

REFERENCE: U-2579C

PROJECT: 34839

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY FORSYTH
PROJECT DESCRIPTION WINSTON SALEM NORTHERN
BELTWAY

SITE DESCRIPTION DUAL BRIDGES 702 & 703 ON -L-
(FUTURE I-74) OVER LOWERY MILL CREEK

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-9	CROSS SECTIONS
10-37	BORE LOGS, CORE LOGS & ROCK CORE PHOTOGRAPHS
38	SOIL & ROCK TEST RESULTS
39	SITE PHOTOGRAPHS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579C	1	39

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.

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- 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. BRADSHAW, E.I.

C. BUKOVITZ, E.I.

M. BREWER, P.E.

GEOLOGIC EX.

A. ROTH

INVESTIGATED BY ECS CAROLINAS, LLP

DRAWN BY M. BREWER, P.E.

CHECKED BY M. WALKO, P.E.

SUBMITTED BY ECS CAROLINAS, LLP

DATE APRIL 2016



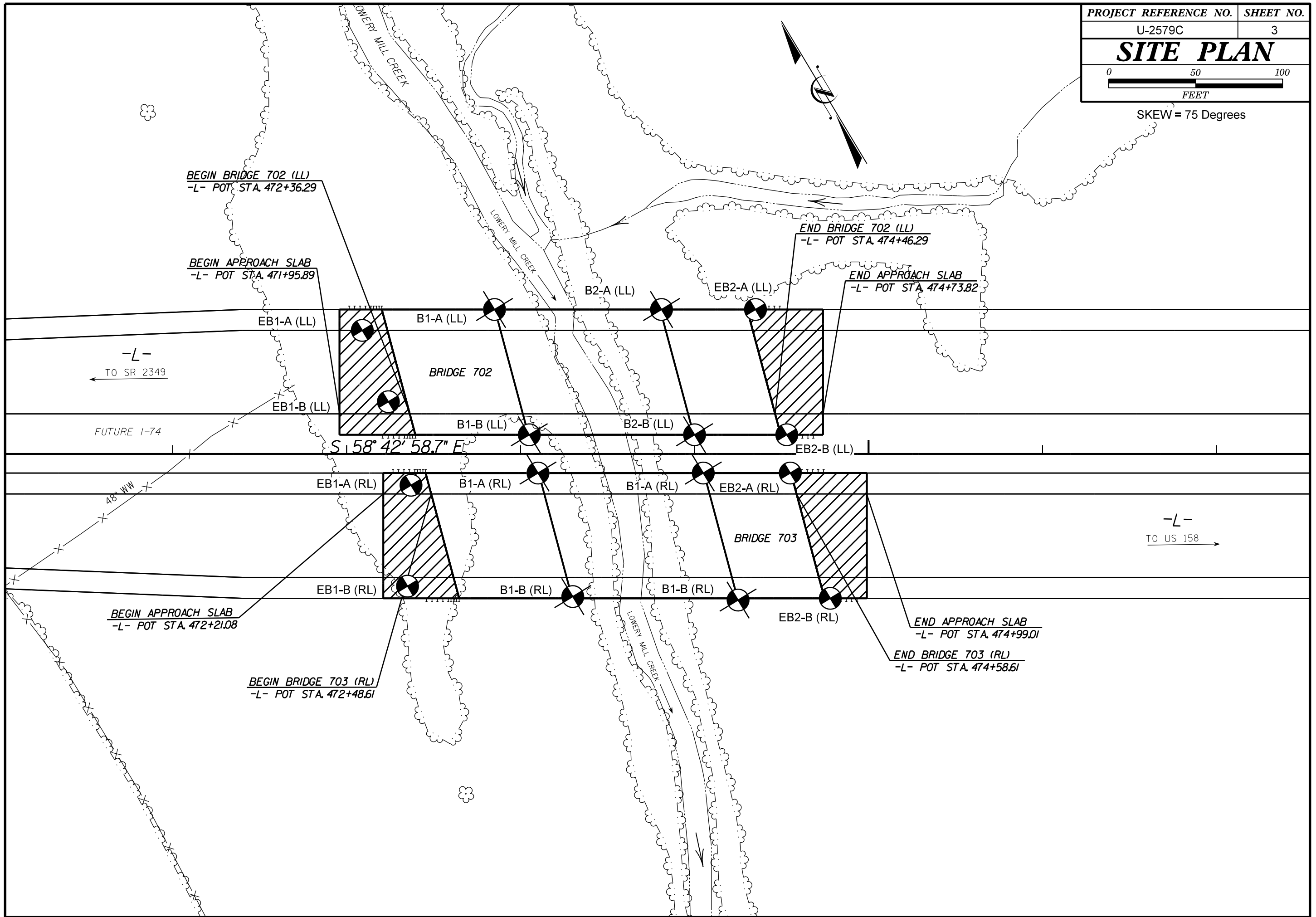
DocuSigned by:
D. Matthew Brewer
EG2ABBEF00DB48C SIGNATURE
5/25/2016 DATE

**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 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. It includes detailed legends for soil types, gradations, and rock hardness, as well as symbols for test borings, groundwater levels, and various engineering terms. Includes sections for Soil Legend and AASHTO Classification, Mineralogical Composition, Compressibility, Percentage of Material, Ground Water, Miscellaneous Symbols, Recommendation Symbols, Abbreviations, Soil Moisture - Correlation of Terms, Plasticity, Color, Equipment Used on Subject Project, Fracture Spacing, Bedding, and Induration.

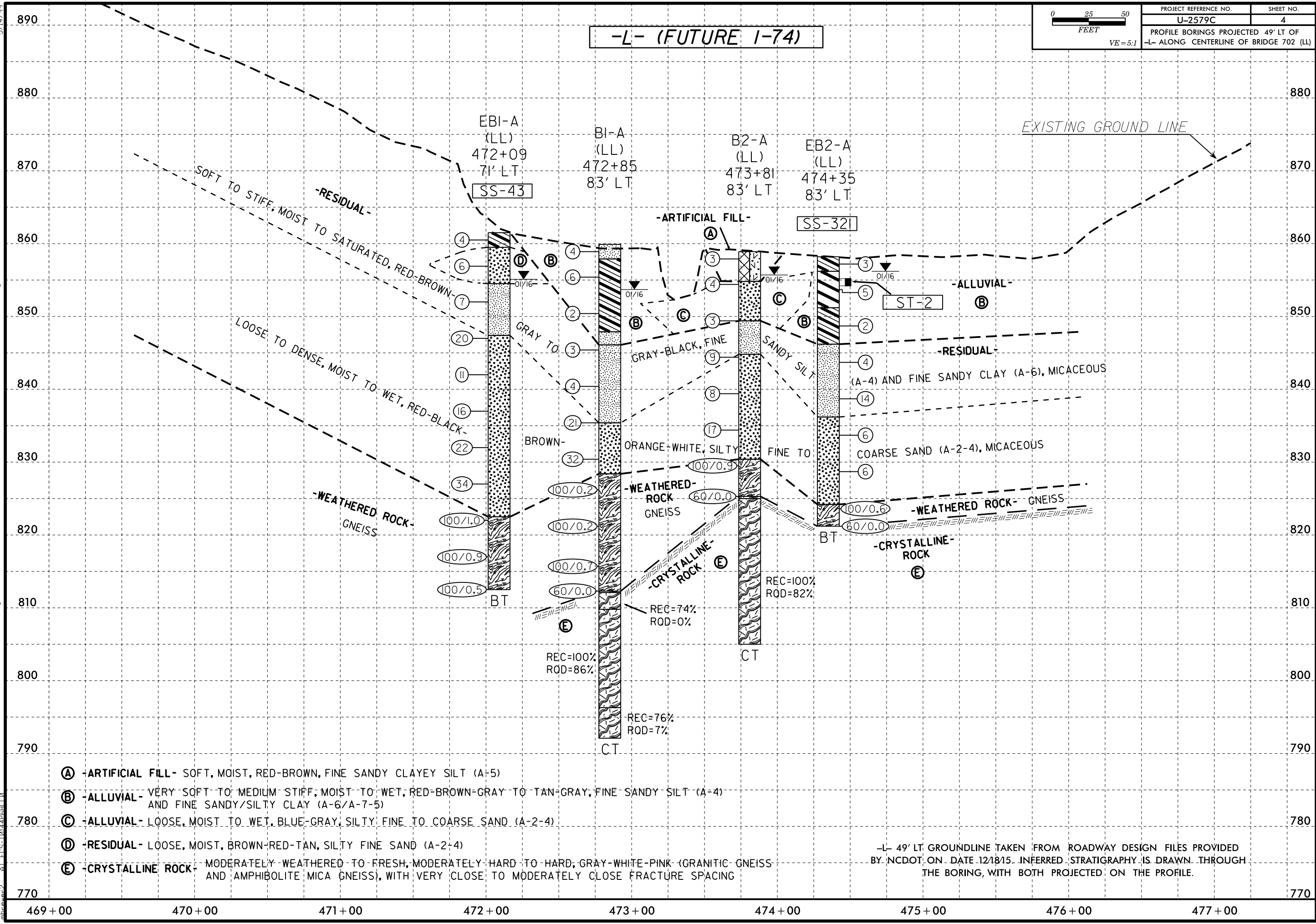
SKEW = 75 Degrees



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 I:\PROJECTS\11000-11999\11500\11502 - U-2579C BRDG (26412) - Bridge No. 702 and 703 - DTR\CADD_GEO\TECH\Site&Sub\U2579C_GEO_BRDG701_PFL.LL_4.dgn
 5/14/99

-L- (FUTURE I-74)

PROJECT REFERENCE NO. U-2579C	SHEET NO. 4
PROFILE BORINGS PROJECTED 49' LT OF -L- ALONG CENTERLINE OF BRIDGE 702 (LL)	



- (A)** -ARTIFICIAL FILL- SOFT, MOIST, RED-BROWN, FINE SANDY CLAYEY SILT (A-5)
- (B)** -ALLUVIAL- VERY SOFT TO MEDIUM STIFF, MOIST TO WET, RED-BROWN-GRAY TO TAN-GRAY, FINE SANDY SILT (A-4) AND FINE SANDY/SILTY CLAY (A-6/A-7-5)
- (C)** -ALLUVIAL- LOOSE, MOIST TO WET, BLUE-GRAY, SILTY FINE TO COARSE SAND (A-2-4)
- (D)** -RESIDUAL- LOOSE, MOIST, BROWN-RED-TAN, SILTY FINE SAND (A-2-4)
- (E)** -CRYSTALLINE ROCK- MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD, GRAY-WHITE-PINK (GRANITIC GNEISS AND AMPHIBOLITE MICA GNEISS), WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING

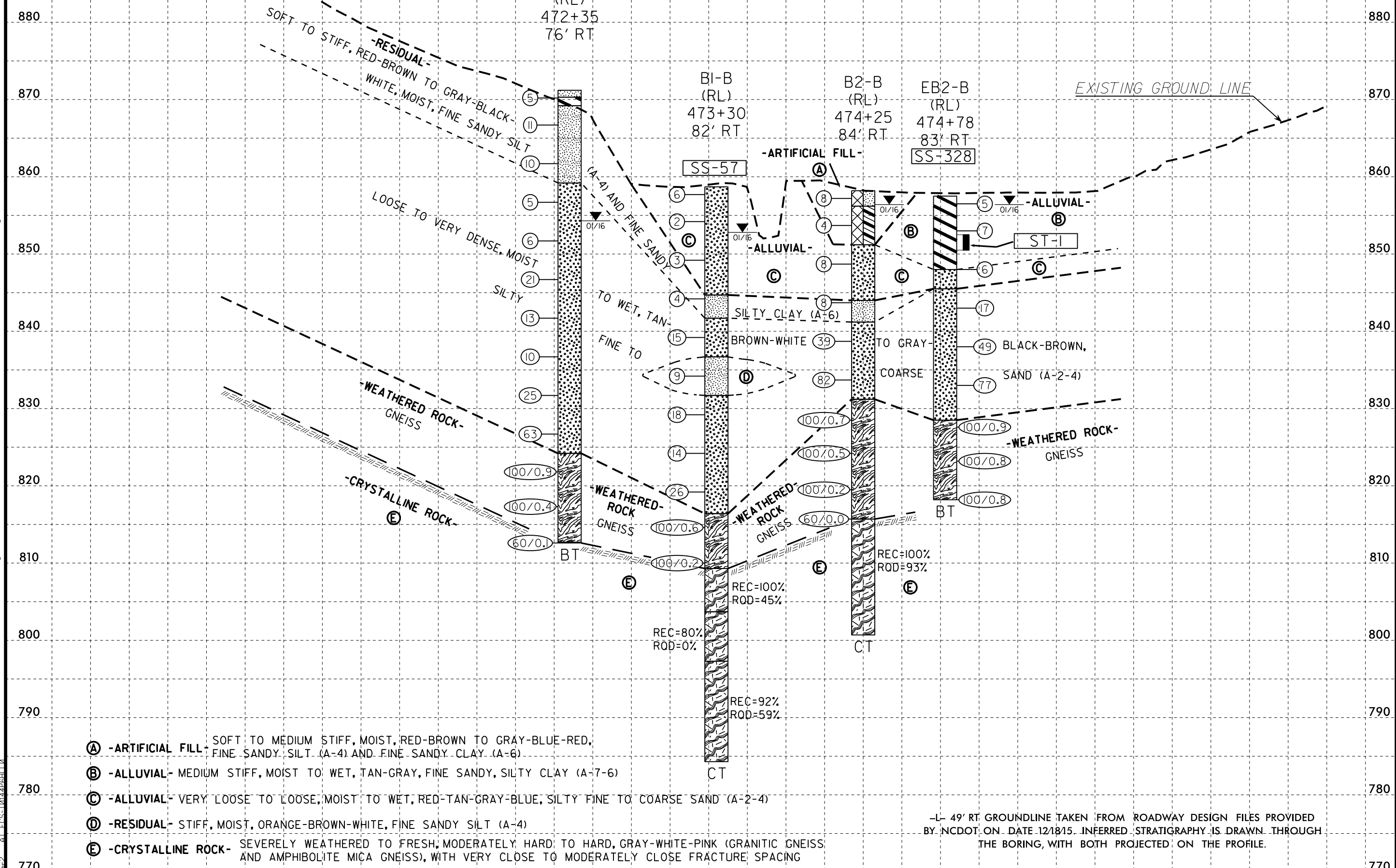
-L- 49' LT GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT, ON DATE 12/18/15. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

469+00 470+00 471+00 472+00 473+00 474+00 475+00 476+00 477+00

5/14/99
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-L- (FUTURE I-74)

PROJECT REFERENCE NO. U-2579C	SHEET NO. 5
PROFILE BORINGS PROJECTED 49' RT OF -L- ALONG CENTERLINE OF BRIDGE 703 (RL)	



- (A) -ARTIFICIAL FILL- SOFT TO MEDIUM STIFF, MOIST, RED-BROWN TO GRAY-BLUE-RED, FINE SANDY SILT (A-4) AND FINE SANDY CLAY (A-6)
- (B) -ALLUVIAL- MEDIUM STIFF, MOIST TO WET, TAN-GRAY, FINE SANDY, SILTY CLAY (A-7-6)
- (C) -ALLUVIAL- VERY LOOSE TO LOOSE, MOIST TO WET, RED-TAN-GRAY-BLUE, SILTY FINE TO COARSE SAND (A-2-4)
- (D) -RESIDUAL- STIFF, MOIST, ORANGE-BROWN-WHITE, FINE SANDY SILT (A-4)
- (E) -CRYSTALLINE ROCK- SEVERELY WEATHERED TO FRESH, MODERATELY HARD TO HARD, GRAY-WHITE-PINK (GRANITIC GNEISS) AND AMPHIBOLITE MICA GNEISS, WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING

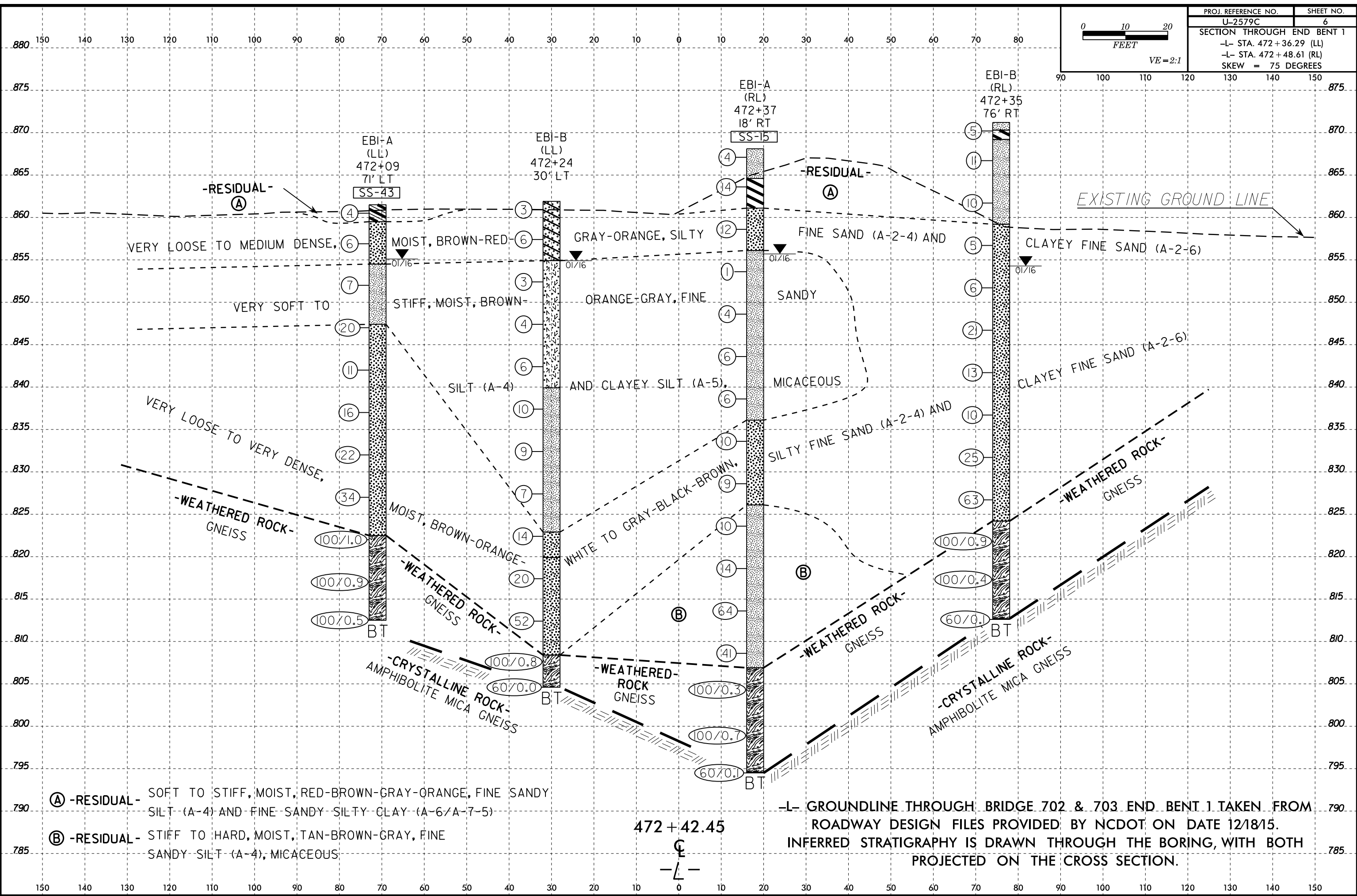
-L- 49' RT GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON DATE 12/18/15. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

8/23/99

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PROJ. REFERENCE NO.	SHEET NO.
U-2579C	6
SECTION THROUGH END BENT 1	
-L- STA. 472+36.29 (LL)	
-L- STA. 472+48.61 (RL)	
SKEW = 75 DEGREES	

0 10 20
FEET
VE=2:1



- Ⓐ -RESIDUAL- SOFT TO STIFF, MOIST, RED-BROWN-GRAY-ORANGE, FINE SANDY SILT (A-4) AND FINE SANDY SILTY CLAY (A-6/A-7-5)
- Ⓑ -RESIDUAL- STIFF TO HARD, MOIST, TAN-BROWN-GRAY, FINE SANDY SILT (A-4), MICACEOUS

