NOTE: SEE SHEET IA FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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STATION 13+50 - 28+00 14+00 - 14+93.28 PLAN PROFILE XSECT

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33621.1.1 (B-4281)

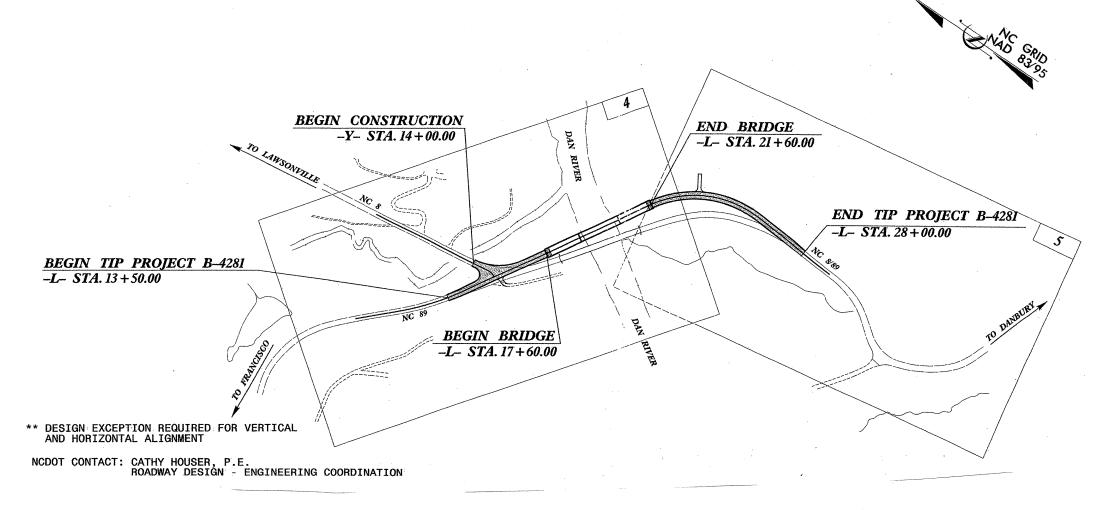
F.A. PROJ. **BRSTP-008(4)**

COUNTY **STOKES**

PROJECT DESCRIPTION BRIDGE NO. 60 OVER DAN RIVER

ON NC 8/89

INVENTORY



STATE SHEET NO. N.C. B-4281 6 1 Was PROLNO. DESCRIPTION 33621.1.1 BRSTP-008(4) P.E. 33621.2.1 BRSTP-008(4) RW/ UTL 33621.3.1 BRSTP-008(4) CONST

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 YARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN PALEIGH 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.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUPFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSUPFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE, THE LABORATORY SAMPLE DATA AND THE IN STIU UN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABLITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSUPFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS AND VARY CONSIDERABLEY WITH THE 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 THE BIODER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMBRARY 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 MARRANT OR QUARANTEE 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** C C MURRAY

