

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 41431.1.1 (U-5018) F.A. PROJ. STP-0043(8)
 COUNTY PITT
 PROJECT DESCRIPTION NC 43 WIDENING FROM US 264 TO NC 11

SITE DESCRIPTION STRUCTURE NO.1 ON -L- (NC 43) OVER HARRIS
MILL RUN AT -L- STATION 56+12

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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 1919 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.

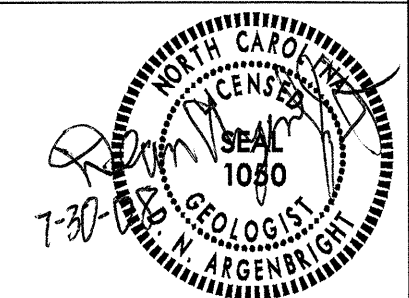
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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.

PROJECT: 41431.1.1 ID: U-5018

PERSONNEL
T.C. BOTTOMS
SOME PERSONNEL

EASTERN REGIONAL

INVESTIGATED BY F.M. WESCOTT III
 CHECKED BY D.N. ARGENBRIGHT
 SUBMITTED BY D.N. ARGENBRIGHT
 DATE JULY, 2008



DRAWN BY: C.P. TURNER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

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.

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SUBSURFACE INVESTIGATION

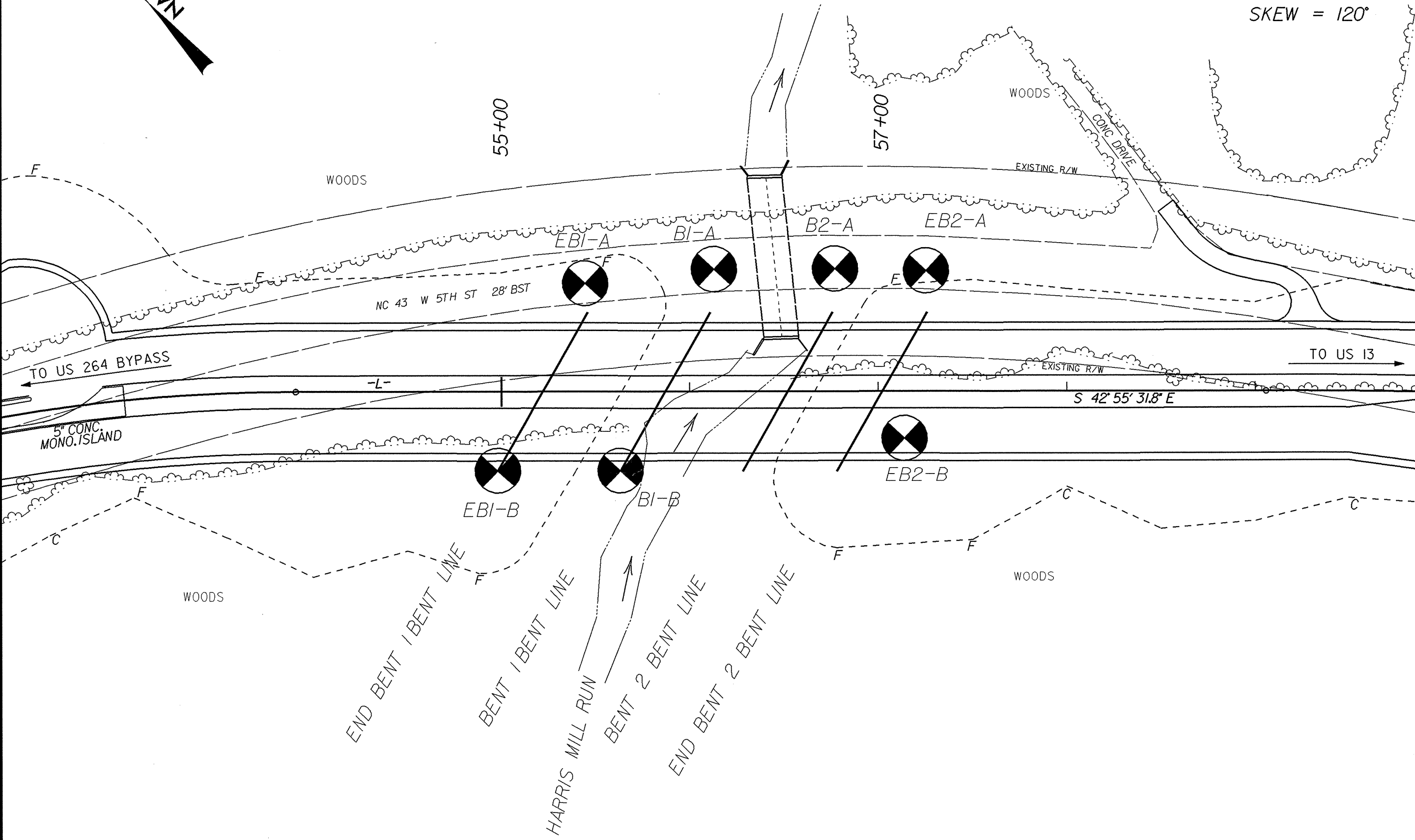
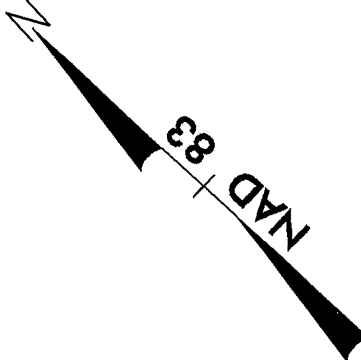
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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, GRN, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY 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. ANGULARITY OF GRAINS 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: WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) 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 SEDIMENTARY ROCK (CP) 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 DISLOGGED 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 (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 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 (SREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF 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. BENCH MARK: BL-III - L - STA. 56+31.50, 86.66' LT. ELEVATION: 44.09 FT. NOTES: FORM. - FORMATION	
SOIL LEGEND AND AASHTO CLASSIFICATION GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS GROUP CLASS. A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-1, A-2, A-3, A-4, A-5, A-6, A-7 SYMBOL		MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50 PERCENTAGE OF MATERIAL ORGANIC MATERIAL GRANULAR SILT - CLAY 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		WEATHERING 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 RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> 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. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> 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.			
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) GENERALLY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE 4 4 TO 10 N/A MEDIUM DENSE 10 TO 30 DENSE 30 TO 50 VERY DENSE >50 GENERALLY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT <2 <0.25 SOFT 2 TO 4 0.25 TO 0.50 MEDIUM STIFF 4 TO 8 0.5 TO 1.0 STIFF 8 TO 15 1 TO 2 VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4		MISCELLANEOUS SYMBOLS 		ROCK HARDNESS 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 GROOVED 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 GROVED 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.			
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.75 2.00 0.42 0.25 0.075 0.053 BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE, SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.) GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005 IN. 12 3		ABBREVIATIONS AR - AUGER REFUSAL HI - HIGHLY BT - BORING TERMINATED MED. - MEDIUM CL - CLAY MICA - MICACEOUS CPT - CONE PENETRATION TEST MOD. - MODERATELY CSE - COARSE NP - NON PLASTIC DMT - DILATOMETER TEST ORG. - ORGANIC DPT - DYNAMIC PENETRATION TEST PMT - PRESSUREMETER TEST e - VOID RATIO SAP. - SAPROLITIC F - FINE SD. - SAND, SANDY FOSS. - FOSSILIFEROUS SL. - SILT, SILTY FRAC. - FRACTURED, FRACTURES SLI. - SLIGHTLY FRAGS. - FRAGMENTS TCR - TRICONE REFUSAL		SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM - OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL - SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE			
PLASTICITY NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH 0-5 6-15 16-25 26 OR MORE		EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input checked="" type="checkbox"/> D-50 ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG.-CARBIDE INSERTS <input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input checked="" type="checkbox"/> TRICONE 2 15/16" STEEL TEETH <input type="checkbox"/> TRICONE " TUNG.-CARB. <input type="checkbox"/> CORE BIT <input type="checkbox"/> _____ HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL CORE SIZE: <input type="checkbox"/> -B _____ <input type="checkbox"/> -N _____ <input type="checkbox"/> -H _____ HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST		INDURATION 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.			

