

STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	42223.1.1 (B-5101)	1	19

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

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

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PROJ. REFERENCE NO. 42223.1.1 (B-5101) F.A. PROJ. BRZ-1149(5)
COUNTY CATAWBA
PROJECT DESCRIPTION BRIDGE NO. 83 ON SR 1149 BETWEEN
SR 1005 AND SR 1165 OVER CLARK CREEK

SITE DESCRIPTION _____

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) 250-4086. 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.

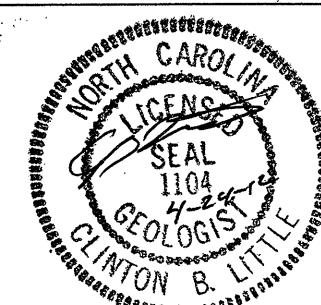
PERSONNEL
Summit Consulting

INVESTIGATED BY R. Q. CALLAWAY

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

DATE APRIL 2012

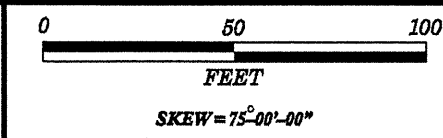


PROJECT: 42223.1.1 ID: B-5101

DRAWN BY: C. E. BURRIS

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT 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.



NAD 83/NSRS 2007

BEGIN TIP PROJECT B-5101
 -L- POT Sta. 13+25.00
 -L- PC Sta. 13+67.37

-T-5 POT 5+00.00
 ELEV.=846.90'
 REBAR SET

END TIP PROJECT B-5101
 -L- POT Sta. 20+00.00

-L- POC Sta. 13+75.00
 BEGIN GRADE

HARVEY L FOX
 AND KATHERINE F LEATHERMAN
 DB 1928 PG 336

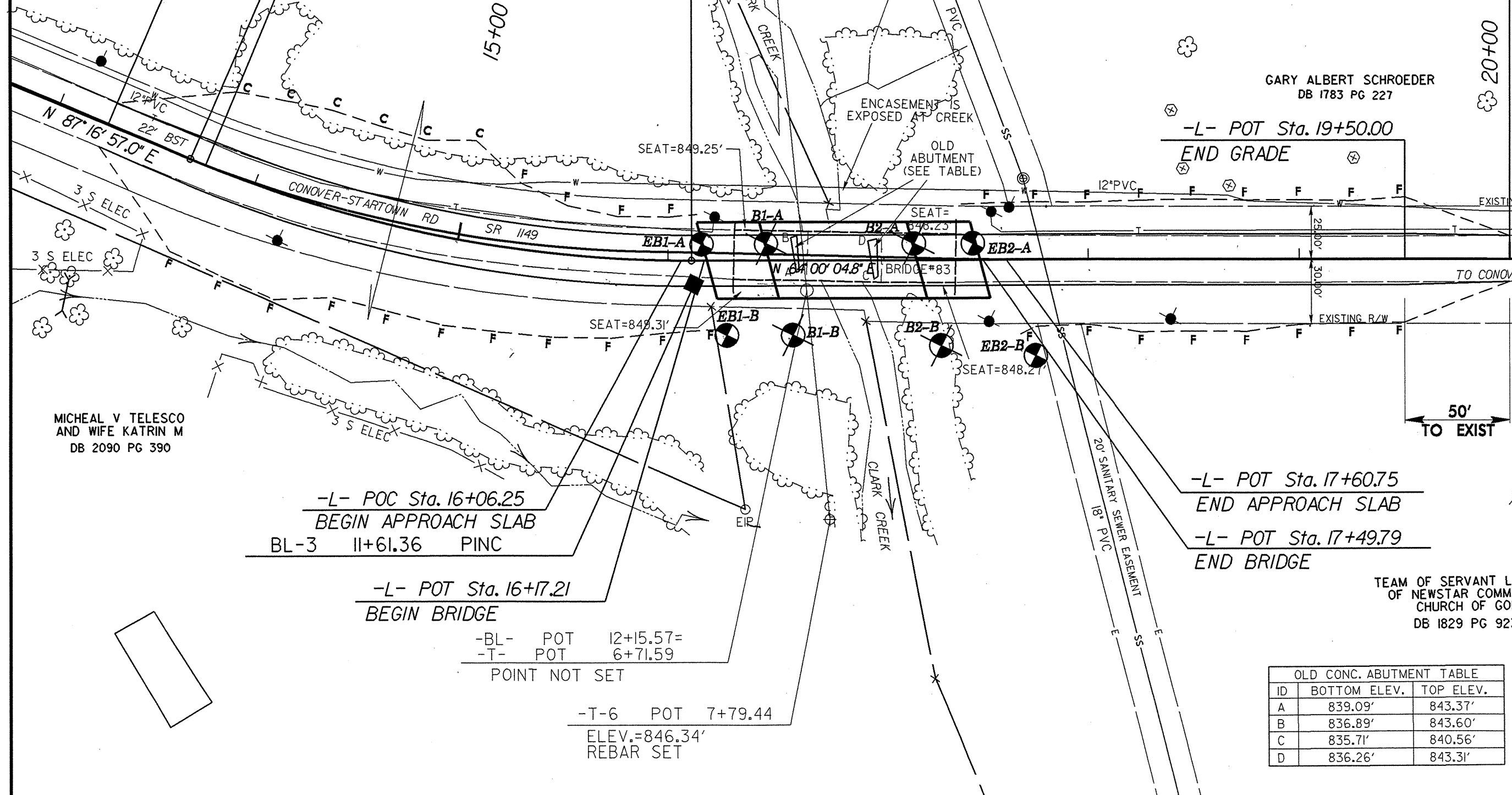
PI Sta 11+65.49 Δ = 25° 34' 11.5" (RT) D = 12° 43' 56.6" L = 200.83' T = 102.11' R = 450.00'	PI Sta 14+90.98 Δ = 23° 16' 52.2" (LT) D = 9° 32' 57.5" L = 243.80' T = 123.61' R = 600.00' SE = .06 RO = SEE PLANS	PI Sta 22+45.36 Δ = 12° 10' 06.0" (LT) D = 4° 46' 28.7" L = 254.85' T = 127.91' R = 1,200.00'
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-L- PT Sta. 16+11.7

BM #2
 STA 11+87.00
 380.00' LT
 ELEV.=847.13'

GARY ALBERT SCHROEDER
 DB 1783 PG 227

-L- POT Sta. 19+50.00
 END GRADE



MICHEAL V TELESKO
 AND WIFE KATRIN M
 DB 2090 PG 390

-L- POC Sta. 16+06.25
 BEGIN APPROACH SLAB
 BL-3 11+61.36 PINC

-L- POT Sta. 16+17.21
 BEGIN BRIDGE

-BL- POT 12+15.57=
 -T- POT 6+71.59
 POINT NOT SET

-T-6 POT 7+79.44
 ELEV.=846.34'
 REBAR SET

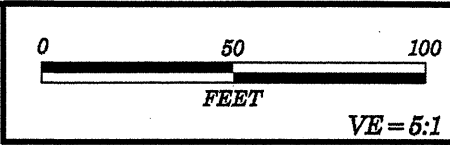
-L- POT Sta. 17+60.75
 END APPROACH SLAB

