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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5516	1	17

REFERENCE: R-5516

PROJECT: 45492

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY *CRAVEN*

PROJECT DESCRIPTION *INTERCHANGE FROM US 70 TO SLOCUM RD AT CHERRY POINT MILITARY BASE*

SITE DESCRIPTION *BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)*

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17	SOIL TEST RESULTS

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.

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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

S. CROCKETT

G. LANG

M. COOGAN

M. WITMORE

INVESTIGATED BY *M. WITMORE*

DRAWN BY *S. CROCKETT*

CHECKED BY *G. LANG*

SUBMITTED BY *AECOM*

DATE *SEPTEMBER, 2015*

NORTH CAROLINA PROFESSIONAL SEAL 031421 ENGINEER GABRIEL W. LANG

DocuSigned by:
Gabriel Lang
1E651F26B73E4AF...
SIGNATURE

1/11/2016
DATE

PROJECT REFERENCE NO.	SHEET NO.
R-5516	2

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 (≤ 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	50 MX													
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	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
MATERIAL PASSING #40														
LL	—		—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX		NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
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 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 LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

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

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
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	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 WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT EXCAVATION
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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_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:
- [X] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] D-25
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [X] TRICONE 4 1/2" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N Q _____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. 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, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD 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 FOOT
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 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, SUCH 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: BM8, RR SPIKE IN LIGHT POLE I29M02
N: 430927 E: 2616910
ELEVATION: 28.88 FEET

NOTES:

WOH = WEIGHT OF HAMMER
WOR = WEIGHT OF RODS
FIAD = FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET
45492 (R-5516)	3

SITE PLAN

0 60 120

FEET

NAD 83 NC GRID NA 2011

KENNETH J. SHIPP, ET UX
DB 1714 PG 977
MB 003 PG 72
TRACT TWO

CLARA F. GARNDER
DB 807 PG 581
MB 003 PG 72

TERRY M. YOUNG, ET UX
DB 1808 PG 255
MB 003 PG 72

CHERRY BRANCH, LTD
DB 1597 PG 802
PC "G" SLIDE 93-B

NORFOLK SOUTHERN RAILWAY

EXISTING RAILROAD R/W

30' DUKE-PROGRESS POWER EASEMENT

EXISTING R/W

SR 1773 (US 70 SERVICE RD) 24' BST

US 70 31' BST

US 70 43' BST

SLOCUM RD 45' BST

UNSPECIFIED RIGHT OF

EBI-B

EBI-A

BI-B

BI-A

YEB01

YWB01

B2-B

B2-A

EB2-B

EB2-A

LRB

27+00

28+00

29+00

30+00

31+00

32+00

33+00

34+00

35+00

UNKNOWN LOCATION OF PIPE END

60' OF 14" CASING IN THIS AREA AS PER CRAVEN COUNTY WATER

HORIZONTAL SCALE	PROJECT REFERENCE NO.	SHEET
0 50 100 FEET VE = 2.5:1	R-5516	4
	PROFILE ALONG CENTERLINE -YEB01-	

PROFILE THROUGH SELECTED BORINGS PROJECTED ALONG -YEB01- BRIDGE NO. 270

EB1-A
29+06
20' LT

B1-A
30+77
7' LT

B2-A
32+28
5' LT

EB2-A
33+63
17' LT

07/15

(A) ROADWAY EMBANKMENT, BROWN, V. LOOSE TO MED. DENSE, DRY TO WET, CLAYEY SAND (A-2-6)

(B) COASTAL PLAIN, TAN, STIFF, MOIST, SANDY SILT (A-4) (DUPLIN FORMATION)

(C) COASTAL PLAIN, BROWN AND GRAY, MED. STIFF TO V. STIFF, DRY TO WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

(D) COASTAL PLAIN, GRAY, SOFT, WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

(E) COASTAL PLAIN, GRAY, GREEN, AND WHITE, MED. DENSE TO V. DENSE, WET SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (CASTLE HAYNE FORMATION)

COASTAL PLAIN, GRAY, BROWN, AND ORANGE, V. LOOSE TO DENSE, WET, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (DUPLIN FORMATION)

COASTAL PLAIN, GRAY AND GREEN, MED. DENSE TO V. DENSE, WET SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (CASTLE HAYNE FORMATION)

COASTAL PLAIN LIMESTONE SEDIMENTARY ROCK, GRAY, SANDY (CASTLE HAYNE FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

BT

NOTE: INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE OFFSET WITH THE BORINGS PROJECTED ONTO THE PROFILE.

GROUNDLINE PROFILE AT CL OF -YEB01- TAKEN FROM ROADWAY DESIGN PLANS AS OF 11-26-14.

28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110

PROJECT REFERENCE NO.	SHEET
R-5516	5
END BENT 1 CROSS SECTION	

0 10 20
FEET
VE = 1:1

BRIDGE NO. 270
SKEW: 90°

-YEBOI-
29+01

EXISTING GROUND SURFACE

EBI-A
29+06
20' LT

EBI-B
29+05
16' RT

COASTAL PLAIN, SANDY SILT

TAN, STIFF, MOIST TO WET, (A-4) (DUPLIN FORMATION)

07/15

COASTAL PLAIN, GRAY AND ORANGE, V. LOOSE TO V. DENSE, MOIST TO WET, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION)

100/0.7

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE

100/0.5

(CASTLE HAYNE FORMATION)

COASTAL PLAIN, GRAY, MED. DENSE TO V. DENSE, WET, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (CASTLE HAYNE FORMATION)

100/0.5

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

100/0.6

BT

BT

COASTAL PLAIN, GRAY, MED. DENSE TO V. DENSE, WET, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (CASTLE HAYNE FORMATION)

(A) COASTAL PLAIN, GRAY, SOFT, WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE R5516_ls_tin.tin DATED 11/2014. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

