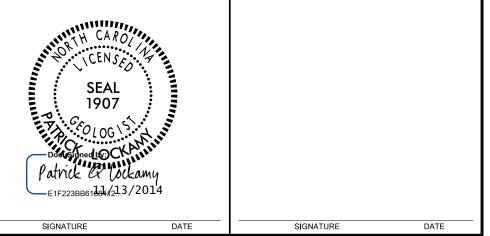
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		T 3 FOR PLA DF INVESTIGA		LAYOUT	STATE OF NORTH CAROLINA Department of transportation Division of highways Geotechnical engineering unit
	<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>	<u>XSC</u>	
404	-L- -DRI-	12+00 - 22+80 10+00 - 11+59	4 4	5 - 11	ROADWAY SUBSURFA <u>CE_INVE</u> STIGATION
: B-5404					COUNTY Jackson PROJECT DESCRIPTION <u>Approaches to Bridge No. 136</u> over Big Pine Creek on SR-1163
REFERENCE:					Inventory
RE	CROSS SECTI <u>Line</u>	ONS <u>STATION</u>	<u>SHEETS</u>		
	-L-	12+50 - 13+50	5-7		
	-L-	16+00	8		
	-L-	18+00	9		
	-L-	19+50-21+00	10-11		
46119					
ROJECT: 46119					Pa

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CAUTION NOTICE

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THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE NURVECHMAND 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 WARARNT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO 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 THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO BE INCOUNTERED ANT NO EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL COMPENSATION, FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

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PERSONNEL

INVESTIGATED BY <u>PQ</u> Lockamy

PQL

DRAWN BY <u>PQ</u> Lockamy

CHECKED BY <u>JC</u>Kuhne

SUBMITTED BY <u>JC Kuhne</u>

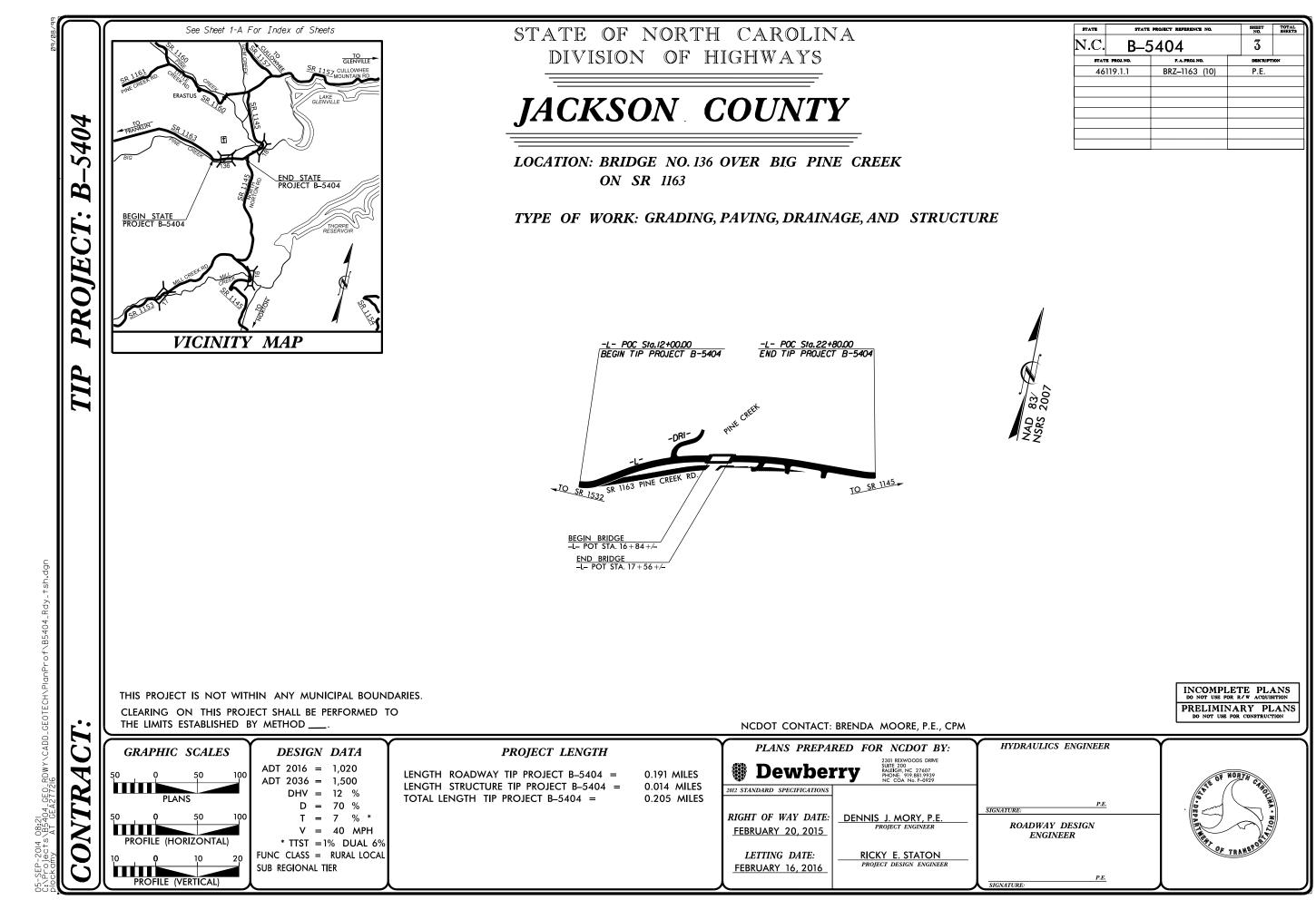
DATE <u>9-5-2014</u>

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	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF.GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS		CRYSTALLINE	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CLASS. (≤ 35%, PASSING *200) (> >35%, PASSING *200) Ondertor Print (hord *200) GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-6 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YELD SAT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL COCOGOCOCO	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	ROCK INCRY ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
7. PASSING	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX *10 50 MX *40 30 MX 50 MX 51 MN GRANULAR SULT CLAY PEAT		WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL PASSING #40	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
LL – – 40 MX 41 MN	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN MODERATE HIDHU		OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
GRUUP INDEX 8 8 8 8 4 4 MX 8 MX 12 MX 16 MX NU MX AMUUNTS OF SOILS		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES (STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SANU	STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITAGE		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	- O-M- Spring or Seep	WITH FRESH ROCK. MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH		(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL	<u>JOINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
(N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION - OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4 LOOSE 4 TO 10	SOIL SYMBOL OF TOMT TEST BORING SLOPE INDICATOR INSTALLATION	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE > 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE 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
VERY SOFT < 2 < 0.25	INFERRED SOIL BOUNDARY CORE BORING • HAND AUGER BORING	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0		VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2		SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	TTTTTT ALLUVIAL SOIL BOUNDARY A FIELUMETER - SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION -	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053		HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REDUIRED TO DETACH HAND SPECIMEN.	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY (BLDR,) (COB,) (GR,) (SL,) (CL,)		MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(USE, SU.) (F SU.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	BY MODERATE BLOWS. MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	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
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY γ - UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
	CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_{d} - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTIO	N DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLID: REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL		TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	FRAGS FRAGMENTS w - MOISTURE CONTENT CBR - CALIFORNIA BEARING HI HIGHLY V - VERY RATIO	FRACTURE SPACING BEDDING	BENCH MARK:
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: FEET
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	
	CME-45C CLAY BITS AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	NOTES:
- DRY - (D) ATTAIN OPTIMUM MOISTURE	CME-55 6' CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED < 0.008 FEET	
PLASTICITY		INDURATION	4
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
NON PLASTIC Ø-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST	FRIABLE CENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	CASING W/ ADVANCER POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
	PORTABLE HOIST	BREAKS EASILY WHEN HIT WITH HAMMER.	
		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
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.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
LISS IERO COST NO ELONY SHIRIY CHIERRED, ETCHIERE COED TO DESCRIBE HITERAHREE		EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

PROJECT REPERENCE NO.	SHEET NO.
B-5404	2 of 11



state N.C.		project reference no.	 SHEET NO.	TOTAL SHEETS
STAT	B PROJ. NO.	F. A. PROJ. NO.	DESCRIPT	ION
46	119.1.1	BRZ-1163 (10)	P.E.	



