46098 REFERENCE

B

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-7	CROSS SECTIONS
8-9	BORE LOGS & CORE REPOR

STRUCTURE SUBSURFACE INVESTIGATION

PROJECT	DESCRIPTION	REPLACE BRI	DGE #143 ON
	OVER LINVI		
SITE DES	CRIPTION		

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
I.C.	46098	1	9

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 1999 707-6550. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

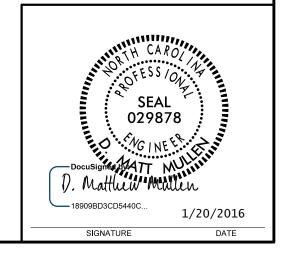
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BORCHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU IN-PLACE TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE DESCRIPTION OF THE DESCRIPTION OF THE STANDARD TEST METHOD. THE DISSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS MOVICATED 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 SATISTY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS.

- IES:
 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.
 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.

D.O. CHEEK
_C.J. COFFEY
D.C. ELLIOT
INVESTIGATED BY
DRAWN BY
Ds
CHECKED BY JOSE
SUBMITTED BY
DATE

PERSONNEL



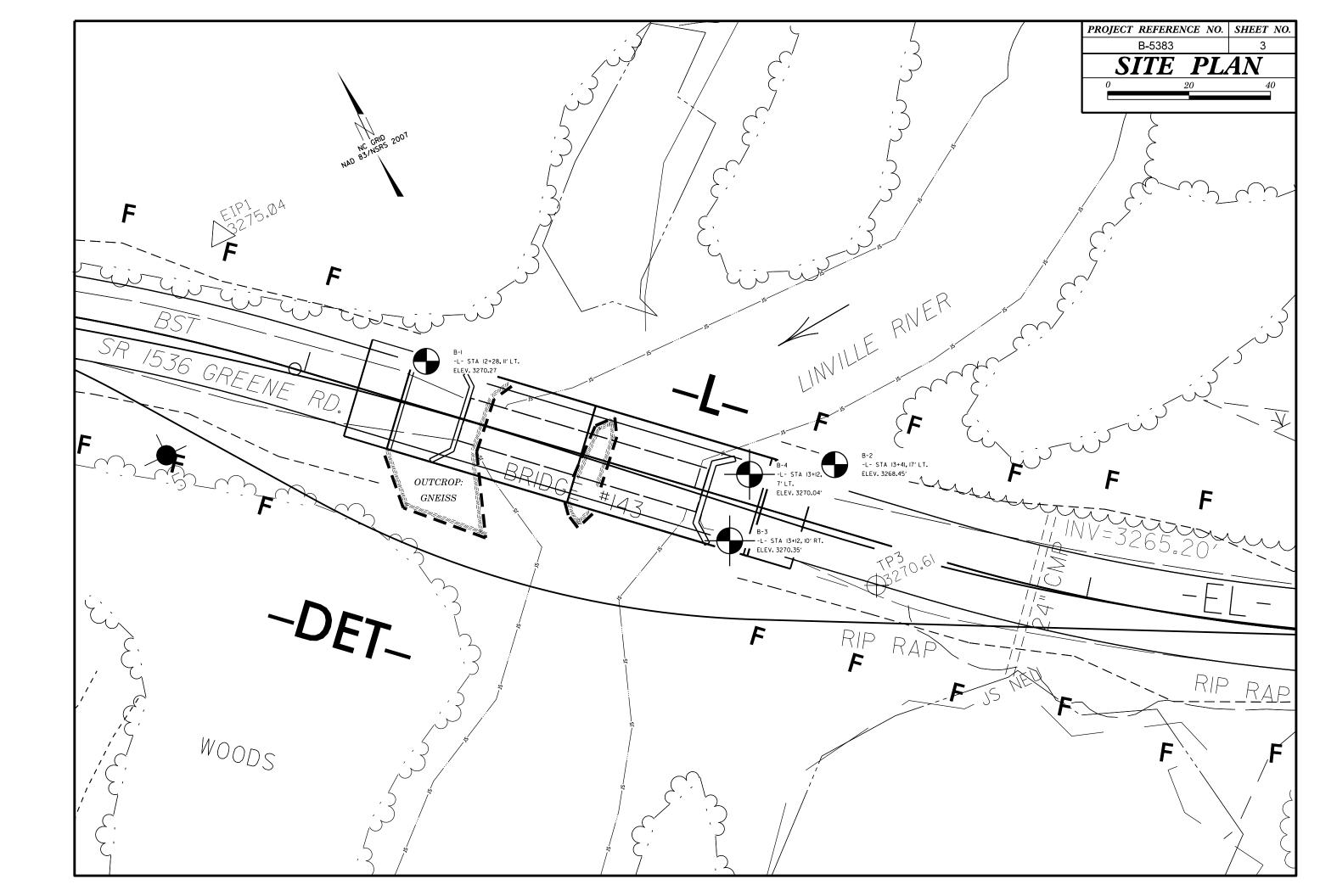
PROJECT REFERENCE NO. SHEET NO. 2

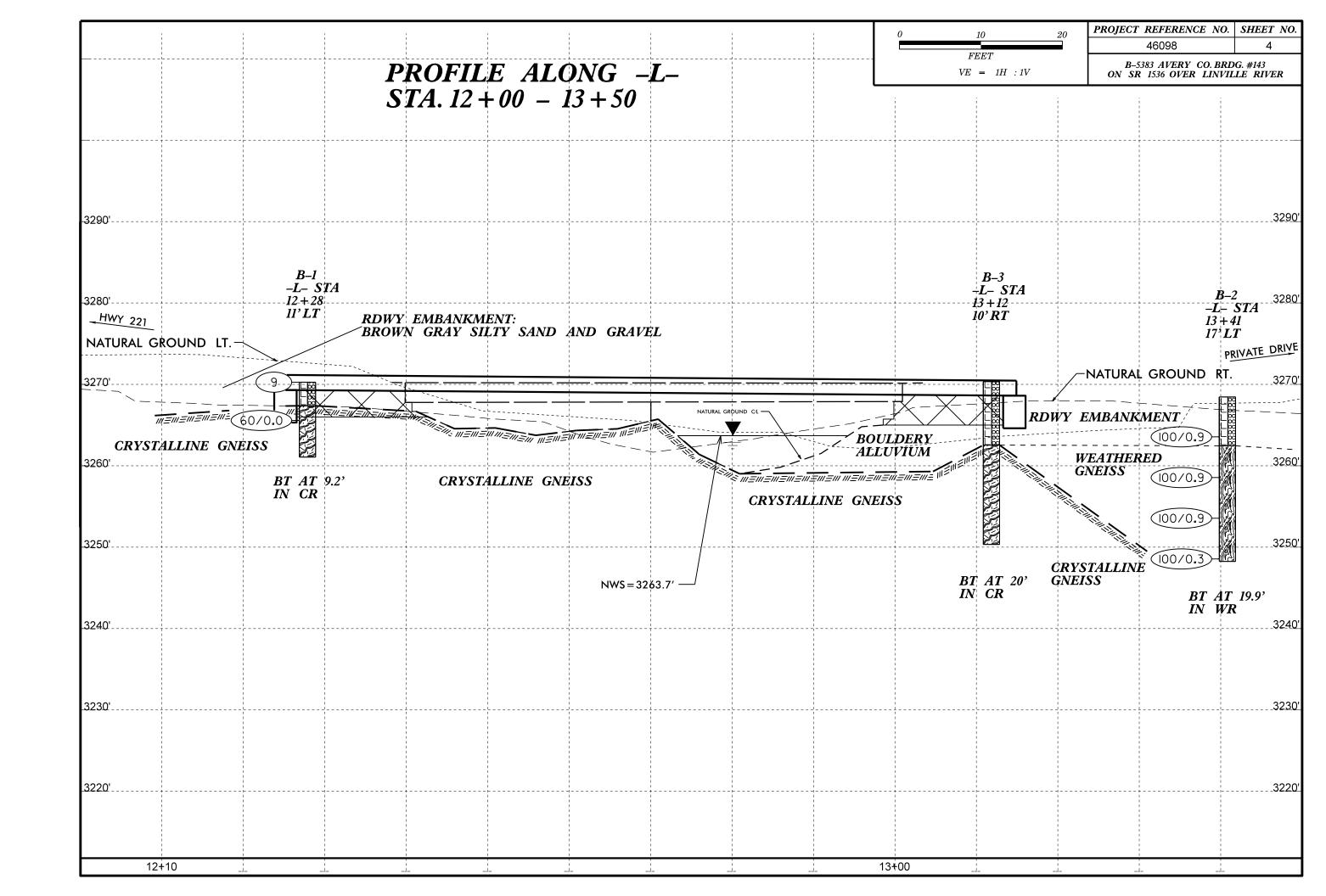
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

