STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41431.1.1 (U-5018)	1	18

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

CONTENTS

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.

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EASTERN REGIONAL

PERSONNEL
T.C. BOTTOMS
S&ME PERSONNEL

INVESTIGATED BY F.M. WESCOTT III

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE JULY, 2008

NORTH CAROLINA LICENSED SEAL 1050 GEOLOGIST D. N. ARGENBRIGHT

7-30-08

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 IT IS 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.

PROJECT: 41431.1.1

ID: U-5018

PROJECT REFERENCE NO.	SHEET NO.
U-5018	2 OF 18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

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-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT PLASTIC INDEX	6 MX		NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	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				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

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.

GRADATION

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: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

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 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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT / SPT DMT / VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS
S - BULK SAMPLE
SS - 9PLIT SPOON SAMPLE
ST - SHELBY TUBE SAMPLE
RS - ROCK SAMPLE
RT - RECOMPACTED TRIAXIAL SAMPLE
CBR - CALIFORNIA BEARING RATIO SAMPLE

ABBREVIATIONS

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
HI. - 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
γ - UNIT WEIGHT
γd - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] D-50
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [X] TRICONE 2 15/16" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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 YEILD 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.

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. *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.

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 FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

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.

TERMS AND DEFINITIONS

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 (SREC.) - 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.

BENCH MARK: BL-III -L- STA. 56+31.50, 86.66' LT.

ELEVATION: 44.09 FT.

NOTES:
FORM. - FORMATION

REVISED 02/23/06

PROJECT REFERENCE NO.	SHEET
U-5018	3 OF 18

SITE PLAN

0 50 100

FEET

SKEW = 120°

NAD 83

55+00

57+00

WOODS

CONC. DRIVE

EXISTING R/W

EB1-A

B1-A

B2-A

EB2-A

NC 43 W 5TH ST 28' BST

TO US 264 BYPASS

TO US 13

-L-

EXISTING R/W

S 42° 55' 31.8" E

5" CONC. MONO. ISLAND

EB1-B

B1-B

EB2-B

WOODS

WOODS

END BENT 1 BENT LINE

BENT 1 BENT LINE

HARRIS MILL RUN

BENT 2 BENT LINE

END BENT 2 BENT LINE

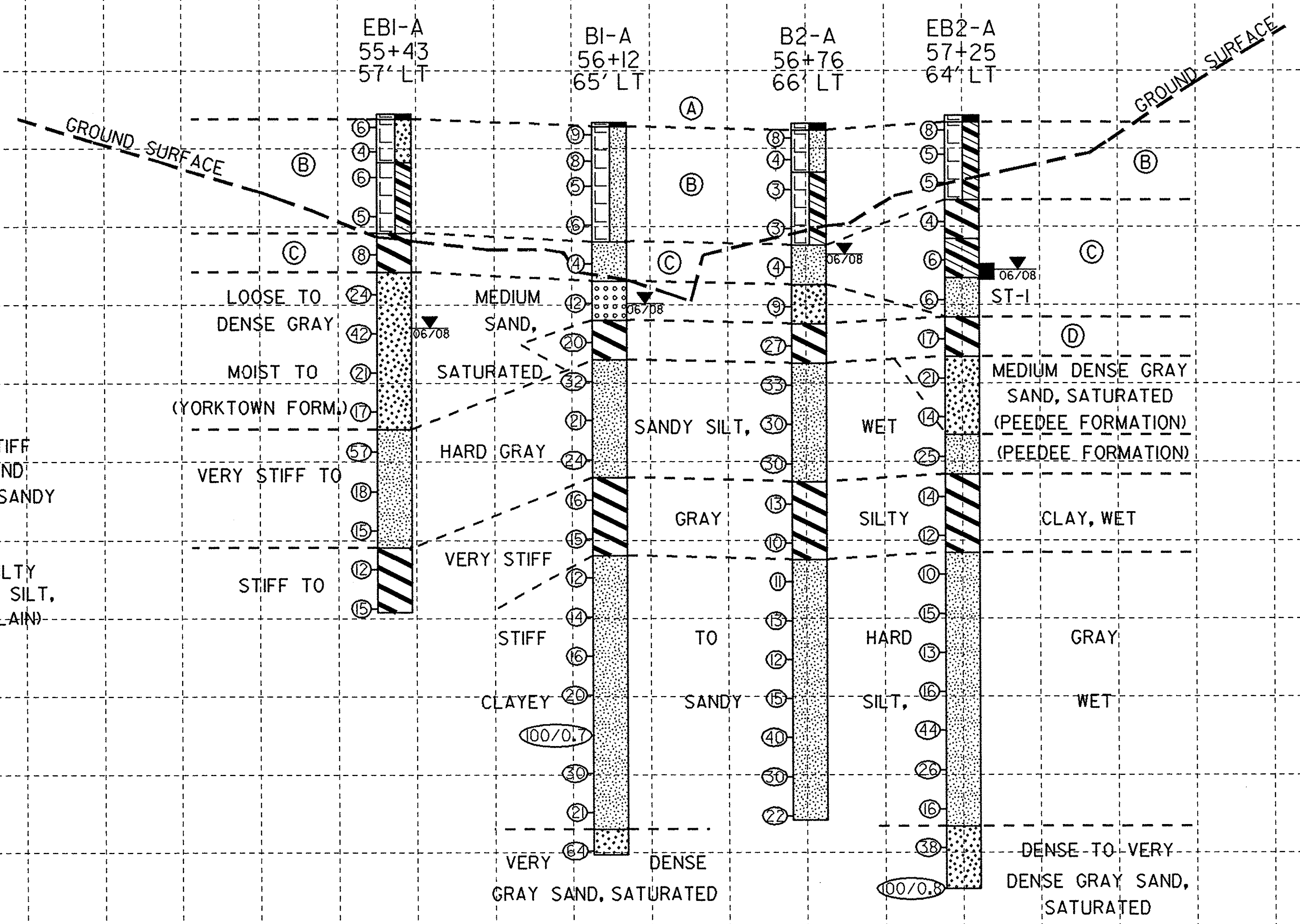
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.5



