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CONTRACT: ID: K-4908

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-LI-	10+00.00 to 47+64.89	5-8	11-12	20
-L2-	10+00.00 to 24+86.60	6-7	13	
-L3-	10+00.00 to 47+31.53	8, 7, 6	14-15	
-L4-	10+00.00 to 27+52.56	7, 6	16	
-LNB-	57+00	7		17
	68+00	8		17
	70+00	8		18
	72+00	8		18
	74+50	8		19
SAMPLES		21		

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 39894.1.1 (K-4908) F.A. PROJ. IMS-77-1(177)39

COUNTY IREDELL

PROJECT DESCRIPTION I-77 REST AREA ON NEW LOCATION

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	NO.	SHEETS
N.C.	K-4908	1	22

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
39894.1.1	IMS-77-1(177)39	P.E.
		R/W & UTIL.

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PERSONNEL
C.C. MURRAY
J.E. ESTEP
M.R. MOORE
ICA

INVESTIGATED BY J.P. ROGERS
CHECKED BY C.B. LITTLE
SUBMITTED BY C.B. LITTLE
DATE SEPTEMBER 2013

NORTH CAROLINA LICENSED SEAL 1104 GEOLOGIST CLINTON B. LITTLE 10-14-13

DRAWN BY: J.K. McCLURE

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PROJECT REFERENCE NO.	SHEET NO.
39894.1.1 (K-4908)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				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	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7							
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE		
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	1 - 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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

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, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
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
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [X] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	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.
SLIGHT (SLI.)	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.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK 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*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	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.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

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.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (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.

BENCH MARK:

ELEVATION: FT.

NOTES:
NCDOT GEOTECHNICAL ENGINEERING UNIT BORING ELEVATIONS OBTAINED FROM THE K4908_ls_tin.tin file.
CONTRACTOR BORING ELEVATIONS SUPPLIED BY THE CONTRACTOR, ICA.

DUE TO DUPLICATIONS IN BORING SAMPLE NUMBERS, THE LETTER 'C' WAS ADDED TO THE SAMPLES SUPPLIED BY THE CONTRACTOR. (i.e. SS-C#)

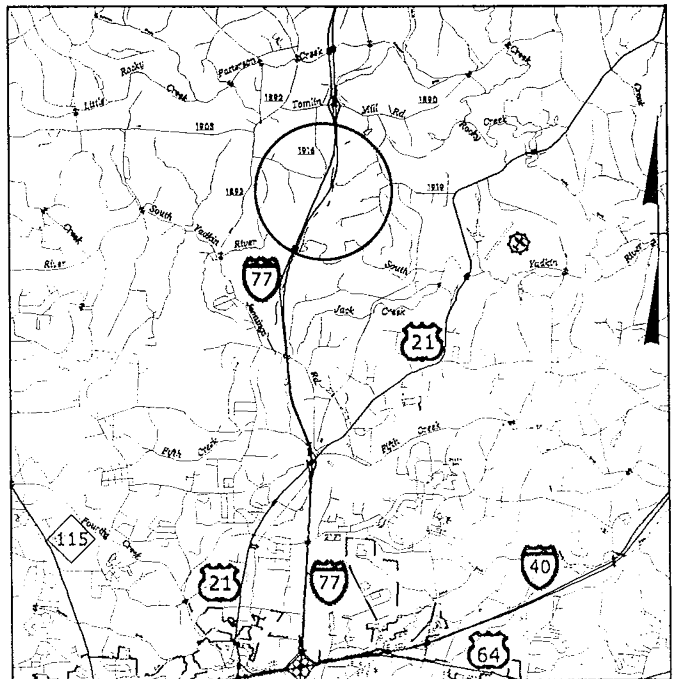
HAMMER EFFICIENCY RECORDS:
HF00066 CME-550 82% 01/09/2013
ICA0404 CME-45C 79% 08/08/2012

REVISED 09/23/09

TIP PROJECT: K-4908

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

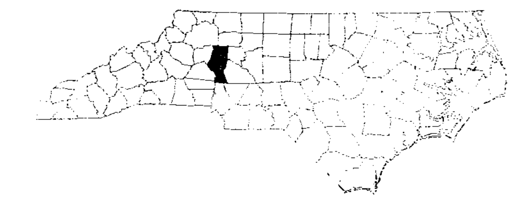
IREDELL COUNTY

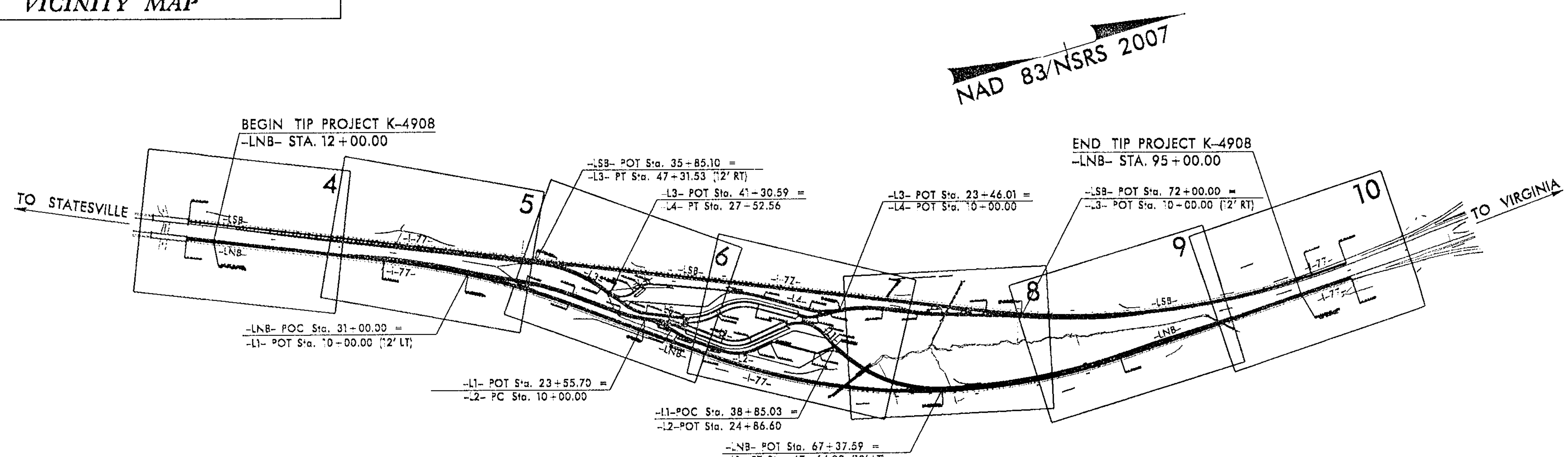
LOCATION: I-77 REST AREA ON NEW LOCATION

TYPE OF WORK: GRADING, DRAINAGE, PAVING, TRAFFIC CONTROL, SIGNING, LIGHTING, REST AREA AND FACILITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	K-4908	2A	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
39894.1.1	IMS-77-1(177)39	PE
39894.2.1	IMS-77-1(177)39	R/W & UTIL
39894.3.1	IMS-77-1(177)39	CONST.





THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING IN THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 32,680
ADT 2040 = 56,200
DHV = 10 %
D = 60 %
T = 14 %
V = 70 MPH

FUNC CLASS = INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT K-4908 = 1.572 MILES
TOTAL LENGTH TIP PROJECT K-4908 = 1.572 MILES

(I-77 NORTHBOUND LANE USED FOR PROJECT LENGTH)

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NA

LETTING DATE: APRIL 21, 2015

JASON MOORE, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Pat McCrory
GOVERNOR

Anthony Tata
SECRETARY

October 4, 2013

STATE PROJECT: 39894.1.1 (K-4908)
FEDERAL PROJECT: IMS-77-1(177)39
COUNTY: Iredell
DESCRIPTION: I-77 – New Rest Area on New Location

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project is located on I-77 in northern Iredell County between mile markers 54 and 59. This project will be entirely on a new location. It will be bound to the east by I-77 North and to the west by I-77 South. Geologically, this project falls within the Inner Piedmont Geologic Belt. According to the NC Geologic Map, rocks within the project corridor are meta ultramafic (PzZu). No rock outcrops were observed within the project corridor. Two tributaries to Olin Creek are the only drainage features to cross the project. The following alignments were investigated:

-L1- 11+00.00 to 47+64.89 (0.69 miles)
-L2- 10+50.00 to 24+86.60 (0.27 miles)
-L3- 10+00.00 to 47+31.53 (0.71 miles)
-L4- 10+00.00 to 27+52.56 (0.33 miles)
-LNB- 31+00.00 to 90+00.00 (1.12 miles)

The total length of lines investigated is 3.12 miles. A preliminary NCDOT field investigation of the new interchange was conducted in February of 2012. All borings performed during the NCDOT phase of the investigation were conducted with a CME-550X drill machine with an automatic hammer. Standard Penetration Tests were performed utilizing Hollow Stem Augers with carbide insert teeth in the head stem. Once the 25% plans became available, a geotechnical consultant provided additional borings and samples in July of 2013. Between the two investigations, 125 soil samples (quality, moisture, Shelby Tube) were submitted to the Materials and Tests Unit for laboratory analysis.

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

TELEPHONE: 919-707-6850
FAX: 919-250-4237

WEBSITE:
www.ncdot.gov/doh/preconstruct/highway/geotech

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

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Cut Slopes:

Within the project corridor is a 55' tall ridge line located to the left of Stations 42+00 to 60+00 –LNB-. Portions of three alignments (L1, L2, and L3) are affected by this ridge. The tallest proposed cut slope in this area is 49' high (at the ditch point) and occurs left of station 32+50 –L1-. In addition, thirty to forty foot high cuts are present on alignments –L2- and –L3- in this same area. An undisturbed sample (ST-1) was taken from a boring performed at 33+00 –L1-, 90' Lt. The triaxial data from ST-1 is available upon request. Groundwater was not encountered in any of the borings performed in the cut sections associated with this ridge.

SOIL PROPERTIES

Residual Soils:

All residual soils on the project are derived from the intrusive, ultra mafic (PzZu) rocks encountered within the project corridor. The dominant residual soil types encountered are sandy silts (A-4, A-5) and silty sands (A-2-4, A-2-5). Sandy clay (A-7) is also present within the project corridor, but in lesser concentrations. Where present, cap clays extend from two to seven feet below the ground surface. Mica was present in varying amounts throughout the residual soils, but primarily in the silty sands and sandy silts. Groundwater, where present, is between elevations 760' and 780'.

Alluvial Soils:

Alluvial soils within the project corridor are associated with two tributaries of Olin Creek. Both of these tributaries are listed on the plans as being jurisdictional streams. The alluvial deposits encountered are up to nine feet thick and contain either micaceous, sandy silt (A-4) or sandy clay (A-7-5). A gravel layer was present at the base of the alluvium in the borings performed right of station 42+12 and left of 46+27 –L1-. Groundwater, where encountered in these deposits, was between elevations 760' and 770'. Maximum fill heights over these deposits are approximately 20'.

