STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33473.1.1 (B-4118)	1	15

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33473.1.1 (B-4118) F.A. PROJ. BRSTP-1905(2)

COUNTY GASTON

PROJECT DESCRIPTION BRIDGE 200 ON SR 1905 (BLACK SNAKE RD.) OVER STANLEY CREEK

SITE DESCRIPTION

ID: B-4118

PROJECT: 33473.1.1

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CAUTION NOTICE

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INVESTIGATED BY J. P. ROGERS

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

DATE AUGUST 2010

NORTH CAROLINA LICENSED SEAL 1104 GEOLOGIST CLINTON B. LITTLE

9-7-10

DRAWN BY: C. E. BURRIS

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PROJECT REFERENCE NO.	SHEET NO.
33473.1.1 (B-4118)	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 TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

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

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#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			
LIQUID LIMIT	6 MX		NP	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
PLASTIC INDEX				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 A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

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

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	>10%	>20%	HIGHLY	35% AND ABOVE

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
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:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

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

CORE SIZE:
- [ ] -B_____
- [X] -N NQ
- [ ] -H_____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

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

BEDDING

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

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CAL.) - 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: BM#2: RR SPIKE IN 15" SWEET GUM
-L- STA. 11+42.71 128.06' RT
ELEVATION: 660.10 FT.

