# PROJECT: 33716.1.1

# STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

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# STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REI	FERENCE NO.	33716.1.1	3-4467		F.A. PROJ. <u>4</u>	BRZ-1111(7)
COUNTY	CLAY					
PROJECT	DESCRIPTION	BRIDGE	NO.3 ON	SR	1111 OVER	
	TOWN CREE					
SITE DES	SCRIPTION					
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL
N.C.	33716.1.1 B-4467	1	11

## **CAUTION NOTICE**

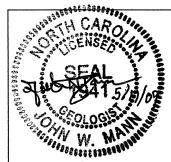
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARNOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (9)9) 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 BORCHOLE, THE LABORATORY SAMPLE DATA AND THE IN STIL (NH-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INFERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOSTURE CONDITIONS MOICATED IN THE SUBSURFACE INVESTICATIONS ARE AS RECORDED AT THE TIME OF THE INVESTICATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS WITH 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, NOT HE INTERPRETATIONS MADE, OR OPINION OF THE EXPERIENCY OR ACCURACY OF THE INVESTIGATION AMODE, OR OPINION OF THE BIDDING 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 OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS TO BE ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

	M.M. HAGER
_	P.Q. LOCKAMY
	D.O. CHEEK
	G.K. ROSE
_	R.D CHILDERS
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- Investigated b	J.W. MANN
CHECKED BY	W.D. FRYE
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PERSONNEL



### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

### DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

# SUBSURFACE INVESTIGATION

### SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

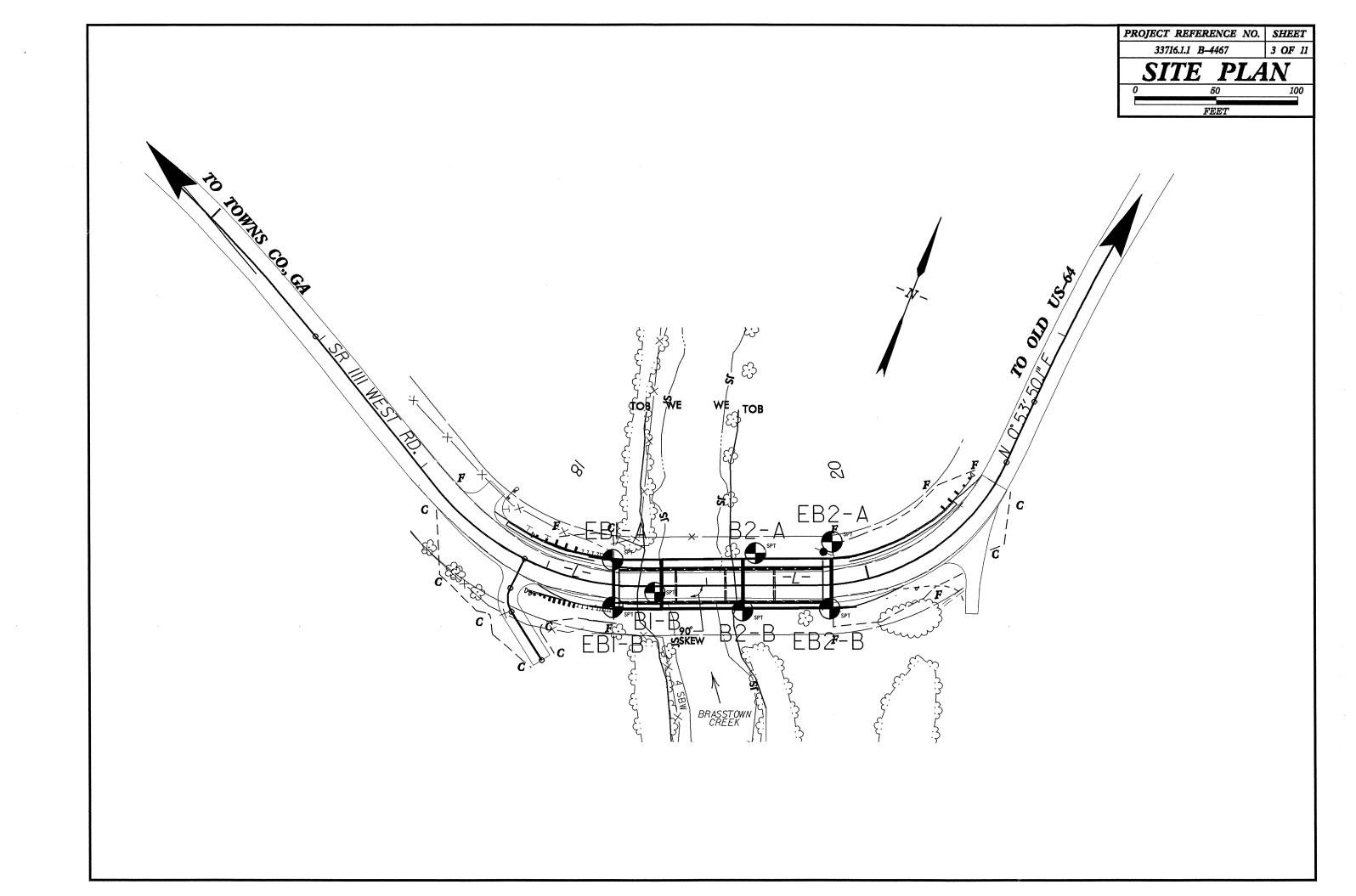
GRADATION SOIL DESCRIPTION TERMS AND DEFINITIONS <u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COA <u>UNIFORM</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSC HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EDUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN AQUIFER - A WATER BEARING FORMATION OR STRATA. 188 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T286, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: AP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZON ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ANGULARITY OF GRAINS CONSISTENCY, COLOR, TEXTURE, MOISTURE, AGSHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS: ARGILLACEDUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS. THE ANGULARITY OR ROUNDNESS OF GOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. VERY STIFF, GRAY, SUTY CLAY, MOSST WITH INTERREDDED FINE SAND LIVERS, HIGHLY PLASTIC, A-7-6 SUBANGULAR, SUBROUNDED, OR ROUNDED ROCK (WR ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL MINERALOGICAL COMPOSITION SOIL LEGEND AND AASHTO CLASSIFICATION FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANJTE, AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE CRYSTALLINE ROCK (CR) MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE. GROUND SUBFACE. ORGANIC MATERIALS CLASS. (≤ 35% PASSING \*200) (> 35% PASSING #200) GNEISS, GABBRO, SCHIST, ETC. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN
SEDIMENTARY BOCK THAT WOULD YELLD SPT REFUSAL IF TESTED. ROCK TYPE
INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD COMPRESSIBILITY A-1 A-3 NON-CRYSTALLINE GROUP COLLUVIUM ~ ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM A-1. A-2 CLASS. 1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-3 A-6. A-7 SLIGHTLY COMPRESSIBLE LIDUID LIMIT LESS THAN 31 OASTAL PLAIN EDIMENTARY ROCK MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 SYMBOL 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. HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50 SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC PERCENTAGE OF MATERIAL PASSIN WEATHERING DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT MUCK, PEAT RANULAI SILT - CLAY CLAY ORGANIC MATERIAL ROCKS OR CUTS MASSIVE ROCK. OTHER MATERIAL SOILS SOILS SOILS SOILS ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE \* 200 RACE OF ORGANIC MATTER 3 - 5% 2 - 3% TRACE 1 - 102 HAMMER IF CRYSTALLINE. ITTLE ORGANIC MATTER 3 - 52 5 - 12% LITTLE 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 ADDERATELY ORGANIC 5 - 10% VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF 20 - 35% LASTIC INDEX CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF V SLIJ HIGHLY DRGANIC LITTLE OR >10% >20% HIGHLY 35% AND ABOVE THE LINE OF DIP. MEASURED CLOCKWISE FROM NORTH HIGHLY OF A CRYSTALLINE NATURE. 9 8 4 MX 8 MX 12 MX 16 MX No MX MODERATE GROUP TNDEX ø GROUND WATER FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLOBATION EXTENDS INTO BOCK UP TO AMOUNTS OF SOILS SI TOHT USUAL TYPES STONE FRAGS. FINE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL SILTY OR CLAYEY SILTY CLAYEY GRAVEL AND SAND OF MAJOR FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. GRAVEL AND SAND SOTUS SOTI S SAND STATIC WATER LEVEL AFTER 24 HOURS SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN MODERATE FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. GEN. ROTING **∑**P₩ GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLDRED, SOME SHOW CLAY, ROCK HAS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA (MOD.) POOR UNSUITAB AS A 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. POOR SUBGRADE WITH FRESH ROCK.  $\bigcirc$ PI OF A-7-5 SUBGROUP IS ≤ LL - 30 : PI OF A-7-6 SUBGROUP IS > LL - 30 MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULI MISCELLANEOUS SYMBOLS AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH CONSISTENCY OR DENSENESS FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK, RANGE OF STANDARD COMPACTNESS OR SAMPLE PRIMARY SOIL TYPE ROADWAY EMBANKMENT (RE) DPT DMT TEST BORING PENETRATION RESISTENCE COMPRESSIVE STRENGTH IF TESTED, WOULD YIELD SPT REFUSAL JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. DESIGNATIONS (TONS/FT2 ) WITH SOIL DESCRIPTION ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED SEVERE S - BULK SAMPLE LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. VERY LOOSE  $\oplus$ AUGER BORING (SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KADLINIZED TO SOME LOOSE 4 TO 10 SS - SPLIT SPOON EXTENT. SOME FRAGMENTS OF STRONG ROCK, USUALLY REMAIN. GRANULAR MEDIUM DENSE 10 TO 30 30 TO 50 N/A IF TESTED, YIELDS SPT N VALUES > 100 BPF LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS ARTIFICIAL FILL (AF) OTHER MATERIAL (NON-COHESIVE) SAMPLE THAN ROADWAY EMBANKMENT MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT ST - SHELBY TUBE VERY DENSE 550 THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. INFERRED SOIL BOUNDARY SAMPLE VERY SOFT ERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN MW O (0.25 MONITORING WELL GENERALLY SOFT 2 TO 4 0.25 TO 0.50 RS - ROCK SAMPLE VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF NTERVENING IMPERVIOUS STRATUM. INFERRED ROCK LINE 4 TO 8 8 TO 15 MEDIUM STIFF PIEZOMETER SILT-CLAY Ø.5 TO 1.0 Δ RT - RECOMPACTED TRIAXIAL 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. INSTALLATION MATERIAL SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS SAMPLE VERY STIFF 15 TO 30 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 RUN AND SLOPE INDICATOR  $\bigcirc$ DIP & DIP DIRECTION OF CRR - CALIFORNIA REARING ROCK HARDNESS EXPRESSED AS A PERCENTAGE. TEXTURE OR GRAIN SIZE SPT N-VALUE CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE SOUNDING ROD U.S. STD. SIEVE SIZE 60 0.25 200 0.075 (REF)- SPT REFUSAL 40 SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND 0.42 CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED ABBREVIATIONS RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO DETACH HAND SPECIMEN. TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. COBBLE AR - AUGER REFUSAL w - MOISTURE CONTENT HI. - HIGHLY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE (BLDR.) (COB.) (GR.) (SL.) (CL.) BT - BORING TERMINATED MED. - MEDIUM SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR EXCAVATED BY HARD BLOW OF A GEDLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED VST - VANE SHEAR TEST CL. - CLAY MICA. - MICACEDUS MM IN. 305 12 2.0 0.25 0.05 0.005 WEA. - WEATHERED CPT - CONE PENETRATION TEST MOD. - MODERATELY SIZE STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CSE. - COARSE NP - NON PLASTIC  $\gamma$  – UNIT WEIGHT A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH - CORRELATI DMT - DILATOMETER TEST ORG. - ORGANIC 7 - DRY UNIT WEIGHT HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE SOIL MOIS ON OF TERMS A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS PMT - PRESSUREMETER TEST POINT OF A GEOLOGIST'S PICK. DPT - DYNAMIC PENETRATION TEST SOIL MOISTURE SCALE FIELD MOISTURE SAP - SAPROLITIC CHIDE FOR FIFLD MOISTURE DESCRIPTION - VOID RATIO CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS SOFT (ATTERBERG LIMITS STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. - FINE SD. - SAND, SANDY FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN ENSS. - ENSSTLIEFERNUS SL. - SILT, SILTY PIECES CAN BE BROKEN BY FINGER PRESSURE. - SATURATED USUALLY LIQUID: VERY WET. USUALLY STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY FRAC. - FRACTURED, FRACTURES FROM BELOW THE GROUND WATER TABLE SLI. - SLIGHTLY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH FRAGS. - FRAGMENTS TCR - TRICONE REFUSAL OTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE LIQUID LIMIT SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE, CAN BE SCRATCHED READILY BY TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. ASTIC FINGERNALL. SEMISOLID; REQUIRES DRYING TO TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. - WET - (W) EQUIPMENT USED ON SUBJECT PROJECT FRACTURE SPACING ATTAIN OPTIMUM MOISTURE (PI) PLASTIC LIMIT THICKNESS **IERM** HAMMER TYPE: SPACING BENCH MARK: BL 3: -BL- STA. 12+50.18 ADVANCING TOOLS: DRILL UNITS: VERY THICKLY BEDDED > 4 FEET MORE THAN 10 FEET 3 TO 10 FEET VERY WIDE - MDIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE X AUTOMATIC MANUAL OPTIMUM MOISTURE THICKLY BEDDED 1.5 - 4 FEET CLAY BITS MOBILE B-\_\_\_ ELEVATION: 1712.07 FT. THINLY REDDED 0.16 - 1.5 FEFT SHRINKAGE LIMIT MODERATELY CLOSE 1 TO 3 FEET 6 CONTINUOUS FLIGHT AUGER CORE SIZE: REQUIRES ADDITIONAL WATER TO NOTES: - DRY - (D) VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET BK-51 X 8" HOLLOW AUGERS THINLY LAMINATED < 0.008 FFFT П-в\_\_\_\_ INDURATION PLASTICITY HARD FACED FINGER BITS \_\_\_\_\_ CME-45C FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. PLASTICITY INDEX (PI) DRY STRENGTH TUNG.-CARBIDE INSERTS \_\_-н\_\_ VERY LOW RUBBING WITH FINGER FREES NUMEROUS GRAINS: X CME-550 0-5 FRIABLE X CASING X W/ ADVANCER LOW PLASTICITY 6-15 SLIGHT GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. HAND TOOLS: MED. PLASTICIT MEDIUM 16-25 TRICONE PORTABLE HOIST GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; \*STEEL TEETH POST HOLE DIGGER MODERATELY INDURATED HIGH PLASTICITY 26 OR MORE HIGH \_\_\_ TRICONE \_\_\_ HAND AUGER COL OR \* TUNG - CARB. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; SOUNDING ROD INDURATED CORE BIT DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN. RED. YELLOW-RROWN, BLUE-CRAY). DIFFICULT TO BREAK WITH HAMMER. VANE SHEAR TEST MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; EXTREMELY INDURATED

