STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	37531.1.1 (B-4859)	1	21

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. *37531.1.1 (B-4859)* F.A. PROJ. *BRSTP-29(38)*

COUNTY *DAVIDSON*

PROJECT DESCRIPTION *BRIDGE 138 ON US 29 /70 & I-85 BUSINESS OVER RICH FORK CREEK*

SITE DESCRIPTION

ID: B-4859

PROJECT: 37531.1.1

CONTENTS

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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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PERSONNEL

AMEC

Environment &

Infrastructure, Inc.

Trigon Engineering

Consultants, Inc.

INVESTIGATED BY *R. Q. CALLAWAY*

CHECKED BY *C. B. LITTLE*

SUBMITTED BY *C. B. LITTLE*

DATE *JANUARY 2012*

NORTH CAROLINA LICENSED SEAL 1104 GEOLOGIST CLINTON B. LITTLE

DRAWN BY: *C. E. BURRIS*

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

NOTE - 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.

PROJECT REFERENCE NO.	SHEET NO.
37531.1.1 (B-4859)	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 # 40 # 200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT PLASTIC INDEX	6 MX		NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
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 0.50 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
PLASTIC RANGE (PI): LL — LIQUID LIMIT		
	- 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
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
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
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME 850
- [X] CME 55

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [X] TRICONE 3 " STEEL TEETH
- [X] TRICONE 3 7/8 " TUNG.-CARB.
- [X] CORE BIT
- [X] 6" HOLLOW AUGERS

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

CORE SIZE:
- [ ] -B___
- [X] -N Q
- [X] -H Q

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: BL-101 STA. 12+55.12 = STA. 18+69.83 -L- 18.8182 RT
(Used by AMEC Environment & Infrastructure, Inc. on 11/18/2011)
ELEVATION: 671.49 FT.

BENCH MARK: BL-3 STA. 12+89.72
(Used by Trigon Engineering Consultants, Inc.)
ELEVATION: 671.79 FT.

NOTES:
STRATIGRAPHY SHOWN THROUGH BORINGS ON CROSS SECTIONS AND PROFILE

The file (B4859 GEO bh BRDG0138 Davidson) was created as an intermediate file for the sole purpose of displaying graphical boring representations on the profile and cross-sections of this project. The information contained in (B4859 GEO bh BRDG0138 Davidson) was obtained from file (B4096 Gint.gpj) created by TRIGON Engineering Consultants Inc. for State Project 8.160201 (B4096) dated 3/22/04.

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	3

SITE PLAN

0 50 100

FEET

SKEW=120°00'00"

DAVIDSON COUNTY COMMUNITY COLLEGE
D.B. 415 PG. 66

TEST WELL

DI

8" VC

6.0 CHAIN LINK W/ 3 S BW

VAR. GRAVEL

WOOD POSTS W/ STEEL CABLE

ANTENNA

24" MTL.

BRUSH

JOHN H. DAVIS AND WIFE, KATHERINE H. DAVIS
D.B. 600 PG. 923

N14°43'11"E 106.23' RICH FORK CREEK

SHERMAN A. YEARGAN, JR., TRUSTEE UNDER THE WILL OF R. WALKER MARTIN, DECEASED, FOR THE BENEFIT OF MARY ALLISON BAILEY
D.B. 682 PG. 526

WOODS

+78.17 154.42'

EXISTING R/W

6' STEEL

FSS

APPROXIMATE LOC.

-BL- 101 PINC 12+55.12

WOODS

BRUSH

15" CMP

RIP RAP

+93.84 184.39'

TO SR 1797

US 29/70 BUS. I-85 S. BOUND 24.5 BST

RETAIN

W.P. #1 STA. 18+94.26

15" CONC

EB1-B(B4096)

NEW CONC BRIDGE #140

CONC. BENT

W.P. #2 STA. 19+71.21

W.P. #3 STA. 20+46.21

B1-B(B4096)

W.P. #4 STA. 21+23.17

B2-B(B4096)

EB2-B(B4096)

18" CMP

N 68°56'21.4" E -L-

US 29/70 BUS. I-85 N. BOUND 24.5 BST

20 OLD CONC BRIDGE #138

EB1-B

B1-B

B2-B

EB2-B

TO SR 1797

REMOVE AND REPLACE EXISTING GUARDRAIL

BEGIN APP. SLAB -L- POT 18+70.41 +/-

BEGIN BRIDGE -L- POT 18+94.26 +/-

+22.30 126.89'

REMOVE & REPLACE EXISTING BRIDGE

END BRIDGE -L- POT 21+23.17 +/-

END APP. SLAB -L- POT 21+47.01 +/-

TREES IN WATER

APPROXIMATE

NC GRID NAD 83

S13°05'26"W 83.99'

S08°48'11"W 108.27'

RICH FORK CREEK

JOHN H. DAVIS AND WIFE, KATHERINE H. DAVIS
D.B. 600 PG. 923

DAVIDSON COUNTY COMMUNITY COLLEGE
DB.1941 PG.1651

W.E. 657-3

WA Wetland

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4096-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 771622.988(ft) EASTING: 1650577.230(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990194 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4096-1" TO -L- STATION (supplied by roadway) IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	4
BRIDGE NO. 138 DAVIDSON CO. PROFILE ALONG -L-	

0 50 100
FEET
VE = 5:1

PI = 20+00.00
EL = 674.00'
VC = 250'
K = 368
G1=(+)0.3457%
G2=(-)0.3333%

C/L STA 20+08.71 -L-
3@75' 54" PRESTRESSED CONCRETE GIRDER BRIDGE
SKEW = 120 DEGREE
GRADE POINT ELEVATION = 673.79'
LENGTH = 225'

PI = 16+50.00
EL = 672.79'
VC = 250'
K = 161
G1=(-)1.2067%
G2=(+)0.3457%

SAG
STA 17+19.33
EL = 673.13'

EB1-B
18+57 -L-
11 RT
ELEV. = 672.1'

BEGIN BRIDGE
STA +/- 18+95 -L-

END BRIDGE
STA +/- 21+20 -L-

EB2-B
21+19 -L-
12 RT
ELEV. = 672.3'

PROP. ROADWAY

PI = 23+00.00
EL = 673.00'
VC = 320'
K = 738
G1=(-)0.3333%
G2=(+)0.1000%

690 680 670 660 650 640 630 620 610 600

EXIST. ROADWAY

ROADWAY EMBANKMENT
ASPHALT AND ABC STONE

ORANGE MED. STIFF MOIST SANDY SILT WITH MICA

GRAY-BROWN MED. STIFF MOIST SANDY CLAY WITH GRAVEL

ALLUVIAL
GRAY LOOSE MOIST TO WET FINE TO COARSE SAND

RESIDUAL
GRAY MED. DENSE WET SILTY FINE TO COARSE SAND

GREENISH GRAY AND WHITE HARD MOIST SANDY SILT

WEATHERED ROCK
WEATHERED DARK GRAY AND WHITE COARSE GRAIN INTRUSIVE ROCK; METADIORITE

CRYSTALLINE ROCK
SPT REFUSAL, METADIORITE

BT
FIAD
11/14/2011

EXIST. STREAMBED

PROP. 100YR WSEL=664.53'
PROP. 50YR WSEL=663.04'
RS-1
RS-2

B1-B
19+67 -L-
12 RT
ELEV. = 656.4'

B2-B
20+43 -L-
12 RT
ELEV. = 656.0'

NORMAL WS EL=652.50'

ALLUVIAL

RESIDUAL

WEATHERED ROCK
SEV. WEATHERED METADIORITE

CRYSTALLINE ROCK
DARK GRAY AND WHITE FRESH, VERY HARD, MODERATE CLOSELY FRACTURED METADIORITE.
ROCK TYPE D.
R1=7
R2=20
R3=26
R4=20
R5=0
RMR=72
REC.=97%
RQD.=97%

BT

ROADWAY EMBANKMENT
ASPHALT AND ABC GRAVEL

GRAY-BROWN MED. STIFF MOIST SANDY SILT

BROWN MED. STIFF MOIST SANDY SILT WITH GRAVEL

BROWN MED. STIFF MOIST CLAY

ALLUVIAL
GRAY MED. STIFF MOIST SANDY CLAY WITH TRACE ROOT FRAGMENTS, (TOP OF ORIGINAL LAND SURFACE)

GRAY AND BROWN MED. STIFF TO STIFF MOIST SANDY CLAY

GRAY MED. DENSE MOIST SILTY FINE TO COARSE SAND

CRYSTALLINE ROCK
SPT REFUSAL METADIORITE
ROLLER CONE BIT REFUSAL

CRYSTALLINE ROCK
METADIORITE

DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MEDIUM CLOSELY FRACTURED METADIORITE.
ROCK TYPE D.
R1=7
R2=20
R3=26
R4=20
R5=0
RMR=72
REC.=89%
RQD.=87%

BT

PERFORMANCE CURVE TABLE				
FREQUENCY				
	10yr	50yr.	100yr.	500yr.
NATURAL	660.04'	661.27'	662.21'	663.52'
CORRECTED	661.42'	663.23'	664.65'	666.41'
PROPOSED	661.10'	663.04'	664.53'	666.36'
@X-SECTION	13004 (125' FROM C/L OF BRIDGE)			

