

CONTRACT: 33424.1.1 ID: B-4060

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4060	1	17
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
		P.E.	
		CONST.	

# STATE OF NORTH CAROLINA

## DEPARTMENT OF TRANSPORTATION

### DIVISION OF HIGHWAYS

### GEOTECHNICAL UNIT

# STRUCTURE SUBSURFACE INVESTIGATION

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#### CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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.

STATE PROJECT 33424.1.1 I.D. NO. B-4060

F.A. PROJECT \_\_\_\_\_

COUNTY CATAWBA

PROJECT DESCRIPTION BRIDGE NO. 17  
ON SR 1486 OVER CLINE CREEK

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


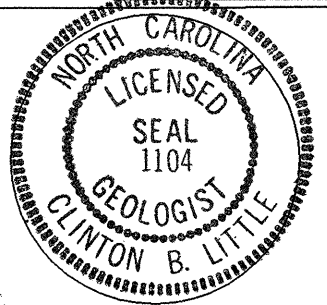
INVESTIGATED BY J.E. BEVERLY PERSONNEL J.K. STICKNEY  
 CHECKED BY C.B. LITTLE C.L. SMITH  
 SUBMITTED BY C.B. LITTLE D.K. BRATTON  
 DATE APRIL 2005 R.W. TODD

DRAWN BY: T.A. MECHUM

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.

5-23-05

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 columns: ID, STATE PROJECT NO., SHEET NO., TOTAL SHEETS. Values: B-4060, 33424.1.1, 2, 17

Main content table divided into sections: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, PLASTICITY, COLOR, and INDURATION.

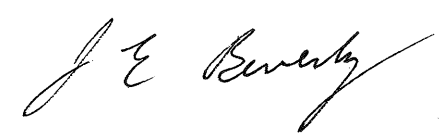


Groundwater

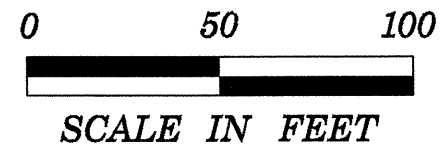
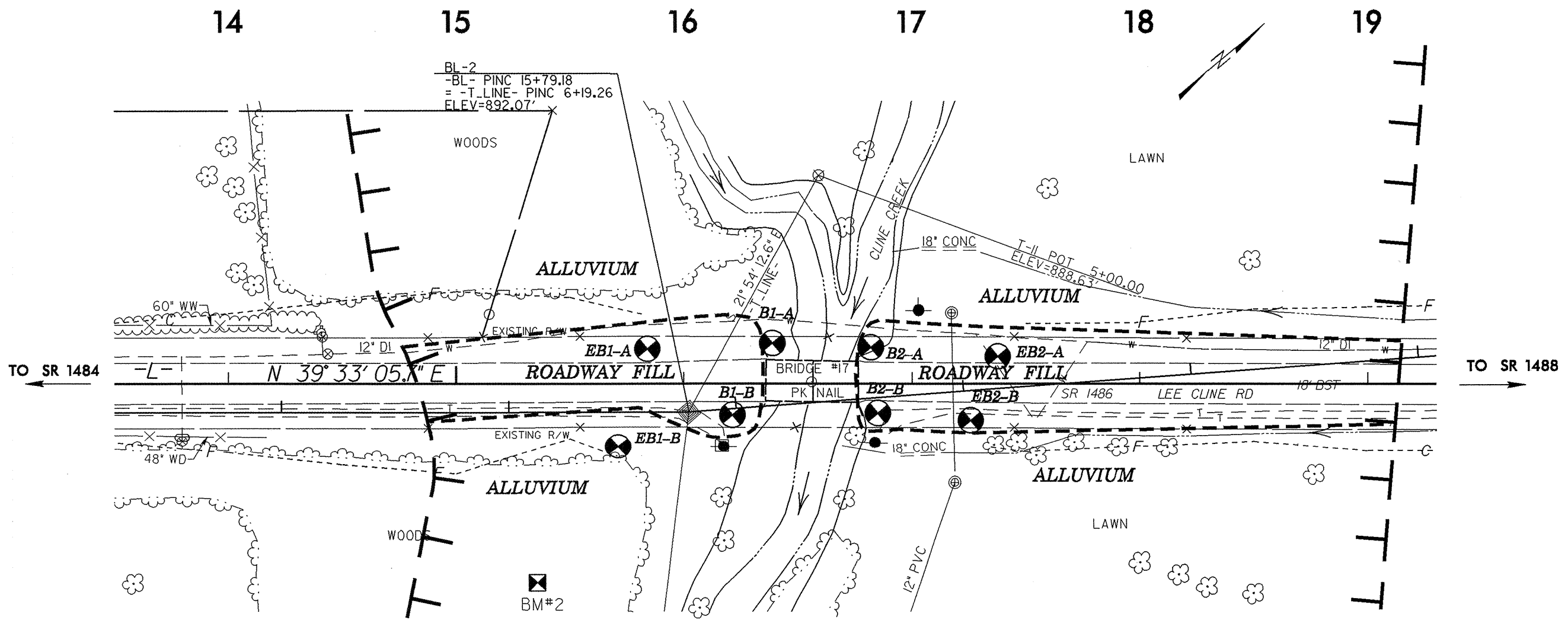
Groundwater measurements taken more than 24 hours after each boring was performed indicate the static groundwater table lies between elevation 883.7 – 879.1 feet.

