

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 38451.1.1 (B-4643) F.A. PROJ. BRNHS-49(22)  
 COUNTY STANLY  
 PROJECT DESCRIPTION BRIDGE NO. 24 OVER CURL TAIL CREEK  
ON NC 49

SITE DESCRIPTION \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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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 SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

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

PERSONNEL

AMEC

(D. WHITE)

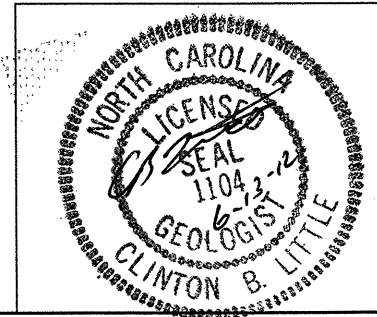
(J. HOWARD)

INVESTIGATED BY J.E. BEVERLY

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE JUNE 2012



**PROJECT: 38451.1.1 ID: B-4643**

DRAWN BY: J.E. BEVERLY





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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

## SUBSURFACE INVESTIGATION

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

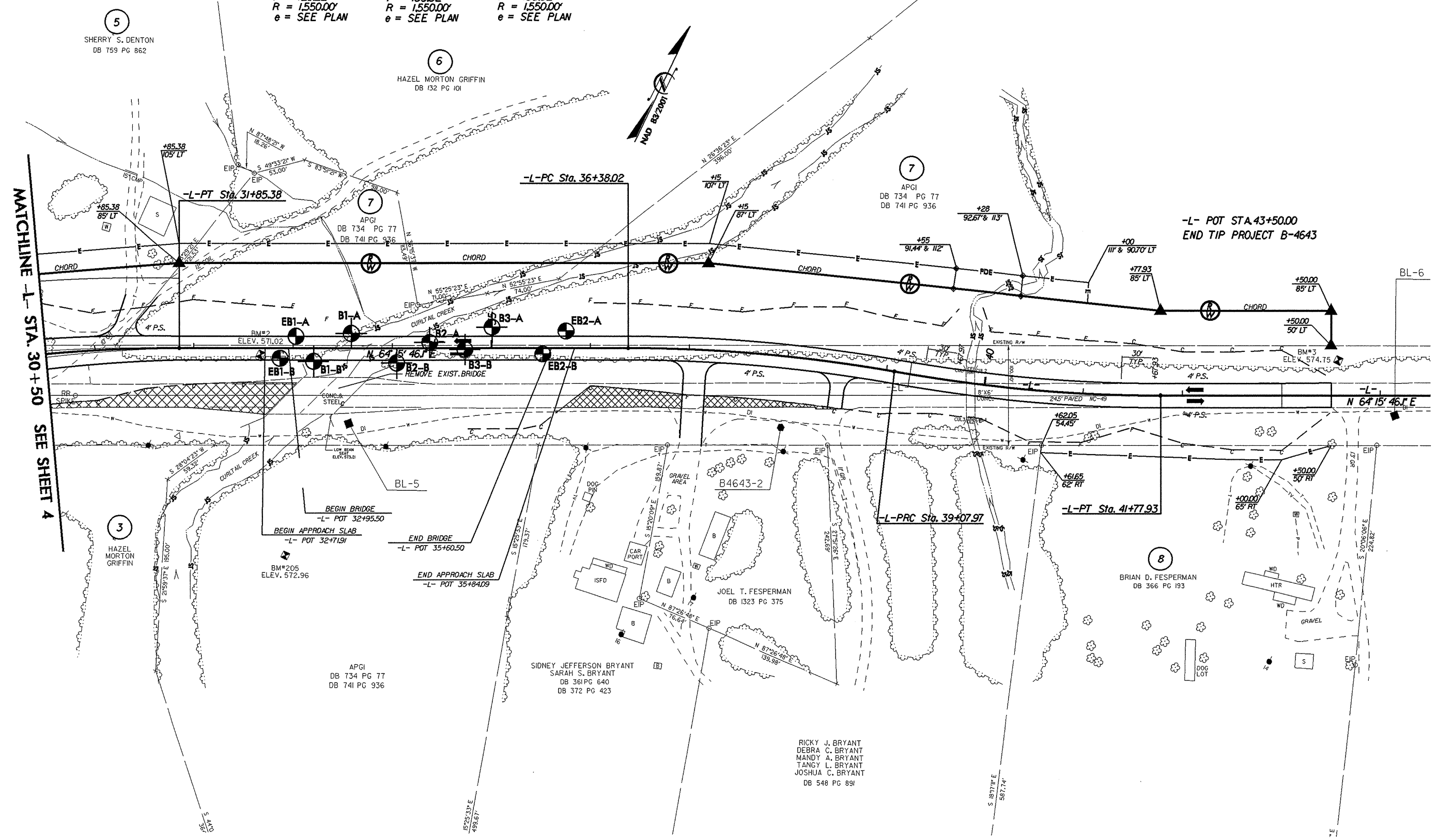
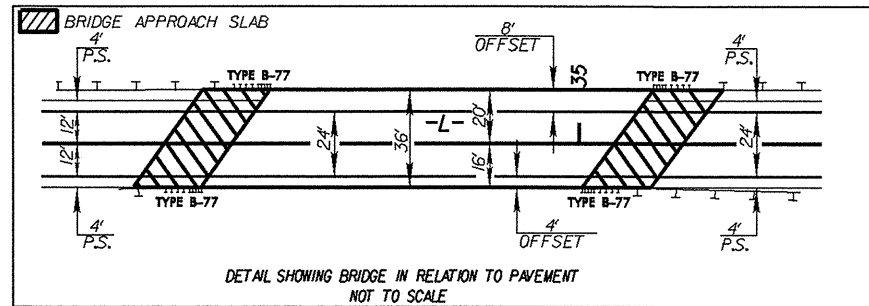
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</i>	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. <b>ANGULARITY OF GRAINS</b> THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u> , <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .	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 EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. 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. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - 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 ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - 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 EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. 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 TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SCREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY 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 SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>MINERALOGICAL COMPOSITION</b>	<b>WEATHERING</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. SLIGHT (SLI.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, YIELDS SPT N VALUES > 100 BPF. VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT 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 VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF. COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	
<b>COMPRESSION</b>	<b>COMPRESSION</b>	<b>GROUND WATER</b>	
SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ 24 STATIC WATER LEVEL AFTER 24 HOURS ▽ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA ○ SPRING OR SEEP	
<b>PERCENTAGE OF MATERIAL</b>	<b>PERCENTAGE OF MATERIAL</b>	<b>MISCELLANEOUS SYMBOLS</b>	
ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES SPT DPT DMT VST PHT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD	
<b>CONSISTENCY OR DENSENESS</b>	<b>CONSISTENCY OR DENSENESS</b>	<b>ROCK HARDNESS</b>	
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )	PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.	
<b>TEXTURE OR GRAIN SIZE</b>	<b>TEXTURE OR GRAIN SIZE</b>	<b>ABBREVIATIONS</b>	
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053	U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053	AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED WU - UNIT WEIGHT WU - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO	
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>	<b>SOIL MOISTURE - CORRELATION OF TERMS</b>	<b>EQUIPMENT USED ON SUBJECT PROJECT</b>	
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST CME-55 ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG-CARB. CORE BIT HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B N Q H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST	
<b>PLASTICITY</b>	<b>PLASTICITY</b>	<b>FRACTURE SPACING</b>	
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH	NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED > 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THINLY LAMINATED 0.008 - 0.03 FEET < 0.008 FEET	
<b>COLOR</b>	<b>COLOR</b>	<b>BEDDING</b>	
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.	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.	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	

