

PROJECT: 33185.1.1 ID: B-3637

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STATE PROJECT 33185.1.1 I.D. NO. B-3637

F.A. PROJECT BRSTP-801(2)

COUNTY DAVIE

PROJECT DESCRIPTION BRIDGE 37 OVER

I-40 ON NC 801

SITE DESCRIPTION BRIDGE 37 OVER I-40 (Y2)

ON NC 801 (-L-)

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3637	1	15
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33185.1.1	BRSTP-801(2)	P.E.	
		CONST.	

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA, AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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 DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE OR THE 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 THE 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.

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.

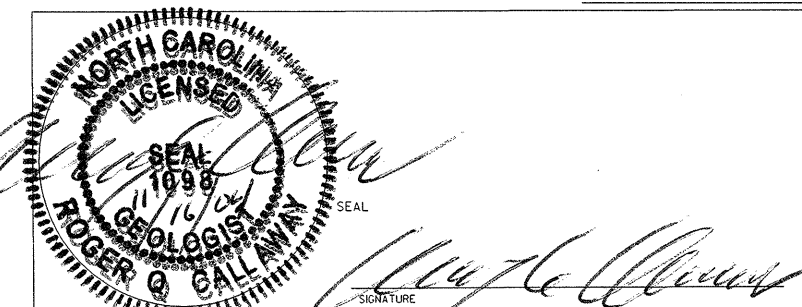
INVESTIGATED BY R.Q. CALLAWAY PERSONNEL C.C. MURRAY

CHECKED BY C.B. LITTLE J.E. ESTEP

SUBMITTED BY C.B. LITTLE J.W. VANDERBURG

DATE JUNE 2004 T.A. MECHUM

DRAWN BY: J.K. McCLURE



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-3637	33185.1.1	2	

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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT 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:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>		<p>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.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>		<p>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 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:</p>		<p>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 IT 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 - 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 4 INCHES 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 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 B.P.F.) 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 LESS THAN 0.1 FOOT PENETRATION WITH 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 (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.</p>																																																																																																																																																																																																																												
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (>5% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (>5% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</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-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> </tr> <tr> <td>GROUP CLASS.</td> <td colspan="7">A-1-a</td> <td colspan="7">A-2-a</td> <td colspan="3">A-3</td> </tr> <tr> <td>SYMBOL</td> <td colspan="7">[Pattern]</td> <td colspan="7">[Pattern]</td> <td colspan="3">[Pattern]</td> </tr> <tr> <td>% PASSING</td> <td colspan="7">50 MX, 30 MX, 15 MX, 10 MX, 7.5 MX, 5 MX, 4 MX, 3 MX</td> <td colspan="7">40 MX, 30 MX, 20 MX, 15 MX, 10 MX, 7.5 MX, 5 MX, 4 MX, 3 MX</td> <td colspan="3">GRANULAR SOILS, SILT-CLAY SOILS, MUCK, PEAT</td> </tr> <tr> <td>LIQUID LIMIT</td> <td colspan="7">6 MX</td> <td colspan="7">N.P., 40, 30, 20, 15, 10, 7.5, 5, 4, 3</td> <td colspan="3">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>PLASTIC INDEX</td> <td colspan="7">0</td> <td colspan="7">0, 4, 8, 12, 16, 20, 25, 30</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GROUP INDEX</td> <td colspan="7">0</td> <td colspan="7">0, 4, 8, 12, 16, 20, 25, 30</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td colspan="2">STONE FRAGS. GRAVEL AND SAND</td> <td colspan="2">FINE SAND</td> <td colspan="3">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="3">CLAYEY SOILS</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GEN. RATING AS A SUBGRADE</td> <td colspan="7">EXCELLENT TO GOOD</td> <td colspan="7">FAIR TO POOR</td> <td colspan="3">FAIR TO POOR, POOR, UNSUITABLE</td> </tr> <tr> <td colspan="18" style="text-align: center;">P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 30</td> </tr> </table>		GENERAL CLASS.	GRANULAR MATERIALS (>5% PASSING #200)							SILT-CLAY MATERIALS (>5% PASSING #200)							ORGANIC MATERIALS			A-1	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-1, A-2	A-3	A-4, A-5	A-6, A-7	GROUP CLASS.	A-1-a							A-2-a							A-3			SYMBOL	[Pattern]							[Pattern]							[Pattern]			% PASSING	50 MX, 30 MX, 15 MX, 10 MX, 7.5 MX, 5 MX, 4 MX, 3 MX							40 MX, 30 MX, 20 MX, 15 MX, 10 MX, 7.5 MX, 5 MX, 4 MX, 3 MX							GRANULAR SOILS, SILT-CLAY SOILS, MUCK, PEAT			LIQUID LIMIT	6 MX							N.P., 40, 30, 20, 15, 10, 7.5, 5, 4, 3							SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC SOILS			PLASTIC INDEX	0							0, 4, 8, 12, 16, 20, 25, 30							HIGHLY ORGANIC SOILS			GROUP INDEX	0							0, 4, 8, 12, 16, 20, 25, 30							HIGHLY ORGANIC SOILS			USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND		SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS		CLAYEY SOILS			HIGHLY ORGANIC SOILS			GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR							FAIR TO POOR, POOR, UNSUITABLE			P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 30																		<p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>		<p style="text-align: center;">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE</p> <p>LIQUID LIMIT LESS THAN 30 LIQUID LIMIT 31-50 LIQUID LIMIT GREATER THAN 50</p>		<p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY</td> </tr> <tr> <td></td> <td></td> <td></td> <td>35% AND ABOVE</td> </tr> </table>		ORGANIC MATERIAL	GRANULAR SOILS	SILT-CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	>10%	>20%	HIGHLY				35% AND ABOVE
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WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET																																																																																																																																																																																																																															
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET																																																																																																																																																																																																																															
CLOSE	0.16 TO 1 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET																																																																																																																																																																																																																															
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET																																																																																																																																																																																																																															
		THINLY LAMINATED	< 0.008 FEET																																																																																																																																																																																																																															
<p style="text-align: center;">COLOR</p> <p>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.</p>		<p style="text-align: center;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>FRIABLE</td> <td>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</td> </tr> <tr> <td>MODERATELY INDURATED</td> <td>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</td> </tr> <tr> <td>INDURATED</td> <td>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</td> </tr> <tr> <td>EXTREMELY INDURATED</td> <td>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</td> </tr> </table>		FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.																																																																																																																																																																																																																							
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<p style="text-align: center;">BENCH MARK: BL-12 PINC 21+53.77 -L- 29+12.65 (21.67 LT.)</p> <p style="text-align: right;">ELEVATION: 795.7'</p>		<p>NOTES:</p>																																																																																																																																																																																																																																



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

November 15, 2004

NCDOT
Geotechnical Unit
12033-D Independence Blvd.
Matthews, NC 28105
STATE PROJECT 33185.1.1
I.D. NUMBER B3637
COUNTY Davie
DESCRIPTION Bridge # 37 over I-40, (-Y2-) on NC 801, (-L-)
SUBJECT: Geotechnical Report – Bridge Foundation Investigation

PROJECT DESCRIPTION

This is a preliminary Bridge Foundation Investigation report in English units, for a design build project that will include raising the grade and widening a two lane bridge to four lanes.

Location:

The site is west of Winston-Salem, just inside Davie County at the intersection of I-40 and NC 801. This investigation was based on the location portrayed on Preliminary Plans.

Proposed Structure (s):

The profile for the roadway appears to be a 5 to 6 feet higher than the existing grade. The current two lane overpass will be replaced by a four lane overpass. The existing and future structures are portrayed with a skew parallel to I-40, approximately 65 degrees.

Drilling:

A CME 550 drill rig with automatic hammer was used on this project. Two borings were drilled to bearing using NW casing with a drag bit in the vicinity of the planned endbent locations. One boring was drilled in the I-40 median.

Bearing and Fixity:

All borings achieved required predicted bearing capacity. Fixity was not an issue.

PHYSIOGRAPHY and GEOLOGY

Physiography

The project is in the Piedmont Physiographic Province near the summit of a ridge that is parallel to and about 1.4 miles west of the Yadkin River. The ridge is at about 805' elevation, and the Yadkin is about 690' elevation.

Geology

Bedrock Geology

The 1985 Geologic Map of North Carolina shows the project area is located within the Pzzm unit, metamorphosed mafic rocks. The conditions encountered near the bridge are

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FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

3/15

more consistent with highly weathered granitic schist.

Variation and Predictability of the Subsurface

The stratigraphy encountered in the borings appears to be systematic, but the direction of most rapid geologic change should be along NC 801. In a short distance foundation conditions could change radically.

FOUNDATION MATERIALS

Soil Section:

All of the borings penetrated a thick interval of residual soil before our bearing capacity guide value was achieved. Standard Penetration Test, (SPT), values were N less than 5 for most of the upper 30 feet on the end bents, and 25' on the interior bent which started a lower elevation. A chart of some of the subsurface conditions appears below.