-L- POT Sta. 17+49.79
 END BRIDGE

TEAM OF SERVANT LEADERS
 OF NEWSTAR COMMUNITY
 CHURCH OF GOD
 DB 1829 PG 923

ID	BOTTOM ELEV.	TOP ELEV.
A	839.09'	843.37'
B	836.89'	843.60'
C	835.71'	840.56'
D	836.26'	843.31'

-L- SR 1149



PROJECT REFERENCE NO.	SHEET
42223.1.I (B-5101)	4
PROFILE ALONG -L- BRIDGE 83 ON SR 1149 OVER CLARK CREEK	

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 3171	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 847.60	FT
BASE DISCHARGE	= 6521	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 850.68	FT
OVERTOPPING DISCHARGE	= 5100+	CFS
OVERTOPPING FREQUENCY	= 10+	YRS
OVERTOPPING ELEVATION	= 850.08	FT
	=	FT
DATE OF SURVEY	= 08/10/11	
W.S. ELEVATION AT DATE OF SURVEY	= 835.10	FT

BM2 ELEVATION = 847.13
 N 704299 E 1330498
 BL STATION 11+87.00 180' LT =
 -L- STATION 16+47.50 167' LEFT.
 RAILROAD SPIKE SET IN BASE OF
 18" FORKED BIRCH TREE ON EAST
 OF CLARK CREEK, 12' NORTH OF
 T-LINE POINT OF "T-1", 5' EAST
 OF EASTERN TOP OF BANK OF CREEK.

-L- STA 13+75.00
 EL = 856.49
 BEGIN GRADE

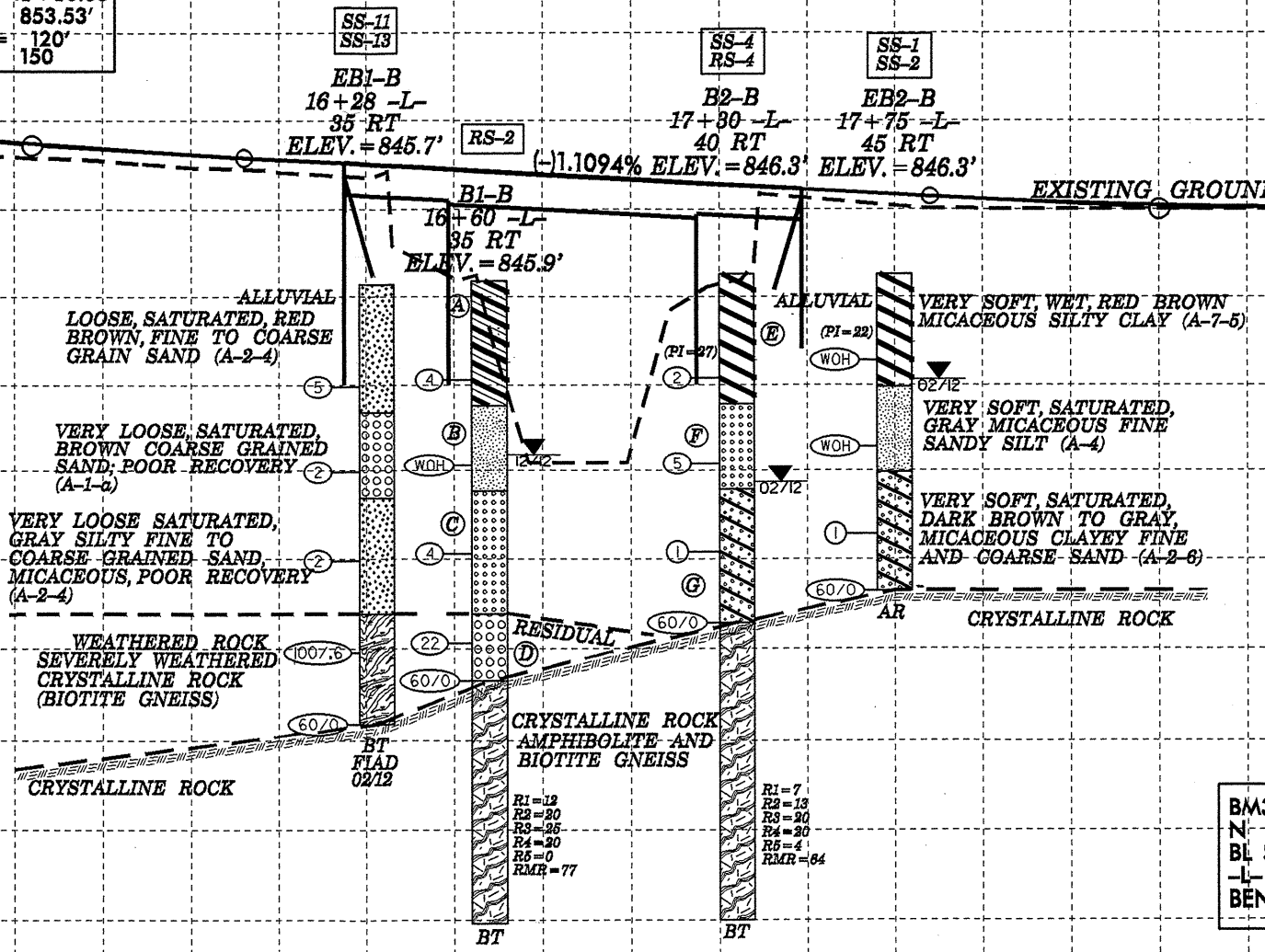
PI = 15+30.00
 EL = 853.53'
 VC = 120'
 K = 150

PI = 18+50.00
 EL = 849.98'
 VC = 130'
 K = 100

-L- STA 19+50.00
 EL = 850.17
 END GRADE

BM1 ELEVATION = 880.62
 N 703947 E 1329792
 BL STATION 5+00.00
 N 84°26'52" W DISTANCE 119.32'
 RAILROAD SPIKE SET IN BASE
 OF 60" FORKED OAK, 30' NORTH
 OF EDGE OF PAVEMENT OF
 CONOVER-STARTOWN ROAD, 25'
 NORTHEAST OF FIRE HYDRANT,
 (OUT OF -L- STATION RANGE).

