

PROJECT: C201242 ID: R-2824

CONTENTS: -L- STATIONS 10+00 - 40+38  
 DETOUR STATIONS 10+00 - 14+54

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



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2824	1	9
STATS PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34510.1.1	STP-1546(8)	P.E.	
34510.3.1	STP-1546(8)	R/W & UTIL.	
34510.2.2	STP-1546(16)	CONST.	

**CAUTION NOTICE**

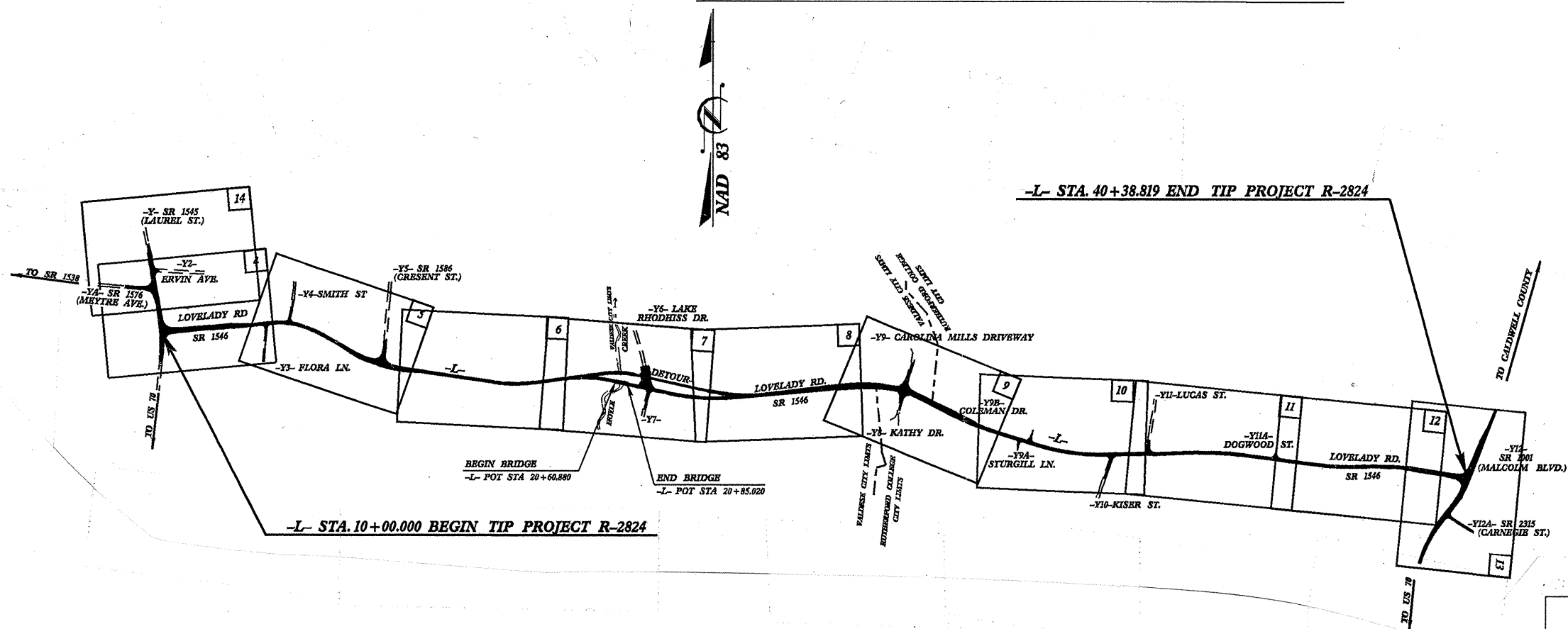
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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.

**SUBSURFACE INVESTIGATION**

STATE PROJECT 8.2851501 I.D. NO. R-2824  
 F.A. PROJECT STP-1546(8)  
 COUNTY BURKE  
 DESCRIPTION SR 1546 FROM SR 1545  
TO SR 1001

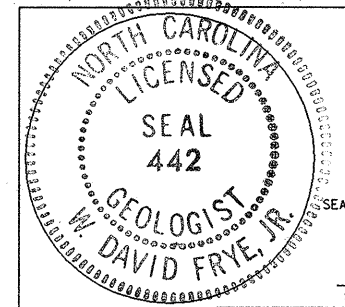


INVESTIGATED BY J.W. MANN PERSONNEL D.P. MURPHY  
 CHECKED BY W.D. FRYE E.A. SMITH  
 SUBMITTED BY W.D. FRYE G.K. ROSE  
 DATE OCTOBER 2002

DRAWN BY: J. W. MANN

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.



