ID: B-4599

PROJECT: 33791.1.1

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33791.1.1 (B-4599) F.A. PROJ. BRSTP-17(41)

COUNTY PASQUOTANK

PROJECT DESCRIPTION BRIDGE NO. 1 & 2 ON US-17/158 OVER KNOBBS CREEK AT -L- STA. 24+52

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33791.1.1 (B-4599)	1	21

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33791.1.1	BRSTP-17(41)	P.E.
		R/W & UTIL.

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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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PERSONNEL

JRS

S&ME

INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE NOVEMBER 2009

DRAWN BY: C.R. SUMNER, J.L. STONE

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NORTH CAROLINA LICENSED SEAL 2007 GEOLOGIST JOSEPH L. STONE 11-2-09

PROJECT REFERENCE NO.	SHEET NO.
B-4599	2 OF 21

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 ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	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

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)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- 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
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

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
ω - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-__
- [ ] BK-51
- [X] CME-45B
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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-4 -L- 28+35 90' RT

ELEVATION: 4.45 FT.

NOTES:
UNDIVIDED C.P.= UNDIVIDED COASTAL PLAIN

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET
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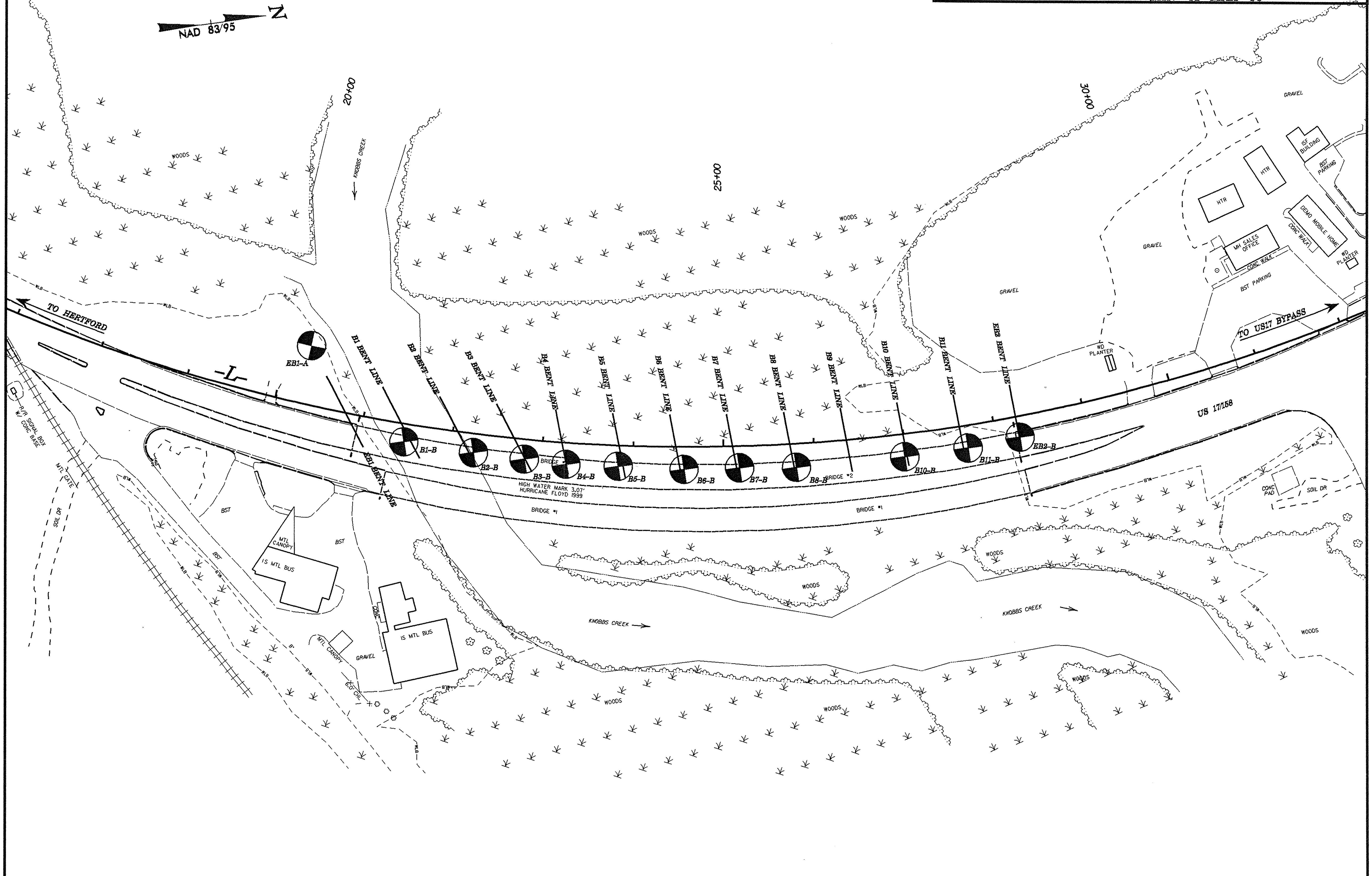
SKEW = VARIABLE
MIN- 51° MAX- 90°



PROFILE THROUGH BORINGS PROJECTED ALONG -L-

PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

VE = 2

EB1-A
20+26
65' LT

B1-B
21+48
20' RT

B2-B
22+25
21' RT

B3-B
22+81
22' RT

B4-B
23+27
24' RT

B5-B
23+84
23' RT

WATER SURFACE

SOFT TO MEDIUM STIFF BROWN SANDY SILT WITH LITTLE ORGANIC MATTER, WET

SOFT TO MEDIUM STIFF TAN GRAY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)

VERY SOFT TO MEDIUM STIFF GRAY SILTY SANDY CLAY (YORKTOWN FORMATION)

ST-1

ST-2

SOFT GRAY SANDY SILT, CLAYEY SANDY SILT,

VERY LOOSE TO MEDIUM DENSE GRAY SAND WITH MICA,

VERY SOFT TO STIFF GRAY SANDY SILT, SANDY SILTY CLAY, SILTY CLAY

LOOSE TO VERY DENSE GRAY SAND, SAT.

MEDIUM STIFF TO STIFF CLAYEY SANDY SILT, WITH SHELL FRAGMENTS, WET

AND VERY SOFT BROWN MUCK WITH VERY SOFT GRAY SILTY CLAY WET

AND SILTY CLAY WITH SHELL FRAGMENTS, WET

SAT. (YORKTOWN FORMATION)

CLAYEY SANDY SILT, AND (YORKTOWN FORMATION)

SANDY SILTY CLAY, (YORKTOWN FORMATION)

WOOD

SAT. (ALLUVIAL) AND SANDY CLAY, (ALLUVIAL)

(YORKTOWN FORMATION)

SILTY SANDY CLAY, WET

SANDY SILT AND SILTY SANDY CLAY, (YORKTOWN FORMATION)

Ⓐ MEDIUM DENSE BROWN SAND WITH CONCRETE DEBRIS, MOIST TO SAT (ARTIFICIAL FILL)

Ⓑ VERY SOFT TO SOFT GRAY CLAYEY SANDY SILT, MOIST TO WET AND VERY LOOSE TAN GRAY SAND, SAT. (ALLUVIAL)

Ⓒ VERY LOOSE GRAY SAND, SAT. (ALLUVIAL)

Ⓓ LOOSE TO MEDIUM DENSE GRAY SAND, SAT. (YORKTOWN FORMATION)

* DRIVE IN WOOD (B4-B)

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/01/09.

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

18+50 19+00 19+50 20+00 20+50 21+00 21+50 22+00 22+50 23+00 23+50 24+00

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4599	5 OF 21
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

B6-B 24+56 25' RT

B7-B 25+17 24' RT

B8-B 25+79 26' RT

B10-B 26+98 25' RT

B11-B 27+68 25' RT

EB2-B 28+26 23' RT

ASPHALT

MEDIUM DENSE TAN SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)

VERY SOFT TO MEDIUM STIFF BROWN MUCK WITH WOOD, MOIST TO SAT. (ALLUVIAL)

BROWN GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET (ALLUVIAL)

VERY LOOSE TO MEDIUM DENSE GRAY SAND, SAT. (ALLUVIAL)

VERY SOFT TO SOFT GRAY CLAYEY SANDY SILT (YORKTOWN FORMATION)

VERY LOOSE TO MEDIUM DENSE GRAY SAND, SAT. (UNDIVIDED C.P.)