Bent	Boring	Collar Elevation	Fill Thickness	Interval of Residual Soil Drilled	Elevation of Top of Residual	Depth to Bearing	Elevation at Bearing
EB1	A	785.9	0	64	721.9	54	731.9
EB1	B	787.14	0	79.5	707.64	62	725.14
B2	B	776.22	6	59	717.22	62	714.22
EB2	A	798.13	14	80	718.13	74	724.13
EB2	B	791.32	2	87	704.32	79.5	711.82

Roadway Fill:

Most of the borings were sited below the fill embankment, but EB2A traversed 14' of A-7 fill. Plasticity Index, (P.I.), values of the two fill samples were 41 and 24 with liquid limit values of 74 and 63. The fill probably came from nearby residual cap clay.

Residual Soil:

The residual soil layer in the preliminary bridge borings is shown in the table above and was from 64' to nearly 90' thick. The upper soil in the borings is A-7, changing to A-5 with depth, and eventually A-4.

Weathered Rock:

Weathered rock was found in EB1-B and EB2-B at a depth of 79' and 94' respectively.

Rock:

No rock was encountered.

Hydrology:

The water level was measured at the time of boring, and at 24 hours. The water was at 770 in the EB1 Borings and the median hole. In the EB2 borings, it was a little higher.

CLOSING STATEMENT

The geotechnical foundation investigation, analysis and recommendations are based on plans sealed 02/09/96. If any significant changes are made in the design or location of the proposed structure, the subsurface information and recommendations will have to be reviewed and modified as necessary.

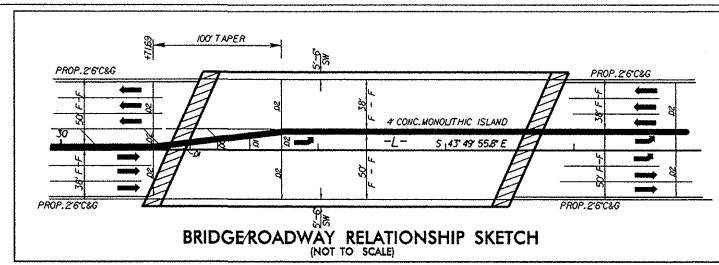
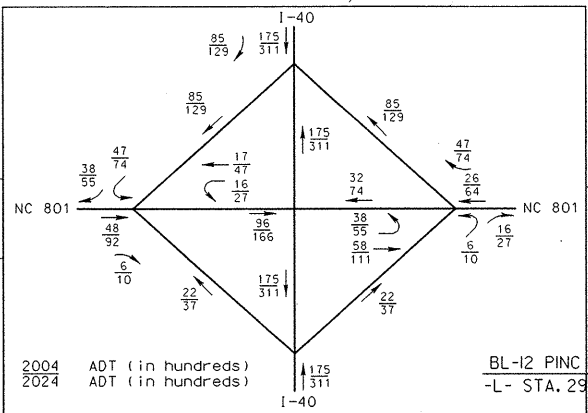
Respectfully Submitted

Roger Q Callaway, L.G.# 1098

Project Geologist

Geotechnical Unit, Matthews Field Office

BURNFAM LIMITED PARTNERSHIP & TALBERT GROUP, LLC
 DB 349 PG 373
 DB 329 PG 116
 PB 7 PG 225



PROJECT REFERENCE NO. B-3637 SHEET NO. 4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

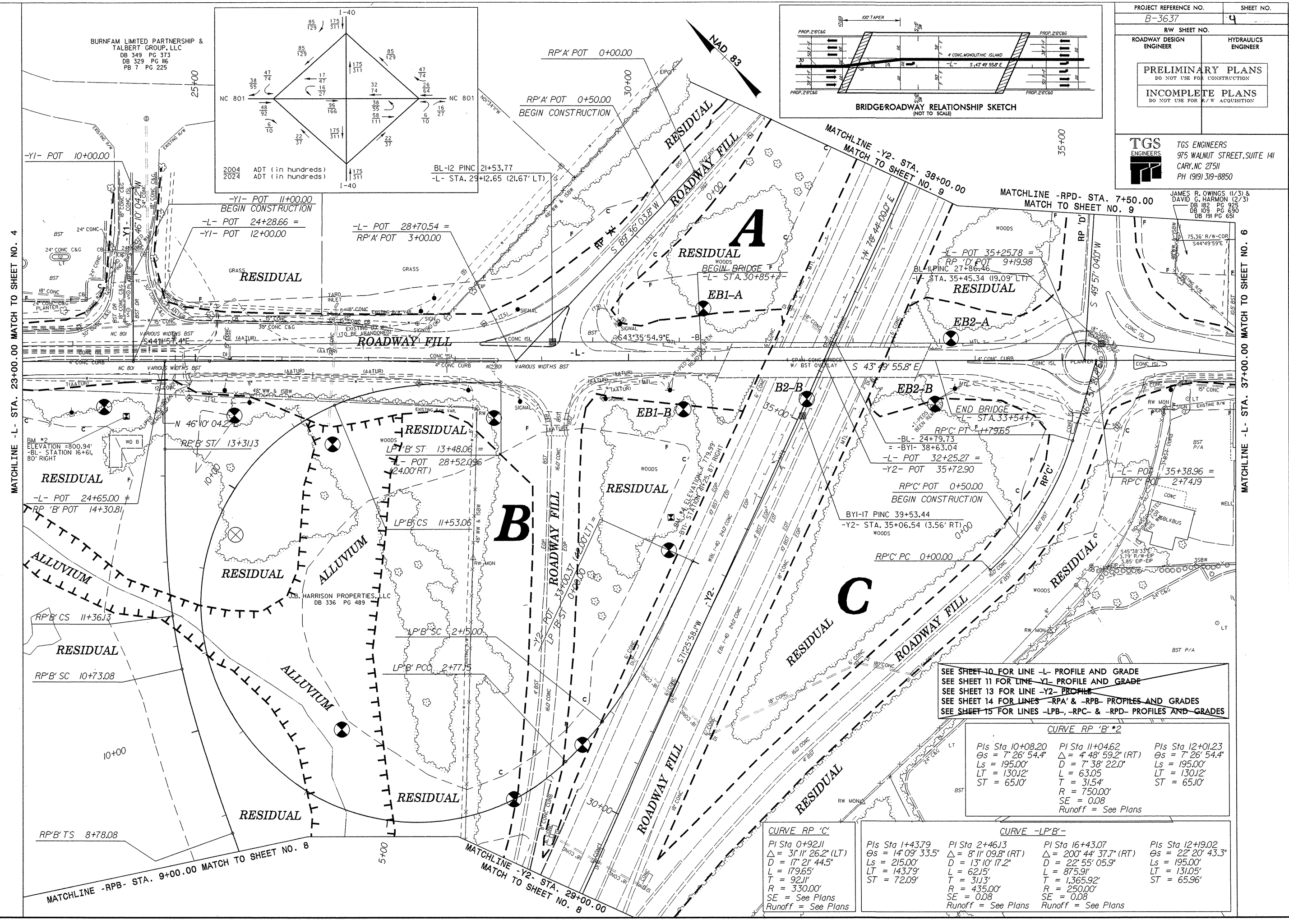
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

TGS ENGINEERS
 TGS ENGINEERS
 975 WALNUT STREET, SUITE 141
 CARY, NC 27511
 PH (919) 319-8850

JAMES R. OWINGS (1/3) & DAVID G. HARMON (2/3)
 DB 182 PG 925
 DB 109 PG 650
 DB 191 PG 651

MATCHLINE -L- STA. 23+00.00 MATCH TO SHEET NO. 4

MATCHLINE -L- STA. 37+00.00 MATCH TO SHEET NO. 6



SEE SHEET 10 FOR LINE -L- PROFILE AND GRADE
 SEE SHEET 11 FOR LINE -Y1- PROFILE AND GRADE
 SEE SHEET 13 FOR LINE -Y2- PROFILE
 SEE SHEET 14 FOR LINES -RPA' & -RPB- PROFILES AND GRADES
 SEE SHEET 15 FOR LINES -LPB-, -RPC- & -RPD- PROFILES AND GRADES

CURVE RP 'B' *2

Pls Sta 10+08.20	PI Sta 11+04.62	Pls Sta 12+01.23
Δs = 7' 26' 54.4"	Δ = 4' 48' 59.2" (RT)	Δs = 7' 26' 54.4"
Ls = 195.00'	D = 7' 38' 22.0"	Ls = 195.00'
LT = 130.12'	L = 63.05	LT = 130.12'
ST = 65.10'	T = 31.54'	ST = 65.10'
	R = 750.00'	
	SE = 0.08	
	Runoff = See Plans	

CURVE RP 'C'