*W. David Frye, Jr.*  
 SIGNATURE

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 1 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
<b>PHASE I</b>															
		(Begin Bridge)													
-DETOUR-	10+00.000	11+12.740	488				488	423		423	486	0	2		2
-DETOUR-	11+39.140	14+54.073	2,213				2,213	843		843	969	0	1,244		1,244
		(End Bridge)													
<b>SUBTOTAL</b>			<b>2,701</b>				<b>2,701</b>	<b>1,266</b>		<b>1,266</b>	<b>1,455</b>	<b>0</b>	<b>1,246</b>		<b>1,246</b>
-Y- (LT)	10+20.000	13+36.710	61				61	735		735	845	784	0		0
-Y2-	10+05.400	10+20.000	4				4	19		19	22	18	0		0
<b>SUBTOTAL</b>			<b>65</b>				<b>65</b>	<b>754</b>		<b>754</b>	<b>867</b>	<b>802</b>	<b>0</b>		<b>0</b>
-Y- (RT)	10+20.000	13+36.710	232				232	574		574	660	428	0		0
-YA-	10+19.000	11+03.260	11				11	95		95	109	98	0		0
-DR16-	10+00.000	10+17.222	0				0	7		7	8	8	0		0
-DR17-	10+00.000	10+20.367	6				6	8		8	9	3	0		0
DR-18-	10+00.000	10+20.210	0				0	73		73	84	84	0		0
<b>SUBTOTAL</b>			<b>249</b>				<b>249</b>	<b>757</b>		<b>757</b>	<b>870</b>	<b>621</b>	<b>0</b>		<b>0</b>
		(Begin Bridge)													
-L- (LT)	10+05.400	20+60.880	3,081				3,081	2,156		2,156	2,479	0	602		602
-DR1-	10+00.000	10+42.939	18				18	317		317	365	347	0		0
-DR2-	10+00.000	10+35.196	6				6	125		125	144	138	0		0
-DR3-	10+00.000	10+41.780	0				0	61		61	70	70	0		0
-Y4-	10+40.000	10+90.780	41				41	72		72	83	42	0		0
-Y5-	11+00.00	11+52.250	971				971	2		2	2	0	969		969
<b>SUBTOTAL</b>			<b>4,117</b>				<b>4,117</b>	<b>2,733</b>		<b>2,733</b>	<b>3,143</b>	<b>597</b>	<b>1,571</b>		<b>1,571</b>
		(Begin Bridge)													
-L- (RT)	10+05.400	20+60.880	2,080				2,080	2,145		2,145	2,467	387	0		0
-Y3-	10+03.630	10+87.630	1,210				1,210	0		0	0	0	1,210		1,210
<b>SUBTOTAL</b>			<b>3,290</b>				<b>3,290</b>	<b>2,145</b>		<b>2,145</b>	<b>2,467</b>	<b>387</b>	<b>1,210</b>		<b>1,210</b>

NOTE: 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.

18/19

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 2 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
	(End Bridge)														
-L- (LT)	20+85.020	23+00.000	117				117	389		389	447	330	0		0
-Y6-	11+20.000	11+49.199	4				4	244		244	281	277	0		0
SUBTOTAL			121				121	633		633	728	607	0		0
	(End Bridge)														
-L- (RT)	20+85.020	27+40.000	4,020				4,020	2,139		2,139	2,460	0	1,560		1,560
-Y7-	10+03.600	10+50.000	5				5	57		57	66	61	0		0
-Y8-	10+18.000	10+47.400	59				59	226		226	260	201	0		0
SUBTOTAL			4,084				4,084	2,422		2,422	2,786	262	1,560		1,560
-L- (LT)	26+80.000	33+60.000	2,606				2,606	569		569	654	0	1,952		1,952
-Y9-	10+40.000	11+03.165	992				992	41		41	47	0	945		945
-DR19-	10+00.000	10+22.330	256				256	0		0	0	0	256		256
-DR20-	10+00.000	10+16.129	127				127	0		0	0	0	127		127
-Y9B-	10+00.000	10+25.748	30				30	0		0	0	0	30		30
-DR4-	10+12.000	10+18.500	6				6	0		0	0	0	6		6
-DR7-	10+00.000	10+36.323	28				28	7		7	8	0	20		20
-Y11-	10+96.780	11+24.780	181				181	1		1	1	0	180		180
SUBTOTAL			4,226				4,226	618		618	710	0	3,516		3,516
-L- (LT)	33+60.000	40+27.465	2,585				2,585	2,610		2,610	3,002	417	0		0
-Y11A-	10+00.000	10+20.813	5				5	26		26	30	25	0		0
-DR15-	10+00.000	10+33.686	0				0	292		292	336	336	0		0
SUBTOTAL			2,590				2,590	2,928		2,928	3,368	778	0		0

NOTE: 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.

LC19

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 3 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
-L- (RT)	29+40.000	33+60.000	352				352	497		497	572	220	0		0
-Y9A-	10+00.000	10+21.429	13				13	1		1	1	0	12		12
-DR5-	10+03.600	10+17.457	0				0	13		13	15	15	0		0
-Y10-	10+03.840	10+60.000	43				43	52		52	60	17	0		0
-DR8-	10+03.601	10+30.200	14				14	0		0	0	0	14		14
<b>SUBTOTAL</b>			422				422	563		563	648	252	26		26
-L- (RT)	33+60.000	40+27.465	969				969	1,716		1,716	1,973	1,004	0		0
-DR10-	10+03.600	10+25.570	0				0	4		4	5	5	0		0
-DR14-	10+03.600	10+38.000	4				4	94		94	108	104	0		0
<b>SUBTOTAL</b>			973				973	1,814		1,814	2,086	1,113	0		0
-Y12- (LT)	10+80.000	14+60.000	49				49	259		259	298	249	0		0
-Y12A-	10+03.600	10+71.961	256				256	134		134	154	0	102		102
<b>SUBTOTAL</b>			305				305	393		393	452	249	102		102
-Y12- (RT)	10+80.000	14+60.000	1,013				1,013	302		302	347	0	666		666
<b>SUBTOTAL</b>			1,013				1,013	302		302	347	0	666		666
<b>SUBTOTAL PHASE I</b>			24,156				24,156	17,328		17,328	19,927	5,668	9,897		9,897
<b>WASTE TO BE USED IN LIEU OF BORROW</b>												-5,668	-5,668		-5,668
<b>TOTAL PHASE I</b>			24,156				24,156	17,328		17,328	19,927	0	4,229		4,229
<b>PHASE II</b>															
-L- (LT)	23+00.000	26+80.000	622				622	205		205	236	0	386		386
-L- (RT)	27+40.000	29+40.000	393				393	40		40	46	0	347		347
-Y6-	11+00.180	11+20.000	4				4	21		21	24	20	0		0
<b>SUBTOTAL</b>			1,019				1,019	266		266	306	20	733		733

NOTE: 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.