Respectfully submitted,

John P. Rogers
Project Geological Engineer

PROJECT REFERENCE NO.	SHEET NO.
K-4908	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

REVISIONS

8/17/99

-LSB- POT Sta. 10+00.00

15

20

CONC

MTL W/ MTL POSTS

IF BST

I-77 S.BOUND

TO STATESVILLE 24 BST

4 BST

-LSB- N 23° 23' 31.3" E

BRIDGE #194

BM #1
N=783908
E=1447966
ELEV=766.47'

SOUTH FORK CATAWBA RIVER

48" RW / 45" W / ISBM

K4908-1

CONC CURB

15" CMP

30" CMP

K4908-2

MTL W/ MTL POSTS

3 BST

I-77 N.BOUND

24 BST

VAR BST

CB

CONC CURB

-LNB- N 23° 18' 01.8" E

BRIDGE #193

-LNB- POT Sta. 10+00.00

-LNB- POT Sta. 12+00.00

BEGIN TIP PROJECT K-4908

MATCHLINE -LNB- STA. 21+00.00 SEE SHEET 5

15

20

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mcclines

PROJECT REFERENCE NO.	SHEET NO.
K-4908	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID
NAD 83/NSRS 2007

8/17/99

REVISIONS

MATCHLINE -LNB- STA. 21+00.00 SEE SHEET 4

25

30

35

I-77 S.BOUND
24' BST

I-77 N.BOUND
24' BST

-LSB-

-BLS-

-BLN-

-LNB-

N 23° 23' 31.3" E

N 23° 31' 16.1" E

N 28° 34' 10.2" E

N 23° 18' 01.8" E

N 27° 10' 01.5" E

BL-16

BL-5

CONC

CONC CURB

MTL W/ MTC POSTS

TOP=763.35'
INV=758.94'

TOP=762.84'
INV=759.23'

TOP=759.21'
INV=756.34'

TOP=760.39'
INV=757.93'

INV=747.05'

INV=792.93'

INV=745.18' FES

INV=743.95'

INV=744.00'

INV=744.41'

INV=747.17'

INV=746.77' FES

INV=752.45'

BM #2
N=786459
E=1449000
ELEV=767.76'

-LNB- PC Sta. 24+68.23

-LNB-
PI Sta 31+73.33
Δ = 13° 41' 56.4" (RT)
D = 0° 58' 33.9"
L = 1,403.47'
T = 705.10'
R = 5,870.00'
SE = EXISTING

-LNB- POC Sta. 31+00.00 =
-LI- POT Sta. 10+00.00 (12' LT)

MATCHLINE -LNB- STA. 35+00.00
SEE SHEET 6

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mcallister

PROJECT REFERENCE NO.	SHEET NO.
K-4908	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83/NSRS 2007

REVISIONS

-L1-

PI Sta 16+07.59	PI Sta 23+00.08	PI Sta 24+94.08
Δ = 9° 49' 56.7" (RT)	Δ = 16° 15' 07.7" (LT)	Δ = 16° 56' 35.0" (RT)
D = 2° 48' 31.0"	D = 5° 24' 18.9"	D = 19° 05' 54.9"
L = 350.08'	L = 300.67'	L = 88.71'
T = 175.47'	T = 151.35'	T = 44.68'
R = 2,040.00'	R = 1,060.00'	R = 300.00'
SE = 0.06	SE = 0.06	SE = SEE PLANS

-L2-

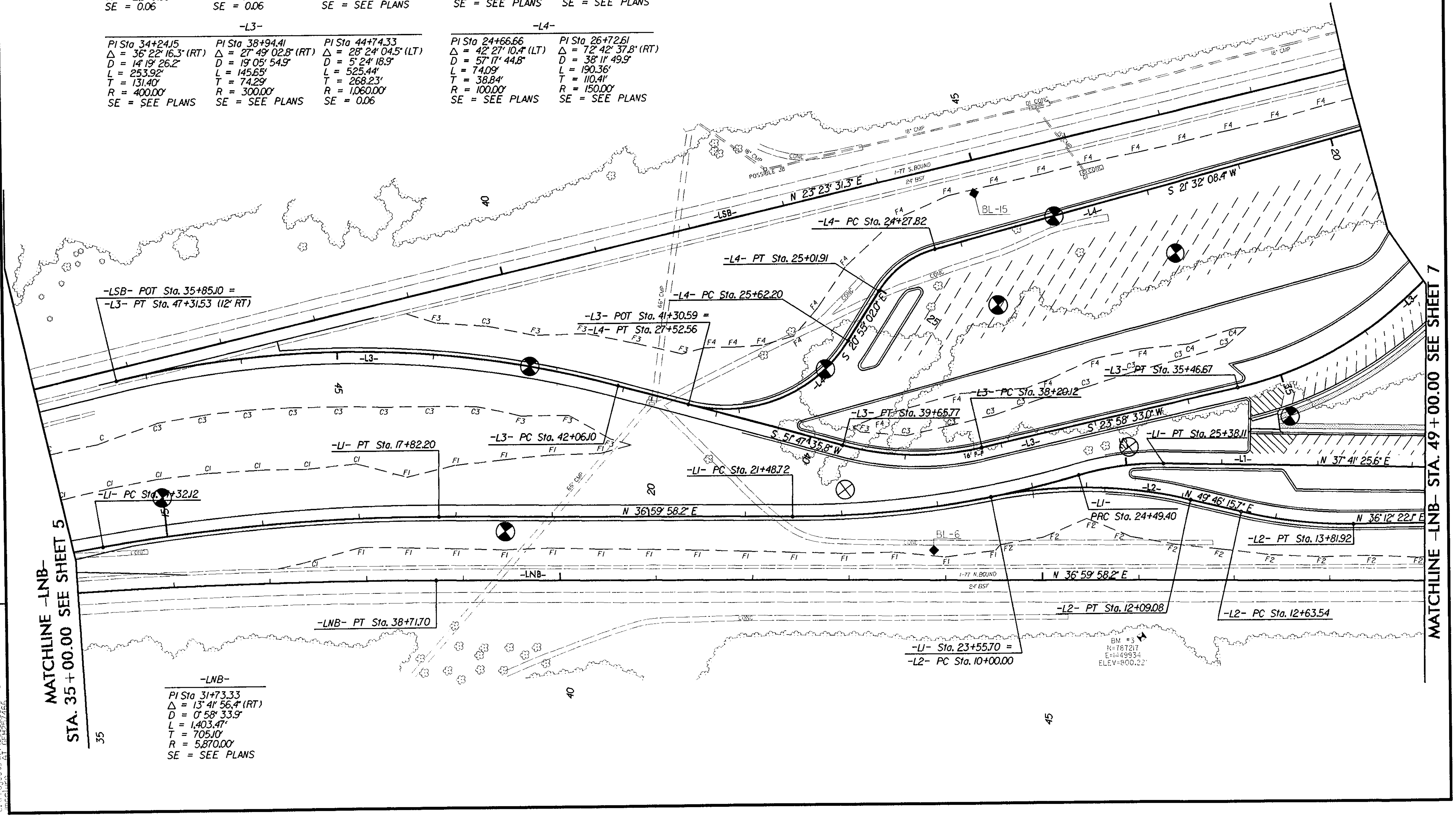
PI Sta 11+06.09	PI Sta 13+23.01
Δ = 23° 57' 32.7" (RT)	Δ = 13° 33' 53.5" (LT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 209.08'	L = 118.38'
T = 106.09'	T = 59.47'
R = 500.00'	R = 500.00'
SE = SEE PLANS	SE = SEE PLANS

-L3-

PI Sta 34+24.15	PI Sta 38+94.41	PI Sta 44+74.33
Δ = 36° 22' 16.3" (RT)	Δ = 27° 49' 02.8" (RT)	Δ = 28° 24' 04.5" (LT)
D = 14° 19' 26.2"	D = 19° 05' 54.9"	D = 5° 24' 18.9"
L = 253.92'	L = 145.65'	L = 525.44'
T = 131.40'	T = 74.29'	T = 268.23'
R = 400.00'	R = 300.00'	R = 1,060.00'
SE = SEE PLANS	SE = SEE PLANS	SE = 0.06

-L4-

PI Sta 24+66.66	PI Sta 26+72.61
Δ = 42° 27' 10.4" (LT)	Δ = 72° 42' 37.8" (RT)
D = 57° 17' 44.8"	D = 38° 11' 49.9"
L = 74.09'	L = 190.36'
T = 38.84'	T = 110.41'
R = 100.00'	R = 150.00'
SE = SEE PLANS	SE = SEE PLANS



-LNB-

PI Sta 31+73.33
Δ = 13° 41' 56.4" (RT)
D = 0° 58' 33.9"
L = 1,403.47'
T = 705.10'
R = 5,870.00'
SE = SEE PLANS

8/17/99

04-SEP-2013 15:28
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PROJECT REFERENCE NO.	SHEET NO.
K-4908	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/09

-L1-

PI Sta 30+68.69	PI Sta 36+32.67	PI Sta 43+36.01
Δ = 44° 44' 32.7" (LT)	Δ = 71° 34' 21.7" (RT)	Δ = 49° 44' 38.6" (LT)
D = 19° 05' 54.9"	D = 24° 54' 40.4"	D = 5° 24' 18.9"
L = 234.27'	L = 287.31'	L = 920.29'
T = 123.47'	T = 165.80'	T = 491.41'
R = 300.00'	R = 230.00'	R = 1,060.00'
SE = SEE PLANS	SE = SEE PLANS	SE = 0.06

-L2-

PI Sta 17+54.91	PI Sta 20+13.44	PI Sta 23+47.38
Δ = 43° 15' 29.3" (LT)	Δ = 38° 13' 35.0" (RT)	Δ = 34° 38' 57.6" (LT)
D = 15° 41' 50.9"	D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 275.57'	L = 33.36'	L = 30.24'
T = 144.73'	T = 17.33'	T = 15.60'
R = 365.00'	R = 50.00'	R = 50.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-L3-

PI Sta 22+22.35	PI Sta 25+71.88	PI Sta 31+23.94	PI Sta 34+24.15
Δ = 20° 57' 59.5" (LT)	Δ = 29° 32' 54.6" (RT)	Δ = 44° 22' 09.7" (LT)	Δ = 36° 22' 16.3" (RT)
D = 5° 24' 18.9"	D = 30° 09' 20.4"	D = 14° 19' 26.2"	D = 14° 19' 26.2"
L = 387.89'	L = 97.99'	L = 309.76'	L = 253.92'
T = 196.14'	T = 50.11'	T = 163.11'	T = 131.40'
R = 1,060.00'	R = 190.00'	R = 400.00'	R = 400.00'
SE = 0.06	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-L4-

PI Sta 11+14.83	PI Sta 17+12.69
Δ = 25° 52' 04.7" (RT)	Δ = 10° 26' 18.0" (LT)
D = 11° 27' 33.0"	D = 3° 49' 11.0"
L = 225.74'	L = 273.27'
T = 114.83'	T = 137.02'
R = 500.00'	R = 1,500.00'
SE = 0.06	SE = SEE PLANS

NAD 83/NSRS 2007

MATCHLINE -LNB- STA. 61+00.00 SEE SHEET 8

MATCHLINE -LNB- STA. 49+00.00 SEE SHEET 6

-L3- POC Sta. 23+46.01 =
-L4- PC Sta. 10+00.00

BL-14

-L4- PC Sta. 15+75.67

-L4- PT Sta. 12+25.74

-L4- PT Sta. 18+48.95

-L3- PT Sta. 24+14.10

-L3- PC Sta. 25+21.77

-L3- PT Sta. 26+19.76

-L1- PT Sta. 37+54.19

-L1- PC Sta. 38+44.60

-L1-POC Sta. 38+85.03 =
-L2-POT Sta. 24+86.60

-L1- PC Sta. 34+66.88

-L3- PC Sta. 29+60.83

-L3- PT Sta. 32+70.58

-L3- PC Sta. 32+92.75

-L1- PT Sta. 31+79.48

-L1- PC Sta. 29+45.21

-L2- PT Sta. 20+29.48

-L2- PT Sta. 23+62.02

-L2- PC Sta. 23+31.79

-L2- PT Sta. 18+85.75

-L2- PC Sta. 19+96.12

-L2- PC Sta. 16+10.18

BL-7

-LNB- PC Sta. 49+45.67

-LNB-

PI Sta 65+75.13
Δ = 38° 51' 18.7" (LT)
D = 1° 14' 24.6"
L = 3,133.06'
T = 1,629.46'
R = 4,620.00'
SE = EXISTING

05-SEP-2013 15:29
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jmcclure AT FEHR-GRAHAM

PROJECT REFERENCE NO.	SHEET NO.
K-4908	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

-LI-
PI Sta 43+36.01
Δ = 49° 44' 38.6" (LT)
D = 5° 24' 18.9"
L = 920.29'
T = 491.41'
R = 1,060.00'
SE = 0.06

-L3-
PI Sta 16+77.24
Δ = 5° 01' 14.9" (RT)
D = 2° 48' 31.0"
L = 178.76'
T = 89.44'
R = 2,040.00'
SE = 0.06

PI Sta 22+22.35
Δ = 20° 57' 59.5" (LT)
D = 5° 24' 18.9"
L = 387.89'
T = 196.14'
R = 1,060.00'
SE = 0.06

-LSB-
PI Sta 81+79.45
Δ = 25° 14' 51.8" (LT)
D = 1° 01' 56.5"
L = 2,445.64'
T = 1,243.00'
R = 5,550.00'
SE = EXISTING

NAD 83/NSRS 2007
NC GRID

BM #5
N=788841
E=1449996
ELEV=812.65'