NOTES:
CAR = CASING ADVANCER REFUSAL

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET
33473.1.1 (B-4118)	3

SITE PLAN

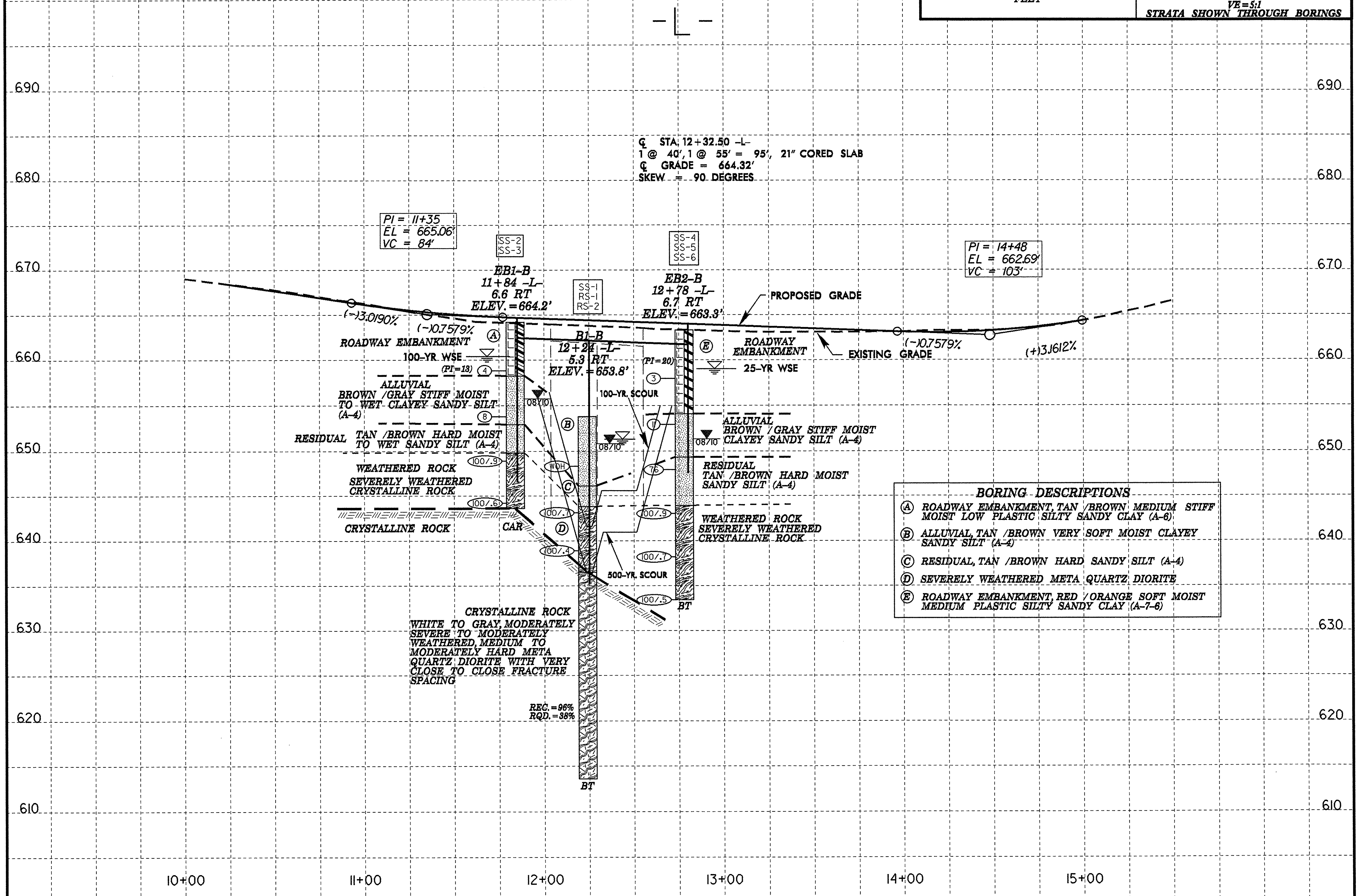
0 50 100
FEET

ISBKD
15" RCP
GRAVEL
EIP
AT&T BOXES
N 74°43'57" E
326.59' EIP TO CENTER OF CREEK
329.80' TOTAL
BM #1
-BL- STA 5+00
12' RIGHT
RR SPIKE IN POWER POLE
ELEV 674.33'
PAUL W. GIBSON JR.
DB 2809 PG 438
PT Sta. 11+26.91
PUBLIC SERVICE GAS R/W 35.00'
68.00' DUKE POWER R/W
18" CMP
CHARLES & JANET BLACK
DB 844 PG 045
PL = CENTER OF CREEK
BEGIN APPROACH SLAB
-L- POT STA.11+73.00
BEGIN BRIDGE
-L- POT STA.11+85.00
BM #3
-BL- STA 13+59
RR SPIKE IN UTILITY POLE
ELEV 675.71'
BL-6
-BL- POT 13+58.76
END TIP PROJECT B-4118
END CONSTRUCTION
-L- POT STA.15+00.00
N 62°12'08.3" E
N 8°11'56.9" E
EDDIE TADLOCK
DB 1394 PG 516
50.00'
EXISTING R/W
PT Sta. 15+48.95
PC Sta. 10+00.00
PC Sta. 13+80.90
S 74°13'37.9" E
SR 1905 BLACKSNAKE RD. 20' BST
RESIDUAL
ALLUVIAL
12" STEEL
16" STEEL
STANLEY CREEK
JS
SEAT=661.43'
BL-3
-BL- PINC 5+00.00
JACK & GAYNELL MOORE
DB 806 PG 190
BEGIN TIP PROJECT B-4118
BEGIN CONSTRUCTION
-L- POT STA. 10+20.00
SOIL
ROADWAY EMBANKMENT
EB1-B
B1-B
EB2-B
EB2-A
-L-
BST
BL-4
-BL- PINC 7+72.77
-L- POT STA 10+78.97
(20.83 LT)
GRAVEL
SEAT=662.07'
CABLE GATE
+28.72
43.33'
N 72°43'43" E
N 61°18'37.4" E
BL-5
-BL- PINC 11+42.24
-L- POT STA 14+35.26
(14.07 LT)
S 41°51'17" E
222.45'
END BRIDGE
-L- POT STA.12+80.00
POWER TOWER
NC GRID NAD 83
BM #2
-BL- STA 8+49 119' Rt.=
-L- STA. 11+42.71 128.06' Rt.
RR SPIKE IN 15" SWEET GUM
ELEV 660.10'
PL = CENTER OF CREEK
50.00' R/W PIEDMONT NATURAL GAS
CLYDE & CHONG MILLMAN
DB 2311PG 840
END APPROACH SLAB
-L- POT STA.12+92.00