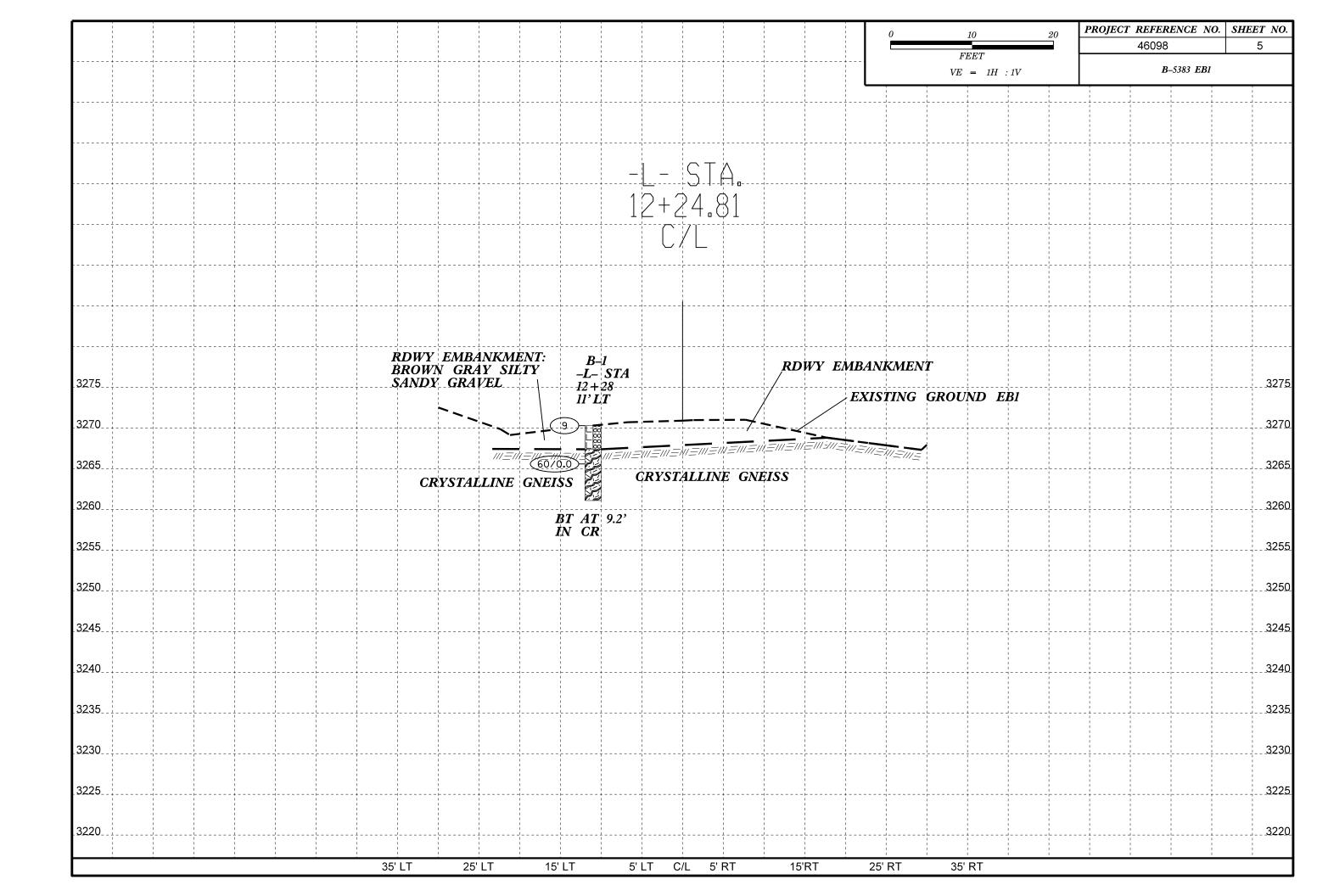
SUBSURFACE INVESTIGATION

