

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 38605.1.1(B-4835) F.A. PROJ. BRZ-1510(3)
COUNTY WARREN
PROJECT DESCRIPTION BRIDGE NO. 124 OVER REEDY POND
CREEK ON SR 1510

INVENTORY

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

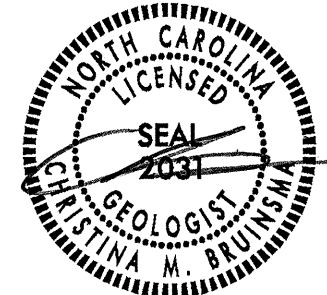
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND 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.

PROJECT: 38605.1.1
ID: B-4835

- PERSONNEL
- C.M. BRUINSMA
 - A. SANDERSON
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INVESTIGATED BY C.M. BRUINSMA
CHECKED BY N.T. ROBERSON
SUBMITTED BY N.T. ROBERSON
DATE NOVEMBER 2011



DRAWN BY: T.T. WALKER, C.M. BRUINSMA

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
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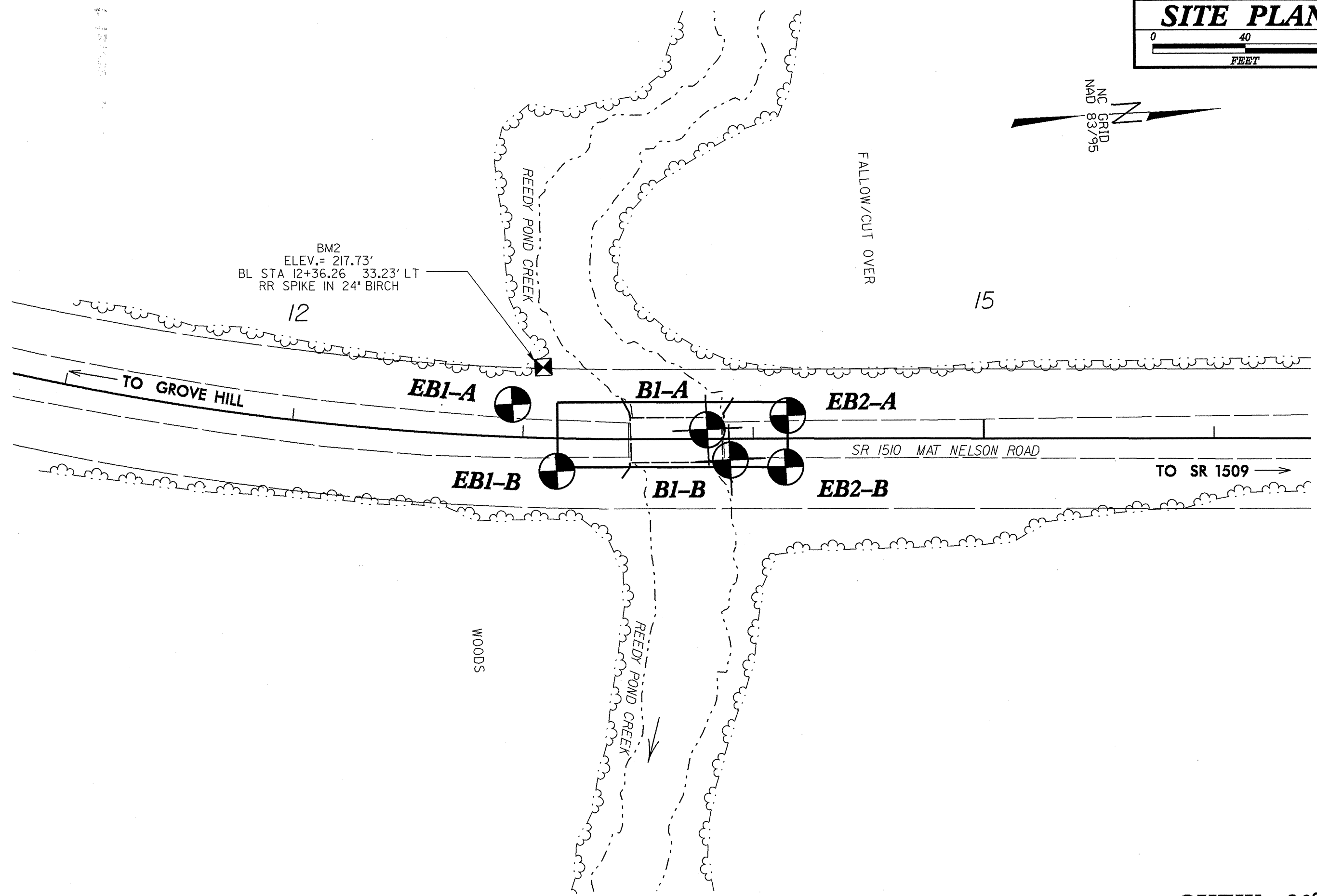
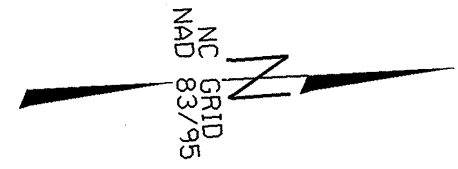
| | |
|---|----------------|
| PROJECT REFERENCE NO. 38605.1.(B-4835) | SHEET NO. 2 |
|---|----------------|

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

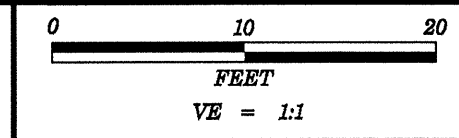
| SOIL DESCRIPTION | | | GRADATION | | | ROCK DESCRIPTION | | | TERMS AND DEFINITIONS | | | | | | | | |
|--|--|--|---|--|--|--|--|--|---|--|--|---|--|--|--|--|--|
| SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T208, 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, GRAV. SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-5</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. | | | 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: | | | 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 DISLOGGED 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 - A 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 (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. | | | | | | | | |
| SOIL LEGEND AND AASHTO CLASSIFICATION | | | MINERALOGICAL COMPOSITION | | | WEATHERING | | | WEATHERING | | | | | | | | |
| 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. | | | WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP) | | | 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 PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTS INCLUDED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC. | | | FRESH VERY SLIGHT (V SL.) SLIGHT (SL.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE | | | ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. 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. 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. 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. 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. 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. 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. 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. | | |
| COMPRESSIONIBILITY | | | PERCENTAGE OF MATERIAL | | | GROUND WATER | | | MISCELLANEOUS SYMBOLS | | | | | | | | |
| SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE | | | LIQUID LIMIT LESS THAN 31 LIQUID LIMIT EQUAL TO 31-50 LIQUID LIMIT GREATER THAN 50 | | | 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 | | | 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 | | | | | | | | |
| CONSISTENCY OR DENSENESS | | | TEXTURE OR GRAIN SIZE | | | ABBREVIATIONS | | | EQUIPMENT USED ON SUBJECT PROJECT | | | | | | | | |
| PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) | | | U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053 | | | 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 W - UNIT WEIGHT Wd - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO | | | | | |
| VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | | | < 4 4 TO 10 10 TO 30 30 TO 50 > 50 | | | N/A | | | CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG-CARB. CORE BIT | | | DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST CME-550X CME-45B | | | | | |
| 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 | | | HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B N WDX4 H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST | | | FRACTURE SPACING TERM SPACING THICKNESS VERY WIDE MORE THAN 10 FEET > 4 FEET WIDE 3 TO 10 FEET 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FEET 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THINLY LAMINATED < 0.008 FEET | | | | | |
| SOIL MOISTURE - CORRELATION OF TERMS | | | PLASTICITY | | | INDURATION | | | NOTES: | | | | | | | | |
| SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION | | | PLASTICITY INDEX (PI) DRY STRENGTH | | | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. | | | BENCH MARK: # 2 STA. 12+36.29, 33.23' LT. RR. SPIKE IN 24" BIRCH ELEVATION: 217.73 FT. | | | | | | | | |
| - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | | 0-5 VERY LOW 6-15 SLIGHT 16-25 MEDIUM 26 OR MORE HIGH | | | 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. | | | FRAGMENTATION OF SOILS | | | | | | | | |
| - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | | NONPLASTIC 0-5 LOW PLASTICITY 6-15 MED. PLASTICITY 16-25 HIGH PLASTICITY 26 OR MORE | | | FRAGMENTATION OF ROCKS | | | FRAGMENTATION OF ROCKS | | | | | | | | |
| - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | | | COLOR | | | FRAGMENTATION OF ROCKS | | | FRAGMENTATION OF ROCKS | | | | | | | | |
| - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | | 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. | | | FRAGMENTATION OF ROCKS | | | FRAGMENTATION OF ROCKS | | | | | | | | |