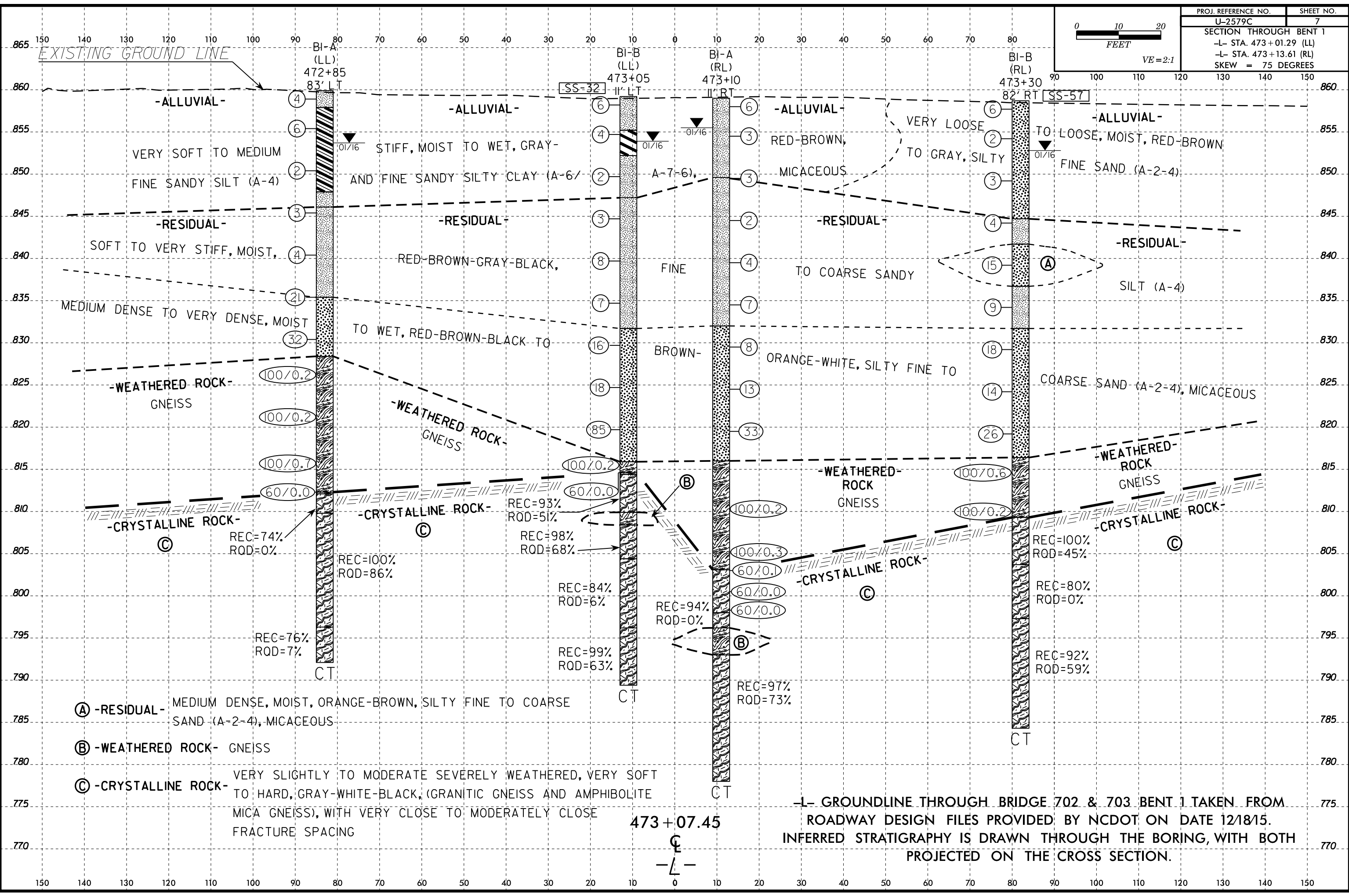
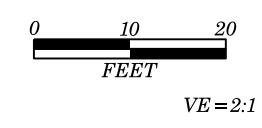
-L- GROUNDLINE THROUGH BRIDGE 702 & 703 END BENT 1 TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON DATE 12/18/15. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

472 + 42.45

Ⓒ
-L-

8/23/99
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PROJ. REFERENCE NO.	SHEET NO.
U-2579C	7
SECTION THROUGH BENT 1	
-L- STA. 473+01.29 (LL)	
-L- STA. 473+13.61 (RL)	
SKEW = 75 DEGREES	



- (A) -RESIDUAL- MEDIUM DENSE, MOIST, ORANGE-BROWN, SILTY FINE TO COARSE SAND (A-2-4), MICACEOUS
- (B) -WEATHERED ROCK- GNEISS
- (C) -CRYSTALLINE ROCK- VERY SLIGHTLY TO MODERATE SEVERELY WEATHERED, VERY SOFT TO HARD, GRAY-WHITE-BLACK, (GRANITIC GNEISS AND AMPHIBOLITE MICA GNEISS), WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING

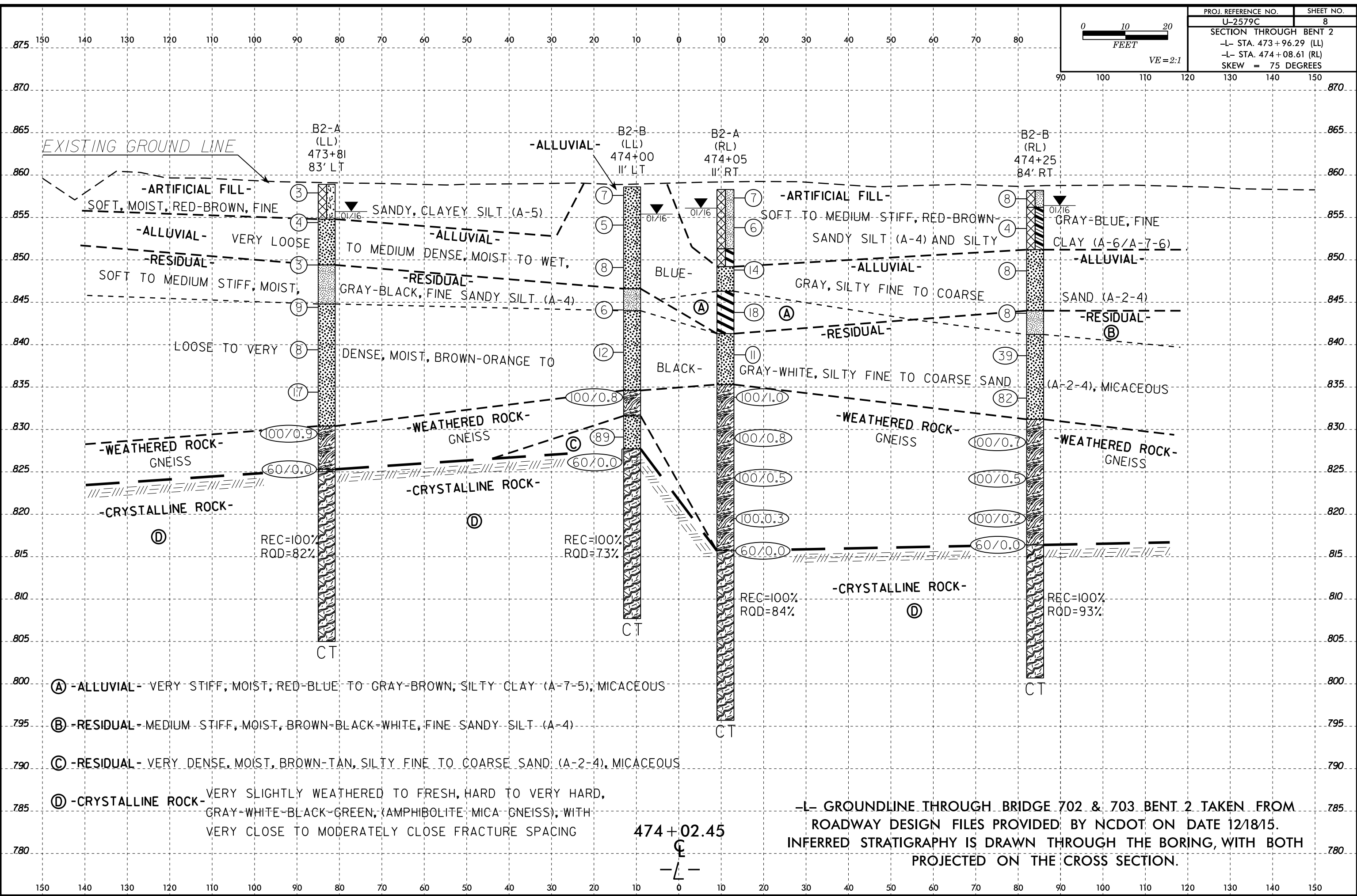
473+07.45

-L- GROUNDLINE THROUGH BRIDGE 702 & 703 BENT 1 TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON DATE 12/18/15. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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PROJ. REFERENCE NO.	SHEET NO.
U-2579C	8
SECTION THROUGH BENT 2	
-L- STA. 473+96.29 (LL)	
-L- STA. 474+08.61 (RL)	
SKEW = 75 DEGREES	

0 10 20
FEET
VE=2:1



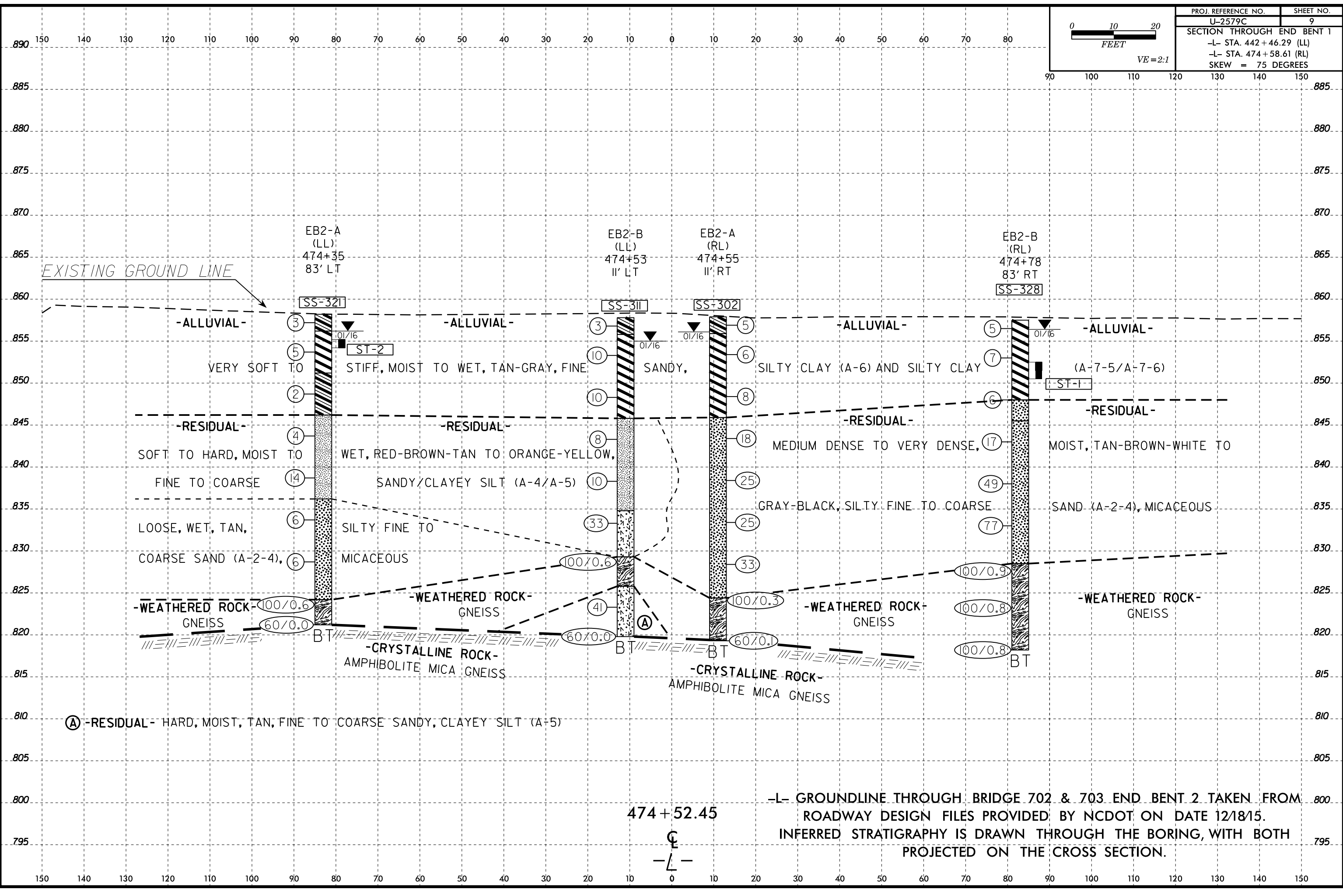
- (A) -ALLUVIAL- VERY STIFF, MOIST, RED-BLUE TO GRAY-BROWN, SILTY CLAY (A-7-5), MICACEOUS
- (B) -RESIDUAL- MEDIUM-STIFF, MOIST, BROWN-BLACK-WHITE, FINE SANDY SILT (A-4)
- (C) -RESIDUAL- VERY DENSE, MOIST, BROWN-TAN, SILTY FINE TO COARSE SAND (A-2-4), MICACEOUS
- (D) -CRYSTALLINE ROCK- VERY SLIGHTLY WEATHERED TO FRESH, HARD TO VERY HARD, GRAY-WHITE-BLACK-GREEN, (AMPHIBOLITE-MICA GNEISS), WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING

474+02.45
L

19-APR-2016 09:41
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PROJ. REFERENCE NO.	SHEET NO.
U-2579C	9
SECTION THROUGH END BENT 1	
-L- STA. 442+46.29 (LL)	
-L- STA. 474+58.61 (RL)	
SKEW = 75 DEGREES	

0 10 20
 FEET
 VE=2:1



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.1	TIP U-2579C	COUNTY FORSYTH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek			GROUND WTR (ft)
BORING NO. EB1-A (LL)	STATION 472+09	OFFSET 71 ft LT	ALIGNMENT -L-
COLLAR ELEV. 861.5 ft	TOTAL DEPTH 49.0 ft	NORTHING 874,602	EASTING 1,657,704
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER B. Thomas	START DATE 01/11/16	COMP. DATE 01/11/16	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	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
865																
861.5	861.5	0.0	5	2	2										861.5	0.0
															859.5	2.9
860	857.9	3.6	2	2	4										RESIDUAL Red-Brown, Fine Sandy CLAY (A-6) with Trace Root Fragments, Soft Brown-Red-Tan, Silty Fine SAND (A-2-4), Loose	
855	853.0	8.5	1	2	5										854.5	7.0
															Brown-Orange-Gray, Fine Sandy SILT (A-4(1)), Medium Stiff, Micaceous	
850	848.0	13.5	8	10	10										847.4	14.1
															Brown-Orange-White, Silty Fine to Coarse SAND (A-2-4), Medium Dense to Dense	
845	843.0	18.5	4	5	6											
840	838.0	23.5	5	6	10											
835	833.0	28.5	4	10	12											
830	828.0	33.5	8	13	21											
825	823.0	38.5	13	28	72											
820	818.0	43.5	21	53	47/0.4										822.5	39.0
															WEATHERED ROCK Brown-Orange-White, (GNEISS)	
815	813.0	48.5													812.5	49.0
															Boring Terminated at Elevation 812.5 ft IN WEATHERED ROCK (GNEISS)	

NCDOT BORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16

WBS 34839.1.1	TIP U-2579C	COUNTY FORSYTH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek			GROUND WTR (ft)
BORING NO. EB1-B (LL)	STATION 472+24	OFFSET 30 ft LT	ALIGNMENT -L-
COLLAR ELEV. 861.9 ft	TOTAL DEPTH 57.3 ft	NORTHING 874,559	EASTING 1,657,695
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER B. Thomas	START DATE 01/11/16	COMP. DATE 01/11/16	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	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
865																
861.9	861.9	0.0	3	1	2										861.9	0.0
860	858.4	3.5	2	3	3										RESIDUAL Red-Brown to Gray-Red-Tan, Clayey Fine SAND (A-2-6), Very Loose to Loose	
855	853.4	8.5	2	1	2										854.9	7.0
															Brown-Orange-Gray, Fine to Coarse Sandy SILT (A-5(0)), with Little Clay, Soft to Medium Stiff	
850	848.4	13.5	2	2	2										847.4	14.1
															Brown-Orange-White, Silty Fine to Coarse SAND (A-2-4), Medium Dense to Dense	
845	843.4	18.5	2	2	4											
840	838.4	23.5	3	4	6											
835	833.4	28.5	2	3	6											
830	828.4	33.5	2	3	4											
825	823.4	38.5	3	4	10											
820	818.4	43.5	5	7	13										822.9	39.0
															White, Silty Fine to Coarse SAND (A-2-4), Medium Dense	
815	813.4	48.5	12	22	30										819.9	42.0
															Brown-Orange-Gray-White, Silty Fine SAND (A-2-4), Medium Dense to Very Dense, Micaceous	
810	808.4	53.5	63	37/0.3											822.9	39.0
															WEATHERED ROCK Tan-White-Brown, (GNEISS)	
805	804.6	57.3													822.9	39.0
															Boring Terminated with Standard Penetration Test Refusal at Elevation 804.6 ft ON CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz											
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)										
BORING NO. B1-A (LL)		STATION 472+85		OFFSET 83 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 859.9 ft		TOTAL DEPTH 67.8 ft		NORTHING 874,573		EASTING 1,657,775											
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic											
DRILLER B. Thomas		START DATE 01/14/16		COMP. DATE 01/15/16		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			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
860	859.9	0.0	3	2	2										859.9	GROUND SURFACE	0.0
	857.9	2.0											M		857.9	ALLUVIAL Red-Brown, Fine Sandy SILT (A-4), Soft, with Trace Organics	2.0
855	856.4	3.5	3	3	3								M			Gray-Red-Brown, Silty CLAY (A-6), Medium Stiff to Soft, Micaceous, with Trace Organics	
	851.4	8.5											M				
850	851.4	8.5	2	1	1												
	846.4	13.5															
845	846.4	13.5	1	1	2								Sat. W		847.9	Brown-Gray, Fine to Coarse Sandy SILT (A-4), Soft, Micaceous	12.0
	846.1	13.8													846.1	RESIDUAL Red-Brown-Black, Fine Sandy SILT (A-4), Soft to Very Stiff, Micaceous, with Trace Clay	13.8
840	841.4	18.5	2	1	3								W				
	836.4	23.5															
835	836.4	23.5	3	4	17								W		835.4	Red-Brown-Black, Silty Fine SAND (A-2-4), Medium Dense, Micaceous	24.5
	831.4	28.5															
830	831.4	28.5	11	14	18								M				
	826.4	33.5															
825	826.4	33.5	100/0.2												828.4	WEATHERED ROCK Gray-White, (GNEISS)	31.5
	821.4	38.5															
820	821.4	38.5	100/0.2														
	816.4	43.5															
815	816.4	43.5	78	22/0.2													
	812.3	47.6															
810	812.3	47.6	60/0.0												812.3	CRYSTALLINE ROCK	47.6
															812.1	Gray-White-Pink, (AMPHIBOLITE MICA GNEISS)	47.8
															809.8	Gray-White, (AMPHIBOLITE MICA GNEISS)	50.1
805																	
800																	
795															796.3	Gray-White-Pink, (GRANITIC GNEISS)	63.6
															792.1	Boring Terminated at Elevation 792.1 ft IN CRYSTALLINE ROCK (GRANITIC GNEISS)	67.8