Ⓐ PAVEMENT

Ⓑ 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)

Ⓒ MEDIUM STIFF ORANGE GRAY BROWN SILTY AND SANDY CLAY AND CLAYEY SANDY SILT, MOIST TO WET, (UNDIVIDED COASTAL PLAIN)

Ⓓ 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 4/11/08

-L-

53+00 54+00 55+00 56+00 57+00 58+00 59+00

5/14/99

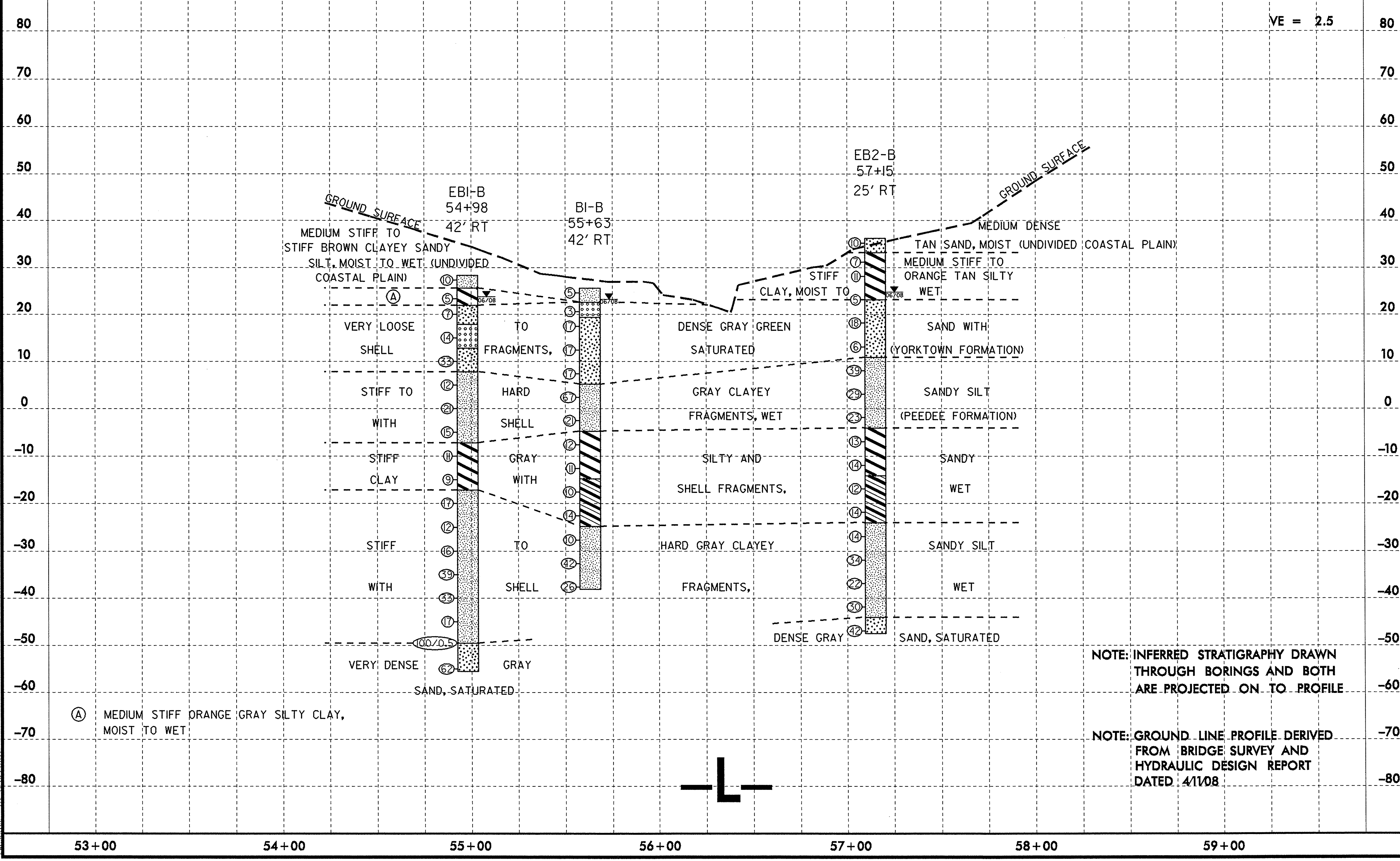
12-AUG-2008 13:53

PROJECT REFERENCE NO.	SHEET NO.
U-5018	5 OF 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

