

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	42244.1.1 (B-5107)	1	18

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

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PROJ. REFERENCE NO. 42244.1.1 (B-5107) F.A. PROJ. BRSTP-1003 (71)

COUNTY FORSYTH

PROJECT DESCRIPTION BRIDGE # 34 OVER ABBOTT'S CREEK  
ON SR 1003 (HIGH POINT RD.)

SITE DESCRIPTION \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**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.

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.

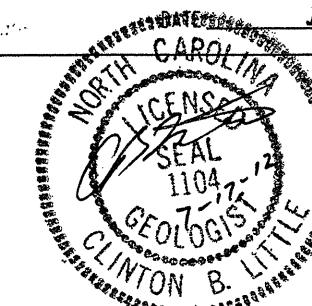
PERSONNEL  
Schnabel Engineering

INVESTIGATED BY R. Q. CALLAWAY

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

JULY 2012



**PROJECT: 42244.1.1 ID: B-5107**

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 IS IT 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.


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

PROJECT REFERENCE NO. 42244.II (B-5107)	SHEET NO. 2
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SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS							
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: <i>VERY STIFF, GRAVITY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i>		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. <b>ANGULARITY OF GRAINS</b> THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		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) CRYSTALLINE ROCK (CR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CP) SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		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 IN 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 SPON 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 (SROD) - 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.							
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>		<b>MINERALOGICAL COMPOSITION</b>		<b>WEATHERING</b>									
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS		MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		FRESH ROCK FRESH. CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SL.) 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 (SL.) 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.		<b>COMPRESSIBILITY</b> SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		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 GROVED 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 FINGER NAIL.		<b>PERCENTAGE OF MATERIAL</b> 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		<b>GROUND WATER</b> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	
<b>CONSISTENCY OR DENSENESS</b>		<b>MISCELLANEOUS SYMBOLS</b>		<b>ROCK HARDNESS</b>									
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )		ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES		TEST BORING WITH CORE AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD									
GENERALY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE 4 TO 10 LOOSE 10 TO 30 MEDIUM DENSE 30 TO 50 DENSE 50 TO 100 VERY DENSE >100		GENERALY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT <2 SOFT 2 TO 4 MEDIUM STIFF 4 TO 8 STIFF 8 TO 15 VERY STIFF 15 TO 30 HARD >30		GENERALY GRANULAR MATERIAL (NON-COHESIVE) N/A		GENERALY SILT-CLAY MATERIAL (COHESIVE) <0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4							
<b>TEXTURE OR GRAIN SIZE</b>		<b>ABBREVIATIONS</b>		<b>FRACTURE SPACING</b>		<b>BEDDING</b>							
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.00 0.42 0.25 0.075 0.053		AR - AUGER REFUSAL BT - BORING TERMINATED 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 HL - 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 W - UNIT WEIGHT W <sub>d</sub> - DRY UNIT WEIGHT S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO		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		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							
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>		<b>EQUIPMENT USED ON SUBJECT PROJECT</b>		<b>INDURATION</b>									
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION		DRILL UNITS: <input checked="" type="checkbox"/> MOBILE B-57 <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST		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.									
LL - LIQUID LIMIT PL - PLASTIC LIMIT OM - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT		ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input checked="" type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input checked="" type="checkbox"/> TUNG-CARBIDE INSERTS <input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input checked="" type="checkbox"/> TRICONE 2 15/16" STEEL TEETH <input type="checkbox"/> TRICONE " TUNG-CARB. <input checked="" type="checkbox"/> CORE BIT		CORE SIZE: <input type="checkbox"/> B <input checked="" type="checkbox"/> N NQ <input type="checkbox"/> H HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST		BENCH MARK: B5107-GPS 2 STA. 17+45.2 -L- 17.4 LT N 828590 E 1680921 ELEVATION: 813.38 FT.							
<b>PLASTICITY</b>		<b>PLASTICITY</b>		<b>INDURATION</b>									
NONPLASTIC 0-5 LOW PLASTICITY 6-15 MED. PLASTICITY 16-25 HIGH PLASTICITY 26 OR MORE		PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH											
<b>COLOR</b>		<b>COLOR</b>											
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.		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.											
						<b>NOTES:</b> STRATIGRAPHY SHOWN THROUGH BORINGS							