Respectfully submitted,

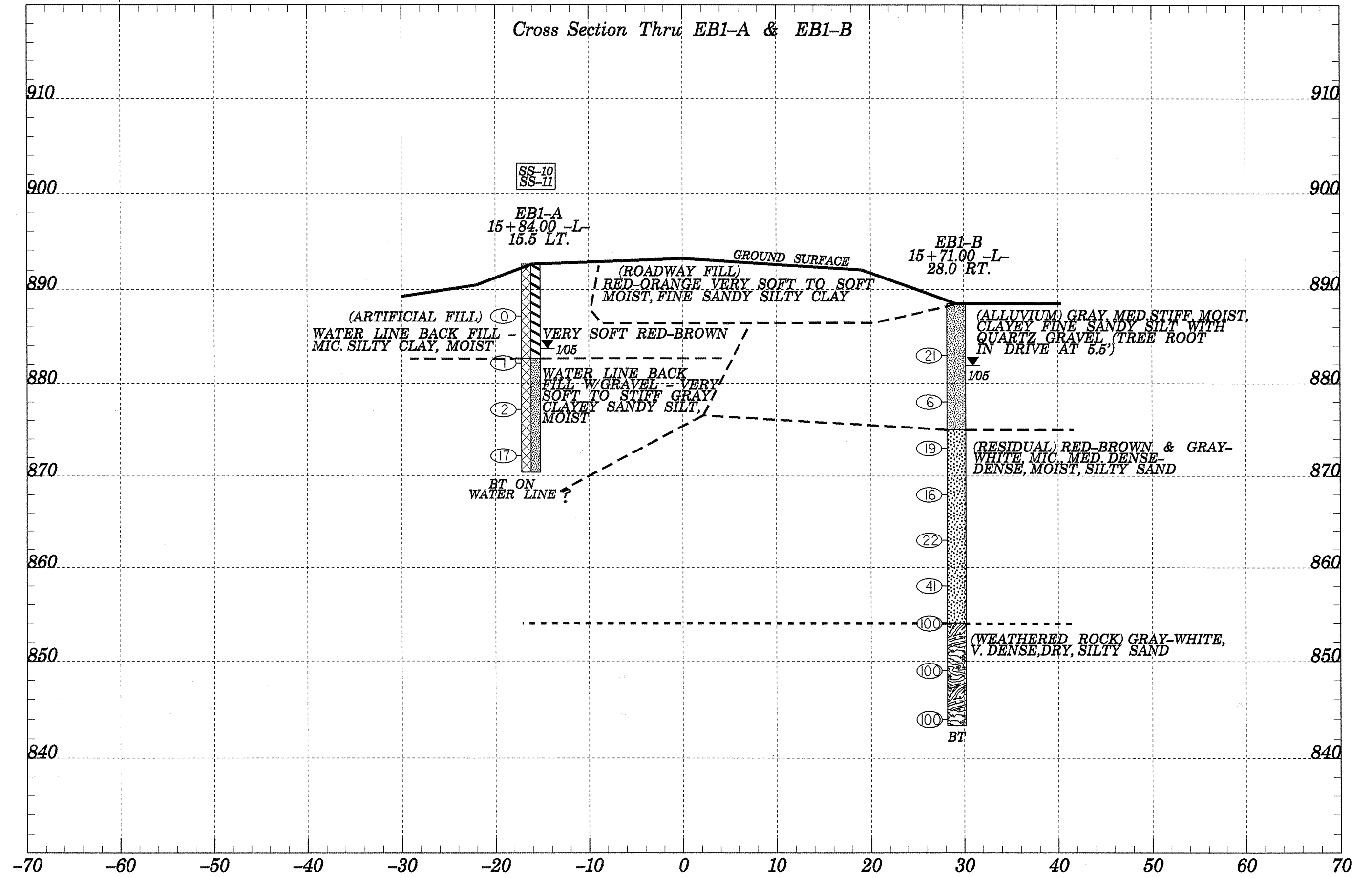
J.E. Beverly, Project Geologist

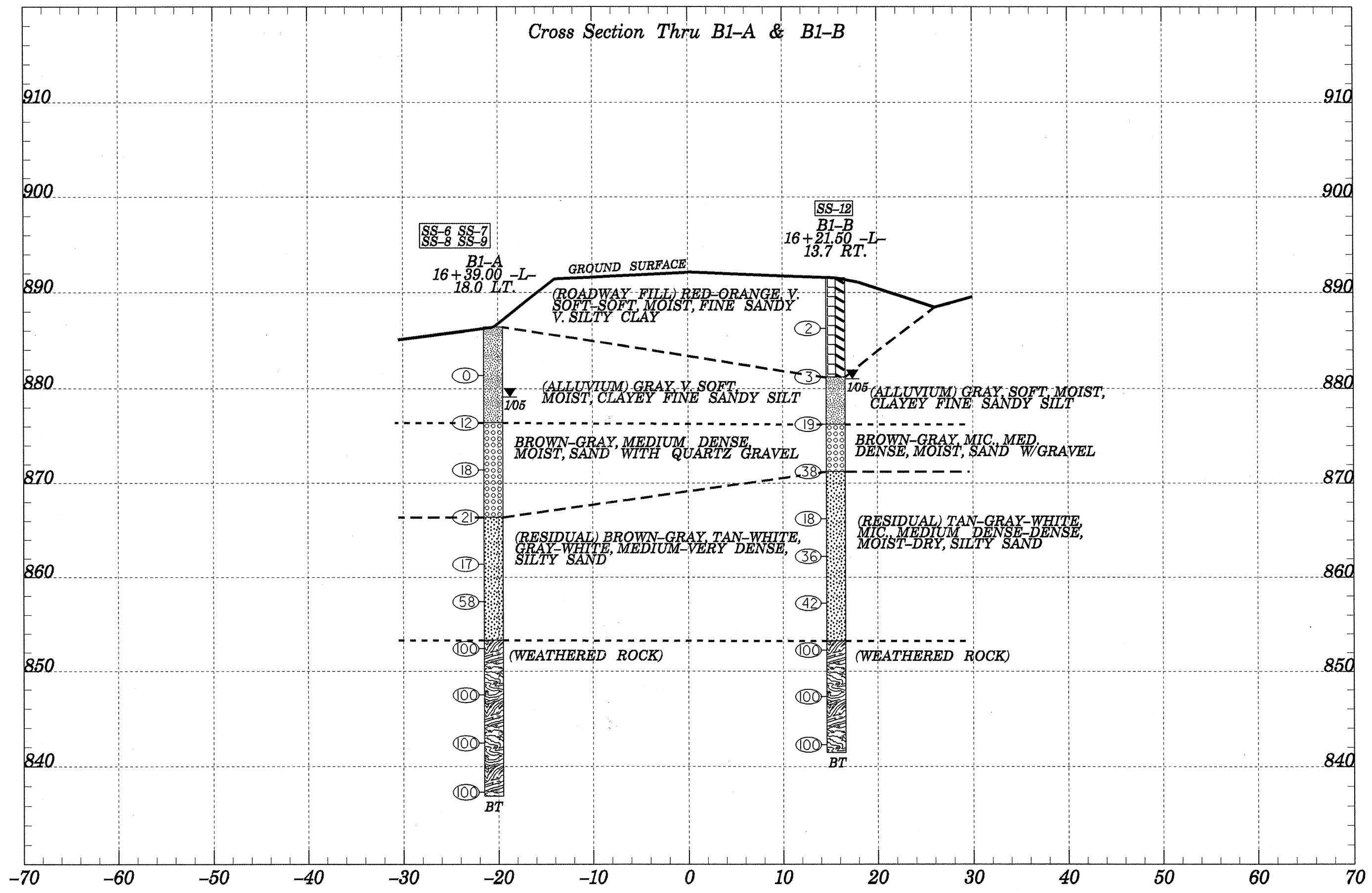


Bridge No. 17 on SR 1486 over Cline Creek  
