

PROJECT: 17BP.1.R.59

REFERENCE: SF-880009

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE

SUBSURFACE INVESTIGATION

COUNTY TYRRELL

PROJECT DESCRIPTION BRIDGE NO. 9 ON NC 94 OVER CANAL AT -L- STA. 15 + 93.75

SITE DESCRIPTION

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C.  | SF-880009                   | 1         | 6            |

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) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

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

NOTES:

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

2. 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.

PERSONNEL

O.B. OTI

D.G. PINTER

J.R. MATULA

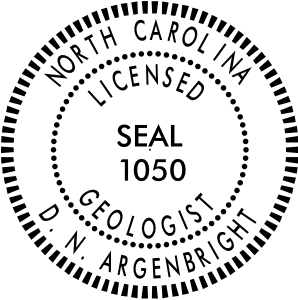
INVESTIGATED BY D.N. ARGENBRIGHT

DRAWN BY C.P. TURNER

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE DECEMBER 2014



DocuSigned by: Dean N. Argenbright12/1/2014

SIGNATURE DATE

***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 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR 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<br>(≤ 35% PASSING #200) |           |                                 |       | SILT-CLAY MATERIALS<br>(> 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-4, A-5 |            |       |
| SYMBOL                         |  |           |                                 |       |   |              |       |       |                   |          |            |       |
| % PASSING #10                  | 50 MX                                      | 30 MX     | 50 MX                           | 51 MN | 35 MX                                       | 35 MX        | 35 MX | 35 MX | 36 MN             | 36 MN    | 36 MN      | 36 MN |
| % PASSING #40                  | 15 MX                                      | 25 MX     | 10 MX                           | 10 MX | 10 MX                                       | 10 MX        | 10 MX | 10 MX | 10 MX             | 10 MX    | 10 MX      | 10 MX |
| % PASSING #200                 | 50 MX                                      | 30 MX     | 50 MX                           | 51 MN | 35 MX                                       | 35 MX        | 35 MX | 35 MX | 36 MN             | 36 MN    | 36 MN      | 36 MN |
| MATERIAL PASSING #40 LL PI     | —  | 6 MX      | —                               | NP    | 40 MX                                       | 41 MN        | 40 MX | 41 MN | 40 MX             | 41 MN    | 40 MX      | 41 MN |
| GROUP INDEX                    | 0  | 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 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 RESISTANCE (N-VALUE)     | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> ) |
|--|--|--|--|
| GENERALLY GRANULAR MATERIAL (NON-COHESIVE) | VERY LOOSE<br>LOOSE<br>MEDIUM DENSE<br>DENSE<br>VERY DENSE       | < 4<br>4 TO 10<br>10 TO 30<br>30 TO 50<br>> 50         | N/A  |
| GENERALLY SILT-CLAY MATERIAL (COHESIVE)    | VERY SOFT<br>SOFT<br>MEDIUM STIFF<br>STIFF<br>VERY STIFF<br>HARD | < 2<br>2 TO 4<br>4 TO 8<br>8 TO 15<br>15 TO 30<br>> 30 | < 0.25<br>0.25 TO 0.5<br>0.5 TO 1.0<br>1 TO 2<br>2 TO 4<br>> 4   |

TEXTURE OR GRAIN SIZE

| U.S. STD. SIEVE OPENING (MM) | 4    | 10   | 40   | 60   | 200   | 270   |
|------------------------------|------|------|------|------|-------|-------|
|                              | 4.76 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 |

| BOULDER (BLDR.) | COBBLE (COB.) | GRAVEL (GR.) | COARSE SAND (CS.E. SD.) | FINE SAND (F. SD.) | SILT (SL.) | CLAY (CL.) |
|-----------------|---------------|--------------|-------------------------|--------------------|------------|------------|
|                 |               |              |                         |                    |            |            |

GRAIN SIZE

| 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                                |
|--|----------------------------|---|
| LL<br>RANGE<br>(PI)<br>PL              | - SATURATED - (SAT.)       | USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE |
|  | - WET - (W)                | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE               |
|  | - MOIST - (M)              | SOLID; AT OR NEAR OPTIMUM MOISTURE                                  |
| OM<br>SL                               | - DRY - (D)                | REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE                |