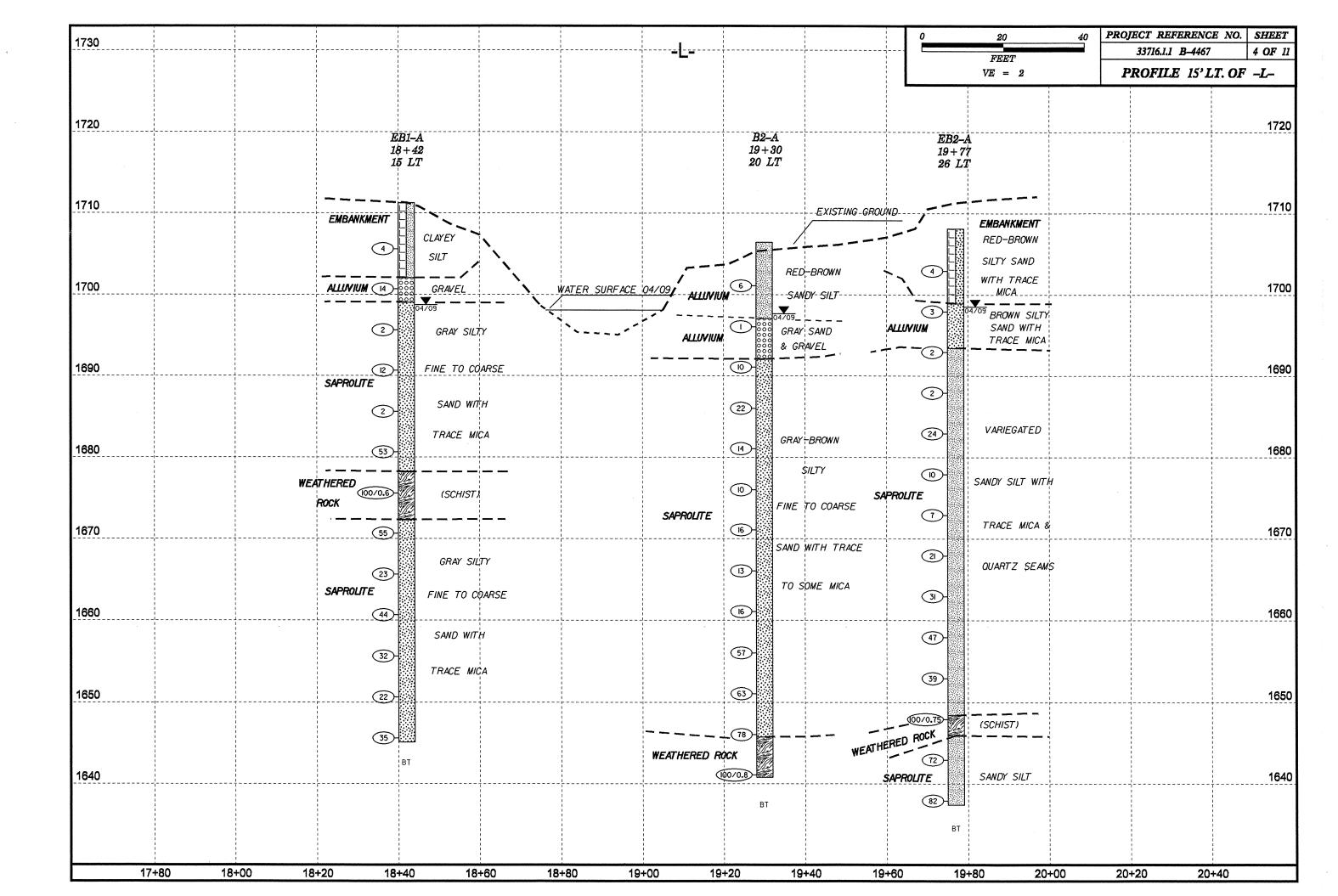
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