STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5987B	1	11

REFERENCE: I-5987B

PROJECT: 47533

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY *ROBESON*

PROJECT DESCRIPTION *I-95 IMPROVEMENTS FROM US 301 (EXIT 22) IN ROBESON COUNTY TO NC 59 (EXIT 41) IN CUMBERLAND COUNTY*

SITE DESCRIPTION *BRIDGE ON -Y7- (SR 1723- (PARKTON TOBEMORY RD.) OVER -L- (I-95) AT -L- STA. 883+36.60*

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (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:
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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

F&R, INC.

INVESTIGATED BY *F&R, INC.*

DRAWN BY *CROCKETT, S.C.*

CHECKED BY *HAMM, J. R.*

SUBMITTED BY *FALCON*

DATE *SEPTEMBER 2021*

NORTH CAROLINA PROFESSIONAL SEAL 48207 ENGINEER STEPHEN C CROCKETT

DocuSigned by:
Stephen C Crockett 9/22/2021
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
I-5987B	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
- 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
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -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: ELEVATIONS TAKEN FROM I5987_LS_TIN3.TIN
DATED 05/21

ELEVATION: FEET

NOTES:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
I-5987	3

SITE PLAN

0 50 100
FEET

BRIDGE SKEW: 80°

L_88471L

L_88414R

L_88236R

L_88257L

EB1-C

B1-A

EB2-C

END BENT 1
-Y7- Sta. 28+85.72

END BENT 2
-Y7- Sta. 30+55.72

BENT 1
-Y7- Sta. 29+70.72
-L- Sta. 883+36.60

TO PARKTON

SR 1723 (PARKTON TOBERMORY RD) 20.8' BST

TO CUMBERLAND COUNTY

I-95 SBL 236' BST

I-95 NBL 230' BST

885

884

883

882

30

33

CURTIS A. MABE
PG 730
DB 1858 PG 16
DB 37 PB

CURTI
DB 18
PB

CONWAY & CONWAY
TRANSPORTATION
DB 2156 PG 613
PB 53 PG 102

EDNA F. M. MARTIN
DB 12L PG 225

NAD 83 NA 2011

S 71°55'15" E
352.91'

60"WW ISBW

72"CHL 3SBW

48"CH

15" CMP

8" CMP

400 PR

96 STR

8", PVC D.A.I.U.R

EXISTING R/W

WOODS

THICKET

SOIL

MTL

CONC

CONC BARRIER WALL

MTL FLUME

EIP

MON

DI

HDI

PROJECT REFERENCE NO.	SHEET NO.
I-5987B	4

BRIDGE ON –Y7– (SR 1723– PARKTON TOBEMORY RD.) OVER –L– (I–95) AT –L– STA. 883+36.60

0 100 200
FEET
VE = 2.5

Ⓐ **ROADWAY EMBANKMENT:** BROWN AND GRAY, MOIST TO WET, LOOSE TO MED. DENSE, CLAYEY SILTY F. TO CSE. SAND (A-2-4)

Ⓑ **UNDIVIDED COASTAL PLAIN:** RED, BROWN, AND TAN, MOIST TO WET, LOOSE TO MED. DENSE, CLAYEY SILTY F. TO CSE. SAND (A-2-4)

Ⓒ **COASTAL PLAIN:** RED-BROWN, WET, V. STIFF, F. TO CSE. SANDY SILTY CLAY (A-7) (MIDDENDORF FORMATION)

Ⓓ **COASTAL PLAIN:** RED, BROWN, ORANGE, WHITE, AND GRAY, SATURATED, LOOSE TO DENSE, SILTY AND CLAYEY F. TO CSE. SAND (A-2-4, A-2-6) (MIDDENDORF FORMATION)

Ⓔ **COASTAL PLAIN:** DARK GRAY AND BLACK, MOIST TO WET, STIFF TO V. STIFF, F. TO CSE. SANDY SILTY CLAY (A-6, A-7) WITH TRACE MICA AND LITTLE WOOD FRAGMENTS (BLACK CREEK FORMATION)

Ⓕ **COASTAL PLAIN:** DARK GRAY, ORANGE, BROWN, AND BLACK, MOIST TO SATURATED, LOOSE TO V. DENSE, SILTY AND CLAYEY F. TO CSE. SAND (A-2-4, A-2-6) (BLACK CREEK FORMATION)