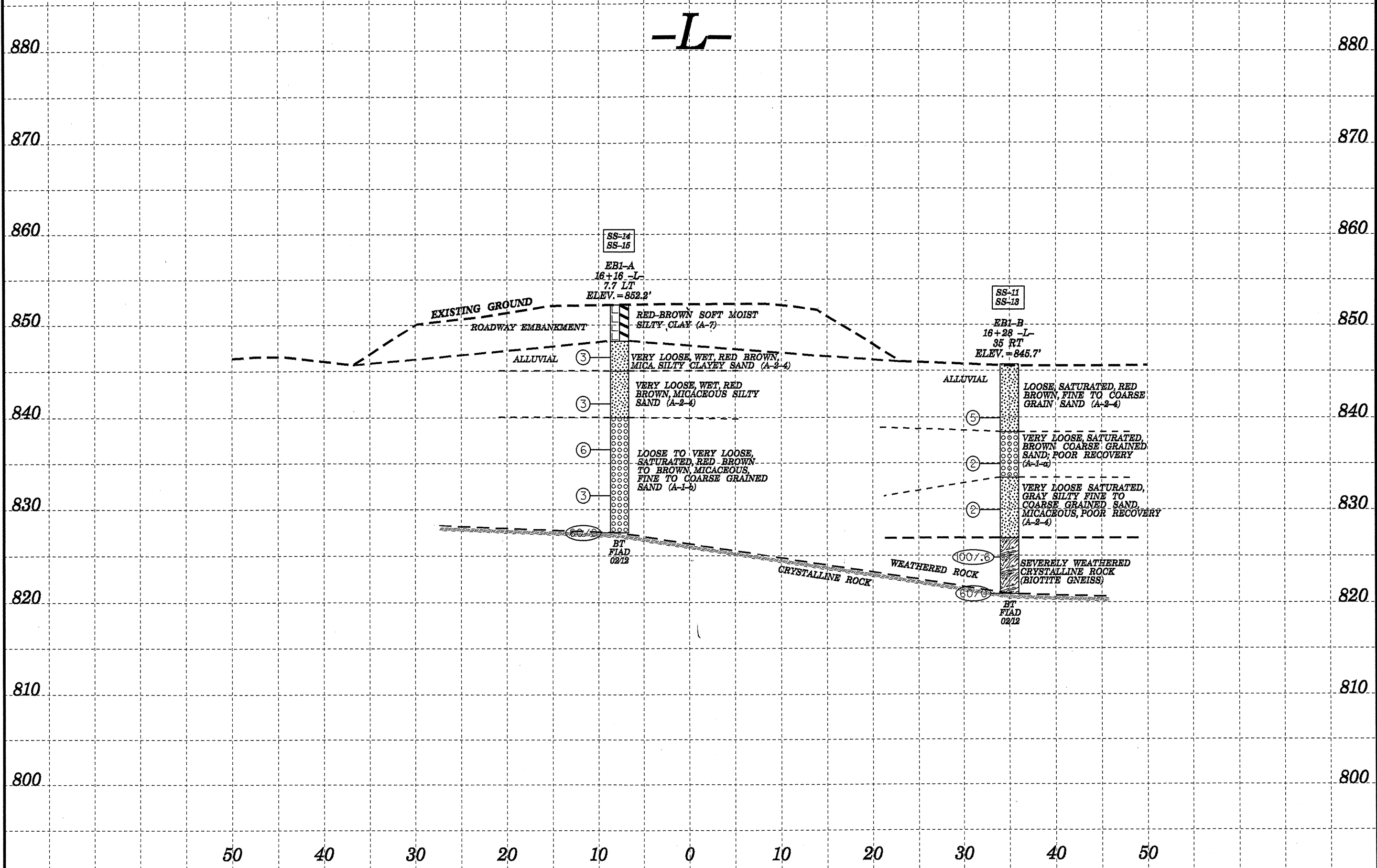
BORING DESCRIPTIONS	
(A)	ALLUVIAL, SOFT, WET, ORANGE BROWN SILTY CLAY WITH THIN SAND BED, MICACEOUS (A-6)
(B)	ALLUVIAL, VERY SOFT, SATURATED, BROWN MICACEOUS SILT WITH VERY THIN BED OF SAND AND GRAVEL. POOR RECOVERY (A-4)
(C)	ALLUVIAL, LOOSE, SATURATED, GRAY MICACEOUS FINE GRAINED SAND (A-3)
(D)	RESIDUAL, MEDIUM DENSE, WET, BLACK AND WHITE SAND AND GRAVEL (A-1-b)
(E)	ALLUVIAL, VERY SOFT, WET, HIGHLY PLASTIC RED BROWN MICACEOUS SILTY CLAY (A-7-5)
(F)	ALLUVIAL, LOOSE, SATURATED, LIGHT BROWN MICACEOUS CLAYEY FINE GRAINED SAND W/ WOOD FRAGMENTS (A-3)
(G)	ALLUVIAL, VERY LOOSE, SATURATED, GRAY MICACEOUS CLAYEY FINE GRAINED SAND; POOR RECOVERY (A-2-6)