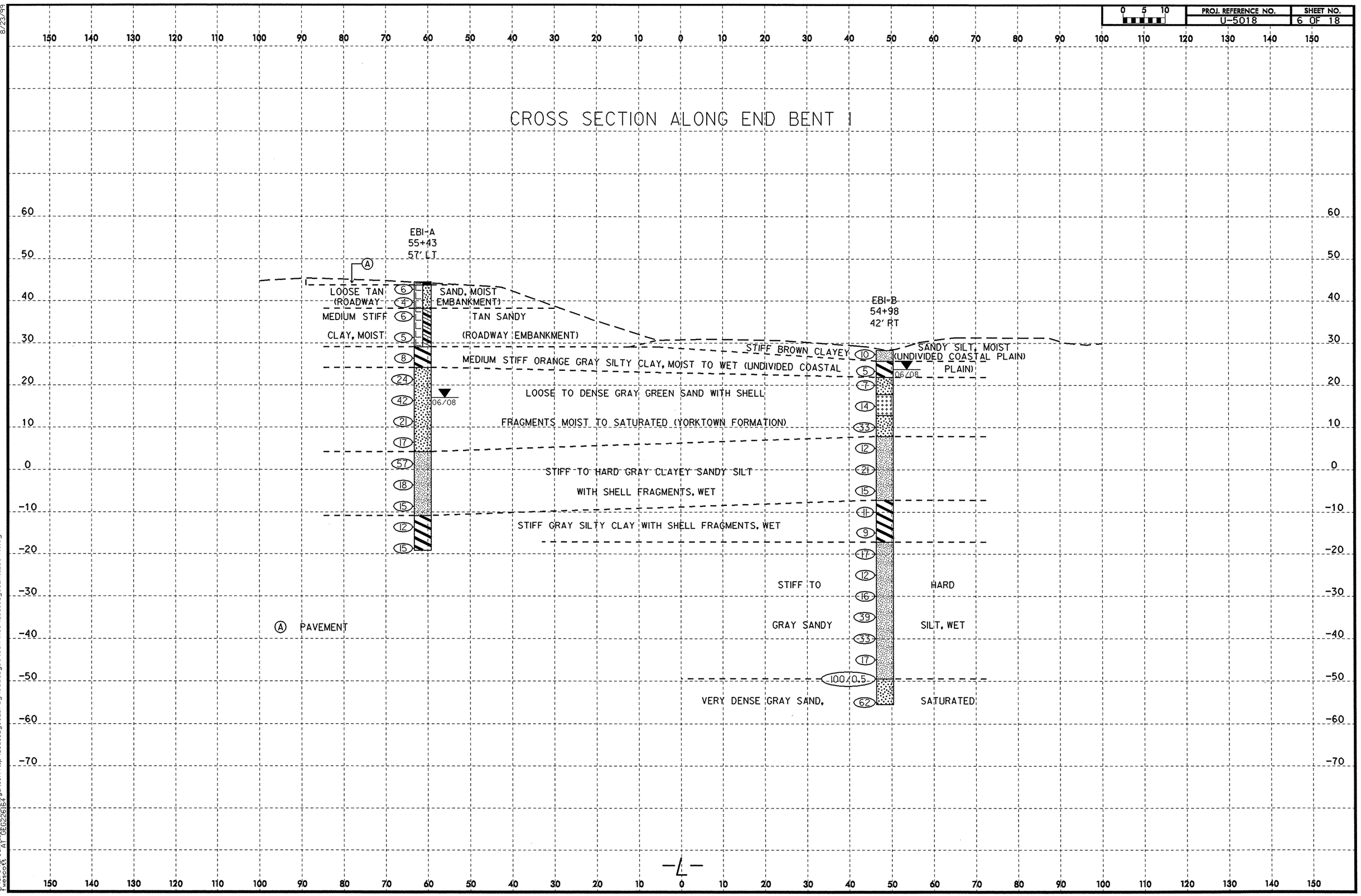


NOTE: INFERRED STRATIGRAPHY DRAWN THROUGH BORINGS AND BOTH ARE PROJECTED ON TO PROFILE

NOTE: GROUND LINE PROFILE DERIVED FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/11/08

PROJ. REFERENCE NO. U-5018 | SHEET NO. 6 OF 18