PROJECT REFERENCE NO.	SHEET
33473.1.1 (B-4118)	4

PROFILE ALONG -L-
VE=5:1
STRATA SHOWN THROUGH BORINGS

0 50 100
FEET



PROJECT REFERENCE NO.	SHEET
33473.1.1 (B-4118)	5
SECTION THROUGH END BENT 1 -L- STA. 11+85.00 SKEW=90°	

0 10 20
FEET

690 680 670 660 650 640 630 620 610 600

SS-2
SS-3
EB1-B
11+84 -L-
6.6 RT
ELEV. = 664.2'

EXISTING GROUND

ROADWAY EMBANKMENT
(PI-13)

TAN /BROWN MED. STIFF MOIST LOW PLASTIC SILTY SANDY CLAY (A-6)

4

ALLUVIAL
08/10 BROWN /GRAY STIFF MOIST TO WET CLAYEY SANDY SILT (A-4)

8

RESIDUAL
TAN /BROWN HARD MOIST TO WET SANDY SILT (A-4)

100/.9

WEATHERED ROCK
SEVERELY WEATHERED CRYSTALLINE ROCK

100/.6

CAR CRYSTALLINE ROCK

60 50 40 30 20 10 0 10 20 30 40 50 60

0	10	20
FEET		

PROJECT REFERENCE NO.	SHEET
33473.1.1 (B-4118)	6
SECTION THROUGH BENT 1 -L- STA. 12+25.00 SKEW=90°	

680
670
660
650
640
630
620
610
600

SS-1
RS-1
RS-2

B1-B
12+24 -L-
5.3 RT
ELEV.=653.8'

EXISTING GROUND

ALLUVIAL
TAN /BROWN VERY SOFT
MOIST CLAYEY SANDY SILT
(A-4)

08/10

WOH

RESIDUAL
TAN /BROWN HARD
SANDY SILT (A-4)

100/.7

WEATHERED ROCK
SEVERELY WEATHERED
META QUARTZ DIORITE

100/.4

CRYSTALLINE ROCK
WHITE TO GRAY, MODERATELY
SEVERE TO MODERATELY WEATHERED
MEDIUM TO MODERATELY HARD
META QUARTZ DIORITE WITH CLOSE
TO VERY CLOSE FRACTURE SPACING

REC.=96%
RQD.=38%

BT

60 50 40 30 20 10 0 10 20 30 40 50 60

PROJECT REFERENCE NO.	SHEET
33473.1.1 (B-4118)	7

SECTION THROUGH END BENT 2
-L- STA. 12+80.00
SKEW = 90°

0 10 20
FEET

690 680 670 660 650 640 630 620 610 600

60 50 40 30 20 10 0 10 20 30 40 50 60

EXISTING GROUND

ROADWAY EMBANKMENT
RED /ORANGE MEDIUM STIFF MOIST MEDIUM PLASTIC SILTY SANDY CLAY (A-7-6)

ALLUVIAL
BROWN /GRAY STIFF MOIST CLAYEY SANDY SILT (A-4)

RESIDUAL
TAN /BROWN /GRAY /WHITE TO BROWN HARD MOIST SANDY SILT (A-4)

SS-7
EB2-A
12+78 -L-
6.4 LT
ELEV. = 663.3'

4
8
51
38'
48'
31
32'

BT
CAVED
08/03/10

SS-4
SS-5
SS-6
EB2-B
12+78 -L-
6.7 RT
ELEV. = 663.3'