PLASTICITY

|                    | PLASTICITY INDEX (PI) | DRY STRENGTH |
|--------------------|-----------------------|--------------|
| NON PLASTIC        | 0-5                   | VERY LOW     |
| SLIGHTLY PLASTIC   | 6-15                  | SLIGHT       |
| MODERATELY PLASTIC | 16-25                 | MEDIUM       |
| HIGHLY PLASTIC     | 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. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES 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 WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

|                         |              |
|-------------------------|--------------|
| SLIGHTLY COMPRESSIBLE   | LL < 31      |
| MODERATELY COMPRESSIBLE | LL = 31 - 50 |
| HIGHLY COMPRESSIBLE     | LL > 50      |

PERCENTAGE OF MATERIAL

| ORGANIC MATERIAL        | GRANULAR SOILS | SILT - CLAY SOILS | OTHER MATERIAL |
|-------------------------|----------------|-------------------|----------------|
| TRACE OF ORGANIC MATTER | 2 - 3%         | 3 - 5%            | TRACE          |
| LITTLE ORGANIC MATTER   | 3 - 5%         | 5 - 12%           | LITTLE         |
| MODERATELY ORGANIC      | 5 - 10%        | 12 - 20%          | SOME           |
| HIGHLY ORGANIC          | > 10%          | > 20%             | HIGHLY         |

GROUND WATER

WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING

STATIC WATER LEVEL AFTER 24 HOURS

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

DIP & DIP DIRECTION OF ROCK STRUCTURES

TEST BORING

AUGER BORING

CORE BORING

MONITORING WELL

PIEZOMETER INSTALLATION

SLOPE INDICATOR INSTALLATION

CONE PENETROMETER TEST

SOUNDING ROD

TEST BORING WITH CORE

SPT N-VALUE

RECOMMENDATION SYMBOLS

UNDERCUT EXCAVATION

SHALLOW UNDERCUT

UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE

UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK

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  
γ<sub>d</sub> - 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

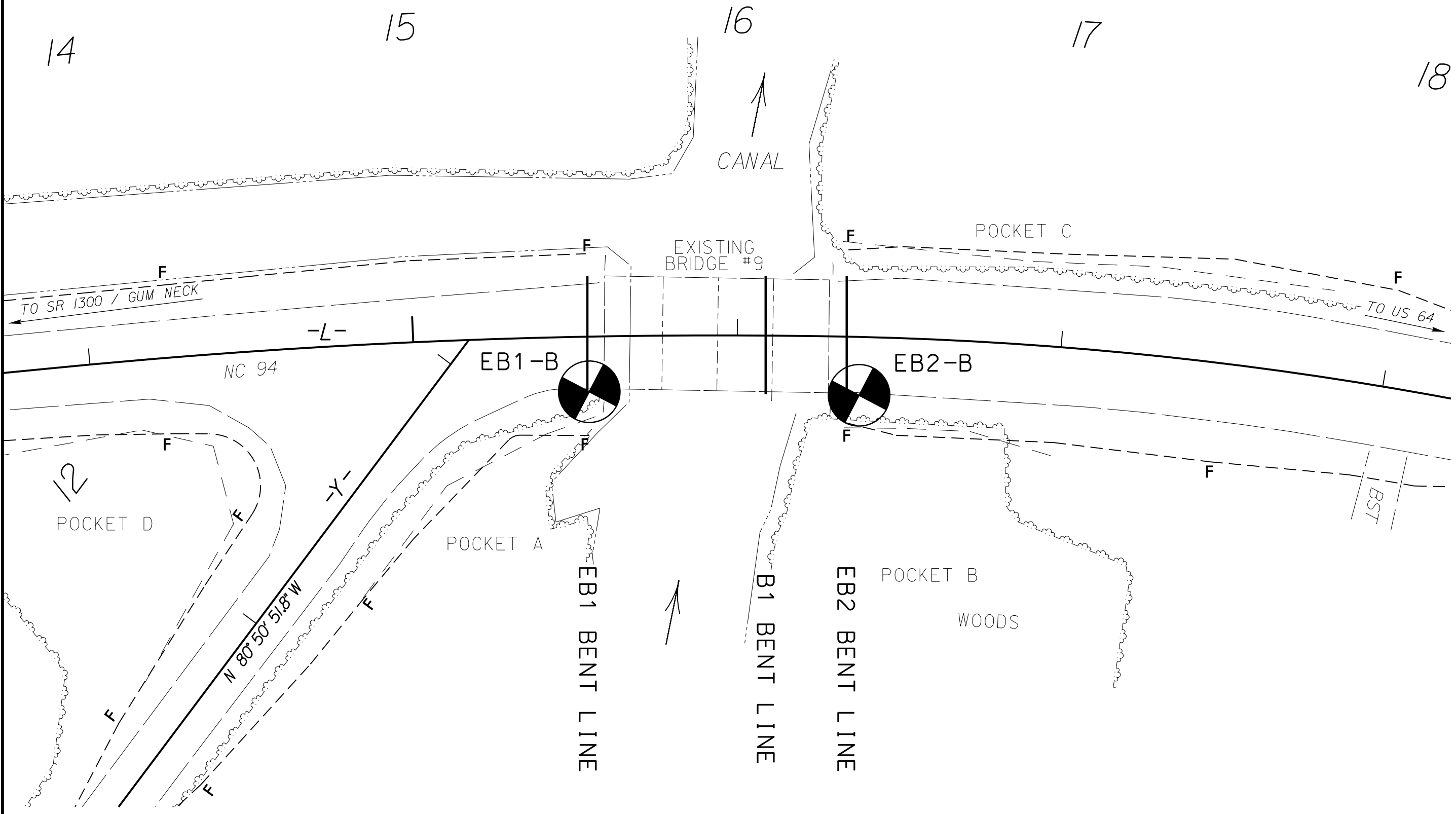
DRILL UNITS:

☐ CME-45C

☒ CME-55

☐ CME-550

SKEW = 90°



5/14/99

01-DEC-2014 11:16  
L:\PROJECTS\Greenville\_Inv\SF880009\_GEO\_BROG\Site&Sub\SF880009\_GEO\_BROG\_9\_GTM.dgn  
Author: AT 10/27/2010

# PROFILE THROUGH BORINGS PROJECTED ALONG -L-

|  |                     |
|--|---------------------|
| PROJECT REFERENCE NO.                              | SHEET NO.           |
| SF-880009  | 4 OF 6              |
| ROADWAY DESIGN ENGINEER                            | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS<br>DO NOT USE FOR R/W ACQUISITION |                     |
| PRELIMINARY PLANS<br>DO NOT USE FOR CONSTRUCTION   |                     |

VE = 2.0 40

30

20

10

0

-10

-20

-30

-40

-50

-60

-70

-80

-90

-100

-110

-120

-130

EB1-B  
15+54  
17' RT

EB2-B  
16+38  
18' RT

WATER SURFACE  
05/14

VERY LOOSE TO LOOSE GRAY

SOFT BLACK

VERY LOOSE TO LOOSE

LOOSE TO DENSE  
FRAGMENTS.

MEDIUM DENSE  
SHELL FRAGMENTS.

SAND WITH WOOD.

MUCK, WET

BROWN SAND.

GRAY SAND  
SATURATED

TO VERY DENSE  
SATURATED

SATURATED (ALLUVIAL)

(ALLUVIAL)

SATURATED (ALLUVIAL)

WITH SHELL  
(YORKTOWN FORMATION)

GRAY SAND WITH  
(YORKTOWN FORMATION)

(A) VERY LOOSE TO LOOSE TAN BROWN SAND,  
MOIST TO SATURATED (ROADWAY EMBANKMENT)

(B) VERY SOFT TO MEDIUM STIFF GRAY SILTY CLAY  
WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)

NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN  
FROM BRIDGE SURVEY AND HYDRAULIC  
DESIGN REPORT DATED 10/03/14.