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PATRICK L. MCCRORY GOVERNOR

ANTHONY J. TATA SECRETARY

September 5, 2014

STATE PROJECT:	46119.1.1 (B-5404)
FEDERAL PROJECT:	BRZ-1163 (10)
COUNTY:	Jackson
DESCRIPTION:	Approaches to Bridge No. 136 over Big Pine Creek on SR-1163
SUBJECT:	Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project, located west of Lake Glenville, includes replacement of the existing bridge on new alignment slightly downstream. Proposed approaches, up to 6 feet tall, lap on to existing embankment. Some marshy alluvium is under proposed embankment. Two existing cuts into residuum with hummocky crystalline rock are to be augmented. The following alignments were investigated:

-L- Station 12+10 – 22+80 -DR1- 10+00 - 11+59

No borings were made for this inventory.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Crystalline rock: Bedrock is intermittently exposed in the creek bed under the existing bridge and upstream. Within proposed cuts, crystalline rock is within 6 feet of finished grade left of -L- from Stations 12+10 to 13+80 and from Stations 19+75 to 21+10

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

WEBSITE: www.ncdot.gov/doh/preconstruct/highway/geotech

LOCATION: CENTURY CENTER COMPLEX ENTRANCE B-2 1020 BIRCH RIDGE DRIVE RALEIGH NC

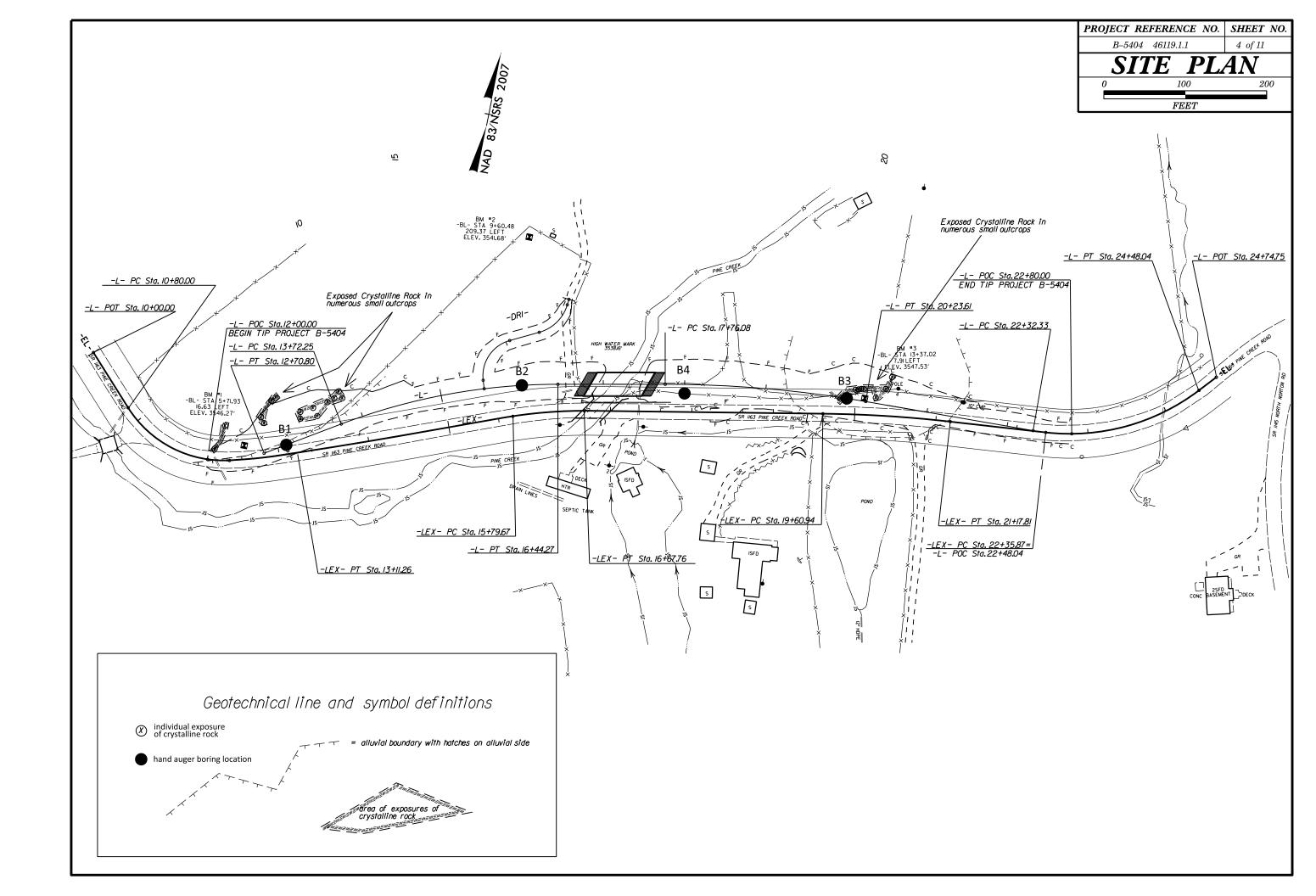
Soft Organic Soil: Soft, organic silty alluvium is present under proposed embankment along -Lfrom Station 17+50 to 19+00.

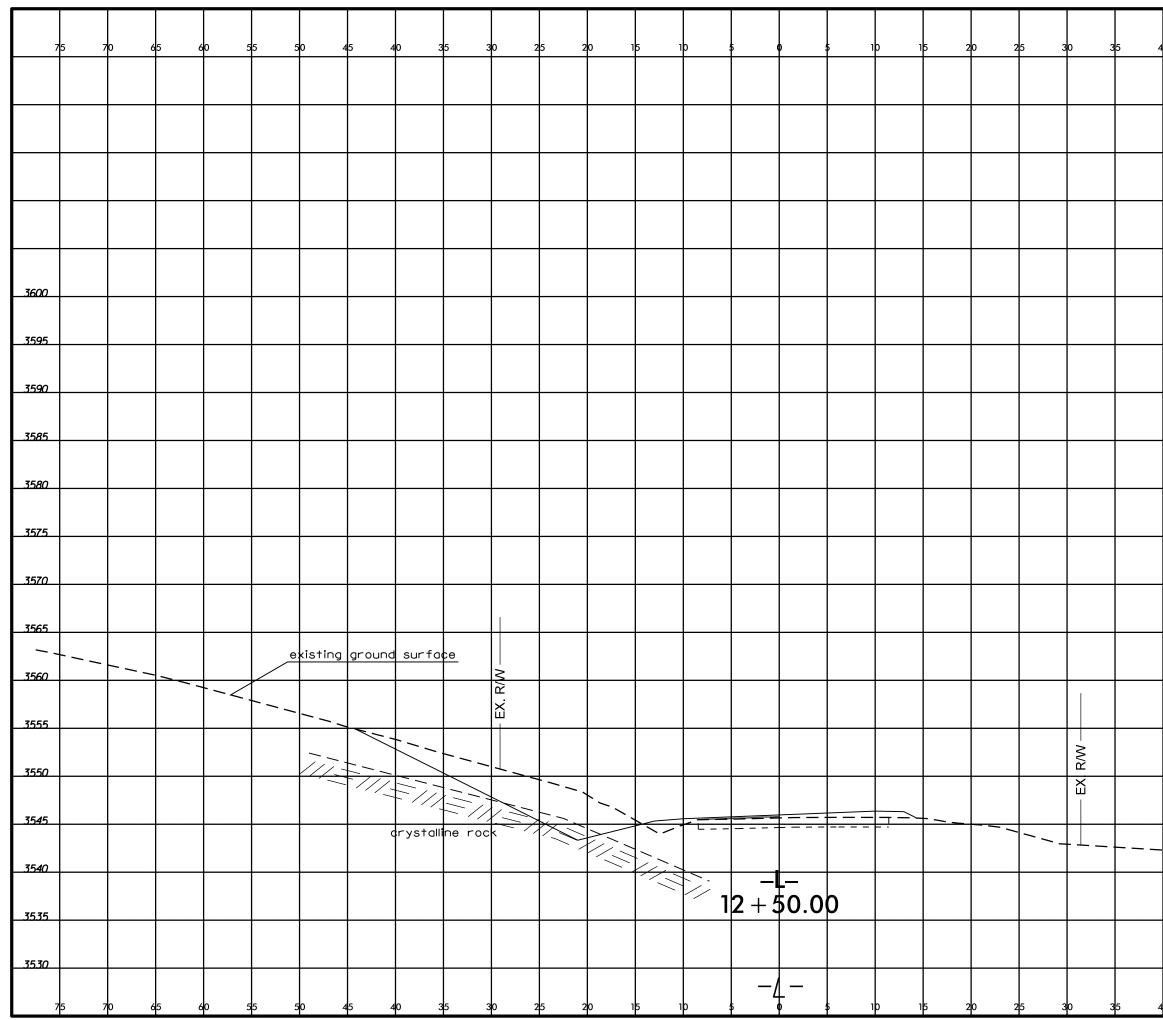
Groundwater: Groundwater is expected to be near elevation 3,534 to 3,535 across the floodplain of Big Pine Creek and almost 4 feet higher on the right side of existing embankment from near the existing bridge to the pond right of -L- Station 20+50.