SITE PLAN



SKEW = 120°

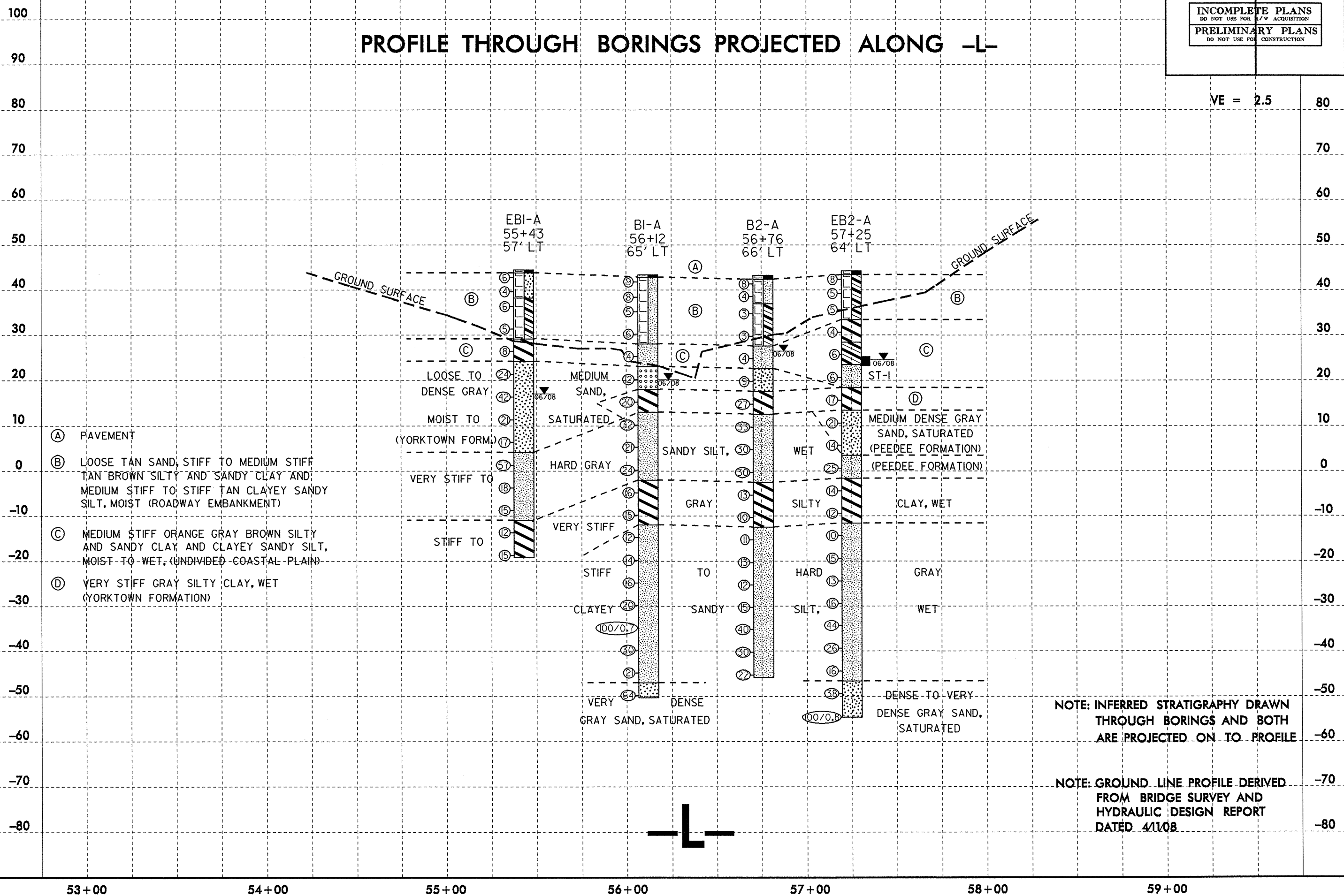


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PROJECT REFERENCE NO. U-5018	SHEET NO. 4 OF 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.5 80



- (A) PAVEMENT
- (B) LOOSE TAN SAND, STIFF TO MEDIUM STIFF TAN BROWN SILTY AND SANDY CLAY AND MEDIUM STIFF TO STIFF TAN CLAYEY SANDY SILT, MOIST (ROADWAY EMBANKMENT)
- (C) MEDIUM STIFF ORANGE GRAY BROWN SILTY AND SANDY CLAY AND CLAYEY SANDY SILT, MOIST TO WET, (UNDIVIDED COASTAL PLAIN)
- (D) VERY STIFF GRAY SILTY CLAY, WET (YORKTOWN FORMATION)

NOTE: INFERRED STRATIGRAPHY DRAWN THROUGH BORINGS AND BOTH ARE PROJECTED ON TO PROFILE

NOTE: GROUND LINE PROFILE DERIVED FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/1/08

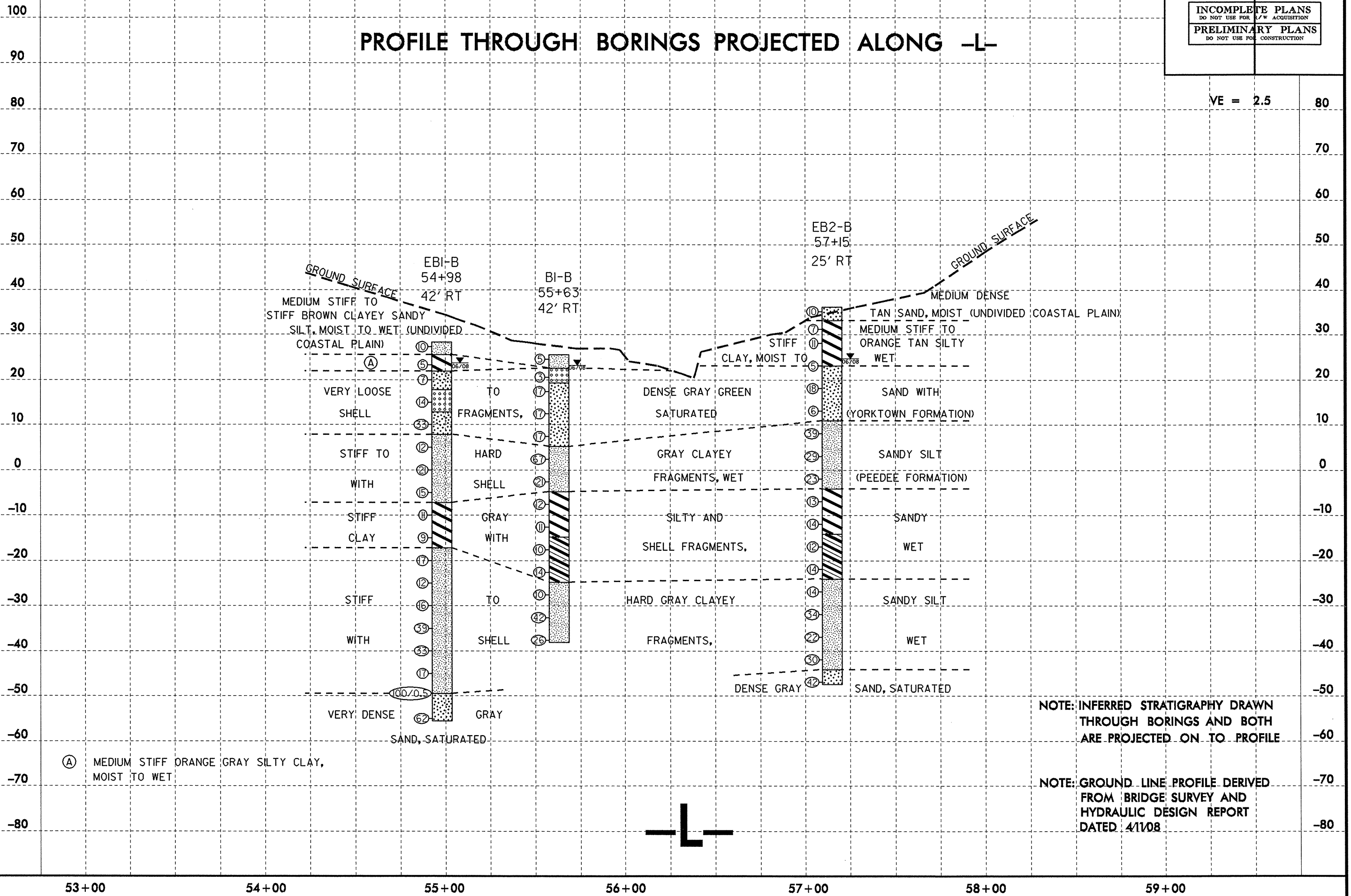


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PROJECT REFERENCE NO. U-5018	SHEET NO. 5 OF 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.5 80