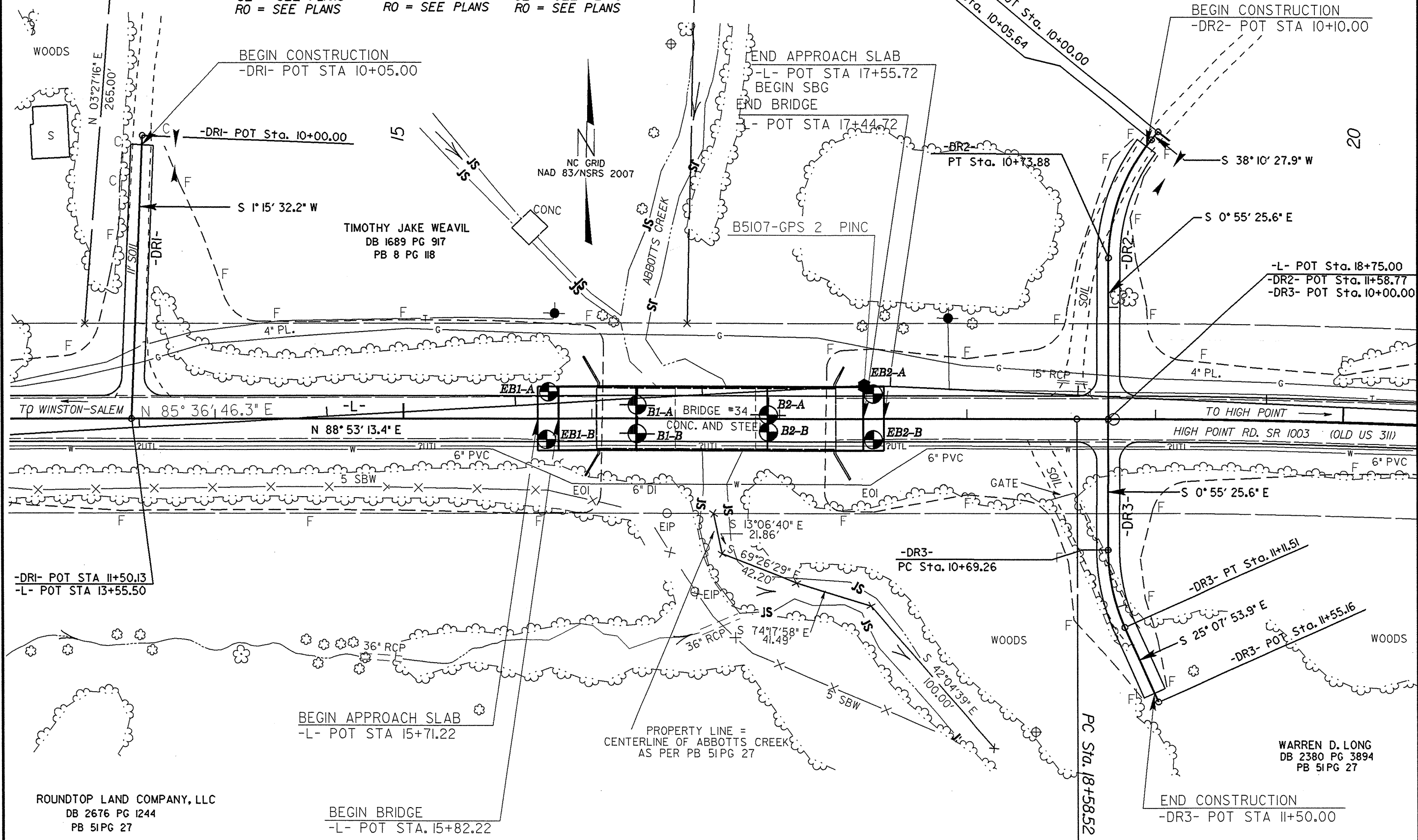
LUCY T. PULLIAM  
DB 1129 PG 609  
DB 1689 PG 917  
PB 12 PG 120

-L-	-DR2-	-DR3-
PI Sta 20+56.38	PI Sta 10+41.15	PI Sta 10+90.70
$\Delta = 4^{\circ} 32' 28.3" (RT)$	$\Delta = 39^{\circ} 05' 53.5" (LT)$	$\Delta = 24^{\circ} 12' 28.4" (LT)$
D = 1'08' 53.6"	D = 57' 17' 44.8"	D = 57' 17' 44.8"
L = 395.50'	L = 68.24'	L = 42.25'
T = 197.85'	T = 35.51'	T = 21.45'
R = 4,990.00'	R = 100.00'	R = 100.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

BM #2  
-BL- STA 11+32  
249' LEFT  
ELEV.=804.85'

JAMES W. MOOREFIELD  
AND WIFE  
ELAINE H. MOOREFIELD  
DB 1661PG 1663  
PB 8 PG 118

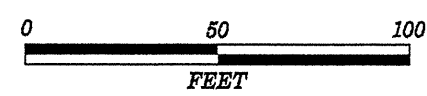
PROJECT REFERENCE NO.	SHEET
42244.1.1 (B-5107)	3
<b>SITE PLAN</b>	
0 50 100 FEET	
SKEW=90°00'00"	