-LSB- PC Sta. 69+36.45

-LSB- POT Sta. 72+00.00 =
-L3- POT Sta. 10+00.00 (12' RT)

-L3- PC Sta. 15+87.80

-L3- PC Sta. 20+26.21

-L3- POT Sta. 17+66.56

S 23° 23' 31.3" W

N 23° 23' 31.3" E

S 18° 22' 16.2" W

BL-13

I-77 S. BOUND
24' BST

MATCHLINE -LNB- STA. 61+00.00 SEE SHEET 7

MATCHLINE -LNB- STA. 75+00.00 SEE SHEET 9

RESIDUAL

ALLUVIAL

-LNB-
PI Sta 65+75.13
Δ = 38° 51' 18.7" (LT)
D = 1° 14' 24.6"
L = 3,133.06'
T = 1,629.46'
R = 4,620.00'
SE = EXISTING

-LNB- POC Sta. 67+37.59 =
-LI- PT Sta. 47+64.89 (12' LT)

BL-8

I-77 N. BOUND
24' BST

BM #4
N=789567
E=1451027
ELEV=808.20'

65

70

51-OCT-2013 10:36
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PROJECT REFERENCE NO.	SHEET NO.
K-4908	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID
NAD 83/NSRS 2007

REVISIONS

8/17/99

MATCHLINE -LNB- STA. 75+00.00 SEE SHEET 8

MATCHLINE -LNB- STA. 89+00.00 SEE SHEET 10

-LSB-
PI Sta 81+79.45
Δ = 25° 14' 51.8" (LT)
D = 1° 01' 56.5"
L = 2,445.64'
T = 1,243.00'
R = 5,550.00'
SE = EXISTING

-LNB-
PI Sta 65+75.13
Δ = 38° 51' 18.7" (LT)
D = 1° 14' 24.6"
L = 3,133.06'
T = 1,629.46'
R = 4,620.00'
SE = EXISTING

-LNB- PT Sta. 80+78.73

BM #6
N=790823
E=1450654
ELEV=813.22'

N 1° 51' 20.5" W

75
80
85

I-77 S.BOUND
11' BST
24' BST
4' BST

I-77 N.BOUND
4' BST
24' BST
11' BST

-LSB-
-LNB-

MTL W/ MTL POSTS

DICE CONC

BL-12
BL-9

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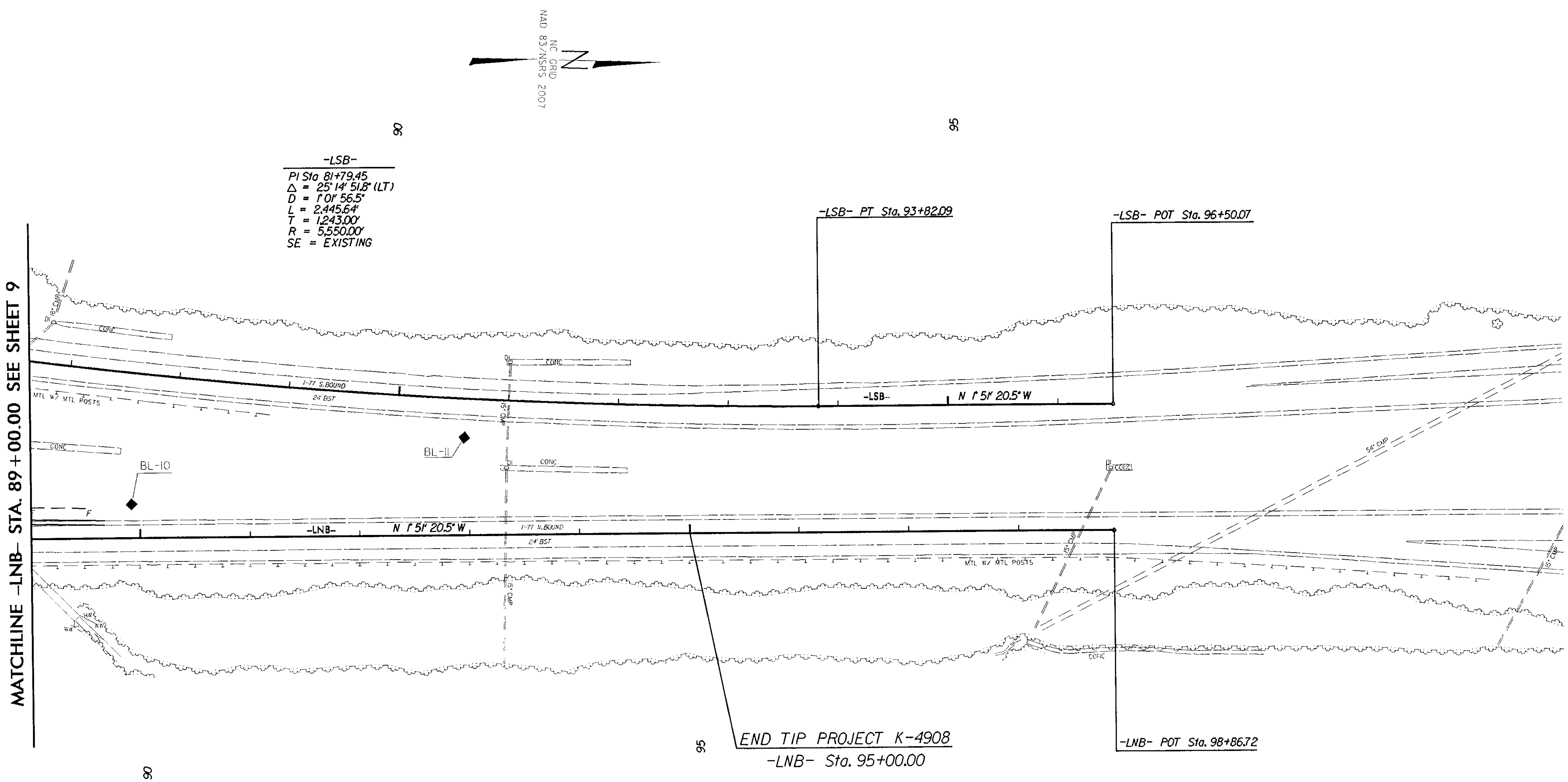
mcollins

PROJECT REFERENCE NO.	SHEET NO.
K-4908	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

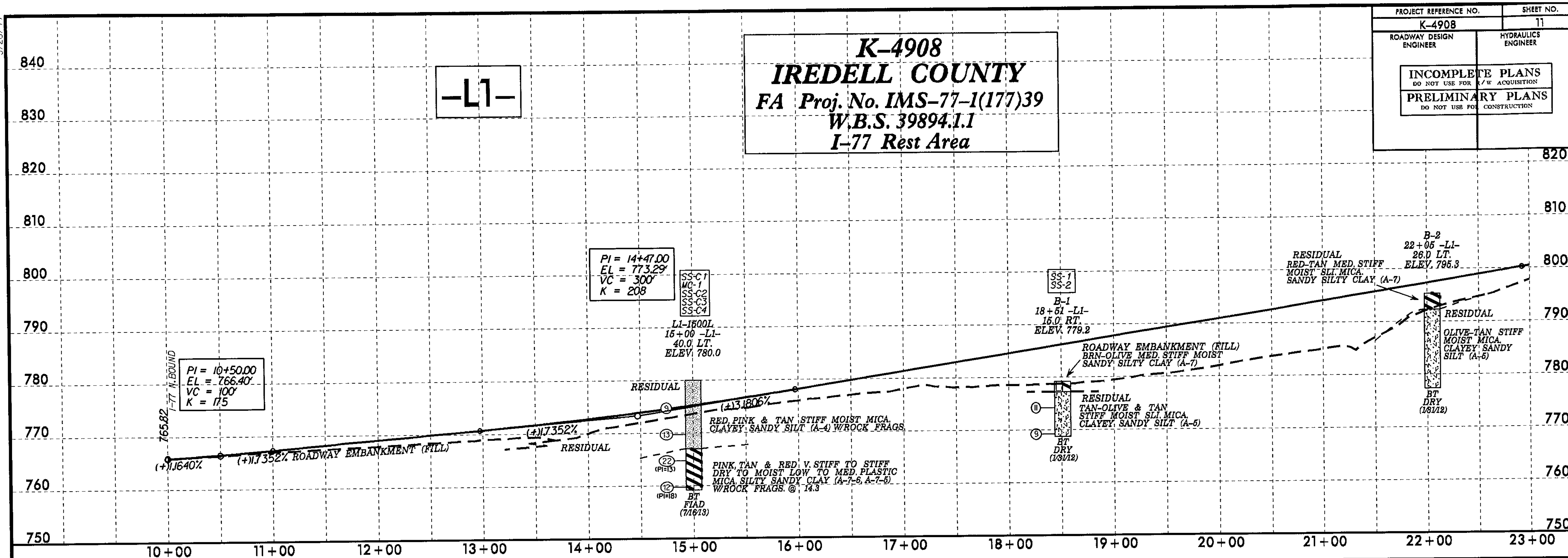
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

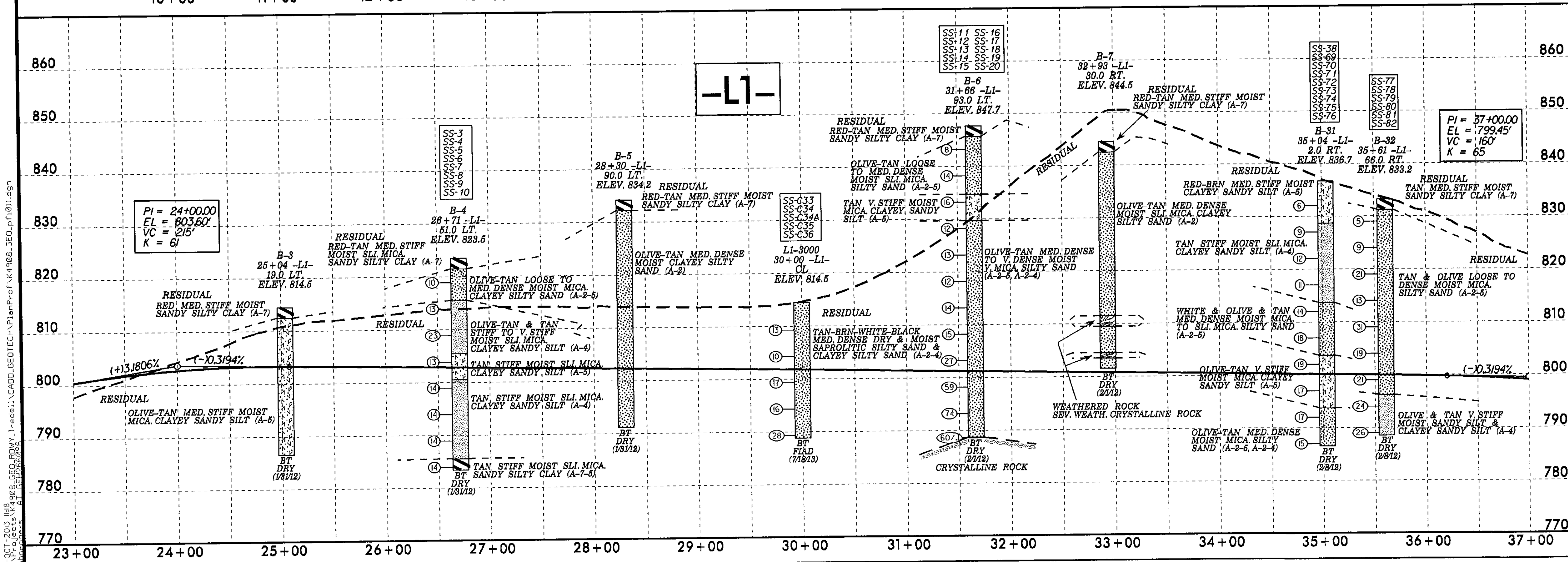
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99