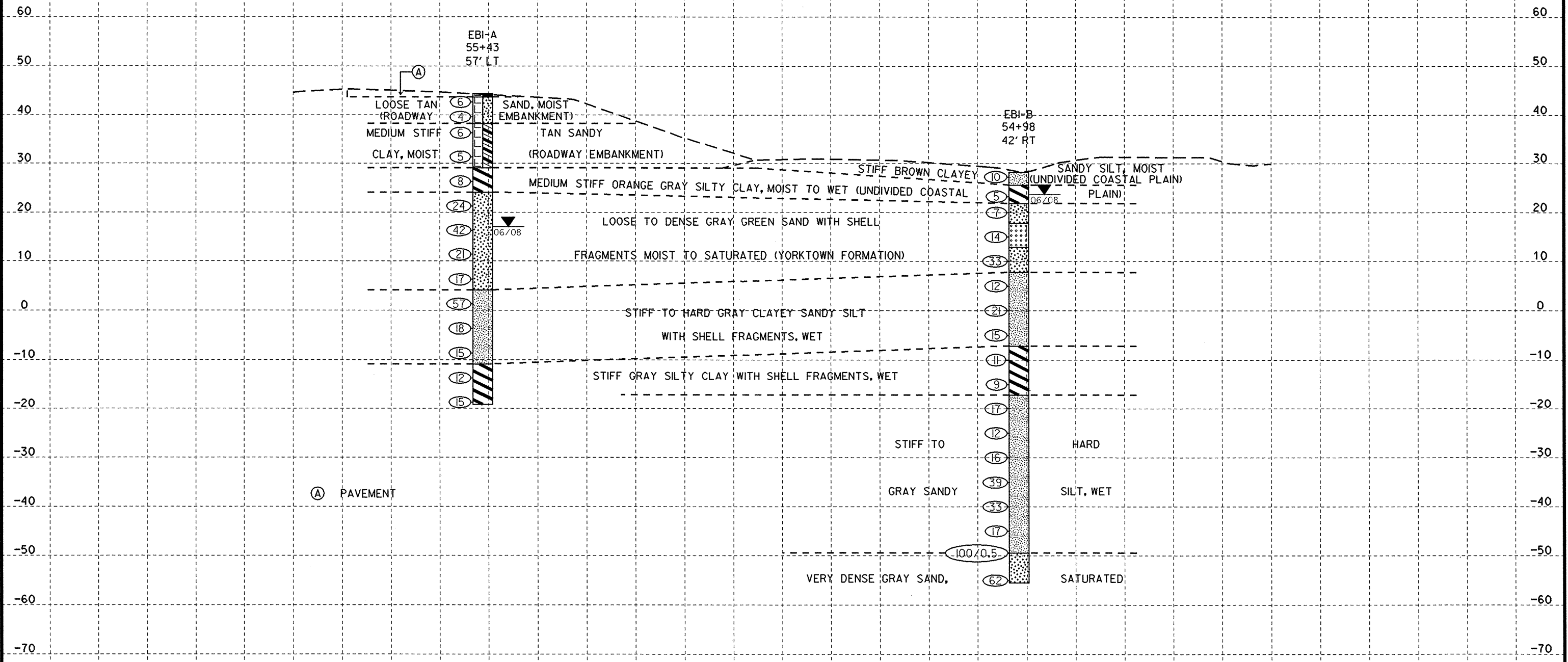
(A) MEDIUM STIFF ORANGE GRAY SILTY CLAY, MOIST TO WET

NOTE: INFERRED STRATIGRAPHY DRAWN THROUGH BORINGS AND BOTH ARE PROJECTED ON TO PROFILE

NOTE: GROUND LINE PROFILE DERIVED FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/1/08

8/23/99

CROSS SECTION ALONG END BENT I

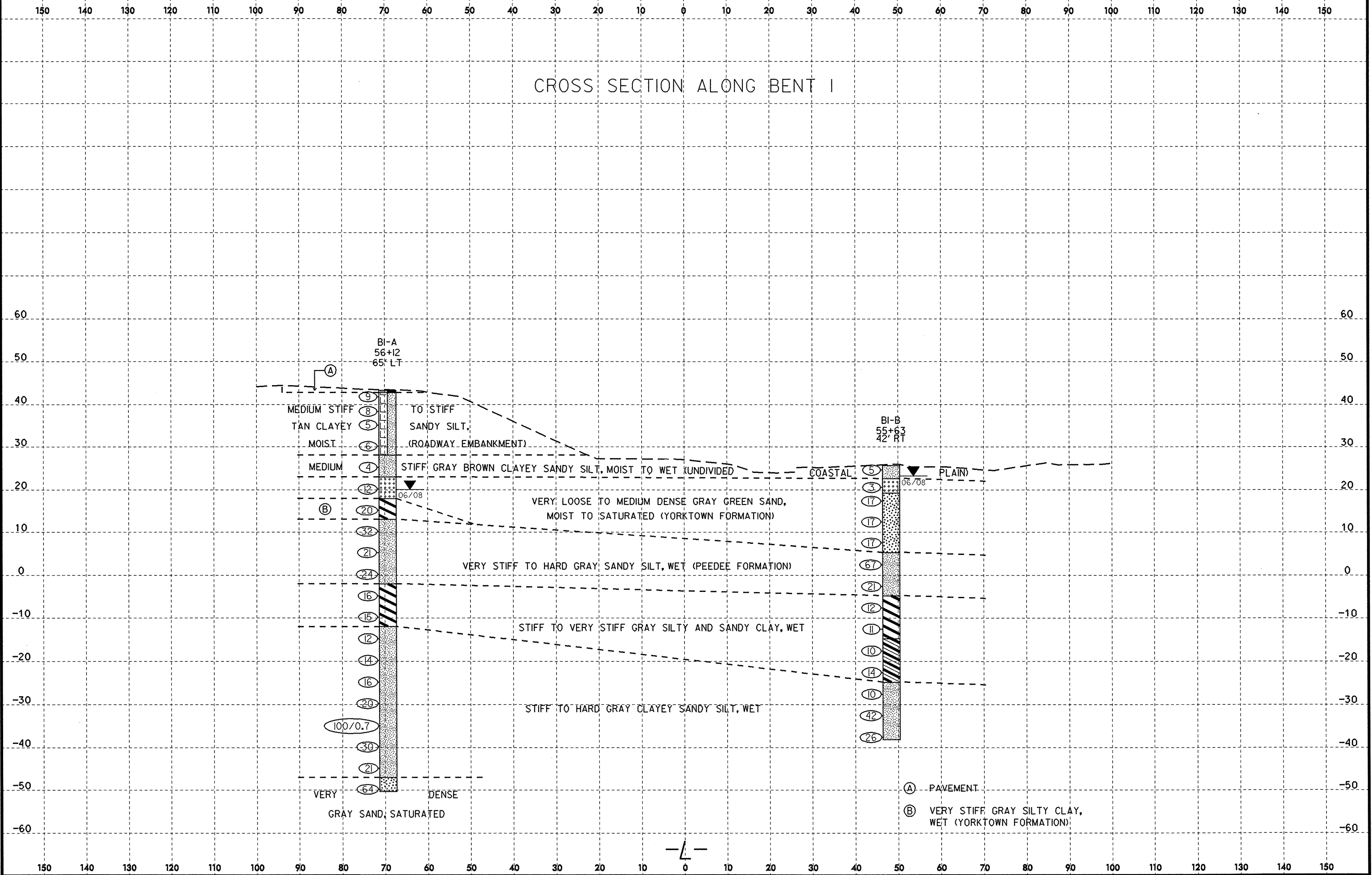


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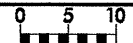
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CROSS SECTION ALONG BENT I

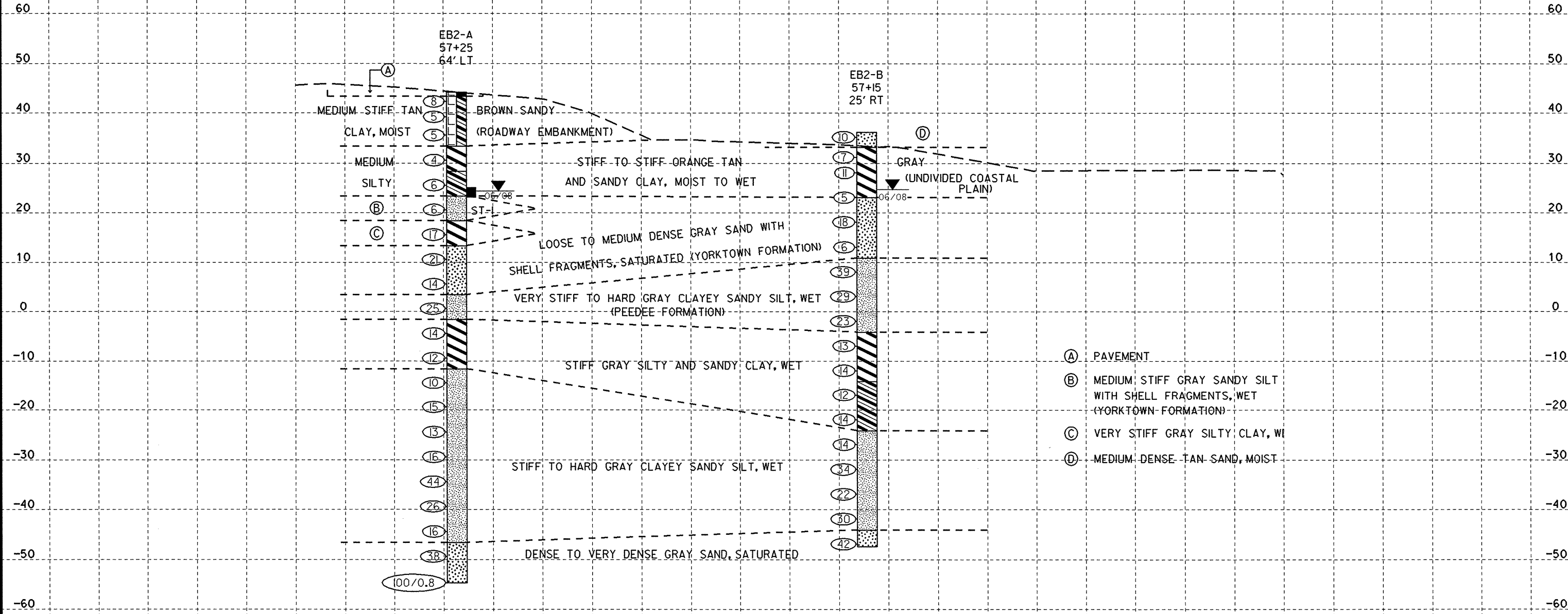


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CROSS SECTION ALONG END BENT 2