NOTE: USE 6" DECK DRAINS ON 12' CENTERS ON SPANS 1 AND 3 LT AND RT

BORING DESCRIPTIONS

- (A) ALLUVIAL, BROWN MED. STIFF MOIST FINE TO COARSE SANDY CLAY
- (B) ALLUVIAL, GRAY SOFT MOIST SANDY CLAY
- (C) ALLUVIAL, DARK GRAY MED. STIFF TO STIFF MOIST SANDY SILT
- (D) RESIDUAL, FIRST DRIVE IN RESIDUAL DARK GRAY VERY STIFF TO HARD MOIST SANDY SILT. MAY EXTEND TO 13.0 BELOW LAND SURFACE.
- (E) RESIDUAL, DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT
- (F) WEATHERED ROCK, SEVERELY WEATHERED METADIORITE
- (G) CRYSTALLINE ROCK, DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE FRACTURED METADIORITE. ROCK TYPE D.
- (H) ALLUVIAL, GRAY-BROWN MED. STIFF WET FINE TO COARSE SANDY SILT
- (I) ALLUVIAL, LIGHT BROWN STIFF WET FINE TO COARSE SANDY SILT
- (J) RESIDUAL, BROWN AND DARK GRAY LOOSE TO MED. DENSE WET FINE TO COARSE SAND WITH ROCK FRAGMENTS
- (K) RESIDUAL, DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT

17+00 18+00 19+00 20+00 21+00 22+00 23+00

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	5

SECTION THROUGH EB-1
-L- STA. 18+94.26
SKEW=120°00'00"

0 10 20
FEET

-L-

SS-5
SS-6
SS-7

EB1-B1(B4096)
18+74 -L-
22 RT
ELEV.=671.1'
=
18+71 -L-
27 LT

EB1-B
18+57 -L-
11 RT
ELEV.=672.1'

ROADWAY EMBANKMENT
ASPHALT AND ABC STONE

EXISTING GROUND

ROADWAY EMBANKMENT FILL
Stiff to Medium Stiff, Tan and Orange, Clayey, Coarse to Fine Sandy SILT with a Little Mica and Gravel

Medium Dense, Grey and White, Clayey, Silty, Fine to Coarse SAND with a Little Mica

Stiff to Soft, Brown-Orange to Grey, Silty, Coarse to Fine Sandy CLAY with a Little Mica and a Trace of Gravel

03/04

ALLUVIAL
Medium Stiff, Grey, Coarse to Fine Sandy SILT with a Trace of Clay

RESIDUAL
Medium Dense to Dense, Grey, Silty, Fine to Coarse SAND

Hard, Dark Grey with White and Brown, Coarse to Fine Sandy SILT

WEATHERED ROCK
Grey and White Metadiorite

BT

ORANGE MED. STIFF MOIST SANDY SILT WITH MICA

11/11

GRAY-BROWN MED. STIFF MOIST SANDY CLAY WITH GRAVEL

ALLUVIAL
GRAY LOOSE MOIST TO WET FINE TO COARSE SAND

RESIDUAL
GRAY MED. DENSE WET SILTY FINE TO COARSE SAND

GREENISH GRAY AND WHITE HARD MOIST SANDY SILT

WEATHERED ROCK
WEATHERED DARK GRAY AND WHITE COARSE GRAIN INTRUSIVE ROCK; METADIORITE

BT
FIAD
11/14/2011

CRYSTALLINE ROCK
SPT REFUSAL, METADIORITE

700 690 680 670 660 650 640 630 620 610 600

50 40 30 20 10 0 10 20 30 40 50

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	6
SECTION THROUGH B-1 -L- STA. 19+71.21 SKEW=120°00'00"	

0 10 20 FEET

-L-

SS-10
SS-11

B1-B(B4096)
19+89 -L-
20 RT
ELEV.=655.2'
=
19+86 -L-
29 LT

RS-1

B1-B
19+67 -L-
12 RT
ELEV.=656.4'

EXISTING GROUND

ALLUVIAL
Soft to Medium Stiff, Brown and Grey, Clayey, Coarse to Fine Sandy SILT

4 — 02/04

10
6
4

Medium Dense to Very Loose, Grey, Clayey, Silty, Coarse to Fine SAND with a Trace of Organics (Leaf Fragments)

3

14

RESIDUAL
Stiff to Very Stiff, Grey, Fine to Coarse Sandy SILT with Some Rock Fragments and a Little Mica

17

CRYSTALLINE ROCK
Grey with White, Moderately Weathered, Soft to Medium Hard, Metadiorite with Very Close to Close Fracture Spacing

WEATHERED ROCK 100/0.9

Grey with Brown and White, Metadiorite
REC.=100% ROD.=0%

WEATHERED ROCK
Grey with White, Severely Weathered, Soft to Very Soft, Metadiorite with Close to Very Close Fracture Spacing

100/0.8

CRYSTALLINE ROCK
Grey with White, Slightly Weathered, Hard, Metadiorite with Close Fracture Spacing

REC.=100% ROD.=69%

WEATHERED ROCK
CRYSTALLINE ROCK
Grey with White, Severely Weathered, Very Soft to Soft, Metadiorite with Very Close to Close Fracture Spacing

Grey with White, Very Slightly to Slightly Weathered, Hard, Metadiorite with Moderately Close to Wide Fracture Spacing

REC.=100% ROD.=100%

REC.=50% ROD.=0%

Grey with White, Moderately Weathered, Medium to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing

Grey with White, Slightly to Moderately Weathered, Hard to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing

REC.=83% ROD.=39%

Grey with White, Slightly to Very Slightly Weathered, Hard, Metadiorite with Wide Fracture Spacing

REC.=100% ROD.=100%

BT

ALLUVIAL
BROWN MED. STIFF MOIST FINE TO COARSE SANDY CLAY

7

11/11

3

GRAY SOFT MOIST SANDY CLAY

4

DARK GRAY MED. STIFF TO STIFF MOIST SANDY SILT

14

RESIDUAL
FIRST DRIVE IN RESIDUAL DARK GRAY VERY STIFF TO HARD, MOIST SANDY SILT. MAY EXTEND TO 13.0 BELOW LAND SURFACE.

53

28

DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT

60/0

WEATHERED ROCK SEVERELY WEATHERED METADIORITE

CRYSTALLINE ROCK
DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE FRACTURED METADIORITE.
ROCK TYPE D.
RI=7. R2=13. R3=20. R4=20. R5=0. RMR=60

REC.=99% ROD.=72%

WEATHERED ROCK
SEVERELY WEATHERED METADIORITE

CRYSTALLINE ROCK
DARK GRAY AND WHITE FRESH, VERY HARD, MODERATELY CLOSELY FRACTURED METADIORITE.
ROCK TYPE D
RI=7
R2=20
R3=25
R4=20
R5=0
RMR=72

REC.=97% ROD.=97%

BT

680 670 660 650 640 630 620 610 600 590 580

50 40 30 20 10 0 10 20 30 40 50

0	10	20
FEET		

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	7

SECTION THROUGH B-2
-L- STA. 20+46.21
SKEW=120°00'00"

690
680
670
660
650
640
630
620
610
600
590

-L-

SS-14
SS-15
RS-2(B4096)

B2-B(B4096)
20+68 -L-
20 RT
ELEV.=655.9'
=
20+65 -L-
29 LT

RS-2

B2-B
20+43 -L-
12 RT
ELEV.=656.0'

EXISTING GROUND

11/0

ALLUVIAL
(6) 3/04
Medium Stiff to Soft, Brown and Grey, Clayey, Coarse to Fine Sandy SILT with a Trace of Organics (Leaf and Root Fragments)

(2)

(12) Stiff, Grey, Silty, Fine Sandy CLAY

RESIDUAL
(3) Very Loose, Grey, Clayey, Silty, Coarse to Fine SAND with a Little Mica and Rock Fragments

(15) Stiff to Very Stiff, Dark Grey with Some White, Coarse to Fine Sandy SILT with a Trace of Clay

(6) 50/0.0

CRYSTALLINE ROCK
Grey with White, Slightly to Very Slightly Weathered, Hard to Very Hard, Metadiorite with Granitic Intrusions and with Wide to Very Wide Fracture Spacing

REC.=100%
RQD.=100%

BT

(6) 11/0
ALLUVIAL
GRAY-BROWN MED. STIFF WET FINE TO COARSE SANDY SILT

(8) LIGHT BROWN STIFF WET FINE TO COARSE SANDY SILT

RESIDUAL
(13) BROWN AND DARK GRAY LOOSE TO MED. DENSE WET FINE TO COARSE SAND WITH ROCK FRAGMENTS

(19) DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT

(100/.6) WEATHERED ROCK SEVERELY WEATHERED METADIORITE

(60/0) CRYSTALLINE ROCK METADIORITE

DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MEDIUM CLOSELY FRACTURED MEATDIORITE.
ROCK TYPE D
RI=7
R2=20
R3=25
R4=20
R5=0
RMR=72

REC.=99%
RQD.=97%

BT

50 40 30 20 10 0 10 20 30 40 50

PROJECT REFERENCE NO.	SHEET
37531.1.1 (B-4859)	8

SECTION THROUGH EB-2
-L- STA. 21+23.17
SKEW=120°00'00"

0 10 20
FEET

-L-

SS-19
SS-20
SS-21

EB2-B(B4096)
21+60 -L-
24 RT
ELEV.=670.4'
=
21+57 -L-
25 LT

EB2-B
21+19 -L-
12 RT
ELEV.=672.3'

EXISTING GROUND

ROADWAY EMBANKMENT
FILL

(6) (10) (8) (5) (8) (10) (10) (16) 50/0.0

Medium Stiff, Brown with Black, Clayey, Coarse to Fine Sandy SILT

Stiff, Brown and Grey, Silty, Coarse to Fine Sandy CLAY

Medium Stiff to Stiff, Brown-Orange to Brown and Grey, Coarse to Fine Sandy, Silty CLAY with a Trace of Gravel and Organics (Leaf Fragments)