PROJECT REFERENCE NO.
SHEET NO.
K-4908
11
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
K-4908
IREDELL COUNTY
FA Proj. No. IMS-77-1(177)39
W.B.S. 39894.1.1
I-77 Rest Area
-L1-
PI = 10+50.00
EL = 766.40'
VC = 100'
K = 175
765.82
I-77 N.BOUND
(+)1.1640%
(+)1.7352% ROADWAY EMBANKMENT (FILL)
(+)1.7352%
RESIDUAL
PI = 14+47.00
EL = 773.29'
VC = 300'
K = 208
SS-C1
MC-1
SS-C2
SS-C3
SS-C4
L1-1500L
15+00 -L1-
40.0 LT.
ELEV. 780.0
RESIDUAL
(+)3.1806%
RED, PINK & TAN STIFF MOIST MICA. CLAYEY SANDY SILT (A-4) W/ROCK FRAGS.
PINK, TAN & RED V. STIFF TO STIFF DRY TO MOIST LOW TO MED. PLASTIC MICA. SILTY SANDY CLAY (A-7-6, A-7-5) W/ROCK FRAGS. @ 14.3
BT
FIAD
(7/18/13)
SS-1
SS-2
B-1
18+51 -L1-
15.0 RT.
ELEV. 779.2
ROADWAY EMBANKMENT (FILL)
BRN-OLIVE MED. STIFF MOIST SANDY SILTY CLAY (A-7)
RESIDUAL
TAN-OLIVE & TAN STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-5)
BT
DRY
(1/31/12)
B-2
22+05 -L1-
26.0 LT.
ELEV. 795.3
RESIDUAL
RED-TAN MED. STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7)
RESIDUAL
OLIVE-TAN STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
BT
DRY
(1/31/12)
840
830
820
810
800
790
780
770
760
750
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00


-L1-
PI = 24+00.00
EL = 803.60'
VC = 215'
K = 61
(+)3.1806%
(-)0.3194%
RESIDUAL
OLIVE-TAN MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
B-3
25+04 -L1-
19.0 LT.
ELEV. 814.5
RESIDUAL
RED MED. STIFF MOIST SANDY SILTY CLAY (A-7)
BT
DRY
(1/31/12)
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10
B-4
26+71 -L1-
51.0 LT.
ELEV. 823.5
RESIDUAL
RED-TAN MED. STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7)
RESIDUAL
OLIVE-TAN LOOSE TO MED. DENSE MOIST MICA. CLAYEY SILTY SAND (A-2-5)
OLIVE-TAN & TAN STIFF TO V. STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-4)
TAN STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-5)
TAN STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-4)
TAN STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7-5)
BT
DRY
(1/31/12)
B-5
28+30 -L1-
90.0 LT.
ELEV. 834.2
RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
OLIVE-TAN MED. DENSE MOIST CLAYEY SILTY SAND (A-2)
BT
DRY
(1/31/12)
SS-C33
SS-C34
SS-C34A
SS-C35
SS-C36
L1-3000
30+00 -L1-
CL
ELEV. 814.5
RESIDUAL
TAN-BRN-WHITE-BLACK MED. DENSE DRY & MOIST SAPROLITIC SILTY SAND & CLAYEY SILTY SAND (A-2-4)
BT
FIAD
(7/18/13)
SS-11 SS-16
SS-12 SS-17
SS-13 SS-18
SS-14 SS-19
SS-15 SS-20
B-6
31+66 -L1-
93.0 LT.
ELEV. 847.7
RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
OLIVE-TAN LOOSE TO MED. DENSE MOIST SLI. MICA. SILTY SAND (A-2-5)
TAN V. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
OLIVE-TAN MED. DENSE TO V. DENSE MOIST V. MICA. SILTY SAND (A-2-5, A-2-4)
BT
DRY
(2/1/12)
CRYSTALLINE ROCK
B-7
32+93 -L1-
30.0 RT.
ELEV. 844.5
RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
RESIDUAL
OLIVE-TAN MED. DENSE MOIST SLI. MICA. CLAYEY SILTY SAND (A-2)
WEATHERED ROCK
SEV. WEATH. CRYSTALLINE ROCK
BT
DRY
(2/1/12)
SS-38
SS-69
SS-70
SS-71
SS-72
SS-73
SS-74
SS-75
SS-76
B-31
35+04 -L1-
2.0 RT.
ELEV. 836.7
RESIDUAL
RED-BRN MED. STIFF MOIST CLAYEY SANDY SILT (A-6)
TAN STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-4)
WHITE & OLIVE & TAN MED. DENSE MOIST MICA. TO SLI. MICA. SILTY SAND (A-2-5)
OLIVE-TAN V. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
OLIVE-TAN MED. DENSE MOIST MICA. SILTY SAND (A-2-5, A-2-4)
BT
DRY
(2/8/12)
SS-77
SS-78
SS-79
SS-80
SS-81
SS-82
B-32
35+61 -L1-
66.0 RT.
ELEV. 833.2
RESIDUAL
TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
RESIDUAL
TAN & OLIVE LOOSE TO DENSE MOIST MICA. SILTY SAND (A-2-5)
OLIVE & TAN V. STIFF MOIST SANDY SILT & CLAYEY SANDY SILT (A-4)
BT
DRY
(2/8/12)
PI = 37+00.00
EL = 799.45'
VC = 160'
K = 65
(-)0.3194%
860
850
840
830
820
810
800
790
780
770
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
K-4908	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L1-

PI = 37+00.00
EL = 799.45'
VC = 160'
K = 65

SS-C37
SS-C38
SS-C39
SS-C40
SS-C41
SS-C42

L1-3800
38+00 -L1-
CL
ELEV. 815.5

RESIDUAL

RED-PINK-TAN-BRN. MED. STIFF DRY MICA. SAPROLITIC CLAYEY SANDY SILT (A-5)

RED-PINK-TAN-BRN. MED. STIFF TO STIFF MOIST MICA. SAPROLITIC CLAYEY SANDY SILT (A-4)

RED-PINK-TAN-BRN. STIFF MOIST MICA. SAPROLITIC SANDY SILT (A-5)

RED-PINK-TAN-BRN. LOOSE DRY TO MOIST MICA. SAPROLITIC SILTY SAND (A-2-5)

BT
FIAD
(7/1813)

(-)12.78(5)%

RESIDUAL

ALLUVIUM

ALLUVIUM
OLIVE-TAN & TAN SOFT TO MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-4) W/GRAVEL LAYER @ 9.0-9.5

RESIDUAL
OLIVE-GREEN TO TAN & OLIVE V. LOOSE TO LOOSE WET SLI. MICA. TO NON-MICA. SILTY SAND (A-2-5)

B-11
42+12 -L1-
2.0 RT.
ELEV. 772.1

SS-27
SS-28
SS-29

BT

PI = 43+15.00
EL = 782.34'
VC = 529'
K = 117

SS-23
SS-24
SS-25
SS-26

B-10
43+04 -L1-
28.0 LT.
ELEV. 774.2

(-)12.78(5)%

(+)1.75(47)%

ROADWAY EMBANKMENT (FILL)

RESIDUAL
OLIVE-TAN LOOSE MOIST V. MICA. SILTY SAND (A-2-4)

TAN MED. STIFF MOIST LOW PLASTIC SILTY SANDY CLAY (A-7-5)

OLIVE-GREEN TO OLIVE & TAN LOOSE WET NON-MICA. TO MICA. SILTY SAND (A-2-5)

BT

B-12
45+61 -L1-
97.0 LT.
ELEV. 779.1

RESIDUAL
OLIVE MED. STIFF MOIST CLAYEY SANDY SILT (A-4)

TAN MED. STIFF MOIST SILTY SANDY CLAY (A-7)

BT

PI = 46+66.00
EL = 788.50'
VC = 170'
K = 244

(+)1.75(47)%

(+)1.05(67)%

ROADWAY EMBANKMENT (FILL)

789.54 I-77 N. BOUND

B-13
46+27 -L1-
234.0 LT.
ELEV. 773.3

SS-30
SS-31

ALLUVIUM
OLIVE-TAN TO GRAY & TAN MED. STIFF MOIST CLAYEY SANDY SILT (A-4) W/GRAVEL LAYER @ 7.2-7.7

TAN & WHITE MED. DENSE BT MOIST SILTY SAND (A-2-4)

830
820
810
800
790
780
770
760
750
740

37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00

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K-4908
IREDELL COUNTY

FA Proj. No. IMS-77-1(177)39
W.B.S. 39894.1.1
I-77 Rest Area

PROJECT REFERENCE NO.	SHEET NO.
K-4908	13

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

-L2-

PI = 11+00.00
EL = 804.01'
VC = 170'
K = 62

SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10

B-3
11+40 -L2- 44.0 LT.
=
25+04 -L1- 19.0 LT.
ELEV. 814.5

RESIDUAL
RED MED. STIFF MOIST SANDY SILTY CLAY (A-7)

RESIDUAL
OLIVE-TAN MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)

(+)2.153%

(-)0.577%

80.86

BT DRY (1/31/12)

RESIDUAL
RED-TAN MED. STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7)

B-4
13+00 -L2- 106.0 LT.
±
26+71 -L1- 51.0 LT.
ELEV. 823.5

OLIVE-TAN LOOSE TO MED. DENSE MOIST MICA. CLAYEY SILTY SAND (A-2-5)

OLIVE-TAN & TAN STIFF TO V. STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-4 & A-5)

TAN STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7-5)

BT DRY (1/31/12)

RESIDUAL

B-5
14+77 -L2- 147.0 LT.
=
28+30 -L1- 90.0 LT.
ELEV. 834.2

RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)

OLIVE-TAN MED. DENSE MOIST CLAYEY SILTY SAND (A-2)

BT DRY (1/31/12)

SS-C33 SS-C34 SS-C34A SS-C35 SS-C36

L1-8000
16+51 -L2- 55.0 LT.
=
30+00 -L1- CL
ELEV. 814.5

RESIDUAL

RESIDUAL

TAN-BRN-WHITE-BLACK MED. DENSE DRY & MOIST SAPROLITIC SILTY SAND & CLAYEY SILTY SAND (A-2-4)

BT FIAD (7/19/13)

SS-11 SS-16 SS-12 SS-17 SS-13 SS-18 SS-14 SS-19 SS-15 SS-20

B-6
18+40 -L2- 157.0 LT.
=
31+66 -L1- 99.0 LT.
ELEV. 847.7

RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)

OLIVE-TAN LOOSE TO MED. DENSE MOIST SLI. MICA. SILTY SAND (A-2-5)

TAN V. STIFF MOIST MICA CLAYEY SANDY SILT (A-6)

OLIVE-TAN MED. DENSE TO V. DENSE MOIST V. MICA. SILTY SAND (A-2-5, A-2-4)

BT DRY (2/1/12)

CRYSTALLINE ROCK

B-7
19+83 -L2- 95.0 LT.
=
32+93 -L1- 30.0 RT.
ELEV. 844.5

RESIDUAL

RESIDUAL
RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)

OLIVE-TAN MED. DENSE MOIST SLI. MICA. & MICA. CLAYEY SILTY SAND (A-2)

BT DRY (2/1/12)

WEATHERED ROCK SEV. WEATHERED CRYSTALLINE ROCK

B-8
21+01 -L2- 36.0 RT.
ELEV. 832.6

BT DRY (2/1/12)

OLIVE & TAN V. STIFF MOIST SANDY SILT & CLAYEY SANDY SILT (A-4)

SS-77 SS-78 SS-79 SS-80 SS-81 SS-82

B-32
21+85 -L2- 117.0 LT.
=
35+61 -L1- 66.0 RT.
ELEV. 833.2

RESIDUAL
TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)

TAN & OLIVE LOOSE TO DENSE MOIST MICA. SILTY SAND (A-2-5)

BT DRY (2/9/12)

WEATHERED ROCK SEV. WEATHERED CRYSTALLINE ROCK

SS-21 SS-22

B-9
22+70 -L2- 161.0 RT.
=
56+79 -LNB- 61.0 LT.
ELEV. 793.7

RESIDUAL
OLIVE-TAN MED. DENSE MOIST SLI. MICA. CLAYEY SILTY SAND (A-2-5)

BT DRY (2/9/12)

OLIVE-TAN STIFF MOIST SLI. MICA. SANDY SILT (A-4)

(-)0.577%

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

PI = 24+30.00
EL = 796.34'
VC = 100'
K = 33

-L2-

SS-C37 SS-C40 SS-C38 SS-C41 SS-C39 SS-C42

L1-3800
24+64 -L2- 79.0 LT.
=
38+00 -L1- CL
ELEV. 815.6

RESIDUAL
RED-PINK-TAN-BRN MED. STIFF DRY MICA. SAPROLITIC CLAYEY SANDY SILT (A-5)