Respectfully submitted,

-DocuSigned by: Patrick Q Lockamy

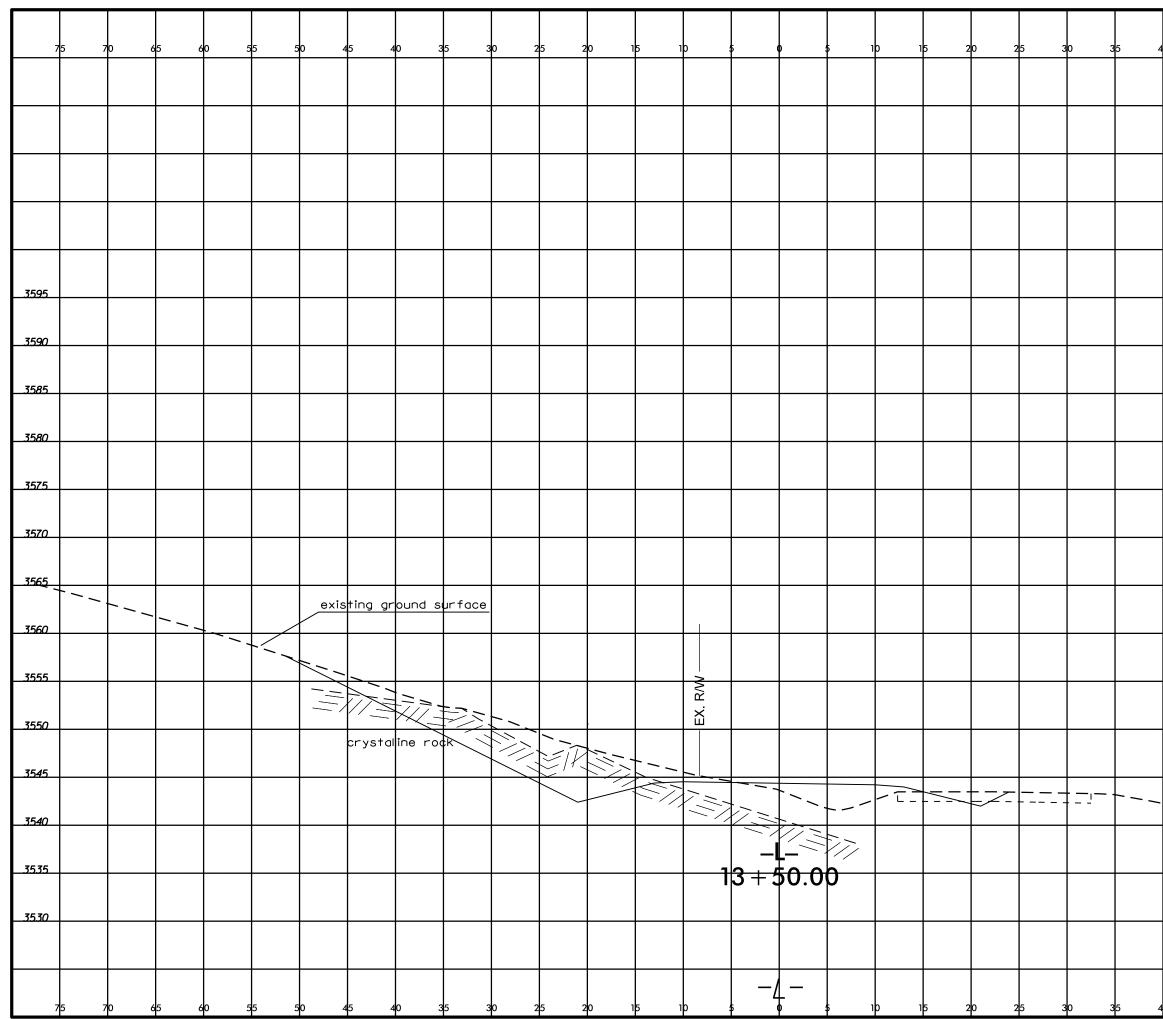
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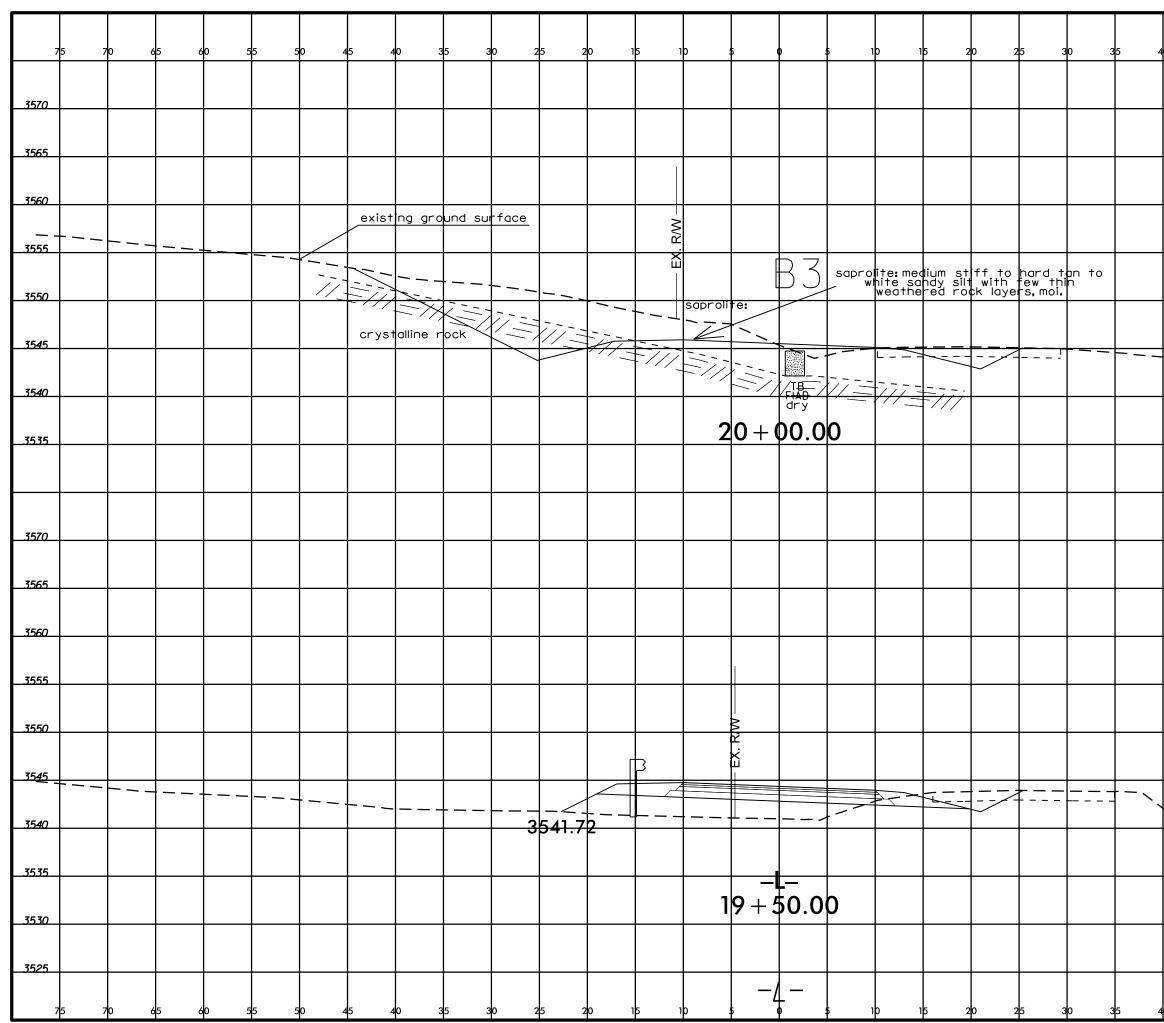
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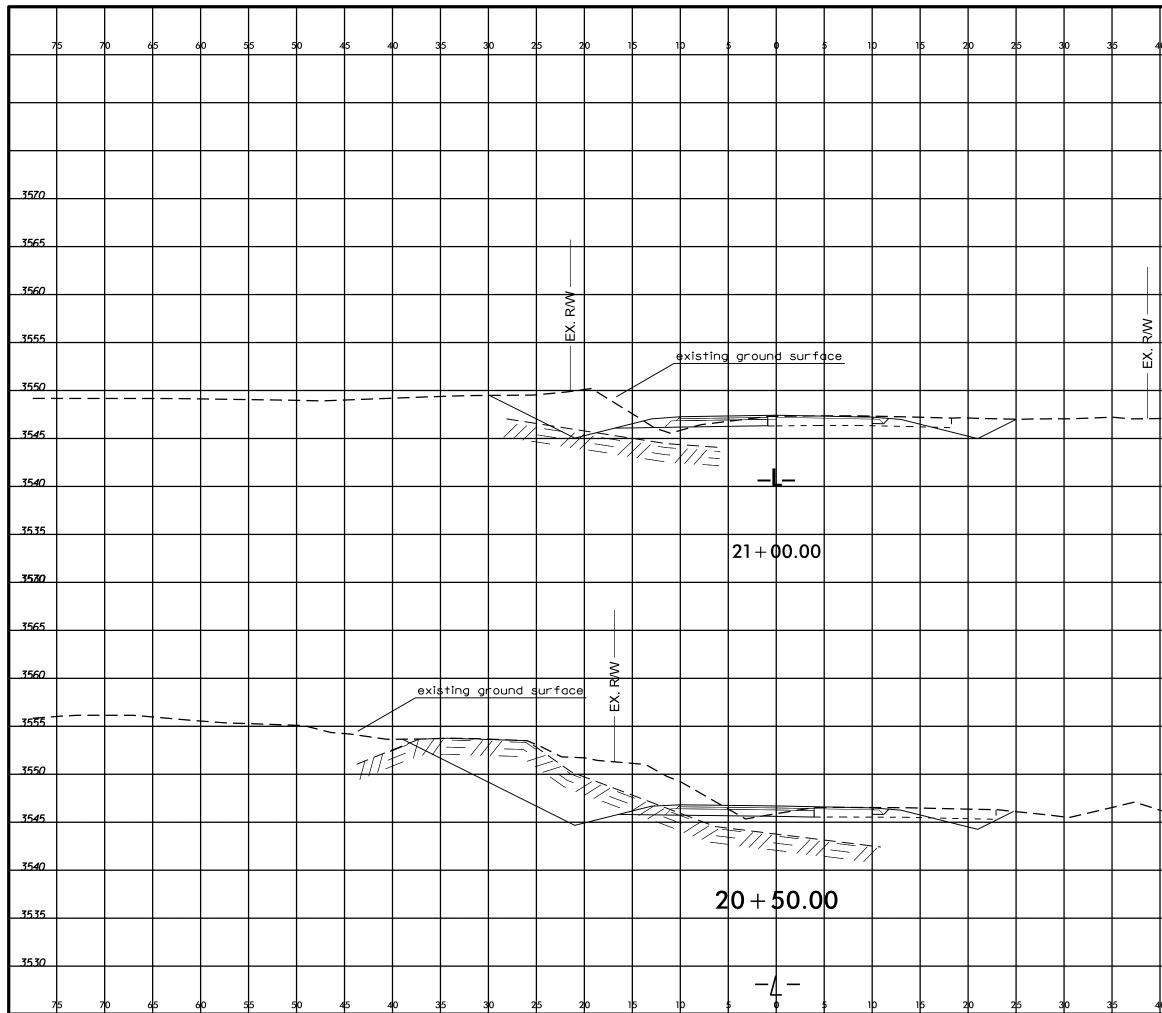
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STATE OF NORTH CAROLINA SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT **CONTENTS** <u>LINE</u> **STATION PLAN** XSC **ROADWAY** 5404 5 - 7 -L-12+00 - 22+80 4 SUBSURFACE INVESTIGATION COUNTY Jackson PROJECT DESCRIPTION Approaches to Bridge No. 136 R over Big Pine Creek on SR-1163 REFERENCE **Recommendations CROSS SECTIONS** LINE **STATION** SHEETS -L-5-7 18+50-19+00