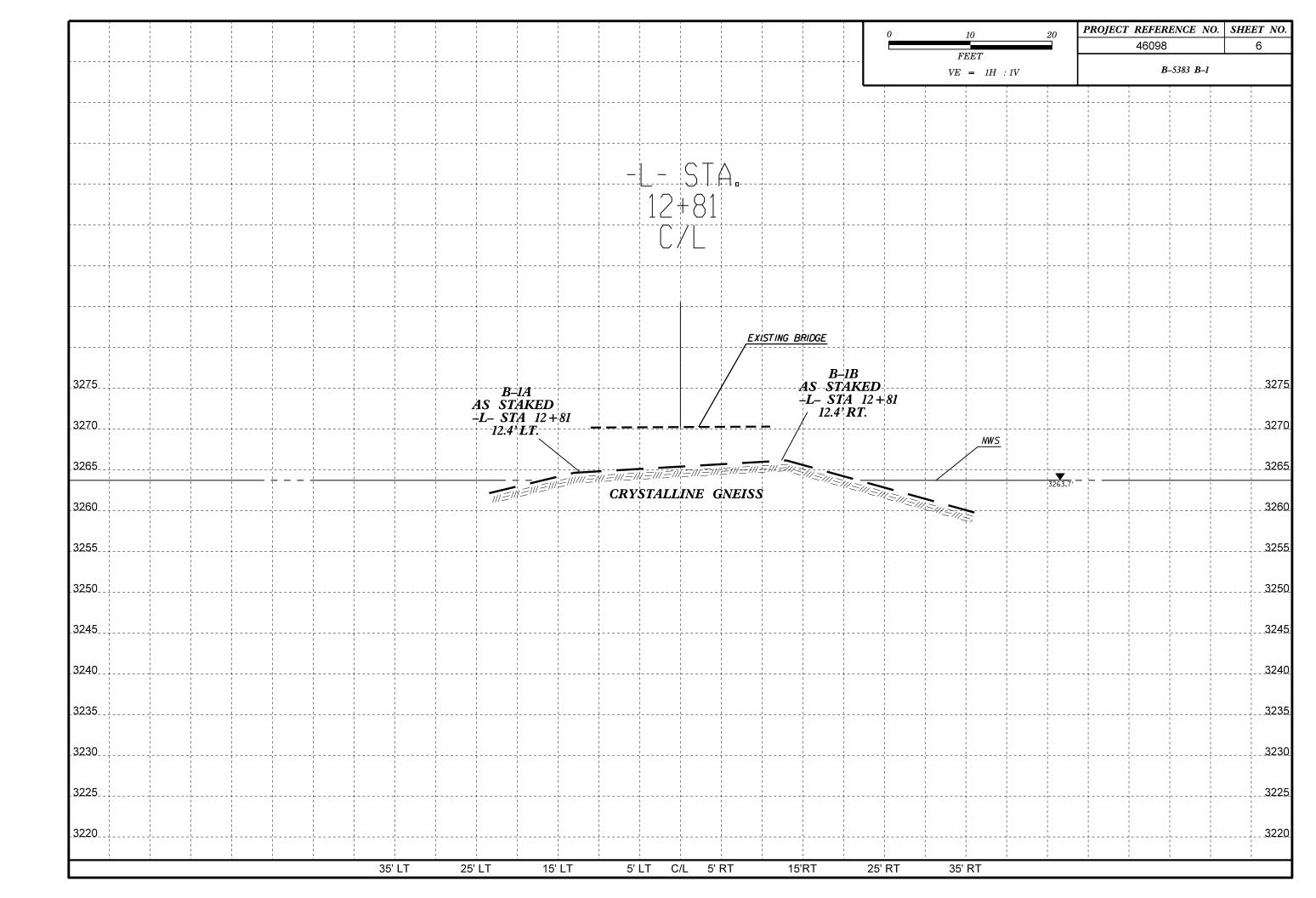
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

