

STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	BD-5102M	1	5

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 45348.1.13 (BD-5102M) F.A. PROJ. BRZ-1141(27)
COUNTY LENOIR
PROJECT DESCRIPTION BRIDGE NO. 32 ON SR 1141 (JOHN GREEN SMITH RD.) OVER DEEP RUN AT -L- STA. 12+95

<u>SHEET</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5	BORE LOGS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSES OF STUDY, PLANNING, AND DESIGN AND NOT FOR CONSTRUCTION OR PAVEMENT PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR REPRODUCED BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 7001-7001-8400. 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. LABORATORY SAMPLE DATA AND THE IN SITU RE-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF PROBABILITY INDICATED IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OF SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OF SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY FROM THOSE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

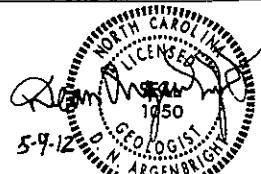
THE DESIGN OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR DESIGN AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE ACCURACY OR RELIABILITY 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 DESIGN OR CONTRACTOR IS CAUTIONED TO MAKE SURE INDEPENDENT SUBSURFACE INVESTIGATIONS AS BE DEEMED 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: 45348.1.13 ID: BD-5102M

PERSONNEL

C.M. WRIKE
J.R. SWARTLEY
R.E. SMITH

INVESTIGATED BY D.N. ARGENBRIGHT
CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE MAY 2012



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

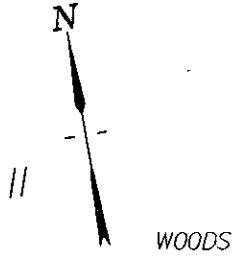
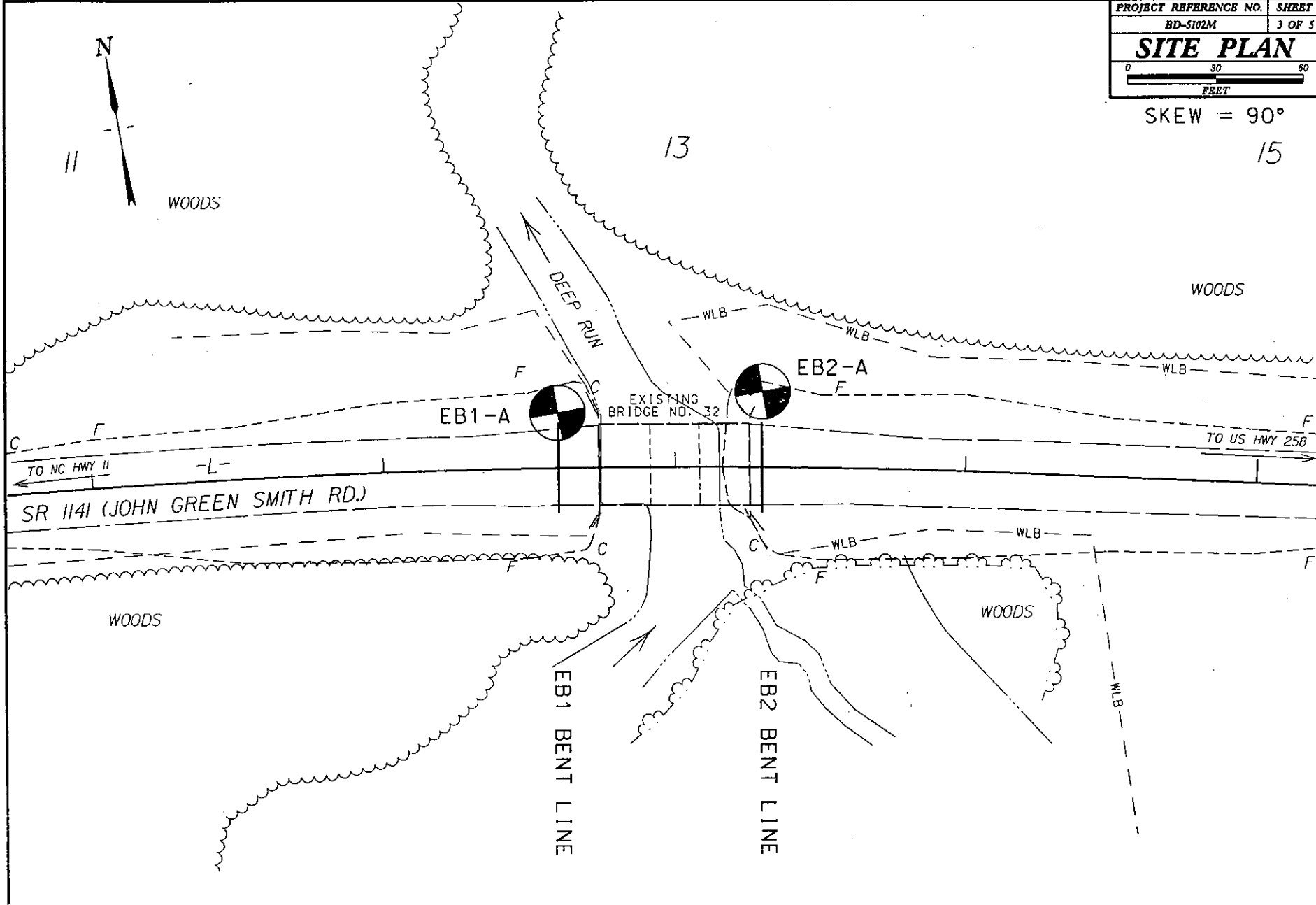
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