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

14+00

15+00

16+00

17+00

18+00



NCDOT GEOTECHNICAL ENGINEERING UNIT  
BORELOG REPORT

|   |                 |            |                     |       |       |                         |    |    |                         |     |           |     |                           |            |
|---|-----------------|------------|---------------------|-------|-------|-------------------------|----|----|-------------------------|-----|-----------|-----|---------------------------|------------|
| WBS 17BP.1.R.59   |                 |            | TIP SF-880009       |       |       | COUNTY TYRRELL          |    |    | GEOLOGIST Oti, O. B.    |     |           |     |                           |            |
| SITE DESCRIPTION BRIDGE NO. 9 ON -L- (NC 94) OVER A CANAL |                 |            |                     |       |       |                         |    |    | GROUND WTR (ft)         |     |           |     |                           |            |
| BORING NO. EB1-B  |                 |            | STATION 15+54       |       |       | OFFSET 17 ft RT         |    |    | ALIGNMENT -L-           |     |           |     |                           |            |
| COLLAR ELEV. 3.2 ft                                       |                 |            | TOTAL DEPTH 78.7 ft |       |       | NORTHING 798,680        |    |    | EASTING 2,813,888       |     |           |     |                           |            |
| DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 92% 07/12/2011  |                 |            |                     |       |       | DRILL METHOD Mud Rotary |    |    | HAMMER TYPE Automatic   |     |           |     |                           |            |
| DRILLER Pinter, D. G.                                     |                 |            | START DATE 11/18/14 |       |       | COMP. DATE 11/18/14     |    |    | SURFACE WATER DEPTH N/A |     |           |     |                           |            |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT          |       |       | BLOWS PER FOOT          |    |    |                         |     | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION |            |
|   |                 |            | 0.5ft               | 0.5ft | 0.5ft | 0                       | 25 | 50 | 75                      | 100 |           |     | ELEV. (ft)                | DEPTH (ft) |
| 5   |                 |            |                     |       |       |                         |    |    |                         |     |           |     |                           |            |
| 0   | 1.0             | 2.2        | 2                   | 2     | 3     | 5                       |    |    |                         |     |           |     | 3.2                       | 0.0        |
| -5  | -4.0            | 7.2        | 1                   | 1     | 2     | 3                       |    |    |                         |     |           |     |                           |            |
| -10   | -9.0            | 12.2       | 3                   | 2     | 1     | 3                       |    |    |                         |     |           |     | -5.3                      | 8.5        |
| -15   | -14.0           | 17.2       | 1                   | 1     | 1     | 2                       |    |    |                         |     |           |     |                           |            |
| -20   | -19.0           | 22.2       | 3                   | 4     | 5     | 9                       |    |    |                         |     |           |     | -11.8                     | 15.0       |
| -25   | -24.0           | 27.2       | 2                   | 3     | 3     | 6                       |    |    |                         |     |           |     | -16.8                     | 20.0       |
| -30   | -29.0           | 32.2       | 4                   | 6     | 10    | 16                      |    |    |                         |     |           |     | -26.8                     | 30.0       |
| -35   | -34.0           | 37.2       | 11                  | 15    | 20    | 35                      |    |    |                         |     |           |     |                           |            |
| -40   | -39.0           | 42.2       | 9                   | 14    | 16    | 30                      |    |    |                         |     |           |     |                           |            |
| -45   | -44.0           | 47.2       | 1                   | 2     | 3     | 5                       |    |    |                         |     |           |     | -41.8                     | 45.0       |
| -50   | -49.0           | 52.2       | 10                  | 19    | 26    | 45                      |    |    |                         |     |           |     | -46.8                     | 50.0       |
| -55   | -54.0           | 57.2       | 14                  | 21    | 23    | 44                      |    |    |                         |     |           |     |                           |            |
| -60   | -59.0           | 62.2       | 11                  | 18    | 19    | 37                      |    |    |                         |     |           |     |                           |            |
| -65   | -64.0           | 67.2       | 8                   | 14    | 12    | 26                      |    |    |                         |     |           |     |                           |            |
| -70   | -69.0           | 72.2       | 3                   | 6     | 8     | 14                      |    |    |                         |     |           |     |                           |            |
| -75   | -74.0           | 77.2       | 6                   | 11    | 18    |                         |    |    |                         |     |           |     |                           |            |

|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|---|-----------------------|---------------|---------------------|-------|-------|-------------------------|----|----|-------------------------|-----|--------------|------------|-----|---------------------------|
| WBS 17BP.1.R.59   |                       |               | TIP SF-880009       |       |       | COUNTY TYRRELL          |    |    | GEOLOGIST Oti, O. B.    |     |              |            |     |                           |
| SITE DESCRIPTION BRIDGE NO. 9 ON -L- (NC 94) OVER A CANAL |                       |               |                     |       |       |                         |    |    | GROUND WTR (ft)         |     |              |            |     |                           |
| BORING NO. EB1-B  |                       |               | STATION 15+54       |       |       | OFFSET 17 ft RT         |    |    | ALIGNMENT -L-           |     |              | 0 HR. N/A  |     |                           |
| COLLAR ELEV. 3.2 ft                                       |                       |               | TOTAL DEPTH 78.7 ft |       |       | NORTHING 798,680        |    |    | EASTING 2,813,888       |     |              | 24 HR. 3.0 |     |                           |
| DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 92% 07/12/2011  |                       |               |                     |       |       | DRILL METHOD Mud Rotary |    |    | HAMMER TYPE Automatic   |     |              |            |     |                           |
| DRILLER Pinter, D. G.                                     |                       |               | START DATE 11/18/14 |       |       | COMP. DATE 11/18/14     |    |    | SURFACE WATER DEPTH N/A |     |              |            |     |                           |
| ELEV<br>(ft)  | DRIVE<br>ELEV<br>(ft) | DEPTH<br>(ft) | BLOW COUNT          |       |       | BLOWS PER FOOT          |    |    |                         |     | SAMP.<br>NO. | MOI        | LOG | SOIL AND ROCK DESCRIPTION |
|   |                       |               | 0.5ft               | 0.5ft | 0.5ft | 0                       | 25 | 50 | 75                      | 100 |              |            |     |                           |
| -75   |                       |               |                     |       |       | ● Match Line            |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
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|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
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|   |                       |               |                     |       |       |                         |    |    |                         |     |              |            |     |                           |
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NCDOT GEOTECHNICAL ENGINEERING UNIT  
BORELOG REPORT