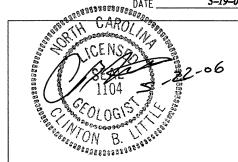
J E ESTEP L N HARPER

INVESTIGATED BY C C MURRAY

CHECKED BY___ C B LITTLE

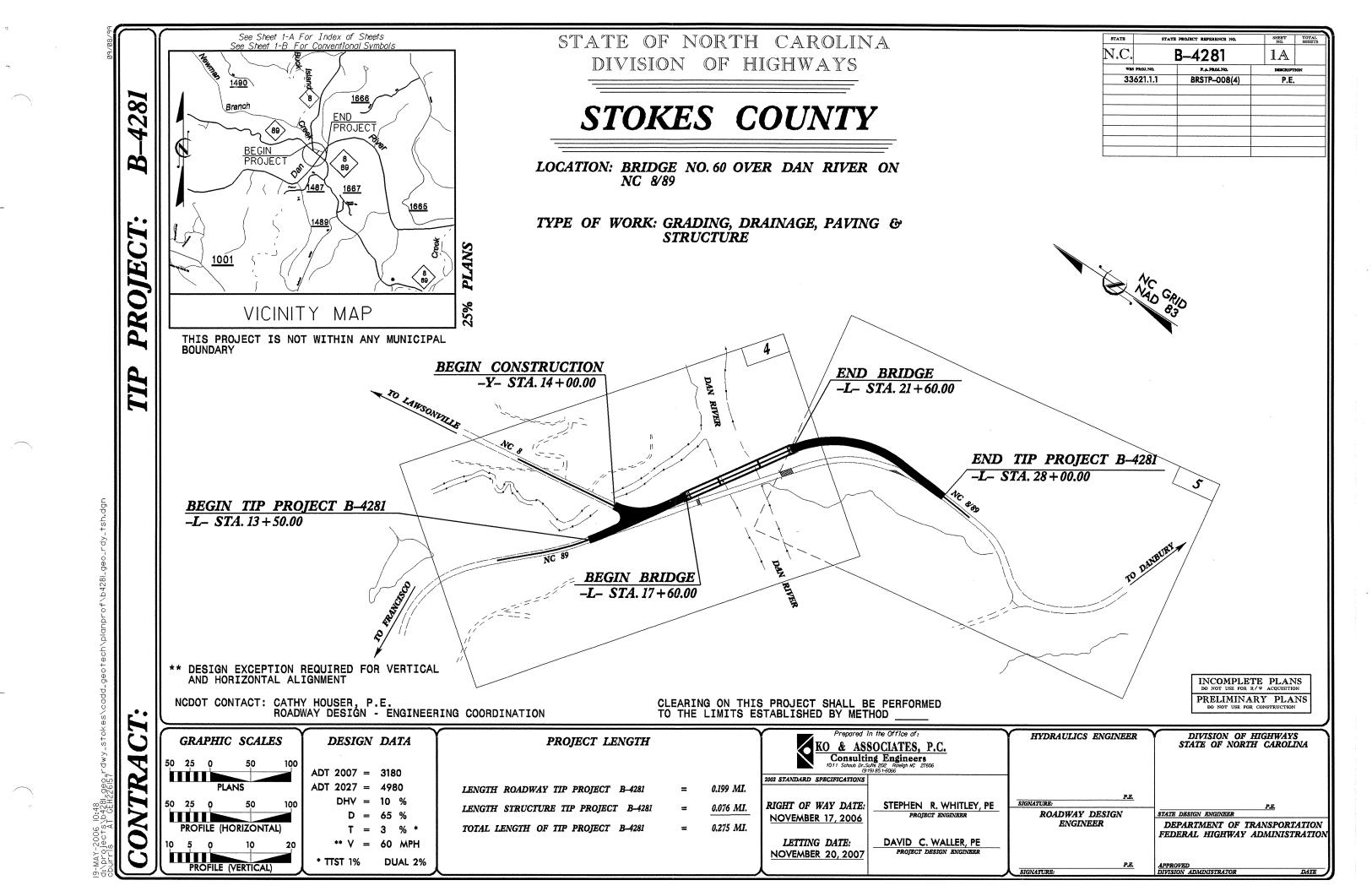
SUBMITTED BY_ C B LITTLE

5-19-06



NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N C DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS. SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