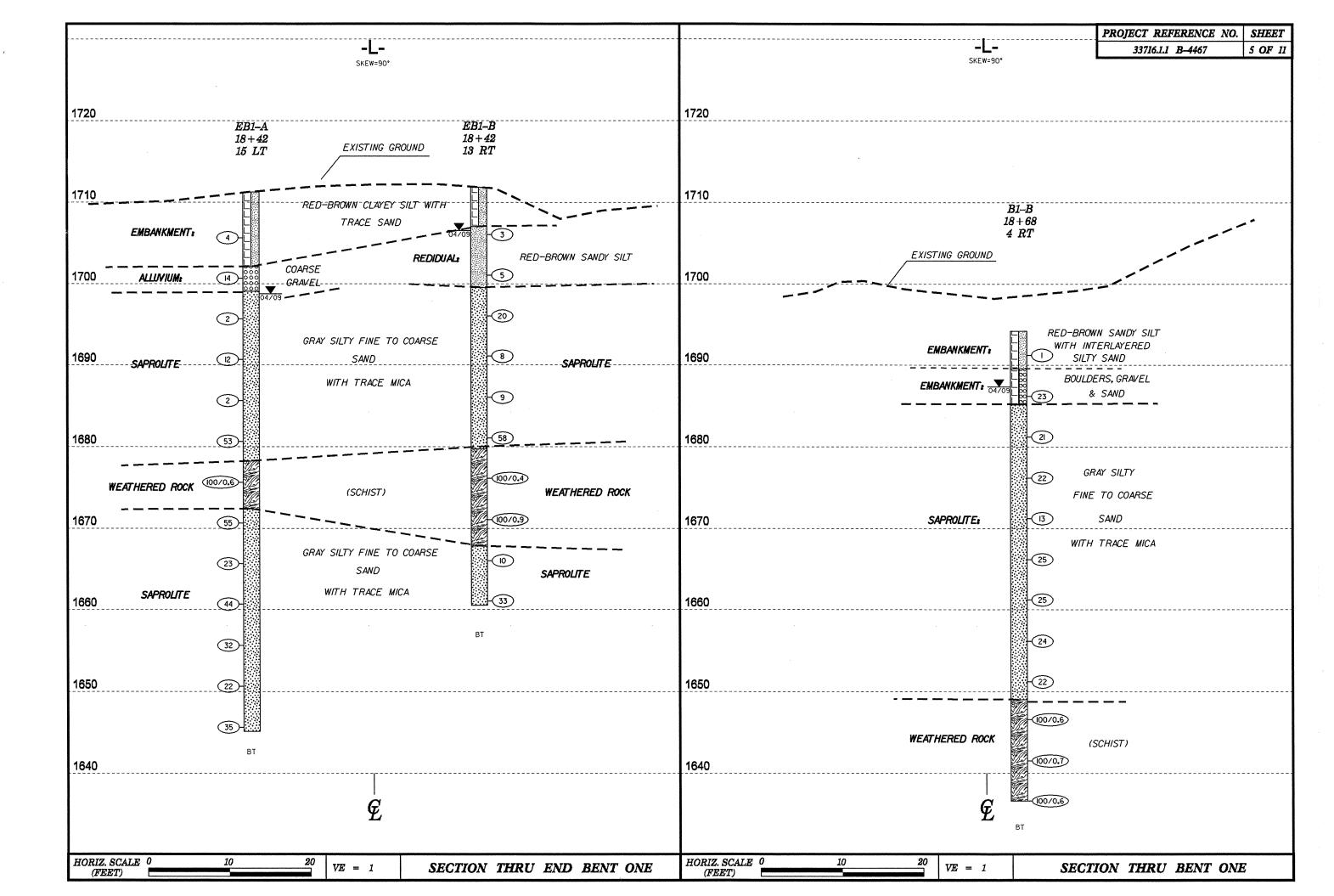
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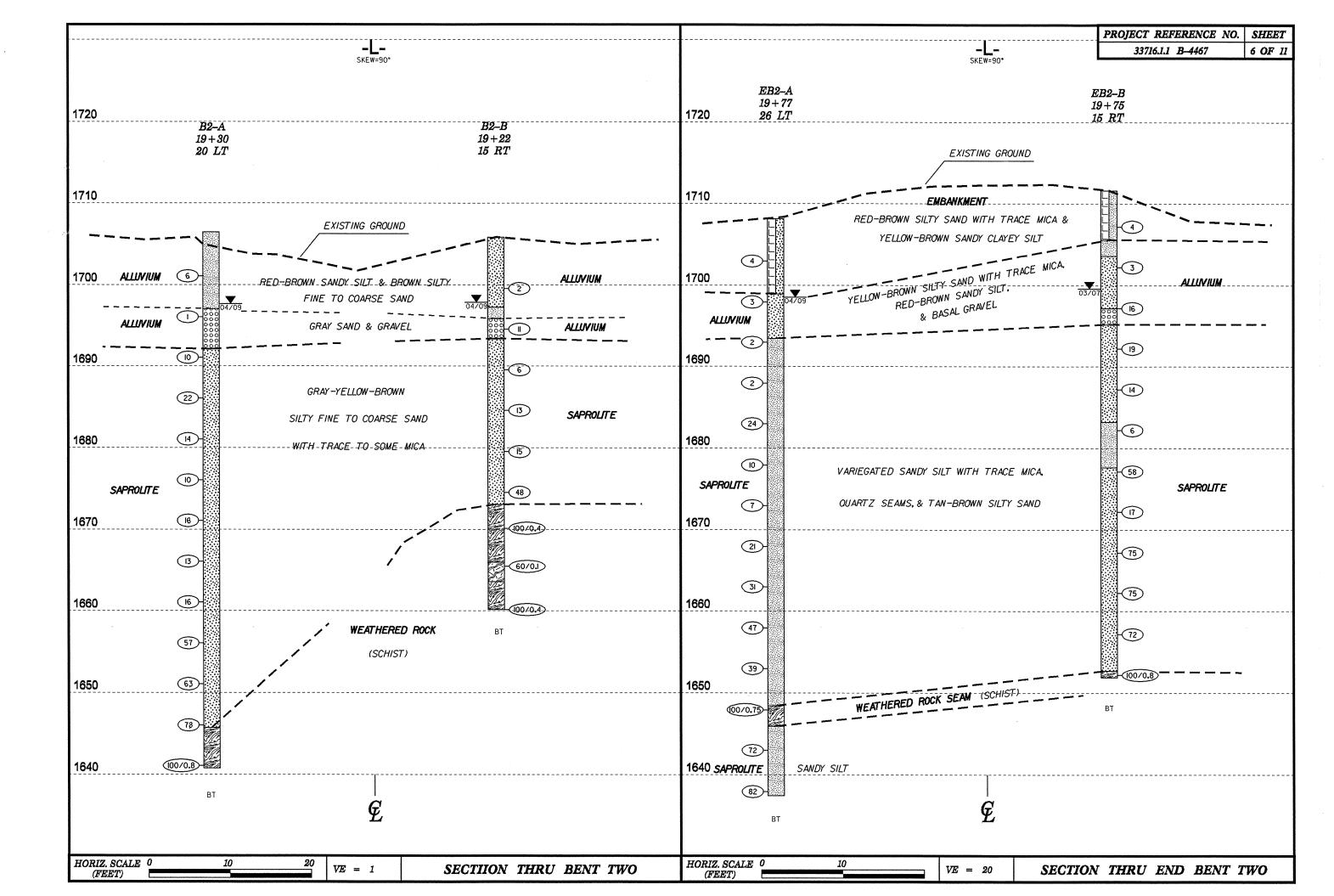
