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	AT TIME	OF INVESTIG	ADWAY TITLE SHEET ATION	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
				GEOTECHNICAL ENGINEERING UNIT
	<u>LINE</u> -L-	<u>STATION</u> II+50-I3+50	<u>PLAN</u> <u>PROFILE</u> 4	ROADWAY
80	-L-	11+30-13+30	7	SUBSURFACE INVESTIGATION
5380				SUBSURFACE INVESTIGATION
<u>`</u>				COUNTY Avery
				PROJECT DESCRIPTION <u>Bridge No. 141 on SR 1114 over Fall</u>
				Branch
\mathbf{F}				INVENTORY
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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 SOLI TEST DATA AVAILABLE MAY BE REVEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-680. 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 NECESSARLY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN STIL (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 INTHE ACCONDITIONS 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 WARANT 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 NECESSART TO SATISFY 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 ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

MM HAGER

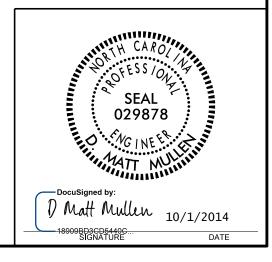
DO CHEEK

INVESTIGATED BY ______ MULLEN

DRAWN BY ______ MULLEN

- CHECKED BY ______ *JC_KUHNE*
- SUBMITTED BY _______ KUHNE

DATE _______



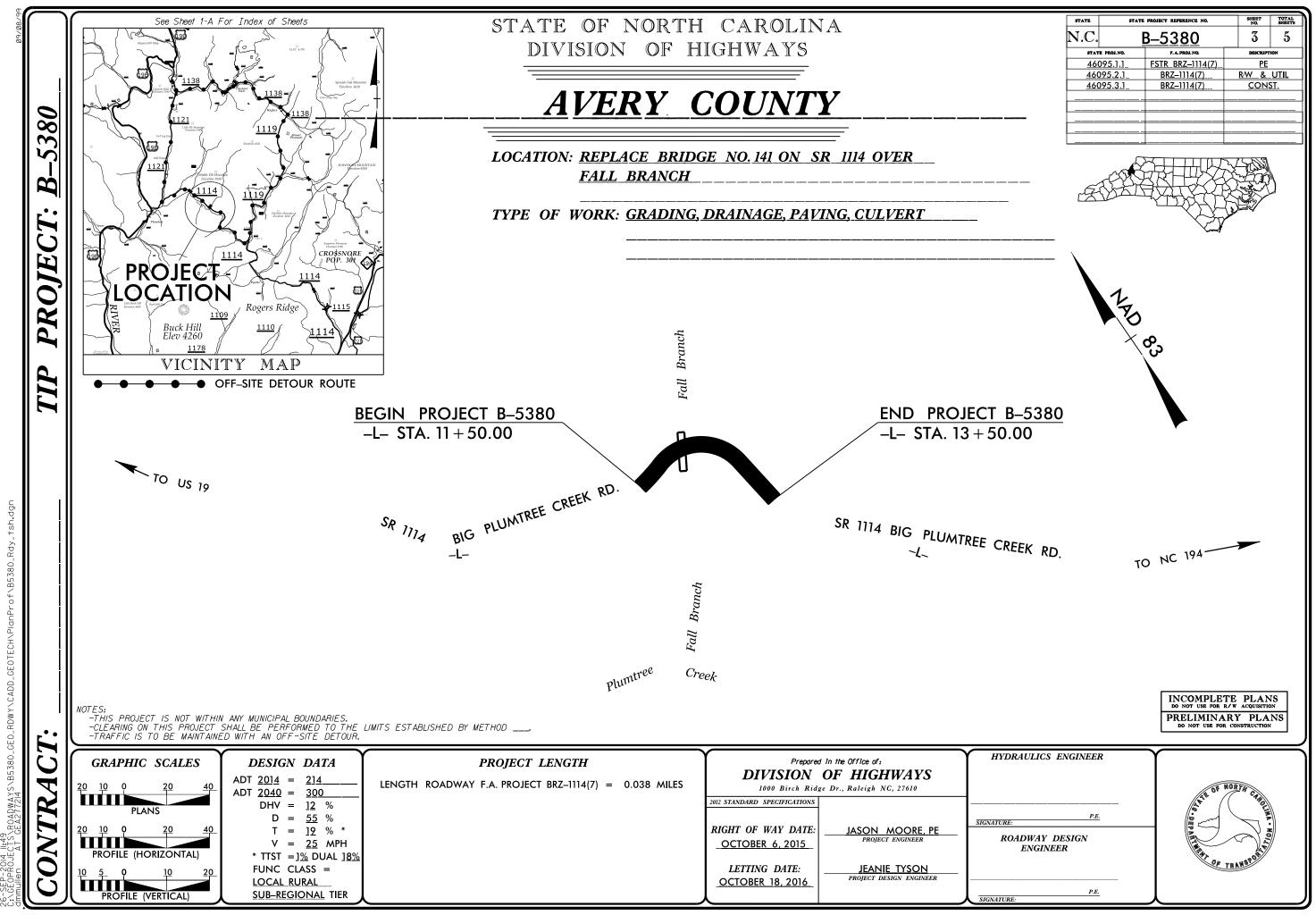
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

