STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819A	1	256

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34192.1.2	IMS-40-2(124)	P.E.
34192.2.GV3	IMS-040-2(145)152	CONST.

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

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34192.1.2 (I-3819A) F.A. PROJ. IMS-40-2(124)

COUNTY IREDELL

PROJECT DESCRIPTION I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 TO WEST OF SR 2158 & I-77 FROM SOUTH OF I-40 TO SOUTH OF SR 2171

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	26+00.00-197+50.00	4-13		49-191
-Y-	122+50.00-179+75.00	9, 14-17		192-230
-YRPAB-	10+00.00-30+44.00	10, 15	24	
-YRPA-	10+00.00-37+12.25	10, 15-16	25	231-232
-YRPBD-	9+79.73-64+45.83	9-10, 14-15	26-28	
-YRPB-	10+00.00-28+01.91	9, 15-16	29	
-YLPB-	18+50.00-23+31.97	9	29	
-YRPC-	10+00.00-21+40.00	9	30	
-YRPD-	5+73.76-31+49.42	10, 14	31	
-Y1-	10+65.00-25+30.00	5, 18	32	
-Y1A-	10+12.11-13+15.00	18	33	
-Y2DW-	10+00.00-15+99.31	8	33	
-Y3-	10+00.00-17+11.14	5	33	
-Y3A-	10+13.61-48+50.00	5-8	34-35	
-Y4-	10+90.00-40+80.00	8, 19-20	36-37	
-Y4RPA-	10+00.00-23+71.48	8	38	
-Y4RPB-	10+00.00-21.93.20	7-8	39	
-Y4RPC-	10+00.00-25+51.81	7-8	40	
-Y4RPD-	10+00.00-24+17.85	8	41	
-Y5-	10+42.82-67+00.00	8-9, 15-16	42-44	
-Y5A-	10+07.96-16+51.81	20	45	
-Y8-	10+12.03-22+66.57	8, 20	45	
-Y10A-	11+00.00-23+00.00	12-13	46	
-Y10ART-	10+00.00-16+82.12	12-13	46	
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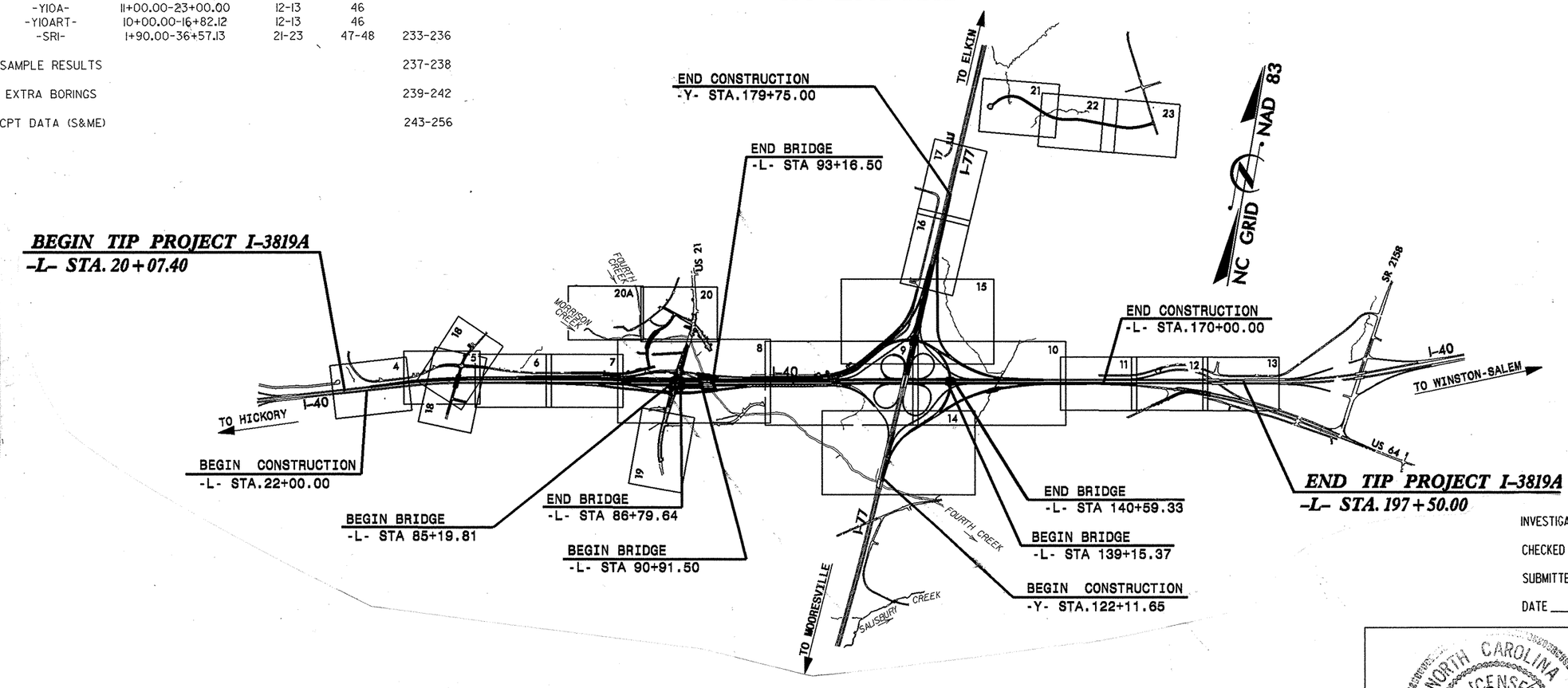
CPT DATA (S&ME)				243-256

INVENTORY



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PERSONNEL

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INVESTIGATED BY J. P. ROGERS
CHECKED BY C. B. LITTLE
SUBMITTED BY C. B. LITTLE
DATE JUNE 2010

NORTH CAROLINA LICENSED SEAL 1104 GEOLOGIST CLINTON B. LITTLE

DRAWN BY: C. E. BURRIS/JP ROGERS

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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.

CONTRACT: C202602

ID: I-3819A

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	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-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX		51 MN									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	40 MX	41 MN	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	6 MX		NP	10 MX	10 MN	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/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >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
GRAIN SIZE 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) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- 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
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
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
- SPT N-VALUE
- REF SPT REFUSAL
- TEST W/ CORE BORING

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
- [ ] 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
- [X] 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 (RQD) - 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:
BORINGS B1-B8 WERE DRILLED FOR A PREVIOUS PROJECT DESIGN AND ARE NOT USED FOR ANY CURRENT ALIGNMENT. BORELOGS FOR THESE BORINGS ARE INCLUDED IN APPENDIX A.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819A	2A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34192.1.2	IMS-40-2(124)	P.E.	

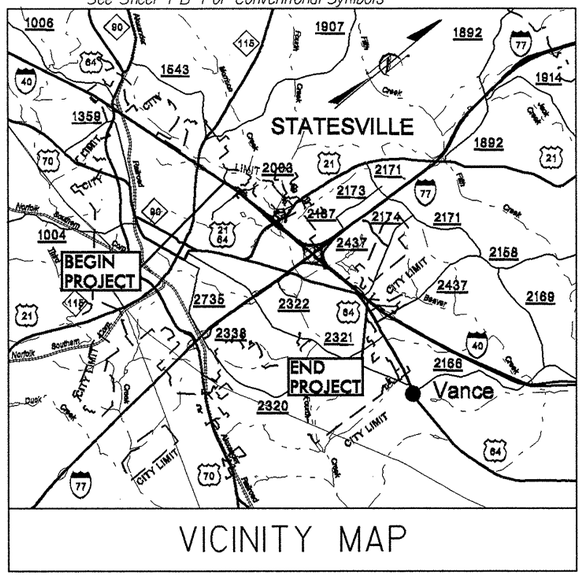
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 (Radio Rd.) TO WEST OF SR 2158 (Old Mocksville Rd.) & I-77 FROM SOUTH OF I-40 TO SOUTH OF SR 2171 (Jane Sower Rd.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, RETAINING WALLS, NOISE WALLS, AND TRAFFIC CONTROL

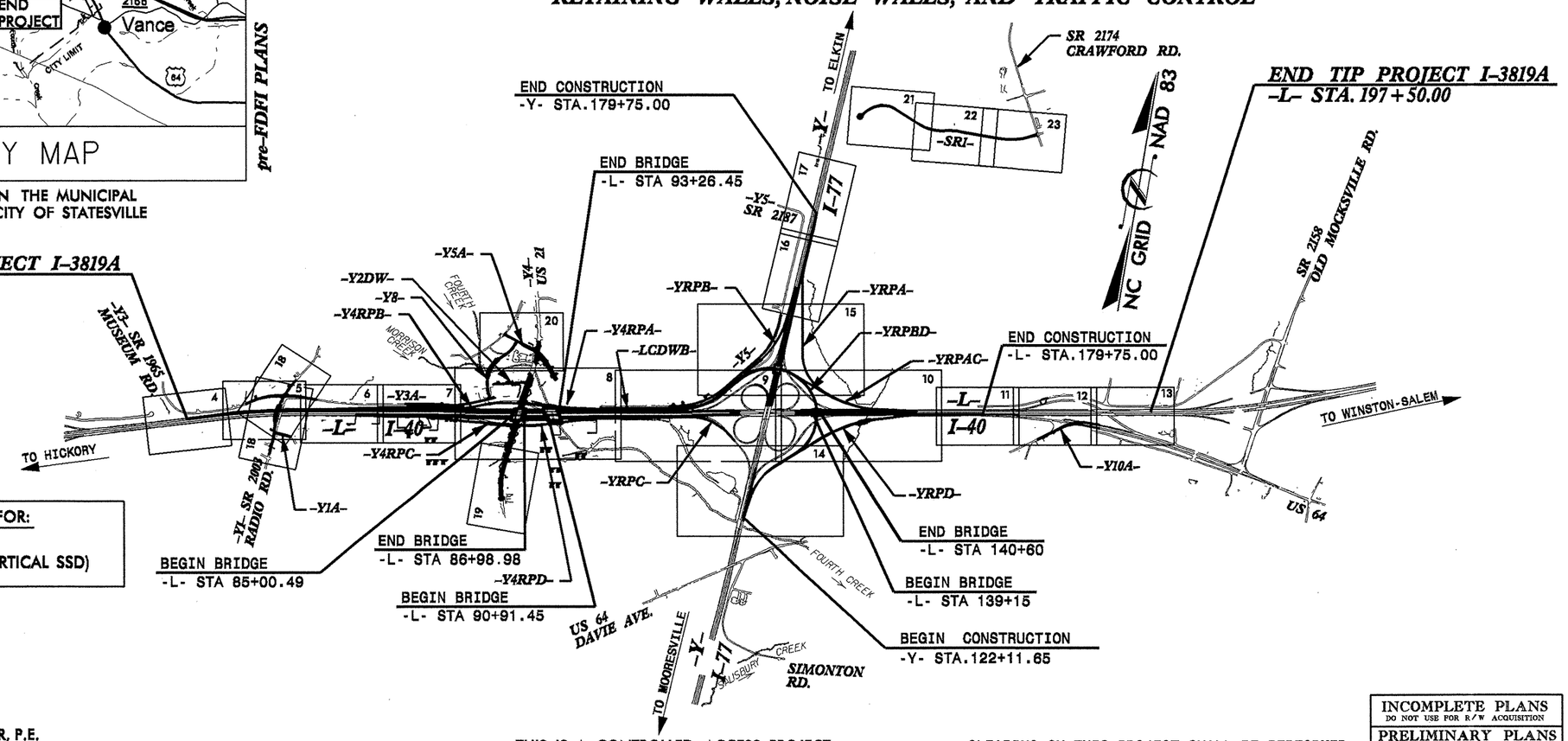
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

pre-FDFI PLANS

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF STATESVILLE



DESIGN EXCEPTIONS REQUIRED FOR:
- -Y4RPC- (MAXIMUM GRADE)
- -Y5A- (CREST V.C. K VALUE, VERTICAL SSD)

NCDOT CONTACT: DOUG TAYLOR, P.E.
ROADWAY DESIGN - ENGINEERING COORDINATION

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

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

	I-40	I-77
ADT 2010 =	71,100	73,200
ADT 2030 =	99,420	109,040
DHV =	10 %	9 %
D =	60 %	55 %
T =	19 % *	20 % **
V =	60 MPH	60 MPH

* TTST 14 + DUAL 5 (I-40)
** TTST 15 + DUAL 5 (I-77)
CLASSIFICATION: INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-3819A	=	3.138
LENGTH STRUCTURES TIP PROJECT I-3819A	=	0.110
TOTAL LENGTH OF TIP PROJECT I-3819A	=	3.248

Prepared in the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 19, 2008

LETTING DATE:
MAY 10, 2011

DAVID C. WALLER, P.E.
PROJECT ENGINEER

MICHAEL A. YOUNG, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

PROJECT: 34192.1.2

TIP PROJECT: I-3819A

09/08/99

30-NOV-2009 14:31
d:\projects\3819a_geo_rdwy_iredell-140&177\cadd_geotech\planprof\13819a_geo_original_tsh_iredell-140&177.dgn
cburris AT GEH245948

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY PURDUE
GOVERNOR

EUGENE CONTI
SECRETARY

June 25, 2010

STATE PROJECT:	34192.1.2 (I-3819A)
FEDERAL PROJECT:	IMS-40-2(124)
COUNTY:	Iredell
DESCRIPTION	I-40/I-77 interchange including I-40 from West of SR 2003 to SR 2158 & I-77 from South of SR 2321 to South of SR 2171.
SUBJECT:	Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project is located in central Iredell County within the city limits of Statesville, NC. The scope of this project revolves around the upgrading of the existing I-40/I-77 Interchange. Typical sections for the -L- line (I-40) and –Y- line (I-77) show a four-lane divided roadway with paved shoulders. This report will address issues encountered during our Roadway investigation. The only structures that have been investigated to date are the proposed retaining walls. Those reports have already been submitted under a different cover. The following alignments were investigated:

Line	Station(s)
-L-	26+00.00 to 197+50.00 (3.24 miles)
-Y-	122+50.00 to 179+75.00 (1.08 miles)
-YRPAB-	10+00.00 to 30+44.00 (0.39 miles)
-YRPA-	10+00.00 to 37+12.25 (0.43 miles)
-YRPBD-	9+79.73 to 64+45.83 (1.04 miles)
-YRPB-	10+00.00 to 28+01.91 (0.34 miles)
-YLPB-	18+50.00 to 23+31.97 (0.09 miles)
-YRPC-	10+00.00 to 21+40.00 (0.22 miles)
-YRPD-	5+73.76 to 31+49.42 (0.48 miles)
-Y1-	10+65.00 to 25+30.00 (0.28 miles)

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

TELEPHONE: 919-250-4088
FAX: 919-250-4237

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

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

Line	Station(s)
-Y1A-	10+12.11 to 13+15.00 (0.06 miles)
-Y2DW-	10+00.00 to 15+99.31 (0.11 miles)
-Y3-	10+00.00 to 17+11.14 (0.13 miles)
-Y3A-	10+00.00 to 16+00.00 (0.11 miles)
-Y3A-	10+13.61 to 48+50.00 (0.73 miles)
-Y4-	10+90.00 to 40+80.00 (0.57 miles)
-Y4RPA-	10+00.00 to 23+71.48 (0.26 miles)
-Y4RPB-	10+00.00 to 21+93.20 (0.23 miles)
-Y4RPC-	10+00.00 to 25+51.81 (0.29 miles)
-Y4RPD-	10+00.00 to 24+17.85 (0.46 miles)
-Y5-	10+42.82 to 67+00.00 (1.07 miles)
-Y5A-	10+07.96 to 16+51.81 (0.12 miles)
-Y8-	10+12.03 to 22+66.57 (0.24 miles)
-Y10A-	11+00.00 to 23+00.00 (0.23 miles)
-Y10ART-	10+00.00 to 16+82.12 (0.13 miles)
-SR1-	1+90.00 to 36+57.13 (0.66 miles)
-SR1-	1+90.00 to 36+57.13 (0.66 miles)

The total length of lines investigated is 13.65 miles.

The initial field investigation was conducted between February and June 2008. Additional borings were performed in August and September of 2009 to accommodate a design change to the original plans. Borings were conducted with a CME-550X drill machine with an automatic hammer. Standard Penetration Tests were conducted at selected locations utilizing 8" hollow stem augers and additional borings were advanced with 6" continuous flight augers. In June 2010, S&ME performed 13 CPT borings in the Fourth Creek floodplain adjacent to I-40. Shelby Tube results from our initial investigation showed potential long term settlement issues. The results from that investigation can be found at the back of the attached inventory plans. Various hand tools (hand auger, drive rods) and visual reconnaissance completed the investigation. Numerous soil samples were submitted to the Materials and Tests Unit for laboratory analysis.

Since this project was investigated originally, the scope of the project has been scaled down to what will be presented in this submittal. Several alignments we investigated originally are still shown on the revised plans as future alignments. Some alignments were shortened as part of the revision. Borings associated with these alignments will still be shown on the plan view sheets with borlogs attached to the back of the Inventory plans.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Crystalline Rock: Rock (auger refusal) was encountered within 10'of the proposed grade at the following locations:

Line	Station(s)
-L-	59+00 to 63+00, Left
-Y-	157+00 to 159+00, Left
-L-	152+50 to 156+50, Right
-YRPA-	20+00 to 21+50

The rock lines depicted on the attached cross-sections and profiles are interpolated between borings and based on 8" hollow stem auger and 6" standard auger refusal. Zones of weathered rock occurring above the depicted rock lines were encountered in some of the borings. According to the Geologic map of North Carolina, the most likely rock type within the project corridor is Biotite/Amphibolite Gneiss metamorphic rock (CZab & CZbg). As stated previously, the hardness was determined primarily on 8" hollow stem auger refusal and 6" standard auger refusal. In addition, the pull down pressure on the feed cylinders on the CME-550X was observed to be 800 - 1000 psi in the areas of auger refusal.

Alluvial Soils; Areas with significant alluvial deposits are discussed below.

Station 86+50 to 115+00 –L- and -YRP4D- 8+07 to 22+62: This is the largest concentration of alluvial soils within the project corridor. These soils are associated primarily with Fourth Creek, which is the largest drainage artery bisecting the project. Unnamed Branch also provides drainage to this segment although to a lesser extent than Fourth Creek. In addition to the proposed widening onto this floodplain, existing I-40 Eastbound already has at least one lane on this material. At the time of our investigation, no noticeable problems were observed in the existing side slopes or in the travel lanes. In addition, 24 hour groundwater levels were between elevations 775' and 783'. –Y4RPD- is another alignment proposed over these alluvial materials.

Alluvial soils encountered in this segment are up to 17' thick and consist of; very soft to medium stiff silty and sandy clay (A-7, A-6), medium stiff sandy silt (A-4), very loose fine sand (A-2-4), loose clayey sand (A-2-4, A-2-6), and organic materials. Up to 14' of artificial fill was encountered in this area overlying the alluvial soils. Medium stiff, sandy clay (A-7, A-6), loose to medium dense silty sand (A-2-4), and loose clayey sand (A-2-6) were the predominant soils encountered in this fill. A shopping center on the east side of Fourth Creek is the source of the primary source of the fill soils in this area.

Six Shelby Tubes were taken in this segment. Moisture contents (pretest) in these tubes ranged from 20% to 97%. The tubes with the lowest moisture contents were the tubes (ST-4, ST-5) taken in the artificial fill present between Stations 43+50 and 58+50. Organic soils, where encountered, had organic contents ranging from 4.9% to 17.3%.

122+50 to 127+20 –Y-, Right: The widening of I-77 (-Y-) thorough this interval will be to the right of centerline only. The alluvial soils in this segment can also be attributed to Fourth Creek. They are four to 19' thick and consist of; loose micaceous silty sand (A-2-4), medium stiff slightly micaceous silty clay (A-7), very soft to soft sand silt (A-5), soft to stiff micaceous sandy clay (A-7), loose coarse sand (A-2-4) and very loose clayey sand (A-2-4) with gravel. At the time of our investigation, groundwater was encountered in this area between elevation 769' and 780'.

6+60 to 7+50 and 14+70 to 15+00, SR1: Two separate floodplains bisect the –SR1- alignment. Alluvial soils at both floodplains are approximately seven feet deep. The first floodplain (6+60 to 7+50, SR1) is a designated wetlands area consisting of stiff, wet, sandy silt (A-4). The second floodplain is fed hydraulically by an upland pond and consists of very soft, wet, sandy clay (A-7, A-6).

Plastic Clays: The following samples had plasticity indices of 26 or greater:

Sample Number	Line	Station(s)	Offset
SS-5A	-YRPBD-	44+00	CL
S-9	-L-	41+50	100' RT.
SS-10C	-YRPA-	27+00	20' LT.
SS-11A	-YRPCA-	45+50	CL
S-16	-L-	59+50	100' RT.
SS-25	-L-	70+50	117' RT.
SS-25A	-YRPCA-	29+50	CL
SS-26A	-YRPCA-	29+50	CL
SS-44	-Y4RPD-	16+06	CL
SS-56	-YRPCA-	107+00	100' RT.
SS-57	-YRPCA-	15+00	CL
SS-59	-L-	113+50	75' RT.
SS-64	-L-	108+00	30' RT.
SS-68	-L-	116+00	70' RT.
SS-71	-L-	122+00	90' RT.
SS-72	-L-	122+00	90' RT.
SS-80	-L-	145+00	100' RT.
SS-111	-Y-	170+00	80' RT.
S-116	-L-	41+00	100' LT.
S-119	-Y3A-	15+00	40' RT.
SS-122	-L-	54+50	125' LT.
SS-129	-L-	70+50	124' LT.
SS-132	-L-	77+00	155' LT.
SS-139	-Y4RPA-	22+50	40' RT.
SS-140	-Y4RPA-	22+50	40' RT.
SS-148	-Y4RPA-	16+80	CL
SS-156	-YRPB-	16+00	28' LT.
SS-166	-Y-	153+00	110' LT.
SS-168	-Y-	151+15	70' LT.
SS-201	-Y-	122+50	90' RT.
SS-207	-YRPBD-	59+50	CL
S-210	-YRPBD-	46+50	CL
S-211	-YRPBD-	26+50	CL
S-212	-YRPD-	24+00	50' RT.
S-257	-YRPAC-	55+00	CL
S-258	-YRPAC-	50+00	CL
S-260	-YRPA-	29+30	1.0' LT.
S-267	SR1	34+00	CL
S-317	-L-	118+00	70' RT.
ST-1	-L-	106+50	112' RT.

Artificial Fill/Roadway Embankments:

Artificial fill soils encountered within the project corridor are up to 14' thick and consist of primarily sandy clays (A-7, A-6), micaceous sandy silts with gravel (A-5, A-4), and silty/clayey sands (A-2-6, A-2-4). Gravel was present in the sandy silts in the boring performed at Station 170+00, –Y- and throughout the borings performed near Wilson Park road. Wilson Park is an unpaved, dirt and gravel, road with no SR designation. Since we were unable to confirm that this road had been built according to the 2006 Standard Specifications, we labeled any materials encountered in the road as artificial fill. In addition, wood fragments and gravel were encountered in the borings performed in the vicinity of Stations 10+00 – 11+00, –Y8-. The largest concentration of these fill soils were encountered at the following locations:

Station	Alignment
6+62 to 20+45	-Y4RPD-
31+20 to 32+55	-YRPA-
10+12 to 12+62	-Y8-
Wilson Park Rd.	Plan Sheets 10, 11, 15

Due to the close proximity of high volumes of traffic, borings advanced through existing roadway embankment soils were not numerous. Where encountered, these types of soils are three to 27' thick and consist primarily of micaceous sandy clays (A-7, A-6), sandy silts (A-5, A-4), and silty/clayey sands (A-2-6, A-2-5). No organic matter was encountered in any of the borings performed in roadway soils.

Groundwater

Groundwater was encountered within six feet of proposed grade in the following location:

Station	Alignment
42+50 to 45+00	-YRPBD-

PHYSIOGRAPHY AND GEOLOGY

The project is located in the central piedmont region of North Carolina. As stated previously, the scope of this project concerns the upgrading of a highly urbanized interstate interchange. Even though there are some open pastures and woodlands, many businesses and some homes will be affected by this upgrade.