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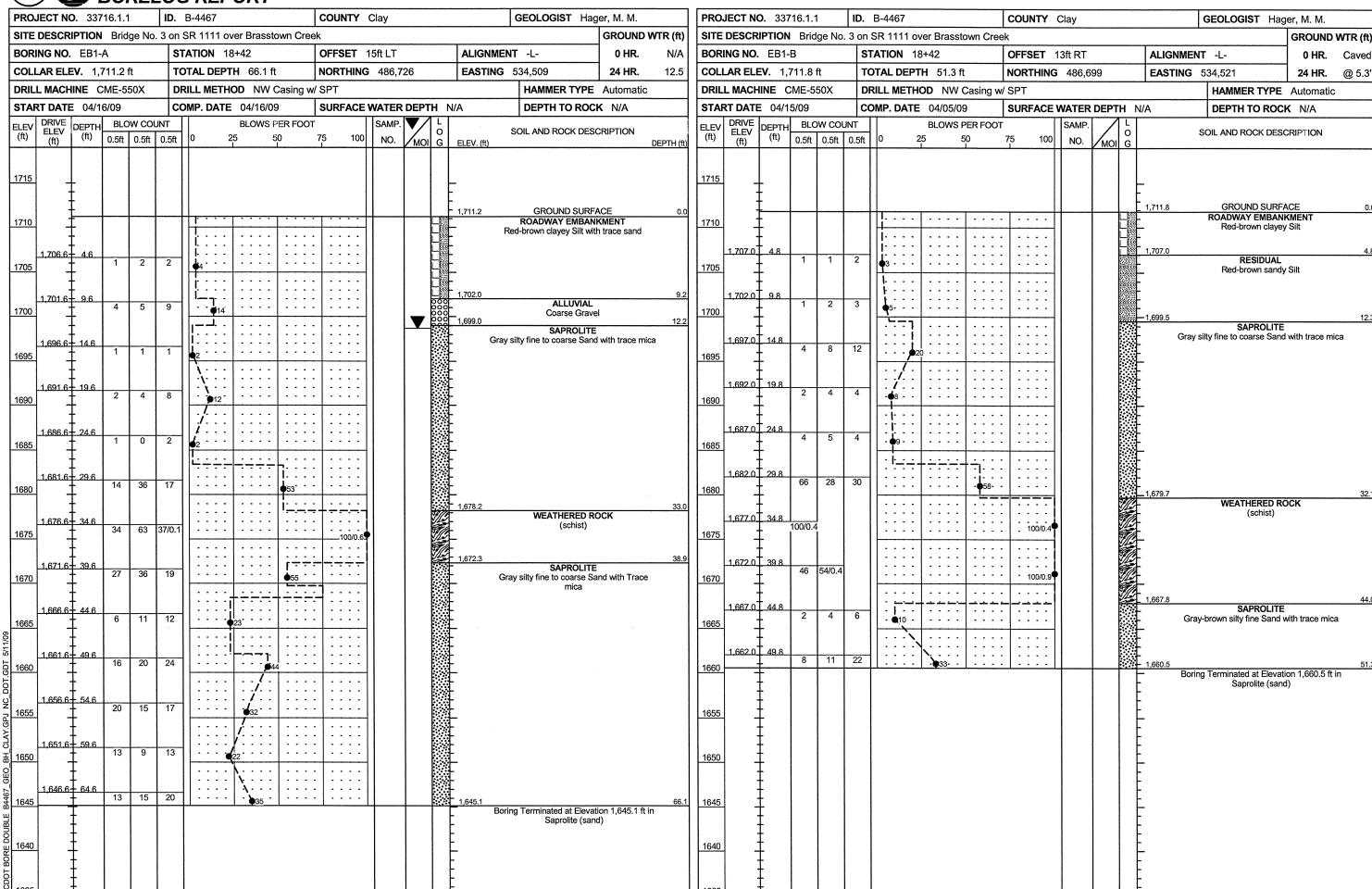
