

PROJECT: C201932 ID. R-2911B

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2911B	1	26
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34517.1.1	STP-70(39)	P.E.	
34517.2.7	STP-70(81)	RW & UTIL.	
34517.3.9	STP-70(81)	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.

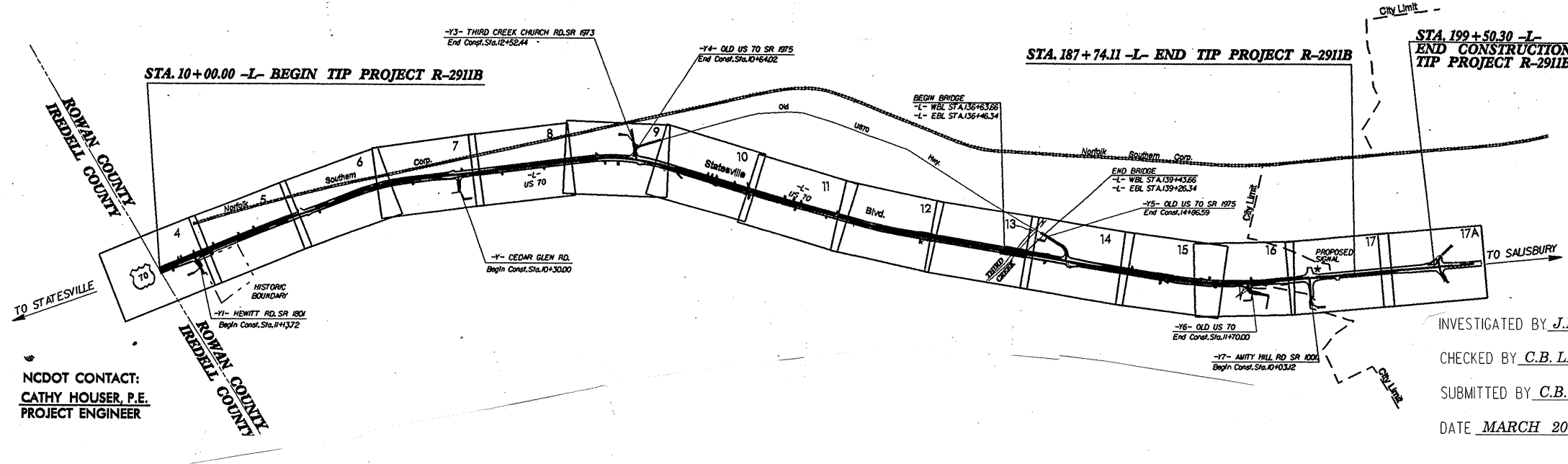
CONTENTS:

LINE	STATION	SHEET NUMBERS		
		PLAN	PROFILE	X-SECTS.
-L-	10+00.00 to 187+74.11	4-17	18-24	
-Y-	10+30.00 to 12+11.34	7	25	
-Y1-	11+13.72 to 12+57.52	4	25	
-Y3-	10+00.00 to 12+52.44	9	25	
-Y5-	10+39.00 to 14+86.59	14	25	
-Y7-	10+03.01 to 13+36.38	17	26	

ROADWAY SUBSURFACE INVESTIGATION

STATE PROJECT 34517.1.1 I.D. NO. R-2911B
F.A. PROJECT _____
COUNTY ROWAN
DESCRIPTION US 70 FROM IREDELL COUNTY
LINE TO EAST OF SR 1001 (AMITY HILL RD.)

INVENTORY



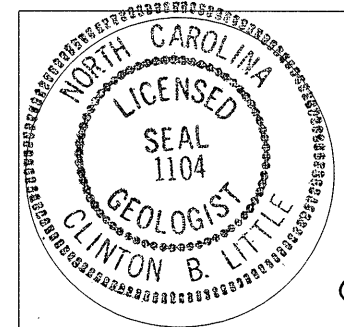
NCDOT CONTACT:
CATHY HOUSER, P.E.
PROJECT ENGINEER

INVESTIGATED BY J.E. BEVERLY PERSONNEL J.K. STICKNEY
CHECKED BY C.B. LITTLE C.L. SMITH
SUBMITTED BY C.B. LITTLE C.E. BURRIS
DATE MARCH 2004

DRAWN BY: J.K. McCLURE

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.



SEAL 3-23-04
C.B. Little
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-2911B	34517.1.1	2	26

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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASTM 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, GRM 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. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										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: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)										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 - 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 IN 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 (SCRC) - 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																			
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.										FRESH VERY SLIGHT (V. SLI.) SLIGHT (SLI.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V. SEV.) COMPLETE																			
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 SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE										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. ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. 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. 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 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 BPF 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 BPF ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
SYMBOL										PERCENTAGE OF MATERIAL ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE																													
% PASSING # 10 # 40 # 200										GROUND WATER 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																													
LIQUID LIMIT PLASTIC INDEX GROUP INDEX										MISCELLANEOUS SYMBOLS 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																													
USUAL TYPES OF MAJOR MATERIALS 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																													
P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 30										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																													
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/SQ. FT.)										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																													
GENERAL GRANULAR MATERIAL (NON-COHESIVE) GENERAL SILT-CLAY MATERIAL (COHESIVE)										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																													
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM) BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SO.) FINE SAND (F. SO.) SILT (SL.) CLAY (CL.)										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																													
GRAIN SIZE MM IN. 305 12" 75 3" 2.0 0.25 0.05 0.005										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																													
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION										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																													
LL LIQUID LIMIT PL PLASTIC LIMIT OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT										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																													
PLASTICITY NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY										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																													
COLOR 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.										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																													
										ABBREVIATIONS 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 HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL W. - MOISTURE CONTENT V. - VERY VST - VANE SHEAR TEST γ - UNIT WEIGHT γ _d - DRY UNIT WEIGHT																													
										EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B- BK-51 CME-45C CME-950 PORTABLE HOIST OTHER OTHER																													
										ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 6" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE STEEL TEETH TRICONE TUNG.-CARB. CORE BIT OTHER																													
										HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H H																													
										HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST OTHER																													
										FRACTURE SPACING TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FEET VERY CLOSE LESS THAN 0.16 FEET																													
										BEDDING TERM THICKNESS VERY THICKLY BEDDED > 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET																													
										INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. 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.																													
										BENCH MARK: ELEVATION: NOTES: NM=24 hr. Water Not Measured																													

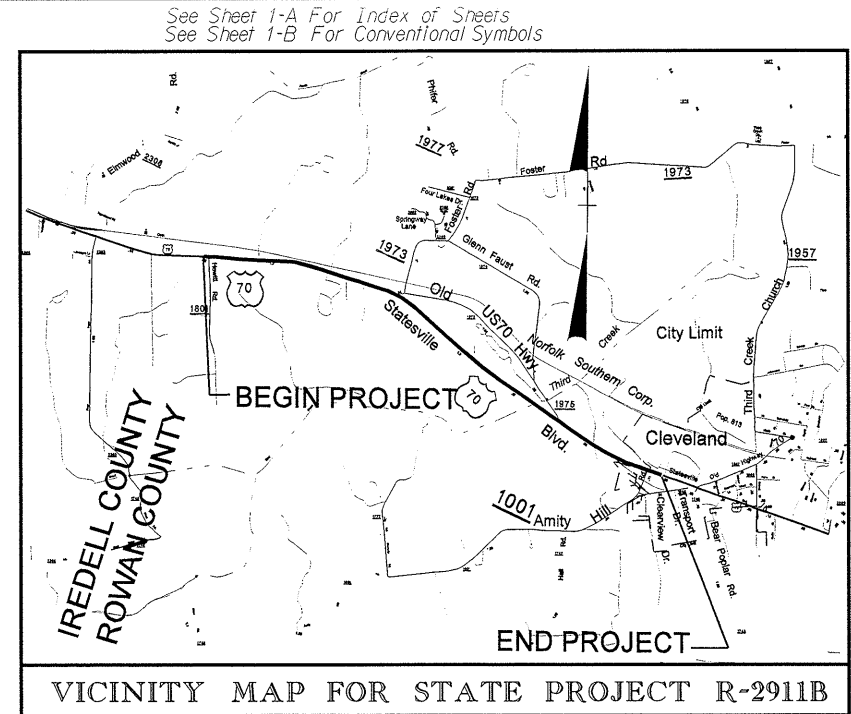
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N.C.	R-2911B	2A	26
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34517.1.1	STP-70(39)	P.E.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

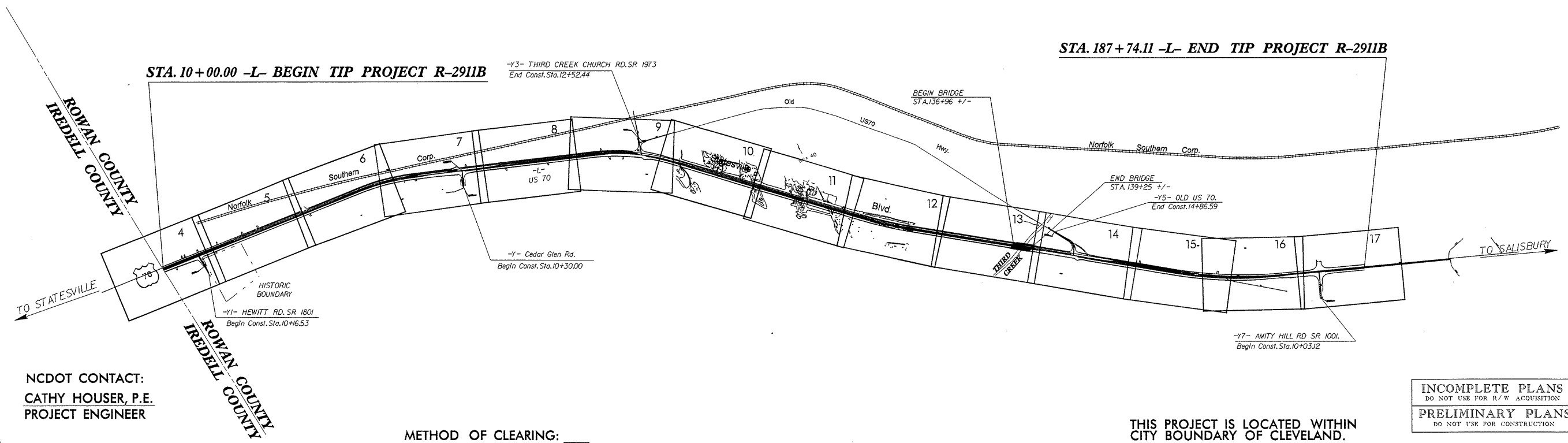
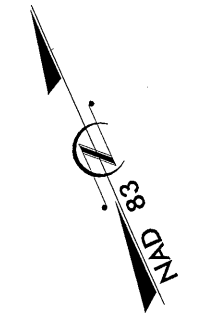
ROWAN COUNTY

LOCATION: US 70 FROM IREDELL COUNTY LINE
TO EAST OF SR 1001 (AMITY HILL ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING,
CULVERTS, AND STRUCTURES



VICINITY MAP FOR STATE PROJECT R-2911B

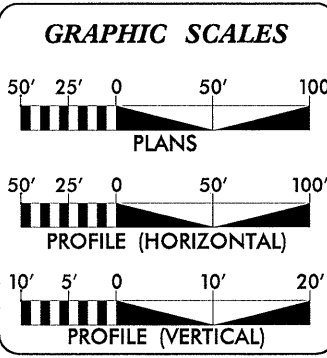


NCDOT CONTACT:
CATHY HOUSER, P.E.
PROJECT ENGINEER

METHOD OF CLEARING: _____

THIS PROJECT IS LOCATED WITHIN
CITY BOUNDARY OF CLEVELAND.

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



DESIGN DATA

ADT 2008 = 13,300	
ADT 2028 = 24,200	
DHV = 9 %	
D = 55 %	
T = 9 % *	
* V = 60 MPH	SHOULDER SECTION
V = 50 MPH	CURB & GUTTER SECTION
* TTST 6%	DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2911B = 3.323 Miles
 LENGTH STRUCTURES TIP PROJECT R-2911B = 0.043 Miles
 TOTAL LENGTH STATE TIP PROJECT R-2911B = 3.366 Miles

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT
WITH ACCESS BEING LIMITED TO
POINTS SHOWN ON THE PLANS.

Prepared in the Office of:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: Stephen Browde, P.E.
October 21, 2005
PROJECT ENGINEER

LETTING DATE: Brian K. Eason, P.E.
October 21, 2008
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

SIGNATURE: _____ P.E.

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

CONTRACT: TIP PROJECT: R-2911B
 03/1/08
 \$\$\$\$\$\$ TIME \$\$\$\$\$\$
 \$\$\$\$\$\$ DGN \$\$\$\$\$\$
 \$\$\$\$\$\$ PERNAME \$\$\$\$\$\$



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

LYNDO TIPPETT
SECRETARY

March 15, 2004

STATE PROJECT: 34517.1.1 (R-2911B)
F.A. PROJECT: STP-70(39)
COUNTY: Rowan
DESCRIPTION: US 70 from Iredell County Line to East of SR 1001 (Amity Hill Rd.)
SUBJECT: Geotechnical Report - Inventory

This report presents the findings of the Geotechnical Investigation for section B of the proposed US 70 widening project. Stations encompassed on this project are from -L- 10+00 to 187+74. The project generally proceeds in an easterly direction from beginning to end.

The geotechnical field investigation for this project was conducted in February 2004. An ATV mounted CME 550 drill machine with automatic hammer was utilized to perform this investigation.

The following survey lines were investigated:

Line	Station
-L-	10+00 – 187+74
-Y1-	11+13.72 – 12+57.52
-Y5-	10+39 – 14+86.59

Areas of Special Geotechnical Interest:

1. *Groundwater:*

Groundwater was encountered in several instances throughout the project corridor. The following two station intervals indicate known areas where groundwater was encountered at or above proposed grade.

Line	Station Range
-L-	74+50 to 77+00 (in cut section at ditch point right of -L-)
-L-	144+00 to 155+50 (in cut section at ditch point right of -L-)

2. *Rock:*

Hard rock was encountered twice during the course of this subsurface investigation. In each case hard rock was well below proposed grade.

3. *High PI Soils: (PI's Greater than 26)*

High PI clay soils were noted consistently throughout the project corridor. They occur both as near surface soils and subsoils in both residual and alluvial formations. Clay soils exhibiting high PI's are in the AASHTO classifications of A-7-5 & A-7-6. The plasticity index for these soils ranges from 11 to 42 with PI's in the high 20's to middle 30's common. Most of these soils are in proposed fill sections, however due to the prevalence of high PI clays there may be instances where pockets of high PI clay soils will be encountered at grade.

4. *Alluvial Soils / Wet Areas:*

There are several areas containing alluvial soils within the project corridor. Alluvial areas are the result of adjacent streams and tributaries. The following two areas may be of special interest.

The most notable alluvial area is associated with the Third Creek Floodplain. Approximate station range right of -L- is 127+50 to 142+00. Alluvial soils in the floodplain are 6 to 10 feet in thickness and highly plastic. Typically alluvial soil in this area consists of blue-gray medium stiff highly plastic silty sandy clay (A-7-5, A-7-6). Shelby Tubes were pushed in 2 boring locations for analysis of these clay soils. Clay percentages are high, PI's range up to 35, and moisture content is 25% to 36%.

Another alluvial area which may be of special interest is located right of -L- station 162+50 to 164+50. Soils in this area are brown-gray and gray very soft to medium stiff, medium to highly plastic sandy silty clay and silty sandy clay (A-7-5, A-7-6). Alluvium is up to 8 feet in depth, PI ranges up to 30 and moisture content is 52% to 63%. Two Shelby Tubes were pushed for analysis in one boring location.