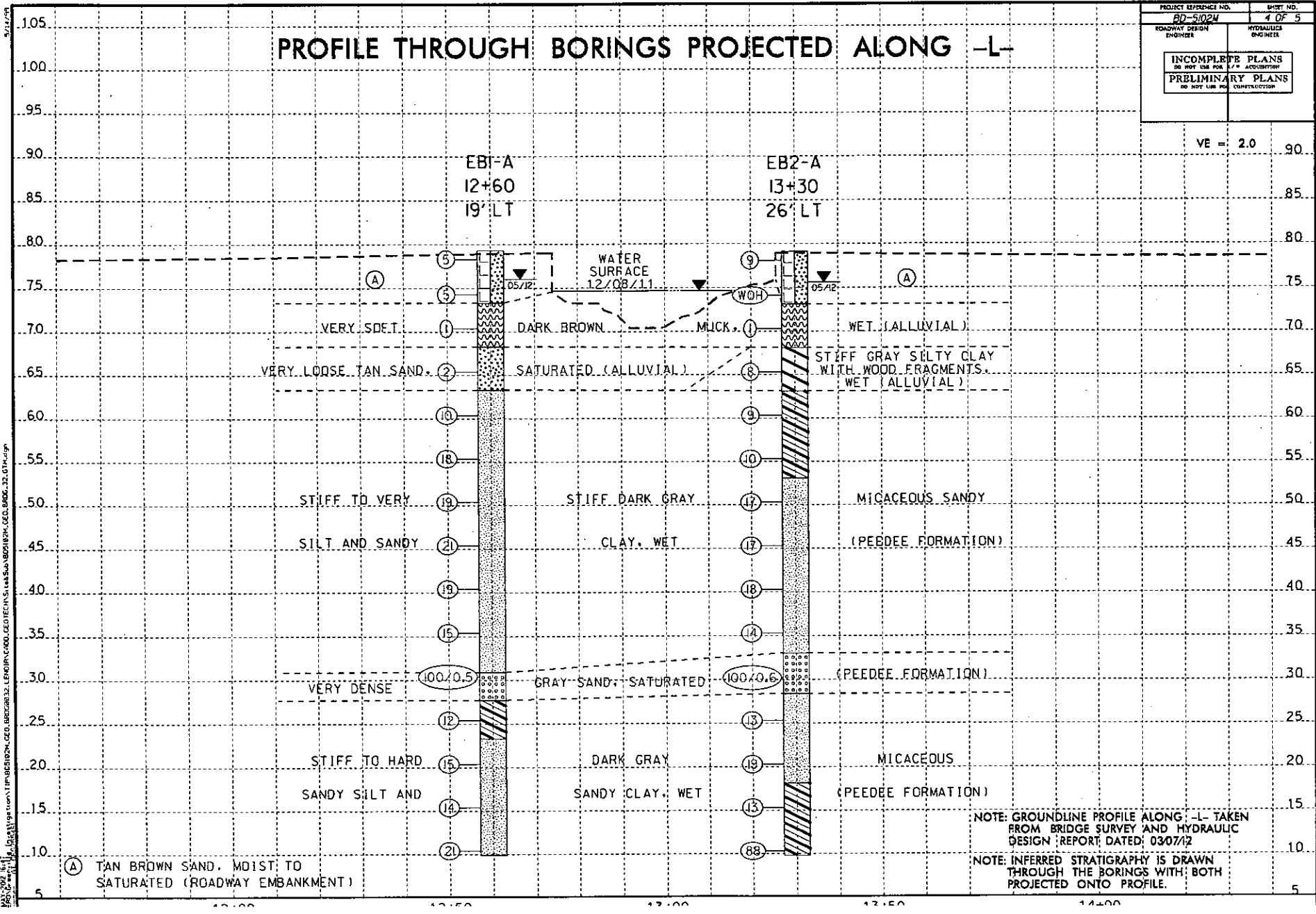
SOIL DESCRIPTION			GRADATION			ROCK DESCRIPTION			TERMS AND DEFINITIONS																																										
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED BY A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASTM D 1586). SOIL CLASSIFICATION IS BASED ON THE MASHO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, MASHO CLASSIFICATION AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. (A-6).</p> <p>NEW TEST: <u>SOIL TEST AND METHOD</u> IS THE SAME UNLESS NOTED OTHERWISE.</p>			<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. POORLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. SAND GRADED - INDICATES A Mixture OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p>			<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED WOULD YIELD SPT REFUSAL, AN UNFRESH 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 50 BLOWS PER FOOT 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:</p>			<p>ALLUVIUM (ALLUVIAL) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUICLER - A WATER BEARING FORMATION OR STRATA. ASTHENOTIC - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR CLAY THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTICEABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALES, SLATES, 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. CALCIUM CARBONATE - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. LOOSE (WEATHERED) ROCK - TOTAL LENGTH OF ALL MATERIALS RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. LOOSE - A TABULAR BODY OF TENSILE ROCK THAT CUTS ACROSS THE STRUCTURE OF BEDDING ROCKS OR CUTS MASSIVE ROCK. NEAR HORIZONTAL - THE ANGLE AT WHICH A STRATUM OR ANY PLUNER FEATURE IS INCLINED FROM THE HORIZONTAL. NO PENETRATION SIDE ADDRESS - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DISCONTINUITY DIRECTION 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. FILLING - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOOD - ROCK FRAGMENTS MIXED WITH SOIL NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL. FLOOD (UNSATURATED) - LIND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FACIES) - A PERCEPTIBLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JUNCTION - 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 THICKS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (SPOTTED) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PENCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERFERING IMPERVIOUS