

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4274	1	5
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33615.1.1	BRSTP-1405 (5)	PE	
33615.2.1	BRSTP-1405 (5)	RW & UTIL.	
33615.3.1	BRSTP-0144 (1)	CONST.	

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	9+50 TO 15+75	4	4,4A	

SOIL SAMPLE DATA PAGE 5

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33615.1.1 (B-4274) F.A. PROJ. BRSTP-1405(5)
COUNTY SCOTLAND
PROJECT DESCRIPTION BRIDGE 14 ON NC 144 OVER
BIG SHOE HEEL CREEK

INVENTORY

CAUTION NOTICE

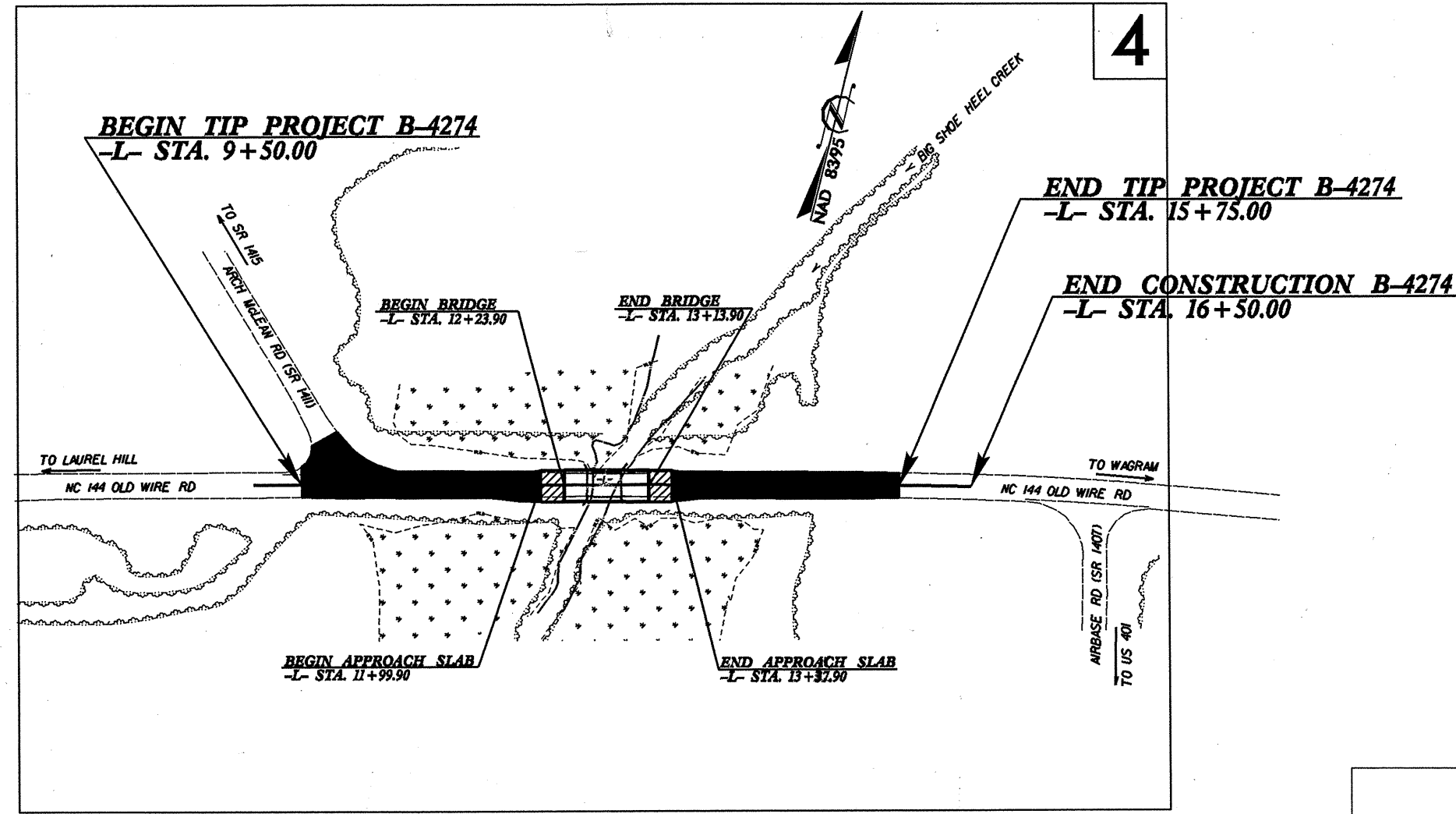
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 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.