| | |
|-----------------------|-------|
| PROJECT REFERENCE NO. | SHEET |
| 38605.1.1(B-4835) | 3 |
| SITE PLAN | |
| | |
| F E E T | |

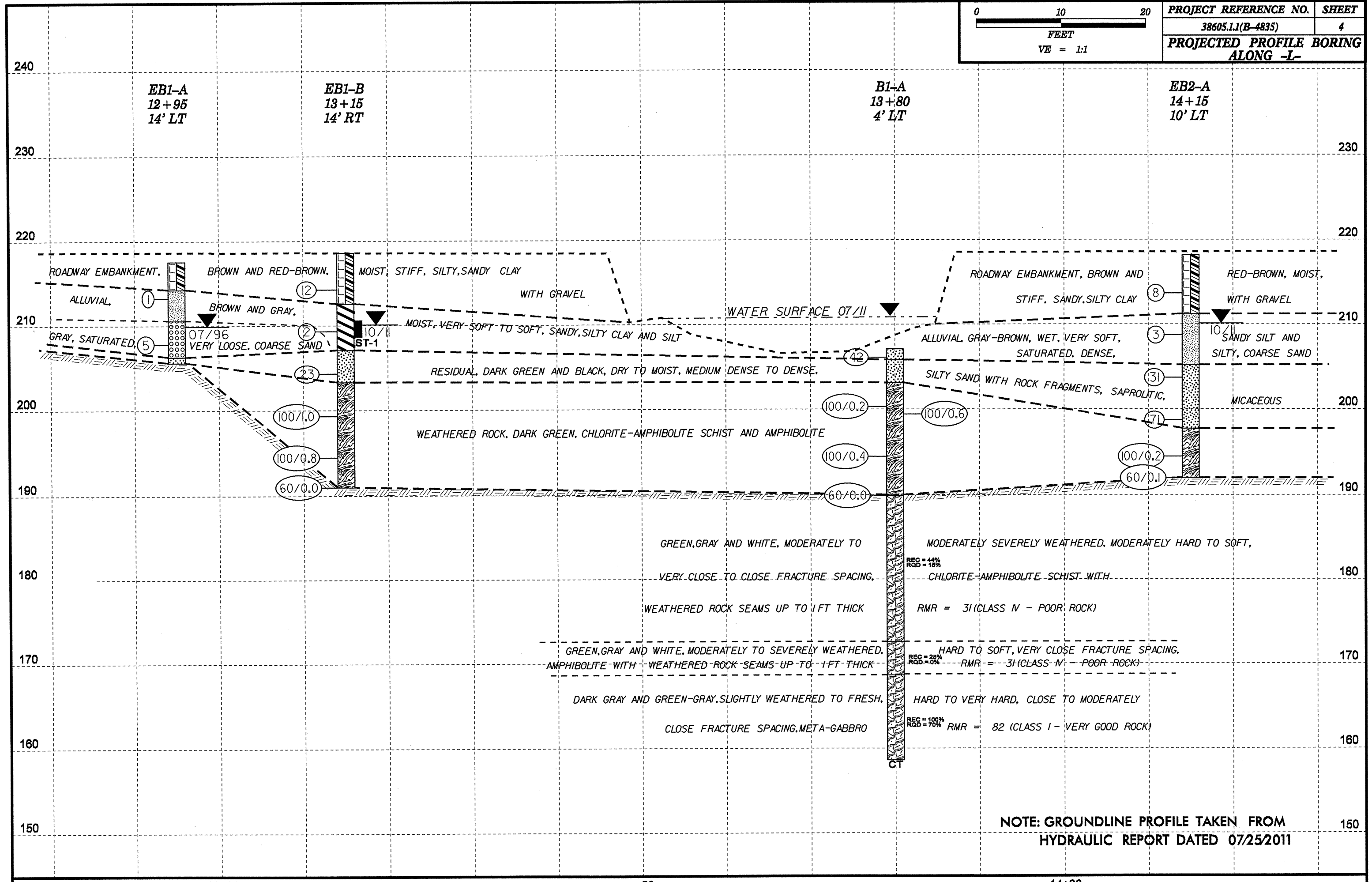


BM2
ELEV.= 217.73'
BL STA 12+36.26 33.23' LT
RR SPIKE IN 24" BIRCH

SKEW = 90°



| | |
|---------------------------------------|-------|
| PROJECT REFERENCE NO. | SHEET |
| 38605.1.1(B-4835) | 4 |
| PROJECTED PROFILE BORING ALONG -L- | |



EB1-A
12+95
14' LT

EB1-B
13+15
14' RT

BI-A
13+80
4' LT

EB2-A
14+15
10' LT

ROADWAY EMBANKMENT.

BROWN AND RED-BROWN.

MOIST, STIFF, SILTY, SANDY CLAY

ROADWAY EMBANKMENT, BROWN AND

RED-BROWN, MOIST,

ALLUVIAL

BROWN AND GRAY,

WITH GRAVEL

STIFF, SANDY, SILTY CLAY

WITH GRAVEL

GRAY, SATURATED,

07/96
VERY LOOSE, COARSE SAND

MOIST, VERY SOFT TO SOFT, SANDY, SILTY CLAY AND SILT

WATER SURFACE 07/11

ALLUVIAL, GRAY-BROWN, WET, VERY SOFT,
SATURATED, DENSE,

10/11
SANDY SILT AND
SILTY, COARSE SAND

RESIDUAL, DARK GREEN AND BLACK, DRY TO MOIST, MEDIUM DENSE TO DENSE.

SILTY SAND WITH ROCK FRAGMENTS, SAPROLITIC,

MICACEOUS

WEATHERED ROCK, DARK GREEN, CHLORITE-AMPHIBOLITE SCHIST AND AMPHIBOLITE

GREEN, GRAY AND WHITE, MODERATELY TO

MODERATELY SEVERELY WEATHERED, MODERATELY HARD TO SOFT,

VERY CLOSE TO CLOSE FRACTURE SPACING,

CHLORITE-AMPHIBOLITE SCHIST WITH

WEATHERED ROCK SEAMS UP TO 1 FT THICK

RMR = 31 (CLASS IV - POOR ROCK)

GREEN, GRAY AND WHITE, MODERATELY TO SEVERELY WEATHERED,
AMPHIBOLITE WITH WEATHERED ROCK SEAMS UP TO 1 FT THICK

HARD TO SOFT, VERY CLOSE FRACTURE SPACING,
RMR = 31 (CLASS IV - POOR ROCK)