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NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

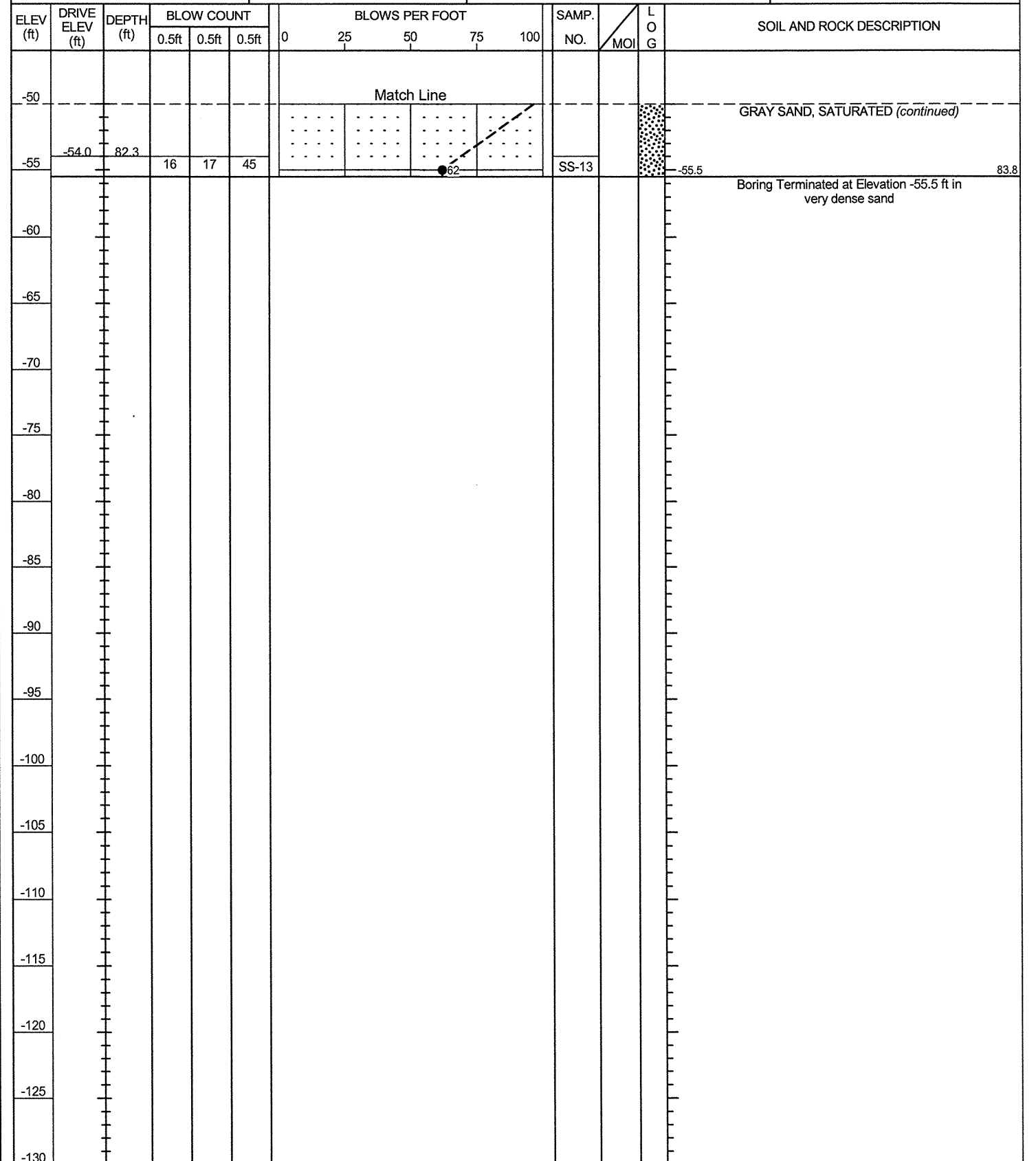
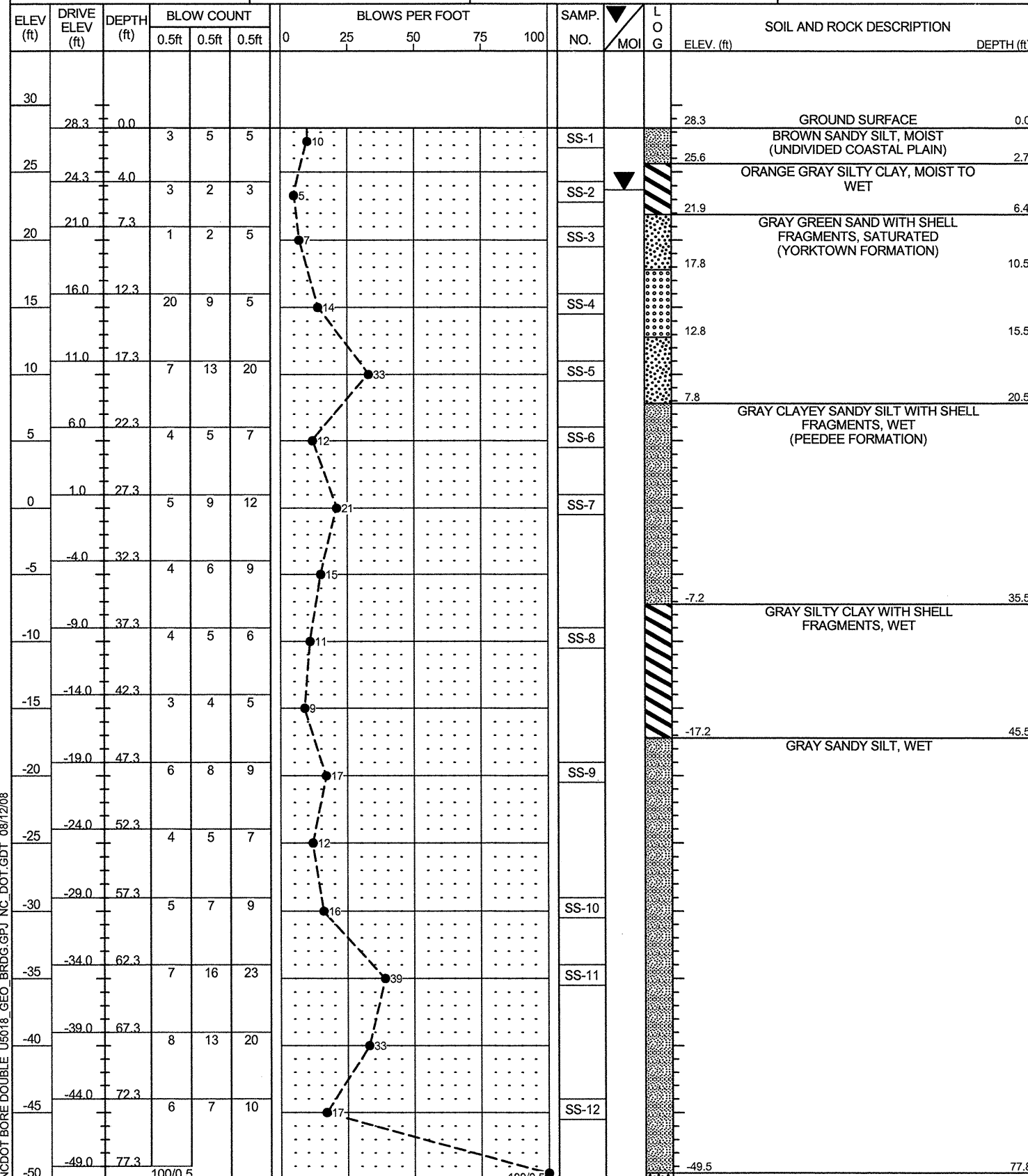
PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB1-A	STATION 55+43	OFFSET 57ft LT	ALIGNMENT -L-
COLLAR ELEV. 44.4 ft	TOTAL DEPTH 63.6 ft	NORTHING 685,561	EASTING 2,469,784
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/24/08	COMP. DATE 06/24/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
45														GROUND SURFACE	0.0
	43.7	0.7	3	3	3						SS-79			PAVEMENT	0.7
	40.6	3.8	2	2	2									TAN SAND, MOIST (ROADWAY EMBANKMENT)	
40															
	37.3	7.1	1	3	3						SS-80			TAN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	6.2
35															
	32.3	12.1	1	2	3										
30															
	27.3	17.1	1	4	4						SS-81			ORANGE GRAY SILTY CLAY, MOIST (UNDIVIDED COASTAL PLAIN)	15.3
25															
	22.3	22.1	6	13	11						SS-82			GRAY GREEN SAND WITH SHELL FRAGMENTS, MOIST TO SATURATED (YORKTOWN FORMATION)	20.3
20															
	17.3	27.1	27	17	25										
15															
	12.3	32.1	4	8	13						SS-83				
10															
	7.3	37.1	4	7	10										
5															
	2.3	42.1	24	28	29						SS-84			GRAY CLAYEY SANDY SILT, WET (PEEDEE FORMATION)	40.3
0															
	-2.7	47.1	5	8	10						SS-85				
-5															
	-7.7	52.1	4	7	8										
-10															
	-12.7	57.1	4	5	7						SS-86			GRAY SILTY CLAY, WET	55.3
-15															
	-17.7	62.1	4	7	8										
-20															
-25															
-30															
-35															