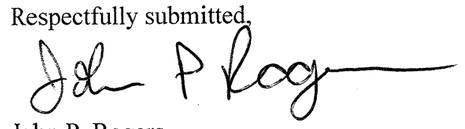
The terrain within the project corridor is rolling hills and steep valleys with both narrow and wide floodplains at stream crossings. Floodplains were also encountered in otherwise upland areas that can be attributable to existing drainage structures for the current interchange and surrounding development. Elevation relief (from highest point to lowest point) within the entire project corridor is approximately 155'. The project is located within the Inner Piedmont Geological Belt. Please refer to the section above entitled "Crystalline Rock" for a more detailed description of anticipated rock types within the project corridor.

SOIL PROPERTIES

Residual Soils

All residual soils on the project are derived from the Biotite/Amphibolite Gneiss rocks previously discussed. The dominant soil types encountered are silty and sandy clay (A-6, A-7), silty sand (A-2-4, A-l-b, and A-2-5) and sandy silts (A-4, A-5). Mica content in these soils is variable to none. In areas where crystalline rock was within 10' of proposed grade, clay soils (A-7, A-6) were encountered only once. It is in these areas of crystalline rock that the predominant soil is silty sand (A-2-4, A-1-b) with an occasional zone of weathered rock.

Respectfully submitted,



John P. Rogers
Project Geological Engineer
Geotechnical Engineering Unit
Harrisburg Field Office

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY PHASE I, STEP 2															
DETOUR -P1S3EB1- -L- 45+00	-L- 81+50	1,752				1,752	735		735	845	0	0	907	0	907
DETOUR -P1S5EB3- -L- 93+50	-L- 122+00	1,447				1,447	59,331		59,331	68,231	66,784	0	0	0	0
DETOUR -P1S5YRPC1- -YRPC- 17+65	-YRPC- 21+50	72				72	2,676		2,676	3,077	3,005	0	0	0	0
DETOUR -P1S4WB1- -L- 123+00	-L- 178+50	1,030				1,030	428		428	492	0	0	538	0	538
-Y- 122+09	-Y- 136+00	181				181	14		14	16	0	0	165	0	165
-Y- 143+50	-Y- 182+75	1,691				1,691	335		335	385	0	0	1,306	0	1,306
-Y3A- 32+86	-Y3A- 47+25	1,340				1,340	546		546	628	0	0	712	0	712
-Y4RPC- 12+36	-Y4RPC- 25+05	1,376				1,376	11,960		11,960	13,754	12,378	0	0	0	0
-Y4RPA- 17+44	-Y4RPA- 18+19.00	1				1	1,746		1,746	2,008	2,007	0	0	0	0
-Y4RPA- 19+26	-Y4RPA- 21+77.78	25				25	2,633		2,633	3,028	3,003	0	0	0	0
-Y4RPD- 16+60	-Y4RPD- 24+12	102				102	30,189		30,189	34,717	34,615	0	0	0	0
-Y5- 39+90	-Y5- 67+00	28,840				28,840	1,124		1,124	1,293	0	0	27,547	0	27,547
-YRPAB- 15+22	-YRPAB- 27+00	52,357				52,357	12,646		12,646	14,543	0	0	37,814	0	37,814
-YRPA- 15+60	-YRPA- 33+00	46,369	437			45,932	18,021	437	17,584	20,659	0	0	25,710	0	25,710
-YRPD- 10+85	-YRPD- 15+57.00	4,254				4,254	3,805		3,805	4,376	122	0	0	0	0
-YRPD- 17+67.00	-YRPD- 28+11	72,236				72,236	16,870		16,870	19,401	0	0	52,836	0	52,836
-YRPBD- 48+15	-YRPBD- 60+91	90,934				90,934	5,068		5,068	5,828	0	0	85,106	0	85,106
-Y8- 10+12	-Y8- 14+05.00	1,268				1,268	3,753		3,753	4,316	3,048	0	0	0	0
-Y8- 17+75.00	-Y8- 22+17	7,472				7,472	3,949		3,949	4,541	0	0	2,931	0	2,931
-Y8DRIVE- 10+12	-Y8DRIVE- 11+95	24				24	2,204		2,204	2,535	2,511	0	0	0	0
-Y10A- 11+00	-Y10A- 23+50	1,512				1,512	150		150	172	0	0	1,340	0	1,340
-SR1- 1+86	-SR1- 36+68	41,306		2,800		41,306	19,624		19,624	22,568	0	0	18,738	2,800	21,538
PHASE I, STEP 2	**SUBTOTAL**	355,589	437	2,800	0	355,152	197,807	437	197,370	227,413	127,473	0	255,650	2,800	258,450
		0							0	0	0	0	0	0	0
Waste in Lieu of Borrow		0							0	0	-127,473	0	-127,473	0	-127,473
		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE I, STEP 2		355,589	437	2,800	0	355,152	197,807	437	197,370	227,413	0	0	128,177	2,800	130,977

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

3D

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller SHEET 2 OF 6 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY PHASE I, STEP 3															
-L- 86+79.64	-L- 90+91.50	0				0	29,196		29,196	33,575	33,575	0	0	0	0
-L- 148+50 LEFT SIDE	-L- 158+50 LEFT SIDE	1,835				1,835	7,370		7,370	8,476	6,641	0	0	0	0
-L- 154+00 RIGHT SIDE	-L- 170+00 RIGHT SIDE	14,989				14,989	54		54	62	0	0	14,927	0	14,927
-YRPBD- 13+02	-YRPBD- 26+00	19,761				19,761	10,129		10,129	11,648	0	0	8,113	0	8,113
DETOUR - P2YRPB1- -YRPBD- 13+25	-YRPBD- 19+03	102				102	1,925		1,925	2,214	2,112	0	0	0	0
-YRPB- 13+99	-YRPB- 22+47.03	3,448				3,448	2,262		2,262	2,601	0	0	847	0	847
-Y- 122+50	-Y- 128+50	206				206	2,938		2,938	3,379	3,173	0	0	0	0
-Y- 166+50	-Y- 180+75	4,016				4,016	301		301	346	0	0	3,670	0	3,670
-Y1- 13+60	-Y1- 19+30.25	74				74	5,330		5,330	6,130	6,056	0	0	0	0
-Y1- 21+55.08	-Y1- 28+00	679				679	3,195		3,195	3,674	2,995	0	0	0	0
-Y1A- 10+25	-Y1A- 12+90	15				15	2,062		2,062	2,371	2,356	0	0	0	0
-Y3- 13+40	-Y3- 17+50	242				242	2,042		2,042	2,348	2,106	0	0	0	0
-Y3A- 10+75	-Y3A- 16+00	2,348				2,348	1,174		1,174	1,350	0	0	998	0	998
PHASE I, STEP 3	**SUBTOTAL**	47,715	0	0	0	47,715	67,978	0	67,978	78,174	59,014	0	28,555	0	28,555
Borrow in Lieu of Waste		0							0	0	-28,555	0	-28,555	0	-28,555
Totals from Phase I, Step 2		355,589	437	2,800	0	355,152	197,807	437	197,370	227,413	0	0	128,177	2,800	130,977
PROJECT SUBTOTALS THRU PHASE I, STEP 3		403,304	437	2,800	0	402,867	265,785	437	265,348	305,587	30,459	0	128,177	2,800	130,977
Waste in Lieu of Borrow		0							0	0	-30,459	0	-30,459	0	-30,459
PROJECT TOTALS THRU PHASE I, STEP 3		403,304	437	2,800	0	402,867	265,785	437	265,348	305,587	0	0	97,718	2,800	100,518
SUMMARY PHASE I, STEP 4															
-L- 53+00	-L- 72+00	22,534				22,534	8,580		8,580	9,867	0	0	12,667	0	12,667
DETOUR -P1S4EB2- -L- 130+00	-L- 149+00	18,130				18,130	2,639		2,639	3,035	0	0	15,095	0	15,095
-L- 149+00	-L- 154+00	52				52	113		113	130	78	0	0	0	0
-YRPBD- 31+00	-YRPBD- 40+00	106,624				106,624	0		0	0	0	0	106,624	0	106,624
-YRPBD- 44+15	-YRPBD- 48+15	60,132				60,132	0		0	0	0	0	60,132	0	60,132
-Y- 128+00	-Y- 132+50	267				267	0		0	0	0	0	267	0	267
-Y- 143+50	-Y- 149+76.90	187				187	1,071		1,071	1,232	1,045	0	0	0	0
-Y- 150+96.40	-Y- 166+50	1,289				1,289	989		989	1,137	0	0	152	0	152
PHASE I, STEP 4	**SUBTOTAL**	209,215	0	0	0	209,215	13,392	0	13,392	15,401	1,123	0	194,937	0	194,937
Waste in Lieu of Borrow		0							0	0	-1,123	0	-1,123	0	-1,123
Totals from Phase I, Step 3		403,304	437	2,800	0	402,867	265,785	437	265,348	305,587	0	0	97,718	2,800	100,518
PROJECT SUBTOTALS THRU PHASE I, STEP 4		612,519	437	2,800	0	612,082	279,177	437	278,740	320,988	0	0	291,532	2,800	294,332
Waste in Lieu of Borrow		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE I, STEP 4		612,519	437	2,800	0	612,082	279,177	437	278,740	320,988	0	0	291,532	2,800	294,332

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller SHEET 3 OF 6 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY PHASE I, STEP 5															
-L- & -P1S5EB3- -L- 69+00	-L- 85+19.81	16				16	29,762		29,762	34,226	34,210	0	0	0	0
-L- 136+00	-L- 139+15.37	177				177	311		311	358	181	0	0	0	0
-L- 140+59.33	-L- 148+50	230				230	1,061		1,061	1,220	990	0	0	0	0
-Y- 156+75	-Y- 166+00	4,742				4,742	250		250	288	0	0	4,454	0	4,454
-YRPBD- 40+00	-YRPBD- 42+00	26,965				26,965	237		237	273	0	0	26,692	0	26,692
-Y4RPC- 18+00	-Y4RPC- 25+50	380				380	4,001		4,001	4,601	4,221	0	0	0	0
PHASE I, STEP 5	**SUBTOTAL**	32,510	0	0	0	32,510	35,622	0	35,622	40,966	39,602	0	31,146	0	31,146
Borrow in Lieu of Waste		0							0	0	-31,146	0	-31,146	0	-31,146
Totals from Phase 1, Step 4		612,519	437	2,800	0	612,082	279,177	437	278,740	320,988	0	0	291,532	2,800	294,332
PROJECT SUBTOTALS THRU PHASE I, STEP 5		645,029	437	2,800	0	644,592	314,799	437	314,362	361,954	8,456	0	291,532	2,800	294,332
Waste in Lieu of Borrow		0							0	0	-8,456	0	-8,456	0	-8,456
PROJECT TOTALS THRU PHASE I, STEP 5		645,029	437	2,800	0	644,592	314,799	437	314,362	361,954	0	0	283,076	2,800	285,876
SUMMARY PHASE I, STEP 6															
-L- 26+00	-L- 53+50	9,145				9,145	12,628		12,628	14,522	5,377	0	0	0	0
-L- 119+00	-L- 127+00	351				351	1,611		1,611	1,853	1,502	0	0	0	0
-L- 132+50	-L- 139+15.37	815				815	86		86	99	0	0	716	0	716
-L- 140+59.33	-L- 144+00	6				6	1,056		1,056	1,214	1,208	0	0	0	0
-L- 144+00	-L- 157+50	790				790	73		73	84	0	0	706	0	706
-Y- 143+38	-Y- 149+76.80	3				3	4,213		4,213	4,845	4,842	0	0	0	0
-Y- 150+96.40	-Y- 157+00	214				214	612		612	704	490	0	0	0	0
-YLPB- 18+53	-YLPB- 20+42.51	26				26	1,391		1,391	1,600	1,574	0	0	0	0
-YRPBD- 26+00	-YRPBD- 31+00	38,357				38,357	2,916		2,916	3,353	0	0	35,004	0	35,004
PHASE I, STEP 6	**SUBTOTAL**	49,707	0	0	0	49,707	24,586	0	24,586	28,274	14,993	0	36,426	0	36,426
Waste in Lieu of Borrow		0							0	0	-14,993	0	-14,993	0	-14,993
Totals from Phase I, Step 5		645,029	437	2,800	0	644,592	314,799	437	314,362	361,954	0	0	283,076	2,800	285,876
PROJECT SUBTOTALS THRU PHASE I, STEP 6		694,736	437	2,800	0	694,299	339,385	437	338,948	390,228	0	0	304,509	2,800	307,309
Waste in Lieu of Borrow		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE I, STEP 6		694,736	437	2,800	0	694,299	339,385	437	338,948	390,228	0	0	304,509	2,800	307,309

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller SHEET 4 OF 6 SHEETS

STATION	STATION	EXCAVATION TOTAL UNCLASS.	EXCAVATION ROCK	EXCAVATION UNDERCUT	EXCAVATION UNSUIT. UNCLASS.	EXCAVATION SUITABLE UNCLASS.	EMBANKMENT TOTAL	EMBANKMENT ROCK	EMBANKMENT EARTH	EMBANKMENT EMBANK. +15%	BORROW	WASTE ROCK	WASTE SUITABLE	WASTE UNSUIT.	WASTE TOTAL
SUMMARY PHASE II															
DETOUR -P3S1WB2-															
-L- 18+00	-L- 33+00	441				441	178		178	205	0	0	236	0	236
DETOUR -P3S1Y4RPA-															
-L- 92+75	-L- 104+00	473				473	66		66	76	0	0	397	0	397
DETOUR -P3S1WB3-															
-L- 116+00	-L- 129+50	553				553	45		45	52	0	0	501	0	501
-L- 134+00	-L- 153+50	3,460				3,460	355		355	408	0	0	3,052	0	3,052
-YRPBD- 42+00	-YRPBD- 44+00	24,593				24,593	0		0	0	0	0	24,593	0	24,593
-Y- 144+00	-Y- 149+76.90	0				0	599		599	689	689	0	0	0	0
-Y- 150+96.40	-Y- 160+00	0				0	693		693	797	797	0	0	0	0
-Y4- 36+50	-Y4- 40+80	238				238	28		28	32	0	0	206	0	206
-Y5- 10+50	-Y5- 16+11.43	133				133	235		235	270	137	0	0	0	0
-Y5A- 10+00	-Y5A- 16+00	5,169				5,169	1,710		1,710	1,967	0	0	3,203	0	3,203
-Y8- 20+17	-Y8- 22+55	689				689	0		0	0	0	0	689	0	689
PHASE II	**SUBTOTAL**	35,749	0	0	0	35,749	3,909	0	3,909	4,496	1,623	0	32,877	0	32,877
Waste in Lieu of Borrow		0							0	0	-1,623	0	-1,623	0	-1,623
Totals from Phase I, Step 6		694,736	437	2,800	0	694,299	339,385	437	338,948	390,228	0	0	304,509	2,800	307,309
PROJECT SUBTOTALS THRU PHASE II		730,485	437	2,800	0	730,048	343,294	437	342,857	394,724	0	0	335,763	2,800	338,563
Waste in Lieu of Borrow		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE II		730,485	437	2,800	0	730,048	343,294	437	342,857	394,724	0	0	335,763	2,800	338,563
SUMMARY PHASE III, STEP 1															
DETOUR -P3S1Y4RPB1-															
-L- 59+00	-L- 81+00	856				856	1,939		1,939	2,230	1,374	0	0	0	0
-L- 81+00	-L- 85+19.81	6				6	15,799		15,799	18,169	18,163	0	0	0	0
-L- 93+16.50	-L- 118+00	2,815				2,815	31,495		31,495	36,219	33,404	0	0	0	0
PHASE III, STEP 1	**SUBTOTAL**	3,677	0	0	0	3,677	49,233	0	49,233	56,618	52,941	0	0	0	0
Borrow in Lieu of Waste									0	0	0	0	0	0	0
Totals from Phase II		730,485	437	2,800	0	730,048	343,294	437	342,857	394,724	0	0	335,763	2,800	338,563
PROJECT SUBTOTALS THRU PHASE III, STEP 1		734,162	437	2,800	0	733,725	392,527	437	392,090	451,342	52,941	0	335,763	2,800	338,563
Waste in Lieu of Borrow		0							0	0	-52,941	0	-52,941	0	-52,941
PROJECT TOTALS THRU PHASE III, STEP 1		734,162	437	2,800	0	733,725	392,527	437	392,090	451,342	0	0	282,822	2,800	285,622
SUMMARY PHASE III, STEP 2															
-L- 26+00	-L- 43+00	11,438				11,438	536		536	616	0	0	10,822	0	10,822
-L- 43+00	-L- 78+00	22,149				22,149	23,281		23,281	26,773	4,624	0	0	0	0
-Y4RPA- 22+00	-Y4RPA- 23+65	488				488	70		70	81	0	0	408	0	408
-Y4RPB- 13+40.60	-Y4RPB- 16+50	416				416	81		81	93	0	0	323	0	323
PHASE III, STEP 2	**SUBTOTAL**	34,491	0	0	0	34,491	23,968	0	23,968	27,563	4,624	0	11,553	0	11,553
Waste in Lieu of Borrow									0	0	-4,624	0	-4,624	0	-4,624
Totals from Phase III, Step 1		734,162	437	2,800	0	733,725	392,527	437	392,090	451,342	0	0	282,822	2,800	285,622
PROJECT SUBTOTALS THRU PHASE III, STEP 2		768,653	437	2,800	0	768,216	416,495	437	416,058	478,905	0	0	289,751	2,800	292,551
Waste in Lieu of Borrow		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE III, STEP 2		768,653	437	2,800	0	768,216	416,495	437	416,058	478,905	0	0	289,751	2,800	292,551

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller SHEET 5 OF 6 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY PHASE III, STEP 3															
-L- 72+00	-L- 80+00	753				753	1,282		1,282	1,474	721	0	0	0	0
-L- 86+79.64	-L- 90+91.50	0				0	14,220		14,220	16,353	16,353	0	0	0	0
-L- 93+16.50	-L- 99+00	0				0	1,575		1,575	1,811	1,811	0	0	0	0
DETOUR -P4WB3- -L- 116+25	-L- 128+50	682				682	448		448	515	0	0	167	0	167
-Y4RPA- 22+00	-Y4RPA- 23+65	453				453	0		0	0	0	0	453	0	453
-Y4RPB- 16+45.40	-Y4RPB- 21+92.99	2,208				2,208	1		1	1	0	0	2,207	0	2,207
-Y5- 20+94.19	-Y5- 39+36.42	362				362	193		193	222	0	0	140	0	140
									0	0	0	0	0	0	0
PHASE III, STEP 3	**SUBTOTAL**	4,458	0	0	0	4,458	17,719	0	17,719	20,376	18,885	0	2,967	0	2,967
	-Y3A- 47+25														
Borrow in Lieu of Waste									0	0	-2,967	0	-2,967	0	-2,967
Totals from Phase III, Step 2		768,653	437	2,800	0	768,216	416,495	437	416,058	478,905	0	0	289,751	2,800	292,551
PROJECT SUBTOTALS THRU PHASE III, STEP 3		773,111	437	2,800	0	772,674	434,214	437	433,777	499,281	15,918	0	289,751	2,800	292,551
Waste in Lieu of Borrow		0							0	0	-15,918	0	-15,918	0	-15,918
PROJECT TOTALS THRU PHASE III, STEP 3		773,111	437	2,800	0	772,674	434,214	437	433,777	499,281	0	0	273,833	2,800	276,633
SUMMARY PHASE IV		0							0	0	0	0	0	0	0
-L- 19+50	-L- 33+00	689				689	136		136	156	0	0	533	0	533
-L- 46+00	-L- 84+85	4,354				4,354	18,999		18,999	21,849	17,495	0	0	0	0
-L- 87+10	-L- 90+91.50	0				0	10,915		10,915	12,552	12,552	0	0	0	0
-L- 93+16.50	-L- 131+00	1,109				1,109	48,957		48,957	56,301	55,192	0	0	0	0
		0							0	0	0	0	0	0	0
-YRPC- 17+65.71	-YRPC- 22+60	704				704	798		798	918	214	0	0	0	0
-Y4RPB- 16+45.40	-Y4RPB- 21+92.99	2,328				2,328	0		0	0	0	0	2,328	0	2,328
		0							0	0	0	0	0	0	0
-Y4- 10+90	-Y4- 34+90	10,995				10,995	3,948		3,948	4,540	0	0	6,455	0	6,455
-Y2DW- 10+00	-Y2DW- 15+50	5,290				5,290	103		103	118	0	0	5,172	0	5,172
		0							0	0	0	0	0	0	0
PHASE IV	**SUBTOTAL**	25,469	0	0	0	25,469	83,856	0	83,856	96,434	85,453	0	14,488	0	14,488
Borrow in Lieu of Waste									0	0	-14,488	0	-14,488	0	-14,488
Totals from Phase III, Step 3		773,111	437	2,800	0	772,674	434,214	437	433,777	499,281	0	0	273,833	2,800	276,633
PROJECT SUBTOTALS THRU PHASE IV		798,580	437	2,800	0	798,143	518,070	437	517,633	595,715	70,965	0	273,833	2,800	276,633
Waste in Lieu of Borrow		0							0	0	-70,965	0	-70,965	0	-70,965
PROJECT TOTALS THRU PHASE IV		798,580	437	2,800	0	798,143	518,070	437	517,633	595,715	0	0	202,868	2,800	205,668
SUMMARY PHASE V, STEP 1		0							0	0	0	0	0	0	0
-L- 25+00	-L- 43+00	1,504				1,504	20		20	23	0	0	1,481	0	1,481
-L- 43+00	-L- 54+00	573				573	115		115	132	0	0	441	0	441
-L- 72+00	-L- 85+00	4,070				4,070	0		0	0	0	0	4,070	0	4,070
-L- 94+00	-L- 126+00	15,490				15,490	560		560	644	0	0	14,846	0	14,846
		0							0	0	0	0	0	0	0
PHASE V, STEP 1	**SUBTOTAL**	21,637	0	0	0	21,637	695	0	695	799	0	0	20,838	0	20,838
Waste in Lieu of Borrow									0	0	0	0	0	0	0
Totals from Phase IV		798,580	437	2,800	0	798,143	518,070	437	517,633	595,715	0	0	202,868	2,800	205,668
PROJECT SUBTOTALS THRU PHASE V, STEP 1		820,217	437	2,800	0	819,780	518,765	437	518,328	596,514	0	0	223,706	2,800	226,506
Waste in Lieu of Borrow		0							0	0	0	0	0	0	0
PROJECT TOTALS THRU PHASE V, STEP 1		820,217	437	2,800	0	819,780	518,765	437	518,328	596,514	0	0	223,706	2,800	226,506

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: I-3819A COUNTY: Iredell DATE: 1/11/2012 COMPILED BY: D.Waller SHEET 6 OF 6 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +15%		ROCK	SUITABLE	UNSUIT.	TOTAL
TOTAL		820,217	437	2,800	0	819,780	518,765	437	518,328	596,514	0	0	223,706	2,800	226,506
LOSS DUE TO CLEARING & GRUBBING		-14,000				-14,000	0			0	0		-14,000		-14,000
ADDITIONAL UNDERCUT		0		2,000										2,000	2,000
PROJECT TOTAL		806,217	437	4,800	0	805,780	518,765	437	518,328	596,514	0	0	209,706	4,800	214,506
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											0				
GRAND TOTAL		806,217	437	4,800	0	805,780	518,765	437	518,328	596,514	0	0	209,706	4,800	214,506
SAY		806,500													

EST. SHALLOW UNDERCUT (CONTINGENCY) = 56,000 CY
EST. D.D.E. = 9,840 CY
EST. SHOULDER BORROW = 31,000 CY
PAVEMENT STRUCTURE VOLUME = 67,129 CY

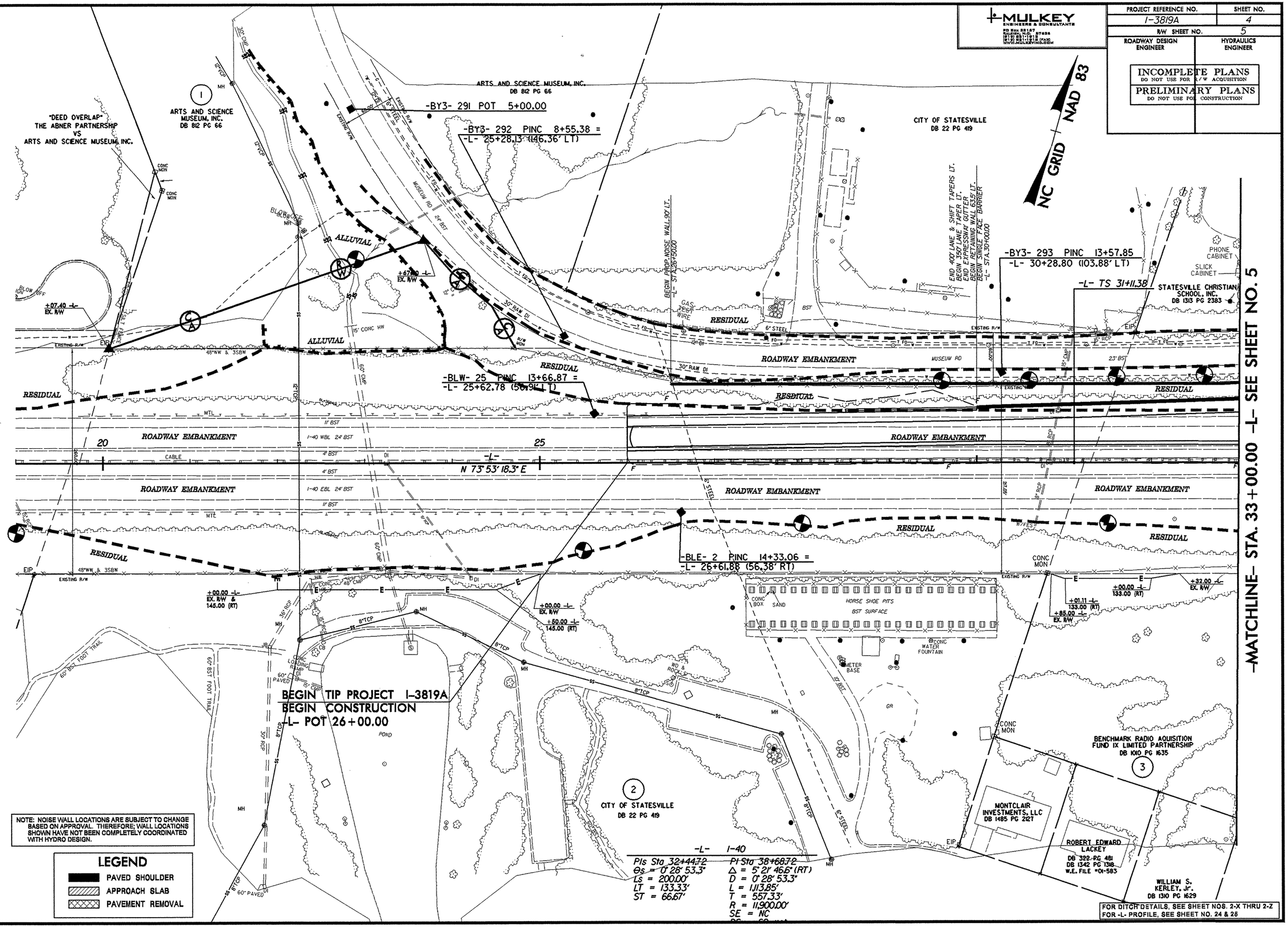
NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

MULKEY ENGINEERS & CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	4
R/W SHEET NO.	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE: NOISE WALL LOCATIONS ARE SUBJECT TO CHANGE BASED ON APPROVAL. THEREFORE; WALL LOCATIONS SHOWN HAVE NOT BEEN COMPLETELY COORDINATED WITH HYDRO DESIGN.