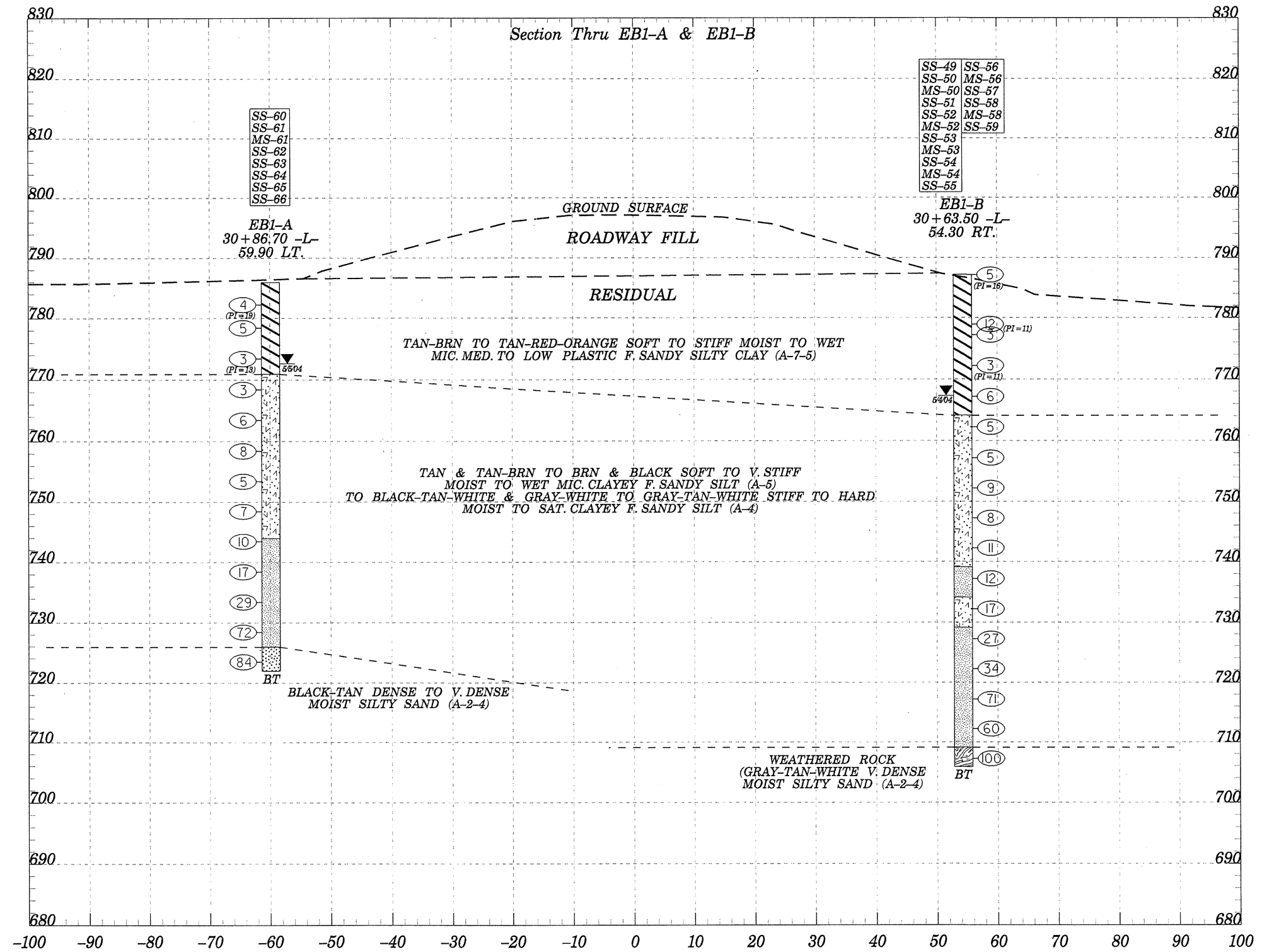
PI Sta 0+92.11
Δ = 31' 11' 26.2" (LT)
D = 17' 2' 44.5"
L = 179.65'
T = 92.11'
R = 330.00'
SE = See Plans
Runoff = See Plans