VERY SOFT TO STIFF GRAY SILTY SANDY CLAY, SANDY SILTY CLAY, SANDY CLAY, AND SANDY SILT, WITH SHELL FRAGMENTS, WET

LOOSE TO MEDIUM DENSE GRAY SAND, SAT. (YORKTOWN FORMATION)

MEDIUM STIFF GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)

MEDIUM DENSE TO VERY DENSE GRAY SAND, SAT. AND MEDIUM STIFF GRAY SANDY SILT, WET (YORKTOWN FORMATION)

MEDIUM STIFF TO STIFF CLAYEY SANDY SILT, WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)

SANDY SILTY CLAY, SANDY SILT AND SILTY SANDY CLAY, (YORKTOWN FORMATION)

Ⓐ VERY SOFT GRAY SILTY CLAY, WET (ALLUVIAL)

Ⓑ MEDIUM STIFF GRAY SANDY SILT AND SILTY CLAY, WET (YORKTOWN FORMATION)

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/01/09.

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

24+00 24+50 25+00 25+50 26+00 26+50 27+00 27+50 28+00 28+50 29+00 29+50

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 20+26	**OFFSET** 65ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 944,920	**EASTING** 2,819,508	**24 HR.** 1.5
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/15/09	**COMP. DATE** 09/15/09	**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)
5										
	2.9	0.0								2.9 0.0 GROUND SURFACE
			2	2	20	22				**ARTIFICIAL FILL**
0	-0.6	3.5								0.9 2.0 BROWN SAND WITH CONCRETE DEBRIS, MOIST TO SAT.
			2	2	4	6	SS-1	56%		**ALLUVIAL**
-5	-6.1	9.0								BROWN SANDY SILT WITH LITTLE ORGANIC MATTER, WET
			WOH	1	1	2				
-10	-11.1	14.0								-9.1 12.0 **UNDIVIDED COASTAL PLAIN**
			2	2	4	6	SS-2			TAN SANDY SILT, WET
-15	-15.6	18.5								
			1	1	1	2				-18.1 21.0 **COASTAL PLAIN**
-20	-20.6	23.5								GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
			1	0	0	0	SS-3	46%		
-25	-25.6	28.5								
			1	1	0	1				
-30	-30.6	33.5								-29.1 32.0 **COASTAL PLAIN**
			1	2	1	3	SS-4			GRAY SANDY SILT AND CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-35	-35.6	38.5								
			1	1	1	2				
-40	-40.6	43.5								
			WOH	WOH	2	2	SS-5			
-45	-45.6	48.5								-44.1 47.0 **COASTAL PLAIN**
			2	5	5	10	SS-6			GRAY SAND, SAT. (YORKTOWN FORMATION)
-50	-50.6	53.5								-49.1 52.0 **COASTAL PLAIN**
			2	3	2	5	SS-7			GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-55	-55.6	58.5								
			1	1	1	2				
-60	-60.6	63.5								-59.1 62.0 **COASTAL PLAIN**
			1	1	2	3	SS-8			GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION)
-65	-65.6	68.5								
			4	6	4	10				
-70	-70.6	73.5								-69.1 72.0 **COASTAL PLAIN**
			13	20	25	45	SS-9			GRAY SAND, SATURATED (YORKTOWN FORMATION)
-75										

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 20+26	**OFFSET** 65ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 944,920	**EASTING** 2,819,508	**24 HR.** 1.5
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/15/09	**COMP. DATE** 09/15/09	**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
-75						Match Line				
	-75.6	78.5	19	41	32	73				**COASTAL PLAIN**
-80										GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*
	-80.6	83.5	10	15	25	40				
-85										
	-85.6	88.5	18	21	28	49	SS-10			
-90										
	-90.6	93.5	4	4	5	9	SS-11			
-95										
	-95.6	98.5	3	4	5	9				
-100										-97.1 100.0 Boring Terminated at Elevation -97.1 ft IN STIFF SANDY SILTY CLAY
-105										Other Samples: ST-1 (25.0 - 27.0) ST-2 (30.0 - 32.0)
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 21+48	**OFFSET** 20ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. -5.0 ft	**TOTAL DEPTH** 95.1 ft	**NORTHING** 945,006	**EASTING** 2,819,628	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/23/09	**COMP. DATE** 09/23/09	**SURFACE WATER DEPTH** 6.6ft	**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
										WATER SURFACE (09/23/09)
0										
-5	-5.0	0.0								GROUND SURFACE 0.0
	-8.4	3.4	WOH	WOH	WOH	0				**ALLUVIAL** TAN SAND, SATURATED -7.0 2.0
-10			1	1	1	2	SS-112			**ALLUVIAL** GRAY CLAYEY SANDY SILT, WET -11.5 6.5
	-13.4	8.4								**ALLUVIAL** BROWN MUCK, WET
-15			WOH	WOH	WOH	0				-16.5 11.5
	-18.4	13.4								**UNDIVIDED COASTAL PLAIN** GRAY SANDY SILT, WET
-20			WOH	1	1	2	SS-113			-21.5 16.5
	-23.4	18.4								**COASTAL PLAIN** GRAY SILTY SANDY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-25			WOH	1	1	2	SS-114			
	-28.4	23.4								
-30			WOH	1	1	2				
	-33.6	28.6								
-35			WOH	1	2	3	SS-115			
	-38.6	33.6								
-40			1	1	2	3				
	-43.6	38.6								
-45			1	4	8	12	SS-116			
	-48.6	43.6								
-50			1	2	3	5	SS-117			
	-53.6	48.6								
-55			1	1	2	3	SS-118			
	-58.6	53.6								
-60			1	1	1	2	SS-119			
	-63.6	58.6								
-65			1	1	4	5				
	-68.6	63.6								
-70			15	22	24	46	SS-120			
	-73.6	68.6								
-75			16	20	26	46				
	-78.6	73.6								-77.0 72.0
-80			17	26	32	58	SS-121			-80.0 75.0

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 21+48	**OFFSET** 20ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. -5.0 ft	**TOTAL DEPTH** 95.1 ft	**NORTHING** 945,006	**EASTING** 2,819,628	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/23/09	**COMP. DATE** 09/23/09	**SURFACE WATER DEPTH** 6.6ft	**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
-80						Match Line				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-83.6	78.6	15	15	20	35				
-85										
	-88.6	83.6	3	3	6	9	SS-122			
-90										
	-93.6	88.6	3	3	4	7				
-95										
	-98.6	93.6	3	3	4	7				-100.1 95.1
-100										Boring Terminated at Elevation -100.1 ft IN MED. STIFF SANDY SILTY CLAY
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										
-160										

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 22+25	**OFFSET** 21ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.3 ft	**TOTAL DEPTH** 110.4 ft	**NORTHING** 945,080	**EASTING** 2,819,651	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/23/09	**COMP. DATE** 09/23/09	**SURFACE WATER DEPTH** 1.2ft	**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))
5										
										WATER SURFACE (09/23/09)
0	0.3	0.0	WOH	WOH	WOH	0				0.3 GROUND SURFACE 0.0
										-1.7 **ALLUVIAL** GRAY SAND, SATURATED 2.0
	-3.4	3.7	WOH	WOH	WOH	0	SS-123			**ALLUVIAL** GRAY CLAYEY SANDY SILT, WET
-5										
	-8.4	8.7	3	2	1	3				
-10										-11.7 **ALLUVIAL** BROWN MUCK, WET 12.0
	-13.4	13.7	1	0	0	0				
-15										-16.7 **ALLUVIAL** GRAY SILTY CLAY, WET 17.0
	-18.4	18.7	WOH	WOH	WOH	0	SS-124	107%		
-20										-21.7 **COASTAL PLAIN** GRAY SILTY SANDY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) 22.0
	-23.4	23.7	WOH	2	2	4	SS-125			
-25										
	-28.4	28.7	WOH	WOH	1	1	SS-126			
-30										-31.7 **COASTAL PLAIN** GRAY SANDY SILT, WET (YORKTOWN FORMATION) 32.0
	-33.4	33.7	WOH	2	1	3	SS-127			
-35										
	-38.6	38.9	WOH	1	1	2				
-40										-41.7 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) 42.0
	-43.6	43.9	1	1	2	3	SS-128			
-45										-46.7 **COASTAL PLAIN** GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION) 47.0
	-48.6	48.9	1	2	2	4	SS-129			
-50										
	-53.6	53.9	1	2	2	4				
-55										
	-58.6	58.9	1	1	1	2	SS-130			-56.7 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION) 57.0
-60										
	-63.6	63.9	2	3	12	15				-64.6 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) 64.9
-65										
	-68.6	68.9	10	17	20	37	SS-131			
-70										
	-73.6	73.9	13	16	21	37				
-75										