		SOIL D	ESCRIPT	ION						GR	ADATION						ROCK DES	SCRIPTION
BE PENETRATED ACCORDING TO IS BASED CONSISTENCY, 0	IDERED UNCONSOLIDA D WITH A CONTINUOL O THE STANDARD PEN ON THE AASHTO SYS COLOR, TEXTURE, MOIS	S FLIGHT POW ETRATION TES TEM. BASIC D TURE, AASHTO	ER AUGER AN T (AASHTO T ESCRIPTIONS CLASSIFICAT	ID YIELD LESS 206, ASTM DI GENERALLY IN ION, AND OTHE	THAN 100 586), SOIL ICLUDE THE R PERTINE	BLOWS PE CLASSIFI FOLLOWI NT FACTOR	ER FOOT CATION NG: IS SUCH	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATE	NDICATES ES A MIXT	THAT SOIL F TURE OF UNIF	ARTICLES ARE AL	L APPROXIMA ZES OF TWO	TELY THE SAME SIZE.	ROCK LINE IN SPT REFUSAL BLOWS IN NO REPRESENTED	DICATES TH IS PENETRA N-COASTAL BY A ZONE	HE LEVEL MATION BY PLAIN M E OF WEA	AT WHICH NON-COAS A SPLIT SPOON SA MATERIAL, THE TRAN THERED ROCK.	OULD YIELD SPT REFUSAL IF TES STAL PLAIN MATERIAL WOULD YIEL MPLER EQUAL TO OR LESS THAN (NSITION BETWEEN SOIL AND ROCI
AS MIN VERY S	IERALOGICAL COMPOSI STIFF.GRAY,SILTY CLAY,M	TION, ANGULAR 10/ST WITH INTE	ITY, STRUCTU RBEDDED FINI	RE, PLASTICITY E SAND LAYERS,	,ETC. FOH HIGHLY PLA	EXAMPLE, STIC.A-7-6					SOIL GRAINS IS DE	SIGNATED B	Y THE TERMS:	WEATHERED		FICHLL T	DIVIDED AS FOLLOW	S: N MATERIAL THAT WOULD YIELD S
	SOIL LEGE		ASHTO	CLASSIFI	CATION			ANGULAR, SUBAN			R <u>ROUNDED</u> . CAL COMPOSI	TION		ROCK (WR)			100 BLOWS PER FO	
GENERAL CLASS.	GRANULAR MATER (≤ 35% PASSING ■			MATERIALS SSING \$200)	ORC	GANIC MATERI	ALS	MINERAL NAM			FELDSPAR, MICA, T		ETC.	CRYSTALLINE ROCK (CR)				RAIN IGNEOUS AND METAMORPHIC I REFUSAL IF TESTED. ROCK TYPE
GROUP A-		A-2	A-4 A-5	A-6 A-7	A-1, A-2	A-4, A-5		ARE USED IN	V DESCRIP		THEY ARE CONSID	ERED OF SIC	NIFICANCE.		2	<u>2.20.</u>	GNEISS, GABBRO, SC FINE TO COARSE G	RAIN METAMORPHIC AND NON-COAS
CLASS. A-1-a	A-1-b A-2-4 A-	2-5 A-2-6 A-2-7	/ •	A-7-5. A-7-6	A-3	A-6, A-7		SL IG	HTLY COM	IPRESSIBLE	ESSIBILITY	LL < 31		NON-CRYSTAL		===		THAT WOULD YEILD SPT REFUSAL ES PHYLLITE, SLATE, SANDSTONE, E
51MBUL 00000	00000		·					MODE		COMPRESSIBLE	5	LL = 31 - LL > 50	50	COASTAL PLA SEDIMENTARY				DIMENTS CEMENTED INTO ROCK, BU K TYPE INCLUDES LIMESTONE, SAN
% PASSING 10 50 MX					GRANULAR	SILT- CLAY	MUCK,				E OF MATER			(CP)		<u></u>	SHELL BEDS, ETC.	ERING
	50 MX 51 MN 25 MX 10 MX 35 MX 35	MX 35 MX 35 M	(36 MN 36 MN	1 36 MN 36 MN	SOILS	SOILS	PEAT	ORGANIC MATERIAL	_	GRANULAR SOILS	SILT - CLAY SOILS	OTHER	MATERIAL	FRESH	ROCK FRESH	1. CRYSTAL		S MAY SHOW SLIGHT STAINING. ROC
MATERIAL PASSING *40 LL PI 6 M		MN 40 MX 41 MN MX 11 MN 11 MN			SOILS LITTL		HIGHLY	TRACE OF ORGANIC M LITTLE ORGANIC MATI MODERATELY ORGANIC HIGHLY ORGANIC	TER	2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20% > 20%	TRACE LITTLE SOME HIGHLY	1 - 10% 10 - 20% 20 - 35% 35% AND ABOVE	VERY SLIGHT (V SLI.)	CRYSTALS O	RALLY FRE ON A BROK	ESH, JOINTS STAINED, KEN SPECIMEN FACE S	SOME JOINTS MAY SHOW THIN CLAY SHINE BRIGHTLY. ROCK RINGS UNDER
GROUP INDEX Ø		4 MX		16 MX NO MX	Mode Amoun		ORGANIC			GROU	ND WATER			SLIGHT	OF A CRYST ROCK GENER			AND DISCOLORATION EXTENDS INTO I
USUAL TYPES STONE I OF MAJOR GRAVEL MATERIALS SAM		r or clayey El and sand	SILTY SOILS	CLAYEY SOILS	org4 Mat	anic	SOILS				DRE HOLE IMMEDIA EL AFTER <u>24</u> H		DRILLING	(SLI.) MODERATE	1 INCH. OPEN CRYSTALS A	N JOINTS ARE DULL	MAY CONTAIN CLAY. AND DISCOLORED. CR	IN GRANITOID ROCKS SOME OCCASION YSTALLINE ROCKS RING UNDER HAMM COLORATION AND WEATHERING EFFEC
GEN. RATING		100	CAID 1	I POOR	FAIR TO	POOR			PERCH	ED WATER, SA	TURATED ZONE, OR	WATER BEAR	RING STRATA	(MOD.)	GRANITOID F	ROCKS, MOS	ST FELDSPARS ARE D	ULL AND DISCOLORED, SOME SHOW CI
AS SUBGRADE	EXCELLENT TO G				POOR	PUUR	UNSUITABLE		SPRINC	G OR SEEP					WITH FRESH		AMMER BLUWS AND S	10WS SIGNIFICANT LUSS OF STRENG
	PI OF A-7-5 SUBC	SISTENCY			> LL - 30				м		EOUS SYMBO			MODERATELY SEVERE				STAINED. IN GRANITOID ROCKS, ALL
	COMPACT		RANGE OF	STANDARD	RANG	E OF UNC	ONFINED			25 /025				(MOD. SEV.)	AND CAN BE	E EXCAVAT		T'S PICK. ROCK GIVES 'CLUNK' SOUND
GENERALLY	VERY	.00SE	(N-V	N RESISTENCE	CUMP	RESSIVE S (TONS/FT		COLONIAL SUPERIOR SOLL STANDAL					SLOPE INDICATOR INSTALLATION	SEVERE (SEV.)	ALL ROCK E REDUCED IN	EXCEPT QU	JARTZ DISCOLORED OR H TO STRONG SOIL. I	R STAINED. ROCK FABRIC CLEAR AND N GRANITOID ROCKS ALL FELDSPARS IRONG ROCK USUALLY REMAIN.