RED-PINK-TAN-BRN MED. STIFF TO STIFF MOIST MICA. SAPROLITIC CLAYEY SANDY SILT (A-4)

794.30

(-)5.000%

RED-PINK-TAN-BRN STIFF MOIST MICA. SAPROLITIC SANDY SILT (A-5)

RED-PINK-TAN-BRN LOOSE DRY TO MOIST MICA. SAPROLITIC SILTY SAND (A-2-5)

BT FIAD (7/19/13)

24+00

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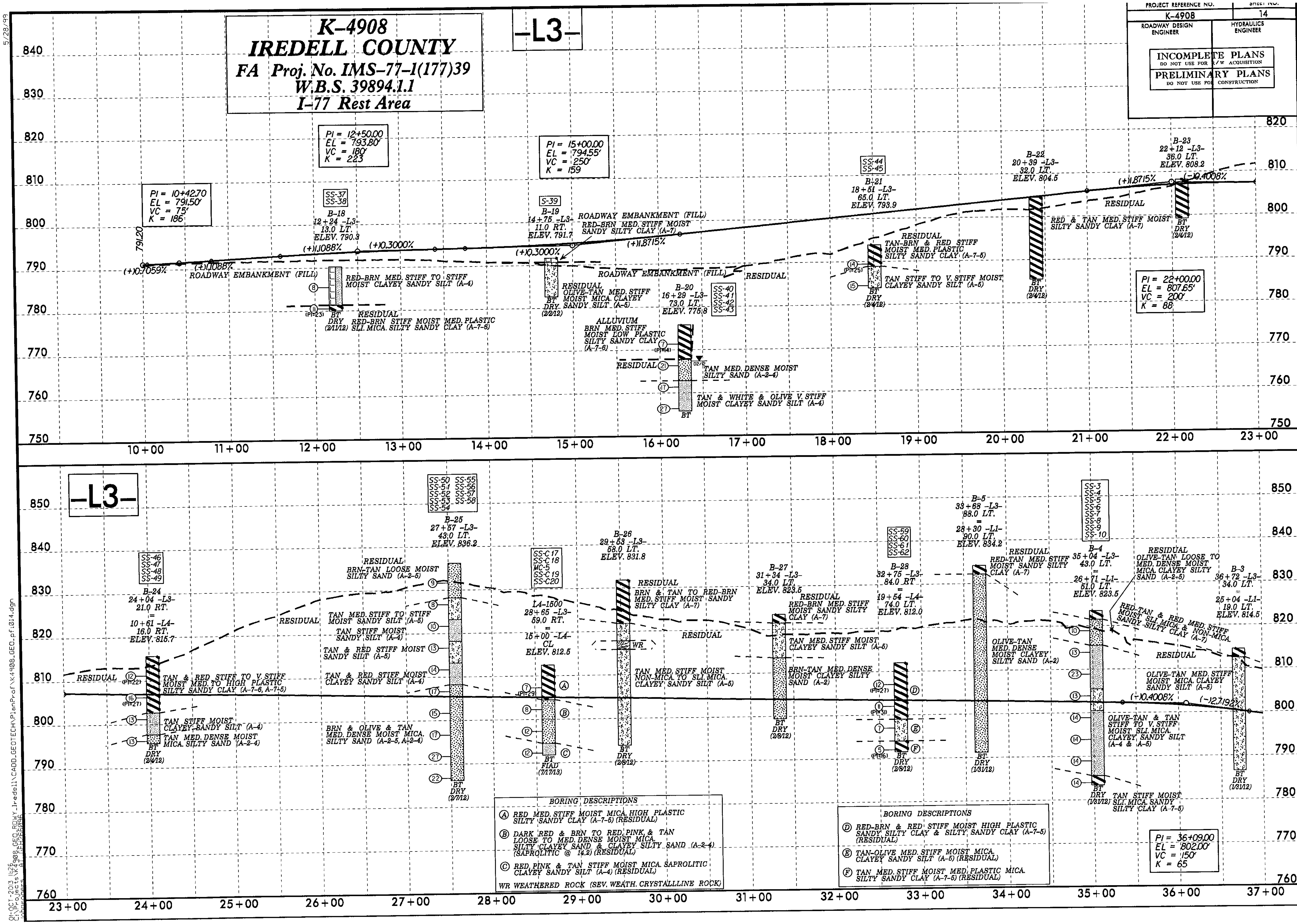
jonrogers



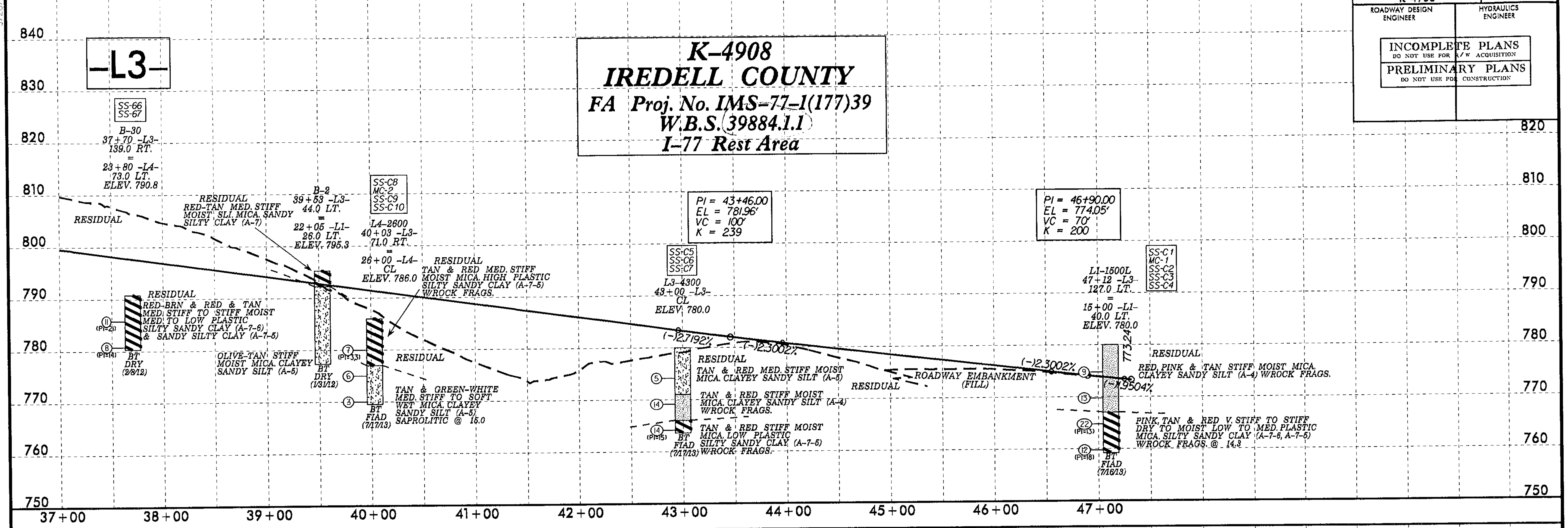
K-4908
IREDELL COUNTY
FA Proj. No. IMS-77-1(177)39
W.B.S. 39894.1.1
I-77 Rest Area
-L3-
PROJECT REFERENCE NO. K-4908
SHEET NO. 14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
PI = 10+42.70 EL = 791.50' VC = 75' K = 186
PI = 12+50.00 EL = 793.80' VC = 180' K = 223
PI = 15+00.00 EL = 794.55' VC = 250' K = 159
PI = 22+00.00 EL = 807.65' VC = 200' K = 88
B-18 12+24 -L3- 13.0 LT. ELEV. 790.3
B-19 14+75 -L3- 11.0 RT. ELEV. 791.7
B-20 16+29 -L3- 73.0 LT. ELEV. 775.8
B-21 18+51 -L3- 65.0 LT. ELEV. 793.9
B-22 20+39 -L3- 32.0 LT. ELEV. 804.5
B-23 22+12 -L3- 36.0 LT. ELEV. 808.2
ROADWAY EMBANKMENT (FILL)
RED-BRN MED. STIFF TO STIFF MOIST CLAYEY SANDY SILT (A-4)
RESIDUAL RED-BRN STIFF MOIST MED. PLASTIC SLI. MICA. SILTY SANDY CLAY (A-7-6)
RESIDUAL OLIVE-TAN MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
ROADWAY EMBANKMENT (FILL) RED-BRN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
ALLUVIUM BRN MED. STIFF MOIST LOW PLASTIC SILTY SANDY CLAY (A-7-6)
TAN MED. DENSE MOIST SILTY SAND (A-2-4)
TAN & WHITE & OLIVE V. STIFF MOIST CLAYEY SANDY SILT (A-4)
RESIDUAL TAN-BRN & RED STIFF MOIST MED. PLASTIC SILTY SANDY CLAY (A-7-5)
TAN STIFF TO V. STIFF MOIST CLAYEY SANDY SILT (A-5)
RED & TAN MED. STIFF MOIST SILTY SANDY CLAY (A-7)
PI = 36+09.00 EL = 802.00' VC = 150' K = 65
B-24 24+04 -L3- 21.0 RT. = 10+61 -L4- 16.0 RT. ELEV. 815.7
B-25 27+57 -L3- 43.0 LT. ELEV. 836.2
L4-1500 28+65 -L3- 59.0 RT. = 15+00 -L4- CL ELEV. 812.5
B-26 29+63 -L3- 68.0 LT. ELEV. 831.8
B-27 31+34 -L3- 34.0 LT. ELEV. 823.5
B-28 32+75 -L3- 84.0 RT. = 19+54 -L4- 74.0 LT. ELEV. 812.0
B-5 33+68 -L3- 88.0 LT. = 28+30 -L1- 90.0 LT. ELEV. 834.2
B-4 35+04 -L3- 43.0 LT. = 26+71 -L1- 51.0 LT. ELEV. 823.5
B-3 36+72 -L3- 34.0 LT. = 25+04 -L1- 19.0 LT. ELEV. 814.5
TAN & RED STIFF TO V. STIFF MOIST MED. TO HIGH PLASTIC SILTY SANDY CLAY (A-7-6, A-7-5)
TAN STIFF MOIST CLAYEY SANDY SILT (A-4)
TAN MED. DENSE MOIST MICA. SILTY SAND (A-2-4)
RESIDUAL BRN-TAN LOOSE MOIST SILTY SAND (A-2-5)
TAN MED. STIFF TO STIFF MOIST SANDY SILT (A-5)
TAN STIFF MOIST SANDY SILT (A-4)
TAN & RED STIFF MOIST SANDY SILT (A-5)
TAN & RED STIFF MOIST CLAYEY SANDY SILT (A-4)
BRN & OLIVE & TAN MED. DENSE MOIST MICA. SILTY SAND (A-2-5, A-2-4)
RESIDUAL BRN & TAN TO RED-BRN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
TAN MED. STIFF MOIST NON-MICA. TO SLI. MICA. CLAYEY SANDY SILT (A-5)
RESIDUAL RED-BRN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
TAN MED. STIFF MOIST CLAYEY SANDY SILT (A-5)
BRN-TAN MED. DENSE MOIST CLAYEY SILTY SAND (A-2)
RESIDUAL RED-TAN MED. STIFF MOIST SANDY SILTY CLAY (A-7)
OLIVE-TAN MED. DENSE MOIST CLAYEY SILTY SAND (A-2)
RESIDUAL OLIVE-TAN LOOSE TO MED. DENSE MOIST MICA. CLAYEY SILTY SAND (A-2-5)
RED-TAN & RED MED. STIFF MOIST SLI. MICA. & NON-MICA. SANDY SILTY CLAY (A-7)
OLIVE-TAN MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5)
OLIVE-TAN & TAN STIFF TO V. STIFF MOIST SLI. MICA. CLAYEY SANDY SILT (A-4 & A-5)
TAN STIFF MOIST SLI. MICA. SANDY SILTY CLAY (A-7-5)
BORING DESCRIPTIONS
(A) RED MED. STIFF MOIST MICA. HIGH PLASTIC SILTY SANDY CLAY (A-7-5) (RESIDUAL)
(B) DARK RED & BRN TO RED, PINK & TAN LOOSE TO MED. DENSE MOIST MICA. SILTY CLAYEY SAND & CLAYEY SILTY SAND (A-2-4) (SAPROLITIC @ 14.2) (RESIDUAL)
(C) RED, PINK & TAN STIFF MOIST MICA. SAPROLITIC CLAYEY SANDY SILT (A-4) (RESIDUAL)
WR WEATHERED ROCK (SEV. WEATH. CRYSTALLLINE ROCK)
BORING DESCRIPTIONS
(D) RED-BRN & RED STIFF MOIST HIGH PLASTIC SANDY SILTY CLAY & SILTY SANDY CLAY (A-7-5) (RESIDUAL)
(E) TAN-OLIVE MED. STIFF MOIST MICA. CLAYEY SANDY SILT (A-5) (RESIDUAL)
(F) TAN MED. STIFF MOIST MED. PLASTIC MICA. SILTY SANDY CLAY (A-7-5) (RESIDUAL)