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| SITE DESCRIPTION BRIDGE NO. 9 ON -L- (NC 94) OVER A CANAL |                 |            |                     |       |       |                         |    |    | GROUND WTR (ft)         |     |           |     |                           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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| COLLAR ELEV. 3.0 ft                                       |                 |            | TOTAL DEPTH 89.0 ft |       |       | NORTHING 798,755        |    |    | EASTING 2,813,850       |     |           |     |                           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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| DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 92% 07/12/2011  |                 |            |                     |       |       | DRILL METHOD Mud Rotary |    |    | HAMMER TYPE Automatic   |     |           |     |                           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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| DRILLER Pinter, D. G.                                     |                 |            | START DATE 11/19/14 |       |       | COMP. DATE 11/19/14     |    |    | SURFACE WATER DEPTH N/A |     |           |     |                           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT          |       |       | BLOWS PER FOOT          |    |    |                         |     | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 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|   |                 |            | 0.5ft               | 0.5ft | 0.5ft | 0                       | 25 | 50 | 75                      | 100 |           |     |                           | DEPTH (ft) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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|   |                 |            |                     |       |       |                         |    |    |                         |     |            |     |   |
|---|-----------------|------------|---------------------|-------|-------|-------------------------|----|----|-------------------------|-----|------------|-----|---|
| WBS 17BP.1.R.59   |                 |            | TIP SF-880009       |       |       | COUNTY TYRRELL          |    |    | GEOLOGIST Oti, O. B.    |     |            |     |   |
| SITE DESCRIPTION BRIDGE NO. 9 ON -L- (NC 94) OVER A CANAL |                 |            |                     |       |       |                         |    |    | GROUND WTR (ft)         |     |            |     |   |
| BORING NO. EB2-B  |                 |            | STATION 16+38       |       |       | OFFSET 18 ft RT         |    |    | ALIGNMENT -L-           |     | 0 HR. N/A  |     |   |
| COLLAR ELEV. 3.0 ft                                       |                 |            | TOTAL DEPTH 89.0 ft |       |       | NORTHING 798,755        |    |    | EASTING 2,813,850       |     | 24 HR. 3.5 |     |   |
| DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 92% 07/12/2011  |                 |            |                     |       |       | DRILL METHOD Mud Rotary |    |    | HAMMER TYPE Automatic   |     |            |     |   |
| DRILLER Pinter, D. G.                                     |                 |            | START DATE 11/19/14 |       |       | COMP. DATE 11/19/14     |    |    | SURFACE WATER DEPTH N/A |     |            |     |   |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT          |       |       | BLOWS PER FOOT          |    |    |                         |     | SAMP. NO.  | LOG | SOIL AND ROCK DESCRIPTION   |
|   |                 |            | 0.5ft               | 0.5ft | 0.5ft | 0                       | 25 | 50 | 75                      | 100 |            |     |   |
| -75   |                 |            | 4                   | 11    | 12    | Match Line              |    |    |                         |     |            |     |   |
| -80   | -79.5           | 82.5       | 18                  | 29    | 31    |                         |    |    |                         |     |            |     | <b>COASTAL PLAIN</b><br>GRAY SAND WITH SHELL FRAGMENTS, SAT.<br>(YORKTOWN FORMATION) <i>(continued)</i> |
| -85   | -84.5           | 87.5       | 17                  | 24    | 28    |                         |    |    |                         |     |            |     |   |
|   |                 |            |                     |       |       |                         |    |    |                         |     |            |     |   |
|   |                 |            |                     |       |       |                         |    |    |                         |     |            |     |   |
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