NCDOT BORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT_GDT 4/19/16

RS-1

GEOTECHNICAL BORING REPORT CORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B1-A (LL)		STATION 472+85		OFFSET 83 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 859.9 ft		TOTAL DEPTH 67.8 ft		NORTHING 874,573		EASTING 1,657,775					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/14/16		COMP. DATE 01/15/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
812.1										Begin Coring @ 47.8 ft	
810	812.1	47.8	5.0	2:27/1.0 1:24/1.0 3:13/1.0 5:20/1.0 5:38/1.0	(4.3) 86%	(1.9) 38%	(1.7) 74%	(0.0) 0%		812.1 Moderate to Slightly Weathered, Moderately Hard to Hard, Very Close to Close Fracture Spacing, Gray-White-Pink (AMPHIBOLITE MICA GNEISS)	47.8
	807.1	52.8					(13.5) 100%	(11.6) 86%		Very Slight to Fresh Weathering, Hard, Close to Moderately Close Fracture Spacing, Gray-White (AMPHIBOLITE MICA GNEISS)	50.1
805			5.0	4:29/1.0 4:30/1.0 4:45/1.0 5:09/1.0 5:52/1.0	(5.0) 100%	(4.3) 86%					
	802.1	57.8									
800			5.0	5:03/1.0 5:01/1.0 4:46/1.0 4:52/1.0 4:57/1.0	(4.8) 96%	(4.3) 86%				RS-1: 58.9-59.3' q _{u-1} =6,405 psi	
	797.1	62.8									
795			5.0	5:11/1.0 4:47/1.0 5:17/1.0 2:10/1.0 3:41/1.0	(4.3) 86%	(1.4) 28%	(3.2) 76%	(0.3) 7%		796.3 Moderate to Slight Weathering, Moderately Hard to Hard, Very Close to Close Fracture Spacing, Gray-White-Pink (GRANITIC GNEISS)	63.6
	792.1	67.8								792.1 Boring Terminated at Elevation 792.1 ft IN CRYSTALLINE ROCK (GRANITIC GNEISS)	67.8

NCDOT CORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16

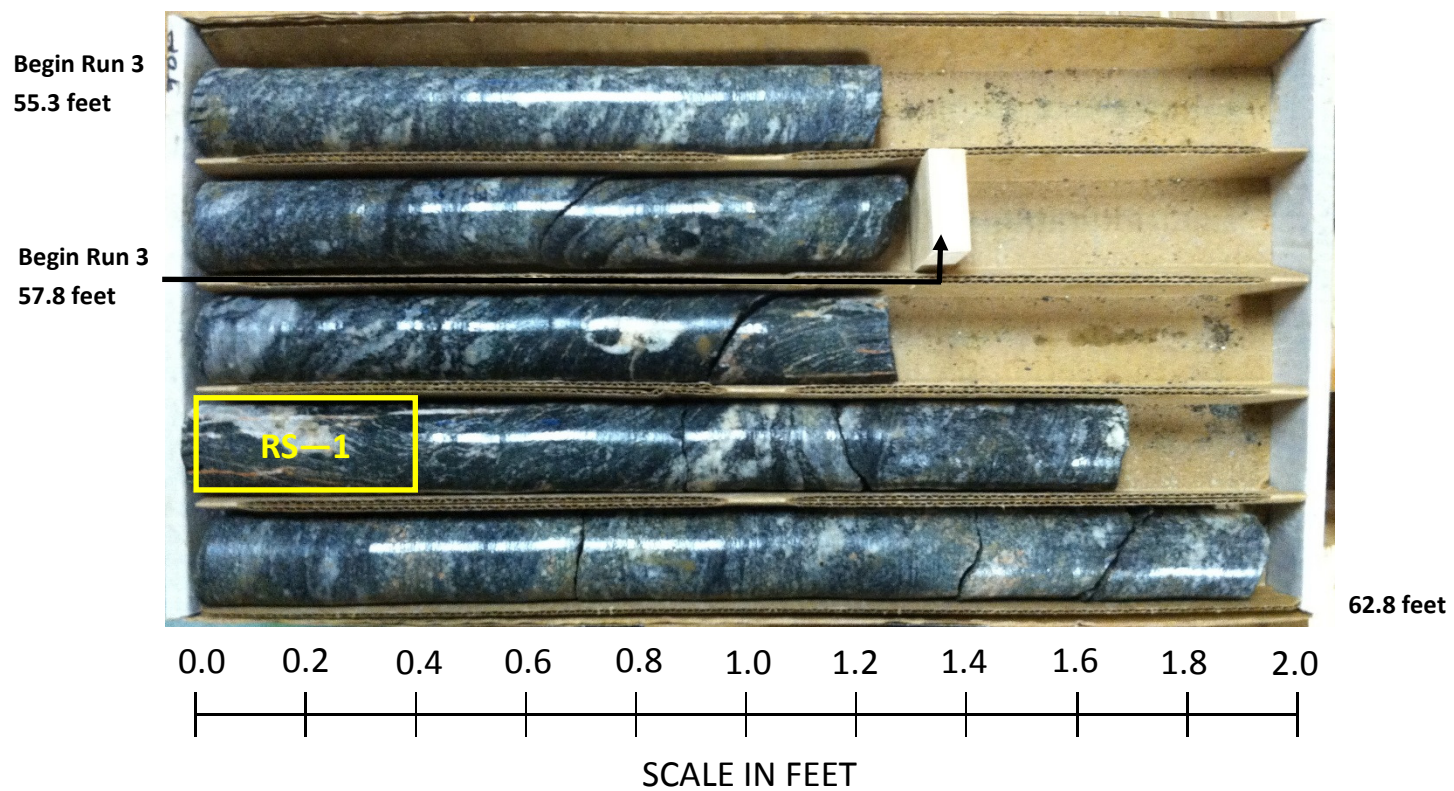
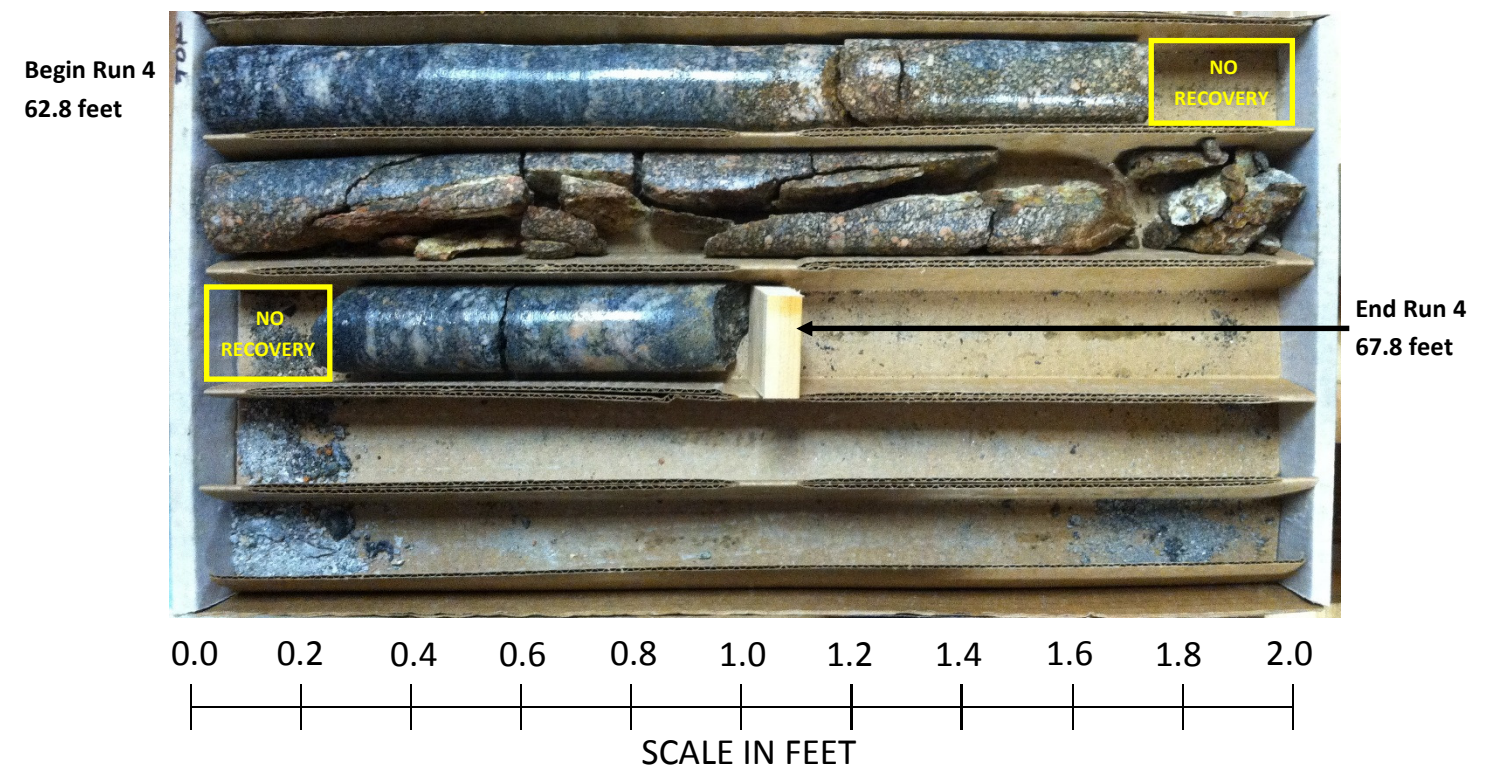
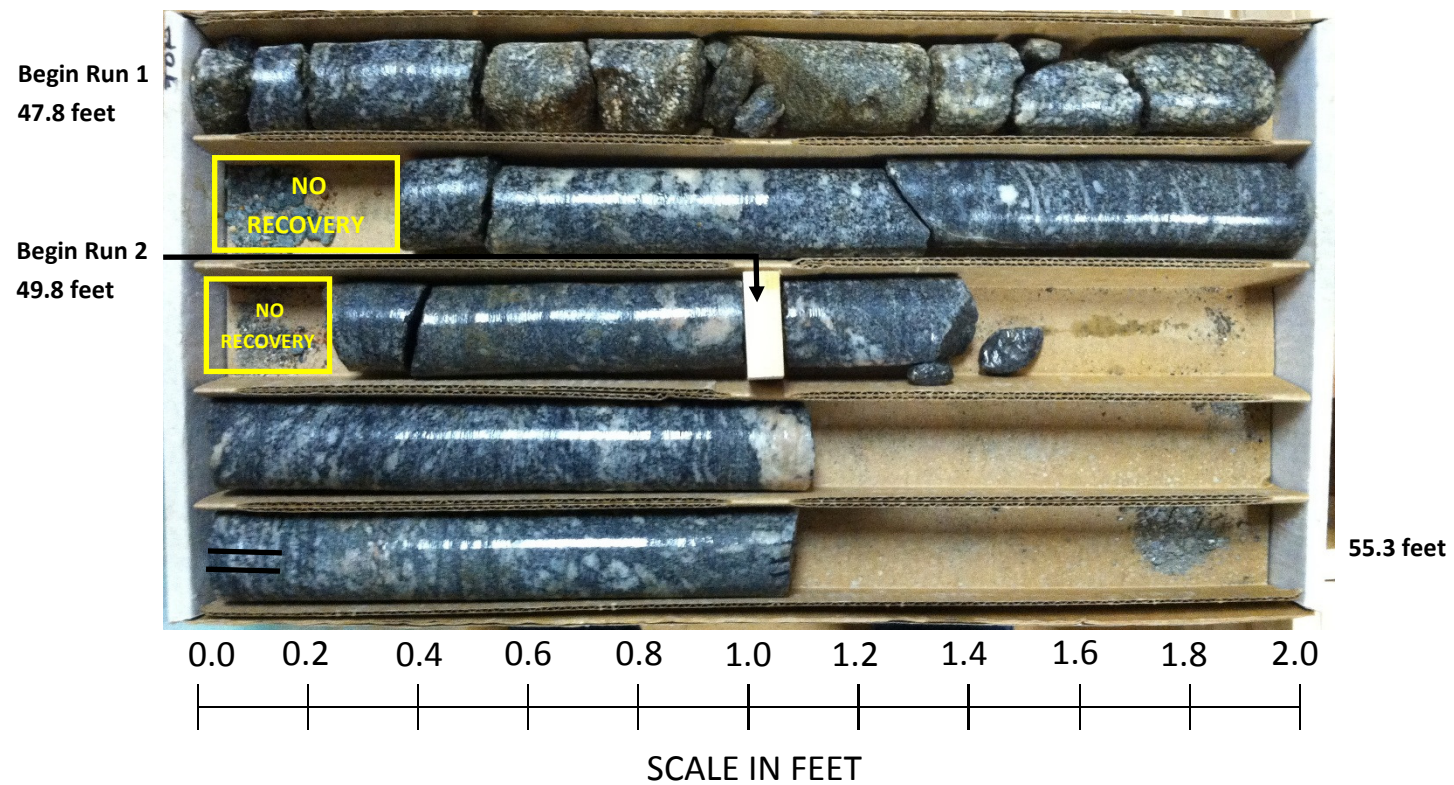


Bridge No. 702 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Rock Core Photographs: Boring - B1-A (LL) — Station: 472+85 Offset: 83' LT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz										
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. B1-B (LL)		STATION 473+05		OFFSET 11 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 859.2 ft		TOTAL DEPTH 69.8 ft		NORTHING 874,501		EASTING 1,657,755										
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER B. Thomas		START DATE 01/13/16		COMP. DATE 01/14/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
860	859.2	0.0												859.2	0.0	GROUND SURFACE
			2	3	3								M			ALLUVIAL Red-Brown, Fine Sandy SILT (A-4), with Trace to Little Clay, Medium Stiff, Trace Organics
855	855.7	3.5	2	2	2								M	855.2	4.0	Red-Brown, Fine Sandy CLAY (A-7-6), Soft, Trace Organics
													M	852.2	7.0	Brown-Gray, Fine Sandy SILT (A-4), with Trace to Little Clay, Very Soft
850	850.7	8.5	1	1	1								M			
845	845.7	13.5	1	1	2								M	847.2	12.0	RESIDUAL Red-Brown-Orange-Black, Fine to Coarse Sandy Silt (A-4), with Trace to Little Clay, Soft to Medium Stiff
840	840.7	18.5	2	3	5								M			
835	835.7	23.5	2	3	4								M			
830	830.7	28.5	2	8	8								M	831.7	27.5	Brown-Black, Silty Fine to Coarse SAND (A-2-4), Medium Dense to Very Dense, Micaceous
825	825.7	33.5	6	8	10								M			
820	820.7	38.5	9	44	41								M			
815	815.7	43.5												815.9	43.3	WEATHERED ROCK Brown-Black. (GNEISS)
	814.6	44.6	100/0.2											814.6	44.6	CRYSTALLINE ROCK Gray-White, (AMPHIBOLITE MICA GNEISS)
			60/0.0											809.9	49.3	WEATHERED ROCK (GNEISS)
810														808.4	50.8	CRYSTALLINE ROCK Gray-White, (AMPHIBOLITE MICA GNEISS)
805														804.4	54.8	Gray-White-Pink, (AMPHIBOLITE MICA GNEISS)
800																
795														796.2	63.0	Gray-White, (AMPHIBOLITE MICA GNEISS)
790														789.4	69.8	Boring Terminated at Elevation 789.4 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

NCDOT BORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT_GDT 4/19/16

RS-2

GEOTECHNICAL BORING REPORT CORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B1-B (LL)		STATION 473+05		OFFSET 11 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 859.2 ft		TOTAL DEPTH 69.8 ft		NORTHING 874,501		EASTING 1,657,755					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/13/16		COMP. DATE 01/14/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 25.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
814.4										Begin Coring @ 44.8 ft	
	814.4	44.8	5.0	4:22/1.0 5:03/1.0 4:14/1.0 5:54/1.0 2:11/1.0	(4.1) 82%	(2.3) 46%	(4.2) 93%	(2.3) 51%		814.4 Very Slightly Weathered to Fresh, Hard, Very Close to Close Fracture Spacing, Gray-White (AMPHIBOLITE MICA GNEISS)	44.8
810	809.4	49.8								809.9	49.3
			5.0	1:33/1.0 2:47/1.0 3:18/1.0 3:55/1.0 5:24/1.0	(4.0) 80%	(1.8) 36%	(0.0) 0%	(0.0) 0%		WEATHERED ROCK (GNEISS)	50.8
805	804.4	54.8							RS-2	804.4 Slightly to Very Slightly Weathered, Moderately Hard to Hard, Very Close to Moderately Close Fracture Spacing, Gray-White (AMPHIBOLITE MICA GNEISS)	54.8
			5.0	1:36/1.0 2:05/1.0 2:10/1.0 2:40/1.0 3:24/1.0	(3.9) 78%	(0.5) 10%	(6.9) 84%	(0.5) 6%		CRYSTALLINE ROCK RS-2: 52.8-53.2' q ₋₂ = 8,836 psi	
800	799.4	59.8								796.2 Moderate to Slight Weathering, Moderately Hard to Hard, Very Close to Close Fracture Spacing, Gray-White-Pink (AMPHIBOLITE MICA GNEISS)	63.0
			5.0	2:17/1.0 2:51/1.0 2:14/1.0 3:04/1.0 4:27/1.0	(4.7) 94%	(0.9) 18%					
795	794.4	64.8								794.4 Very Slightly Weathered to Fresh, Hard, Close to Moderately Close Fracture Spacing, Gray-White (AMPHIBOLITE MICA GNEISS)	
			5.0	5:20/1.0 4:48/1.0 4:46/1.0 4:57/1.0 4:59/1.0	(5.0) 100%	(4.3) 86%	(6.7) 99%	(4.3) 63%			
790	789.4	69.8								789.4 Boring Terminated at Elevation 789.4 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	69.8