ID: B-4274

CONTRACT: C201896



PERSONNEL

LITTLE

MURRAY

ESTEP

HARPER

INVESTIGATED BY LITTLE

CHECKED BY McCLURE

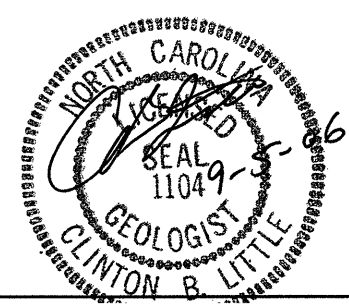
SUBMITTED BY LITTLE

DATE SEPTEMBER 2006

DRAWN BY: LITTLE

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.



CONTRACT:
TIP PROJECT: B-4274

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SCOTLAND COUNTY

LOCATION: BRIDGE NO.14 ON NC 144 OVER BIG SHOE HEEL CREEK
 TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURES

STATE	STATE PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	B-4274	1	
STATE PROJECT	PROJECT NO.	DESCRIPTION	
33615.1.1	BRSTP-1405 (5)	PE	

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

VICINITY MAP

OFFSITE DETOUR
(THIS PROJECT IS NOT INCLUDED WITHIN ANY MUNICIPAL BOUNDARIES)

25% PLANS

NCDOT CONTACT : CATHY HOUSER, P.E.
ROADWAY DESIGN-ENGINEERING COORDINATION

CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD

GRAPHIC SCALES

DESIGN DATA

ADT 2006 = 3450
 ADT 2026 = 5700
 DHV = 10%
 D = 60%
 T = 5% *
 V = 60 MPH
 * TTST 2% DUAL 3%

PROJECT LENGTH

Length Roadway TIP Project B-4274 = 0.105 Miles
 Length Structure TIP Project B-4274 = 0.015 Miles
 Total Length TIP Project B-4274 = 0.120 Miles

Prepared in the Office of:
THE LPA GROUP
 TRANSPORTATION CONSULTANTS

THE LPA GROUP of North Carolina, p.a.
 5000 Falls of Neuse Rd., Suite 304
 Raleigh, North Carolina 27609

RIGHT OF WAY DATE:
JULY 21 2006

LETTING DATE:
NOVEMBER 20, 2007

JEANNE K. RICHTER, P.E.
PROJECT ENGINEER

JODY L. COLE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. 33615.I.I
 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 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, GRN, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HARD PLASTIC, A-7-6		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. 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:		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 (ROD) - 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																																																																																																																																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">GENERAL CLASS.</th> <th colspan="2">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="2">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="2">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>SYMBOL</th> <th>A-1-a</th> <th>A-1-b</th> <th>A-2</th> <th>A-2-4</th> <th>A-2-5</th> <th>A-2-6</th> <th>A-2-7</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-7-5</th> <th>A-7-6</th> <th>A-7-8</th> <th>A-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> </tr> <tr> <td></td> <td></td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> <td>○○○○○○○○○○</td> </tr> <tr> <td>% PASSING</td> <td></td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>LIQUID LIMIT</td> <td></td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> </tr> <tr> <td>PLASTIC INDEX</td> <td></td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> </tr> <tr> <td>GROUP INDEX</td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td></td> <td>STONE FRAGS, GRAVEL, AND SAND</td> <td>FINE SAND</td> <td>SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> <td>CLAYEY SOILS</td> </tr> <tr> <td>GENERATING AS A SUBGRADE</td> <td></td> <td colspan="3">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSATURABLE</td> <td colspan="9"></td> </tr> </table>		GENERAL CLASS.		GRANULAR MATERIALS (<= 35% PASSING #200)		SILT-CLAY MATERIALS (> 35% PASSING #200)		ORGANIC MATERIALS		GROUP CLASS.	SYMBOL	A-1-a	A-1-b	A-2	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-7-5	A-7-6	A-7-8	A-1, A-2	A-3	A-4, A-5	A-6, A-7			○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	○○○○○○○○○○	% PASSING		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	LIQUID LIMIT		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	PLASTIC INDEX		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	GROUP INDEX		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS		STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND	SILTY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	GENERATING AS A SUBGRADE		EXCELLENT TO GOOD			FAIR TO POOR			FAIR TO POOR	POOR	UNSATURABLE										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		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 YIELD 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.			
GENERAL CLASS.		GRANULAR MATERIALS (<= 35% PASSING #200)		SILT-CLAY MATERIALS (> 35% PASSING #200)		ORGANIC MATERIALS																																																																																																																																																																									
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LIQUID LIMIT		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50																																																																																																																																																												
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USUAL TYPES OF MAJOR MATERIALS		STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND	SILTY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS	CLAYEY SOILS																																																																																																																																																												
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 1, 2006