LEGEND
- PAVED SHOULDER
- APPROACH SLAB
- PAVEMENT REMOVAL

-L- I-40

PIs Sta 32+44.72	PI Sta 38+68.72
Θs = 0° 28' 53.3"	Δ = 5° 21' 46.6" (RT)
Ls = 200.00'	D = 0° 28' 53.3"
LT = 133.33'	L = 1,113.85'
ST = 66.67'	T = 557.33'
	R = 11,900.00'
	SE = NC

FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -L- PROFILE, SEE SHEET NO. 24 & 25

8/17/99

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chbrris A1 GEH245146

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	5
R/W SHEET NO.	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127 Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 FAX
WWW.MULKEYINC.COM

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L- I-40

PIs Sta 32+44.72
Θs = 0° 28' 53.3"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

PI Sta 38+68.72
Δ = 5° 21' 46.6" (RT)
D = 0° 28' 53.3"
L = 1,113.85'
T = 557.33'
R = 11,900.00'
SE = NC
DS = 60 mph

PIs Sta 44+91.90
Θs = 0° 28' 53.3"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

-Y1-

PI Sta 14+25.14
Δ = 10° 26' 16.0" (LT)
D = 4° 10' 55.8"
L = 249.58'
T = 125.14'
R = 1,370.00'
SE = 03
Runoff = 63'
DS = 40 mph

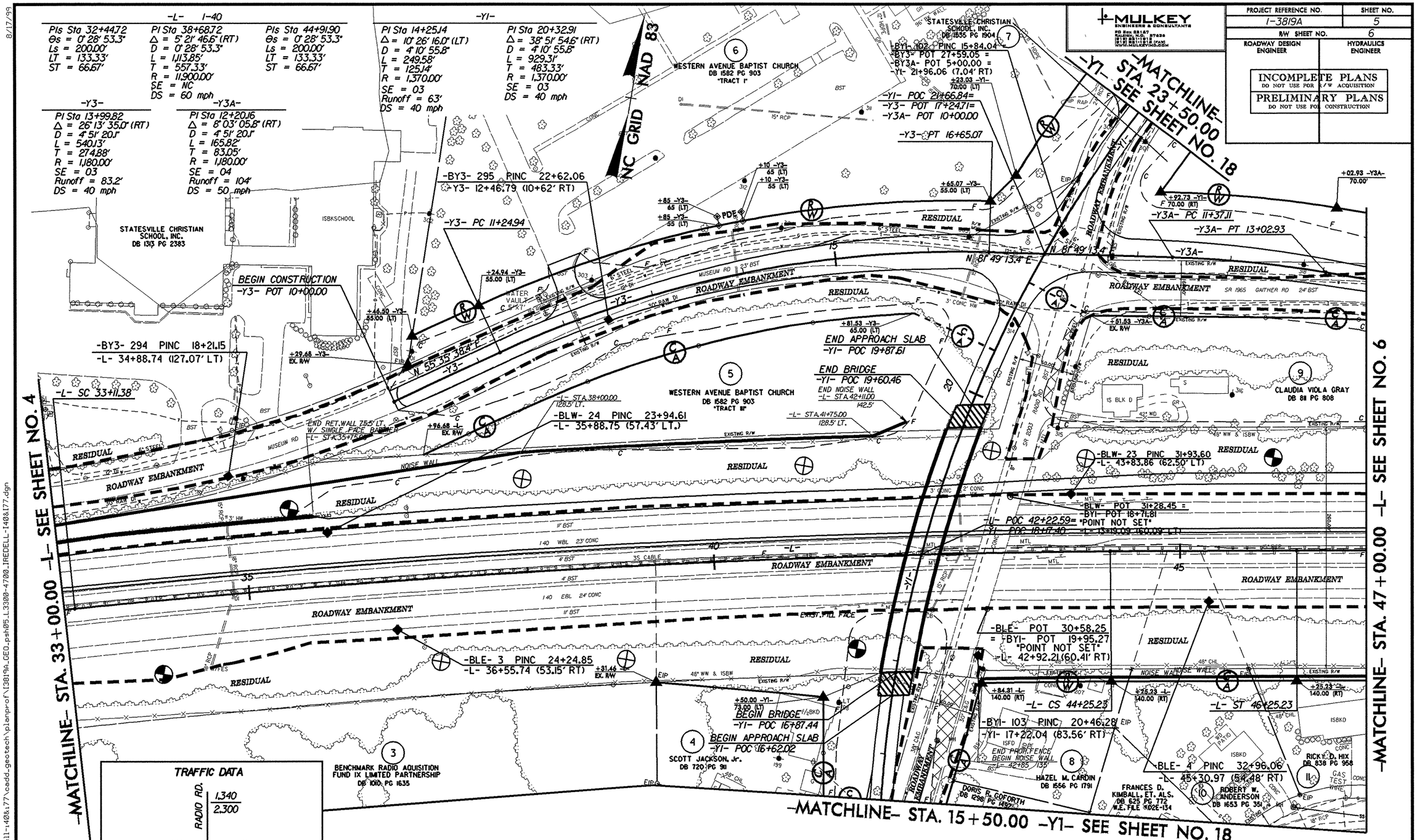
PI Sta 20+32.91
Δ = 38° 51' 54.6" (RT)
D = 4° 10' 55.8"
L = 929.31'
T = 463.33'
R = 1,370.00'
SE = 03
DS = 40 mph

-Y3-

PI Sta 13+99.82
Δ = 26° 13' 35.0" (RT)
D = 4° 51' 20.1"
L = 540.13'
T = 274.88'
R = 1,180.00'
SE = 03
Runoff = 83.2'
DS = 40 mph

-Y3A-

PI Sta 12+20.16
Δ = 8° 03' 05.8" (RT)
D = 4° 51' 20.1"
L = 165.82'
T = 83.05'
R = 1,180.00'
SE = 04
Runoff = 104'
DS = 50 mph



TRAFFIC DATA

	RADIO RD.	
	1,340 / 2,300	
440 / 600		340 / 500
MUSEUM RD.		GAITHER RD.
4,360 / 7,400		4,620 / 7,500
1,920 / 2,800		2,280 / 3,000
2010 AVERAGE / 2030 DAILY TRAFFIC		4,760 / 7,000

NOTE: NOISE WALL LOCATIONS ARE SUBJECT TO CHANGE BASED ON APPROVAL. THEREFORE; WALL LOCATIONS SHOWN HAVE NOT BEEN COMPLETELY COORDINATED WITH HYDRO DESIGN.

FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -L- PROFILE, SEE SHEET NO. 25
FOR -Y1- PROFILE, SEE SHEET NO. 44
FOR -Y3- PROFILE, SEE SHEET NO. 45
FOR -Y3A- PROFILE, SEE SHEET NO. 46
FOR PAVEMENT-BRIDGE RELATIONSHIP SKETCHES, SEE SHEET NO. 2-AP

LEGEND
- PAVED SHOULDER
- APPROACH SLAB
- PAVEMENT REMOVAL

8/17/99

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ch:pm13 ST (GEH2)R9446

8/17/99

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127 RALEIGH, N.C. 27636 (919) 851-1912 (919) 851-1918 (FAX) WWW.MULKEYINC.COM

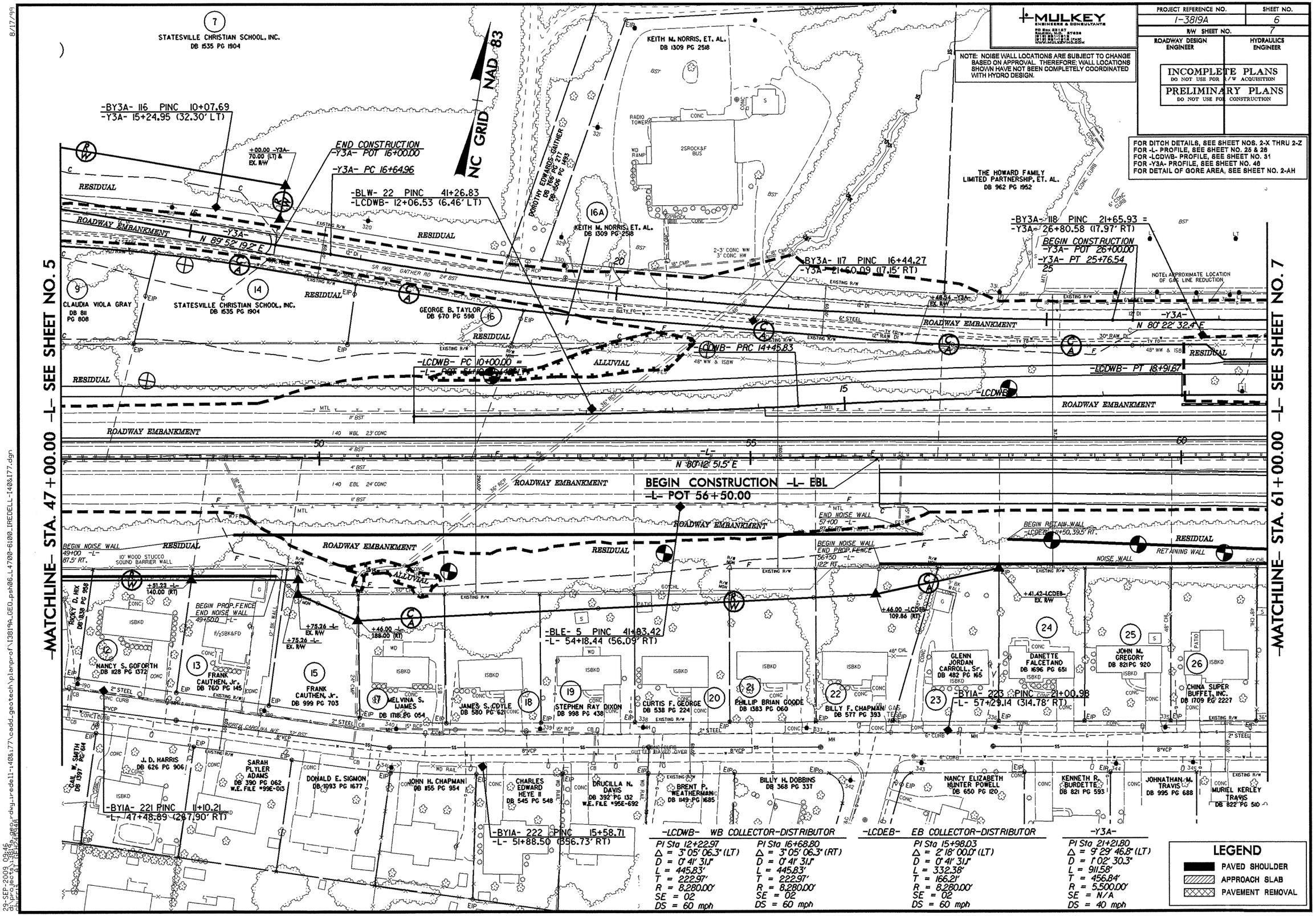
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	6
R/W SHEET NO.	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: NOISE WALL LOCATIONS ARE SUBJECT TO CHANGE BASED ON APPROVAL. THEREFORE, WALL LOCATIONS SHOWN HAVE NOT BEEN COMPLETELY COORDINATED WITH HYDRO DESIGN.

FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -L- PROFILE, SEE SHEET NO. 25 & 26
FOR -LCDWB- PROFILE, SEE SHEET NO. 31
FOR -Y3A- PROFILE, SEE SHEET NO. 46
FOR DETAIL OF GORE AREA, SEE SHEET NO. 2-AH



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pb:ipris BY: REH24948

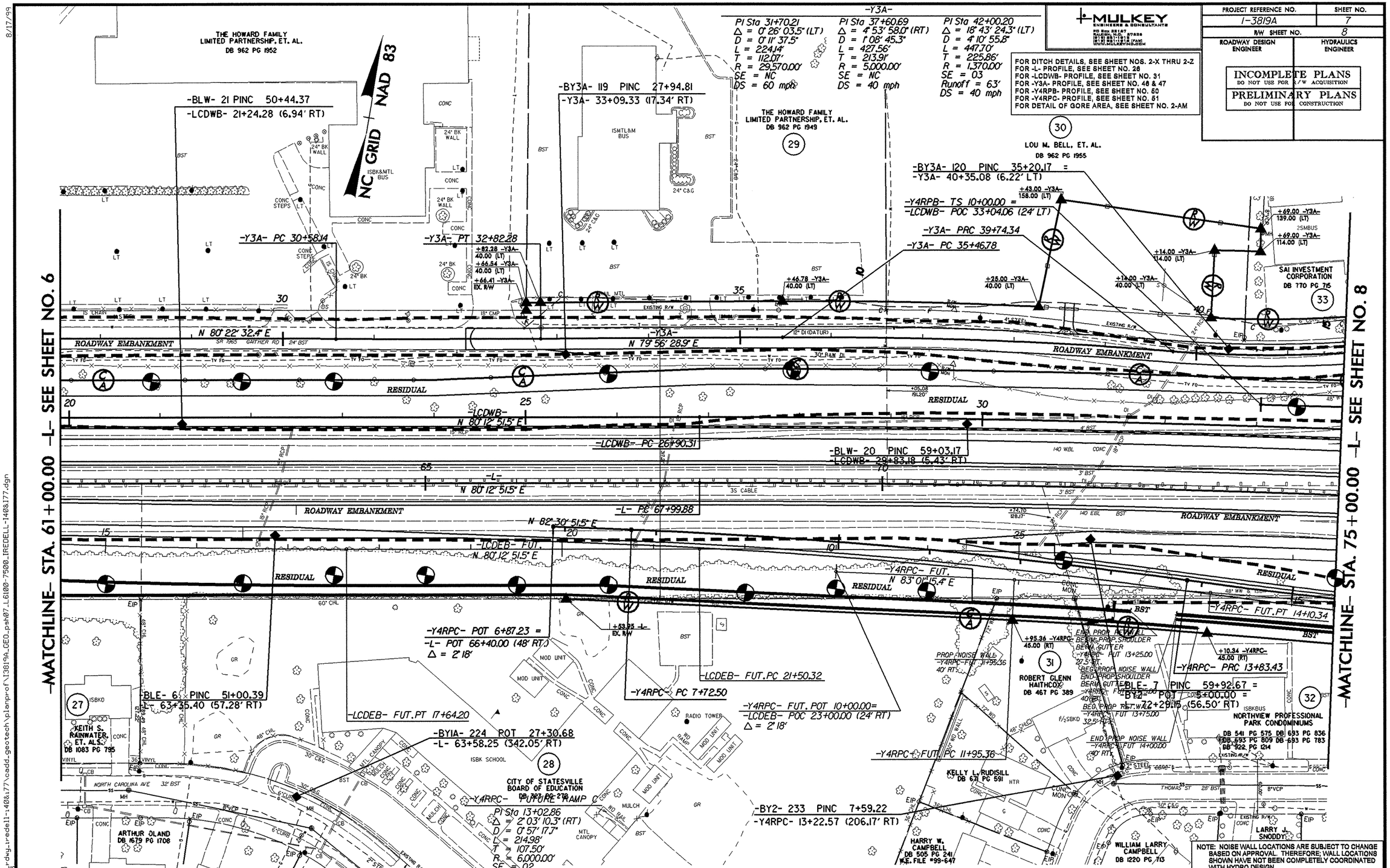
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	7
R/W SHEET NO.	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MULKEY ENGINEERS & CONSULTANTS

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -L- PROFILE, SEE SHEET NO. 26
FOR -LCDWB- PROFILE, SEE SHEET NO. 31
FOR -Y3A- PROFILE, SEE SHEET NO. 46 & 47
FOR -Y4RPB- PROFILE, SEE SHEET NO. 50
FOR -Y4RPC- PROFILE, SEE SHEET NO. 51
FOR DETAIL OF GORE AREA, SEE SHEET NO. 2-AM



NOTE: NOISE WALL LOCATIONS ARE SUBJECT TO CHANGE BASED ON APPROVAL. THEREFORE; WALL LOCATIONS SHOWN HAVE NOT BEEN COMPLETELY COORDINATED WITH HYDRO DESIGN.

-LCDWB- WB COLLECTOR-DISTRIBUTOR	
PI Sta 30+83.22	
Δ = 2° 38' 12.7" (RT)	
D = 0° 20' 08.2"	
L = 785.69'	
T = 392.91'	
R = 17,072.00'	
SE = NC	
DS = 75 mph	

-LCDEB- FUT. EB COLLECTOR-DISTRIBUTOR	
PI Sta 15+98.03	PI Sta 25+39.92
Δ = 2° 18' 00.0" (LT)	Δ = 2° 38' 12.7" (RT)
D = 0° 41' 31.1"	D = 0° 20' 18.5"
L = 332.38'	L = 779.06'
T = 166.21'	T = 389.60'
R = 8,280.00'	R = 16,928.00'
SE = 02	SE = NC
DS = 55 mph	DS = 75 mph

-Y4RPC- RAMP C	
PI Sta 10+78.23	PI Sta 15+83.52
Δ = 5° 50' 02.4" (RT)	Δ = 3° 16' 28.2" (LT)
D = 0° 57' 17.7"	D = 0° 49' 06.6"
L = 610.93'	L = 400.06'
T = 305.73'	T = 200.08'
R = 6,000.00'	R = 7,000.00'
SE = 02	SE = 02
DS = 50 mph	DS = 50 mph