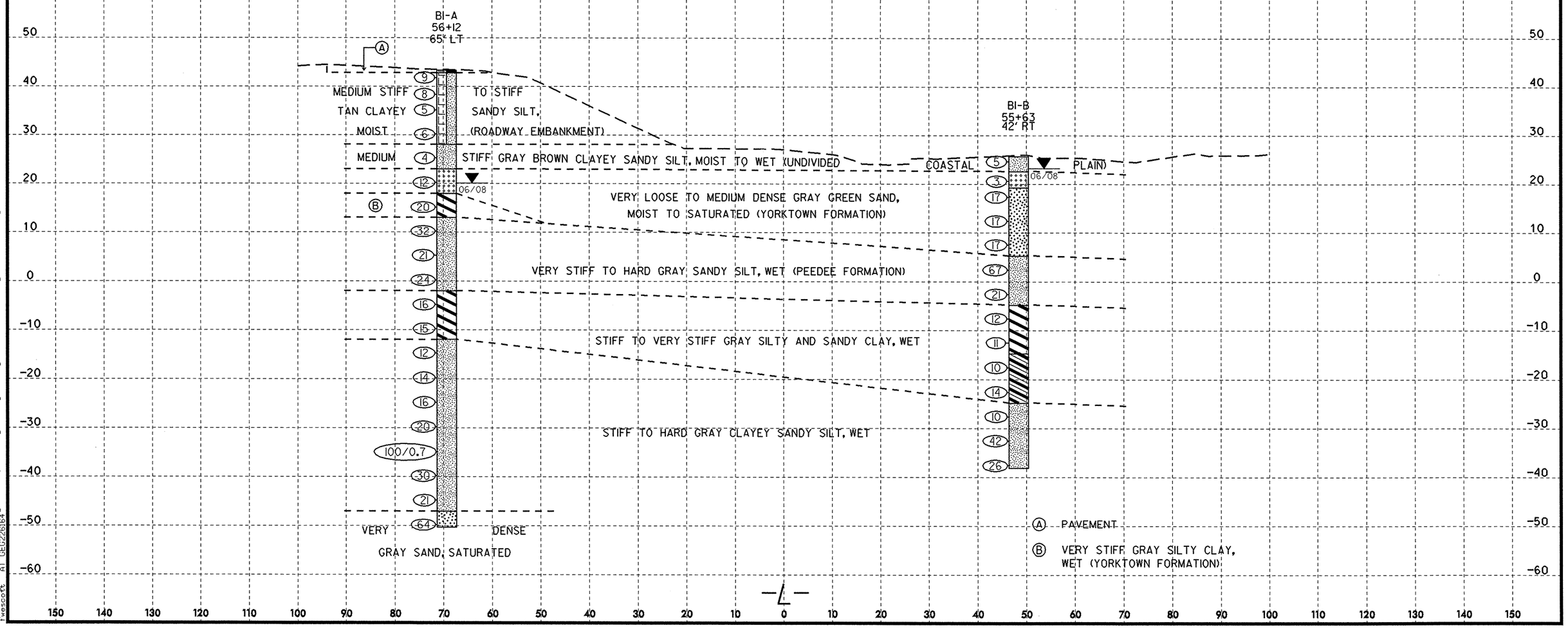
CROSS SECTION ALONG END BENT 1



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5018	7 OF 18

CROSS SECTION ALONG BENT 1



CROSS SECTION ALONG END BENT 2

EB2-A
57+25
64' LT

EB2-B
57+15
25' RT

Ⓐ

MEDIUM STIFF TAN CLAY, MOIST (8, 5, 5)