PROJECT REFERENCE NO.	SHEET
R-5516	6
BENT 1 CROSS SECTION	

0 10 20
FEET
VE = 1:1

BRIDGE NO. 270
SKEW: 90°

-YEBOI-
30+41

BI-A
30+77
7' LT

BI-B
30+79
19' RT

EXISTING GROUND SURFACE

ROADWAY EMBANKMENT, BROWN, V. LOOSE TO MED. DENSE, DRY TO WET, CLAYEY SAND (A-2-6)

07/15

07/15

11, 2, 19, 6, 12, 7, 7, 15, 9, 23, 8, 8, 22, 11, 13, 11, 18

4, 3, 19, 11, 4, 8, 6, 14, 19, 14, 7, 7, 9, 48, 13, 16, 12, 12, 54, 77

COASTAL PLAIN, GRAY AND TAN, LOOSE TO DENSE, WET, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

100/0.8

100/0.8

COASTAL PLAIN, GRAY AND WHITE, MED. DENSE TO V. DENSE, WET, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

100/0.8

100/0.9

BT

BT

COASTAL PLAIN, GRAY AND WHITE, MED. DENSE TO V. DENSE, WET, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)

(A) ROADWAY EMBANKMENT, BROWN AND GRAY, SOFT, DRY TO WET, SILTY SANDY CLAY (A-6)

NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE R5516 ls_tin.tin DATED 11/2014. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90

40 20 0 20 40

PROJECT REFERENCE NO.	SHEET
R-5516	7
BENT 2 CROSS SECTION	

0 10 20
FEET
VE = 1:1

BRIDGE NO. 270
SKEW: 90°

-YEBOI-
32+26

B2-A
32+28
5' LT

B2-B
32+35
17' RT

EXISTING GROUND SURFACE

ROADWAY EMBANKMENT, BROWN, STIFF, DRY, SANDY SILT (A-4)

COASTAL PLAIN, BROWN AND GRAY, SOFT TO V. STIFF, MOIST TO WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

COASTAL PLAIN, GRAY, TAN, AND GREEN, V. LOOSE TO V. DENSE, WET, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION)

COASTAL PLAIN, WHITE, MED. DENSE, WET, SILTY SAND (A-2-4) WITH LIMESTONE FRAGMENTS (CASTLE HAYNE FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

COASTAL PLAIN, GREEN, MED. DENSE, WET, SILTY SAND (A-2-4) WITH LIMESTONE FRAGMENTS (CASTLE HAYNE FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK, GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)

COASTAL PLAIN, GREEN AND GRAY, MED. DENSE TO DENSE, WET, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)

NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE R5516_ls_tin.tin DATED 11/2014. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

PROJECT REFERENCE NO.	SHEET
R-5516	8
END BENT 2 CROSS SECTION	

0 10 20
FEET
VE = 1:1

BRIDGE NO. 270
SKEW: 90°

EXISTING GROUND SURFACE

-YEB01-
33+66

EB2-A
33+63
17' LT

EB2-B

07/15

07/15

COASTAL PLAIN, BROWN, SOFT TO MED. STIFF,
DRY TO WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

COASTAL PLAIN, BROWN AND GRAY,
V. LOOSE TO DENSE, WET,
SILTY AND CLAYEY SAND (A-2-4, A-2-6)
WITH SHELL AND LIMESTONE FRAGMENTS
(DUPLIN FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK,
GRAY, SANDY LIMESTONE
(CASTLE HAYNE FORMATION)

COASTAL PLAIN, GRAY,
MED. DENSE TO V. DENSE, WET,
SILTY SAND (A-2-4) WITH SHELL FRAGMENTS
(CASTLE HAYNE FORMATION)

COASTAL PLAIN SEDIMENTARY ROCK,
GRAY, SANDY LIMESTONE
(CASTLE HAYNE FORMATION)

BT

BT

Ⓐ ARTIFICIAL FILL, BROWN, STIFF,
MOIST, SANDY CLAY (A-6)

Ⓑ COASTAL PLAIN, GRAY, STIFF, WET,
SANDY CLAY (A-6) WITH SHELL FRAGMENTS
(DUPLIN FORMATION)

Ⓒ COASTAL PLAIN, BROWN, SOFT TO MED. STIFF,
DRY TO WET, SANDY CLAY (A-6) (DUPLIN FORMATION)

NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE R5516_ls_tin.tin DATED 11/2014. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 29+06	**OFFSET** 20 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 3.8
COLLAR ELEV. 23.7 ft	**TOTAL DEPTH** 99.9 ft	**NORTHING** 431,562	**EASTING** 2,616,529	**24 HR.** 3.9
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/09/15	**COMP. DATE** 07/09/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
25										
										23.7 GROUND SURFACE 0.0
	22.7	1.0						M		**COASTAL PLAIN** TAN, STIFF, SANDY SILT (A-4) (DUPLIN FORMATION)
20	20.3	3.4	3	4	5	9		M		20.7 3.0
	17.8	5.9	8	7	6	13		W		**COASTAL PLAIN** GRAY & ORANGE, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) (DUPLIN FORMATION)
15	15.3	8.4	4	4	3	7		W		15.7 8.0
			1	1	1	2		W		**COASTAL PLAIN** GRAY, SOFT, SANDY CLAY (A-6) (DUPLIN FORMATION)
10	10.3	13.4								11.7 12.0
			3	6	9	15		W		**COASTAL PLAIN** GRAY, V. LOOSE TO MED. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (DUPLIN FORMATION)
5	5.3	18.4	4	4	4	8		W		
0	0.3	23.4	2	2	1	3		W		
-5	-4.7	28.4	9	13	12	25		W		
-10	-9.7	33.4	6	6	7	13		W		
-15	-14.7	38.4	3	2	3	5		W		
-20	-19.7	43.4	2	3	4	7		W		
-25	-24.7	48.4	2	3	4	7		W		
-30	-29.7	53.4	9	11	11	22		W		
-35	-34.7	58.4	2	2	3	5		W		
-40	-39.7	63.4	4	7	7	14		W		
-45	-44.7	68.4	8	11	7	18		W		
-50	-49.7	73.4	19	81/0.2		100/0.7				-46.3 70.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55	-54.7	78.4								-53.1 76.8