10/9

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 4 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
DETOUR REMOVAL															
		(Begin Bridge)													
-DETOUR-	10+74.467	11+12.740	411				411	0		0	0	0	411		411
-DETOUR-	11+39.140	12+95.018	801				801	69		69	79	0	722		722
		(End Bridge)													
SUBTOTAL			1,212				1,212	69		69	79	0	1,133		1,133
SUBTOTAL PHASE II			2,231				2,231	335		335	385	20	1,866		1,866
WASTE TO BE USED IN LIEU OF BORROW												-20	-20		-20
TOTAL PHASE II			2,231				2,231	335		335	385	0	1,846		1,846
PHASE I - II TOTALS			26,387				26,387	17,663		17,663	20,312	0	6,075		6,075
LOSS DUE TO CLEARING AND GRUBBING			-4,625				-4,625						-4,625		-4,625
PROJECT TOTALS			21,762				21,762	17,663		17,663	20,312	0	1,450		1,450
GRAND TOTALS			21,762												1,450
SAY			22,000												1,500

EST. DRAINAGE DITCH EXCAVATION = 750 CM

SHOULDER BORROW = 3,600 CM

EST. UNDERCUT = 130 CM

EST. SHALLOW UNDERCUT = 500 CM

NOTE: 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.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-2824	8.2851501	2	9



SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS	
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER 30 cm ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND 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, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>		WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE (ALSO POORLY GRADED). GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.		HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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 2.5 cm PER 50 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 WHICH 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 IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDING 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) OF A 63.5 kg HAMMER FALLING 0.76 METERS REQUIRED TO PRODUCE A PENETRATION OF 30 cm INTO SOIL WITH A 5 cm OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 2.5 cm PENETRATION WITH 50 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.	
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING		ELEVATION:	
GENERAL CLASS. GRANULAR MATERIALS (<=5% PASSING #200) SILT-CLAY MATERIALS (>5% 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) NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER 30 cm.		ELEVATION:	
GROUP CLASS. A-1, A-1-b, A-3, A-2, A-2-4, A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-1, A-2, A-3, A-4, A-5, A-6, A-7		COMPRESSIBILITY		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.		ELEVATION:	
SYMBOL		SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		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.		ELEVATION:	
% PASSING		PERCENTAGE OF MATERIAL		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.		ELEVATION:	
LIQUID LIMIT PLASTIC INDEX		GROUND WATER		WEATHERING		ELEVATION:	
GROUP INDEX		WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING. STATIC WATER LEVEL AFTER 24 HOURS. PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA SPRING OR SEEPAGE		FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		ELEVATION:	
USUAL TYPES OF MAJOR MATERIALS		MISCELLANEOUS SYMBOLS		VERY SLIGHT (V. SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.		ELEVATION:	
GEN. RATING AS A SUBGRADE		ROADWAY EMBANKMENT WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS INFERRED SOIL BOUNDARIES INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP/DIP DIRECTION OF ROCK STRUCTURES SOUNDING ROD		SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 2.5 cm. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.		ELEVATION:	
P.I. OF A-7-5 <= L.L. - 30 ; P.I. OF A-7-6 > L.L. - 30		SPT CPT DMT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL		MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.		ELEVATION:	
CONSISTENCY OR DENSENESS		ABBREVIATIONS		MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL.		ELEVATION:	
PRIMARY SOIL TYPE		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 FRAGS. - FRAGMENTS MED. - MEDIUM PMT - PRESSUREMETER TEST SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL W - UNIT WEIGHT Wd - DRY UNIT WEIGHT W - MOISTURE CONTENT V. - VERY VST - VANE SHEAR TEST		SEVERE (SEV.) ALL ROCKS 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 BLOWS PER 30 cm.		ELEVATION:	
COMPACTNESS OR CONSISTENCY		EQUIPMENT USED ON SUBJECT PROJECT		VERY SEVERE (V. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BLOWS PER 30 cm.		ELEVATION:	
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)		DRILL UNITS: MOBILE B- BK-51 CME-45 CME-550 PORTABLE HOIST OTHER OTHER		COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIXES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		ELEVATION:	
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (KN/m <sup>2</sup> )		ADVANCING TOOLS: CLAY BITS 152 mm CONTINUOUS FLIGHT AUGER 203 mm HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE mm STEEL TEETH TRICONE mm TUNG.-CARB. CORE BIT OTHER		ROCK HARDNESS		ELEVATION:	
VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE		HAMMER TYPE: AUTOMATIC MANUAL		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.		ELEVATION:	
VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD		CORE SIZE: B N XML H		HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.		ELEVATION:	
GENERALLY GRANULAR MATERIAL (NON-COHESSIVE)		HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST OTHER		MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 6 mm DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.		ELEVATION:	
GENERALLY SILT-CLAY MATERIAL (COHESSIVE)		INDURATION		MEDIUM HARD CAN BE GROOVED OR GOUGED 1 mm DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 25 mm MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.		ELEVATION:	
TEXTURE OR GRAIN SIZE		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.		SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL CENTIMETERS IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.		ELEVATION:	
U.S. STD. SIEVE SIZE OPENING (MM)		FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.		VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 25 mm OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.		ELEVATION:	
BOULDER (BLDR.)		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.		ELEVATION:		ELEVATION:	
COBBLE (COB.)		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.		ELEVATION:		ELEVATION:	
GRAVEL (GR.)		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		ELEVATION:		ELEVATION:	
COARSE SAND (CSE, SD.)		ELEVATION:		ELEVATION:		ELEVATION:	
FINE SAND (F, SD.)		ELEVATION:		ELEVATION:		ELEVATION:	
SILT (SL.)		ELEVATION:		ELEVATION:		ELEVATION:	
CLAY (CL.)		ELEVATION:		ELEVATION:		ELEVATION:	
GRAIN SIZE		ELEVATION:		ELEVATION:		ELEVATION:	
SOIL MOISTURE - CORRELATION OF TERMS		ELEVATION:		ELEVATION:		ELEVATION:	
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		ELEVATION:		ELEVATION:		ELEVATION:	
FIELD MOISTURE DESCRIPTION		ELEVATION:		ELEVATION:		ELEVATION:	
GUIDE FOR FIELD MOISTURE DESCRIPTION		ELEVATION:		ELEVATION:		ELEVATION:	
LIQUID LIMIT		ELEVATION:		ELEVATION:		ELEVATION:	
PLASTIC LIMIT		ELEVATION:		ELEVATION:		ELEVATION:	
OPTIMUM MOISTURE		ELEVATION:		ELEVATION:		ELEVATION:	
SHRINKAGE LIMIT		ELEVATION:		ELEVATION:		ELEVATION:	
PLASTICITY		ELEVATION:		ELEVATION:		ELEVATION:	
NONPLASTIC		ELEVATION:		ELEVATION:		ELEVATION:	
LOW PLASTICITY		ELEVATION:		ELEVATION:		ELEVATION:	
MED. PLASTICITY		ELEVATION:		ELEVATION:		ELEVATION:	
HIGH PLASTICITY		ELEVATION:		ELEVATION:		ELEVATION:	
COLOR		ELEVATION:		ELEVATION:		ELEVATION:	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL.-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		ELEVATION:		ELEVATION:		ELEVATION:	