(PI=20)
3
11
08/10
76
100/.9
100/.7
100/.5

ROADWAY EMBANKMENT
RED /ORANGE SOFT MOIST MEDIUM PLASTIC SILTY SANDY CLAY (A-7-6)

ALLUVIAL
BROWN /GRAY STIFF MOIST CLAYEY SANDY SILT (A-4)

RESIDUAL
TAN /BROWN HARD MOIST SANDY SILT (A-4)

WEATHERED ROCK
SEVERELY WEATHERED CRYSTALLINE ROCK

BT

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 33473.1.1	**ID.** B-4118	**COUNTY** GASTON	**GEOLOGIST** Stickney, J. K.
SITE DESCRIPTION Bridge 200 on SR 1905 (Black Snake rd.) over Stanley Creek			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 11+84	**OFFSET** 7 ft RT	**ALIGNMENT** -L- / **0 HR.** NM
COLLAR ELEV. 664.2 ft	**TOTAL DEPTH** 20.6 ft	**NORTHING** 595,497	**EASTING** 1,381,629 / **24 HR.** 8.5
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic
DRILLER Smith, C. L.	**START DATE** 08/03/10	**COMP. DATE** 08/03/10	**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)
665										664.2 GROUND SURFACE 0.0
660	659.8	4.4								**ROADWAY EMBANKMENT** TAN / BROWN MEDIUM STIFF MOIST LOW PLASTIC (PI=13) SILTY SANDY CLAY (A-6)
			1	2	2	4	SS-2	M		658.2 6.0
655	654.8	9.4								**ALLUVIAL** BROWN / GRAY STIFF MOIST TO WET CLAYEY SANDY SILT (A-4)
			3	4	4	8	SS-3	W		652.9 11.3
650	649.8	14.4								**RESIDUAL** TAN / BROWN HARD MOIST TO WET SANDY SILT (A-4) 649.8 14.4
			25	75/.4		100/.9				**WEATHERED ROCK** SEVERELY WEATHERED CRYSTALLINE ROCK
645	644.8	19.4								
			79	21/.1		100/.6		D		643.6 20.6
640										Boring Terminated with Casing Advancer Refusal at Elevation 643.6 ft on crystalline rock
635										
630										
625										
620										
615										
610										
605										
600										
595										
590										
585										

NCDOT BORE SINGLE B4118_GEO_BH_BRDG0200_GASTON.GPJ NC_DOT.GDT 08/26/10

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 33473.1.1	**ID.** B-4118	**COUNTY** GASTON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION Bridge 200 on SR 1905 (Black Snake rd.) over Stanley Creek				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 12+24	**OFFSET** 5 ft RT	**ALIGNMENT** -L-	**0 HR.** NM
COLLAR ELEV. 653.8 ft	**TOTAL DEPTH** 40.2 ft	**NORTHING** 595,516	**EASTING** 1,381,664	**24 HR.** 3.0
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing W/SPT & Core		**HAMMER TYPE** Automatic	
DRILLER Smith, C. L.	**START DATE** 08/02/10	**COMP. DATE** 08/02/10	**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)
655										653.8 GROUND SURFACE 0.0
										ALLUVIAL TAN / BROWN VERY SOFT MOIST CLAYEY SANDY SILT (A-4)
650	649.3	4.5	0	0	0 WOH	0		M		
										646.1 7.7
645	644.3	9.5								**RESIDUAL** 643.8 TAN / BROWN HARD SANDY SILT (A-4) 10.0
			6	13	87/.2	100/.7	SS-1			**WEATHERED ROCK** SEVERELY WEATHERED META QUARTZ DIORITE
640	639.3	14.5	100/.4			100/.4				
										636.5 17.3
635										**CRYSTALLINE ROCK** WHITE TO GRAY, MODERATELY SEVERE TO MODERATELY WEATHERED, MEDIUM TO MODERATELY HARD META QUARTZ DIORITE
630							RS-1			
625										
620							RS-2			
615										613.6 40.2
										Boring Terminated at Elevation 613.6 ft in meta quartz diorite
610										
605										
600										
595										
590										
585										
580										
575										