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 29+06	**OFFSET** 20 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 3.8
COLLAR ELEV. 23.7 ft	**TOTAL DEPTH** 99.9 ft	**NORTHING** 431,562	**EASTING** 2,616,529	**24 HR.** 3.9
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/09/15	**COMP. DATE** 07/09/15	**SURFACE WATER DEPTH** 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
-55						Match Line				
			8	10	16	26		W		**COASTAL PLAIN** GRAY, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE & SHELL FRAGMENTS (CASTLE HAYNE FORMATION) *(continued)*
-60	-59.7	83.4	55	55	34	89		W		-62.3 86.0
-65	-64.7	88.4	100/0.5			100/0.5				**COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-70	-69.7	93.4	24	27	25	52		W		-67.3 91.0
-75	-74.7	98.4	14	13	9	22		W		**COASTAL PLAIN** GRAY, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
										-76.2 99.9
										Boring Terminated at Elevation -76.2 ft IN CP: SILTY SAND

NCDOT BORE DOUBLE R5516_GEO_BRDG.GPJ NC_DOT.GDT 9/17/15

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 29+05	**OFFSET** 16 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 3.4
COLLAR ELEV. 24.0 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,535	**EASTING** 2,616,505	**24 HR.** 3.3
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/09/15	**COMP. DATE** 07/09/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
25										
										24.0 / 0.0 GROUND SURFACE
	23.0	1.0	4	4	5	9 13		M		**COASTAL PLAIN** TAN, STIFF, SANDY SILT (A-4) (DUPLIN FORMATION)
20	20.5	3.5	5	7	6			W		21.0 / 3.0
	18.0	6.0	1	5	7	12		W		**COASTAL PLAIN** GRAY & ORANGE, V. LOOSE TO V. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (DUPLIN FORMATION)
15	15.5	8.5	2	2	4	6		W		
	10.5	13.5	1	6	8	14		W		
10										
	5.5	18.5	3	6	7	13		W		
5										
	0.5	23.5	4	1	1	2		W		
0										
	-4.5	28.5	7	7	6	13		W		
-5										
	-9.5	33.5	7	6	7	13		W		
-10										
	-14.5	38.5	2	3	2	5		W		
-15										
	-19.5	43.5	2	3	3	6		W		
-20										
	-24.5	48.5	3	3	4	7		W		
-25										
	-29.5	53.5	9	9	22	31		W		
-30										
	-34.5	58.5	6	4	3	7		W		
-35										
	-39.5	63.5	15	58	20	78		W		
-40										
	-44.5	68.5	16	16	8	24		W		
-45										
	-49.5	73.5	8	100/0.5		100/0.5				-50.0 / 74.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION) -53.0 / 77.0
-50										
	-54.5	78.5								
-55										

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 29+05	**OFFSET** 16 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 3.4
COLLAR ELEV. 24.0 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,535	**EASTING** 2,616,505	**24 HR.** 3.3
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/09/15	**COMP. DATE** 07/09/15	**SURFACE WATER DEPTH** 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
-55						Match Line				
			11	26	37	63		W		**COASTAL PLAIN** GRAY, V. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE FRAGMENTS (CASTLE HAYNE FORMATION) *(continued)*
-60	-59.5	83.5	100/0.5			100/0.5				-59.0 / 83.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-65	-64.5	88.5	50	90	10/0.1	100/0.6				
-70	-69.5	93.5	51	40	53	93		W		-68.0 / 92.0 **COASTAL PLAIN** GRAY, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
-75	-74.5	98.5	14	14	14	28		W		-76.0 / 100.0 Boring Terminated at Elevation -76.0 ft IN CP: SILTY SAND

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 30+77	**OFFSET** 7 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 5.5
COLLAR ELEV. 25.1 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,456	**EASTING** 2,616,660	**24 HR.** 4.5
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/07/15	**COMP. DATE** 07/07/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
30											
25										25.1 GROUND SURFACE	0.0
	24.1	1.0	3	3	8	11		D		**ROADWAY EMBANKMENT** BROWN, V. LOOSE TO MED. DENSE, CLAYEY SAND (A-2-6)	
20	21.6	3.5	WOH	1	1	2					
	19.1	6.0	9	9	10	19		W		19.6 **COASTAL PLAIN**	5.5
15	16.6	8.5	2	3	3	6		W		GRAY, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (DUPLIN FORMATION)	
	11.6	13.5	4	5	7	12		W			
10											
	6.6	18.5	4	4	3	7		W			
5											
	1.6	23.5	5	4	3	7		W			
0											
	-3.4	28.5	8	8	7	15		W			
-5											
	-8.4	33.5	5	4	5	9		W			
-10											
	-13.4	38.5	10	11	12	23		W			
-15											
	-18.4	43.5	3	4	4	8		W			
-20											
	-23.4	48.5	3	4	4	8		W			
-25											
	-28.4	53.5	10	13	9	22		W			
-30											
	-33.4	58.5	4	6	5	11		W			
-35											
	-38.4	63.5	12	6	7	13		W			
-40											
	-43.4	68.5	4	6	5	11		W			
-45											
	-48.4	73.5	21	12	6	18		W			
-50											

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 30+77	**OFFSET** 7 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 5.5
COLLAR ELEV. 25.1 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,456	**EASTING** 2,616,660	**24 HR.** 4.5
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/07/15	**COMP. DATE** 07/07/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-53.4	78.5	22	78/0.3		100/0.8				-51.9 77.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55										
	-58.4	83.5	7	10	7	17		W		-56.9 82.0 **COASTAL PLAIN** GRAY & WHITE, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
-60										
	-63.4	88.5	9	29	27	56		W		
-65										
	-68.4	93.5	66	34/0.3		100/0.8				-66.9 92.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-70										
	-73.4	98.5	6	8	16	24		W		-71.9 97.0 **COASTAL PLAIN** GRAY, MED. DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS -74.9 100.0 (CASTLE HAYNE FORMATION) Boring Terminated at Elevation -74.9 ft IN CP: SILTY SAND