FATTLE OF GRAIN SIZE		SOIL AND ROCK LEGEND, TERM	AS, SYMBOLS, AND ABBREVIATIONS				
The content of the	SOIL DESCRIPTION			TERMS AND DEFINITIONS			
Column C		<u>UNIFORM</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO	ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.				
## 14 Part 1 Part	100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL	POORLY GRADED)	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.	ONE TO THE PROPERTY OF THE PRO			
Second Column Second Colum			OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.			
State Column Co	AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:		WEATHERED WAS NON-COASTAL PLAIN MATERIAL THAT WOULD VIELD SPT N. VALUES > 100				
The control of the			ROCK (WR) BLOWS PER FOOT IF TESTED.				
Auto- Auto	CENTEDAL COMMUNICATION OF THE	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.				
The content of the	CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200)		GNEISS, GABBRO, SCHIST, ETC.				
Company Comp			BOCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED, ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.			
The content of the	000000000	MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL			
The control of the	% PASSING SILT-	PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	•			
1	3 10 50 MX GRANULAR CLAY PEAT			ROCKS OR CUTS MASSIVE ROCK.			
Application Part		TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%					
	DI ACTIC DISCY C. ANY JUD CO.	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%		DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF			
March 1946	HIGHLY HIGHLY						
Company Comp	UISHAN TYPES STINE FRACS			SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.			
Company Comp	OF MAJOR GRAVEL, AND FINE SILTY OR CLATET SILTY OF CHAPTER SILTY OF CHAPTE		CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.				
## CALL COLOR OF CASES 15 C. 1. N. 1/2 or 3-1-4 10000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 1000000 10000000 10000000 10000000 10000000 100000000	GEN. RATING	PW PERCUED MATER CATURATER TONE OR MATER PEARING STRATA	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLDRED, SOME SHOW CLAY. ROCK HAS				
CONSTRUCTION OF CREATED STATE Control of	SUBGRADE			FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY			
Performance March			MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL				
Description Control of the contr	RANGE OF STANDARD RANGE OF UNCONFINED		(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES *CLUNK* SOUND WHEN STRUCK.	THE FIELD.			
Control Cont	PRIMARY SUIL TIPE CONCISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH						
## ## ## ## ## ## ## ## ## ## ## ## ##	GENERALLY LODGE	— SOIL SYMBOL ————————————————————————————————————	(SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME				
Second Column Second Colum	MATERIAL MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER CODE PODING SAMPLE	IF TESTED, YIELDS SPT N VALUES > 100 BPF				
Married 1.00		ST - 9HELBY TUBE	(V SEV.) THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH DNLY FRAGMENTS OF STRONG ROCK				
## ACCUPATION OF THE PROPERTY OF THE COLOR AND ALL COLOR ALL COLOR AND ALL COLOR AND ALL COLOR AND ALL COLOR ALL COLOR AND ALL COLOR ALL COLOR AND ALL COLOR	10.25	MN MONITORING WELL PS - BOCK SAMPLE	REMAINING SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR				
Section Sect	SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	PIEZOMETER A PIEZOMETER INSTALLATION RT - RECOMPACTED TRIAXIAI	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND				
TEXTURE OF ORACIN SIZE U.S. 50. SECRET STZ 4. 19 40 50 200 70 70 70 70 70 70 70 70 70 70 70 70 7	(COHESIVE) VERY STIFF 15 TO 30 2 TO 4	SAMPLE SUIL BUONDART SLOPE INDICATOR		ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF			
Common C		ROCK STRUCTURES RATIO SAMPLE					
## APP 200 B 69 WAT COMES OF THE STATE OF TH							
March Color Colo		NET OF LEGISLE		SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND			
CORD			TO DETACH HAND SPECIMEN.				
GRAIN M 365 75 2.0 0.05 0.005	SANU SANU SANU	BT - BORING TERMINATED MED MEDIUM V - VERY	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED.				
SOL MOISTURE - CORRELATION OF TERMS SOL MOISTUR		CPT - CONE PENETRATION TEST MOD MODERATELY WEA WEATHERED	BY MODERATE BLOWS.				
SOL NOISTURE SCARLE FILL MOISTURE SCARLE (BATS) OF FILL MOISTURE DESCRIPTION AND SATIO OF SEASON MOISTURE DESCRIPTION OF SECRIPTION OF SEASON MOISTURE DESCRIPTION OF SECRIPTION OF SEASON MOISTURE DESCRIPTION OF SEASON MOISTURE DESCRIPTION OF SEASON MOISTURE OF A GROCOSTS PICK. OF A GROCOST PICK. OF A GROCOSTS PICK. OF A GROCOSTS PICK. OF A GROCOST PICK. OF A GROCOSTS PICK. OF A GROCOST PI		DMT - DILATOMETER TEST ORG ORGANIC γ_a - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH			
FOR CHIEF TO LINES SUBJECT LINES SUBJECT FOR CHIEF TO SERVE FROM HOURS TO SERVER. HORSE IN SIZE OF NOCEARTS AND FIRST RESERVE. CAR BE SEARCHED READILY SHIFT FINDER PRESSURE. CAR BE SEARCHED READILY SHIFT FINDE	SOIL MOISTURE SCALE FIELD MOISTURE CLIDE FOR FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATION TEST PMT - PRESSUREMETER TEST		THAN 0.1 FOOT PER 60 BLOWS.			