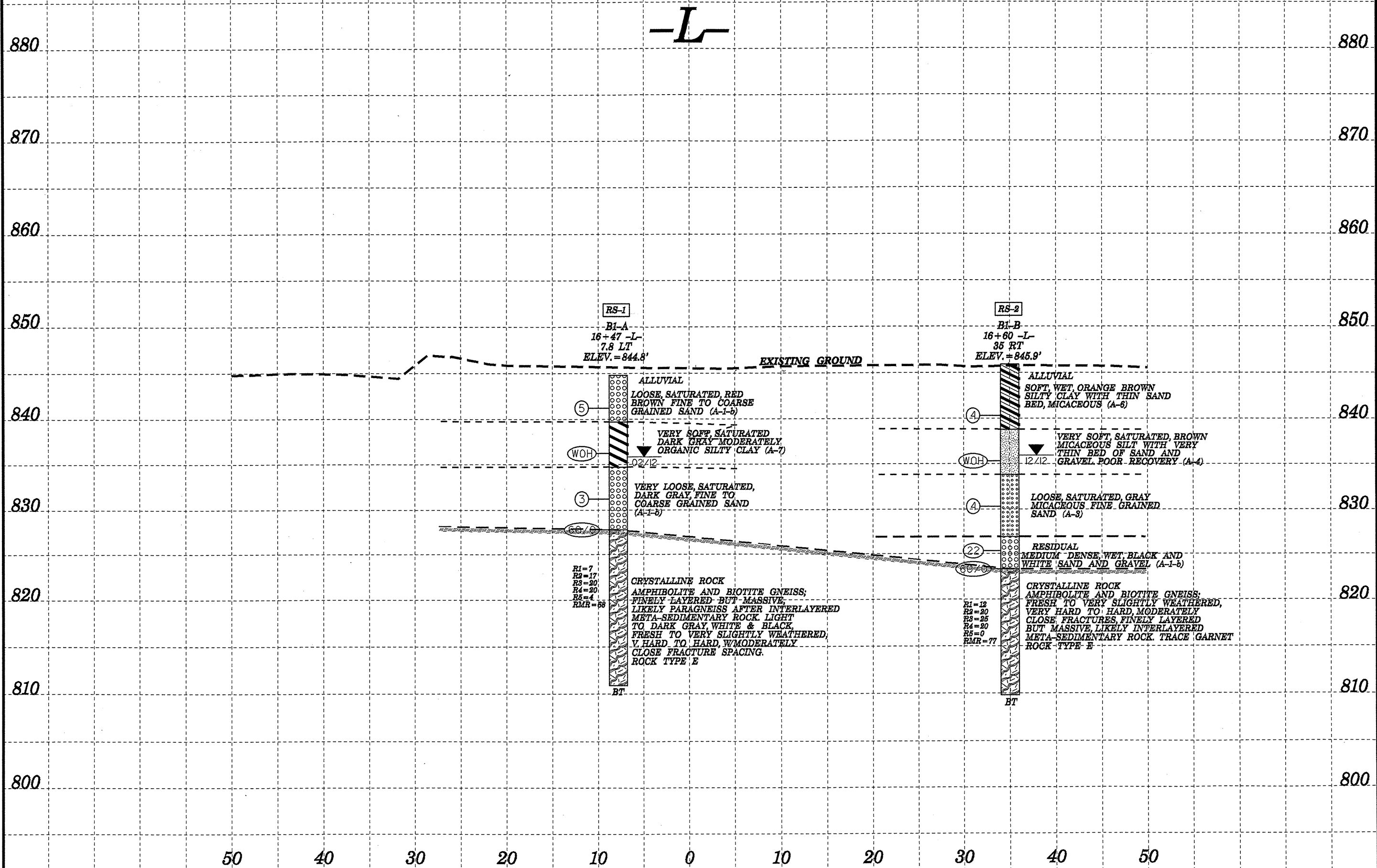


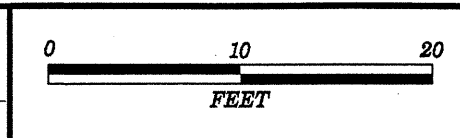
BM3 ELEVATION = 854.90
 N 704979.55 E 1330803.93
 BL STATION 17+33.19 688.58' LT =
 -L- STATION 23+23.15 636.83' LEFT.
 BENCH MARK IS "GPS B5101-1"

SEE SHEET 3 FOR PLAN VIEW

13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

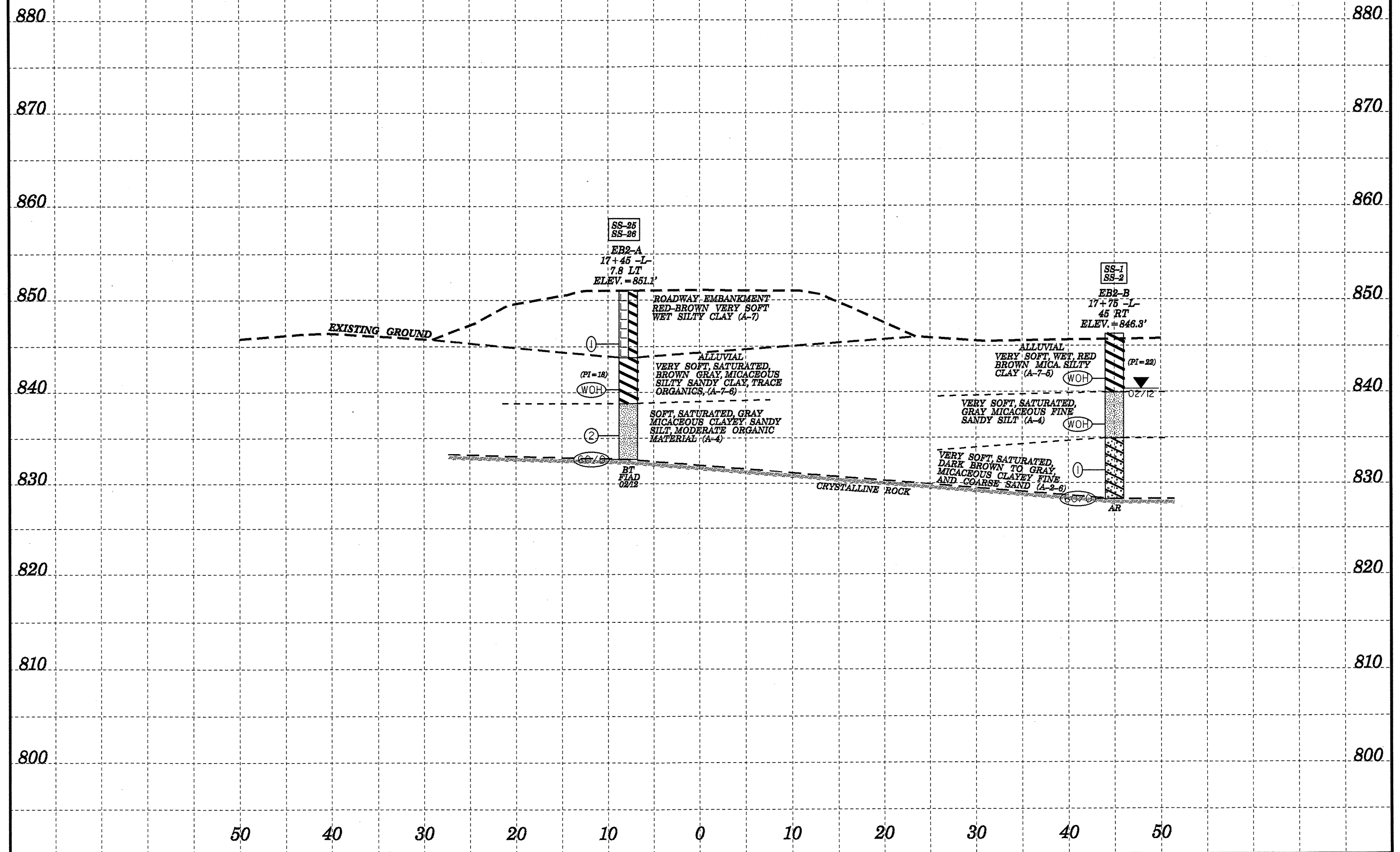






PROJECT REFERENCE NO.	SHEET
42223.1.1 (B-5101)	8
SECTION THROUGH EB2 STA. 17+49.79 -L- SKEW=75°00'00"	

-L-



WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist									
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek						GROUND WTR (ft)									
BORING NO. B1-B		STATION 16+60		OFFSET 35 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 845.9 ft		TOTAL DEPTH 36.1 ft		NORTHING 704,122		EASTING 1,330,598									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIETRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 02/17/12		COMP. DATE 12/17/12		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					
850															
845														845.9	0.0
840	841.3	4.6	0	1	3								W		
835	836.3	9.6	0	0	0								Sat.		
830	831.3	14.6	1	2	2								Sat.		
825	826.3	19.6	16	12	10								W		
820	823.3	22.6	60/0												60/0
815															
810															
Boring Terminated at Elevation 809.8 ft in amphibolite and biotite gneiss															
NOTE: Hole caved at 10.5'															