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 22+25	**OFFSET** 21ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.3 ft	**TOTAL DEPTH** 110.4 ft	**NORTHING** 945,080	**EASTING** 2,819,651	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/23/09	**COMP. DATE** 09/23/09	**SURFACE WATER DEPTH** 1.2ft	**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
-75						Match Line				
	-78.6	78.9	12	15	17	32				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*
-80										
	-83.6	83.9	13	14	18	32	SS-132			-81.7 82.0
-85										
	-88.6	88.9	5	4	7	11	SS-133			-86.7 87.0 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT AND SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-90										
	-93.6	93.9	3	3	4	7				
-95										
	-98.6	98.9	3	4	6	10	SS-134			
-100										
	-103.6	103.9	4	5	5	10				
-105										
	-108.6	108.9	3	4	4	8				-110.1 110.4 Boring Terminated at Elevation -110.1 ft IN MEDIUM STIFF TO STIFF SANDY SILT
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 22+81	**OFFSET** 22ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 1.0 ft	**TOTAL DEPTH** 101.0 ft	**NORTHING** 945,135	**EASTING** 2,819,666	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/15/09	**COMP. DATE** 09/15/09	**SURFACE WATER DEPTH** 0.7ft	**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)
5										
	1.0	0.0								WATER SURFACE (09/15/09)
										+1.0 GROUND SURFACE 0.0
0			WOH	WOH	WOH	0	SS-12			**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
	-3.3	4.3								
-5			1	0	1	1				
	-8.3	9.3								
-10			WOH	WOH	WOH	0				
	-13.3	14.3								-11.5 12.5
-15			1	0	1	1	SS-13			**ALLUVIAL** GRAY SILTY CLAY AND SANDY CLAY, WET
	-18.5	19.5								
-20			WOH	WOH	WOH	0				
	-23.5	24.5								
-25			WOH	WOH	WOH	0	SS-14			
	-28.5	29.5								-27.0 28.0
-30			3	1	2	3	SS-15			**ALLUVIAL** GRAY SAND, SATURATED
	-33.5	34.5								-32.0 33.0
-35			1	1	1	2	SS-16			**COASTAL PLAIN** GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
	-38.5	39.5								
-40			WOH	2	2	4				
	-43.5	44.5								
-45			WOH	1	2	3	SS-17			
	-48.5	49.5								-47.0 48.0
-50			4	2	4	6	SS-18			**COASTAL PLAIN** GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)
	-53.5	54.5								
-55			1	1	2	3	SS-19			
	-58.5	59.5								-57.0 58.0
-60			6	10	11	21	SS-20			**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-63.5	64.5								-62.0 63.0
-65			1	2	2	4	SS-21			**COASTAL PLAIN** GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)
	-68.5	69.5								-67.0 68.0
-70			14	19	20	39	SS-22			**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-73.5	74.5								
-75			12	16	19	35				-75.0 76.0

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 22+81	**OFFSET** 22ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 1.0 ft	**TOTAL DEPTH** 101.0 ft	**NORTHING** 945,135	**EASTING** 2,819,666	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/15/09	**COMP. DATE** 09/15/09	**SURFACE WATER DEPTH** 0.7ft	**DEPTH TO ROCK** N/A	

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
-75					Match Line				
	-78.5 79.5								
-80		13	17	16	33	SS-23			
	-83.5 84.5								
-85		12	13	12	25				
	-88.5 89.5								
-90		3	4	5	9	SS-24			
	-93.5 94.5								
-95		3	3	3	6				
	-98.5 99.5								
-100		2	4	6	10				-77.0 78.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
									-87.0 88.0 **COASTAL PLAIN** GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)
									-100.0 101.0 Boring Terminated at Elevation -100.0 ft IN STIFF SANDY SILTY CLAY
-105									
-110									
-115									
-120									
-125									
-130									
-135									
-140									
-145									
-150									
-155									

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B4-B	**STATION** 23+27	**OFFSET** 24ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.9 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,180	**EASTING** 2,819,678	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/16/09	**COMP. DATE** 09/16/09	**SURFACE WATER DEPTH** 0.8ft	**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))
5										
	0.9	0.0								WATER SURFACE (09/16/09)
										GROUND SURFACE 0.9 / 0.0
0			WOH	WOH	WOH	0	SS-25			**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
	-3.4	4.3								
-5			20	30	20	DRIVE IN WOOD 50				
	-8.4	9.3								
-10			1	0	0	0				
	-11.6	12.5								**ALLUVIAL** GRAY SILTY CLAY, WET
	-13.5	14.4	WOH	WOH	WOH	0				
-15										
	-18.5	19.4	WOH	WOH	WOH	0	SS-26			
-20										
	-23.5	24.4	WOH	WOH	WOH	0				
-25										
	-26.6	27.5								**ALLUVIAL** GRAY SAND, SATURATED
	-28.5	29.4	2	1	1	2	SS-27			
-30										
	-31.6	32.5								**COASTAL PLAIN** GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION)
	-33.5	34.4	WOH	WOH	1	1	SS-28			
-35										
	-38.5	39.4	WOH	1	1	2				
-40										
	-43.5	44.4	1	1	0	1	SS-29			
-45										
	-46.6	47.5								**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-48.5	49.4	3	7	6	13	SS-30			
-50										
	-51.6	52.5								**COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
	-53.5	54.4	1	1	2	3	SS-31			
-55										
	-56.6	57.5								**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-58.5	59.4	10	10	12	22	SS-32			
-60										
	-61.6	62.5								**COASTAL PLAIN** GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
	-63.5	64.4	WOH	2	1	3	SS-33			
-65										
	-66.6	67.5								**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-68.5	69.4	10	15	20	35	SS-34			
-70										
	-73.5	74.4	11	19	19	38				
-75										

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B4-B	**STATION** 23+27	**OFFSET** 24ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.9 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,180	**EASTING** 2,819,678	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/16/09	**COMP. DATE** 09/16/09	**SURFACE WATER DEPTH** 0.8ft	**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
-75						Match Line				
	-78.5	79.4	13	15	17	32				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*
-80										
	-83.5	84.4	11	16	20	36				
-85										
	-86.6	87.5								**COASTAL PLAIN** GRAY SILTY SANDY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
	-88.5	89.4	4	5	5	10	SS-35			
-90										
	-93.5	94.4	3	4	5	9				
-95										
	-98.5	99.4	5	6	4	10				
-100										
	-100.0	100.9								Boring Terminated at Elevation -100.0 ft IN STIFF SILTY SANDY CLAY
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK		**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**	
BORING NO. B5-B	**STATION** 23+84	**OFFSET** 23ft RT	**ALIGNMENT** -L-	**0 HR.**	N/A
COLLAR ELEV. 0.8 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,236	**EASTING** 2,819,689	**24 HR.**	N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic		
START DATE 09/16/09	**COMP. DATE** 09/16/09	**SURFACE WATER DEPTH** 0.8ft		**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)
5										
	0.8	0.0								WATER SURFACE (09/16/09)
0			WOH	WOH	WOH	0				GROUND SURFACE 0.8 0.0
	-3.4	4.2								**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
-5			1	8	2	10				
	-8.4	9.2								
-10			WOH	WOH	WOH	0				
	-13.4	14.2								-12.7 13.5
-15			1	0	0	0	SS-36			**ALLUVIAL** GRAY SILTY CLAY AND SANDY CLAY, WET
	-18.4	19.2								
-20			WOH	WOH	WOH	0				
	-23.4	24.2								
-25			WOH	WOH	WOH	0	SS-37			
	-28.4	29.2								-28.9 29.7
-30			WOH	1	2	3	SS-38			**ALLUVIAL** GRAY SAND, SATURATED
	-33.4	34.2								-31.7 32.5
-35			1	0	1	1	SS-39			**COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
	-38.6	39.4								-36.7 37.5
-40			1	0	1	1				**COASTAL PLAIN** GRAY SANDY SILT, WET (YORKTOWN FORMATION)
	-43.6	44.4								
-45			1	1	1	2	SS-40			
	-48.6	49.4								-46.7 47.5
-50			3	4	5	9				**COASTAL PLAIN** GRAY SILTY SAND, SATURATED (YORKTOWN FORMATION)
	-53.6	54.4								-51.7 52.5
-55			1	1	2	3	SS-41			**COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
	-58.6	59.4								-56.7 57.5
-60			6	11	23	34	SS-42			**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-63.6	64.4								
-65			1	2	7	9	SS-43			
	-68.6	69.4								-66.7 67.5
-70			6	10	9	19				
	-73.6	74.4								
-75			14	23	25	48	SS-44			-75.2 76.0