BROWN SANDY (ROADWAY EMBANKMENT)

MEDIUM SILTY (4, 6)

Ⓑ (6)

Ⓒ (17)

05/08

ST-1

STIFF TO STIFF ORANGE-TAN AND SANDY CLAY, MOIST TO WET (21, 14)

LOOSE TO MEDIUM DENSE GRAY SAND WITH SHELL FRAGMENTS, SATURATED (YORKTOWN FORMATION) (25, 14, 12, 10, 15, 13, 16, 44, 26, 16, 38, 100/0.8)

VERY STIFF TO HARD GRAY CLAYEY SANDY SILT, WET (PEEDEE FORMATION)

STIFF GRAY SILTY AND SANDY CLAY, WET

STIFF TO HARD GRAY CLAYEY SANDY SILT, WET

DENSE TO VERY DENSE GRAY SAND, SATURATED

Ⓓ

GRAY (UNDIVIDED COASTAL PLAIN) (10, 7, 11, 15, 18, 16, 39, 29, 23, 13, 14, 12, 14, 14, 34, 22, 30, 42)

06/08

Ⓐ PAVEMENT

Ⓑ MEDIUM STIFF GRAY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)

Ⓒ VERY STIFF GRAY SILTY CLAY, WE

Ⓓ MEDIUM DENSE TAN SAND, MOIST

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-	**0 HR.** N/A
COLLAR ELEV. 44.4 ft	**TOTAL DEPTH** 63.6 ft	**NORTHING** 685,561	**EASTING** 2,469,784	**24 HR.** 27.4
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
45										44.4 GROUND SURFACE	0.0
	43.7	0.7								43.7 PAVEMENT	0.7
			3	3	3	6	SS-79			TAN SAND, MOIST (ROADWAY EMBANKMENT)	
40	40.6	3.8	2	2	2	4					
	37.3	7.1								38.2 TAN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	6.2
			1	3	3	6	SS-80				
35	32.3	12.1									
			1	2	3	5					
30	27.3	17.1								29.1 ORANGE GRAY SILTY CLAY, MOIST (UNDIVIDED COASTAL PLAIN)	15.3
			1	4	4	8	SS-81				
25	22.3	22.1								24.1 GRAY GREEN SAND WITH SHELL FRAGMENTS, MOIST TO SATURATED (YORKTOWN FORMATION)	20.3
			6	13	11	24	SS-82				
20	17.3	27.1									
			27	17	25	42					
15	12.3	32.1									
			4	8	13	21	SS-83				
10	7.3	37.1									
			4	7	10	17					
5	2.3	42.1								4.1 GRAY CLAYEY SANDY SILT, WET (PEEDEE FORMATION)	40.3
			24	28	29	57	SS-84				
0	-2.7	47.1									
			5	8	10	18	SS-85				
-5	-7.7	52.1									
			4	7	8	15					
-10										-10.9 GRAY SILTY CLAY, WET	55.3
	-12.7	57.1									
-15			4	5	7	12	SS-86				
	-17.7	62.1									
-20			4	7	8	15				-19.2 Boring Terminated at Elevation -19.2 ft in stiff silty clay	63.6
-25											
-30											
-35											

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

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE 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-B	**STATION** 54+98	**OFFSET** 42ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 28.3 ft	**TOTAL DEPTH** 83.8 ft	**NORTHING** 685,527	**EASTING** 2,469,679 — **24 HR.** 4.6
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