03/04 ALLUVIAL
Stiff, Grey, Clayey, Coarse to Fine Sandy SILT

RESIDUAL
Loose to Medium Dense, Brown-Yellow, Clayey, Fine to Coarse SAND

Very Stiff, Brown and Grey, Coarse to Fine Sandy SILT

BT

CRYSTALLINE ROCK
SPT REFUSAL, MET ADIORITE

ROADWAY EMBANKMENT
ASPHALT AND ABC GRAVEL

(5) (5) (4) (4) (5) (14) (10) 60/0.0

GRAY-BROWN MED. STIFF MOIST SANDY SILT

BROWN MED. STIFF MOIST SANDY SILT WITH GRAVEL

BROWN MED. STIFF MOIST CLAY

ALLUVIAL
GRAY MED. STIFF MOIST SANDY CLAY WITH TRACE ROOT FRAGMENTS, (TOP OF ORIGINAL LAND SURFACE)

GRAY AND BROWN MED. STIFF TO STIFF, MOIST SANDY CLAY

GRAY MED. DENSE MOIST SILTY FINE TO COARSE SAND

BT

CRYSTALLINE ROCK
SPT REFUSAL, MET ADIORITE
ROLLER CONE BIT REFUSAL

700 690 680 670 660 650 640 630 620 610 600

50 40 30 20 10 0 10 20 30 40 50

N.C.D.O.T. GEOTECHNICAL UNIT
BORING LOG

SHEET 16 OF 34

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business			GROUND WATER (ft)
BORING NO. EB1-B1	BORING LOCATION 18+74	OFFSET 22ft RT	ALIGNMENT -L-
COLLAR ELEV. 671.1 ft	NORTHING 771895.49	EASTING 1651281.54	0 HR. NM
TOTAL DEPTH 59.0 ft	DRILL MACHINE CME 45	DRILL METHOD HSA	HAMMER TYPE 140 lb. Manual
DATE STARTED 3/4/04	COMPLETED 3/5/04	SURFACE WATER DEPTH NA	24 HR. 18.0

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
671.1									671.1 0.00
670.1	1.0								ROADWAY EMBANKMENT FILL: Stiff to Medium Stiff, Tan and Orange, Clayey, Coarse to Fine Sandy SILT with a Little Mica and Gravel
667.6	3.5	4	6	8	14		M		
665.1	6.0	2	2	3	5	SS-5	25.4%	M	
662.6	8.5	3	3	5	8				662.1 9.0
657.6	13.5	3	5	9	14		M		ROADWAY EMBANKMENT FILL: Medium Dense, Grey and White, Clayey, Silty, Fine to Coarse SAND with a Little Mica 12.0
652.6	18.5	2	3	5	8	SS-6	28.5%		ROADWAY EMBANKMENT FILL: Stiff to Soft, Brown-Orange to Grey, Silty, Coarse to Fine Sandy CLAY with a Little Mica and a Trace of Gravel
647.6	23.5	1	1	1	2		M		649.1 22.0
642.6	28.5	2	3	3	6	SS-7	29.4%		ALLUVIAL: Medium Stiff, Grey, Coarse to Fine Sandy SILT with a Trace of Clay
637.6	33.5	1	8	6	14				
632.6	38.5	48	26	17	43		S		642.1 29.0
627.6	43.5	18	30	32	62		W		RESIDUAL: Medium Dense to Dense, Grey, Silty, Fine to Coarse SAND
622.6	48.5	28	54	46/0.3	100/0.9		M		635.1 36.0
617.6	53.5	25	51	49/0.2	100/0.7				Hard, Dark Grey with White and Brown, Coarse to Fine Sandy SILT
612.6	58.5	100/0.5	35	65/0.3	100/0.8				627.1 44.0
			100/0.5						WEATHERED ROCK: Grey and White Metadiorite
									612.1 59.0
									Boring Terminated at Elevation 612.1 feet in Weathered Rock: Metadiorite

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 9

WBS 37531.1.1	TIP B-4859	COUNTY DAVIDSON	GEOLOGIST LLOYD, K
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)			GROUND WTR (ft)
BORING NO. EB1-B	STATION 18+57	OFFSET 11 ft RT	ALIGNMENT -L- 0 HR. 10.3
COLLAR ELEV. 672.1 ft	TOTAL DEPTH 52.6 ft	NORTHING 771,855	EASTING 1,651,282 24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/14/11	COMP. DATE 11/14/11	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)
675										
										672.1 0.0
670	670.3	1.8								GROUND SURFACE
			10	5	3	8		M		ROADWAY EMBANKMENT 0 - 4.3' ASPHALT AND ABC STONE
	667.8	4.3								667.8 4.3
665			2	3	3	6		M		ROADWAY EMBANKMENT 4.3' ORANGE MED. STIFF MOIST SANDY SILT WITH MICA
	664.6	7.5								
			2	2	2	4		M		
660	659.6	12.5								659.6 12.5
			2	3	2	5		M		ROADWAY EMBANKMENT 12.5 GRAY-BROWN MED. STIFF MOIST SANDY CLAY WITH GRAVEL
655	654.6	17.5								654.6 17.5
			1	1	2	3		M		ALLUVIAL 17.5 GRAY LOOSE MOIST TO WET FINE TO COARSE SAND
650	649.6	22.5								
			3	2	3	5		M		
645	644.6	27.5								
			3	4	3	7		W		
640	639.6	32.5								639.6 32.5
			4	5	6	11		W		RESIDUAL 32.5 GRAY MED. DENSE WET SILTY FINE TO COARSE SAND
635	634.6	37.5								634.6 37.5
			10	13	18	31		M		RESIDUAL 37.5 GREENISH GRAY AND WHITE HARD MOIST SANDY SILT
630	629.6	42.5								
			6	18	31	49		M		628.1 44.0
625	624.6	47.5								WEATHERED ROCK 44' WEATHERED DARK GRAY AND WHITE COARSE GRAIN INTRUSIVE ROCK; METADIORITE
			60/0.2			60/0.2				
620	619.6	52.5								619.6 52.5
			60/0.1			60/0.1				619.5 52.6 CRYSTALLINE ROCK 52.5 SPT REFUSAL, METADIORITE
										Boring Terminated with Standard Penetration Test Refusal at Elevation 619.5 ft in metadiorite

NCDOT BORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

N.C.D.O.T. GEOTECHNICAL UNIT
BORING LOG

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business			GROUND WATER (ft)
BORING NO. EB1-B	BORING LOCATION 19+62	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 656.2 ft	NORTHING 771929.32	EASTING 1651363.01	0 HR. NM
TOTAL DEPTH 49.7 ft	DRILL MACHINE CME 850	DRILL METHOD Wash Rotary	24 HR. 2.0
DATE STARTED 2/24/04	COMPLETED 2/24/04	SURFACE WATER DEPTH NA	HAMMER TYPE 140 lb. Automatic

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
656.2									
655.2	1.0								656.2 — 0.00
652.7	3.5	WOH	WOH	WOH	WOH		W		ALLUVIAL: Very Loose, Brown, Silty, Fine to Coarse SAND — 653.2 — 3.0
650.2	6.0	3	4	6	10		W		ALLUVIAL: Stiff to Soft, Brown and Grey, Clayey, Coarse to Fine Sandy SILT with a Little Mica
647.7	8.5	4	4	4	8		W		
642.7	13.5	2	4	4	8		W		
637.7	18.5	WOH	1	2	3		W		640.2 — 16.0
632.7	23.5	3	3	4	7	SS-3	S		ALLUVIAL: Loose, Grey, Fine to Coarse SAND with a Little Gravel and Mica and a Trace of Silt — 632.7 — 23.5
627.7	28.5	8	15	14	29		M		RESIDUAL: Very Stiff, Grey with Brown and White, Coarse to Fine Sandy SILT
622.7	33.5	9	11	14	25	SS-4	21.2%		
617.7	38.5	23	50	50/0.3	100/0.8				622.2 — 34.0
612.7	43.5	60	40/0.3		100/0.8				WEATHERED ROCK: Grey with Brown and White, Metadiorite
607.7	48.5	23	41	59/0.4	100/0.9				
		30	48	52/0.2	100/0.7				606.5 — 49.7

Boring Terminated at Elevation 606.5 feet in Weathered Rock: Metadiorite

Note: Drill fluid = creek water + bentonite
Mud density = 65.2 lbs./cu. ft.