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK		**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**	
BORING NO. B5-B	**STATION** 23+84	**OFFSET** 23ft RT	**ALIGNMENT** -L-	**0 HR.**	N/A
COLLAR ELEV. 0.8 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,236	**EASTING** 2,819,689	**24 HR.**	N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic		
START DATE 09/16/09	**COMP. DATE** 09/16/09	**SURFACE WATER DEPTH** 0.8ft		**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
-75						Match Line				
	-78.6	79.4	15	16	17	33				
-80										
	-83.6	84.4	11	16	18	34				
-85										
	-88.6	89.4	4	4	5	9	SS-45			
-90										
	-93.6	94.4	3	3	5	8				
-95										
	-98.6	99.4	4	3	4	7				
-100										-86.7 87.5 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-105										**COASTAL PLAIN** GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION)
-110										-100.1 100.9 Boring Terminated at Elevation -100.1 ft IN MEDIUM STIFF CLAYEY SANDY SILT
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK			**GROUND WTR (ft)**
BORING NO. B6-B	**STATION** 24+56	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.8 ft	**TOTAL DEPTH** 100.8 ft	**NORTHING** 945,308	**EASTING** 2,819,703	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/17/09	**COMP. DATE** 09/17/09	**SURFACE WATER DEPTH** 0.5ft	**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)
5										
	0.8	0.0	WOH	WOH	WOH	0				WATER SURFACE (09/17/09)
0										0.8 0.0 GROUND SURFACE
	-3.4	4.2	1	0	0	0				**ALLUVIAL** BROWN MUCKWIHT WOOD, SAT.
-5										
	-8.4	9.2	WOH	1	0	1				
-10										-11.7 12.5
	-13.4	14.2	WOR	WOR	WOR	0	SS-46	127%		**ALLUVIAL** GRAY SILTY CLAY, WET
-15										
	-18.4	19.2	WOR	WOR	WOR	0				
-20										-21.7 22.5
	-23.4	24.2	WOH	WOH	WOH	0	SS-47			**ALLUVIAL** GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET
-25										
	-28.4	29.2	WOH	WOH	WOH	0				
-30										-31.7 32.5
	-33.4	34.2	2	4	6	10	SS-48			**ALLUVIAL** GRAY SAND, SATURATED
-35										
	-38.5	39.3	WOH	WOH	1	1	SS-49			-36.7 37.5 **COASTAL PLAIN** GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
-40										
	-43.5	44.3	WOH	1	2	3				
-45										-46.7 47.5
	-48.5	49.3	3	4	5	9	SS-50			**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-50										-51.7 52.5
	-53.5	54.3	1	1	1	2	SS-51			**COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-55										-56.7 57.5
	-58.5	59.3	12	17	16	33				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60										
	-63.5	64.3	5	5	7	12	SS-52			
-65										-66.7 67.5
	-68.5	69.3	16	19	19	38	SS-53			
-70										
	-73.5	74.3	12	17	25	42				-75.2 76.0
-75										

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK			**GROUND WTR (ft)**
BORING NO. B6-B	**STATION** 24+56	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.8 ft	**TOTAL DEPTH** 100.8 ft	**NORTHING** 945,308	**EASTING** 2,819,703	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/17/09	**COMP. DATE** 09/17/09	**SURFACE WATER DEPTH** 0.5ft	**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
-75						Match Line				
	-78.5	79.3	11	16	22	38				
-80										
	-83.5	84.3	16	20	27	47	SS-54			
-85										
	-88.5	89.3	5	4	5	9	SS-55			
-90										
	-93.5	94.3	3	4	5	9				
-95										
	-98.5	99.3	4	3	5	8				
-100										-81.7 82.5 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
										-86.7 87.5 **COASTAL PLAIN** GRAY SANDY SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
										-100.0 100.8 Boring Terminated at Elevation -100.0 ft IN MEDIUM STIFF TO STIFF SANDY SILTY CLAY
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK			**GROUND WTR (ft)**
BORING NO. B7-B	**STATION** 25+17	**OFFSET** 24ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.0 ft	**TOTAL DEPTH** 100.2 ft	**NORTHING** 945,369	**EASTING** 2,819,710	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/17/09	**COMP. DATE** 09/17/90	**SURFACE WATER DEPTH** 1.0ft	**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)
0										WATER SURFACE (09/17/09)
	0.0	0.0	WOH	WOH	WOH	0				0.0 GROUND SURFACE 0.0
	-3.5	3.5								**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
-5			1	0	0	0				
	-8.5	8.5								
-10			WOH	WOH	WOH	0	SS-56			
	-13.5	13.5								
-15			WOH	WOH	WOH	0	SS-57			-12.0 12.0 **ALLUVIAL** GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET
	-18.5	18.5								
-20			WOH	WOH	WOH	0				
	-23.5	23.5								
-25			WOH	WOH	WOH	0				
	-28.5	28.5								
-30			WOH	WOH	WOH	0	SS-58			-29.5 29.5 **ALLUVIAL** GRAY SAND, SATURATED
	-33.5	33.5								
-35			1	3	4	7				
	-38.7	38.7								
-40			WOH	WOH	1	1	SS-59			-37.0 37.0 **COASTAL PLAIN** GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
	-43.7	43.7								-42.0 42.0
-45			1	2	3	5	SS-60			
	-48.7	48.7								-47.0 47.0 **COASTAL PLAIN** GRAY SAND, SATURATED, (YORKTOWN FORMATION)
-50			1	3	7	10	SS-61			
	-53.7	53.7								-52.0 52.0 **COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-55			1	1	2	3	SS-62			
	-58.7	58.7								-57.0 57.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60			12	23	26	49	SS-63			
	-63.7	63.7								-62.0 62.0 **COASTAL PLAIN** GRAY SANDY SILT, WET (YORKTOWN FORMATION)
-65			2	2	3	5	SS-64			
	-68.7	68.7								-67.0 67.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-70			9	10	6	16				
	-73.7	73.7								
-75			13	17	23	40	SS-65			
	-78.7	78.7								
-80			14	18	16	34				

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK			**GROUND WTR (ft)**
BORING NO. B7-B	**STATION** 25+17	**OFFSET** 24ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.0 ft	**TOTAL DEPTH** 100.2 ft	**NORTHING** 945,369	**EASTING** 2,819,710	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/17/09	**COMP. DATE** 09/17/90	**SURFACE WATER DEPTH** 1.0ft	**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
-80						Match Line				
	-83.7	83.7								
-85			8	11	10	21				
	-88.7	88.7								
-90			3	3	4	7	SS-66			
	-93.7	93.7								
-95			3	3	3	6				
	-98.7	98.7								
-100			4	3	5	8				
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										
-160										

COASTAL PLAIN
GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*

87.0 87.0

COASTAL PLAIN
GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)

100.2 100.2

Boring Terminated at Elevation -100.2 ft IN MEDIUM STIFF TO STIFF SANDY SILTY CLAY

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B8-B	**STATION** 25+79	**OFFSET** 26ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.1 ft	**TOTAL DEPTH** 100.3 ft	**NORTHING** 945,431	**EASTING** 2,819,718	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/18/09	**COMP. DATE** 09/18/09	**SURFACE WATER DEPTH** 1.0ft	**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
5										
0	0.1	0.0	WOH	WOH	WOH	0				WATER SURFACE (09/18/09) 0.1 GROUND SURFACE 0.0
	-3.5	3.6	4	1	1	2				**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
-5	-8.5	8.6	1	0	0	0				
-10	-13.5	13.6	WOR	WOR	WOR	0	SS-67			-11.9 12.0 **ALLUVIAL** GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET
-15	-18.5	18.6	WOR	WOR	WOR	0				
-20	-23.5	23.6	WOH	WOH	WOH	0	SS-68			-26.9 27.0 **ALLUVIAL** GRAY SAND, SATURATED
-25	-28.7	28.8	WOH	1	2	3	SS-69			-31.9 32.0 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION)
-30	-33.7	33.8	WOH	1	1	2	SS-70			
-35	-38.7	38.8	1	2	1	3				
-40	-43.7	43.8	1	1	3	4	SS-71			-41.9 42.0 **COASTAL PLAIN** GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
-45	-48.7	48.8	3	4	11	15	SS-72			-46.9 47.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-50	-53.7	53.8	1	2	2	4	SS-73			-51.9 52.0 **COASTAL PLAIN** GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-55	-58.7	58.8	16	21	30	51	SS-74			-56.9 57.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60	-63.7	63.8	WOH	1	6	7	SS-75			-61.9 62.0 **COASTAL PLAIN** GRAY SILTY SANDY CLAY, WET (YORKTOWN FORMATION)
-65	-68.7	68.8	11	16	18	34	SS-76			-66.9 67.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-70	-73.7	73.8	11	16	22	38				-71.9 72.0 -74.9 75.0
-75										