Physiography/Geology:

The project corridor is located in the piedmont region of North Carolina in Rowan County west of the city of Salisbury. A portion of this project is within the city limits of Cleveland. Geologically this site is within the Charlotte Belt and is underlain by metamorphosed mafic rock types. The topography consists of gently rolling hills and gently sloping interstream areas ranging in elevation from approximately 700 to 840 feet. The existing US 70 project corridor is surrounded by businesses, residential homes, and open fields. Several streams and wet weather drainage features bisect the project. Third Creek is the major watercourse along this section of US 70.

Soil Properties:

1. *Residual Soils:*

These soils are derived from in place weathering of parent materials. They occur in a variety of consistencies, classifications, and stratigraphic sequences. Residual soils are further subdivided into clays, silts, and sands.

Clays are found consistently throughout the project corridor as both near surface soils and subsoils. They consist primarily of medium stiff to red-brown and tan silty sandy clay and sandy silty clay (A-6, A-7-5, A-7-6) up to 20 feet in thickness. These soils are typically well drained with a plasticity index range of 11 to 42 and a liquid limit range of 40 to 80.

Silts encountered on the project were of the A-4 and A-5 AASHTO Classifications and occur as both near surface soils and subsoils. They generally consist of medium stiff to very stiff tan-orange-white and gray clayey sandy silt with thicknesses up to 15 feet.

Sands encountered on the project were of the A-2-4, and A-1-b AASHTO Classification and occur as both near surface soils and subsoils. The sandy soil generally consists of medium dense to very dense tan-brown-gray silty sand. The maximum thickness of sand encountered was 19 feet.

2. Alluvial Soils:

Alluvial soils originate from water transportation and deposition in a floodplain environment. These deposits range up to 15 feet in thickness. Alluvial soils consist of very soft to medium stiff silty sandy clay (A-7-5, A-7-6), and loose to medium dense clayey fine and coarse sand with quartz gravel (A-2-4, A-1-b).

3. Fill Soils:

Existing roadway fill soil associated with existing US 70 is common along the project corridor. Small amounts of artificial fill soils were encountered as backfill associated with existing drainpipes and culverts.

Rock Properties:

Rock is defined as that material which refuses penetration of power augers and / or achieves SPT refusal. During our investigation only two boring locations encountered hard rock. In each instance hard rock is well below proposed grade.


Wells:

During the course of this investigation only one well was noted within the proposed construction boundary. This well is located 75 feet right of -L- station 106+20. There are a number of homes and business located along existing US 70. Thus, there is the possibility for additional wells which remain undetected at this time.

SPECIAL SAMPLES

ST-1	-L- Station 134+00	71' RT
ST-2	-L- Station 134+00	71' RT
ST-3	-L- Station 130+00	65' RT
ST-4	-L- Station 130+00	65' RT
ST-5	-L- Station 163+30	78' RT
ST-6	-L- Station 163+30	78' RT

Respectfully Submitted,


J.E. Beverly, Project Geologist

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: 34517.3.9

TIP # R-2911B

COUNTY: ROWAN

DATE: 5/28/2008

SHEET 38 OF 46 SHEETS

SURVEY LINE	BEGIN STA.	END STA.	EXCAVATION					EMBANKMENT				BORROW	WASTE				
			TOTAL UNCL. EXCAVATION	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUITABLE EXCAV.	SUITABLE EXCAV.	TOTAL EMBANKMENT	ROCK EMBANK.	EARTH EMBANKMENT	EMBANK. + 20.%		SUITABLE WASTE	UNSUITABLE WASTE	TOTAL WASTE		
Summary No. 1	Right Side																
-L-	10+00.00	40+00.00	3,101				3,101	7,187		7,187	8,624	5,523					
-Y1-	11+13.72	12+57.52	60				60	317		317	380	320					
SUBTOTAL	Summary No. 1		3,161				3,161	7,504		7,504	9,004	5,843					
Summary No. 2	Right Side																
-L-	40+00.00	70+00.00	3,459				3,459	12,522		12,522	15,026	11,567					
-Y-	10+30.00	12+11.34	188				188	72		72	86	102					102
SUBTOTAL	Summary No. 2		3,647				3,647	12,594		12,594	15,112	11,567	102				102
Summary No. 3	Right Side																
-L-	70+00.00	100+00.00	10,678				10,678	28,308		28,308	33,970	23,292					
SUBTOTAL	Summary No. 3		10,678				10,678	28,308		28,308	33,970	23,292					
Summary No. 4	Right Side																
-L-	100+00.00	130+00.00	25,087				25,087	32,784		32,784	39,341	14,254					
SUBTOTAL	Summary No. 4		25,087				25,087	32,784		32,784	39,341	14,254					
Summary No. 5	Right Side																
-L-	130+00.00	136+55.00						20,695		20,695	24,834	24,834					
		Begin Bridge															
SUBTOTAL	Summary No. 5							20,695		20,695	24,834	24,834					

*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 Yards

PROJECT: 34517.3.9

TIP # R-2911B

COUNTY: ROWAN

DATE: 5/28/2008

SHEET 36 OF 46 SHEETS

SURVEY LINE	BEGIN STA.	END STA.	EXCAVATION			EMBANKMENT				BORROW	WASTE			
			TOTAL UNCL. EXCAVATION	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUITABLE EXCAV.	SUITABLE EXCAV.	TOTAL EMBANKMENT	ROCK EMBANK.		EARTH EMBANKMENT	EMBANK. + 20.%	SUITABLE WASTE	UNSUITABLE WASTE
Summary No. 6	Right Side													
-L-	139+35.00	169+00.00	54,296				54,296	35,835		35,835	43,002		11,294	11,294
	End Bridge													
SUBTOTAL	Summary No. 6		54,296				54,296	35,835		35,835	43,002		11,294	11,294
Summary No. 7	Right Side													
-L-	169+00.00	199+50.30	5,595				5,595	1,286		1,286	1,543		4,052	4,052
-Y7-	10+50.00	13+00.00	598				598	84		84	101		497	497
-Y6-	10+34.41	13+06.30	307				307	179		179	215		92	92
SUBTOTAL	Summary No. 7		6,500				6,500	1,549		1,549	1,859		4,641	4,641
Right Side Summary Totals			103,369				103,369	139,269		139,269	167,122	79,790	16,037	16,037
Summary No. 8	Left Side													
-L-	10+00.00	40+00.00	4,648				4,648	923		923	1,108		3,540	3,540
-X-OVER1-	16+09.45	17+59.31	49				49	24		24	29		20	20
SUBTOTAL	Summary No. 8		4,697				4,697	947		947	1,137		3,560	3,560
Summary No. 9	Left Side													
-L-	40+00.00	70+00.00	3,592				3,592	1,445		1,445	1,734		1,858	1,858
SUBTOTAL	Summary No. 9		3,592				3,592	1,445		1,445	1,734		1,858	1,858
Summary No. 10	Left Side													
-L-	70+00.00	100+00.00	9,494				9,494	1,513		1,513	1,816		7,678	7,678
-Y3-	10+40.94	12+52.44	323				323						323	323
SUBTOTAL	Summary No. 10		9,817				9,817	1,513		1,513	1,816		8,001	8,001

*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 Yards

PROJECT: 34517.3.9

TIP # R-2911B

COUNTY: ROWAN

DATE: 5/28/2008

SHEET 30 OF 26 SHEETS

SURVEY LINE	BEGIN STA.	END STA.	EXCAVATION				EMBANKMENT				BORROW	WASTE					
			TOTAL UNCL. EXCAVATION	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUITABLE EXCAV.	SUITABLE EXCAV.	TOTAL EMBANKMENT	ROCK EMBANK.	EARTH EMBANKMENT		EMBANK. + 20.0%	SUITABLE WASTE	UNSUITABLE WASTE	TOTAL WASTE		
Summary No. 11	Left Side																
-L-	100+00.00	130+00.00	15,382				15,382	14,085		14,085	16,902	1,520					
SUBTOTAL	Summary No. 11		15,382				15,382	14,085		14,085	16,902	1,520					
Summary No. 12	Left Side																
-L-	130+00.00	136+55.00	22				22	1,556		1,556	1,867	1,845					
		Beg. Bridge															
SUBTOTAL	Summary No. 12		22				22	1,556		1,556	1,867	1,845					
Summary No. 13	Left Side																
-L-	139+35.00	169+00.00	14,144				14,144	2,335		2,335	2,802		11,342				11,342
		End Bridge															
-Y5-	10+39.00	14+86.59	2,816				2,816	97		97	116		2,700				2,700
SUBTOTAL	Summary No. 13		16,960				16,960	2,432		2,432	2,918		14,042				14,042
Summary No. 14	Left Side																
-L-	169+00.00	199+50.30	3,161				3,161	1,397		1,397	1,676		1,485				1,485
SUBTOTAL	Summary No. 14		3,161				3,161	1,397		1,397	1,676		1,485				1,485
Left Side Summary Totals			53,631				53,631	23,375		23,375	28,050	3,365	28,946				28,946

*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 Yards

PROJECT: 34517.3.9

TIP # R-2911B

COUNTY: ROWAN

DATE: 5/28/2008

SHEET 38 OF 46 SHEETS

SURVEY LINE	BEGIN STA.	END STA.	EXCAVATION					EMBANKMENT				BORROW	WASTE		
			TOTAL UNCL. EXCAVATION	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUITABLE EXCAV.	SUITABLE EXCAV.	TOTAL EMBANKMENT	ROCK EMBANK.	EARTH EMBANKMENT	EMBANK. + 20.%		SUITABLE WASTE	UNSUITABLE WASTE	TOTAL WASTE
PROJECT SUBTOTALS			157,000				157,000	162,644		162,644	195,172	83,155	44,983		44,983
ESTIMATE LOSS DUE TO CLEARING AND GRUBBING			-7,850				-7,850				7,850				
WASTE IN LIEU OF BORROW											-44,983	-44,983		-44,983	
SHOULDER MATERIAL							12,500		12,500	15,000	15,000				
** ADDITIONAL UNCLASSIFIED EXC.			1,434				1,434				-1,434				
PROJECT SUBTOTALS			150,584				150,584	175,144	175,144	210,172	59,588	0		0	
EST. 5% TO REPLACE TOP SOIL ON BORROW PITS											2,979				
PROJECT TOTALS			150,584				150,584	175,144	175,144	210,172	62,567				
SAY			150,600								62,600				

EST. UNDERCUT = 4,000 CY

-L- Pavement Structure Volume = 26,100 CY

EST. CLASS IV SUBGRADE STABILIZER= 2,500 TONS

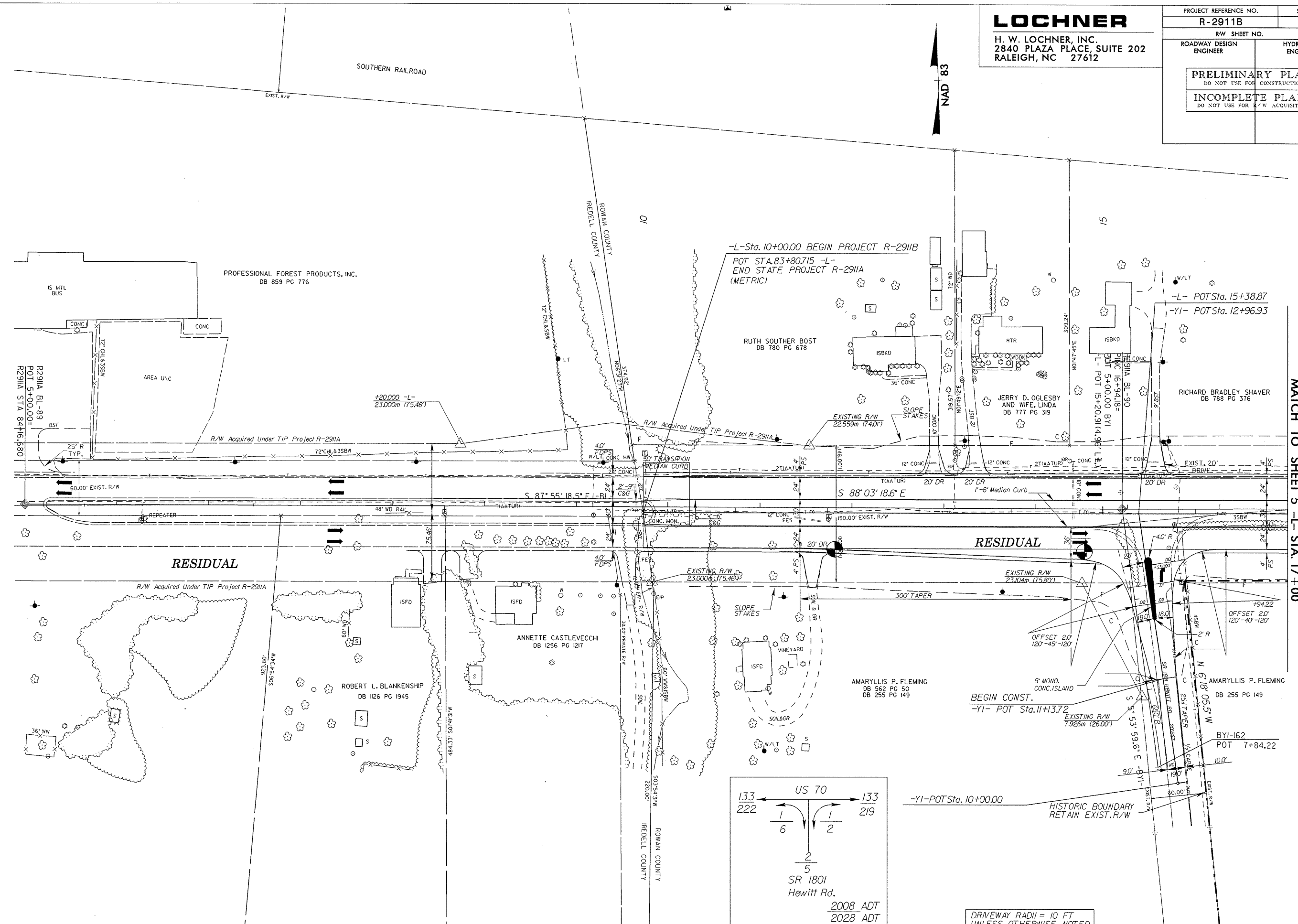
EST. SELECT GRANULAR MATERIAL= 3,000 CY

*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.