NCDOT BORE SINGLE 07104004.GPJ NC_DOT.GDT 3/19/04

SHEET 10

N.C.D.O.T. GEOTECHNICAL UNIT
BORING LOG

SHEET 19 OF 34

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business			GROUND WATER (ft)
BORING NO. B1-B	BORING LOCATION 19+89	OFFSET 20ft RT	ALIGNMENT -L-	0 HR. NM
COLLAR ELEV. 655.2 ft	NORTHING 771938.59	EASTING 1651387.88	24 HR. 2.0
TOTAL DEPTH 60.8 ft	DRILL MACHINE CME 850	DRILL METHOD Wash Rotary/HQ Core	HAMMER TYPE 140 lb. Automatic
DATE STARTED 2/20/04	COMPLETED 2/23/04	SURFACE WATER DEPTH NA	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
655.2									655.2 0.0
654.2	1.0	2	2	2	4				ALLUVIAL: Soft to Medium Stiff, Brown and Grey, Clayey, Coarse to Fine Sandy SILT
651.7	3.5								652.2 3.0
649.2	6.0	2	3	7	10		W		ALLUVIAL: Medium Dense to Very Loose, Grey, Clayey, Silty, Coarse to Fine SAND with a Trace of Organics (Leaf Fragments)
646.7	8.5	6	4	2	6	SS-10	W		
641.7	13.5	WOH	2	2	4		W		
636.7	18.5	3	1	2	3		S		
631.7	23.5	3	5	9	14		W		635.7 19.5 RESIDUAL: Stiff to Very Stiff, Grey, Fine to Coarse Sandy SILT with Some Rock Fragments and a Little Mica
626.7	28.5	4	7	10	17	SS-11	25.9%		
619.0	36.2	16	41	59/0.4	100/0.9				626.2 29.0 625.3 29.9 WEATHERED ROCK: Grey with Brown and White, Metadiorite
		50	50/0.3		100/0.8				623.8 31.4 CRYSTALLINE ROCK: Grey with White, Moderately Weathered, Soft to Medium Hard, Metadiorite with Very Close to Close Fracture Spacing
									WEATHERED ROCK: Grey with White, Severely Weathered, Soft to Very Soft, Metadiorite with Close to Very Close Fracture Spacing
									616.8 38.4 615.5 39.7
									614.1 41.1 CRYSTALLINE ROCK: Grey with White, Slightly Weathered, Hard, Metadiorite with Close Fracture Spacing
									WEATHERED ROCK: Grey with White, Severely Weathered, Very Soft to Soft, Metadiorite with Very Close to Close Fracture Spacing
									607.9 47.3
									606.1 49.1 CRYSTALLINE ROCK: Grey with White, Very Slightly to Slightly Weathered, Hard, Metadiorite with Moderately Close to Wide Fracture Spacing
									603.8 51.4 CRYSTALLINE ROCK: Grey with White, Moderately Weathered, Medium to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing
									CRYSTALLINE ROCK: Grey with White, Slightly to Moderately Weathered, Hard to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing
									594.4 60.8 CRYSTALLINE ROCK: Grey with White, Slightly to Very Slightly Weathered, Hard, Metadiorite with Wide Fracture Spacing

Coring Terminated at Elevation 594.4 feet in Crystalline Rock: Metadiorite

*Note: Drill fluid = creek water + bentonite
Mud density = 64.5 lbs./cu. ft.
Slurry was used for soil and weathered rock drilling.
Creek water alone was used for rock coring.

N.C.D.O.T. GEOTECHNICAL UNIT
CORE BORING REPORT

SHEET 11

SHEET 19 OF 34

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business			GROUND WATER (ft)
BORING NO. B1-B	BORING LOCATION 19+89	OFFSET 20ft RT	ALIGNMENT -L-	0 HR. NM
COLLAR ELEV. 655.2 ft	NORTHING 771938.59	EASTING 1651387.88	24 HR. 2.0
TOTAL DEPTH 60.8 ft	DRILL MACHINE CME 850	DRILL METHOD Wash Rotary/HQ Core	HAMMER TYPE 140 lb. Automatic
DATE STARTED 2/20/04	COMPLETED 2/23/04	SURFACE WATER DEPTH NA	
CORE SIZE HQ	TOTAL RUN 30.1 ft	DRILLER R. Toothman	

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
										Begin Coring @ 29.9 ft
625.3	29.9	1.5	2:30	(1.5) 100%	(0.0) 0%		(1.5) 100%	(0.0) 0%		625.3 623.8 CRYSTALLINE ROCK: Grey with White, Moderately Weathered, Soft to Medium Hard, Metadiorite with Very Close to Close Fracture Spacing 29.9 31.4
623.8	31.4	4.8	0:25/0.5							
			1:00	(0.9) 19%	(0.0) 0%		(0.9) 14%	NA		Majority of jts @ 0° to 10° with iron staining
			1:30							2 vertical fractures 0.3 ft. to 0.4 ft. long with iron staining
619.0	36.2		1:15							WEATHERED ROCK: Grey with White, Severely Weathered, Soft to Very Soft, Metadiorite with Close to Very Close Fracture Spacing
			2:10							
618.2	37.0	2.7	1:15/0.8							616.8 38.4
			V=100/0.6	(1.3) 48%	(0.8) 30%					
615.5	39.7		2:00/0.2				(1.3) 100%	(0.9) 69%		615.5 39.7 *Note: Run #2 cut short due to core block
614.1	41.1	1.4	2:00	(1.2) 86%	NA					614.1 41.1 CRYSTALLINE ROCK: Grey with White, Slightly Weathered, Hard, Metadiorite with Close Fracture Spacing
			1:15				(1.2) 86%	NA		2 bisecting fractures; 1 @ 60° and 1 @ 80°
		4.9	5:15/0.5	(4.9) 100%	(4.9) 100%		(6.2) 100%	(6.2) 100%		*Note: Run #3 cut short due to core block
609.2	46.0		2:40/0.5							WEATHERED ROCK: Grey with White, Severely Weathered, Very Soft to Soft, Metadiorite with Very Close to Close Fracture Spacing
			3:45/0.9							607.9 47.3
		5.0	3:30	(4.1) 82%	(2.3) 46%					
			3:45				(0.9) 50%	(0.0) 0%		606.1 49.1 *Note: Run #4 cut short to adjust stroke
604.2	51.0		3:40							CRYSTALLINE ROCK: Grey with White, Very Slightly to Slightly Weathered, Hard, Metadiorite with Moderately Close to Wide Fracture Spacing
			3:30				(1.9) 83%	(0.9) 39%		603.8 51.4
		4.9	3:30/0.9	(4.5) 92%	(4.5) 92%		(9.4) 100%	(9.4) 100%		1 jt @ 50°
599.3	55.9		3:00							
			5:40							#Note: Run #5 is short due to mismeasurement by driller
		4.9	4:30	(4.9) 100%	(4.9) 100%					CRYSTALLINE ROCK: Grey with White, Moderately Weathered, Medium to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing
			4:00							
			4:00							1 - 0.7 ft. long vertical jt w/iron staining
594.4	60.8		4:10							594.4 60.8 Low angle jts @ 10° to 20° w/iron staining
			3:15							
			3:50							CRYSTALLINE ROCK: Grey with White, Slightly to Moderately Weathered, Hard to Moderately Hard, Metadiorite with Very Close to Close Fracture Spacing
			4:05							
			4:00/0.9							Majority of jts @ 20° to 30° w/iron staining
			4:10							1 jt @ 70° to 90° w/heavy iron staining
			3:45							CRYSTALLINE ROCK: Grey with White, Slightly to Very Slightly Weathered, Hard, Metadiorite with Wide Fracture Spacing
			3:55							
			4:35							No natural fractures
			5:00/0.9							

*Note: Runs #7 and 8 are short due to mismeasurement by driller
Coring Terminated at Elevation 594.4 feet in Crystalline Rock: Metadiorite

*Note: Drill fluid = creek water + bentonite
Mud density = 64.5 lbs./cu. ft.
Slurry was used for soil and weathered rock drilling.
Creek water alone was used for rock coring.

NCDOT CORE SINGLE 07104004.GPJ NC_DOT.GDT 4/6/04

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 37531.1.1	**TIP** B-4859	**COUNTY** DAVIDSON	**GEOLOGIST** LLOYD, K	
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 19+67	**OFFSET** 12 ft RT	**ALIGNMENT** -L-	**0 HR.** 5.3
COLLAR ELEV. 656.4 ft	**TOTAL DEPTH** 59.3 ft	**NORTHING** 771,894	**EASTING** 1,651,385	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/15/11	**COMP. DATE** 11/15/11	**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)
660										656.4 GROUND SURFACE	0.0
655	654.4	2.0	5	4	3	7		M		**ALLUVIAL** 0' BROWN MED. STIFF MOIST FINE TO COARSE SANDY CLAY	
650	649.7	6.7	2	2	1	3		M		649.7 **ALLUVIAL** 6.7' GRAY SOFT MOIST SANDY CLAY	6.7
645	644.7	11.7	1	2	2	4		M		644.7 **ALLUVIAL** 11.7 DARK GRAY MED. STIFF TO STIFF MOIST SANDY SILT	11.7
640	639.7	16.7	6	5	9	14		M		639.7 **RESIDUAL** 16.7 FIRST DRIVE IN RESIDUAL DARK GRAY VERY STIFF TO HARD MOIST SANDY SILT. MAY EXTEND TO 13.0 BELOW LAND SURFACE.	16.7
635	634.7	21.7	17	24	29	53		M			
630	629.7	26.7	11	11	17	28		M		629.7 **RESIDUAL** 627.9 26.7 DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT	26.7 / 28.5
625	627.1	29.3	60/0			60/0				627.1 **WEATHERED ROCK** 28.5 SEVERELY WEATHERED METADIORITE	29.3
620										**CRYSTALLINE ROCK** METADIORITE 620.2	36.2
615										**WEATHERED ROCK** SEVERELY WEATHERED METADIORITE	
610							RS-1			612.1 **CRYSTALLINE ROCK** METADIORITE	44.3
605											
600										597.1 Boring Terminated at Elevation 597.1 ft in metadiorite	59.3