ROUNDTOP LAND COMPANY, LLC  
DB 2676 PG 1244  
PB 51PG 27

BEGIN BRIDGE  
-L- POT STA. 15+82.22

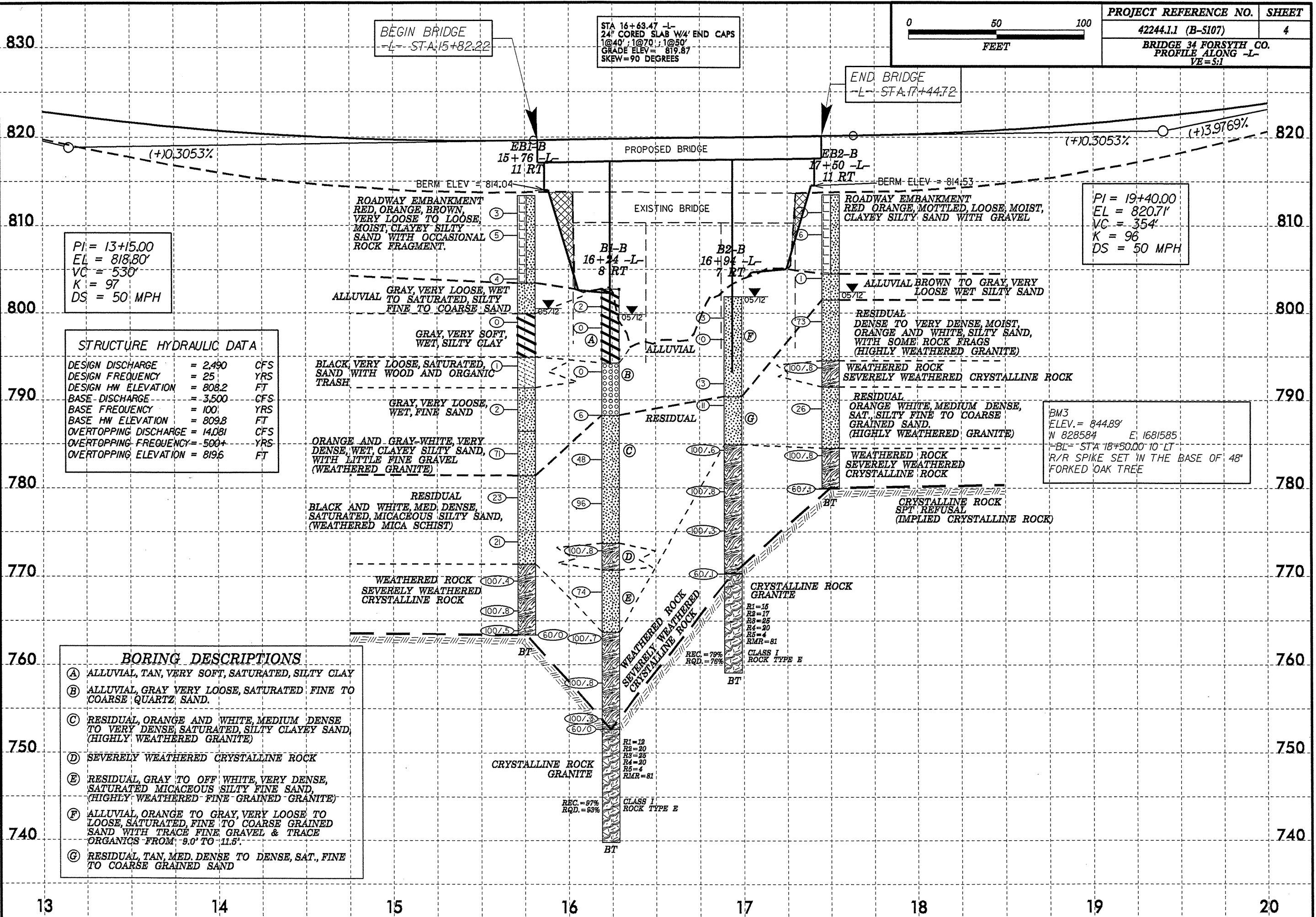
WARREN D. LONG  
DB 2380 PG 3894  
PB 51PG 27



BEGIN BRIDGE  
-L- STA: 15+82.22

STA 16+63.47 -L-  
24" CORED SLAB W/4' END CAPS  
1@40' ; 1@70' ; 1@50'  
GRADE ELEV = 819.87  
SKEW = 90 DEGREES

END BRIDGE  
-L- STA: 17+44.72



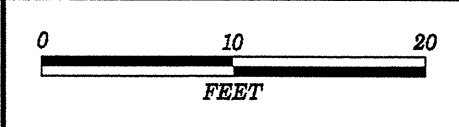
PI = 13+15.00  
EL = 818.80'  
VC = 530'  
K = 97  
DS = 50 MPH

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2,490	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 808.2	FT
BASE DISCHARGE	= 3,500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 809.8	FT
OVERTOPPING DISCHARGE	= 14,081	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 819.6	FT