PROJECT REFERENCE NO. B-4643	SHEET NO. 3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR S/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

SEE SHEET 6 FOR PROFILE OF -L-

**NOTE: MAINTAIN TRAFFIC DURING CONSTRUCTION UTILIZING EXISTING ROADWAY**

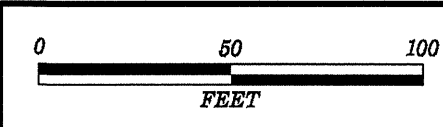
-L-		
PI Sta 30+59.72	PI Sta 37+73.34	PI Sta 40+43.29
$\Delta = 9^{\circ} 18' 38.4''$ (RT)	$\Delta = 9^{\circ} 58' 43.9''$ (RT)	$\Delta = 9^{\circ} 58' 43.9''$ (LT)
D = 3' 41' 47.4"	D = 3' 41' 47.4"	D = 3' 41' 47.4"
L = 251.88'	L = 269.95'	L = 269.95'
T = 126.22'	T = 135.32'	T = 135.32'
R = 1550.00'	R = 1550.00'	R = 1550.00'
e = SEE PLAN	e = SEE PLAN	e = SEE PLAN



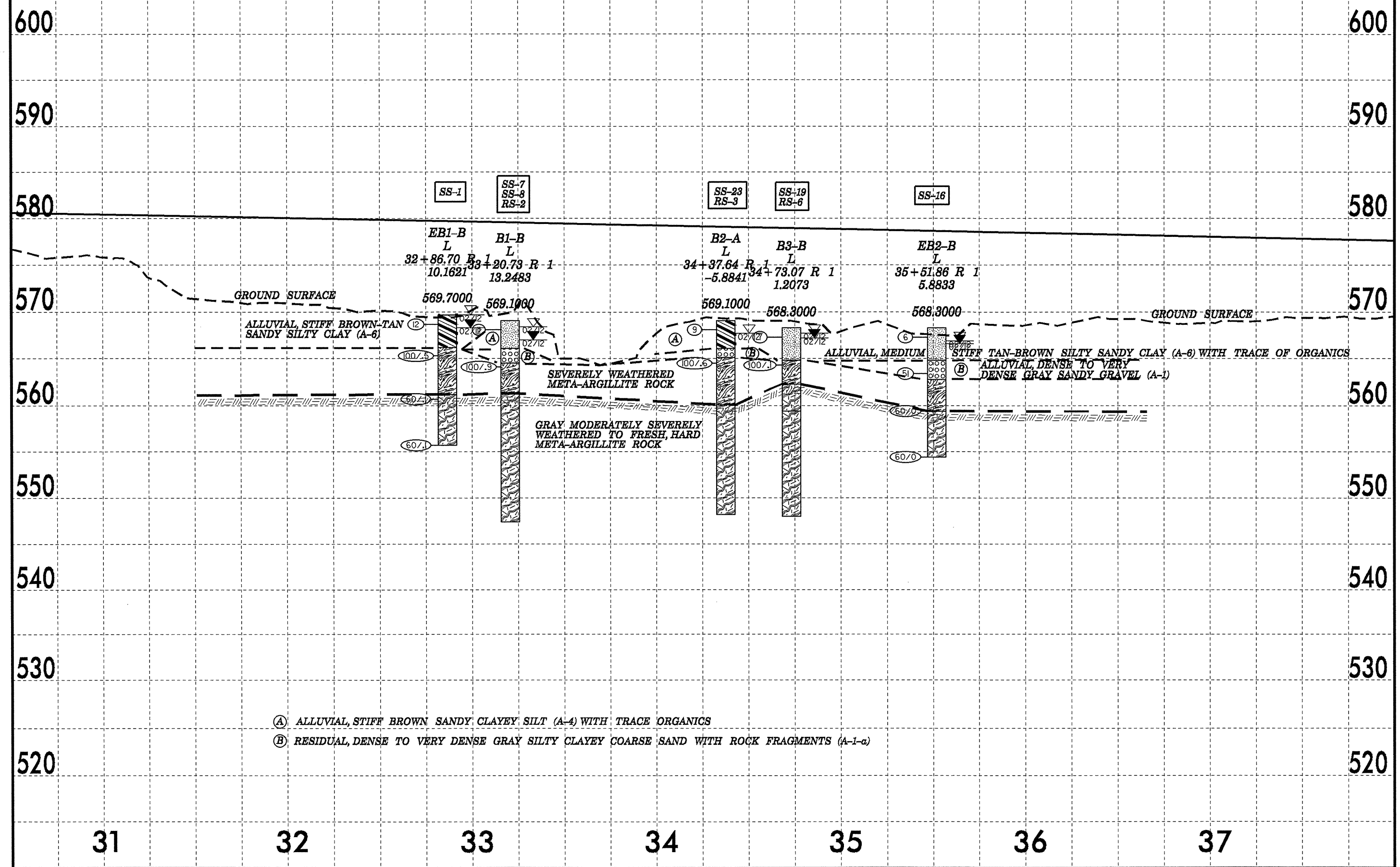
REVISIONS

MATCHLINE -L- STA. 30+50 SEE SHEET 4

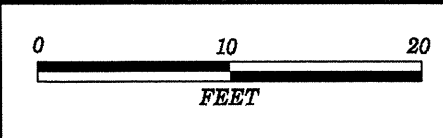
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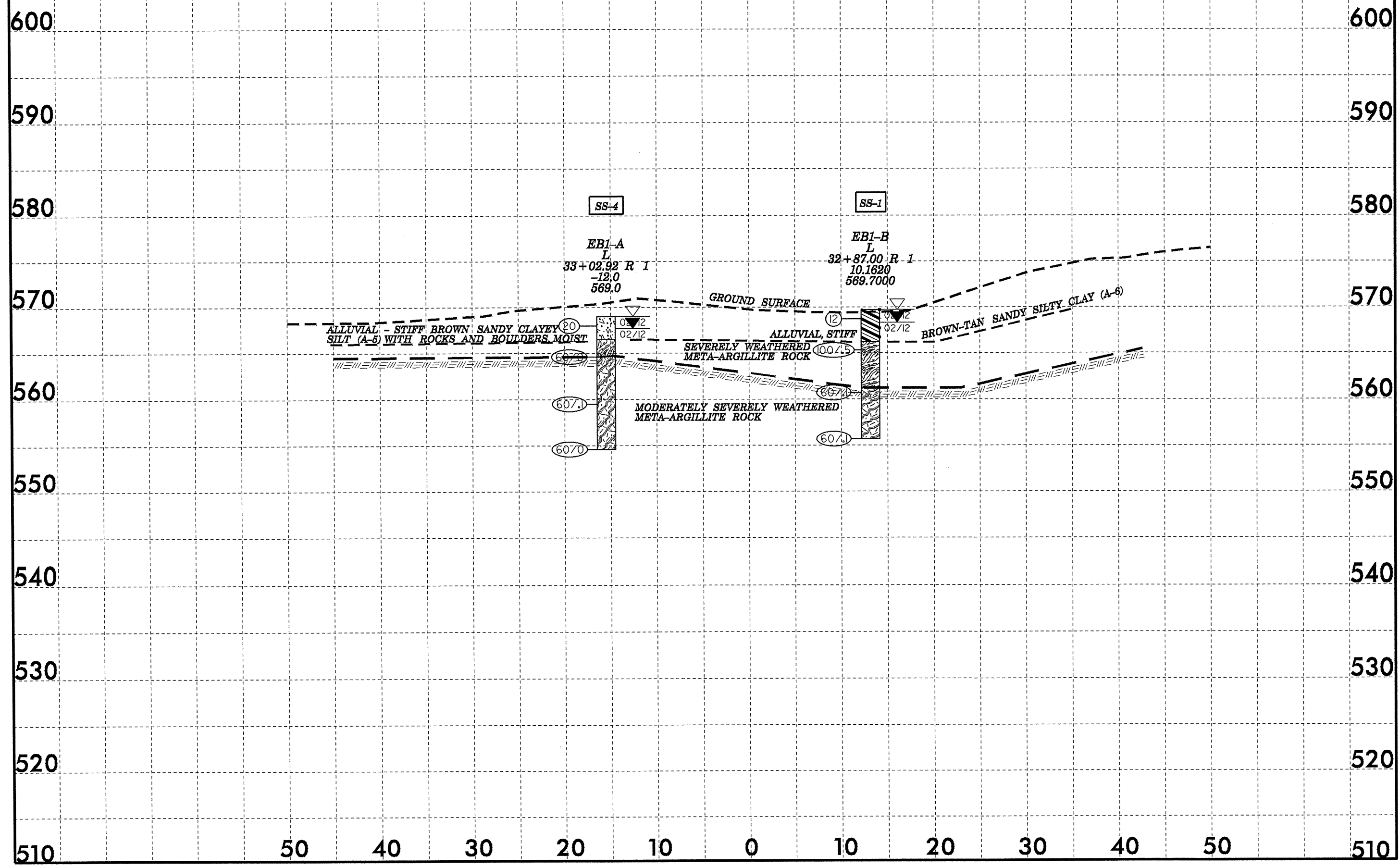
PROJECT REFERENCE NO.	SHEET
38451.1.1 (B-4643)	4
PROFILE ALONG -L- CENTERLINE	