BEGIN BRIDGE
–Y7– STA. 28+85.72

–Y7– STA. 29+70.72 =
–L– STA. 883+36.60

END BRIDGE
–Y7– STA. 30+55.72

PROPOSED GRADE

EXISTING GROUND

SIO_EB1-C
28+86
5' LT

SIO_B1-A
29+79
15' LT

SIO_EB2-C
30+54
5' LT

01/20

BT

BT

BT
CAVED
01/20

200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00

–Y7–

NOTES:

GROUNDLINE PROFILE TAKEN FROM FILES PROVIDED BY STANTEC DATED MARCH, 2021.

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

BRIDGE SKEW: 80°

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5987B	5

0 20 40
FEET

Ⓐ **ROADWAY EMBANKMENT:** BROWN-GRAY, MOIST, LOOSE, SILTY F. TO CSE. SAND (A-2-4) WITH TRACE ORGANICS
Ⓑ **UNDIVIDED COASTAL PLAIN:** BROWN AND TAN, MOIST TO WET, LOOSE TO MED. DENSE, SILTY F. TO CSE. SAND (A-2-4) WITH TRACE GRAVEL AND ORGANICS
Ⓒ **COASTAL PLAIN:** ORANGE, BROWN, TAN, AND GRAY, WET TO SATURATED, LOOSE TO DENSE, SILTY AND CLAYEY F. TO CSE. SAND (A-2-4, A-2-6) WITH TRACE CLAY AND GRAVEL (MIDDENDORF FORMATION)
Ⓓ **COASTAL PLAIN:** ORANGE, BROWN, AND GRAY, WET, V. STIFF, F. TO CSE. SANDY SILTY CLAY (A-7) (MIDDENDORF FORMATION)
Ⓔ **COASTAL PLAIN:** DARK GRAY, MOIST TO WET, STIFF, F. SANDY SILTY CLAY (A-7) (BLACK CREEK FORMATION)
Ⓕ **COASTAL PLAIN:** ORANGE, BROWN, AND GRAY, WET TO SATURATED, LOOSE TO V. DENSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6) WITH TRACE MICA (BLACK CREEK FORMATION)

L_8847IL
28+68
128' LT

EBI-C
28+86
5' LT

L_88257L
29+06
83' RT

01/20

BT

END BENT #1
28+85.72

-Y7-

NOTES:

GROUNDLINE CROSS SECTION ALONG BENT LINE DRAWN FROM TOPOGRAPHIC DATA IN ELECTRONIC FILES RECEIVED FROM MOTT MACDONALD DATED MARCH 2021.

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$DATE$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
I-5987B	6

0 5 10

0 20 40
FEET

Ⓐ **ROADWAY EMBANKMENT:** BROWN, MOIST, LOOSE, SILTY F. TO CSE. SAND (A-2-4)
Ⓑ **UNDIVIDED COASTAL PLAIN:** BROWN, ORANGE, AND TAN, MOIST TO WET, LOOSE, SILTY F. TO CSE. SAND (A-2-4) WITH TRACE ORGANICS
Ⓒ **COASTAL PLAIN:** RED, ORANGE, BROWN, TAN, AND GRAY, MOIST TO SATURATED, LOOSE TO DENSE, SILTY AND CLAYEY F. TO CSE. SAND (A-2-4, A-2-6) WITH TRACE CLAY AND GRAVEL (MIDDENDORF FORMATION)
Ⓓ **COASTAL PLAIN:** BLACK AND DARK GRAY, WET, V. STIFF, F. SANDY SILTY CLAY (A-7) WITH TRACE MICA AND LITTLE WOOD FRAGMENTS (BLACK CREEK FORMATION)
Ⓔ **COASTAL PLAIN:** ORANGE, BROWN, AND DARK GRAY, SATURATED, LOOSE TO V. DENSE, SILTY F. TO CSE. SAND (A-2-4) WITH TRACE MICA AND LITTLE CLAY (BLACK CREEK FORMATION)

L_88414R
30+32
99' LT

4 9 41 30 32 32
02/20
BT

EB2-C
30+54
5' LT

4 6 14 5 23 16 25 5 14 8 7 7 30 8 7 7 11 9 14 28 29 95
BT
CAVED 01/20

L_88236R
30+63
76' RT

5 6 35 20 11 12
01/20
BT

END BENT #2
30+55.72

-Y7-

NOTES:

GROUNDLINE CROSS SECTION ALONG BENT LINE DRAWN FROM TOPOGRAPHIC DATA IN ELECTRONIC FILES RECEIVED FROM MOTT MACDONALD DATED MARCH 2021.