LEGEND
- PAVED SHOULDER
- APPROACH SLAB
- PAVEMENT REMOVAL

8/17/99

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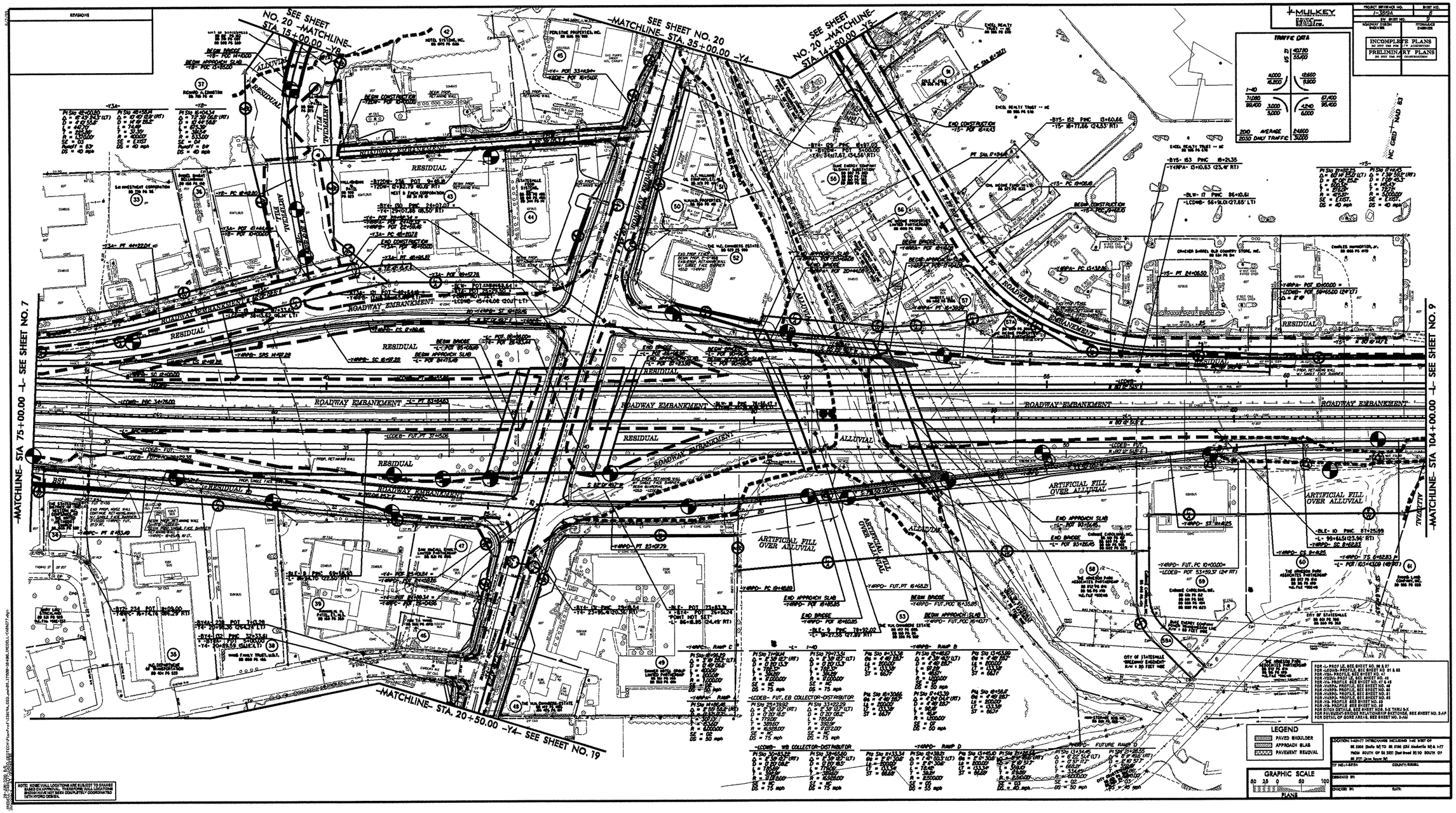
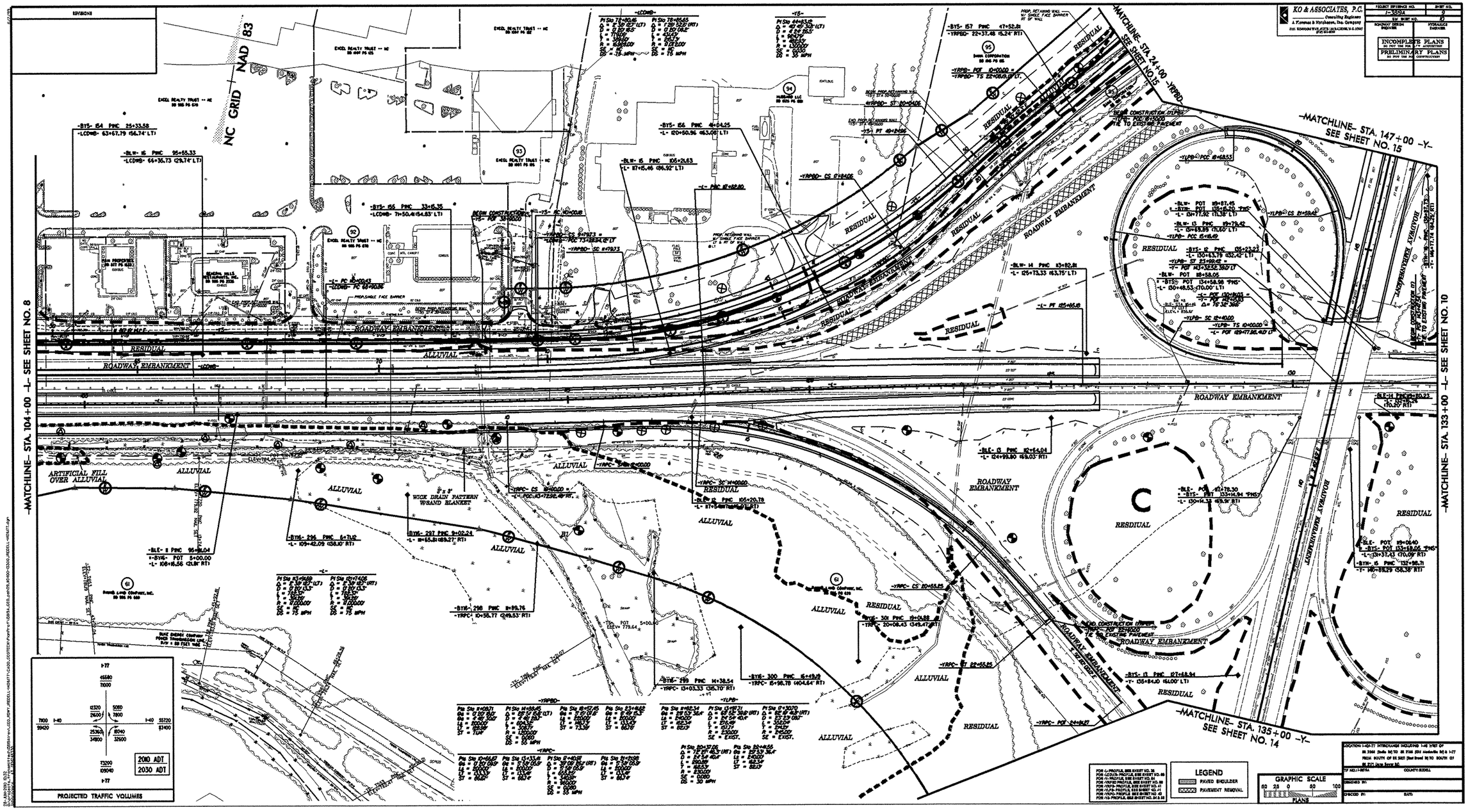

SEE SHEET NO. 20 -MATCHLINE- STA. 15+00.00 -Y6-
SEE SHEET NO. 20 -MATCHLINE- STA. 35+00.00 -Y4-
SEE SHEET NO. 20 -MATCHLINE- STA 14+50.00 -Y5-
-MATCHLINE- STA 75+00.00 -L- SEE SHEET NO. 7
-MATCHLINE- STA 104+00.00 -L- SEE SHEET NO. 9
-MATCHLINE- STA. 20+50.00 -Y4- SEE SHEET NO. 19
ROADWAY EMBANKMENT
RESIDUAL
ALLUVIAL
ARTIFICIAL FILL OVER ALLUVIAL
TYPICAL
TRAFFIC DATA
1-40
2010 AVERAGE 2030 DAILY TRAFFIC
INCOMPLETE PLANS
PRELIMINARY PLANS
NC GRID NAD 83
LEGEND
PAVED SHOULDER
APPROACH SLAB
PAVEMENT REMOVAL
GRAPHIC SCALE
PLANS
NOTE: SOME WALL LOCATIONS ARE SUBJECT TO CHANGE BASED ON APPROVAL. THEREFORE WALL LOCATIONS SHOWN HAVE NOT BEEN COMPLETELY COORDINATED WITH HYDRO DESIGN.


KO & ASSOCIATES, P.C.
Consulting Engineers
A Kimley-Horn and Associates, Inc. Company
FEDERAL REFERENCE NO. I-3838A
SHEET NO. 9
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
NC GRID NAD 83
-MATCHLINE- STA. 104+00 -L- SEE SHEET NO. 8
-MATCHLINE- STA. 133+00 -L- SEE SHEET NO. 10
-MATCHLINE- STA. 147+00 -Y- SEE SHEET NO. 15
-MATCHLINE- STA. 135+00 -Y- SEE SHEET NO. 14
-MATCHLINE- STA. 24+00 -YRPBD-
ARTIFICIAL FILL OVER ALLUVIAL
ALLUVIAL
RESIDUAL
ROADWAY EMBANKMENT
WICK DRAIN PATTERN W/SAND BLANKET
BEGIN CONSTRUCTION -YLPB-
END CONSTRUCTION -YLPB-
PROJECTED TRAFFIC VOLUMES
2010 ADT
2030 ADT
LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL
GRAPHIC SCALE
PLANS
LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 WEST OF SR 2366 (Stella Rd) TO SR 2166 (Old Statesville Rd) & I-77 FROM SOUTH OF SR 5821 (East Broad Rd) TO SOUTH OF SR 2172 (New River Rd)
TIP NO. I-3838A
COUNTY: IREDELL
DESIGNED BY:
CHECKED BY:
DATE:

REVISIONS

-MATCHLINE- SEE SHEET NO. 23

-MATCHLINE- STA. 36+00 -YRPBD- SEE SHEET NO. 15

-MATCHLINE- SEE SHEET NO. 9

-MATCHLINE- STA. 133+00 SEE SHEET NO. 11

-MATCHLINE- STA. 162+00 SEE SHEET NO. 11

-MATCHLINE- SEE SHEET NO. 14

NC GRID NAD 83

KO & ASSOCIATES, P.C.
Consulting Engineers
A Parsons & Hinkhouse, Inc. Company
P.O. BOX 1000 TOWN, SUITE 100 BLACKSBURG, N.C. 27107
(703) 951-8884

PROJECT REFERENCE NO.	SHEET NO.
I-5924	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECTED TRAFFIC VOLUMES

2010 ADT
2030 ADT

RESIDUAL
ALLUVIAL
ARTIFICIAL FILL
ROADWAY EMBANKMENT

PAVEMENT-BRIDGE RELATIONSHIP SKETCH
-L- I-40 OVER -YRPD-

PAVEMENT-BRIDGE RELATIONSHIP SKETCH
-YRPD- OVER TRIBUTARY NO. 3

LEGEND
PAVED SHOULDER
APPROACH SLAB
PAVEMENT REMOVAL

GRAPHIC SCALE
80 25 0 80 100
PLANS

FOR -L- PROFILE, SEE SHEET NOS. 10 & 30
FOR -YRPA- PROFILE, SEE SHEET NO. 31
FOR -YRPC- PROFILE, SEE SHEET NO. 35
FOR -YRPD- PROFILE, SEE SHEET NOS. 38 & 40
FOR -YRPE- PROFILE, SEE SHEET NO. 46

LOCATION: I-40/77 INTERCHANGE INCLUDING I-40 WEST OF SR 1326 (Stella Rd) TO SR 2136 (Old Mocksville Rd) & I-77 FROM SOUTH OF SR 1327 (Bell Road Rd) TO SOUTH OF SR 1131 (Fort Road Rd)

TIP NO.: I-5924 COUNTY: IREDELL

DESIGNED BY:

CHECKED BY: DATE

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	11
R/W SHEET NO.	12
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

-MATCHLINE- STA. 162+00 -L- SEE SHEET NO. 10

-MATCHLINE- STA. 176+00 -L- SEE SHEET NO. 12

-YRPAC- (FUTURE)

PIs Sta 12+53.36	PI Sta 14+21.60	PIs Sta 15+89.59
Θs = 3° 47' 39.9"	Δ = 7° 41' 55.1" (RT)	Θs = 3° 47' 39.9"
Ls = 200.00'	D = 3° 47' 39.9"	Ls = 200.00'
LT = 133.36'	L = 202.89'	LT = 133.36'
ST = 66.69'	T = 101.60'	ST = 66.69'
	R = 1,510.00'	

98
THE Dr. J. H. PRESSLY ESTATE
DB 1653 PG 1771
"FIRST TRACT"

-BLW- 9 PINC 153+47.66
-L- 165+37.91 (56.76' LT)

-YRPAC- CS 15+22.89
(FUTURE)

-YRPAC- SC 13+20.00
(FUTURE)

(FUTURE)
-YRPAC- POT 10+00.00 =
-L- POT 168+75.00 ,60' LT.
Δ = 2° 18'

-YRPAC- TS 11+20.00
(FUTURE)

-BY15A- 250 POT 5+00.00
-L- 170+04.83 (132.24' LT)

BM #10
-BY15A- STA 5+50
40' RIGHT
ELEV. = 870.75'

-BY15A- 251 PINC 10+74.41
-L- 175+78.59 (104.94' LT)

-BLW- 8 PINC 163+31.79
-L- 175+21.97 (69.15' LT)

+94 -L- 182'
+75 -L- 188'
+63 -L- EX.R/W
+84 -L- EX.R/W
+97 -L- 184'
+96 -L- EX.R/W
+77 -L- 184'
+76 -L- EX.R/W

RESIDUAL
ARTIFICIAL FILL
ROADWAY EMBANKMENT
N 80° 12' 51.5" E
S 82° 30' 51.5" W
-L-
140 WBL BST
140 EBL CONC
EXISTING R/W
22' BST
SR 2432 BRYCESTER RD
48" WW & ISBW
72"CHL & 3SBW
18" RCP
24" DI
15" RCP
4" PLASTIC
3S CABLE
CONC
BST
GR

-LCDEB- PC 120+00.31
(FUTURE)

-LCDEB- PRC 124+46.15
(FUTURE)

(FUTURE)
-LCDEB- PT 128+91.98 =
-L- POT 175+41.24, 48' RT.

END CONSTRUCTION (EBL)
-L- POT 170+00.00
TIE TO EXISTING PAVEMENT

-BLE- 18 PINC 155+57.12
-L- 167+92.89 (64.53' RT)

98
The Dr. J.H. PRESSLY ESTATE
DB 1653 PG 1771
"SECOND TRACT"

99
A.J. CAUSEY FAMILY LIMITED PARTNERSHIP
DB 1222 PG 1409
"FIRST TRACT"

103
ROBERT B. CASHION, ET. AL.
DB 726 PG 958

104
JAMES RENTALS, L.L.C.
DB 1714 PG 271
DB 760 PG 854
"TRACT 4"

104A
JAMES RENTALS, L.L.C.
DB 1714 PG 271
DB 760 PG 854
"TRACT 3"

105
VOLK FAMILY LIMITED PARTNERSHIP
DB 1117 PG 2053

105A
MATHURDAS MAHIDAS KOTHADIA
DB 985 PG 2004
"TRACT 3"

ISBLKBUS
ISMTLBUS
ISMTL BUS
ISBLK BUS
EIP
GUY
15" RCP

-LCDEB- (FUTURE)

PI Sta 122+23.28	PI Sta 126+69.12
Δ = 3° 05' 06.3" (LT)	Δ = 3° 05' 06.3" (RT)
D = 0° 41' 31.1"	D = 0° 41' 31.1"
L = 445.83'	L = 445.83'
T = 222.97'	T = 222.97'
R = 8,280.00'	R = 8,280.00'

LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET NO. 30

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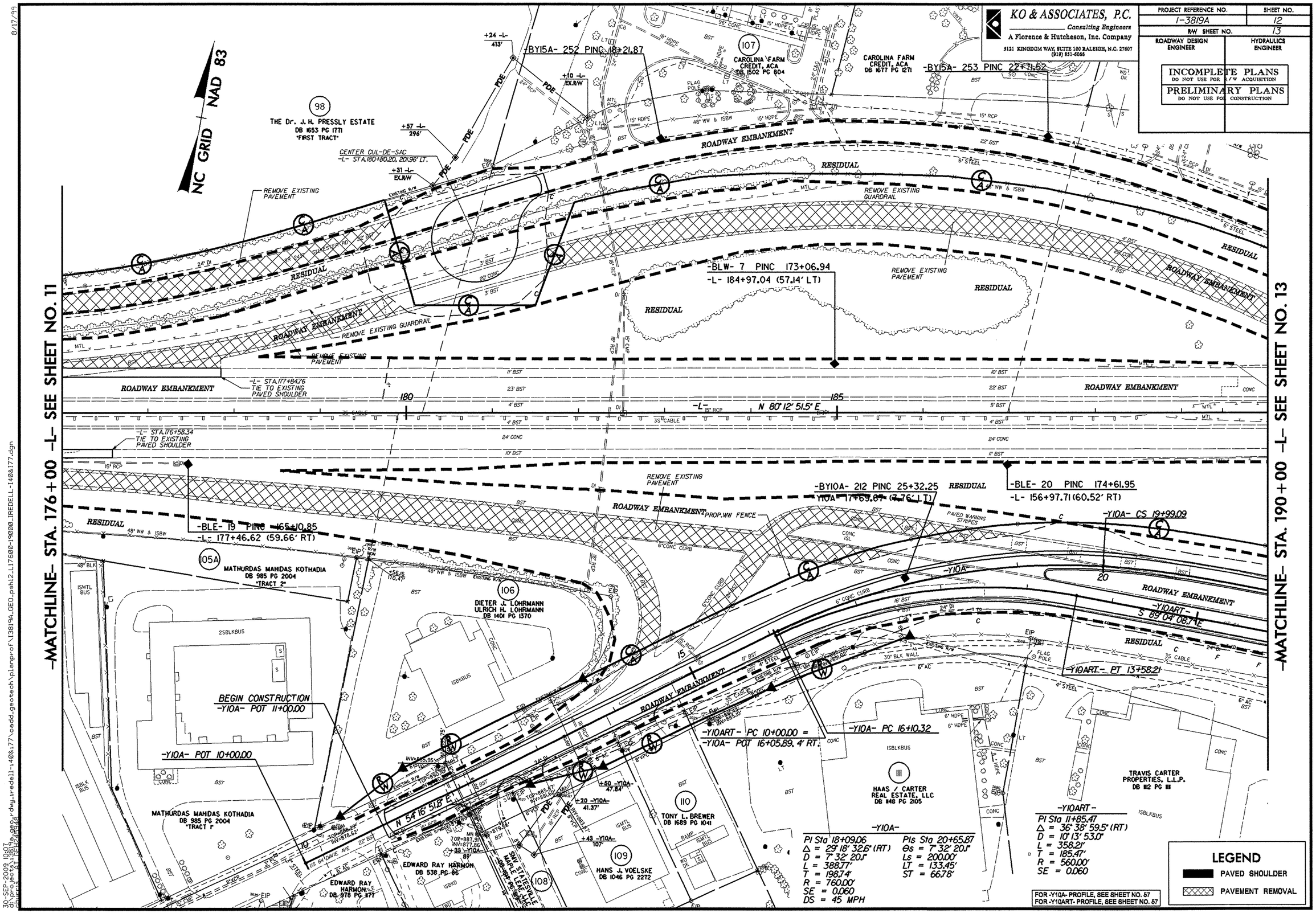

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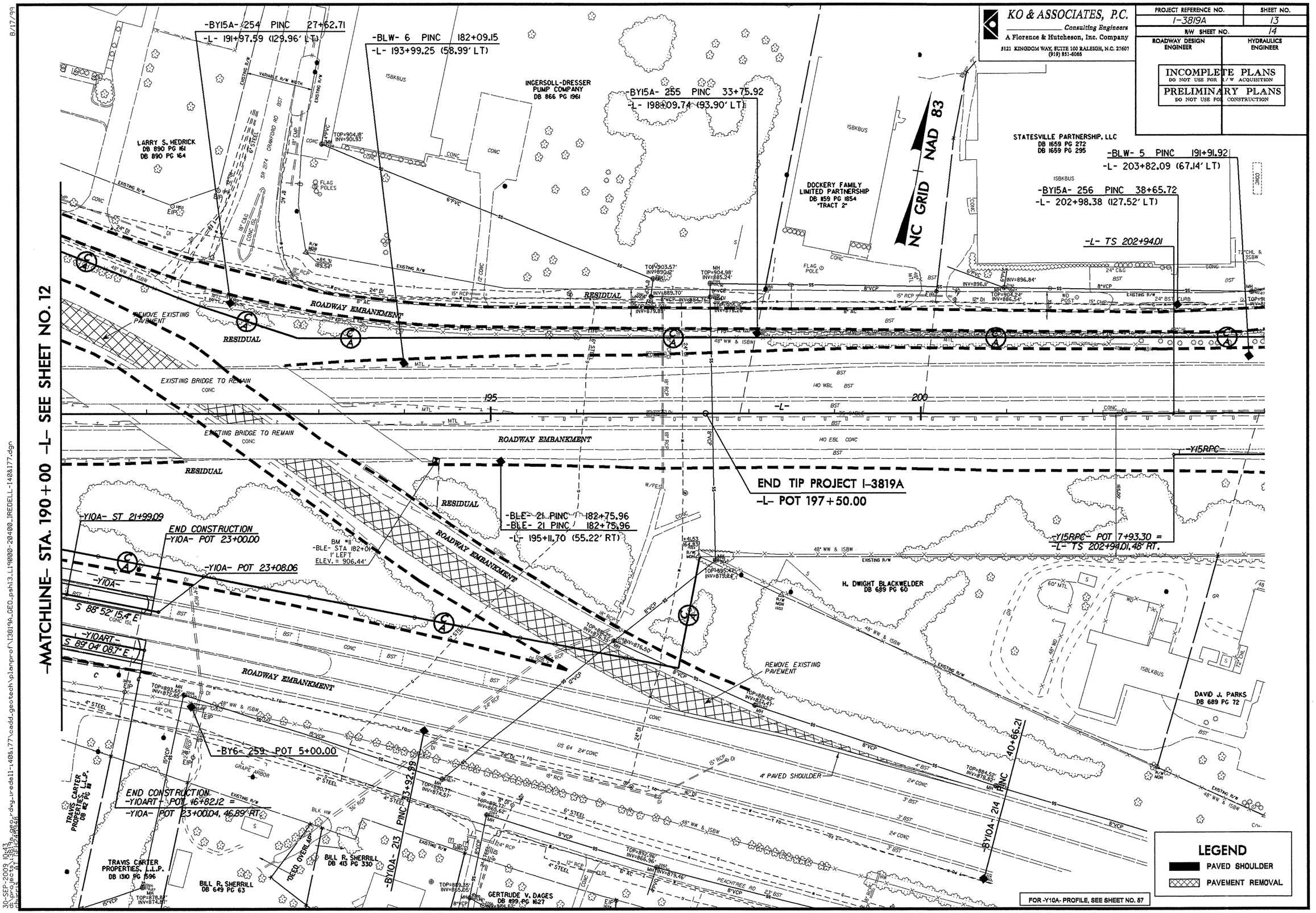
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6065
PROJECT REFERENCE NO.
1-3819A
SHEET NO.
13
R/W SHEET NO.
14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-BY15A- 254 PINC 27+62.71
-L- 191+97.59 (129.96' LT)
-BLW- 6 PINC 182+09.15
-L- 193+99.25 (58.99' LT)
INGERSOLL-DRESSER PUMP COMPANY DB 866 PG 1961
-BY15A- 255 PINC 33+75.92
-L- 198+09.74 (93.90' LT)
LARRY S. HEDRICK DB 890 PG 161 DB 890 PG 164
DOCKERY FAMILY LIMITED PARTNERSHIP DB 859 PG 1854 "TRACT 2"
STATESVILLE PARTNERSHIP, LLC DB 1659 PG 272 DB 1659 PG 295
-BLW- 5 PINC 191+91.92
-L- 203+82.09 (67.14' LT)
-BY15A- 256 PINC 38+65.72
-L- 202+98.38 (127.52' LT)
-L- TS 202+94.01
NC GRID NAD 83
-MATCHLINE- STA. 190+00 -L- SEE SHEET NO. 12
ROADWAY EMBANKMENT
RESIDUAL
REMOVE EXISTING PAVEMENT
EXISTING BRIDGE TO REMAIN
-L-
195
200
END TIP PROJECT I-3819A
-L- POT 197+50.00
-Y15RPC
-Y10A- ST 21+99.09
END CONSTRUCTION
-Y10A- POT 23+00.00
-Y10A- POT 23+08.06
-BLE- 21 PINC 182+75.96
-BLE- 21 PINC 182+75.96
-L- 195+11.70 (55.22' RT)
-Y15RPC- POT 7+93.30 =
-L- TS 202+94.01, 48' RT.
H. DWIGHT BLACKWELDER DB 689 PG 60
DAVID J. PARKS DB 689 PG 72
S 88° 52' 15.4" E
S 89° 04' 06.7" E
-BY6- 259 POT 5+00.00
4' PAVED SHOULDER
-BY10A- 213 PINC 43+92.99
-BY10A- 214 PINC 40+66.21
END CONSTRUCTION
-Y10ART- POT 16+82.12 =
-Y10A- POT 23+00.04, 46.89' RT.
TRAVIS CARTER PROPERTIES, L.L.P. DB 1310 PG 1596
BILL R. SHERRILL DB 649 PG 63
BILL R. SHERRILL DB 415 PG 330
GERTRUDE V. DAGES DB 899 PG 1627
PEACHTREE RD
LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL
FOR -Y10A- PROFILE, SEE SHEET NO. 57
8/17/99
30-SEP-2009 10:43
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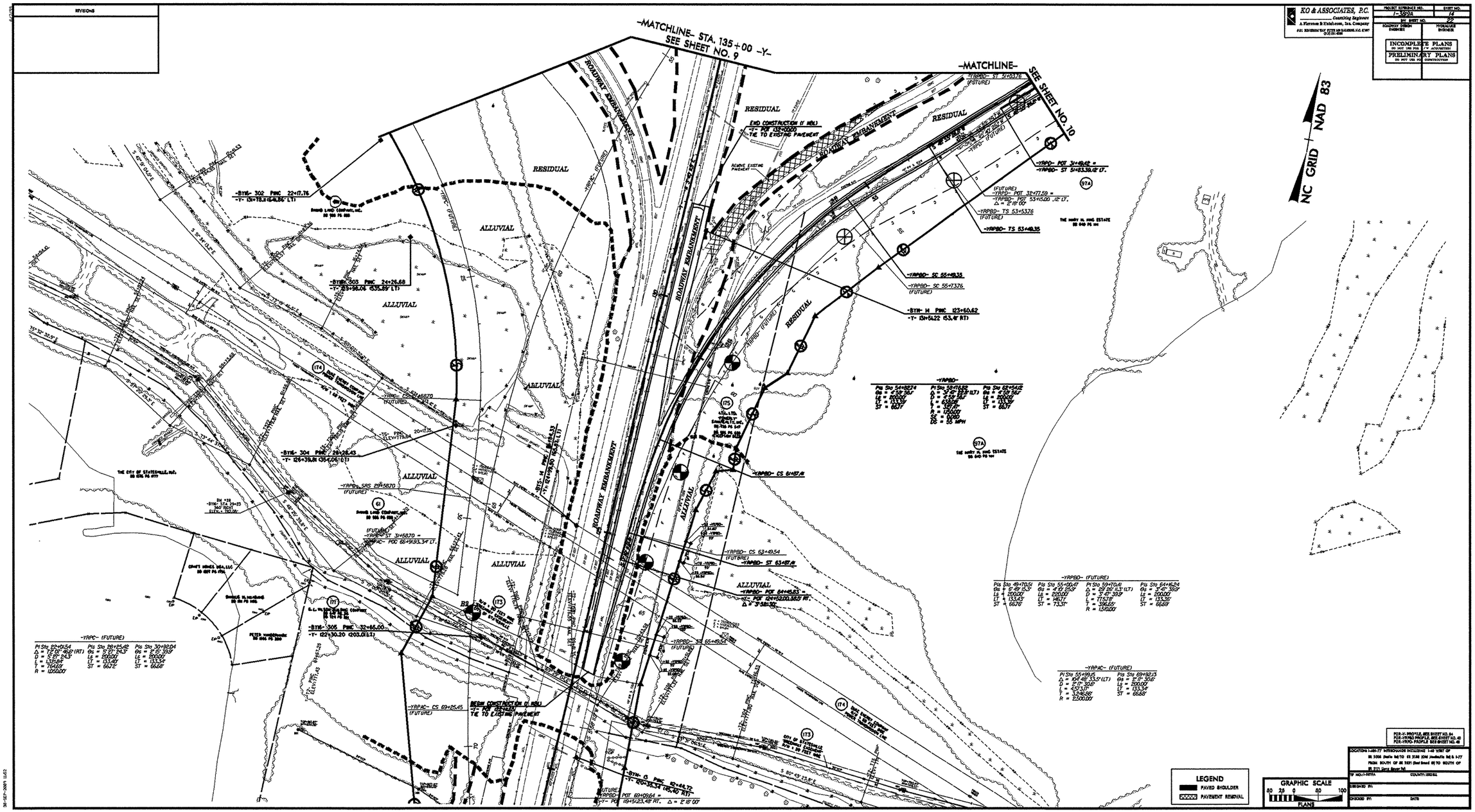
REVISIONS