BORING DESCRIPTIONS	
(A)	ALLUVIAL, TAN, VERY SOFT, SATURATED, SILTY CLAY
(B)	ALLUVIAL, GRAY VERY LOOSE, SATURATED FINE TO COARSE QUARTZ SAND.
(C)	RESIDUAL, ORANGE AND WHITE, MEDIUM DENSE TO VERY DENSE, SATURATED, SILTY CLAYEY SAND, (HIGHLY WEATHERED GRANITE)
(D)	SEVERELY WEATHERED CRYSTALLINE ROCK
(E)	RESIDUAL, GRAY TO OFF WHITE, VERY DENSE, SATURATED MICACEOUS SILTY FINE SAND, (HIGHLY WEATHERED FINE-GRAINED GRANITE)
(F)	ALLUVIAL, ORANGE TO GRAY, VERY LOOSE TO LOOSE, SATURATED, FINE TO COARSE GRAINED SAND WITH TRACE FINE GRAVEL & TRACE ORGANICS FROM 9.0' TO 11.5'.
(G)	RESIDUAL, TAN, MED. DENSE TO DENSE, SAT., FINE TO COARSE GRAINED SAND

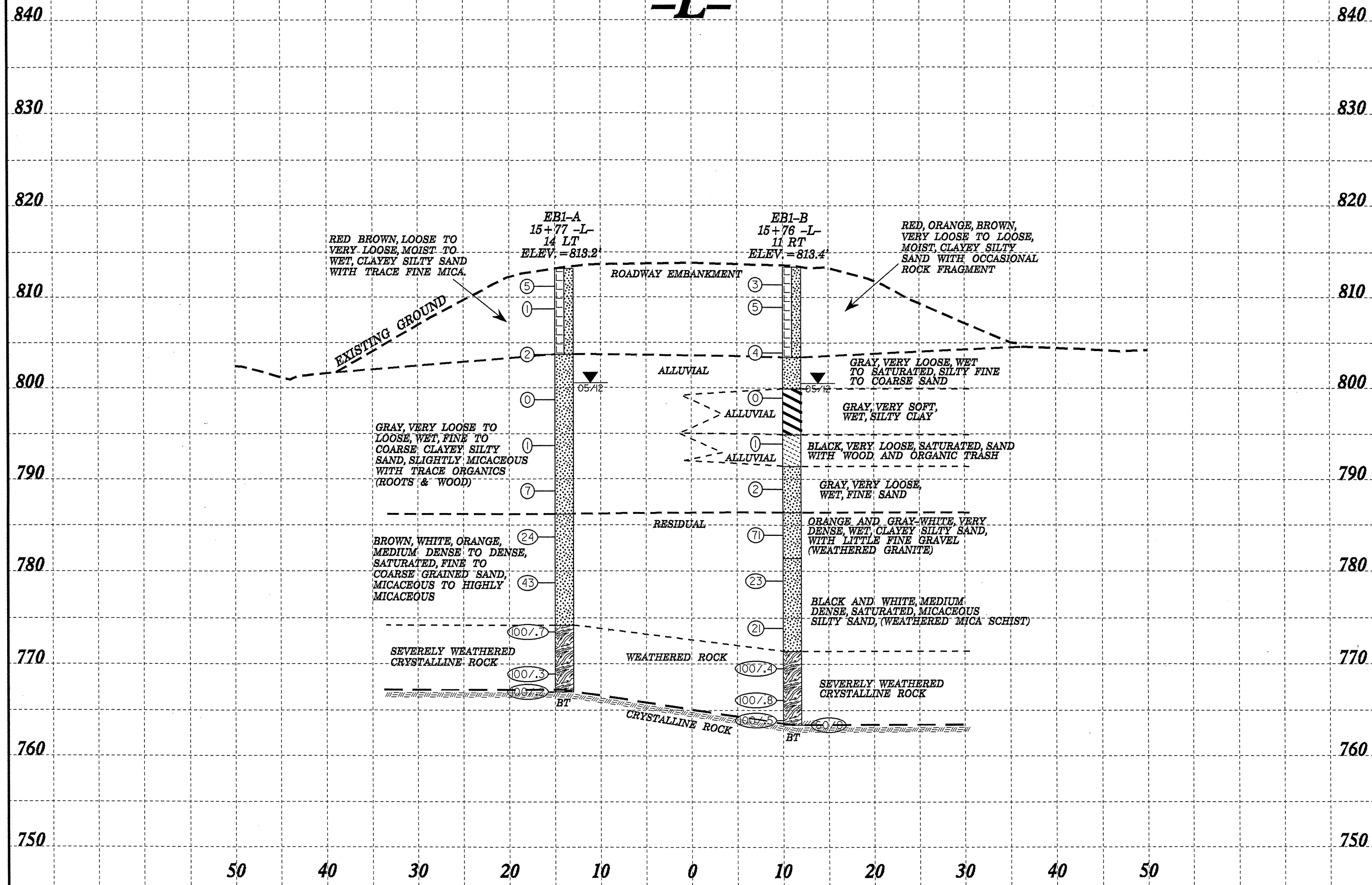
PI = 19+40.00  
EL = 820.71'  
VC = 354'  
K = 96  
DS = 50 MPH

