

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

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PROJ. REFERENCE NO. 33765.1.1 B-4552 F.A. PROJ. \_\_\_\_\_  
 COUNTY IREDELL  
 PROJECT DESCRIPTION BRIDGE NO. 100 ON SR 1526 OVER  
BUFFALO SHOALS 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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL

R.W. TODD

M.L. SMITH

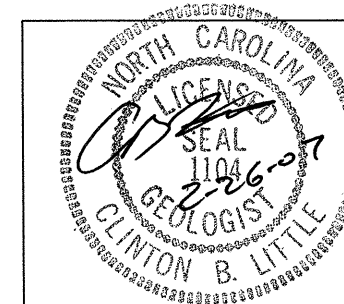
A.C. SMITH

INVESTIGATED BY C.B. LITTLE

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE FEBRUARY 2007



**PROJECT: 33765.1.1 ID: B-4552**

DRAWN BY: J.K. McClure

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.





STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

February 16, 2007

STATE PROJECT: 33765.1.1 (B-4552)  
FEDERAL PROJECT: BRZ-1526(3)  
COUNTY: Iredell  
DESCRIPTION: Bridge 100 over Buffalo Shoals Creek on SR 1526

#### PROJECT DESCRIPTION

The project is located in west-central Iredell County, east of Hickory. It is about two miles east of the Catawba River (Lookout Shoals Lake) and two miles north of I-40 near the Sharon crossroads community. The proposed structure as investigated is two spans at 55' and 55' on a skew of 120°. End Bent Two is designed as a vertical abutment. The overall width is 36 feet. Buffalo Shoals Creek, at the crossing, is about 40' wide with a normal flow depth of about one foot. The normal water surface elevation is 855.3'. The existing (and proposed) 100 year flood elevation is 864.4 per the Hydraulics Unit report.

The Geotechnical Unit field investigation was conducted in November 2006. Five test borings were performed with a CME 550 drill rig utilizing a combination of 8' hollow stem augers, NW casing (with advancer), 2-7/8" tri-cone bit, and/or NQ wireline coring tools. Drilling fluid was water pumped from the stream without additives. All borings terminated in weathered or crystalline rock.

#### PHYSIOGRAPHY AND GEOLOGY

The project is located in the piedmont region of North Carolina, Inner Piedmont Geologic Belt, in a region mapped as the unit Cza, amphibolite. The rock core obtained is described as biotite gneiss and amphibolite. There are also some thin layers of calc-silicate rock. The rock is moderately weathered to fresh, and generally hard.

Soils encountered on the site include existing roadway embankment fill soils, alluvial soils bordering the stream, and residual soils derived from the parent rock. The fill soils were 12 to 15' thick, silty sandy clay (A-7) on the End Bent One side, silty clayey sand (A-2-4) at End Bent Two. Alluvial soils encountered at End Bent One were six to eight feet thick consisting of medium stiff clayey sandy silt (A-4). At Bent One (in the channel) they consisted of three to four feet of loose to medium dense sand and gravel (A-1-A). The residual soils varied greatly in thickness. They were predominantly silty coarse sands with mica that graded to weathered rock of similar composition.

Four of the five borings terminated in or on crystalline rock, the boring at End Bent Two terminated in weathered rock.

#### FOUNDATION MATERIALS

##### End Bent One:

Eight to twelve feet of silty sandy clay (embankment fill) rests on five to eight feet of medium stiff clayey sandy silt (alluvium). Residual soil/weathered rock was encountered at a depth of 16-17 feet (Elevation 854-855). Sixteen feet of residual soil was present on the left side; no residual soil was present on the right where the alluvium rests on weathered rock. The top of weathered rock elevation was 839 on the left and 854 on the right. Both borings terminated with tri-cone bit refusal on crystalline rock; at elevation 837 (left) and 843.5 right.

Bent One: The borings were conducted through the existing bridge deck and were collared in the stream channel. Water depth was about six inches. Stream channel sand and gravel was three to four feet thick. Residual soil below the channel sand was one to five feet thick, dense to very dense, micaceous, silty coarse sand. Weathered rock was encountered at four to eight feet depth, elevation 847.5 (left) and 851 (right). Rock core was obtained in both borings. Coring was performed from 13.1' to 32.9' depth (Elevation 841.9-822.1) in boring B1-A (left side) and from 20.6' to 28.0' (834.4-827.0) in boring B1-B (right side). The upper two core runs on the left side had lower recovery (67% and 83%); recovery was 100% elsewhere. RQD was lower in the same interval (33% and 77%), 79% in the third run (left side), 100% elsewhere. The rock was moderately weathered in the lower REC/RQD value intervals, otherwise slightly weathered to fresh. Most of the rock was described as hard. The rock is biotite gneiss, amphibolite, and calc-silicate rock.

##### End Bent Two:

Roadway embankment fill was 15' thick, consisting of loose silty clayey sand (A-2-4). The fill was on residual soil, there was no alluvium. The residual soil layer was five feet thick, consisting of silty coarse sand grading to weathered rock. The top of weathered rock was at 18.5' depth, elevation 852.5.

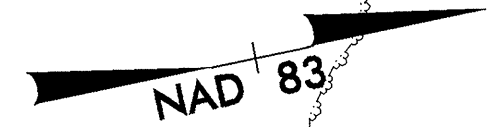
#### GROUNDWATER

Groundwater as measured in the end bent borings was near elevation 858. The interior borings were in the stream channel (elevation 855).