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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 SOL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1999/707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOL TEST DATA AVAIL

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVALABLE SUBSURFACE DATA AND NAY NOT INCESSARLY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN STU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INTERENT IN THE STANDARD TEST METHOD. THE OSERVED WATER LEVELS OR SOL MOSTURE CONDITIONS MOICATED IN THE SUBSURFACE LEVELS OR SOIL MOSTINGE CONDITIONS MAY VARY CONSIDERABLY WITH THE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BLOER OR CONTRACTOR IS CALIFORD THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BUDDING 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 MATERNIZ AND CONDITIONS TO BE ENCOLINTERED. THE BUDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSART TO SATISTY HINSELF AS TO CONDITIONS TO BE ENCOLINTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS COMPRISATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL COMPENSATION OF FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

2.

THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. BY HANNIG REDUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF THE BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

PQL

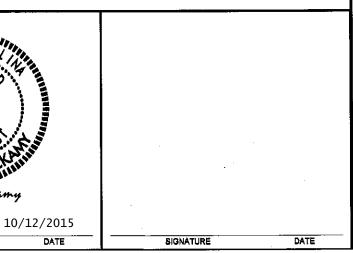
INVESTIGATED BY PQ Lockamy

DRAWN BY PQ Lockamy

CHECKED BY JC Kuhne

SUBMITTED BY JC Kuhne

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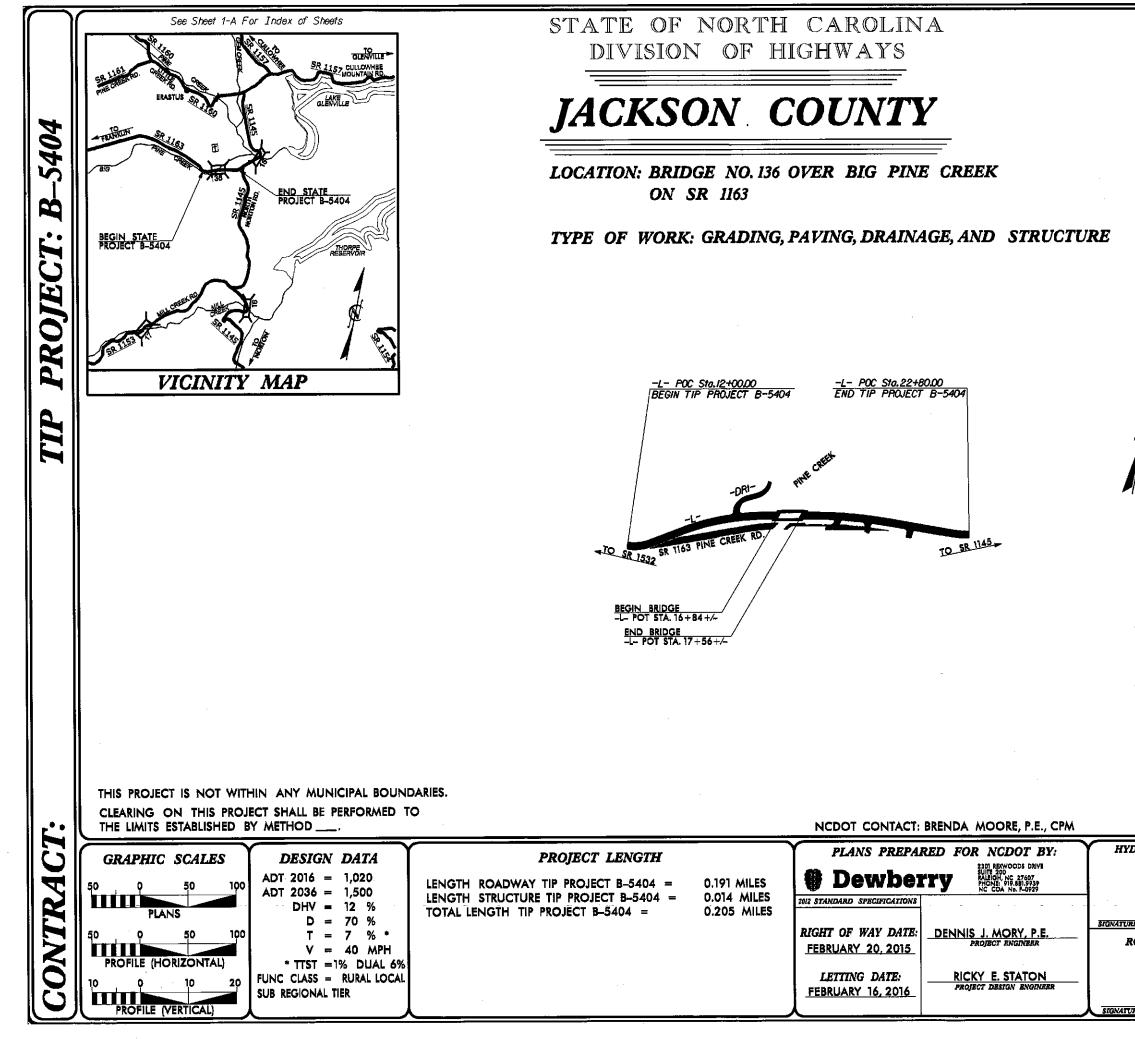