NCDOT CORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16



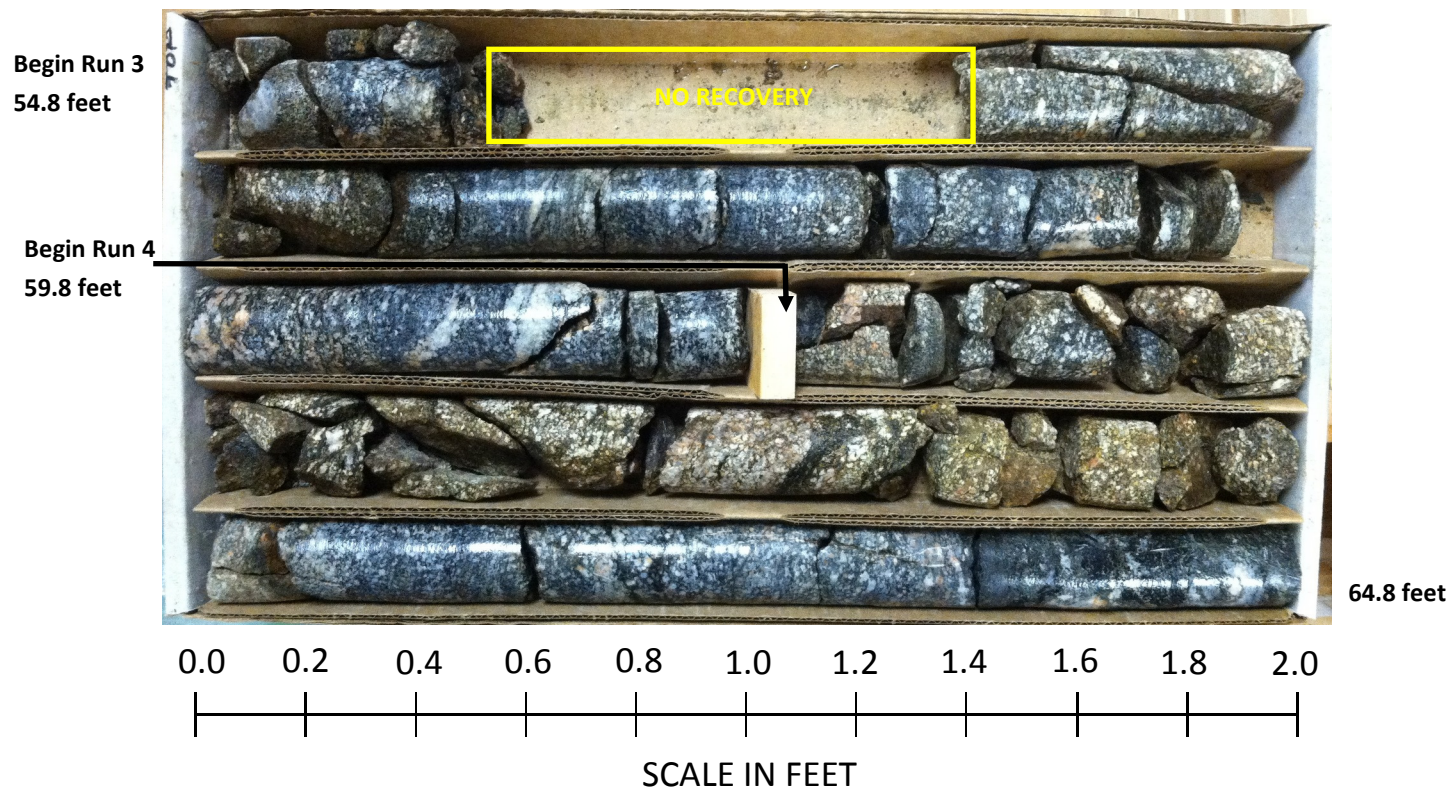
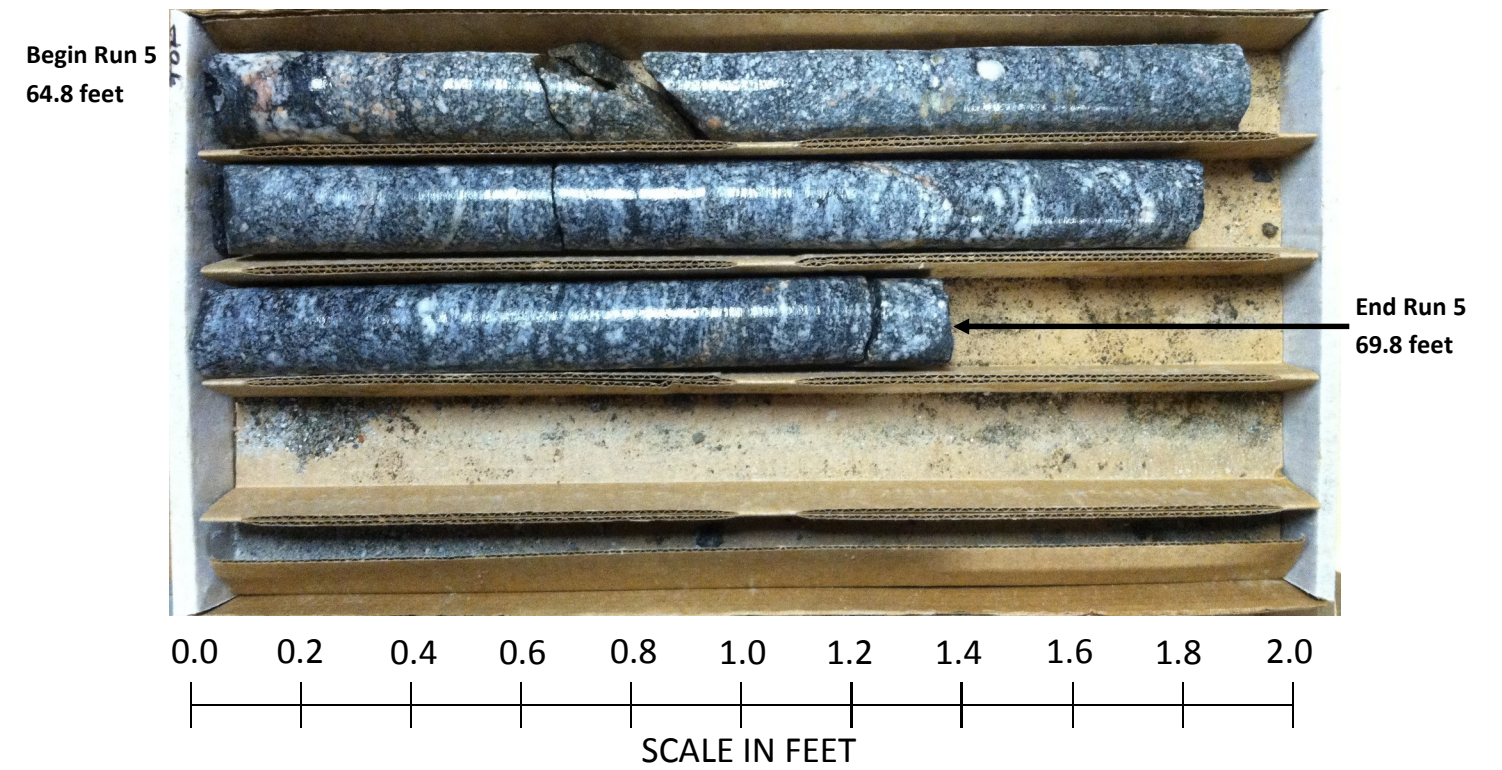
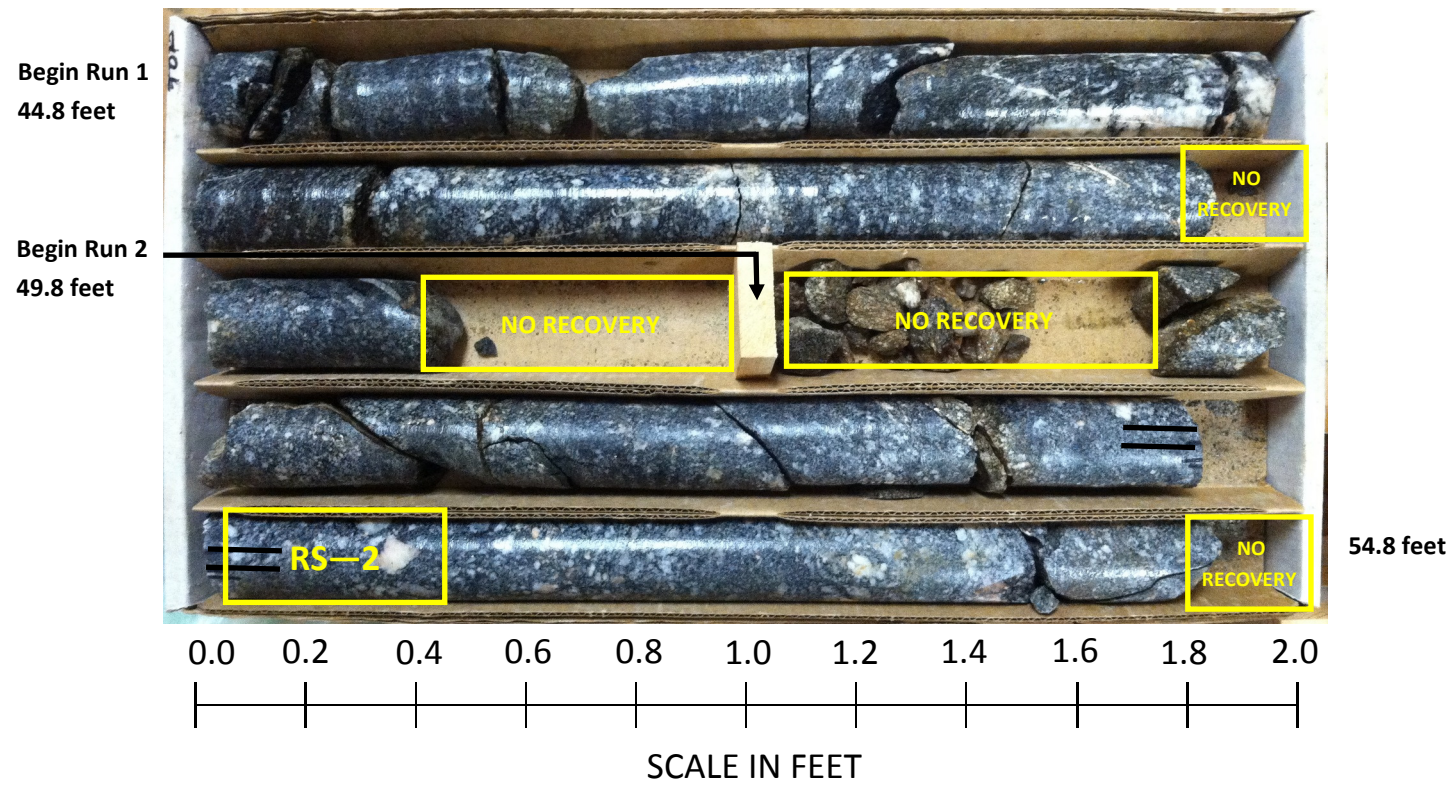
Bridge No. 702 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

Sheet No. 16

ECS Carolinas Project No. 08:11502

Rock Core Photographs: Boring - B1-B (LL) — Station: 473+05 Offset: 11' LT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz										
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. B2-A (LL)		STATION 473+81		OFFSET 83 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 858.9 ft		TOTAL DEPTH 53.9 ft		NORTHING 874,523		EASTING 1,657,857										
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER B. Thomas		START DATE 01/20/16		COMP. DATE 01/20/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
860	858.9	0.0												858.9	0.0	GROUND SURFACE
			2	1	2	3							M			ARTIFICIAL FILL Red-Brown, Fine Sandy, Clayey SILT (A-5), Soft
855	855.4	3.5	2	2	2	4							M	854.8	4.1	ALLUVIAL Blue-Gray, Silty Fine to Coarse SAND (A-2-4), Very Loose
850	850.4	8.5	2	1	2	3							W	849.4	9.5	RESIDUAL Gray-Black, Fine Sandy SILT (A-4), Soft, Micaceous
845	845.4	13.5	4	4	5	9							M	844.8	14.1	Black-Yellow-Brown-Orange, Silty Fine SAND (A-2-4), Loose to Medium Dense, Micaceous
840	840.4	18.5	3	4	4	8							M			
835	835.4	23.5	7	9	8	17							M			
830	830.4	28.5	17	83/0.4						100/0.9				830.4	28.5	WEATHERED ROCK Brown-White (GNEISS).
825	825.3	33.6	60/0.0							60/0.0				825.3	33.6	CRYSTALLINE ROCK Gray-White-Pink, (AMPHIBOLITE MICA GNEISS).
820														825.0	33.9	
815																
810																
805													RS-3	805.0	53.9	Boring Terminated at Elevation 805.0 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

NCDOT BORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16

GEOTECHNICAL BORING REPORT CORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz						
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)					
BORING NO. B2-A (LL)		STATION 473+81		OFFSET 83 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 858.9 ft		TOTAL DEPTH 53.9 ft		NORTHING 874,523		EASTING 1,657,857						
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic						
DRILLER B. Thomas		START DATE 01/20/16		COMP. DATE 01/20/16		SURFACE WATER DEPTH N/A						
CORE SIZE NQ2		TOTAL RUN 20.0 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %				
825	825.0	33.9	5.0	4:10/1.0 4:37/1.0 4:35/1.0 4:15/1.0 4:10/1.0	(5.0) 100%	(3.5) 70%	(20.0) 100%	(16.4) 82%		Begin Coring @ 33.9 ft	33.9	
820	820.0	38.9	5.0	3:37/1.0 4:20/1.0 3:29/1.0 3:32/1.0 3:21/1.0	(5.0) 100%	(3.1) 62%				Very Slightly Weathered to Fresh, Moderately Hard to Hard, Very Close to Moderately Close Fracture Spacing, Gray-White-Pink, (AMPHIBOLITE MICA GNEISS).		
815	815.0	43.9	5.0	4:08/1.0 3:50/1.0 4:16/1.0 4:02/1.0 3:57/1.0	(5.0) 100%	(4.9) 98%						
810	810.0	48.9	5.0	3:10/1.0 3:18/1.0 3:07/1.0 3:18/1.0 2:45/1.0	(5.0) 100%	(4.9) 98%						
805	805.0	53.9	5.0								RS-3	RS-3: 49.2-49.6' q _u -3 = 10,133 psi
Boring Terminated at Elevation 805.0 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)												

NCDOT CORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16

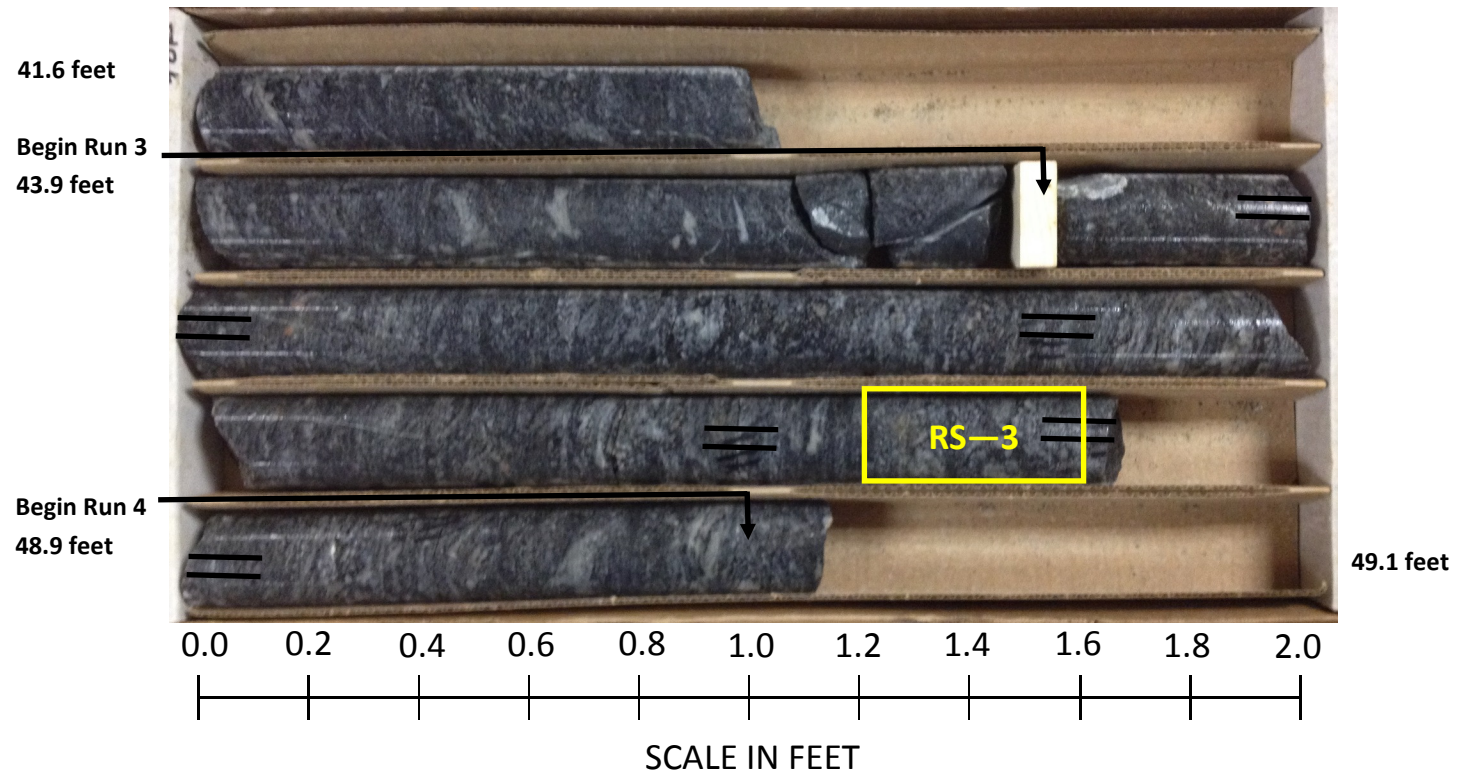
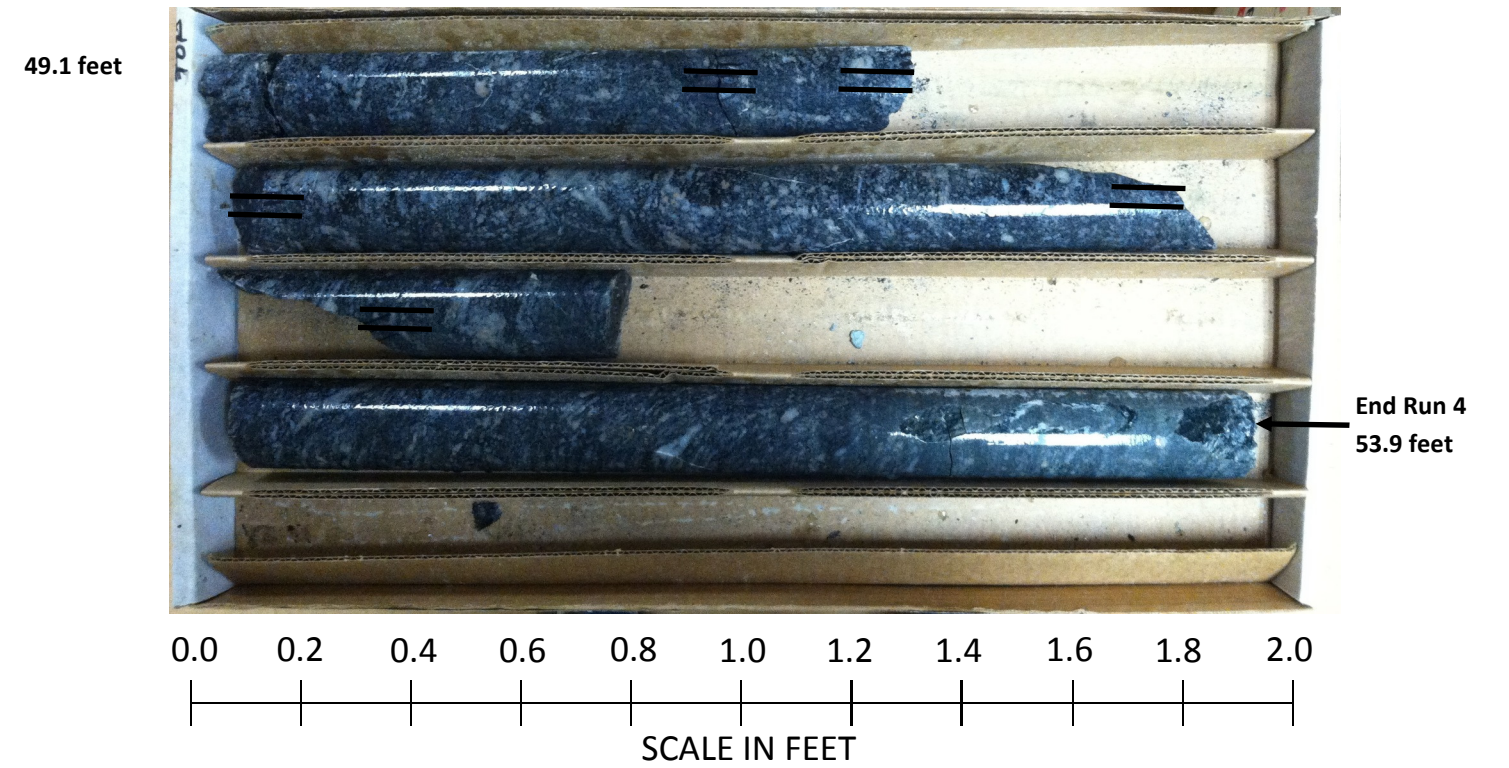
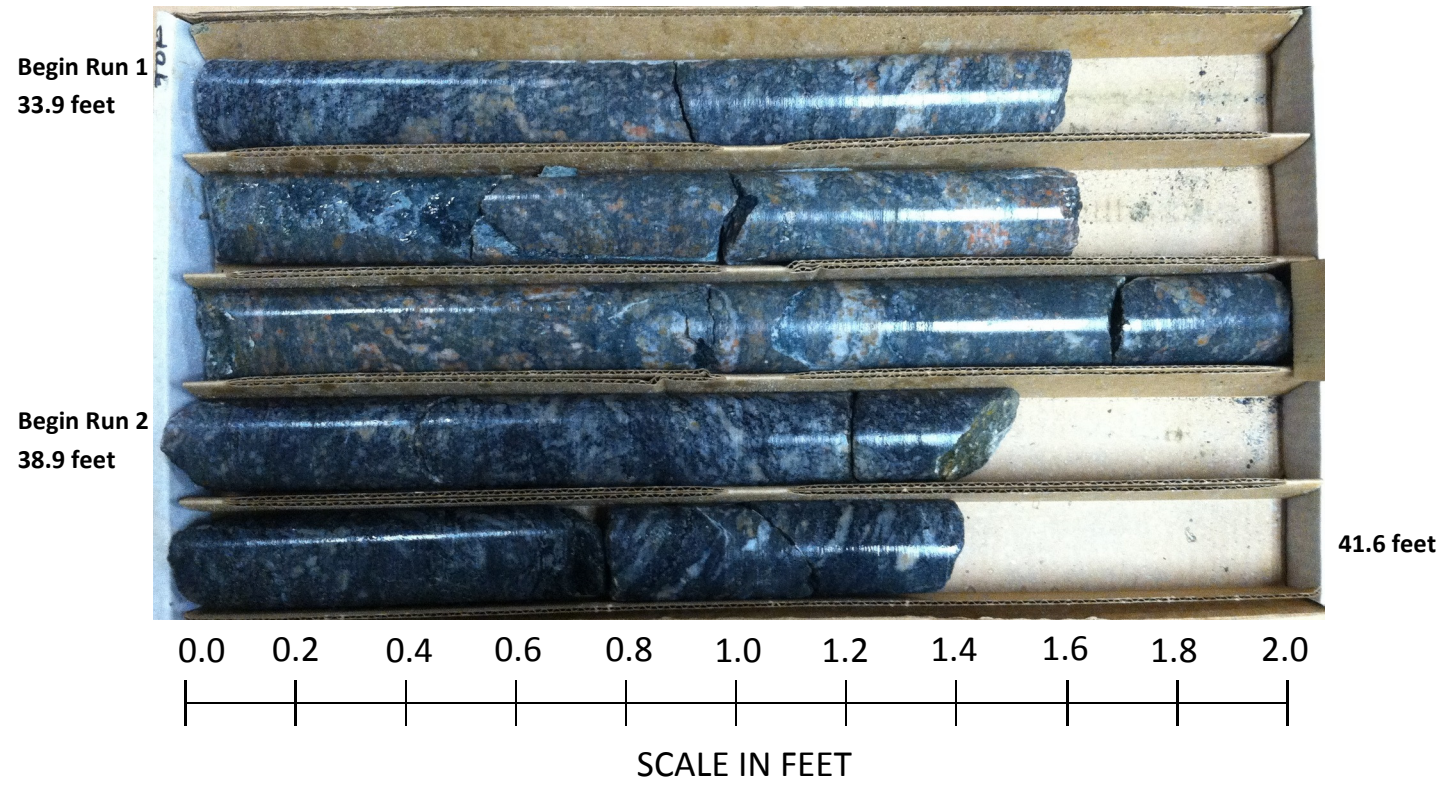