** ADDITIONAL MATERIAL STOCKPILED FROM ADJOINING PROJECT (R-2911A)

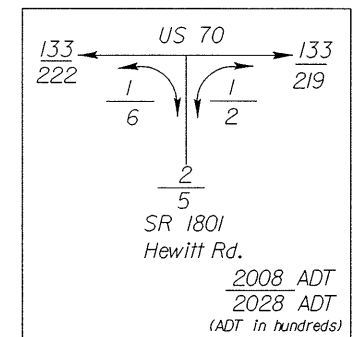
LOCHNER
 H. W. LOCHNER, INC.
 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2911B	04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



REVISIONS

MATCH TO SHEET 5 - L- STA. 17+00



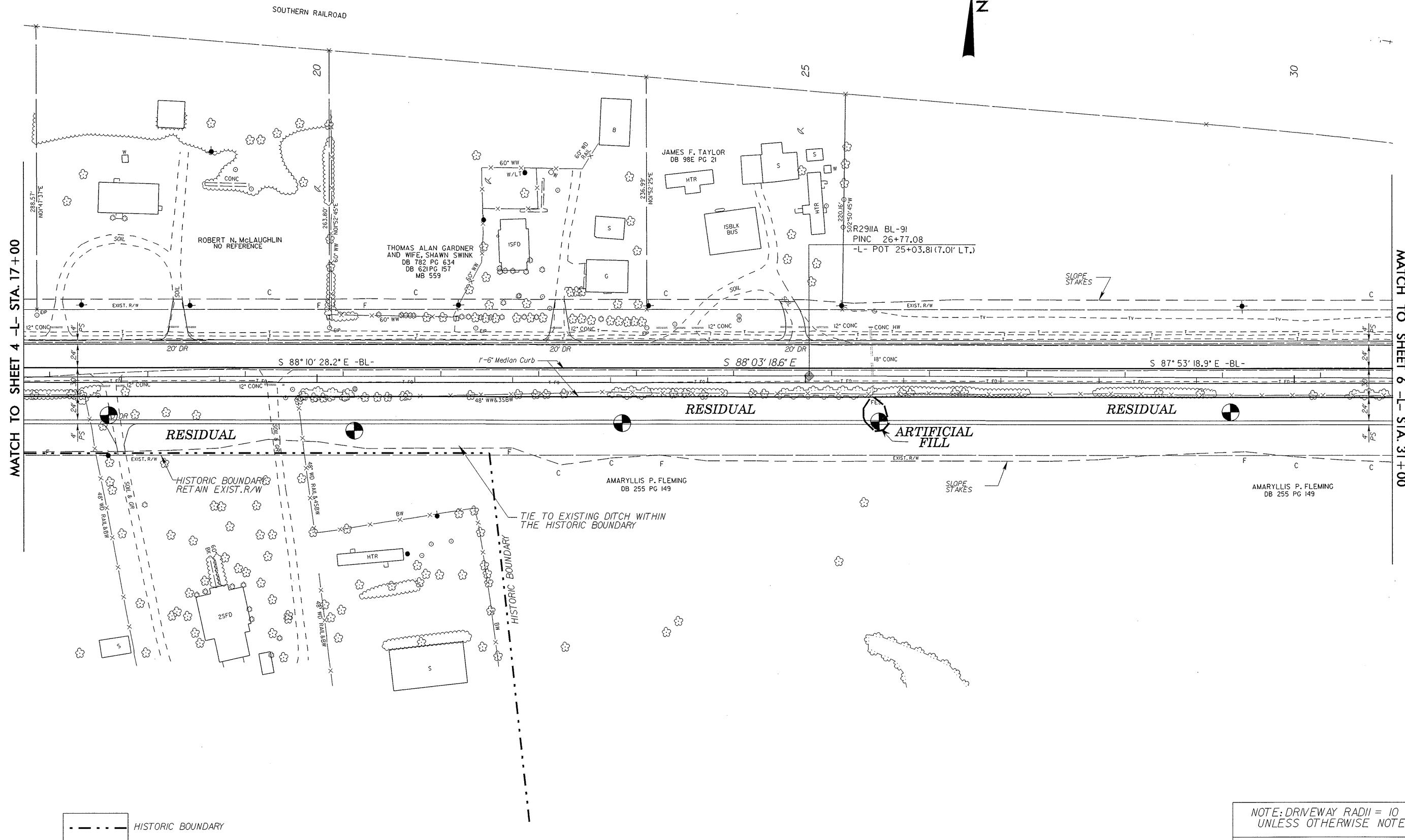
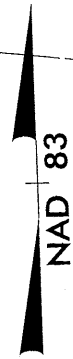
DRIVEWAY RADII = 10 FT
 UNLESS OTHERWISE NOTED

--- HISTORIC BOUNDARY

See Sheet 18 for -L- Profile
 See Sheet 25 for -YI- Profile

1. DATE PLOTTED: 08/17/09
 2. TIME PLOTTED: 10:00 AM
 3. PLOT NAME: R-2911B-04.dwg

PROJECT REFERENCE NO. R-2911B	SHEET NO. 05
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	



MATCH TO SHEET 4 -L- STA. 17+00

MATCH TO SHEET 6 -L- STA. 31+00

REVISIONS

--- HISTORIC BOUNDARY

NOTE: DRIVEWAY RADII = 10 FT. UNLESS OTHERWISE NOTED.

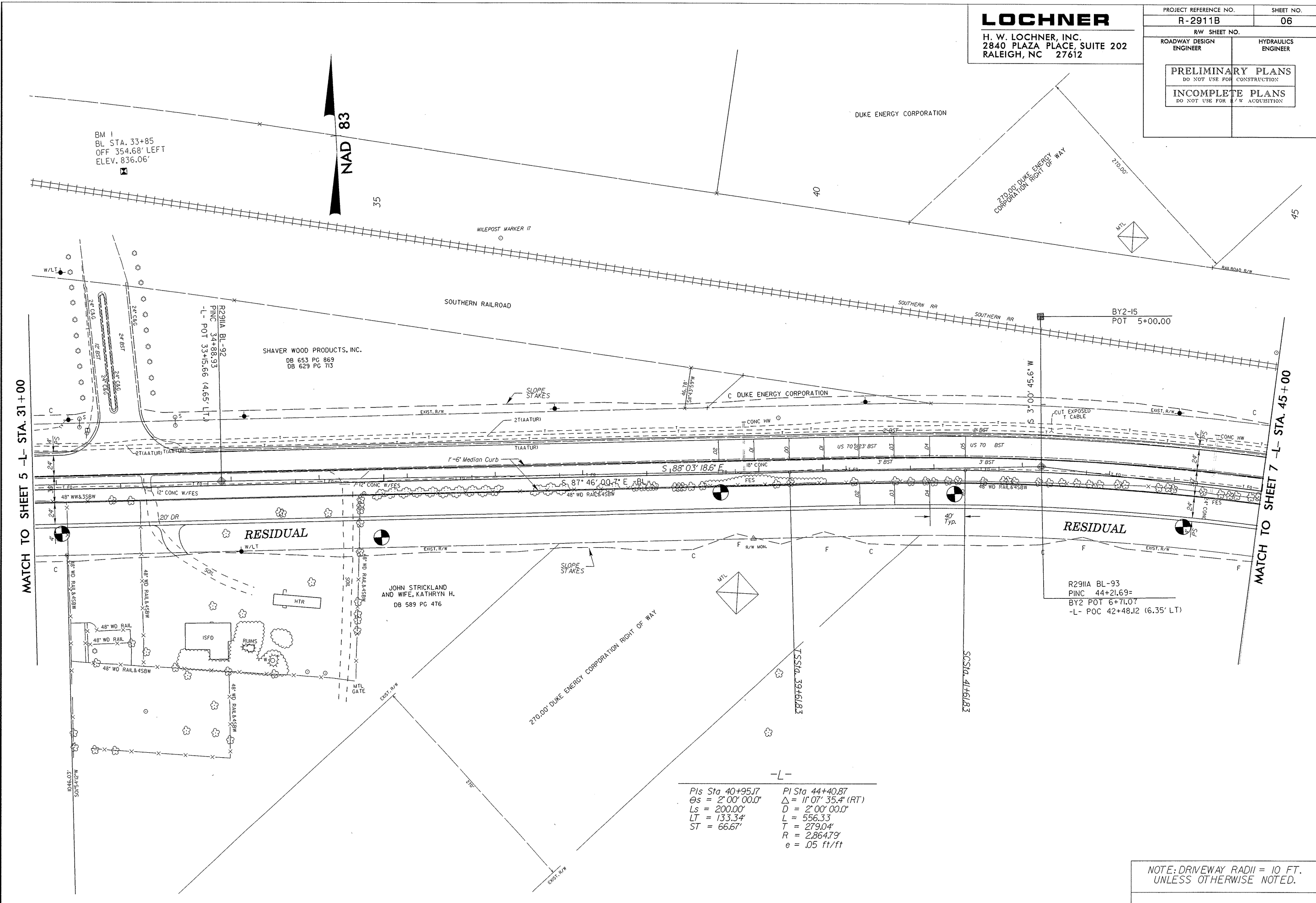
See Sheet 18 for -L- Profile

***** TIME *****
***** PLANNING *****

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2911B	06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



MATCH TO SHEET 5 -L- STA. 31+00

MATCH TO SHEET 7 -L- STA. 45+00

NAD 83

BM 1
BL STA. 33+85
OFF 354.68' LEFT
ELEV. 836.06'

R2911A BL-92
PINC 34+88.93
-L- POT 33+15.66 (4.65' LT)

SHAVER WOOD PRODUCTS, INC.
DB 653 PG 869
DB 629 PG 713

JOHN STRICKLAND
AND WIFE, KATHRYN H.
DB 589 PG 476

R2911A BL-93
PINC 44+21.69=
BY2 POT 6+71.07
-L- POC 42+48.12 (6.35' LT)

-L-

PIs Sta. 40+95.17	PI Sta. 44+40.87
$\theta_s = 2^{\circ}00'00.0''$	$\Delta = 11^{\circ}07'35.4''$ (RT)
$L_s = 200.00'$	$D = 2^{\circ}00'00.0''$
$LT = 133.34'$	$L = 556.33'$
$ST = 66.67'$	$T = 279.04'$
	$R = 2,864.79'$
	$e = .05$ ft/ft

NOTE: DRIVEWAY RADII = 10 FT.
UNLESS OTHERWISE NOTED.

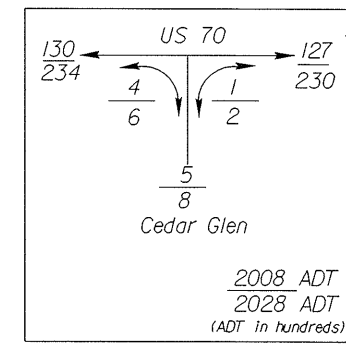
See Sheet 19 for -L- Profile

REVISIONS

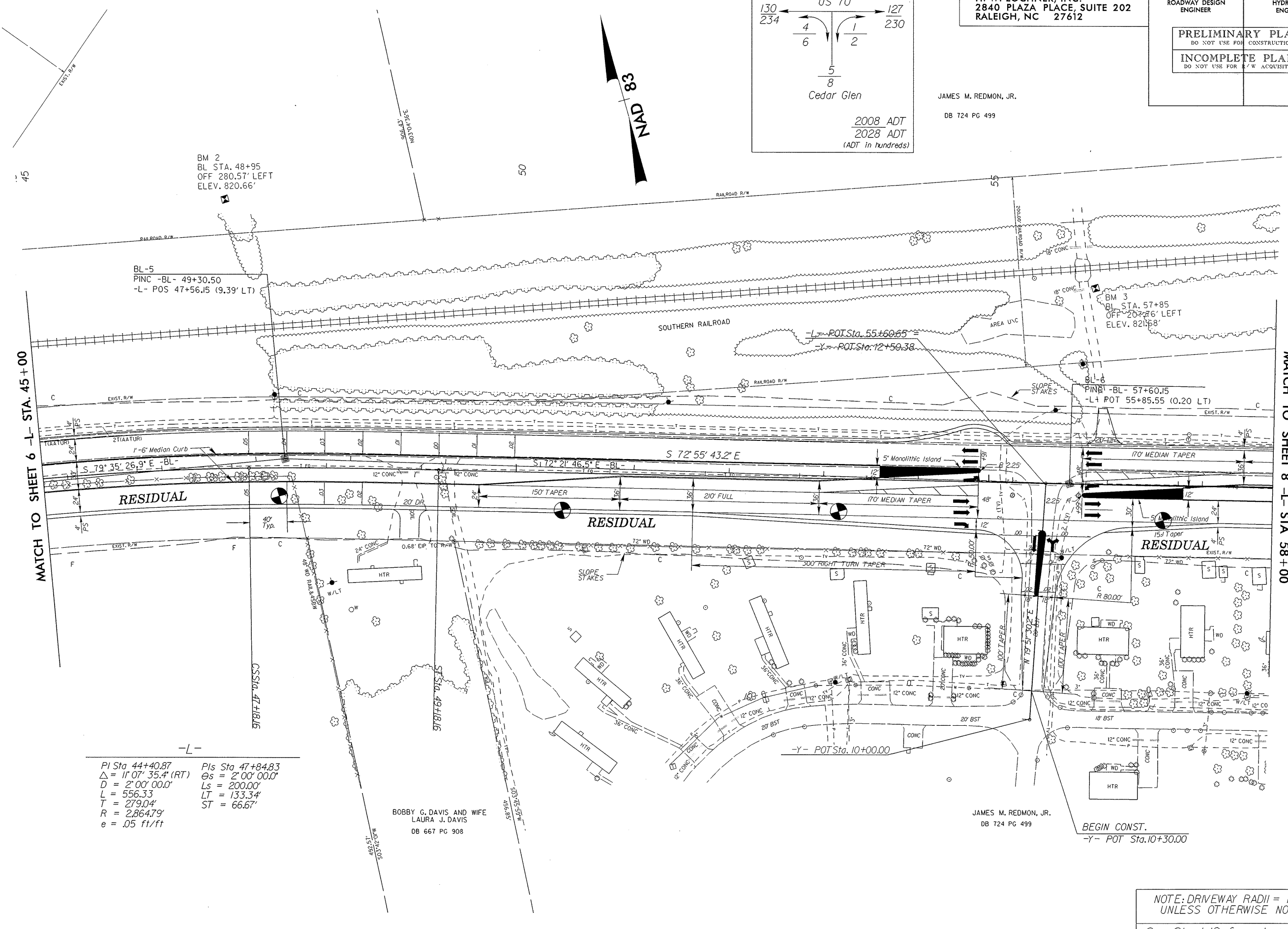
DATE: 04/16/03
TIME: 10:55 AM
BY: [illegible]
CHECKED: [illegible]

LOCHNER
 H. W. LOCHNER, INC.
 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2911B	07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



JAMES M. REDMON, JR.
 DB 724 PG 499



REVISIONS

MATCH TO SHEET 6 -L- STA. 45+00

MATCH TO SHEET 8 -L- STA 58+00

-L-
 PI Sta 44+40.87 PIs Sta 47+84.83
 $\Delta = 11^{\circ}07'35.4''$ (RT) $\Theta_s = 2^{\circ}00'00.0''$
 $D = 2^{\circ}00'00.0''$ $L_s = 200.00'$
 $L = 556.33'$ $LT = 133.34'$
 $T = 279.04'$ $ST = 66.67'$
 $R = 2,864.79'$
 $e = .05$ ft/ft

BOBBY G. DAVIS AND WIFE
 LAURA J. DAVIS
 DB 667 PG 908

JAMES M. REDMON, JR.
 DB 724 PG 499

BEGIN CONST.
 -Y- POT Sta. 10+30.00

NOTE: DRIVEWAY RADII = 10 FT.
 UNLESS OTHERWISE NOTED.