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$DATE$

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_EB1-C	**STATION** 28+86	**OFFSET** 5 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 172.9 ft	**TOTAL DEPTH** 105.0 ft	**NORTHING** 411,459	**EASTING** 2,011,378	**24 HR.** 10.2
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S. Davis	**START DATE** 01/06/20	**COMP. DATE** 01/07/20	**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)
175											
	172.9	0.0	1	3	5	8		M		172.9 GROUND SURFACE	0.0
170	169.4	3.5	2	2	2	4		W		**ROADWAY EMBANKMENT** Brown-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics	2.0
165	164.4	8.5	11	8	9	17				**UNDIVIDED COASTAL PLAIN** Brown-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Clay	7.0
160	159.4	13.5	14	17	22	39		Sat.		**COASTAL PLAIN** Red-Brown-Gray, Silty Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	12.0
155	154.4	18.5	7	9	11	20		Sat.		Tan-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Clay (MIDDENDORF FORMATION)	
150	149.4	23.5	6	11	13	24		Sat.			
145	144.4	28.5	10	8	7	15		Sat.			
140	139.4	33.5	3	1	2	3		Sat.		140.9 Maroon-Brown-Light Gray, Silty Clayey Fine to Coarse SAND (A-2-6) with Trace Gravel (MIDDENDORF FORMATION)	32.0
135	134.4	38.5	1	3	3	6		Sat.			
130	129.4	43.5	2	1	1	2		Sat.			
125	124.4	48.5	3	4	5	9		W		125.9 Dark Gray, Fine to Coarse Sandy Silty CLAY (A-7) with Trace Mica (BLACK CREEK FORMATION)	47.0
120	119.4	53.5	2	2	2	4		Sat.		120.9 Brown-Tan-Light Gray, Silty Fine SAND (A-2-4) with Trace Clay and Coarse Sand (BLACK CREEK FORMATION)	52.0
115	114.4	58.5	2	3	3	6		Sat.			
110	109.4	63.5	4	5	6	11		W		110.9 Dark Gray, Fine Sandy Silty CLAY (A-6) with Trace Mica and Coarse Sand (BLACK CREEK FORMATION)	62.0
105	104.4	68.5	3	4	5	9		Sat.		105.9 Dark Gray, Clayey Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Clay (BLACK CREEK FORMATION)	67.0
100	99.4	73.5	3	4	5	9		Sat.			
95											

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_EB1-C	**STATION** 28+86	**OFFSET** 5 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 172.9 ft	**TOTAL DEPTH** 105.0 ft	**NORTHING** 411,459	**EASTING** 2,011,378	**24 HR.** 10.2
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S. Davis	**START DATE** 01/06/20	**COMP. DATE** 01/07/20	**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)
95						Match Line					
	94.4	78.5	5	6	7	13		Sat.		Dark Gray, Clayey Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Clay (BLACK CREEK FORMATION) *(continued)*	
90	89.4	83.5	4	5	7	12		Sat.			
85	84.4	88.5	10	11	12	23		Sat.			
80	79.4	93.5	6	7	9	16		Sat.			
75	74.4	98.5	11	11	16	27		Sat.			
70	69.4	103.5	20	26	33	59		M		70.9 Gray, Silty Clayey Fine to Coarse SAND (A-2-6) with Trace Mica (BLACK CREEK FORMATION) 67.9	102.0 105.0
										Boring Terminated at Elevation 67.9 ft in CLAYEY SAND (COASTAL PLAIN) (BLACK CREEK FORMATION)	