FRACE FRACTURES PROVIDED WHITE TIBELE PROVIDED WHITE W	(ATTERBERG LIMITS) DESCRIPTION	F - FINE SD SAND, SANDY	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.			
Semisolic recursion of the control o	(SAT.) FROM BELOW THE GROUND WATER TABLE	FRAC FRACTURED, FRACTURES SLI SLIGHTLY	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH				
RANGE C PLASTIC LIMIT	PLASTIC	PRHOS PRHOMENTS ICK - IKILUNE REPUSAL		TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.			
PLC TRESTICITY ON PLASTICITY ON PART WAS ARREADED ON PLANT OF THE MARKEN DISTINGARIES SAMPLE, ON PLASTICITY ON PLASTICITY ON PLANT OF THE MARKEN DISTINGARIES SAMPLE, ON PLASTICITY ON PLANT OF THE MARKEN DISTINGARIES SAMPLE, ON PLANT OF THE MARKEN DISTINGARIES SAMPLE, ON PLASTICITY ON PLANT OF THE MARKEN DISTINGARIES SAMPLE, ON PLANT OF THE MARK	RANGE - WET - (W) SEMISULID; REUDIRES DRYING TO	EQUIPMENT USED ON SUBJECT PROJECT	FRACTURE SPACING BEDDING	IDPSDIL (TS.) - SURFACE SDILS USUALLY CONTAINING ORGANIC MATTER.			
OH OPTIMUM MOISTURE - MOIST - 699 SOLIDA AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT - ORY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - ORY - (III) RECUIRES ADDITIONAL WATER TO A SITE I FEET THINLY BEDDED ALS - 4. REF ET THINLY BEDDED ALS - 4. REF THE THINLY BEDDED ALS - 4. REF TET THINLY BEDDE	PLL - FLHSTIL LIMIT	DRILL UNITS: HOTHICING TOOLS:	VEDY TURNS OF THE PARTY OF THE	BENCH MARK:			
SL SHRIPKARDE LIMIT - DRY - (I) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (I) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRE ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER TO BREAK SAMPLE, - DRY - (II) REQUIRE ADDITIONAL WATER	I OM T OF THIS TOTAL		WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	FI FVATION: FT			
ATTAIN OPTIMUM MOISTURE PLASTICITY PLASTICITY INDEX (PI) PLASTICITY INDEX (PI) PRATICITY INDEX (PI) PRATICITY INDEX (PI) PRASTICITY INDEX (PI) PRASTICITY PROSTING OF THE MARTERIAL BY CEMENTING OF THE MARTERIAL BY CEMENT OF THE MARTERIAL BY CEMENT OF THE MARTERIAL BY CEMENT OF THE MARTERIAL BY CHANCE THICKY HAND AUGRS PRASTICATION PRASTICATION PRASTICA	REQUIRES ADDITIONAL WATER TO	6*CONTINUOUS FLIGHT AUGER CORE SIZE:	CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET				
PLASTICITY PLASTICITY INDEX (P]) DRY STRENGTH NONPLASTIC OF VERY LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM PLASTICITY 16-25 MEDIUM PLASTICITY 16-25 MEDIUM PLASTICITY 16-26 OR MORE 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. HARD FACED FINGER BITS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER BITS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER BITS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER BITS -N FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER BITS -N FRIBBLE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER BITS -N FRIBBLE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD FACED FINGER FREES NUMEROUS GRAINS, TREASURE OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD TOOLS GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH STEEL PROBE; DIFFICULT TO SEPARATE WITH STEEL PROBE; OR SEDIMENTARY ROCKS, INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; WORLD AND THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. HARD TOOLS GRAIN CAN BE SEPARATED FROM SAMPLE. HARD TOOLS GRAIN CAN BE SEPARAT		9/-51		The state of the s			
PLASTICITY INDEX (P)) DRY STRENGTH NONPLASTIC 0-5 VERY LOW PLASTICITY 6-15 SLIGHT HIGH PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE 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. WI TUNG, -CARBIDE INSERTS X TUNG, -CARBIDE INSERTS -H. FOR SEDIMENTARY ROCKS, INDURATION IS THE MATERIALS NUMEROUS GRAINS; CASING W/ ADVANCER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HALE DIGGER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; CASING W/ ADVANCER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; DIGGER HAND TOOLS; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE; PORT HAME RECOVER, ECC. AS BELY WITH STEEL PROBE;	PLASTICITY]			
LOW PLASTICITY 6-15 MEDIUM MED PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH PLASTICITY COLOR DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. CASING W/ ADVANCER HAND TOOLS; HAND TOOLS; POST HOLE DIGGER MODERATELY INDURATED MODIFACTOR HAND TOOLS; POST HOLE DIGGER MODERATELY INDURATED MODIFACTOR	1	TUNG,-CARBIDE INSERTS	DUDDING WITH FINCED FREED WHITEDOW COANNO				
MELLY LASTICITY 16-25 16-1011 17-1011 18-25 16-1011 18-25 18	LOW PLASTICITY 6-15 SLIGHT	CASING W/ ADVANCED					
COLOR DESCRIPTIONS MAY INCLUDE COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. TRICONE TUNG,-CARB.							
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. CORE BIT SOUNDING ROD INDURATED ORIFICUAT TO BREAK WITH HAMMER OFFICIAL TO BREAK WITH HAMMER VANE SHEAR TEST EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;							
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).	CORE BIT					
	MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	LJ VHIVE STEHR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.				