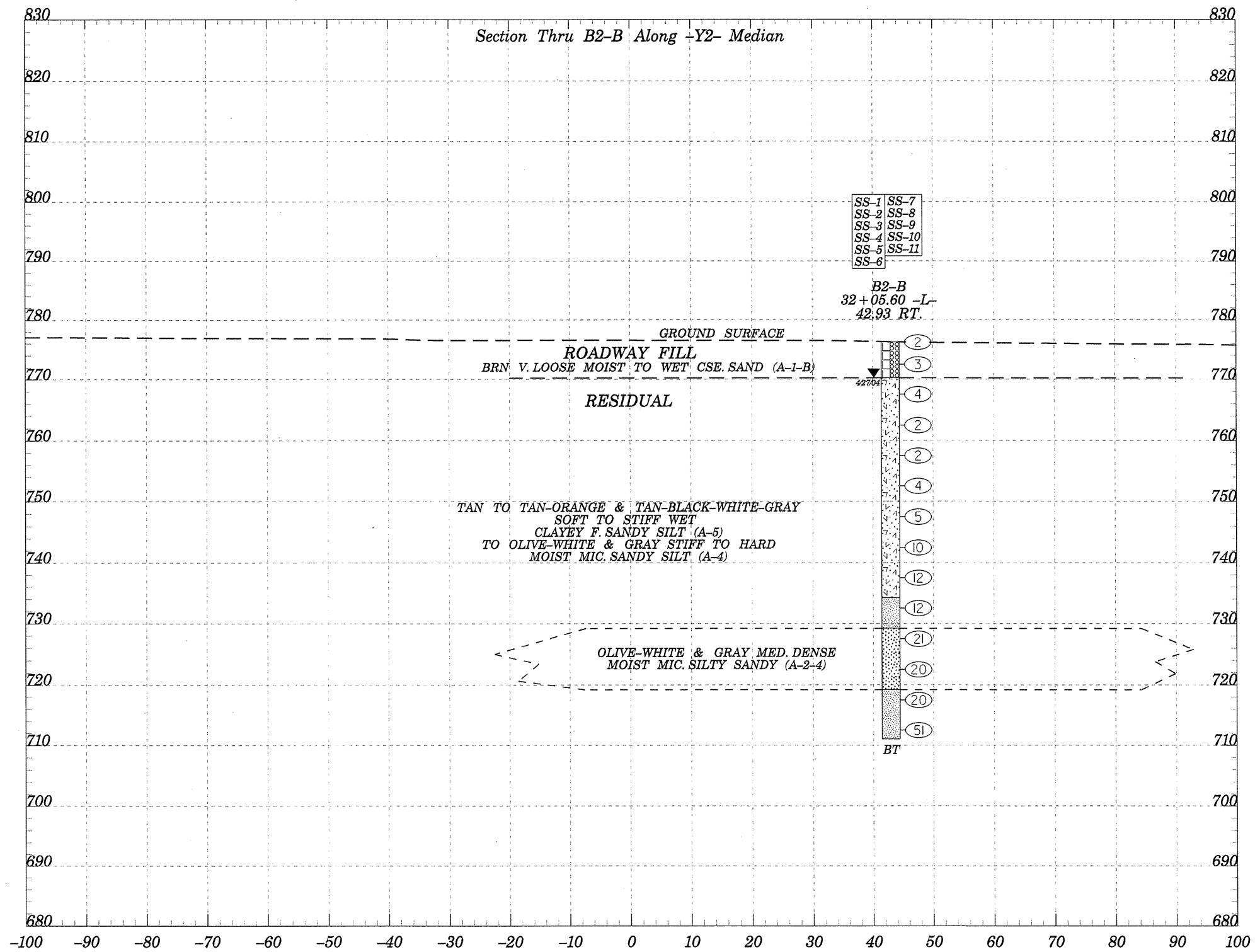
CURVE -LP'B'-

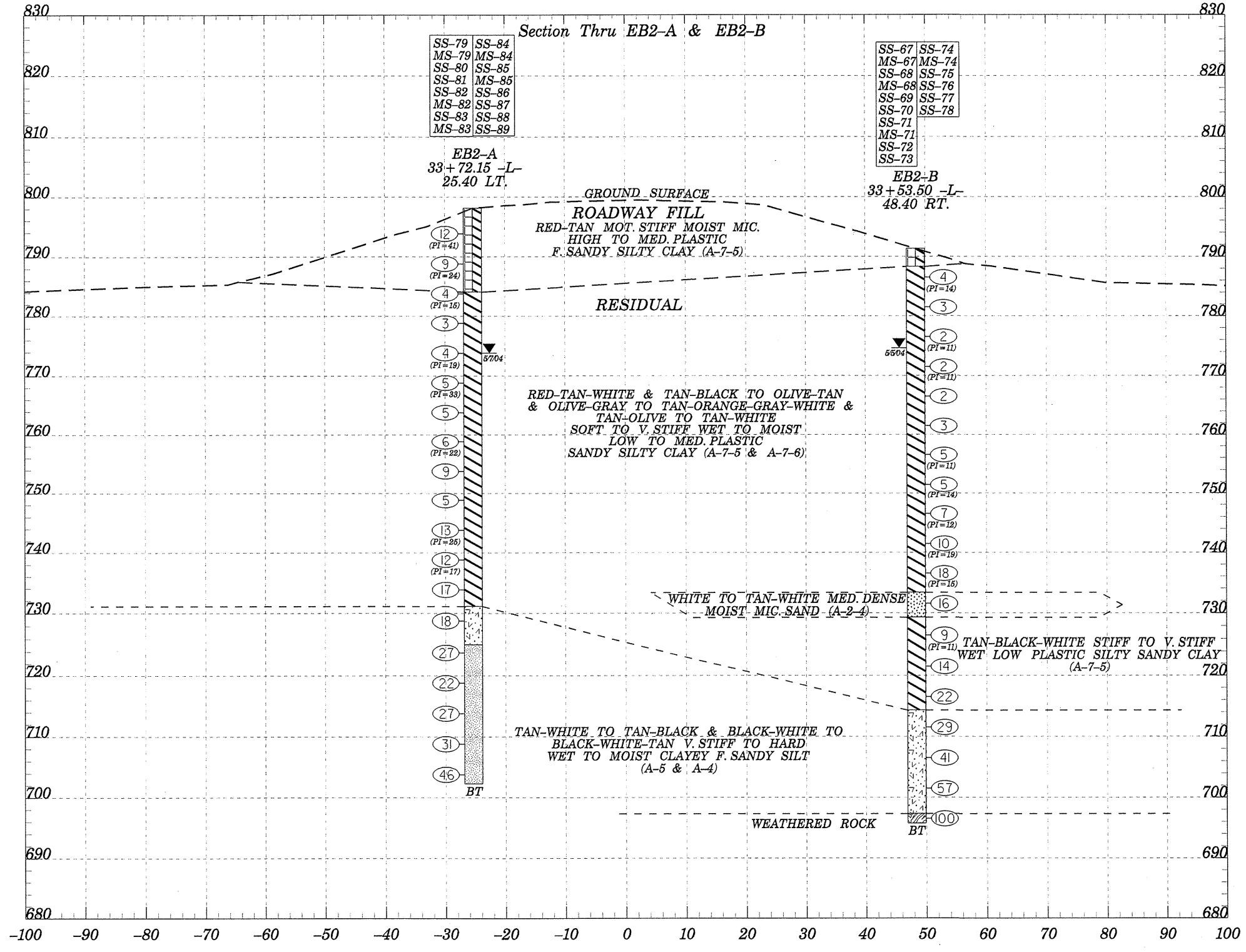
Pls Sta 1+43.79	PI Sta 2+46.13	PI Sta 16+43.07	Pls Sta 12+19.02
Δs = 14' 09' 33.5"	Δ = 8' 11' 09.8" (RT)	Δ = 200' 44' 37.7" (RT)	Δs = 22' 20' 43.3"
Ls = 215.00'	D = 13' 10' 17.2"	D = 22' 55' 05.9"	Ls = 195.00'
LT = 143.79'	L = 62.15'	L = 875.91'	LT = 131.05'
ST = 72.09'	T = 31.13'	T = 1,365.92'	ST = 65.96'
	R = 435.00'	R = 250.00'	
	SE = 0.08	SE = 0.08	
	Runoff = See Plans	Runoff = See Plans	

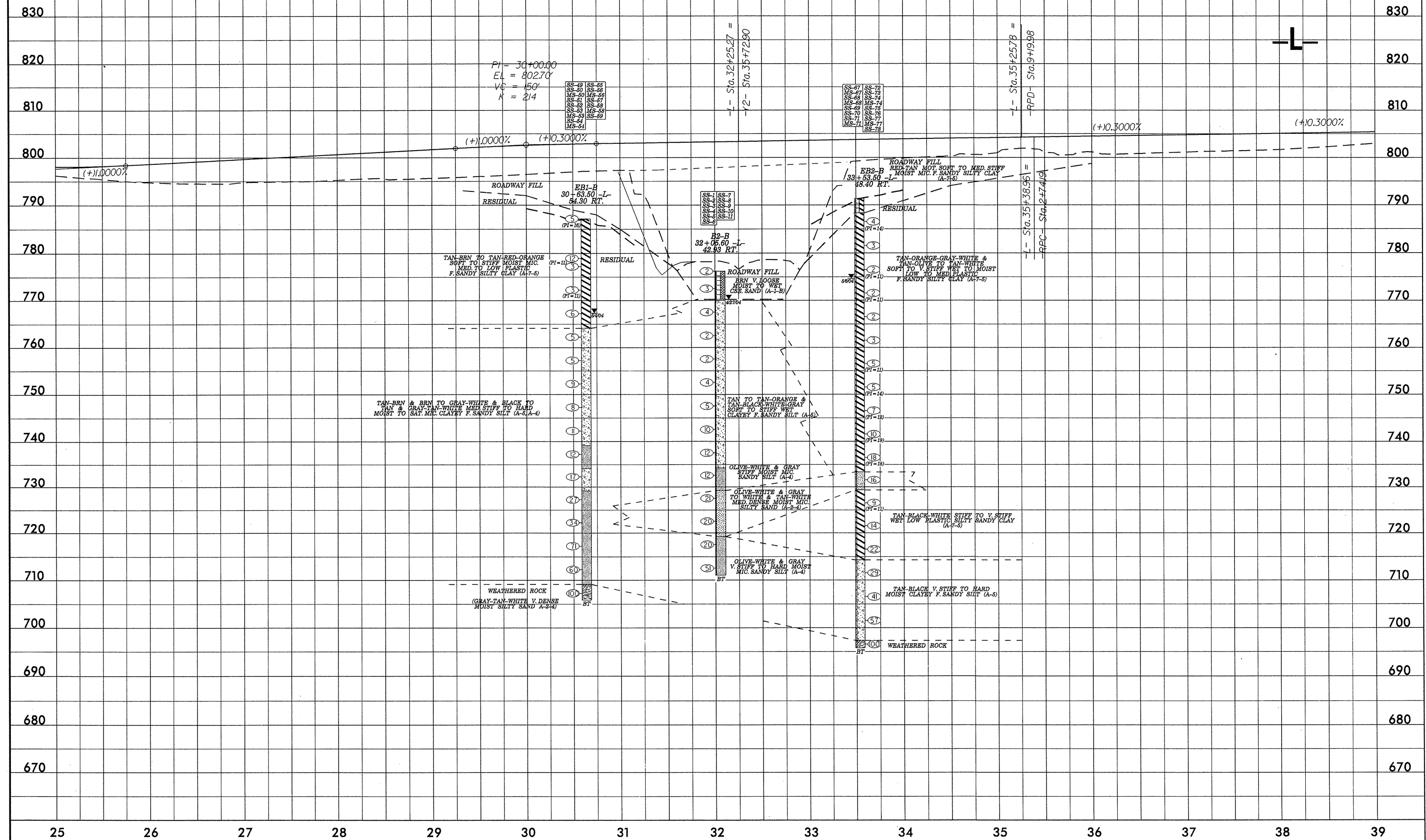
MATCHLINE -RPB- STA. 9+00.00 MATCH TO SHEET NO. 8

MATCHLINE -Y2- STA. 29+00.00
 MATCH TO SHEET NO. 8









NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG




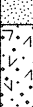

SHEET 1 OF 1

9/5

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MECHUM T.A.								
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER							
BORING NO. EBI-A		BORING LOCATION 30+86.70		OFFSET -59.90		ALIGNMENT L								
COLLAR ELEVATION 785.90		NORTHING 824727.85		EASTING 1573532.62		0 HR.								
TOTAL DEPTH 64.0		DRILL MACHINE CME-550		DRILL METHOD NWCAS/TRI-CONE		HAMMER TYPE AUTOMATIC								
START DATE 5/4/04		COMPLETION DATE 5/4/04		SURFACE WATER DEPTH		DEPTH TO ROCK								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	1.0'	1.5'		0	25	50	75					100
785.9														
785.0	3.7	2	1	3	I	X-4								(RESIDUAL) TAN-BRN SOFT TO MED. STIFF MOIST TO WET MIC. MED.-LOW PLASTIC F. SANDY SILTY CLAY (A-7-5) (WEATHERED GNEISS)
780.0	7.5	1	2	3	I	X-5								
775.0	12.5	1	2	1	I	X-3								
770.0	17.5	2	1	2	I	X-3								TAN TO TAN-BRN SOFT TO STIFF MOIST TO WET MIC. CLAYEY F. SANDY SILT (A-5)
765.0	22.5	3	2	4	I	X-6								
760.0	27.5	2	3	5	I	X-8								
755.0	32.5	2	2	3	I	X-5								
750.0	37.5	2	3	4	I	X-7								
745.0	42.5	2	3	7	I	X-10								
740.0	47.5	5	7	10	I	X-17								BLACK-TAN-WHITE STIFF TO HARD MOIST TO WET F. SANDY SILT (A-4)
735.0	52.5	8	12	17	I	X-29								
730.0	57.5	15	28	44	I	X-72								
725.0	62.5	30	37	47	I	X-84								BLACK-TAN DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
720.0														
715.0														BORING TERMINATED AT ELEV. 721.93 IN V. DENSE SILTY SAND (A-2-4)