BM3  
ELEV. = 844.89'  
N 828584 E 1681585  
R/R SPIKE SET IN THE BASE OF 48" FORKED OAK TREE



PROJECT REFERENCE NO.	SHEET
42244.1.1 (B-5107)	5
SECTION THROUGH EB-1 STA. 15+82.22 -L- SKEW = 90° 00' 00"	

**-L-**



RED BROWN, LOOSE TO VERY LOOSE, MOIST TO WET, CLAYEY SILTY SAND WITH TRACE FINE MICA

EB1-A  
15+77 -L-  
14 LT  
ELEV. = 813.2'

EB1-B  
15+76 -L-  
11 RT  
ELEV. = 813.4'

RED, ORANGE, BROWN, VERY LOOSE TO LOOSE, MOIST, CLAYEY SILTY SAND WITH OCCASIONAL ROCK FRAGMENT

EXISTING GROUND

ROADWAY EMBANKMENT

ALLUVIAL

GRAY, VERY LOOSE, WET TO SATURATED, SILTY FINE TO COARSE SAND

GRAY, VERY LOOSE TO LOOSE, WET, FINE TO COARSE, CLAYEY SILTY SAND, SLIGHTLY MICACEOUS WITH TRACE ORGANICS (ROOTS & WOOD)

GRAY, VERY SOFT, WET, SILTY CLAY

BLACK, VERY LOOSE, SATURATED, SAND WITH WOOD AND ORGANIC TRASH

GRAY, VERY LOOSE, WET, FINE SAND

BROWN, WHITE, ORANGE, MEDIUM DENSE TO DENSE, SATURATED, FINE TO COARSE GRAINED SAND, MICACEOUS TO HIGHLY MICACEOUS

RESIDUAL

ORANGE AND GRAY-WHITE, VERY DENSE, WET, CLAYEY SILTY SAND, WITH LITTLE FINE GRAVEL (WEATHERED GRANITE)

BLACK AND WHITE, MEDIUM DENSE, SATURATED, MICACEOUS SILTY SAND, (WEATHERED MICA SCHIST)