NCDOT GEOTECHNICAL ENGINEERING UNIT
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WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 30+79	**OFFSET** 19 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 5.0
COLLAR ELEV. 26.5 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,432	**EASTING** 2,616,649	**24 HR.** 5.0
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/06/15	**COMP. DATE** 07/06/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
30										
	26.5	0.0								GROUND SURFACE
25	25.5	1.0	2	2	2	4		D		**ROADWAY EMBANKMENT** BROWN & GRAY, SOFT, SILTY SANDY CLAY (A-6)
	23.0	3.5	2	1	2	3				
20	20.5	6.0	7	7	12	19		M		
	18.0	8.5	4	4	7	11		M		
15	13.0	13.5	2	2	2	4		M		
10	8.0	18.5	4	4	4	8		M		
5	3.0	23.5	2	2	4	6		M		
0	-2.0	28.5	7	6	8	14		W		
-5	-7.0	33.5	10	10	9	19		W		
-10	-12.0	38.5	6	6	8	14		W		
-15	-17.0	43.5	2	3	4	7		M		
-20	-22.0	48.5	3	3	4	7		M		
-25	-27.0	53.5	3	4	5	9		M		
-30	-32.0	58.5	8	9	39	48		M		
-35	-37.0	63.5	3	5	8	13		M		
-40	-42.0	68.5	3	4	12	16		M		
-45	-47.0	73.5	5	5	7	12		W		
-50										
	21.0	5.5								**COASTAL PLAIN** GRAY & TAN, LOOSE TO DENSE, SILTY SAND (A-2-4) WITH LIMESTONE AND SHELL FRAGMENTS (DUPLIN FORMATION)

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 30+79	**OFFSET** 19 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 5.0
COLLAR ELEV. 26.5 ft	**TOTAL DEPTH** 100.0 ft	**NORTHING** 431,432	**EASTING** 2,616,649	**24 HR.** 5.0
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/06/15	**COMP. DATE** 07/06/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-52.0	78.5	11	33	67/0.3	100/0.8		W		-51.5 78.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55	-57.0	83.5	11	8	4	12		W		-55.5 82.0 **COASTAL PLAIN** GRAY, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
-60	-62.0	88.5	15	14	40	54		W		
-65	-67.0	93.5	32	68/0.4		100/0.9		W		-65.5 92.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-70	-72.0	98.5	33	40	37	77		W		-70.5 97.0 **COASTAL PLAIN** GRAY & WHITE, V. DENSE SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
										-73.5 100.0 Boring Terminated at Elevation -73.5 ft IN CP: SILTY SAND

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WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 32+28	**OFFSET** 5 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 6.0
COLLAR ELEV. 27.9 ft	**TOTAL DEPTH** 114.8 ft	**NORTHING** 431,394	**EASTING** 2,616,797	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MID5152 D-25 86% 05/19/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER B. FOWLER	**START DATE** 03/17/15	**COMP. DATE** 03/17/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
30										
	26.9	1.0	3	4	3	7		M		27.9 / 0.0 **GROUND SURFACE**
25	24.6	3.3	1	2	2	4	SS-457	25%		**COASTAL PLAIN** BROWN AND GRAY, MED. STIFF TO V. STIFF, SANDY CLAY (A-6) (DUPLIN FORMATION)
	22.2	5.7	WOH	2	4	6		W		
20	19.6	8.3	6	12	13	25				
15	14.6	13.3	2	1	4	5		W		15.9 / 12.0 **COASTAL PLAIN** GRAY AND GREEN, LOOSE TO DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGS. (DUPLIN FORMATION)
10	9.6	18.3	4	7	10	17	SS-461	19%		
5	4.6	23.3	6	6	5	11		W		
0	-0.4	28.3	3	4	7	11		W		
-5	-5.4	33.3	9	9	10	19		W		
-10	-10.4	38.3	10	12	15	27		W		
-15	-15.4	43.3	16	24	18	42		W		
-20	-20.4	48.3	4	4	6	10		M		
-25	-25.4	53.3	3	4	6	10	SS-468	33%		
-30	-30.4	58.3	4	3	4	7		M		
-35	-35.4	63.3	4	4	6	10		W		
-40	-40.4	68.3	3	4	8	12		W		
-45	-45.4	73.3	4	6	10	16		W		
-50										

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-50.4	78.3	16	73	27/0.3	100/0.8				-50.9 / 78.8 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55	-55.4	83.3	8	6	9	15		W		-53.6 / 81.5 **COASTAL PLAIN** WHITE, MED. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE FRAGS. (CASTLE HAYNE FORMATION)
-60	-60.4	88.3	14	71	29/0.0	100/0.5				-60.9 / 88.8 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-65	-65.4	93.3	6	10	16	26		W		-63.6 / 91.5 **COASTAL PLAIN** GREEN, MED. DENSE, SILTY SAND (A-2-4) WITH LIMESTONE FRAGS. (CASTLE HAYNE FORMATION)
-70	-70.4	98.3	95	5/0.0		100/0.5				-68.6 / 96.5 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-75	-75.4	103.3	9	10	23	33		W		-73.6 / 101.5 **COASTAL PLAIN** GREEN AND GRAY, MED. DENSE TO DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGS. (CASTLE HAYNE FORMATION)
-80	-80.4	108.3	6	12	12	24		W		
-85	-85.4	113.3	7	5	7	12		W		-86.9 / 114.8 Boring Terminated at Elevation -86.9 ft IN CP: SILTY SAND