9/09/04

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BURKE COUNTY**

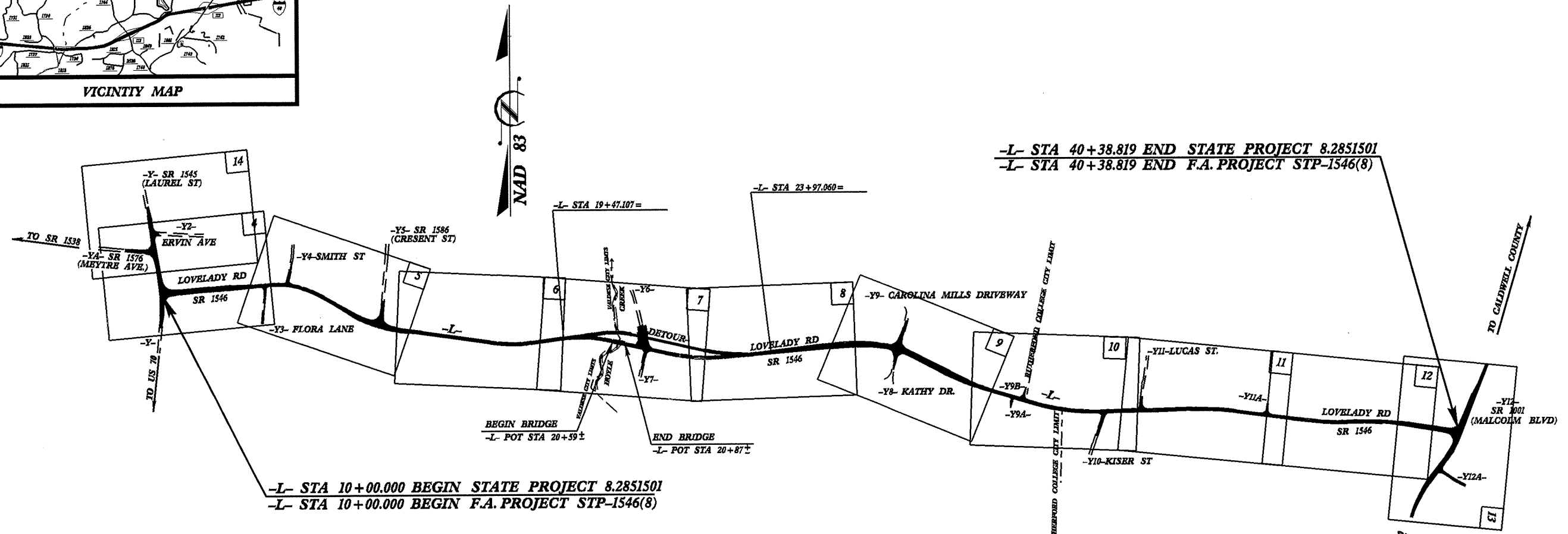
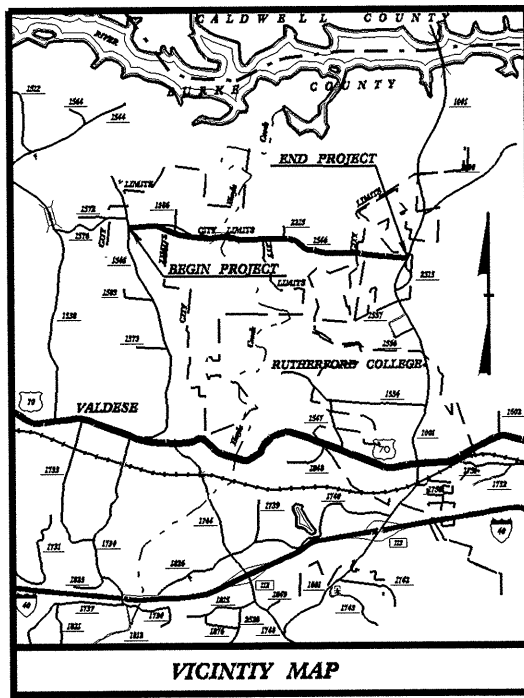
LOCATION: SR 1546 (LOVELADY ROAD) FROM SR 1545 (LAUREL ST)  
TO SR 1001 (MALCOLM BLVD.)  
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