GRANULAR MATERIAL	LOC MEDIUM	DENSE	10	0 10 10 30		N/A			ILL (AF) (-	131 111		CONE PENETROMETER		IF TESTED.	WOULD YI	ELD SPT N VALUES >	100 BPF
(NON-COHESIV	VE) DEN VERY VERY	DENSE	>	10 50 50 2		< 0.25		THAN ROADWA		4	→ AUGER BORING	•	TEST SOUNDING ROD	VERY SEVERE (V SEV.)	BUT MASS I REMAINING.	IS EFFECT SAPROLIT	IVELY REDUCED TO S E IS AN EXAMPLE OF	R STAINED. ROCK FABRIC ELEMENTS OIL STATUS, WITH ONLY FRAGMENTS ROCK WEATHERED TO A DEGREE TH
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	SO MEDIUM STI VERY	STIFF FF	4 ⁻ 8 T	TO 4 TO 8 TO 15 TO 30		0.25 TO 1 0.5 TO 1 1 TO 2 2 TO 4	.0				MONITORING WE PIEZOMETER	ill 🔶	TEST BORING WITH CORE - SPT N-VALUE	COMPLETE	ROCK REDUC	CED TO SO CONCENTR	DIL. ROCK FABRIC NOT	NN. <u>IF TESTED, WOULD YIELD SPT N</u> DISCERNIBLE, OR DISCERNIBLE ONL' BE PRESENT AS DIKES OR STRINGE
	НА	RD	>	30		> 4					INSTALLATION	<u> </u>	SIT N VALUE		HESO HILEX		ROCK H	ARDNESS
		EXTURE C									ATION SYMB			VERY HARD			ED BY KNIFE OR SHAR	P PICK. BREAKING OF HAND SPECIME
U.S. STD. SIEVE S OPENING (MM)		4 10 4.76 2.00	40 0.42	60 200 0.25 0.075	270 0.053			EXCAVATION	[∠⊿ uns	CLASSIFIED E SUITABLE WAS	TE	ACCEP	SSIFIED EXCAVATION - TABLE, BUT NOT TO BE IN THE TOP 3 FEET OF	HARD			S OF THE GEOLOGIST"	S PICK. LY WITH DIFFICULTY. HARD HAMMER
BOULDER	COBBLE G	AVEL	COARSE	FINE	6	SILT	CLAY	SHALLOW UNDERCUT		CLASSIFIED E	XCAVATION - GRADABLE ROCK		KMENT OR BACKFILL		TO DETACH	HAND SPE	ECIMEN.	
(BLDR.)		GR.) 2.0	SAND (CSE. SD.)	SAND (F SD. 0.25		SL.) 0.005	(CL.)	AR - AUGER REFUSAL		MED N		VST -	VANE SHEAR TEST	MODERATELY HARD		BY HARD	BLOW OF A GEOLOGIS	DUGES OR GROOVES TO 0.25 INCHES ST'S PICK. HAND SPECIMENS CAN BE
SIZE IN. I	12 3							BT - BORING TERMINATED CL CLAY	٥		MICACEOUS 10DERATELY	7-1	WEATHERED JNIT WEIGHT	MEDIUM HARD				DEEP BY FIRM PRESSURE OF KNIFE EICES 1 INCH MAXIMUM SIZE BY HAR
	SOIL MOIS	FIELD MO		TION OF	TERMS			CPT - CONE PENETRATION CSE COARSE	N TEST	NP - NO ORG C	IN PLASTIC	γď- ι	DRY UNIT WEIGHT		POINT OF A			
	RG LIMITS)	- SATURA	TION	GUIDE FOR F				DMT - DILATOMETER TES DPT - DYNAMIC PENETRA e - VOID RATIO		PMT - F ST SAP S	PRESSUREMETER TE SAPROLITIC	S - B	M <u>PLE ABBREVIATIONS</u> ULK SPLIT SPOON	SOFT	FROM CHIPS	S TO SEVE		NIFE OR PICK. CAN BE EXCAVATED : BY MODERATE BLOWS OF A PICK PO URE.
	IOUID LIMIT	(SAT.)		FROM BELOW	THE GRO	UND WATE	R TABLE	F - FINE FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC	TURES	SL SI SLI S	LT, SILTY	ST - RS -	SHELBY TUBE	VERY SOFT		THICKNES		AVATED READILY WITH POINT OF PIC Y FINGER PRESSURE. CAN BE SCRAT
RANGE <		- WET - (W)	SEMISOLID; R ATTAIN OPTI				FRAGS FRAGMENTS HI HIGHLY	10120		ISTURE CONTENT	CBR -	CALIFORNIA BEARING RATIO		RACTUR			BEDDING
	PTIMUM MOISTURE	- MOIST -	· (M)	SOLID; AT OF	NEAR OP	TIMUM MO	ISTURE		1		ON SUBJECT	PROJEC	T.	TERM VERY WIDE WIDE		MORE 3 1	<u>SPACING</u> THAN 10 FEET TO 10 FEET TO 3 FEET	<u>TERM</u> VERY THICKLY BEDDED THICKLY BEDDED THINLY BEDDED
SL S	SHRINKAGE LIMIT	- DRY - (ום	REQUIRES AD)	CME-45C	<u> </u>	CLAY BITS	FLIGHT AUGER		OMATIC MANUAL	MODERATE CLOSE VERY CLOS		0.16	TO 3 FEET 5 TO 1 FOOT THAN 0.16 FEET	THINLY BEDDED 0 VERY THINLY BEDDED 0 THICKLY LAMINATED 0. THINLY LAMINATED
		PLA	STICITY					CME-55	 ۹	B'HOLLOW AUG	ERS	В					INDUR	ATION
			CITY INDEX	(PI)		Y STRENG		Х СМЕ-550		HARD FACED F		X-N W		FOR SEDIMEN	ARY ROCKS	. INDURAT		ING OF MATERIAL BY CEMENTING,
	STIC (PLASTIC ELY PLASTIC		0-5 6-15 16-25			VERY LOW SLIGHT MEDIUM		VANE SHEAR TEST		TUNGCARBIDE		HAND TOO	DLS:	FRIABL			GENTLE BLOW E	FINGER FREES NUMEROUS GRAINS; BY HAMMER DISINTEGRATES SAMPL
HIGHLY P						HIGH		PORTABLE HOIST	י 📃 ו		STEEL TEETH		T HOLE DIGGER D AUGER	MODER	ATELY INDUF	RATED	BREAKS EASILY	SEPARATED FROM SAMPLE WITH S WHEN HIT WITH HAMMER. FFICULT TO SEPARATE WITH STEE
DECODIDITIO	MAY INCLUDE COLO			C (TAN: 055	VEL 1 01 1 22			 		TRICONE	* TUNGCARB.		NDING ROD	INDURA	TED			BREAK WITH HAMMER.
	MAY INCLUDE COLC RS SUCH AS LIGHT,									-			E SHEAR TEST	EXTRE	1ELY INDURA	ATED		BLOWS REQUIRED TO BREAK SAMP S ACROSS GRAINS.