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 32+28	**OFFSET** 5 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 6.0
COLLAR ELEV. 27.9 ft	**TOTAL DEPTH** 114.8 ft	**NORTHING** 431,394	**EASTING** 2,616,797	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MID5152 D-25 86% 05/19/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER B. FOWLER	**START DATE** 03/17/15	**COMP. DATE** 03/17/15	**SURFACE WATER DEPTH** N/A	

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WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 32+35	**OFFSET** 17 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 8.2
COLLAR ELEV. 29.0 ft	**TOTAL DEPTH** 89.8 ft	**NORTHING** 431,370	**EASTING** 2,616,796	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/10/15	**COMP. DATE** 07/10/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
30										29.0 / 0.0 GROUND SURFACE
	28.0	1.0	5	4	5	9		D		**ROADWAY EMBANKMENT** BROWN, STIFF, SANDY SILT (A-4)
25	25.4	3.6	1	1	1	2		W		26.0 / 3.0 **COASTAL PLAIN** BROWN & GRAY, SOFT, SANDY CLAY (A-6) (DUPLIN FORMATION)
	22.9	6.1	WOH	2	2	4		W		
20	20.4	8.6	2	1	2	3		W		21.0 / 8.0 **COASTAL PLAIN** GRAY & TAN, V. LOOSE TO V. DENSE, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION)
15	15.4	13.6	2	1	2	3		W		
10	10.4	18.6	2	2	2	4		W		
5	5.4	23.6	1	2	2	4		W		
0	0.4	28.6	1	WOH	WOH	0		W		
-5	-4.6	33.6	WOR	WOR	WOR	0		W		
-10	-9.6	38.6	13	15	21	36		W		
-15	-14.6	43.6	18	14	10	24		W		
-20	-19.6	48.6	4	6	10	16		W		
-25	-24.6	53.6	3	4	4	8		W		
-30	-29.6	58.6	4	2	3	5		W		
-35	-34.6	63.6	3	2	3	5		W		
-40	-39.6	68.6	3	2	4	6		W		
-45	-44.6	73.6	2	4	5	9		W		
-50	-49.6	78.6								

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 32+35	**OFFSET** 17 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 8.2
COLLAR ELEV. 29.0 ft	**TOTAL DEPTH** 89.8 ft	**NORTHING** 431,370	**EASTING** 2,616,796	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/10/15	**COMP. DATE** 07/10/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50			60	14	26	Match Line 40		W		**COASTAL PLAIN** GRAY & TAN, V. LOOSE TO V. DENSE, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION) *(continued)*
-55	-54.6	83.6	49	14	68	82		W		-56.1 / 85.1 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-60	-59.6	88.6	13	26	74/0.2	100/0.7				-60.8 / 89.8 Boring Terminated at Elevation -60.8 ft IN CP: SANDY LIMESTONE

NCDOT BORE DOUBLE R5516_GEO_BRDG.GPJ NC_DOT.GDT 9/17/15

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WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 33+63	**OFFSET** 17 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 8.2
COLLAR ELEV. 27.8 ft	**TOTAL DEPTH** 98.9 ft	**NORTHING** 431,374	**EASTING** 2,616,929	**24 HR.** 6.6
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/08/15	**COMP. DATE** 07/08/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
30										
	26.8	1.0	2	3	2	5		D		27.8 GROUND SURFACE 0.0 **COASTAL PLAIN** BROWN, SOFT TO MED. STIFF, SANDY CLAY (A-6) (DUPLIN FORMATION)
25	24.5	3.3	3	2	2	4		W		
	22.0	5.8	3	4	5	9				22.8 5.0 **COASTAL PLAIN** BROWN & GRAY, V. LOOSE TO DENSE, SILTY SAND (A-2-4) WITH SHELL AND LIMESTONE FRAGMENTS (DUPLIN FORMATION)
20	19.5	8.3	2	6	7	13		W		
	14.5	13.3	2	5	7	12		W		
15	9.5	18.3	4	4	6	10		W		
10	4.5	23.3	1	1	2	3		W		
5	-0.5	28.3	8	6	6	12		W		
0	-5.5	33.3	8	7	6	13		W		
-5	-10.5	38.3	14	13	12	25		W		
-10	-15.5	43.3	7	7	8	15		W		
-15	-20.5	48.3	3	3	4	7		W		
-20	-25.5	53.3	3	4	4	8		W		
-25	-30.5	58.3	15	16	10	26		W		
-30	-35.5	63.3	3	3	7	10		W		
-35	-40.5	68.3	3	3	3	6		W		
-40	-45.5	73.3	3	2	6	8		W		
-45										
-50										

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 33+63	**OFFSET** 17 ft LT	**ALIGNMENT** -YEB01-	**0 HR.** 8.2
COLLAR ELEV. 27.8 ft	**TOTAL DEPTH** 98.9 ft	**NORTHING** 431,374	**EASTING** 2,616,929	**24 HR.** 6.6
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/08/15	**COMP. DATE** 07/08/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50	-50.5	78.3	5	29	7	Match Line 36		W		-54.2 82.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55	-56.1	83.9	60/0.1			60/0.1				
-60	-60.5	88.3	60/0.0			60/0.0				-63.2 91.0 **COASTAL PLAIN** GRAY, V. DENSE, SILTY SAND (A-2-4) (CASTLE HAYNE FORMATION)
-65	-65.5	93.3	28	28	38	66		W		-68.2 96.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-70	-70.5	98.3	74	26/0.1		100/0.6				-71.1 98.9 Boring Terminated at Elevation -71.1 ft IN CP: SANDY LIMESTONE
-75										
-80										
-85										
-90										
-95										
-100										