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 1 OF 2

PROJECT NO. 33185.1.1	ID. B-3637	COUNTY DAVIE	GEOLOGIST MECHUM T.A.										
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801				GROUND WATER									
BORING NO. EBI-B	BORING LOCATION 30+63.50	OFFSET 54.30	ALIGNMENT L	0 HR.									
COLLAR ELEVATION 787.14	NORTHING 824665.49	EASTING 1573434.17	24 HR. 19.8										
TOTAL DEPTH 81.3	DRILL MACHINE CME-550X	DRILL METHOD NWCAS/TRI-CONE	HAMMER TYPE AUTOMATIC										
START DATE 5/4/04	COMPLETION DATE 5/4/04	SURFACE WATER DEPTH	DEPTH TO ROCK										
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION
		0.5'	0.5'	0.5'		0	25	50	75				
787.14	0	2	2	3	1	X 5					SS-49	M	 (RESIDUAL) TAN-BRN TO TAN-RED-ORANGE SOFT TO STIFF MOIST MIC. MED.-LOW PLASTIC F. SANDY SILTY CLAY (A-7-5)
785.0													
780.0	8.2	3	5	7	1	X 12					SS-50	M	
	9.9	1	1	2	1	X 3					MS-50	41.9	
775.0													
	14.9	3	1	2	1	X 3					SS-51	M	
770.0													
	19.9	1	2	4	1	X 6							
765.0													
	24.9	1	2	3	1	X 5					SS-52	M	
760.0											MS-52	59.5	 TAN-BRN TO BRN MED. STIFF TO STIFF MOIST MIC. CLAYEY F. SANDY SILT (A-5)
	29.9	2	2	3	1	X 5							
755.0													
	34.9	1	4	5	1	X 9					SS-53	M	
750.0											MS-53	55.2	
	39.9	2	3	5	1	X 8							
745.0													
	44.9	2	4	7	1	X 11					SS-54	M	
740.0											MS-54	49.6	
	49.9	4	5	7	1	X 12					SS-55	SAT	 GRAY-WHITE STIFF MOIST TO SAT. CLAYEY F. SANDY SILT (A-4)
735.0													
	54.9	4	6	11	1	X 17					SS-56	M	
730.0											MS-56	36.1	 BLACK TO TAN V. STIFF SAT. TO MOIST MIC. F. SANDY SILT (A-5)
	59.9	5	10	17	1	X 27					SS-57	M	
725.0													
	64.9	9	16	18	1	X 34							
720.0													
	69.9	13	26	45	1	X 71					SS-58	M	
715.0											MS-58	19.0	 GRAY-TAN-WHITE V. STIFF TO HARD MOIST F. SANDY SILT (A-4)
	74.9	12	20	40	1	X 60							

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 2 OF 2

PROJECT NO. 33185.1.1	ID. B-3637	COUNTY DAVIE	GEOLOGIST MECHUM T.A.										
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801				GROUND WATER									
BORING NO. EBI-B	BORING LOCATION 30+63.50	OFFSET 54.30	ALIGNMENT L	0 HR.									
COLLAR ELEVATION 787.14	NORTHING 824665.49	EASTING 1573434.17	24 HR. 19.8										
TOTAL DEPTH 81.3	DRILL MACHINE CME-550X	DRILL METHOD NWCAS/TRI-CONE	HAMMER TYPE AUTOMATIC										
START DATE 5/4/04	COMPLETION DATE 5/4/04	SURFACE WATER DEPTH	DEPTH TO ROCK										
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION
		0.5'	0.5'	0.5'		0	25	50	75				
710.0													
	79.9	32	48	52	0.9						SS-59	M	 WEATHERED ROCK (GRAY-TAN-WHITE V. DENSE MOIST SILTY SAND A-2-4)
705.0													
700.0													
695.0													
690.0													
685.0													
680.0													
675.0													
670.0													
665.0													
660.0													
655.0													
650.0													
645.0													
640.0													
635.0													
													TERMINATED BORING AT ELEV. 705.84 IN WEATHERED ROCK

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

SHEET 1 OF 1

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MURRAY C.C.								
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER							
BORING NO. B2-B		BORING LOCATION 32+05.64		OFFSET 42.93		ALIGNMENT L								
COLLAR ELEVATION 776.22		NORTHING 824570.86		EASTING 1573540.78		0 HR.								
TOTAL DEPTH 65.2		DRILL MACHINE CME-550X		DRILL METHOD H.S. AUGERS		HAMMER TYPE AUTOMATIC								
START DATE 4/27/04		COMPLETION DATE 4/27/04		SURFACE WATER DEPTH		DEPTH TO ROCK								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			BLOWS PER FOOT					SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'	0	25	50	75	100					
776.22	0	1	1	1										
775.0	3.7	1	2	1	X 2									(ROADWAY FILL) BRN V. LOOSE MOIST TO WET CSE. SAND (A-1-B)
770.0	8.7	1	2	2	X 3									(RESIDUAL) TAN TO TAN-ORANGE & TAN-BLACK-WHITE-GRAY SOFT TO STIFF WET CLAYEY F. SANDY SILT (A-5)
765.0	13.7	1	1	1	X 4									
760.0	18.7	1	1	1	X 2									
755.0	23.7	2	2	2	X 2									
750.0	28.7	1	2	3	X 4									
745.0	33.7	2	4	6	X 5									
740.0	38.7	3	4	8	X 10									
735.0	43.7	5	5	7	X 12									OLIVE-WHITE & GRAY STIFF MOIST MIC. SANDY SILT (A-4)
730.0	48.7	4	8	13	X 21									OLIVE-WHITE & GRAY MED. DENSE MOIST MIC. SILTY SAND (A-2-4)
725.0	53.7	5	6	14	X 20									
720.0	58.7	5	8	12	X 20									OLIVE-WHITE & GRAY V. STIFF TO HARD MOIST MIC. SANDY SILT (A-4)
715.0	63.7	15	22	29	X 51									
710.0														NOTE: COLLAR ELEVATION FOR THIS BORING WAS OBTAINED FROM .DTM FILE
705.0														BORING TERMINATED AT ELEV. 711.02 IN HARD SANDY SILT (A-4)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 1 OF 2

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MECHUM T.A.							
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER						
BORING NO. EB2-A		BORING LOCATION 33+72.15		OFFSET -25.40		ALIGNMENT L							
COLLAR ELEVATION 798.13		NORTHING 824498.04		EASTING 1573705.42		24 HR. 24.3							
TOTAL DEPTH 95.8		DRILL MACHINE CME-550X		DRILL METHOD NWCAS/TRI-CONE		HAMMER TYPE AUTOMATIC							
START DATE 5/6/04		COMPLETION DATE 5/7/04		SURFACE WATER DEPTH		DEPTH TO ROCK							
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION
		0.5'	0.5'	0.5'		0	25	50	75				
798.1													(ROADWAY FILL) RED-TAN MOT. STIFF MOIST MIC. HIGH-MED. PLASTIC F. SANDY SILTY CLAY (A-7-5)
795.0	4.3	3	5	7	I	X12				SS-79 MS-79	M	34.3	
790.0	9.3	3	4	5	I	X9				SS-80	M		
785.0	14.3	1	2	2	I	X4				SS-81	W		(RESIDUAL) RED-TAN-WHITE TO TAN-BLACK, OLIVE-TAN & OLIVE-GRAY SOFT TO V. STIFF WET MIC. LOW-HIGH PLASTIC SANDY SILTY CLAY (A-7-5 & A-7-6)
780.0	19.3	Ø	1	2	I	X3					W		
775.0	24.3	1	2	2	I	X4				SS-82 MS-82	▼	66.1	
770.0	29.3	Ø	3	2	I	X5				SS-83 MS-83	W	72.5	
765.0	34.3	2	2	3	I	X5							
760.0	39.3	2	3	3	I	X6				SS-84 MS-84	W	60.1	
755.0	44.3	3	4	5	I	X9							
750.0	49.3	1	2	3	I	X5							
745.0	54.3	4	6	7	I	X13				SS-85 MS-85	W	49.5	
740.0	59.3	4	6	6	I	X12				SS-86	W		
735.0	64.3	5	6	11	I	X17							
730.0	69.3	6	8	10	I	X18				SS-87	W		TAN-WHITE V. STIFF WET CLAYEY F. SANDY SILT (A-5)
725.0	74.3	6	10	17	I	X27				SS-88	M		BLACK-WHITE TO BLACK-WHITE-TAN V. STIFF TO HARD MOIST CLAYEY SANDY SILT (A-4)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 2 OF 2

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MECHUM T.A.								
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER							
BORING NO. EB2-A		BORING LOCATION 33+72		OFFSET -25		ALIGNMENT L								
COLLAR ELEVATION 798.1		NORTHING 824498.04		EASTING 1573705.42		24 HR. 24.3								
TOTAL DEPTH 95.8		DRILL MACHINE CME-550X		DRILL METHOD NWCAS/TRI-CONE		HAMMER TYPE AUTOMATIC								
START DATE 5/6/04		COMPLETION DATE 5/7/04		SURFACE WATER DEPTH		DEPTH TO ROCK								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75					100
720.0	79.3	5	8	14	I	X22								BLACK-WHITE TO BLACK-WHITE-TAN V. STIFF TO HARD MOIST CLAYEY SANDY SILT (A-4)
715.0	84.3	6	10	17	I	X27								
710.0	89.3	6	12	19	I	X31								
705.0	94.3	10	18	28	I	X46				SS-89	M			
700.0														
695.0														
690.0														
685.0														
680.0														
675.0														
670.0														
665.0														
660.0														
655.0														
650.0														
645.0														TERMINATED BORING AT ELEV. 702.33 IN HARD CLAYEY F. SANDY SILT (A-4)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 1 OF 2