STATE PROJECT: 33615.1.1 (B-4274)
FEDERAL PROJECT: BRSTP-1405(5)
COUNTY: Scotland
DESCRIPTION: Bridge 14 on NC 144 over Big Shoe Heel Creek

SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

The project is located on NC 144 (Old Wire Road, SR 1405) just north of US 401 near the town of Wagram. The project will replace the bridge over Big Shoe Heel Creek. This report addresses the roadway approaches from Station 9+50 to 15+75 -L-.

The Geotechnical field investigation was conducted in August of 2006. Four Standard Penetration Test borings were performed through the existing pavement with a CME 550 drill machine using 8" hollow stem augers and an automatic drop hammer. Representative soil samples were collected and tested for grain size and Atterburg limits. Three samples were also tested for organic content.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Organic Soils: The recent alluvial soils contain layers of organic sands. The organic content of the three samples tested were approximately 5%, 20%, and 28%. Granular soils with organic content greater than 10% are considered muck and are generally unsuitable for highway construction. These soils were encountered at depths of six to eight feet below the existing roadway grade. The layer thickness was between two and eight feet. Some of the split spoon samples contained significant quantities of wood.

Alluvial Soils: Alluvial soils were encountered in all borings, immediately below roadway embankment fill. The upper portion consists of medium dense sand and clayey sand overlying organic sands as discussed above.

Groundwater: Groundwater levels will be seasonally variable. Zero hour readings in the test borings were at six feet and three feet. Groundwater is likely to be present within three feet below the proposed grade during wet weather periods.

Wetlands: Wetlands are mapped immediately adjacent to the roadway, on both sides, for most of the length of the project. These areas contain standing surface water or very shallow groundwater and muck soils.

PHYSIOGRAPHY AND GEOLOGY

The project is located in the coastal plain region of North Carolina. It is within the floodplain of Big Shoe Heel Creek. The floodplain contains recent sediments (alluvium) consisting of alluvial sands and granular organic soils as previously discussed. The overall thickness of recent sediments is about twelve feet. Below the sediments are coastal plain soils of the Middendorf Formation. Our test borings terminated with minimal penetration into the Middendorf soils. They were sampled as white medium dense coarse sands.

SOIL PROPERTIES

Roadway Fill Soils

These soils occur across the site. They consist of three feet of tan loose moist sand.

Alluvial Soils

Again, the recent alluvial deposit averages twelve feet thick with loose to medium dense saturated sand and clayey sand over organic sands. The two borings on the east side encountered a basal sand and coarse sand layer three feet thick.

Coastal Plain Soils

Coastal Plain soils were encountered below the recent alluvium at depths of 12 to 15 feet below the existing roadway grade. They consisted of white medium dense coarse sand.

Respectfully submitted,

Clint Little
Regional Geological Engineer

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT TIP # B-4274

COUNTY Scotland

DATE 6/3/2008

SHEET 1 OF 1

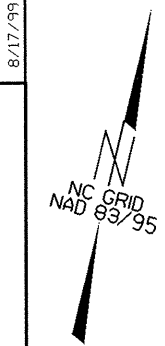
LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. 15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
-L-	9+50.00	12+23.90 BEGIN BRIDGE	68	0	0	0	68	268	0	0	268	308	240	0	0	0
-L-	13+13.90 END BRIDGE	15+75.00	110	0	0	0	110	230	0	0	230	265	155	0	0	0
PROJECT SUBTOTAL			178	0	0	0	178	498	0	0	498	573	395	0	0	0
ADDITIONAL UNDERCUT																
SHOULDER MATERIAL																
WASTE IN LIEU OF BORROW																
LOSS DUE TO CLEARING & GRUBBING																
PROJECT TOTAL			178	0	0	0	178	498	0	0	498	573	395	0	0	0
EST 5% TO REPLACE TOP SOIL ON BORROW PIT													20			
GRAND TOTAL			178										415			
SAY			200										450			

EST. UNDERCUT EXCAVATION = 400 C.Y.