KO & ASSOCIATES, P.C.
Consulting Engineers
A Parsons & Kinkaiden, Inc. Company
4141 REGIONAL WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-9300

PROJECT REFERENCE NO.	SHEET NO.
I-3809A	14
R/W SHEET NO.	99
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR CLAY ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL

GRAPHIC SCALE
40 20 0 40 100
PLANS

PCR-V, PROFILE, SEE SHEET NO. 54
PCR-YRPBD PROFILE, SEE SHEET NO. 40
PCR-YRPC PROFILE SEE SHEET NO. 41

LOCATION: I-40-77 INTERCHANGE INCLUDING I-40 VIEW OF SR 3006 (Statesville Rd) TO SR 2136 (Old Mocksville Rd) & I-77 FROM SOUTH OF SR 3021 (Sand Road) TO SOUTH OF SR 2121 (Jerry Boyer Rd)

TIP NO. I-3809A	COUNTY: IREDELL
DESIGNED BY:	
CHECKED BY:	DATE

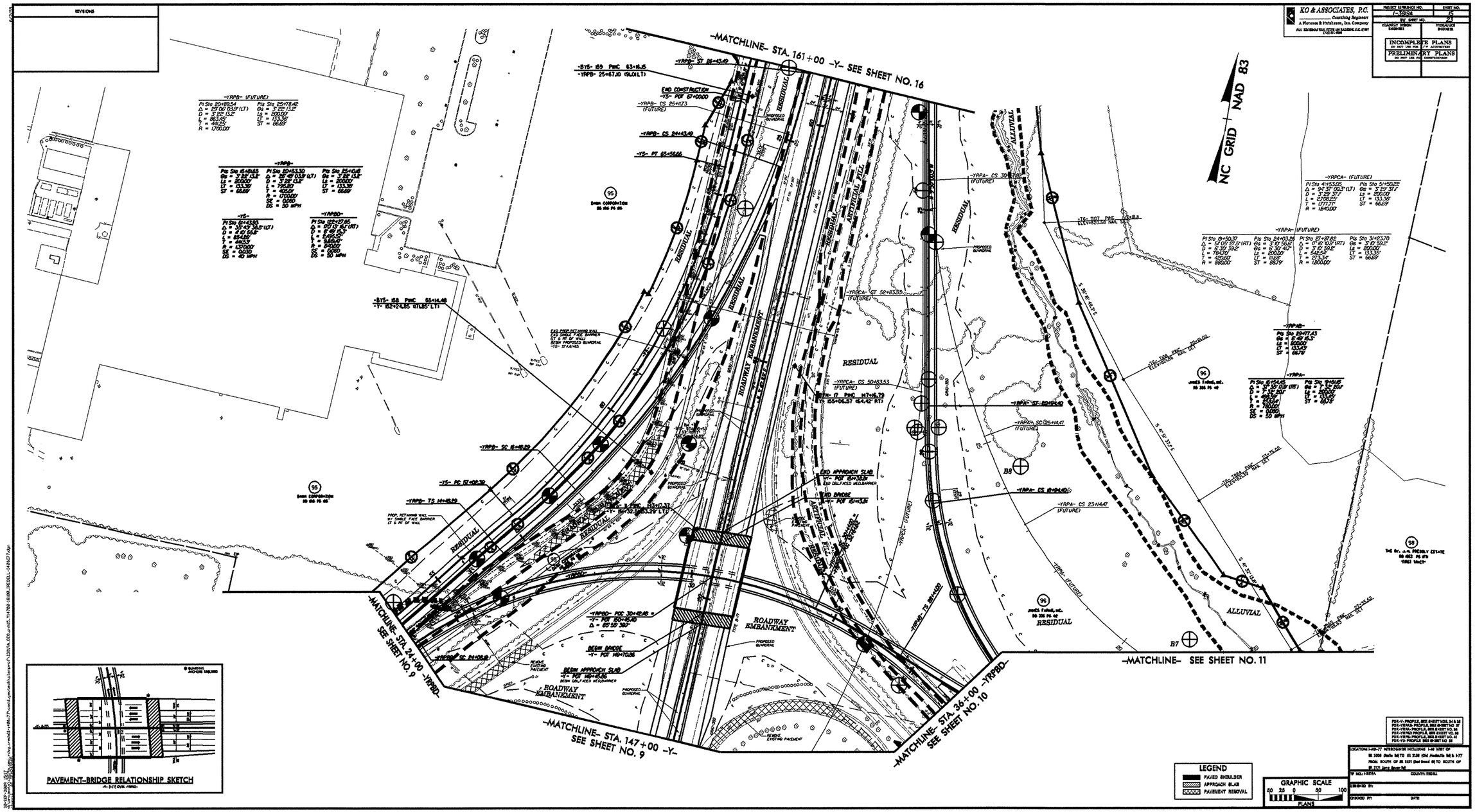
36-SEP-2009 14:53

REVISIONS

KO & ASSOCIATES, P.C.
Consulting Engineers
A Parsons & Whitehorne, Inc. Company
FAX: EDENTON NAT'L BUILDING, 112 EAST CHOWAN ST. EDENTON, NC 27932

PROJECT REFERENCE NO.	SHEET NO.
I-3894	15
R/W SHEET NO.	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 WEST OF
SR 3008 (Davie Rd TO) (El 3138 ON) (Hoskins Rd) & I-77
FROM SOUTH OF SR 3231 (Bell Street) TO SOUTH OF
SR 3170 (Long Street Rd)

TIP NO.: I-3894A COUNTY: IREDELL

DESIGNED BY:

CHECKED BY: DATE:

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
1-3819A	16
R/W SHEET NO.	24
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

-MATCHLINE- STA. 161+00 -Y- SEE SHEET NO. 15

-MATCHLINE- STA. 175+00 -Y- SEE SHEET NO. 17

95
DANA CORPORATION
DB 1016 PG 195

176
CONGRESS STATESVILLE, LLC
DB 1532 PG 1446

96
JAMES FARMS, INC.
DB 336 PG 412

(FUTURE)
-YRPB- ST 27+11.73
-Y- POT 161+66.99, 48' LT

-YRPB- POT 28+01.91 =
-Y- POT 162+56.93, 39.0' LT.
Δ = 2°18'00"

-Y5- POT 73+84.77

-BY5- 160 PINC 70+84.69
-Y- 167+94.74 (150.54 LT)

-BY5- 161 PINC 76+55.74
-Y- 173+65.78 (152.52 LT)

-BYS- 10 PINC 155+20.86
-Y- 163+36.00 (51.72 LT)

END CONSTRUCTION (Y SBL)
-Y- POT 165+49.95
TIE TO EXISTING PAVEMENT

-BYS- 9 PINC 165+53.19
-Y- 173+68.32 (51.06 LT)

-T6- T100 PINC 7+18.74
ELEV=861.26 NAIL SET

-YRPCA- CS 63+33.24
(FUTURE)

(FUTURE)
-YRPCA- ST 65+33.24
-Y- POT 169+35.00, 60' RT.

-YRPA- ST 37+12.25 =
-Y- POT 170+72.66, 39.0' RT.

-YRPA- CS 35+12.25

-YRPCA- SC 61+10.73
(FUTURE)

-YRPA- TS 31+58.73

-YRPA- SC 33+58.73

-YRPCA- TS 59+77.37
(FUTURE)

-YRPCA- POT 5+00.00
ELEV= 862.88

-BYN- 18 PINC 156+86.76
-Y- 164+76.54 (63.63 RT)

-BYN- 19 PINC 166+67.05
-Y- 174+56.79 (54.49 RT)

(FUTURE)
-YRPA- ST 32+57.01 =
-YRPCA- POT 57+20.00, 12' RT.

-T6- T100 PINC 8+76.87
ELEV=840.94 NAIL SET

RESIDUAL
ROADWAY EMBANKMENT
ARTIFICIAL FILL
ALLUVIAL
177 SBL
177 NBL
SR 2187 GLENWAY DR
24' BST
48" WW & ISBW
48" CONC
18" RCP
24" RCP
EXISTING R/W
N 3°47'05.8" E
N 5°58'11.0" E
N 16°00'41.2" E

-YRPA-

PIs Sta 32+92.09	PI Sta 34+35.56	PIs Sta 35+78.94
Θs = 3°49'11.0"	Δ = 5°51'50.5" (RT)	Θs = 3°49'11.0"
Ls = 200.00'	D = 3°49'11.0"	Ls = 200.00'
LT = 133.36'	L = 153.52'	LT = 133.36'
ST = 66.69'	T = 76.83'	ST = 66.69'
	R = 1,500.00'	
	SE = 0.060	
	DS = 45 MPH	

-YRPCA- (FUTURE)

PIs Sta 61+10.73	PI Sta 62+55.37	PIs Sta 63+99.94
Θs = 3°47'39.9"	Δ = 5°54'52.6" (RT)	Θs = 3°47'39.9"
Ls = 200.00'	D = 3°47'39.9"	Ls = 200.00'
LT = 133.36'	L = 155.88'	LT = 133.36'
ST = 66.69'	T = 78.01'	ST = 66.69'
	R = 1,510.00'	

FOR -Y- PROFILE, SEE SHEET NO. 35
FOR -YRPA- PROFILE, SEE SHEET NO. 38
FOR -YRPB- PROFILE, SEE SHEET NO. 41

LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL

8/17/99

30-SEP-2009 16:02
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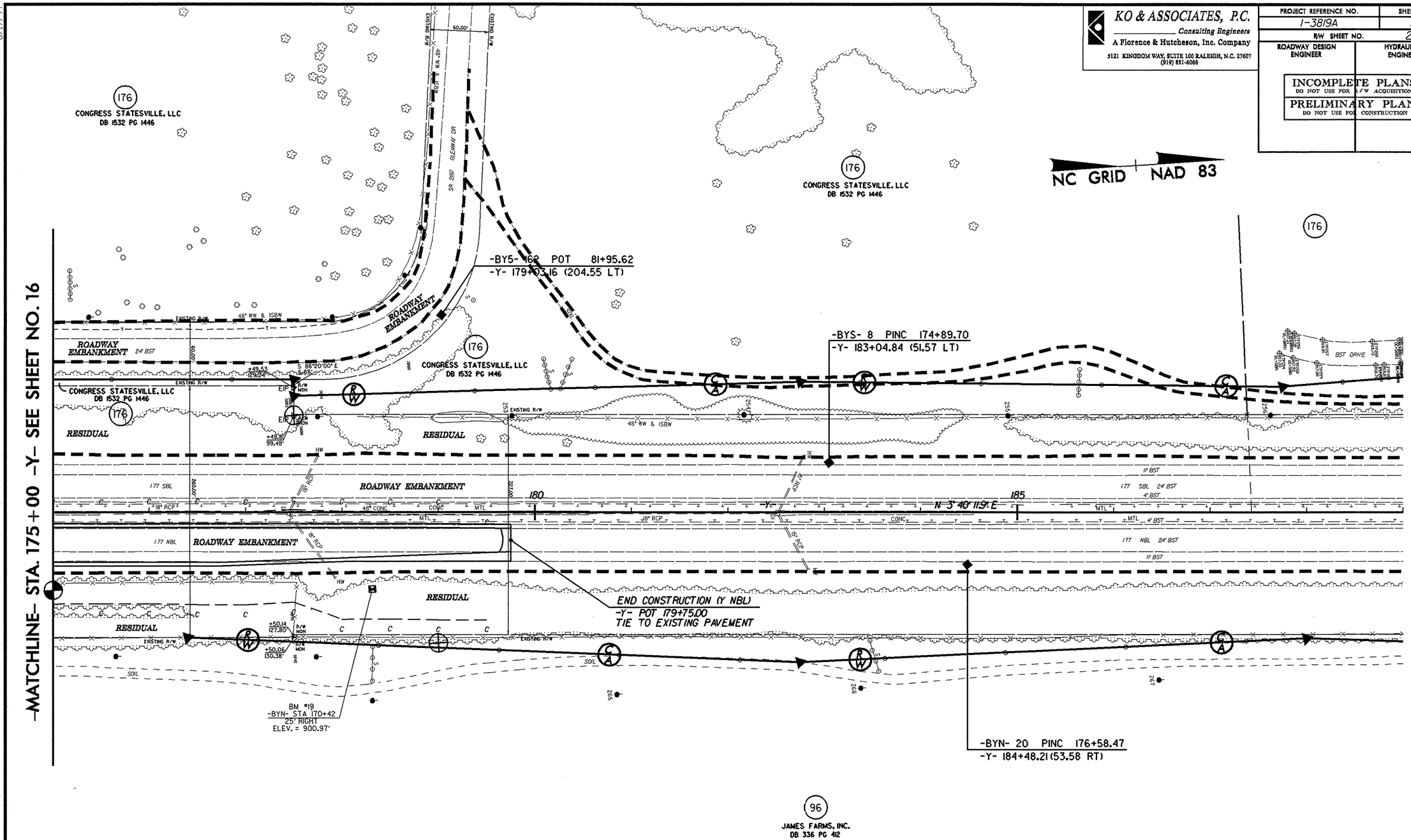
chipmas AT HEIDENREICH

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	17
R/W SHEET NO.	25
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



FOR -Y- PROFILE, SEE SHEET NOS. 35 & 36

LEGEND

PAVED SHOULDER

PAVEMENT REMOVAL

8/17/99

01-OCT-2009 08:56
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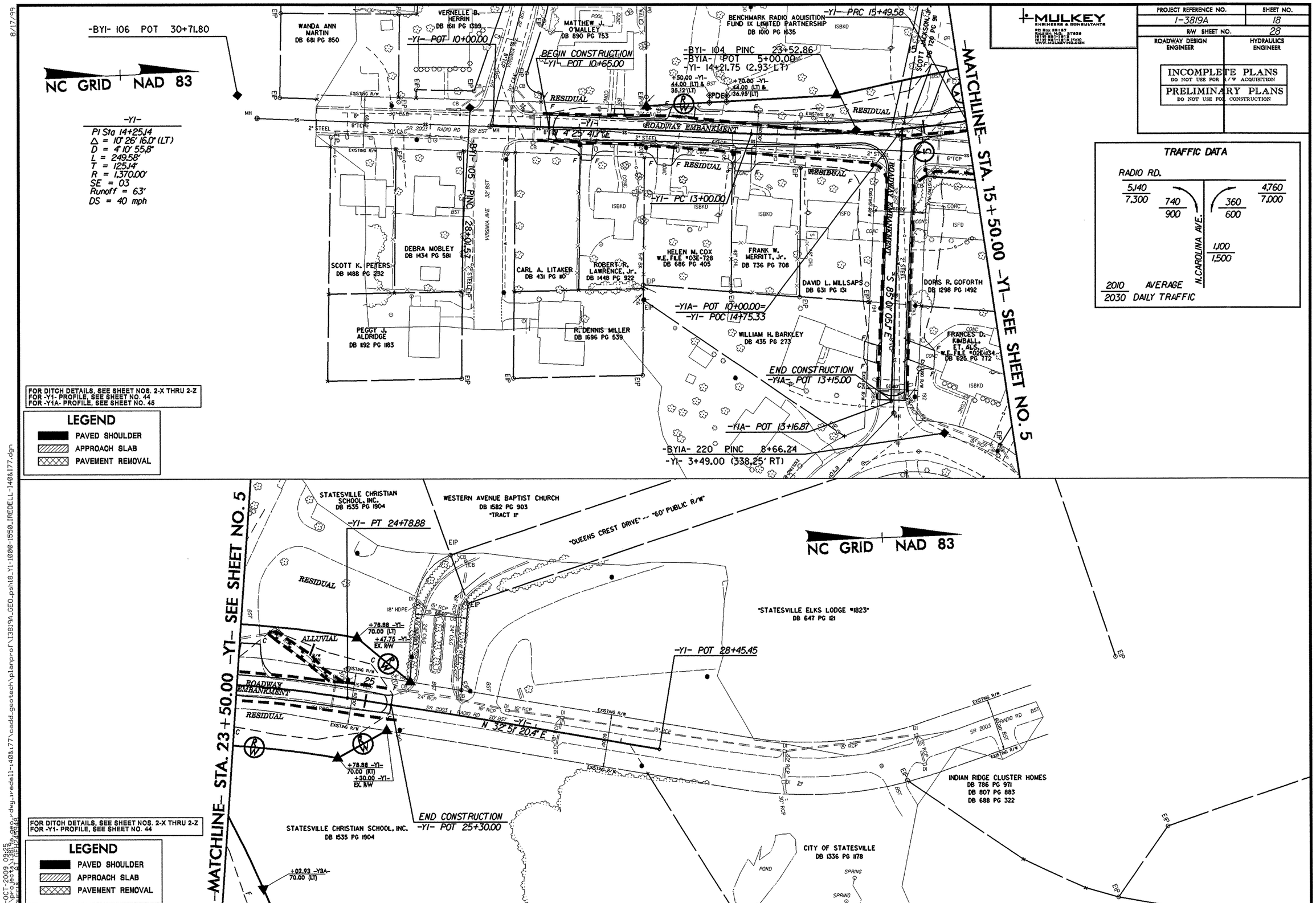

8/17/99

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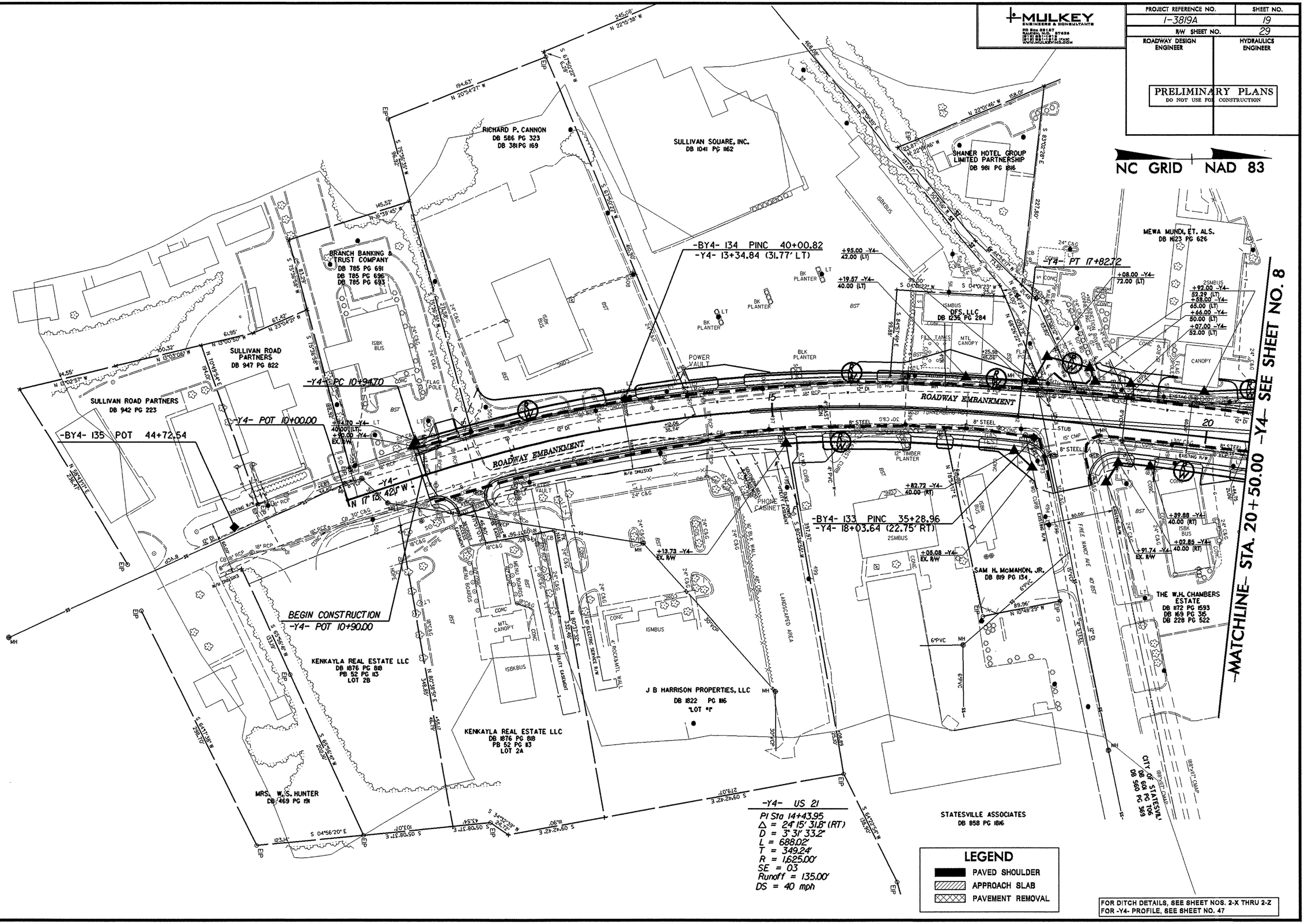
chuerls BY:GEOPAK48

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127 RALEIGH, N.C. 27636
(919) 851-1912 (919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	19
R/W SHEET NO.	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83



FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -Y4- PROFILE, SEE SHEET NO. 47