SEVERELY WEATHERED CRYSTALLINE ROCK

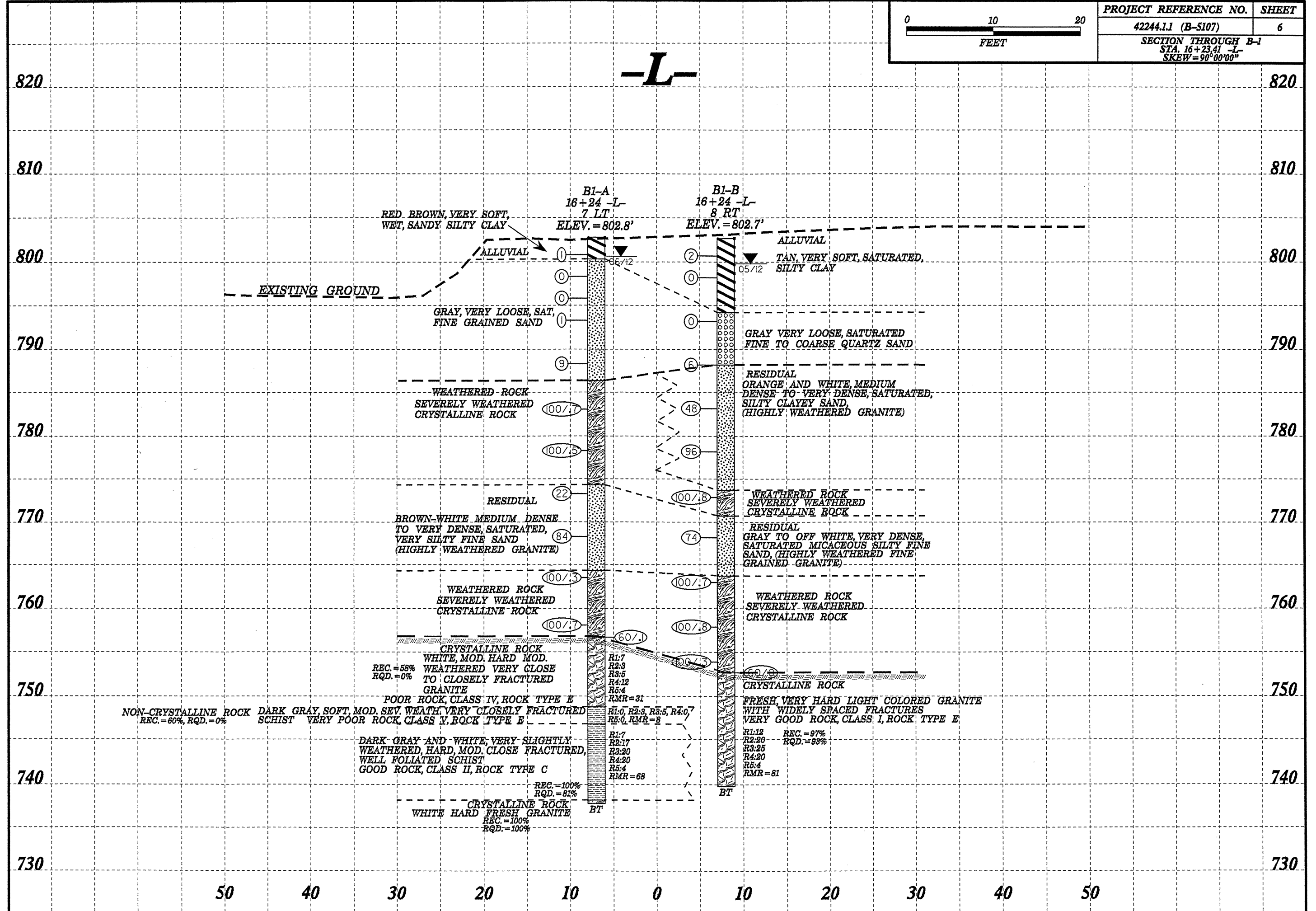
WEATHERED ROCK

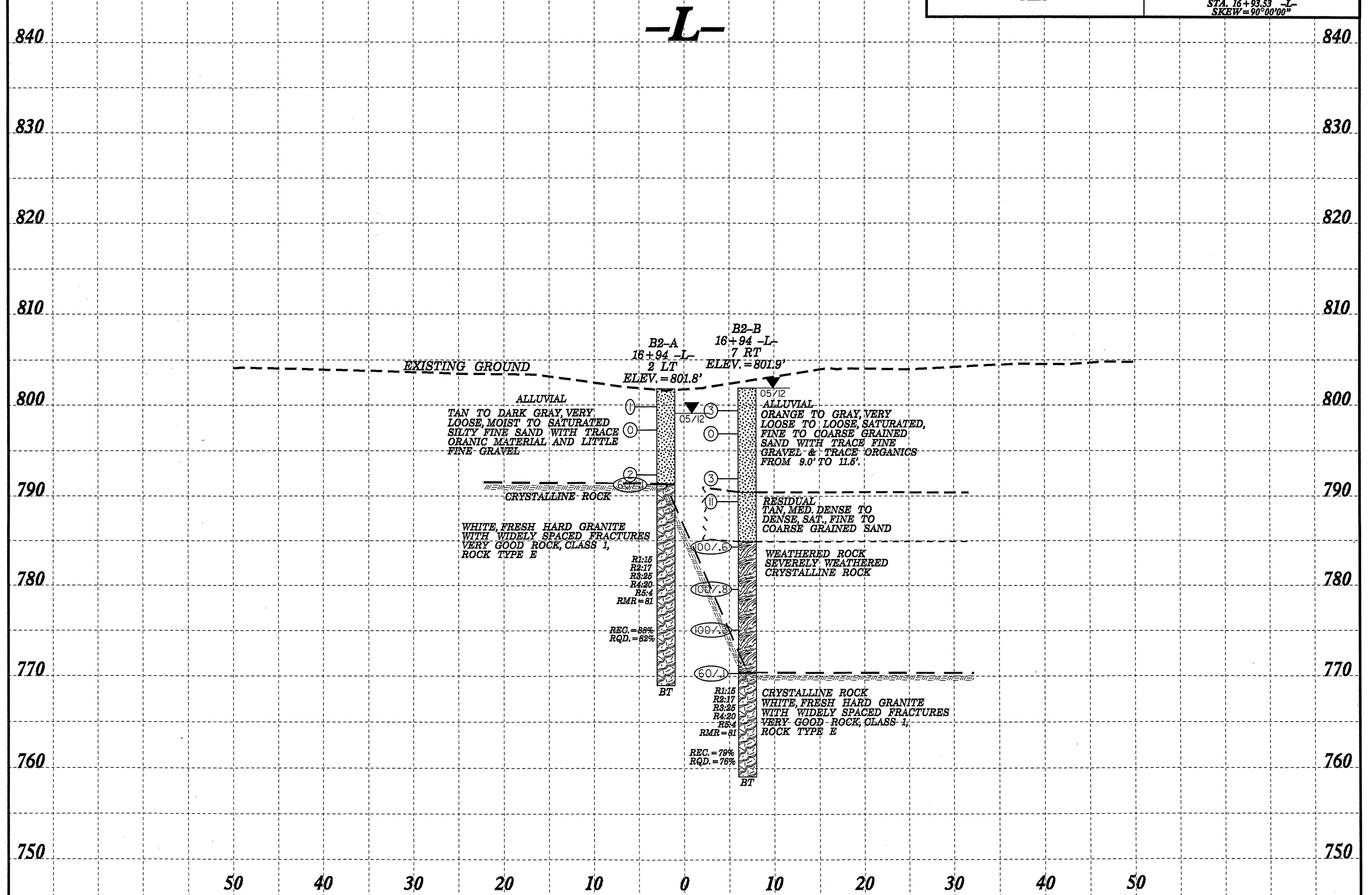
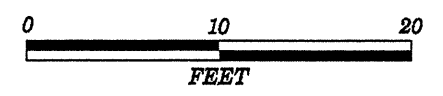
SEVERELY WEATHERED CRYSTALLINE ROCK