NCDOT BORE SINGLE B4118_GEO_BH_BRDG0200_GASTON.GPJ NC_DOT.GDT 08/26/10

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 33473.1.1	**ID.** B-4118	**COUNTY** GASTON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION Bridge 200 on SR 1905 (Black Snake rd.) over Stanley Creek				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 12+24	**OFFSET** 5 ft RT	**ALIGNMENT** -L-	**0 HR.** NM
COLLAR ELEV. 653.8 ft	**TOTAL DEPTH** 40.2 ft	**NORTHING** 595,516	**EASTING** 1,381,664	**24 HR.** 3.0
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing W/SPT & Core		**HAMMER TYPE** Automatic	
DRILLER Smith, C. L.	**START DATE** 08/02/10	**COMP. DATE** 08/02/10	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 22.9 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
636.5											ELEV. (ft) DEPTH (ft)
635	636.5	17.3	2.9	1/1.0	(2.9) 100%	(0.6) 21%		(22.0) 96%	(8.7) 38%		Begin Coring @ 17.3 ft
	633.6	20.2									636.5 **CRYSTALLINE ROCK** 17.3
			5.0	1.03/1.0	(4.9) 98%	(1.9) 37%					WHITE TO GRAY, MODERATELY SEVERE TO MODERATELY WEATHERED, MEDIUM TO MODERATELY HARD META QUARTZ DIORITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING R1=2, R=8, R3=10, R4=6, R5=7 RMR=33
630							RS-1				
	628.6	25.2									
			5.0	1.11/1.0	(5.0) 100%	(2.6) 52%					
625	623.6	30.2									
			5.0	1.07/1.0	(4.3) 86%	(1.8) 36%					
620							RS-2				
	618.6	35.2									
			5.0	1.24/1.0	(4.9) 98%	(1.8) 36%					
615	613.6	40.2									613.6 40.2
											Boring Terminated at Elevation 613.6 ft in meta quartz diorite
610											
605											
600											
595											
590											
585											
580											
575											
570											
565											
560											

NCDOT CORE SINGLE B4118_GEO_BH_BRDG0200_GASTON.GPJ NC_DOT.GDT 08/26/10

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

PROJECT NO. 33473.1.1	**ID.** B-4118	**COUNTY** GASTON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION Bridge 200 on SR 1905 (Black Snake rd.) over Stanley Creek				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 12+78	**OFFSET** 6 ft LT	**ALIGNMENT** -L-	**0 HR.** NM
COLLAR ELEV. 663.3 ft	**TOTAL DEPTH** 35.8 ft	**NORTHING** 595,552	**EASTING** 1,381,706	**24 HR.** Caved@5.0
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
DRILLER Smith, C. L.	**START DATE** 08/03/10	**COMP. DATE** 08/03/10	**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)
665										663.3 — GROUND SURFACE — 0.0
	659.0	4.3	1	2	2	4		M		**ROADWAY EMBANKMENT** RED / ORANGE MEDIUM STIFF MOIST MEDIUM PLASTIC SILTY SANDY CLAY (A-7-6)
660										654.0 — 9.3
	654.0	9.3	2	3	5	8		M		**ALLUVIAL** BROWN / GRAY STIFF MOIST CLAYEY SANDY SILT (A-4)
655										649.0 — 14.3
	649.0	14.3	12	22	29	51		M		**RESIDUAL** TAN / BROWN / GRAY / WHITE TO BROWN HARD MOIST SANDY SILT (A-4)
650										
	644.0	19.3	5	12	26	38		M		
645										
	639.0	24.3	15	20	28	48	SS-7	M		
640										
	634.0	29.3	8	11	20	31		M		
635										
	629.0	34.3	10	14	18	32				627.5 — 35.8
630										Boring Terminated at Elevation 627.5 ft in sandy silt
625										
620										
615										
610										
605										
600										
595										
590										
585										