PROJECT REFERENCE NO.	SHEET NO.
K-4908	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

K-4908
IREDELL COUNTY
FA Proj. No. IMS-77-1(177)39
W.B.S. 39884.1.1
I-77 Rest Area



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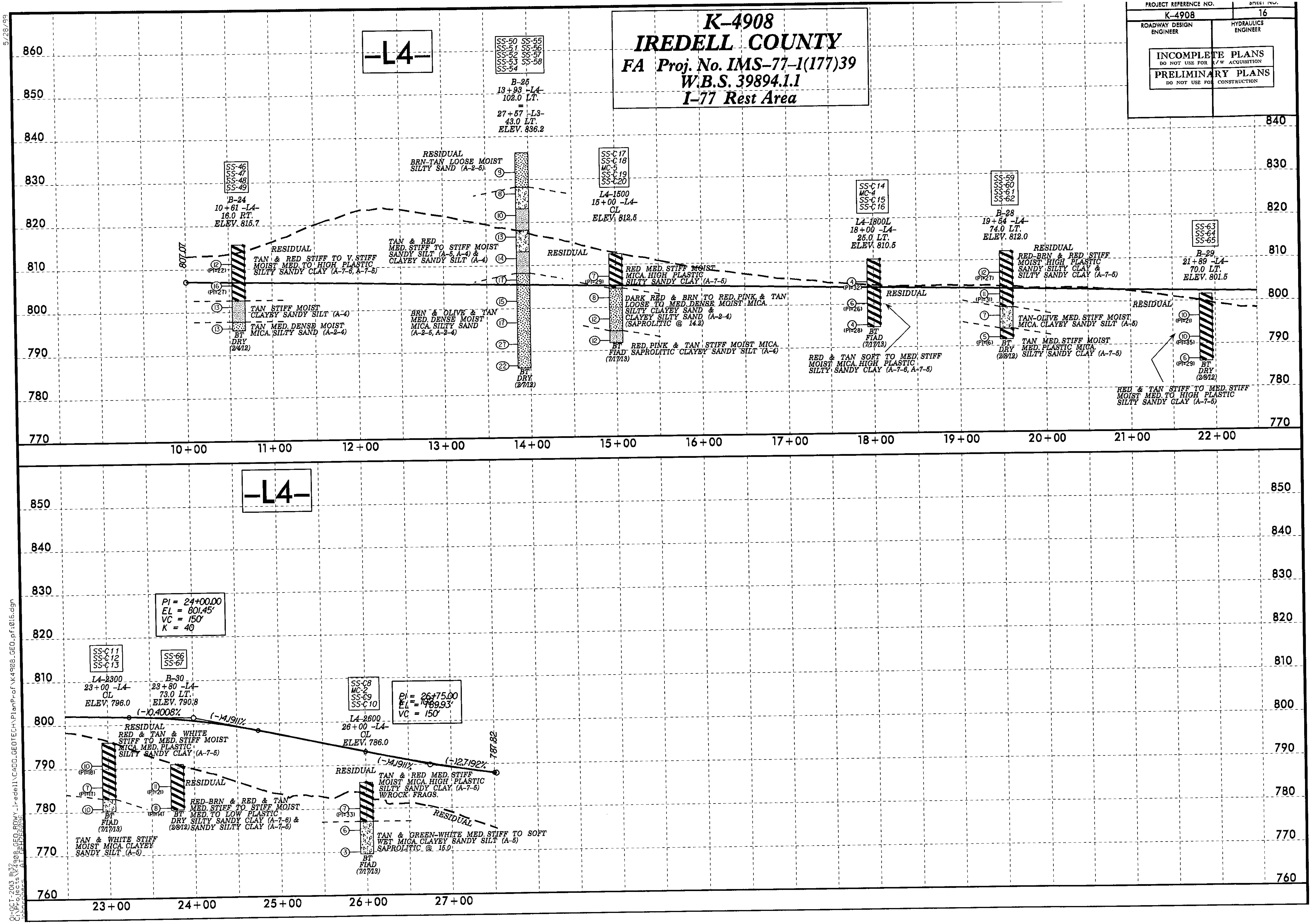
PROJECT REFERENCE NO.	SHEET NO.
K-4908	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

K-4908
IREDELL COUNTY
FA Proj. No. IMS-77-1(177)39
W.B.S. 39894.1.1
I-77 Rest Area



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PROJ. REFERENCE NO.	SHEET NO.
K-4908	17

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

830 820 810 800 790 780 770 760 750

B-14
68+12 -LNB-
70.0 LT.
ELEV. 783.9

I-77 N. BOUND

0.060

790.70

ROADWAY EMBANKMENT (FILL)

OLIVE-TAN MED. DENSE MOIST CLAYEY SILTY SAND (A-2)

RESIDUAL

OLIVE-TAN MED. DENSE MOIST
CLAYEY SILTY SAND (A-2)

BT

68+00.00

SS-21
SS-22

B-9
56+79 -LNB-
61.0 LT.
ELEV. 793.7

I-77 N. BOUND

RESIDUAL

OLIVE-TAN MED. DENSE MOIST
SLI. MICA. CLAYEY SILTY SAND (A-2-5)

796.07

ROADWAY EMBANKMENT (FILL)

OLIVE-TAN STIFF MOIST
SLI. MICA. SANDY SILT (A-4)

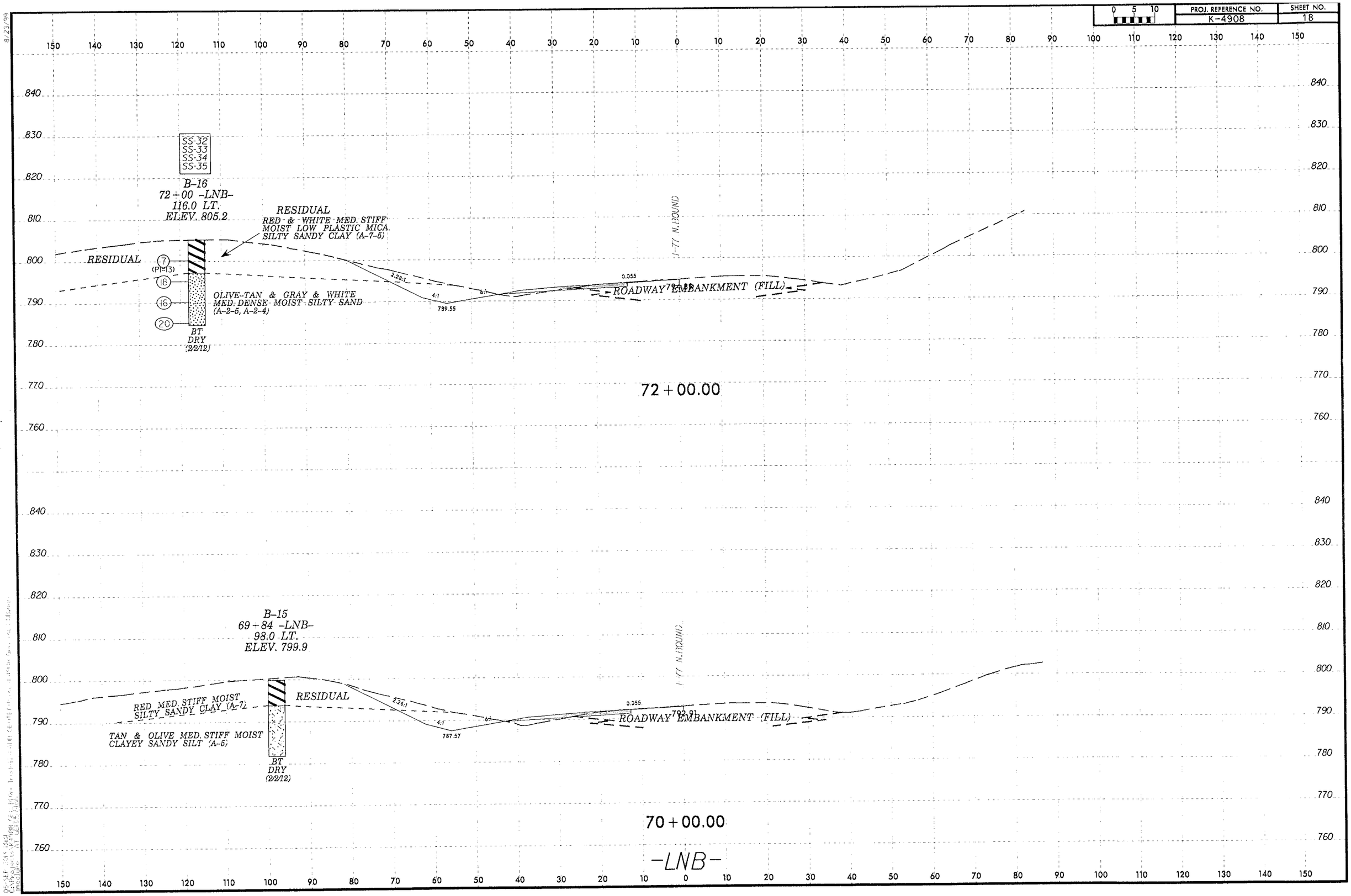
BT
DRY
(2/2/12)

WEATHERED ROCK
SEV. WEATH. CRYSTALLINE ROCK

57+00.00

-LNB-

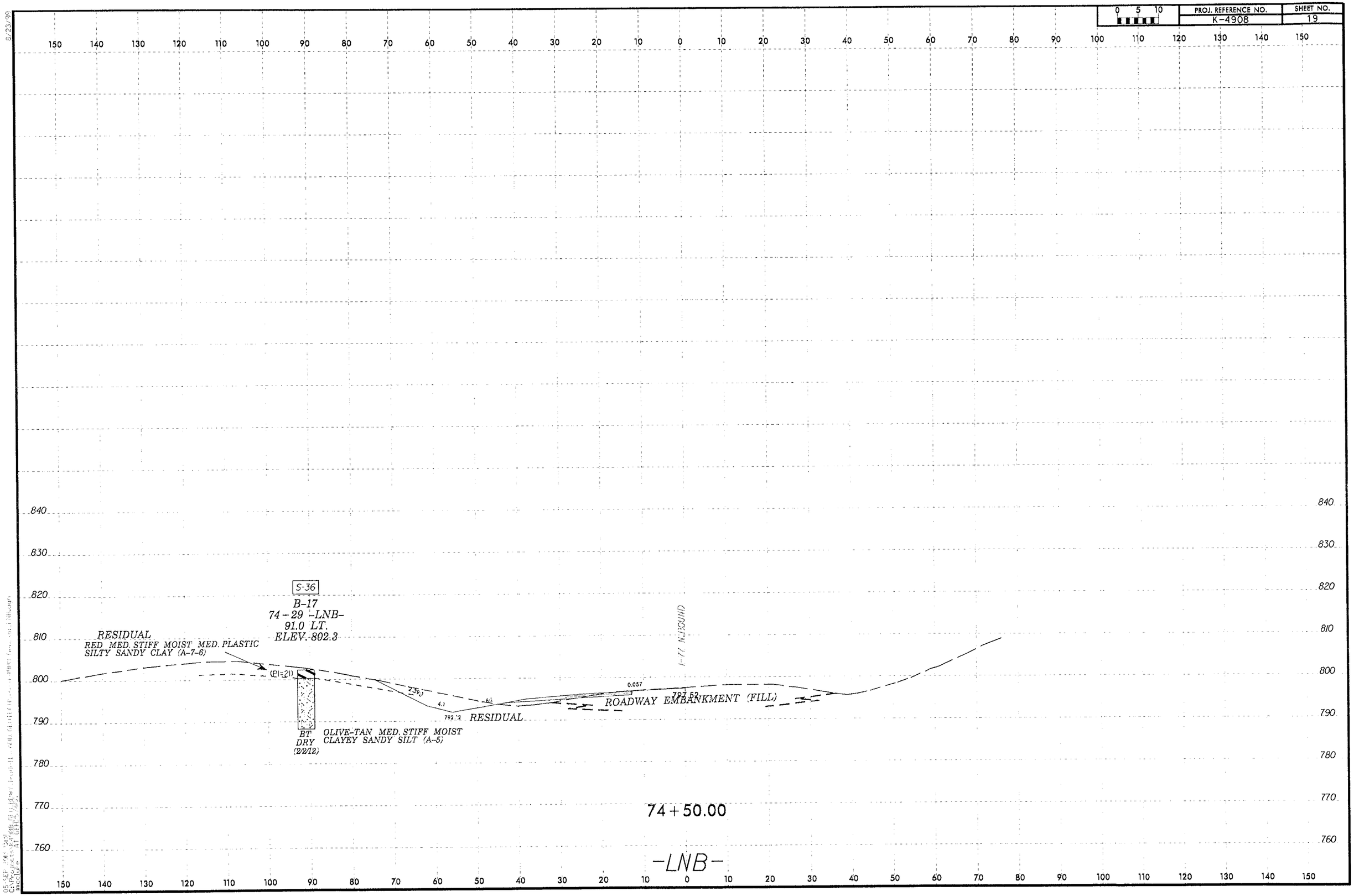
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	K-4908	18