**METRIC**

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND OR MILLIMETERS UNLESS OTHERWISE SHOWN

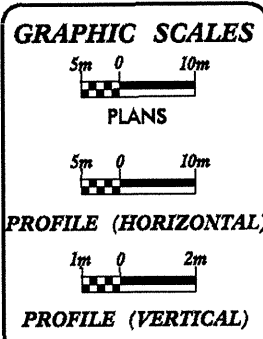
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2824	3	9
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
8,2851501	STP-1546(8)	P.E.	

PROJECT: 8.2851501 R-2824



\*\* DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE, AND MAXIMUM GRADE.  
THIS PROJECT IS WITHIN THE CITY LIMITS OF VALDESE AND RUTHERFORD COLLEGE.  
THIS IS NOT A CONTROL OF ACCESS PROJECT.

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION  
INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION



DESIGN DATA

ADT 2001 =	3946
ADT 2025 =	8100
DHV =	12 %
D =	60 %
T =	4 % *
V =	65 km/h **

\*(TTST 2 % + DUAL 2 %)

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT STP-1546(8) =	km
LENGTH STRUCTURE F.A. PROJECT STP-1546(8) =	km
TOTAL LENGTH OF STATE PROJECT 8.2851501 =	3.039 km

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **GLENN W. MUMFORD, P.E.**  
AUGUST 16, 2002  
PROJECT ENGINEER

LETTING DATE: **ANTHONY A. HOUSER, P.E.**  
JUNE 15, 2004  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_

ROADWAY DESIGN ENGINEER

SIGNATURE: \_\_\_\_\_

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED DIVISION ADMINISTRATOR

DATE



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

October 2002

STATE PROJECT: 8.2851501 (R-2824)  
F. A. PROJECT: STP-1546(8)  
COUNTY: Burke  
DESCRIPTION: Upgrade of SR-1546 From SR-1545 to SR-1001  
  
SUBJECT: Geotechnical Report – Inventory

**Project Description**

This project is located within the municipalities of Valdese and Rutherford College in Burke County. Proposed is an upgrade of existing SR-1546 to provide two 3.6 meter travel lanes and 2.4 meter usable shoulders of which 1.2 meters will be paved. This widening will include right- and left-turn lanes along with a center-turn lane at selected station intervals along the alignment. To minimize the impact to residences and businesses located along the project corridor, a combination of symmetrical and asymmetrical widening will be utilized. Total length of this project is approximately 3.04 kilometers. Existing Bridge No. 110, which carries SR-1546 over Hoyle Creek, is to be replaced to accommodate the improvement. As a result, a temporary detour bridge and its approaches are to be constructed north of the existing structure.

The subsurface investigation was conducted during the summer of 2002. Borings were advanced with a CME-550 ORV drill unit equipped with eight-inch hollow augers. Standard Penetration Tests (SPT) were performed at selected sites utilizing an automatic drive hammer. Soil samples were collected and tested for AASHTO classification.

The following base lines and station intervals were investigated either by visual inspection or the advancement of drill borings.

**Base Line**

**Station Interval**

-L-  
Detour

10+00 – 40+38  
10+00 – 14+54

**Areas of Special Geotechnical Interest**

Station interval of groundwater expected within 1.8 meters of ground surface.

(1) - Detour - 11+20 – 11+40

**Physiography and Land Use**

The project corridor is located in the foothills of the Piedmont Physiographic Province. Geologically, the area is located in the Inner Piedmont Belt, and underlain by mica schist. Drainage is provided by Hoyle Creek, which the alignment crosses, and other tributaries of the Catawba River.

The existing vertical alignment is rolling, with topographic relief ranging from 329 to 366 meters along the corridor. The project area is a mix of both residential and commercial or service businesses.

**Soil and Rock Properties**

Saprolite is the predominant soil type in the project corridor. It is typically composed of variegated, slightly micaceous silty sand with interspersed weathered rock fragments. These rock fragments vary from gravel-to-cobble sized, and were found to escalate the blow counts during Standard Penetration Testing. Hard rock was encountered by borings only beneath grade. There are no outcrop exposures along the corridor.

**Groundwater Properties**

Groundwater elevations should be well below grade except in the area of the existing bridge and the detour alignment. Here, groundwater levels varied from 1.49 to 2.93 meters beneath natural ground. However, these levels can be expected to rise during periods of normal rainfall.

**Geotechnical Descriptive Analysis of the Project**

**-L- Stations 10+00 to 40+38**

The entire length of this project is comprised of minor cuts and fills to the left and right. The proposed excavations and embankments are generally less than 5 meters. Cuts will predominantly daylight in sandy saprolite with variable densities due to interspersed weathered rock fragments. Fills will be placed on a combination of medium stiff to stiff residual clay or saprolite. Existing cuts and embankments appear stable along the alignment.

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT  
1589 MAIL SERVICE CENTER  
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088  
FAX: 919-250-4237  
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:  
CENTURY CENTER COMPLEX  
BUILDING B  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC 27610



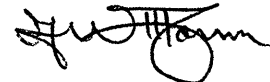
Detour Stations 10+00 to 14+54

The proposed bridge detour construction will primarily consist of 2.5 meters or less of embankment placed on alluvial and residual soils. The alluvium is confined between approximate Stations 11+20 to 11+60 and is composed of loose silty sand and gravel or soft to medium stiff sandy clay. These soils approach four meters thick, and have been deposited over loose to medium dense saprolitic micaceous silty sand. Outside of the alluvial confines, the proposed temporary fills will rest on approximately 2.5 meters of stiff to very stiff residual sandy clay. Sandy saprolite lies beneath the residuum in this station interval.