Respectfully submitted,

Clint Little  
Regional Geological Engineer

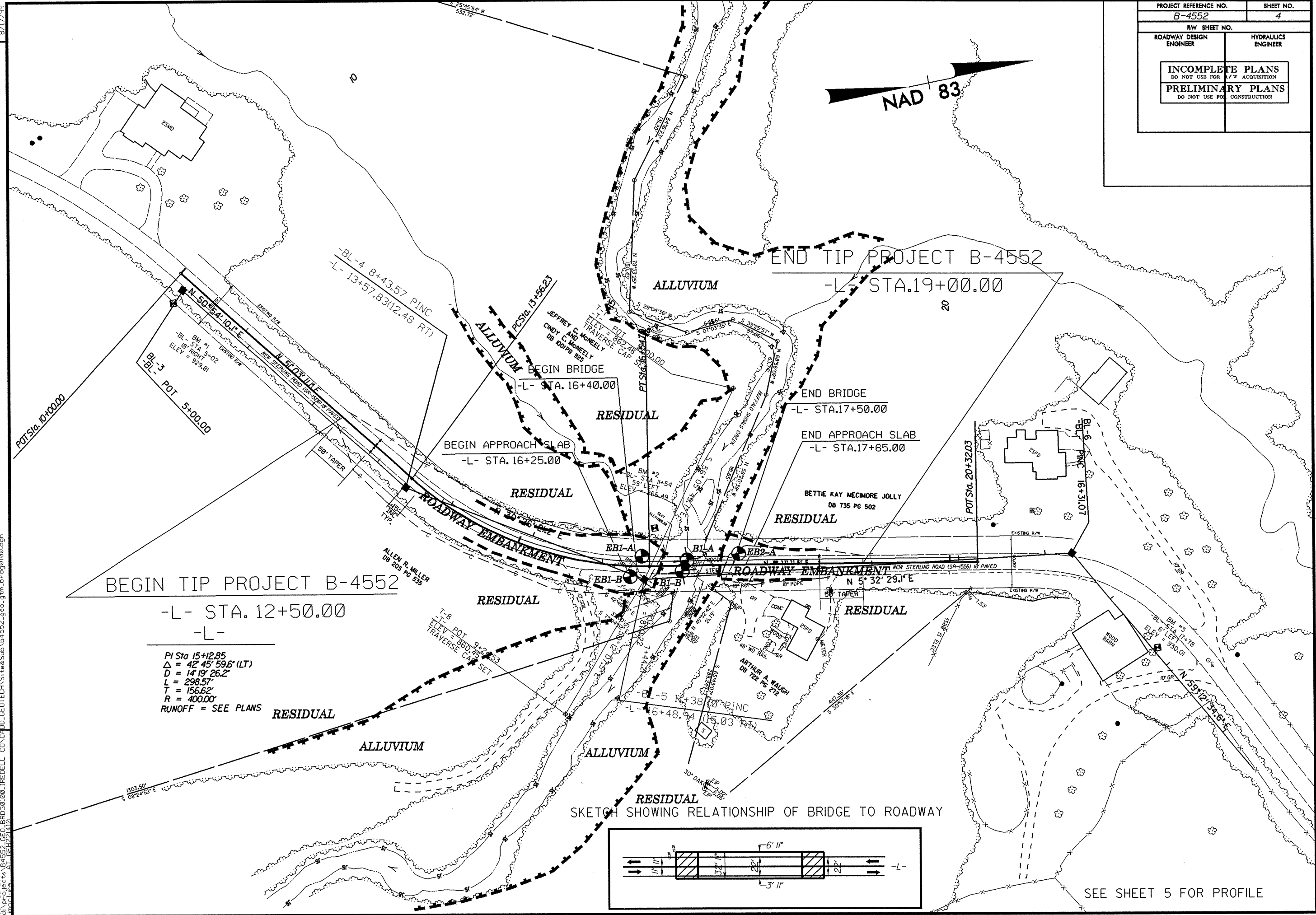
PROJECT REFERENCE NO.		SHEET NO.	
B-4552		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



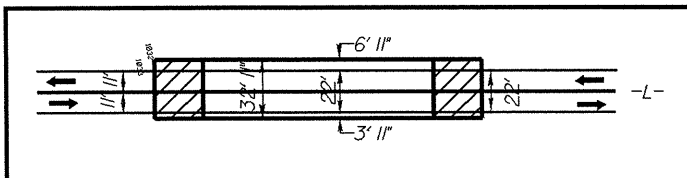
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REVISIONS

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SKETCH SHOWING RELATIONSHIP OF BRIDGE TO ROADWAY



SEE SHEET 5 FOR PROFILE

# PROFILE -L-

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1500 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 862.6 FT
BASE DISCHARGE	= 2300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 864.4 FT
OVERTOPPING DISCHARGE	= 10000 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 873.2 FT
DATE OF SURVEY	= 4/27/06
W.S. ELEVATION AT DATE OF SURVEY	= 855.3 FT

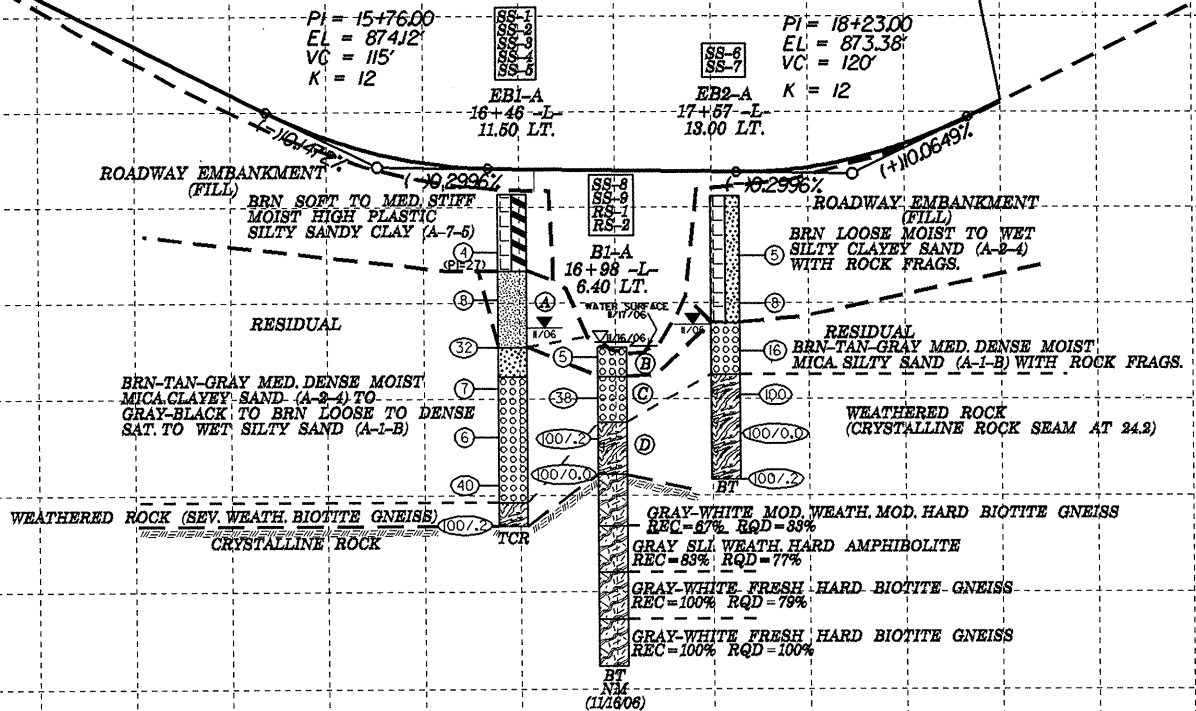
**BEGIN GRADE**  
 -L- STA 12+50.00  
 EL. 907.20