Bridge No. 702 on -L- (Future I-74) over Lowery Mill Creek

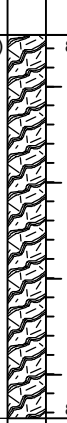
WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Rock Core Photographs: Boring - B2-A (LL) — Station: 473+81 Offset: 83' LT



GEOTECHNICAL BORING REPORT CORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B2-B (LL)		STATION 474+00		OFFSET 11 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 858.6 ft		TOTAL DEPTH 50.9 ft		NORTHING 874,452		EASTING 1,657,836					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/19/16		COMP. DATE 01/20/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
827.7	827.7	30.9	5.0	N=60/0.0 3:59/1.0 4:45/1.0 4:34/1.0 4:20/1.0 4:10/1.0	(5.0) 100%	(4.2) 84%	(20.0) 100%	(14.6) 73%		Begin Coring @ 30.9 ft CRYSTALLINE ROCK Slightly Weathered to Fresh, Moderately Hard to Hard, Very Close to Close Fracture Spacing, Gray-White-Green, (AMPHIBOLITE MICA GNEISS) RS-4: 35.4-35.8' q _{u-4} = 4,003 psi	30.9
825	822.7	35.9	5.0	3:41/1.0 3:33/1.0 3:59/1.0 3:58/1.0 4:18/1.0	(5.0) 100%	(4.4) 88%				RS-4	
820	817.7	40.9	5.0	4:14/1.0 4:22/1.0 4:34/1.0 4:18/1.0 4:17/1.0	(5.0) 100%	(2.9) 58%					
815	812.7	45.9	5.0	3:34/1.0 3:34/1.0 3:57/1.0 4:01/1.0 3:59/1.0	(5.0) 100%	(3.1) 62%					
810	807.7	50.9									
											Boring Terminated at Elevation 807.7 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

NCDOT CORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 4/19/16



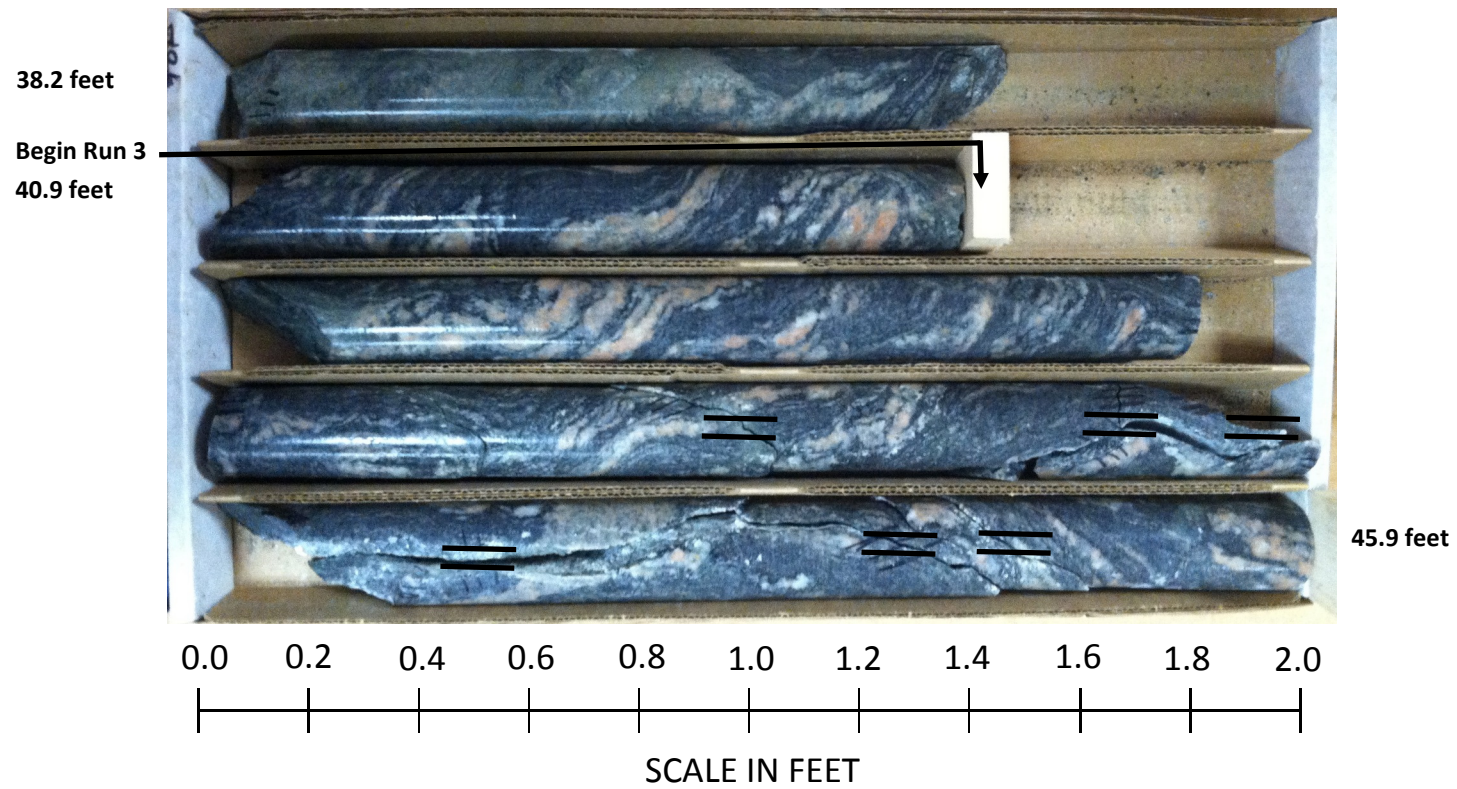
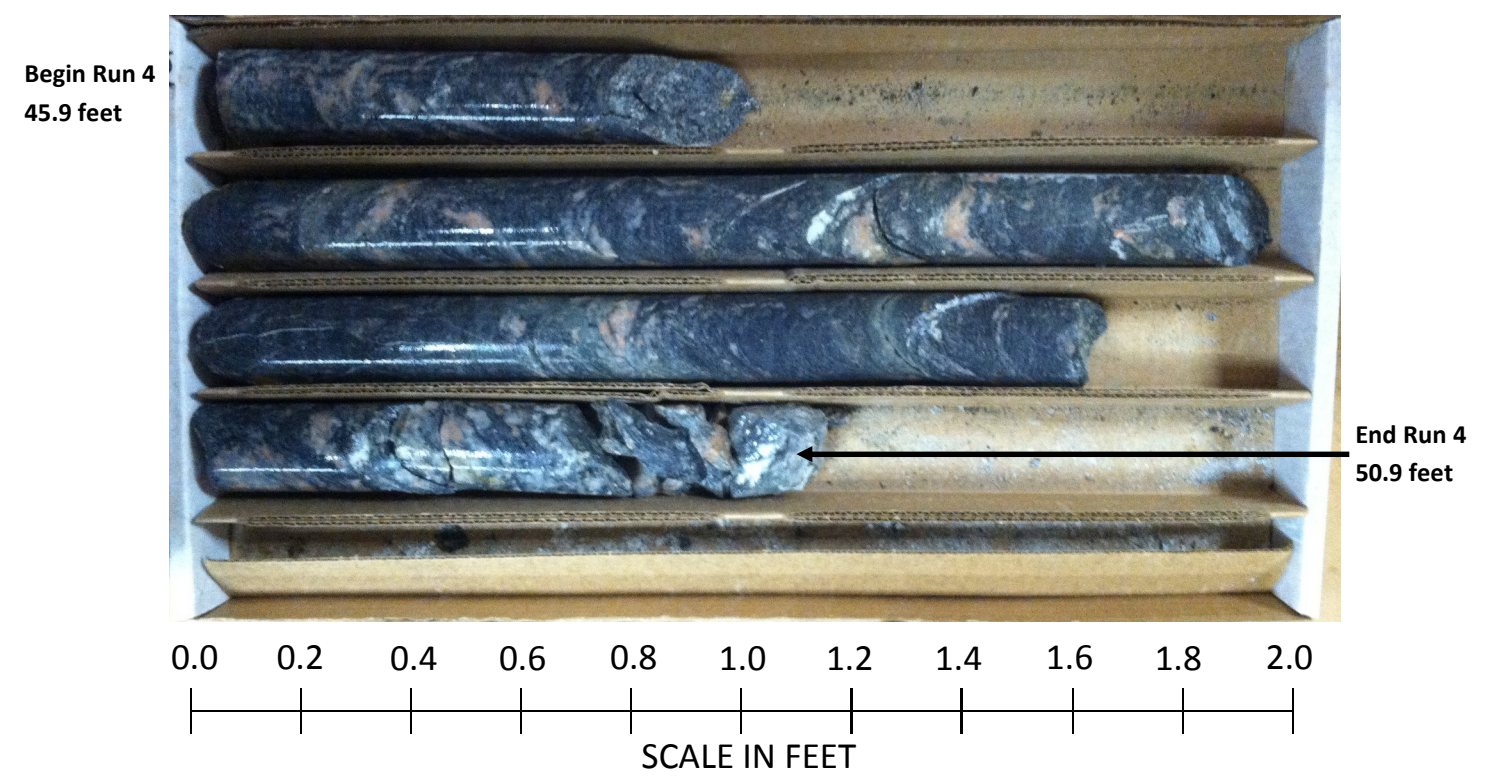
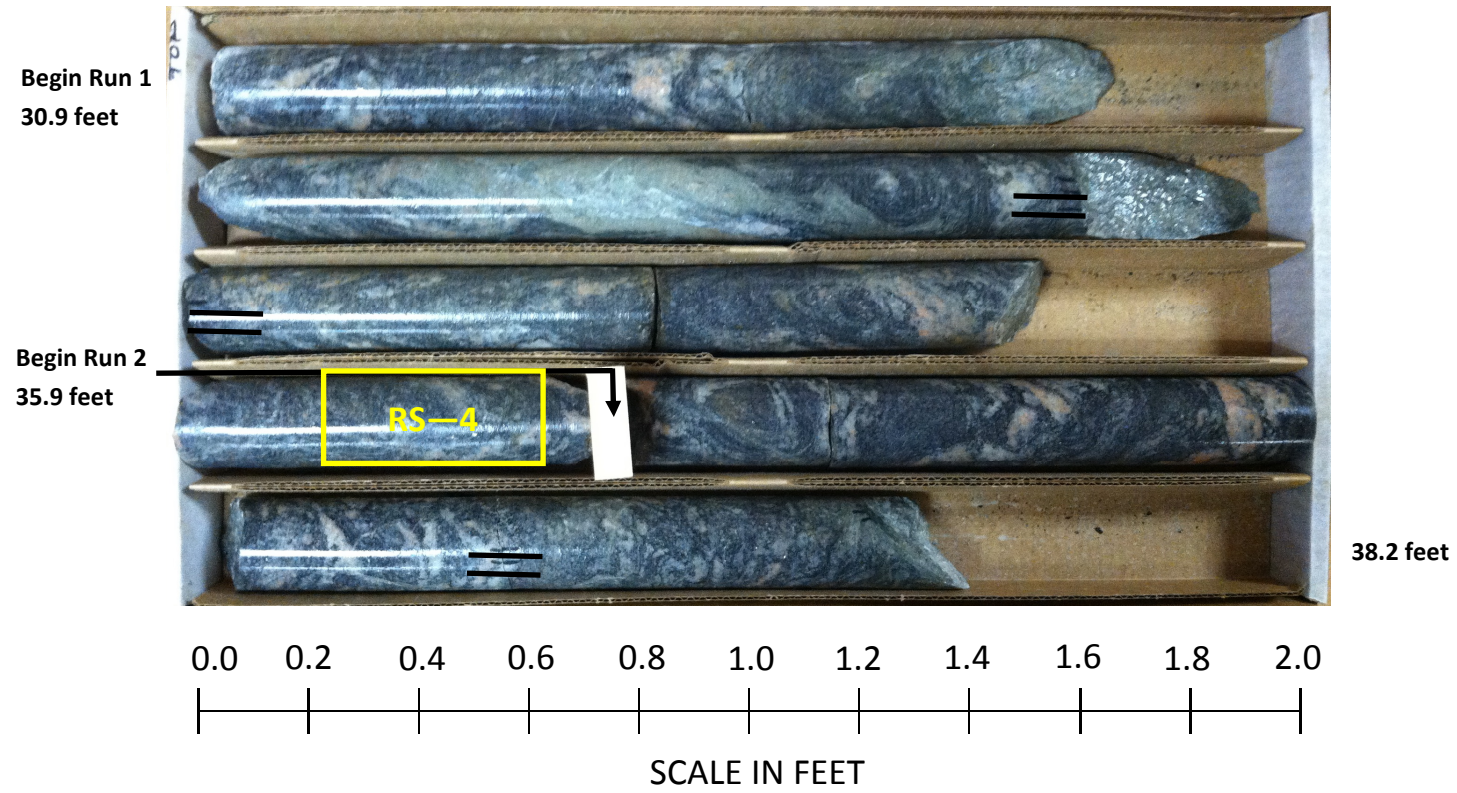
Bridge No. 702 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Sheet No. 22

Rock Core Photographs: Boring - B2-B (LL) — Station: 474+00 Offset: 11' LT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST J. Bradshaw										
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB2-A (LL)		STATION 474+35		OFFSET 83 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 858.2 ft		TOTAL DEPTH 37.0 ft		NORTHING 874,495		EASTING 1,657,903										
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D50 87% 11/07/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Messick		START DATE 01/20/16		COMP. DATE 01/20/16		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						
860	858.2	0.0	2	1	2									858.2	GROUND SURFACE	0.0
855	854.7	3.5	2	3	2									856.2	ALLUVIAL Tan, Fine Sandy CLAY (A-6), Soft Tan-Gray, Fine Sandy, Silty CLAY (A-7-5(18)), Medium Stiff	2.9
	849.7	8.5	2	1	1									851.2	Tan-Gray, Fine to Coarse Sandy, Silty CLAY (A-6(8)), Very Soft	7.0
845	844.7	13.5	2	1	3									846.2	RESIDUAL Red-Brown-Tan, Fine Sandy SILT (A-4), Soft to Stiff, Micaceous	12.0
840	839.7	18.5	5	8	6									836.2	Tan, Silty Fine to Coarse SAND (A-2-4), Loose, Micaceous	22.0
835	834.7	23.5	2	2	4									824.2	WEATHERED ROCK Tan-Gray, (GNEISS).	34.0
830	829.7	28.5	3	3	3									821.2	Boring Terminated with Standard Penetration Test Refusal at Elevation 821.2 ft ON CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	37.0
825	824.7	33.5	15	60	40/0.1									821.2	Other Samples: ST-2 (3.0 - 4.0)	

WBS 34839.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST J. Bradshaw										
SITE DESCRIPTION Bridge 702 on -L- (Future I-74) over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB2-B (LL)		STATION 474+53		OFFSET 11 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 857.8 ft		TOTAL DEPTH 38.0 ft		NORTHING 874,424		EASTING 1,657,881										
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D50 87% 11/07/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Messick		START DATE 01/19/16		COMP. DATE 01/19/16		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						
860	857.8	0.0	2	1	2									857.8	GROUND SURFACE	0.0
855	854.3	3.5	7	4	6									855.8	ALLUVIAL Tan-Gray, Fine to Coarse Sandy CLAY (A-6), Soft Tan-Gray, Silty CLAY (A-7-6(15)), Stiff	2.0
	849.3	8.5	3	7	3									845.8	RESIDUAL Tan-Orange-Yellow, Fine to Coarse Sandy SILT (A-4), Medium Stiff to Stiff, Micaceous	12.0
845	844.3	13.5	2	3	5									834.8	Tan, Fine to Coarse Sandy Clayey SILT (A-5), Hard	23.0
840	839.3	18.5	5	5	5									829.3	WEATHERED ROCK Tan-Gray, (GNEISS).	28.5
835	834.3	23.5	14	21	12									825.8	RESIDUAL Tan, Fine to Coarse Sandy, Clayey SILT (A-5), Hard	32.0
830	829.3	28.5	16	84/0.1										819.8	Boring Terminated with Standard Penetration Test Refusal at Elevation 819.8 ft ON CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	38.0
825	824.3	33.5	18	29	12											
820	819.8	38.0														

NCDOT BORE DOUBLE U2579C_GEO_BRDG702.GPJ NC_DOT.GDT 3/30/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST M. Brewer										
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB1-A (RL)		STATION 472+37		OFFSET 18 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 868.1 ft		TOTAL DEPTH 73.6 ft		NORTHING 874,511		EASTING 1,657,682										
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER B. Thomas		START DATE 01/11/16		COMP. DATE 01/11/16		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
870	868.1	0.0	2	2	2											868.1 GROUND SURFACE 0.0
865	864.6	3.5	5	6	8							SS-15 23%				864.6 RESIDUAL 3.5 Brown-Red, Clayey, Fine Sandy SILT (A-4), Trace Root Fragments, Soft
860	859.6	8.5	5	6	6											861.1 Red-Brown, Fine to Coarse Sandy, Silty CLAY (A-7-5(14)), Trace Mica, Stiff 7.0
855	854.6	13.5	1	0	1											856.1 Tan-Red-Orange, Silty Fine SAND (A-2-4), Medium Dense, Micaceous 12.0
850	849.6	18.5	2	2	2											Orange-Gray-Brown, Fine Sandy SILT (A-4), Very Soft to Medium Stiff, Micaceous
845	844.6	23.5	3	2	4											
840	839.6	28.5	2	2	4											
835	834.6	33.5	4	4	6											836.1 Gray-Brown to Gray-White Orange, Silty Fine to Coarse SAND (A-2-4), Loose, Micaceous 32.0
830	829.6	38.5	6	4	5											
825	824.6	43.5	2	3	7											826.1 Tan-Brown to Gray-Brown, Fine Sandy SILT (A-4), Stiff to Hard, Micaceous 42.0
820	819.6	48.5	4	5	9											
815	814.6	53.5	22	30	34											
810	809.6	58.5	20	20	21											
805	804.6	63.5	100/0.3													806.9 WEATHERED ROCK 61.2 Gray-White to Orange-Red-White (GNEISS)
800	799.6	68.5	75	25/0.2												
795	794.6	73.5	60/0.1													794.6 CRYSTALLINE ROCK 73.5 794.5 (AMPHIBOLITE MICA GNEISS) Boring Terminated with Standard Penetration Test Refusal at Elevation 794.5 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST M. Brewer										
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB1-B (RL)		STATION 472+35		OFFSET 76 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 871.2 ft		TOTAL DEPTH 58.6 ft		NORTHING 874,463		EASTING 1,657,650										
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER B. Thomas		START DATE 01/11/16		COMP. DATE 01/11/16		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
875																
870	871.2	0.0	2	2	3											871.2 GROUND SURFACE 0.0
865	867.7	3.5	2	5	6											870.3 RESIDUAL 0.9 869.2 Brown, Clayey, Fine Sandy SILT (A-4), with Trace Roots, Medium Stiff 2.0
860	862.7	8.5	2	4	6											Red-Brown, Fine Sandy Silty CLAY (A-7-5), Medium Stiff
855	857.7	13.5	3	3	2											859.2 Red-Orange-Brown, Fine Sandy SILT (A-4), with Little Clay, Stiff 12.0
850	852.7	18.5	2	2	4											Tan-Brown-White to Gray-Black Brown, Silty Fine to Coarse SAND (A-2-4), with trace Gravel-Sized Quartz and Rock Fragments, Loose to Very Dense, Micaceous
845	847.7	23.5	4	6	15											
840	842.7	28.5	7	7	6											
835	837.7	33.5	3	4	6											
830	832.7	38.5	6	10	15											
825	827.7	43.5	12	24	39											
820	822.7	48.5	27	100/0.4												824.2 WEATHERED ROCK 47.0 Gray-Tan-White (GNEISS)
815	817.7	53.5	100/0.4													
	812.7	58.5	60/0.1													812.7 CRYSTALLINE ROCK 58.5 812.6 (AMPHIBOLITE MICA GNEISS). Boring Terminated with Standard Penetration Test Refusal at Elevation 812.6 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