NCDOT BORE DOUBLE U5018 GEO BRDG.GPJ NC DOT.GDT 08/12/08

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB1-B	STATION 54+98	OFFSET 42ft RT	ALIGNMENT -L-
COLLAR ELEV. 28.3 ft	TOTAL DEPTH 83.8 ft	NORTHING 685,527	EASTING 2,469,679
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/18/08	COMP. DATE 06/18/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

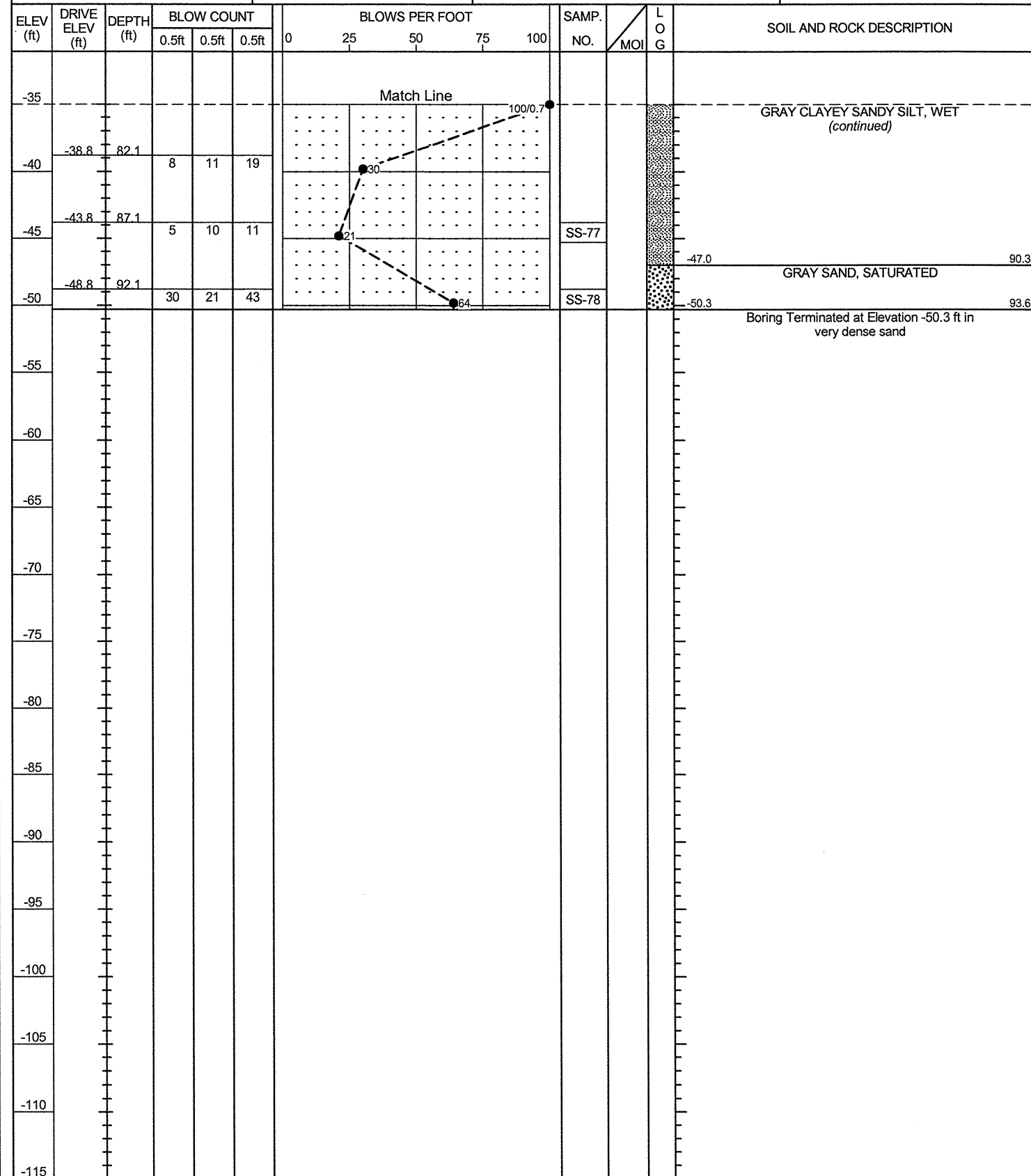
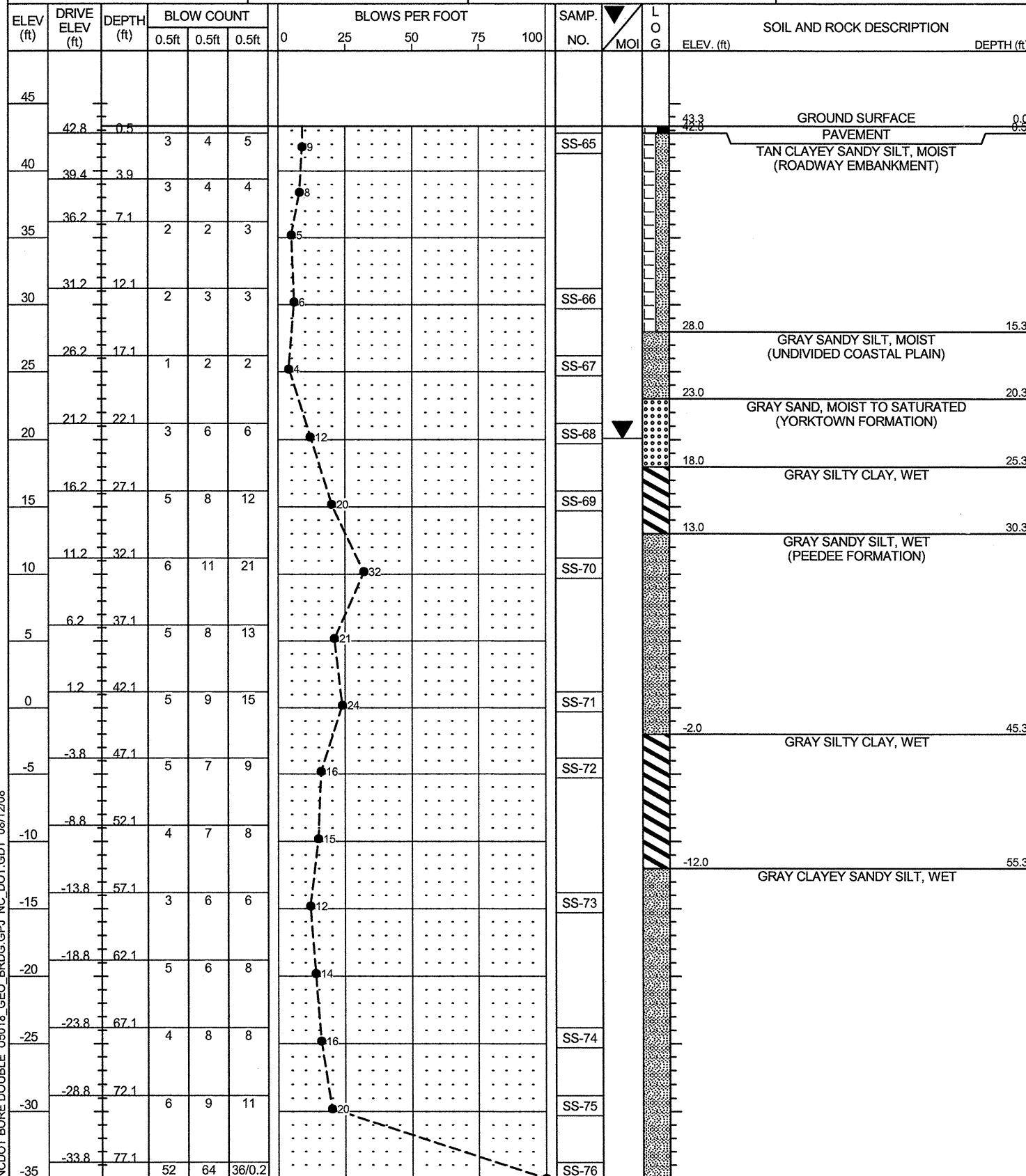
PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB1-B	STATION 54+98	OFFSET 42ft RT	ALIGNMENT -L-
COLLAR ELEV. 28.3 ft	TOTAL DEPTH 83.8 ft	NORTHING 685,527	EASTING 2,469,679
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/18/08	COMP. DATE 06/18/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U5018_GEO_BRDG.GPJ NC_DOT.GDT 08/12/08