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

			SOIL D	ESCRIPTION				GRADATION						
										SPT REFUSAL	IS PENETRATION	BY A SPLIT SPOON SAM	MPLER EQUAL TO OR LESS TH	AN 0.1 FODT PER 60
	IS BA	ased on the AA	SHTO SYSTEM. BASIC	DESCRIPTIONS GENERALLY IN	(CLUDE THE FOLLOW)N	Ge	BH-BHHBED - MOICHTED			BLOWS IN NON	I-COASTAL PLAIN	N MATERIAL, THE TRAM	NSITION BETWEEN SOIL AND	ROCK IS OFTEN
the first and in a water water is a strateging of the strate	CONSISTEN	NCY, COLOR, TEXT MINERAL DRICAL	URE, MOISTURE, AASHTU COMPOSITION, ANGULA	I CLASSIFICATION, AND OTHE RITY, STRUCTURE, PLASTICITI	R PERTINENT FACTOR:	SUCH							Si	
Control C	Vi	ERI STIFF.GRALS	LTY CLAY, WOIST WITH INT	ERBEDDED FINE SAND LAYERS	HIGHLY PLASTIC.A-7-6				IGNATED BY THE TERMS:	WEATHERED	SULSUL	NON-COASTAL PLAIN	N MATERIAL THAT WOULD YIEL	.D SPT N VALUES >
		SÖIL	LEGEND AND	AASHTO CLASSIFI	CATION		ANGULHR, SUDAIN		101					
	GENERAL	GRANU	lar materials	SILT-CLAY MATERIALS	OPCONIC MATERIA					CRYSTALLINE	P. P.			
	CLASS.	(≤ 35%	PASSING 200	(> 35% PASSING #200)		L3					Kix i			PE INCLUDES GRANITE,
	SROUP		In the second				ARE USED IN		RED OF SIGNIFICANCE.	NDN-CRYCTALL	THE	FINE TO COARSE G	BAIN METAMORPHIC AND NON-D	COASTAL PLAIN
	CLASS. A	1-1-a A-1-b	A-2-4 A-2-5 A-2-6 A-2	7 4-7-6	A-3 R-B, A-7							SEDIMENTARY ROCK	THAT WOULD YEALD SPT REF	USAL IF TESTED.
	SYMBOL 83								LL < 31 II = 31 - 50	COASTAL PLAT	N			
	V Decchirc	000000000000000000000000000000000000000								SEDIMENTARY		SPT REFUSAL, ROCK	K TYPE INCLUDES LIMESTONE,	SANDSTONE, CEMENTED
		2 NX				MUČK,		PERCENTAGE OF MATERI	AL	(CP)				
	40 3 i	82 HX 588 HX 53 HN				PEAT		GRANULAR SILT - CLAY						
NAME Image NAME Image NAME Image NAME NAME NAME NAME <th< td=""><td>*298 15</td><td>5 NX 25 MX 10 HX</td><td>35 HX 35 HX 35 HX 35</td><td>NX 36 MN 36 MN 36 MN 36 MN</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>'S MAY SHOW SLIGHT STAINING.</td><td>ROCK RINGS UNDER</td></th<>	*298 15	5 NX 25 MX 10 HX	35 HX 35 HX 35 HX 35	NX 36 MN 36 MN 36 MN 36 MN									'S MAY SHOW SLIGHT STAINING.	ROCK RINGS UNDER
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Berling of an end of a star and a star		6 MX NP				HIGHL Y	HIGHLY ORGANIC	> 10% > 20%	HIGHLY 35% AND ABOVE				Sine Briomen nook hinos of	
			↓ ↓↓					GROUND WATER					AND DISCOLORATION EXTENDS IN	NTO ROCK UP TO
						50IL 5	∇			(SL1.)	i Inch. Open Join	TS MAY CONTAIN CLAY.	IN GRANITOID ROCKS SOME OCC	ASIONAL FELDSPAR
		CRAVEL AND FINE			MATTER						CRYSTALS ARE DU	LL AND DISCOLORED. CRI	YSTALLINE ROCKS RING UNDER H	HAMMER BLOWS.
			GRAYEL AND SAND	SOILS SOILS			_	STATIC WATER LEVEL AFTER 24 HO	DURS	MODERATE	SIGNIFICANT PORT	IONS OF ROCK SHOW DIS	COLORATION AND WEATHERING E	FFECTS. IN
	GEN, RATING		I		FAIR TO			PERCHED WATER, SATURATED ZONE, OR	WATER BEARING STRATA					
Implementation Impleme		EXCEL	LENT TO GOOD	Fair to poor	POOR POOR	UNSUITABLE	0.000					R HAMMER BLOWS AND S	HUNS SIGNIFICANT LUSS OF STR	KENGTA AS LUMPAKED
	· · · ·	PJ OF	A-7-5 SUBGROUP IS ≤ LL	- 37 : PI OF A-7-6 SUBGROUP 15	> LL - 38			SPAING DR SEEP				0000017 01900000000000000000000000000000	STAINED IN GRANITED BOCKS	
								MISCELLANEOUS SYMBOL	S					
		· · · · · ·			RANGE OF UNCO	INE1NED							T'S PICK. ROCK GIVES "CLUNK" S	COUND WHEN STRUCK.
	PRIMARY S	OIL TYPE			COMPRESSIVE S	RENGTH			CTION		IF TESTED, WOULD	YIELD SPT_REEUSAL		
			CUNSISTENUT	IN-VALUE)	(TONS/FT	²)	WITH SOIL DES	SCRIPTION OF ROCK STRUCT	TURES					
Image: And the second of the second	GENERAL	1 4												PARS ARE KAULINIZED
Mittender Procession Processi							8	V VST PHT						
UNDER DESCRIPTION UNIT East > 58 UNIT East OPEN DESCRIPTION OPEN DES	MATER]A	rL i			NZA									NTS ARE DISCERNIBLE
	(NON-COH	HESIVE)								SEVERE	BUT MASS IS EFFI	ECTIVELY REDUCED TO S	DIL STATUS, WITH DNLY FRAGME	INTS OF STRONG ROCK
Generalize Construct Stort (b) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c			VERY SOFT	< 2	< Ø.25	·	INFERRED SOIL	. BOUNDARY CORE BORING	HAND AUGER BORING					
Bit Column Bit No B A 10 B B 2 10 A Procession Processint andefinandefinance finance finandefinandefinandefinance fina	GENERAL	LY				.5		NV a						
CODESING UP: #131FF US 15 38 2 10 4 Y***** ALL MORAL SUBLE BURGENTION Cold Part Invalue CALMAN ALL SUBJECT CALMANAL SUBJECT CALMANAL SUB						ø	INFERRED ROC	K LINE "O MONITORING WEL						
Instrument 3.82 3.4 Instrument Description Descriptio													BE PRESENT AS DIRES OR STR	INGERS, SAPRULITE IS
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US_STD_SIZE 4.0 0.0 2.0 2.0 2.0 2.0 2.0 0.0 <th< td=""><td></td><td></td><td>TEXTURE</td><td>OR GRAIN SIZE</td><td>1</td><td></td><td></td><td>RECOMMENDATION SYMBO</td><td>LS</td><td>· · · · ·</td><td></td><td>RULK HA</td><td>ARUNESS</td><td></td></th<>			TEXTURE	OR GRAIN SIZE	1			RECOMMENDATION SYMBO	LS	· · · · ·		RULK HA	ARUNESS	
														ECIMENS REQUIRES
BOLLCER COBLE									ACCEPTABLE, BUT NOT TO BE					