NCDOT BORE DOUBLE U2579C_GEO_BRDG703.GPJ NC_DOT.GDT 4/19/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz									
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)								
BORING NO. B1-A (RL)		STATION 473+10		OFFSET 11 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 859.0 ft		TOTAL DEPTH 81.0 ft		NORTHING 874,479		EASTING 1,657,748									
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER B. Thomas		START DATE 01/12/16		COMP. DATE 01/13/16		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					
860	859.0	0.0												GROUND SURFACE	0.0
	855.5	3.5	2	2	4	6								ALLUVIAL Red-Brown-Gray, Fine Sandy SILT (A-4), Trace to Little Clay, Medium Stiff to Soft	
855			2	1	2	3									
	850.5	8.5	2	1	2	3								RESIDUAL Brown-White-Orange, Fine Sandy SILT (A-4), Very Soft to Medium Stiff, Micaceous	
850			2	1	2	3									
	845.5	13.5	1	1	1	2									
845			1	1	1	2									
	840.5	18.5	2	2	2	4									
840			2	2	2	4									
	835.5	23.5	2	3	4	7									
835			2	3	4	7									
	830.5	28.5	2	3	5	8								Brown-White-Orange, Silty Fine SAND (A-2-4), with Trace Gravel-Sized Rock Fragments, Loose to Dense, Micaceous	
830			2	3	5	8									
	825.5	33.5	4	8	5	13									
825			4	8	5	13									
	820.5	38.5	5	12	21	33									
820			5	12	21	33									
	815													WEATHERED ROCK Orange-Brown-Gray, (GNEISS).	
815															
	810.5	48.5													
810															
	805.5	53.5												CRYSTALLINE ROCK (GNEISS)	
805															
	803.1	55.9													
800															
	800.5	58.5												CRYSTALLINE ROCK Gray-White-Black, (AMPHIBOLITE MICA GNEISS).	
800															
	798.3	60.7													
795															
	790														
790															
	785														
785															
	780														
780															
	778.0													Boring Terminated at Elevation 778.0 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	

NCDOT BORE DOUBLE U2579C_GEO_BRDC703.GPJ NC_DOT_GDT 4/19/16

RS-5

GEOTECHNICAL BORING REPORT CORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B1-A (RL)		STATION 473+10		OFFSET 11 ft RT		ALIGNMENT -L-					
COLLAR ELEV. 859.0 ft		TOTAL DEPTH 81.0 ft		NORTHING 874,479		EASTING 1,657,748					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/12/16		COMP. DATE 01/13/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ				TOTAL RUN 20.0 ft							
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
798										Begin Coring @ 61.0 ft	
795	798.0	61.0	5.0	2:10/1.0 4:02/1.0 3:16/1.0	(1.7) 34%	(0.0) 0%	(1.7) 94%	(0.0) 0%		Slightly to Very Slightly Weathered, Hard, Very Close Fracture Spacing, Gray-White (GRANITIC GNEISS)	61.0
	793.0	66.0		3:04/1.0 3:58/1.0			(0.0) 0%	(0.0) 0%		WEATHERED ROCK Weathered Zone, No Recovery (GNEISS)	66.0
790			5.0	3:27/1.0 3:57/1.0 4:53/1.0 3:33/1.0 3:10/1.0	(4.7) 94%	(2.9) 58%	(14.5) 97%	(11.0) 73%		CRYSTALLINE ROCK Very Slightly Weathered to Fresh, Hard to Very Hard, Very Close to Moderately Close Fracture Spacing, Gray-White-Black (AMPHIBOLITE MICA GNEISS)	
785	788.0	71.0	5.0	2:33/1.0 3:48/1.0 3:30/1.0 3:20/1.0 3:58/1.0	(4.9) 98%	(4.0) 80%			RS-5	RS-5: 71.1-71.5' q _u -5 = 7,193 psi	
780	783.0	76.0	5.0	3:46/1.0 2:58/1.0 3:24/1.0 3:42/1.0 3:12/1.0	(4.9) 98%	(4.1) 82%					
	778.0	81.0								Boring Terminated at Elevation 778.0 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	81.0

NCDOT CORE DOUBLE U2579C_GEO_BRDG703.GPJ NC_DOT.GDT 4/19/16



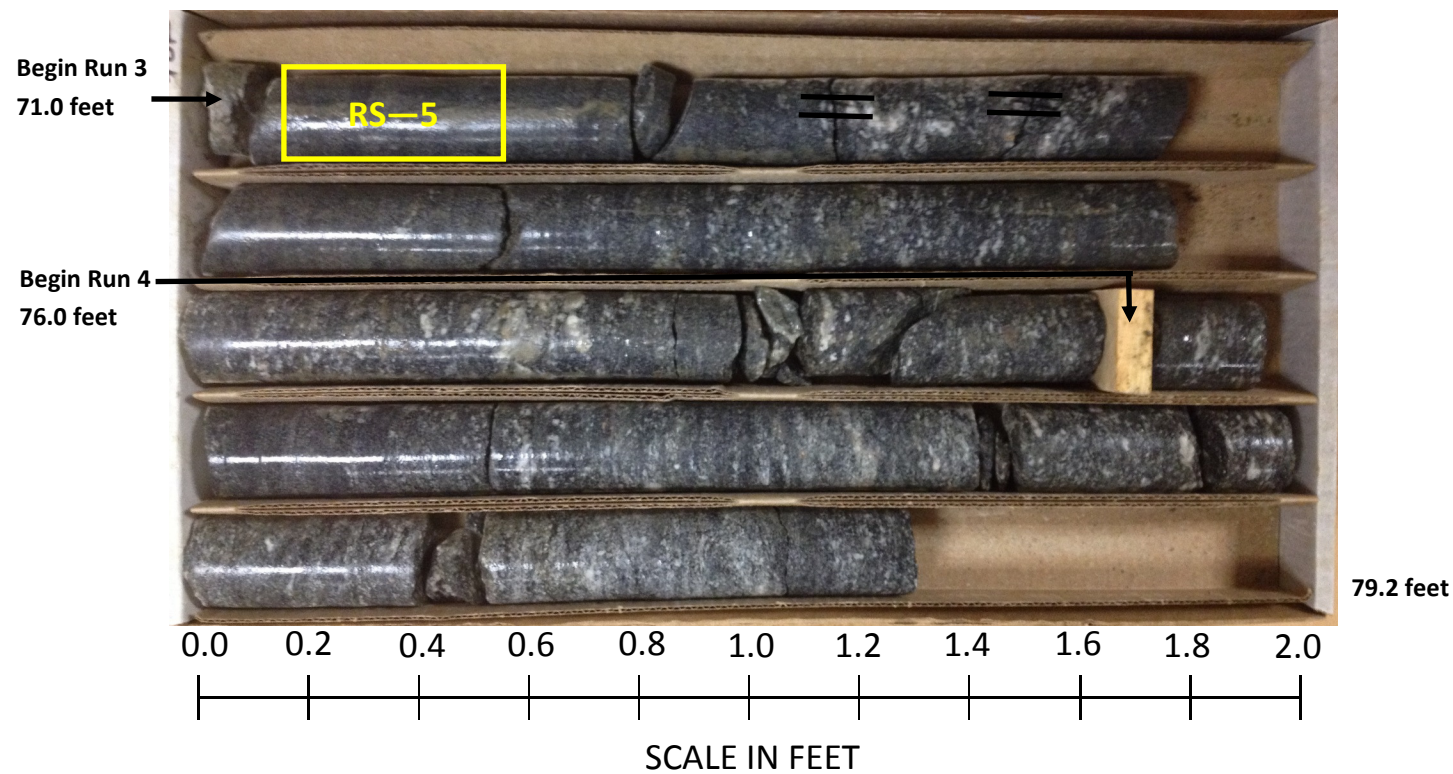
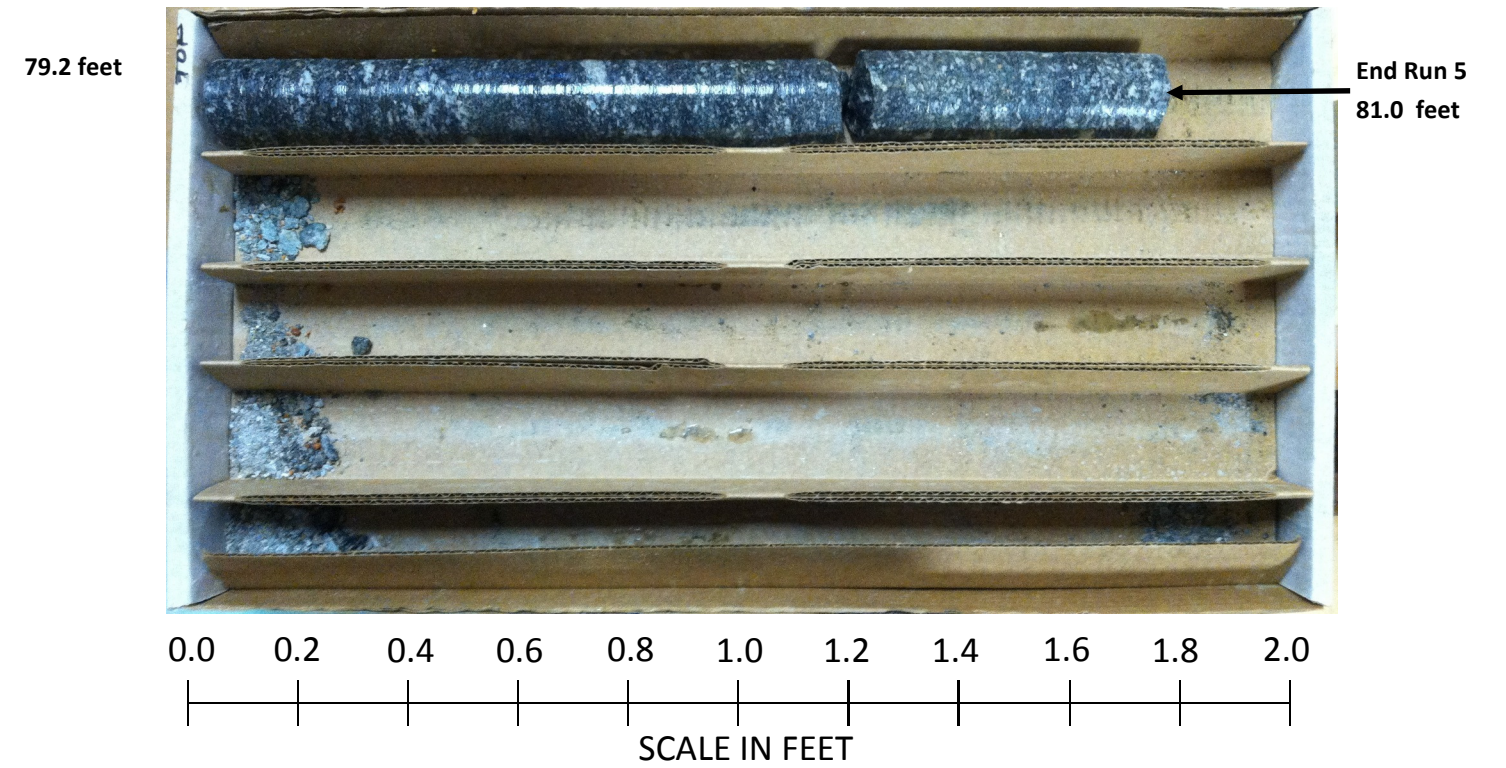
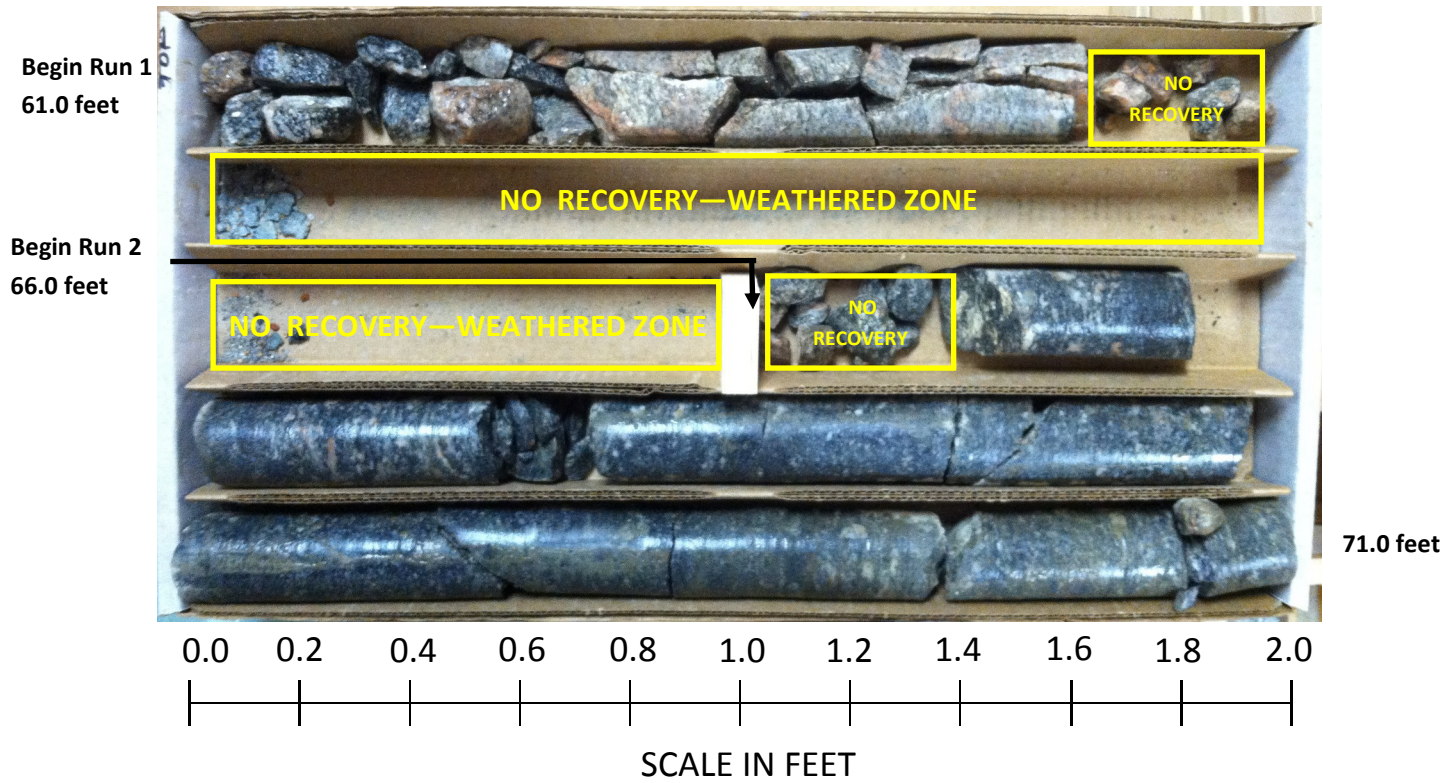
Bridge No. 703 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Sheet No. 27

Rock Core Photographs: Boring - B1-A (RL) — Station: 473+10 Offset: 11' RT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz											
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)										
BORING NO. B1-B (RL)		STATION 473+30		OFFSET 82 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 858.7 ft		TOTAL DEPTH 74.4 ft		NORTHING 874,409		EASTING 1,657,728											
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic											
DRILLER B. Thomas		START DATE 01/12/16		COMP. DATE 01/12/16		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							
860	858.7	0.0													858.7	GROUND SURFACE	0.0
855	855.2	3.5	3	3	3	6							M				
850	850.2	8.5	2	1	1	2							M				
845	845.2	13.5	2	1	2	3							M				
840	840.2	18.5	2	1	3	4							M				
840	840.2	18.5	4	7	8	15						SS-57	27%		844.7	14.0	
835	835.2	23.5	2	4	5	9							M		841.7	17.0	
830	830.2	28.5	4	8	10	18							M	836.7	22.0		
825	825.2	33.5	4	6	8	14							M	831.7	27.0		
820	820.2	38.5	6	11	15	26							M				
815	815.2	43.5	76	24/0.1										816.4	42.3		
810	810.2	48.5	100/0.2											809.3	49.4		
805														803.7	55.0		
800														797.3	61.4		
795												RS-6		784.3	74.4		
790																	
785																	
Boring Terminated at Elevation 784.3 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)																	

NCDOT BORE DOUBLE U2579C_GEO_BRDG703.GPJ NC_DOT.GDT 4/19/16

GEOTECHNICAL BORING REPORT CORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B1-B (RL)		STATION 473+30		OFFSET 82 ft RT		ALIGNMENT -L-					
COLLAR ELEV. 858.7 ft		TOTAL DEPTH 74.4 ft		NORTHING 874,409		EASTING 1,657,728					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/12/16		COMP. DATE 01/12/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 25.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
809.3										Begin Coring @ 49.4 ft	
	809.3	49.4	5.0	3:25/1.0 2:46/1.0 3:28/1.0	(5.0) 100%	(2.1) 42%	(5.6) 100%	(2.5) 45%		809.3 CRSTALLINE ROCK Slightly Weathered, Moderately Hard, Very Close to Close Fracture Spacing, Black-Gray-White-Pink (GRANITIC GNEISS)	49.4
	805	54.4		3:40/1.0 2:38/1.0						803.7	55.0
			5.0	2:53/1.0 2:29/1.0 2:08/1.0 2:14/1.0 1:50/1.0	(5.0) 100%	(0.4) 8%	(5.1) 80%	(0.0) 0%		803.7 Moderately Severe, Medium Hard to Very Soft, Very Close Fracture Spacing, Gray-White-Brown (AMPHIBOLITE MICA GNEISS)	
	800	59.4		2:08/1.0 2:01/1.0 2:53/1.0 2:38/1.0 2:26/1.0	(3.7) 74%	(1.1) 22%	(11.9) 92%	(7.7) 59%		797.3	61.4
	795	64.4		1:59/1.0 2:13/1.0 2:10/1.0 2:44/1.0 2:39/1.0	(4.0) 80%	(2.5) 50%			RS-6	797.3 Slightly to Very Slightly Weathered, Medium Hard to Moderately Hard, Very Close and Moderately Close to Close Fracture Spacing, Black-Gray-White (AMPHIBOLITE MICA GNEISS) RS-6: 62.5-62.9' q _{u-6} = 4,036 psi	
	790	69.4		2:24/1.0 2:23/1.0 2:18/1.0 2:11/1.0 3:21/1.0	(4.9) 98%	(4.1) 82%				784.3	74.4
	785	74.4								784.3 Boring Terminated at Elevation 784.3 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	

