STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4623	1	13

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38440.1.1	BRZ-1128(6)	PE
38440.2.1	BRZ-1128(6)	R/W, UTIL

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. *38440.1.1 (B-4623)* F.A. PROJ. *BRZ-1128(6)*

COUNTY *ROCKINGHAM*

PROJECT DESCRIPTION *BRIDGE NO. 47 ON SR 1128 OVER HOGAN'S CREEK*

INVENTORY

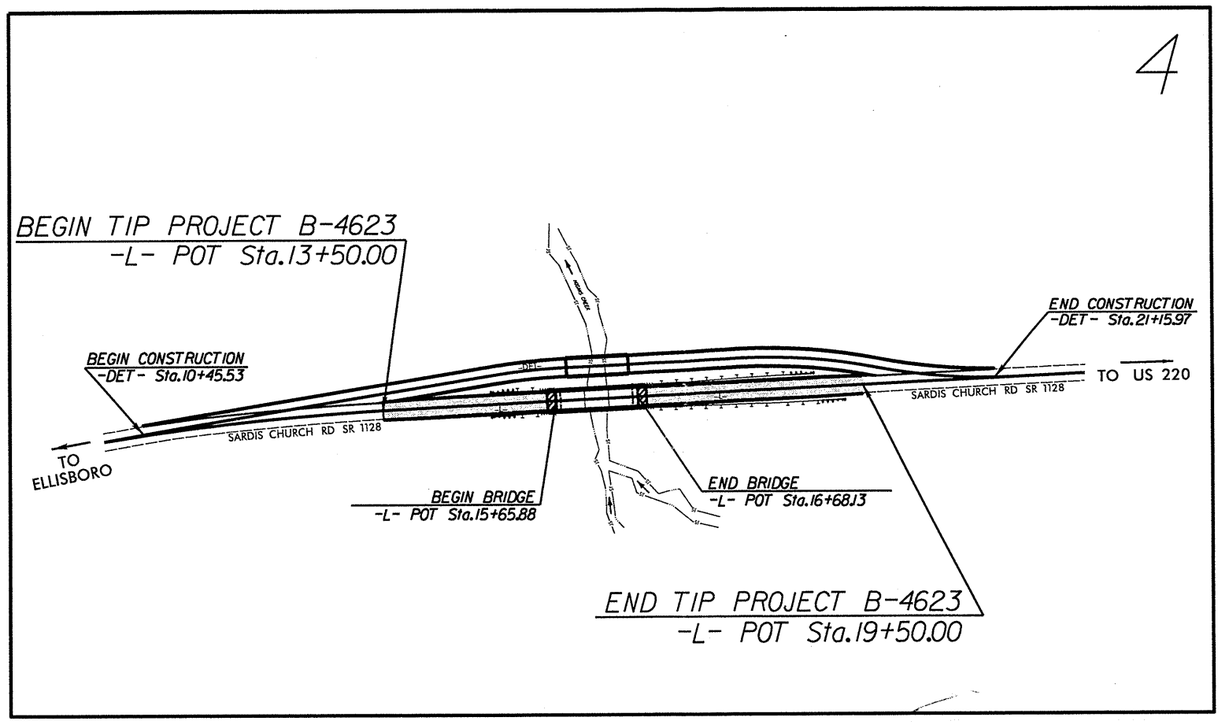
CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

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

NAD 83



PERSONNEL

C. NORVILLE

J. HAMM

T. EVANS

TRIGON

INVESTIGATED BY *T. EVANS*

CHECKED BY *J. HAMM*

SUBMITTED BY *FALCON ENG.*

DATE *OCTOBER 2012*

NORTH CAROLINA PROFESSIONAL SEAL 027331 ENGINEER CHRISTOPHER V. NORVILLE 10/19/12

DRAWN BY: *T. EVANS*

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.

CONTRACT: C203283

ID: B-4623

PROJECT REFERENCE NO.	SHEET NO.
38440.1.1 (B-4623)	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													
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
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				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:
- [X] MOBILE B- 57
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

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

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -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 (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:
BM-2: R/R SPIKE IN 13" HICKORY (STA. 25+09.55, 57.45' RT)
N: 943198, E: 1715868 ELEVATION: 742.22 FT.

NOTES:
FIAD - FILLED-IN AFTER DRILLING

REVISED 09/23/09

09/08/99

TIP PROJECT: B-4623

CONTRACT:

$$$$$$SYSTIME$$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4623	2A	13

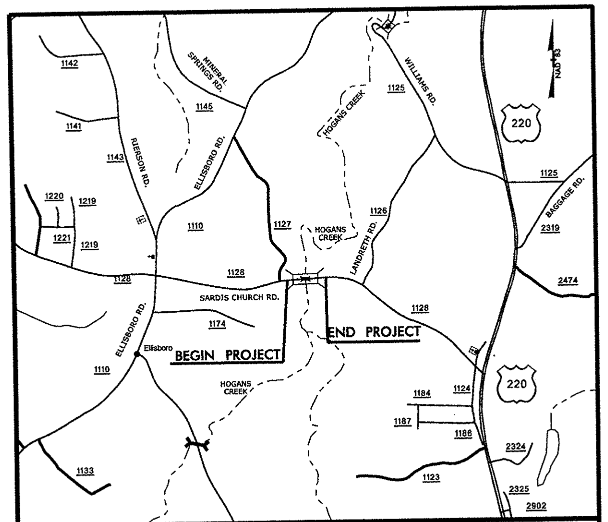
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38440.1.1	BRZ-1128(6)	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