DARK GRAY AND GREEN-GRAY, SLIGHTLY WEATHERED TO FRESH,

HARD TO VERY HARD, CLOSE TO MODERATELY

CLOSE FRACTURE SPACING, META-GABBRO

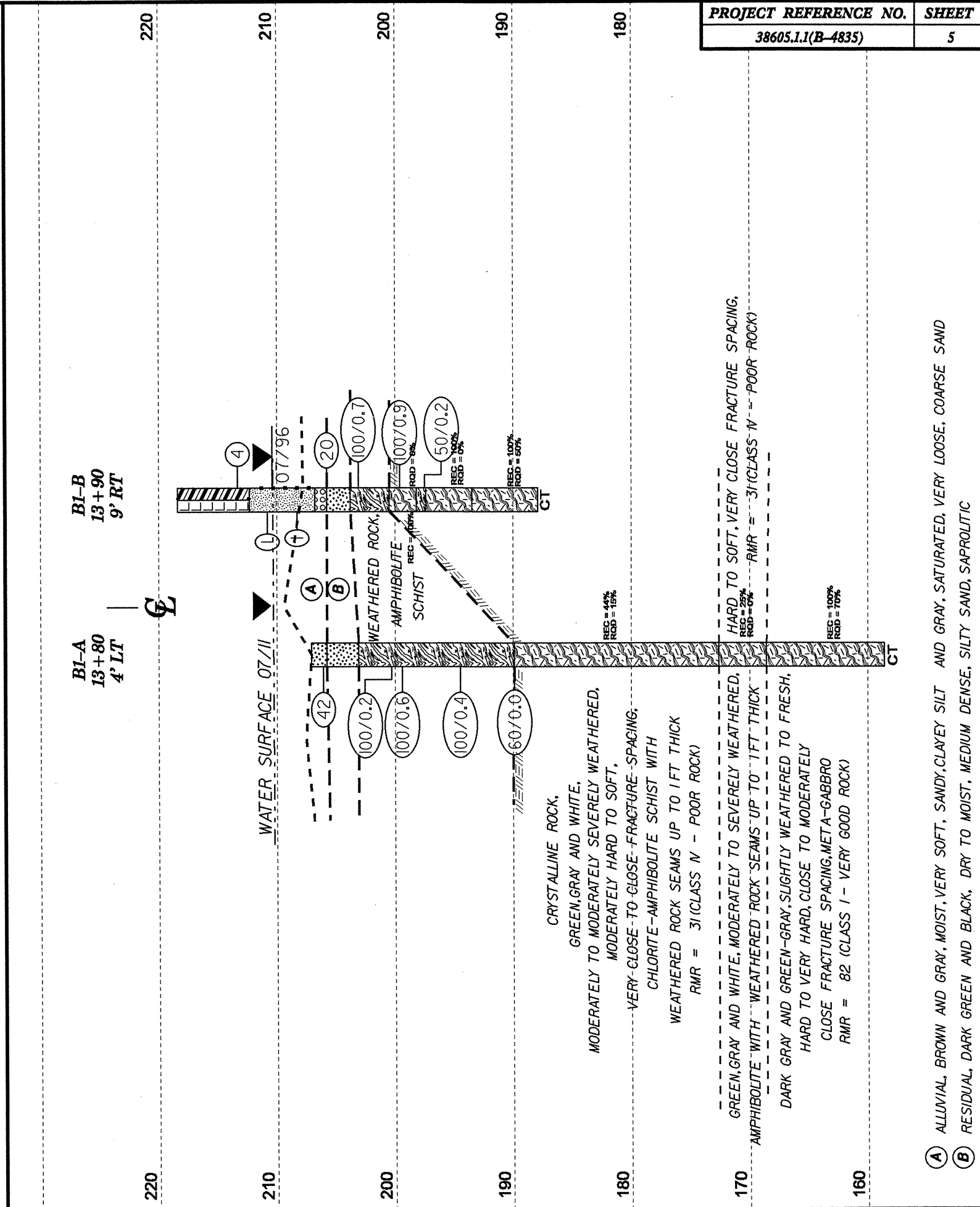
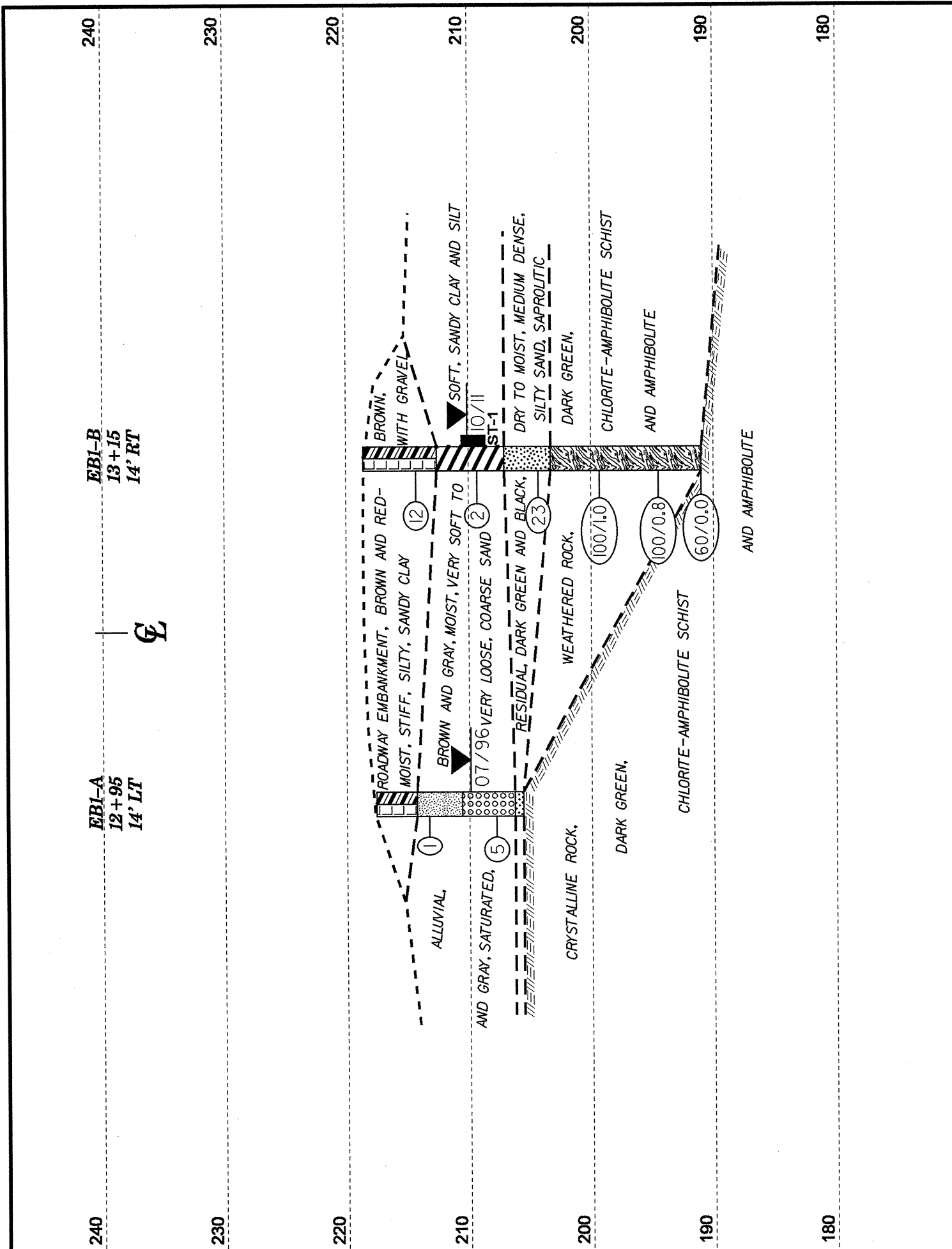
RMR = 82 (CLASS I - VERY GOOD ROCK)