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IS OFTEN) SPT REFUSAL.	
How Provided in the second set of the secon	I FOOT PER 60 IS OFTEN	
N VALUES > A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION SUCH AS SHALE, SLAFE, TC. ATESIAN - DADA WATER THAT IS UNDER SUFFICIENT AS SHALE, SLAFE, TC. ATESIAN - DADA WATER THAT IS UNDER SUFFICIENT PRESSURE TO INSE ADVO. THE LEVEL AT WIGHT ITS ENCONTEND, BUT WHICH DOES NOT NEESSANDLY RISE TO DR ADVO. THE GROUP D SUFFICIENT OF THE DADA WATER THAT IS UNDER SUFFICIENT PRESSURE TO DR ADVO. THE GROUP D SUFFICIENT OF THE DADA WATER THAT IS UNDER SUFFICIENT PRESSURE TO UNISE ADVO. THE CONCLAMPORT. CLILIVIUM - TOOL FRACEWERS INTRO UNIT OF ALL WATERIAL RECOVERED IN THE CORE BARREL DY/IDED DRE COMPANY OF YELL DRE TO ADALEST WICK AND STRAIN OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF AN PLANAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AT WICK AS STRAIL OF ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS WICK THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS THAT THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS THAT THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS THAT THE THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO THAT LEVEL AS THAT THE THAT ANY FLAMAR FEATURE IS INCLINED FRAM THE DRE TO T		
VECTUATION VECETIATION VECETIATION VECETIATION VECETIATION VECETIATION VERTACLE VELONES CRALEJ - SOLIS THAT CONTAIN APPRCIABLE MANIN'S OF CALCIUM CARBONATE. VERTACIÓN COLLUMUENT AND CARDENAS INTERNA DI DE CONTRE DA VERANTY ON SLOPE OR AT BOTTOM VERTACIÓN COLLUMUENT AND CARDENAS INTERNA DI DE CONTRE DA VERANTY ON SLOPE OR AT BOTTOM VERTACIÓN COLLEMENTE DE CARDENAS INCOLOR VERTACIÓN COLLEMENTE DE CARDENAS INCOLOR VERTACIÓN COLDER TRACENCIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CARDENAS INCOLOR VERTACIÓN DE CARDENAS INCOLOR DE CARDENAS INCOLOR DE CAR	T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
PRANCEL Concercision Pream Concentration Pream Pream	DCK THAT NCLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
F TESED. COLUMUM - ROCK FRADEWIS MIXED MITH SOL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. MAY NOT VIELD OWS. CORMING CORMING FRADEWIS MIXED MITH SOL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OWS. CORMING MAND CORRECT CORMING FRADEWIS MADE PARSED AS A PRECENTAGE. DIKE A TABULAR BOLY OF TOROUS ROOK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROOKS OF CORMING DIKE A TABULAR BOLY OF TOROUS ROOK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROOKS OF CORMING READEWIS COLONGER FRAM MORTH. DATINGS IF DORL MARKET BLOWS IN CRUET OF THE FELSORS DIRECTION OF AZUMITH- THE DIRECTION OR BEARING OF THE HORIZONIAL TRACE OF THE LINE OF DIRECTION OF AZUMITH- THE ORDER ALONG CUSELY SPACED PRAALLE PLAKES. S, N FELSORA ELOSIS RELATIVE TO OWN MOTHER PARALLE ID THE FRACTURE. RECOVERED INTERTION OF AZUMITH' OF SPLITTING ALONG CUSELY SPACED PRAALLE PLAKES. RE COMMEND FELSORA ELOSIS RELATIVE TO OWN MOTHER PARALLE ID THE FRACTURE. RECOVERED INTERTION OF AZUMITH' OF SPLITTING ALONG CUSELY SPACED PRAALLE PLAKES. RECOVER ADD FELSORA ELOSIS RELATIVE TO OWN MOTHER PARALLE ID THE FRACTURE. RECOVER ADD INTERTION ON CLASS CORE CONTROL THAT CONE RECOVERED AND THE STRUCTURE. ELOSIS RELATIVE. RECOVER ADD FELSORA INTERTION ON CLASS CORE CONTROL THAT CONE RECOVERED AND THE STRUCTURE. RECOVER ADD FARLE ADD OR CORE PRADUCTING ADD ADD ADD SLODGED FOR THE STRUC		CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
10HE, CENENTED BY TOTAL LENGTLOGE CORE TRAIL NAME DEPRESENTING A RECENTANCE. INTEL OF A LONG AND A LONG A LON	IF TESTED. C.	
RINGS UNDER RINGS UNDER RINGS UNDER DIP DISCUSSION OF UTS MASSIVE ROCK. DIP DISCUSSION OF DIP LINE OF DIP, MEASURED CLOCKVISE FROM NORTH. FULL - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELITIVE TO USE AND/INTER PARALLED TO THE FRACTURE. FELOSAR RELONS. S. IN Y. ROCK MAS IS COMPARED RELONS. S. IN Y. ROCK MAS IS COMPARED FULD FOR CHARGE FROM NORTH. FULD - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. LINE OF DIP, MEASURED CLOCKVISE FROM NORTH. FELOSAR RELONS. S. IN Y. ROCK MAS IS COMPARED FLOST FRACTURE IN ROCK ALONG WHICH NO REPARED PARALLEL PLANES. LINE OF DIP, MEASURED CLOCKVISE FROM NORTH. FLOST	MAY NOT YIELD STONE, CEMENTED	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
RINGS UNDER DATINGS IF GERM, MAREE BLOWS IF DE DIRECTION CUID AZIMUTH9 - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE INDE OF DIP, MEASURED CLOCKWISE FROM NOTH. PALL A FRACTURE OF FRACTURE. PALL A FRACTURE OF TRACTURE COR EAOLONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIBES RELATIVE TO DUE ANDTHEN PARALLEL TO THE FRACTURE. SINCE STRUCTURE CORE ALCOLEX Y SAFED PARALLEL PLANES. S. IN Y. ROCK HAS S. N. Y. ROCK HAS S. N. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. PLOOD PLAIN (FP) - LAND BORDERING A STREAM, BULL OF SEDIMENTS DEPOSITED BY THE STREAM. MENTICUE ONTO - INFOLUCIARY MARKED WITH NOT FOR MORE DIRECTIONS. MOTILED MOTI - INFOLUARY MARKED WITH SPOTS DE DIFFERENT CLORES. MOTILING IN SOLLS USAAULTY INCICATES PODE AREATION AND LACK OF DOOD DRAINAGE. DESCENDING SAFROLITE IS SAFROLITE OF THE SAFROLING STREAM AND LACK OF DOOD DRAINGE. SAFROLITE IS SAFROLITE IS SAFROLI		
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LLLSTMP SULL FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEGGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. NEE KAOLINIZED LEDSC - A BOOY OF SOL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTILED MOLTJ - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USURLY INDICATES FOOR AERATION AND LACK OF GOOD DARINGGE. E DISCENNIBLE E STATUM ROR ALUES J. 200 WATER - WATER HAINTAINED BADVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENIS IMPERVIOUS STRATUM. ALUES J. 200 WATER - WATER HAINTAINED BADVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENIS IMPERVIOUS STRATUM. NSMALL AND RESIDUAL IRES, SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. REDUIRES REDUIRES EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SILL - AN INTRUSIVE BODY OF ICHEDUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND THE REDUIRED TO PREME BODY OF ICHEDUS ROCK SCHEMENTS THAT THE INTRUDE ROCKS. SILL - AN INTRUSIVE BODY OF ICHEDUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND THE REDUIRED AND STRIATED SURFACE THAT ANALENT INTRUDE ROCKS. SILL - AN INTRUSIVE BODY OF ICHEDUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND THE REDUIRED OF PREMEMOLE AND STRIATED SURFACE THAT A HARE BEEN EMPLACED PARALLEL TO THE BEGOLING OS STRATAD. <td></td> <td></td>		
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VIDENT BUT HRE KAQLINIZED LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTILED (MOTIL: IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTILING IN SOILS STRONG ROCK OULY MIONE E DISCERNIBLE S STRONG ROCK OULY MIONE RULES. (JOB DEF IN MIONE RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE OF THE WORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL, (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE TOTAL LENGTH OF CORE ROCK. SECRETIS EDUAL TO OR OREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RELATIVELY THIN COMPARED WITH ITS LIFERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SILL - AN INTRUSIVE BODY OF IOREOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LIFERATION RESISTANCE ISFT FROM FRICTION ALONG A FAULT THE BEDOING OR SCHISTOSITY OF THE INTRUDED ROCKS. SILL - AN INTRUSTORED DIAMETER SET SETTANCE ISFT FROM FRICTION ALONG A FAULT THE BEDORD PENETRATION TEST IFPENETRATION RESISTANCE ISFT FROM FRICTION ALONG A FAULT THE BEDORD PENETRATION RESISTANCE ISFT FROM FRICTION ALONG A FAULT THE BEDORD PENETRATION RESISTANCE ISFT. SILL LENTH OF STRATU AND EXPRESSED AS A PERCENTAGE. SITANDA COMPENTY STRATUMAND EXPRESSED AS A PERCENTAGE. TOPSOIL ITS.) SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. EXISTING STRUCTURE ELEVATION: IOOO FEET AT PRESSURE, ETC. EVICENESS A REST	WHEN STRUCK.	
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is saprolite is Note description to sum of the period	VALUES < 100 BPF	
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EEP CAN BE ETACHED SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. IR PICK POINT. BLOWS OF THE STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB.HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOLL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. FRAGMENTS T. SMALL, THIN STRATA CORE RECOVERY (SREC.) - TOTAL LENOTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENOTH OF STRATUM MAD EXPRESSED AS A PERCENTAGE. PIECES 1 INCH ED READILY BY STRATA CORE RECOVERY (SREC.) - TOTAL LENOTH OF OR COK QUALITY DESCRIBED BY TOTAL LENOTH OF STRATA AND EXPRESSED AS A PERCENTAGE. THICKNESS 4 FEET 5 4 FEET 8. OLG FEET 9. OLG FEET BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF EXISTING STRUCTURE BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF EXISTING STRUCTURE NOTES: PROBE; AT, PRESSURE, ETC. - EEL PROBE; - PROBE; -	BLOWS REQUIRED	<u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF IR PICK POINT, BLOWS OF THE BLOWS OF THE THADENTS TAMBLE, THIN STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF THICKNESS 4 FEET 6 - 1.5 FEET 8 - 0.03 FEET 9. 0.03 FEET 0.16 FEET AT, PRESSURE, ETC. EEL PROBE: PROBE: ***	EEP CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
T. SMALL, THIN TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEQMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF EXISTING STRUCTURE BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF EXISTING STRUCTURE NOTES: NOTES: A FEET A. PRESSURE, ETC. EEL PROBE: PROBE:	DR PICK POINT. BLOWS OF THE	STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT)- NUMBER OF BLOWS (N OR BPF)OF A 140 LB.HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL
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ELD READLET BT TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. HICKNESS 4 FEET BENCH MARK: TBM = NAIL IN 14* MAPLE ~III' N. OF N.E. CORNER OF 24 FEET EXISTING STRUCTURE EXISTING STRUCTURE 16 - 1.5 FEET NOTES: NOTES: 3 - 0.16 FEET NOTES: - 4.1, PRESSURE, ETC. - - EEL PROBE: PROBE: -	. PIECES 1 INCH HED READILY BY	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
THICKNESS EXISTING STRUCTURE 4 FEET - 16 - 1.5 FEET - 3 - 0.16 FEET NOTES: 98 - 0.03 FEET - 41, PRESSURE, ETC. - EEL PROBE; PROBE; 97.0 -	DI	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAT MCCRORY GOVERNOR ANTHONY J. TATA Secretary