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. B1-A	STATION 56+12	OFFSET 65ft LT	ALIGNMENT -L-
COLLAR ELEV. 43.3 ft	TOTAL DEPTH 93.6 ft	NORTHING 685,516	EASTING 2,469,836
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/24/08	COMP. DATE 06/24/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. B1-A	STATION 56+12	OFFSET 65ft LT	ALIGNMENT -L-
COLLAR ELEV. 43.3 ft	TOTAL DEPTH 93.6 ft	NORTHING 685,516	EASTING 2,469,836
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/24/08	COMP. DATE 06/24/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U5018_GEO BRDG.GPJ NC_DOT.GDT 08/12/08

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. B1-B	STATION 55+63	OFFSET 42ft RT	ALIGNMENT -L-
COLLAR ELEV. 25.6 ft	TOTAL DEPTH 63.7 ft	NORTHING 685,479	EASTING 2,469,723
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/19/08	COMP. DATE 06/19/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
30															
25	25.6	0.0	1	4	1									25.6	GROUND SURFACE
														22.6	BROWN CLAYEY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)
20	21.6	4.0	2	2	1									19.3	GRAY GREEN SAND, SATURATED (YORKTOWN FORMATION)
	18.4	7.2	7	11	6										
15															
	13.4	12.2	6	7	10										
10															
	8.4	17.2	6	7	10										
5															
	3.4	22.2	18	30	37										
0															
	-1.6	27.2	7	8	13										
-5															
	-6.6	32.2	5	5	7										
-10															
	-11.6	37.2	4	5	6										
-15															
	-16.6	42.2	4	4	6										
-20															
	-21.6	47.2	4	5	9										
-25															
	-26.6	52.2	4	4	6										
-30															
	-31.6	57.2	3	14	28										
-35															
	-36.6	62.2	6	10	16										
-40															
-45															
-50															

NCDOT BORE DOUBLE U5018_GEO_BRDG.GPJ_NC_DOT.GDT 08/12/08



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. B2-A	STATION 56+76	OFFSET 66ft LT	ALIGNMENT -L-
COLLAR ELEV. 43.2 ft	TOTAL DEPTH 89.0 ft	NORTHING 685,469	EASTING 2,469,880
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/23/08	COMP. DATE 06/23/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. B2-A	STATION 56+76	OFFSET 66ft LT	ALIGNMENT -L-
COLLAR ELEV. 43.2 ft	TOTAL DEPTH 89.0 ft	NORTHING 685,469	EASTING 2,469,880
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/23/08	COMP. DATE 06/23/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
45															
42.3	42.3	0.9												GROUND SURFACE	0.0
40	39.5	3.7	3	4	4									PAVEMENT	0.9
	35.7	7.5	2	2	2									BROWN CLAYEY SANDY SILT, MOIST (ROADWAY EMBANKMENT)	
35	30.7	12.5	1	2	1									BROWN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	6.3
30	25.7	17.5	1	2	1									BROWN CLAYEY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)	15.7
25	20.7	22.5	2	1	3									GRAY SAND, SATURATED (YORKTOWN FORMATION)	20.7
20	15.7	27.5	1	2	7									GRAY SILTY CLAY, WET	25.7
15	10.7	32.5	7	10	17									GRAY SANDY SILT WITH SHELL FRAGMENTS, WET (PEEDEE FORMATION)	30.7
10	5.7	37.5	5	10	23									GRAY SILTY CLAY, WET	45.7
5	0.7	42.5	4	12	18									GRAY CLAYEY SANDY SILT, WET	55.7
0	-4.3	47.5	5	11	19										
-5	-9.3	52.5	4	6	7										
-10	-14.3	57.5	4	4	6										
-15	-19.3	62.5	4	4	6										
-20	-24.3	67.5	4	5	6										
-25	-29.3	72.5	4	5	7										
-30	-34.3	77.5	4	5	7										
-35															

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-35														
-40	-39.3	82.5	14	22	18									GRAY CLAYEY SANDY SILT, WET (continued)
-45	-44.3	87.5	4	6	16									
-50														
-55														
-60														
-65														
-70														
-75														
-80														
-85														
-90														
-95														
-100														
-105														
-110														
-115														

NCDOT BORE DOUBLE U5018 GEO BRDG.GPJ NC_DOT.GDT 08/12/08

Match Line

Boring Terminated at Elevation -45.8 ft in very stiff sandy silt

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB2-A	STATION 57+25	OFFSET 64ft LT	ALIGNMENT -L-
COLLAR ELEV. 44.2 ft	TOTAL DEPTH 98.9 ft	NORTHING 685,433	EASTING 2,469,912
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/23/08	COMP. DATE 06/23/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB2-A	STATION 57+25	OFFSET 64ft LT	ALIGNMENT -L-
COLLAR ELEV. 44.2 ft	TOTAL DEPTH 98.9 ft	NORTHING 685,433	EASTING 2,469,912
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/23/08	COMP. DATE 06/23/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

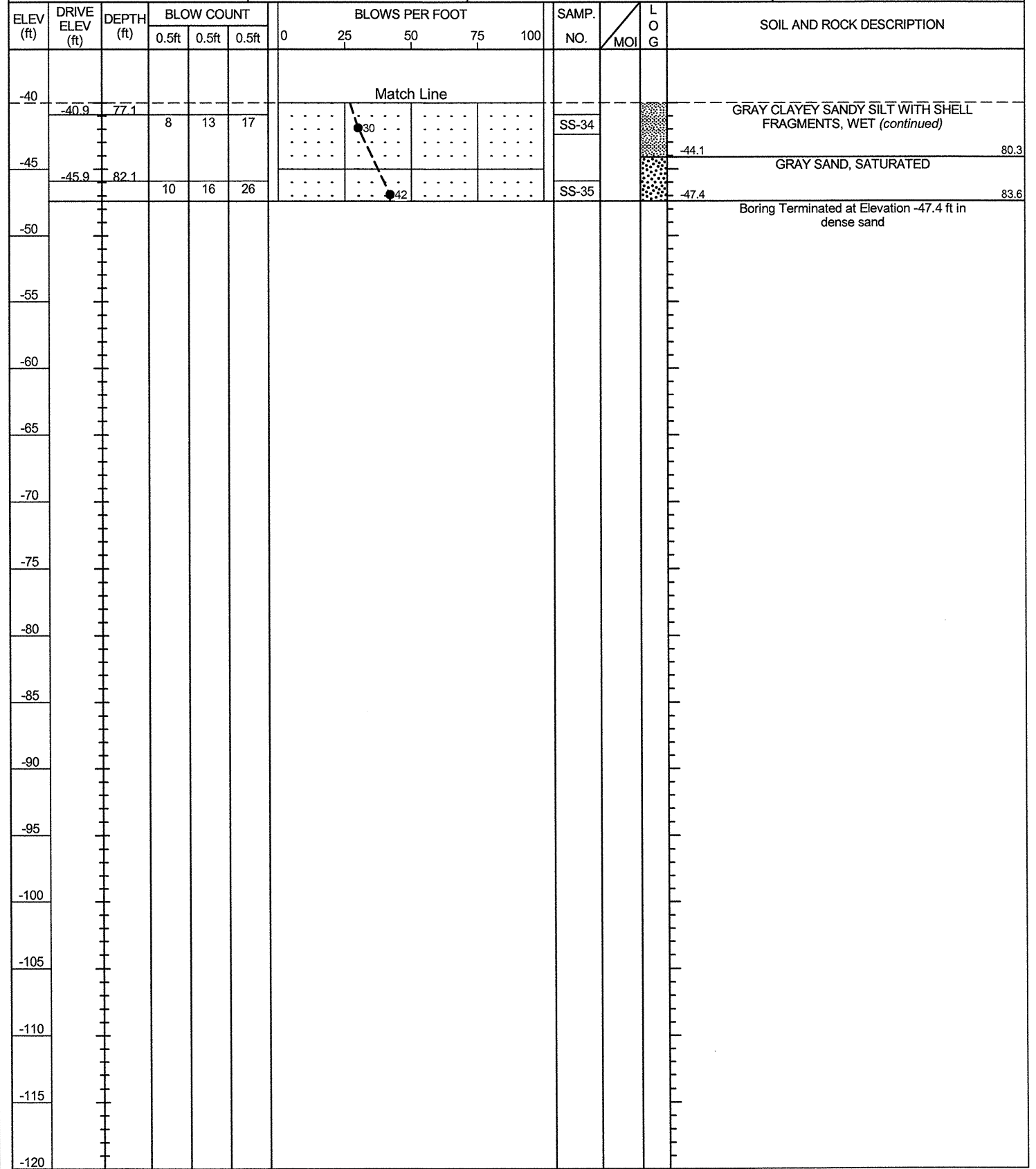
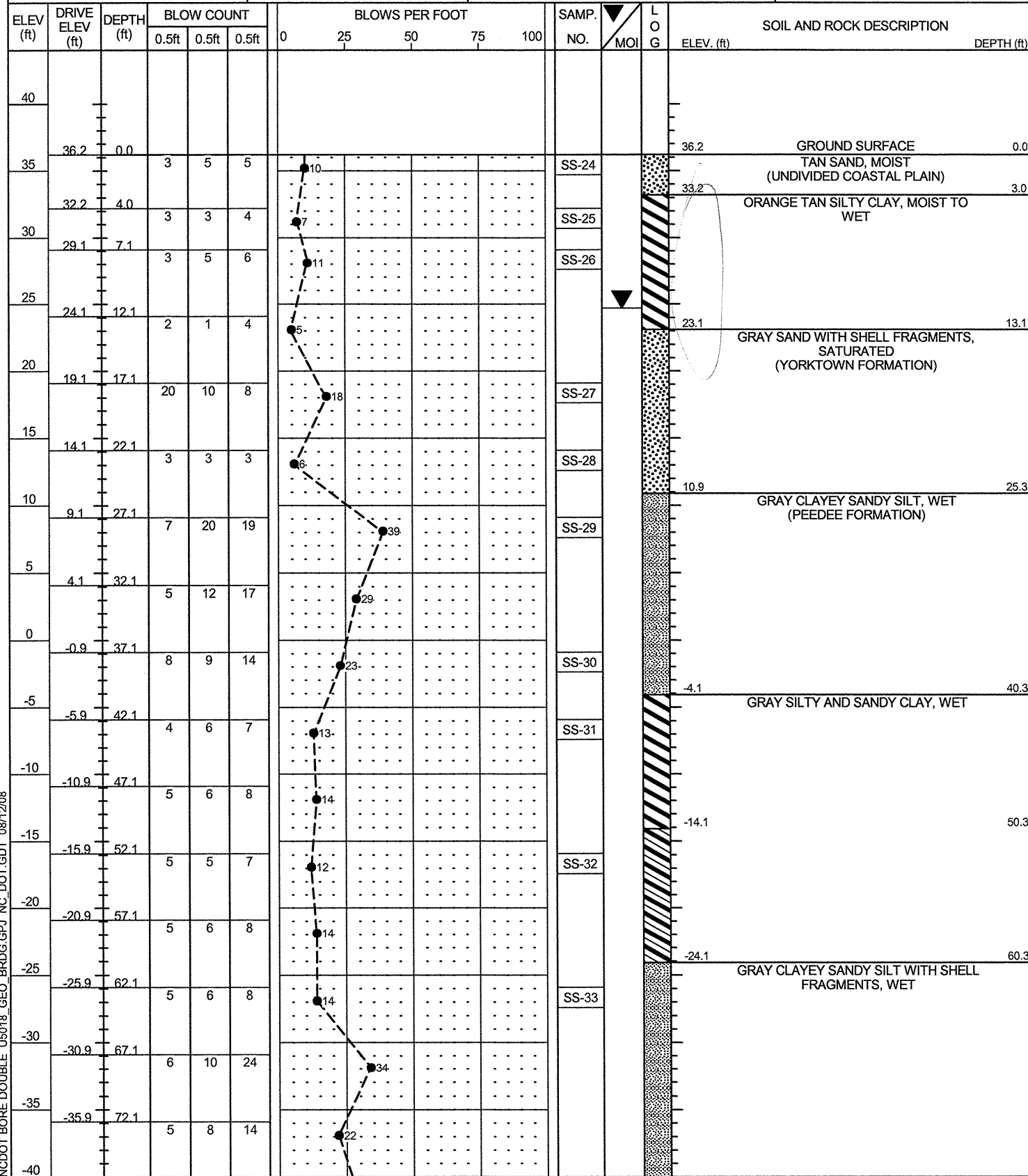
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
45																	
	43.3	0.9		3	3	5									44.2	GROUND SURFACE	0.0
															43.3	PAVEMENT	0.9
40	40.2	4.0		2	2	3										TAN BROWN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	
35	36.6	7.6		2	2	3											
30	31.6	12.6		1	1	3											
25	26.6	17.6		1	3	3											
20	21.6	22.6		1	1	5											
15	16.6	27.6		4	6	11											
10	11.6	32.6		5	7	14											
5	6.6	37.6		5	5	9											
0	1.6	42.6		14	11	14											
-5	-3.4	47.6		4	6	8											
-10	-8.4	52.6		3	5	7											
-15	-13.4	57.6		4	4	6											
-20	-18.4	62.6		3	7	8											
-25	-23.4	67.6		4	6	7											
-30	-28.4	72.6		5	7	9											
-35	-33.4	77.6		13	17	27											