See Sheet 19 for -L- Profile
 See Sheet 25 for -Y- Profile

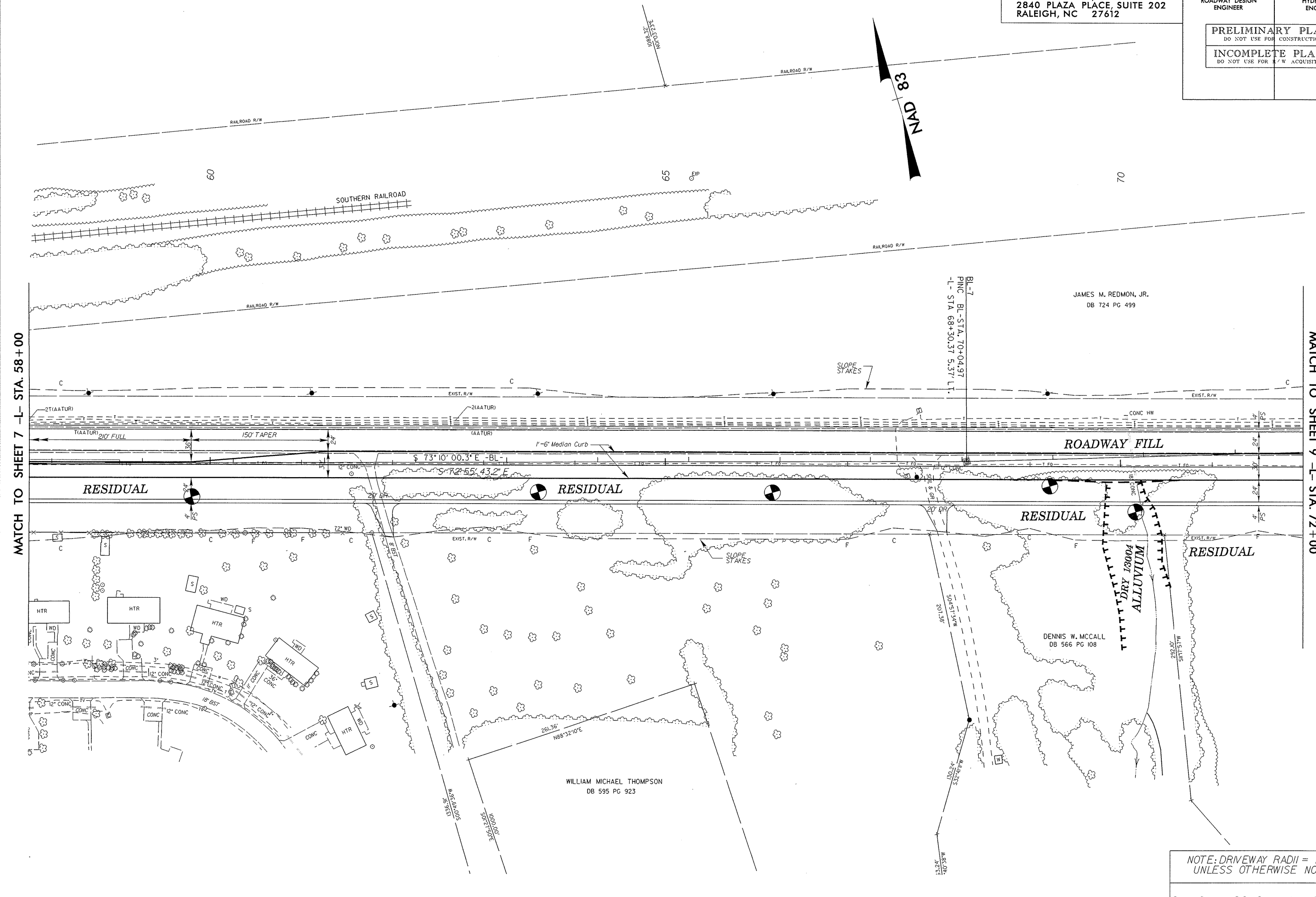
LOCHNER
 H. W. LOCHNER, INC.
 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2911B	SHEET NO. 08
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	

REVISIONS

MATCH TO SHEET 7 -L- STA. 58+00

MATCH TO SHEET 9 -L- STA. 72+00



JAMES M. REDMON, JR.
 DB 724 PG 499

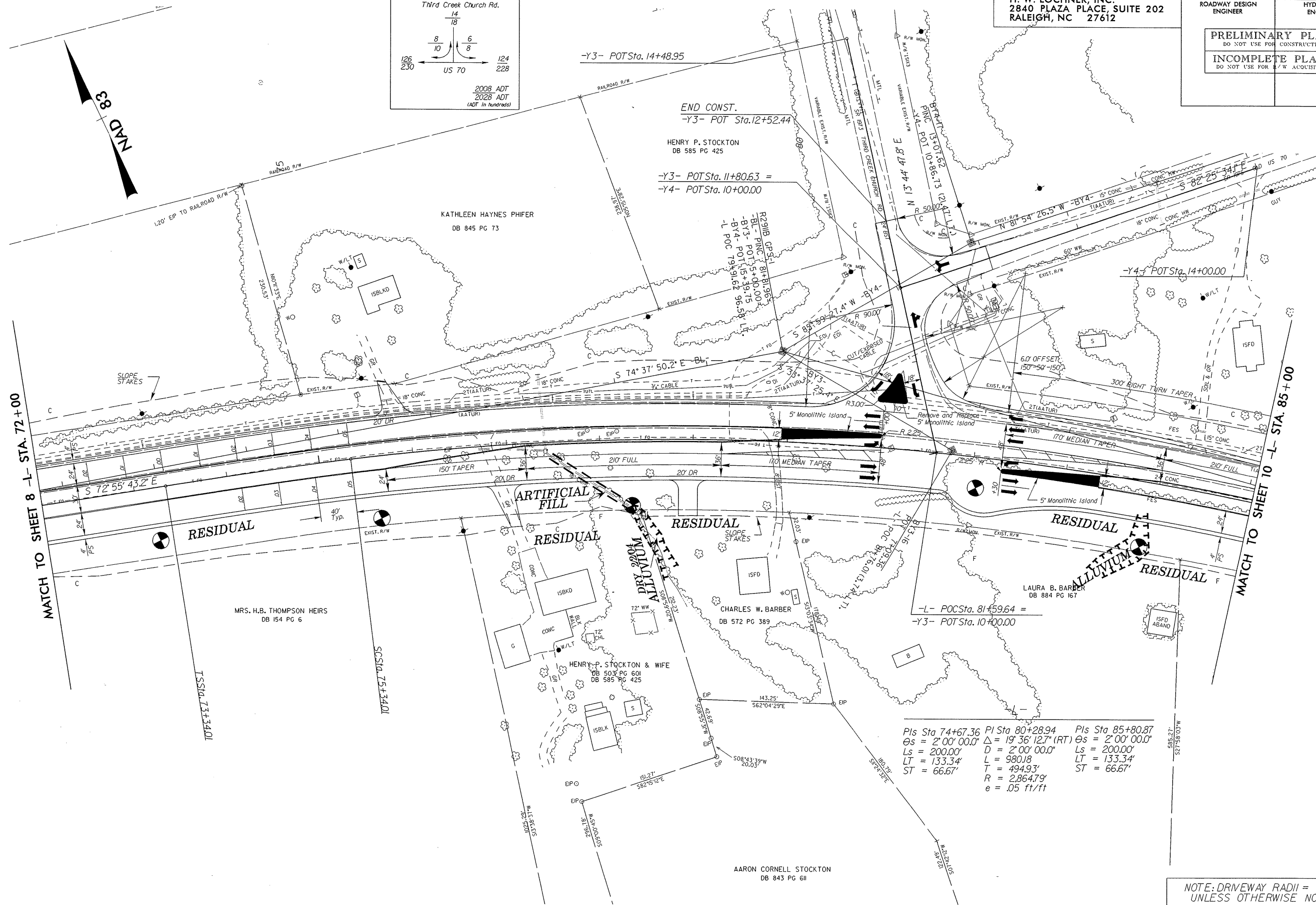
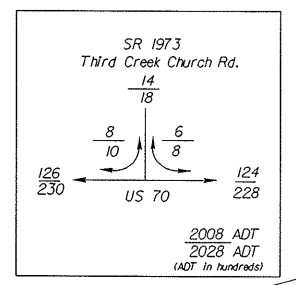
WILLIAM MICHAEL THOMPSON
 DB 595 PG 923

DENNIS W. MCCALL
 DB 566 PG 108

NOTE: DRIVEWAY RADII = 10 FT.
 UNLESS OTHERWISE NOTED.

See Sheet 20 for -L- Profile

 TIME *****



Pls Sta 74+67.36	Pl Sta 80+28.94	Pls Sta 85+80.87
Os = 2' 00' 00.0"	Δ = 19' 36' 12.7" (RT)	Os = 2' 00' 00.0"
Ls = 200.00'	D = 2' 00' 00.0"	Ls = 200.00'
LT = 133.34'	L = 980.18	LT = 133.34'
ST = 66.67'	T = 494.93'	ST = 66.67'
	R = 2,864.79'	
	e = .05 ft/ft	

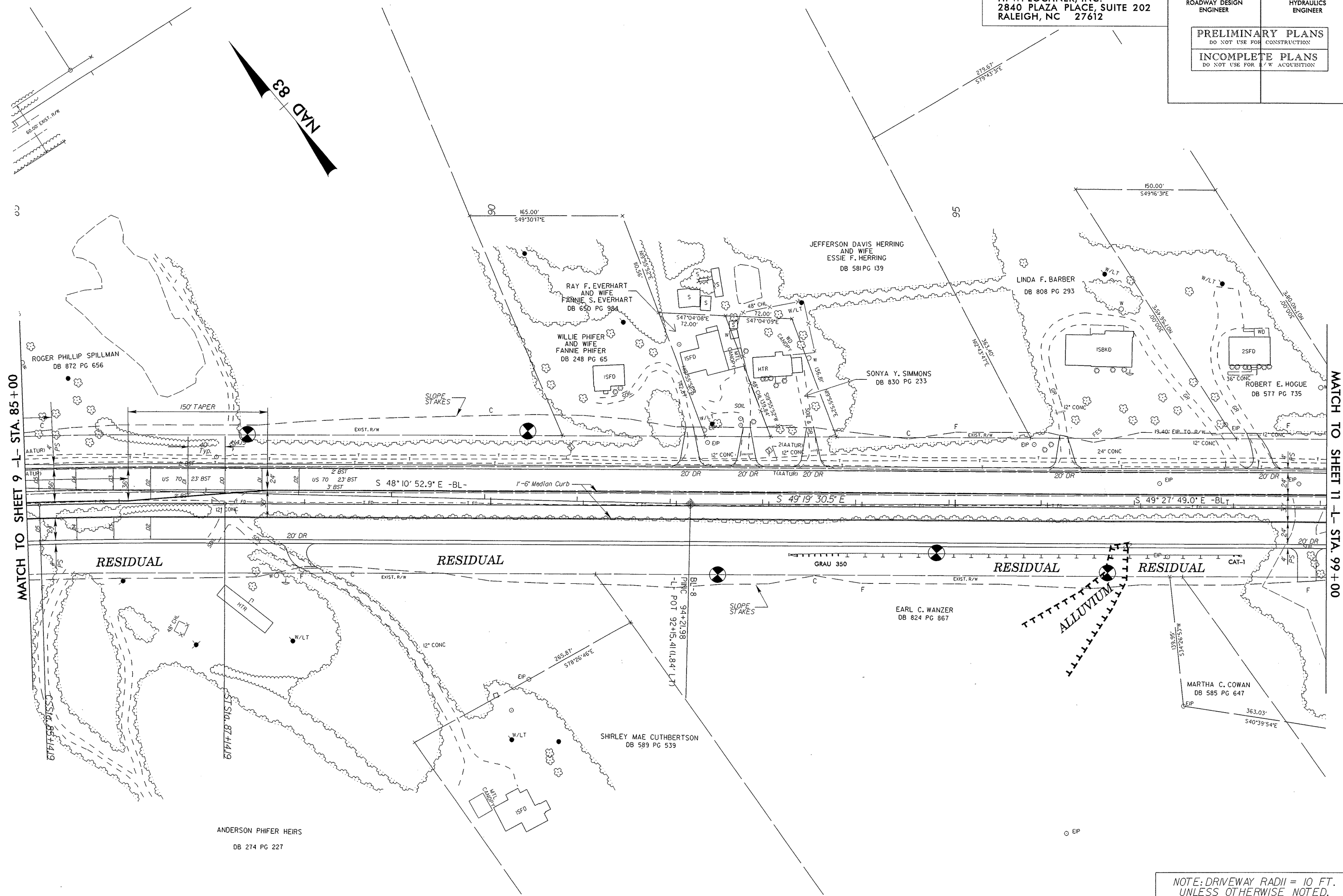
NOTE: DRIVEWAY RADII = 10 FT. UNLESS OTHERWISE NOTED.
 See Sheet 20 for -L- Profile
 See Sheet 25 for -Y3- Profile

REVISIONS

TIME: 11:00 AM
 DATE: 11/17/11

LOCHNER
 H. W. LOCHNER, INC.
 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2911B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	



REVISIONS

MATCH TO SHEET 9 -L- STA. 85+00

MATCH TO SHEET 11 -L- STA. 99+00

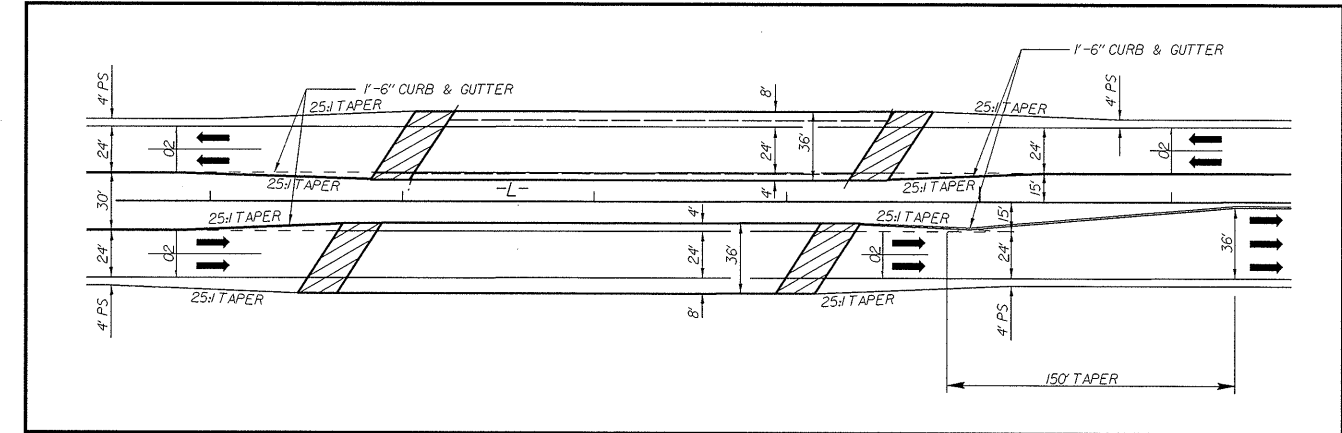
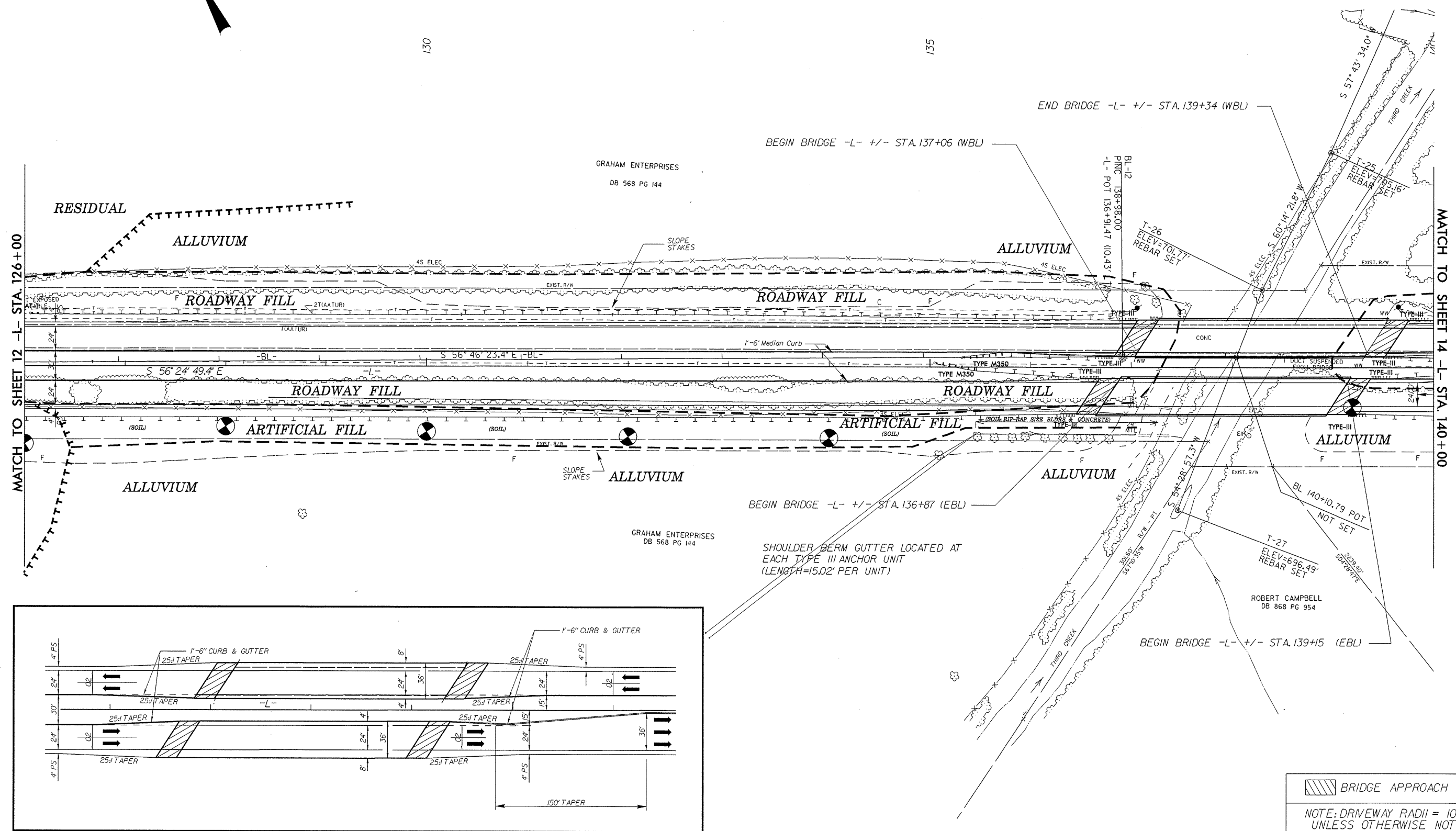
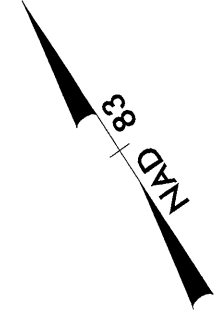
DATE: 07/17/11
 TIME: 10:00 AM
 DRAWN: J. W. LOCHNER
 CHECKED: J. W. LOCHNER
 APPROVED: J. W. LOCHNER

NOTE: DRIVEWAY RADII = 10 FT.
 UNLESS OTHERWISE NOTED.
 See Sheet 21 for -L- Profile

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2911B	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



RELATIONSHIP OF PAVEMENT TO PROPOSED BRIDGE

BRIDGE APPROACH SLAB

NOTE: DRIVEWAY RADII = 10 FT. UNLESS OTHERWISE NOTED.