Catawba County

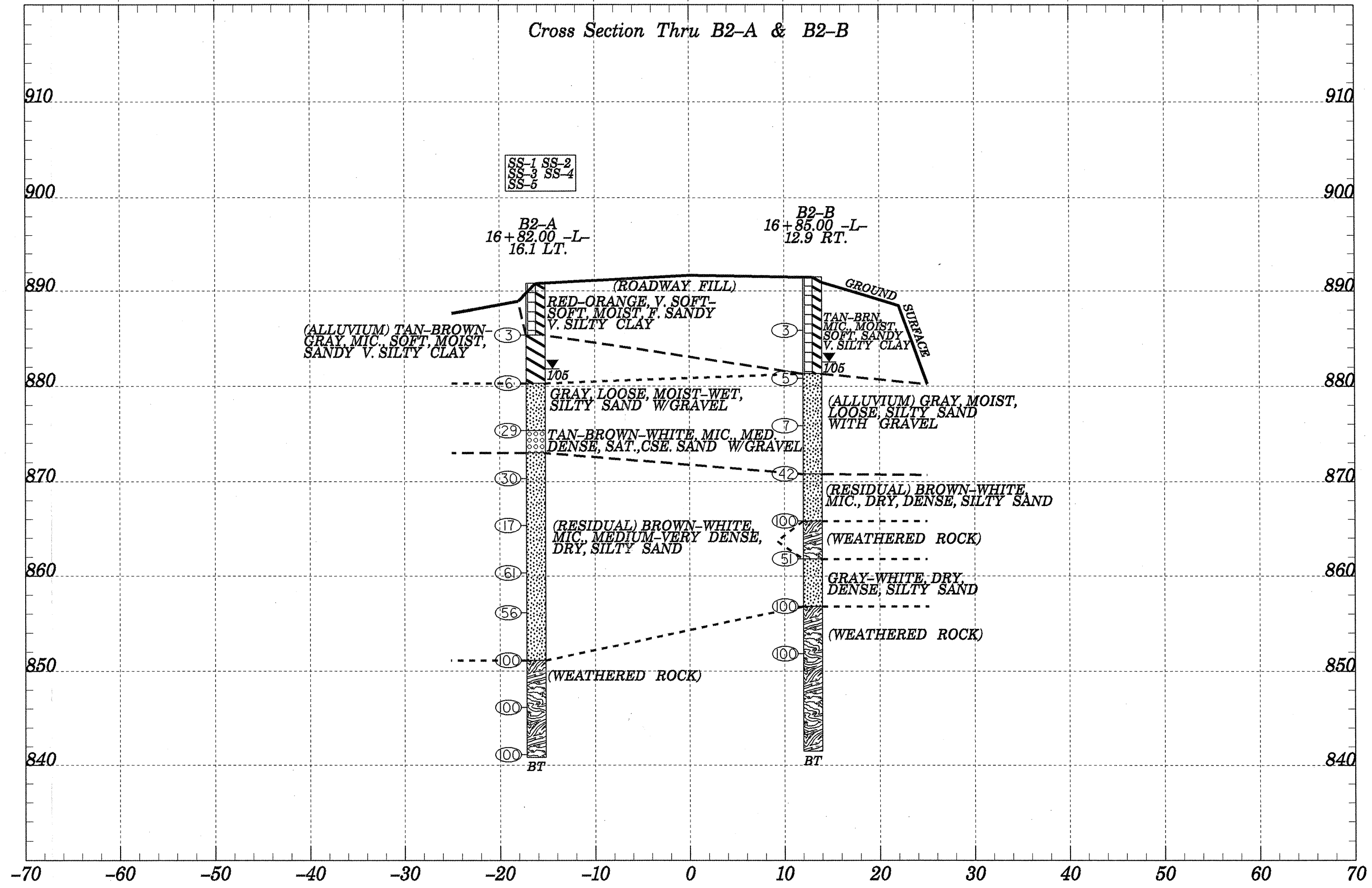


Cross Section Thru EB1-A & EB1-B





Cross Section Thru B2-A & B2-B



B2-A  
16+82.00 -L-  
16.1 LT.