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B8-B	**STATION** 25+79	**OFFSET** 26ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.1 ft	**TOTAL DEPTH** 100.3 ft	**NORTHING** 945,431	**EASTING** 2,819,718	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/18/09	**COMP. DATE** 09/18/09	**SURFACE WATER DEPTH** 1.0ft	**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
-75						Match Line				
-80	-78.7	78.8	15	21	23	44				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*
-85	-83.7	83.8	11	14	14	28	SS-77			
-90	-88.7	88.8	5	5	6	11	SS-78			-86.9 87.0 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-95	-93.7	93.8	3	5	5	10				
-100	-98.7	98.8	4	3	4	7				-100.2 100.3 Boring Terminated at Elevation -100.2 ft IN MED. STIFF CLAYEY SANDY SILT
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B10-B	**STATION** 26+98	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.7 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,552	**EASTING** 2,819,723	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/21/09	**COMP. DATE** 09/21/09	**SURFACE WATER DEPTH** 0.8ft	**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))
5										
	0.7	0.0								WATER SURFACE (09/21/09)
0			1	1	1	2				0.7 GROUND SURFACE 0.0 **ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
	-3.5	4.2	1	2	1	3				
-5	-8.5	9.2	WOH	WOH	WOH	0	SS-79			
-10										-11.8 12.5 **ALLUVIAL** GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET
	-13.5	14.2	WOR	WOR	WOR	0	SS-80	147%		
-15	-18.5	19.2	2	2	9	11	SS-81			-18.3 19.0 -19.5 20.2 **UNDIVIDED COASTAL PLAIN** GRAY SAND, SATURATED **COASTAL PLAIN** GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-20										
-25	-23.5	24.2	WOH	1	1	2	SS-82			
	-28.5	29.2	2	1	1	2				
-30										
-35	-33.7	34.4	1	1	2	3	SS-83			-31.8 32.5 **COASTAL PLAIN** GRAY SILTY SANDY CLAY, SANDY SILTY CLAY AND SANDY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
	-38.7	39.4	1	1	1	2				
-40										
-45	-43.7	44.4	1	1	1	2	SS-84			
	-48.7	49.4	1	3	2	5				
-50										-41.8 42.5
-55	-53.7	54.4	1	3	8	11	SS-85			-51.8 52.5
	-58.7	59.4	16	13	16	29				-56.8 57.5 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60							SS-86			
-65	-63.7	64.4	7	12	13	25				
	-68.7	69.4	11	17	12	29	SS-87			
-70										
-75	-73.7	74.4	16	21	29	50				-75.0 75.7

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B10-B	**STATION** 26+98	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 0.7 ft	**TOTAL DEPTH** 100.9 ft	**NORTHING** 945,552	**EASTING** 2,819,723	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/21/09	**COMP. DATE** 09/21/09	**SURFACE WATER DEPTH** 0.8ft	**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))
-75						Match Line				
	-78.7	79.4	13	17	22	39	SS-88			-76.8 77.5 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-80										
-85	-83.7	84.4	11	10	24	34				
	-88.7	89.4	3	4	4	8	SS-89			-86.8 87.5 **COASTAL PLAIN** GRAY SILTY SANDY CLAY WITH SHELL FRAGMENTS (YORKTOWN FORMATION)
-90										
-95	-93.7	94.4	2	4	5	9				
	-98.7	99.4	3	4	3	7				-100.2 100.9 Boring Terminated at Elevation -100.2 ft IN MED. STIFF SILTY SANDY CLAY
-100										
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B11-B	**STATION** 27+68	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 1.0 ft	**TOTAL DEPTH** 96.2 ft	**NORTHING** 945,623	**EASTING** 2,819,723	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/22/09	**COMP. DATE** 09/22/09	**SURFACE WATER DEPTH** 0.2ft	**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))
5										
	1.0	0.0								1.0 WATER SURFACE (09/22/09) 0.0
0			WOH	WOH	WOH	0				**ALLUVIAL** BROWN MUCK WITH WOOD, SAT.
	-3.5	4.5								
-5			WOH	WOH	WOH	0				
	-8.5	9.5								
-10			1	2	3	5				
	-13.5	14.5								-12.0 13.0 **UNDIVIDED COASTAL PLAIN** TAN SAND, SATURATED
-15			2	2	4	6	SS-102			
	-18.5	19.5								-17.0 18.0 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT, WET (YORKTOWN FORMATION)
-20			WOH	WOH	WOH	0	SS-103			
	-23.5	24.5								
-25			WOH	WOH	WOH	0				
	-28.5	29.5								-27.0 28.0 **COASTAL PLAIN** GRAY SANDY CLAY, SANDY SILTY CLAY AND SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-30			1	2	1	3	SS-104			
	-33.7	34.7								
-35			WOH	1	1	2				
	-38.7	39.7								-37.0 38.0
-40			1	1	1	2	SS-105			
	-43.7	44.7								
-45			1	1	2	3				
	-48.7	49.7								
-50			1	1	2	3	SS-106			
	-53.7	54.7								-52.0 53.0 **COASTAL PLAIN** GRAY SANDY SILT, WET (YORKTOWN FORMATION)
-55			1	1	2	3	SS-107			
	-58.7	59.7								-57.0 58.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60			16	21	27	48	SS-108			
	-63.7	64.7								
-65			14	20	20	40				
	-68.7	69.7								
-70			11	14	14	28				
	-73.7	74.7								
-75			21	23	27	50	SS-109			

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK	**GEOLOGIST** Swartley, J. R.	
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. B11-B	**STATION** 27+68	**OFFSET** 25ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 1.0 ft	**TOTAL DEPTH** 96.2 ft	**NORTHING** 945,623	**EASTING** 2,819,723	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/22/09	**COMP. DATE** 09/22/09	**SURFACE WATER DEPTH** 0.2ft	**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
-75						Match Line				**COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION) *(continued)*
	-78.7	79.7								
-80			11	15	22	37				
	-83.7	84.7								-82.0 83.0
-85			18	36	37	73	SS-110			
	-88.7	89.7								
-90			3	3	3	6	SS-111			**COASTAL PLAIN** GRAY SANDY SITLY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
	-93.7	94.7								
-95			2	4	6	10				-95.2 96.2 Boring Terminated at Elevation -95.2 ft IN STIFF SANDY SILTY CLAY
-100										
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										
-155										

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PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK		**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 28+26	**OFFSET** 23ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 5.2 ft	**TOTAL DEPTH** 100.2 ft	**NORTHING** 945,680	**EASTING** 2,819,720	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/22/09	**COMP. DATE** 09/22/09	**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)
10										
5										
	3.7	1.5								5.2 GROUND SURFACE 0.0
	1.7	3.5	4	5	7	12 13	SS-90			3.7 PAVEMENT 1.5
0			3	5	8					**ROADWAY EMBANKMENT** TAN SAND, MOIST TO SATURATED
	-3.8	9.0								
-5			11	6	7	13	SS-91			
	-8.5	13.7								-6.8 12.0 **UNDIVIDED COASTAL PLAIN** TAN SAND, SATURATED
-10			2	1	2	3				
	-13.5	18.7								
-15			3	4	4	8	SS-92			
	-18.5	23.7								-16.8 22.0 **UNDIVIDED COASTAL PLAIN** GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-20			WOH	WOH	WOH	0	SS-93			
	-23.5	28.7								
-25			WOH	1	1	2				
	-28.5	33.7								
-30			2	2	1	3	SS-94			
	-33.5	38.7								
-35			1	2	1	3				
	-38.5	43.7								-36.8 42.0 **COASTAL PLAIN** GRAY SANDY SILTY CLAY AND SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-40			WOH	1	1	2	SS-95			
	-43.5	48.7								
-45			1	1	2	3				
	-48.5	53.7								
-50			1	1	2	3	SS-96			
	-53.5	58.7								-51.8 57.0 **COASTAL PLAIN** GRAY SANDY SILT, WET (YORKTOWN FORMATION)
-55			1	1	2	3	SS-97			
	-58.5	63.7								-56.8 62.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-60			17	18	16	34	SS-98			
	-63.5	68.7								-61.8 67.0 **COASTAL PLAIN** GRAY SANDY SILTY CLAY, WET (YORKTOWN FORMATION)
-65			2	2	3	5	SS-99			
	-68.5	73.7								-66.8 72.0 **COASTAL PLAIN** GRAY SAND, SATURATED (YORKTOWN FORMATION)
-70			12	16	14	30	SS-99A			