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
30	28.3	0.0								28.3 GROUND SURFACE	0.0
			3	5	5	10	SS-1			25.6 BROWN SANDY SILT, MOIST (UNDIVIDED COASTAL PLAIN)	2.7
25	24.3	4.0								ORANGE GRAY SILTY CLAY, MOIST TO WET	
			3	2	3	5	SS-2	▼		21.9	6.4
20	21.0	7.3								GRAY GREEN SAND WITH SHELL FRAGMENTS, SATURATED (YORKTOWN FORMATION)	
			1	2	5	7	SS-3			17.8	10.5
15	16.0	12.3									
			20	9	5	14	SS-4			12.8	15.5
10	11.0	17.3									
			7	13	20	33	SS-5			7.8	20.5
5	6.0	22.3								GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (PEEDEE FORMATION)	
			4	5	7	12	SS-6				
0	1.0	27.3									
			5	9	12	21	SS-7				
-5	-4.0	32.3									
			4	6	9	15					
-10	-9.0	37.3									
			4	5	6	11	SS-8				
-15	-14.0	42.3									
			3	4	5	9					
-20	-19.0	47.3									
			6	8	9	17	SS-9				
-25	-24.0	52.3									
			4	5	7	12					
-30	-29.0	57.3									
			5	7	9	16	SS-10				
-35	-34.0	62.3									
			7	16	23	39	SS-11				
-40	-39.0	67.3									
			8	13	20	33					
-45	-44.0	72.3									
			6	7	10	17	SS-12				
-50	-49.0	77.3	100/0.5			100/0.5				-49.5 GRAY SILTY CLAY WITH SHELL FRAGMENTS, WET	77.8
										-17.2 GRAY SANDY SILT, WET	45.5
										-7.2	35.5

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- — **0 HR.** N/A
COLLAR ELEV. 28.3 ft	**TOTAL DEPTH** 83.8 ft	**NORTHING** 685,527	**EASTING** 2,469,679 — **24 HR.** 4.6
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

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				GRAY SAND, SATURATED *(continued)*
	-54.0	82.3	16	17	45	62	SS-13			-55.5 83.8
-55										Boring Terminated at Elevation -55.5 ft in very dense sand
-60										
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										
-120										
-125										
-130										

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. B1-A	**STATION** 56+12	**OFFSET** 65ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 43.3 ft	**TOTAL DEPTH** 93.6 ft	**NORTHING** 685,516	**EASTING** 2,469,836	**24 HR.** 23.2
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
45										43.3 GROUND SURFACE	0.0
	42.8	0.5								42.8 PAVEMENT	0.5
40	39.4	3.9	3	4	5	9	SS-65			TAN CLAYEY SANDY SILT, MOIST (ROADWAY EMBANKMENT)	
	36.2	7.1	3	4	4	8					
35			2	2	3	5					
	31.2	12.1									
30			2	3	3	6	SS-66			28.0	15.3
	26.2	17.1								GRAY SANDY SILT, MOIST (UNDIVIDED COASTAL PLAIN)	
25			1	2	2	4	SS-67			23.0	20.3
	21.2	22.1								GRAY SAND, MOIST TO SATURATED (YORKTOWN FORMATION)	
20			3	6	6	12	SS-68	▼		18.0	25.3
	16.2	27.1								GRAY SILTY CLAY, WET	
15			5	8	12	20	SS-69			13.0	30.3
	11.2	32.1								GRAY SANDY SILT, WET (PEEDEE FORMATION)	
10			6	11	21	32	SS-70				
	6.2	37.1									
5			5	8	13	21					
	1.2	42.1									
0			5	9	15	24	SS-71			-2.0	45.3
	-3.8	47.1								GRAY SILTY CLAY, WET	
-5			5	7	9	16	SS-72				
	-8.8	52.1									
-10			4	7	8	15					
	-13.8	57.1								-12.0	55.3
-15			3	6	6	12	SS-73			GRAY CLAYEY SANDY SILT, WET	
	-18.8	62.1									
-20			5	6	8	14					
	-23.8	67.1									
-25			4	8	8	16	SS-74				
	-28.8	72.1									
-30			6	9	11	20	SS-75				
	-33.8	77.1									
-35			52	64	36/0.2		SS-76				

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				GRAY CLAYEY SANDY SILT, WET *(continued)*
						100/0.7				
-40	-38.8	82.1	8	11	19	30				
	-43.8	87.1								
-45			5	10	11	21	SS-77			-47.0 90.3
	-48.8	92.1								GRAY SAND, SATURATED
-50			30	21	43	64	SS-78			-50.3 93.6
										Boring Terminated at Elevation -50.3 ft in very dense sand
-55										
-60										
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										