NCDOT BORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 37531.1.1	**TIP** B-4859	**COUNTY** DAVIDSON	**GEOLOGIST** LLOYD, K	
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 19+67	**OFFSET** 12 ft RT	**ALIGNMENT** -L-	**0 HR.** 5.3
COLLAR ELEV. 656.4 ft	**TOTAL DEPTH** 59.3 ft	**NORTHING** 771,894	**EASTING** 1,651,385	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/15/11	**COMP. DATE** 11/15/11	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 30.0 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 ELEV. (ft)	DEPTH (ft)
627.13											Begin Coring @ 29.3 ft	
625	627.1	29.3	5.0	*N=60/0* 12:58/1.0 13:10/1.0 9:20/1.0 9:43/1.0 4:03/1.0	(4.9) 98%	(4.6) 92%		(6.8) 99%	(5.0) 72%		627.1 **CRYSTALLINE ROCK** 29.3 - 36.2 DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE FRACTURED METADIORITE. ROCK TYPE D. FAIR ROCK. R1=7 R2=13 R3=20 R4=20 R5=0 RMR=60	29.3
620	622.1	34.3	5.0	3:01/1.0 4:12/1.0 3:41/1.0 2:59/1.0 1:10/1.0	(1.9) 38%	(0.0) 0%		(0.0) 0%	(0.0) 0%		620.2 **WEATHERED ROCK** 36.2 - 44.3 NO RECOVERY, PRESUMED SEVERELY WEATHERED ROCK. VERY POOR ROCK. R1=0 R2=0 R3=5 R4=0 R5=0 RMR=5	36.2
615	617.1	39.3	5.0	1:45/1.0 2:32/1.0 1:58/1.0 2:20/1.0 3:08/1.0	(0.0) 0%	(0.0) 0%					612.1 **CRYSTALLINE ROCK** 44.3 - 59.3 DARK GRAY AND WHITE FRESH, VERY HARD, MODERATE CLOSELY FRACTURED METADIORITE. ROCK TYPE D. GOOD ROCK. R1=7 R2=20 R3=25 R4=20 R5=0 RMR=72	44.3
610	612.1	44.3	5.0	4:25/1.0 9:01/1.0 8:18/1.0 8:20/1.0 10:35/1.0	(5.0) 100%	(5.0) 100%	RS-1	(14.5) 97%	(14.5) 97%		597.1 Boring Terminated at Elevation 597.1 ft in metadiorite	59.3
605	607.1	49.3	5.0	7:33/1.0 5:33/1.0 6:34/1.0 5:05/1.0 5:01/1.0	(4.5) 90%	(4.5) 90%						
600	602.1	54.3	5.0	3:38/1.0 3:11/1.0 3:01/1.0 3:12/1.0 2:58/1.0	(5.0) 100%	(5.0) 100%						
	597.1	59.3										

NCDOT CORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

N.C.D.O.T. GEOTECHNICAL UNIT

BORING LOG

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton	
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business				GROUND WATER (ft)
BORING NO. B2-B	BORING LOCATION 20+68	OFFSET 20ft RT	ALIGNMENT -L-	0 HR. NM
COLLAR ELEV. 655.9 ft	NORTHING 771966.99	EASTING 1651461.63		24 HR. 1.8
TOTAL DEPTH 34.7 ft	DRILL MACHINE CME 850	DRILL METHOD Wash Rotary/HQ Core	HAMMER TYPE 140 lb. Automatic	
DATE STARTED 3/2/04	COMPLETED 3/3/04	SURFACE WATER DEPTH NA		

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
655.9									655.9 0.00
654.9	1.0	3	3	3	●6		W		ALLUVIAL: Medium Stiff to Soft, Brown and Grey, Clayey, Coarse to Fine Sandy SILT with a Trace of Organics (Leaf and Root Fragments)
652.4	3.5	2	1	1	●2	ST-3			648.9 7.0
647.4	8.5	3	5	7	●12	SS-14	22.3%		ALLUVIAL: Stiff, Grey, Silty, Fine Sandy CLAY
642.4	13.5	2	1	2	●3	SS-15	W		643.9 12.0 RESIDUAL: Very Loose, Grey, Clayey, Silty, Coarse to Fine SAND with a Little Mica and Rock Fragments
637.4	18.5	5	8	7	●15		M		637.4 18.5 Stiff to Very Stiff, Dark Grey with Some White, Coarse to Fine Sandy SILT with a Trace of Clay
635.2	20.7	60/0.0			60/0.0	RS-2			635.2 20.7 CRYSTALLINE ROCK: Grey with White, Slightly to Very Slightly Weathered, Hard to Very Hard, Metadiorite with Granitic Intrusions and with Wide to Very Wide Fracture Spacing
621.2	34.7								621.2 34.7 Coring Terminated at Elevation 621.2 feet in Crystalline Rock: Metadiorite

Note: Drill fluid = creek water + bentonite
Mud density = 64.5 lbs./cu. ft.
Slurry was used for soil and weathered rock drilling.
Creek water alone was used for rock coring.

NCDOT BORE SINGLE 07104004.GPJ NC_DOT.GDT 3/19/04

N.C.D.O.T. GEOTECHNICAL UNIT

CORE BORING REPORT SHEET 13

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business			GROUND WATER (ft)
BORING NO. B2-B	BORING LOCATION 20+68	OFFSET 20ft RT	ALIGNMENT -L- 0 HR. NM
COLLAR ELEV. 655.9 ft	NORTHING 771966.99	EASTING 1651461.63	24 HR. 1.8
TOTAL DEPTH 34.7 ft	DRILL MACHINE CME 850	DRILL METHOD Wash Rotary/HQ Core	HAMMER TYPE 140 lb. Automatic
DATE STARTED 3/2/04	COMPLETED 3/3/04	SURFACE WATER DEPTH NA	
CORE SIZE HQ	TOTAL RUN 14.0 ft	DRILLER C. Heun	

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
										Begin Coring @ 20.7 ft
635.2	20.7	4.0	N=60/0.0	(4.0)	(4.0)	RS-2	(14.0)	(14.0)		635.2 CRYSTALLINE ROCK: Grey with White, Slightly to Very Slightly Weathered, Hard to Very Hard, Metadiorite with Granitic Intrusions and with Wide to Very Wide Fracture Spacing 20.7
631.2	24.7		8:20 8:10 9:30	100%	100%		100%	100%		
		5.0	13:30	(5.0)	(5.0)					Metamorphosed granitic intrusions are dominate from 21.0 feet to 21.7 feet, 28.4 feet to 29.2 feet, 29.9 feet to 31.0 feet, and 33.3 feet to 34.1 feet
			12:45 13:10 12:00	100%	100%					1 natural fracture at 30°
626.2	29.7	5.0	11:00	(5.0)	(5.0)					*Note: 0.2 ft. of core could not be retrieved from hole at end of Run #3. REC and RQD values assume unretrieved core is the same as retrieved core
			14:00 16:00 17:10	100%	100%					
621.2	34.7		18:20 19:20 25:30							621.2 34.7 Coring Terminated at Elevation 621.2 feet in Crystalline Rock: Metadiorite

Note: Drill fluid = creek water + bentonite
Mud density = 64.5 lbs./cu. ft.
Slurry was used for soil and weathered rock drilling.
Creek water alone was used for rock coring.

NCDOT CORE SINGLE 07104004.GPJ NC_DOT.GDT 3/22/04

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 37531.1.1	**TIP** B-4859	**COUNTY** DAVIDSON	**GEOLOGIST** LLOYD, K	
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 20+43	**OFFSET** 12 ft RT	**ALIGNMENT** -L-	**0 HR.** 0.0
COLLAR ELEV. 656.0 ft	**TOTAL DEPTH** 38.7 ft	**NORTHING** 771,921	**EASTING** 1,651,456	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/17/11	**COMP. DATE** 11/17/11	**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)
660										
	656.0	0.0						▽		656.0 GROUND SURFACE 0.0
655			2	2	4	6		W		**ALLUVIAL** GRAY-BROWN MED. STIFF WET FINE TO COARSE SANDY SILT
650	648.9	7.1	3	4	4	8		W		648.9 7.1 / 648.0 **ALLUVIAL** LIGHT BROWN STIFF WET FINE TO COARSE SANDY SILT 8.0
645	644.9	11.1	3	6	7	13		W		**RESIDUAL** BROWN AND DARK GRAY LOOSE TO MED. DENSE WET FINE TO COARSE SAND WITH ROCK FRAGMENTS
640	639.9	16.1	10	9	10	19		M		639.9 16.1 **RESIDUAL** DARK GRAY AND BROWN VERY STIFF MOIST SANDY SILT
635	634.9	21.1	53	47/0.1		100/.6				635.5 20.5 **WEATHERED ROCK** SEVERELY WEATHERED METADIORITE
630	630.8	25.2	60/0			60/0	RS-2			633.0 23.0 **CRYSTALLINE ROCK** METADIORITE 630.8 25.2 **CRYSTALLINE ROCK** METADIORITE
625										
620										617.3 38.7 Boring Terminated at Elevation 617.3 ft in metadiorite

NCDOT BORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 37531.1.1	**TIP** B-4859	**COUNTY** DAVIDSON	**GEOLOGIST** LLOYD, K	
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 20+43	**OFFSET** 12 ft RT	**ALIGNMENT** -L-	**0 HR.** 0.0
COLLAR ELEV. 656.0 ft	**TOTAL DEPTH** 38.7 ft	**NORTHING** 771,921	**EASTING** 1,651,456	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/17/11	**COMP. DATE** 11/17/11	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 13.5 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
											ELEV. (ft) DEPTH (ft)
630.79											
630	630.8	25.2	3.5	*N=60/0* 5:31/1.0 7:06/1.0 6:46/1.0	(3.5) 100%	(3.3) 94%	RS-2	(13.3) 99%	(13.1) 97%		Begin Coring @ 25.2 ft / 630.8 **CRYSTALLINE ROCK** 25.2 DARK GRAY AND WHITE FRESH TO VERY SLIGHTLY WEATHERED, HARD, MEDIUM CLOSELY FRACTURED METADIORITE. ROCK TYPE D. GOOD ROCK. R1=7 R2=20 R3=25 R4=20 R5=0 RMR=72
	627.3	28.7	5.0	3:01/0.5	(4.9) 98%	(4.9) 98%					
625				6:35/1.0 6:43/1.0 7:15/1.0 6:46/1.0 7:20/1.0							
	622.3	33.7	5.0	8:01/1.0 11:31/1.0 11:13/1.0 10:49/1.0 7:35/1.0	(4.9) 98%	(4.9) 98%					
620											
	617.3	38.7									617.3 38.7 Boring Terminated at Elevation 617.3 ft in metadiorite