STRATUM. RESIDUAL (RESIDUAL) 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. SAMPLABLE (SAMPLABLE) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE ON FABRIC OF THE PARENT ROCK. SOIL - AN INTRUSIVE BODY OF TENSILE ROCK OF APPROPRIATELY UNIFORM THICKNESS AND RELATIVELY EVEN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EXPANDED PARALLEL TO THE BEDDING OR SUBSIDIOSITY OF THE INTRUSIVE ROCKS. SUBSIDIOSITY - POLISHED AND STRATIFIED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (STANDARD PENETRATION TEST) - NUMBER OF BLOWS IN OR BY OF A 148 LB HAMMER FALLING 30 INCHES REQUIRED TO PENETRATE A PEEPS POSITION OF 1 FOOT INTO SOIL WITH A 2 INCH DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 50 BLOWS PER FOOT PER 60 BLOWS. STRATA (STRATA) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM LIND TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA 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 LIND TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. STRATA (STRATA) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK, BASELINE CAP. +1.0L - 3" AT -1L - STA. 14+49.01 ELEVATION: 814 FT.</p>																																										
<p>SOIL LEGEND AND MASHO CLASSIFICATION</p> <table border="1"> <tr> <th>GENERAL CLASS</th> <th>GRAVELLY MATERIALS (U.S. 30% PASSING #200)</th> <th>SILT-CLAY MATERIALS (U.S. 30% PASSING #200)</th> <th>ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1 A-2 A-3</td> <td>A-4 A-5 A-6 A-7</td> <td>A-8, A-9 A-10, A-11</td> </tr> <tr> <td>PI</td> <td>0-7</td> <td>0-7</td> <td>0-7</td> </tr> </table>			GENERAL CLASS	GRAVELLY MATERIALS (U.S. 30% PASSING #200)	SILT-CLAY MATERIALS (U.S. 30% PASSING #200)	ORGANIC MATERIALS	GROUP CLASS.	A-1 A-2 A-3	A-4 A-5 A-6 A-7	A-8, A-9 A-10, A-11	PI	0-7	0-7	0-7	<p>MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>			<p>COMPRESSION</p> <p>SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE MODICALLY COMPRESSIBLE</p> <p>LIQUID LIMIT LESS THAN 50 LIQUID LIMIT EQUAL TO 50-59 LIQUID LIMIT GREATER THAN 50</p>			<p>CRYSTALLINE ROCK (CR)</p> <p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT IN VALUES > 100 BLOWS PER FOOT IF TESTED.</p> <p>NON-CRYSTALLINE ROCK (NCR)</p> <p>FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SECONDARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GARNET, SCHIST, ETC.</p>																														
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PROJECT REFERENCE NO.	SHEET
BD-5102M	3 OF 5
SITE PLAN	
FEET	