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WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 33+56	**OFFSET** 45 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 5.0
COLLAR ELEV. 25.6 ft	**TOTAL DEPTH** 99.4 ft	**NORTHING** 431,314	**EASTING** 2,616,911	**24 HR.** 5.4
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/07/15	**COMP. DATE** 07/08/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
30										
25	24.6	1.0	6	6	5	11 12		M		25.6 / 0.0 GROUND SURFACE **ARTIFICIAL FILL** BROWN, STIFF, SANDY CLAY (A-6)
	22.1	3.5	3	5	7					22.6 / 3.0 **COASTAL PLAIN** BROWN, MED. DENSE, CLAYEY SAND (A-2-6) (DUPLIN FORMATION)
20	19.6	6.0	5	10	9	19		W		
	17.1	8.5	4	2	5	7 12		W		17.6 / 8.0 **COASTAL PLAIN** BROWN, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (DUPLIN FORMATION)
15	12.1	13.5	4	6	6	12		W		
10	7.1	18.5	2	1	3	4		W		
5	2.1	23.5	2	2	2	4		W		
0	-2.9	28.5	6	6	8	14		W		
-5	-7.9	33.5	7	8	7	15		W		
-10	-12.9	38.5	8	8	7	15		W		
-15	-17.9	43.5	4	6	4	10		W		-16.4 / 42.0 **COASTAL PLAIN** GRAY, STIFF, SANDY CLAY (A-6) WITH SHELL FRAGMENTS (DUPLIN FORMATION)
-20	-22.9	48.5	3	4	4	8		W		-21.4 / 47.0 **COASTAL PLAIN** GRAY, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) (DUPLIN FORMATION)
-25	-27.9	53.5	4	5	5	10		W		
-30	-32.9	58.5	3	5	9	14		W		
-35	-37.9	63.5	3	6	5	11		W		
-40	-42.9	68.5	2	3	4	7		W		
-45	-47.9	73.5	3	3	4	7		W		
-50										

WBS 45492.1.1	**TIP** R-5516	**COUNTY** CRAVEN	**GEOLOGIST** M. WITMORE	
SITE DESCRIPTION BRIDGE NO. 270 ON -YEB01- OVER -L- (US 70)				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 33+56	**OFFSET** 45 ft RT	**ALIGNMENT** -YEB01-	**0 HR.** 5.0
COLLAR ELEV. 25.6 ft	**TOTAL DEPTH** 99.4 ft	**NORTHING** 431,314	**EASTING** 2,616,911	**24 HR.** 5.4
DRILL RIG/HAMMER EFF./DATE MID3964 CME-45C 83% 08/07/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER M. COOGAN	**START DATE** 07/07/15	**COMP. DATE** 07/08/15	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-52.9	78.5	100/0.4			100/0.4				-50.4 / 76.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-55	-57.9	83.5	16	16	23	39		W		-56.4 / 82.0 **COASTAL PLAIN** GRAY, MED. DENSE TO DENSE, SILTY SAND (A-2-4) WITH SHELL FRAGMENTS (CASTLE HAYNE FORMATION)
-60	-62.9	88.5	4	6	10	16		W		
-65	-67.9	93.5	65	35/0.3		100/0.8				-66.4 / 92.0 **COASTAL PLAIN SEDIMENTARY ROCK** GRAY, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
-70	-72.9	98.5	70	30/0.4		100/0.9				-73.8 / 99.4 Boring Terminated at Elevation -73.8 ft IN CP: SANDY LIMESTONE

NCDOT BORE DOUBLE R5516_GEO_BRDG.GPJ NC_DOT.GDT 9/17/15

PROJECT REFERENCE NO.	SHEET
R-5516	17

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	ALIGNMENT	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-457	5' LT	32+28	-YEBO1-	3.3-4.8	A-6	39	23	9.7	40.5	10.9	38.9	96.2	96.9	51.2	24.9	-
SS-461	5' LT	32+28	-YEBO1-	18.3-19.8	A-2-4	-	-	62.8	32.8	1.4	3.0	99.7	79.6	5.2	19.3	-
SS-468	5' LT	32+28	-YEBO1-	53.3-54.8	A-2-4	30	7	21.2	63.3	6.0	9.5	99.0	90.8	21.0	32.8	-

TESTED BY: Michael P. Sm

NCDOT NO.: 129-03-0411

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5516	1	6

REFERENCE: R-5516

PROJECT: 45492

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY *CRAVEN*

PROJECT DESCRIPTION *INTERCHANGE FROM US 70 TO SLOCUM RD AT CHERRY POINT MILITARY BASE*

SITE DESCRIPTION *MSE RETAINING WALLS 1 AND 2*

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE ALONG -WI-
5	PROFILE ALONG -W2-
6	LABORATORY TESTING RESULTS

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.

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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

S. CROCKETT

G. LANG

J. BARE

M. WITMORE

Z. AGHAZADEH

INVESTIGATED BY *M. WITMORE*

DRAWN BY *S. CROCKETT*

CHECKED BY *Z. AGHAZADEH*

SUBMITTED BY *AECOM*

DATE *JUNE, 2016*

NORTH CAROLINA PROFESSIONAL SEAL 031421 ENGINEER GABRIEL W. LANG

DocuSigned by:
Gabriel W. Lang
1E651F26B73E4AF...
SIGNATURE

8/17/2016
DATE

PROJECT REFERENCE NO.	SHEET NO.
R-5516	2

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 (≤ 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
MATERIAL PASSING #40 LL PI	— 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 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 LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

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

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
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	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 WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT EXCAVATION
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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_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:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] D-50
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [X] TRICONE 4 1/2" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. 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, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD 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 FOOT
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 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, SUCH 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:

ELEVATION: FEET

NOTES:

WOH = WEIGHT OF HAMMER
FIAD = FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
R-5516 (24229)	3