See Sheet 22 for -L- Profile

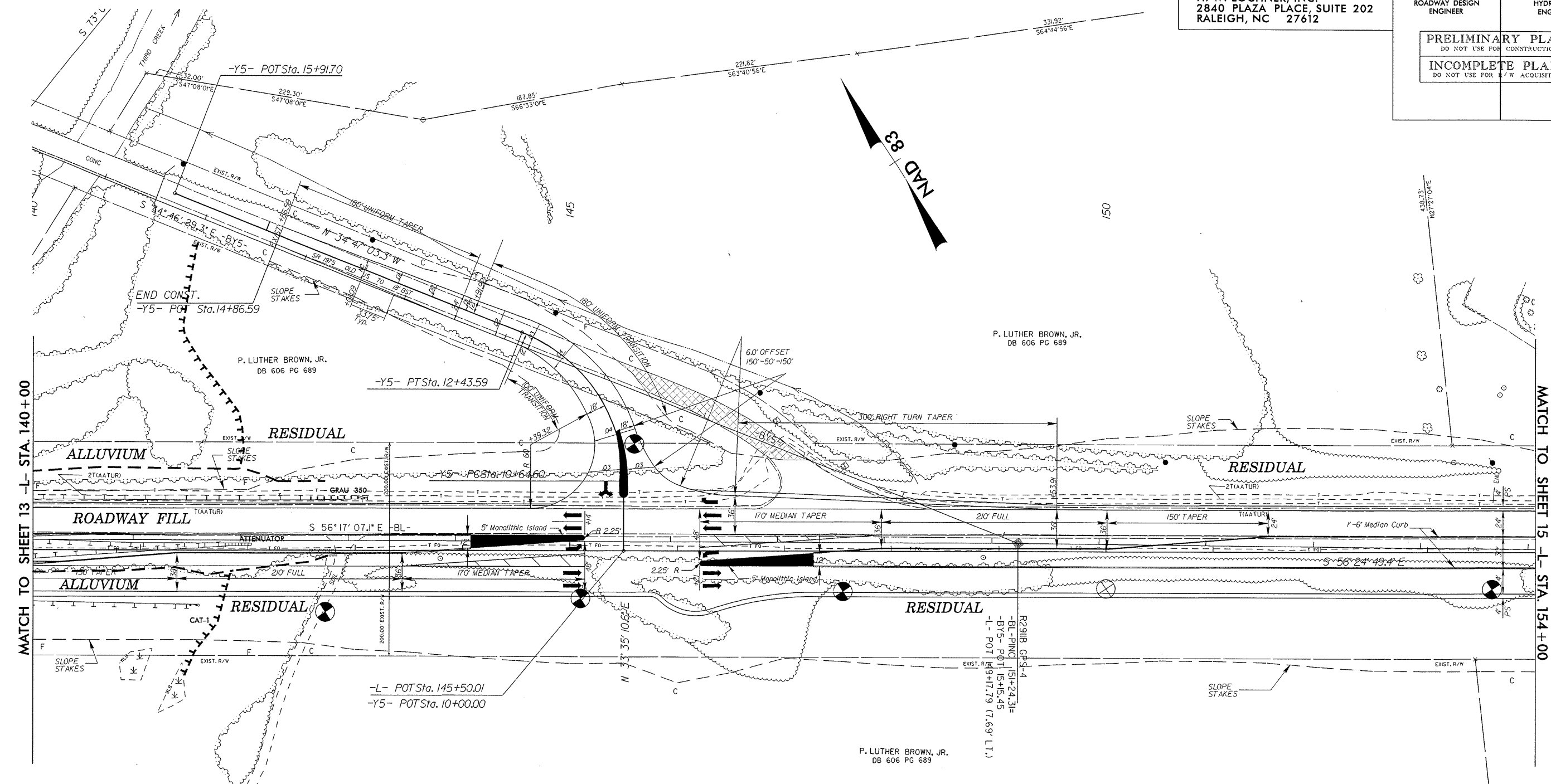
REVISIONS

DATE: 11/11/11
TIME: 10:00 AM
BY: H.W.L.
CHECKED: H.W.L.
APPROVED: H.W.L.

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2911B	SHEET NO. 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

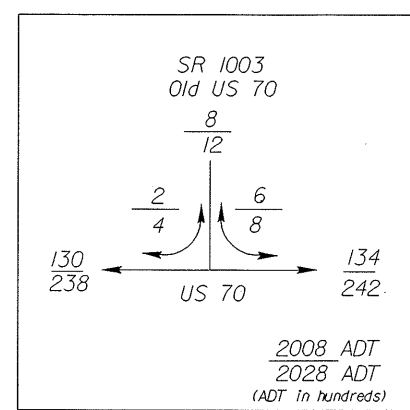


REVISIONS

MATCH TO SHEET 13 -L- STA. 140+00

MATCH TO SHEET 15 -L- STA. 154+00

-Y5-
PI Sta 11+66.48
 $\Delta = 68^\circ 22' 13.9''$ (LT)
D = 38' 11' 49.9"
L = 178.99'
T = 101.88'
R = 150.00'



NOTE: DRIVEWAY RADII = 10 FT. UNLESS OTHERWISE NOTED.

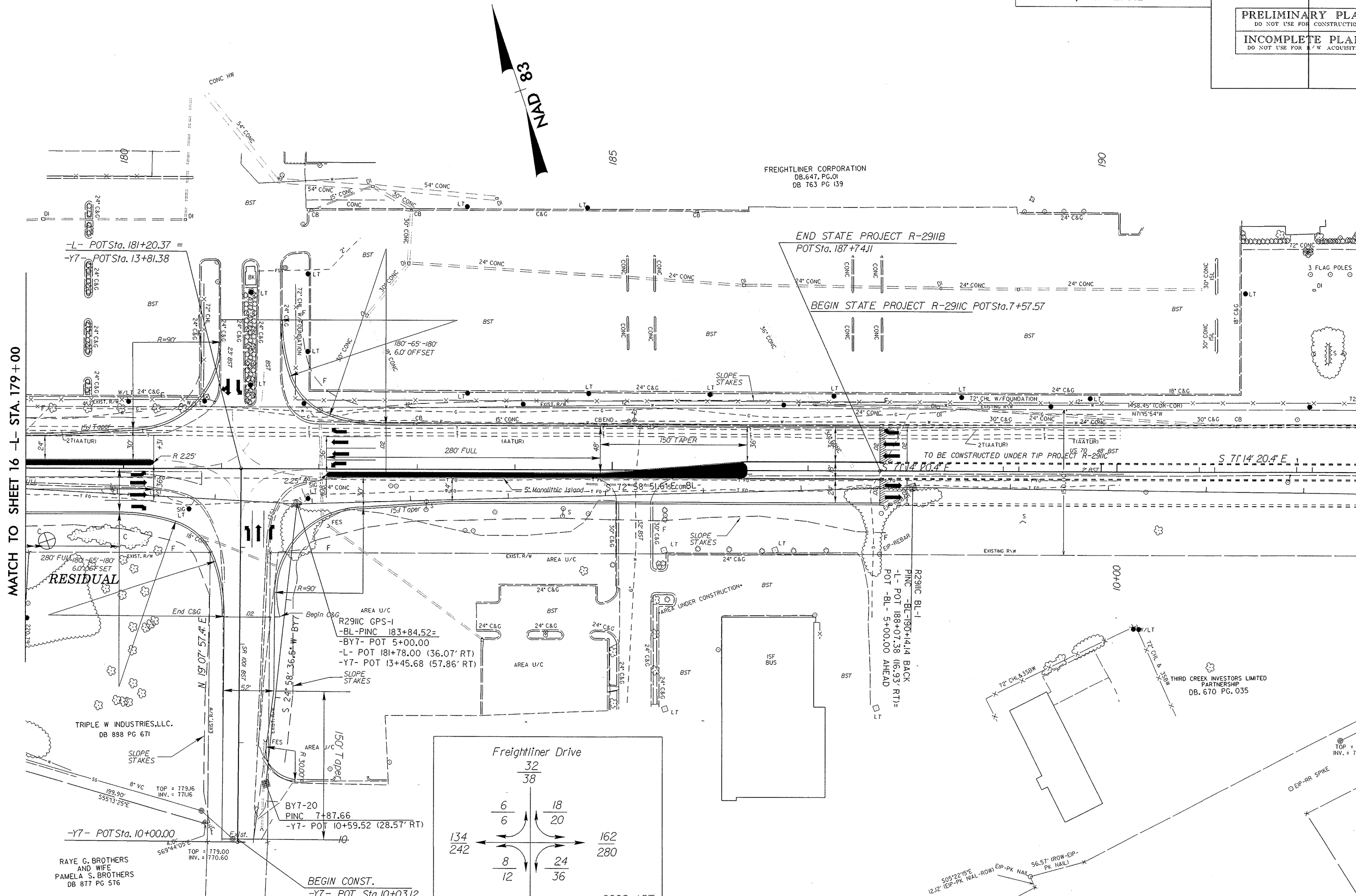
See Sheet 23 for -L- Profile
See Sheet 25 for -Y5- Profile

DATE TIME 11:44 8/17

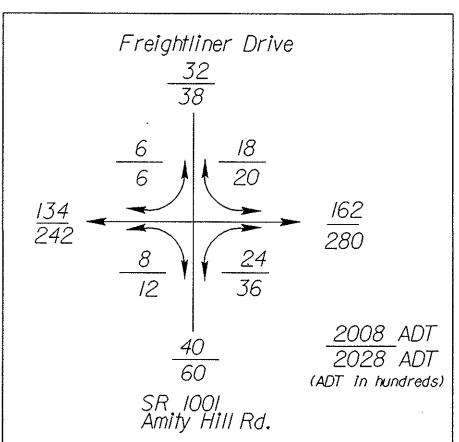
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2911B	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



REVISIONS

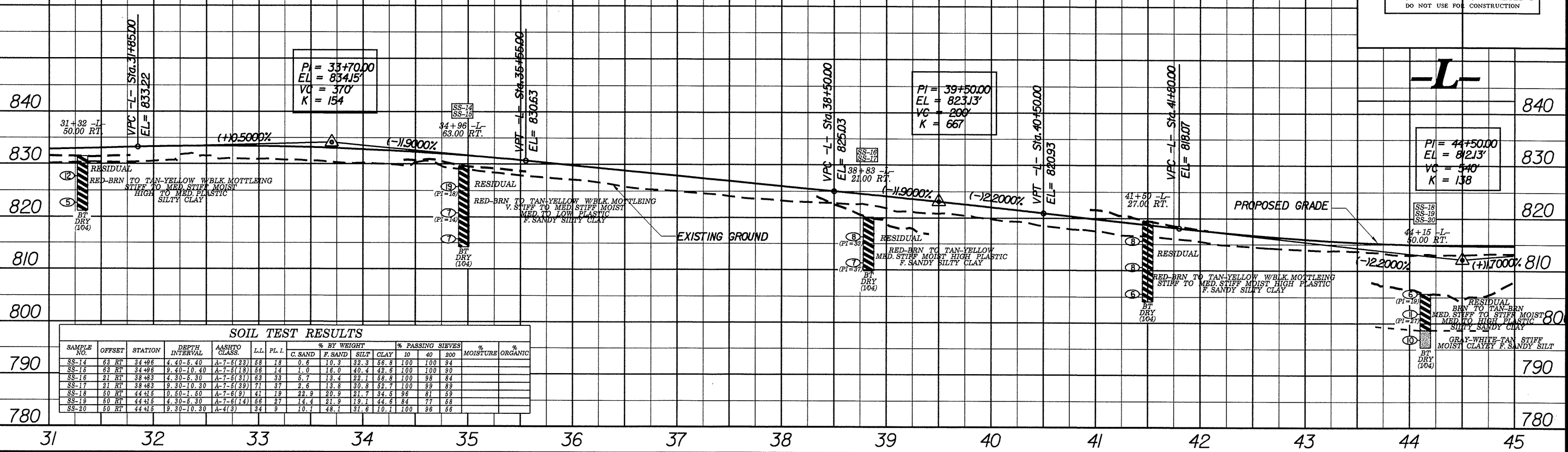


DATE: 11/17/11
TIME: 10:00 AM
BY: H.W. LOCHNER
CHECKED BY: J. W. BROWN
SCALE: AS SHOWN

NOTE: DRIVEWAY RADII = 10 FT.
UNLESS OTHERWISE NOTED.