Notes:
1. Surficial Organic Soil: 0.0-0.1'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** B. Painter	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_B1-A	**STATION** 29+79	**OFFSET** 15 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 171.3 ft	**TOTAL DEPTH** 90.0 ft	**NORTHING** 411,439	**EASTING** 2,011,469	**24 HR.** 4.0
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 82% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER D. Tignor	**START DATE** 01/21/20	**COMP. DATE** 01/22/20	**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)
175											
	171.3	0.0	3	4	9	13		M		171.3 GROUND SURFACE	0.0
170										**ROADWAY EMBANKMENT** Brown, Clayey Silty Fine to Coarse SAND (A-2-4) with Trace Organics	
	167.8	3.5	5	3	4	7		W			
165										164.3	7.0
	162.8	8.5	18	17	8	25		W		**UNDIVIDED COASTAL PLAIN** Red-Brown, Clayey Silty Fine to Coarse SAND (A-2-4)	
160										161.8	9.5
	157.8	13.5	13	14	15	29		W		**COASTAL PLAIN** 159.3 Red-Brown, Fine to Coarse Sandy Silty CLAY (A-7) (MIDDENDORF FORMATION)	12.0
155										156.8 Red-Brown, Clayey Silty Fine to Coarse SAND (A-2-4) (MIDDENDORF FORMATION)	14.5
	152.8	18.5	7	12	17	29		Sat.		154.3 White, Fine to Coarse SAND (A-3) (MIDDENDORF FORMATION)	17.0
150										Orange-White-Gray, Silty Fine to Coarse SAND (A-2-4) (MIDDENDORF FORMATION)	
	147.8	23.5	10	9	11	20		Sat.			
145											
	142.8	28.5	7	7	7	14		Sat.			
140											
	137.8	33.5	3	4	3	7		Sat.			
135											
	132.8	38.5	3	5	5	10		Sat.			
130											
	127.8	43.5	2	2	4	6		W			
125										124.3	47.0
	122.8	48.5	5	6	8	14		M		Dark Gray, Fine Sandy Silty CLAY (A-7) with Trace Organics and Mica (BLACK CREEK FORMATION)	
120										119.3	52.0
	117.8	53.5	2	3	4	7		W		Orange-Brown, Silty Clayey Fine SAND (A-2-6) with Trace Mica (BLACK CREEK FORMATION)	
115											
	112.8	58.5	2	3	4	7		W			
110											
	107.8	63.5	3	3	7	10		Sat.		106.8	64.5
105										Dark Gray, Fine Sandy Silty CLAY (A-7) with Trace Organics and Mica (BLACK CREEK FORMATION)	
	102.8	68.5	4	6	7	13		W			
100										99.3	72.0
	97.8	73.5	3	3	4	7		Sat.		Orange, Silty Clayey Fine to Coarse SAND (A-2-6) (BLACK CREEK FORMATION)	
95											

NCDOT BORE SINGLE B07_I5987_GEO_BORELOGS_BRDG_Y7.GPJ NC_DOT.GDT 9/3/21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** B. Painter	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_B1-A	**STATION** 29+79	**OFFSET** 15 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 171.3 ft	**TOTAL DEPTH** 90.0 ft	**NORTHING** 411,439	**EASTING** 2,011,469	**24 HR.** 4.0
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 82% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER D. Tignor	**START DATE** 01/21/20	**COMP. DATE** 01/22/20	**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)
95						Match Line					
	92.8	78.5	6	8	10	18		Sat.		94.3 Gray, Clayey Silty Fine to Coarse SAND (A-2-4) with Trace Mica (BLACK CREEK FORMATION)	77.0
90											
	87.8	83.5	4	5	7	12		W			
85											
	82.8	88.5	4	7	11	18		W		81.3	90.0
										Boring Terminated at Elevation 81.3 ft in SILTY SAND (COASTAL PLAIN) (BLACK CREEK FORMATION)	

Notes:
1. Surficial Organic Soil: 0.0-0.2'