**END GRADE**  
 -L- STA 19+00.00  
 EL. 881.13

**BM #2: RR SPIKE**  
 IN 12 INCH POPLAR 59 FEET  
 LT. OF -L- 16+61.63  
 44.34' LT.  
 ELEV. 865.48

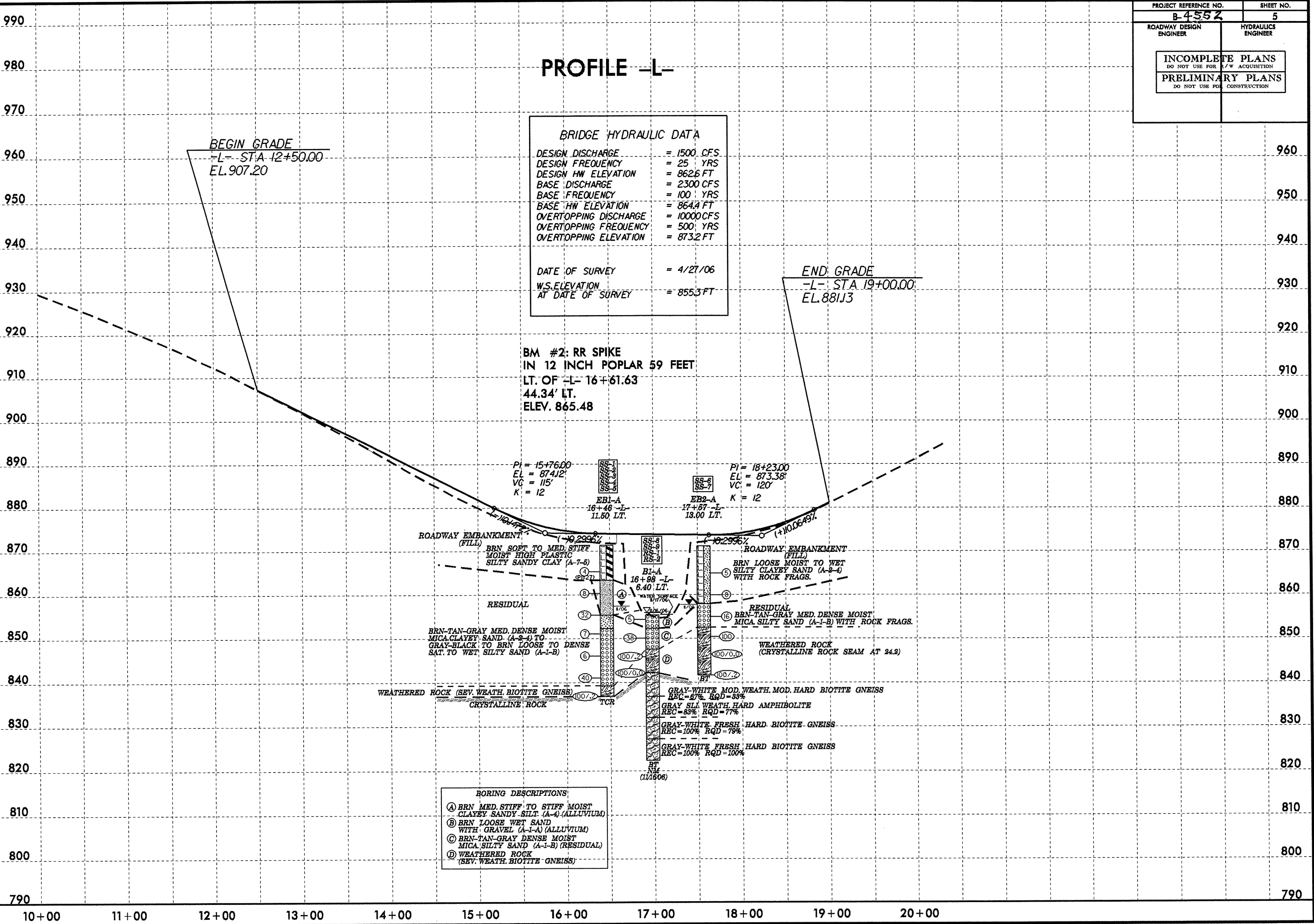
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 EL = 874.12'  
 VC = 115'  
 K = 12