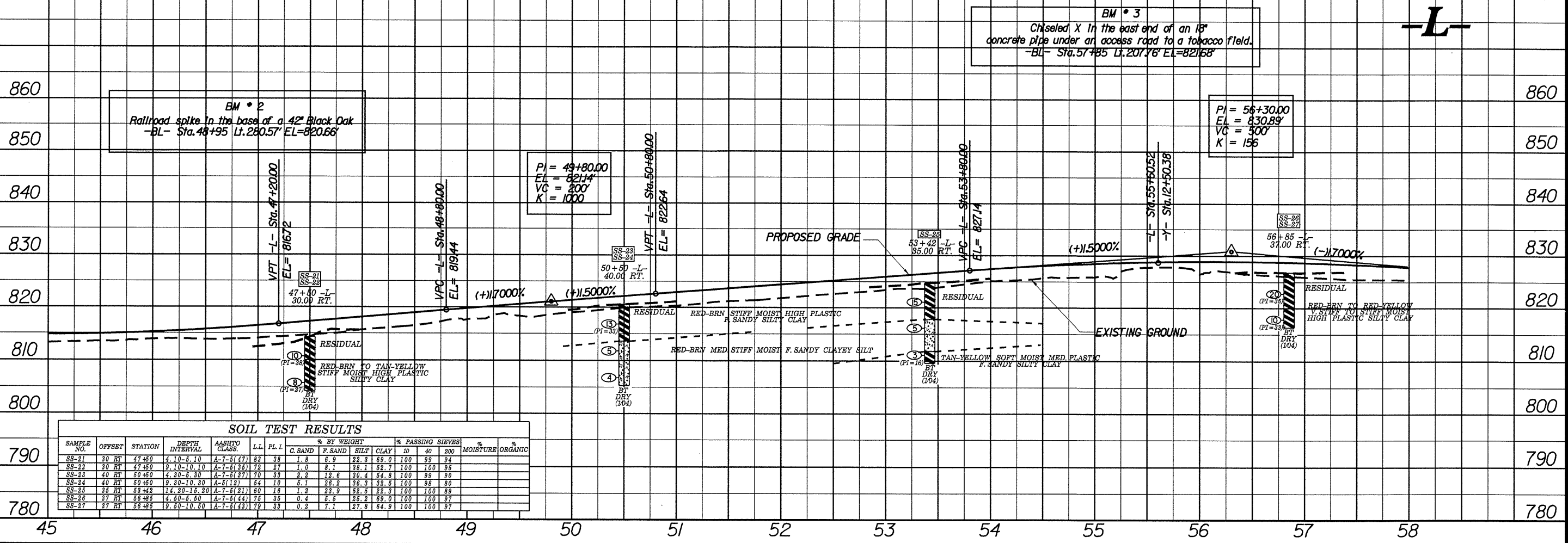
See Sheet 24 for -L- Profile
See Sheet 26 for -Y7- Profile

BM * 1
Chiseled X in a Concrete Headwall for an 18" concrete pipe at the entrance to a cattle farm.
-BL- Sta. 33+85 Lt. 354.68' EL=836.06'

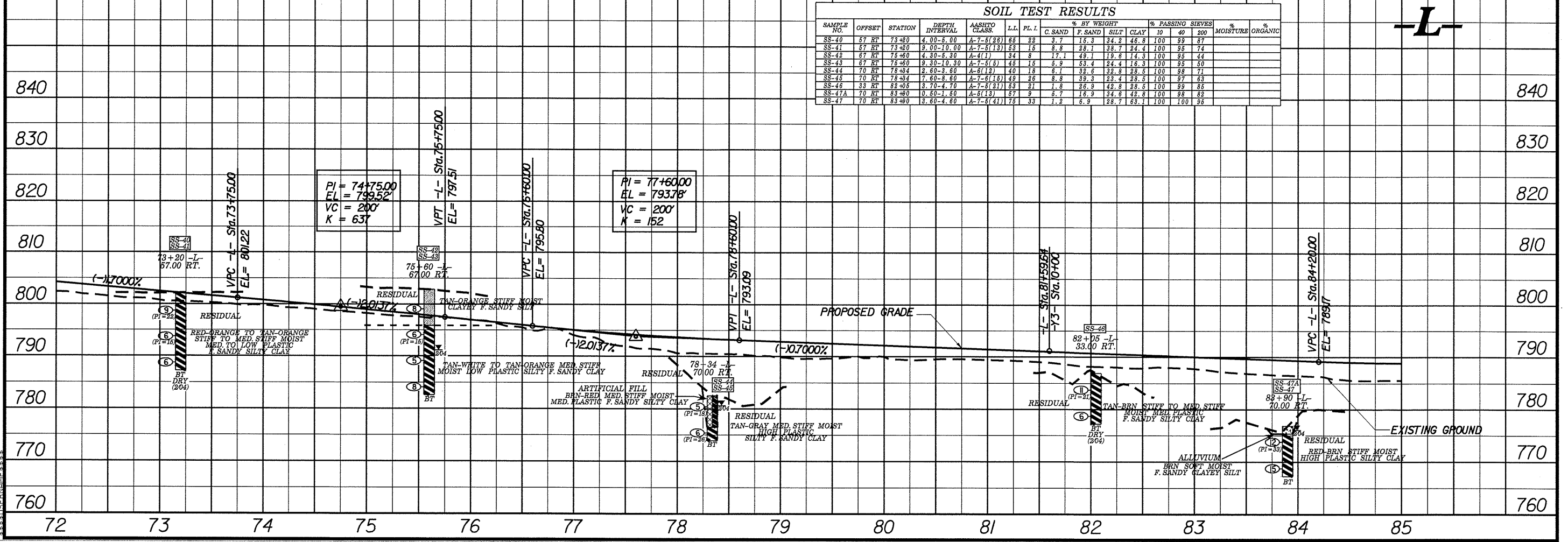
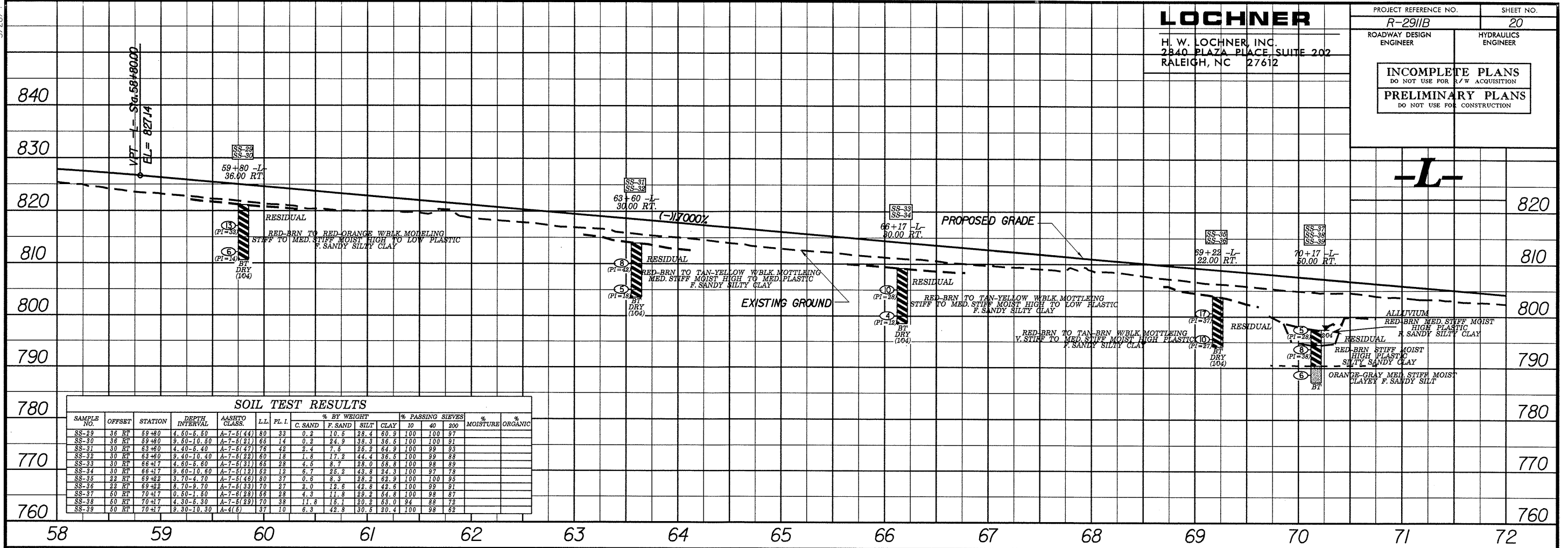


BM * 3
Chiseled X in the east end of an 18" concrete pipe under an access road to a tobacco field.
-BL- Sta. 57+85 Lt. 207.76' EL=821.68'

BM * 2
Railroad spike in the base of a 42" Black Oak
-BL- Sta. 48+95 Lt. 280.57' EL=820.66'



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



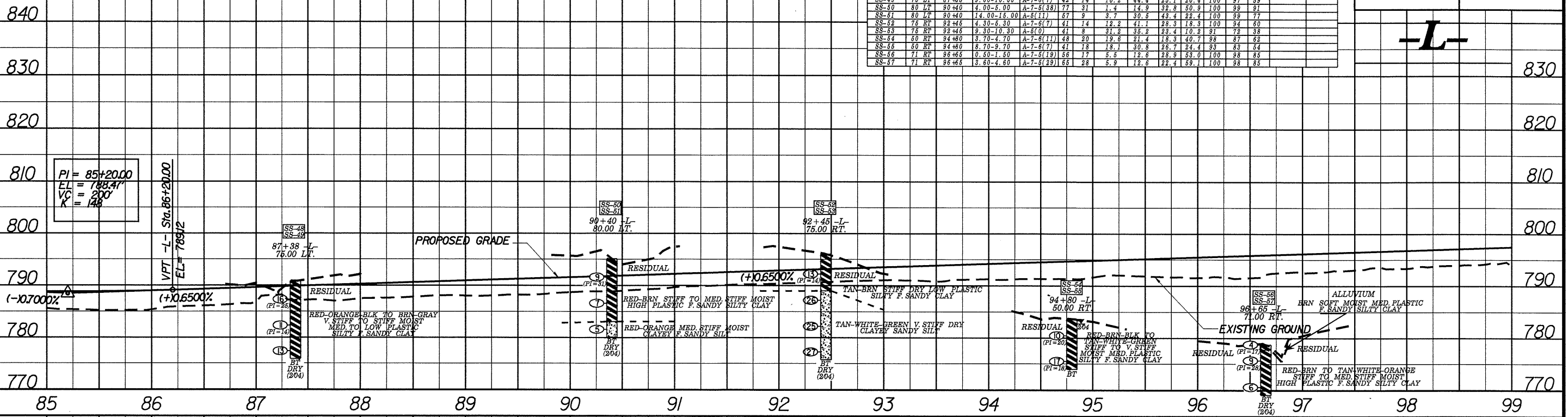
5/28/74

BM * 4
 Railroad spike in the western most root of a 6' gum, 33.6' from the centerline of Old US 70 SR 1975.
 -BL- Sta. 92+18 Lt. 693.97' EL=802.89'

SOIL TEST RESULTS

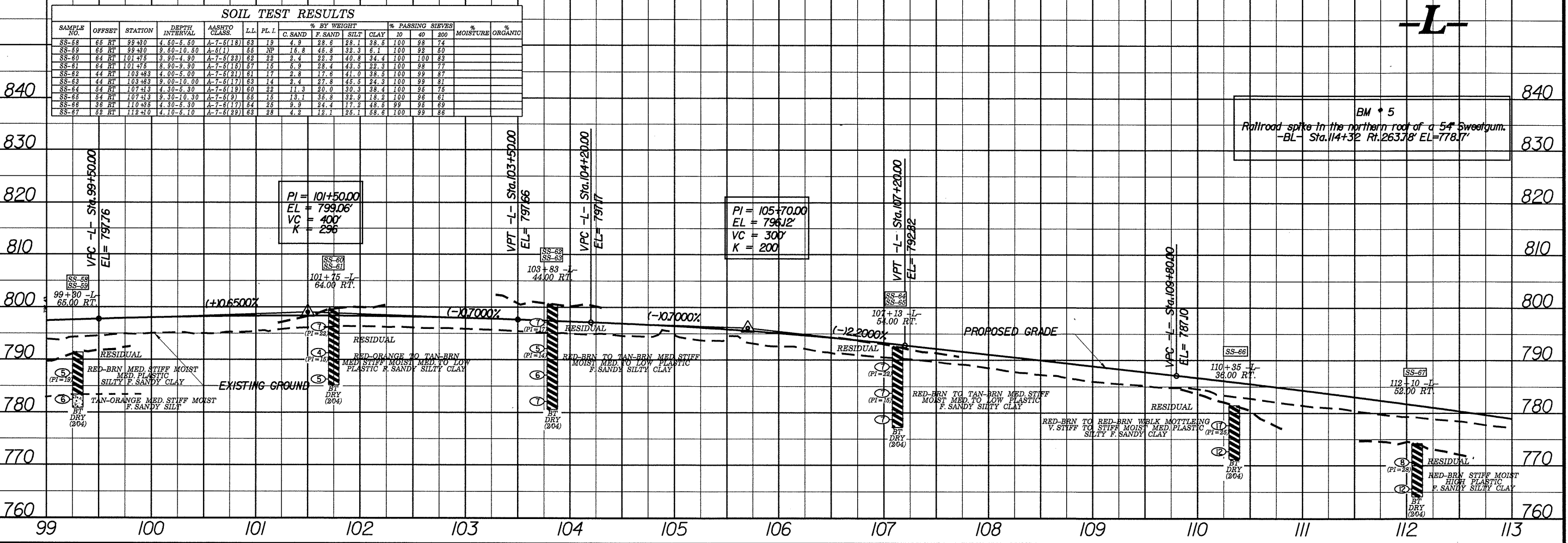
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-48	75 LT	87+38	4.00-5.00	A-7-6(12)	63	26	21.4	22.0	11.8	44.8	96	84	67		
SS-49	75 LT	87+38	9.00-10.00	A-7-6(11)	43	14	10.2	44.4	25.1	20.4	100	97	59		
SS-50	80 LT	90+40	4.00-5.00	A-7-6(38)	77	31	1.4	14.9	32.8	50.9	100	99	91		
SS-51	80 LT	90+40	14.00-15.00	A-6(11)	67	9	3.7	30.5	43.4	22.4	100	99	77		
SS-52	75 RT	92+46	4.30-6.30	A-7-6(7)	41	14	12.2	41.1	28.3	18.3	100	94	60		
SS-53	75 RT	92+46	9.30-10.30	A-6(0)	41	8	31.2	35.2	23.4	10.2	91	73	38		
SS-54	50 RT	94+80	3.70-4.70	A-7-6(11)	48	20	19.6	21.4	18.3	40.7	98	87	62		
SS-55	50 RT	94+80	8.70-9.70	A-7-6(7)	47	18	18.1	30.8	26.7	24.4	93	83	54		
SS-56	71 RT	96+65	0.50-1.50	A-7-6(18)	36	17	5.8	12.6	23.9	53.0	100	98	85		
SS-57	71 RT	96+65	5.60-6.60	A-7-6(29)	65	28	5.9	12.6	22.4	59.1	100	98	85		

PI = 85+20.00
 EL = 785.47'
 VC = 200'
 K = 148



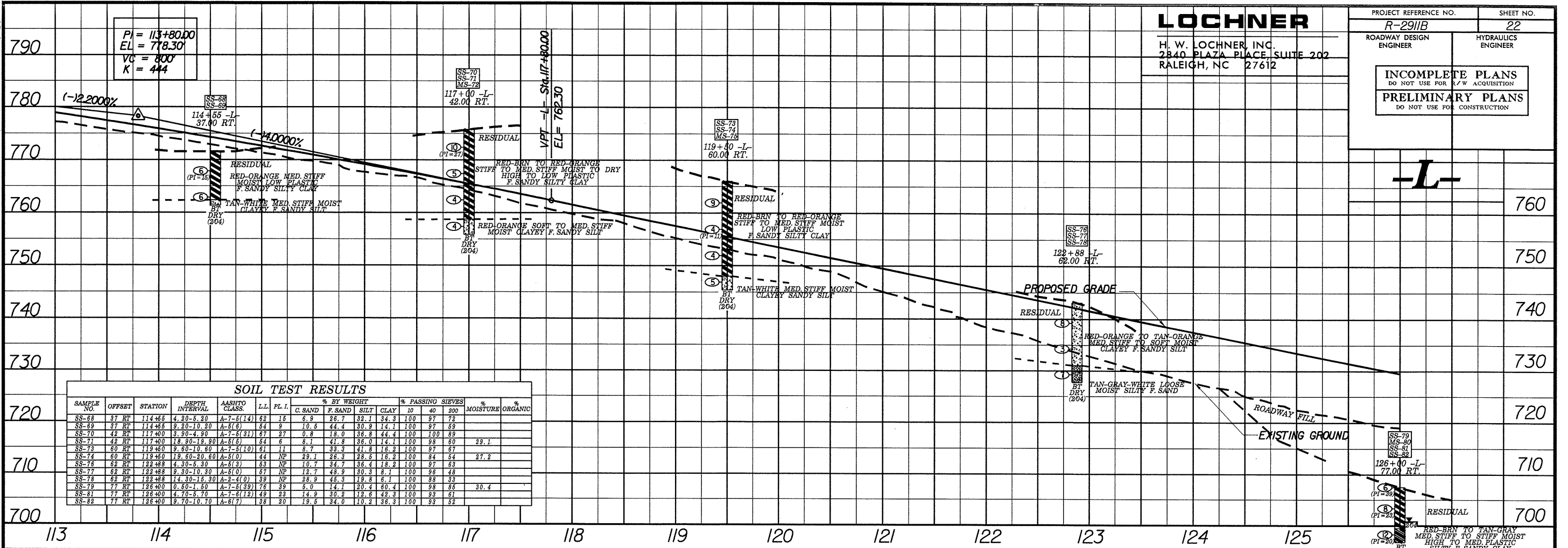
SOIL TEST RESULTS

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-58	65 RT	99+30	4.60-5.60	A-7-6(18)	63	19	4.9	28.6	28.1	38.5	100	98	74		
SS-59	65 RT	99+30	9.60-10.60	A-6(1)	65	NP	16.8	46.8	32.3	6.1	100	92	60		
SS-60	64 RT	101+75	3.90-4.90	A-7-6(23)	82	22	2.4	22.3	40.8	34.4	100	100	83		
SS-61	64 RT	101+75	8.90-9.90	A-7-6(15)	67	15	5.9	28.3	43.5	22.3	100	98	77		
SS-62	44 RT	103+83	4.00-5.00	A-7-6(21)	61	17	2.8	17.5	41.0	38.5	100	99	87		
SS-63	44 RT	103+83	9.00-10.00	A-7-6(17)	63	14	2.4	27.8	45.5	24.3	100	92	81		
SS-64	64 RT	107+13	4.30-5.30	A-7-6(19)	60	22	11.3	20.0	30.3	38.4	100	96	76		
SS-65	64 RT	107+13	9.30-10.30	A-7-6(9)	66	16	13.1	36.8	32.9	18.2	100	96	81		
SS-66	36 RT	110+35	4.30-5.30	A-7-6(17)	64	25	9.9	24.4	17.2	48.6	99	96	69		
SS-67	63 RT	112+10	4.10-5.10	A-7-6(29)	63	28	4.2	12.1	26.1	68.6	100	99	88		