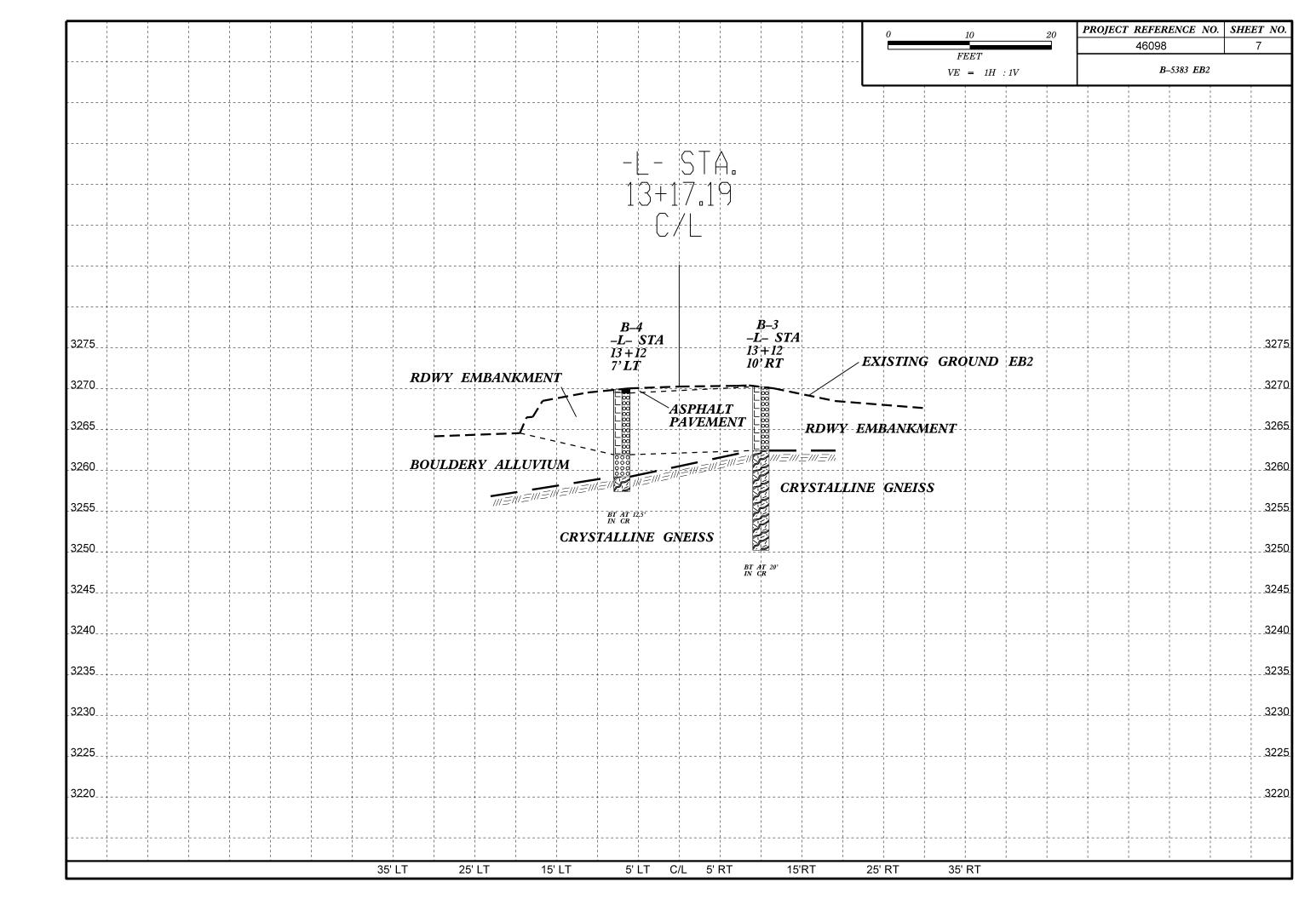
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS				
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN RE PENETRATED WITH A CONTINUOUS ELICHT POWER AUGER AND VIELD LESS THAN 100 RIOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.		ALLUYIUM (ALLUY.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.				
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.		AQUIFER - A WATER BEARING FORMATION OR STRATA.				
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK.	<u> </u>				
	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	\$(1/72(1/78					
		ROCK (WR) 100 BLOWS PER FOOT IF TESTED.					
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPCOMIC MATERIALS	## 1						
LLASS. (≤ 35% PASSING "200) (> 35% PASSING "200)		POCK (CB) WOULD YIELD SPI REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,					
		NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	<u> </u>				
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31	ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.					
7. PASSING	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50		CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED				
■10 50 MX GRANULAR SIL1- MUCK,	PERCENTAGE OF MATERIAL						
#40 30 MX 50 MX 51 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS OTHER MATERIAL						
MATERIAL	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%						
PASSING *40							
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITILE UR HIGHLY							
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOULS	GROUND WATER						
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING						
UF MAJUK GRAVEL, AND CRAVEL AND SAND SOLIS SOLIS	▼ STATIC WATER LEVEL AFTER 24 HOURS		<u> </u>				
GEN, RATING FAIR TO SOOD FAIR TO SOOD HASSILVADUS	∇ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA						
AS SUBGRADE POOR POOR ONSUTHBLE	O-MM- SPRING OR SEEP		I				
	-						