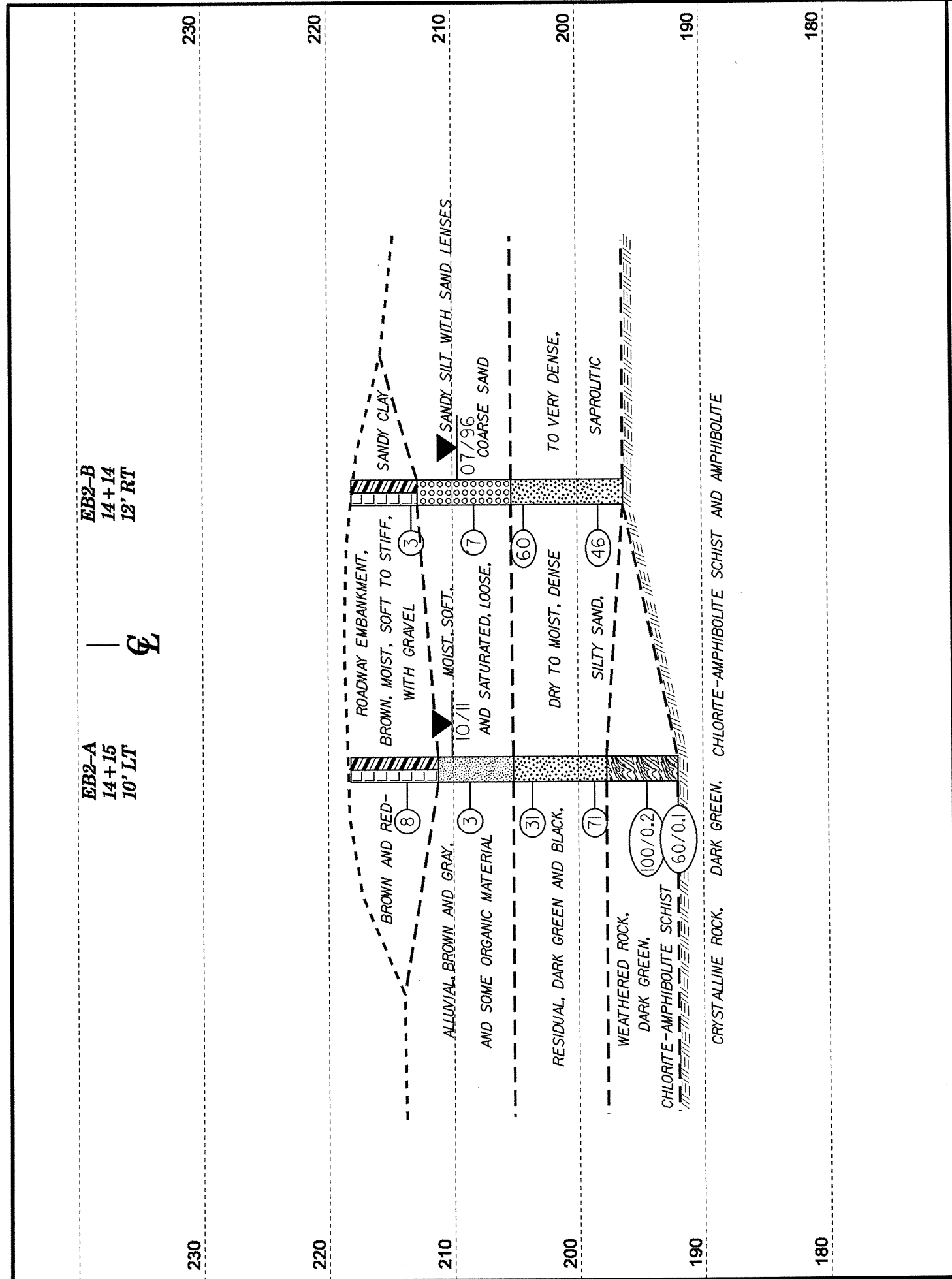
NOTE: GROUNDLINE PROFILE TAKEN FROM
HYDRAULIC REPORT DATED 07/25/2011

13+00

+50

14+00





HORIZ. SCALE 0 10 20 (FEET)
 VE = 1:1
CROSS SECTION THROUGH END BENT 2

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

| | | | |
|--|---------------------|--------------------------|-------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Sanderson, A. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. EB1-A | STATION 12+95 | OFFSET 14 ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 217.6 ft | TOTAL DEPTH 12.0 ft | NORTHING 950,140 | EASTING 2,293,567 |
| DRILL RIG/HAMMER EFF./DATE CME-45B | | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 07/23/96 | COMP. DATE 07/23/96 | 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 | | | | | |
| 220 | | | | | | | | | | | | | | GROUND SURFACE | 0.0 |
| 215 | 214.3 | 3.3 | 2 | 3 | 2 | | | | | | SS-4 | M | | ROADWAY EMBANKMENT BROWN, SILTY, SANDY CLAY | 3.3 |
| 210 | 208.8 | 8.8 | 2 | 0 | 1 | | | | | | SS-5 | Sat. | | ALLUVIAL BROWN, CLAYEY, SANDY SILT | 7.0 |
| | | | | | | | | | | | | | | GRAY, COARSE SAND | 11.3 |
| | | | | | | | | | | | | | | RESIDUAL GREEN-GRAY, SILTY SAND WITH ROCK FRAGMENTS, SAPROLITIC | 12.0 |
| Boring Terminated by Auger Refusal at Elevation 205.6 ft on CRYSTALLINE ROCK (AMPHIBOLITE SCHIST) | | | | | | | | | | | | | | | |

| | | | |
|--|---------------------|--------------------------|---------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Bruinsma, C. M. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. EB1-B | STATION 13+15 | OFFSET 14 ft RT | ALIGNMENT -L- |
| COLLAR ELEV. 218.6 ft | TOTAL DEPTH 27.6 ft | NORTHING 950,158 | EASTING 2,293,597 |
| DRILL RIG/HAMMER EFF./DATE RFO0057 CME-550X 73% 12/06/2005 | | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 10/16/11 | COMP. DATE 10/16/11 | 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 | | | | | |
| 220 | | | | | | | | | | | | | | GROUND SURFACE | 0.0 |
| 215 | 215.3 | 3.3 | 4 | 5 | 7 | | | | | | | | | ROADWAY EMBANKMENT RED-BROWN, SILTY, SANDY CLAY WITH GRAVEL | 6.0 |
| 210 | 210.3 | 8.3 | 2 | 1 | 1 | | | | | | | | | ALLUVIAL DARK GRAY, SANDY, SILTY CLAY | 11.5 |
| 205 | 205.3 | 13.3 | 9 | 7 | 16 | | | | | | | | | RESIDUAL DARK GREEN AND BLACK, SILTY SAND WITH ROCK FRAGMENTS, SAPROLITIC, MICACEOUS | 15.3 |
| 200 | 200.3 | 18.3 | 42 | 58/0.5 | | | | | | | | | | WEATHERED ROCK DARK GREEN AND BLACK, AMPHIBOLITE SCHIST | 191.0 |
| 195 | 195.3 | 23.3 | 80 | 20/0.3 | | | | | | | | | | | |
| | 191.0 | 27.6 | 60/0.0 | | | | | | | | | | | | |
| Boring Terminated with Standard Penetration Test Refusal at Elevation 191.0 ft in CRYSTALLINE ROCK (AMPHIBOLITE SCHIST) | | | | | | | | | | | | | | | |
| Other Samples: ST-1 (8.0 - 10.0) | | | | | | | | | | | | | | | |