8/17/99

01-OCT-2009 09:46
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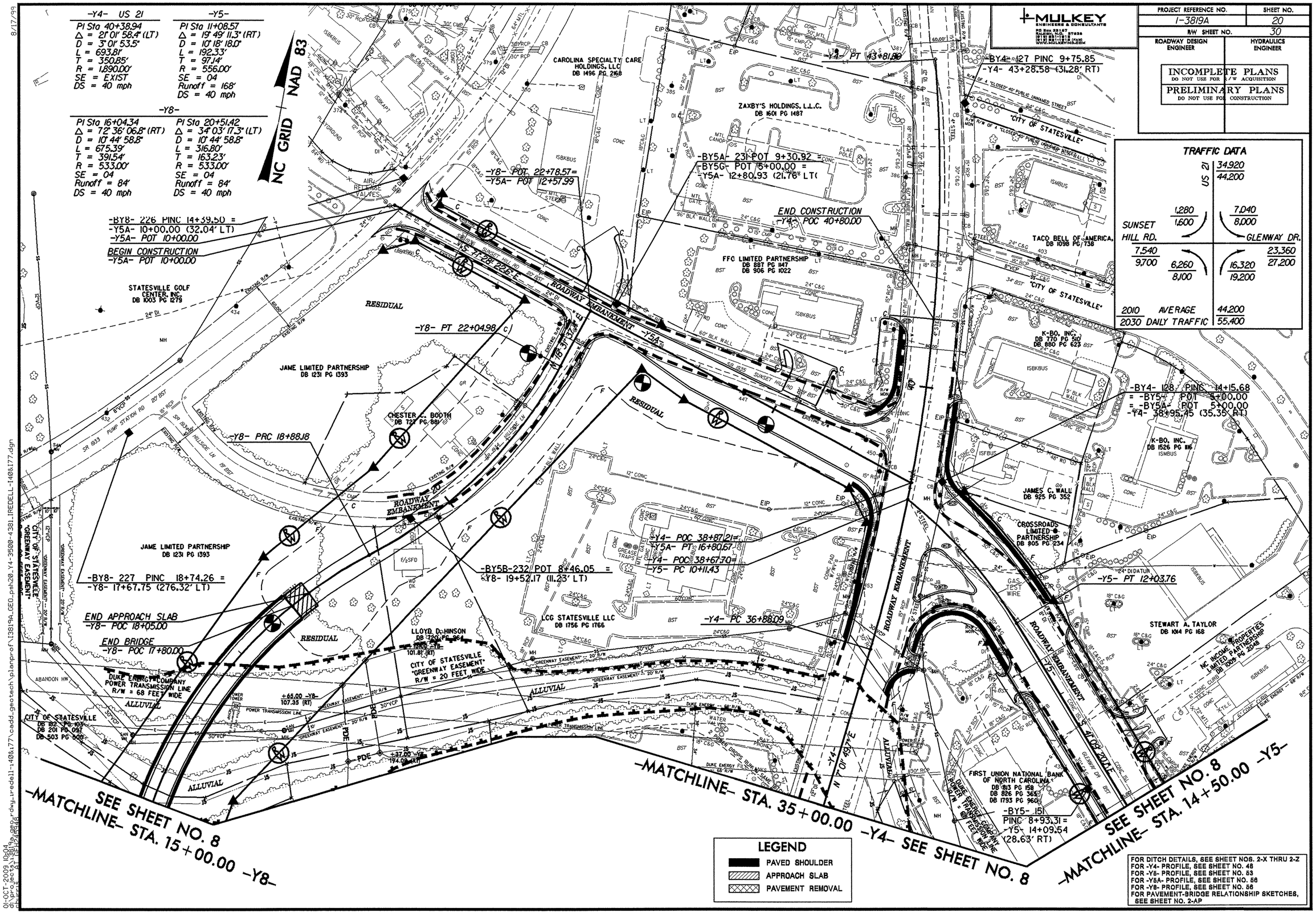
churiss

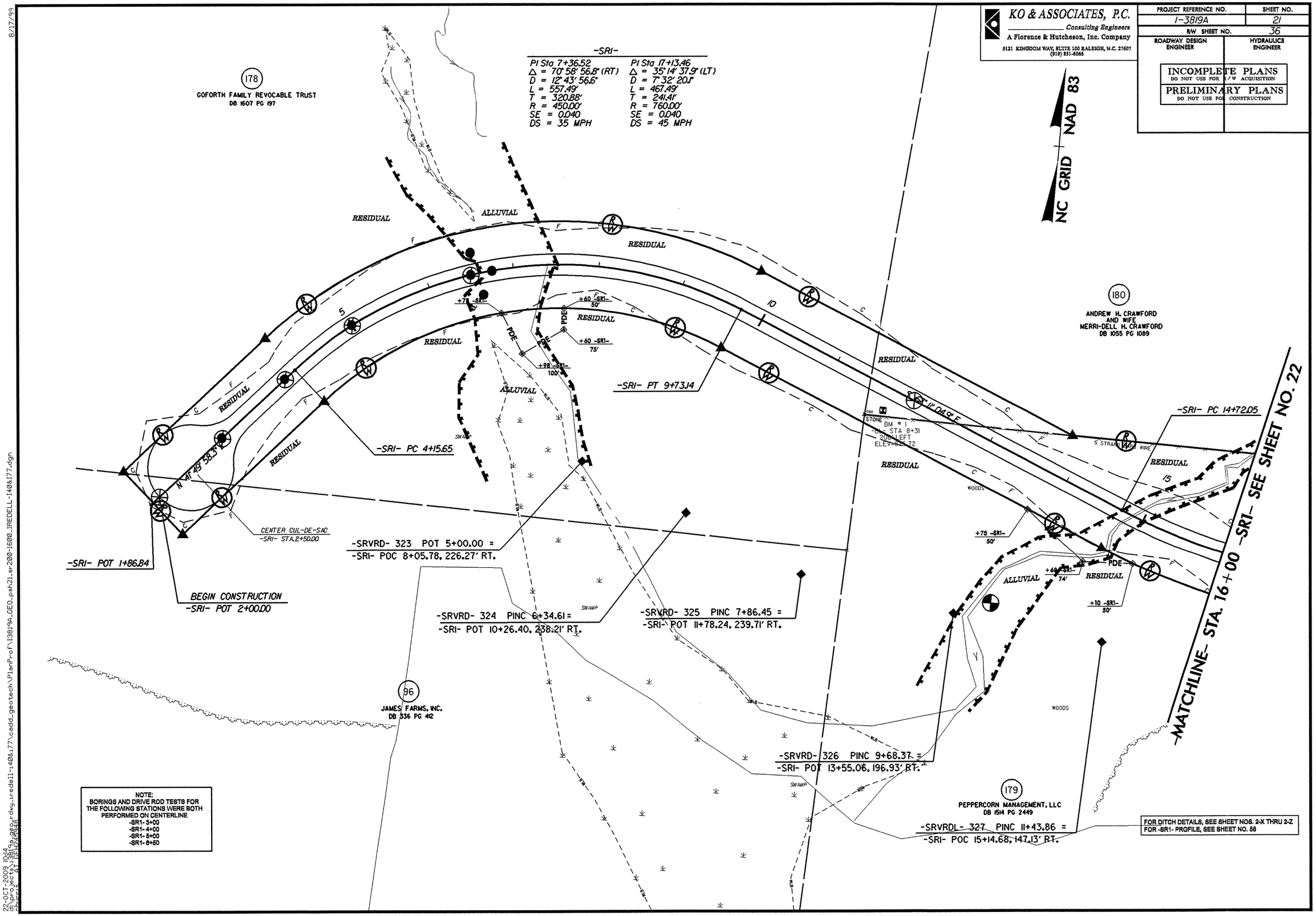

-Y4- US 21
PI Sta 40+38.94
Δ = 21° 01' 58.4" (LT)
D = 3° 01' 53.5"
L = 693.81'
T = 350.85'
R = 1,890.00'
SE = EXIST
DS = 40 mph
-Y5-
PI Sta 11+08.57
Δ = 19° 49' 11.3" (RT)
D = 10° 18' 18.0"
L = 192.33'
T = 97.14'
R = 556.00'
SE = 04
Runoff = 168'
DS = 40 mph
-Y8-
PI Sta 16+04.34
Δ = 72° 36' 06.8" (RT)
D = 10° 44' 58.8"
L = 675.39'
T = 391.54'
R = 533.00'
SE = 04
Runoff = 84'
DS = 40 mph
PI Sta 20+51.42
Δ = 34° 03' 17.3" (LT)
D = 10° 44' 58.8"
L = 316.80'
T = 163.23'
R = 533.00'
SE = 04
Runoff = 84'
DS = 40 mph
NC GRID NAD 83
MULKEY ENGINEERS & CONSULTANTS
PROJECT REFERENCE NO. 1-3819A
SHEET NO. 20
R/W SHEET NO. 30
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
TRAFFIC DATA
US 21 34,920 / 44,200
SUNSET HILL RD. 1,280 / 1,600
GLENWAY DR. 7,040 / 8,000
7,540 / 9,700
6,260 / 8,100
23,360 / 27,200
16,320 / 19,200
2010 AVERAGE 44,200
2030 DAILY TRAFFIC 55,400
-BY4- 127 PINC 9+75.85
-Y4- 43+28.58 (31.28' RT)
-Y4- PT 43+81.80
CAROLINA SPECIALTY CARE HOLDINGS, LLC DB 1496 PG 2168
ZAXBY'S HOLDINGS, L.L.C. DB 1601 PG 1487
-BY5A- 231 POT 9+30.92 =
-BY5C- POT 5+00.00 =
-Y5A- 12+80.93 (21.76' LT)
END CONSTRUCTION
-Y4- POC 40+80.00
-Y8- POT 22+78.57=
-Y5A- POT 12+57.99
-BY8- 226 PINC 14+39.50 =
-Y5A- 10+00.00 (32.04' LT)
-Y5A- POT 10+00.00
BEGIN CONSTRUCTION
-Y5A- POT 10+00.00
STATESVILLE GOLF CENTER, INC. DB 1003 PG 1279
RESIDUAL
-Y8- PT 22+04.98
JAME LIMITED PARTNERSHIP DB 1231 PG 1393
CHESTER C. BOOTH DB 721 PG 881
-Y8- PRC 18+88.18
FFC LIMITED PARTNERSHIP DB 887 PG 147 DB 906 PG 1022
TACO BELL OF AMERICA, DB 1098 PG 738
"CITY OF STATESVILLE"
K-BO, INC. DB 770 PG 510 DB 860 PG 623
-BY4- 128 PINC 14+15.68
= -BY5- POT 8+00.00
= -BY5A- POT 5+00.00
-Y4- 38+95.45 (35.35' RT)
K-BO, INC. DB 1526 PG 816
JAMES C. WALL DB 825 PG 352
CROSSROADS LIMITED PARTNERSHIP DB 805 PG 234
-Y5- PT 12+03.76
STEWART A. TAYLOR DB 1014 PG 168
NC INCOME PROPERTIES LIMITED PARTNERSHIP DB 1005 PG 2048
-Y4- POC 38+87.21=
-Y5A- PT 16+80.67
-Y4- POC 38+67.70=
-Y5- PC 10+11.43
-BY5B-232 POT 8+46.05 =
-Y8- 19+52.17 (11.23' LT)
-Y4- PC 36+88.09
LCG STATESVILLE LLC DB 1756 PG 1766
LLOYD DOHNSON DB 720 PG 864
CITY OF STATESVILLE "GREENWAY EASEMENT" R/W = 20 FEET WIDE
-BY8- 227 PINC 18+74.26 =
-Y8- 17+67.75 (276.32' LT)
END APPROACH SLAB
-Y8- POC 18+05.00
END BRIDGE
-Y8- POC 17+80.00
DUKE ENERGY COMPANY POWER TRANSMISSION LINE R/W = 68 FEET WIDE
ALLUVIAL
CITY OF STATESVILLE DB 182 PG 103 DB 201 PG 097 DB 503 PG 908
ROADWAY EMBANKMENT
FIRST UNION NATIONAL BANK OF NORTH CAROLINA DB 813 PG 158 DB 826 PG 369 DB 1793 PG 960
-BY5- 151
PINC 8+93.31 =
-Y5- 14+09.54
(28.63' RT)
-MATCHLINE- STA. 35+00.00 -Y4-
SEE SHEET NO. 8
-MATCHLINE- STA. 15+00.00 -Y8-
SEE SHEET NO. 8
-MATCHLINE- STA. 14+50.00 -Y5-
LEGEND
PAVED SHOULDER
APPROACH SLAB
PAVEMENT REMOVAL
FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -Y4- PROFILE, SEE SHEET NO. 48
FOR -Y5- PROFILE, SEE SHEET NO. 53
FOR -Y5A- PROFILE, SEE SHEET NO. 56
FOR -Y8- PROFILE, SEE SHEET NO. 56
FOR PAVEMENT-BRIDGE RELATIONSHIP SKETCHES, SEE SHEET NO. 2-AP

8/17/99

KO & ASSOCIATES, P.C. Consulting Engineers A Florence & Hutcheson, Inc. Company 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607 (919) 851-6065	PROJECT REFERENCE NO.	SHEET NO.
	I-3819A	21
	R/W SHEET NO.	36
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE:
BORINGS AND DRIVE ROD TESTS FOR THE FOLLOWING STATIONS WERE BOTH PERFORMED ON CENTERLINE
-SR1- 3+00
-SR1- 4+00
-SR1- 5+00
-SR1- 6+50

FOR DITCH DETAILS, SEE SHEET NOS. 2-X THRU 2-Z
FOR -SR1- PROFILE, SEE SHEET NO. 58

22-OCT-2003 10:14
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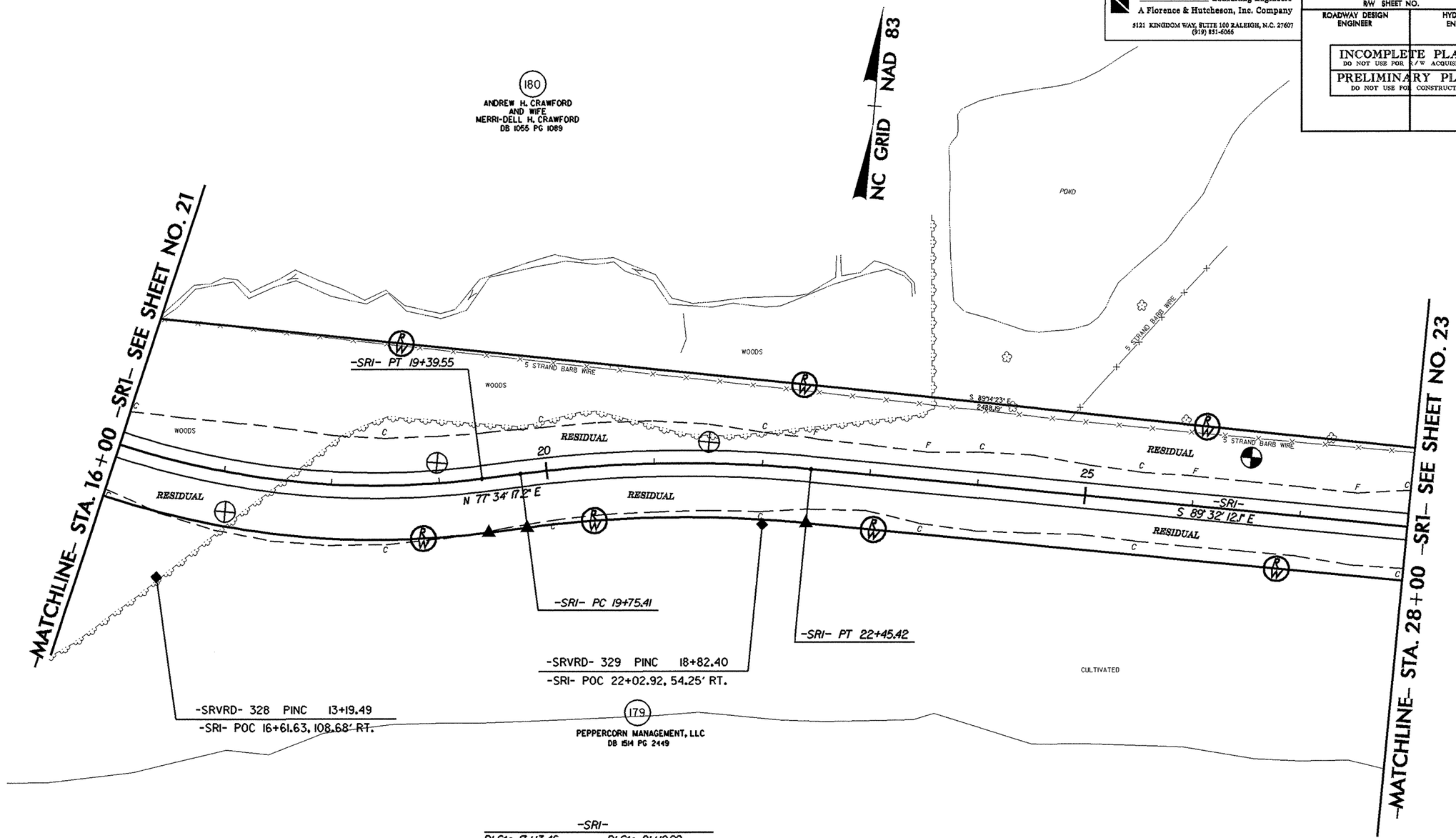
chpmc, ay, DEF12,PS46

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	22
R/W SHEET NO.	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



-SRI-

PI Sta 17+13.46	PI Sta 21+10.99
Δ = 35° 14' 37.9" (LT)	Δ = 12° 53' 30.7" (RT)
D = 7° 32' 20.1"	D = 4° 46' 28.7"
L = 467.49'	L = 270.01'
T = 241.41'	T = 135.58'
R = 760.00'	R = 1,200.00'
SE = 0.040	SE = 0.030
DS = 45 MPH	DS = 35 MPH

FOR DITCH DETAILS, SEE SHEET NOS. 2- THRU 2-
FOR -SR1- PROFILE, SEE SHEET NO. 58

8/17/99

02-OCT-2008 09:24
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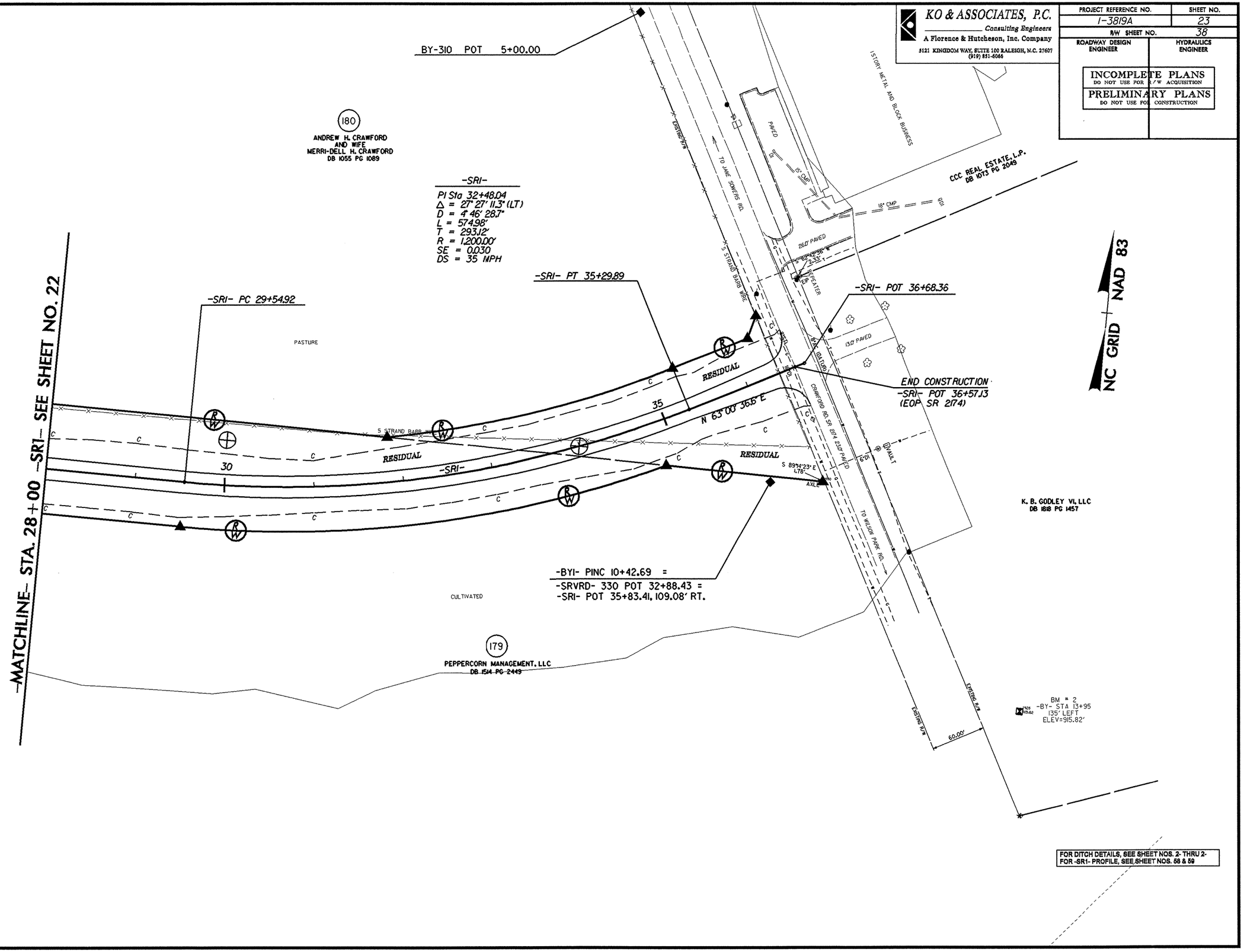
chbrris AT RBH24948

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	23
R/W SHEET NO.	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR DITCH DETAILS, SEE SHEET NOS. 2- THRU 2-
FOR -SR1- PROFILE, SEE SHEET NOS. 58 & 59

8/17/99

02-OCT-2009 09:38
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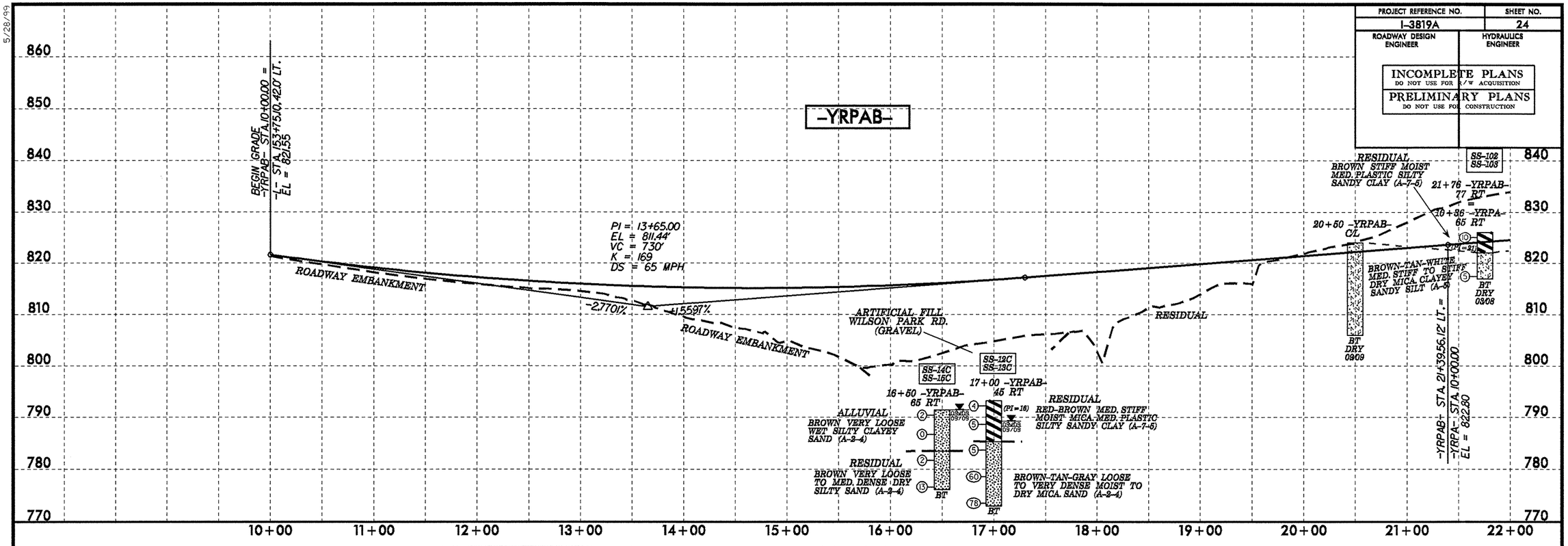
chiers AT REHP45946