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MECHUM T.A.								
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER							
BORING NO. EB2-B		BORING LOCATION 33+53.50		OFFSET 48.40		ALIGNMENT L								
COLLAR ELEVATION 791.32		NORTHING 824460.38		EASTING 1573639.26		24 HR. 16.7								
TOTAL DEPTH 95.6		DRILL MACHINE CME-550X		DRILL METHOD NWCAS/TRI-CONE		HAMMER TYPE AUTOMATIC								
START DATE 5/5/04		COMPLETION DATE 5/6/04		SURFACE WATER DEPTH		DEPTH TO ROCK								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	1.0'	1.5'		0	25	50	75					100
791.32														(ROADWAY FILL) RED-TAN MOT. SOFT TO MED. STIFF MOIST MIC. F. SANDY SILTY CLAY (A-7-5)
790.0	4.8	2	2	2	1	X4				SS-67 MS-67	W	45.3		(RESIDUAL) TAN-ORANGE-GRAY-WHITE & TAN-OLIVE TO TAN-WHITE SOFT TO V. STIFF WET TO MOIST LOW-MED. PLASTIC F. SANDY SILTY CLAY (A-7-5)
785.0	9.8	0	1	2	1	X3								
780.0	14.8	2	1	1	1	X2				SS-68 MS-68	W	57.3		
775.0	19.8	0	1	1	1	X2				SS-69	W			
770.0	24.8	0	1	1	1	X2					W			
765.0	29.8	0	1	2	1	X3					W			
760.0	34.8	1	2	3	1	X5				SS-70	W			
755.0	39.8	2	2	3	1	X5				SS-71 MS-71	W	64.8		
750.0	44.8	3	3	4	1	X7				SS-72	W			
745.0	49.8	2	3	7	1	X10				SS-73	W			
740.0	54.8	5	7	11	1	X18				SS-74 MS-74	M	31.0		
735.0	59.8	16	8	8	1	X16				SS-75	M			WHITE TO TAN-WHITE MED. DENSE MOIST MIC. SAND (A-2-4)
730.0	64.8	2	4	5	1	X9				SS-76	W			TAN-BLACK-WHITE STIFF TO V. STIFF WET LOW PLASTIC SILTY SANDY CLAY (A-7-5)
725.0	69.8	3	5	9	1	X14					W			
720.0	74.8	4	8	14	1	X22					W			

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

13/15
 SHEET 2 OF 2

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST MECHUM T.A.								
SITE DESCRIPTION BRIDGE 37 OVER I-40 ON NC 801							GROUND WATER							
BORING NO. EB2-B		BORING LOCATION 33+53.50		OFFSET 48.40		ALIGNMENT L								
COLLAR ELEVATION 791.32		NORTHING 824460.38		EASTING 1573639.26		24 HR. 16.7								
TOTAL DEPTH 95.6		DRILL MACHINE CME-550X		DRILL METHOD NWCAS/TRI-CONE		HAMMER TYPE AUTOMATIC								
START DATE 5/5/04		COMPLETION DATE 5/6/04		SURFACE WATER DEPTH		DEPTH TO ROCK								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	1.0'	1.5'		0	25	50	75					100
715.0														
710.0	79.8	7	10	19	1	X29				SS-77 MS-77	M	31.1		TAN-BLACK V. STIFF TO HARD MOIST CLAYEY F. SANDY SILT (A-5)
705.0	84.8	11	16	25	1	X41				SS-78	M			
700.0	89.8	16	23	34	1	X57								
695.0	94.8	43	57		0.8									WEATHERED ROCK
690.0														
685.0														
680.0														
675.0														
670.0														
665.0														
660.0														
655.0														
650.0														
645.0														
640.0														TERMINATED BORING AT ELEV. 695.72 IN WEATHERED ROCK

TEST RESULTS

PROJECT: 33185.1.1 B-3637

COUNTY: DAVIE

SITE DESCRIPTION: BRIDGE NO. 37 OVER I-40 (-Y2-) ON NC 801 (-L-)

SOIL SAMPLE RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	UNIT WT. (d)	VOID RATIO
								C. SAND	F. SAND	SILT	CLAY	10	40	200				
EB2-A																		
SS-79	25.40 LT	33+72.15	4.30-5.80	A-7-5(40)	12	74	41	3.9	14.9	25.1	56.0	100	99	85				
MS-79															34.3			
SS-80			9.30-10.80	A-7-5(25)	9	63	24	2.1	19.9	32.4	45.6	100	100	84				
SS-81			14.30-15.80	A-7-5(14)	4	57	15	3.5	31.1	36.3	29.0	100	99	75				
SS-82			24.80-25.80	A-7-5(12)	4	54	19	20.5	19.3	33.2	27.0	94	80	63				
MS-82															66.1			
SS-83			29.30-30.80	A-7-5(31)	5	66	33	2.3	24.9	45.9	27.0	100	99	83				
MS-83															72.5			
SS-84			39.30-40.80	A-7-5(15)	6	57	22	4.6	41.1	41.9	12.4	100	98	66				
MS-84															60.1			
SS-85			54.30-55.80	A-7-5(15)	13	60	25	21.0	23.9	38.6	16.6	100	86	62				
MS-85															49.5			
SS-86			59.30-60.80	A-7-6(7)	12	41	17	23.9	24.3	33.2	18.7	94	78	55				
SS-87			69.30-70.80	A-5(5)	18	47	7	15.1	31.5	40.9	12.4	100	92	60				
SS-88			74.30-75.80	A-4(0)	27	37	NP	33.0	33.0	21.6	12.4	100	79	39				
SS-89			94.30-95.80	A-4(0)	49	26	NP	26.3	44.4	18.9	10.4	100	89	38				
EB2-B																		
SS-67	48.40 RT	33+53.5	4.80-6.30	A-7-5(14)	4	54	14	3.2	27.2	37.2	32.4	100	98	79				
MS-67															45.3			
SS-68			14.80-16.30	A-7-5(11)	2	53	11	3.2	33.8	36.6	26.3	100	99	73				
MS-68															57.3			
SS-69			19.80-21.30	A-7-5(13)	2	53	11	3.9	25.3	44.5	26.3	100	98	80				
SS-70			34.80-36.30	A-7-5(7)	5	52	11	13.0	32.2	36.6	18.2	96	90	62				
SS-71			39.80-41.30	A-7-5(13)	5	53	14	6.9	25.1	41.6	26.3	100	97	76				
MS-71															64.8			
SS-72			44.80-46.30	A-7-5(10)	7	52	12	9.3	28.8	43.7	18.2	100	97	70				
SS-73			49.80-51.30	A-7-5(16)	10	53	19	6.9	25.1	45.7	22.3	98	95	74				
SS-74			54.80-56.30	A-7-5(4)	18	45	15	15.4	31.8	34.5	18.2	87	80	51				
MS-74															31.0			
SS-75			59.80-61.30	A-2-4(0)	16	36	NP	42.4	43.2	8.4	6.1	94	75	19				
SS-76			64.80-66.30	A-7-5(4)	9	49	11	21.5	37.7	34.8	6.1	100	90	50				
SS-77			79.80-81.30	A-5(3)	29	41	8	10.5	46.2	33.1	10.1	100	97	55				
MS-77															31.1			
SS-78			84.80-86.30	A-5(4)	41	36	9	8.5	48.4	32.9	10.1	100	98	56				

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33185.1.1 (B-3637)	1	5

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33185.1.1 F.A. PROJ. BRSTP-801(2)
COUNTY DAVIE
PROJECT DESCRIPTION BRIDGE NO. 37 OVER I-40 ON NC 801

SITE DESCRIPTION RETAINING WALL AT INTERSECTION OF
SR 1452 (YADKIN VALLEY RD.) AND NC 801

CONTENTS

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

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.