PROJECT NO. 33791.1.1	**ID.** B-4599	**COUNTY** PASQUOTANK		**GEOLOGIST** Swartley, J. R.
SITE DESCRIPTION BRIDGE NOS. 1 AND 2 ON -L- (US-17/158) OVER KNOBBS CREEK				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 28+26	**OFFSET** 23ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 5.2 ft	**TOTAL DEPTH** 100.2 ft	**NORTHING** 945,680	**EASTING** 2,819,720	**24 HR.** N/A
DRILL MACHINE CME-45B	**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic	
START DATE 09/22/09	**COMP. DATE** 09/22/09	**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
-70						Match Line				-71.8 77.0 GRAY SAND, SATURATED (YORKTOWN FORMATION)
	-73.5	78.7	14	16	23	39				
-75										
	-78.5	83.7	15	23	28	51				
-80										
	-83.5	88.7	20	27	17	44	SS-100			
-85										
	-88.5	93.7	3	3	4	7	SS-101			-86.8 92.0 **COASTAL PLAIN** GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)
-90										
	-93.5	98.7	2	3	4	7				-95.0 100.2 Boring Terminated at Elevation -95.0 ft IN MED. STIFF CLAYEY SANDY SILT
-95										
-100										
-105										
-110										
-115										
-120										
-125										
-130										
-135										
-140										
-145										
-150										

B-4599
33791.1.1

BRIDGE NO. 1 & 2 ON US-17/158 OVER KNOBBS CREEK AT -L- STA. 24+52

SOIL TEST RESULTS EB1-A

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	65 LT	20+26	3.5-5.0	A-4(0)	33	4	29.9	36.5	21.5	12.0	89	78	37	55.7	6.8
SS-2	65 LT	20+26	14.0-15.5	A-4(2)	27	3	0.4	39.0	44.6	16.1	100	100	94	-	-
SS-3	65 LT	20+26	23.5-25.0	A-6(4)	30	11	0.4	53.8	21.7	24.1	100	100	60	46.0	-
SS-4	65 LT	20+26	33.5-35.0	A-4(0)	27	4	1.8	60.5	19.5	18.2	100	99	55	-	-
SS-5	65 LT	20+26	43.5-45.0	A-4(3)	29	8	3.0	49.4	23.3	24.2	100	99	61	-	-
SS-6	65 LT	20+26	48.5-50.0	A-2-4(0)	23	2	2.8	68.1	13.1	16.1	100	99	34	-	-
SS-7	65 LT	20+26	53.5-55.0	A-7-6(26)	48	26	1.0	14.5	44.4	40.2	100	100	92	-	-
SS-8	65 LT	20+26	63.5-65.0	A-4(3)	29	7	1.4	49.6	28.9	20.1	100	100	66	-	-
SS-9	65 LT	20+26	73.5-75.0	A-3(0)	18	N P	72.3	19.7	4.9	3.0	98	59	9	-	-
SS-10	65 LT	20+26	88.5-90.0	A-3(0)	19	N P	78.1	16.8	2.1	3.0	97	57	6	-	-
SS-11	65 LT	20+26	93.5-95.0	A-7-6(22)	45	23	0.8	27.5	45.6	26.1	100	99	90	-	-

SOIL TEST RESULTS B1-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-112	20 RT	21+48	3.4-4.9	A-4(1)	23	3	3.0	35.0	39.8	22.2	100	99	87	-	-
SS-113	20 RT	21+48	13.4-14.9	A-4(0)	26	5	1.4	67.3	13.2	18.1	100	99	40	-	-
SS-114	20 RT	21+48	18.4-19.9	A-6(11)	37	18	0.2	44.5	27.1	28.2	100	100	72	-	-
SS-115	20 RT	21+48	28.6-30.1	A-4(0)	24	3	1.8	58.8	21.2	18.1	100	100	59	-	-
SS-116	20 RT	21+48	38.6-40.1	A-2-4(0)	21	N P	5.7	76.4	6.7	11.1	100	99	21	-	-
SS-117	20 RT	21+48	43.6-45.1	A-6(15)	38	17	0.6	30.0	41.2	28.2	100	100	87	-	-
SS-118	20 RT	21+48	48.6-50.1	A-7-6(42)	63	38	0.8	10.3	32.5	56.4	100	100	96	-	-
SS-119	20 RT	21+48	53.6-55.1	A-6(8)	35	19	8.5	43.3	20.0	28.2	100	98	60	-	-
SS-120	20 RT	21+48	63.6-65.1	A-3(0)	17	N P	78.2	16.6	3.1	2.0	100	59	6	-	-
SS-121	20 RT	21+48	73.6-75.1	A-1-b(0)	19	N P	78.1	17.5	2.3	2.0	90	41	5	-	-
SS-122	20 RT	21+48	83.6-85.1	A-6(13)	39	15	2.0	32.8	41.0	24.2	100	98	85	-	-

SOIL TEST RESULTS B2-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-123	21 RT	22+25	3.7-5.2	A-4(0)	16	3	14.1	49.1	16.6	20.1	100	98	41	-	-
SS-124	21 RT	22+25	18.7-20.2	A-7-5(45)	77	35	0.6	2.0	34.9	62.4	100	100	98	106.6	-
SS-125	21 RT	22+25	23.7-25.2	A-6(6)	30	13	4.4	46.1	23.3	26.2	100	98	64	-	-
SS-126	21 RT	22+25	28.7-30.2	A-6(9)	34	14	0.8	40.7	30.3	28.2	100	100	75	-	-
SS-127	21 RT	22+25	33.7-35.2	A-4(0)	26	4	1.8	61.4	20.6	16.1	100	99	56	-	-
SS-128	21 RT	22+25	43.9-45.4	A-2-4(0)	21	3	24.0	53.7	8.3	14.1	100	94	25	-	-
SS-129	21 RT	22+25	45.4-48.9	A-7-6(22)	44	23	0.8	20.5	42.4	36.3	100	100	90	-	-
SS-130	21 RT	22+25	58.9-60.4	A-4(4)	31	7	1.2	45.1	29.5	24.2	100	99	73	-	-
SS-131	21 RT	22+25	68.9-70.4	A-3(0)	18	N P	61.1	32.1	3.7	3.0	99	78	8	-	-
SS-132	21 RT	22+25	83.9-85.4	A-1-b(0)	17	N P	76.0	20.1	1.8	2.0	91	47	5	-	-
SS-133	21 RT	22+25	88.9-90.4	A-4(3)	30	8	3.4	49.3	27.1	20.1	100	98	64	-	-
SS-134	21 RT	22+25	98.9-100.4	A-4(4)	33	9	6.0	52.0	23.9	18.1	99	96	62	-	-

SOIL TEST RESULTS B3-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-12	22 RT	22+81	1.0-1.5	A-4(0)	29	N P	19.1	35.7	26.7	18.5	100	93	55	-	-
SS-13	22 RT	22+81	14.3-15.8	A-7-5(35)	62	30	1.2	4.7	38.6	55.4	100	100	95	-	-
SS-14	22 RT	22+81	24.5-26.0	A-7-6(12)	48	23	9.0	32.4	17.5	41.1	100	94	60	-	-
SS-15	22 RT	22+81	29.5-31.0	A-3(0)	24	N P	21.4	72.7	0.8	5.1	100	98	8	-	-
SS-16	22 RT	22+81	34.5-36.0	A-4(0)	24	3	1.6	61.6	16.2	20.5	100	100	55	-	-
SS-17	22 RT	22+81	44.5-46.0	A-4(0)	23	6	16.0	51.7	11.7	20.5	100	96	40	-	-
SS-18	22 RT	22+81	49.5-51.0	A-7-6(16)	42	21	2.1	28.7	34.3	34.9	100	100	79	-	-
SS-19	22 RT	22+81	54.5-56.0	A-7-6(26)	52	28	1.4	19.9	31.4	47.2	100	100	87	-	-
SS-20	22 RT	22+81	59.5-61.0	A-2-4(0)	21	N P	17.2	69.1	6.5	7.2	100	99	21	-	-
SS-21	22 RT	22+81	64.5-66.0	A-6(14)	35	18	4.9	20.9	35.1	39.0	100	98	84	-	-
SS-22	22 RT	22+81	69.5-71.0	A-3(0)	22	N P	66.3	30.6	0.0	3.1	100	79	4	-	-
SS-23	22 RT	22+81	79.5-81.0	A-1-b(0)	21	N P	76.2	19.5	0.2	4.0	91	46	5	-	-
SS-24	22 RT	22+81	89.5-91.0	A-6(11)	36	13	2.1	31.6	39.6	26.7	100	98	86	-	-