PROJECT REFERENCE NO. 33621.1.1 (B-4281)

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT TIP # B-4281

COUNTY Stokes

DATE 1/4/2008

SHEET 3 OF 6 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT	EARTH EMB.	EMBANK. 20%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
SI	JMMARY NO	.1									-					
-L-	13+50	18+50	55	·			55	3135			3135	3762	3707			
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-L-	20+50	28+00	455				455	10202			10202	12242	11787			
TOTA	L SUMMARY	NO.2	455	<u> </u>			455	10202			10202	12242	11787			
	, , , , , , , , , , , , , , , , , , , ,	. Exist. Roadbed)												2007		<u> </u>
-L-	15+50	18+50	3225				3225							3225		
TOTA	L SUMMARY	NO. 3	3225				3225		***************************************					3225		
																
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	GRAND TO	TAL	9194				9194	13510			13510	16212	16513	8709		
	SAY		9200										16550			+

^{*} 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.



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT SECRETARY

May 19, 2006

STATE PROJECT:

33621.1.1 (B-4281)

FEDERAL PROJECT:

BRSTP-008(4)

COUNTY:

Stokes

DESCRIPTION:

Bridge 60 over Dan River on NC 8/89

SUBJECT:

Geotechnical Report - Inventory

PROJECT DESCRIPTION

The project is located in central Stokes County near Hanging Rock State Park. The closest town is Danbury. NC 8 and NC 89 converge near the beginning of the project to run coincident toward the south-east. The project calls for relocation of NC 8/89 toward the north (upstream along the Dan River). The maximum relocation is about 80°. Most of the roadway will be on embankment with fill heights on the order of 20°.

The Geotechnical investigation consisted of six Standard Penetration Test (SPT) borings performed with a CME-550 drill rig using 8" hollow stem augers. The borings were conducted in March 2006.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

There are no areas of particular concern.

PHYSIOGRAPHY AND GEOLOGY

The site is in the Sauratown Mountains Geologic group, mapped as CZmg meta-graywacke and muscovite-biotite schist. Rock core samples were not obtained. A large portion of the project is within the Dan River floodplain. There are some small deposits of terrace gravels above the floodplain level.

Project elevations range from a low in the stream channel of about 702' to a high at the end of the project of about 755'. The floodplain elevation is near 720'. The floodplain along the centerline – L- runs from approximate Station 15+50 to 22+75.

SOIL PROPERTIES

Residual Soils

Residual soils occur below the alluvium and outside of the floodplain area. They were described as white and tan micaceous silty sand with classifications of A-4 and A-2-4. Near the end of the project, one boring encountered red to tan silty clay (A-7). The sandy silts and silty sands were typically hard or very dense and rapidly graded to weathered and/or hard rock. The clay soils at the end of the project were medium to very stiff.

Artificial/Roadway Fill Soils

Artificial fills were not encountered. The existing roadway embankment is about 15' high. It was not tested or sampled.