8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
K-4908	19



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	K-4908	20

SS-C21 SS-C27
SS-C22 SS-C28
SS-C23 SS-C29
SS-C24 SS-C30
SS-C25 SS-C31
SS-C26 ST-1

L1-3300L
33+00 -L1-
90.0 LT.
ELEV. 845.0

B-7
32+92 -L1-
30.0 RT.
ELEV. 844.5

850.41

RESIDUAL

RESIDUAL
RED-TAN MED. STIFF MOIST
SANDY SILTY CLAY (A-7)

RESIDUAL

5 TAN-BRN LOOSE MOIST MICA.
SILTY SAND (A-2-5) W/ROOTS

6 TAN-BRN-WHITE-BLACK MED. STIFF
DRY MICA. SILT (A-5)

19
9 TAN-BRN-WHITE-BLACK
MED. DENSE TO LOOSE DRY MICA.
CLAYEY SILTY SAND TO SAND (A-2-4)
SAPROLITIC @ 19.6-30.1
ST-1
7

OLIVE-TAN MED. DENSE MOIST
SLI. MICA. CLAYEY SILTY SAND (A-2)

WEATHERED ROCK
TAN-BRN-WHITE-BLACK
SEV. WEATHERED
CRYSTALLINE ROCK (GNEISS)

100/.6

WEATHERED ROCK
SEV. WEATH. CRYSTALLINE ROCK

12 TAN-BRN-WHITE-BLACK
MED. DENSE TO DENSE
DRY TO MOIST MICA
SAPROLITIC SILTY SAND (A-2-4)

36
14
19

801.33
0.020
0.020
801.13

WEATHERED ROCK
SEV. WEATH. CRYSTALLINE ROCK

OLIVE-TAN MED. DENSE MOIST
SLI. MICA. CLAYEY SILTY SAND (A-2)

60/.0

BT
FIAD
(7/17/13)
CRYSTALLINE ROCK
BIOTITE GNEISS

BT
DRY
(2/1/12)
OLIVE-TAN MED. DENSE MOIST
SLI. MICA. CLAYEY SILTY SAND (A-2)

33+00.00

-L1-

06-SEP-2013 14:34
C:\Projects\K4908_GEO_RDWY.lredell\CADD_GEOTECH\xsc\K4908_Geo_xsL1.dgn
imeclure AT GER25/466

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	Line or Boring ID
SS-1	15.0 RT.	18+51	4.0-5.5	A-5(2)	52	8	24.8	32.3	20.7	22.2	98	85	44	-	L1
SS-2	15.0 RT.	18+51	9.0-10.5	A-5(1)	47	5	26.2	29.1	24.5	20.2	97	82	45	-	L1
SS-3	51.0 LT.	26+71	3.5-5.1	A-2-5(0)	43	4	32.3	36.5	17.0	14.2	100	82	33	-	L1
SS-4	51.0 LT.	26+71	8.6-10.1	A-4(0)	40	4	27.4	38.9	21.5	12.2	100	85	37	-	L1
SS-5	51.0 LT.	26+71	13.6-15.1	A-4(0)	35	5	26.2	31.2	30.4	12.2	100	85	44	-	L1
SS-6	51.0 LT.	26+71	18.6-20.1	A-5(5)	46	8	9.7	28.4	45.6	16.2	100	95	63	-	L1
SS-7	51.0 LT.	26+71	23.6-25.1	A-4(2)	40	4	13.2	30.2	42.4	14.2	100	94	58	-	L1
SS-8	51.0 LT.	26+71	28.6-30.1	A-4(1)	37	4	17.4	27.4	38.9	16.2	99	89	56	-	L1
SS-9	51.0 LT.	26+71	33.6-35.1	A-4(0)	36	4	27.4	27.2	33.3	12.2	98	80	46	-	L1
SS-10	51.0 LT.	26+71	38.6-40.1	A-7-5(6)	41	11	15.2	21.1	39.4	24.3	99	92	64	-	L1
SS-11	93.0 LT.	31+66	3.5-5.0	A-2-5(0)	45	NP	24.1	44.4	25.4	6.1	98	86	33	-	L1
SS-12	93.0 LT.	31+66	8.5-10.0	A-2-5(0)	41	NP	30.4	41.8	21.7	6.1	97	83	28	-	L1
SS-13	93.0 LT.	31+66	13.5-15.0	A-5(0)	46	4	27.8	31.2	32.9	8.1	100	84	42	-	L1
SS-14	93.0 LT.	31+66	18.5-20.0	A-2-5(0)	44	NP	24.5	46.9	24.5	4.1	96	81	29	-	L1
SS-15	93.0 LT.	31+66	23.5-25.0	A-2-5(0)	42	3	27.2	40.4	26.4	6.1	71	60	24	-	L1
SS-16	93.0 LT.	31+66	28.5-30.0	A-2-5(0)	43	NP	33.9	41.4	20.7	4.1	96	80	25	-	L1
SS-17	93.0 LT.	31+66	33.5-35.0	A-2-4(0)	37	4	27.8	39.1	24.9	8.1	100	85	35	-	L1
SS-18	93.0 LT.	31+66	38.5-40.0	A-2-4(0)	37	NP	29.6	44.2	20.1	6.1	100	84	28	-	L1
SS-19	93.0 LT.	31+66	43.5-45.0	A-2-4(0)	39	NP	32.5	39.6	21.9	6.1	95	78	28	-	L1
SS-20	93.0 LT.	31+66	48.5-50.0	A-2-4(0)	36	NP	39.4	40.4	16.2	4.1	98	75	21	-	L1
SS-21	61.0 LT.	56+79	3.9-5.4	A-2-5(0)	53	4	26.6	42.2	19.1	12.2	100	87	34	-	LNB
SS-22	61.0 LT.	56+79	8.9-10.4	A-4(0)	28	NP	19.3	42.0	32.7	6.1	98	91	39	-	LNB
SS-23	28.0 LT.	43+04	0.5-2.0	A-2-4(0)	40	NP	42.1	35.2	16.7	6.1	95	69	24	-	L1
SS-24	28.0 LT.	43+04	4.0-5.5	A-7-5(4)	44	12	28.5	24.1	29.2	18.2	100	82	49	-	L1
SS-25	28.0 LT.	43+04	9.0-10.5	A-2-5(0)	43	NP	32.6	36.0	23.4	8.1	93	75	31	-	L1
SS-26	28.0 LT.	43+04	14.0-15.5	A-2-5(0)	50	NP	34.0	40.4	21.5	4.0	100	82	28	-	L1
SS-27	2.0 RT.	42+12	4.4-5.9	A-4(1)	35	8	28.5	28.1	21.1	22.2	100	85	44	-	L1
SS-28	2.0 RT.	42+12	9.4-10.9	A-2-5(0)	49	NP	34.4	41.9	19.7	4.0	100	80	26	-	L1
SS-29	2.0 RT.	42+12	14.4-15.9	A-2-5(0)	48	NP	36.4	42.1	17.5	4.0	97	77	23	-	L1
SS-30	234.0 LT.	46+27	4.0-5.5	A-4(0)	27	7	27.0	36.3	18.5	18.2	98	84	37	-	L1
SS-31	234.0 LT.	46+27	9.0-10.5	A-2-4(0)	36	NP	37.1	38.7	20.1	4.0	96	75	24	-	L1
SS-32	116.0 LT.	72+00	4.0-5.5	A-7-5(5)	52	13	16.5	37.1	26.1	20.2	100	96	50	-	LNB
SS-33	116.0 LT.	72+00	9.0-10.5	A-2-5(0)	44	9	40.2	31.7	20.1	8.1	100	78	30	-	LNB
SS-34	116.0 LT.	72+00	14.0-15.5	A-2-4(0)	34	NP	35.1	39.0	17.9	8.1	98	80	28	-	LNB
SS-35	116.0 LT.	72+00	19.0-20.5	A-2-4(0)	35	NP	24.2	46.2	21.5	8.1	98	85	31	-	LNB
S-36	91.0 LT.	74+29	0.0-2.0	A-7-6(12)	45	21	20.4	16.1	15.0	48.4	100	88	64	-	LNB
SS-37	13.0 LT.	12+24	3.8-5.3	A-4(0)	39	4	25.0	31.5	27.3	16.1	95	82	43	-	L3
SS-38	13.0 LT.	12+24	8.8-10.3	A-7-6(10)	47	23	26.6	18.4	16.6	38.3	100	84	55	-	L3
S-39	11.0 RT.	14+75	1.0-9.0	A-5(3)	43	7	21.6	24.2	25.9	28.3	97	85	54	-	L3
SS-40	73.0 LT.	16+29	3.5-5.0	A-7-6(4)	43	14	22.6	21.2	28.0	28.3	83	71	47	-	L3
SS-41	73.0 LT.	16+29	8.5-10.0	A-2-4(0)	30	2	51.1	24.2	16.6	8.1	95	63	24	-	L3
SS-42	73.0 LT.	16+29	13.5-15.0	A-4(0)	38	5	32.7	24.6	28.6	14.1	94	74	41	-	L3
SS-43	73.0 LT.	16+29	18.5-20.0	A-4(1)	36	6	30.7	23.0	26.2	18.2	96	77	45	-	L3
SS-44	65.0 LT.	18+51	3.5-5.0	A-7-5(16)	56	25	18.8	15.3	17.5	48.4	100	89	66	-	L3
SS-45	65.0 LT.	18+51	8.5-10.0	A-5(1)	43	5	18.4	34.5	24.9	22.2	100	91	48	-	L3
SS-46	16.0 RT.	10+61	3.5-5.0	A-7-6(11)	51	22	21.8	19.8	16.0	42.4	97	84	57	-	L4
SS-47	16.0 RT.	10+61	8.5-10.0	A-7-5(19)	59	27	15.3	16.8	19.5	48.4	99	90	68	-	L4
SS-48	16.0 RT.	10+61	13.5-15.0	A-4(0)	38	1	19.6	42.8	27.5	10.1	100	91	40	-	L4
SS-49	16.0 RT.	10+61	18.5-20.0	A-2-4(0)	40	NP	24.4	42.2	25.3	8.1	96	85	34	-	L4
SS-50	43.0 LT.	27+57	3.5-5.0	A-2-5(0)	45	4	26.2	41.2	24.5	8.1	99	85	35	-	L3
SS-51	43.0 LT.	27+57	8.5-10.0	A-5(0)	41	2	26.2	36.9	28.8	8.1	95	80	36	-	L3
SS-52	43.0 LT.	27+57	13.5-15.0	A-4(0)	34	4	27.2	34.5	30.2	8.1	96	83	38	-	L3
SS-53	43.0 LT.	27+57	18.5-20.0	A-5(0)	42	2	26.8	36.1	29.0	8.1	95	82	36	-	L3
SS-54	43.0 LT.	27+57	23.5-25.0	A-4(0)	35	4	27.6	29.1	27.1	16.1	96	81	42	-	L3
SS-55	43.0 LT.	27+57	28.5-30.0	A-2-5(0)	47	NP	28.7	42.3	23.0	6.1	98	82	31	-	L3
SS-56	43.0 LT.	27+57	33.5-35.0	A-2-5(0)	42	NP	28.1	42.1	23.8	6.1	100	83	34	-	L3
SS-57	43.0 LT.	27+57	38.5-40.0	A-2-5(0)	45	NP	32.6	44.5	18.9	4.0	99	81	25	-	L3
SS-58	43.0 LT.	27+57	48.5-50.5	A-2-4(0)	40	NP	30.1	39.0	22.8	8.1	98	81	32	-	L3
SS-59	74.0 LT.	19+54	4.0-5.5	A-7-5(24)	61	27	13.1	9.5	22.8	54.6	100	91	78	-	L4
SS-60	74.0 LT.	19+54	9.0-10.5	A-7-5(18)	62	31	23.7	15.2	18.7	42.5	100	85	62	-	L4
SS-61	74.0 LT.	19+54	14.0-15.5	A-5(3)	51	9	21.8	30.9	29.0	18.2	100	88	49	-	L4
SS-62	74.0 LT.	19+54	19.0-20.5	A-7-5(8)	55	16	23.5	21.6	26.6	28.3	100	85	56	-	L4
SS-63	70.0 LT.	21+89	4.0-5.5	A-7-5(9)	56	21	30.1	18.6	18.9	32.4	100	80	52	-	L4
SS-64	70.0 LT.	21+89	9.0-10.5	A-7-5(28)	76	35	16.6	11.9	23.0	48.5	100	90	72	-	L4
SS-65	70.0 LT.	21+89	14.0-15.5	A-7-5(20)	71	29	19.8	15.4	26.4	38.4	98	85	64	-	L4
SS-66	73.0 LT.	23+80	4.0-5.5	A-7-6(12)	46	21	20.2	14.4	20.9	44.5	97	84	64	-	L4
SS-67	73.0 LT.	23+80	9.0-10.5	A-7-5(13)	59	14	12.9	17.6	43.2	26.3	100	93	70	-	L4