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

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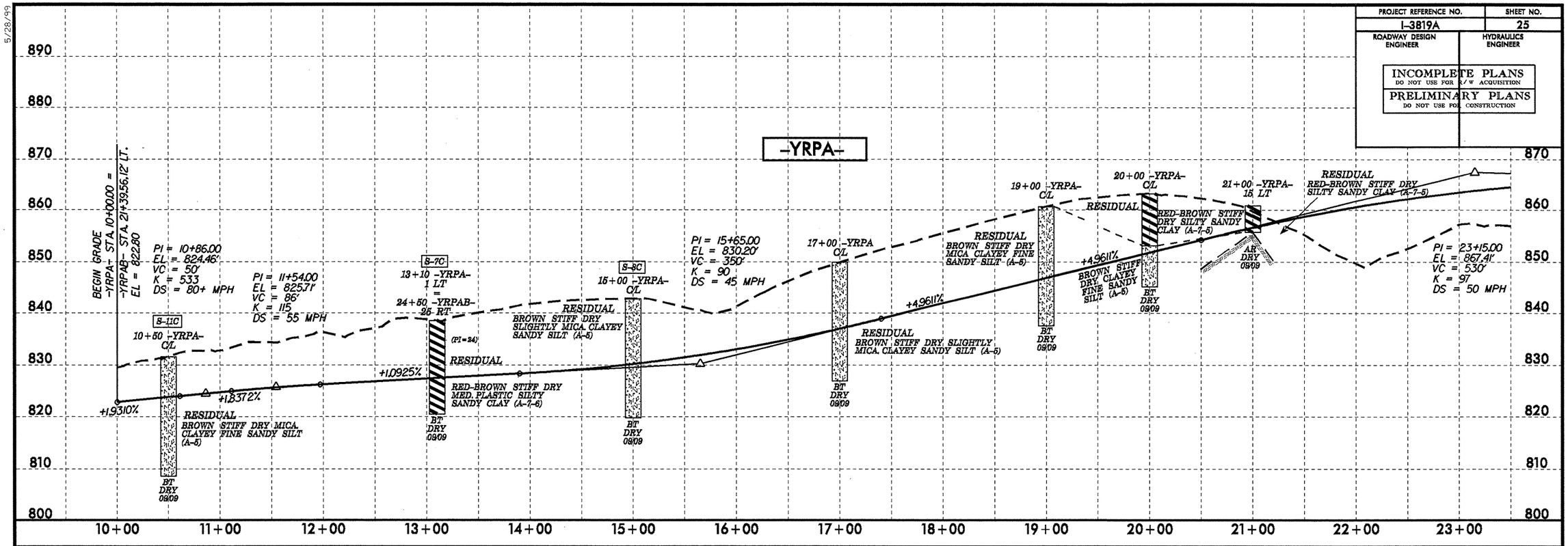
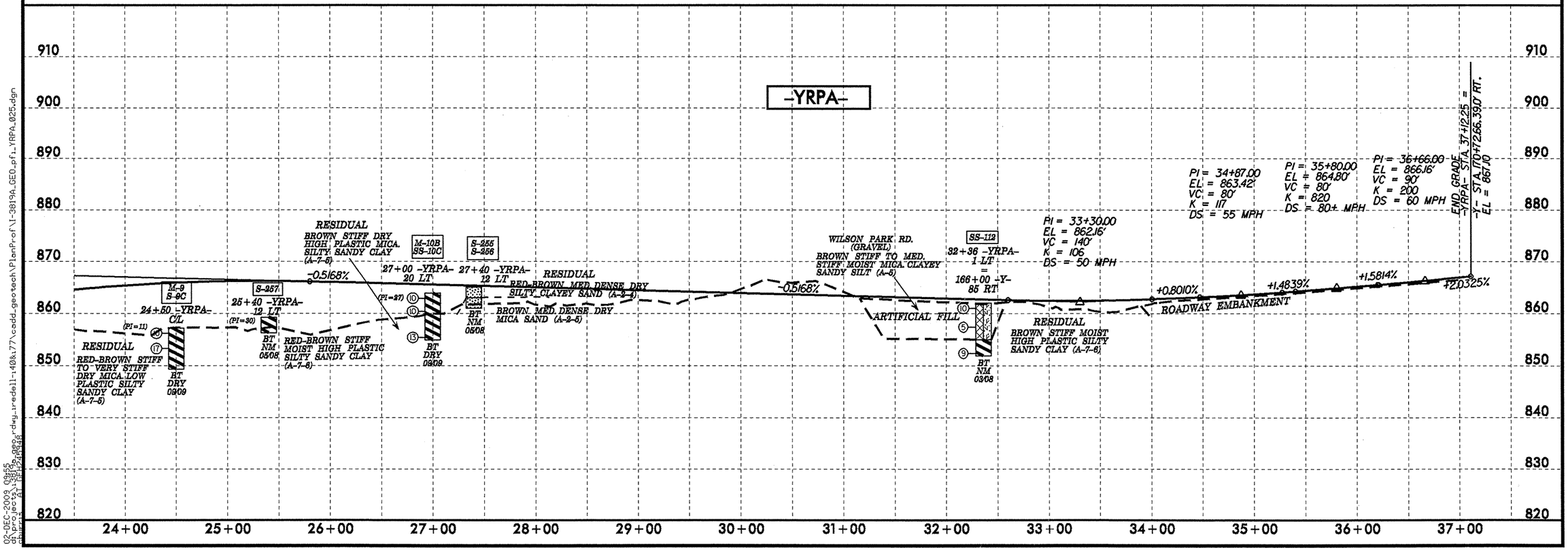
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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





5/28/99

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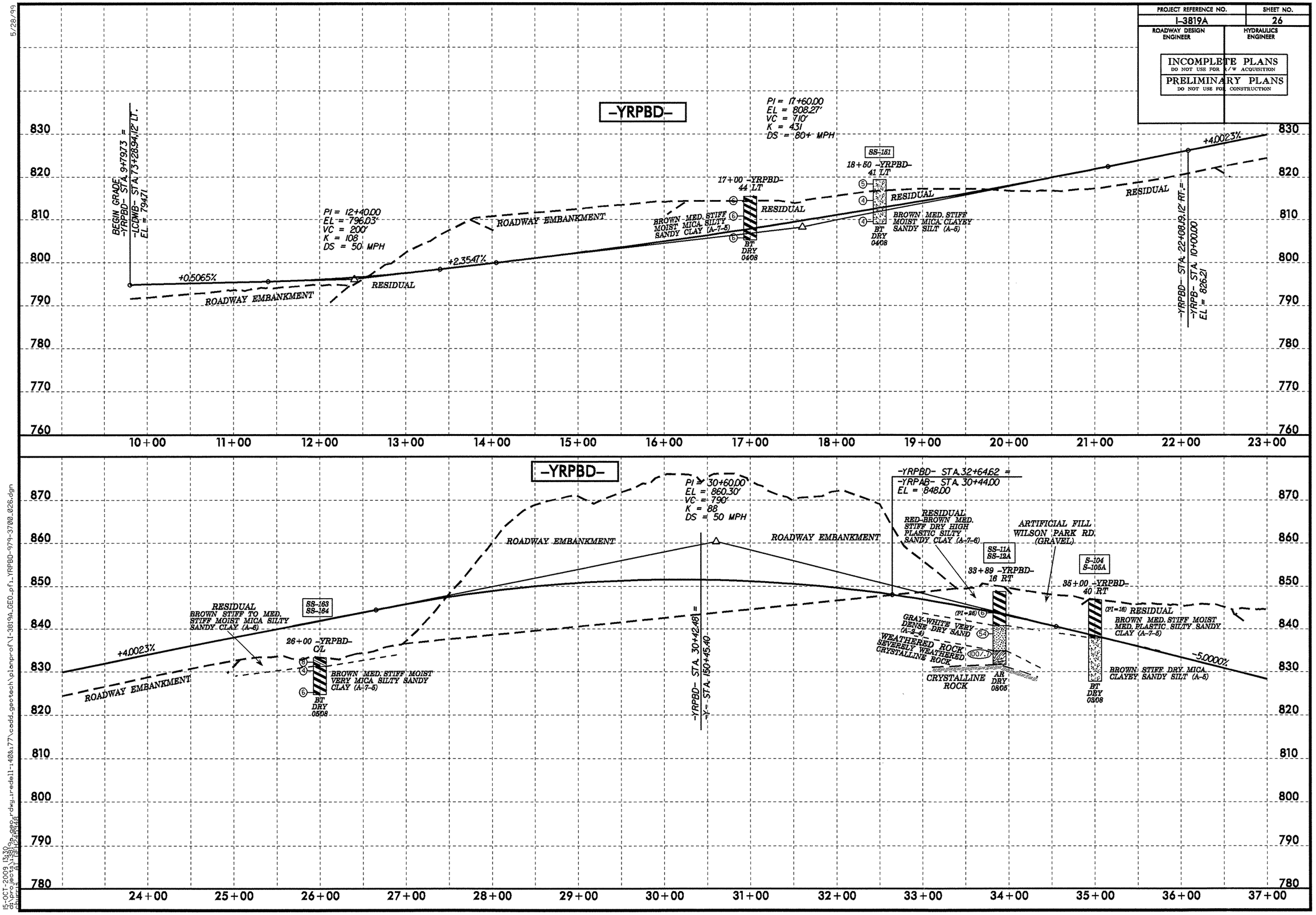
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

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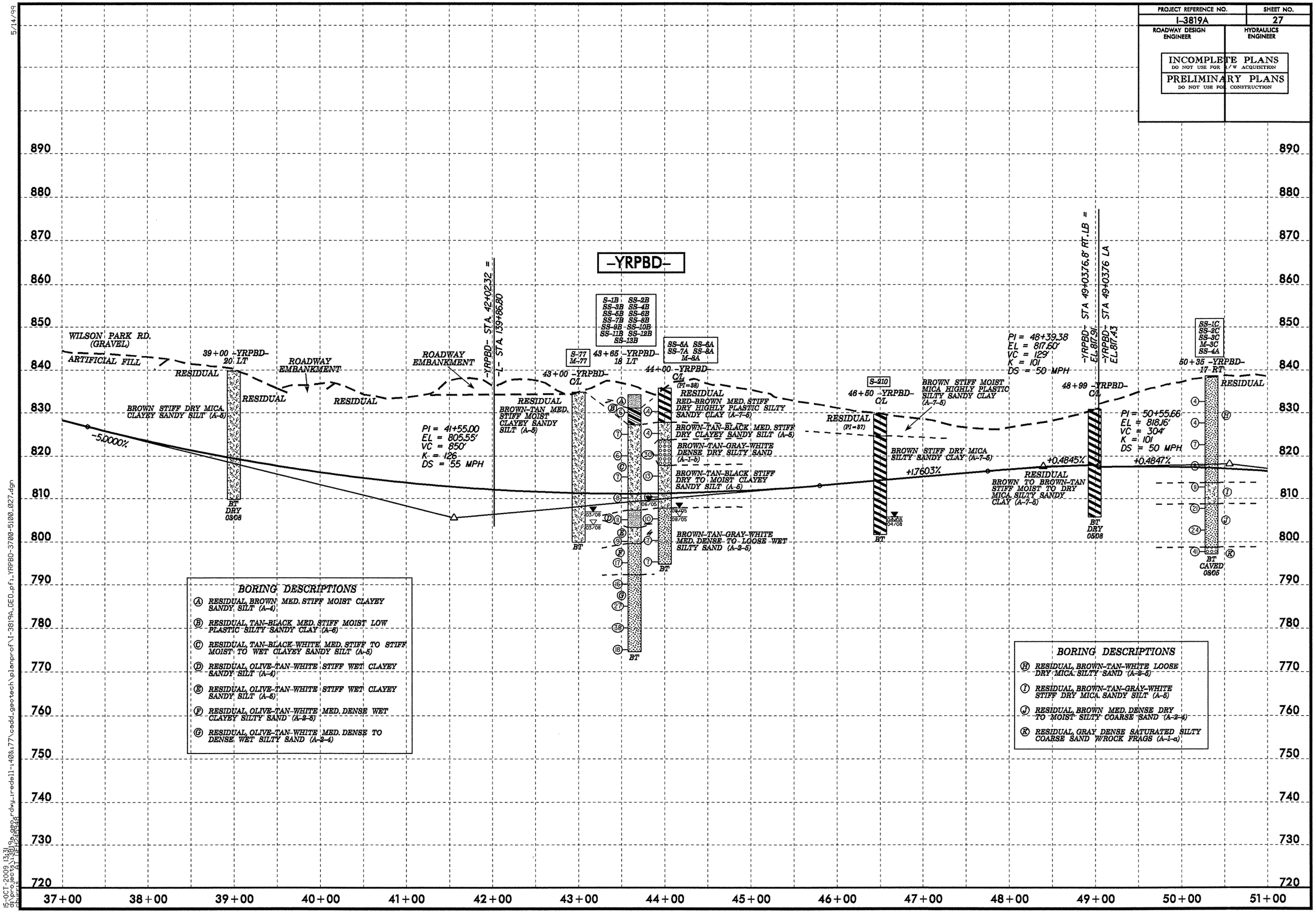
Bhupen Patel (BHPATEL)

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



BORING DESCRIPTIONS

- (A) RESIDUAL, BROWN MED. STIFF MOIST CLAYEY SANDY SILT (A-4)
- (B) RESIDUAL, TAN-BLACK MED. STIFF MOIST LOW PLASTIC SILTY SANDY CLAY (A-6)
- (C) RESIDUAL, TAN-BLACK-WHITE MED. STIFF TO STIFF MOIST TO WET CLAYEY SANDY SILT (A-5)
- (D) RESIDUAL, OLIVE-TAN-WHITE STIFF WET CLAYEY SANDY SILT (A-4)
- (E) RESIDUAL, OLIVE-TAN-WHITE STIFF WET CLAYEY SANDY SILT (A-5)
- (F) RESIDUAL, OLIVE-TAN-WHITE MED. DENSE WET CLAYEY SILTY SAND (A-2-5)
- (G) RESIDUAL, OLIVE-TAN-WHITE MED. DENSE TO DENSE WET SILTY SAND (A-2-4)

BORING DESCRIPTIONS

- (H) RESIDUAL, BROWN-TAN-WHITE LOOSE DRY MICA SILTY SAND (A-2-5)
- (I) RESIDUAL, BROWN-TAN-GRAY-WHITE STIFF DRY MICA SANDY SILT (A-5)
- (J) RESIDUAL, BROWN MED. DENSE DRY TO MOIST SILTY COARSE SAND (A-2-4)
- (K) RESIDUAL, GRAY DENSE SATURATED SILTY COARSE SAND W/ROCK FRAGS (A-1-a)

5/14/99
15-OCT-2009 13:31
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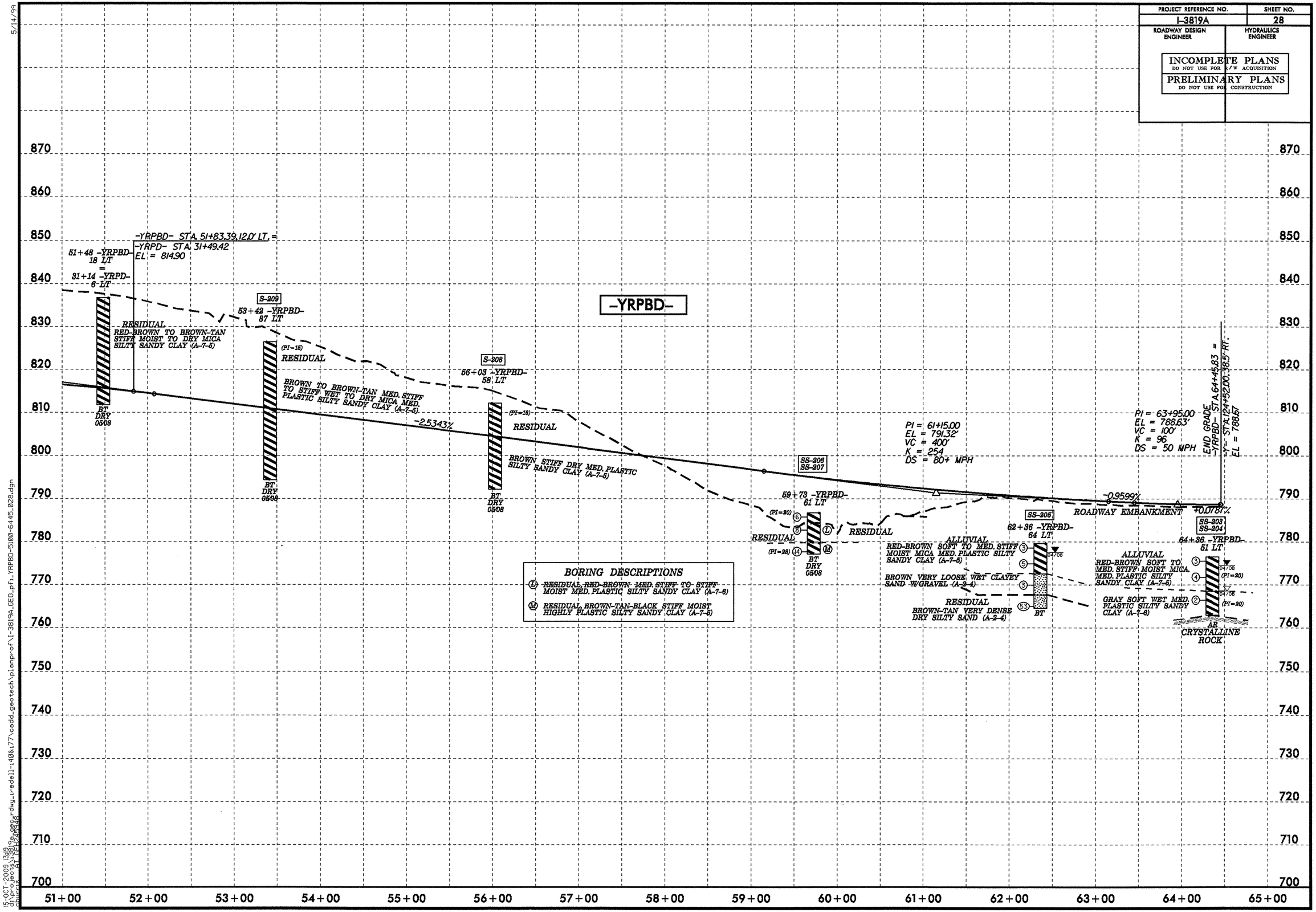
chhiris

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/14/99

15-OCT-2009 13:19
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ABHIRAM AT GEH23R948

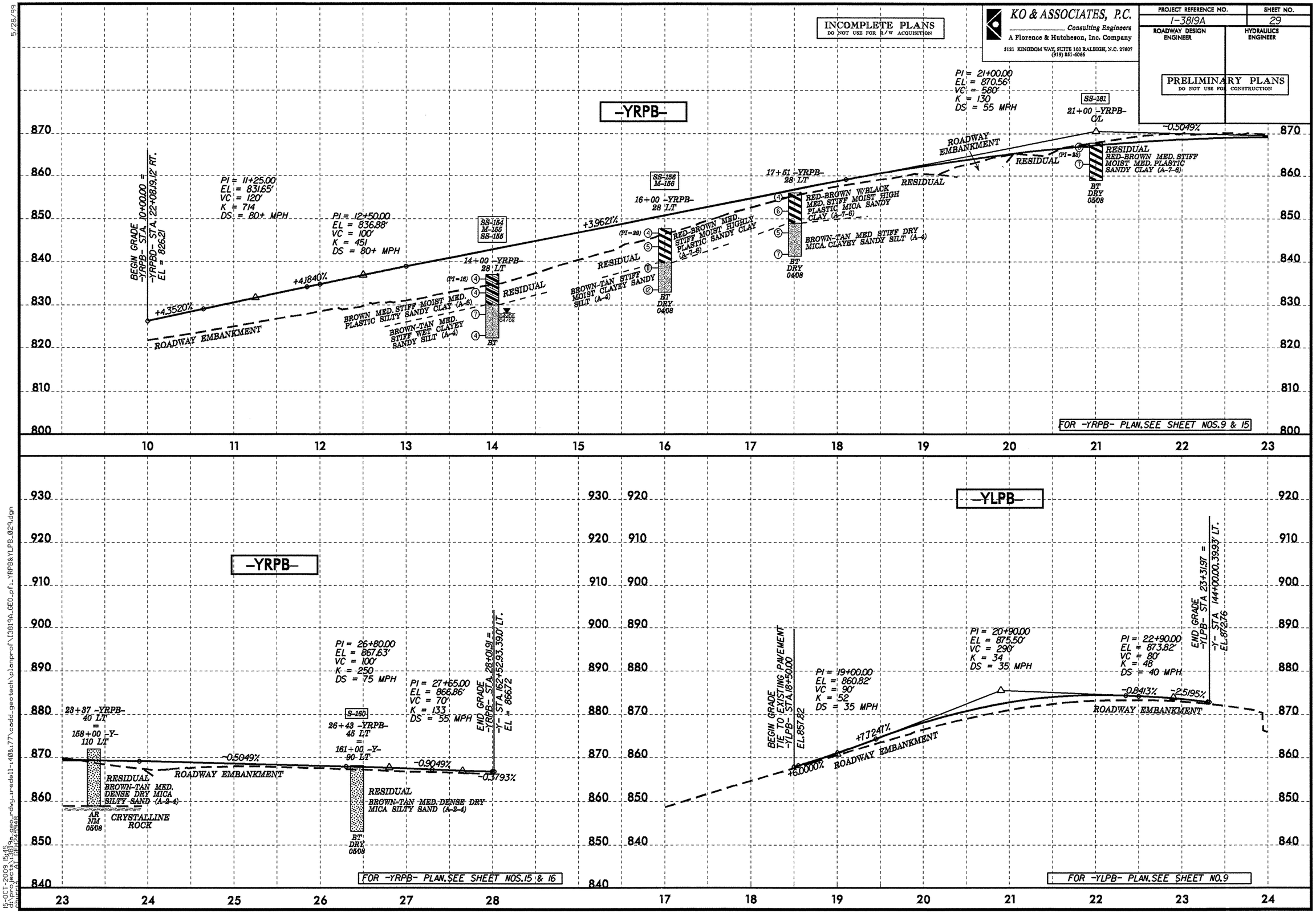
5/28/99

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
1-3819A	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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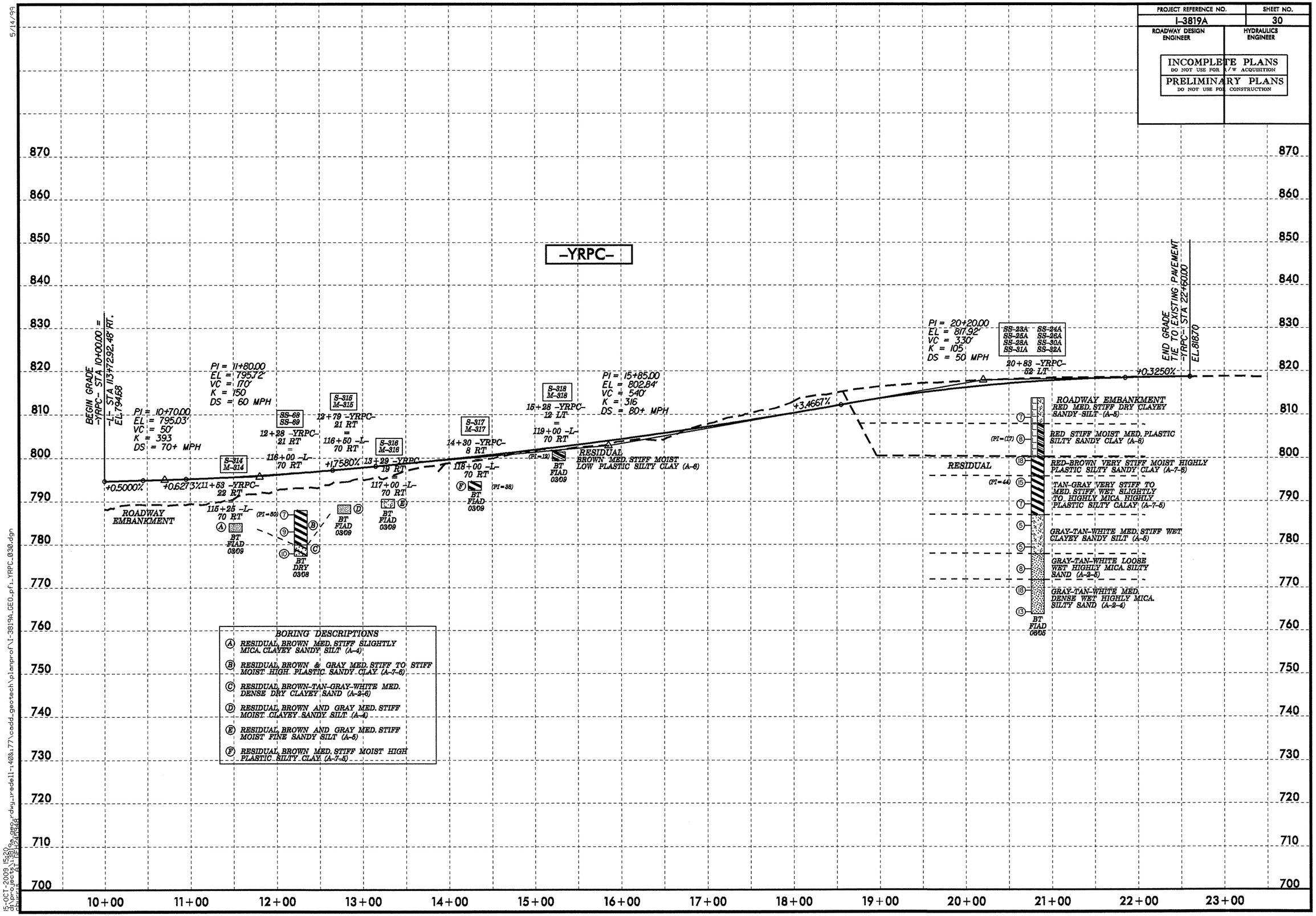
chpierce AT DEP2R948