BOLDER CORPUE CORPUE CORPUE CORPUE Community Community <td>UPENING (MM</td> <td>1)</td> <td>4.75 2.06</td> <td></td> <td></td> <td></td> <td>SHALLOW IN</td> <td>UNCLASSIFIED EXCAVATION -</td> <td></td> <td></td> <td></td> <td></td> <td>LY WITH DIFFICULTY. HARD HAM</td> <td>MER BLOWS REDUIRED</td>	UPENING (MM	1)	4.75 2.06				SHALLOW IN	UNCLASSIFIED EXCAVATION -					LY WITH DIFFICULTY. HARD HAM	MER BLOWS REDUIRED
COUD COUNT MC MOD Count MC MOD	BOULDER	R COBBLE	GRAVEL		9111			ACCEPTABLE DEGRADABLE ROCK	EMBANKMENT OK BACKFILL					WED DEED CAN DE
NUM VM	(BLDR.)	(COB.)	(GR,)			(CL.)		ABBREVIATIONS						
Size in ize in in<		208	75 20	R 25	0.05 0.005		AR - AUGER BEFUSAL	MED MEDIUM	VST - VANE SHEAR TEST					
SOIL MOISTURE - CORRELATION OF TERMS CL - CLY MOD MODENTILY Z'- UNIT WEIGHT SOIL MOISTURE SCALE FIELD MOISTURE DUIDE FOR FIELD MOISTURE DESCRIPTION DESCRIPTION <td< td=""><td></td><td></td><td></td><td>\$,20</td><td>0.000</td><td></td><td></td><td></td><td>WEA WEATHERED</td><td>MEDIUM</td><td>CAN BE GRODVED</td><td>OR GOUGED 0.05 INCHES</td><td>DEEP BY FIRM PRESSURE OF K</td><td>NIFE OR PICK POINT.</td></td<>				\$,20	0.000				WEA WEATHERED	MEDIUM	CAN BE GRODVED	OR GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF K	NIFE OR PICK POINT.
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WATTERBERG LIMITS: DESCRIPTION DUILS FOR FIGLE MOSTURE DESCRIPTION DUT - PRESQUENTER TEST PAPLE ABBREVITIONS Same Laboration Provide the set of the se	···-				IERMS				'∕d- DRY UNIT WEIGHT					
PARTICLE DATES DEVENDENCE DATES Seturates					FIELD MOISTURE DES	CRIPTIDN			SAMPLE ABBREVIATIONS					
SATURATED - USUALLY LIQUUD, VERY VERY LUXUALLY SATURATED - USUALLY LIQUUD, VERY VERY LUXUALLY SATURATED - USUALLY LIQUUD, VERY VERY LUXUALLY SATURATED - USUALLY LIQUUD, VERY VERY LUXUALTY SATURATED - USUALLY LIQUUD, VERY VERY LUXUALTY SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY SATURATED READULY WITH POINT OF PICK, PEEES I INCH SATURATED - VERY S	·····													K FORMEL, MIN
LL LIUDD LIMIT (SRL) FRUME BELOW THE GROUND WHEN THERE F - FIRE SL - SLILISLIT SIL - SLILISLIT SF - FRUE SOFT OR HORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READLY BY PLASTIC - VET - (M) SEMISLID, REQUIRES BRYING TO ATTAIN OFTIMUM MOISTURE FRO FROMENTS RI - SLILISLIT SI - SLILISLIT SI - SLILISLIT SOFT OR HORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READLY BY (P) PLASTIC LIMIT - VET - (M) SEMISLID, REQUIRES BRYING TO ATTAIN OFTIMUM MOISTURE FRO. EXCLAND RECOMPACIED TRIAXIAL RT - RECOMPACIED TRIAXIAL RT - RECOMPACIED TRIAXIAL RT - RECOMPACIED TRIAXIAL RT - NORTHALL MOISTURE SOFT OR HORE TAN 10 FERT FRO. EXCLAND 0M OPTIMUM MOISTURE - MOIST - MI SOLID, AT OR NEAR OPTIMUM MOISTURE DRILL UNITS: Advancing tools: HAMMER TYPE: SOFT THICKLY BEDDED 4.95 FEET 0M OPTIMUM MOISTURE - DRY - (C) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE DRILL UNITS: Advancing tools: HAMMER TYPE: ORFTONINGUES FLET THICKLY BEDDED 4.95 FEET THICKLY BEDDED <td></td> <td></td> <td>- Satur</td> <td></td> <td></td> <td></td> <td>➡ - VDID RATIO</td> <td>SD SAND, SANDY</td> <td>SP - SPLIT SPOON</td> <td></td> <td></td> <td></td> <td></td> <td>PICK. PIECES 1 INCH</td>			- Satur				➡ - VDID RATIO	SD SAND, SANDY	SP - SPLIT SPOON					PICK. PIECES 1 INCH
PLASTIC RARGE - vet - GO Semisol.Dp. Recuires payme to attain 0PTimum Moisture F05 F05SILTENDUS FRAGE FRACTURES SLL- SLUPINT, TRA- FRACTURES Rt - Rockersto recompacted trianale recompacted tr	l) FROM BELOV	Y THE GROUND WATE	TABLE				SOFT	OR MORE IN THICK	(NESS CAN BE BROKEN B	BY FINGER PRESSURE. CAN BE S	CRATCHED READILY BY
Product - vet - col Bendlock and multime to artific to multime to artific to multime to the most of the mos											FINGERNAIL.			
(PD) PLASTIC LIMIT ITEM OF DECIMA MITH AND FUSIONE HIL- MIDHLY V - VERY RATIO TERM SPACING TERM THORKESS 0H OPTIMUM MOISTURE - MOIST - (M) SOLIDA TO R NEAR OPTIMUM MOISTURE EQUIPMENT USED ON SUBJECT PROJECT Mole THAN 19 FEET VERY HICKLY BEDDED 1.5 - 4 FEET 0H OPTIMUM MOISTURE - MOIST - (M) SOLIDA TO R NEAR OPTIMUM MOISTURE DELL UNTS: ADVANCING TOULS: MANHER TYPE: MOLE ALS FEET THICKLY BEDDED 1.5 - 4 FEET - DRY - (0) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE CRE-45C CLAP BITS MANHER TYPE: MOLE ALS FEET THICKLY LAMINATED 0.408 - 8.48 FEET - DRY - (0) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE CRE-55 B HOLLOW AUGERS B HOL B HOL CORE SIZE: INDUCRATION - DRY - (0) RECOURS (PI) DRY STRENCTH C CME-550 B HOLLOW AUGERS B HAD FACED FINGER BITS M M M MANEROUS REARS INDUCRATION NON PLASTIC 0-15 SULDHTY DRY STRENCTH C CME-550 INDURATED CARES REAR TEST FOR SEDIMENDING IN IS THE HARDENING ING, HEAT, PRESSURE, ETC. NON PLASTIC	BANGE 2		- WET -							F	RACTURE SP	PACING	BEDD	ING
OPTIMUM MOISTURE - MOIST - MM SOLID, AT OR NEAR OPTIMUM MOISTURE EQUIPMENT USED ON SUBJECT PROJECT VERY Mole MORe THAN 19 FEET VERY MOLE VERY MOLE J 19 FEET VERY MOLE J 10 IF FEET VERY MOLE J	(PD) PL				INOM HUISTURE									