SKEW = 90°
15



PROFILE THROUGH BORINGS PROJECTED ALONG -L-

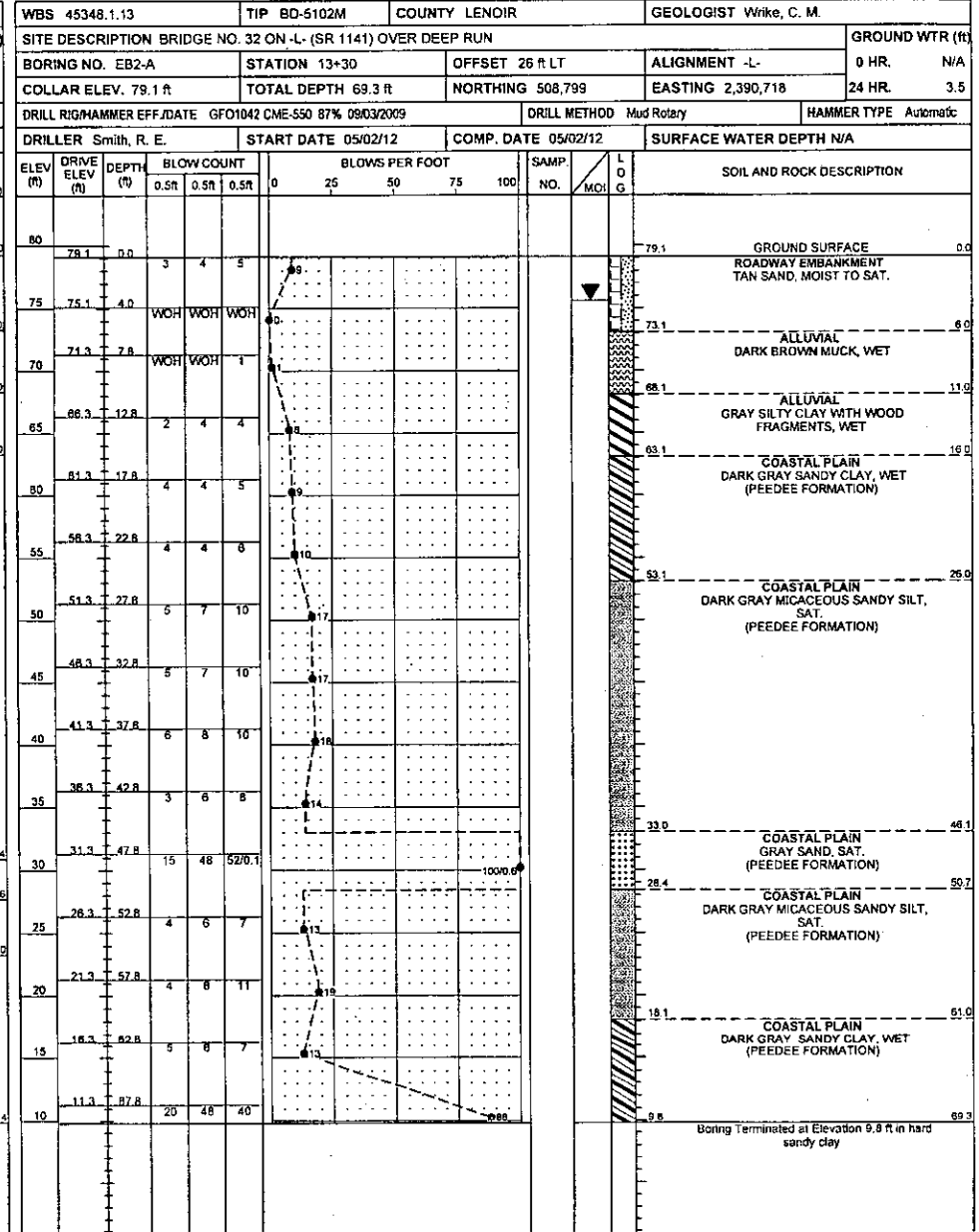
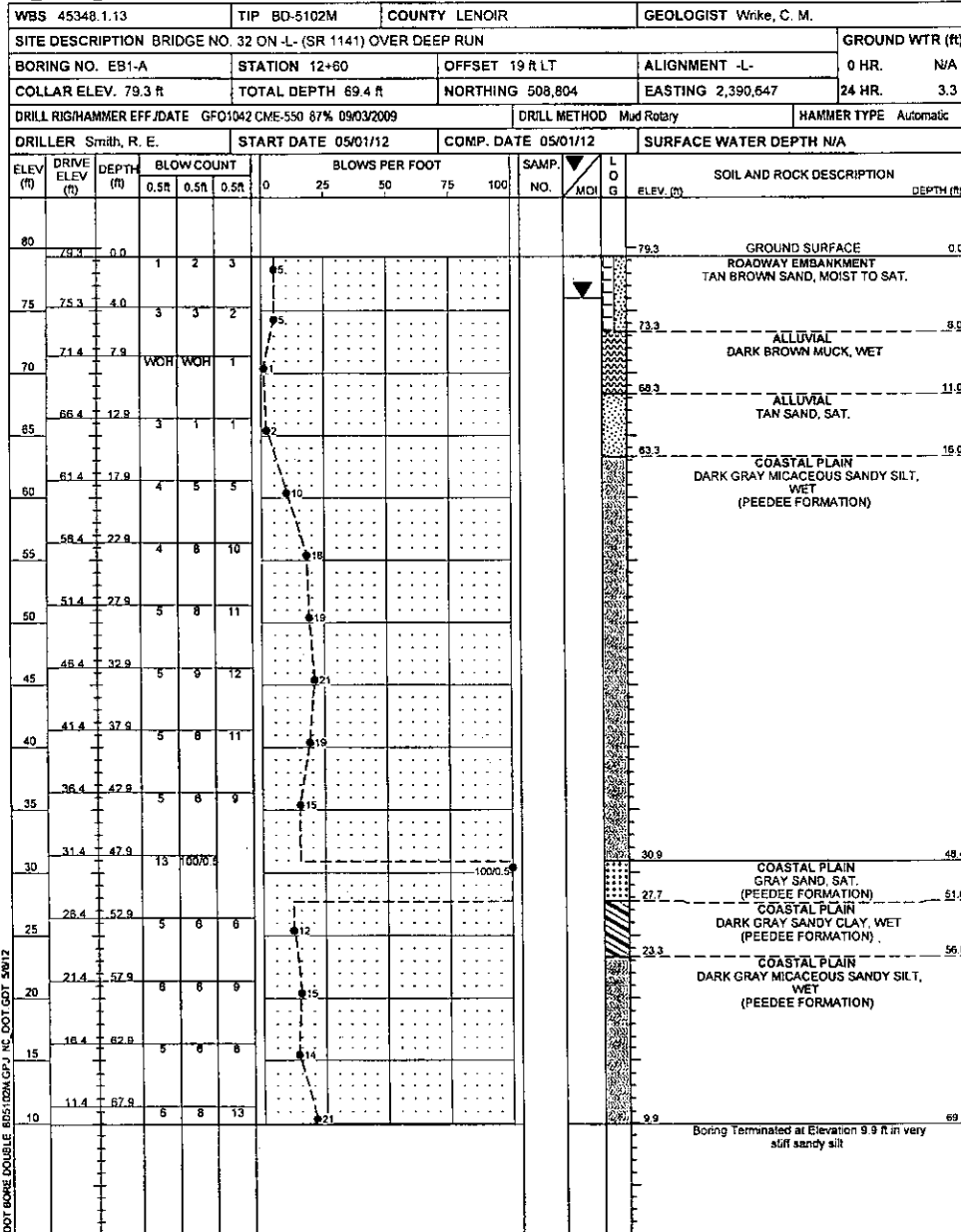


NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 03/07/12

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

DATE: 05/14/11
 DRAWN BY: J. L. ...
 CHECKED BY: ...
 PROJECT: ...
 SHEET: ...

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT



:DOT BORE LOGS: BBS/DBA/GPJ/HC/DOO/GDT/5/01/12