NCDOT BORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist						
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek						GROUND WTR (ft)						
BORING NO. B1-B		STATION 16+60		OFFSET 35 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 845.9 ft		TOTAL DEPTH 36.1 ft		NORTHING 704,122		EASTING 1,330,598						
DRILL RIG/HAMMER EFF./DATE SUM0093 DIETRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 02/17/12		COMP. DATE 12/17/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
823.3	823.3	22.6	3.5	N=60/0 3:22/1.0 3:13/1.0 4:00/1.5	(3.4) 97%	(3.2) 91%		(13.4) 99%	(12.3) 91%		Begin Coring @ 22.6 ft	22.6
820	819.8	26.1	5.0	2:56/1.0 3:54/1.0 3:46/1.0 2:45/1.0 3:18/1.0	(5.0) 100%	(4.5) 90%	RS-2				CRYSTALLINE ROCK BIOTITE GNEISS Czab, AMPHIBOLITE AND BIOTITE GNEISS. FRESH TO VERY SLIGHTLY WEATHERED, VERY HARD TO HARD, MODERATELY CLOSE FRACTURES, FINELY LAYERED BUT MASSIVE, LIKELY INTERLAYERED META-SEDIMENTARY ROCK. TRACE GARNET. CLASS II, GOOD ROCK, ROCK TYPE E. R1=12 R2=20 R3=25 R4=20 R5=0 RMR=77	
815	814.8	31.1	5.0	4:05/1.0 3:10/1.0 3:13/1.0 3:39/1.0	(5.0) 100%	(4.6) 92%						
810	809.8	36.1										36.1
Boring Terminated at Elevation 809.8 ft in amphibolite and biotite gneiss												
NOTE: Hole caved at 10.5'												

NCDOT CORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist										
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)									
BORING NO. B2-A		STATION 17+17		OFFSET 8 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 844.7 ft		TOTAL DEPTH 34.3 ft		NORTHING 704,186		EASTING 1,330,631										
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 02/22/12		COMP. DATE 02/22/12		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						
845														844.7	GROUND SURFACE	0.0
840	841.7	3.0	0	0	0							SS-21	W	839.2	ALLUVIAL VERY SOFT, WET, (PI=21) RED BROWN, MICACEOUS SILTY CLAY (A-7.5)	5.5
835	836.7	8.0	1	0	1							Sat.		834.2	ALLUVIAL VERY LOOSE, SATURATED, GRAY, MICACEOUS FINE GRAINED SAND, TRACE ORGANICS (A-3)	10.5
830	831.7	13.0	0	1	4							Sat.		829.2	ALLUVIAL LOOSE, SATURATED, GRAY FINE TO COARSE GRAINED SAND (A-1-b)	15.5
825	826.7	18.0	3	2	1							Sat.		823.9	ALLUVIAL VERY LOOSE, SATURATED, GRAY FINE TO COARSE GRAINED SAND WITH A LITTLE GRAVEL (A-1-b)	20.8
820	823.9	20.8	60/0									RS-3		823.9	CRYSTALLINE ROCK AMPHIBOLITE AND BIOTITE GNEISS	20.8
815														810.4	Boring Terminated at Elevation 810.4 ft in amphibolite and biotite gneiss	34.3

NCDOT BORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist						
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)					
BORING NO. B2-A		STATION 17+17		OFFSET 8 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 844.7 ft		TOTAL DEPTH 34.3 ft		NORTHING 704,186		EASTING 1,330,631						
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 02/22/12		COMP. DATE 02/22/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
823.9	823.9	20.8	3.5	N=60/0 6:00/1.0 5:50/1.0 5:16/1.5	(3.4) 97%	(3.0) 86%		(13.0) 96%	(11.1) 82%		Begin Coring @ 20.8 ft	20.8
820	820.4	24.3	5.0	4:36/1.0 3:00/1.0 2:33/1.0 3:00/1.0 3:27/1.0	(4.7) 94%	(4.7) 94%	RS-3				Czab, AMPHIBOLITE AND BIOTITE GNEISS. FRESH TO VERY SLIGHTLY WEATHERED, VERY HARD TO HARD, MODERATELY CLOSE FRACTURES, FINELY LAYERED BUT MASSIVE, LIKELY INTERLAYERED META-SEDIMENTARY ROCK. SOMEWHAT SHALY AT TOP AND BOTTOM 2 FEET. CLASS II, GOOD ROCK, ROCK TYPE E	
815	815.4	29.3	5.0	4:23/1.0 3:37/1.0 2:56/1.0 3:03/1.0	(4.9) 98%	(3.4) 68%					R1=12 R2=17 R3=20 R4=20 R5=0 RMR=69	
	810.4	34.3									Boring Terminated at Elevation 810.4 ft in amphibolite and biotite gneiss	34.3

NCDOT CORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist									
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)								
BORING NO. B2-B		STATION 17+30		OFFSET 40 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 846.3 ft		TOTAL DEPTH 36.3 ft		NORTHING 704,148		EASTING 1,330,663									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 02/16/12		COMP. DATE 02/16/12		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					
850															
845														846.3	0.0
840	841.4	4.9	0	0	2						SS-4	W	ALLUVIAL VERY SOFT, WET, HIGHLY PLASTIC (PI=27) RED BROWN MICACEOUS SILTY CLAY (A-7-5)	7.4	
835	836.4	9.9	2	3	2						Sat.		ALLUVIAL LOOSE, SATURATED, LIGHT BROWN MICACEOUS CLAYEY FINE GRAINED SAND W/ WOOD FRAGMENTS (A-3)	12.4	
830	831.4	14.9	0	0	1						Sat.		ALLUVIAL VERY LOOSE, SATURATED, GRAY MICACEOUS CLAYEY FINE GRAINED SAND; POOR RECOVERY (A-2-6)		
825	826.4	19.9	60/0										CRYSTALLINE ROCK AMPHIBOLITE AND BIOTITE GNEISS	19.9	
820											RS-4				
815															
810														810.0	36.3
Boring Terminated at Elevation 810.0 ft in amphibolite and biotite gneiss															
NOTE: Hole caved at 13.0'															

NCDOT BORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist						
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)					
BORING NO. B2-B		STATION 17+30		OFFSET 40 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 846.3 ft		TOTAL DEPTH 36.3 ft		NORTHING 704,148		EASTING 1,330,663						
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 02/16/12		COMP. DATE 02/16/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
826.4												
825	826.4	19.9	1.4	N=60/0 3:41/1.0 1:15/0.4	(1.3)	(0.0)		(15.6)	(11.3)		Begin Coring @ 19.9 ft	19.9
	825.0	21.3	5.0	3:25/1.0 2:17/1.0 2:25/1.0 2:42/1.0 2:07/1.0	93%	0%		95%	69%		CRYSTALLINE ROCK Czab, AMPHIBOLITE AND BIOTITE GNEISS, META MORPHOSED SEDIMENTS. FRESH, FINELY LAYERED WITH SHALEY INTERBEDS. TRACE GARNET. CLASS II, ROCK TYPE E, GOOD ROCK. R1=7 R2=13 R3=20 R4=20 R5=4 RMR=64	
820	820.0	26.3	5.0	2:56/1.0 2:44/1.0 2:45/1.0 3:33/1.0 2:49/1.0	(4.9)	(3.5)	RS-4					
815	815.0	31.3	5.0	2:54/1.0 2:35/1.0 2:37/1.0 2:39/1.0 3:00/1.0	98%	70%						
810	810.0	36.3			(4.5)	(3.9)						
Boring Terminated at Elevation 810.0 ft in amphibolite and biotite gneiss												
NOTE: Hole caved at 13.0'												