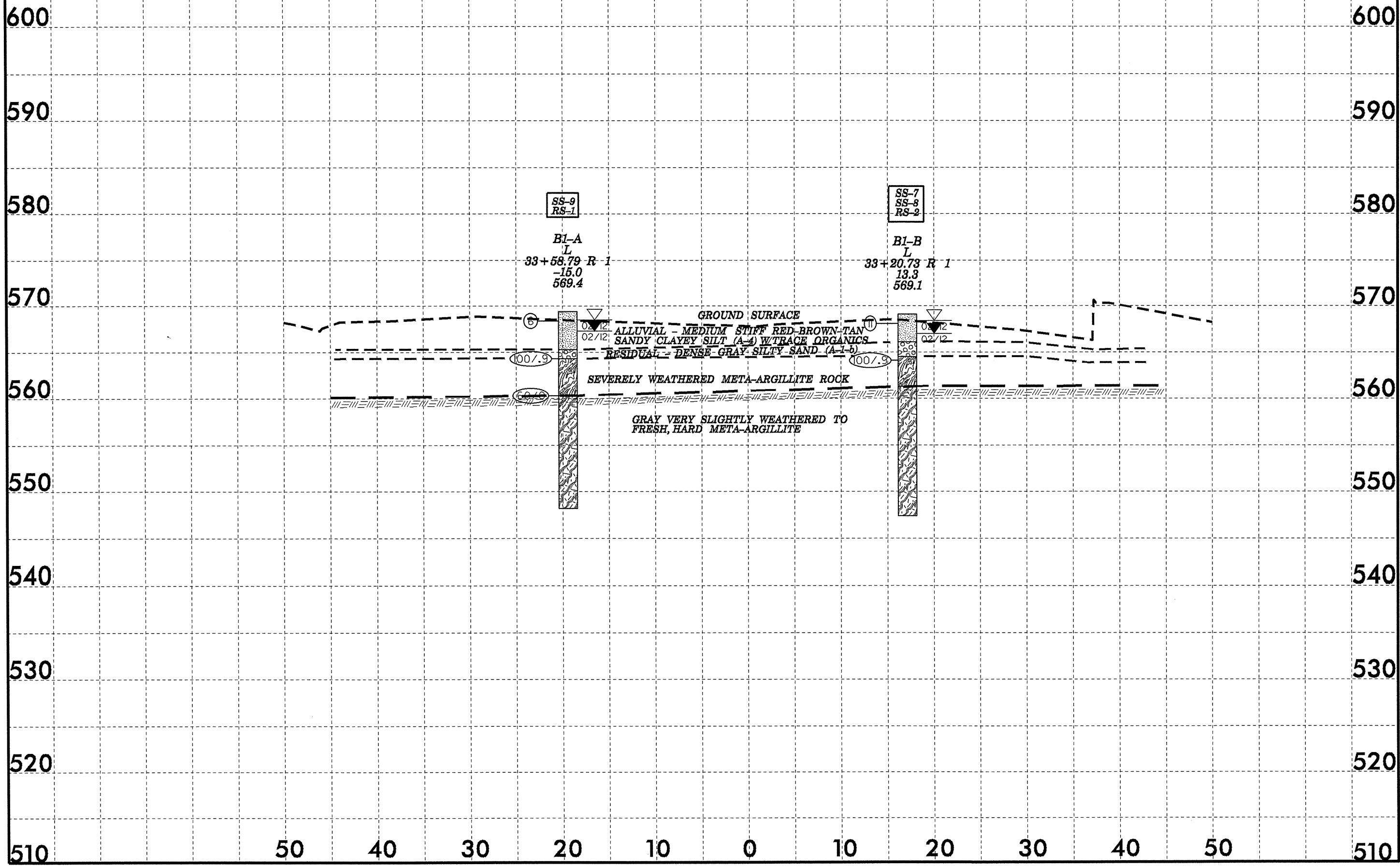


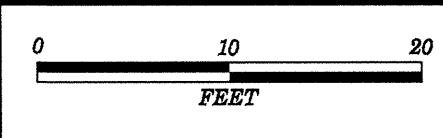




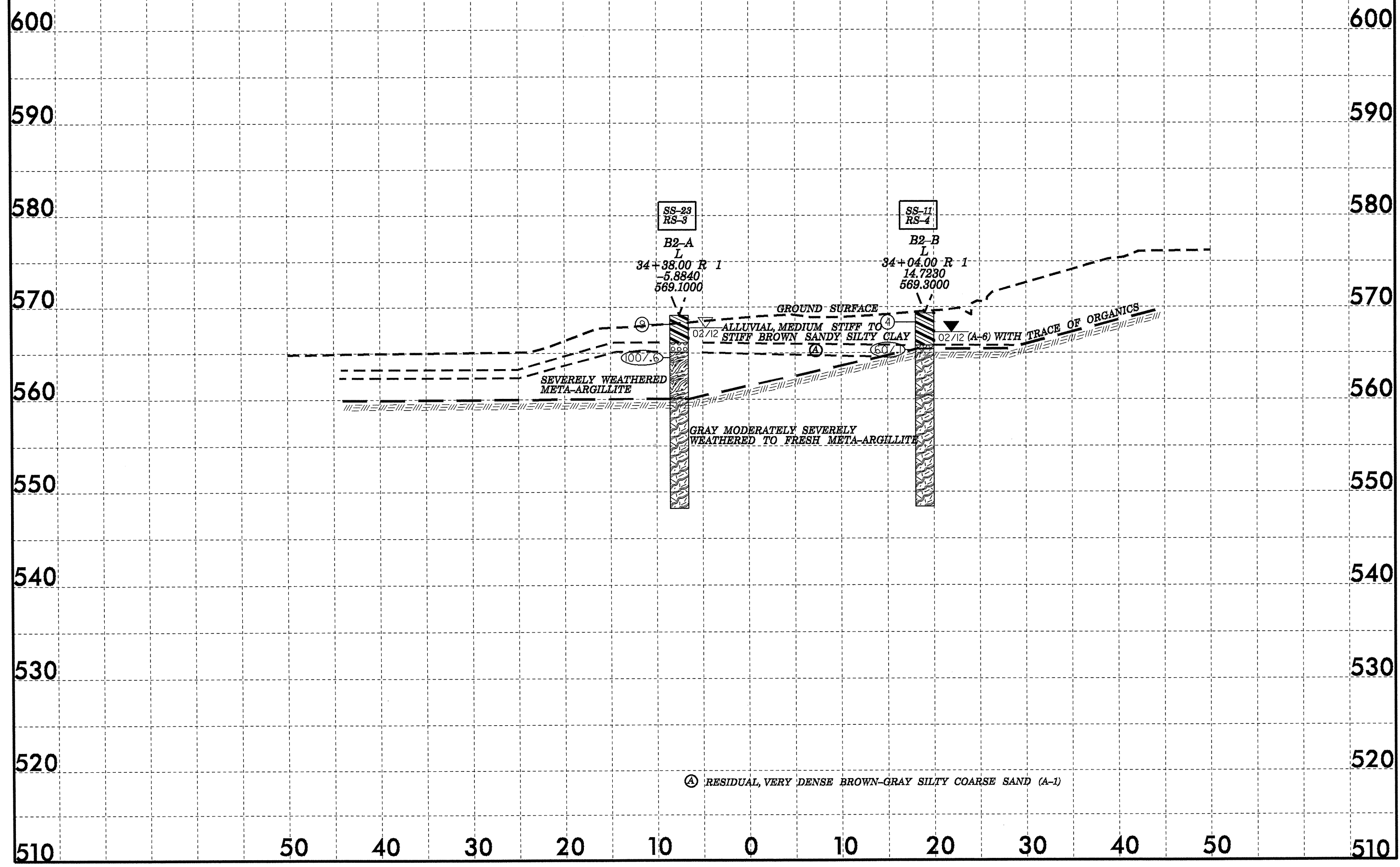
PROJECT REFERENCE NO.	SHEET
38451.1.1 (B-4643)	5
SECTION THROUGH EBI -L- STATION 32+95.5 SKEW=135 DEGREES	