NCDOT CORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

N.C.D.O.T. GEOTECHNICAL UNIT
BORING LOG

SHEET 27 OF 34

WBS ELEMENT NO. 33454.1.1	ID No. B-4096	COUNTY Davidson	GEOLOGIST P. Weaver/P. Alton	
SITE DESCRIPTION Bridge 140 Over Rich Fork Creek on US 29-70/I-85 Business				GROUND WATER (ft)
BORING NO. EB2-B	BORING LOCATION 21+60	OFFSET 24ft RT	ALIGNMENT -L-	0 HR. NM
COLLAR ELEV. 670.4 ft	NORTHING 771996.74	EASTING 1651549.23		24 HR. 17.5
TOTAL DEPTH 33.1 ft	DRILL MACHINE CME 45	DRILL METHOD HSA		HAMMER TYPE 140 lb. Manual
DATE STARTED 3/5/04	COMPLETED 3/5/04	SURFACE WATER DEPTH NA		

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
670.4									670.4 0.00
669.4	1.0								ROADWAY EMBANKMENT FILL: Medium Stiff, Brown with Black, Clayey, Coarse to Fine Sandy SILT
666.9	3.5	3	2	4	⊕6	SS-19	22.5%		667.4 3.0
664.4	6.0	2	4	6	⊕10		W		ROADWAY EMBANKMENT FILL: Stiff, Brown and Grey, Silty, Coarse to Fine Sandy CLAY
661.9	8.5	1	3	5	⊕8		M		663.4 7.0
656.9	13.5	3	2	3	⊕5	SS-20	35.9%		ROADWAY EMBANKMENT FILL: Medium Stiff to Stiff, Brown-Orange to Brown and Grey, Coarse to Fine Sandy, Silty CLAY with a Trace of Gravel and Organics (Leaf Fragments)
651.9	18.5	2	3	5	⊕8		S		653.4 17.0
646.9	23.5	2	4	6	⊕10		S		ALLUVIAL: Stiff, Grey, Clayey, Coarse to Fine Sandy SILT
641.9	28.5	3	4	6	⊕10	SS-21	S		647.4 23.0
637.3	33.1	5	7	9	⊕16		M		RESIDUAL: Loose to Medium Dense, Brown-Yellow, Clayey, Fine to Coarse SAND
		60/0.0			60/0.0⊕				640.9 29.5
									Very Stiff, Brown and Grey, Coarse to Fine Sandy SILT
									637.3 33.1
									Boring Terminated with SPT Refusal at Elevation 637.3 feet on Crystalline Rock: Metadiorite

NCDOT BORE SINGLE 07104004.GPJ NC_DOT.GDT 3/23/04

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 15

WBS 37531.1.1	TIP B-4859	COUNTY DAVIDSON	GEOLOGIST LLOYD, K	
SITE DESCRIPTION BRIDGE # 138 OVER RICH FORK CREEK ON US 29/70 & I-85 BUS. (NBL)				GROUND WTR (ft)
BORING NO. EB2-B	STATION 21+19	OFFSET 12 ft RT	ALIGNMENT -L-	0 HR. 10.1
COLLAR ELEV. 672.3 ft	TOTAL DEPTH 34.7 ft	NORTHING 771,948	EASTING 1,651,527	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 86% 10/3/2010		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/18/11	COMP. DATE 11/18/11	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
										672.3 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT
										670.1 0 - 2.2' ASPHALT AND ABC GRAVEL 2.2
670	670.1	2.2	5	3	2	⊕5		M		ROADWAY EMBANKMENT
										2.2' GRAY-BROWN MED. STIFF MOIST SANDY SILT
665	664.9	7.4	3	2	3	⊕5		M		664.9 7.4
										ROADWAY EMBANKMENT
660	659.9	12.4	2	2	2	⊕4		M		7.4' BROWN MED. STIFF MOIST SANDY SILT WITH GRAVEL
										659.9 12.4
655	654.9	17.4	1	2	2	⊕4		M		ROADWAY EMBANKMENT
										12.4' BROWN MED. STIFF MOIST CLAY
650	649.9	22.4	3	2	3	⊕5		M		654.9 17.4
										ALLUVIAL
										17.4' GRAY MED. STIFF MOIST SANDY CLAY WITH TRACE ROOT FRAGMENTS, (TOP OF ORIGINAL LAND SURFACE)
645	644.9	27.4	3	6	8	⊕14		M		649.9 22.4
										ALLUVIAL
										22.4 GRAY AND BROWN MED. STIFF TO STIFF MOIST SANDY CLAY
640	639.9	32.4	2	2	8	⊕10		M		644.9 27.4
	637.9	34.4	60/0			60/0⊕				ALLUVIAL
										27.4' GRAY MED. DENSE MOIST SILTY FINE TO COARSE SAND
								M		637.9 34.4
										637.6 CRYSTALLINE ROCK 34.7
										34.4 SPT REFUSAL, METADIORITE
										Boring Terminated with Roller Cone Bit Refusal at Elevation 637.6 ft in metadiorite

NCDOT BORE SINGLE B4859_GEO_BH_BRDG0138_DAVIDSON.GPJ NC_DOT.GDT 1/12/12

TEST RESULTS

PROJECT: 37531.1.1 (B-4859)
COUNTY: DAVIDSON
SITE DESCRIPTION: BRIDGE NO. 138 ON US 29 / 70 & I-85 BUSINESS OVER RICH FORK CREEK

ROCK SAMPLE RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL*	*RQD*	*UNIT WT (pcf)*	Q(ksf)	E(MPsi)
		B1-B					
RS-1	12 RT	19+67 -L-	44.9-45.4	97%	180.8	1249.92	10.69
		B2-B					
RS-2	12 RT	20+43 -L-	26.6-27.0	97%	169.7	1866.24	5.06

TIP No. B-4096 WBS Element No. 33454.1.1
Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business
Davidson County, North Carolina
SUMMARY OF LABORATORY TEST DATA

Boring Number	Sample Depth (ft.)	Sample No.*	Natural Moisture Content (%)	AASHTO Class (Group Index)	N-Value (blows/ ft.)	Atterberg Limits			Gradation Results							
						L.L.	P.L.	P.I.	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Retained #270 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
EB1-A	6.0-7.5	SS-1	34.4	A-4 (0)	2	23	NP	NP	95	81	52	54	20	32	37	11
EB1-A	28.5-30.0	SS-2	22.7	A-4 (0)	23	27	NP	NP	99	88	37	73	24	49	25	2
EB1-B	18.5-20.0	SS-3	-	A-1-b (0)	7	12	NP	NP	83	38	9	93	72	20	8	0
EB1-B	28.5-30.0	SS-4	21.2	A-4 (0)	25	27	NP	NP	97	89	40	70	20	49	30	1
EB1-B1	3.5-5.0	SS-5	25.4	A-4 (0)	5	39	31	8	87	67	39	65	30	29	24	17
EB1-B1	13.5-15.0	SS-6	28.5	A-7-5 (5)	8	43	32	11	90	81	55	51	15	31	28	26
EB1-B1	23.5-25.0	SS-7	29.4	A-4 (0)	6	19	NP	NP	100	98	44	65	7	58	30	5
B1-A	3.5-5.0	SS-8	20.6	A-4 (0)	5	18	NP	NP	100	99	57	54	4	49	32	15
B1-A	23.5-25.0	SS-9	19.4	A-4 (0)	33	25	NP	NP	98	93	41	71	12	58	28	2
B1-B	6.0-7.5	SS-10	-	A-2-4 (0)	6	18	NP	NP	100	94	31	73	28	45	17	10
B1-B	23.5-25.0	SS-11	25.9	A-4 (0)	17	25	NP	NP	100	94	43	69	15	54	29	2
B2-A	9.5-11.0	SS-12	36.1	A-4 (0)	11	35	NP	NP	100	96	52	60	9	50	32	9
B2-A	28.5-30.0	SS-13	21.1	A-4 (0)	30	32	NP	NP	98	93	48	64	12	51	30	7
B2-B	8.5-10.0	SS-14	22.3	A-6 (12)	12	35	17	18	99	97	75	30	5	24	28	43
B2-B	13.5-15.0	SS-15	-	A-2-4 (0)	3	30	NP	NP	88	72	35	72	27	41	21	11
EB2-A	3.5-5.0	SS-16	21.4	A-4 (0)	8	25	NP	NP	94	79	37	68	27	39	20	14
EB2-A	13.5-15.0	SS-17	26.2	A-6 (6)	5	35	21	14	100	98	58	47	9	39	15	37
EB2-A	38.5-40.0	SS-18	-	A-2-4 (0)	70	22	NP	NP	88	58	21	85	44	39	16	1
EB2-B	1.0-2.5	SS-19	22.5	A-4 (0)	6	29	23	6	94	79	42	64	25	36	19	20
EB2-B	8.5-10.0	SS-20	35.9	A-7-6 (18)	5	55	29	26	92	88	70	34	7	21	31	41
EB2-B	23.5-25.0	SS-21	-	A-1-b (0)	10	38	26	12	98	35	16	86	73	12	3	12
SBD-1	0.0-0.5	G-1	-	A-2-4 (0)	NA	20	NP	NP	71	53	22	82	35	39	20	6
SBD-2	0.0-0.5	G-2	-	A-2-4 (0)	NA	15	NP	NP	100	82	16	88	43	45	11	1