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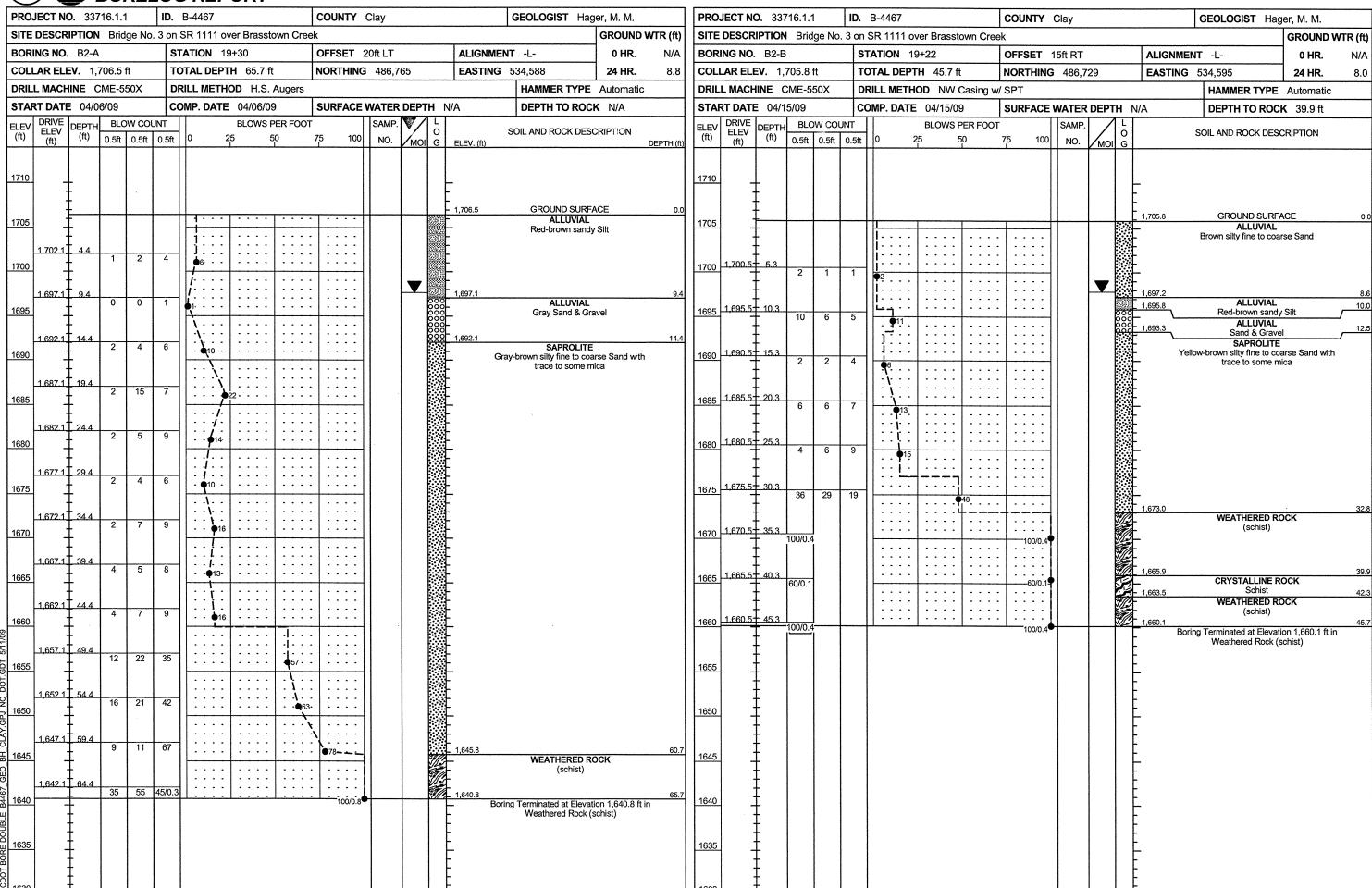