NCDOT BORE SINGLE B07_I5987_GEO_BORELOGS_BRDG_Y7.GPJ NC_DOT.GDT 9/3/21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_EB2-C	**STATION** 30+54	**OFFSET** 5 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 173.6 ft	**TOTAL DEPTH** 105.0 ft	**NORTHING** 411,406	**EASTING** 2,011,537	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S. Davis	**START DATE** 01/14/20	**COMP. DATE** 01/15/20	**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)
175											
	173.6	0.0	2	2	2	4		M		173.6 GROUND SURFACE	0.0
										ROADWAY EMBANKMENT	
170	170.1	3.5	3	3	3	6		M		171.6 Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel and Organics	2.0
										UNDIVIDED COASTAL PLAIN	
165	165.1	8.5	4	6	8	14		W		Brown, Silty Fine to Coarse SAND (A-2-4)	
										166.6	7.0
160	160.1	13.5	3	3	2	5		Sat.		**COASTAL PLAIN** Red-Orange-Brown, Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	
155	155.1	18.5	11	12	11	23		Sat.		156.6	17.0
										Orange-Brown-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Clay (MIDDENDORF FORMATION)	
150	150.1	23.5	6	7	9	16		Sat.			
145	145.1	28.5	11	12	13	25		Sat.			
140	140.1	33.5	2	2	3	5		Sat.		141.6	32.0
										Light Gray-Orange-Tan, Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	
135	135.1	38.5	5	7	7	14		Sat.		136.6	37.0
										Orange-Brown-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Clay and Mica (MIDDENDORF FORMATION)	
130	130.1	43.5	4	3	5	8		Sat.			
125	125.1	48.5	3	3	4	7		Sat.			
120	120.1	53.5	3	2	5	7		Sat.			
115	115.1	58.5	11	13	17	30		W		116.6	57.0
										Black-Dark Gray, Fine Sandy Silty CLAY (A-7) with Trace Mica and Little Wood Fragments (BLACK CREEK FORMATION)	
110	110.1	63.5	5	4	4	8		Sat.		111.6	62.0
										Orange-Brown to Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Little Clay (BLACK CREEK FORMATION)	
105	105.1	68.5	3	3	4	7		Sat.			
100	100.1	73.5	3	3	4	7		Sat.			
95	95.1	78.5									

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. S10_EB2-C	**STATION** 30+54	**OFFSET** 5 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 173.6 ft	**TOTAL DEPTH** 105.0 ft	**NORTHING** 411,406	**EASTING** 2,011,537	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S. Davis	**START DATE** 01/14/20	**COMP. DATE** 01/15/20	**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)
95						Match Line					
	90.1	83.5	4	5	6	11		Sat.		Orange-Brown to Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Little Clay (BLACK CREEK FORMATION) *(continued)*	
90			3	4	5	9		Sat.			
85	85.1	88.5	5	5	9	14		Sat.			
80	80.1	93.5	7	13	15	28		Sat.			
75	75.1	98.5	14	15	14	29		Sat.			
70	70.1	103.5	40	44	51	95		Sat.		68.6	105.0
										Boring Terminated at Elevation 68.6 ft in SILTY SAND (COASTAL PLAIN) (BLACK CREEK FORMATION)	

Notes:
1. Surficial Organic Soil: 0.0-0.2'
2. Boring caved-in at 5.5' after 24 hours, probable groundwater level

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. L_88471L	**STATION** 28+68	**OFFSET** 128 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 170.4 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 411,581	**EASTING** 2,011,399	**24 HR.** 3.2
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S.Davis	**START DATE** 01/24/20	**COMP. DATE** 01/24/20	**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)
175											
170	170.4	0.0	2	8	7	15		M		170.4 GROUND SURFACE	0.0
										169.9 **ROADWAY EMBANKMENT** Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel and Organics	0.5
	166.9	3.5	3	4	5	9		W		168.4 **UNDIVIDED COASTAL PLAIN** Tan-Light Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics	2.0
165										**COASTAL PLAIN** Orange-Brown-Gray, Silty Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	
	161.9	8.5	13	8	10	18		W			
160											
	156.9	13.5	12	9	12	21		Sat.		158.4 Orange-Brown-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel (MIDDENDORF FORMATION)	12.0
155											
	151.9	18.5	8	9	12	21		Sat.			
150											
	146.9	23.5	7	4	10	14		Sat.		145.4 Boring Terminated at Elevation 145.4 ft in SAND (COASTAL PLAIN) (MIDDENDORF FORMATION)	25.0

Notes:
1. Surficial Organic Soil: 0.0-0.1'