September 26, 2014

STATE PROJECT:	46095.1.1 (B-5380)
COUNTY:	Avery
DESCRIPTION:	Replace Bridge No. 141 on SR 1114 over Fall Branch
SUBJECT:	Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project includes the approaches to the proposed new location of bridge number 141 on SR 1114. The proposed relocation consists of minor vertical and horizontal alignment changes along existing. The terrain is mountainous and riverine, but does not include unusually large cuts or fills. The following alignments were investigated:

-L- Station: 10+46.56–13+50

The total length of lines investigated by field reconnaissance and drilling is .06 miles.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

<u>**Crystalline Rock:**</u> Weathered to crystalline rock should be expected within 6' of grade in the following Station intervals:

-L-Station: 10+46.56–13+50

SOIL PROPERTIES

Soils on the project are derived from gneiss rock (Zatm) encountered within the project corridor. The dominant alluvial, residual and saprolitic soil types encountered are

MAILING ADDRESS: NC DEPARTMENT OF TRANSPORTATION GEOTECHNICAL ENGINEERING UNIT 1589 MAIL SERVICE CENTER RALEIGH NC 27699-1589

TELEPHONE: 919-707-6850 FAX: 919-250-4237 www.ncdot.gov/doh/preconstruct/highway/geotech LOCATION: CENTURY CENTER COMPLEX ENTRANCE B-2 1020 BIRCH RIDGE DRIVE RALEIGH NC micaceous silty sand, silty sand (AASHTO A-4). Weathered and crystalline rock may require blasting and is unlikely to produce durable stone for use on the project.