PI = 18+23.00  
 EL = 873.38'  
 VC = 120'  
 K = 12

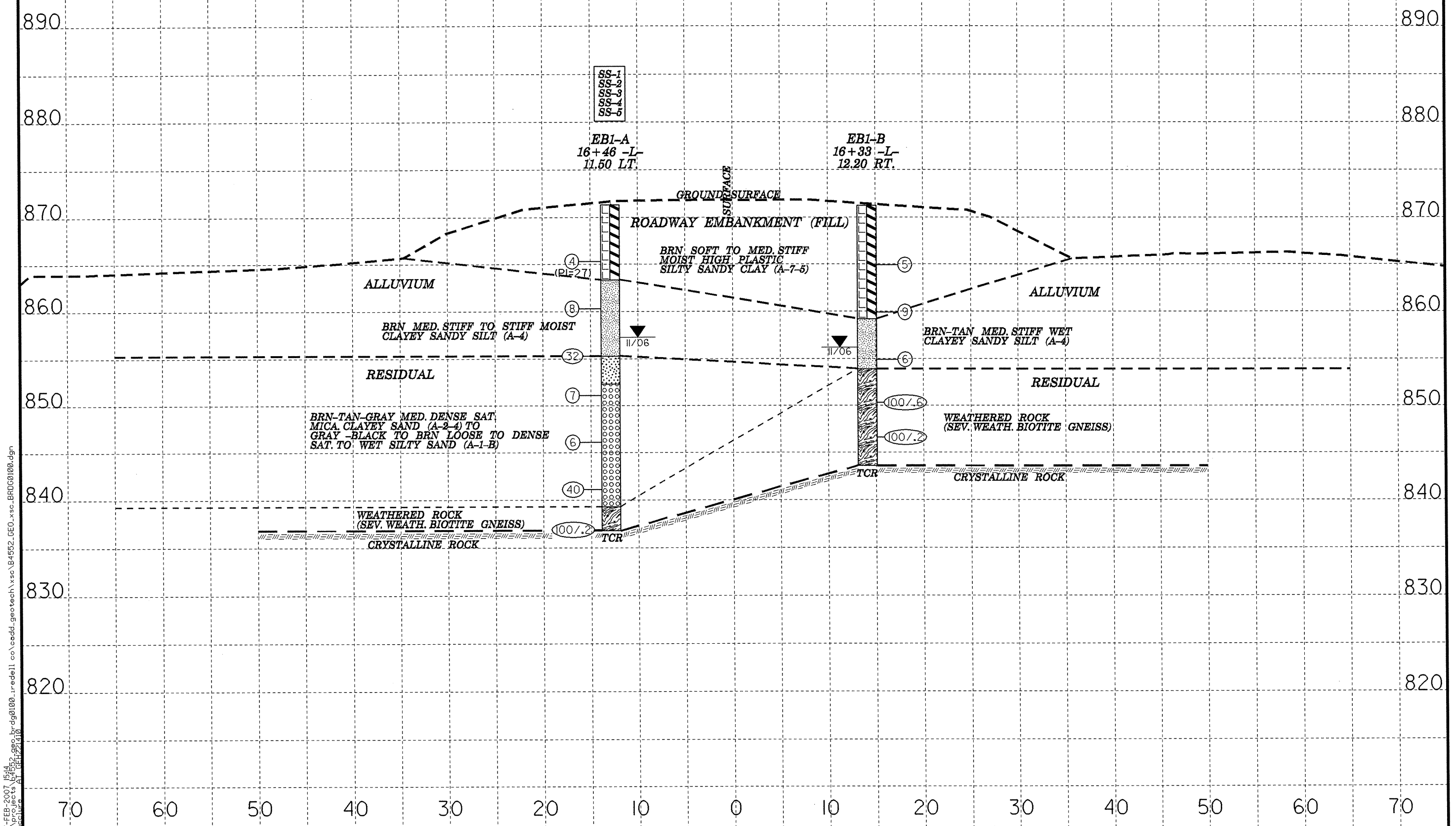


- BORING DESCRIPTIONS:**
- (A) BRN MED. STIFF TO STIFF MOIST CLAYEY SANDY SILT (A-4) (ALLUVIUM)
  - (B) BRN LOOSE WET SAND WITH GRAVEL (A-1-A) (ALLUVIUM)
  - (C) BRN-TAN-GRAY DENSE MOIST MICA SILTY SAND (A-1-B) (RESIDUAL)
  - (D) WEATHERED ROCK (SEV. WEATH. BIOTITE GNEISS)

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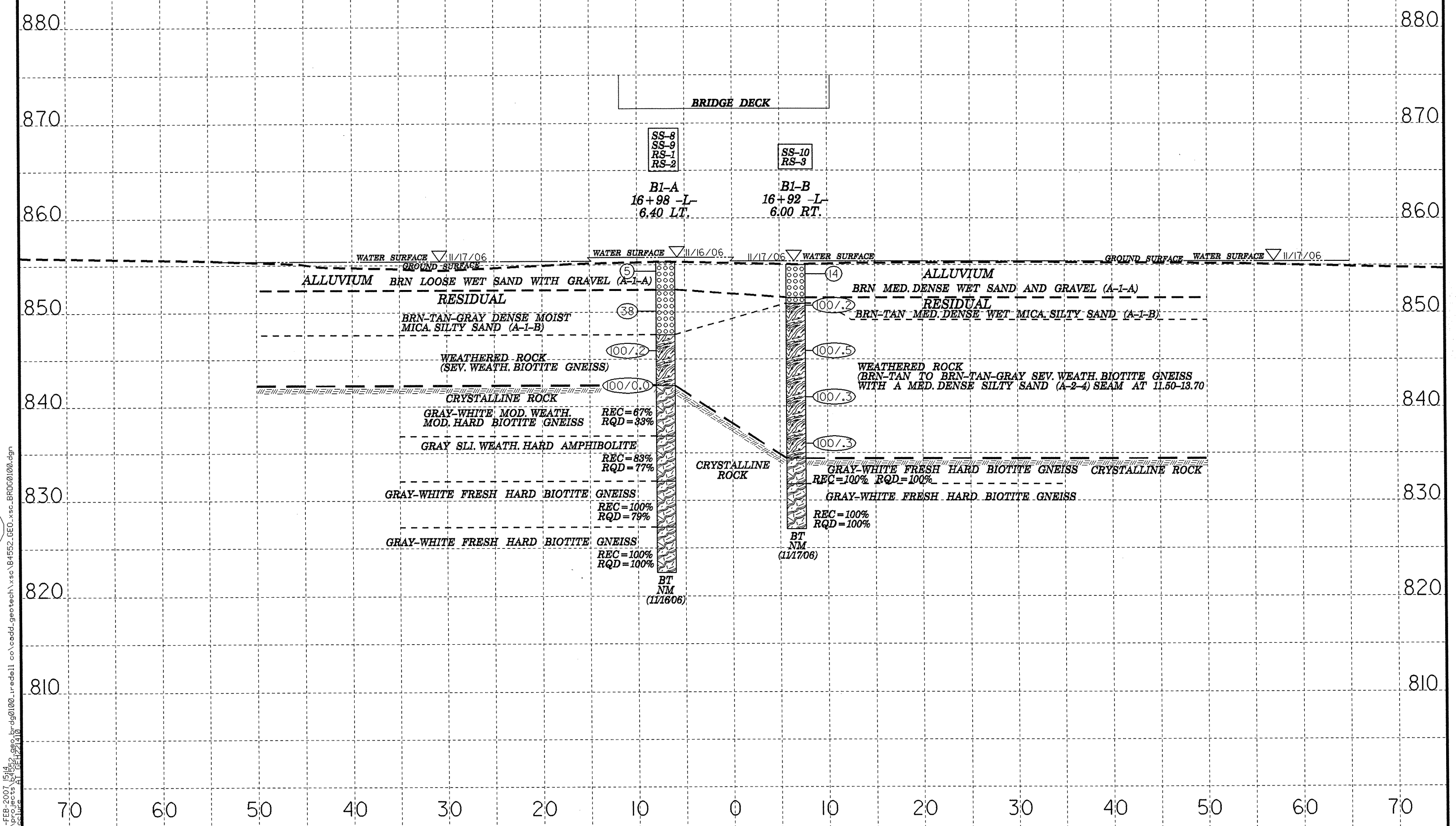