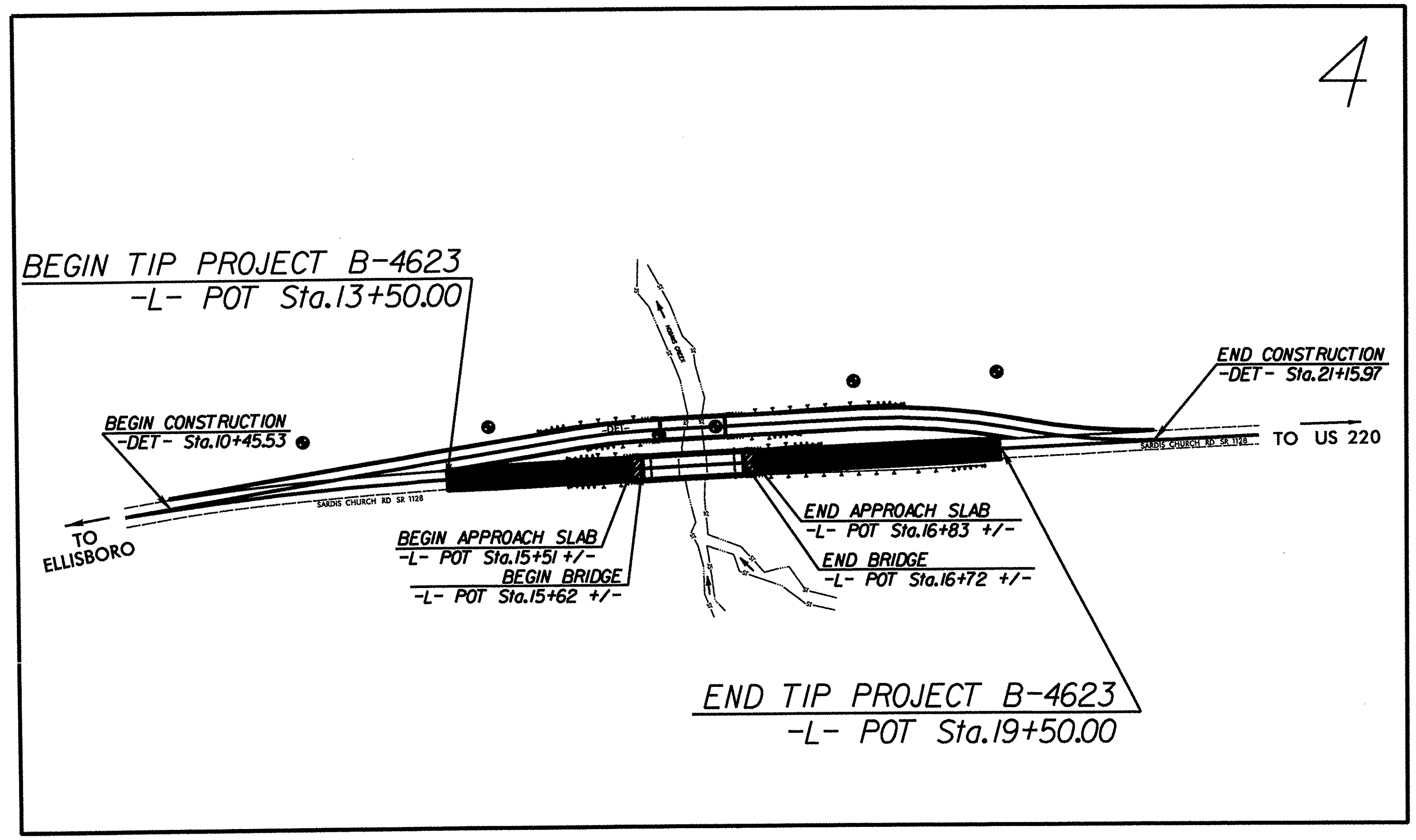
ROCKINGHAM COUNTY

LOCATION: REPLACE BRIDGE No. 47 OVER HOGANS CREEK ON SR 1128 (SARDIS CHURCH ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

NAD 83



VICINITY MAP



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ?

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 2300
ADT 2033 = 5000
DHV = 15 %
D = 70 %
T = 6 % *
V = 60 MPH
* (TTST =1 + DUAL =5)
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4623 = 0.093 MILES

LENGTH STRUCTURE TIP PROJECT B-4623 = 0.021 MILES

TOTAL LENGTH TIP PROJECT B-4623 = 0.114 MILES

Prepared In the Office of:
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8008 CORPORATE CENTER DRIVE, SUITE 410
CHARLOTTE, NC 28226
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 21, 2012

LETTING DATE:
DECEMBER 17, 2013

KENNETH HERRING, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

BRENDA L. MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _______________ *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: _______________ *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

WBS: 38840.1.1
TIP: B-4623
F.A. No.: BRZ-1128(6)
COUNTY: Rockingham
DESCRIPTION: Bridge No. 47 over Hogan's Creek on SR 1128
SUBJECT: Roadway Subsurface Investigation – Inventory

PROJECT DESCRIPTION

The project site is located south of the town of Madison in North Carolina. The project corridor is along Sardis Church Road (SR 1128) near the existing Bridge No. 47 over Hogans Creek. The existing bridge No. 47 will be replaced along the same alignment. Additionally, improvements will be made along -L- (SR 1128) between Stations 13+50 -L- and 19+50 -L-. Roadway grades along each approach will be raised marginally by less than one foot. An on-site detour will carry traffic during the replacement of Bridge No. 47. The detour alignment (-DET-) deviates from -L- at station 10+04 and crosses Hogan's Creek just north of the existing structure with a temporary bridge structure. -DET- will be constructed approximately 41 feet parallel north to -L-. The 70-foot-long, single-span detour structure begins at station 15+83, -L- (15+81.92, -DET-) and ends at 16+53.7, -L- (16+51.92, -DET-). -DET- rejoins -L- at station 21+38, -L- (21+39.51 -DET-). Detour roadway construction will consist of cuts on the order of up to 7 feet as the detour alignment crosses existing cut slopes adjacent to SR 1128. Approach embankments of up to 12 and 15 feet, respectively, are anticipated at end bents 1 and 2 as -DET- approaches undeveloped floodplain areas along Hogan's Creek.