SITE PLAN

0 100 200

FEET

NAD 83

-YEBOI- PC Sta.10+00.00=
-L- POT Sta.X+37.07
39.00' LT

-L- PC Sta.74+42.93

-L- POT Sta.74+41.76=
-YWBOI- POC Sta.11+41.12

-L- POC Sta.75+13.29=
-YEBOI- POC Sta.32+25.84

-L- PT Sta.76+70.76

END RETAINING WALL
-W2- Sta.15+59.99

BEGIN RETAINING WALL
-W2- Sta.9+92.05

BEGIN RETAINING WALL
-W1- Sta.9+50.00

-YEBOI- CS Sta. 35+65.61

END WALL
-W1- Sta.19+76.61

-LRA- CS Sta. 18+62.83

-YEBOI- ST Sta. 37+09.21

-LRB- CS Sta. 14+71.27

-LRB- SC Sta.16+39.27

-LRB- PC Sta.11+63.03
POC Sta.32+79.81

-LRB- TS Sta.10+00.00=
-L- POT Sta.79+68.08
39.00' RT

-LRB- SC Sta.11+68.00

-YWBOI- PRC Sta. 13+35.81

-YEBOI- SC Sta. 25+20.15

N 36° 01' 42.31" E

N 26° 28' 55.6" W

S 15° 20' 15.4" E

N 08° 31' 37.4" E

KENNETH J. SHIPP, ET UX
TRACT ONE
DB 1714 PG 977
MB 003 PG 72

KENNETH J. SHIPP, ET UX
DB 1714 PG 977
MB 003 PG 72
TRACT TWO

CLARA F. GARNDER
DB 807 PG 58
MB 003 PG 72

TERRY M. YOUNG, ET UX
DB 1808 PG 257
MB 003 PG 72

HAVELOCK JOINT PROPERTIES, LLC
DB 2052 PG 216
DB 1040 PG 233
MB 003 PG 72

CHERRY BRANCH, LTD
DB 1597 PG 802
PC "G" SLIDE 93-B

CHERRY BRANCH, LTD
DB 1478 PG 66
PC "G" SLIDE 93-B

ERNEST L. LAMBERTI
et ux
DB 1845 PG 347
PC "G" SLIDE 93-B

JAMES L. MOREIRA
et ux
DB 2484 PG 570
PC "G" SLIDE 93-B

SHELL SECKER, et vir
DB 2468 PG 680
PC "G" SLIDE 93-B

JOHN R. KAUFMAN, JR.
DB 2208 PG 325
PC "G" SLIDE 93-B

BENJAMIN BLOUNT,
et ux
DB 2022 PG 292
PC "G" SLIDE 93-B

LARRY D. HORN, et ux
DB 1958 PG 667
PC "G" SLIDE 93-B

NORA BARRERAS CAMEZ
DB 2482 PG 337
PC "G" SLIDE 93-B

ROBERT E. COLAW
DB 2142 PG 371
PC "G" SLIDE 93-B

JEFFREY WEBER
DB 2001 PG 241
PC "G" SLIDE 93-B

US 70

NORFOLK SOUTHERN RAILWAY

MACDONALD BLVD

30' DUKE-PROGRESS POWER EASEMENT

UNKNOWN LOCATION OF PIPE END

60' OF 18" CASING IN THIS AREA AS PER CRAVEN COUNTY WATER

28' BORE WITH CASING UNDER SERVICE RD AS PER CRAVEN COUNTY WATER

0	100	200
FEET		

VE = 5 : 1

PROJECT REFERENCE NO.	SHEET NO.
R-5516 (24229)	4

MSE WALL 1 PROFILE

BEGIN WALL
-W1- STA.9+50.00
EL = 27.10'

END WALL
-W1- STA.19+36.71
EL = 28.65'

GRADE ELEVATION

EXISTING GROUND

COASTAL PLAIN, GRAY AND BROWN, SOFT TO STIFF, MOIST TO WET, SANDY SILT AND SANDY CLAY (A-4, A-6)

COASTAL PLAIN, BROWN, ORANGE, AND GRAY, V. LOOSE TO V. DENSE, MOIST TO WET, SILTY AND CLAYEY SAND (A-2-4, A-2-6) WITH SHELL AND LIMESTONE FRAGMENTS

(A) COASTAL PLAIN, BROWN AND GRAY, V. SOFT TO STIFF, MOIST TO WET, SANDY CLAY (A-6)