DANCE OF STANDARD DANCE OF UNCONFINED	MISCELLHNEUUS STMBULS		JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.				
PRIMARY SOIL TYPE COMPACIALES OF PENETRATION RESISTENCE COMPRESSIVE STRENGTH	III KONDINI CHONKICHI (KEZ)						
VERY LODGE (4	SPT C SURPE INDICATOR						
GENERALLY LOOSE 4 TO 10			<u> </u>				
MATERIAL DENSE 10 10 30 N/A		<u> </u>					
	THIN TOHOWAT EMBHINAMENT CO.	SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE				
	- INFERRED SOIL BOUNDARY - CORE BORING SOUNDING ROD						
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0		COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND					
	THE ALLEMAN SOLUTION A PIEZOMETER COST N. MALLES		ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE				
	INSTRUCTION -		1				
TEXTURE OR GRAIN SIZE							
	UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE ACCEPTABLE, BUT NOT TO BE						
COARSE FINE							
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY	UNDERCOT LSS ACCEPTABLE DEGRADABLE ROCK						
	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL				
SOIL MOISTURE - CORRELATION OF TERMS							
	CSE COARSE ORG ORGANIC		STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY				
(ATTERBERG LIMITS) DESCRIPTION							
			LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY				
LL LIOUID LIMIT	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK						
		TERM SPACING TERM THICKNESS					
- MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE							
		MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	NOTES:				
		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET					
ATTAIN UPTIMUM MUISTURE	CME-55 - CURE SIZE:						
	┦ ┌ ├						
	<u> </u> □	DIRRING WITH FINGED EDEER NUMEROUS CRAINS.					
SLIGHTLY PLASTIC 6-15 SLIGHT	I I VANE SHEAR TEST I □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □						
	POST HOLE DIGGER						
	Column C						
	Company Comp						
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	Company Comp						
		SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14				