NCDOT BORE SINGLE B07_I5987_GEO_BORELOGS_BRDG_Y7.GPJ NC_DOT.GDT 9/3/21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. L_88257L	**STATION** 29+06	**OFFSET** 83 ft RT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 171.0 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 411,369	**EASTING** 2,011,369	**24 HR.** 4.3
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S.Davis	**START DATE** 01/24/20	**COMP. DATE** 01/24/20	**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)
175											
170	171.0	0.0	1	2	3	5		M		171.0 GROUND SURFACE	0.0
										UNDIVIDED COASTAL PLAIN Brown-Light Brown, Silty Fine SAND (A-2-4) with Trace Organics	
	167.5	3.5	2	4	5	9				166.5	4.5
165										**COASTAL PLAIN** Orange-Brown, Silty Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	
	162.5	8.5	10	7	11	18		W		162.0	9.0
160										161.5 Orange-Brown-Gray, Fine to Coarse Sandy Silty CLAY (A-7) (MIDDENDORF FORMATION)	9.5
	157.5	13.5	10	12	16	28		Sat.		157.0 Orange-Brown, Silty Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)	14.0
155											
	152.5	18.5	5	7	10	17		Sat.		Orange-Tan to Tan-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Clay (MIDDENDORF FORMATION)	
150											
	147.5	23.5	6	8	9	17		Sat.		146.0 Boring Terminated at Elevation 146.0 ft in SILTY SAND (COASTAL PLAIN) (MIDDENDORF FORMATION)	25.0

Notes:
1. Surficial Organic Soil: 0.0-0.1'

NCDOT BORE SINGLE B07_I5987_GEO_BORELOGS_BRDG_Y7.GPJ NC_DOT.GDT 9/3/21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** B. Painter	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. L_88414R	**STATION** 30+32	**OFFSET** 99 ft LT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 171.0 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 411,502	**EASTING** 2,011,546	**24 HR.** 4.0
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 82% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER R. Clarke	**START DATE** 02/04/20	**COMP. DATE** 02/04/20	**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)
175										
170	171.0	0.0	1	1	3	4		M		171.0 GROUND SURFACE 0.0 **UNDIVIDED COASTAL PLAIN** Brown-Orange, Clayey Silty Fine to Coarse SAND (A-2-4)
	167.5	3.5	1	3	6	9		M		
165										164.0 7.0
	162.5	8.5	15	19	22	41		M		**COASTAL PLAIN** Orange, Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)
160										
	157.5	13.5	12	15	15	30		W		
155										154.0 17.0
	152.5	18.5	11	16	16	32		W		Orange-White, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel (MIDDENDORF FORMATION)
150										
	147.5	23.5	7	15	17	32		W		146.0 25.0 Boring Terminated at Elevation 146.0 ft in SILTY SAND (COASTAL PLAIN) (MIDDENDORF FORMATION)

Notes:
1. Surficial Organic Soil: 0.0-0.1'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 47533.1.1	**TIP** I-5987B	**COUNTY** ROBESON	**GEOLOGIST** W. Pesl	
SITE DESCRIPTION Bridge on -Y7- (Parkton Tobermory Road) over -L- (I-95) at -L- Sta. 883+36.60				**GROUND WTR (ft)**
BORING NO. L_88236R	**STATION** 30+63	**OFFSET** 76 ft RT	**ALIGNMENT** -Y7-	**0 HR.** N/A
COLLAR ELEV. 171.4 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 411,326	**EASTING** 2,011,520	**24 HR.** 11.4
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 84% 03/01/2019		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER S.Davis	**START DATE** 01/20/20	**COMP. DATE** 01/20/20	**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)
175										
170	171.4	0.0	1	2	3	5		M		171.4 GROUND SURFACE 0.0 **UNDIVIDED COASTAL PLAIN** Brown-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Organics
	167.9	3.5	1	1	5	6		W		
165										164.4 7.0
	162.9	8.5	12	17	19	36		W		**COASTAL PLAIN** Orange-Brown-Tan, Silty Clayey Fine to Coarse SAND (A-2-6) (MIDDENDORF FORMATION)
160										159.4 12.0
	157.9	13.5	7	9	11	20		Sat.		Orange-Tan to Tan-Light Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Clay and Gravel (MIDDENDORF FORMATION)
155										
	152.9	18.5	5	5	6	11		Sat.		
150										
	147.9	23.5	5	5	7	12		Sat.		146.4 25.0 Boring Terminated at Elevation 146.4 ft in SILTY SAND (COASTAL PLAIN) (MIDDENDORF FORMATION)(MIDDENDORF FORMATION)

Notes:
1. Surficial Organic Soil: 0.0-0.1'