The geotechnical field investigation was completed in August 2012. Borings were advanced with a Mobile B-57 ATV-mounted drill machine with an automatic hammer. Standard penetration tests were performed in the borings in accordance with standard NCDOT procedures and soils were visually classified in the field. Representative soil samples were collected and tested following NCDOT/AASHTO methods by Falcon.

The following alignments, totaling approximately 0.325 miles were investigated.

Line	Station
-L-	13+50 to 19+50
-DET-	10+00 to 21+16

AREAS OF SPECIAL GEOTECHNICAL INTEREST

1) Soft Cohesive Soils:

Borings in the following locations contained soft, cohesive soils at or near the ground surface and beneath proposed embankments.

Station	Offset
-DET- 15+57 to 17+10	LT and RT

2) Crystalline Rock:

Borings in the following locations encountered crystalline rock within six (6) feet of proposed roadway grades.

Station	Offset
-DET- 18+36 to 19+37	LT and RT

PHYSIOGRAPHY AND GEOLOGY

According to the ***Geologic Map of North Carolina*** (1985), the proposed site is located within the Milton Belt Geologic Formation in the Western Piedmont Physiographic Province of North Carolina. The bedrock in this area consists of biotite gneiss and schist, interlayered with mica schist and amphibolite. This area is also noted to contain small masses of granitic rock. Samples of residual and weathered rock materials obtained on site are consistent with the published information.

Topographically, the site generally exhibits the gently rolling terrain characteristic of the North Carolina Piedmont. Overall topographic relief along proposed grading areas is 42 feet (elevations between 698 and 740). The majority of -DET- will be located in an existing overhead power (OHP) easement, which appears to feature predominantly natural terrain. Topography along the OHP easement consists of a narrow alluvial floodplain along Hogan's Creek (estimated to be on the order of 200 to 250 feet in total width). Moderately steep slopes formed of residual soils are present on either side of the floodplain.

Surface drainage along the existing roadway is promoted by constructed ditches. Overall site topography promotes positive site drainage towards Hogan's Creek by a series of small draws and tributaries in the area.

SOIL PROPERTIES

In general, alluvial and residual soils were encountered overlying weathered rock and crystalline rock. In addition, roadway embankment fills are present along SR 1128 and the existing bridge approach embankments. These materials were not encountered in our borings, but should be expected where modifications to the existing embankments are proposed.

Alluvial deposits associated with Hogan's Creek consist of red-brown and gray, very soft to stiff, sandy clays and silts (A-4, A-6) with gravel, cobbles, and trace amounts of mica, and loose, slightly silty to silty sands (A-1-b, A-2-4) with gravel and trace amounts of mica. Laboratory tests indicate some of the alluvial soils are non-plastic, however, field classifications indicate plasticity indices (PI) of up to 10. Alluvial deposits in boring -DET- EB1 (west bank of Hogan's Creek) were underlain directly by weathered rock materials. Alluvial deposits in boring -DET- EB2 (east bank) were underlain by residual soils.

Residual soils encountered in -DET- borings R-1 through R-4 and EB2 consist of brown and tan, loose to dense, silty sands and sandy silts (A-2-4, A-2-5) and stiff to very stiff, sandy silts (A-4, A-5) with an isolated occurrence of medium stiff, sandy clay (A-7-5). These soils contain trace amounts to some mica and rock fragments and are often saprolitic. Laboratory tests indicate the residual soils range from non-plastic to a PI of 21.

Weathered rock materials were encountered at elevations ranging from 666 feet to 721 feet in -DET- borings EB1, EB2, R-3, and R-4.

Crystalline rock materials were encountered at elevations ranging from approximately 668 to 719 feet in -DET- borings EB1, EB2, and R-4. Weathered rock and Crystalline rock materials encountered consisi of tan and brown to gray, black and white, mica schist and mica gneiss

GROUNDWATER PROPERTIES

Groundwater levels were measured at the time of boring completion, and when possible after 24 hours. Upland borings (R-1 through R-4) and EB1 did not encounter wet soil samples indicative of the presence of groundwater, and no groundwater was observed at the time of boring completion. Boring EB2 encountered wet and saturated soils at depths as shallow as 6 feet. After 24 hours, groundwater was measured directly in the borehole at a depth of 6.7 feet below the existing ground surface (elevation 701.5 feet). Groundwater and surface water conditions will vary with seasonal fluctuations, such as the frequency and magnitude of rainfall, and may vary from conditions encountered during our investigation.

Respectfully submitted:
FALCON ENGINEERING, INC.

Jeremy R. Hamm, EI
Geotechnical Designer/Project Manager

Christopher V. Norville, PE
Director of Geotechnical/Construction Services

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: B-4623 COUNTY: Rockingham DATE: Mar-13 COMPILED BY: J.TALLEY SHEET__ OF __ SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
PHASE I: DETOUR CONSTRUCTION															
-L- STA 10+49.95	-L- STA 15+83.80 BR	1,161				1,161	851		851	1,021			140		140
-L- STA 16+58.13 BR	-L- STA 21+14.48	2,906				2,906	2,286		2,286	2,743			163		163
	SUBTOTAL	4,067				4,067	3,137		3,137	3,764			303		303
PHASE II: L CONSTRUCTION															
-L- STA 13+50.00	-L- STA 15+65.88 BR	44				44	86		86	103	59				
-L- STA 16+68.13 BR	-L- STA 19+50.00	17				17	306		306	367	350				
	SUBTOTAL	61				61	392		392	470	409				
PHASE III: DETOUR REMOVAL & L GRADING															
-L- STA 14+02.52	-L- STA 15+83.80 BR	378				378	4		4	5			373		373
-L- STA 16+58.13 BR	-L- STA 19+99.40	1,124				1,124	805		805	966			158		158
	SUBTOTAL	1,502				1,502	809		809	971			531		531
	SUBTOTAL														
TOTAL		5,630				5,630	4,338		4,338	5,205	409		834		834
EST FOR -DET- SHOULDER MATERIAL							205		205	246	246				
LOSS DUE TO CLEARING & GRUBBING		-350				-350					350				
PROJECT TOTAL		5,280				5,280	4,543		4,543	5,451	1,005		834		834
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											50				
GRAND TOTAL		5,280				5,280	4,543		4,543	5,451	1,055		834		834
SAY		5,300									1,075				