BM * 5
 Railroad spike in the northern root of a 5' Sweetgum.
 -BL- Sta. 114+32 Rt. 263.78' EL=778.7'

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



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-68	37 RT	114+56	4.20-5.20	A-7-6(14)	62	15	6.9	26.7	32.1	34.3	100	97	72		
SS-69	37 RT	114+56	9.20-10.20	A-6(6)	54	9	10.6	44.4	30.9	14.1	100	97	59		
SS-70	42 RT	117+00	3.90-4.90	A-7-6(31)	87	27	0.8	18.0	36.8	44.4	100	100	89		
SS-71	42 RT	117+00	18.30-19.90	A-6(6)	64	6	8.1	41.8	36.0	14.1	100	98	60	29.1	
SS-73	60 RT	119+50	9.60-10.80	A-7-5(10)	61	11	8.7	33.3	41.8	16.2	100	97	67		
SS-74	60 RT	119+50	19.50-20.80	A-5(0)	44	NP	29.1	26.3	28.5	16.2	100	84	54	27.2	
SS-76	62 RT	122+88	4.30-5.30	A-6(3)	63	NP	10.7	34.7	38.4	15.2	100	97	63		
SS-77	62 RT	122+88	9.30-10.30	A-5(0)	67	NP	12.7	48.9	30.3	8.1	100	96	48		
SS-78	62 RT	122+88	14.30-15.30	A-2-4(0)	39	NP	28.9	45.3	19.8	6.1	100	88	33		
SS-79	77 RT	126+00	0.60-1.60	A-7-6(39)	76	39	5.0	14.1	20.4	60.4	100	98	86	30.4	
SS-81	77 RT	126+00	4.70-5.70	A-7-6(12)	49	23	14.9	30.2	12.6	42.3	100	93	61		
SS-82	77 RT	126+00	9.70-10.70	A-6(7)	38	20	19.5	34.0	10.2	36.3	100	93	52		

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	γ	VOID RATIO
							C. SAND	F. SAND	SILT	CLAY	10	40	200				
SS-79	77 RT	126+00	0.60-1.60	A-7-6(39)	76	39	5.0	14.1	20.4	60.4	100	98	86	30.4			
SS-81	77 RT	126+00	4.70-5.70	A-7-6(12)	49	23	14.9	30.2	12.6	42.3	100	93	61				
SS-82	77 RT	126+00	9.70-10.70	A-6(7)	38	20	19.5	34.0	10.2	36.3	100	93	52				
SS-83	60 RT	128+00	0.60-1.60	A-7-6(26)	69	26	4.6	16.6	30.5	48.3	100	98	83	40.4			
SS-85	60 RT	128+00	4.40-6.40	A-7-6(28)	66	34	6.2	20.3	23.1	50.4	100	98	76				
SS-86	60 RT	128+00	6.90-7.90	A-7-6(24)	62	33	10.3	22.0	19.4	48.3	100	97	70				
SS-87	60 RT	128+00	9.40-10.40	A-2-4(0)	18	NP	62.0	28.8	3.1	6.0	100	71	12				
ST-3	65 RT	130+00	0.30-2.30	A-7-6(15)	68	25	14.8	34.9	20.2	32.1	100	96	68	26	100.69	0.7184	
SS-88	65 RT	130+00	4.30-5.30	A-7-6(31)	64	35	3.4	20.7	17.4	68.4	100	99	50				
ST-4	65 RT	130+00	4.70-6.70	A-7-6(23)	68	30	5.6	26.9	16.4	52.1	100	98	72	35.3	81.89	1.0574	
SS-89	66 RT	130+00	9.30-10.30	A-2-4(0)	24	NP	23.6	60.8	3.5	12.1	100	92	22				
SS-90	65 RT	130+00	16.80-17.80	A-2-4(0)	24	NP	26.0	64.8	11.2	8.1	100	90	29				

PI = 129+00.00
EL = 717.50'
VC = 600'
K = 136

PI = 135+50.00
EL = 720.10'
VC = 200'
K = 222

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	CFS
DESIGN FREQUENCY	=	YRS
DESIGN HW ELEVATION	=	FT
BASE DISCHARGE	=	CFS
BASE FREQUENCY	=	YRS
BASE HW ELEVATION	=	FT
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING ELEVATION	=	FT
DATE OF SURVEY	=	
W.S. ELEVATION	=	FT
AT DATE OF SURVEY	=	

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	γ	VOID RATIO
							C. SAND	F. SAND	SILT	CLAY	10	40	200				
SS-92	70 RT	133+00	0.60-1.60	A-7-5(33)	64	31	3.4	10.1	30.1	58.4	100	99	89	26.4			
SS-94	71 RT	134+00	0.60-1.60	A-7-6(32)	61	30	1.4	11.9	40.4	46.3	100	99	91	34.8			
ST-1	71 RT	134+00	0.60-2.60	A-7-6(37)	66	29	0.6	2.6	30.7	66.1	100	100	98	36	79.70	1.1373	
SS-95	71 RT	134+00	4.40-5.40	A-7-6(28)	59	30	2.0	17.9	29.7	60.4	100	99	84				
ST-2	71 RT	134+00	4.60-6.60	A-7-6(10)	41	15	2.6	32.3	25.1	40.1	100	99	71	35.1	85.18	1.02	
SS-96	71 RT	134+00	6.30-7.30	A-7-6(20)	61	29	4.4	25.0	24.5	46.3	100	98	76				
SS-97	71 RT	134+00	11.90-12.90	A-1-3(0)	53	NP	70.3	24.4	1.3	4.0	89	44	6				
SS-131	40 RT	139+20	4.00-5.00	A-7-5(17)	56	14	0.6	18.4	28.3	54.7	100	100	87				
SS-132	40 RT	139+20	9.00-10.00	A-2-4(0)	26	NP	37.3	52.6	5.1	5.1	100	88	14				
SS-133	40 RT	139+20	19.00-20.00	A-2-4(0)	26	NP	35.2	46.2	14.6	4.0	96	81	26				

THIRD CREEK

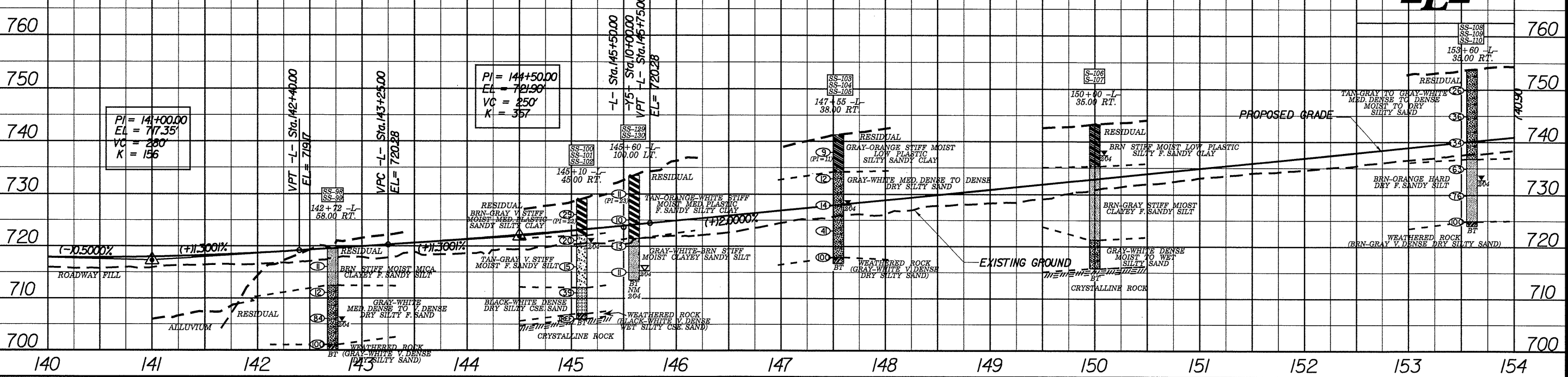
WEATHERED ROCK
(GRAY-WHITE-BRN
V. DENSE MOIST
SILTY SAND)

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

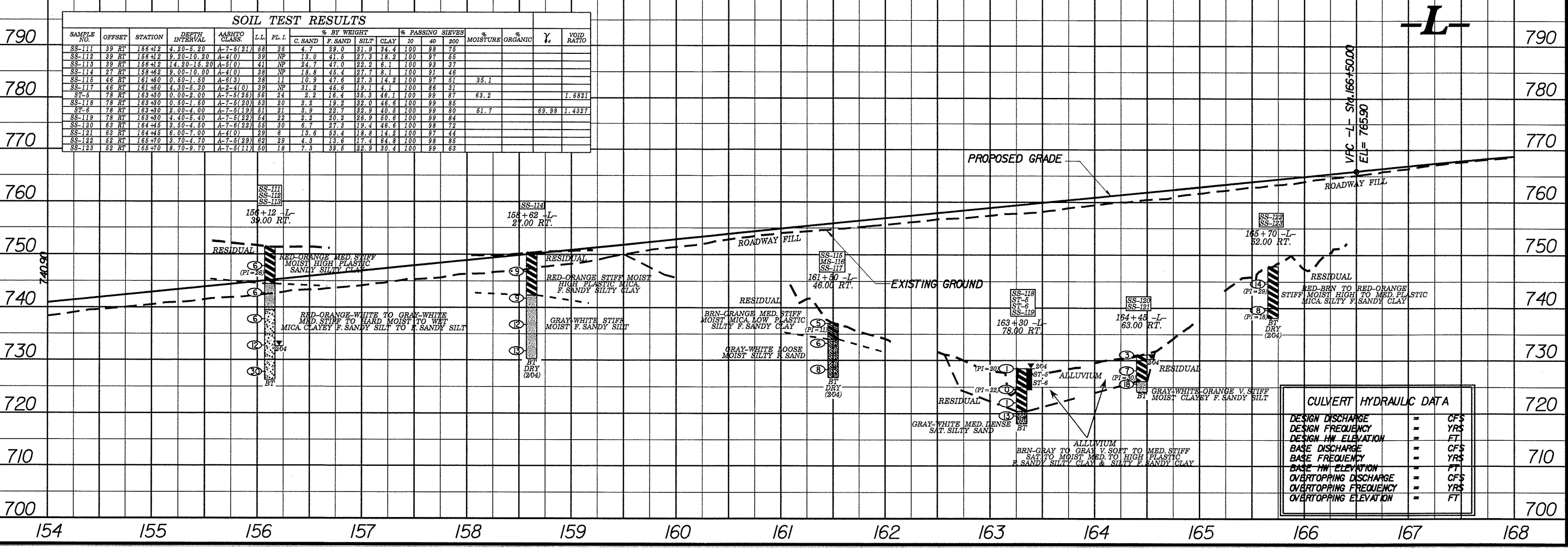
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

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

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-98	58 RT	142+72	3.30-4.30	A-1(0)	31	NP	10.1	56.5	21.2	12.2	100	98	44		
SS-99	58 RT	142+72	5.30-6.30	A-1(0)	31	NP	23.3	48.2	15.6	8.1	100	86	34		
SS-100	45 RT	145+10	3.50-4.50	A-2(8)(12)	45	22	17.6	27.9	26.0	34.4	95	86	84		
SS-101	45 RT	145+10	8.50-9.50	A-5(4)	60	NP	3.4	47.3	49.1	6.1	100	98	73		
SS-102	45 RT	145+10	18.50-19.50	A-1(0)	24	NP	51.9	31.8	12.3	4.1	81	50	18		
SS-129	100 LT	145+60	4.00-5.00	A-7-5(20)	60	23	9.1	23.5	26.9	40.5	100	96	75		
SS-130	100 LT	145+60	14.00-16.00	A-1(0)	37	7	37.2	30.2	22.5	10.1	97	74	38		
SS-103	38 RT	147+65	3.80-4.80	A-5(2)	33	11	27.6	36.3	24.0	12.2	100	82	44		
SS-104	38 RT	147+65	8.80-9.80	A-1(0)	32	NP	31.2	41.7	21.0	6.1	94	75	34		
SS-105	38 RT	147+65	18.80-19.80	A-2(4)(0)	27	NP	36.7	41.9	17.7	4.1	88	65	27		
S-106	35 RT	150+00	0.00-8.00	A-5(8)	39	19	17.8	29.0	22.8	30.4	96	85	57		
S-107	35 RT	150+00	8.00-22.00	A-1(2)	29	8	5.7	55.1	23.0	16.2	100	98	56		
SS-108	35 RT	153+60	4.40-5.40	A-2(4)(0)	27	NP	31.2	46.0	16.7	6.1	100	87	31		
SS-109	35 RT	153+60	14.40-16.40	A-2(4)(0)	28	NP	38.9	46.0	13.1	2.0	100	82	22		
SS-110	35 RT	153+60	19.40-20.40	A-1(0)	27	NP	20.7	53.9	21.4	4.1	95	86	36		