Respectfully submitted,

Docusigned by: D Matt Mullen Matto Mullenc PE Project Geological Engineer



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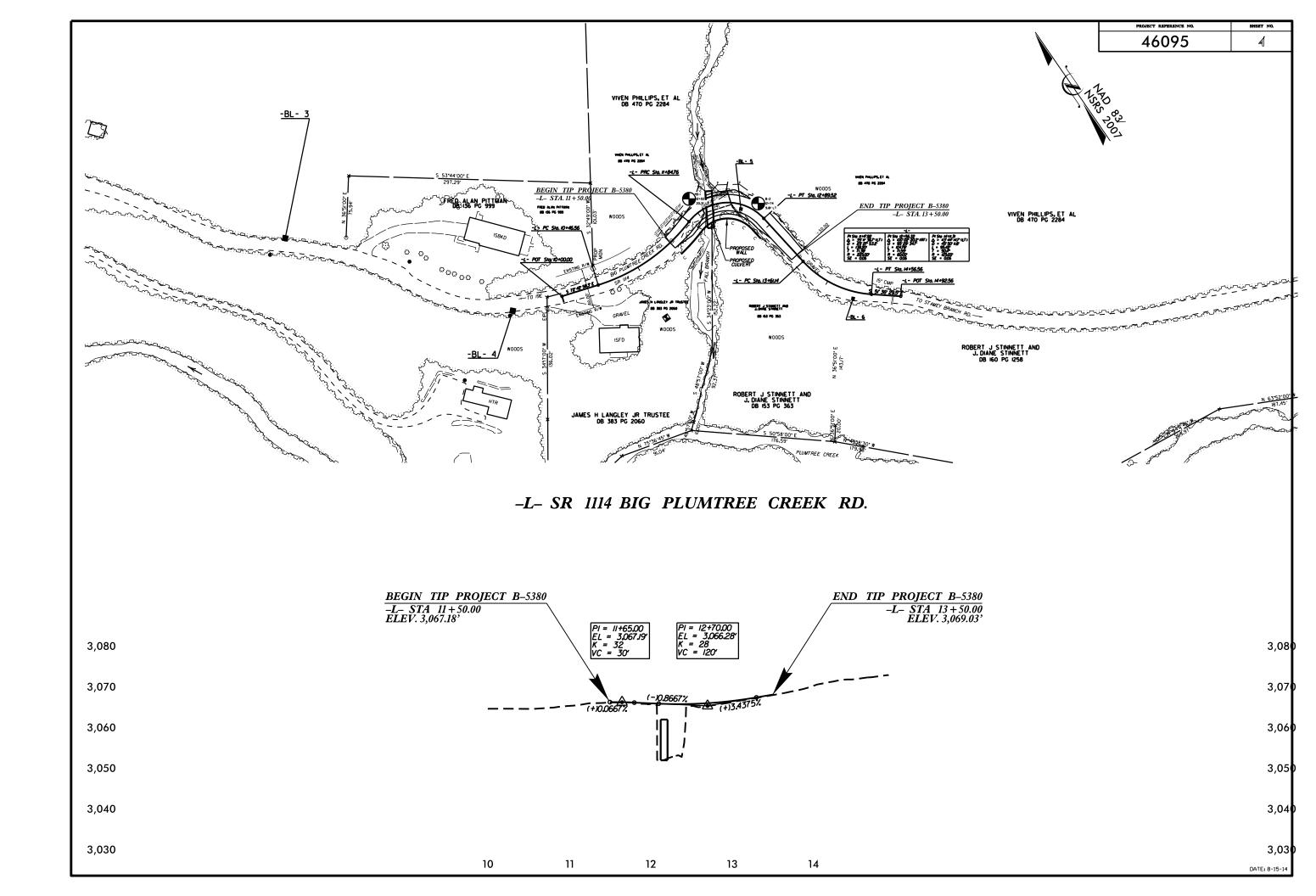
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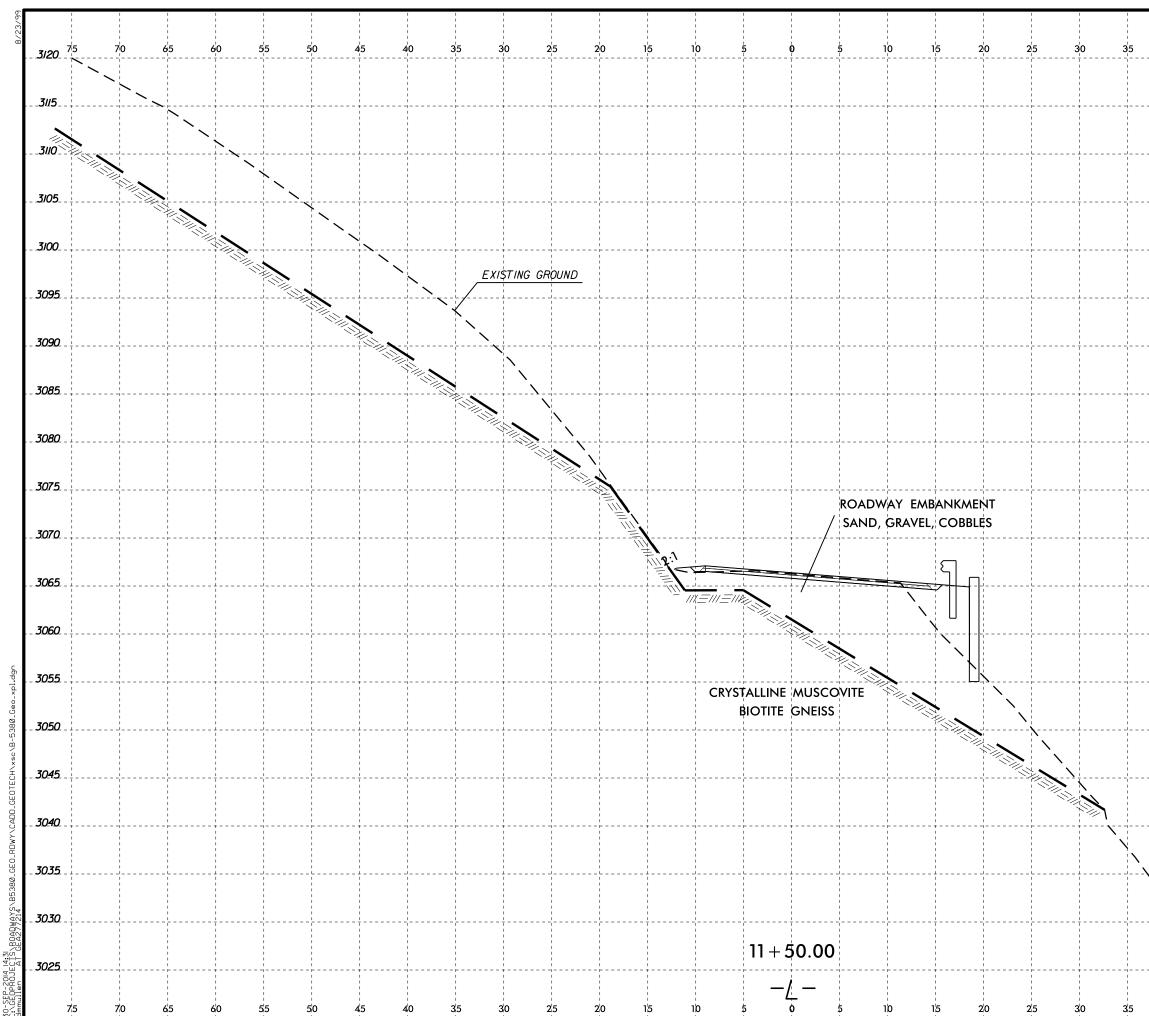
MAILING ADDRESS: NC DEPARTMENT OF TRANSPORTATION GEOTECHNICAL ENGINEERING UNIT 1589 MAIL SERVICE CENTER RALEIGH NC 27699-1589