SOIL TEST RESULTS B4-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-25	24 RT	23+27	1.0-1.5	A-4(0)	38	5	21.6	40.9	19.1	18.5	97	87	40	-	-
SS-26	24 RT	23+27	19.4-20.9	A-7-5(36)	66	32	1.0	8.6	34.9	55.4	100	100	93	-	-
SS-27	24 RT	23+27	29.4-30.9	A-2-4(0)	20	N P	16.5	71.4	0.8	11.3	100	99	13	-	-
SS-28	24 RT	23+27	34.4-35.9	A-4(3)	30	10	2.1	52.8	16.4	28.7	100	100	56	-	-
SS-29	24 RT	23+27	44.4-45.9	A-4(0)	26	7	9.9	56.1	13.6	20.5	100	98	41	-	-
SS-30	24 RT	23+27	49.4-50.9	A-2-4(0)	21	N P	8.9	70.9	5.7	14.4	99	98	22	-	-
SS-31	24 RT	23+27	54.4-59.9	A-7-6(39)	61	38	0.6	12.7	25.1	61.6	100	100	92	-	-
SS-32	24 RT	23+27	59.4-60.9	A-2-4(0)	25	N P	6.4	80.8	6.7	6.2	100	100	22	-	-
SS-33	24 RT	23+27	64.4-65.9	A-6(13)	40	20	0.8	38.4	32.0	28.7	100	100	72	-	-
SS-34	24 RT	23+27	74.4-75.9	A-3(0)	20	N P	74.1	21.6	1.2	3.1	95	54	5	-	-
SS-35	24 RT	23+27	89.4-90.9	A-6(7)	34	11	3.3	43.1	31.0	22.6	100	98	70	-	-

SOIL TEST RESULTS B5-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-36	23 RT	23+84	14.2-15.7	A-7-6(29)	60	32	1.6	17.7	21.1	59.5	100	100	82	-	-
SS-37	23 RT	23+84	24.2-25.7	A-7-6(20)	55	28	0.8	30.0	19.9	49.3	100	100	72	-	-
SS-38	23 RT	23+84	29.7-30.7	A-2-4(0)	20	N P	18.0	68.1	5.9	8.1	100	100	15	-	-
SS-39	23 RT	23+84	34.2-35.7	A-7-6(27)	55	26	2.2	10.5	36.8	50.5	100	99	89	-	-
SS-40	23 RT	23+84	44.4-45.9	A-4(0)	25	5	7.9	53.3	22.6	16.2	100	98	49	-	-
SS-41	23 RT	23+84	54.4-55.9	A-7-6(39)	63	37	1.4	10.5	31.5	56.6	100	100	92	-	-
SS-42	23 RT	23+84	59.4-60.9	A-2-4(0)	24	N P	7.4	81.2	6.4	5.1	100	98	18	-	-
SS-43	23 RT	23+84	64.4-65.9	A-2-4(0)	21	N P	12.1	69.5	11.3	7.1	100	99	25	-	-
SS-44	23 RT	23+84	74.4-75.9	A-1-b(0)	20	N P	77.9	18.9	1.2	2.0	95	49	4	-	-
SS-45	23 RT	23+84	89.4-90.9	A-4(7)	34	10	3.4	37.0	35.4	24.2	100	97	76	-	-

B-4599
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BRIDGE NO. 1 & 2 ON US-17/158 OVER KNOBBS CREEK AT -L- STA. 24+52

SOIL TEST RESULTS B6-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-46	25 RT	24+56	14.2-15.7	A-7-5(39)	66	32	1.2	2.6	39.6	56.6	100	99	97	126.7	-
SS-47	25 RT	24+56	24.2-25.7	A-7-5(39)	70	32	1.2	4.2	33.9	60.6	100	99	96	-	9.4
SS-48	25 RT	24+56	34.2-35.7	A-3(0)	22	N P	63.1	35.3	0.6	1.0	100	76	3	-	-
SS-49	25 RT	24+56	39.3-40.8	A-7-6(20)	45	24	3.0	25.9	26.7	44.4	100	98	83	-	-
SS-50	25 RT	24+56	49.3-50.8	A-2-4(0)	21	5	29.1	44.6	12.1	14.1	98	94	28	-	-
SS-51	25 RT	24+56	54.3-55.8	A-7-5(42)	68	38	1.4	9.1	28.9	60.6	100	100	93	-	-
SS-52	25 RT	24+56	64.3-65.8	A-2-4(0)	24	N P	13.1	71.2	8.6	7.1	100	96	24	-	-
SS-53	25 RT	24+56	69.3-70.8	A-3(0)	23	N P	61.3	35.2	1.5	2.0	100	83	5	-	-
SS-54	25 RT	24+56	84.3-85.8	A-1-b(0)	16	N P	87.2	10.4	0.4	2.0	88	30	3	-	-
SS-55	25 RT	24+56	89.3-90.8	A-6(14)	38	15	2.0	26.9	40.8	30.3	100	99	90	-	-

SOIL TEST RESULTS B7-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-56	24 RT	25+17	8.5-10.0				11.1	4.6	25.7	58.6	100	92	85	-	-
SS-57	24 RT	25+17	13.5-15.0	A-7-5(41)	73	32	2.0	2.0	29.3	66.7	100	98	97	-	8.7
SS-58	24 RT	25+17	29.5-30.0	A-2-4(0)	22	N P	16.0	68.5	5.5	10.1	100	99	17	-	-
SS-59	24 RT	25+17	38.7-40.2	A-7-6(20)	43	23	2.0	28.7	30.9	38.4	100	99	84	-	-
SS-60	24 RT	25+17	43.7-45.2	A-6(7)	34	13	2.6	41.2	31.9	24.2	100	99	66	-	-
SS-61	24 RT	25+17	48.7-50.2	A-2-4(0)	20	N P	46.6	38.5	4.8	10.1	100	83	16	-	-
SS-62	24 RT	25+17	53.7-55.2	A-7-6(28)	55	29	3.6	12.5	29.3	54.5	100	99	86	-	-
SS-63	24 RT	25+17	58.7-60.2	A-3(0)	22	N P	22.7	70.7	3.5	3.0	100	98	8	-	-
SS-64	24 RT	25+17	63.7-65.2	A-4(0)	22	1	17.8	53.5	18.6	10.1	100	95	41	-	-
SS-65	24 RT	25+17	73.7-75.2	A-3(0)	17	N P	79.7	15.2	3.1	2.0	96	52	6	-	-
SS-66	24 RT	25+17	88.7-90.2	A-6(16)	39	17	2.0	24.4	43.2	30.3	100	99	91	-	-

SOIL TEST RESULTS B8-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-67	26 RT	25+79	13.6-15.1	A-7-5(42)	69	34	1.2	1.6	30.5	66.7	100	99	98	-	-
SS-68	26 RT	25+79	23.6-25.1	A-7-5(40)	71	33	2.4	2.8	32.1	62.6	100	98	96	-	-
SS-69	26 RT	25+79	28.8-30.3	A-3(0)	17	N P	31.2	65.4	1.4	2.0	100	91	5	-	-
SS-70	26 RT	25+79	33.8-35.3	A-4(1)	25	5	1.6	54.5	23.6	20.2	100	100	66	-	-
SS-71	26 RT	25+79	43.8-45.3	A-6(11)	37	15	0.6	35.4	35.8	28.3	100	100	76	-	-
SS-72	26 RT	25+79	48.8-50.3	A-2-4(0)	19	N P	36.9	50.6	3.4	9.1	100	90	14	-	-
SS-73	26 RT	25+79	53.8-55.3	A-7-6(29)	57	31	3.0	14.1	30.3	52.5	100	99	86	-	-
SS-74	26 RT	25+79	58.8-60.3	A-3(0)	21	N P	50.1	45.4	1.5	3.0	97	83	6	-	-
SS-75	26 RT	25+79	63.8-65.3	A-7-6(11)	42	18	7.5	34.1	36.2	22.2	100	98	68	-	-
SS-76	26 RT	25+79	68.8-70.3	A-2-4(0)	18	N P	61.6	29.8	4.5	4.0	100	85	11	-	-
SS-77	26 RT	25+79	83.8-85.3	A-3(0)	22	N P	53.2	44.3	1.4	1.0	95	65	3	-	-
SS-78	26 RT	25+79	88.8-90.3	A-4(5)	31	10	2.4	47.1	28.3	22.2	100	99	67	-	-