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	Line or Boring ID
SS-68	2.0 RT.	35+04	3.7-5.2	A-5(2)	43	7	22.6	27.5	33.7	16.2	100	87	51	-	L1
SS-69	2.0 RT.	35+04	8.7-10.2	A-4(1)	35	5	24.1	29.9	35.9	10.1	100	86	47	-	L1
SS-70	2.0 RT.	35+04	13.7-15.2	A-4(0)	37	6	30.7	25.1	34.1	10.1	95	75	43	-	L1
SS-71	2.0 RT.	35+04	18.7-20.2	A-4(0)	36	3	29.1	33.2	29.6	8.1	99	81	39	-	L1
SS-72	2.0 RT.	35+04	23.7-25.2	A-2-5(0)	42	NP	28.1	41.5	24.4	6.1	99	84	32	-	L1
SS-73	2.0 RT.	35+04	28.7-30.2	A-2-5(0)	45	NP	29.9	35.0	27.0	8.1	99	81	35	-	L1
SS-74	2.0 RT.	35+04	33.5-35.2	A-5(0)	44	5	21.6	37.8	32.5	8.1	99	87	42	-	L1
SS-75	2.0 RT.	35+04	43.7-45.2	A-2-5(0)	41	NP	26.9	41.5	27.6	4.0	98	83	33	-	L1
SS-76	2.0 RT.	35+04	48.7-50.2	A-2-4(0)	35	2	39.6	24.3	28.0	8.1	91	67	34	-	L1
SS-77	66.0 RT.	35+61	3.2-4.7	A-2-5(0)	56	NP	40.2	36.6	17.1	6.1	96	73	24	-	L1
SS-78	66.0 RT.	35+61	13.2-14.7	A-2-5(0)	42	NP	40.6	37.2	16.1	6.1	98	74	24	-	L1
SS-79	66.0 RT.	35+61	18.2-19.7	A-2-5(0)	43	NP	42.9	33.6	15.5	8.1	100	72	26	-	L1
SS-80	66.0 RT.	35+61	23.7-24.7	A-2-5(0)	46	NP	34.8	43.3	15.9	6.1	99	79	24	-	L1
SS-81	66.0 RT.	35+61	38.2-39.7	A-4(0)	33	3	24.7	40.0	27.2	8.1	99	85	37	-	L1
SS-82	66.0 RT.	35+61	43.2-44.7	A-4(0)	35	1	26.1	32.4	31.4	10.1	96	80	42	-	L1
			SAMPLES FROM CONSULTANT												
SS-C1	40.0 LT.	15+00	4.3-5.8	A-4(0)	30	5	35.1	27.0	17.5	20.3	84	64	37	-	L1
MC-1	40 LT	15+00	4.3-5.8				0.0	0.0	0.0	0.0		0	0	28.4	L1
SS-C2	40.0 LT.	15+00	9.3-10.8		-	-	#######	#######	#######	#######	-	#####	#####	-	L1
SS-C3	40.0 LT.	15+00	14.3-15.8	A-7-6(2)	41	13	29.0	19.5	19.1	32.5	77	60	42	-	L1
SS-C4	40.0 LT.	15+00	19.3-20.8	A-7-5(13)	56	18	12.2	16.2	18.9	52.7	90	82	67	-	L1
SS-C5	CL	43+00	4.9-6.4	A-5(3)	44	9	26.6	26.2	22.9	24.3	94	75	50	-	L3
SS-C6	CL	43+00	9.9-11.4	A-4(0)	34	6	36.9	27.2	17.6	18.3	97	73	40	-	L3
SS-C7	CL	43+00	14.9-16.4	A-7-5(5)	45	15	28.4	20.7	20.5	30.4	90	73	49	-	L3
SS-C8	CL	26+00	5.0-6.5	A-7-5(28)	77	33	15.8	15.2	18.3	50.7	100	90	73	-	L4
MC-2	CL	26+00	5.0-6.5				0.0	0.0	0.0	0.0		0	0	38.1	L4
SS-C9	CL	26+00	10.0-11.5	A-5(2)	43	7	28.2	28.0	21.5	22.3	98	78	50	-	L4
SS-C10	CL	26+00	15.0-16.5	A-5(3)	41	10	35.3	16.2	24.1	24.3	92	64	49	-	L4
SS-C11	CL	23+00	4.3-5.8	A-7-5(9)	50	18	23.9	20.7	16.8	38.5	97	82	57	-	L4
SS-C12	CL	23+00	9.3-10.8	A-7-5(15)	60	17	14.0	19.5	26.0	40.6	100	92	71	-	L4
SS-C13	CL	23+00	14.3-15.8	A-5(6)	47	10	15.4	28.4	31.8	24.3	95	85	60	-	L4
SS-C14	25 LT	18+00	4.3-5.8	A-7-6(23)	61	32	16.4	16.0	12.8	54.8	100	90	70	-	L4
MC-4	25 LT	18+00	4.3-5.8				0.0	0.0	0.0	0.0		0	0	29.9	L4
SS-C15	25 LT	18+00	9.3-10.8	A-7-6(15)	55	26	24.5	16.0	8.7	50.7	100	83	61	-	L4
SS-C16	25 LT	18+00	14.3-15.8	A-7-5(24)	63	28	11.8	14.8	18.7	54.8	100	93	77	-	L4
SS-C17	CL	15+00	4.2-5.7	A-7-5(20)	63	29	16.8	19.5	15.0	48.7	100	89	68	-	L4
SS-C18	CL	15+00	9.2-10.7	A-2-4(0)	34	NP	36.5	40.0	11.4	12.2	98	76	29	-	L4
MC-5	CL	15+00	9.2-10.7				0.0	0.0	0.0	0.0		0	0	16.5	L4
SS-C19	CL	15+00	14.2-15.7	A-2-4(0)	38	NP	29.6	42.8	15.4	12.2	100	84	34	-	L4
SS-C20	CL	15+00	19.2-20.7	A-4(0)	34	3	31.0	38.3	18.5	12.2	100	82	38	-	L4
SS-C21	90 LT	33+00	4.6-6.1	A-2-5(0)	45	NP	20.5	58.0	13.4	8.1	98	88	31	-	L1
SS-C22	90 LT	33+00	9.6-11.1	A-5(5)	47	NP	1.9	2.8	94.9	0.5	92	91	88	-	L1
SS-C23	90 LT	33+00	14.6-16.1	A-2-4(0)	36	NP	22.7	49.5	15.6	12.2	100	89	35	-	L1
SS-C24	90 LT	33+00	19.6-21.1	A-2-4(0)	40	NP	39.8	43.6	10.5	6.1	93	73	22	-	L1
SS-C26	90 LT	33+00	24.6-26.1	A-2-4(0)	40	NP	44.4	40.6	8.9	6.1	99	73	21	-	L1
SS-C27	90 LT	33+00	29.6-30.7	A-2-4(0)	22	NP	18.5	58.6	16.8	6.1	94	87	32	-	L1
SS-C28	90 LT	33+00	34.6-36.1	A-2-4(0)	35	NP	30.0	47.1	14.8	8.1	64	53	18	-	L1
SS-C29	90 LT	33+00	39.6-41.1	A-2-4(0)	22	NP	22.5	48.3	23.1	6.1	88	79	33	-	L1
SS-C30	90 LT	33+00	44.6-46.1	A-2-4(0)	39	NP	25.4	56.2	12.4	6.1	97	85	26	-	L1
SS-C31	90 LT	33+00	49.6-51.1	A-2-4(0)	37	NP	29.8	52.3	13.8	4.1	100	86	25	-	L1
SS-C33	CL	30+00	4.2-5.7	A-2-4(0)	35	NP	32.3	51.3	12.4	4.1	100	82	22	-	L1
SS-C34	CL	30+00	9.2-10.7	A-2-4(0)	31	NP	35.3	44.0	12.6	8.1	100	80	27	-	L1
SS-C34A	CL	30+00	14.2-15.7	A-2-4(0)	39	NP	33.3	48.8	9.8	8.1	100	83	24	-	L1
SS-C35	CL	30+00	19.2-20.7	A-2-4(0)	33	NP	37.3	40.8	11.8	10.1	100	77	29	-	L1
SS-C36	CL	30+00	24.2-25.7	A-2-4(0)	33	3	36.7	42.8	10.4	10.1	98	76	27	-	L1
SS-C37	CL	38+00	3.9-5.4	A-5(0)	43	NP	28.9	42.8	16.2	12.1	100	84	36	-	L1
SS-C38	CL	38+00	8.9-10.4	A-4(1)	35	6	22.4	32.5	24.9	20.2	100	87	51	-	L1
SS-C39	CL	38+00	13.9-15.4	A-4(0)	39	NP	25.8	45.2	16.9	12.1	100	86	39	-	L1
SS-C40	CL	38+00	18.9-20.4	A-5(0)	41	NP	26.6	46.2	19.1	8.1	100	86	37	-	L1
SS-C41	CL	38+00	23.9-25.4	A-2-5(0)	46	NP	25.8	55.1	11.0	8.1	100	88	28	-	L1
SS-C42	CL	38+00	28.9-30.4	A-2-5(0)	43	NP	19.2	58.3	14.4	8.1	100	91	32	-	L1
ST-1	CL	33+00	22.0-24.0	A-2-4(0)	38	NP	27.6	44.4	15.9	12	98	84	35	16.3	
NOTE: SAMPLE SS-C2 DID NOT HAVE ENOUGH MATERIAL TO SAMPLE.														-	

TEST RESULTS

PROJECT 39894.1.1 (K-4908)
COUNTY: IREDELL
SITE DESCRIPTION I-77 NEW REST AREA ON NEW LOCATION

SOIL SAMPLE RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL*	*AASHTO CLASS*	*N*	*L.L.*	*P.I.*	*% BY WEIGHT C. SAND*	*F. SAND*	*SILT*	*CLAY*	*% PASSING SIEVES 10*	*40*	*200*	*% MOISTURE*	*UNIT WT. (d)*	*VOID RATIO*
ST-1	90.0 LT.	33+00	22.0-24.0	A-2-4	4	38	NP	27.6	44.4	15.9	12	98	84	35	16.3	89	.95