DM OPTIMUM MOISTURE - MOIST - (M) SOLID, AT OR NEAR OPTIMUM MOISTURE DIL UNDE 3 TO 10 FEET THICKLY BEDDED 0.10 - 4 FEET SL SHRINKAGE LIMIT - - DRL UNTS: DUAL VALUE CLAY BITS - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE DELL UNTS: DUAL VALUE CLAY BITS - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE CME-65 0 + OLLOW AUGERS HAMMER TYPE: MODERATELY CLOSE 0.6 TO 1 FOOT VERY THINLY BEDDED 0.483 - 0.16 FEET - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE CME-65 0 + OLLOW AUGERS -		T					FOI	IPMENT USED ON SUBJECT	PROJECT				VERY THICKLY BEDDED	
SL SHAINKAGE LIMIT	ом.	⊥ ортамым м	DISTURE - MOIST	- (M) SOLID; AT O	R NEAR OPTIMUM MO	ISTURE								
PRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE CME-655 6' CONTINUOUS FLIGHT AUGER VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET PLASTICITY PLASTICITY DRY - (D) DRY STRENGTH CME-659 6' CONTINUOUS FLIGHT AUGER CORE SIZEH FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENUS GRAINS; CORE SIZEH FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENUS GRAINS; CORE SIZEH THO, VARE SIGHT AUGER FOR SEDIMENTARY ROCKS, INDURATION SIS THE HARDENUS GRAINS; FOR SEDIMENTARY ROCKS, INDURATION SIS THE HARDENUS GRAINS; FOR SEDIMENTARY ROCKS, INDURATION SIS THE HARDENUS GRAINS; FOR SED	SL.	SHRINKAGE	LIMIT	-				_						
- DRY = 601 ATTAIN OPTIMUM MOISTURE CME-B5 6* CONTINUOUS FLIGHT AUGER CORE SIZE: THINLY LAMINATED C 0.008 FEET INDURATION PLASTICITY DRY = 601 DRY = 601 G* CONTINUOUS FLIGHT AUGER CORE SIZE: Image: Core Size	1	1		REQUIRES A	DDITIONAL WATER TO			<u> </u>					THICKLY LAMINATED	
PLASTICITY Induction	1		- URY -	ATTAIN OPT	IMUM MOISTURE		EME-55	6" CONTINUOUS FLIGHT AUGER	CORE SIZE				THINLY LAMINATED	< 0.008 FEET
PLASTICITY INDEX (PI) DRY STRENGTH CME-650 HARD FACEO FINGER BITS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. NON PLASTIC 0-5 VERY LOW 1 UNG-CARBIDE INSERTS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. NON PLASTIC 6-15 SLIGHT VANE SHEAR TEST 1 CASING V/ ADVANCER MODERATELY PLASTIC 16-25 MEDIUM PORTABLE HOIST 1 CASING V/ ADVANCER POST HOLE DIGGER MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; MIGHLY PLASTIC 26 DR MORE HIGH PORTABLE HOIST TRICONE 'STEEL TEETH X HAND AUGER DESCRIPTIONS MAY INCLUDE COLOR OR CLUB COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). CORE BIT CORE BIT CORE BIT GRAINS ROD INDURATED GRAINS ARE UIFFICULT TO SEPARATE WITH STEEL PROBE; DESCRIPTIONS MAY INCLUDE COLOR OR CLUB COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). CORE BIT CORE BIT VANE SHEAR TEST GRAINS ROD INDURATED GRAINS ARE UIFFICULT TO SEPARATE WITH STEEL PROBE; DESCRIPTIONS MAY INCLUDE COLOR OR CLUB COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). <td< td=""><td>L</td><td>1</td><td>DI</td><td>ASTICITY</td><td></td><td></td><td></td><td>6" HOLLOW AUGERS</td><td> []-в []-н</td><td></td><td></td><td>INDUR</td><td>RATION</td><td></td></td<>	L	1	DI	ASTICITY				6" HOLLOW AUGERS	[]-в []-н			INDUR	RATION	
PLASTIC 10 PLASTIC DRY STRENCTH <	L						CME-559	HARD FACED FINGER BITS		FOR SEDIMEN	ARY ROCKS, INDU	RATION IS THE HARDEN	ING OF MATERIAL BY CEMENT	ING, HEAT, PRESSURE, ETC.
NUM FLASTIC 6-15 SLIGHT VARE SHEAR TEST INDEPUTING CHARDLE INSERTS HAND TOOLSI MODERATELY PLASTIC 16-25 MEDIUM PORTABLE HOIST CASING W ADVANCER HIGHLY PLASTIC 26 OR MORE HIGH PORTABLE HOIST TRICONE 'STEEL TEETH MAND AUGER COLOR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). PORTABLE HOIST TRICONE 'STEEL TEETH SUNDING ROD INDURATED OFAINS ARE DIFFICULT TO SEPARATELY WITH STEEL PROBE; DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). CORE 6JT CORE 6JT VANE SHEAR TEST EXTEMPLY INDURATED SHARP HAMMER DLOWS REQUIRED TO BREAK SAMPLE;		D) 40770	PLAS						^{א-} لـــا		-			
MODERATELY PLASTIC IG-25 MEDIUM I CASING W ADVANCER POST HOLE DIGGER MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; HIGHLY PLASTIC 26 DR MORE HIGH PORTABLE HOIST TRICONE 'STEEL TEETH X HAND AUGER BREAKS EASLY WHEN HIT WITH HAMMER, COLOR COLOR							VANE SHEAR TEST		HAND TOOLS:	FRIABL	E			
HIGHLY PLASTIC 26 DR MORE HIGH PORTABLE HOIST TRICONE STEEL TEETH NOT HELE DISCLE MODERATELY INDURATED BREAKS EASILY WHEN HIT WITH HAMMER. COLOR Image: Color of the colo	MODI	ERATELY PLAST	.1C					CASING W/ ADVANCER		I		GRAINS CAN RE	E SEPARATED FROM SAMPLE W	ITH STEEL PROBE:
COLOR Image: Arrow of the construction o							PORTABLE HOIST	TRICONE STEEL TEETH		MODERA	TELY INDURATED			
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	L			COLOR						1		GRAINS ARE DI	FFICULT TO SEPARATE WITH S	STEEL PROBE:
SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	L	•		<u> </u>			1 🗖			INDURA	TED			
									VANE SHEAR TEST	1		SHARP HAMMER	BLOWS REQUIRED TO BREAK	SAMPLE:
	MO	IDIFIERS SUCH	AS LIGHT, DARK, STRE	AKED, ETC, ARE USED TO D	ESCRIBE APPEARANCE				[]	EXTREM	IELY INDURATED			