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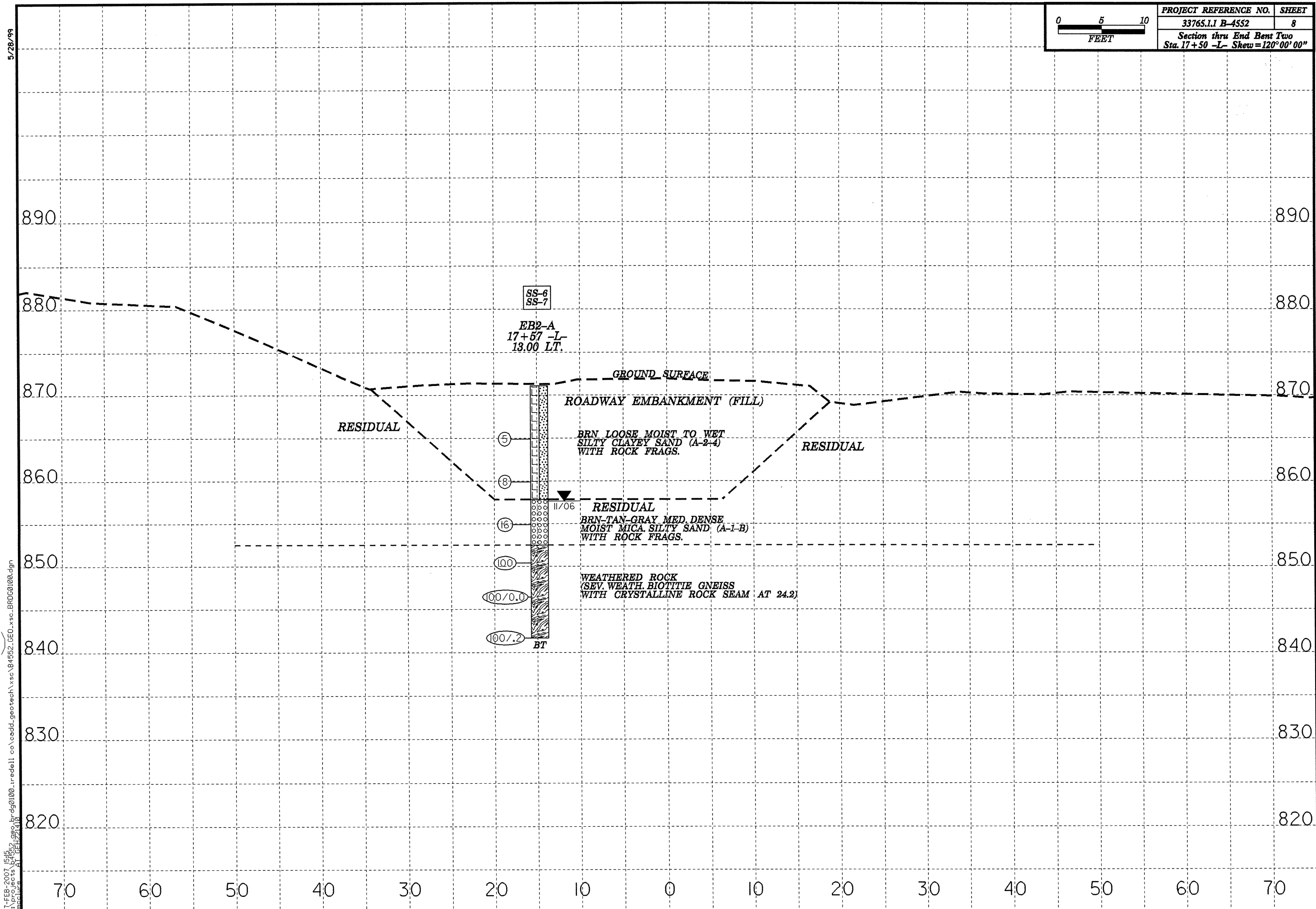
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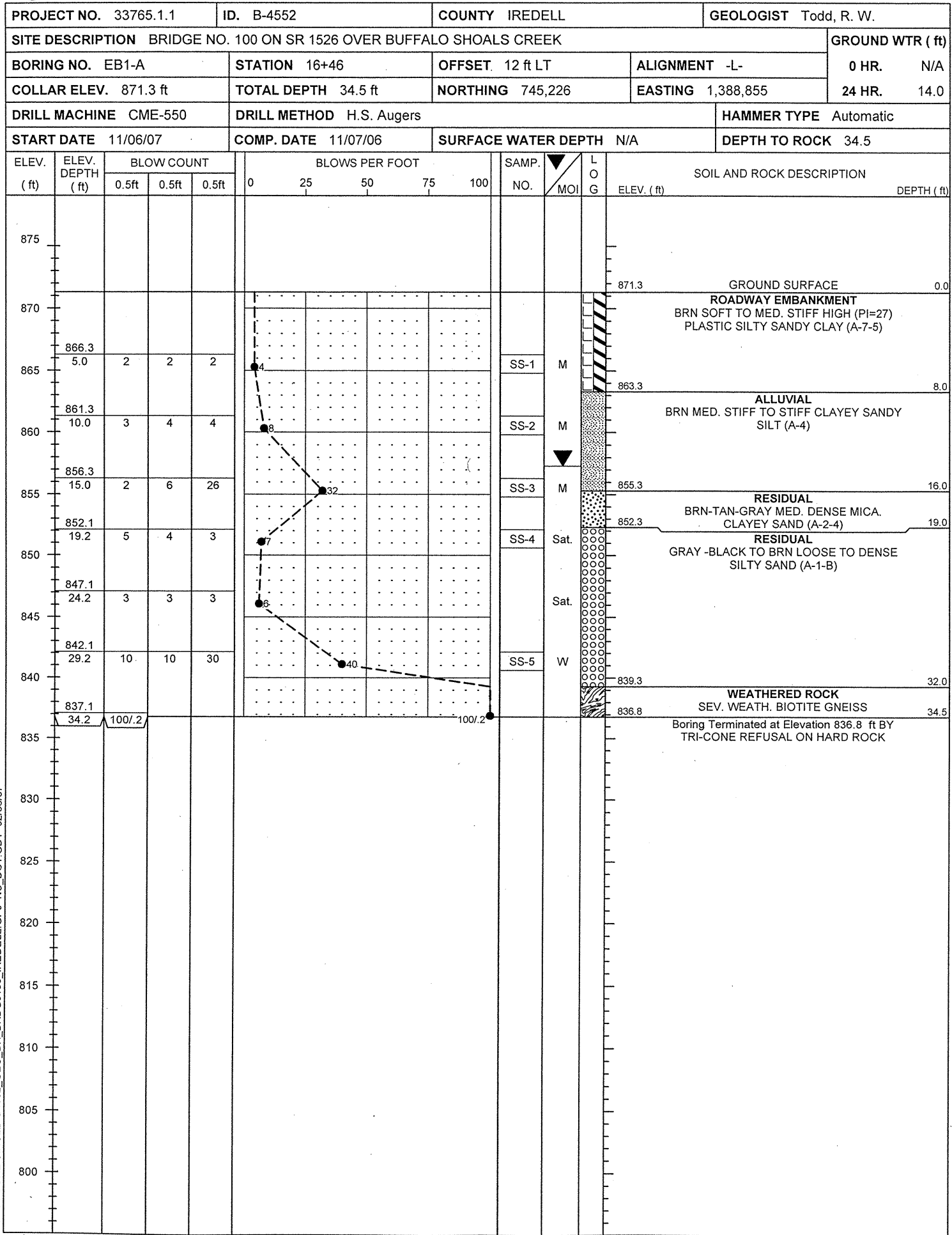
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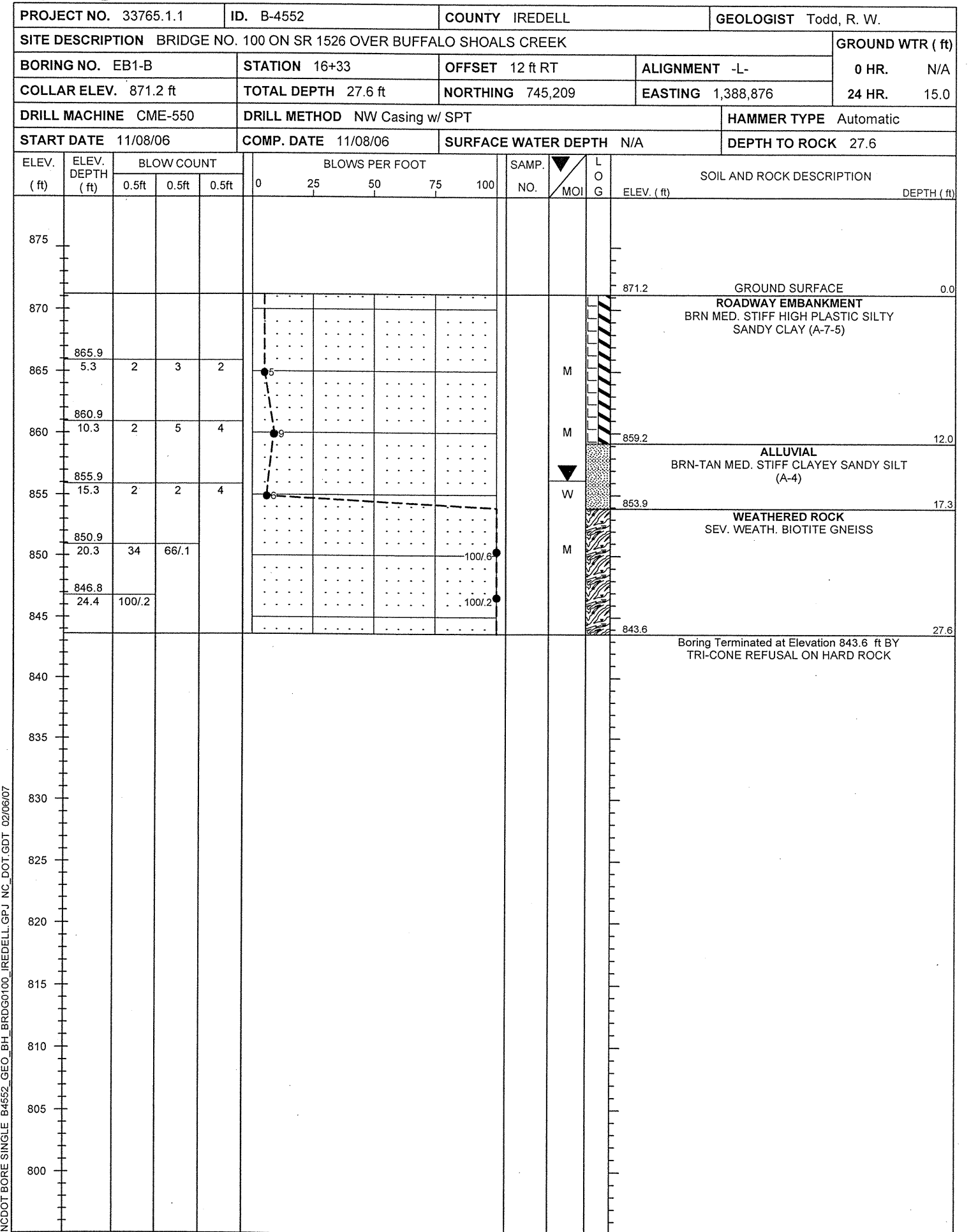
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NCDOT BORE SINGLE B4552\_GEO\_BH\_BRD0100\_IREDELL.GPJ NC\_DOT.GDT 02/06/07