NCDOT CORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT.GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist									
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 17+45		OFFSET 8 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 851.1 ft		TOTAL DEPTH 18.4 ft		NORTHING 704,198		EASTING 1,330,656									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 02/22/12		COMP. DATE 02/22/12		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					
855															
														851.1	0.0
850															
	846.3	4.8	0	0	1							W			
845														843.8	7.3
	841.3	9.8	0	0	0						SS-25	Sat.			
840														838.8	12.3
	836.3	14.8	0	1	1						SS-26	Sat.			
835															
	832.7	18.4	60/0											832.7	18.4

NCDOT BORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT_GDT 4/18/12

WBS 42223.1.1		TIP B-5101		COUNTY CATAWBA		GEOLOGIST Contract Geologist									
SITE DESCRIPTION Bridge No. 83 on SR 1149 between SR 1005 and SR 1165 over Clark Creek							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 17+75		OFFSET 45 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 846.3 ft		TOTAL DEPTH 18.1 ft		NORTHING 704,164		EASTING 1,330,706									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 82% 07/22/2011		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 02/16/12		COMP. DATE 02/16/12		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					
850															
														846.3	0.0
845															
	842.4	3.9	0	0	0						SS-1	W			
840														839.9	6.4
	837.4	8.9	0	0	0						SS-2	Sat.			
835														834.9	11.4
	832.4	13.9	0	0	1							Sat.			
830															
	828.2	18.1	60/0											828.2	18.1

NCDOT BORE SINGLE B5101_GEO_BH_BRD0083_CATAWBA.GPJ NC_DOT_GDT 4/18/12

Boring Terminated with Standard Penetration Test Refusal at Elevation 828.2 ft on crystalline rock

NOTE:
Hole caved at 7.5'.

TEST RESULTS

PROJECT: 42223.1.1 (B-5101)

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 83 ON SR 1149 BETWEEN SR 1005 AND SR 1165 OVER CLARK CREEK

SHEET
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SOIL SAMPLE RESULTS														ROCK SAMPLE RESULTS																															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	UNIT WT. (d)	VOID RATIO	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	RQD	UNIT WT (pcf)	Q(ksf)	E(MPsi)																			
								C. SAND	F. SAND	SILT	CLAY	10	40	200																															
EB1-A																																													
SS-14	7.7 LT	16+16 -L-	4.70-6.20	A-2-4(0)	3	21	3	36.7	31.3	15.9	16.1	99	77	32				RS-1	7.8 LT	16+47 -L-	18.35-18.90	78%	179.31	1762.56	6.32																				
SS-15	7.7 LT	16+16 -L-	9.70-11.20	A-2-4(0)	3	35	4	39.4	28.3	18.3	14.1	99	72	33				B1-B																											
EB1-B																																													
SS-11	35.0 RT	16+28 -L-	4.80-6.30	A-2-4(0)	5	34	8	69.1	9.4	9.4	12.0	93	39	20				RS-2	35.0 RT	16+60 -L-	28.1-28.6	91%	175.64	2551.68	7.29																				
SS-13	35.0 RT	16+28 -L-	14.80-16.30	A-2-4(0)	2	30	NP	23.7	63.5	8.8	4.0	100	87	15				B2-A																											
B2-A																																													
SS-21	7.8 LT	17+17 -L-	3.00-4.50	A-7-5(23)	0	54	21	3.6	8.0	34.1	54.2	100	99	89				RS-3	7.8 LT	17+17 -L-	24.3-24.75	82%	170.63	3009.6	6.92																				
B2-B																																													
SS-4	40.0 RT	17+30 -L-	4.90-6.40	A-7-5(32)	2	62	27	1.6	3.6	34.5	60.2	100	99	95				B2-B																											
EB2-A																																													
SS-25	7.8 LT	17+45 -L-	9.80-11.30	A-7-6(12)	0	42	18	9.0	21.7	29.1	40.2	100	98	70				EB2-B																											
SS-26	7.8 LT	17+45 -L-	14.80-16.30	A-4(0)	2	26	3	17.9	49.0	17.1	16.1	100	96	36				EB2-B																											
EB2-B																																													
SS-1	45.0 RT	17+75 -L-	3.90-5.40	A-7-5(21)	0	52	22	7.6	10.6	33.5	48.2	100	98	83				EB2-B																											
SS-2	45.0 RT	17+75 -L-	8.90-10.40	A-4(2)	0	27	10	8.6	44.2	23.1	24.1	100	99	48				EB2-B																											