NCDOT BORE DOUBLE B4835 GEO BH BDRG0124.GPJ NC_DOT.GDT 11/23/11

| | | | |
|--|---------------------|--------------------------|---------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Bruinsma, C. M. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. B1-A | STATION 13+80 | OFFSET 4 ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 207.1 ft | TOTAL DEPTH 48.5 ft | NORTHING 950,224 | EASTING 2,293,583 |
| DRILL RIG/HAMMER EFF./DATE RFO0057 CME-550X 73% 12/06/2005 | | DRILL METHOD Wash Boring | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 10/13/11 | COMP. DATE 10/18/11 | SURFACE WATER DEPTH 3.2ft |

| | | | |
|--|---------------------|--------------------------|---------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Bruinsma, C. M. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. B1-A | STATION 13+80 | OFFSET 4 ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 207.1 ft | TOTAL DEPTH 48.5 ft | NORTHING 950,224 | EASTING 2,293,583 |
| DRILL RIG/HAMMER EFF./DATE RFO0057 CME-550X 73% 12/06/2005 | | DRILL METHOD Wash Boring | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 10/13/11 | COMP. DATE 10/18/11 | SURFACE WATER DEPTH 3.2ft |

| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |
|-----------|-----------------|------------|------------|-------|-------|----------------|----|----|----|-----|-----------|---------|--|------------|
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | |
| 210 | | | | | | | | | | | | | WATER SURFACE (10/13/11) | |
| 205 | 207.1 | 0.0 | 3 | 13 | 29 | | | | | | | | GROUND SURFACE | 0.0 |
| 205 | | | | | | | | | | | | | ALLUVIAL GRAY, SILTY COARSE SAND WITH GRAVEL | 1.3 |
| 200 | 200.5 | 6.6 | | | | | | | | | | | RESIDUAL GREEN-GRAY, SILTY SAND WITH ROCK FRAGMENTS, SAPROLITIC WEATHERED ROCK | 4.0 |
| 200 | 200.0 | 7.1 | | | | | | | | | | | DARK-GREEN, AMPHIBOLITE SCHIST | |
| 195 | 194.9 | 12.2 | | | | | | | | | | | | |
| 190 | 189.9 | 17.2 | | | | | | | | | | | CRYSTALLINE ROCK GREEN, GRAY AND WHITE, MODERATELY TO MODERATELY SEVERE WEATHERED, MODERATELY HARD TO SOFT, VERY CLOSE TO CLOSE FRACTURE SPACING, CHLORITE-AMPHIBOLITE SCHIST WITH WEATHERED ROCK SEAMS UP TO 1 FT THICK | 17.2 |
| 185 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |

| 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 (%) | | | |
| 189.9 | 189.9 | 17.2 | 1.3 | 0.45 | (0.7) | (0.0) | | (7.6) | (2.6) | | Begin Coring @ 17.2 ft | 17.2 |
| 185 | 188.8 | 18.5 | 5.0 | 0.25/0.3 | 54% | 0% | RS-1 | 44% | 15% | | CRYSTALLINE ROCK GREEN, GRAY AND WHITE, MODERATELY TO MODERATELY SEVERE WEATHERED, MODERATELY HARD TO SOFT, VERY CLOSE TO CLOSE FRACTURE SPACING, CHLORITE-AMPHIBOLITE SCHIST WITH WEATHERED ROCK SEAMS UP TO 1 FT THICK | |
| 180 | 183.6 | 23.5 | 5.0 | 0.54 | (2.0) | (0.0) | | | | | STRATA REC= 44% STRATA RQD= 15% RMR = 31 (CLASS IV - POOR ROCK) | |
| 175 | 178.6 | 28.5 | 5.0 | 1.49 | (1.9) | (1.1) | | | | | | |
| 170 | 173.6 | 33.5 | 5.0 | 1.27 | (2.0) | (0.0) | | (1.0) | (0.0) | | CRYSTALLINE ROCK GREEN-GRAY AND WHITE, MODERATELY TO SEVERELY WEATHERED, HARD TO SOFT, VERY CLOSE FRACTURE SPACING, AMPHIBOLITE WITH WEATHERED ROCK SEAMS UP TO 1 FT THICK | 34.5 |
| 165 | 168.6 | 38.5 | 5.0 | 0.50 | (5.0) | (2.5) | | (10.0) | (7.0) | | STRATA REC= 25% STRATA RQD= 0% RMR = 31 (CLASS IV - POOR ROCK) | 38.5 |
| 160 | 163.6 | 43.5 | 5.0 | 1.45 | (5.0) | (4.5) | RS-2 | | | | CRYSTALLINE ROCK DARK GRAY AND GREEN-GRAY, SLIGHTLY WEATHERED TO FRESH, HARD TO VERY HARD, CLOSE TO MODERATELY CLOSE FRACTURED SPACING, META-GABBRO | |
| | 158.6 | 48.5 | | 1.46 | | | | | | | STRATA REC= 100% STRATA RQD= 70% RMR = 82 (CLASS I - VERY GOOD ROCK) | 48.5 |

NCDOT BORE DOUBLE B4835 GEO BH BDRG0124.GPJ NC_DOT.GDT 11/23/11



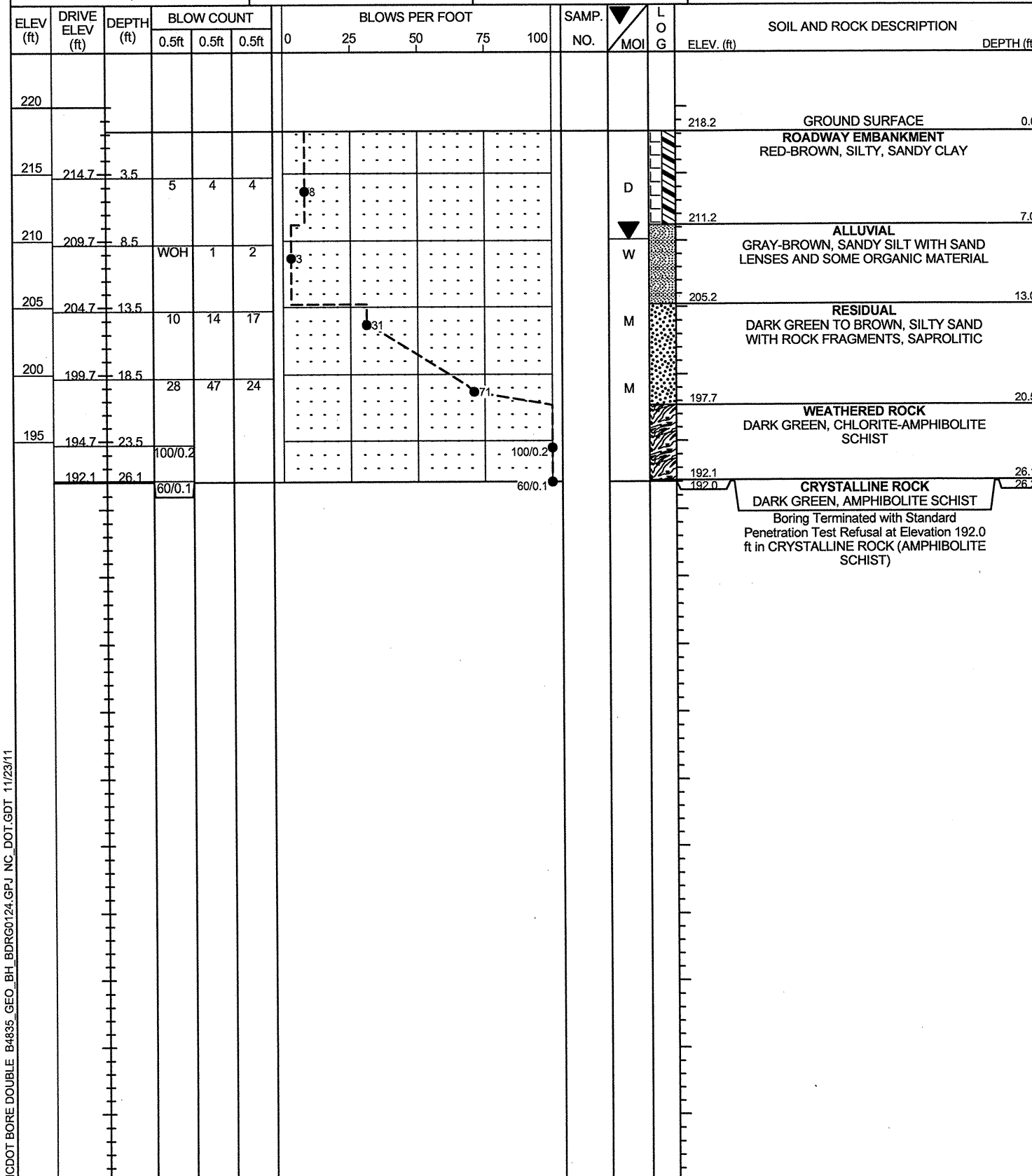
| | | | | | | | | | | | |
|--|-----------------|--------------------------|------------|-----------------------|--------|-------------------------|-----------------|-----------|-----|---------------------------|------------|
| WBS 38605.1.1 | | TIP B-4835 | | COUNTY WARREN | | GEOLOGIST Sanderson, A. | | | | | |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | | | | | GROUND WTR (ft) | | | | |
| BORING NO. B1-B | | STATION 13+90 | | OFFSET 9 ft RT | | ALIGNMENT -L- | | | | | |
| COLLAR ELEV. 218.4 ft | | TOTAL DEPTH 30.5 ft | | NORTHING 950,233 | | EASTING 2,293,596 | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-45B | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | |
| DRILLER Dixon, D. W. | | START DATE 07/24/96 | | COMP. DATE 07/24/96 | | SURFACE WATER DEPTH N/A | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | |
| 220 | | | | | | | | | | | 218.4 |
| | | | | | | | | | | | 0.0 |
| | | | | | | | | | | | 212.3 |
| 215 | 214.3 | 4.1 | 7 | 2 | 2 | | | | | | 6.1 |
| | 211.8 | 6.6 | 1 | 0 | 1 | | | | | | 11.6 |
| 210 | 209.3 | 9.1 | WOH | WOH | 1 | | | | | | 12.6 |
| | 206.8 | 11.6 | 6 | 8 | 12 | | | | | | 14.6 |
| 205 | 204.3 | 14.1 | 36 | 44 | 56/0.2 | | | | | | 17.9 |
| | 201.4 | 17.0 | 30 | 70/0.4 | | | | | | | 20.2 |
| 200 | 197.9 | 20.5 | 50/0.2 | | | | | | | | 21.0 |
| | | | | | | | | | | | 24.9 |
| 195 | | | | | | | | | | | 30.5 |
| | | | | | | | | | | | |
| 190 | | | | | | | | | | | |