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. B1-B	**STATION** 55+63	**OFFSET** 42ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 25.6 ft	**TOTAL DEPTH** 63.7 ft	**NORTHING** 685,479	**EASTING** 2,469,723	**24 HR.** 2.4
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										25.6 GROUND SURFACE	0.0
	25.6	0.0	1	4	1	5	SS-14	▼		BROWN CLAYEY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)	
	21.6	4.0	2	2	1	3	SS-15			22.6 GRAY GREEN SAND, SATURATED (YORKTOWN FORMATION)	3.0
	18.4	7.2	7	11	6	17	SS-16			19.3	6.3
	13.4	12.2	6	7	10	17	SS-17				
	8.4	17.2	6	7	10	17				5.2 GRAY SANDY SILT, WET (PEEDEE FORMATION)	20.4
	3.4	22.2	18	30	37	67	SS-18				
	-1.6	27.2	7	8	13	21	SS-19			-4.8 GRAY SILTY AND SANDY CLAY, WET	30.4
	-6.6	32.2	5	5	7	12	SS-20				
	-11.6	37.2	4	5	6	11				-14.8	40.4
	-16.6	42.2	4	4	6	10	SS-21				
	-21.6	47.2	4	5	9	14				-24.8 GRAY SANDY SILT, WET	50.4
	-26.6	52.2	4	4	6	10	SS-22				
	-31.6	57.2	3	14	28	42	SS-23				
	-36.6	62.2	6	10	16	26				-38.1 Boring Terminated at Elevation -38.1 ft in very stiff sandy silt	63.7

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

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE 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-	**0 HR.**	N/A
COLLAR ELEV. 43.2 ft	**TOTAL DEPTH** 89.0 ft	**NORTHING** 685,469	**EASTING** 2,469,880	**24 HR.**	16.9
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
45												
	42.3	0.9								GROUND SURFACE	43.2	0.0
										PAVEMENT	42.3	0.9
40	39.5	3.7	3	4	4	8	SS-52			BROWN CLAYEY SANDY SILT, MOIST (ROADWAY EMBANKMENT)		
			2	2	2	4						
35	35.7	7.5								BROWN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	36.9	6.3
			1	2	1	3	SS-53					
30	30.7	12.5										
			1	2	1	3	SS-54					
25	25.7	17.5								BROWN CLAYEY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)	27.5	15.7
			2	1	3	4	SS-55					
20	20.7	22.5								GRAY SAND, SATURATED (YORKTOWN FORMATION)	22.5	20.7
			1	2	7	9	SS-56					
15	15.7	27.5								GRAY SILTY CLAY, WET	17.5	25.7
			7	10	17	27	SS-57					
10	10.7	32.5								GRAY SANDY SILT WITH SHELL FRAGMENTS, WET (PEEDEE FORMATION)	12.5	30.7
			5	10	23	33	SS-58					
5	5.7	37.5										
			4	12	18	30						
0	0.7	42.5										
			5	11	19	30	SS-59					
-5	-4.3	47.5								GRAY SILTY CLAY, WET	-2.5	45.7
			4	6	7	13	SS-60					
-10	-9.3	52.5										
			4	4	6	10						
-15	-14.3	57.5								GRAY CLAYEY SANDY SILT, WET	-12.5	55.7
			3	5	6	11	SS-61					
-20	-19.3	62.5										
			4	5	8	13						
-25	-24.3	67.5										
			4	5	7	12	SS-62					
-30	-29.3	72.5										
			5	7	8	15	SS-63					
-35	-34.3	77.5										

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-	**0 HR.**	N/A
COLLAR ELEV. 43.2 ft	**TOTAL DEPTH** 89.0 ft	**NORTHING** 685,469	**EASTING** 2,469,880	**24 HR.**	16.9
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				
			14	22	18	40	SS-64			GRAY CLAYEY SANDY SILT, WET *(continued)*
-40	-39.3	82.5								
			10	12	18	30				
-45	-44.3	87.5								-45.8 89.0
			4	6	16	22				Boring Terminated at Elevation -45.8 ft in very stiff sandy silt
-50										
-55										
-60										
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										