NCDOT CORE DOUBLE U2579C_GEO_BRDG703.GPJ_NC_DOT.GDT 4/19/16



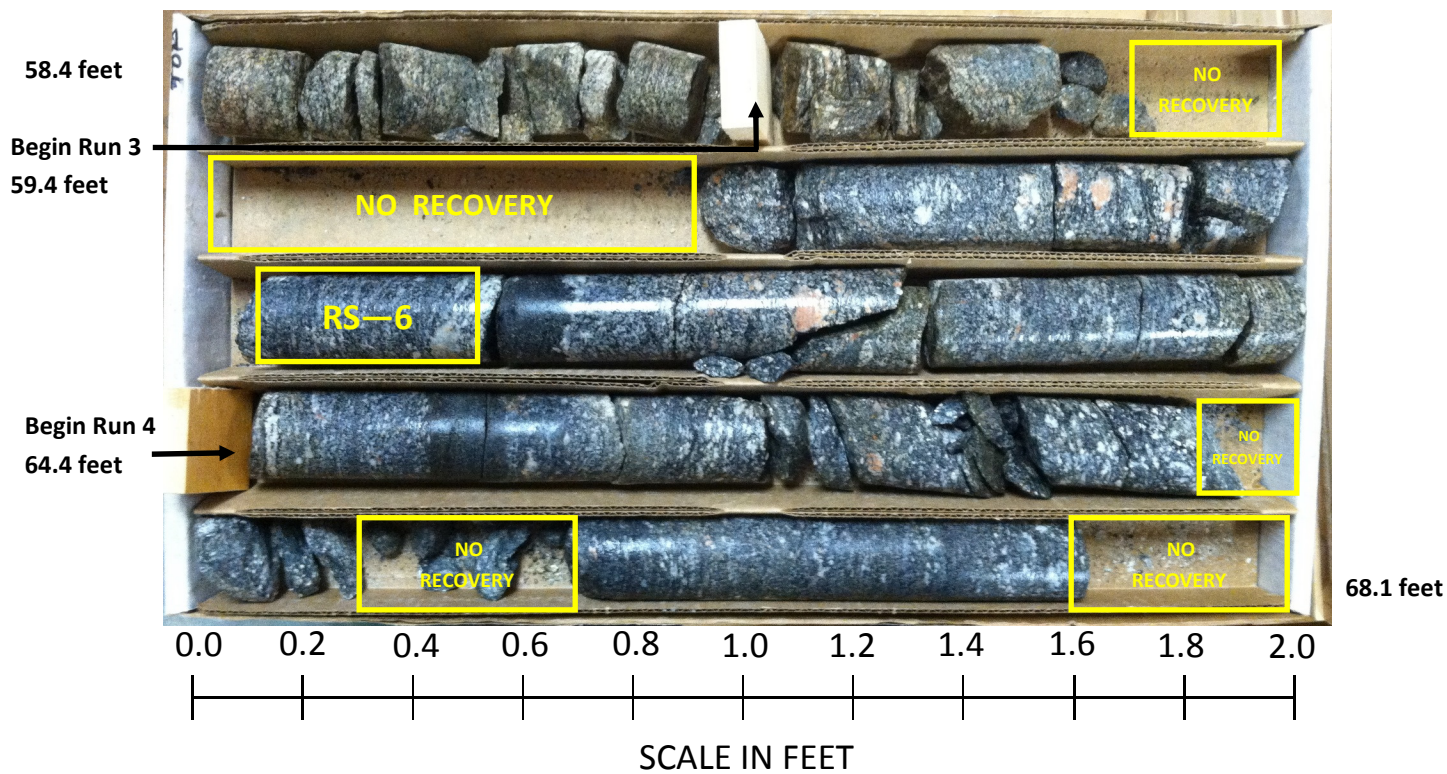
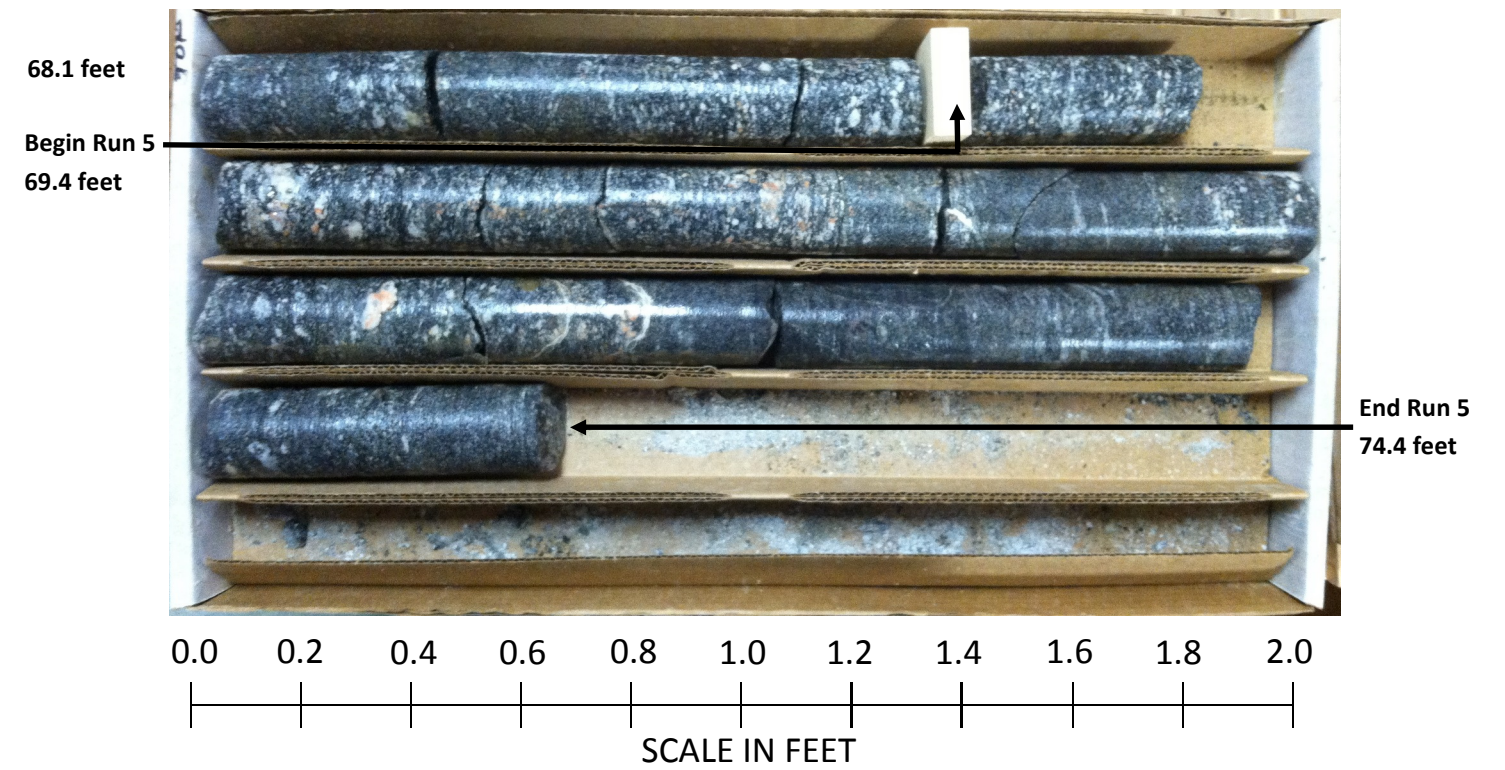
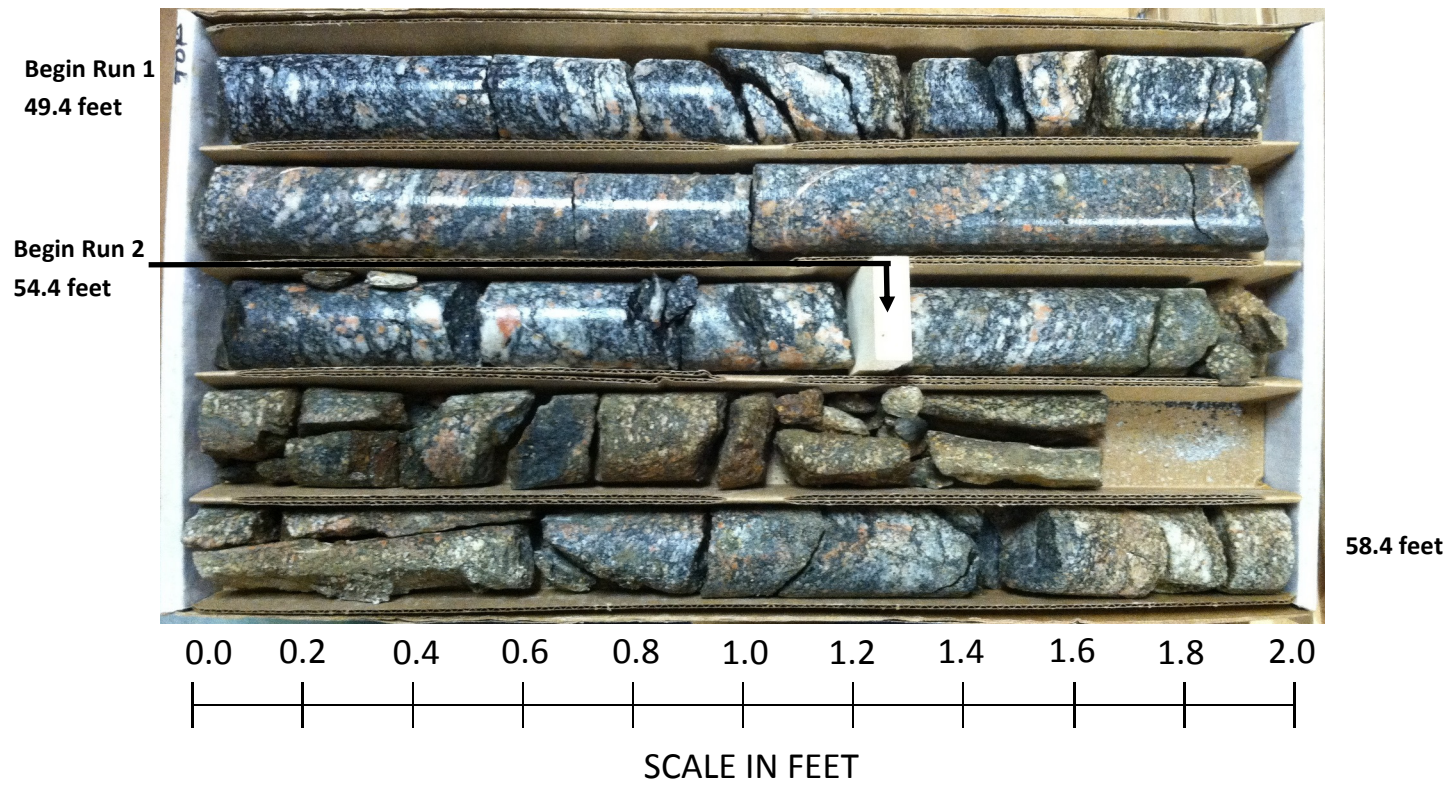
Bridge No. 703 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Sheet No. 30

Rock Core Photographs: Boring - B1-B (RL) — Station: 473+30 Offset: 82' RT



GEOTECHNICAL BORING REPORT CORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz					
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)				
BORING NO. B2-A (RL)		STATION 474+05		OFFSET 11 ft RT		ALIGNMENT -L-					
COLLAR ELEV. 858.3 ft		TOTAL DEPTH 62.6 ft		NORTHING 874,430		EASTING 1,657,829					
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER B. Thomas		START DATE 01/18/16		COMP. DATE 01/19/16		SURFACE WATER DEPTH N/A					
CORE SIZE NQ				TOTAL RUN 20.0 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) %			
815.7											
815	815.7	42.6	5.0	N=60/0.0 3:50/1.0 6:25/1.0 5:55/1.0 6:25/1.0 4:35/1.0	(5.0) 100%	(2.5) 50%	(20.0) 100%	(16.8) 84%		815.7 Very Slightly Weathered to Fresh, Moderately Hard to Hard, Very Close to Moderately Close Fracture Spacing, Gray-White-Black (AMPHIBOLITE MICA GNEISS)	42.6
810	810.7	47.6	5.0	3:00/1.0 2:53/1.0 3:14/1.0 3:53/1.0 4:30/1.0	(5.0) 100%	(4.9) 98%					
805	805.7	52.6	5.0	3:40/1.0 3:24/1.0 3:39/1.0 3:58/1.0 4:16/1.0	(5.0) 100%	(4.6) 92%				RS-7: 52.6-53.0' q _c -7 = 5,807 psi	
800	800.7	57.6	5.0	3:58/1.0 4:02/1.0 4:20/1.0 3:41/1.0 3:49/1.0	(5.0) 100%	(4.8) 96%					
	795.7	62.6									Boring Terminated at Elevation 795.7 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

NCDOT CORE DOUBLE U2579C_GEO_BRD6703.GPJ NC_DOT.GDT 4/19/16



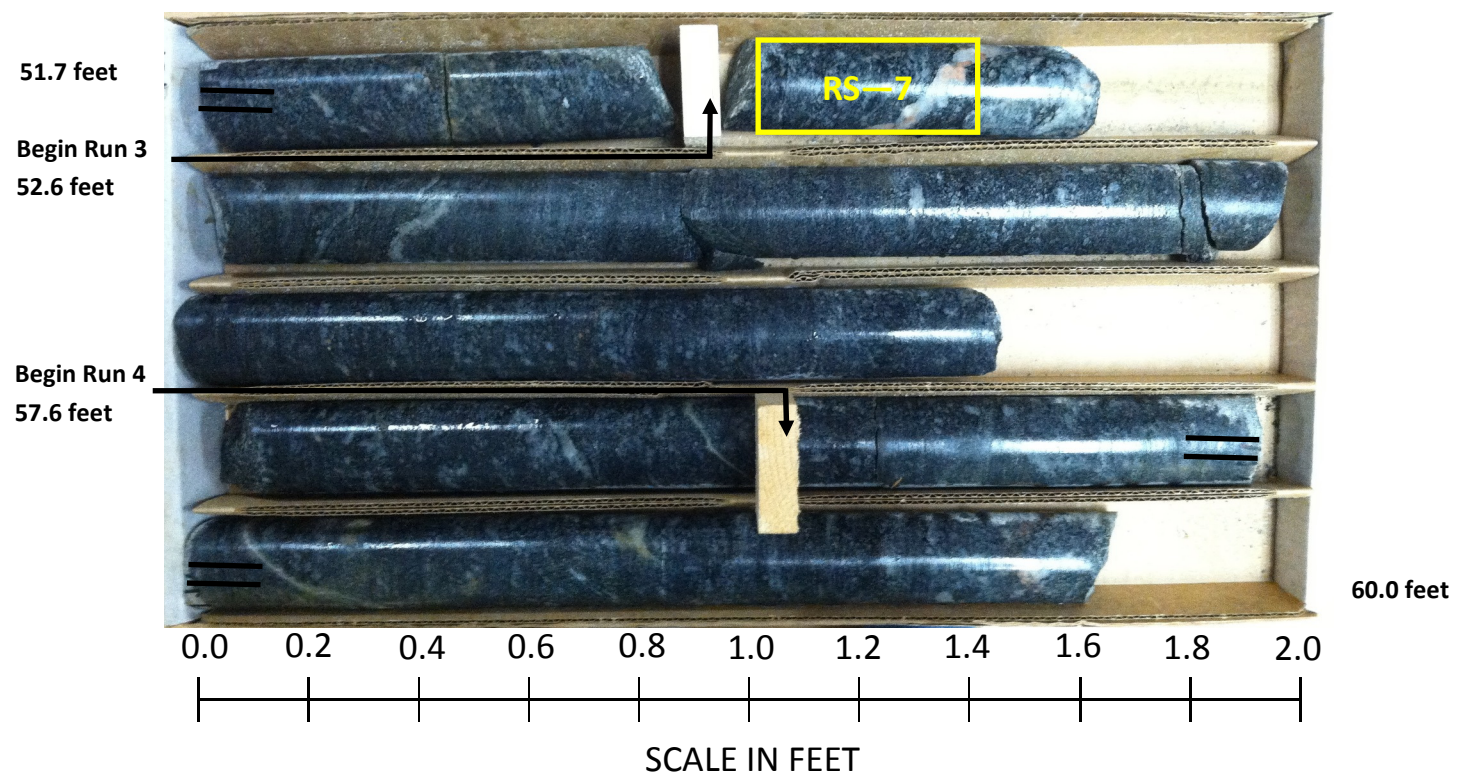
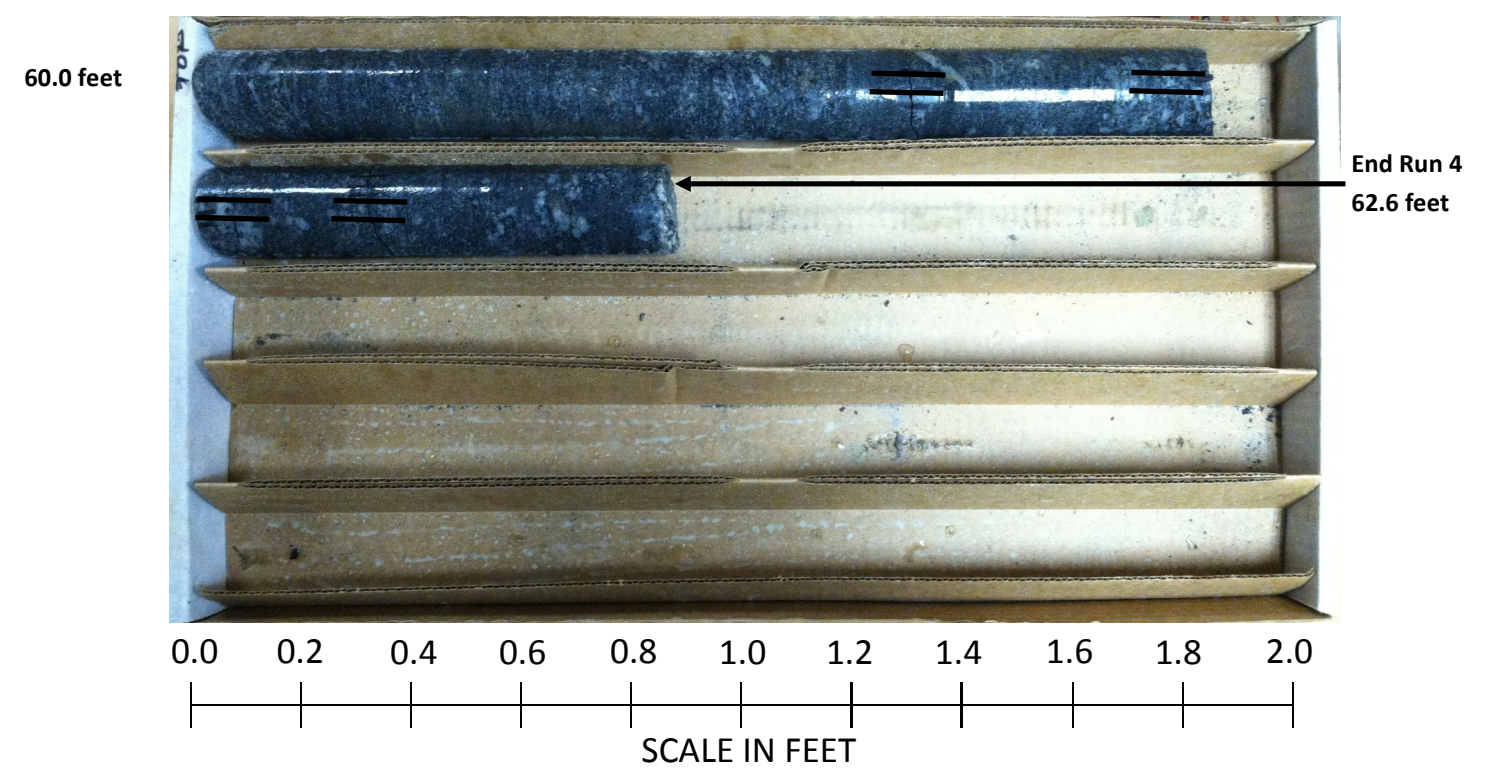
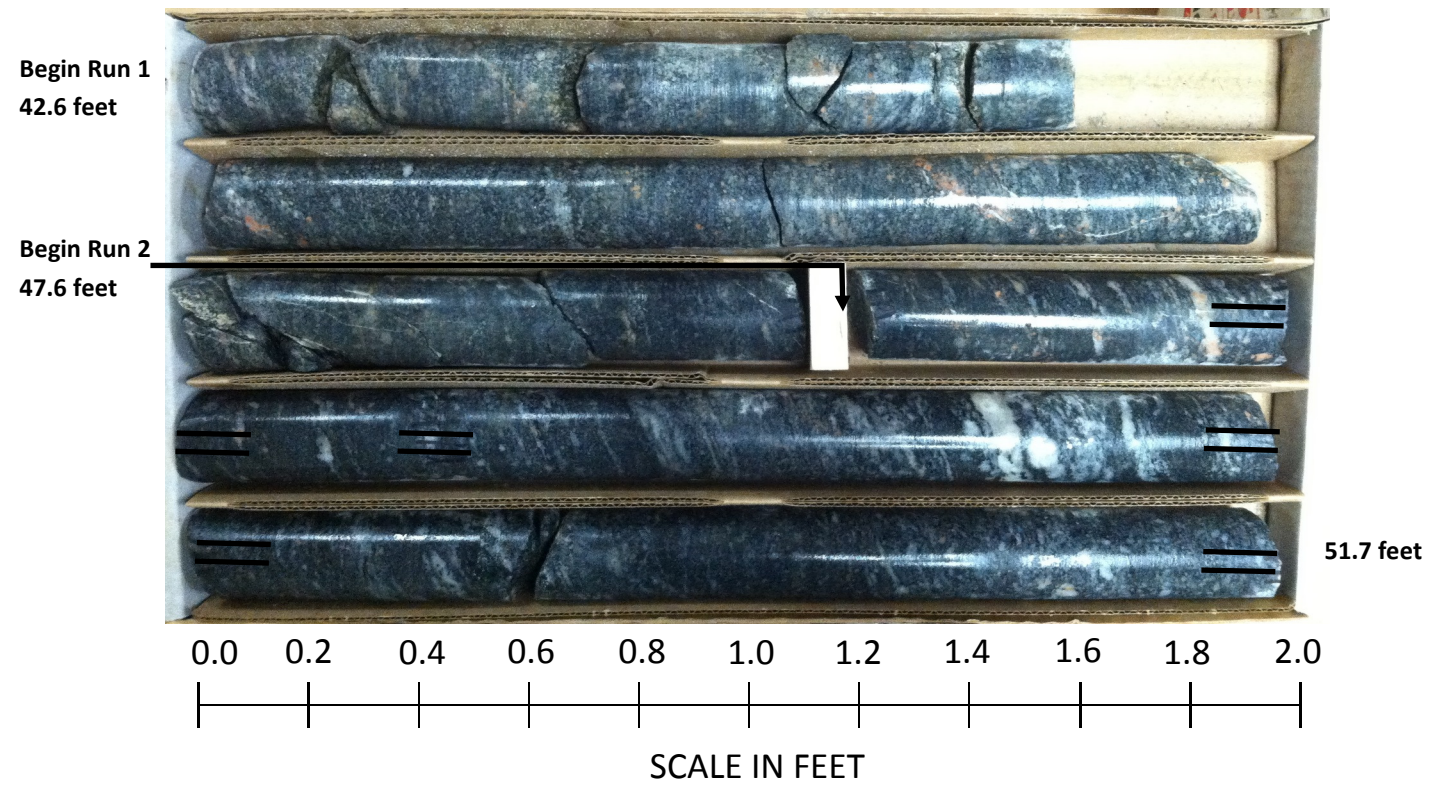
Bridge No. 703 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Sheet No. 33