GEOTECHNICAL BORING REPORT BORE LOG

В	ORE LOG					
WBS 46098.1.1 TIP B-5383 COUNTY	Y AVERY GEOLOGIST Hager, M. M.		WBS 46098.1.1	TIP B-5383 COUN	TY AVERY	GEOLOGIST Hager, M. M.
SITE DESCRIPTION Bridge No. 143 on SR-1536 over the Linville Riv	iver.	GROUND WTR (ft)	SITE DESCRIPTION Bridge No	o. 143 on SR-1536 over the Linville	River.	GROUND WTR (ft)
BORING NO. B-1 STATION 12+28	OFFSET 11 ft LT ALIGNMENT L	0 HR . N/A	BORING NO. B-2	STATION 13+41	OFFSET 17 ft LT	ALIGNMENT L 0 HR. N/A
COLLAR ELEV. 3,270.3 ft TOTAL DEPTH 9.2 ft	NORTHING N/A EASTING N/A	24 HR . Dry	COLLAR ELEV. 3,268.5 ft	TOTAL DEPTH 20.2 ft	NORTHING N/A	EASTING N/A 24 HR. Dry
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009	DRILL METHOD NW Casing W/SPT & Core HAMMI	MER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE AF	FO0071 CME-550X 72% 09/03/2009	DRILL METHOD	NW Casing w/ SPT HAMMER TYPE Automatic
DRILLER Coffey, Jr., C. START DATE 05/10/12	COMP. DATE 05/10/12 SURFACE WATER DEPTH N/A	I/A	DRILLER Coffey, Jr., C.	START DATE 05/10/12	COMP. DATE 05/10/12	SURFACE WATER DEPTH N/A
COLLAR ELEV. 3,270.3 ft TOTAL DEPTH 9.2 ft DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009 DRILLER Coffey, Jr., C. START DATE 05/10/12 ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT	NORTHING N/A DRILL METHOD NW Casing W/SPT & Core HAMMI COMP. DATE 05/10/12 SAMP. L O SOIL AND ROCK DESC NO. MOI G ELEV. (ft) To Soll AND ROCK DESC ROADWAY EMBANY Brown-gray silty sand ar CRYSTALLINE RO Gray meta-arkos	24 HR. Dry MER TYPE Automatic A/A SCRIPTION DEPTH (ft) FACE 0.0 NKMENT and gravel. 2.9 ROCK ose. 9.2 ttion 3,261.1 ft in	COLLAR ELEV. 3,268.5 ft DRILL RIG/HAMMER EFF./DATE AF	TOTAL DEPTH 20.2 ft FO0071 CME-550X 72% 09/03/2009 START DATE 05/10/12 DUNT BLOWS PER FOO 0.5ft 0 25 50	NORTHING N/A DRILL METHOD COMP. DATE 05/10/12 T 75 100 NO. MOI	EASTING N/A 24 HR. Dry
HE DOUBLE						-
NCDOT BO						