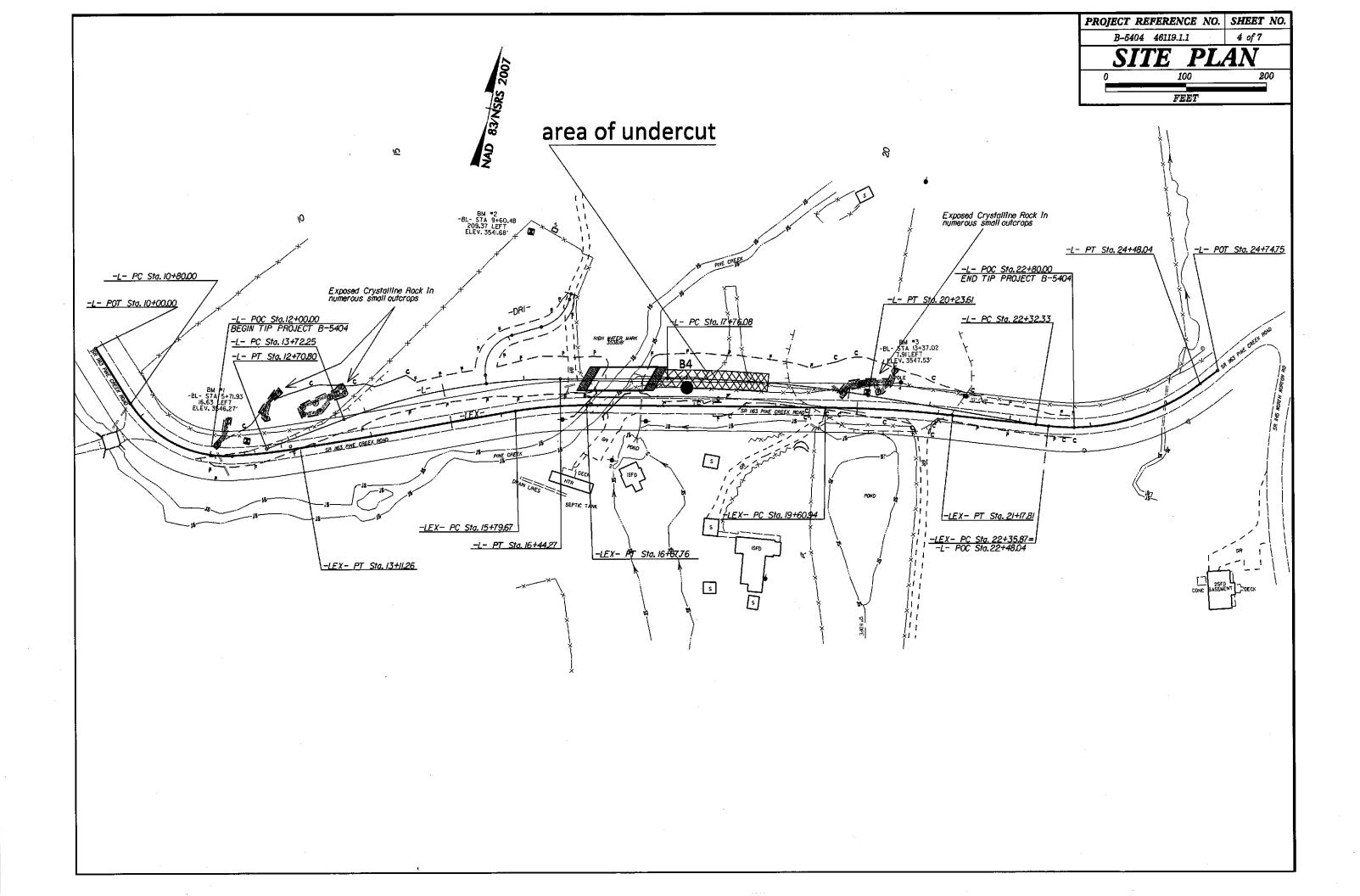
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	ERMS AND DEFINITIONS	
LLUVIUM (ALLUV.) - SOILS THAT	HAVE BEEN TRANSPORTED BY WATER.	
<u>OUIFER</u> – A WATER BEARING FO <u>RENACEOUS</u> – APPLIED TO ROCK	RMATION OR STRATA. Is that have been derived from sand or tha	IT CONTAIN SAND.
RGILLACEOUS - APPLIED TO ALI	L ROCKS OR SUBSTANCES COMPOSED OF CLAY MI (IN THEIR COMPOSITION, SUCH AS SHALE, SLATE,	NERALS, OR HAVING
RTESIAN - GROUND WATER THAT	IN THEIR CUMPLESISSIN, SUCH AS SHALE, SLATE, I IS UNDER SUFFICIENT PRESSURE TO RISE ABOV WHICH DOES NOT NECESSARILY RISE TO OR ABOV	E THE LEVEL AT
URFACE.	WHICH DUES NOT NELESSARILY RISE TO UR ABOV	
OLLUVIUM - ROCK FRAGMENTS N	NT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM N MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLO	
F SLOPE. <u>ORE RECOVERY (REC.)</u> - TOTAL L INTITAL LENGTH DE COBE BUN	LENGTH OF ALL MATERIAL RECOVERED IN THE CO	DRE BARREL DIVIDED
DIKE - A TABULAR BODY OF JGN	AND EXPRESSED AS A PERCENTAGE. EDUS ROCK THAT CUTS ACROSS THE STRUCTURE	OF ADJACENT
	TRATUM OR ANY PLANAR FEATURE IS INCLINED F	TROM THE
KORIZONTAL. DI <u>P DIRECTION IDIP AZIMUTHD</u> - T	The direction or bearing of the horizontal	
INE OF DIP, MEASURED CLOCKWI AUL <u>T</u> - A FRACTURE OR FRACTU	ISE FROM NORTH. URE ZONE ALONG WHICH THERE HAS BEEN DISPLA	
DES RELATIVE TO ONE ANOTHE		
	URFACE NEAR THEIR ORIGINAL POSITION AND DIS	
LOOD PLAIN (FP) - LAND BORDER	RING A STREAM, BUILT OF SEDIMENTS DEPOSITED	
TELD.	SEOLOGIC UNIT THAT CAN BE RECOGNIZED AND T	
EDGE - A SHELF-LIKE RIDGE OF	NG WHICH NO APPRECIABLE MOVEMENT HAS OCCU R PROJECTION OF ROCK WHOSE THICKNESS IS SM	
TS LATERAL EXTENT. . <u>ENS</u> - A BODY OF SOIL OR ROC	K THAT THINS OUT IN ONE OR MORE DIRECTIONS	2
IDTTLED (MOT.) - IRREGULARLY N	MARKED WITH SPOTS OF DIFFERENT COLORS. MOT TION AND LACK OF GOOD ORAINAGE.	
	AINED ABOVE THE NORMAL GROUND WATER LEVEL	BY THE PRESENCE
<u>Residual (Res.) Soil</u> - Soil For	RMED IN PLACE BY THE WEATHERING OF ROCK.	
R <u>ock quality designation (rot</u> Rock segments equal to DR G Run and expressed as a perci	D - A MEASURE OF ROCK QUALITY DESCRIBED BY REATER THAN 4 INCHES DIVIDED BY THE TOTAL ENTAGE.	LENGTH OF CORE
	IN THAT RETAINS THE RELIC STRUCTURE OR FAS	BRIC OF THE PARENT
BILL - AN INTRUSIVE BODY OF I	igneous rock of approximately uniform thic In its Lateral Extent that has reen emplag	
THE BEDDING OR SCHISTOSITY D		
DR SLIP PLANE.	TRIATED SURFACE THAT RESULTS FROM FRICTION	
A 140 LB. HAMMER FALLING 30 1	<u>'Enetration resistance)(SPT)</u> - Number of Blo Inches Required to produce a penetration o Er Split Spoon Sampler, SPT refusal is pen R& Rigues.	F 1 FODT INTO SOIL
	- TOTAL LENGTH OF STRATA MATERIAL RECOVER	ed divided by
STRATA ROCK QUALITY DESIGNAT	(IDN (SROD) - A MEASURE OF ROCK QUALITY DESC	RIBED BY TOTAL
	HIN A STRATUM EQUAL TO OR GREATER THAN 4 AND EXPRESSED AS A PERCENTAGE. USUALLY CONTAINING ORGANIC MATTER.	
BENCH MARK:		
	ELEVATION:	FEET
NOTES:		



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