CRYSTALLINE ROCK

BT

BT













WBS 42244.1.1	TIP B-5107	COUNTY FORSYTH	GEOLOGIST Contract Geologist
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)			GROUND WTR (ft)
BORING NO. B1-B	STATION 16+24	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 802.7 ft	TOTAL DEPTH 62.9 ft	NORTHING 828,562	EASTING 1,680,799
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/29/12	COMP. DATE 05/30/12	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
805														802.7	0.0
	801.7	1.0	1	1	1										
800	799.2	3.5	1	0	0										
	794.2	8.5	0	0	0										
795	789.2	13.5	1	1	5										
	784.2	18.5	6	17	31										
780	779.2	23.5	22	55	41										
	774.2	28.5	15	41	59/3										
775	769.2	33.5	24	33	41										
	764.2	38.5	30	53	47/2										
760	759.2	43.5	19	64	36/3										
	754.2	48.5	100/3												
755	752.7	50.0	60/0												
750															
745															
740															

NCDOT BORE SINGLE B5107\_GEO\_BH\_BRD0034\_FORSYTH.GPJ NC\_DOT\_GDT 6/29/12

WBS 42244.1.1	TIP B-5107	COUNTY FORSYTH	GEOLOGIST Contract Geologist
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)			GROUND WTR (ft)
BORING NO. B1-B	STATION 16+24	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 802.7 ft	TOTAL DEPTH 62.9 ft	NORTHING 828,562	EASTING 1,680,799
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/29/12	COMP. DATE 05/30/12	SURFACE WATER DEPTH N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
752.7											Begin Coring @ 50.0 ft	
	752.7	50.0	5.0	N=60/0 3.28/1.0 3.21/1.0 3.02/1.0 6.41/1.0 6.54/1.0	(5.0)	(5.0)		(12.5)	(12.0)		CRYSTALLINE ROCK	50.0
750					100%	100%		97%	93%		FRESH, VERY HARD LIGHT COLORED GRANITE WITH WIDELY SPACED FRACTURES	
	747.7	55.0	5.0	5.31/1.0 4.11/1.0 5.39/1.0 4.23/1.0 7.37/1.0	(5.0)	(5.0)					R1: 12, R2: 20, R3: 25, R4: 20, R5: 4, RMR=81	
745					100%	100%					VERY GOOD ROCK, CLASS I, ROCK TYPE E	
	742.7	60.0	2.9	8.43/1.0 6.51/1.0 6.02/0.9	(2.5)	(2.0)						
740	739.8	62.9			86%	69%					Boring Terminated at Elevation 739.8 ft in granite	62.9

NCDOT CORE SINGLE B5107\_GEO\_BH\_BRD0034\_FORSYTH.GPJ NC\_DOT\_GDT 6/29/12

WBS 42244.1.1		TIP B-5107		COUNTY FORSYTH		GEOLOGIST Contract Geologist										
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)						GROUND WTR (ft)										
BORING NO. B2-A		STATION 16+94		OFFSET 2 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 801.8 ft		TOTAL DEPTH 32.8 ft		NORTHING 828,574		EASTING 1,680,869										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 05/21/12		COMP. DATE 05/21/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
805																
	800.8	1.0		1	1	0								801.8	GROUND SURFACE	0.0
800															ALLUVIAL TAN TO DARK GRAY, VERY LOOSE, MOIST TO SATURATED SILTY FINE SAND WITH TRACE ORANIC MATERIAL AND LITTLE FINE GRAVEL	
	798.3	3.5		0	0	0										
795																
	793.3	8.5		0	1	1										
790														791.3	CRYSTALLINE ROCK GRANITE	10.5
	791.3	10.5		60/1										791.2	CRYSTALLINE ROCK GRANITE	10.6
785																
780																
775																
770																
Boring Terminated at Elevation 769.0 ft in granite																