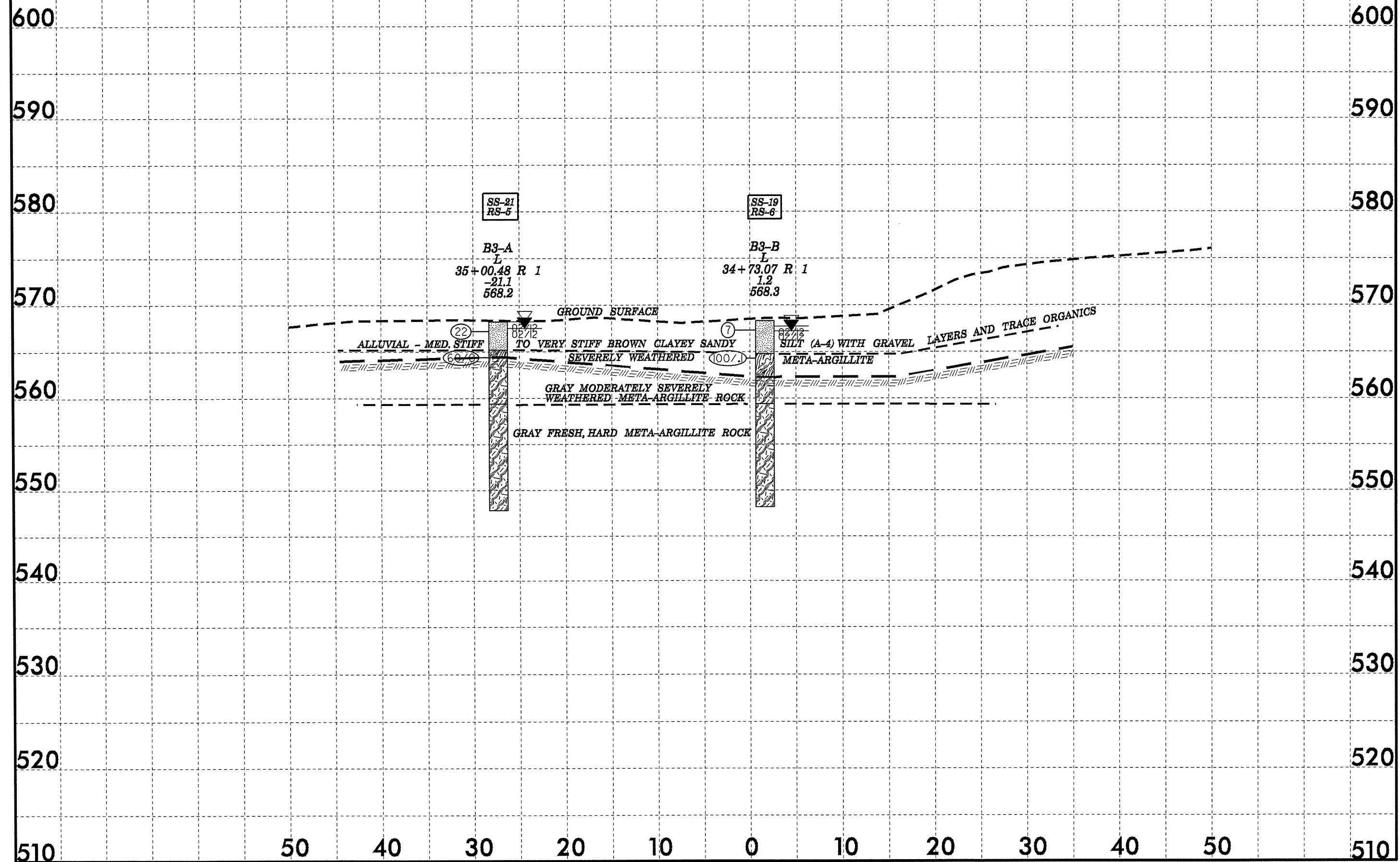


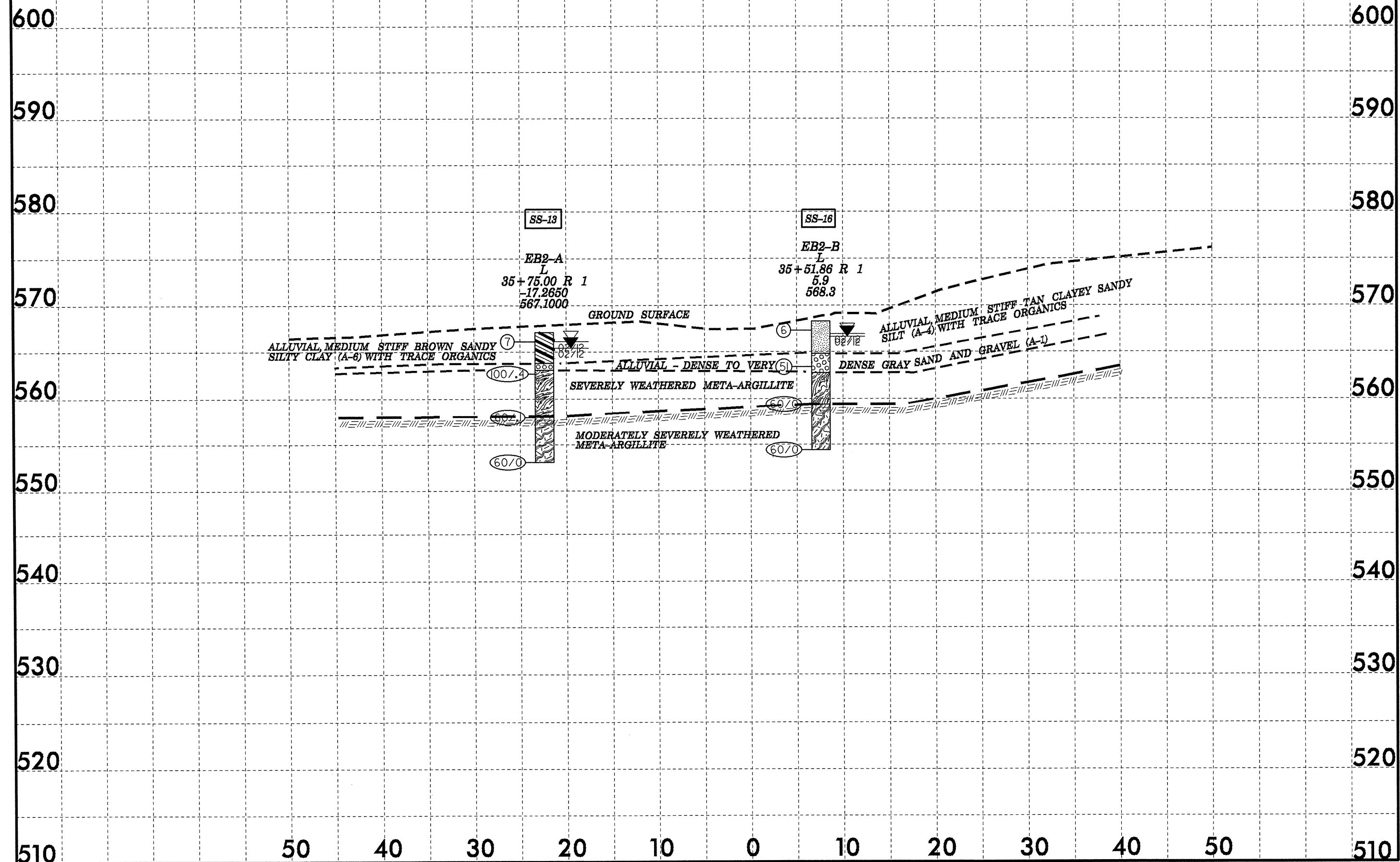




PROJECT REFERENCE NO.	SHEET
38451.11 (B-4643)	7
SECTION THROUGH B2 -L- STATION 34+15.5 SKEW=135 DEGREES	











WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard									
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)								
BORING NO. B1-A		STATION 33+59		OFFSET 15 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 569.4 ft		TOTAL DEPTH 21.2 ft		NORTHING 633,153		EASTING 1,632,923									
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER D. White		START DATE 02/14/12		COMP. DATE 02/14/12		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75					100	
570	569.4	0.0	2	3	3							569.4	GROUND SURFACE	0.0	
565	565.3	4.1	33	62	38/4							565.3	ALLUVIAL MEDIUM STIFF RED-BROWN-TAN SANDY CLAYEY SILT (A-4) W/ TRACE ORGANICS	4.1	
560	560.3	9.1	60/0									560.3	RESIDUAL DENSE GRAY SILTY SAND (A-1-b)	9.1	
555												555.3	WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE ROCK	5.1	
550												550.3	CRYSTALLINE ROCK GRAY VERY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING	21.2	
													548.2	Boring Terminated at Elevation 548.2 ft In Meta-Argillite Rock	21.2

NCDOT BORE SINGLE B4643\_BORINGS.GPJ NC\_DOT.GDT 6/5/12

WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard						
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)					
BORING NO. B1-A		STATION 33+59		OFFSET 15 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 569.4 ft		TOTAL DEPTH 21.2 ft		NORTHING 633,153		EASTING 1,632,923						
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic								
DRILLER D. White		START DATE 02/14/12		COMP. DATE 02/14/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		SAMP. NO.	LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)				
569.4											Begin Coring @ 9.1 ft	
560.3	560.3	9.1	2.1	N=60/0 4:45/1.0	(1.4) 67%	(0.0) 0%	(12.1) 100%	(7.6) 63%			CRYSTALLINE ROCK	9.1
555	558.2	11.2	5.0	5:15/1.1 4:45/1.0	(4.9) 98%	(4.4) 88%			RS-1		GRAY VERY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING R1=12, R2=13, R3=15, R4=20, R5=7, RMR=67, ROCK TYPE B	11.2