NCDOT BORE SINGLE B4118_GEO_BH_BRDG0200_GASTON.GPJ NC_DOT.GDT 09/02/10

NCDOT GEOTECHNICAL ENGINEERING UNIT
BOREHOLE REPORT

PROJECT NO. 33473.1.1	**ID.** B-4118	**COUNTY** GASTON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION Bridge 200 on SR 1905 (Black Snake rd.) over Stanley Creek				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 12+78	**OFFSET** 7 ft RT	**ALIGNMENT** -L-	**0 HR.** NM
COLLAR ELEV. 663.3 ft	**TOTAL DEPTH** 29.9 ft	**NORTHING** 595,540	**EASTING** 1,381,712	**24 HR.** 12.0
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
DRILLER Smith, C. L.	**START DATE** 08/03/10	**COMP. DATE** 08/03/10	**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)
665										663.3 — GROUND SURFACE — 0.0
	658.9	4.4	1	1	2	3	SS-4	M		**ROADWAY EMBANKMENT** RED / ORANGE SOFT MOIST MEDIUM PLASTIC (PI=20) SILTY SANDY CLAY (A-7-6)
660										654.1 — 9.2
	653.9	9.4	4	6	5	11	SS-5	M		**ALLUVIAL** BROWN / GRAY STIFF MOIST CLAYEY SANDY SILT (A-4)
655										649.3 — 14.0
	648.9	14.4	17	30	46	76	SS-6	M		**RESIDUAL** TAN / BROWN HARD MOIST SANDY SILT (A-4)
650										643.9 — 19.4
	643.9	19.4	27	73/.4		100/.9		D		**WEATHERED ROCK** SEVERELY WEATHERED CRYSTALLINE ROCK
645										
	638.9	24.4	62	38/.2		100/.7		D		
640										
	633.9	29.4	81	19/0		100/.5				633.4 — 29.9
635										Boring Terminated at Elevation 633.4 ft in severely weathered crystalline rock
630										
625										
620										
615										
610										
605										
600										
595										
590										
585										

NCDOT BORE SINGLE B4118_GEO_BH_BRDG0200_GASTON.GPJ NC_DOT.GDT 08/26/10

TEST RESULTS

PROJECT: 33473.1.1 (B-4118)
COUNTY: GASTON
SITE DESCRIPTION: BRIDGE 200 ON SR 1905 (BLACK SNAKE RD.) OVER STANLEY CREEK

SOIL SAMPLE RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL*	*AASHTO CLASS*	*N*	*L.L.*	*P.I.*	*% BY WEIGHT*				*% PASSING SIEVES*			*%*	*%*	*UNIT*	*VOID*
								C. SAND	*F. SAND*	*SILT*	*CLAY*	*10*	*40*	*200*	*MOISTURE*	*ORGANIC*	*WT. (d)*	*RATIO*
		EB1-B																
SS-2	6.6 RT	11+84	4.90-5.90	A-6(4)	4	30	13	15.4	32.9	23.4	28.3	93	84	55				
SS-3	6.6 RT	11+84	9.90-10.90	A-4(0)	8	21	4	8.1	47.9	31.9	12.1	96	92	56				
		B1-B																
SS-1	5.3 RT	12+24	9.50-10.50	A-4(1)	19	28	6	24.2	30.9	38.8	6.1	96	81	50				
		EB2-A																
SS-7	6.4 LT	12+78	24.80-25.80	A-4(8)	48	40	9	0.8	38.8	52.3	8.1	100	100	79				
		EB2-B																
SS-4	6.7 RT	12+78	4.90-5.90	A-7-6(13)	3	43	20	11.1	23.6	22.8	42.4	99	92	70				
SS-5	6.7 RT	12+78	9.90-10.90	A-4(0)	11	21	NP	14.7	55.4	19.8	10.1	94	88	39				
SS-6	6.7 RT	12+78	14.90-15.90	A-4(0)	76	25	4	32.5	36.0	27.5	4.0	94	73	36				