-Y- Lines

-Y- lines will undergo modification to intercept the -L- line, and will develop a similar soil profile.

Respectfully Submitted,



J. W. Mann, TEG-III

JWM:mw

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 1 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
<b>PHASE I</b>															
		(Begin Bridge)													
-DETOUR-	10+00.000	11+12.740	488				488	423		423	486	0	2		2
-DETOUR-	11+39.140	14+54.073	2,213				2,213	843		843	969	0	1,244		1,244
		(End Bridge)													
<b>SUBTOTAL</b>			2,701				2,701	1,266		1,266	1,455	0	1,246		1,246
-Y- (LT)	10+20.000	13+36.710	61				61	735		735	845	784	0		0
-Y2-	10+05.400	10+20.000	4				4	19		19	22	18	0		0
<b>SUBTOTAL</b>			65				65	754		754	867	802	0		0
-Y- (RT)	10+20.000	13+36.710	232				232	574		574	660	428	0		0
-YA-	10+19.000	11+03.260	11				11	95		95	109	98	0		0
-DR16-	10+00.000	10+17.222	0				0	7		7	8	8	0		0
-DR17-	10+00.000	10+20.367	6				6	8		8	9	3	0		0
DR-18-	10+00.000	10+20.210	0				0	73		73	84	84	0		0
<b>SUBTOTAL</b>			249				249	757		757	870	621	0		0
		(Begin Bridge)													
-L- (LT)	10+05.400	20+60.880	3,081				3,081	2,156		2,156	2,479	0	602		602
-DR1-	10+00.000	10+42.939	18				18	317		317	365	347	0		0
-DR2-	10+00.000	10+35.196	6				6	125		125	144	138	0		0
-DR3-	10+00.000	10+41.780	0				0	61		61	70	70	0		0
-Y4-	10+40.000	10+90.780	41				41	72		72	83	42	0		0
-Y5-	11+00.00	11+52.250	971				971	2		2	2	0	969		969
<b>SUBTOTAL</b>			4,117				4,117	2,733		2,733	3,143	597	1,571		1,571
		(Begin Bridge)													
-L- (RT)	10+05.400	20+60.880	2,080				2,080	2,145		2,145	2,467	387	0		0
-Y3-	10+03.630	10+87.630	1,210				1,210	0		0	0	0	1,210		1,210
<b>SUBTOTAL</b>			3,290				3,290	2,145		2,145	2,467	387	1,210		1,210

NOTE: 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.

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

SHEET 2 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
	(End Bridge)														
-L- (LT)	20+85.020	23+00.000	117				117	389		389	447	330	0		0
-Y6-	11+20.000	11+49.199	4				4	244		244	281	277	0		0
<b>SUBTOTAL</b>			121				121	633		633	728	607	0		0
	(End Bridge)														
-L- (RT)	20+85.020	27+40.000	4,020				4,020	2,139		2,139	2,460	0	1,560		1,560
-Y7-	10+03.600	10+50.000	5				5	57		57	66	61	0		0
-Y8-	10+18.000	10+47.400	59				59	226		226	260	201	0		0
<b>SUBTOTAL</b>			4,084				4,084	2,422		2,422	2,786	262	1,560		1,560
-L- (LT)	26+80.000	33+60.000	2,606				2,606	569		569	654	0	1,952		1,952
-Y9-	10+40.000	11+03.165	992				992	41		41	47	0	945		945
-DR19-	10+00.000	10+22.330	256				256	0		0	0	0	256		256
-DR20-	10+00.000	10+16.129	127				127	0		0	0	0	127		127
-Y9B-	10+00.000	10+25.748	30				30	0		0	0	0	30		30
-DR4-	10+12.000	10+18.500	6				6	0		0	0	0	6		6
-DR7-	10+00.000	10+36.323	28				28	7		7	8	0	20		20
-Y11-	10+96.780	11+24.780	181				181	1		1	1	0	180		180
<b>SUBTOTAL</b>			4,226				4,226	618		618	710	0	3,516		3,516
-L- (LT)	33+60.000	40+27.465	2,585				2,585	2,610		2,610	3,002	417	0		0
-Y11A-	10+00.000	10+20.813	5				5	26		26	30	25	0		0
-DR15-	10+00.000	10+33.686	0				0	292		292	336	336	0		0
<b>SUBTOTAL</b>			2,590				2,590	2,928		2,928	3,368	778	0		0

NOTE: 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.