GEOTECHNICAL BORING REPORT CORE LOG

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-	46098					B-538					AVERY	GEOLOGIST Elliott, D	. C.	T		-	3 460
	DESCR		N Brid	lge No. 1				the Lin	ville R	_		I		4	ID WTR (ft)		DES
	RING NO.				+		13+12			+	FSET 10 ft RT	ALIGNMENT L		0 HR.	Dry		RING N
	LAR ELE						PTH 20			NC	PRTHING N/A	EASTING N/A		24 HR.	FIAD		LAR I
	L RIG/HAI			TE AFO	6744 CN	1E - 45C	83% 01/2	9/2015				/ Casing W/SPT & Core	HAMM	ER TYPE	Automatic		L RIG/
-	LLER C				STA	RT DA	TE 07/1	10/15		CC	OMP. DATE 07/10/15	SURFACE WATER DEF	TH N	/A		DRIL	LLER
COF	RE SIZE	NXWL					N 20.0				1					COR	RE SIZ
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	UN RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	L O G	ELEV. (ft)	ESCRIPTION AND REMARK	s		DEPTH (ft)	ELEV (ft)	, RU ELE (ft
3 <u>379</u> -6	5											Ground Surface				3269.5	i9
32.3	3,270.4 -	- 0.0	5.0		(2.4)			(5.0) 100%	48%		-	ROADWAY EMBANKMEN bouldery roadway embankme					3,26
	-	-						en	bankm	nen C	-					2265	3,26
3265	3,265.4	- 5.0 -	2.8		(1.9)			(2.8)	(1.9)		- 3,265.4	ROADWAY EMBANKMEN	Г		5.0	3203	3,20
	3,262.6-	- - 7.8			68%			100%	68%		- - 3,262.6	bouldery roadway embankme			7.8		
3260	3,260.4	- - 10.0	2.2		(1.8) 82%	(0.4) 18%		(2.2) 18%	(1.8)		‡	CRYSTALLINE ROCK crystalline gneiss				3260	3,2 <u>6</u> 3,25
3200			5.0		(5.0) 100%	(2.2)			15% CR		- -	, 0					3,25
	-	_			100%	44 /0					 -						0,20
3255	3,255.4	15.0	5.0		(4.0)	(2.6)					_						
	-	_	3.0		80%	52%					_						
	3,250.4	- 20.0									3,250.4				20.0		
	3,230.4	-										ated at Elevation 3,250.4 ft in	crystallin	e gneiss	20.0		3,24
	-	_									-						
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NCDOT CORE DOUBLE BORELOGS_CORELOGS.GPJ NC_DOT.GDT 1720/16	-	<u> </u>			1						<u> </u>						
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***	46098	3.1.1			TIP	B-538	33	С	OUNT	ΥA	VERY		GEOLOGIST Elliott, D.	. C.		
			I Brid	lge No. 1			36 over t						<u>, </u>		GROUN	ID WTR (ft)
	NG NO.			<u> </u>			13+12			_	FSET 7	7 ft LT	ALIGNMENT L		0 HR.	N/A
	AR ELE		270.01	ft	_		PTH 12.	5 ft		+	RTHING		EASTING N/A		24 HR.	N/A
							83% 01/29			1		DRILL METHOD NW		НАММ		Automatic
	LER C						TE 07/1			СС	MP. DA	TE 07/15/15	SURFACE WATER DEP			
	E SIZE						N 22.0 f									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)		UN RQD (ft) %	SAMP. NO.		ATA RQD (ft) %	L O G		D	ESCRIPTION AND REMARKS	S		
3269.59				(IVIIII/IL)	<u>%</u>	<u> </u>		- %	%				Begin Coring @ 0.5 ft			
1209.38	3,269.6	0.5	4.6							138	- 3,269.6		ROADWAY EMBANKMENT	•		0.5
	-	-											Bouldery embankment			
3265	3,265.0	5.0	5.0								3,265.0		ROADWAY EMBANKMENT	-		5.0
	-	-									3,262.0		Bouldery embankment			8.0
3260	3,2 <u>6</u> 0.0 3,259.3	10.0 - 10.7						_		000	_		ALLUVIAL Gravelly, bouldery alluvium			
	3,259.3	-	10.7		(1.5)						3,259.3 - 3,257.5		CRYSTALLINE ROCK			10.7 12.5
	5,257.5-	12.5			83%_					رزافتها	- 3,237.5	Boring Termina	Crystalline gneiss ated at Elevation 3,257.5 ft in c	crystalline	e gneiss	
	_	F									_	· ·		•		
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	3,249.3	20.7														
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