Alluvial Soils

The overall thickness of the floodplain sediments is 15 to 20 feet. A fairly consistent surface layer is present to depth of 5-10 feet. It consists of brown, soft to medium stiff, slightly micaceous, sandy silt (A-4). Below the surface silt, we encountered either loose, wet, micaceous silty sand (A-2-4) or soft to medium stiff, wet, sandy clay (A-6, A-7).

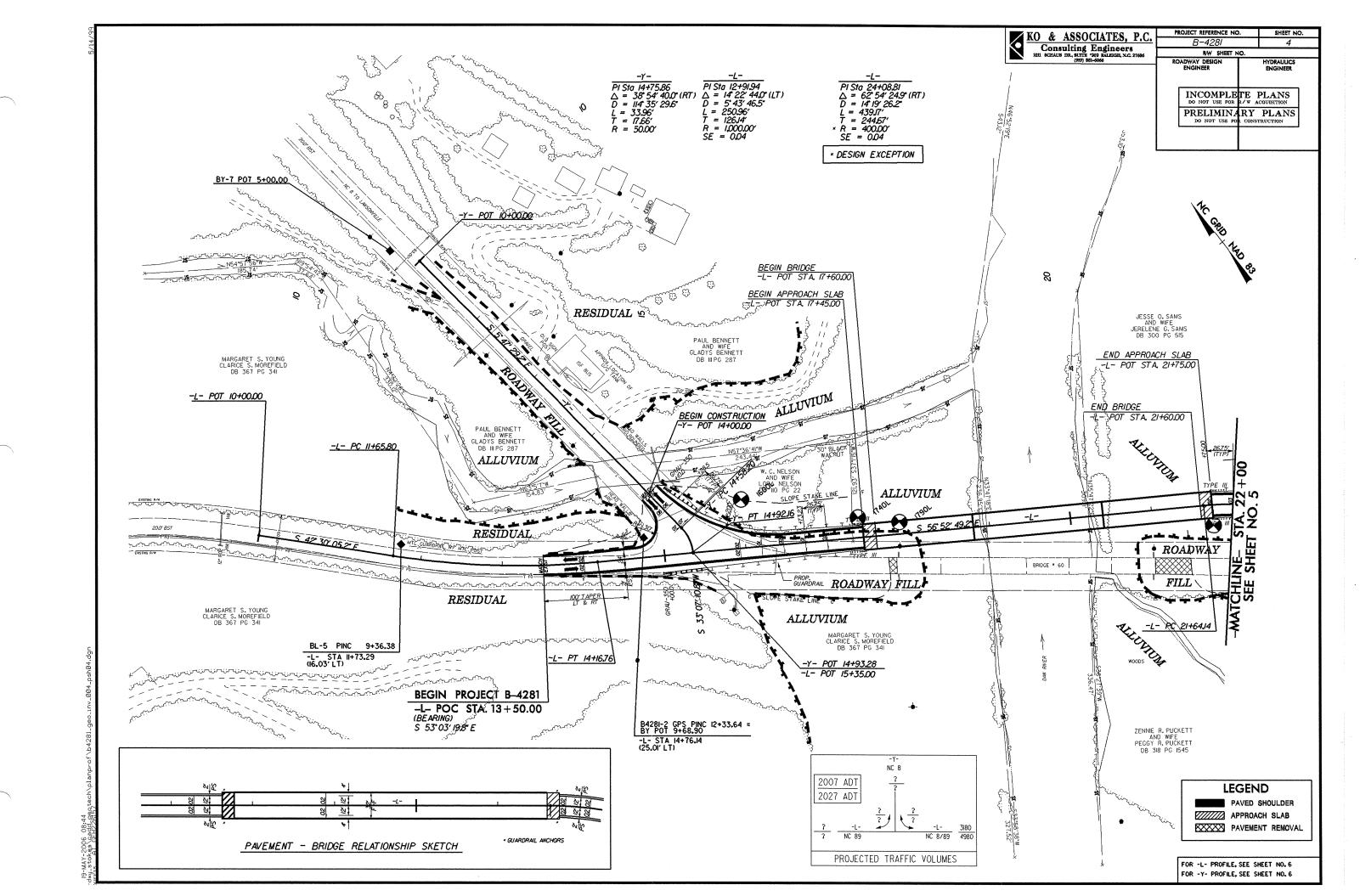
GROUNDWATER

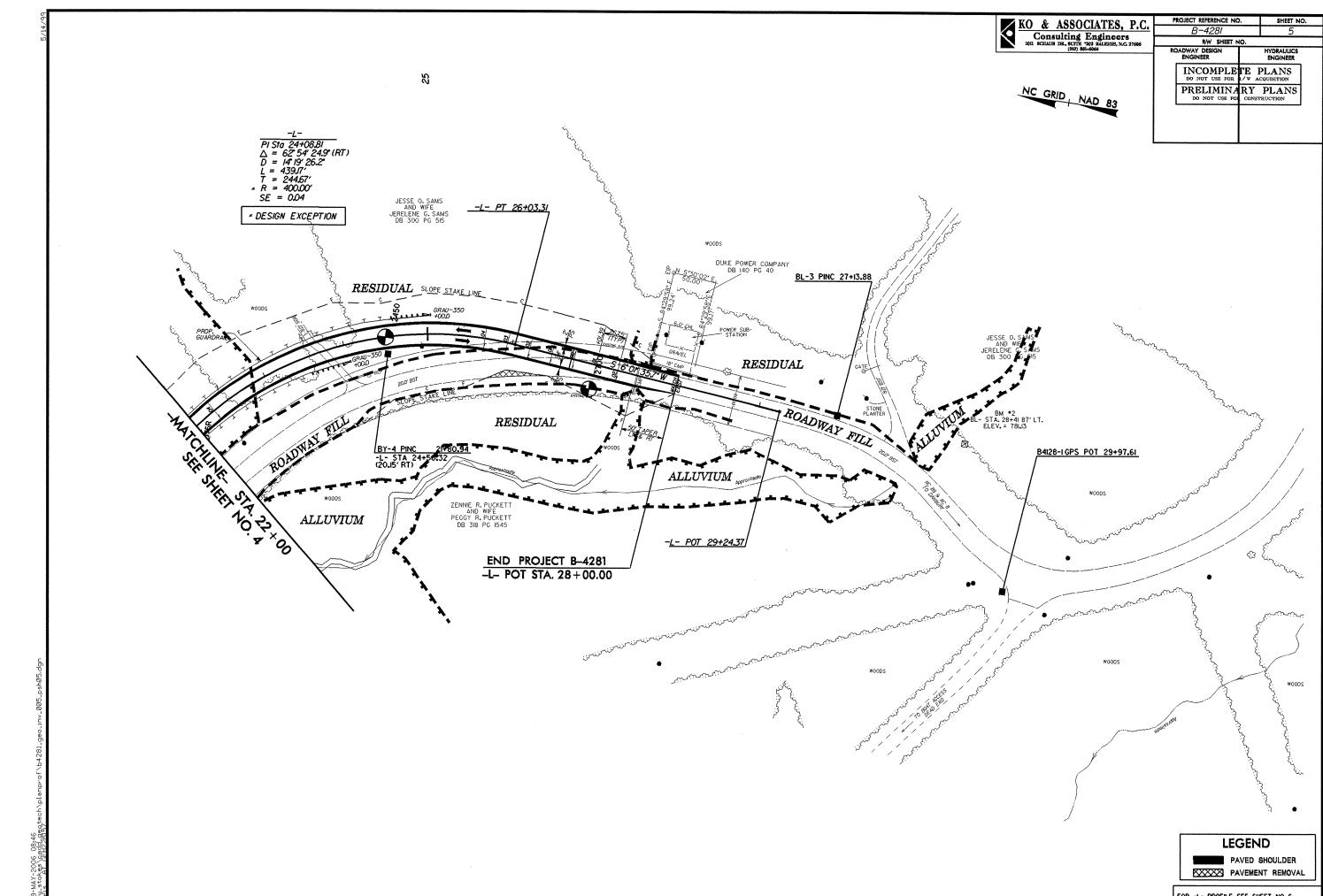
Groundwater was encountered only in the floodplain borings, at depths of 11 - 12 feet (Elevation 707-708').

Respectfully submitted,

Clint Little

Regional Geologist





FOR -L- PROFILE, SEE SHEET NO. 6