Rock Core Photographs: Boring - B2-A (RL) — Station: 474+05 Offset: 11' LT



GEOTECHNICAL BORING REPORT CORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST C. Bukovitz	
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)
BORING NO. B2-B (RL)		STATION 474+25		OFFSET 84 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 858.2 ft		TOTAL DEPTH 57.5 ft		NORTHING 874,358		EASTING 1,657,808	
DRILL RIG/HAMMER EFF./DATE GEO102 Diedrich D120 86% 11/07/2015				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic	
DRILLER B. Thomas		START DATE 01/18/16		COMP. DATE 01/18/16		SURFACE WATER DEPTH N/A	
CORE SIZE NQ		TOTAL RUN 15.0 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. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
815.7											Begin Coring @ 42.5 ft	
815	815.7	42.5	5.0	3:04/1.0 3:45/1.0 3:29/1.0 3:23/1.0 3:16/1.0	(5.0) 100%	(4.1) 82%		(15.0) 100%	(14.0) 93%		815.7	42.5
810	810.7	47.5	5.0	3:01/1.0 3:38/1.0 3:44/1.0 3:43/1.0 3:42/1.0	(5.0) 100%	(4.9) 98%					Very Slightly Weathered to Fresh, Moderately Hard to Hard. Very Close to Wide Fracture Spacing, Gray-White-Black (AMPHIBOLITE MICA GNEISS)	
805	805.7	52.5	5.0	2:56/1.0 3:17/1.0 3:29/1.0 3:59/1.0 3:58/1.0	(5.0) 100%	(5.0) 100%					RS-8: 51.1-51.5' q _u -8 = 3.847 psi	
	800.7	57.5										800.7
											Boring Terminated at Elevation 800.7 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)	

NCDOT CORE DOUBLE U2579C_GEO_BRDG703.GPJ NC_DOT.GDT 4/19/16



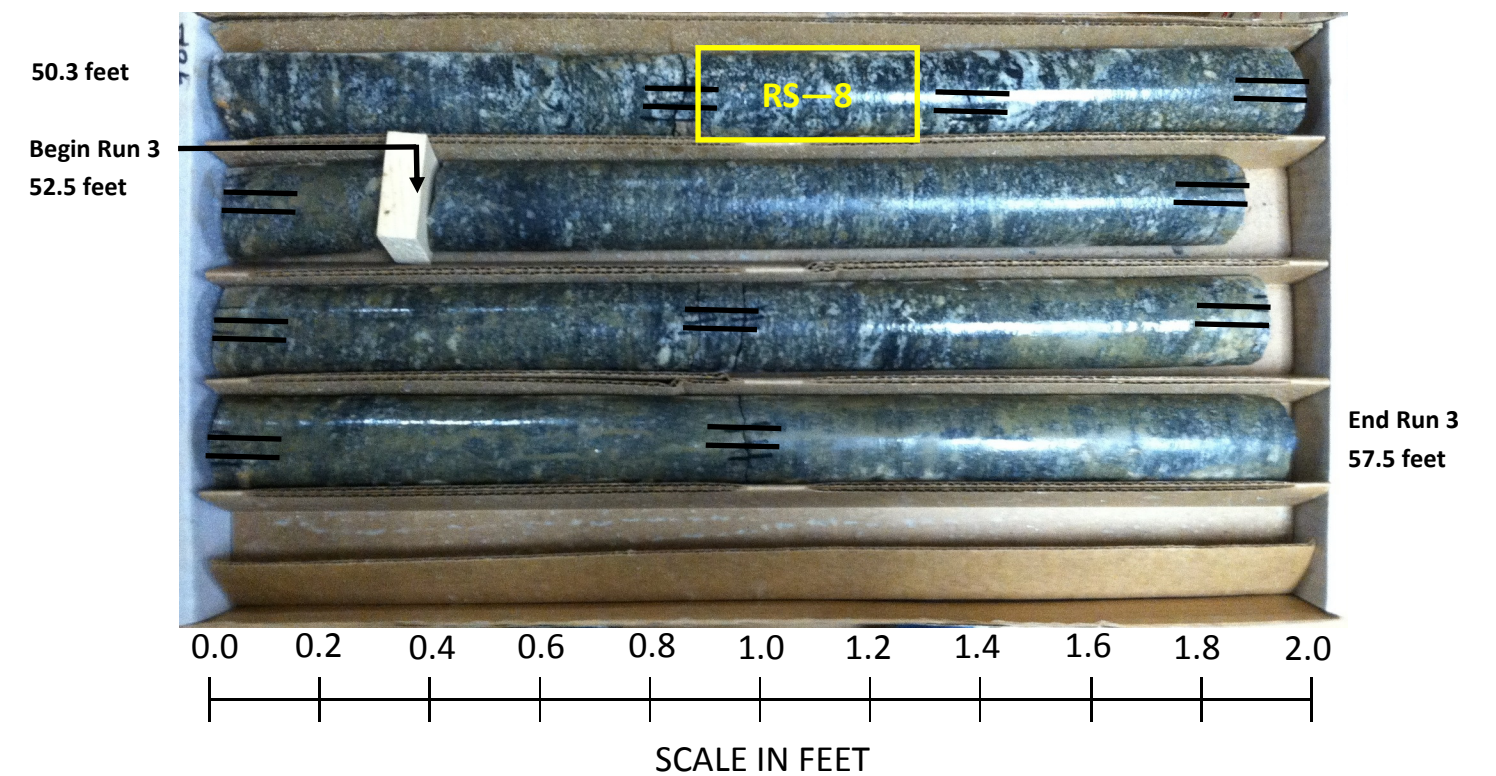
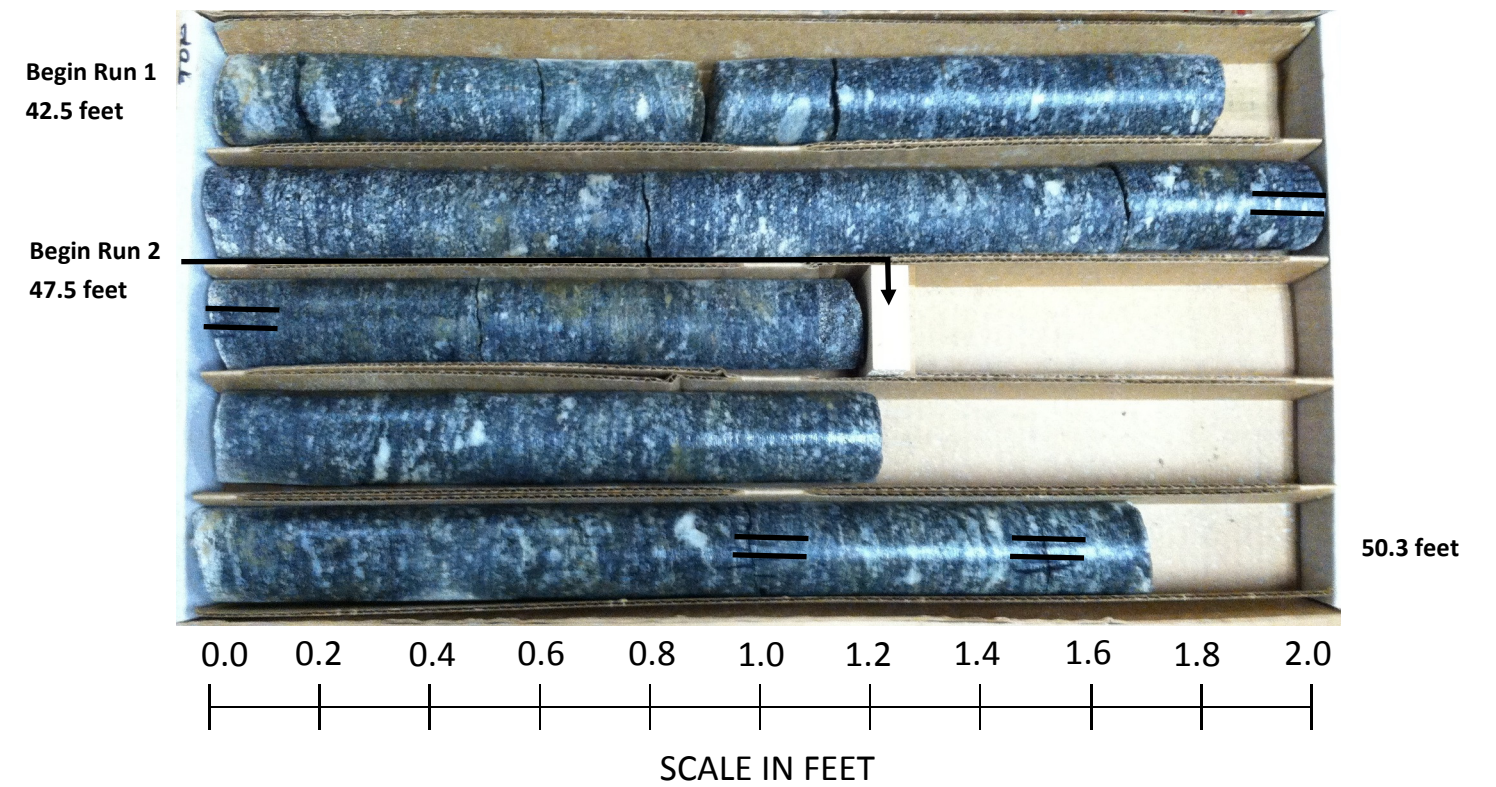
Bridge No. 703 on -L- (Future I-74) over Lowery Mill Creek

WBS - 34839.1.1 TIP No. - U-2579C

ECS Carolinas Project No. 08:11502

Sheet No. 36

Rock Core Photographs: Boring - B2-B (RL) — Station: 474+25 Offset: 84' RT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST J. Bradshaw										
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB2-A (RL)		STATION 474+55		OFFSET 11 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 857.9 ft		TOTAL DEPTH 38.6 ft		NORTHING 874,404		EASTING 1,657,872										
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D50 87% 11/07/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER J. Messick		START DATE 01/19/16		COMP. DATE 01/19/16		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						
860	857.9	0.0	2	2	3									857.9	0.0	GROUND SURFACE
855	854.4	3.5	2	3	3									855.9	2.9	ALLUVIAL Tan-Gray, Fine Sandy CLAY (A-6), Medium Stiff Tan-Gray, Silty CLAY (A-7-5(11)), Medium Stiff
850	849.4	8.5	3	4	4									849.4		
845	844.4	13.5	4	7	11									845.9	12.0	RESIDUAL Tan-Brown, Silty Fine to Coarse SAND (A-2-4), Medium Dense to Dense, Micaceous
840	839.4	18.5	8	10	15											
835	834.4	23.5	7	10	15											
830	829.4	28.5	8	13	20											
825	824.4	33.5	100/0.3											824.4	33.5	WEATHERED ROCK Tan-Gray, (GNEISS)
820	819.4	38.5	60/0.1											819.4	38.5	CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS) Boring Terminated with Standard Penetration Test Refusal at Elevation 819.3 ft IN CRYSTALLINE ROCK (AMPHIBOLITE MICA GNEISS)

WBS 34939.1.1		TIP U-2579C		COUNTY FORSYTH		GEOLOGIST J. Bradshaw										
SITE DESCRIPTION Bridge No. 703 (RL) on -L- over Lowery Mill Creek							GROUND WTR (ft)									
BORING NO. EB2-B (RL)		STATION 474+78		OFFSET 83 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 857.5 ft		TOTAL DEPTH 39.3 ft		NORTHING 874,331		EASTING 1,657,854										
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D50 87% 11/07/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER J. Messick		START DATE 01/20/16		COMP. DATE 01/20/16		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						
860	857.5	0.0												857.5	0.0	GROUND SURFACE
855	854.0	3.5	3	2	3									855.9	2.9	ALLUVIAL Tan-Gray, Fine Sandy, Silty CLAY (A-7-6(21)), Medium Stiff
850	849.0	8.5	3	3	4									849.0		
845	844.0	13.5	5	3	3									845.9	12.0	RESIDUAL Gray, Silty Fine to Coarse SAND (A-2-4), Loose
840	839.0	18.5	6	7	10									845.5	12.0	RESIDUAL Gray-Black to Tan-White, Silty Fine to Coarse SAND (A-2-4), Medium Dense to Very Dense, Micaceous
835	834.0	23.5	8	15	34											
830	829.0	28.5	16	28	49											
825	824.0	33.5	17	38	62/0.4									828.5	29.0	WEATHERED ROCK Tan-Gray, (GNEISS)
820	819.0	38.5	61	39/0.3										824.4	33.5	
			40	60/0.3										819.4	38.5	
														818.2	39.3	Boring Terminated at Elevation 818.2 ft IN WEATHERED ROCK (GNEISS) Other Samples: ST-1 (5.0 - 7.0)

NCDOT BORE DOUBLE U2579C_GEO_BRDG703.GPJ NC_DOT.GDT 3/30/16

SOIL TEST RESULTS

SAMPLE NO.	BORING	OFFSET	STATION -L-	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-43	EB1-A (LL)	71' LT	472+09	8.5-10.0'	A-4(1)	38	7	23.4	38.0	26.7	11.8	99.0	86.0	47.0	33.5	-
SS-32	EB1-B (LL)	30' LT	472+24	13.5-15.0'	A-5(0)	46	NP	33.2	39.5	20.6	6.7	99.0	78.0	36.0	36.8	-
SS-321	EB2-A (LL)	83' LT	474+35	8.5-10.0'	A-6(8)	40	17	10.3	34.8	25.0	29.9	98.0	94.0	60.0	29.4	-
SS-311	EB2-B (LL)	11' LT	474+53	3.5-5.0'	A-7-6(15)	48	22	5.3	30.4	24.2	40.0	99.0	98.0	69.0	32.3	-
ST-2	EB2-A (LL)	83' LT	474+53	3.0-4.0'	A-7-5(18)	49	18	2.3	14.3	30.3	53.2	100.0	99.0	87.0	44.0	-
SS-15	EB1-A (RL)	18' RT	472+37	3.5-5.0'	A-7-5(14)	59	26	23.8	18.2	7.8	50.2	99.0	83.0	59.0	22.6	-
SS-57	B1-B (RL)	82' RT	473+30	18.5-20.0'	A-2-4(0)	38	NP	43.3	39.7	8.3	8.8	95.0	71.0	23.0	26.9	-
SS-302	EB2-A(RL)	11' RT	474+55	3.5-5.0'	A-7-5(11)	55	17	12.3	27.5	26.1	34.1	99.0	94.0	64.0	57.3	-
SS-328	EB2-B (RL)	83' RT	474+78	3.5-5.0'	A-7-6(21)	53	28	3.5	25.4	21.9	49.2	98.0	97.0	75.0	35.0	-
ST-1	EB2-B (RL)	83' RT	474+78	5.0-7.0'	A-7-6(32)	65	36	1.9	17.8	25.3	55.0	92.0	92.0	80.0	45.0	-

SS = Split-Barrel Sample (ASTM D-1586)
 ST= Shebly Tube Sample (ASTM D-1587)

ROCK TEST RESULTS

SAMPLE NO.	BORING	OFFSET	STATION -L-	DEPTH INTERVAL	Rock Type	Unit Weight LB/FT ³	Unconfined Compressive Stregth, KSI	Section Modulus @ 40%, MPsi
RS-1	B1-A (LL)	83' LT	472+85	58.9-59.3'	Amphibolite Mica Gneiss	179.8	6.5	0.33
RS-2	B1-B (LL)	11' LT	473+05	52.8-53.2	Amphibolite Mica Gneiss	170.5	8.9	0.56
RS-3	B2-A (LL)	83' LT	473+81	49.2-49.6'	Amphibolite Mica Gneiss	171.0	10.3	0.52
RS-4	B2-B (LL)	11' LT	474+00	35.4-35.8'	Amphibolite Mica Gneiss	170.9	4.0	0.22
RS-5	B1-A (RL)	11' RT	473+10	71.1-71.5'	Amphibolite Mica Gneiss	170.5	7.3	0.28
RS-6	B1-B (RL)	82' RT	473+30	62.5-62.9'	Amphibolite Mica Gneiss	165.1	4.1	2.02
RS-7	B2-A (RL)	11' RT	474+05	52.6-53.0'	Amphibolite Mica Gneiss	170.0	5.9	0.20
RS-8	B2-B (RL)	84' RT	474+25	51.1-51.5'	Amphibolite Mica Gneiss	170.6	6.7	0.74

RS = NQ2 Rock Core Barrel Sample (ASTM D-2113)

Lab Technician: Amanda R. Roth

NCDOT Certification No.: 112-09-1003

Signature: 

SITE PHOTOS



Looking south along Bent 2 along Sanitary Sewer Easement



Looking south along Lowery Mill Creek between Bent 1 and Bent 2



Looking west (downstation) on -L- at Lowery Mill Creek toward Bent 1 and End Bent 1