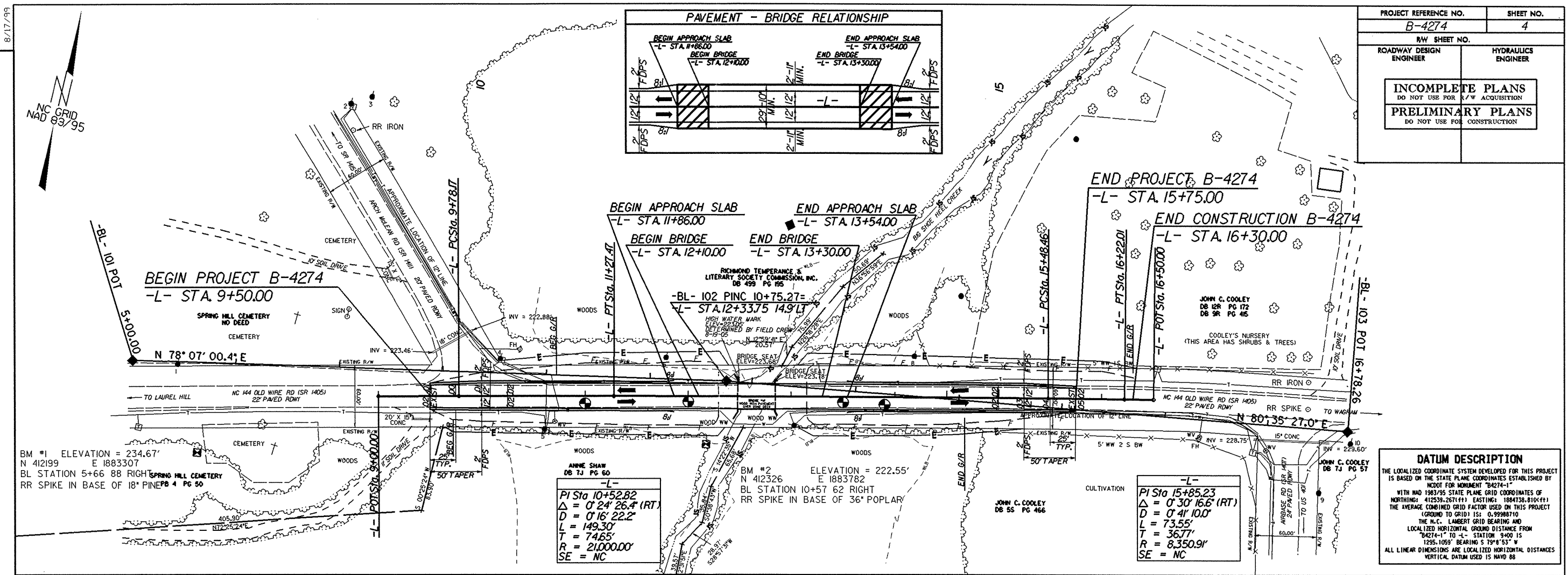
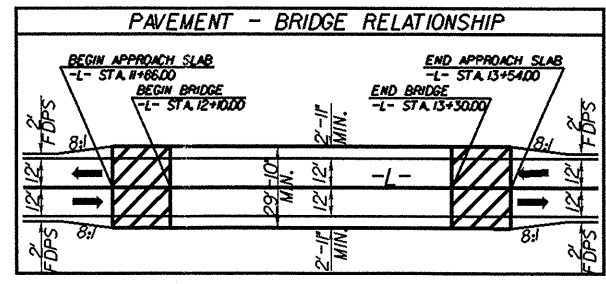
EST. SELECT GRANULAR FILL = 750 C.Y.

* 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.

8/17/99



PROJECT REFERENCE NO. B-4274	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS

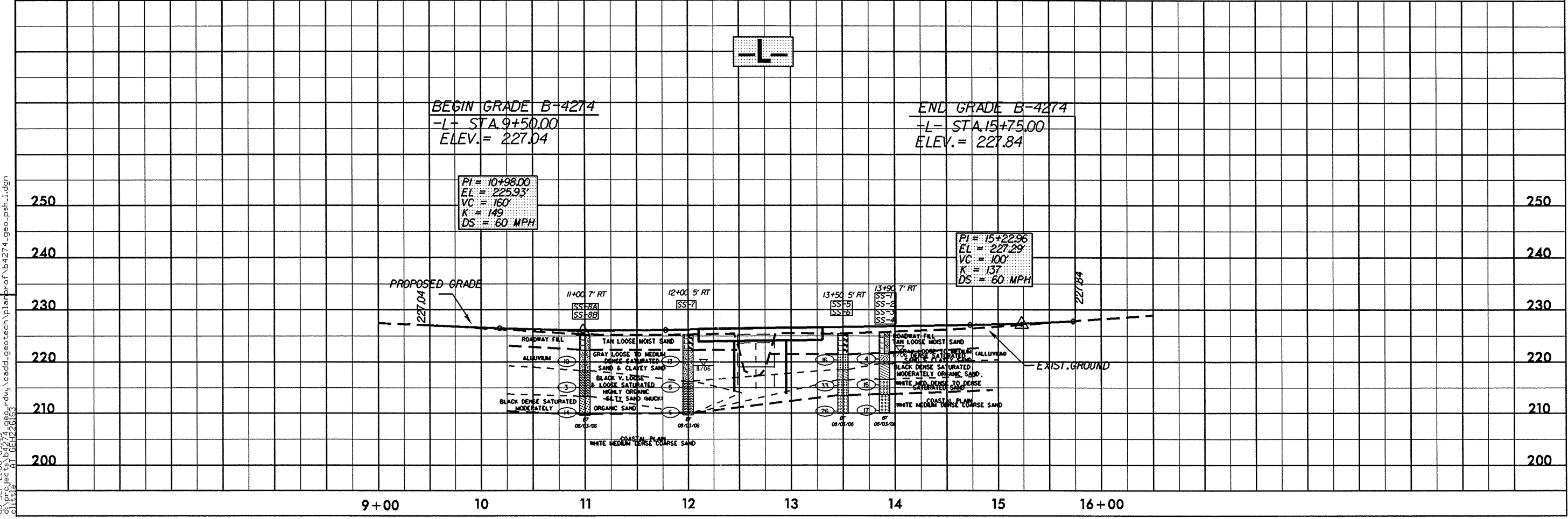
BM #1 ELEVATION = 234.67'
 N 412199 E 1883307
 BL STATION 5+66 88 RIGHT SPRING HILL CEMETERY
 RR SPIKE IN BASE OF 18" PINE PG 4 PG 50

ANNE SHAW
 DB 73 PG 60
 PI Sta 10+52.82
 Δ = 0° 24' 26.4" (RT)
 D = 0' 16' 22.2"
 L = 149.30'
 T = 74.65'
 R = 21,000.00'
 SE = NC

BM #2 ELEVATION = 222.55'
 N 412326 E 1883782
 BL STATION 10+57 62 RIGHT
 RR SPIKE IN BASE OF 36" POPLAR

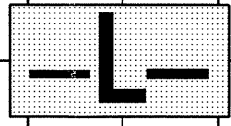
PI Sta 15+85.23
 Δ = 0° 30' 16.6" (RT)
 D = 0' 41' 10.0"
 L = 73.55'
 T = 36.77'
 R = 8,350.91'
 SE = NC

DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NC DOT FOR MONUMENT "B4274-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTING: 412538.2874(1) EASTING: 1884735.8104(1) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988710 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4274-1" TO STATION 9+00 IS 1295.1059' BEARING S 79° 8' 53" W ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