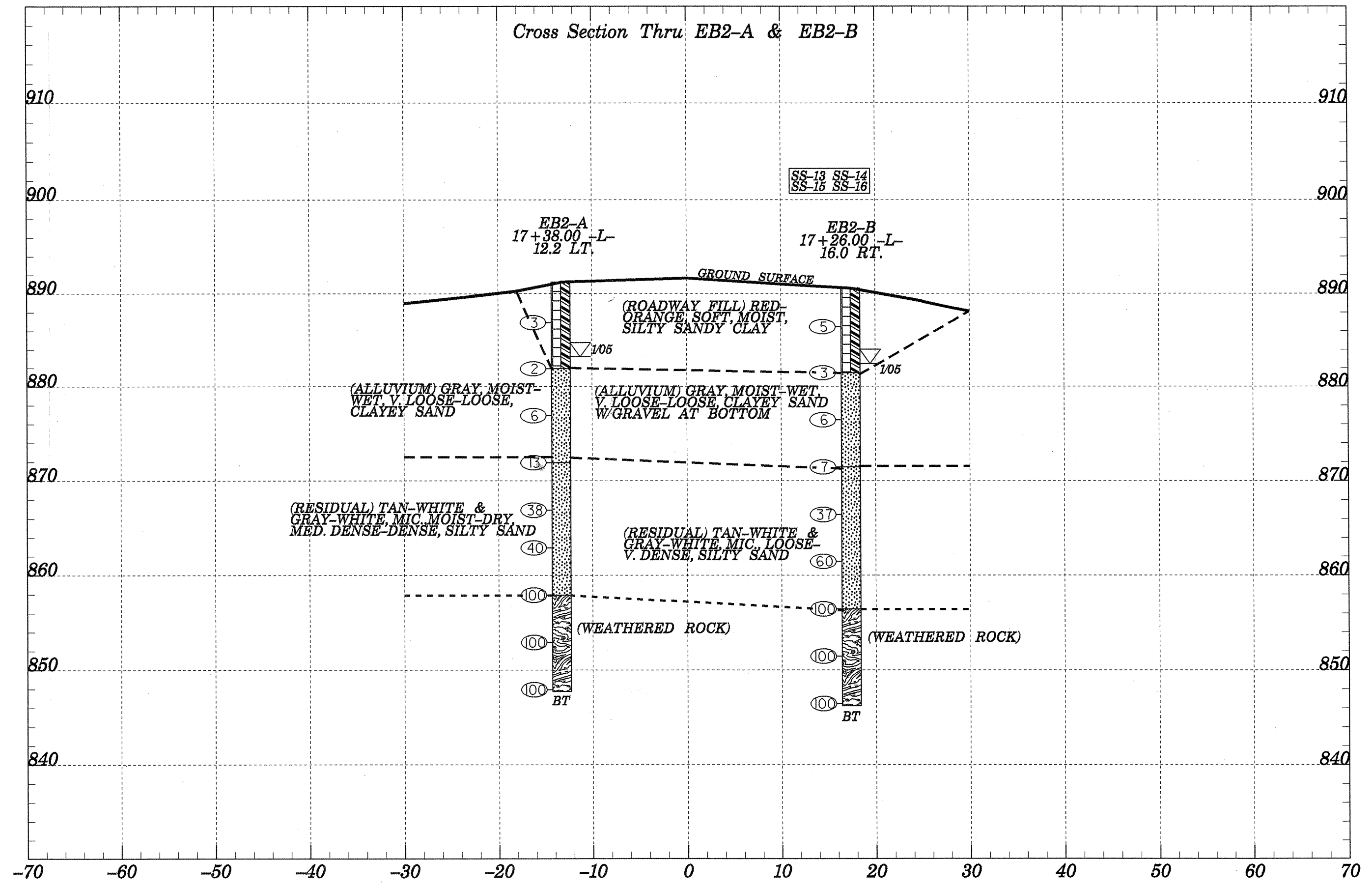
B2-B  
16+85.00 -L-  
12.9 RT.