| | | | | | | | | | | | | |
|--|---------------|--------------------------|----------|-----------------------|-------------|-------------------------|-----------------|--------------------|------------|-----|--|------------|
| WBS 38605.1.1 | | TIP B-4835 | | COUNTY WARREN | | GEOLOGIST Sanderson, A. | | | | | | |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | | | | | GROUND WTR (ft) | | | | | |
| BORING NO. B1-B | | STATION 13+90 | | OFFSET 9 ft RT | | ALIGNMENT -L- | | | | | | |
| COLLAR ELEV. 218.4 ft | | TOTAL DEPTH 30.5 ft | | NORTHING 950,233 | | EASTING 2,293,596 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-45B | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | |
| DRILLER Dixon, D. W. | | START DATE 07/24/96 | | COMP. DATE 07/24/96 | | SURFACE WATER DEPTH N/A | | | | | | |
| CORE SIZE NWD4 | | TOTAL RUN 12.4 ft | | | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | REC. (ft) % | RQD (ft) % | SAMP. NO. | STRATA REC. (ft) % | RQD (ft) % | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) |
| 200.5 | 200.5 | 17.9 | 2.6 | 1:09 | (2.3) | (0.0) | | (2.3) | (0.0) | | Begin Coring @ 17.9 ft | 17.9 |
| 200 | 197.9 | 20.5 | | 0:34 | 88% | 0% | | 100% | 0% | | CRYSTALLINE ROCK | 20.2 |
| | 197.7 | 20.7 | 4.8 | 0:27/0.6 | (4.5) | (0.0) | | (0.0) | (0.0) | | GREEN-GRAY, MODERATELY SEVERE TO SEVERELY WEATHERED, MODERATELY HARD TO SOFT, VERY CLOSE TO CLOSE FRACTURE SPACING, AMPHIBOLITE SCHIST | 21.0 |
| 195 | | | | 0:48 | 94% | 0% | | 0% | 0% | | STRATA REC=100% | |
| | | | | 1:02 | | | | (3.9) | (0.0) | | STRATA RQD=0% | |
| | | | | 0:57 | | | | 100% | 0% | | RMR = 31 (CLASS IV - POOR ROCK) | 24.9 |
| | | | | 2:06/0.8 | (5.0) | (2.8) | | (5.6) | (2.8) | | WEATHERED ROCK | |
| 190 | | | | 1:07 | 100% | 56% | | 100% | 50% | | GREEN-GRAY, AMPHIBOLITE GNEISS | |
| | | | | 1:00 | | | | | | | CRYSTALLINE ROCK | |
| | | | | 1:13 | | | | | | | GREEN-GRAY, MODERATELY SEVERELY WEATHERED, SOFT TO MODERATELY HARD, VERY CLOSE FRACTURE SPACING, AMPHIBOLITE GNEISS | |
| | | | | 1:20 | | | | | | | STRATA REC=100% | |
| | | | | 1:20 | | | | | | | STRATA RQD=0% | |
| | | | | | | | | | | | RMR = 31 (CLASS IV - POOR ROCK) | 30.5 |
| | | | | | | | | | | | WEATHERED ROCK | |
| | | | | | | | | | | | GREEN-GRAY, AMPHIBOLITE GNEISS | |
| | | | | | | | | | | | CRYSTALLINE ROCK | |
| | | | | | | | | | | | GREEN-GRAY, MODERATELY SEVERELY WEATHERED, SOFT TO MODERATELY HARD, VERY CLOSE FRACTURE SPACING, AMPHIBOLITE GNEISS | |
| | | | | | | | | | | | STRATA REC=100% | |
| | | | | | | | | | | | STRATA RQD=50% | |
| | | | | | | | | | | | RMR = 82 (CLASS I - VERY GOOD ROCK) | |
| | | | | | | | | | | | Boring Terminated at Elevation 187.9 ft in CRYSTALLINE ROCK (META-GABBRO) | |