NCDOT BORE SINGLE B5107\_GEO\_BH\_BRDG0034\_FORSYTH.GPJ NC\_DOT.GDT 6/29/12

WBS 42244.1.1		TIP B-5107		COUNTY FORSYTH		GEOLOGIST Contract Geologist						
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)						GROUND WTR (ft)						
BORING NO. B2-A		STATION 16+94		OFFSET 2 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 801.8 ft		TOTAL DEPTH 32.8 ft		NORTHING 828,574		EASTING 1,680,869						
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 05/21/12		COMP. DATE 05/21/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft)	RQD (ft)		REC. (%)	RQD (%)		ELEV. (ft)	DEPTH (ft)
791.2												Begin Coring @ 10.6 ft
790	791.2	10.6	2.2	2.03/1.0	(2.2)	(2.2)		(19.6)	(18.1)		791.2	CRYSTALLINE ROCK WHITE, FRESH HARD GRANITE WITH WIDELY SPACED FRACTURES R1: 15, R2: 17, R3: 25, R4: 20, R5: 4, RMR=81 VERY GOOD ROCK, CLASS I, ROCK TYPE E
	789.0	12.8		1.46/1.2	100%	100%						
785			5.0	2.08/1.0	(4.8)	(4.6)						
	784.0	17.8		1.48/1.0	96%	92%						
780			5.0	2.25/1.0								
	779.0	22.8		2.24/1.0								
			5.0	3.07/1.0	(4.6)	(4.5)						
				1.49/1.0	92%	90%						
775			5.0	1.59/1.0								
	779.0	22.8		1.53/1.0								
			5.0	1.52/1.0								
				1.31/1.0	(3.8)	(2.9)						
				1.05/1.0	76%	58%						
770			5.0	1.28/1.0								
	774.0	27.8		1.16/1.0								
			5.0	1.48/1.0								
				1.29/1.0	(4.2)	(3.9)						
				1.17/1.0	84%	78%						
	769.0	32.8		1.49/1.0								
				1.44/1.0								
				1.38/1.0								
Boring Terminated at Elevation 769.0 ft in granite												

NCDOT CORE SINGLE B5107\_GEO\_BH\_BRDG0034\_FORSYTH.GPJ NC\_DOT.GDT 6/29/12

WBS 42244.1.1		TIP B-5107		COUNTY FORSYTH		GEOLOGIST Contract Geologist										
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)							GROUND WTR (ft)									
BORING NO. B2-B		STATION 16+94		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 801.9 ft		TOTAL DEPTH 42.8 ft		NORTHING 828,565		EASTING 1,680,869										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 05/24/12		COMP. DATE 05/24/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
805																
															801.9	0.0
800	800.4	1.5	0	0	3											
	797.9	4.0	0	0	0											
795																
	792.9	9.0	0	0	3											
790	790.4	11.5	4	5	6											
785	785.4	16.5	30	76	24/1											
780	780.4	21.5	52	100/3												
775	775.4	26.5	100/3													
770	770.4	31.5	60/1													
765																
760																

NCDOT BORE SINGLE B5107\_GEO\_BH\_BRD0034\_FORSYTH.GPJ\_NC\_DOT.GDT 6/29/12

WBS 42244.1.1		TIP B-5107		COUNTY FORSYTH		GEOLOGIST Contract Geologist						
SITE DESCRIPTION BRIDGE 34 OVER ABBOTT'S CREEK ON SR 1003 (HIGH POINT ROAD)							GROUND WTR (ft)					
BORING NO. B2-B		STATION 16+94		OFFSET 7 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 801.9 ft		TOTAL DEPTH 42.8 ft		NORTHING 828,565		EASTING 1,680,869						
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 93% 12/08/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 05/24/12		COMP. DATE 05/24/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
	770.3	31.6	3.2	1.34/1.0 2.26/1.0 2.36/1.2	(3.2) 100%	(3.2) 100%		(8.8) 79%	(8.5) 76%		Begin Coring @ 31.6 ft	
	767.1	34.8	5.0	2.05/1.0 1.32/1.0 2.12/1.0 2.14/1.0 2.20/1.0	(3.3) 66%	(3.0) 60%					CRYSTALLINE ROCK WHITE, FRESH HARD GRANITE WITH WIDELY SPACED FRACTURES. LAST 1' OF CORE WAS NOT PICKED UP BY LIFTER R1: 15, R2: 17, R3: 25, R4: 20, R5: 4, RMR=81 VERY GOOD ROCK, CLASS I, ROCK TYPE E	31.6
765												
	762.1	39.8	3.0	2.02/1.0 2.27/1.0 2.27/1.0	(2.3) 77%	(2.3) 77%						
760	759.1	42.8									Boring Terminated at Elevation 759.1 ft in granite	42.8

NCDOT CORE SINGLE B5107\_GEO\_BH\_BRD0034\_FORSYTH.GPJ\_NC\_DOT.GDT 6/29/12