PERSONNEL

C. C. MURRAY

J. E. ESTEP

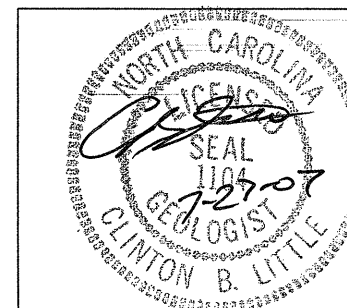
J. W. VANDERBURG

INVESTIGATED BY C. B. LITTLE

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

DATE JULY 2007



PROJECT: 33185.1.1 ID: B-3637

DRAWN BY: C. E. BURRIS

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

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

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: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH 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. 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 STRATA RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOOD - 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 IMPERVIUS 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 (SCREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM 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 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"> <tr> <th colspan="2">GENERAL CLASS.</th> <th colspan="4">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="4">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</th> <th>A-3</th> <th>A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</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>A-1-a</td> <td>A-1-b</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td>A-7-5</td> <td>A-7-6</td> <td></td> <td></td> <td></td> </tr> </table>		GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)				SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		GROUP CLASS.	SYMBOL	A-1	A-3	A-2	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7			A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-7-5	A-7-6				MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)									
GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)				SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS																																									
GROUP CLASS.	SYMBOL	A-1	A-3	A-2	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7																																							
		A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-7-5	A-7-6																																										
COMPRESSIONIBILITY		PERCENTAGE OF MATERIAL		GROUND WATER																																															
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DESCRIPTIONS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		BENCH MARK: ELEVATION: _____ FT.		RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		NOTES:																																													

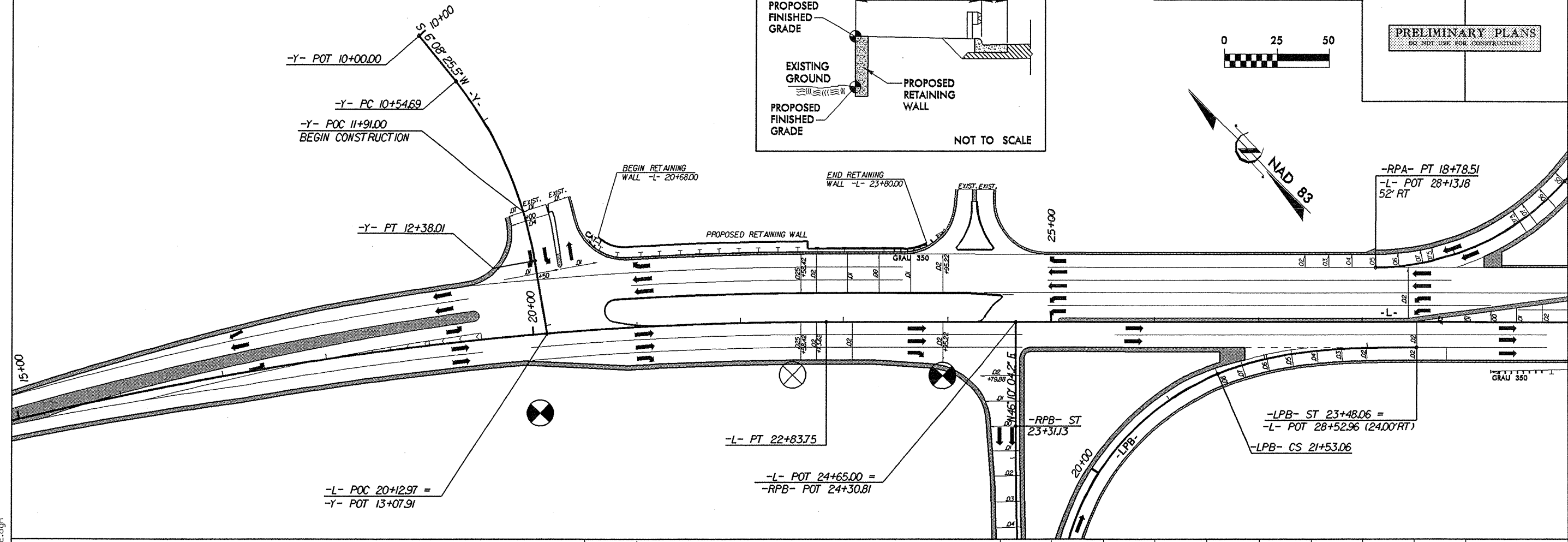
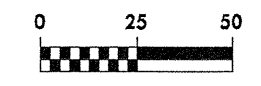
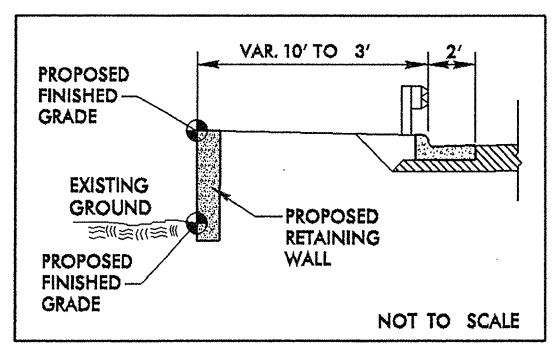
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DETAIL OF RETAINING WALL ENVELOPE

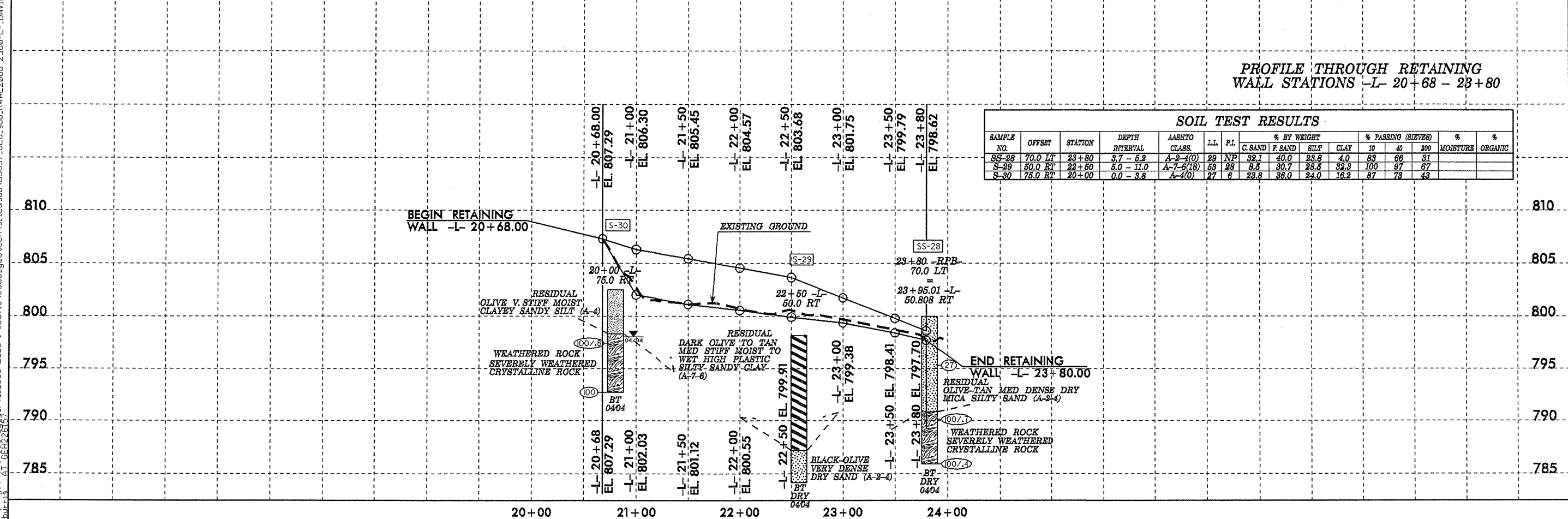
TGS
TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850

PROJECT REFERENCE NO.	SHEET NO.
B-3637	3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE THROUGH RETAINING WALL STATIONS -L- 20+68 - 23+80