SOIL TEST RESULTS																	
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	Y _p	VOID RATIO
							C. SAND	F. SAND	SILT	CLAY	10	40	200				
SS-111	39 RT	156+12	4.30-5.30	A-7-6(21)	58	26	4.7	29.0	31.9	34.4	100	98	75				
SS-112	39 RT	156+12	9.30-10.30	A-1(0)	39	NP	13.0	41.6	27.3	18.2	100	97	65				
SS-113	39 RT	156+12	14.30-15.30	A-5(0)	42	NP	24.7	47.0	22.2	6.1	100	93	37				
SS-114	27 RT	158+62	13.00-14.00	A-1(0)	38	NP	13.8	45.4	27.7	8.1	100	91	46				
SS-115	48 RT	161+60	0.50-1.50	A-5(3)	38	11	10.9	47.6	27.3	14.2	100	87	51	35.1			
SS-117	46 RT	161+60	4.30-5.30	A-2(4)(0)	39	NP	31.2	45.6	19.1	4.1	100	86	31				
ST-5	78 RT	163+30	0.00-2.00	A-7-5(26)	58	24	2.2	16.4	35.3	46.1	100	99	87	63.2		1.6821	
SS-118	78 RT	163+30	0.50-1.50	A-7-5(20)	53	20	3.2	19.2	32.0	46.6	100	99	85				
ST-6	78 RT	163+30	2.00-4.00	A-7-5(19)	57	21	3.9	22.7	32.9	40.5	100	99	80	61.7		69.98	1.4327
SS-119	78 RT	163+30	4.40-5.40	A-7-5(22)	61	23	2.3	20.2	36.9	50.8	100	99	84				
SS-120	63 RT	164+45	3.50-4.50	A-7-6(22)	55	30	6.7	27.3	19.4	46.6	100	98	72				
SS-121	63 RT	164+45	6.00-7.00	A-1(0)	29	6	13.6	53.4	18.8	14.2	100	97	44				
SS-122	62 RT	165+70	3.70-4.70	A-7-6(29)	62	29	4.3	13.6	17.4	64.8	100	98	85				
SS-123	62 RT	165+70	8.70-9.70	A-7-6(11)	50	18	7.3	39.5	22.9	30.4	100	99	63				



CULVERT HYDRAULIC DATA	
DESIGN DISCHARGE	= CFS
DESIGN FREQUENCY	= YRS
DESIGN HW ELEVATION	= FT
BASE DISCHARGE	= CFS
BASE FREQUENCY	= YRS
BASE HW ELEVATION	= FT
OVERTOPPING DISCHARGE	= CFS
OVERTOPPING FREQUENCY	= YRS
OVERTOPPING ELEVATION	= FT

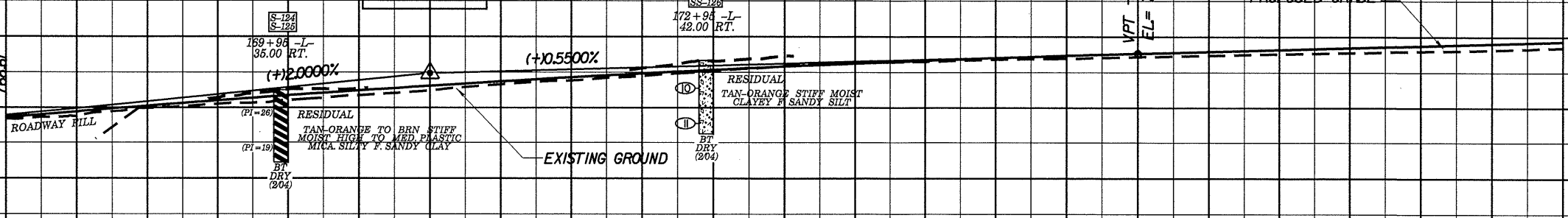
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM 7
Railroad spike in the root of a 15" Walnut
by the entrance to a fishing hole.
-BL- Sta. 171+46 Rt. 144.64 EL=771.62

PI = 171+00.00
EL = 774.90'
VC = 900'
K = 621

SS-126
172+94 -L-
42.00 RT.

VPT -L- Sta. 175+50.00
EL= 777.38



SOIL TEST RESULTS

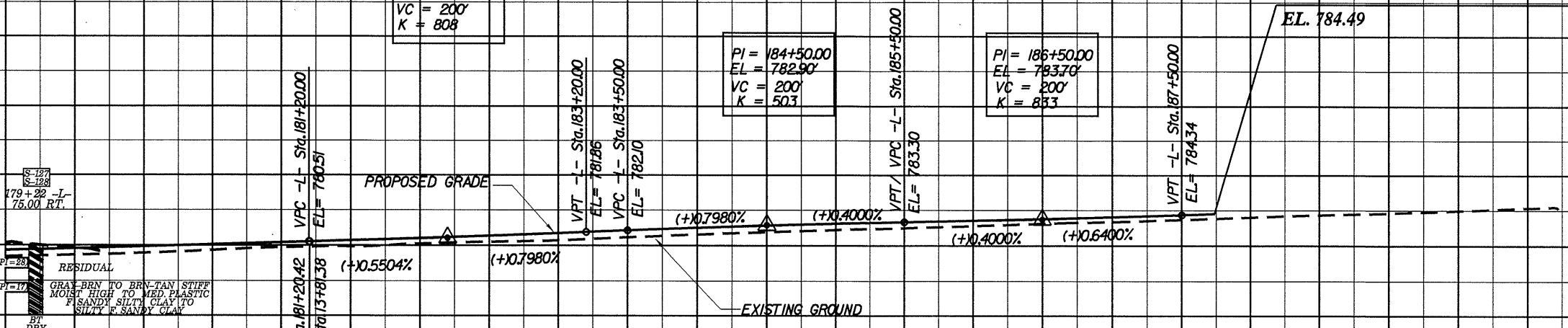
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS.	LL	PL.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-124	35 RT	169+95	0.00-8.00	A-7-6(29)	69	26	2.2	17.8	31.4	48.6	100	99	86		
S-125	30 RT	169+95	8.00-10.30	A-7-6(16)	55	19	3.4	34.2	32.0	30.4	100	99	74		
SS-126	42 RT	172+95	4.40-5.40	A-5(11)	55	10	5.3	30.0	38.5	26.3	100	99	75		

PI = 182+20.00
EL = 781.06'
VC = 200'
K = 808

PI = 184+50.00
EL = 782.90'
VC = 200'
K = 503

PI = 186+50.00
EL = 783.70'
VC = 200'
K = 833

END GRADE -L- STA. 187+74.11
EL. 784.49



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS.	LL	PL.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-127	75 RT	179+22	0.00-5.00	A-7-6(24)	51	28	2.2	25.1	28.1	44.5	100	100	81		
S-128	75 RT	179+22	5.00-10.00	A-8(10)	38	17	6.5	34.0	27.1	32.4	100	98	68		

5/28/94

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 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

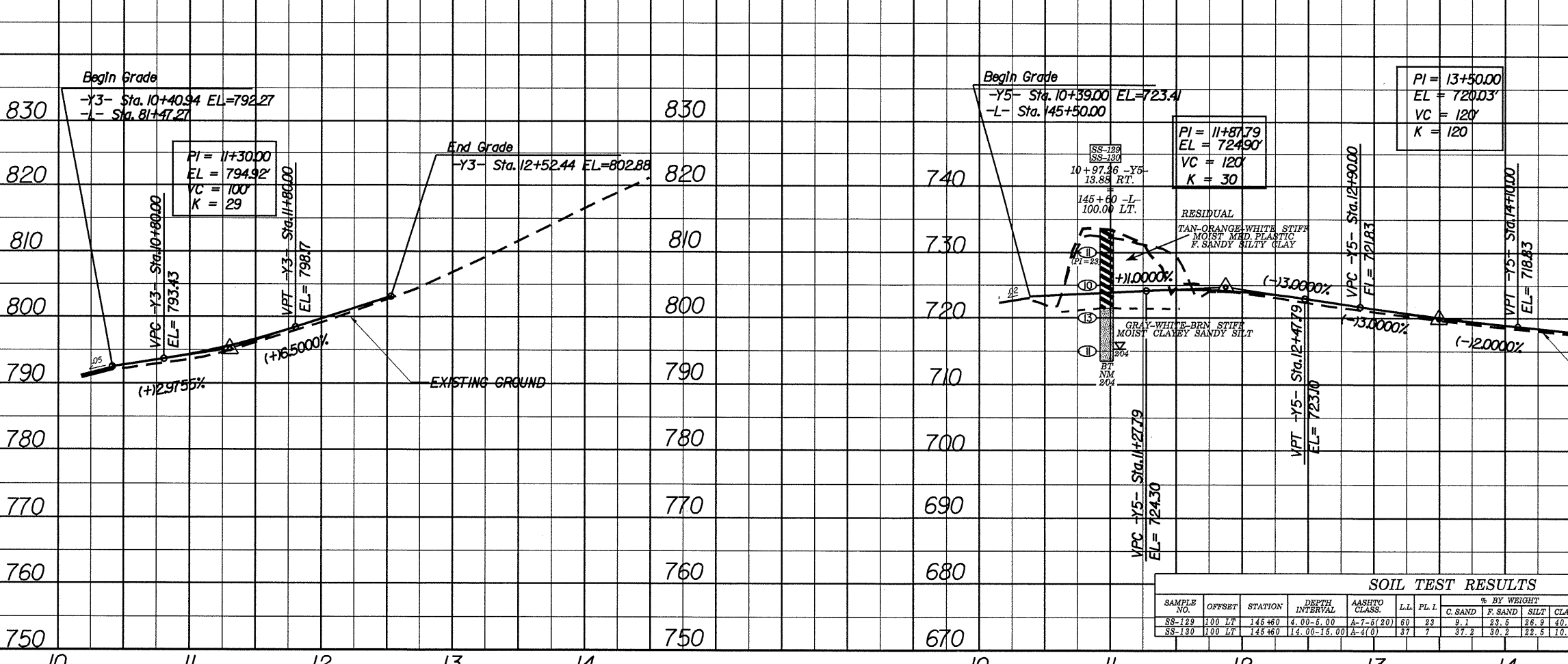
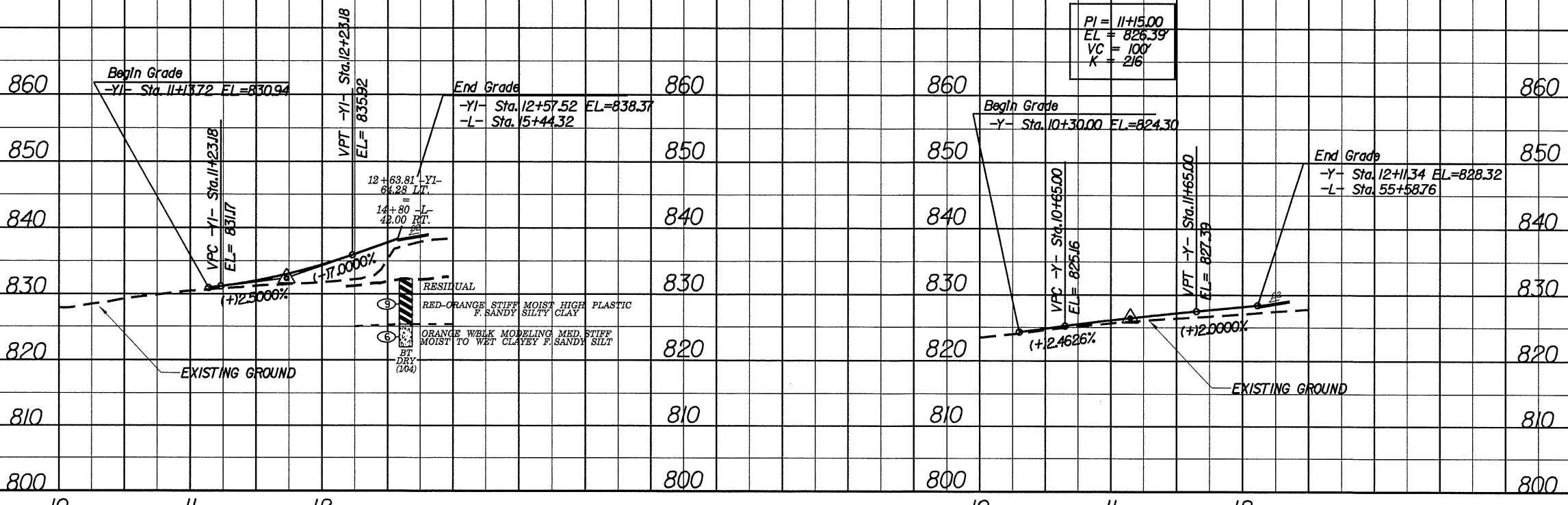
PROJECT REFERENCE NO. R-2911B SHEET NO. 25
 ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
INCOMPLETE PLANS
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PRELIMINARY PLANS
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PI = 11+72.25
 EL = 832.40'
 VC = 100'
 K = 22

PI = 11+15.00
 EL = 826.39'
 VC = 100'
 K = 216

PI = 13+50.00
 EL = 720.03'
 VC = 120'
 K = 120

PI = 11+87.79
 EL = 724.90'
 VC = 120'
 K = 30



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL.I.	% BY WEIGHT				% PASSING SIEVES		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40		
SS-129	100 LT	145+60	4.00-5.00	A-7-5(20)	60	23	9.1	23.5	26.9	40.5	100	96	75	
SS-130	100 LT	145+60	14.00-15.00	A-4(0)	37	7	37.2	30.2	22.5	10.1	97	74	33	

 SYSTEMS DESIGN

5/28/91

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

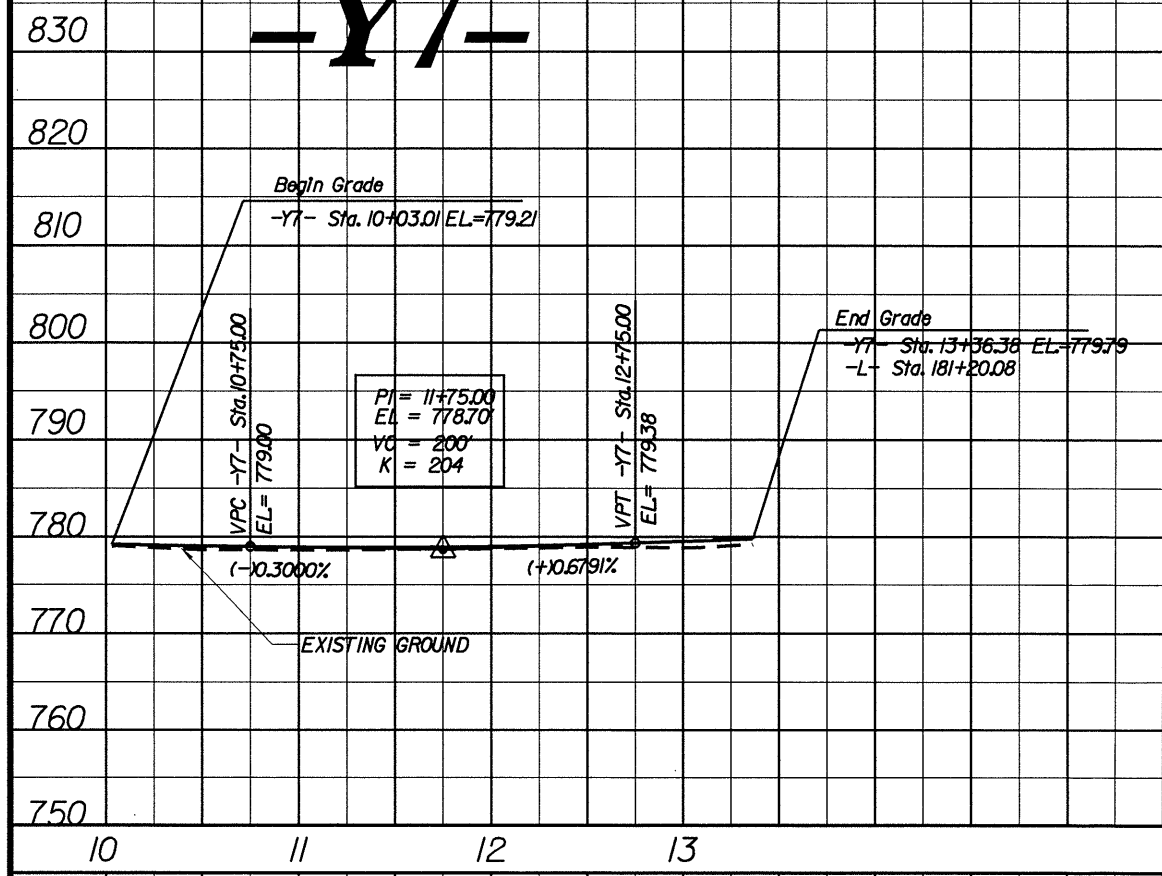
PROJECT REFERENCE NO. R-2911B SHEET NO. 26

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y7-

-Y7-



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