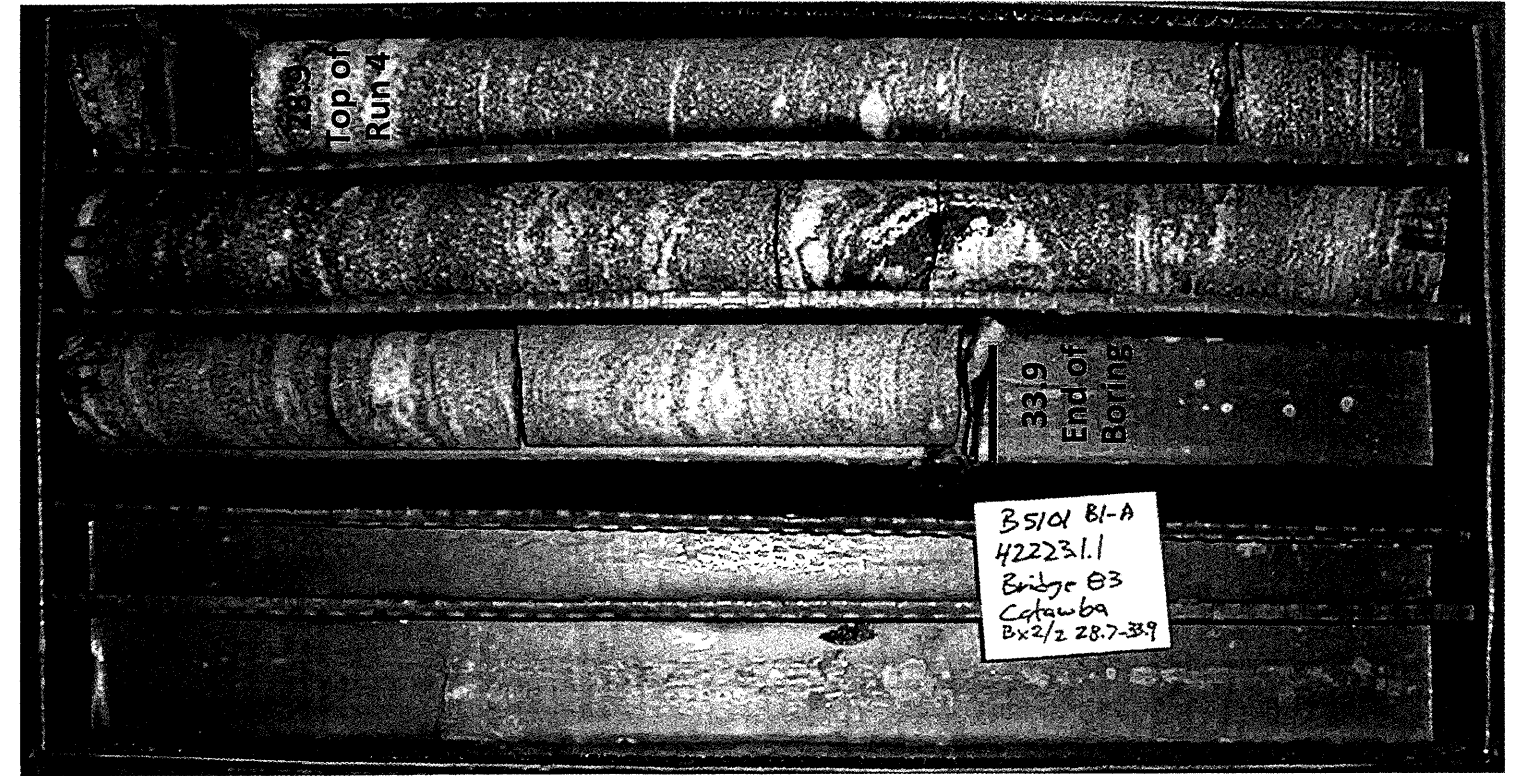
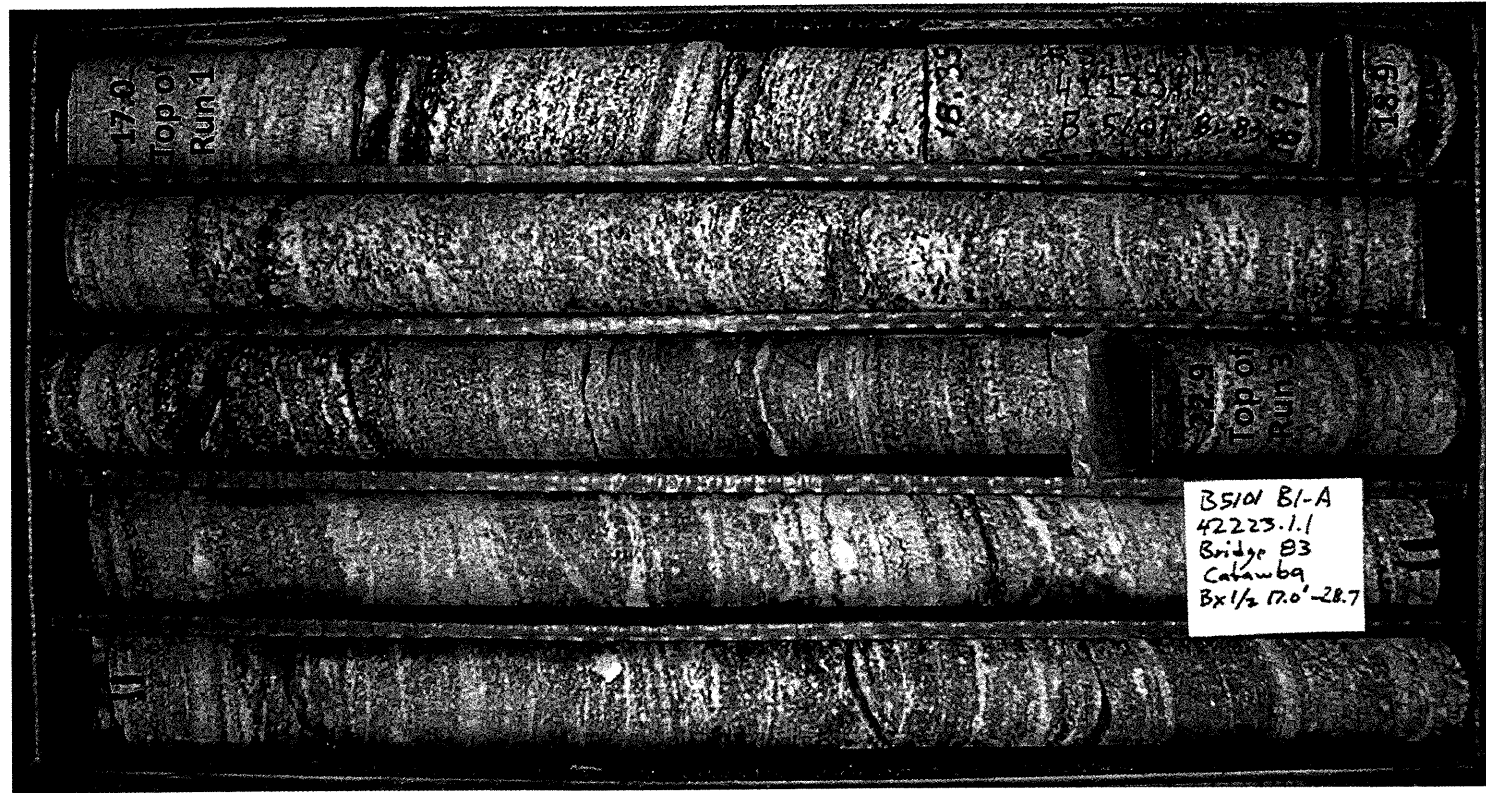
PROJECT: 42223.1.1 (B-5101)

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 83 ON SR 1149 BETWEEN SR 1005 AND SR 1165 OVER CLARK CREEK