5019

### EARTHWORK BALANCE SHEET

Volumes in Cubic Meters

PROJECT R-2824

COUNTY Burke

DATE 25-Feb-09

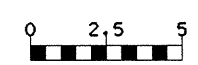
SHEET 3 OF 4 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
-L- (RT)	29+40.000	33+60.000	352				352	497		497	572	220	0		0
-Y9A-	10+00.000	10+21.429	13				13	1		1	1	0	12		12
-DR5-	10+03.600	10+17.457	0				0	13		13	15	15	0		0
-Y10-	10+03.840	10+60.000	43				43	52		52	60	17	0		0
-DR8-	10+03.601	10+30.200	14				14	0		0	0	0	14		14
<b>SUBTOTAL</b>			422				422	563		563	648	252	26		26
-L- (RT)	33+60.000	40+27.465	969				969	1,716		1,716	1,973	1,004	0		0
-DR10-	10+03.600	10+25.570	0				0	4		4	5	5	0		0
-DR14-	10+03.600	10+38.000	4				4	94		94	108	104	0		0
<b>SUBTOTAL</b>			973				973	1,814		1,814	2,086	1,113	0		0
-Y12- (LT)	10+80.000	14+60.000	49				49	259		259	298	249	0		0
-Y12A-	10+03.600	10+71.961	256				256	134		134	154	0	102		102
<b>SUBTOTAL</b>			305				305	393		393	452	249	102		102
-Y12- (RT)	10+80.000	14+60.000	1,013				1,013	302		302	347	0	666		666
<b>SUBTOTAL</b>			1,013				1,013	302		302	347	0	666		666
<b>SUBTOTAL PHASE I</b>			24,156				24,156	17,328		17,328	19,927	5,668	9,897		9,897
<b>WASTE TO BE USED IN LIEU OF BORROW</b>												-5,668	-5,668		-5,668
<b>TOTAL PHASE I</b>			24,156				24,156	17,328		17,328	19,927	0	4,229		4,229
<b>PHASE II</b>															
-L- (LT)	23+00.000	26+80.000	622				622	205		205	236	0	386		386
-L- (RT)	27+40.000	29+40.000	393				393	40		40	46	0	347		347
-Y6-	11+00.180	11+20.000	4				4	21		21	24	20	0		0
<b>SUBTOTAL</b>			1,019				1,019	266		266	306	20	733		733

NOTE: 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.



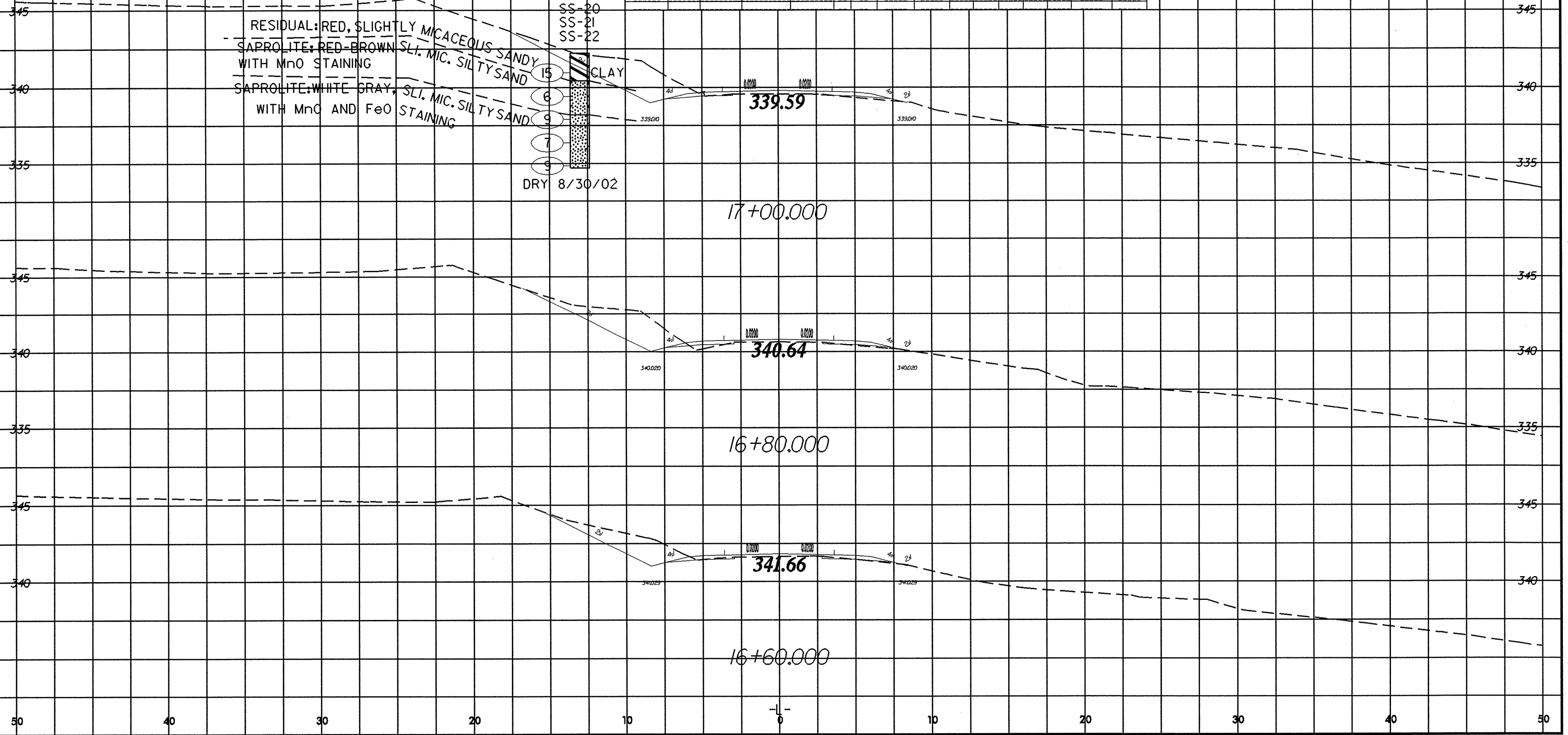
P2722.00



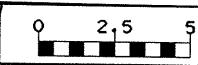
50 40 30 20 10 0 10 20 30 40 50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-20	13ml T	17+00	0.99-1.44	A-7-5 (4)	50	13	28	24	13	35	91	75	48		
SS-21	13ml T	17+00	4.03-4.47	A-2-5 (0)	47	NP	48	34	12	6	89	64	21		
SS-22	13ml T	17+00	7.07-7.52	A-2-4 (0)	40	NP	49	34	11	6	93	67	20		