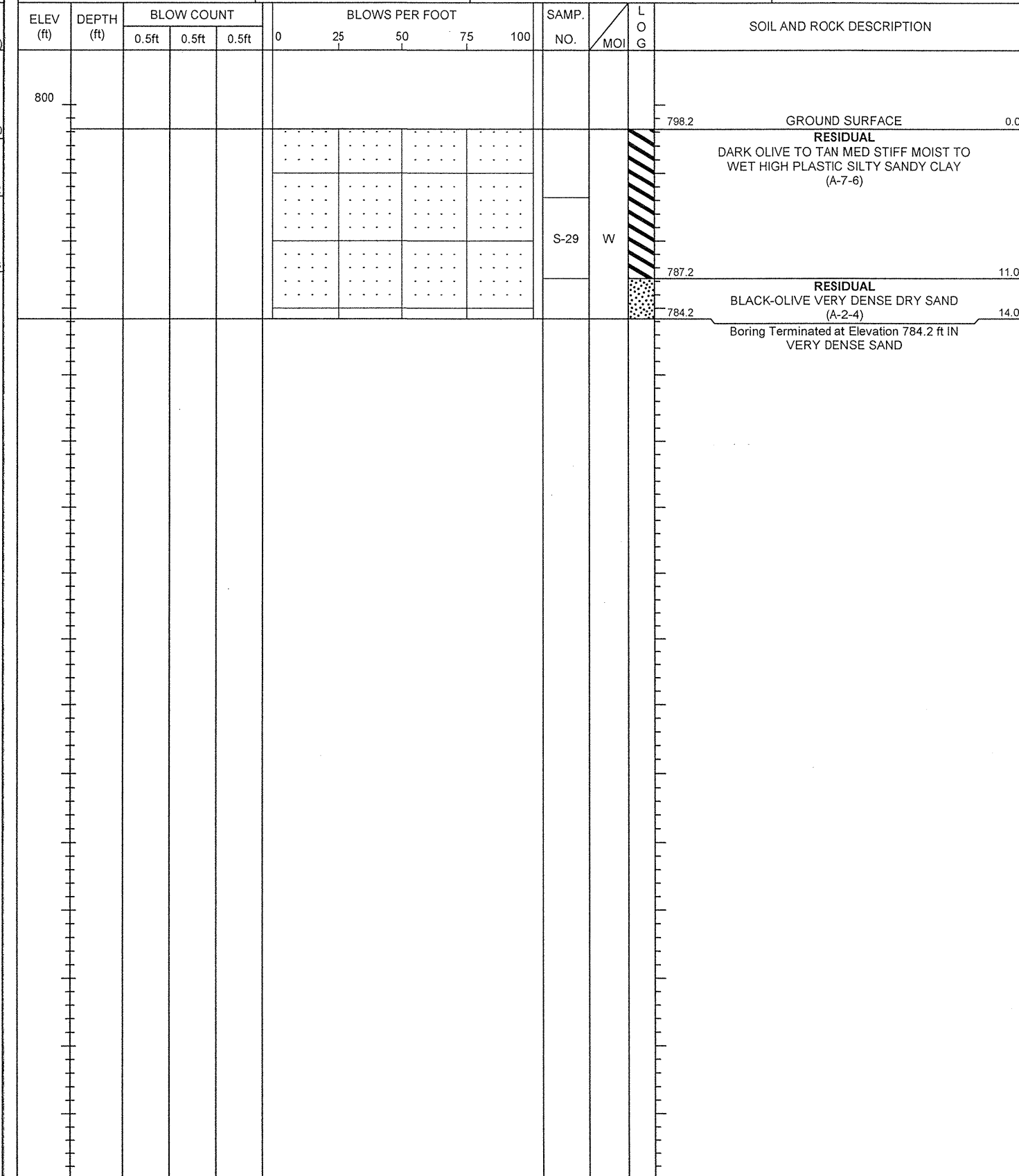
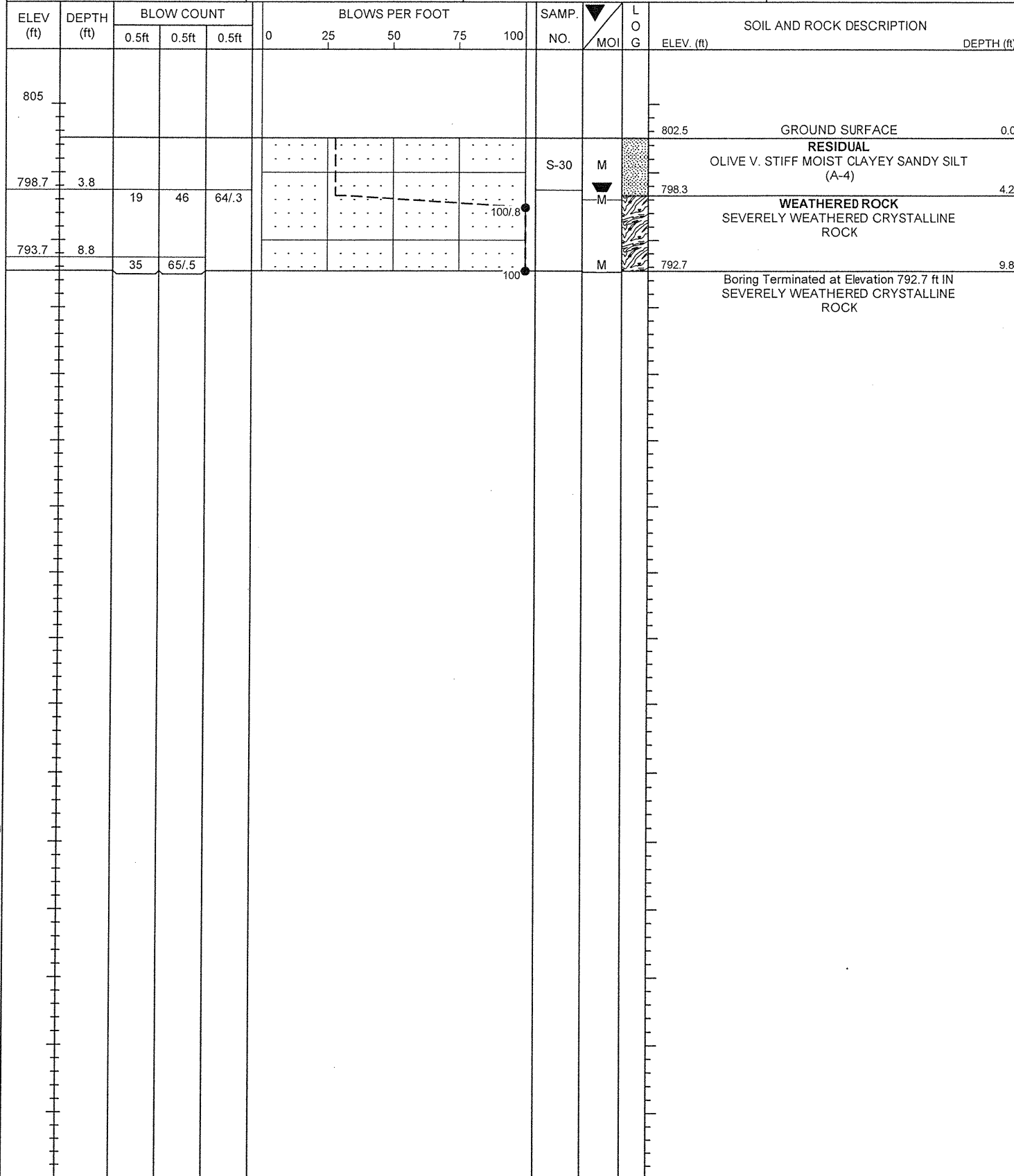


SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE		% ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200	W	U	
SS-28	70.0 LT	23+80	3.7 - 6.2	A-2-4(O)	29	NP	33.7	40.0	23.8	4.0	83	66	31			
S-29	50.0 RT	22+60	5.0 - 11.0	A-7-6(18)	63	28	8.5	30.7	28.6	32.3	100	97	67			
S-30	75.0 RT	20+00	0.0 - 3.8	A-4(O)	27	6	23.8	36.0	24.0	16.2	87	73	43			

26-JUL-2007 14:05
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PROJECT NO. 33185.1.1	ID. B-3637	COUNTY DAVIE	GEOLOGIST Murray, C. C.
SITE DESCRIPTION RETAINING WALL AT INTERSECTION OF SR 1452 (YADKIN VALLEY RD.) AND NC 801			GROUND WTR (ft)
BORING NO. 2000L	STATION 20+00	OFFSET 75ft RT	ALIGNMENT -L-
COLLAR ELEV. 802.5 ft	TOTAL DEPTH 9.8 ft	NORTHING 825,405	EASTING 1,572,679
DRILL MACHINE CME-550	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 04/29/04	COMP. DATE 04/29/04	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 33185.1.1	ID. B-3637	COUNTY DAVIE	GEOLOGIST Murray, C. C.
SITE DESCRIPTION RETAINING WALL AT INTERSECTION OF SR 1452 (YADKIN VALLEY RD.) AND NC 801			GROUND WTR (ft)
BORING NO. 2250L	STATION 22+50	OFFSET 50ft RT	ALIGNMENT -L-
COLLAR ELEV. 798.2 ft	TOTAL DEPTH 14.0 ft	NORTHING 825,255	EASTING 1,572,874
DRILL MACHINE CME-550	DRILL METHOD Solid Augers	HAMMER TYPE Automatic	
START DATE 04/28/04	COMP. DATE 04/28/04	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE B-3637_GEO_BH_RWAL_DAVIE.GPJ NC_DOT.GDT 07/26/07

PROJECT NO. 33185.1.1		ID. B-3637		COUNTY DAVIE		GEOLOGIST Murray, C. C.									
SITE DESCRIPTION RETAINING WALL AT INTERSECTION OF SR 1452 (YADKIN VALLEY RD.) AND NC 801							GROUND WTR (ft)								
BORING NO. 1380RPB		STATION 23+80		OFFSET 70ft LT		ALIGNMENT -RPB-									
COLLAR ELEV. 800.0 ft		TOTAL DEPTH 14.1 ft		NORTHING 825,150		EASTING 1,572,974									
DRILL MACHINE CME-550		DRILL METHOD H.S. Augers				HAMMER TYPE Automatic									
START DATE 04/28/04		COMP. DATE 04/28/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A									
ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
800													800.0	0.0	GROUND SURFACE
796.3	3.7	18	14	13						SS-28	D				RESIDUAL OLIVE-TAN MED DENSE DRY MICA SILTY SAND (A-2-4)
791.3	8.7	20	55	45/2							D		790.8	9.2	WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK
786.3	13.7										D		785.9	14.1	Boring Terminated at Elevation 785.9 ft IN SEVERELY WEATHERED CRYSTALLINE ROCK

NCDOT BORE DOUBLE B-3637_GEO_BH_RVAL_DAVIE.GPJ NC_DOT.GDT 07/26/07