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. EB2-A	**STATION** 57+25	**OFFSET** 64ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 44.2 ft	**TOTAL DEPTH** 98.9 ft	**NORTHING** 685,433	**EASTING** 2,469,912	**24 HR.** 19.8
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
45										44.2 GROUND SURFACE	0.0
	43.3	0.9								43.3 PAVEMENT	0.9
40	40.2	4.0	3	3	5	8	SS-36			TAN BROWN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)	
	36.6	7.6	2	2	3	5	SS-37			33.4	10.8
35			2	2	3	5				GRAY SILTY AND SANDY CLAY, MOIST TO WET (UNDIVIDED COASTAL PLAIN)	
	31.6	12.6									
30			1	1	3	4	SS-38			28.4	15.8
	26.6	17.6									
25			1	3	3	6	SS-39			23.4	20.8
	21.6	22.6								GRAY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	
20			1	1	5	6	SS-40			18.4	25.8
	16.6	27.6								GRAY SILTY CLAY, WET	
15			4	6	11	17	SS-41			13.4	30.8
	11.6	32.6								GRAY SAND, SATURATED (PEEDEE FORMATION)	
10			5	7	14	21	SS-42				
	6.6	37.6									
5			5	5	9	14					
	1.6	42.6									
0			14	11	14	25	SS-43			3.4	40.8
	-3.4	47.6								GRAY SANDY SILT, WET	
-5			4	6	8	14	SS-44			-1.6	45.8
	-8.4	52.6								GRAY SILTY CLAY, WET	
-10			3	5	7	12					
	-13.4	57.6								-11.6	55.8
-15			4	4	6	10	SS-45			GRAY CLAYEY SANDY SILT, WET	
	-18.4	62.6									
-20			3	7	8	15					
	-23.4	67.6									
-25			4	6	7	13	SS-46				
	-28.4	72.6									
-30			5	7	9	16	SS-47				
	-33.4	77.6									
-35			13	17	27	44	SS-48				

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-	**0 HR.** N/A
COLLAR ELEV. 44.2 ft	**TOTAL DEPTH** 98.9 ft	**NORTHING** 685,433	**EASTING** 2,469,912	**24 HR.** 19.8
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 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				GRAY CLAYEY SANDY SILT, WET *(continued)*
	-38.4	82.6	7	11	15	26				
-40										
	-43.4	87.6	5	7	9	16	SS-49			-46.6 90.8
-45										GRAY SAND, SATURATED
	-48.4	92.6	12	16	22	38	SS-50			
-50										
	-53.4	97.6	37	57	43/0.3	100/0.8	SS-51			-54.7 98.9
-55										Boring Terminated at Elevation -54.7 ft in very dense sand
-60										ST-1 19.1-21.1
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										

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. EB2-B	**STATION** 57+15	**OFFSET** 25ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 36.2 ft	**TOTAL DEPTH** 83.6 ft	**NORTHING** 685,381	**EASTING** 2,469,839 — **24 HR.** 11.5
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

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
										36.2	0.0
										GROUND SURFACE	
										TAN SAND, MOIST (UNDIVIDED COASTAL PLAIN)	
										33.2	3.0
										ORANGE TAN SILTY CLAY, MOIST TO WET	
										23.1	13.1
										GRAY SAND WITH SHELL FRAGMENTS, SATURATED (YORKTOWN FORMATION)	
										10.9	25.3
										GRAY CLAYEY SANDY SILT, WET (PEEDEE FORMATION)	
										-4.1	40.3
										GRAY SILTY AND SANDY CLAY, WET	
										-14.1	50.3
										-24.1	60.3
										GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET	

40	36.2	0.0									
35	32.2	4.0	3	5	5	10	SS-24				
30	29.1	7.1	3	3	4	7	SS-25				
25	24.1	12.1	3	5	6	11	SS-26				
20	19.1	17.1	2	1	4	5					
15	14.1	22.1	20	10	8	18	SS-27				
10	9.1	27.1	3	3	3	6	SS-28				
5	4.1	32.1	7	20	19	39	SS-29				
0	-0.9	37.1	5	12	17	29					
-5	-5.9	42.1	8	9	14	23	SS-30				
-10	-10.9	47.1	4	6	7	13	SS-31				
-15	-15.9	52.1	5	6	8	14					
-20	-20.9	57.1	5	5	7	12	SS-32				
-25	-25.9	62.1	5	6	8	14					
-30	-30.9	67.1	5	6	8	14	SS-33				
-35	-35.9	72.1	6	10	24	34					
-40			5	8	14	22					

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- — **0 HR.** N/A
COLLAR ELEV. 36.2 ft	**TOTAL DEPTH** 83.6 ft	**NORTHING** 685,381	**EASTING** 2,469,839 — **24 HR.** 11.5
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

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-40	-40.9	77.1	8	13	17	Match Line 30	SS-34			GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET *(continued)*
-45	-45.9	82.1	10	16	26	42	SS-35			-44.1 80.3 GRAY SAND, SATURATED -47.4 83.6 Boring Terminated at Elevation -47.4 ft in dense sand
-50										
-55										
-60										
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										
-120										

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		

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

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 X 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 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.

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 X Degrading ____ Static ____

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

Observations and Other Comments: ____

DESIGN SCOUR ELEVATIONS(14) Feet X 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

Template Revised 02/07/06

Reported by: [signature] Date: 7-30-08