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 11/11/06 11:08:28 AM

B-4274



BEGIN GRADE B-4274
-L- STA. 9+50.00
ELEV. = 227.04

END GRADE B-4274
-L- STA. 15+75.00
ELEV. = 227.84

PI = 10+98.00
EL = 225.93'
VC = 160'
K = 149
DS = 60 MPH

PI = 15+22.96
EL = 227.29'
VC = 100'
K = 137
DS = 60 MPH

240

230

220

210

200

PROPOSED GRADE

227.04

11+00 7' RT

12+00 5' RT

13+50 5' RT

13+90 7' RT

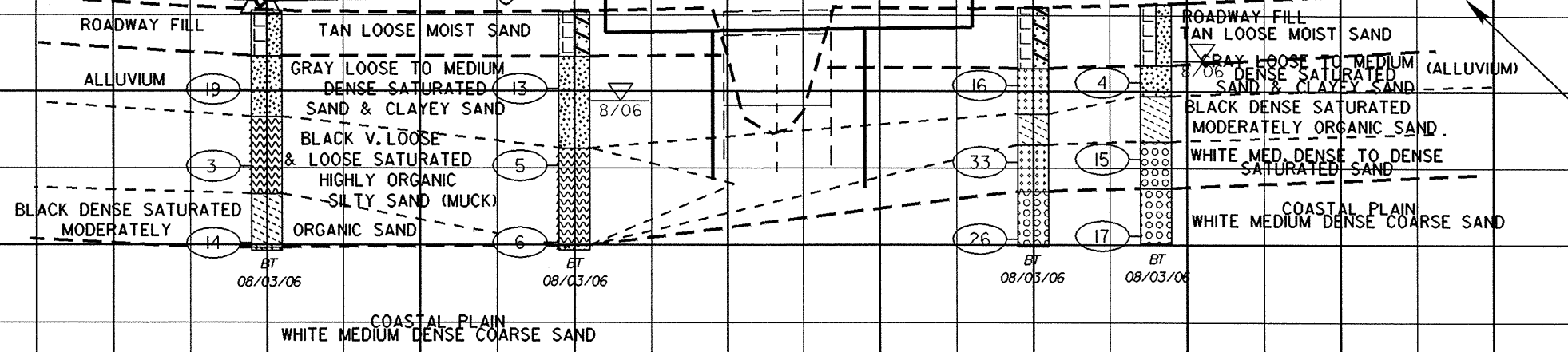
227.84

SS-8A
SS-8B

SS-7

SS-5
SS-6

SS-7
SS-2
SS-3
SS-4



9+00

10

11

12

13

14

15

16+00

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAY
 MATERIALS & TESTS UNIT
 SOILS LABORATORY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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T. I. P. No. B-4274

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REPORT ON SAMPLES OF SOILS FOR QUALITY

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Project 3361511 County SCOTLAND Owner _____
 Date: Sampled 8/4/06 Received 8/14/06 Reported 8/16/06
 Sampled from _____ By C C MURRAY
 Submitted by N WAINAINA 1995 Standard Specifications

Project 3361511 County SCOTLAND Owner _____
 Date: Sampled 8/4/06 Received 8/14/06 Reported 8/16/06
 Sampled from _____ By C C MURRAY
 Submitted by N WAINAINA 1995 Standard Specifications

732143 TO 732177
 9/1/06

732143 TO 732177
 9/1/06

TEST RESULTS

Proj. Sample No.	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6
Lab. Sample No.	732143	732144	732145	732146	732147	732148
Retained #4 Sieve %	-	-	4	-	-	-
Passing #10 Sieve %	100	99	81	100	99	97
Passing #40 Sieve %	69	61	30	44	59	55
Passing #200 Sieve %	13	17	3	15	7	5

TEST RESULTS

Proj. Sample No.	SS-7	SS-8A	SS-8B			
Lab. Sample No.	732149	732150	732151			
Retained #4 Sieve %	-	-	1			
Passing #10 Sieve %	97	96	95			
Passing #40 Sieve %	63	69	75			
Passing #200 Sieve %	21	29	30			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60 %	54.0	60.5	84.0	75.9	66.3	69.5
Fine Sand Ret - #270 %	36.9	25.0	12.9	10.4	29.2	27.0
Silt 0.05 - 0.005 mm %	5.1	7.5	1.1	4.6	1.5	1.5
Clay < 0.005 mm %	4.0	7.0	2.0	9.1	3.0	2.0
Passing #40 Sieve %	-	-	-	-	-	-
Passing #200 Sieve %	-	-	-	-	-	-

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60 %	55.1	47.1	40.3			
Fine Sand Ret - #270 %	26.6	25.6	31.6			
Silt 0.05 - 0.005 mm %	6.2	19.2	20.0			
Clay < 0.005 mm %	12.1	8.1	8.1			
Passing #40 Sieve %	-	-	-			
Passing #200 Sieve %	-	-	-			

L. L.	19	26	20	22	19	23
P. I.	NP	NP	NP	4	NP	NP
AASHTO Classification	A-2-4(0)	A-2-4(0)	A-1-b(0)	A-1-b(0)	A-3(0)	A-3(0)
Station	13+90	13+90	13+90	13+90	13+50	13+50
OFFSET	7 RT	7 RT	7 RT	7 RT	5 RT	5 RT
ALIGNMENT	L	L	L	L	L	L
Depth (Ft)	4.10	6.00	9.10	14.10	4.10	9.10
to	5.60	9.00	10.60	15.60	5.60	10.60
%ORGANIC		5.2				

L. L.	16	62	46			
P. I.	NP	NP	NP			
AASHTO Classification	A-2-4(0)	A-2-5(0)	A-2-5(0)			
Station	12+00	11+00	11+00			
OFFSET	5 RT	7 RT	7 RT			
ALIGNMENT	L	L	L			
Depth (Ft)	4.10	7.00	9.20			
to	5.60	9.00	10.70			
%ORGANIC		19.7	27.7			

cc: C C MURRAY
 Soils File

Soils Engineer

Soils Engineer