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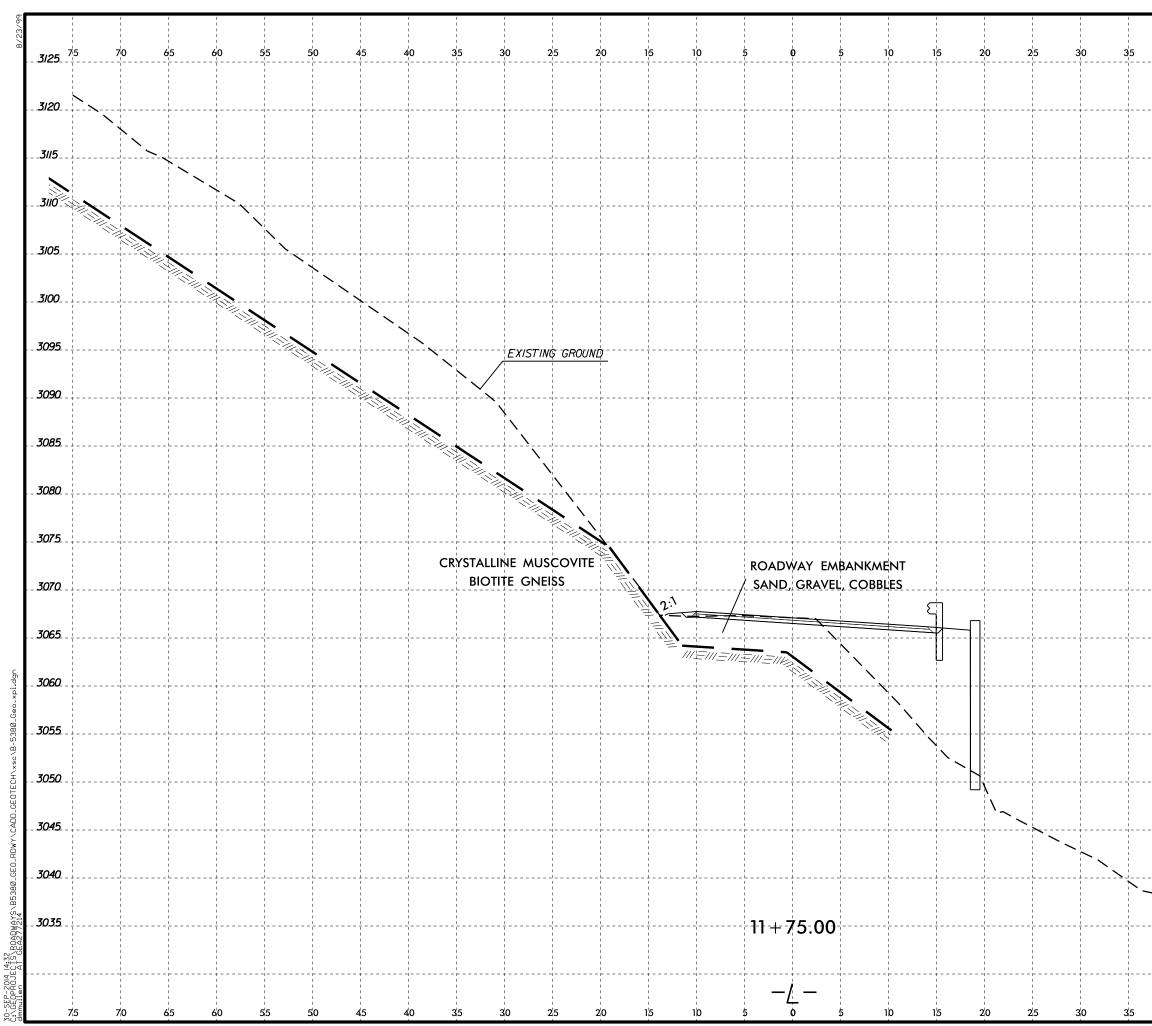
Matt Mullen. PE Project Geological Engineer





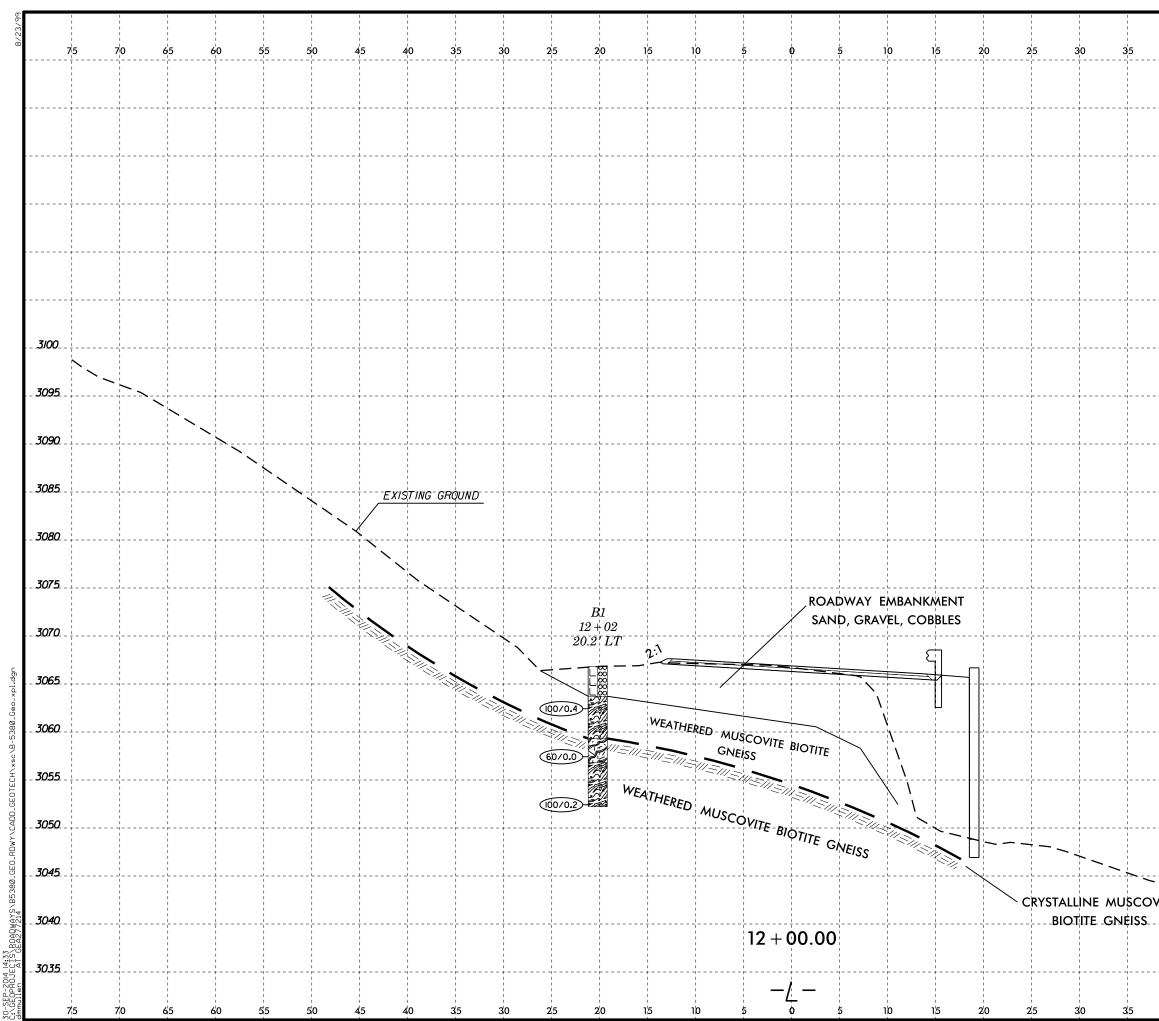
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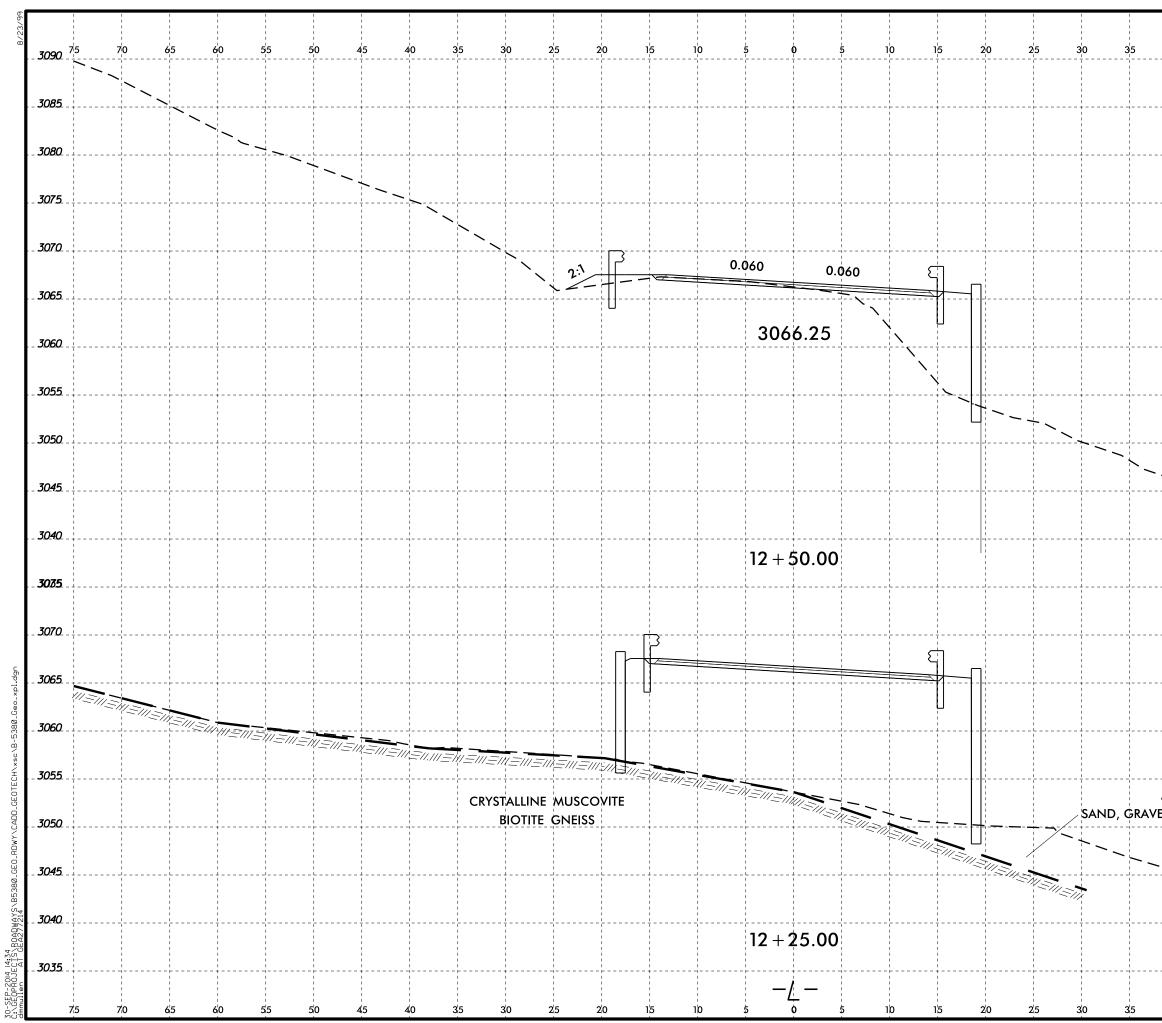