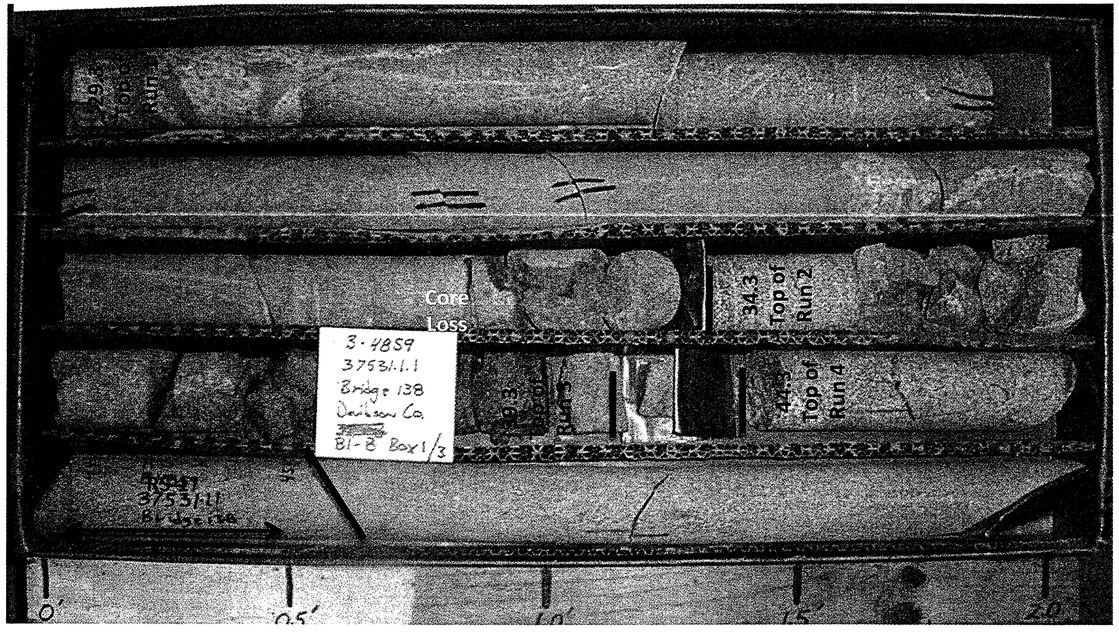
* SS = Split-Spoon Sample (ASTM-D-1586)
** G = Grab Sample
***ST=Shelby Tube (Undisturbed) Sample
NP -- Non Plastic NA-- Non Applicable

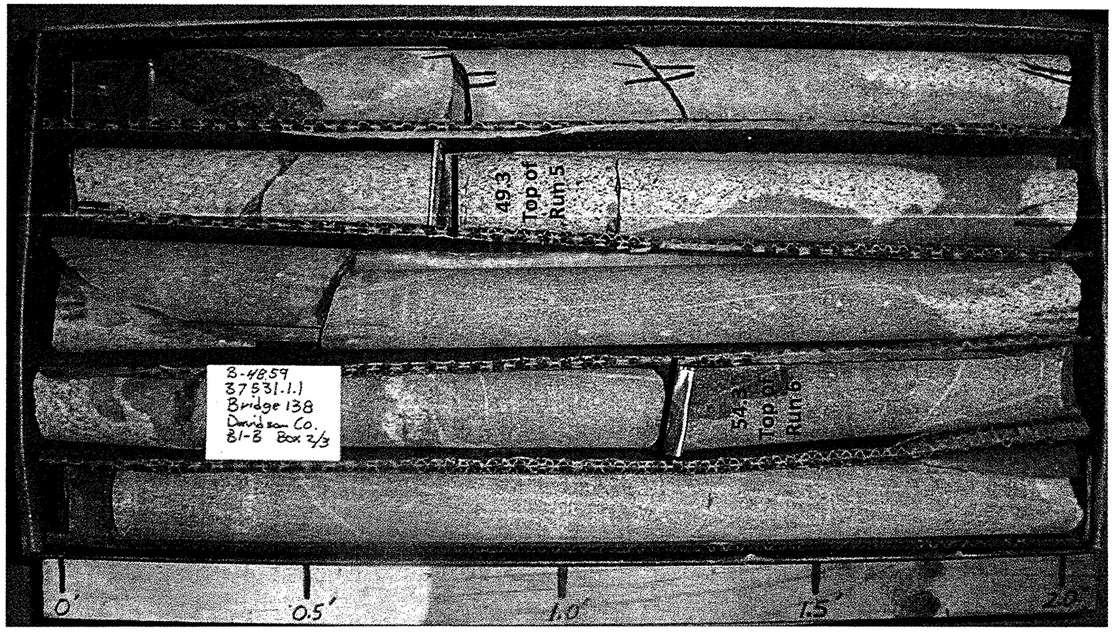
TRIGON ENGINEERING CONSULTANTS, INC.
GREENSBORO, NORTH CAROLINA
Trigon Job Number: 071-04-004
Page: 1 of 1

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

WBS ELEMENT NO.: 33454.1.1
PROJECT NO.: 8.1602101 (B-4096)
F.A. NO.: BRSTP-29(20)
COUNTY: Davidson
DESCRIPTION: Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business

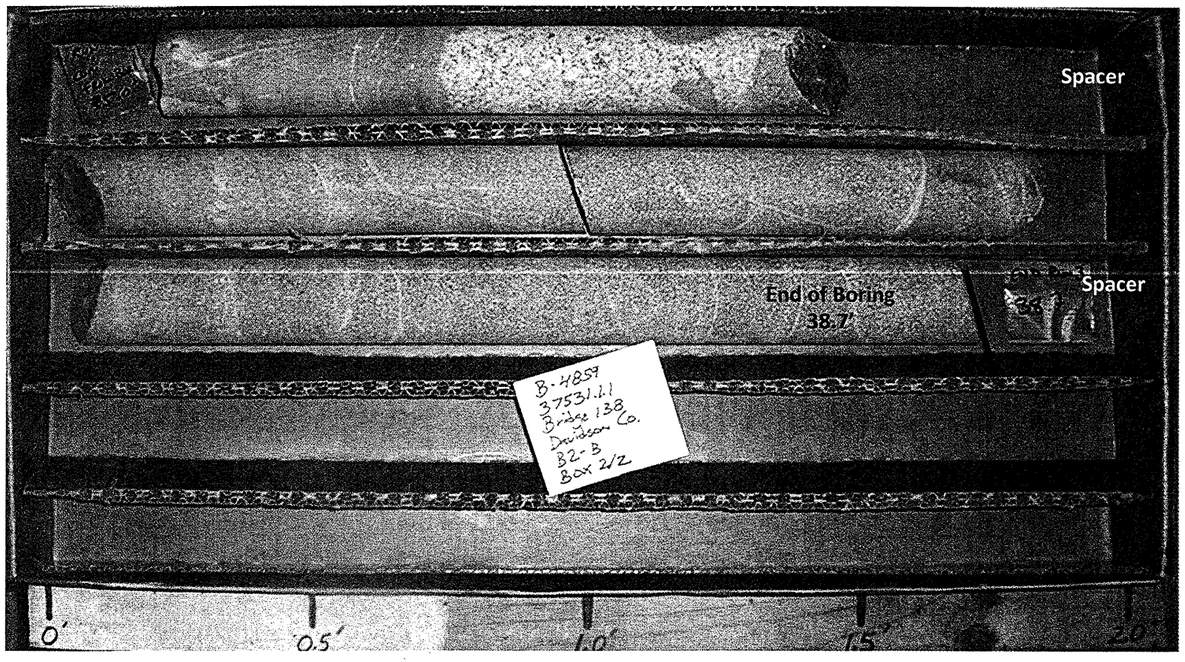
Sample #	Boring #	Depth (ft.)	Rock Type	Geologic Map Unit	Run RQD	Length (ft.)	Diameter (ft.)	Dry Density (lbs/cu. ft.)	Unconfined Compressive Strength (psi)	Maximum Load (lbs.)	Loading Rate (in./min.)
RS-1	B1-A	55.3-55.7	Metamorphosed Mafic Rock	PzZm	100%	0.4139	0.2083	179.8	13,825	67,830	0.009
RS-2	B2-B	21.0-21.4	Metamorphosed Mafic Rock	PzZm	100%	0.4128	0.2083	169.2	19,824	97,260	0.009


Top of Run 3
Core Loss
B-4859
37531.1.1
Bridge 138
Davidson Co.
B1-B Box 1/3
Run 3
34.3
Top of Run 2
44.3
Top of Run 4
0'
0.5'
1.0'
1.5'
2.0'


49.3
Top of Run 5
B-4859
37531.1.1
Bridge 138
Davidson Co.
B1-B Box 2/3
54.1
Top of Run 6
0'
0.5'
1.0'
1.5'
2.0'


B-4859
37531.1.1
Bridge 138
Davidson Co.
B1-B 3/3
End of Boring
0'
0.5'
1.0'
1.5'
2.0'