550	553.2	16.2	5.0	2:30/1.0	(5.0) 100%	(3.2) 64%						16.2
	548.2	21.2		2:00/1.0							Boring Terminated at Elevation 548.2 ft In Meta-Argillite Rock	21.2

NCDOT CORE SINGLE B4643\_BORINGS.GPJ NC\_DOT.GDT 6/5/12



WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard							
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)						
BORING NO. B2-A		STATION 34+38		OFFSET 6 ft LT		ALIGNMENT -L-							
COLLAR ELEV. 569.1 ft		TOTAL DEPTH 20.9 ft		NORTHING 633,179		EASTING 1,632,998							
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic									
DRILLER D. White		START DATE 02/17/12		COMP. DATE 02/17/12		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75				
570												569.1	0.0
	569.1	0.0	2	4	5							566.1	3.0
												565.1	4.0
565	565.1	4.0	60	40/1								560.1	9.0
560												560.1	9.0
												548.2	20.9
555													
550													
Boring Terminated at Elevation 548.2 ft In Meta-Argillite Rock													

NCDOT BORE SINGLE B4643 BORINGS.GPJ NC\_DOT.GDT 6/5/12

WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard					
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)				
BORING NO. B2-A		STATION 34+38		OFFSET 6 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 569.1 ft		TOTAL DEPTH 20.9 ft		NORTHING 633,179		EASTING 1,632,998					
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic							
DRILLER D. White		START DATE 02/17/12		COMP. DATE 02/17/12		SURFACE WATER DEPTH N/A					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
569.1											
	560.1	9.0	1.9	3:30/1.0	(1.9)	(1.9)	(11.9)	(8.3)		Begin Coring @ 9.0 ft	
	558.2	10.9	5.0	2:30/0.9	100%	100%	100%	70%		CRYSTALLINE ROCK	9.0
				3:00/1.0	(4.8)	(2.5)				GRAY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING R1=7, R2=13, R3=10, R4=20, R5=7, RMR=57, ROCK TYPE B	
				2:45/1.0	96%	50%					
				3:00/1.0							
				3:30/1.0							
				5:15/1.0							
				5.0	4:00/1.0	(4.7)	(3.9)				
					3:15/1.0	94%	78%				
					3:00/1.0						
					3:15/1.0						
					4:00/1.0						
	548.2	20.9								Boring Terminated at Elevation 548.2 ft In Meta-Argillite Rock	20.9