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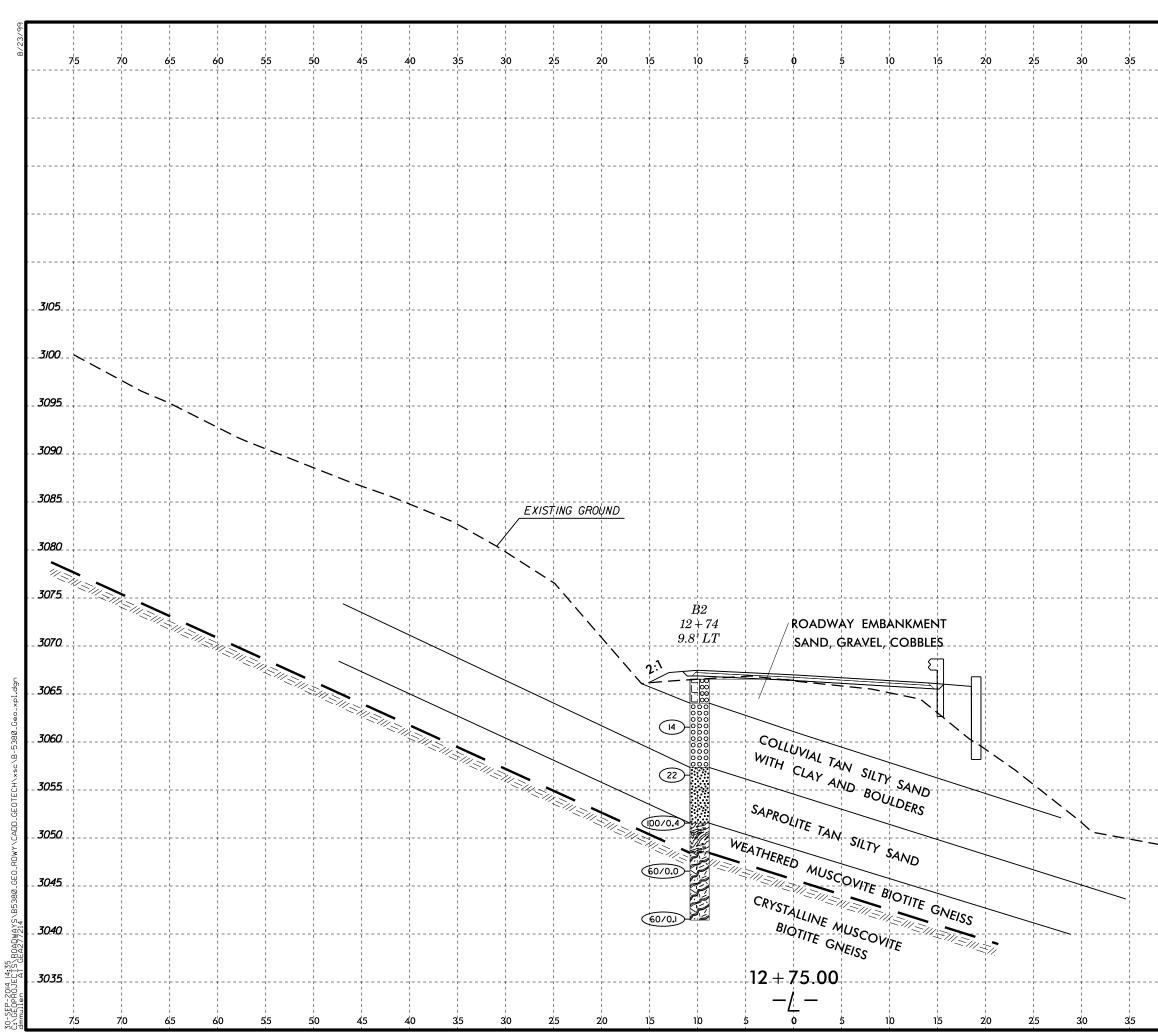


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