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70

9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

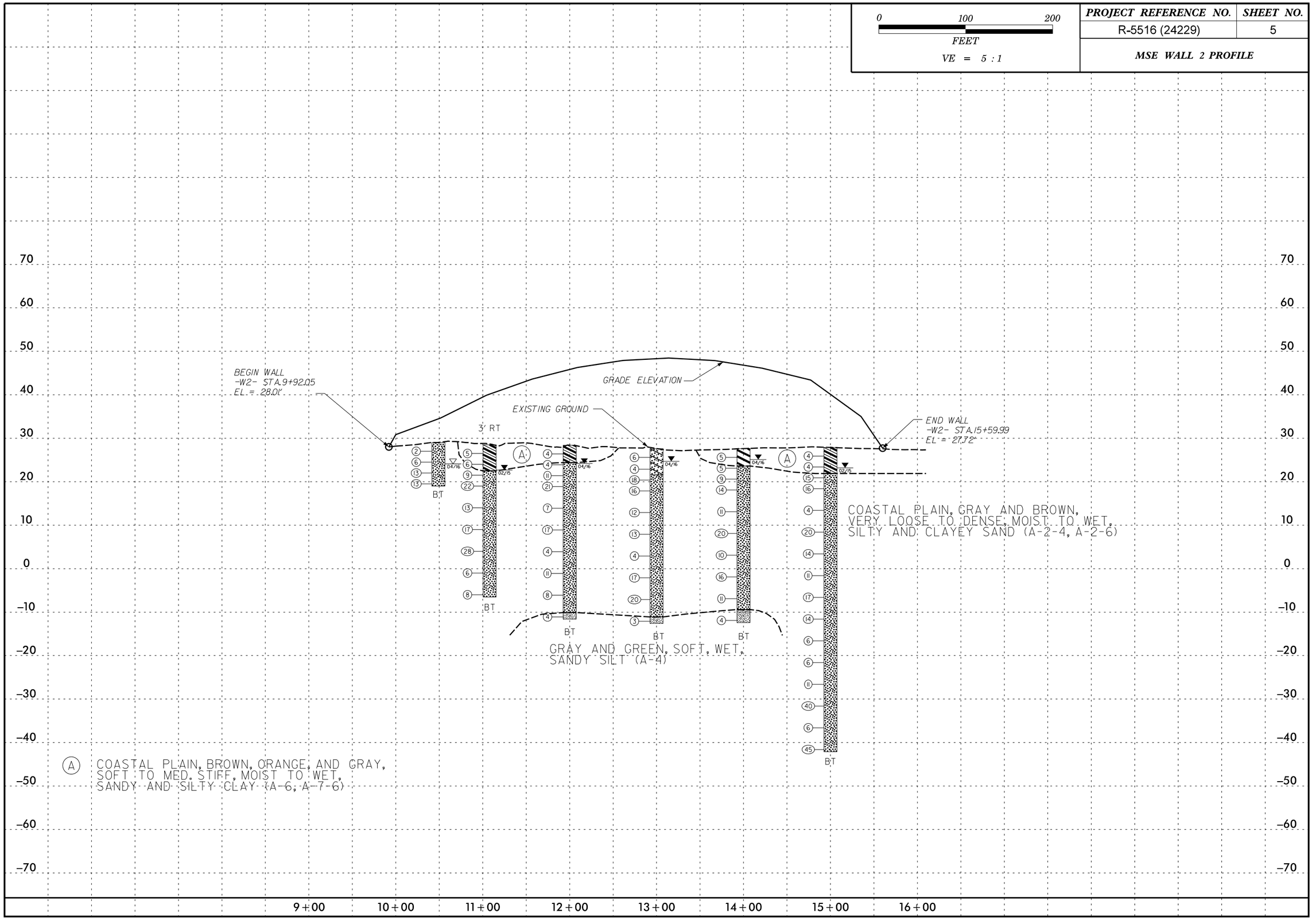
0	100	200

FEET

VE = 5 : 1

PROJECT REFERENCE NO.	SHEET NO.
R-5516 (24229)	5

MSE WALL 2 PROFILE



PROJECT REFERENCE NO.	SHEET
R-5516	6

SOIL TEST RESULTS

BORING NO.	OFFSET	STATION	ALIGNMENT	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C.SAND	F.SAND	SILT	CLAY	10	40	200		
R1_B1	CL	9+70	-W1-	3.5-5.0	A-2-4	-	-	25.0	59.9	4.8	10.3	99.9	90.4	16.0	21.8	-
R1_B2	3' RT	11+00	-W1-	13.5-15.0	A-2-4	-	-	76.3	21.6	0.7	1.4	99.9	75.2	2.4	21.3	-
R1_B2	3' RT	11+00	-W1-	53.5-55.0	A-2-6	37	16	22.0	53.0	11.4	13.6	93.2	82.6	32.8	25.6	-
R1_B3	CL	12+56	-W1-	23.5-25.0	A-6	32	18	3.7	45.8	19.3	31.2	100.0	99.5	52.4	47.5	-
R1_B4	CL	13+47	-W1-	23.5-25.0	A-7-6	46	28	2.3	45.8	19.0	33.0	100.0	99.9	55.5	60.3	-
YEB01_RW3_B3	8' LT	14+14	-W1-	6.0-7.5	A-2-4	18	4	18.4	68.8	4.0	8.9	100	90.3	14.9	27.3	-
YEB01_RW3_B3	8' LT	14+14	-W1-	28.5-30.0	A-2-4	-	-	48.9	34.7	9.5	7.0	87.1	73.5	21.6	24.6	-
R1_B5	1' RT	15+00	-W1-	3.5-5.0	A-6	40	25	7.1	35.3	15.6	42.0	100.0	97.4	58.8	25.8	-
R1_B6	CL	16+78	-W1-	23.5-25.0	A-6	34	19	2.3	35.6	23.1	38.9	100.0	99.7	64.4	69.4	-
R1_B7	3' RT	17+45	-W1-	1.0-2.5	A-4	23	9	10.8	43.4	18.6	27.2	95.1	91.6	45.8	18.9	-
YEB01_RW3_B7	CL	18+23	-W1-	8.5-10.0	A-2-4	18	3	3.3	70.6	13.3	12.8	100	99.0	30.0	57.0	-
YEB01_RW3_B7	CL	18+23	-W1-	18.5-20.0	A-2-4	-	-	60.2	33.1	4.0	3.2	99.1	70.0	7.9	20.0	-
R1_B8	CL	18+87	-W1-	3.5-5.0	A-2-4	28	9	8.8	64.0	8.6	18.6	100.0	97.6	30.0	48.1	-
R2_B1	CL	10+49	-W2-	1.0-2.5	A-2-4	23	8	15.5	51.5	14.1	18.9	99.2	95.0	34.2	25.7	-
YEB01_RW1_B2	3' RT	11+08	-W2-	8.5-10.0	A-2-4	-	-	5.2	90.4	2.5	2.0	100	99.7	5.2	23.9	-
R2_B4	CL	13+00	-W2-	3.7-5.2	A-2-6	25	11	14.8	52.6	9.5	23.1	100.0	94.9	33.6	21.9	-
R2_B5	CL	14+00	-W2-	1.0-2.5	A-7-6	64	43	5.0	22.9	13.8	58.3	100.0	98.3	72.9	30.7	-
YEB01_RW1_B6	CL	15+00	-W2-	13.5-15.0	A-2-4	-	-	9.1	79.3	4.1	7.4	100	97.0	13.5	26.1	-
YEB01_RW1_B6	CL	15+00	-W2-	48.5-50.0	A-2-4	22	3	17.0	68.7	5.1	9.2	100	94.1	17.6	31.3	-

TESTED BY: Michael P. Sm

NCDOT NO.: 129-03-0411