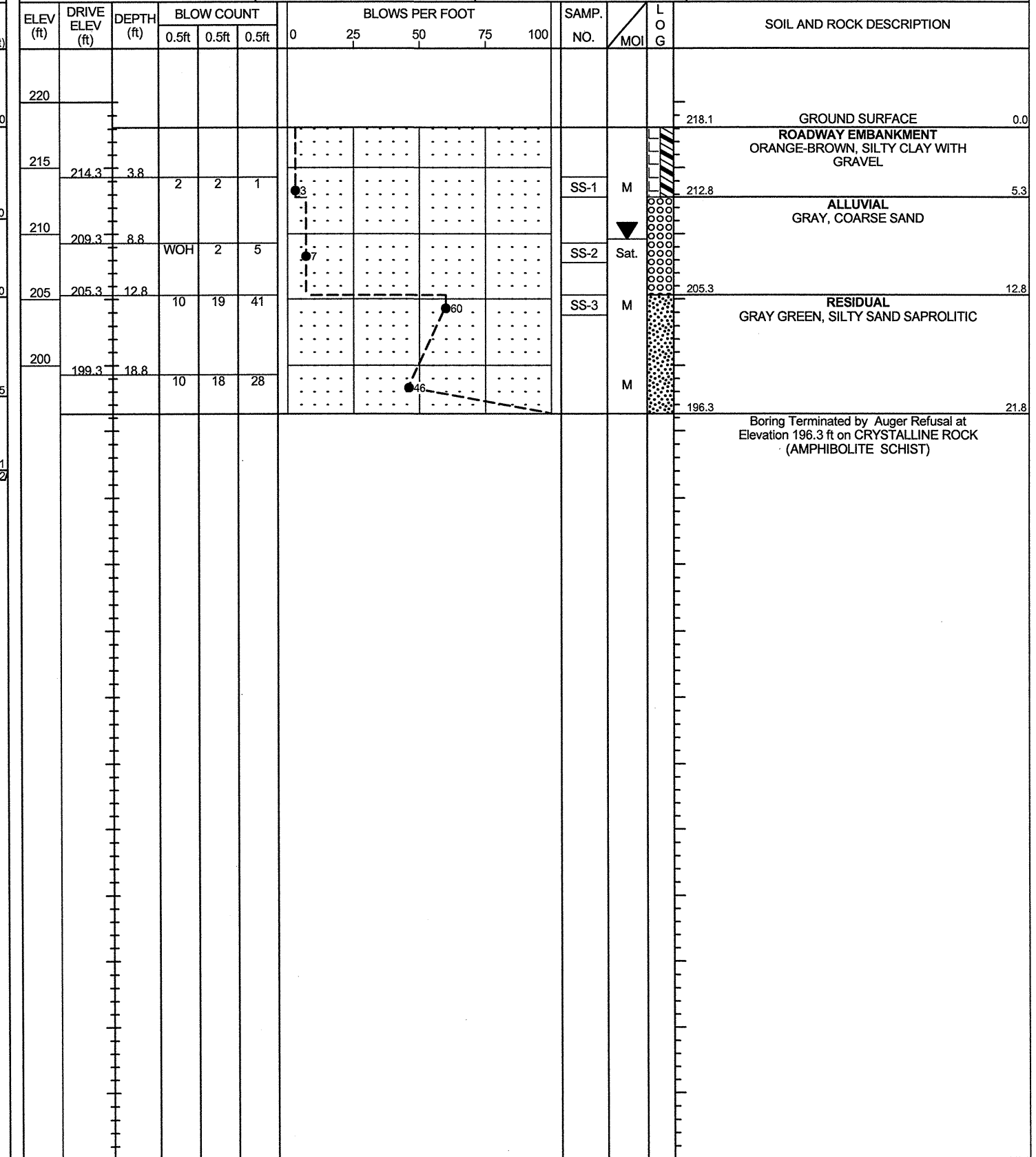
NCDOT BORE DOUBLE B4835_GEO_BH_BDRG0124.GPJ NC_DOT.GDT 11/23/11

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

| | | | |
|--|---------------------|--------------------------|---------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Bruinsma, C. M. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. EB2-A | STATION 14+15 | OFFSET 10 ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 218.2 ft | TOTAL DEPTH 26.2 ft | NORTHING 950,259 | EASTING 2,293,578 |
| DRILL RIG/HAMMER EFF./DATE RFO0057 CME-550X 73% 12/06/2005 | | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 10/07/11 | COMP. DATE 10/07/11 | SURFACE WATER DEPTH N/A |



| | | | |
|--|---------------------|--------------------------|-------------------------|
| WBS 38605.1.1 | TIP B-4835 | COUNTY WARREN | GEOLOGIST Sanderson, A. |
| SITE DESCRIPTION BRIDGE NO. 124 OVER REEDY POND CREEK ON SR 1510 | | | GROUND WTR (ft) |
| BORING NO. EB2-B | STATION 14+14 | OFFSET 12 ft RT | ALIGNMENT -L- |
| COLLAR ELEV. 218.1 ft | TOTAL DEPTH 21.8 ft | NORTHING 950,257 | EASTING 2,293,600 |
| DRILL RIG/HAMMER EFF./DATE CME-45B | | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic |
| DRILLER Dixon, D. W. | START DATE 07/22/96 | COMP. DATE 07/22/96 | SURFACE WATER DEPTH N/A |



NCDOT BORE DOUBLE B4835_GEO_BH_BDRG0124.GPJ NC_DOT.GDT 11/23/11

EB1-A

| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|--------------------------|--------|---------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|-----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C.SAND | F.SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-4 | 14 LT | 12+95 | 3.8-5.3 | A-4(4) | 27 | 8 | 1.2 | 37.6 | 39.0 | 22.2 | 100 | 100 | 73 | - | - |
| SS-5 | 14 LT | 12+95 | 8.8-10.3 | A-1-b(0) | 25 | NP | 69.7 | 24.2 | 6.1 | 0.0 | 80 | 36 | 6 | - | - |

B1-A

| ROCK TEST RESULTS | | | | | | | |
|--------------------------|--------|---------|----------------|-------------|----------------------------|--------------------------------|-------------------------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | ROCK TYPE | UNIT WT LB/FT ³ | UNCONFINED COMP. STRENGTH, KSI | SECTION MOD. @ 40% MPSI |
| RS-1 | 4 LT | 13+80 | 19.7-20.5 | SCHIST | 185.5 | 11.27 | 7.88 |
| RS-2 | 4 LT | 13+80 | 43.0-43.5 | META-GABBRO | 179.0 | 8.81 | 11.15 |