ROCK SAMPLE RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL*	*RQD*	*UNIT WT lb/ft3*	Q(ksf)	E(MPsi)
		B1-B					
RS-1	5.3 RT	12+24	22.2-22.7	38%	176.7	374.4	5.93
RS-2	5.3 RT	12+24	31.2-31.7	38%	155.1	331.2	0.858

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

FIELD SCOUR REPORT

WBS: 33473.1.1 TIP: B-4118 COUNTY: GASTON

DESCRIPTION(1): BRIDGE NO. 200 ON SR 1905 OVER STANLEY CREEK.

EXISTING BRIDGE

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

Bridge No.: 200 Length: 51.5' Total Bents: 3 Bents in Channel: 1 Bents in Floodplain: 3
Foundation Type: END BENTS - PILES WITH ABUTMENT WALL. INTERIOR - TIMBER PILES

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NONE OBSERVED AT TIME OF INVESTIGATION

Interior Bents: NONE OBSERVED AT TIME OF INVESTIGATION

Channel Bed: NONE OBSERVED AT TIME OF INVESTIGATION

Channel Bank: MINOR UNDERCUT AT MEANDERS. TREES LEANING TOWARDS CREEK.

EXISTING SCOUR PROTECTION

Type(3): NONE

Extent(4): N/A

Effectiveness(5): N/A

Obstructions(6): NONE

INSTRUCTIONS

1 Describe the specific site's location, including route number and body of water crossed.
2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
3 Note existing scour protection (e.g. rip rap).
4 Describe extent of existing scour protection.
5 Describe whether or not the scour protection appears to be working.
6 Note obstructions such as dams, fallen trees, debris at bents, etc.
7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
10 Determine the approximate floodplain width from field observation or a topographic map.
11 Describe the material covering the floodplain (e.g. grass, trees, crops).
12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoritical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

DESIGN INFORMATION

Channel Bed Material(7): SILT, SAND, GRAVEL, AND ROCK.

Channel Bank Material(8): SANDY SILT AS SS-1

Channel Bank Cover(9): TREES, SHRUBS, AND GRASS

Floodplain Width(10): APP. 350'

Floodplain Cover(11): TREES, SHRUBS, AND GRASS

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

Channel Migration Tendency(13): SLIGHT TENDENCY FOR EAST - SOUTHEAST MIGRATION.

Observations and Other Comments: ____

DESIGN SCOUR ELEVATIONS(14) Feet X Meters ____

	BENTS B1
100 YR.	643

Comparison of DSE to Hydraulics Unit theoretical scour:
DSE IS APP. 1.2' HIGHER THAN THEORETICAL DUE TO PRESENCE OF WEATHERED ROCK.