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.
EST. UNDERCUT (SOFT FOUNDATION SOILS) 100 CY (CONTINGENCY) PER GEOTECHNICAL REPORT - DESIGN & CONSTRUCTION RECOMMENDATIONS DATED 10/22/2012
EST. UNDERCUT (SUBGRADE STABILITY) 100 CY (CONTINGENCY) PER GEOTECHNICAL REPORT - DESIGN & CONSTRUCTION RECOMMENDATIONS DATED 10/22/2012
EST. GEOTEXTILE FOR SOIL STABILIZATION 650 SY (CONTINGENCY) PER GEOTECHNICAL REPORT - DESIGN & CONSTRUCTION RECOMMENDATIONS DATED 10/22/2012
EST. SELECT GRANULAR MATERIAL CL III 650 CY (CONTINGENCY) PER GEOTECHNICAL REPORT - DESIGN & CONSTRUCTION RECOMMENDATIONS DATED 10/22/2012

CHARLES W DALTON
NO DEED REFERENCE

CHARLES W DALTON
NO DEED REFERENCE

CHARLES W DALTON
NO DEED REFERENCE

CHARLES W DALTON
NO DEED REFERENCE

12+00
13+00
14+00
15+00
17+00
18+00
19+00

ALLUVIAL
RESIDUAL

ALLUVIAL
RESIDUAL

RESIDUAL
ALLUVIAL

RESIDUAL
ALLUVIAL

-BL-5 30+58.04 PINE

HOGANS CREEK

STATE GRID NORTH

R-1
R-2
R-3
R-4

EB1
EB2

N 87° 08' 25.5" E

N 87° 10' 52.5" E

N 84° 02' 29.0" E

N 87° 08' 25.5" E

TYPE III
TYPE III
TYPE III
TYPE III

BRIDGE #47

SR 1128 - SARDIS CHURCH RD
20' BST

TL-2
TL-2
TL-2

CONCRETE BENTS

BM 1
-BL- STA 30+31.87
67.43 RIGHT
ELEV=711.84'
R/R SPIKE IN 24" POPLAR

NOTES:

PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU, DATED AUGUST 2, 2012.

0 50 100
FEET

FALCON ENGINEERING

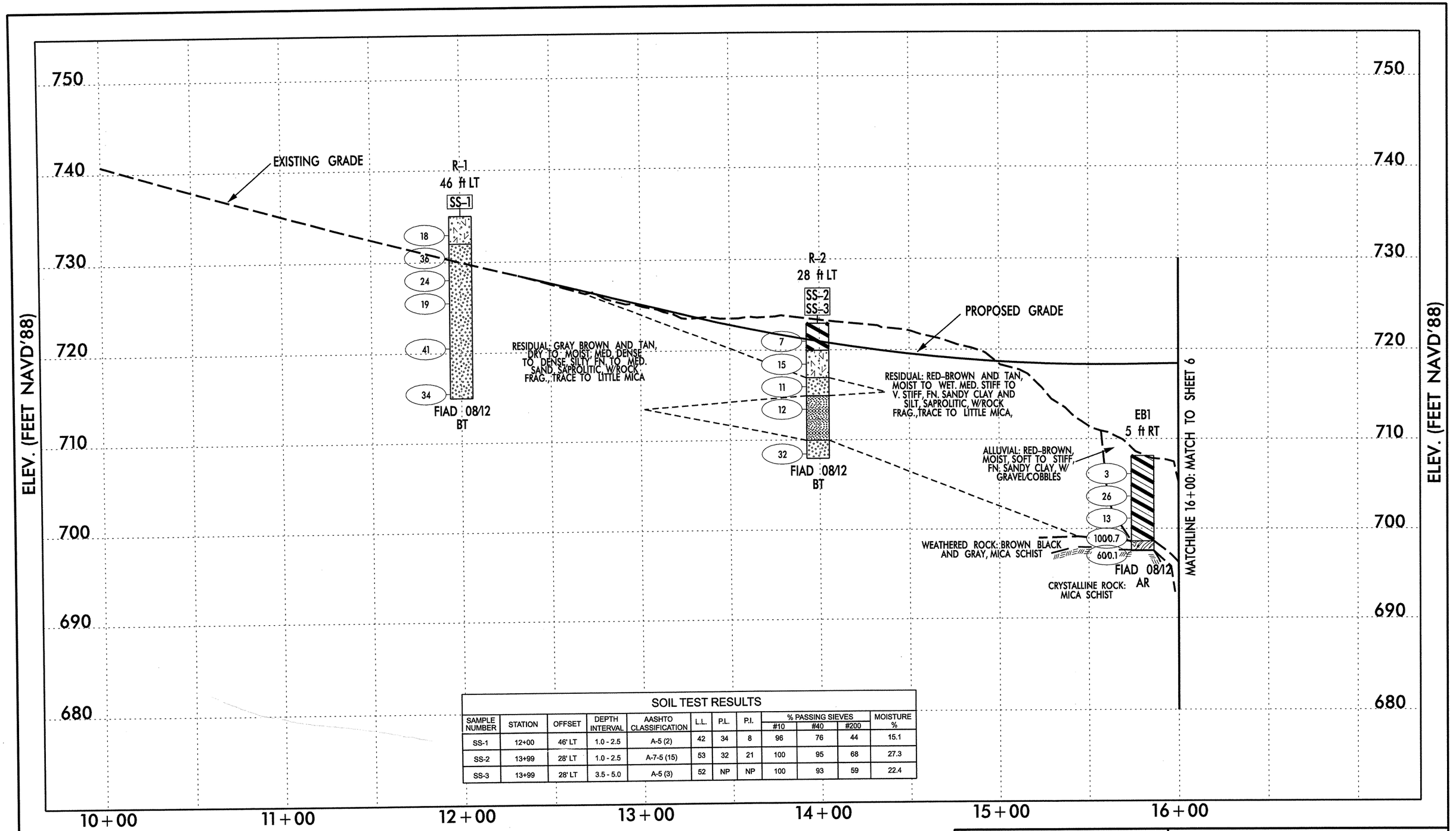
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