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						
-35																
-40	-38.4	82.6		7	11	15										
-45	-43.4	87.6		5	7	9										
-50	-48.4	92.6		12	16	22										
-55	-53.4	97.6		37	57	43/0.3										
-60																
-65																
-70																
-75																
-80																
-85																
-90																
-95																
-100																
-105																
-110																
-115																

NCDOT BORE DOUBLE U5018_GEO BRDG.GPJ NC_DOT.GDT 08/12/08

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB2-B	STATION 57+15	OFFSET 25ft RT	ALIGNMENT -L-
COLLAR ELEV. 36.2 ft	TOTAL DEPTH 83.6 ft	NORTHING 685,381	EASTING 2,469,839
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/20/08	COMP. DATE 06/20/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 41431.1.1	ID. U-5018	COUNTY PITT	GEOLOGIST Bottoms, T. C.
SITE DESCRIPTION STRUCTURE NO. 1 ON -L- (NC 43) OVER HARRIS MILL RUN			GROUND WTR (ft)
BORING NO. EB2-B	STATION 57+15	OFFSET 25ft RT	ALIGNMENT -L-
COLLAR ELEV. 36.2 ft	TOTAL DEPTH 83.6 ft	NORTHING 685,381	EASTING 2,469,839
DRILL MACHINE DIEDRICH D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 06/20/08	COMP. DATE 06/20/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U5018 GEO BRDG.GPJ NC_DOT.GDT 08/12/08

U-5018
Structure No. 1 on NC 43 over Harris Mill Run

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.
EB1-B	SS-1	100	99	40	5.8	58.3	17.4	18.6	20	4	A-4(0)	1.0-1.5		
	SS-2	100	100	88	1.0	14.9	26.2	57.9	59	35	A-7-6(34)	4.0-5.5		
	SS-3	98	85	29	34.0	38.9	13.6	13.4	20	4	A-2-4(0)	7.3-8.8		
	SS-4	85	55	9	69.5	22.2	2.1	6.2	18	NP	A-3(0)	12.3-13.8		
	SS-5	100	100	34	1.0	73.5	9.0	16.5	29	NP	A-2-4(0)	17.3-18.8		
	SS-6	100	99	52	2.1	65.8	10.4	21.7	32	7	A-4(2)	22.3-23.8		
	SS-7	100	100	58	0.2	72.8	14.7	12.3	31	4	A-4(1)	27.3-28.8		
	SS-8	100	100	80	0.4	37.8	24.6	37.2	42	20	A-7-6(16)	37.3-38.8		
	SS-9	100	100	82	1.0	56.8	19.4	22.7	31	7	A-4(5)	47.3-48.8		
	SS-10	100	98	58	5.2	67.1	15.3	12.4	28	5	A-4(1)	57.3-58.8		
	SS-11	100	97	44	7.9	72.3	9.5	10.3	28	3	A-4(0)	62.3-63.8		
	SS-12	99	95	75	8.7	53.9	20.9	16.5	32	8	A-4(5)	72.3-73.8		
	SS-13	97	91	24	45.1	31.9	7.4	15.5	22	NP	A-2-4(0)	82.3-83.8		
B1-B	SS-14	100	100	68	1.2	35.5	34.3	28.9	31	10	A-4(5)	1.0-1.5		
	SS-15	97	78	6	41.1	54.1	2.7	2.1	20	NP	A-3(0)	4.0-5.5		
	SS-16	91	64	19	52.3	28.6	8.8	10.3	20	NP	A-2-4(0)	7.2-8.7		
	SS-17	100	99	34	1.4	77.8	8.4	12.4	28	3	A-2-4(0)	12.2-13.7		
	SS-18	100	100	46	0.1	85.3	9.4	5.2	28	NP	A-4(0)	22.2-23.7		
	SS-19	100	100	64	0.4	69.6	15.5	14.5	28	4	A-4(1)	27.2-28.7		
	SS-20	100	100	85	0.4	28.5	29.8	41.3	49	27	A-7-6(24)	32.2-33.7		
	SS-21	100	95	60	9.5	46.7	14.9	28.9	37	19	A-6(9)	42.2-43.7		
	SS-22	99	98	78	2.1	55.8	29.8	12.4	33	9	A-4(6)	52.2-53.7		
	SS-23	100	97	53	6.0	67.6	12.0	14.5	27	NP	A-4(0)	57.2-58.7		
EB2-B	SS-24	100	99	33	12.0	57.3	6.2	24.5	24	10	A-2-4(0)	1.0-1.5		
	SS-25	100	99	79	1.6	22.4	18.9	57.1	51	18	A-7-5(16)	4.0-5.5		
	SS-26	100	100	91	0.6	11.4	22.7	65.2	60	34	A-7-6(35)	7.1-8.6		
	SS-27	97	84	27	44.0	28.5	16.2	11.2	17	NP	A-2-4(0)	17.1-18.6		
	SS-28	96	76	12	53.0	36.5	1.3	9.2	20	NP	A-2-4(0)	22.1-23.6		
	SS-29	100	100	37	0.4	75.6	9.7	14.3	27	NP	A-4(0)	27.1-28.6		
	SS-30	100	100	65	0.4	68.5	8.7	22.4	29	2	A-4(0)	37.1-38.6		
	SS-31	99	98	71	1.4	41.0	18.9	38.7	46	24	A-7-6(16)	42.1-43.6		
	SS-32	100	96	63	9.4	40.8	13.1	36.7	39	21	A-6(11)	52.1-53.6		
	SS-33	100	99	76	1.6	58.7	13.1	26.5	31	10	A-4(6)	62.1-63.6		
	SS-34	100	99	78	1.6	66.1	16.0	16.3	31	4	A-4(3)	77.1-78.1		
	SS-35	100	99	28	12.4	63.5	8.8	15.3	25	4	A-2-4(0)	82.1-83.6		
EB2-A	SS-36	99	94	40	14.1	48.7	8.7	28.5	25	11	A-6(1)	1.0-2.4		
	SS-37	100	99	40	3.7	61.0	8.9	26.5	26	11	A-6(1)	7.6-9.1		
	SS-38	100	99	81	2.0	20.4	18.5	59.1	48	19	A-7-6(17)	12.6-14.1		
	SS-39	100	99	57	5.7	40.4	13.1	40.8	36	21	A-6(9)	17.6-19.1		
	SS-40	98	76	38	52.3	9.8	26.7	11.2	20	5	A-4(0)	22.6-24.1		
	SS-41	100	99	78	1.4	34.0	23.8	40.8	51	17	A-7-5(15)	27.6-29.1		
	SS-42	100	100	3	0.4	76.7	6.6	16.3	27	3	A-2-4(0)	32.6-34.1		
	SS-43	100	100	57	0.2	72.8	10.7	16.3	28	1	A-4(0)	42.6-44.1		
	SS-44	100	97	72	6.7	32.8	23.8	36.7	42	22	A-7-5(15)	47.6-49.1		