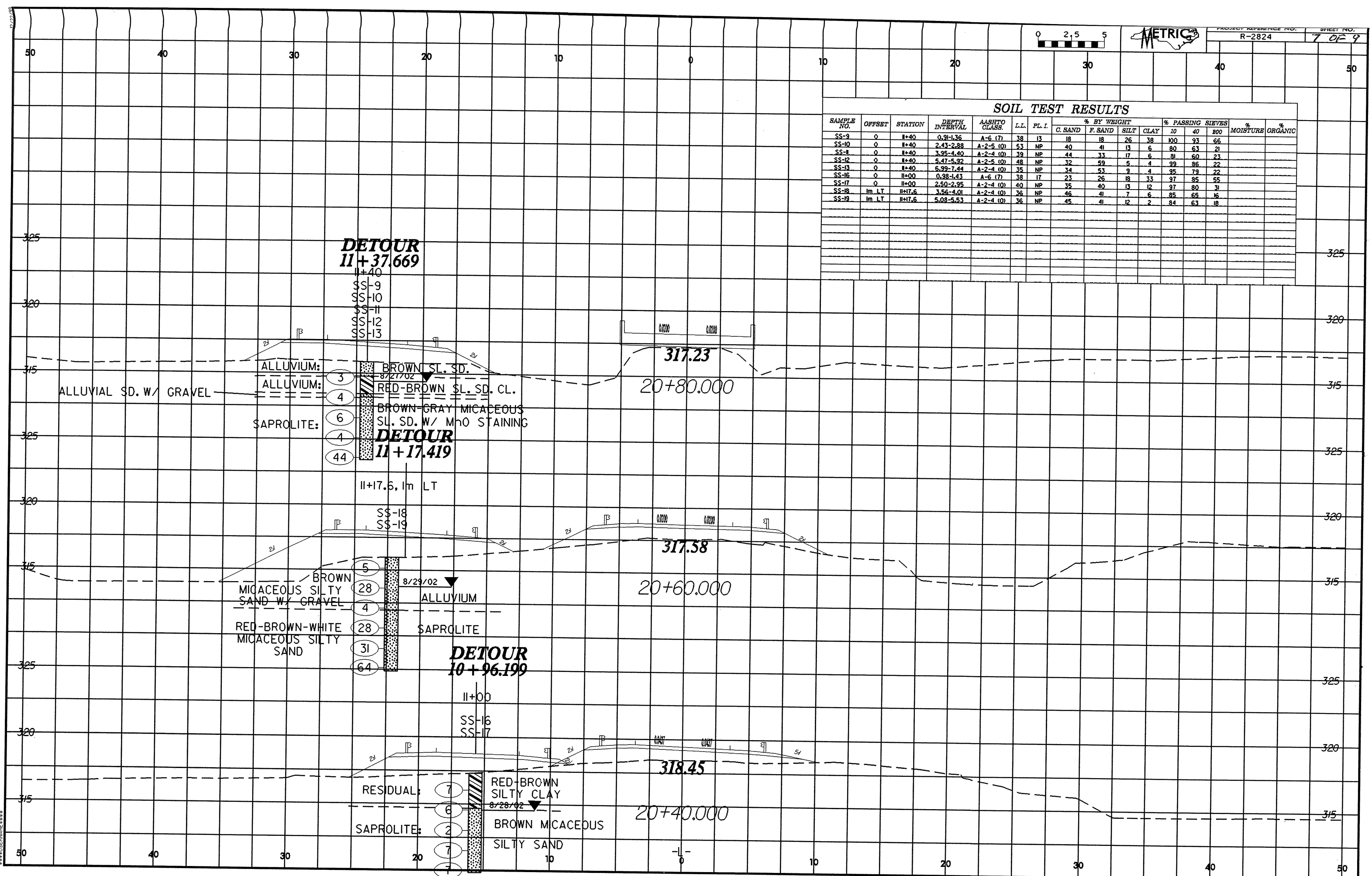


\*\*\*\*\*SYSTEMTIME\*\*\*\*\*  
\*\*\*\*\*LOCALTIME\*\*\*\*\*  
\*\*\*\*\*SOURCE\*\*\*\*\*



### SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-9	0	11+40	0.91-1.36	A-6 (7)	38	13	18	18	26	38	100	93	66		
SS-10	0	11+40	2.43-2.88	A-2-5 (0)	53	NP	40	41	13	6	80	63	21		
SS-11	0	11+40	3.95-4.40	A-2-4 (0)	39	NP	44	33	17	6	81	60	23		
SS-12	0	11+40	5.47-5.92	A-2-5 (0)	48	NP	32	59	5	4	99	86	22		
SS-13	0	11+40	6.99-7.44	A-2-4 (0)	35	NP	34	53	9	4	95	79	22		
SS-16	0	11+00	0.98-1.43	A-6 (7)	38	17	23	26	18	33	97	85	55		
SS-17	0	11+00	2.50-2.95	A-2-4 (0)	40	NP	35	40	13	12	97	80	31		
SS-18	1m LT	11+17.6	3.56-4.01	A-2-4 (0)	36	NP	46	41	7	6	85	65	16		
SS-19	1m LT	11+17.6	5.08-5.53	A-2-4 (0)	36	NP	45	41	12	2	84	63	18		



\*\*\*\*\*SYSTEM TIME\*\*\*\*\*  
 \*\*\*\*\*SUN 11/11/02\*\*\*\*\*  
 \*\*\*\*\*11:11:11\*\*\*\*\*  
 \*\*\*\*\*11/11/02\*\*\*\*\*  
 \*\*\*\*\*11:11:11\*\*\*\*\*