BORING LOCATION PLAN

BRIDGE NO. 47 ON SR 1128 OVER HOGANS CREEK
ROCKINGHAM COUNTY, NORTH CAROLINA
WBS: 38440.1.1 , TIP: B-4623

OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 4



SOIL TEST RESULTS

SAMPLE NUMBER	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASSIFICATION	L.L.	P.L.	P.I.	% PASSING SIEVES			MOISTURE %
								#10	#40	#200	
SS-1	12+00	46' LT	1.0 - 2.5	A-5 (2)	42	34	8	96	76	44	15.1
SS-2	13+99	28' LT	1.0 - 2.5	A-7-5 (15)	53	32	21	100	95	68	27.3
SS-3	13+99	28' LT	3.5 - 5.0	A-5 (3)	52	NP	NP	100	93	59	22.4

NOTES:
- GROUNDLINE PROFILE OF –DET– TAKEN FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU, DATED AUGUST 2, 2012.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 50 100
FEET

FALCON ENGINEERING
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RALEIGH, NC 27607
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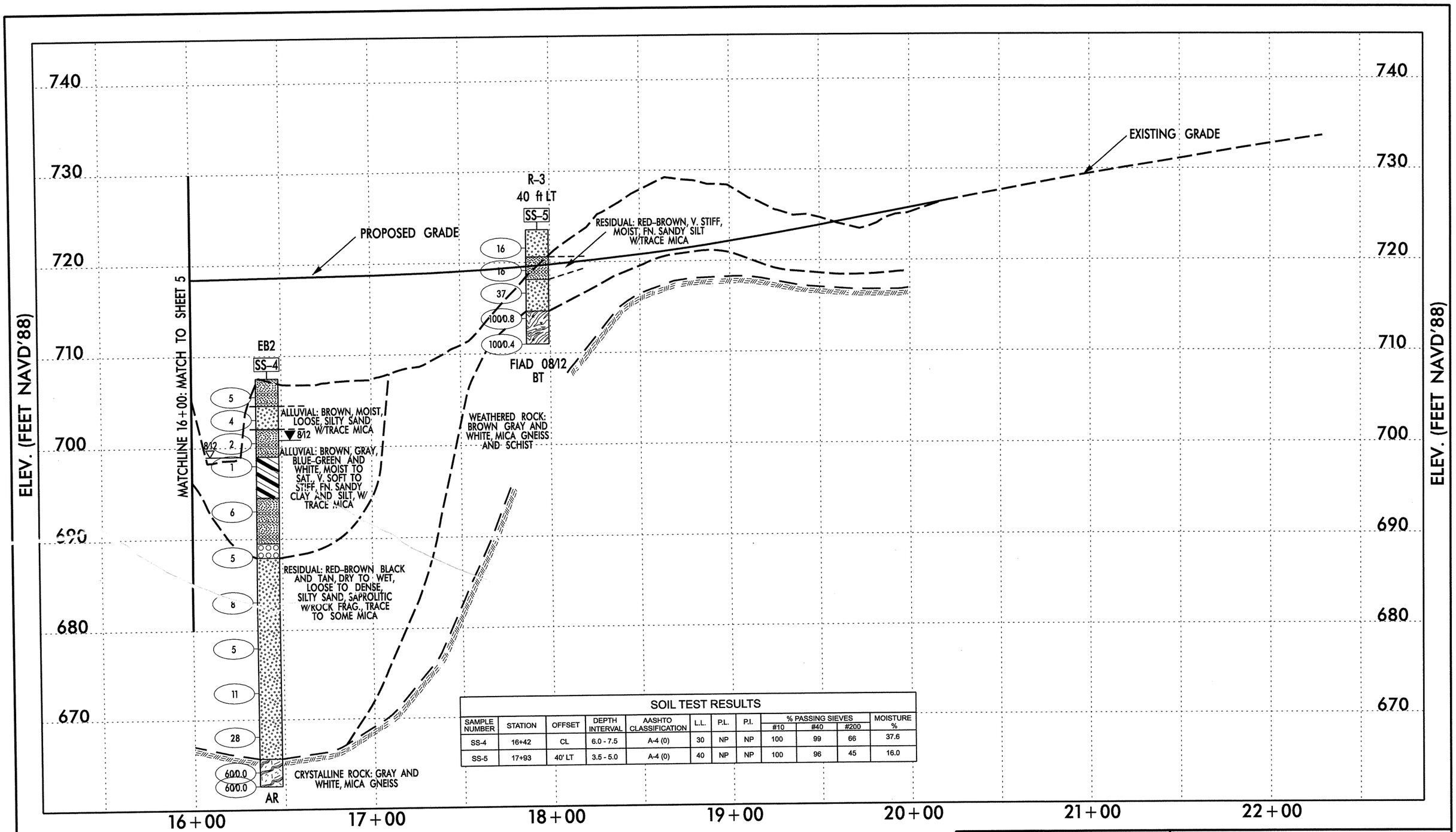
FAX: 919.871.0803

SUBSURFACE PROFILE ALONG –DET–

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
ROCKINGHAM COUNTY, NORTH CAROLINA
WBS.: 38440.1.1 , TIP NO.: B-4623

OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 5



SOIL TEST RESULTS

SAMPLE NUMBER	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASSIFICATION	L.L.	P.L.	P.I.	% PASSING SIEVES			MOISTURE %
								#10	#40	#200	
SS-4	16+42	CL	6.0 - 7.5	A-4 (0)	30	NP	NP	100	99	66	37.6
SS-5	17+93	40' LT	3.5 - 5.0	A-4 (0)	40	NP	NP	100	96	45	16.0

NOTES:

- GROUNDLINE PROFILE OF –DET– TAKEN FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU, DATED AUGUST 2, 2012.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 50 100
FEET

FALCON ENGINEERING
FALCON ENGINEERING, INC.
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RALEIGH, NC 27607
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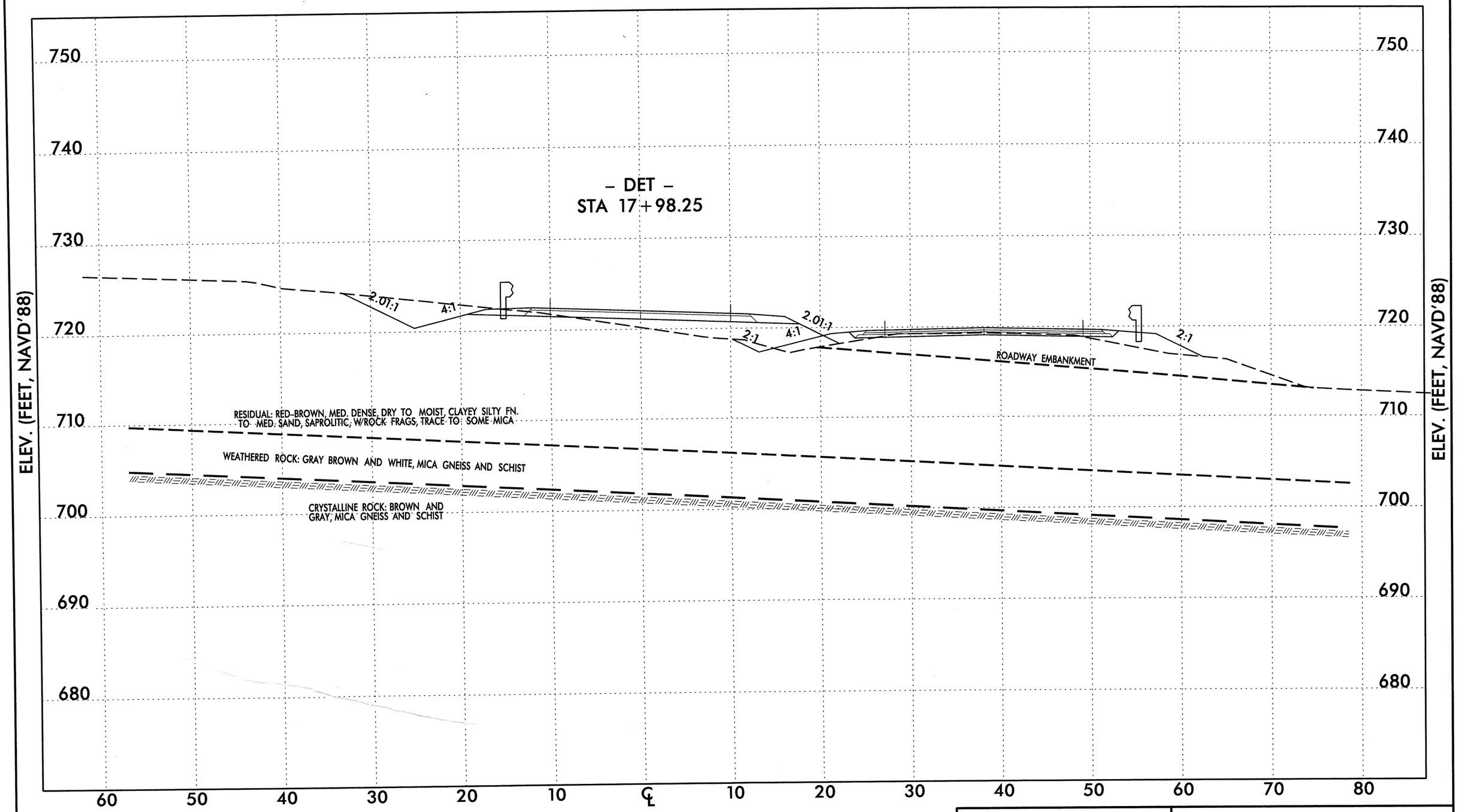
FAX: 919.871.0803

SUBSURFACE PROFILE ALONG –DET–

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
ROCKINGHAM COUNTY, NORTH CAROLINA
WBS.: 38440.1.1 , TIP NO.: B-4623

OCTOBER 2012 | FALCON PROJECT NO.: G12022.00 | SHEET 6



NOTES:
- CROSS SECTION OF –DET– TAKEN FROM ELECTRONIC FILES RECIEVED FROM NCDOT GEU, DATED AUGUST, 2012.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 10 20
FEET