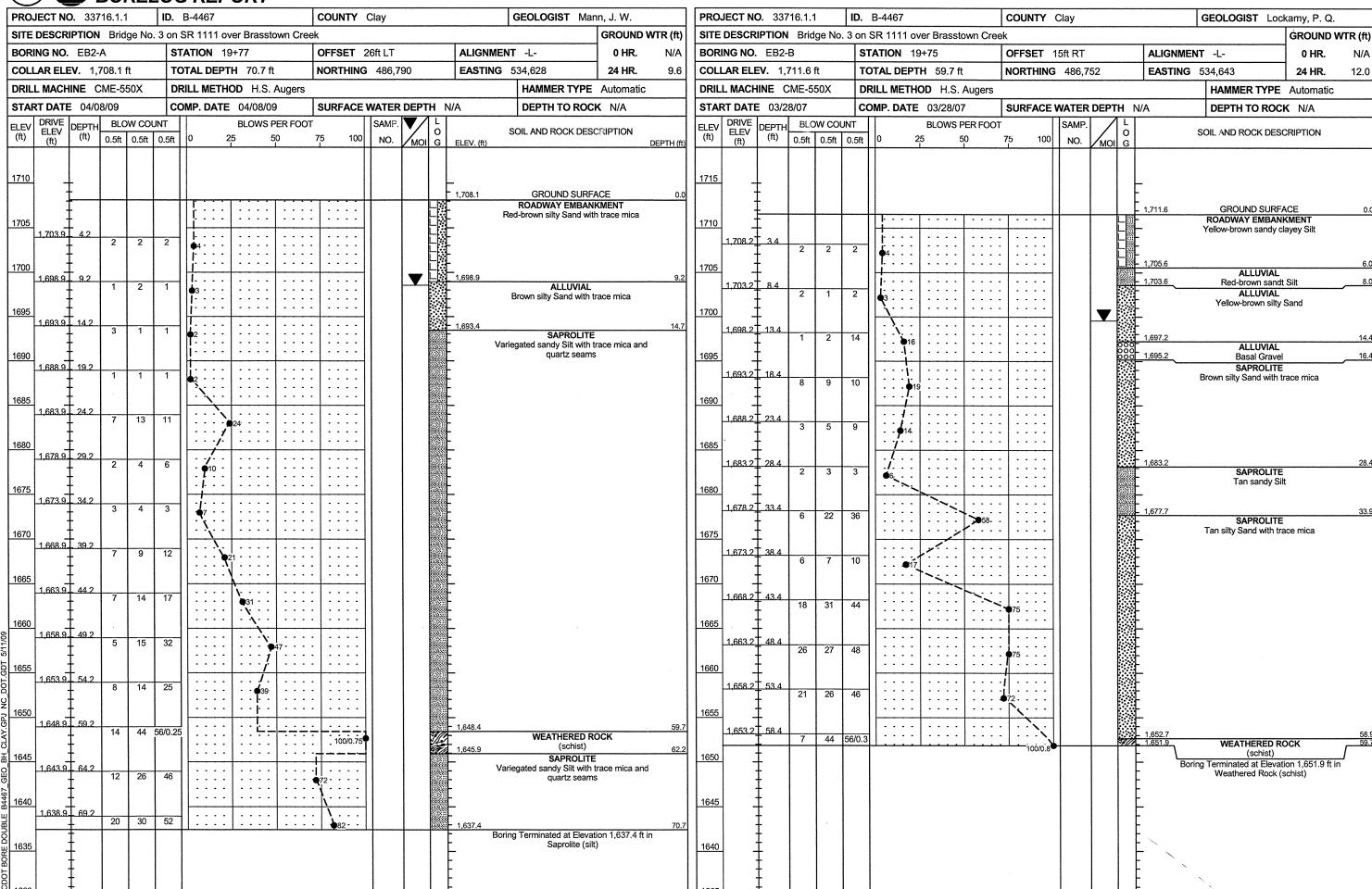


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# FIELD SCOUR REPORT

WBS:	33716.1.1	TIP:	B-4467	COUNTY: CLAY						
DESCRIPTION(1): B	ridge No. 3 on	SR 1111	over Brasstown C	Creek						
EXISTING BRIDGE										
Information from:	Field Ir Other	nspection (explain)	X Micr BSR dated Nov. 2	rofilm (reel p 2008	pos:)					
Bridge No.: 3 Foundation Type:	Length:	125'	Total Bents: 5	Bents in Channel: 2	Bents in Floodplain: 3					
EVIDENCE OF SC Abutments or En		: None no	oted.							
Interior Bents: N	· · · · · · · · · · · · · · · · · · ·									
Channel Bed: N	one noted									
Channel Bank: <u>M</u>	linor undercutt	ing on bo	yh upstream bank	S.						
<b>EXISTING SCOUF</b> Type(3): <u>R</u>			utment from previo	ous structure.						
Extent(4): L	ocated betwee	n End Be	nt 1 & Bent 1.							
Effectiveness(5): G	ood protection	for end b	pent.							
Obstructions(6): N	one									

# **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.
- Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 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 theoritical 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.

			DES	SIGN IN	<b>IFORM</b>	<u>ATION</u>					
Channel Be	d Material(7):	Boulders	s, cobble	s, silt & s	sand						
			***************************************								
Channel Ban	k Material(8):	Silt & sa	nd	-							
Channel Ba	ank Cover(9):	Trees, s	hrubbery	/							
Floodpla	in Width(10):	~1000 ft	•								
Floodpla	in Cover(11):							-			
s	Stream is(12):	Ag	grading		Degr	ading	X	Sta	itic		
Channel Migration T	endency(13):	Toward	nterior E	Bent 1.							
Observations and	Other Comm	nents:									
DESIGN SCOUR	ELEVATION	S(14)				Feet	X	Mete	ers	-	
	<b>BENTS</b>										
	B1	B2			<u>,</u>		_		······································		
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Comparison of D	SE to Hydraul	ics Unit t	heoretica	al scour:							
DSE in agreemer											
00" 41111100											
SOIL ANALYSIS Bed or Bank	RESULTS FI	ROM CH.	ANNEL	BED AN	DBANK	MATER	KIAL			<del></del>	
Sample No.									·	<b>_</b>	
Retained #4											
Passed #10											
Passed #10		4			<b> </b>					1	
Passed #200			-	Wind - 17-76 - 1-Arraman - 17-76 - 1-Arraman - 17-76 - 1-Arraman - 17-76 - 17-	<b>†</b>						
Coarse Sand				**************************************							
Fine Sand		***************************************									
Silt											
Clay											
LL											
PI											
AASHTO										<u> </u>	
Station											
Offset										-	
Depth				<del></del>	<u> </u>					<u> </u>	
<u> </u>									Form GEU	1.047-	Revised 7/26/20

Reported by:	J.W. Mann	Date:	3/21/2009