NCDOT BORE SINGLE B4552\_GEO\_BH\_BRD0100\_IREDELL.GPJ NC\_DOT.GDT 02/06/07

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL UNIT CORE BORING REPORT**

PROJECT NO. 33765.1.1	ID. B-4552	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION BRIDGE NO. 100 ON SR 1526 OVER BUFFALO SHOALS CREEK			GROUND WTR (ft)
BORING NO. B1-A	STATION 16+98	OFFSET 6 ft LT	ALIGNMENT -L-
COLLAR ELEV. 855.3 ft	TOTAL DEPTH 32.9 ft	NORTHING 745,277	EASTING 1,388,868
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT Core	HAMMER TYPE Automatic	
START DATE 11/16/06	COMP. DATE 11/16/06	SURFACE WATER DEPTH 0.5	DEPTH TO ROCK 13.1

PROJECT NO: 33765.1.1      PROJECT ID: B-4552      COUNTY: IREDELL      GEOLOGIST: R.W. TODD  
 SITE DESCRIPTION: BRIDGE 100 ON SR 1526 OVER BUFFALO SHOALS CREEK      DRILLER: M.L. SMITH  
 BORING NO: B1-A      BORING LOCATION (STA): 16+98 -L-      OFFSET: 6.40' LT.  
 COLLAR ELEV: 855.30'      PERSONNEL:      CORE SIZE: NXWL  
 TOTAL DEPTH: 32.90'      DRILL MACHINE: CME-550      DATE STARTED: 11/16/06  
 TOTAL RUN: 19.80'      DRILL EQUIP:      DATE COMPLETED: 11/16/06

ELEV. (ft)	ELEV. DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
		0.5ft	0.5ft	0.5ft	0	25	50	75	100				
860													
855.3	0.0	2	2	3						SS-8	W	GROUND SURFACE	0.0
851.1	4.2	20	20	18						SS-9	M	ALLUVIAL BRN LOOSE SAND WITH GRAVEL (A-1-A)	3.0
847.6												RESIDUAL BRN-TAN-GRAY DENSE MICA SILTY SAND (A-1-B)	7.7
842.2	13.1	100/0.0								RS-1		WEATHERED ROCK SEV. WEATH. BIOTITE GNEISS	13.1
836.8												CRYSTALLINE ROCK GRAY-WHITE MOD. WEATH. MOD. HARD BIOTITE GNEISS REC=67% RQD=33%	18.5
832.0										RS-2		CRYSTALLINE ROCK GRAY SLI. WEATH. HARD AMPHIBOLITE REC=83% RQD=77%	23.3
827.2												CRYSTALLINE ROCK GRAY-WHITE FRESH HARD BIOTITE GNEISS REC=100% RQD=79%	28.1
822.4												CRYSTALLINE ROCK GRAY-WHITE FRESH HARD BIOTITE GNEISS REC=100% RQD=100%	32.9
												Boring Terminated at Elevation 822.4 ft IN FRESH HARD BIOTITE GNEISS	

ELEV. (FT)	DEPTH (FT)	DRILL RATE (MIN/1.0 FT)	RUN NO.	REC % (FT)	RQD % (FT)	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
841.90	13.10	1.5 1.25 1.25 1.25	1	67	33	RS-1	GRAY/WHITE, MOD. WEATH. & MOD. HARD, BIOTITE GNEISS.  FS = CLOSE
836.50	18.50	1.8 1.8 1.8	2	83	77	RS-2	GRAY, SLI. WEATH., HARD, AMPHIBOLITE.  FS = CLOSE TO MOD. CLOSE
831.70	23.30	2.0 2.0 2.0	3	100	79		GRAY/WHITE, FRESH, HARD, BIOTITE GNEISS.  FS = CLOSE TO MOD. CLOSE
826.90	28.10	2.0 2.0 2.0	4	100	100		GRAY/WHITE, FRESH, HARD, BIOTITE GNEISS.  FS = CLOSE TO MOD. CLOSE
822.10	32.90	2.0					FS = CLOSE TO MOD. CLOSE