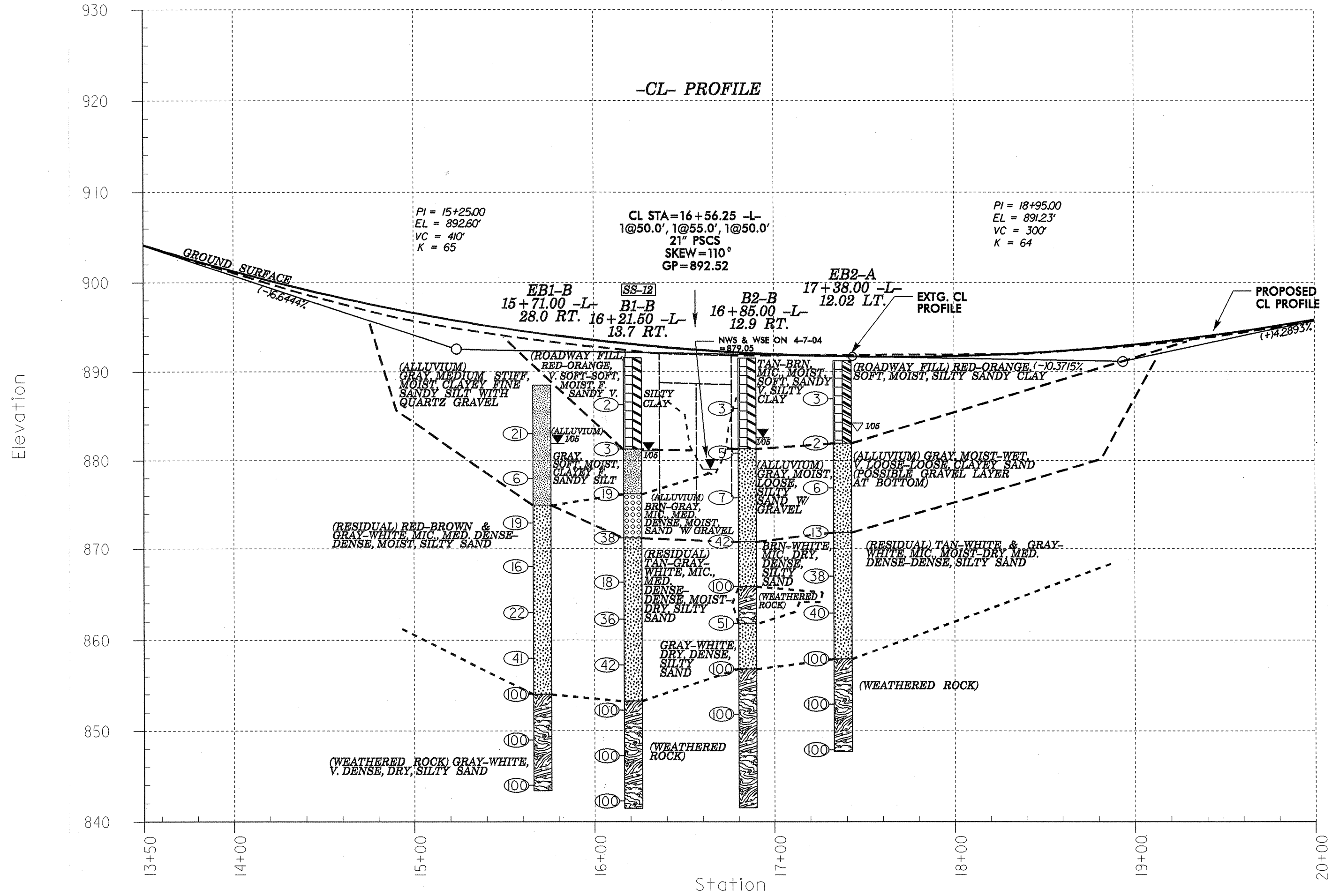
SS-1 SS-2  
SS-3 SS-4  
SS-5

BT

BT







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEK							GND WATER						
BORING NO EB1-A		NORTHING 0.00		EASTING 0.00		0 HR N/A							
ALIGNMENT L		BORING LOCATION 15+84.000		OFFSET 15.50ft LT		24 HR 9.00ft							
COLLAR ELEV 892.70ft		TOTAL DEPTH 22.30ft		START DATE 1/13/05		COMPLETION DATE 01/13/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log EB1-A, Page 1 of 1							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
892.70													Ground Surface
890.00	5.50	1	0	0	1.0								ARTIFICIAL FILL - (WATER LINE BACK FILL) - VERY SOFT RED-BROWN MICACEOUS SILTY CLAY
	10.50	0	0	1	1.0								
880.00	15.50	0	1	1	1.0								WATER LINE BACK FILL W/ GRAVEL - VERY SOFT TO STIFF GRAY CLAYEY SANDY SILT
	20.50	0	1	16	1.0								
870.40													BORING TERMINATED ON WATER LINE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEK							GND WATER						
BORING NO EB1-B		NORTHING 0.00		EASTING 0.00		0 HR N/A							
ALIGNMENT L		BORING LOCATION 15+71.000		OFFSET 28.00ft RT		24 HR 6.60ft							
COLLAR ELEV 888.50ft		TOTAL DEPTH 45.10ft		START DATE 1/24/05		COMPLETION DATE 01/24/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log EB1-B, Page 1 of 1							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
888.50													Ground Surface
	5.50	6	9	12	1.0								(ALLUVIUM) GRAY, MEDIUM STIFF, MOIST, CLAYEY FINE SANDY SILT WITH QUARTZ GRAVEL (TREE ROOT IN DRIVE AT 5.5')
880.00	10.50	1	2	4	1.0								
	15.50	7	8	11	1.0								(RESIDUAL) RED-BROWN AND GRAY-WHITE, MIC., MEDIUM DENSE-DENSE, MOIST, SILTY SAND
870.00	20.50	8	6	10	1.0								
	25.50	7	9	13	1.0								
860.00	30.50	22	15	26	1.0								
	34.50	100			0.5								
850.00	39.50	57	43		0.8								(WEATHERED ROCK) GRAY-WHITE, VERY DENSE, DRY, SILTY SAND
	44.50	76	24		0.6								
843.40													BORING TERMINATED AT ELEV. 843.4 IN WEATHERED ROCK

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG**

PROJECT NO 33424.1.1	ID B-4060	COUNTY CATAWBA	GEOLOGIST J.K. STICKNEY
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEK			GND WATER
BORING NO B1-A	NORTHING 0.00	EASTING 0.00	0 HR N/A
ALIGNMENT L	BORING LOCATION 16+39.000	OFFSET 18.00ft LT	24 HR 7.30ft
COLLAR ELEV 886.42ft	TOTAL DEPTH 49.40ft	START DATE 1/13/05	COMPLETION DATE 01/13/05
DRILL MACHINE CME-550X	DRILL METHOD NWCAS/TRI-CONE	HAMMER TYPE AUTOMATIC	
SURFACE WATER DEPTH		DEPTH TO ROCK N/A	Log B1-A, Page 1 of 1

ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	MOI	LOG	SOIL AND ROCK DESCRIPTION
		6in	6in	6in		0	25	50	75				
886.42													
													Ground Surface
880.00	5.00	0	0	0	1.0	0							(ALLUVIUM) GRAY, VERY SOFT, MOIST, CLAYEY FINE SANDY SILT
	10.00	3	5	7	1.0	12							BROWN-GRAY, MEDIUM DENSE, MOIST, SAND WITH QUARTZ GRAVEL
870.00	15.00	12	9	9	1.0	18							
	20.00	9	10	11	1.0	21							
860.00	25.00	5	5	12	1.0	7							(RESIDUAL) BROWN-GRAY, TAN-WHITE, GRAY-WHITE, MEDIUM-VERY DENSE, SILTY SAND
	29.00	14	26	32	1.0				58				
	34.00	38	62		0.9								(WEATHERED ROCK)
850.00	39.00	29	60	40	0.7								
	44.00	34	66		1.0								
840.00	49.00	100			0.4								
837.02													
BORING TERMINATED AT ELEV. 837.02 IN WEATHERED ROCK													

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY						
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER					
BORING NO B1-B		NORTHING 0.00		EASTING 0.00		0 HR 10.60ft						
ALIGNMENT L		BORING LOCATION 16+21.500		OFFSET 13.70ft RT		24 HR 10.50ft						
COLLAR ELEV 891.56ft		TOTAL DEPTH 50.10ft		START DATE 1/25/05		COMPLETION DATE 01/25/05						
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC						
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log B1-B, Page 1 of 2						
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION
		6in	6in	6in		0	25	50	75			
891.56												
890.00												
	5.30	0	1	1	1.0							
	10.30	1	1	2	1.0							
880.00												
	15.30	10	11	8	1.0							
	20.30	14	18	20	1.0							
870.00												
	25.30	10	7	11	1.0							
	29.30	8	14	22	1.0							
860.00												
	34.30	17	19	23	1.0							
	39.30	25	55	45	0.9							
850.00												
	44.30	41	59		1.0							
	49.30	56	44		0.8							
841.46												
Continued on the next page												

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY						
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER					
BORING NO B1-B		NORTHING 0.00		EASTING 0.00		0 HR 10.60ft						
ALIGNMENT L		BORING LOCATION 16+21.500		OFFSET 13.70ft RT		24 HR 10.50ft						
COLLAR ELEV 891.56ft		TOTAL DEPTH 50.10ft		START DATE 1/25/05		COMPLETION DATE 01/25/05						
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC						
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log B1-B, Page 2 of 2						
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION
		6in	6in	6in		0	25	50	75			
841.46												
BORING TERMINATED AT ELEV. 841.46 IN WEATHERED ROCK												

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY								
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEK							GND WATER							
BORING NO B2-A		NORTHING 0.00		EASTING 0.00		0 HR 9.00ft								
ALIGNMENT L		BORING LOCATION 16+82.000		OFFSET 16.10ft LT		24 HR 9.00ft								
COLLAR ELEV 890.85ft		TOTAL DEPTH 50.00ft		START DATE 1/12/05		COMPLETION DATE 01/12/05								
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log B2-A, Page 1 of 2								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
890.85														Ground Surface
	5.50	0	1	2	1.0									(ROADWAY FILL) RED-ORANGE, VERY SOFT-SOFT, MOIST, FINE SANDY VERY SILTY CLAY
	10.50	1	2	4	1.0									(ALLUVIUM) TAN-BROWN-GRAY, MIC., SOFT, MOIST, SANDY VERY SILTY CLAY
	15.50	15	11	18	1.0									GRAY, LOOSE, MOIST-WET, SILTY SAND WITH GRAVEL
	20.50	7	10	20	1.0									TAN-BROWN-WHITE, MIC., MED. DENSE, SAT., COARSE SAND W/ GRAVEL
	25.50	5	7	10	1.0									(RESIDUAL) BROWN-WHITE, MIC., MEDIUM-VERY DENSE, DRY, SILTY SAND
	30.50	28	38	23	1.0									
	34.70	35	33	23	1.0									
	39.70	100			0.5									
	44.70	100			0.5									(WEATHERED ROCK)
840.85	49.70	100			0.3									
Continued on the next page.														

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY								
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEK							GND WATER							
BORING NO B2-A		NORTHING 0.00		EASTING 0.00		0 HR 9.00ft								
ALIGNMENT L		BORING LOCATION 16+82.000		OFFSET 16.10ft LT		24 HR 9.00ft								
COLLAR ELEV 890.85ft		TOTAL DEPTH 50.00ft		START DATE 1/12/05		COMPLETION DATE 01/12/05								
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log B2-A, Page 2 of 2								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
840.85														BORING TERMINATED AT ELEV. 840.85 IN WEATHERED ROCK

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER						
BORING NO B2-B			NORTHING 0.00		EASTING 0.00		0 HR 9.10ft						
ALIGNMENT L			BORING LOCATION 16+85.000		OFFSET 12.90ft RT		24 HR 9.00ft						
COLLAR ELEV 891.55ft		TOTAL DEPTH 50.00ft		START DATE 1/25/05		COMPLETION DATE 01/25/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log B2-B, Page 1 of 2							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
891.55													
890.00													
5.70	1	1	2	1.0									
880.00	10.70	1	2	3	1.0								
15.70	5	3	4	1.0									
870.00	20.70	15	20	22	1.0								
25.70	25	64	36	0.7									
860.00	29.70	10	17	34	1.0								
34.70	26	42	58	1.0									
850.00	39.70	100		0.3									
841.55													

Ground Surface

Continued on the next page

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER						
BORING NO B2-B			NORTHING 0.00		EASTING 0.00		0 HR 9.10ft						
ALIGNMENT L			BORING LOCATION 16+85.000		OFFSET 12.90ft RT		24 HR 9.00ft						
COLLAR ELEV 891.55ft		TOTAL DEPTH 50.00ft		START DATE 1/25/05		COMPLETION DATE 01/25/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log B2-B, Page 2 of 2							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
841.55													