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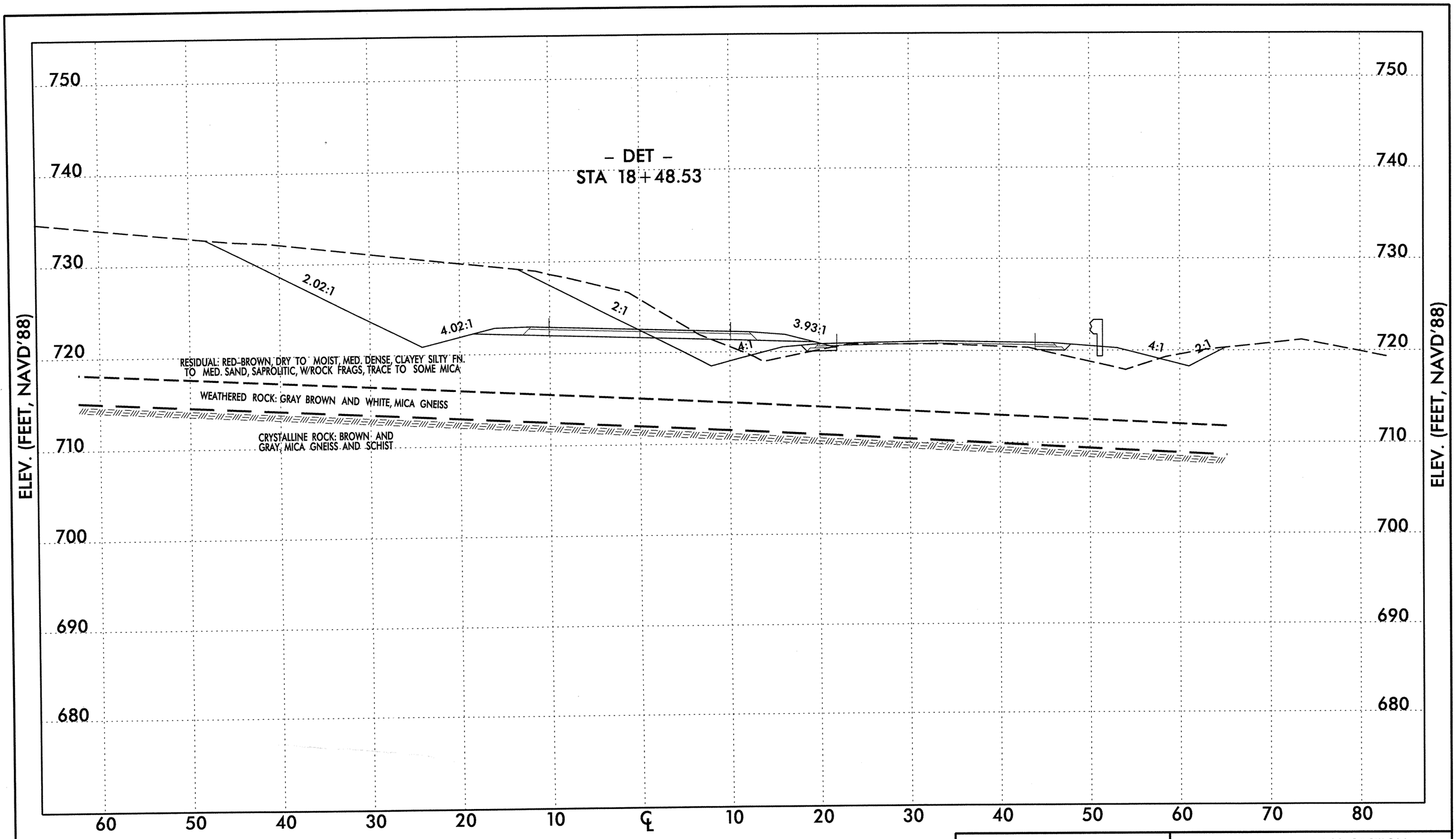
SUBSURFACE CROSS SECTION

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
ROCKINGHAM COUNTY, NORTH CAROLINA
WBS.: 38440.1.1, TIP NO.: B-4623

OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 7



NOTES:

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

VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 10 20
FEET

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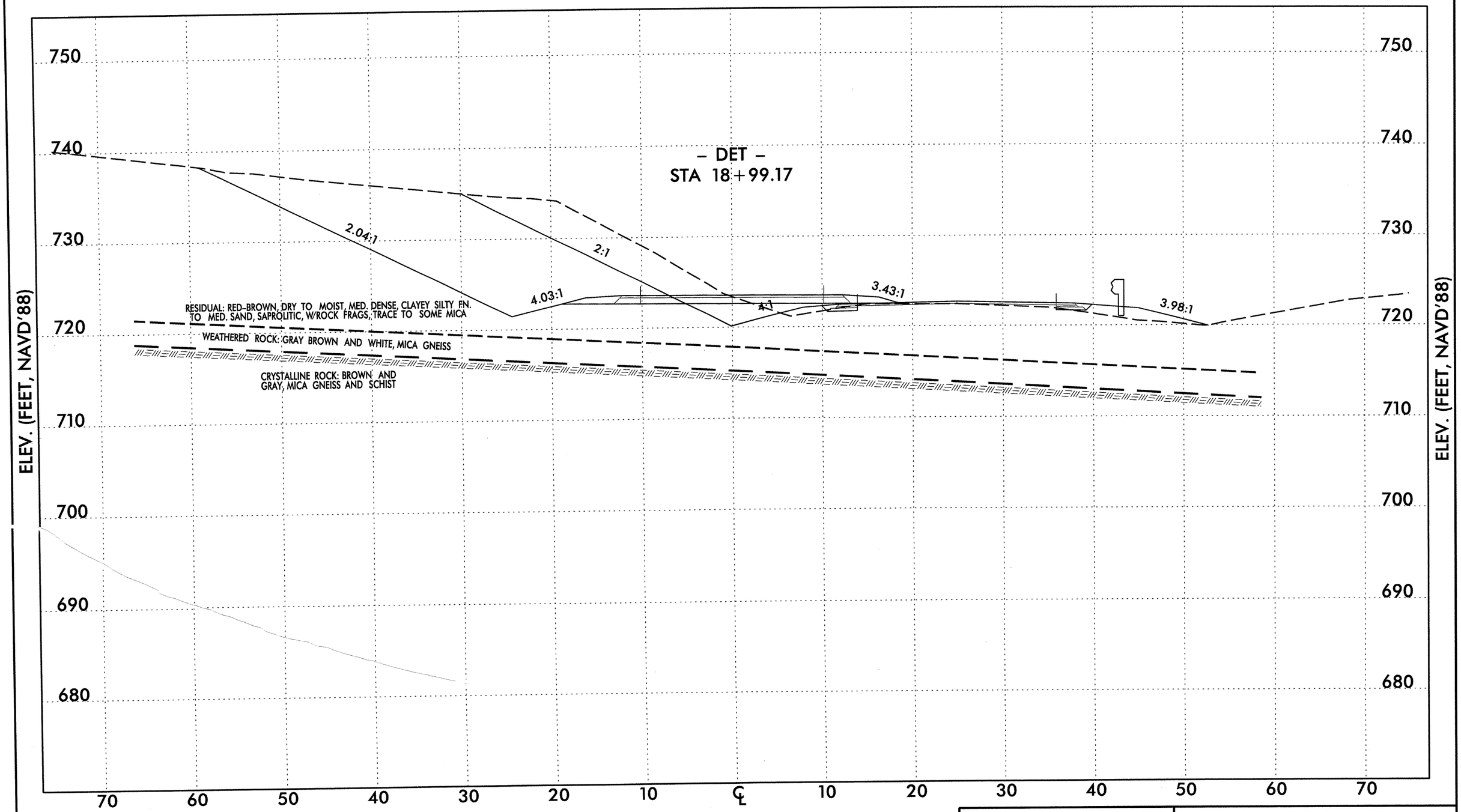
SUBSURFACE CROSS SECTION