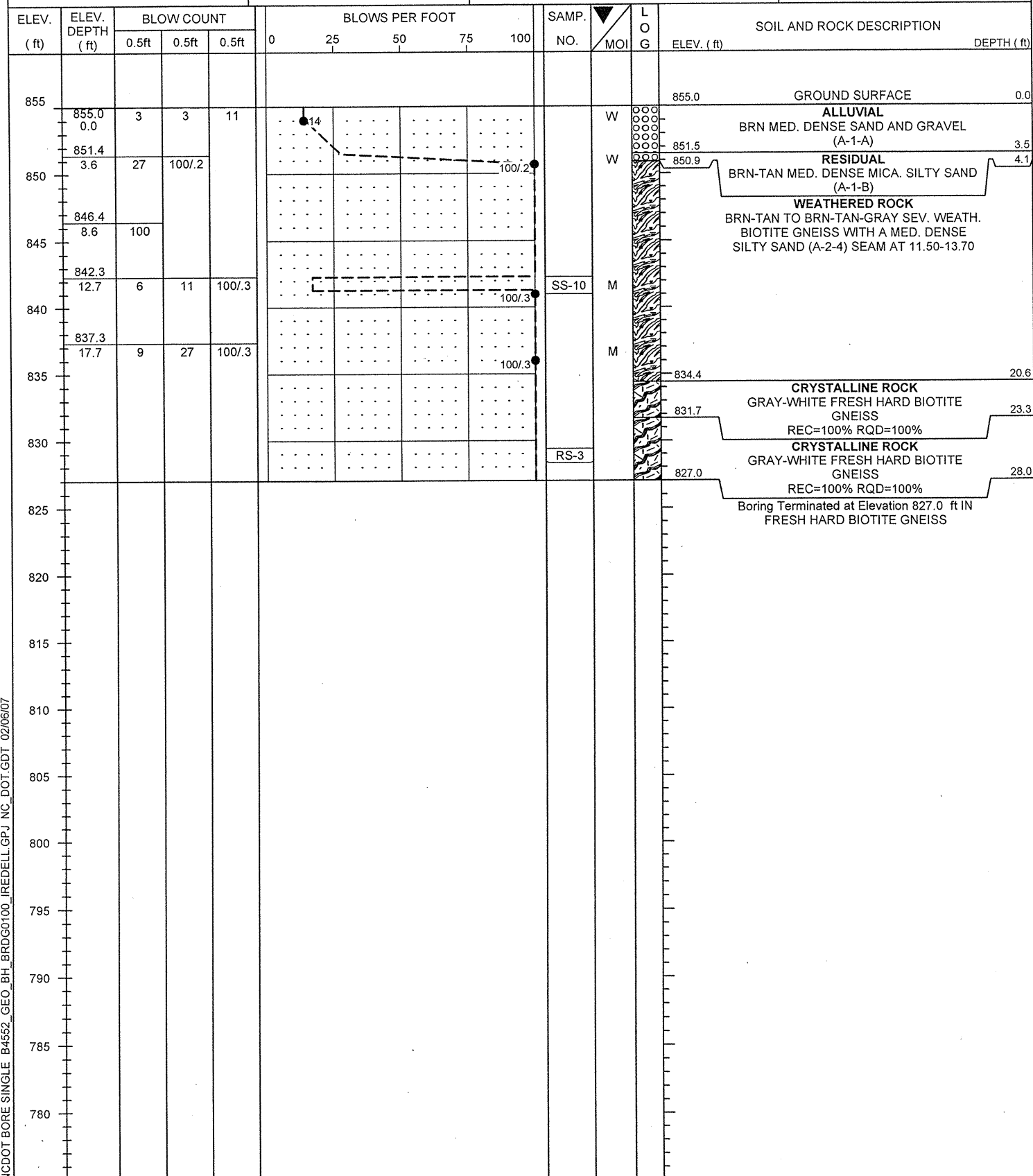
**NOTES**

NCDOT BORE SINGLE B4552\_GEO\_BH\_BRD0100\_IREDELL.GPJ NC\_DOT\_GDT\_02/06/07

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL UNIT CORE BORING REPORT**

PROJECT NO. 33765.1.1	ID. B-4552	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION BRIDGE NO. 100 ON SR 1526 OVER BUFFALO SHOALS CREEK			GROUND WTR (ft)
BORING NO. B1-B	STATION 16+92	OFFSET 6 ft RT	ALIGNMENT -L-
COLLAR ELEV. 855.0 ft	TOTAL DEPTH 28.0 ft	NORTHING 745,269	EASTING 1,388,879
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT Core	HAMMER TYPE Automatic	
START DATE 11/17/06	COMP. DATE 11/17/06	SURFACE WATER DEPTH 0.4	DEPTH TO ROCK 20.6

PROJECT NO: 33765.1.1      PROJECT ID: B-4552      COUNTY: IREDELL      GEOLOGIST: R.W. TODD  
 SITE DESCRIPTION: BRIDGE 100 ON SR 1526 OVER BUFFALO SHOALS CREEK      DRILLER: M.L. SMITH  
 BORING NO: B1-B      BORING LOCATION (STA): 16+91.50 -L-      OFFSET: 6.0' RT.  
 COLLAR ELEV: 855.00'      PERSONNEL:      CORE SIZE: NXWL  
 TOTAL DEPTH: 28.00'      DRILL MACHINE: CME-550      DATE STARTED: 11/17/06  
 TOTAL RUN: 6.40'      DRILL EQUIP:      DATE COMPLETED: 11/17/06



ELEV. (FT)	DEPTH (FT)	DRILL RATE (MIN/1.0 FT)	RUN NO.	REC % (FT)	RQD % (FT)	SAMPLE NO.	FIELD CLASSIFICATION AND REMARKS
855.0	0.0						GROUND SURFACE
851.5	3.5						ALLUVIAL BRN MED. DENSE SAND AND GRAVEL (A-1-A)
850.9	4.1						RESIDUAL BRN-TAN MED. DENSE MICA. SILTY SAND (A-1-B)
846.4	8.6	1.5	1	100	100		WEATHERED ROCK BRN-TAN TO BRN-TAN-GRAY SEV. WEATH. BIOTITE GNEISS WITH A MED. DENSE SILTY SAND (A-2-4) SEAM AT 11.50-13.70
842.3	12.7	1.5					
842.3	12.7	1.5	2	100	100		GRAY/WHITE, FRESH, HARD, BIOTITE GNEISS.
837.3	17.7	1.5				RS-3	FS = CLOSE
837.3	17.7	1.5					GRAY/WHITE, FRESH, HARD, BIOTITE GNEISS.
834.4	20.6	1.5					CRYSTALLINE ROCK GRAY-WHITE FRESH HARD BIOTITE GNEISS
831.7	23.3	1.5					REC=100% RQD=100%
827.0	28.0	1.5					CRYSTALLINE ROCK GRAY-WHITE FRESH HARD BIOTITE GNEISS
827.0	28.0	1.5					REC=100% RQD=100%
827.0	28.0						Boring Terminated at Elevation 827.0 ft IN FRESH HARD BIOTITE GNEISS