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

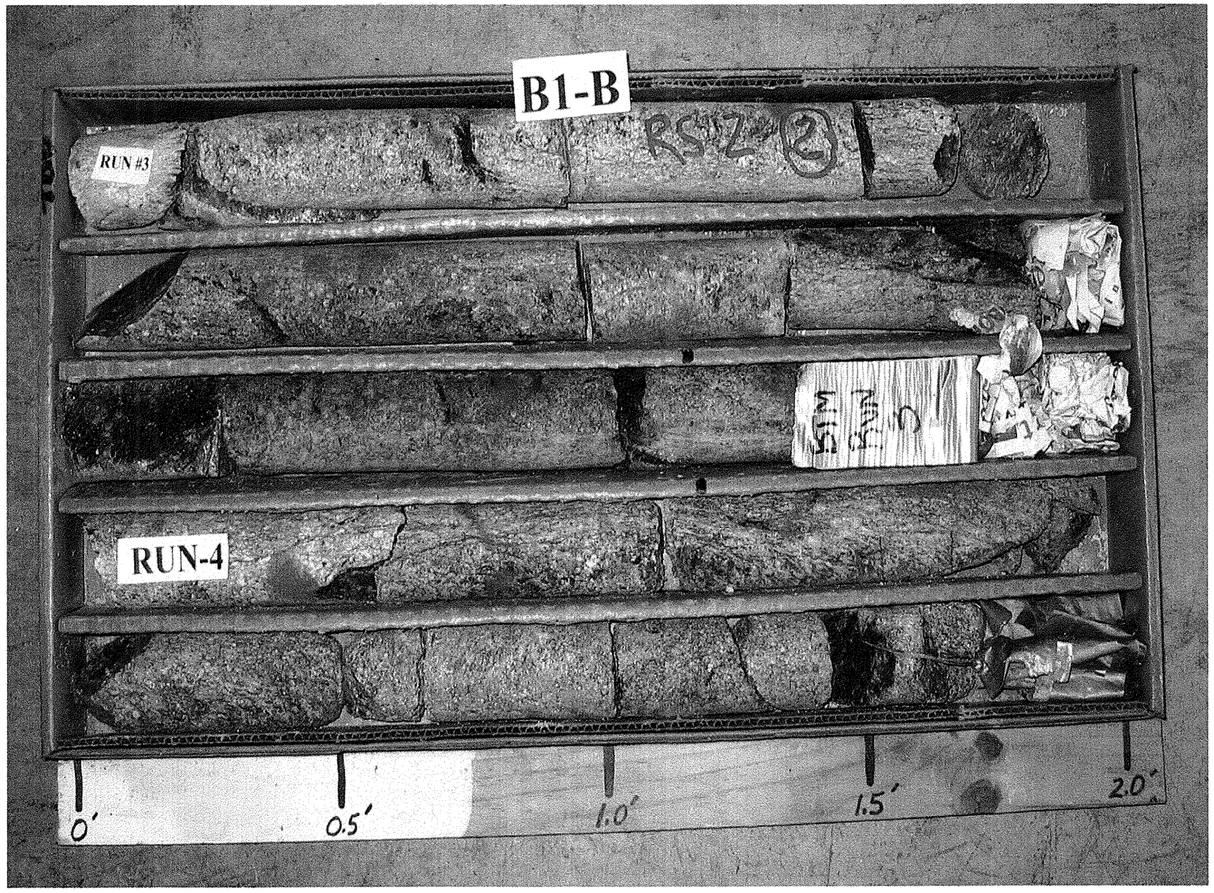
Bed or Bank							
Sample No.							
Retained #4		SEE	SAMPLE	RESULTS			
Passed #10							
Passed #40							
Passed #200							
Coarse Sand							
Fine Sand							
Silt							
Clay							
LL							
PI							
AASHTO							
Station							
Offset							
Depth							

Template Revised 02/07/06

Reported by: JK STICKNEY **Date:** 8/3/2010

PROJECT NUMBER: 33473.1.1 (B-4118)
COUNTY: GASTON
DESCRIPTION: BRIDGE 200 ON SR 1905 (BLACK SNAKE RD.) OVER STANLEY CREEK

B1-B RUNS 1 THROUGH 4



PROJECT NUMBER: 33473.1.1 (B-4118)
COUNTY: GASTON
DESCRIPTION: BRIDGE 200 ON SR 1905 (BLACK SNAKE RD.) OVER STANLEY CREEK

B1-B RUN 4 CONT. & RUN 5

PROJECT NUMBER : 33473.1.1 (B-4118)
COUNTY: GASTON
DESCRIPTION: BRIDGE 200 ON SR 1905 (BLACK SNAKE RD.) OVER STANLEY CREEK

SITE PHOTOS

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