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
ROCKINGHAM COUNTY, NORTH CAROLINA
WBS.: 38440.1.1, TIP NO.: B-4623

OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 8



NOTES:

- CROSS SECTION OF –DET– TAKEN FROM ELECTRONIC FILES RECIEVED FROM NCDOT GEU, DATED AUGUST, 2012.
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VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 10 20
FEET

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SUBSURFACE CROSS SECTION

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
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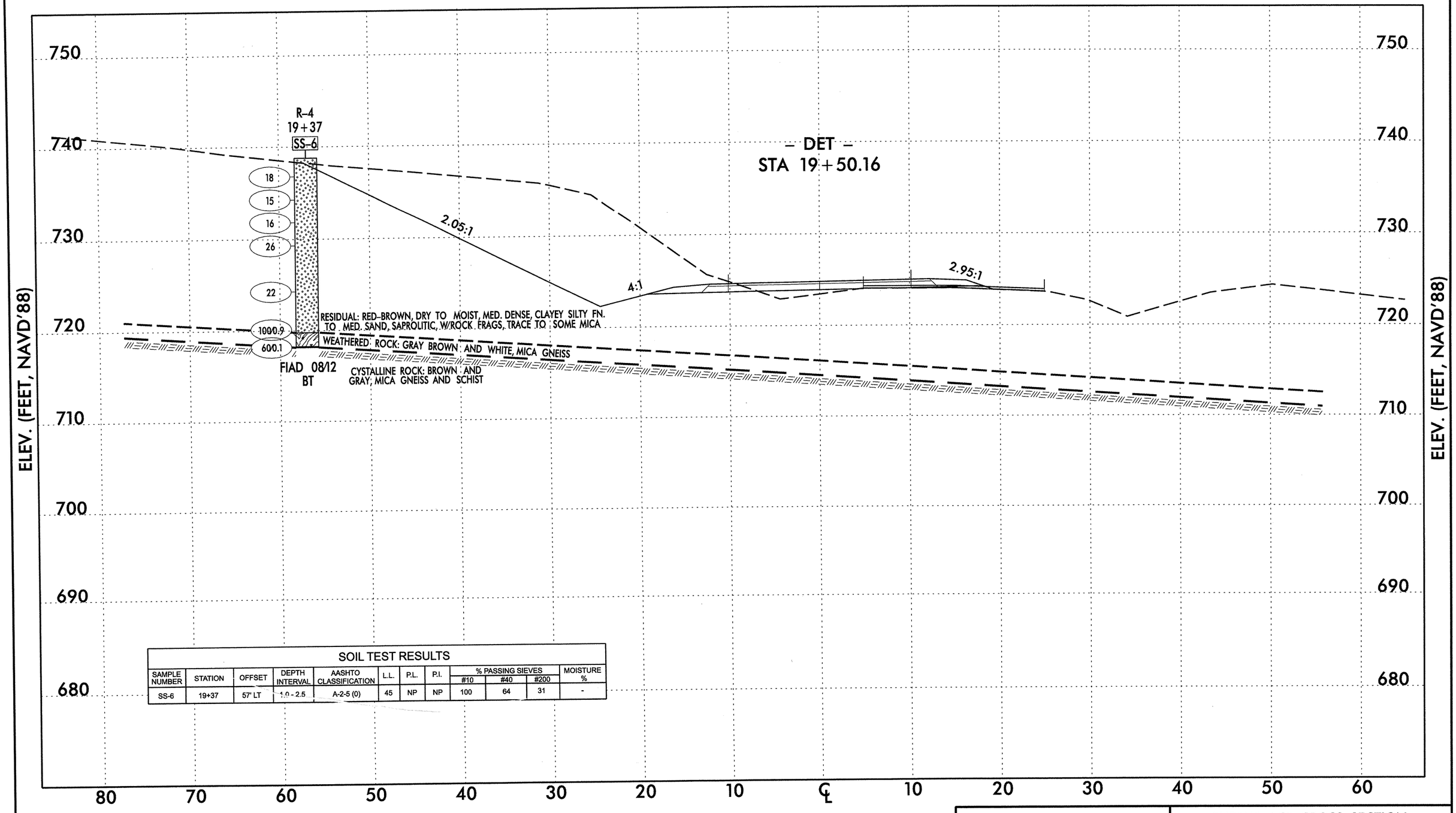
WBS.: 38440.1.1, TIP NO.: B-4623

OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 9



SOIL TEST RESULTS

SAMPLE NUMBER	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASSIFICATION	L.L.	P.L.	P.I.	% PASSING SIEVES			MOISTURE %
								#10	#40	#200	
SS-6	19+37	57' LT	1.0 - 2.5	A-2-5 (0)	45	NP	NP	100	64	31	-

NOTES:
- CROSS SECTION OF –DET– TAKEN FROM ELECTRONIC FILES RECIEVED FROM NCDOT GEU, DATED AUGUST, 2012.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE CROSS SECTION.

VERTICAL SCALE
0 10 20
FEET

HORIZONTAL SCALE
0 10 20
FEET

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SUBSURFACE CROSS SECTION

BRIDGE NO. 47 OVER HOGAN'S CREEK ON SR 1128
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OCTOBER 2012	FALCON PROJECT NO.: G12022.00	SHEET 10