NOTES

PROJECT NO. 33765.1.1	ID. B-4552	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION BRIDGE NO. 100 ON SR 1526 OVER BUFFALO SHOALS CREEK			GROUND WTR (ft)
BORING NO. EB2-A	STATION 17+57	OFFSET 13 ft LT	ALIGNMENT -L-
COLLAR ELEV. 871.1 ft	TOTAL DEPTH 29.4 ft	NORTHING 745,336	EASTING 1,388,870
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic	
START DATE 11/15/06	COMP. DATE 11/15/06	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV. (ft)	ELEV. 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)	
875													871.1	0.0	GROUND SURFACE
870															ROADWAY EMBANKMENT BRN LOOSE SILTY CLAYEY SAND (A-2-4) WITH ROCK FRAGS.
865.9	5.2	3	2	3						SS-6	M				
860.9	10.2	3	5	3							W				
855.9	15.2	9	8	8						SS-7	M		857.8	13.3	RESIDUAL BRN-TAN-GRAY MED. DENSE MICA. SILTY SAND (A-1-B) WITH ROCK FRAGS.
850.9	20.2	100/5											852.5	18.6	WEATHERED ROCK SEV. WEATH. BIOTITE GNEISS WITH CRYSTALLINE ROCK SEAM AT 24.2
846.9	24.2	11	100/0.0												
841.9	29.2	100/2													
840															Boring Terminated at Elevation 841.7 ft IN WEATHERED ROCK

NCDOT BORE SINGLE B4552\_GEO\_BH\_BRDGG0100\_IREDELL.GPJ\_NC\_DOT.GDT 02/06/07

TEST RESULTS

PROJECT: 33765.1.1 B-4552

COUNTY: IREDELL

SITE DESCRIPTION: BRIDGE NO. 100 ON SR 1526 OVER BUFFALO SHOALS CREEK

SOIL SAMPLE RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			UNIT WT. (d)	VOID RATIO
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
<b>EB1-A</b>																
SS-1	12.0 LT.	16+46	5.00-6.50	A-7-5(16)	4	59	27	19.9	17.3	10.7	52.2	96	83	63		
SS-2	12.0 LT.	16+46	10.00-11.50	A-4(1)	8	34	10	28.7	32.3	14.9	24.1	93	76	40		
SS-3	12.0 LT.	16+46	16.00-16.50	A-2-4(0)	32	30	NP	53.8	26.3	5.9	14.0	80	53	18		
SS-4	12.0 LT.	16+46	19.20-20.70	A-1-b(0)	7	35	NP	53.2	25.9	12.9	8.0	75	44	19		
SS-5	12.0 LT.	16+46	29.20-30.70	A-1-b(0)	40	31	NP	51.8	28.5	11.7	8.0	77	47	19		
<b>B1-A</b>																
SS-8	6.0 LT.	16+98	0.00-1.50	A-1-a(0)	5	26	NP	68.3	22.8	6.9	2.0	32	15	4		
SS-9	6.0 LT.	16+98	4.20-5.70	A-1-b(0)	38	34	NP	39.5	40.7	15.7	4.0	53	40	14		
<b>B1-B</b>																
SS-10	6.0 RT.	16+92	12.70-14.00	A-2-4(0)	100+	37	NP	34.3	50.2	13.5	2.0	81	66	17		
<b>EB2-A</b>																
SS-6	13.0 LT.	17+57	5.20-6.70	A-2-4(0)	5	34	7	36.7	28.2	17.0	18.1	62	47	24		
SS-7	13.0 LT.	17+57	15.20-16.70	A-1-b(0)	16	28	NP	51.2	29.6	11.2	8.1	75	49	18		

ROCK SAMPLE RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	RQD	UNIT WT	Q(MPa) (MPsi)	E(MPa) (MPsi)
<b>B1-A</b>							
RS-1	6.0 LT.	16+98 -L-	13.10-13.70	33%		CURRENTLY BEING TESTED	
RS-2	6.0 LT.	16+98 -L-	19.10-19.85	77%		CURRENTLY BEING TESTED	
<b>B1-B</b>							
RS-3	6.0 RT.	16+91.50 -L-	25.60-26.60	100%		CURRENTLY BEING TESTED	



# FIELD SCOUR REPORT

WBS: 33765.1.1 TIP: B-4552 COUNTY: IREDELL

DESCRIPTION(1): BRIDGE 100 ON SR 1526 OVER BUFFALO SHOALS CREEK

### EXISTING BRIDGE

Information from: Field Inspection  Microfilm \_\_\_\_\_ (reel \_\_\_\_\_ pos: \_\_\_\_\_)  
 Other (explain) \_\_\_\_\_

Bridge No.: 100 Length: 75 Total Bents: 4 Bents in Channel: 2 Bents in Floodplain: 2  
 Foundation Type: FOOTINGS

#### EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NONE

Interior Bents: NONE

Channel Bed: NONE

Channel Bank: MODERATE EROSION ON SOUTH CHANNEL BANK 50' UPSTREAM

#### EXISTING SCOUR PROTECTION

Type(3): NONE

Extent(4): \_\_\_\_\_

Effectiveness(5): \_\_\_\_\_

Obstructions(6): \_\_\_\_\_

#### INSTRUCTIONS

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- 14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoretical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

### DESIGN INFORMATION

Channel Bed Material(7): SS-8 BROWN SAND & GRAVEL (A-1-A)

Channel Bank Material(8): SS-2 BROWN-TAN CLAYEY SANDY SILT (Alluvial) (A-4(1))

Channel Bank Cover(9): TREEES, BRIARS, SHRUBS

Floodplain Width(10): 200'

Floodplain Cover(11): TREEES, GRASS

Stream is(12): Aggrading \_\_\_\_\_ Degrading  Static \_\_\_\_\_

Channel Migration Tendency(13): MINOR

Observations and Other Comments: \_\_\_\_\_

#### DESIGN SCOUR ELEVATIONS(14)

Feet  Meters \_\_\_\_\_

BENT ONE	849																			
END BENT TWO	853																			

Comparison of DSE to Hydraulics Unit theoretical scour:

THEORETICAL SCOUR: BENT ONE:847; END BENT TWO: 853

ADJUSTED UPWARD BASED ON DENSE RESIDUAL SOIL &/OR WEATHERED ROCK

#### SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

Bed or Bank																					
Sample No.																					
Retained #4																					
Passed #10																					
Passed #40																					
Passed #200																					
Coarse Sand																					
Fine Sand																					
Silt																					
Clay																					
LL																					
PI																					
AASHTO																					
Station																					
Offset																					
Depth																					

Reported by:

Date: 3-7-07

33765.1.1 B-4552  
IREDELL COUNTY  
BRIDGE NO. 100 ON SR 1526 OVER BUFFALO SHOALS CREEK

CORE PHOTOS



33765.1.1 B-4552  
IREDELL COUNTY  
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PHOTOS