SOIL TEST RESULTS B10-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-79	25 RT	26+98	9.2-10.7				17.0	7.3	39.4	36.4	90	78	70	-	-
SS-80	25 RT	26+98	14.2-15.7	A-7-5(37)	70	33	3.8	6.3	37.4	52.5	100	97	91	147.0	-
SS-81	25 RT	26+98	19.2-20.2	A-3(0)	22	N P	48.7	50.1	0.2	1.0	100	91	2	-	-
SS-82	25 RT	26+98	24.2-25.7	A-4(4)	31	10	0.4	53.3	22.0	24.2	100	100	64	-	-
SS-83	25 RT	26+98	34.4-35.9	A-6(11)	34	13	0.4	38.0	33.3	28.3	100	100	85	-	-
SS-84	25 RT	26+98	44.4-45.9	A-7-6(20)	46	25	2.4	22.6	34.5	40.4	100	98	80	-	-
SS-85	25 RT	26+98	54.4-55.9	A-6(2)	29	11	11.3	49.1	17.4	22.2	99	95	49	-	-
SS-86	25 RT	26+98	59.4-60.9	A-3(0)	22	N P	46.0	48.4	3.6	2.0	99	78	8	-	-
SS-87	25 RT	26+98	69.4-70.9	A-3(0)	22	N P	43.9	52.7	1.3	2.0	99	90	4	-	-
SS-88	25 RT	26+98	79.4-80.9	A-1-b(0)	18	N P	79.7	15.8	2.5	2.0	94	48	6	-	-
SS-89	25 RT	26+98	89.4-90.9	A-6(8)	33	11	3.2	39.0	37.6	20.2	100	98	78	-	-

SOIL TEST RESULTS B11-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-102	25 RT	27+68	14.5-16.0	A-3(0)	30	N P	54.2	44.2	0.5	1.0	100	78	2	-	-
SS-103	25 RT	27+68	19.5-21.0	A-4(3)	29	9	0.2	57.6	22.0	20.2	100	100	57	-	-
SS-104	25 RT	27+68	29.5-31.0	A-6(3)	35	15	12.5	39.4	19.8	28.3	75	67	44	-	-
SS-105	25 RT	27+68	39.7-40.2	A-7-6(25)	46	27	0.4	22.6	36.6	40.4	100	100	90	-	-
SS-106	25 RT	27+68	49.7-51.2	A-7-6(40)	61	36	0.8	6.7	42.0	50.5	100	100	96	-	-
SS-107	25 RT	27+68	54.7-56.2	A-4(0)	26	3	4.4	59.2	18.2	18.1	100	99	55	-	-
SS-108	25 RT	27+68	59.7-61.2	A-3(0)	27	N P	62.4	32.8	1.7	3.0	99	71	6	-	-
SS-109	25 RT	27+68	74.7-76.2	A-3(0)	18	N P	70.5	25.1	1.4	3.0	94	64	6	-	-
SS-110	25 RT	27+68	84.7-86.2	A-1-b(0)	18	N P	78.2	16.4	2.3	3.0	92	44	6	-	-
SS-111	25 RT	27+68	89.7-91.2	A-6(10)	36	11	2.0	33.2	40.6	24.2	100	99	86	-	-

SOIL TEST RESULTS EB2-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-90	23 RT	28+26	1.5-3.0	A-2-4(0)	11	N P	25.6	56.3	6.1	12.1	100	94	20	-	-
SS-91	23 RT	28+26	9.0-10.5	A-2-4(0)	17	N P	19.1	64.2	7.6	9.1	100	95	19	-	-
SS-92	23 RT	28+26	18.7-20.2	A-2-4(0)	20	N P	3.5	83.3	9.1	4.0	100	100	21	-	-
SS-93	23 RT	28+26	23.7-25.2	A-4(2)	28	7	0.4	58.4	21.0	20.2	100	100	56	-	-
SS-94	23 RT	28+26	33.7-35.2	A-4(3)	31	10	7.7	50.3	19.8	22.2	95	88	55	-	-
SS-95	23 RT	28+26	43.7-45.2	A-7-6(22)	43	25	1.0	24.6	33.9	40.4	100	100	88	-	-
SS-96	23 RT	28+26	53.7-55.2	A-7-6(22)	46	25	1.8	17.6	40.2	40.4	100	99	85	-	-
SS-97	23 RT	28+26	58.7-60.2	A-4(0)	26	1	1.2	61.2	21.4	16.2	100	100	56	-	-
SS-98	23 RT	28+26	63.7-65.2	A-3(0)	19	N P	58.9	35.1	4.0	2.0	99	87	7	-	-
SS-99	23 RT	28+26	68.7-70.2	A-6(13)	36	18	8.7	15.6	41.4	34.3	98	95	80	-	-
SS-99A	23 RT	28+26	73.7-75.2	A-2-4(0)	20	N P	17.0	73.9	6.1	3.0	100	99	11	-	-
SS-100	23 RT	28+26	88.7-90.2	A-3(0)	21	N P	38.8	52.3	3.8	5.1	82	68	9	-	-
SS-101	23 RT	28+26	93.7-95.2	A-4(6)	33	7	2.2	36.6	41.0	20.2	100	99	85	-	-

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

FIELD SCOUR REPORT

WBS: 33791.1.1 TIP: B-4599 COUNTY: PASQUOTANK

DESCRIPTION(1): BRIDGES NO. 1 AND 2 ON US 17/158 OVER KNOBBS CREEK

EXISTING BRIDGE

Information from: Field Inspection X Microfilm ____ (reel ____ pos: ____)
Other (explain) BSR REPORT

Bridge No.: 1 Length: 720 Total Bents: 61 Bents in Channel: 10 Bents in Floodplain: 51
Foundation Type: TIMBER PILES

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NONE NOTED

Interior Bents: NONE NOTED

Channel Bed: NONE NOTED

Channel Bank: NONE NOTED

EXISTING SCOUR PROTECTION

Type(3): CONCRETE END WALLS

Extent(4): 4 FEET OUTSIDE EDGE OF BRIDGE, BOTH END BENTS

Effectiveness(5): EFFECTIVE

Obstructions(6): NONE NOTED

DESIGN INFORMATION

Channel Bed Material(7): VERY SOFT SANDY SILT AND VERY LOOSE SAND

Channel Bank Material(8): VERY SOFT SANDY SILT AND VERY LOOSE SAND

Channel Bank Cover(9): TREES AND SHRUBS

Floodplain Width(10): 750' (+/-)

Floodplain Cover(11): TREES

Stream is(12): Aggrading X Degrading ____ Static ____

Channel Migration Tendency(13): MODERATE TO THE SOUTH

Observations and Other Comments: ____

DESIGN SCOUR ELEVATIONS(14) Feet X Meters ____

BENTS

B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
-16.5	-9	-0.6	-0.8	-1.2	-1.6	-1.7	-1.7	-1.4	-1.2	-0.6

Comparison of DSE to Hydraulics Unit theoretical scour:
GEOTECHNICAL ANALYSIS AGREES WITH A MAXIMUM THEORETICAL SCOUR ELEVATION OF FEET AS OUTLIINED IN THE BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT.

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 Sheet 18
"Soil Test Results",
for samples:
SS- 112,123 (CHANNEL BANK)
SS-112, 123 (CHANNEL BED)

Template Revised 02/07/06

Reported by: [signature] **Date:** 10/29/2009

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.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

FIELD SCOUR REPORT

WBS: 33791.1.1 TIP: B-4599 COUNTY: PASQUOTANK

DESCRIPTION(1): BRIDGES NO. 1 AND 2 ON US 17/158 OVER KNOBBS CREEK

EXISTING BRIDGE

Information from: Field Inspection X Microfilm ____ (reel ____ pos: ____)
Other (explain) BSR REPORT

Bridge No.: 2 Length: 740 Total Bents: 38 Bents in Channel: 7 Bents in Floodplain: 31
Foundation Type: TIMBER PILES

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NONE NOTED

Interior Bents: NONE NOTED

Channel Bed: NONE NOTED

Channel Bank: NONE NOTED

EXISTING SCOUR PROTECTION

Type(3): CONCRETE END WALLS

Extent(4): 6 FEET OUTSIDE EDGE OF BRIDGE, BOTH END BENTS

Effectiveness(5): EFFECTIVE

Obstructions(6): TREE LIMBS ON 5TH INTERIOR BENT

INSTRUCTIONS

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12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
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DESIGN INFORMATION

Channel Bed Material(7): VERY SOFT SANDY SILT AND VERY LOOSE SAND

Channel Bank Material(8): VERY SOFT SANDY SILT AND VERY LOOSE SAND

Channel Bank Cover(9): TREES AND SHRUBS

Floodplain Width(10): 750' (+/-)

Floodplain Cover(11): TREES

Stream is(12): Aggrading X Degrading ____ Static ____

Channel Migration Tendency(13): MODERATE TO THE SOUTH

Observations and Other Comments: ____

DESIGN SCOUR ELEVATIONS(14) Feet X Meters ____

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SS-112, 123 (CHANNEL BANK)

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