BORING TERMINATED AT ELEV. 841.55 IN WEATHERED ROCK

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER						
BORING NO EB2-A		NORTHING 0.00		EASTING 0.00		0 HR 8.00ft	24 HR N/A						
ALIGNMENT L		BORING LOCATION 17+38.000		OFFSET 12.20ft LT		24 HR N/A							
COLLAR ELEV 891.25ft		TOTAL DEPTH 43.50ft		START DATE 1/26/05		COMPLETION DATE 01/26/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH			DEPTH TO ROCK N/A			Log EB2-A, Page 1 of 1							
ELEV	DEPTH	BLOW CT			PEN	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in	(ft)	0	25	50	75	100			
891.25													Ground Surface
	4.30	1	1	2	1.0								(ROADWAY FILL) RED-ORANGE, SOFT, MOIST, SILTY SANDY CLAY
	9.30	1	1	1	1.0								(ALLUVIUM) GRAY, MOIST-WET, VERY LOOSE-LOOSE, CLAYEY SAND
880.00	14.30	2	3	3	1.0								(RESIDUAL) TAN-WHITE & GRAY-WHITE, MIC., MOIST-DRY, MEDIUM DENSE-DENSE, SILTY SAND
	19.30	7	6	7	1.0								(WEATHERED ROCK)
870.00	24.30	25	18	20	1.0								(WEATHERED ROCK)
	28.30	10	17	23	1.0								(WEATHERED ROCK)
860.00	33.30	29	47	53	0.9								(WEATHERED ROCK)
	38.30	52	48		0.8								(WEATHERED ROCK)
850.00	43.30	100			0.2								(WEATHERED ROCK)
847.75													BORING TERMINATED AT ELEV. 847.75 IN WEATHERED ROCK

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 33424.1.1		ID B-4060		COUNTY CATAWBA		GEOLOGIST J.K. STICKNEY							
SITE DESCRIPTION BRIDGE NO. 17 ON SR 1486 (LEE CLINE RD.) OVER CLINE CREEEK							GND WATER						
BORING NO EB2-B		NORTHING 0.00		EASTING 0.00		0 HR 7.90ft	24 HR N/A						
ALIGNMENT L		BORING LOCATION 17+26.000		OFFSET 16.00ft RT		24 HR N/A							
COLLAR ELEV 890.58ft		TOTAL DEPTH 44.35ft		START DATE 1/26/05		COMPLETION DATE 01/26/05							
DRILL MACHINE CME-550X			DRILL METHOD NWCAS/TRI-CONE			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log EB2-B, Page 1 of 1							
ELEV	DEPTH	BLOW CT			PEN	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in	(ft)	0	25	50	75	100			
890.58													Ground Surface
	4.10	1	3	2	1.0								(ROADWAY FILL) RED-ORANGE, MEDIUM STIFF, MOIST, SILTY SANDY CLAY
	9.10	0	1	2	1.0								(ALLUVIUM) GRAY, MOIST-WET, VERY LOOSE-LOOSE, CLAYEY SAND WITH GRAVEL AT BOTTOM
880.00	14.10	3	3	3	1.0								(RESIDUAL) TAN-WHITE & GRAY-WHITE, MIC., LOOSE-VERY DENSE, SILTY SAND
	19.10	4	3	4	1.0								(WEATHERED ROCK)
870.00	24.10	7	12	25	1.0								(WEATHERED ROCK)
	29.10	18	25	35	1.0								(WEATHERED ROCK)
860.00	34.10	60	40		1.0								(WEATHERED ROCK)
	39.10	71	29		0.6								(WEATHERED ROCK)
850.00	44.10	100			0.3								(WEATHERED ROCK)
846.23													BORING TERMINATED AT ELEV. 846.23 IN WEATHERED ROCK



SOIL AND ROCK TEST RESULTS

PROJECT: 33424.1.1 B-4060

COUNTY: CATAWBA

SITE DESCRIPTION: BRIDGE NO. 17 ON SR 1486 OVER CLINE CREEK

SHEET 16 OF 17

SOIL SAMPLE DATA

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	LL	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE
								C. SAND	F. SAND	SILT	CLAY	10	40	200	
SS-10	15.5 LT.	15+84 (EB1-A)	5.5-7.0	A-7-6(22)	0	48	20	2.4	6.1	51.1	40.4	100	99	93	
SS-11	15.5 LT.	15+84 (EB1-A)	10.5-12.0	A-4(1)	1	28	5	7.1	48.3	22.4	22.2	100	98	53	
SS-6	18.0 LT.	16+39 (B1-A)	5.0-6.5	A-4(2)	0	33	9	16.6	44.0	25.3	14.1	100	92	47	
SS-7	18.0 LT.	16+39 (B1-A)	15.0-16.5	A-1-b(0)	18	24	NP	57.8	28.7	9.5	4.0	57	33	10	
SS-8	18.0 LT.	16+39 (B1-A)	20.0-21.5	A-2-4(0)	21	33	NP	35.8	46.3	13.9	4.0	100	82	26	
SS-9	18.0 LT.	16+39 (B1-A)	29.0-30.5	A-2-4(0)	58	32	NP	54.3	32.3	11.3	2.0	86	53	15	
SS-12	13.7 RT.	16+21.5 (B1-B)	5.3-6.8	A-7-6(15)	2	43	15	2.8	12.3	5.05	34.3	100	99	89	
SS-1	16.1 LT.	16+82 (B2-A)	5.5-7.0	A-7-6(19)	3	45	18	3.2	9.1	45.3	42.4	100	98	91	
SS-2	16.1 LT.	16+82 (B2-A)	10.5-12.0	A-2-4(0)	6	26	4	48.1	30.9	12.9	8.1	87	57	22	
SS-3	16.1 LT.	16+82 (B2-A)	15.-17.0	A-1-b(0)	19	24	NP	83.2	13.3	3.4	0.0	91	30	4	
SS-4	16.1 LT.	16+82 (B2-A)	20.5-22.0	A-2-4(0)	30	34	NP	50.5	38.2	9.3	2.0	99	72	16	
SS-5	16.1 LT.	16+82 (B2-A)	30.5-32.0	A-2-4(0)	76	29	NP	46.3	36.1	13.6	4.0	94	65	22	
SS-13	16.0 RT.	17+26 (EB2-B)	4.1-5.6	A-6(9)	5	38	14	17.0	19.8	28.9	34.3	100	90	69	
SS-14	16.0 RT.	17+26 (EB2-B)	9.1-10.6	A-2-4(0)	3	29	NP	45.1	37.4	7.5	10.1	100	72	22	
SS-15	16.0 RT.	17+26 (EB2-B)	19.1-20.6	A-2-5(0)	7	45	NP	28.5	55.8	13.7	2.0	100	90	24	
SS-16	16.0 RT.	17+26 (EB2-B)	24.1-25.6	A-2-4(0)	37	30	NP	49.1	37.4	10.5	3.0	95	66	18	