NCDOT BORE SINGLE B4643 BORINGS.GPJ NC\_DOT.GDT 6/5/12





WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard										
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)									
BORING NO. B3-A		STATION 35+00		OFFSET 21 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 568.2 ft		TOTAL DEPTH 20.6 ft		NORTHING 633,220		EASTING 1,633,048										
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER D. White		START DATE 02/16/12		COMP. DATE 02/16/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT				BLOWS PER FOOT				SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
570	568.2	0.0	0	3	19									568.2	GROUND SURFACE	0.0
565	564.4	3.8												565.2	ALLUVIAL VERY SOFT TO VERY STIFF BROWN CLAYEY SANDY SILT (A-4) WITH GRAVEL LAYERS	3.0
560														559.4	WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE	8.8
555															CRYSTALLINE ROCK MODERATELY SEVERELY WEATHERED META-ARGILLITE	
550															CRYSTALLINE ROCK GRAY FRESH, HARD META-ARGILLITE WITH CLOSE TO MODERATELY CLOSE FRACTURE SPACING	
														547.6	Boring Terminated at Elevation 547.6 ft In Meta-Argillite Rock	20.6

NCDOT BORE SINGLE B4643 BORINGS.GPJ NC\_DOT.GDT 6/5/12

WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard						
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)					
BORING NO. B3-A		STATION 35+00		OFFSET 21 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 568.2 ft		TOTAL DEPTH 20.6 ft		NORTHING 633,220		EASTING 1,633,048						
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic						
DRILLER D. White		START DATE 02/16/12		COMP. DATE 02/16/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
559.4												
	559.4	8.8	1.8	4:15/1.0	(1.8)	(1.8)		(11.8)	(11.5)		Begin Coring @ 8.8 ft	8.8
	557.6	10.6	5.0	3:30/0.8	100%	100%	RS-5	100%	97%		CRYSTALLINE ROCK GRAY FRESH, HARD META-ARGILLITE WITH CLOSE TO MODERATELY CLOSE FRACTURE SPACING R1=7, R2=20, R3=20, R4=20, R5=7, RMR=74, ROCK TYPE B	
	552.6	15.6	5.0	3:45/1.0	(5.0)	(5.0)						
	550		5.0	3:45/1.0	(5.0)	(4.7)						
	547.6	20.6		2:45/1.0							Boring Terminated at Elevation 547.6 ft In Meta-Argillite Rock	20.6

NCDOT CORE SINGLE B4643 BORINGS.GPJ NC\_DOT.GDT 6/5/12

WBS 38451.1.1	TIP B-4643	COUNTY STANLY	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49			GROUND WTR (ft)
BORING NO. B3-B	STATION 34+73	OFFSET 1 ft RT	ALIGNMENT -L-
COLLAR ELEV. 568.3 ft	TOTAL DEPTH 20.3 ft	NORTHING 633,188	EASTING 1,633,033
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER D. White	START DATE 02/15/12	COMP. DATE 02/15/12	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75				
570													
	568.3	0.0										GROUND SURFACE	0.0
			3	3	4						SS-19	ALLUVIAL MEDIUM STIFF BROWN CLAYEY SANDY SILT (A-4) WITH TRACE ORGANICS	3.5
565											M	WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK	6.0
560												CRYSTALLINE ROCK MODERATELY SEVERELY WEATHERED CRYSTALLINE ROCK	8.9
555											RS-6	CRYSTALLINE ROCK GRAY FRESH, HARD META-ARGILLITE	
550													

Boring Terminated at Elevation 548.0 ft In Meta-Argillite Rock												
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NCDOT BORE SINGLE B4643 BORINGS.GPJ NC DOT.GDT 6/5/12

WBS 38451.1.1	TIP B-4643	COUNTY STANLY	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49			GROUND WTR (ft)
BORING NO. B3-B	STATION 34+73	OFFSET 1 ft RT	ALIGNMENT -L-
COLLAR ELEV. 568.3 ft	TOTAL DEPTH 20.3 ft	NORTHING 633,188	EASTING 1,633,033
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER D. White	START DATE 02/15/12	COMP. DATE 02/15/12	SURFACE WATER DEPTH N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
559.4												
	559.4	8.9	1.4	2:30/0.4	(1.4)	(1.2)		(11.3)	(10.2)		Begin Coring @ 8.9 ft	8.9
	558.0	10.3	5.0	4:00/1.0	100%	86%		99%	89%		CRYSTALLINE ROCK GRAY FRESH, HARD META-ARGILLITE WITH CLOSE TO MODERATELY CLOSE FRACTURE SPACING R1=7, R2=17, R3=20, R4=20, R5=7, RMR=71, ROCK TYPE B	
555												
	553.0	15.3			(4.9)	(4.1)	RS-6					
			5.0	3:00/1.0	100%	98%						
550												
	548.0	20.3		5:00/1.0							Boring Terminated at Elevation 548.0 ft In Meta-Argillite Rock	20.3

Boring Terminated at Elevation 548.0 ft In Meta-Argillite Rock												
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NCDOT CORE SINGLE B4643 BORINGS.GPJ NC DOT.GDT 6/5/12

WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard										
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 35+75		OFFSET 17 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 567.1 ft		TOTAL DEPTH 14.0 ft		NORTHING 633,249		EASTING 1,633,117										
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011			DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER D. White		START DATE 02/15/12		COMP. DATE 02/15/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
570														567.1	GROUND SURFACE	0.0
	567.1	0.0	2	4	3									563.8	ALLUVIAL MEDIUM STIFF BROWN SANDY SILTY CLAY (A-6) WITH TRACE ORGANICS	3.3
565	563.1	4.0												563.1	ALLUVIAL DENSE GRAY SANDY GRAVEL (A-1)	4.0
		100/4														
560	558.1	9.0												558.1	WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE	9.0
		60/1														
555	553.1	14.0												553.1	CRYSTALLINE ROCK MODERATELY SEVERELY WEATHERED META-ARGILLITE	14.0
		60/0														
															Boring Terminated at Elevation 553.1 ft In Meta-Argillite Rock	

NCDOT BORE SINGLE B4643\_BORINGS.GPJ NC\_DOT.GDT 6/5/12

WBS 38451.1.1		TIP B-4643		COUNTY STANLY		GEOLOGIST J. Howard										
SITE DESCRIPTION Bridge No. 24 over Curl Tail Creek on NC 49							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 35+52		OFFSET 6 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 568.3 ft		TOTAL DEPTH 13.9 ft		NORTHING 633,218		EASTING 1,633,106										
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 74% 02/01/2011			DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER D. White		START DATE 02/15/12		COMP. DATE 02/15/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
570														568.3	GROUND SURFACE	0.0
	568.3	0.0	2	3	3									564.8	ALLUVIAL MEDIUM STIFF TAN CLAYEY SANDY SILT (A-4) WITH TRACE ORGANICS	3.5
565	564.4	3.9	13	25	26									562.8	ALLUVIAL DENSE TO VERY DENSE GRAY SANDY GRAVEL (A-1)	5.5
560	559.4	8.9												559.4	WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE	8.9
555	554.4	13.9												554.4	CRYSTALLINE ROCK MODERATELY SEVERELY WEATHERED META-ARGILLITE	13.9
		60/0														
															Boring Terminated at Elevation 554.4 ft In Meta-Argillite Rock	

NCDOT BORE SINGLE B4643\_BORINGS.GPJ NC\_DOT.GDT 6/5/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAY  
MATERIALS & TESTS UNIT  
SOILS LABORATORY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAY  
MATERIALS & TESTS UNIT  
SOILS LABORATORY

T. I. P. No. B-4643

T. I. P. No. B-4643

REPORT ON SAMPLES OF SOILS FOR QUALITY

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 38451.1.1 County STANLY Owner  
Date: Sampled 2/15/12 Received 2/29/12 Reported 3/2/12  
Sampled from BRIDGE By J E BEVERLY  
Submitted by N WAINAINA 1995 Standard Specifications

Project 38451.1.1 County STANLY Owner  
Date: Sampled 2/15/12 Received 2/29/12 Reported 3/2/12  
Sampled from BRIDGE By J E BEVERLY  
Submitted by N WAINAINA 1995 Standard Specifications

777991 TO 778002  
3/9/12

777991 TO 778002  
3/9/12

TEST RESULTS

TEST RESULTS

Proj. Sample No.	SS-1	SS-4	SS-7	SS-8	SS-9	SS-11
Lab. Sample No.	777991	777992	777993	777994	777995	777996
Retained #4 Sieve	%	28	3	62	-	-
Passing #10 Sieve	%	100	63	23	94	98
Passing #40 Sieve	%	92	58	13	90	91
Passing #200 Sieve	%	76	51	8	77	65

Proj. Sample No.	SS-13	SS-16	SS-17	SS-19	SS-21	SS-23
Lab. Sample No.	777997	777998	777999	778000	778001	778002
Retained #4 Sieve	%	5	-	-	2	-
Passing #10 Sieve	%	79	81	89	90	100
Passing #40 Sieve	%	68	60	81	79	81
Passing #200 Sieve	%	58	49	61	64	53

MINUS NO. 10 FRACTION

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60	%	10.1	11.3	8.1	55.3	6.1
Fine Sand Ret - #270	%	14.6	8.3	22.7	11.3	12.8
Silt 0.05 - 0.005 mm	%	42.9	41.8	38.8	15.1	44.7
Clay < 0.005 mm	%	32.4	38.5	30.4	18.2	36.5
Passing #40 Sieve	%	-	-	-	-	-
Passing #200 Sieve	%	-	-	-	-	-

SOIL MORTAR - 100%						
Coarse Sand Ret - #60	%	18.0	31.4	-	11.8	16.6
Fine Sand Ret - #270	%	9.7	8.9	-	20.3	13.2
Silt 0.05 - 0.005 mm	%	39.8	31.3	-	35.6	41.8
Clay < 0.005 mm	%	32.4	28.4	NOT	32.4	28.4
Passing #40 Sieve	%	-	-	Enough	-	-
Passing #200 Sieve	%	-	-	-	-	-

L. L.	38	42	34	22	31	34
P. I.	11	10	10	4	7	11
AASHTO Classification	A-6(8)	A-5(3)	A-4(5)	A-1-a(0)	A-4(5)	A-6(6)
Station						
Offset						
Alignment	L	L	L	L	L	L
Location	EB1-B	EB1-B	B1-B	B1-B	B1-B	B2-B
Depth (Ft)	0.00	0.00	0.00	3.60	0.00	0.00
to	1.50	1.50	1.50	5.10	1.50	1.50

L. L.	40	36	Material	32	39	39
P. I.	12	10	-	10	10	12
AASHTO Classification	A-6(5)	A-4(3)	-	A-4(4)	A-4(6)	A-6(4)
Station						
Offset						
Alignment	L	L	L	L	L	L
Location	EB2-A	EB2-B	EB2-B	B3-B	B3-A	B2-A
Depth (Ft)	0.00	0.00	3.90	0.00	0.00	0.00
to	1.50	1.50	5.40	1.50	1.50	1.50
			***			

cc: J E BEVERLY

\*\*\* Insufficient Material to Test Sample

cc: J E BEVERLY

\*\*\* Insufficient Material to Test Sample

Soils Engineer

Soils Engineer



38451.1.1 (B-4643)  
STANLY COUNTY  
BRIDGE #24 OVER CURL TAIL CREEK ON NC 49

CORE PHOTOS





38451.1.1 (B-4643)  
STANLY COUNTY  
BRIDGE #24 OVER CURL TAIL CREEK ON NC 49

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