B1-A

SHEET 16



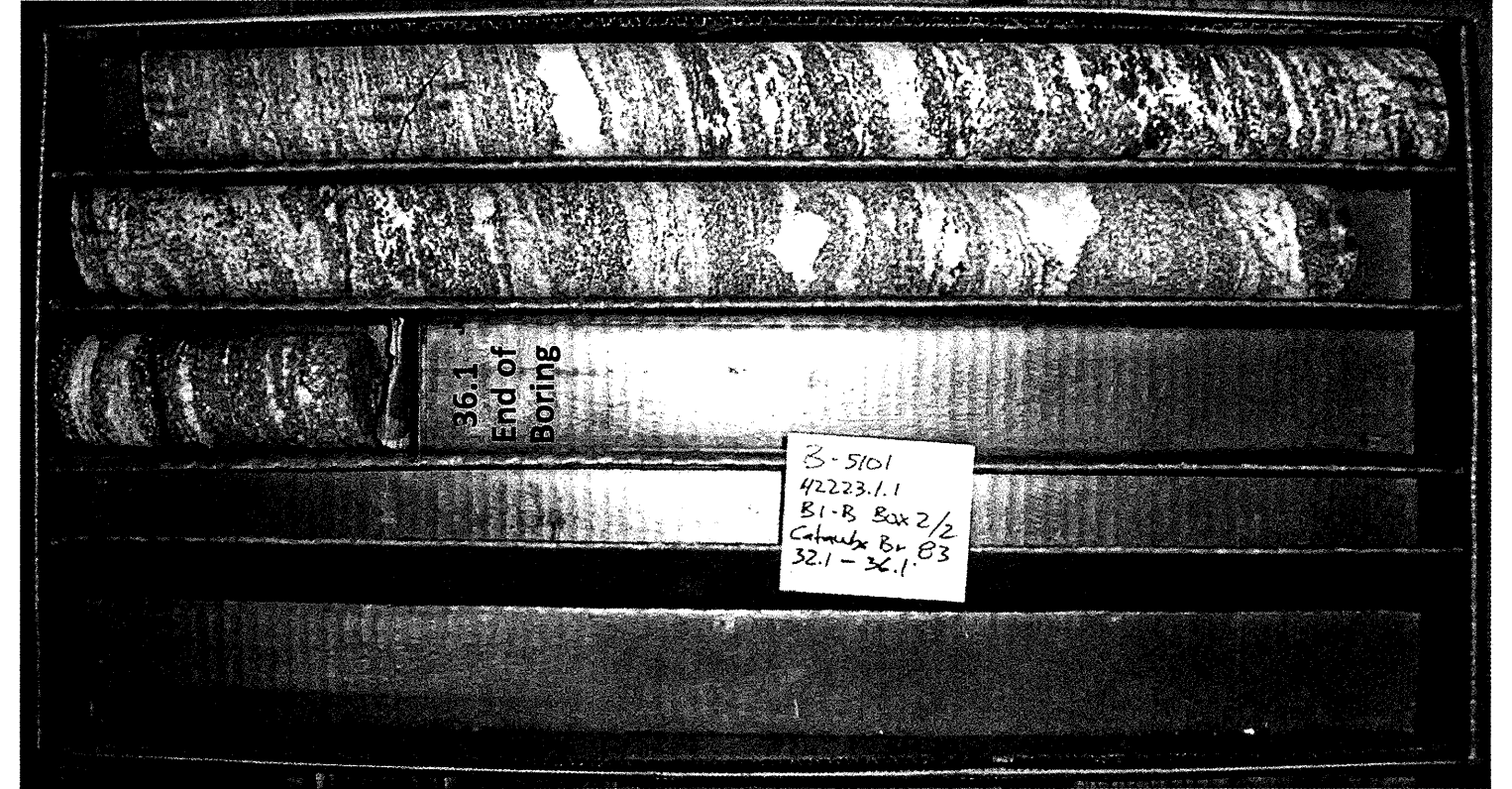
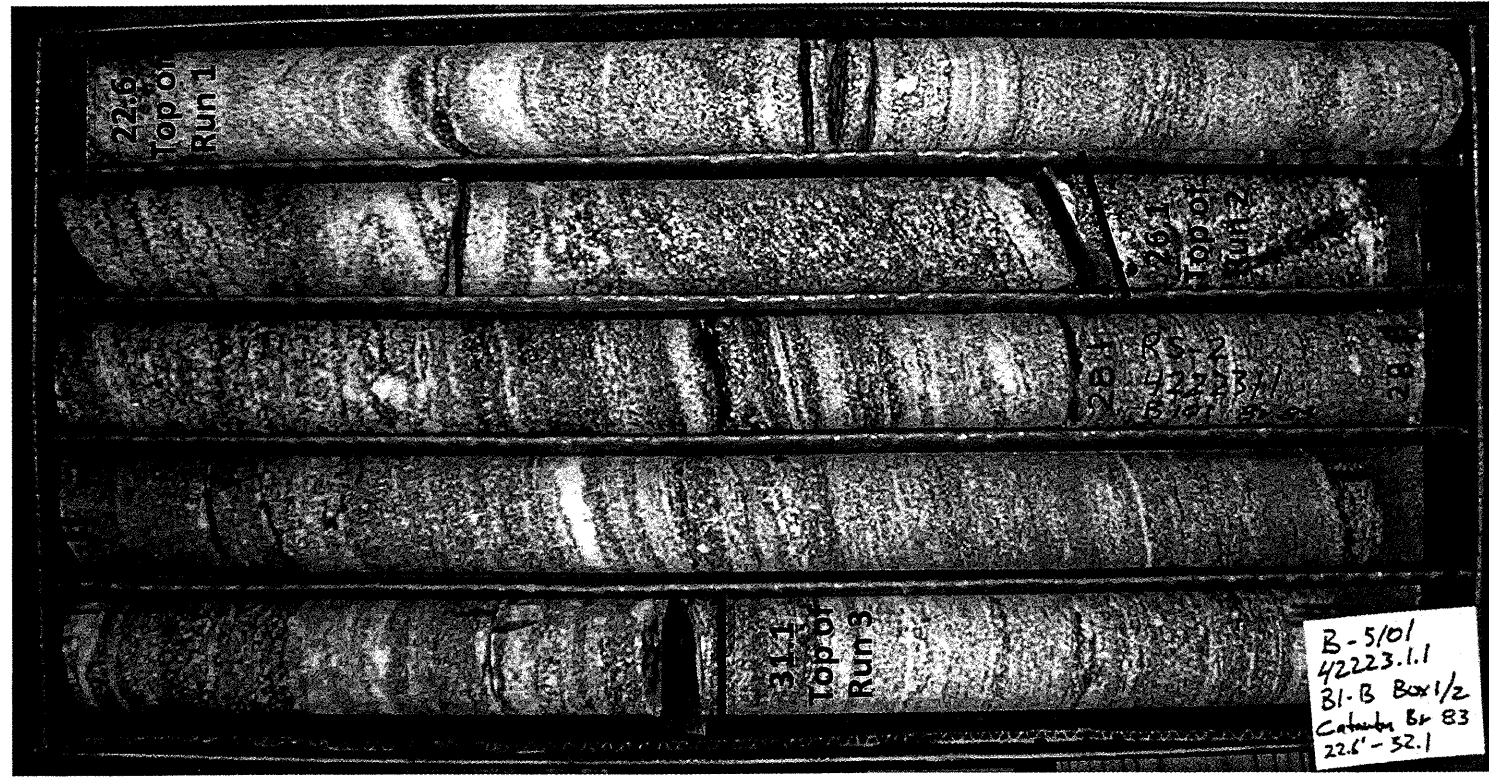
PROJECT: 42223.1.1 (B-5101)

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 83 ON SR 1149 BETWEEN SR 1005 AND SR 1165 OVER CLARK CREEK

B1-B

SHEET 17



PROJECT: 42223.1.1 (B-5101)

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 83 ON SR 1149 BETWEEN SR 1005 AND SR 1165 OVER CLARK CREEK

B2-A

SHEET 18



PROJECT: 42223.1.1 (B-5101)

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 83 ON SR 1149 BETWEEN SR 1005 AND SR 1165 OVER CLARK CREEK

B2-B

SHEET 19