U-5018
Structure No. 1 on NC 43 over Harris Mill Run

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.
EB2-A	SS-45	100	96	46	8.2	60.3	10.1	21.4	26	6	A-4(0)	57.6-59.1		
	SS-46	100	100	75	0.4	55.5	13.6	30.6	32	10	A-4(6)	67.6-69.1		
	SS-47	100	98	56	5.9	66.1	9.7	18.3	28	4	A-4(0)	72.6-74.1		
	SS-48	100	98	46	5.7	73.6	9.5	11.2	27	NP	A-4(0)	77.6-79.1		
	SS-49	100	98	80	6.9	51.0	21.7	20.4	29	2	A-4(1)	87.6-89.1		
	SS-50	100	96	31	19.4	52.6	8.7	19.4	19	1	A-2-4(0)	92.6-94.1		
	SS-51	100	96	17	25.2	60.2	6.4	8.2	19	NP	A-2-4(0)	97.6-98.9		
B2-A	SS-52	100	98	42	7.3	54.6	11.5	26.5	23	8	A-4(0)	1.0-2.4		
	SS-53	100	96	50	9.2	43.8	12.3	34.7	31	15	A-6(4)	7.5-9.0		
	SS-54	100	97	39	12.2	52.0	7.2	28.5	27	14	A-6(2)	12.5-14.0		
	SS-55	100	99	41	9.0	52.0	10.5	28.5	22	7	A-4(0)	17.5-19.0		
	SS-56	98	64	33	57.7	9.8	23.3	9.2	20	4	A-2-4(0)	22.5-24.0		
	SS-57	100	98	86	3.1	16.7	19.1	61.1	74	19	A-7-5(25)	27.5-29.0		
	SS-58	100	100	36	0.2	72.7	10.8	16.3	28	4	A-4(0)	32.5-34.0		
	SS-59	100	100	55	0.2	79.0	10.6	10.2	30	NP	A-4(0)	42.5-44.0		
	SS-60	100	99	73	2.6	34.0	20.6	42.8	49	24	A-7-6(17)	47.5-49.0		
	SS-61	100	98	51	5.3	65.4	11.0	18.3	29	8	A-4(2)	57.5-59.0		
	SS-62	100	100	78	0.4	61.1	12.0	26.5	32	9	A-4(6)	67.5-69.0		
	SS-63	100	98	63	6.3	63.1	14.3	16.3	28	6	A-4(2)	72.5-74.0		
	SS-64	100	98	52	3.7	72.1	10.0	14.3	28	1	A-4(0)	77.5-79.0		
	B1-A	SS-65	100	99	37	3.5	63.7	10.4	22.4	22	7	A-4(0)	1.0-2.0	
SS-66		100	99	38	7.3	58.2	7.9	26.5	24	9	A-4(0)	12.1-13.6		
SS-67		100	99	37	4.3	61.9	21.6	12.2	21	5	A-4(0)	17.1-18.6		
SS-68		100	96	6	21.5	74.3	1.1	3.1	14	NP	A-3(0)	22.1-23.6		
SS-69		100	99	69	2.0	39.9	19.3	38.7	51	25	A-7-6(17)	27.1-28.6		
SS-70		100	100	36	0.4	73.1	8.1	18.3	31	8	A-4(0)	32.1-33.6		
SS-71		100	100	56	0.4	71.7	13.6	14.3	27	2	A-4(0)	42.1-43.6		
SS-72		100	97	71	7.3	33.2	24.8	34.6	45	24	A-7-6(16)	47.1-48.6		
SS-73		100	96	47	7.7	60.3	11.6	20.4	29	10	A-4(2)	57.1-58.6		
SS-74		100	100	74	0.4	60.7	14.5	24.4	31	10	A-4(6)	67.1-68.6		
SS-75		100	98	56	5.9	66.4	11.4	16.3	28	5	A-4(1)	72.1-73.6		
SS-76		100	100	53	0.8	81.3	7.7	10.2	27	NP	A-4(0)	77.1-78.3		
SS-77		100	96	74	10.6	49.7	21.4	18.3	28	3	A-4(1)	87.1-88.6		
SS-78		100	93	20	24.2	58.1	5.4	12.2	20	NP	A-2-4(0)	92.1-93.6		
EB1-A	SS-79	98	95	34	6.9	63.5	11.2	18.3	18	2	A-2-4(0)	1.0-2.2		
	SS-80	100	98	43	7.7	51.9	9.8	30.5	35	18	A-6(4)	7.1-8.6		
	SS-81	100	98	81	3.5	18.5	21.0	57.0	53	26	A-7-6(23)	17.1-18.6		
	SS-82	77	52	16	52.7	28.5	4.5	14.3	25	8	A-2-4(0)	22.1-23.6		
	SS-83	99	98	33	1.8	75.2	6.7	16.3	29	3	A-2-4(0)	32.1-33.6		
	SS-84	98	97	37	0.8	82.6	10.5	6.1	26	NP	A-4(0)	42.1-43.6		
	SS-85	100	99	70	1.4	60.7	17.5	20.4	33	6	A-4(4)	47.1-48.6		
	SS-86	100	99	73	2.6	45.2	17.5	34.6	43	25	A-7-6(17)	57.1-58.6		



**FIELD
SCOUR REPORT**

WBS: 41431.1.1 TIP: U-5018 COUNTY: Pitt

DESCRIPTION(1): Structure No. 1 on NC 43 over Harris Mill Run

EXISTING BRIDGE

Information from: Field Inspection Microfilm _____ (reel _____ pos: _____)
Other (explain) _____

Bridge No.: NA Length: NA Total Bents: NA Bents in Channel: NA Bents in Floodplain: NA
Foundation Type: NA

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NA

Interior Bents: NA

Channel Bed: NA

Channel Bank: NA

EXISTING SCOUR PROTECTION

Type(3): NA

Extent(4): NA

Effectiveness(5): NA

Obstructions(6): NA

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.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 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 theoretical 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.

DESIGN INFORMATION

Channel Bed Material(7): Sand (SS-15) and sandy silt (SS-67)

Channel Bank Material(8): Silty and sandy clay (SS-39, SS-81) and clayey sandy silt (SS-1)

Channel Bank Cover(9): Wooded

Floodplain Width(10): 300+/- feet

Floodplain Cover(11): Wooded

Stream is(12): Aggrading Degrading _____ Static _____

Channel Migration Tendency(13): Not likely, possibly toward End Bent 2

Observations and Other Comments: _____

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

	BENTS													
	B1	B2												
50 yr scour	26	26.5												
100 yr scour	24													

Comparison of DSE to Hydraulics Unit theoretical scour:
Design Scour Elevation agrees with the Hydraulics Unit's 50 yr. overtopping scour.

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

Bed or Bank														
Sample No.														
Retained #4														
Passed #10														
Passed #40														
Passed #200														
Coarse Sand														
Fine Sand														
Silt														
Clay														
LL														
PI														
AASHTO														
Station														
Offset														
Depth														

See Sheets 16 and 17,
"Soil Test Results",
for samples:
Channel bed SS-15, SS-67
Channel bank SS-39, SS-81, SS-1

Reported by: Paul M. Wood Date: 7-30-08