B1-B

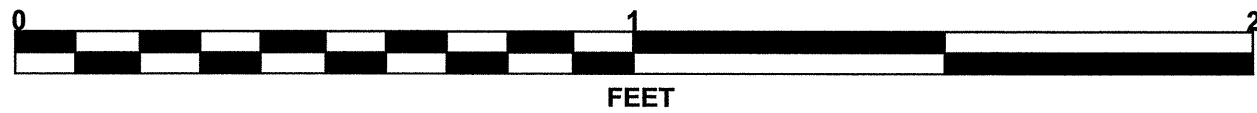
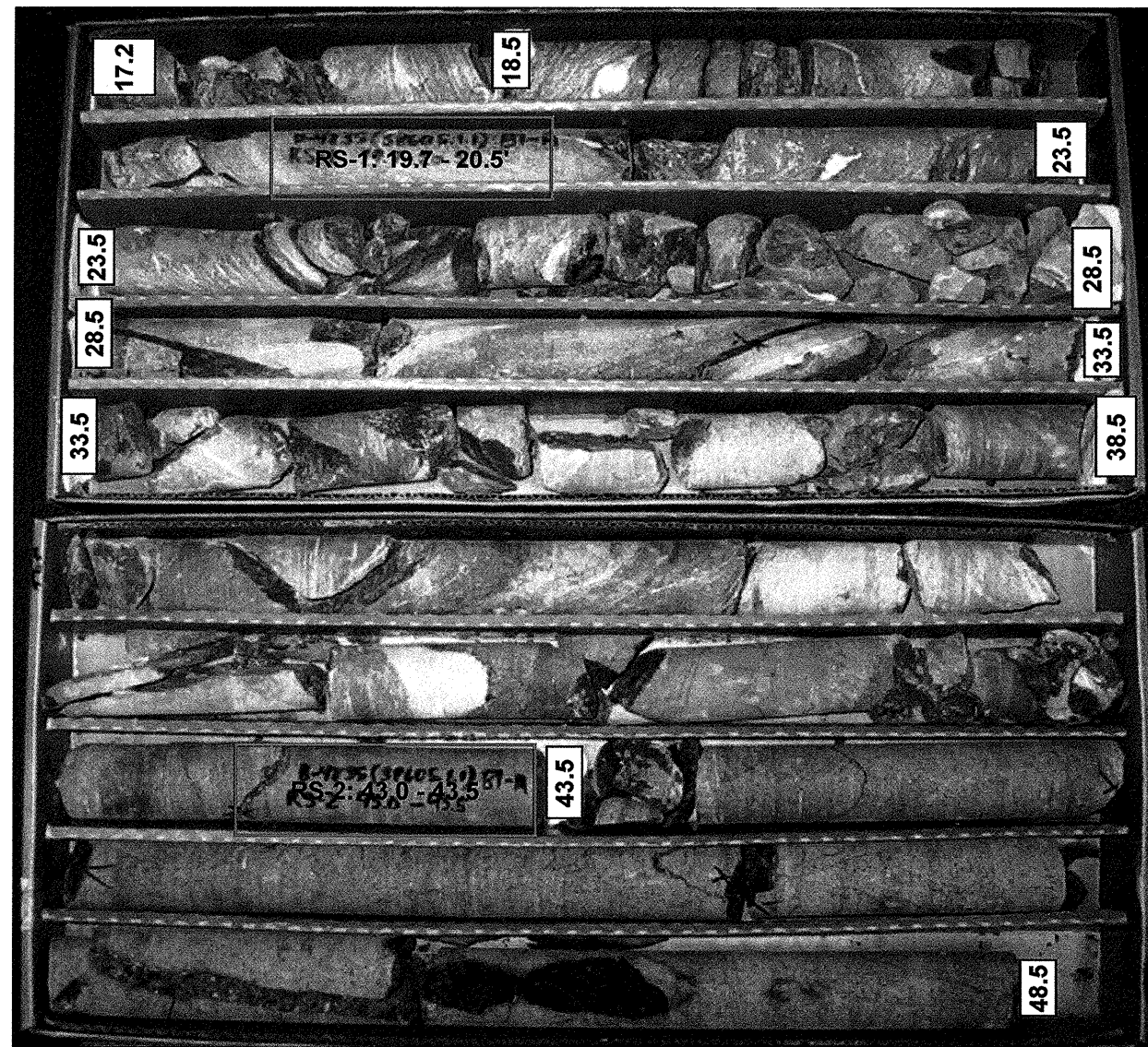
| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|--------------------------|--------|---------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C.SAND | F.SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-10 | 9 RT | 13+90 | 6.6-8.1 | A-4(3) | 29 | 10 | 14.3 | 33.5 | 27.9 | 24.2 | 95 | 90 | 56 | - | - |

EB2-B

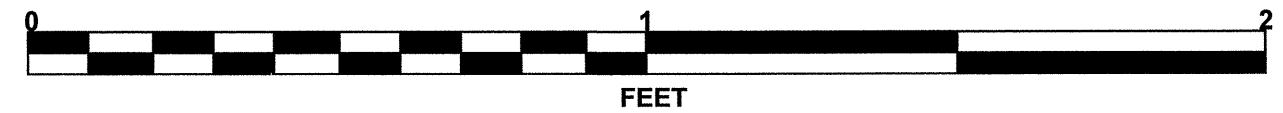
| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|--------------------------|--------|---------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C.SAND | F.SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-1 | 12 RT | 14+14 | 3.8-5.3 | A-6(4) | 38 | 17 | 11.7 | 37.0 | 19.0 | 32.3 | 76 | 70 | 46 | - | - |
| SS-2 | 12 RT | 14+14 | 8.8-10.3 | A-1-b(0) | 19 | NP | 66.3 | 18.0 | 9.7 | 6.1 | 74 | 34 | 14 | - | - |
| SS-3 | 12 RT | 14+14 | 12.8-14.3 | A-2-4(0) | 28 | 4 | 39.4 | 25.3 | 29.3 | 6.1 | 80 | 57 | 33 | - | - |

CORE PHOTOGRAPHS

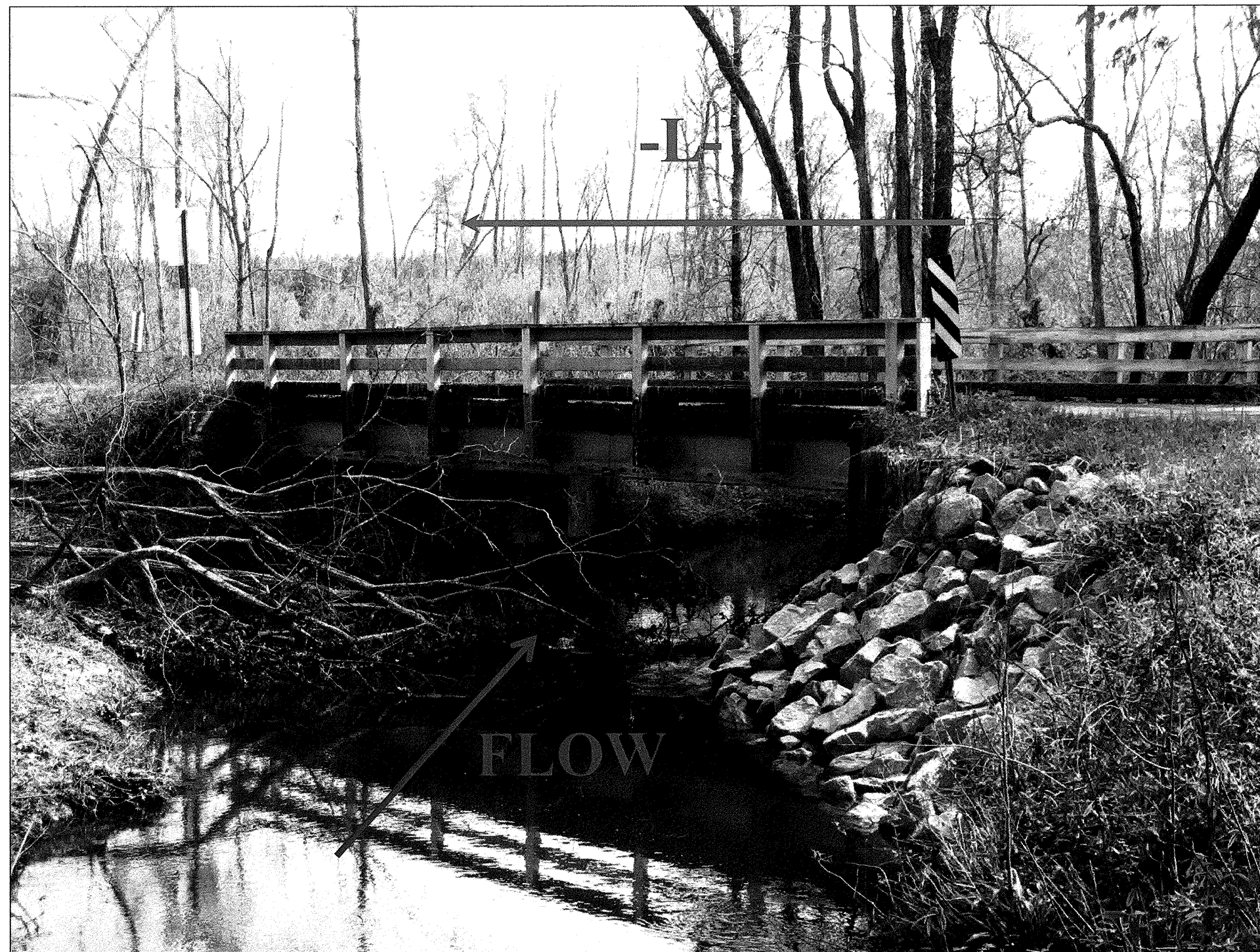
B1-A
BOXES 1 & 2: 17.2 - 48.5 FEET



B1-B (previously B2-B)
BOX 1 & 2: 17.9 - 30.5 FEET



SITE PHOTOGRAPH



Bridge No. 123 on SR 1510 over Reedy Pond Creek