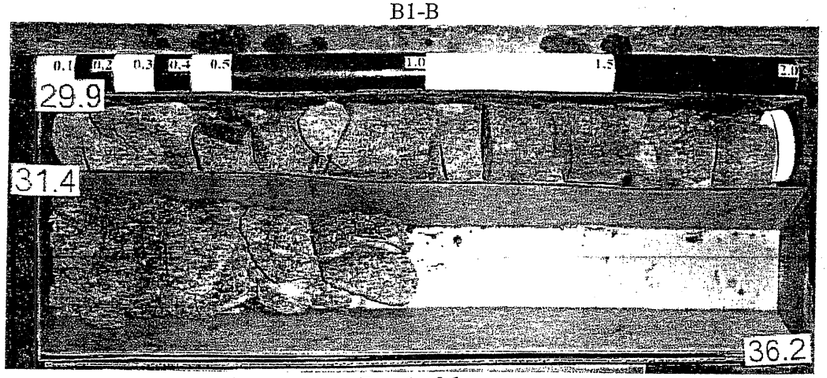
37531.1.1 (B-4859)
BRIDGE NO. 138 ON US 29 / 70 & I-85 BUSINESS OVER RICH FORK CREEK
B2-B



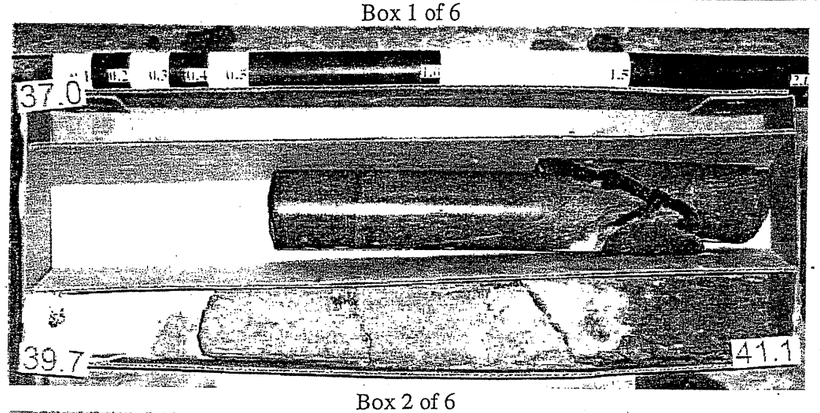
CORE PHOTOGRAPHS

Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business
NCDOT Project No. 8.1602101 (B-4096) WBS Element No. 33454.1.1

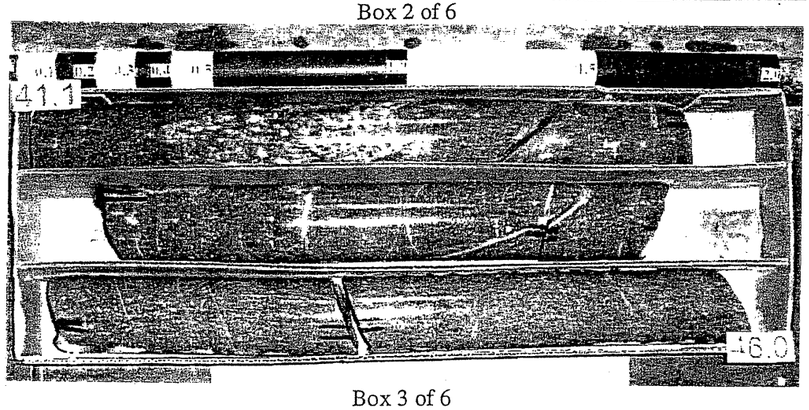
B1-B



Box 1 of 6



Box 2 of 6



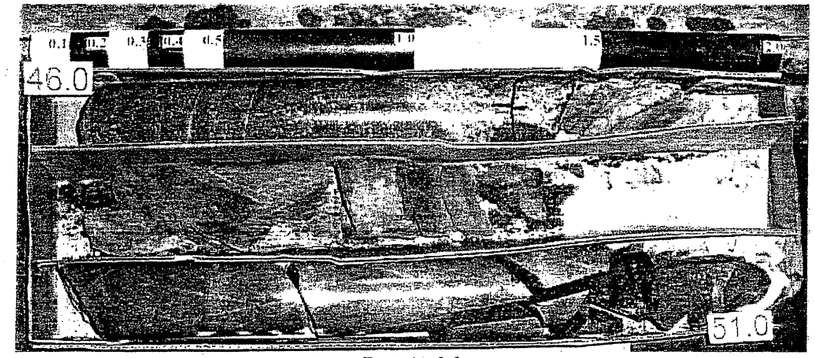
Box 3 of 6

(SCALE = 1:4)

CORE PHOTOGRAPHS

Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business
NCDOT Project No. 8.1602101 (B-4096) WBS Element No. 33454.1.1

B1-B



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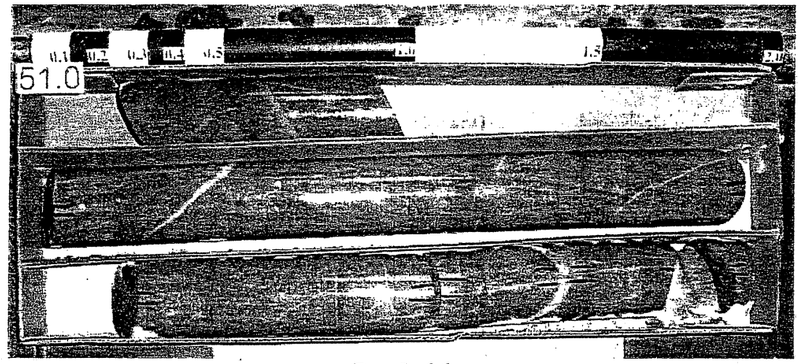

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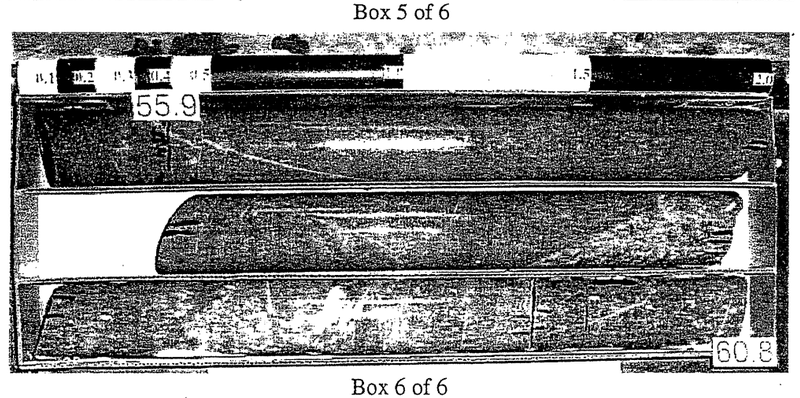


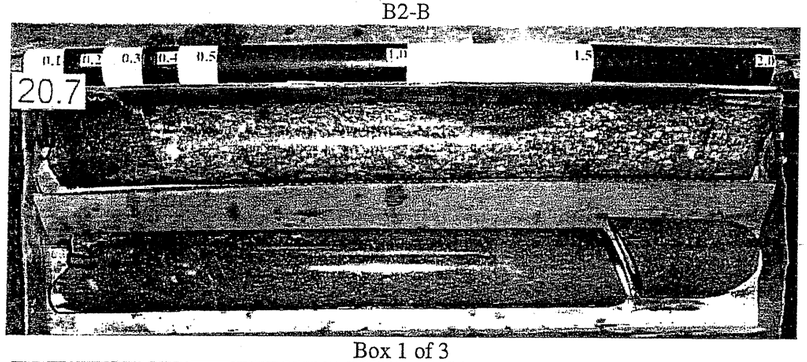
Box 6 of 6

(SCALE = 1:4)

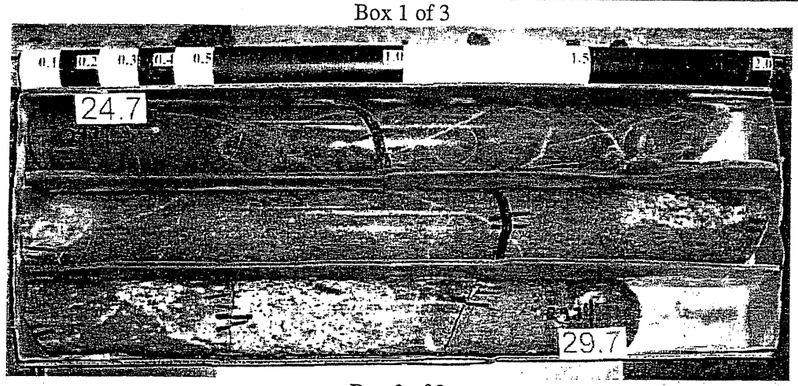
CORE PHOTOGRAPHS

Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business
NCDOT Project No. 8.1602101 (B-4096) WBS Element No. 33454.1.1

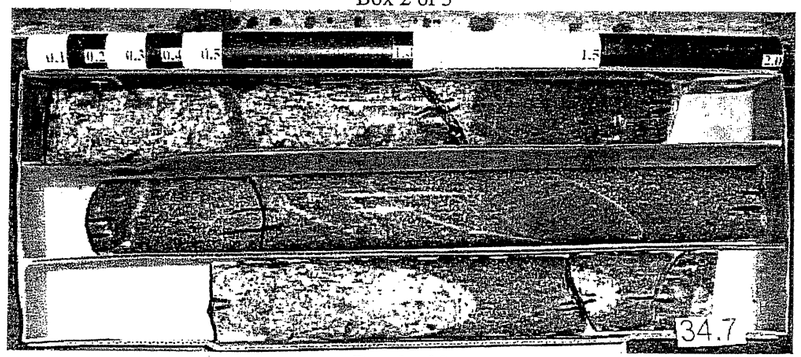
B2-B



Box 1 of 3



Box 2 of 3



Box 3 of 3

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