**GEOTECHNICAL UNIT FIELD SCOUR REPORT**

PROJECT: 33424.1.1 TIP NO.: B-4060 COUNTY: CATAWBA

DESCRIPTION(1): BRIDGE NO. 17 ON SR 1486 (LEE CLINE ROAD) OVER CLINE CREEK

◆ **INFORMATION ON EXISTING BRIDGES** Information obtained from  Field Inspection  
 Microfilm (Reel:            Position:            )  
 Other

COUNTY BRIDGE NO. 17 BRIDGE LENGTH 40 NO. BENTS 3 NO. BENTS IN: CHANNEL 2 FLOODPLAIN 3

FOUNDATION TYPE: CONCRETE ABUTMENTS

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: EB2-B DUE TO DRAIN PIPE FOR ACCESS TO FIELD (EROSION), EB2-A UPSTREAM SIDE (EROSION)  
RECENT INSTALLATION OF WATER LINE POSSIBLE FACTOR

INTERIOR BENTS: NONE NOTED

CHANNEL BED: NONE NOTED

CHANNEL BANKS: SLOUGHING / UNDERMINING

◆ **EXISTING SCOUR PROTECTION:**

TYPE(3): NONE

EXTENT(4): N/A

EFFECTIVENESS(5): N/A

OBSTRUCTIONS(6) (DAMS, DEBRIS, ETC.): TREES, TREE LIMBS

◆ **DESIGN INFORMATION**

CHANNEL BED MATERIAL(7) (Sample Results Attached): SAND, GRAVEL, AND BOULDERS

CHANNEL BANK MATERIAL(8) (Sample Results Attached): SS-7, GRAY-BROWN, MIC., MOIST, MEDIUM DENSE, SAND WITH QUARTZ  
GRAVEL (ALLUVIUM)

CHANNEL BANK COVER(10): MATURE TREES, GRASS, SHRUBS

FLOOD PLAIN WIDTH(11): 14+85 TO 19+25 -L-

FLOOD PLAIN COVER(12): MATURE TREES, GRASS, SHRUBS

STREAM IS:  DEGRADING  AGGRADING (13)OTHER OBSERVATIONS AND COMMENTS: ROADWAY FILL IS VERY SOFT, DRILLING WATER COMING OUT OF CRACKS IN PAVEMENT  
15-20' AWAY.◆  
◆  
◆  
◆ **DESIGN INFORMATION CONT.**

CHANNEL MIGRATION TENDENCY(14): SLIGHT

GEOTECHNICAL ADJUSTED SCOUR ELEVATIONS (15): Two borings were performed at each bent location. Following are historic scour elevations based on the alluvial / residual soil contact.

At Bent 1 the alluvial - residual horizon for boring B1-A occurs at elevation 866' while the contact in boring B1-B occurs at elevation 871'.  
For Bent 2 the alluvial - residual boundary occurs at elevation 873' in boring B2-A and 871' in boring B2-B.At this time the Geotechnical Engineering Unit can find no reason to adjust the theoretical scour predicted on the NCDOT Hydraulic Design Report.  
Thus the 100 year scour elevation of 870' given for Bent 1 and 860' given for Bent 2 remain unaltered.

REPORTED BY: 1/26/05 DATE: J.K.S. / J.E.B.

**INSTRUCTIONS**

- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE GIVING ROUTE NUMBER AND BODY OF WATER CROSSED.
- (2) NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING, SLOUGHING, SCOUR LOCATIONS DEGRADATIONS, ETC.)
- (3) NOTE ANY EXISTING SCOUR PROTECTION (RIPRAP, ETC.)
- (4) DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION.
- (5) DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING.
- (6) NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC.
- (7) DESCRIBE THE CHANNEL BED MATERIAL; A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- (8) DESCRIBE THE CHANNEL BANK MATERIAL; A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- (9) DESCRIBE THE FOUNDATION BEARING MATERIAL
- (10) DESCRIBE THE BANK COVERING (GRASS, TREES, RIPRAP, NONE, ETC.)
- (11) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
- (12) DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
- (13) CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING.
- (14) DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE Laterally DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
- (15) GIVE THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION EXPECTED OVER THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS). THIS CAN BE GIVEN AS AN ELEVATION RANGE ACROSS THE SITE, OR ON A BENT BY BENT BASIS WHERE VARIATIONS EXIST. DISCUSS RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION. IF THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVERY PERCENTAGE; PERCENT RQD; DIFFERENTIAL WEATHERING; SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES; OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.