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/14/99

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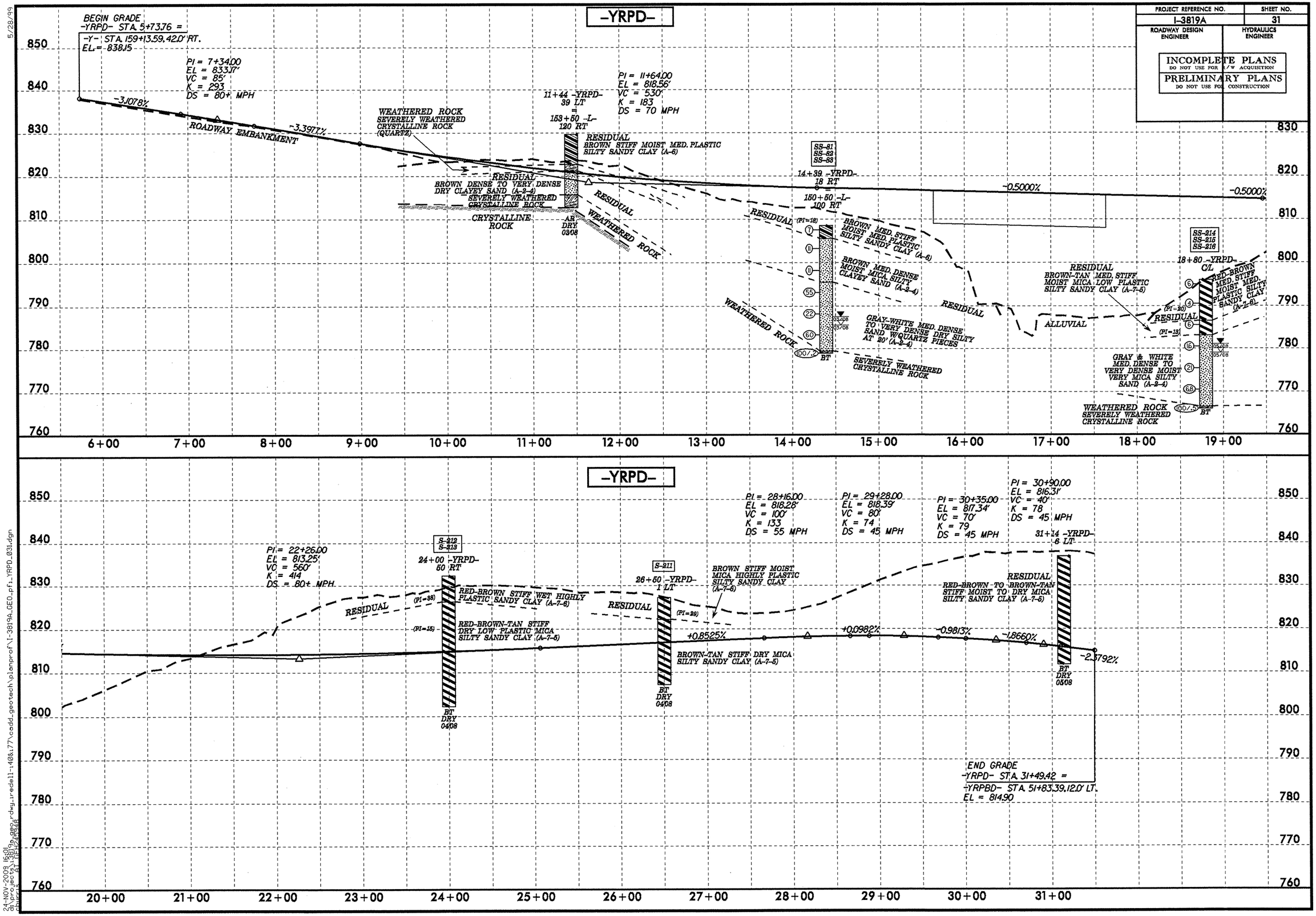
ehenry2 AT RPI\24946

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



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5/28/99

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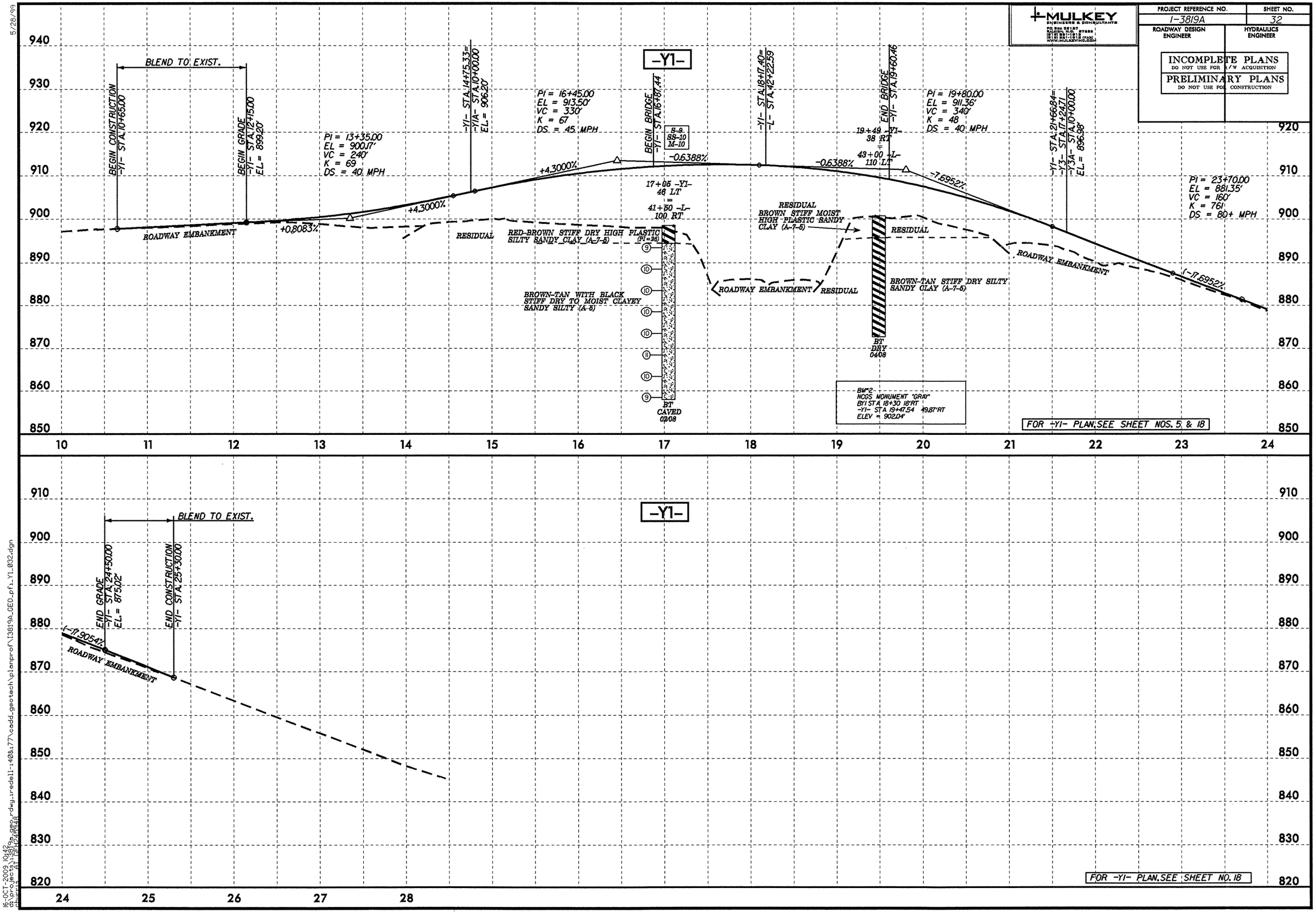
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



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churiss AT DEH24948

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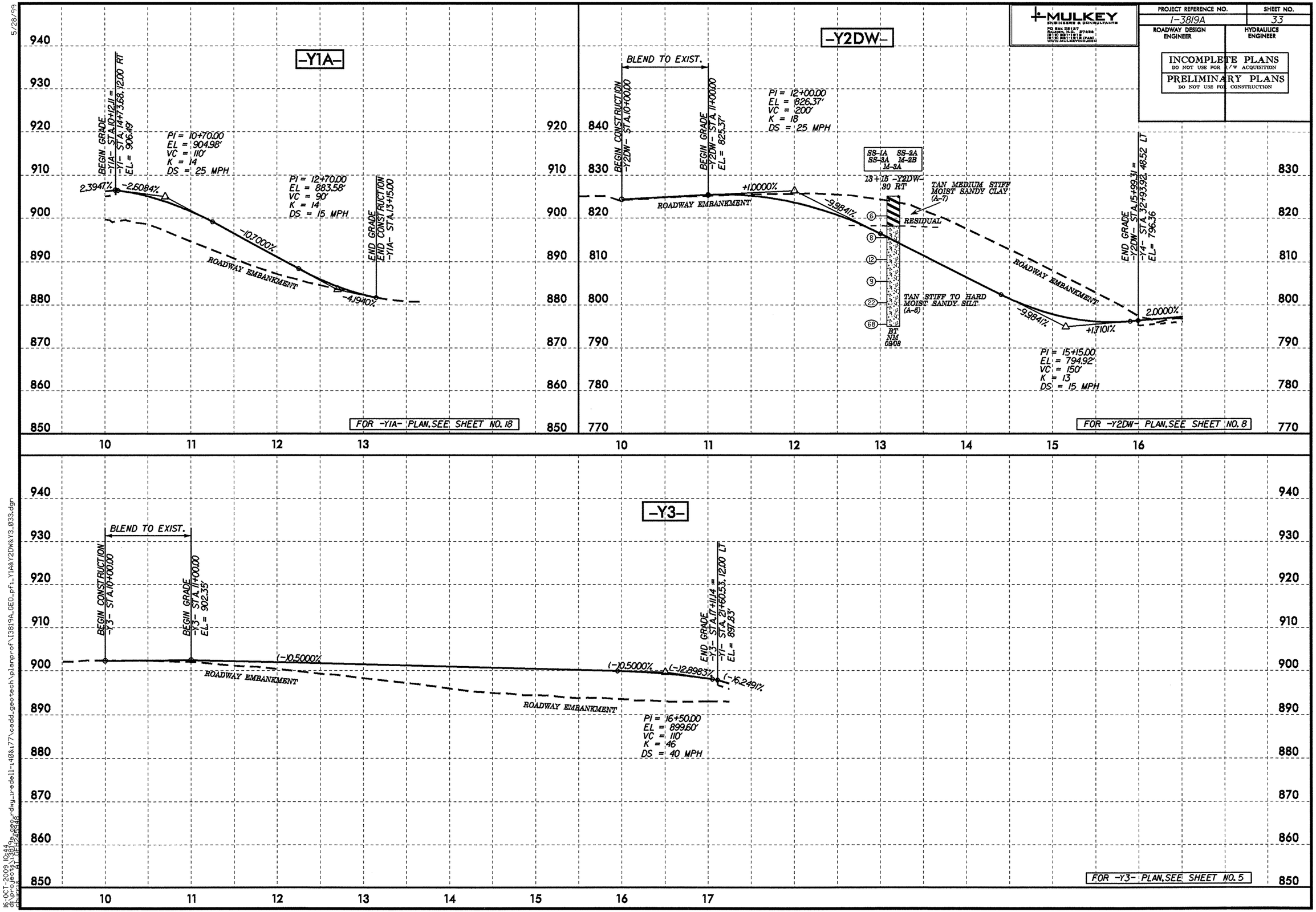
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/28/99

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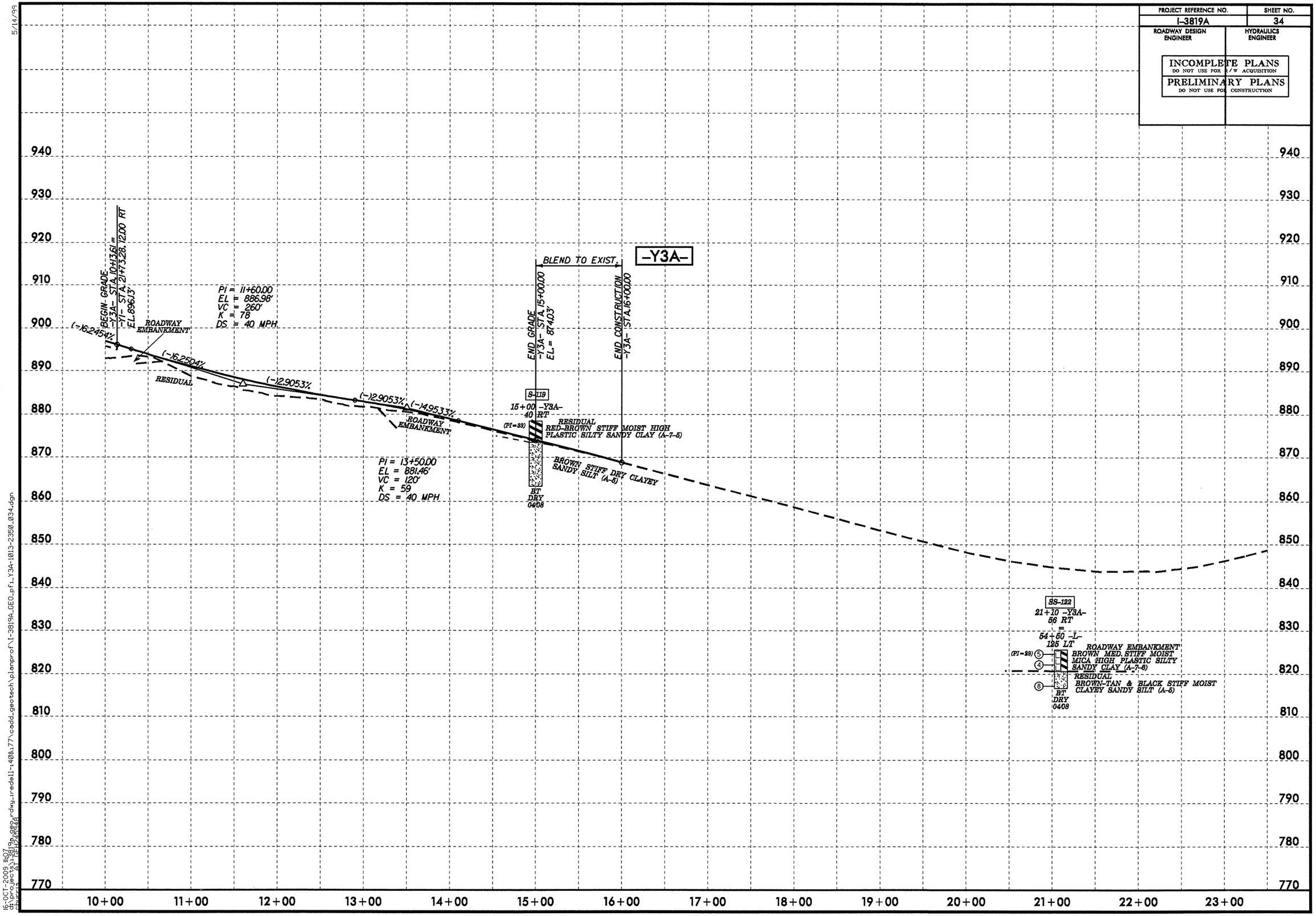
churicks AT DEH24R948

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/14/99

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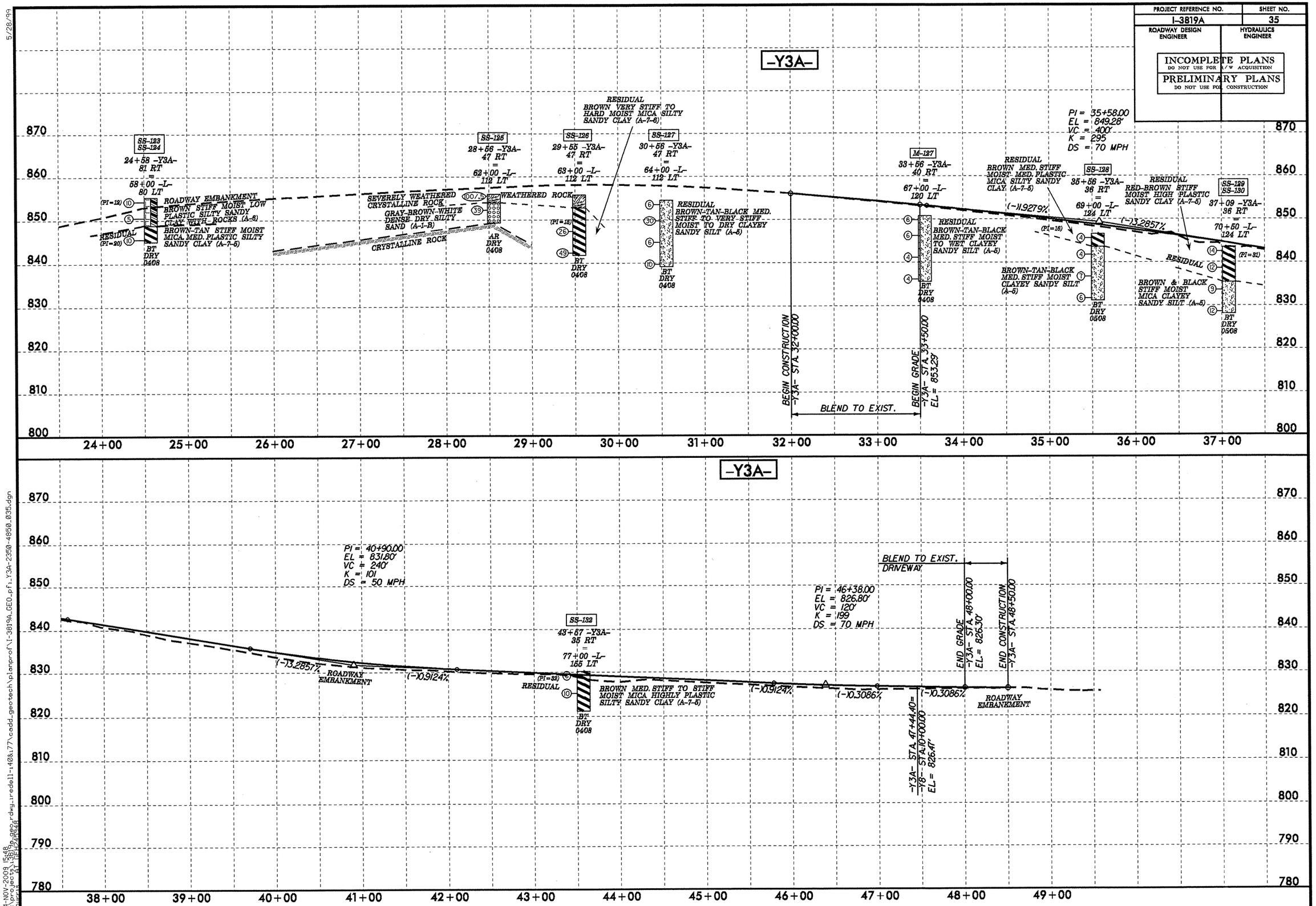
cburris
AT NEP24&26

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/28/99

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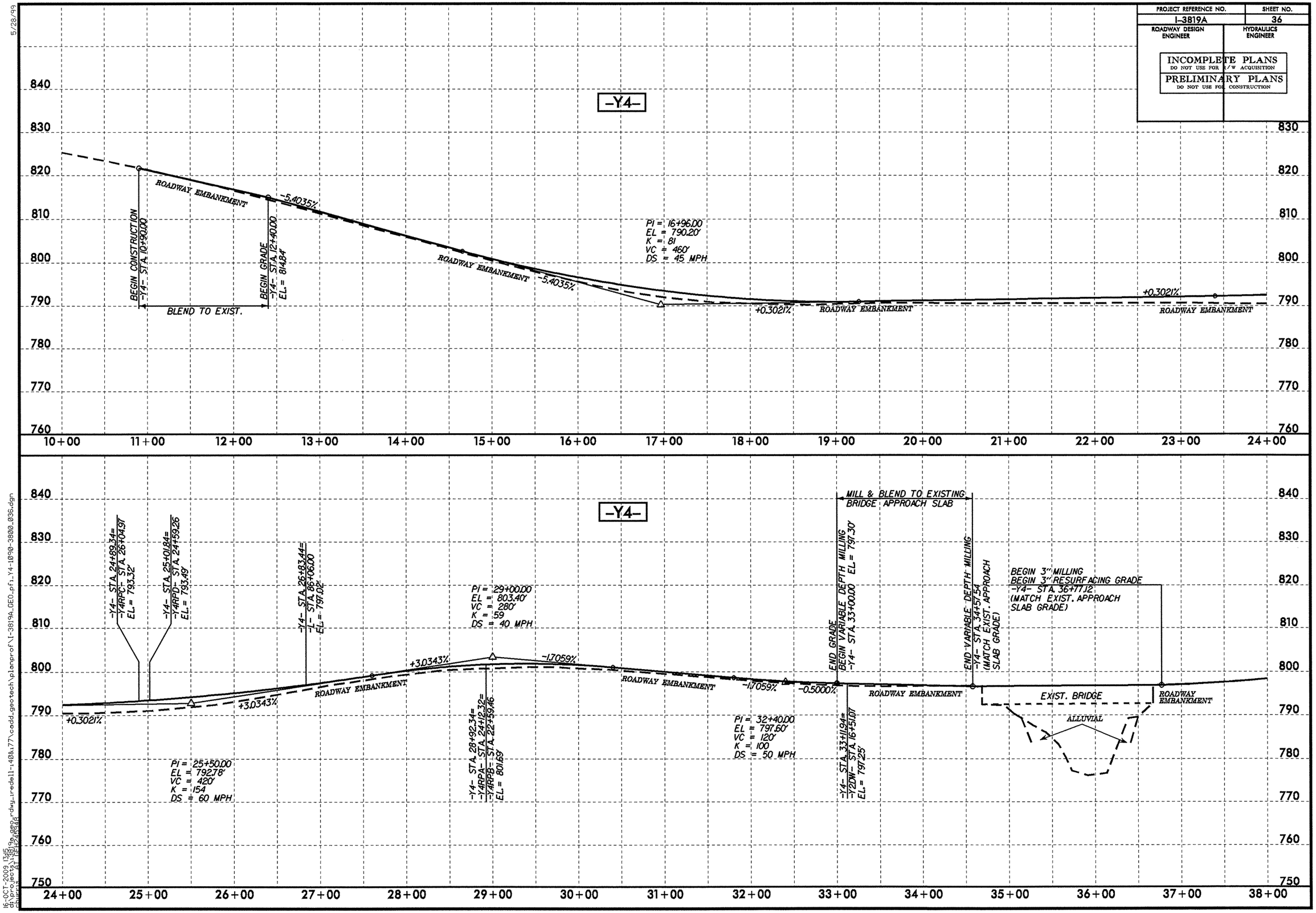
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

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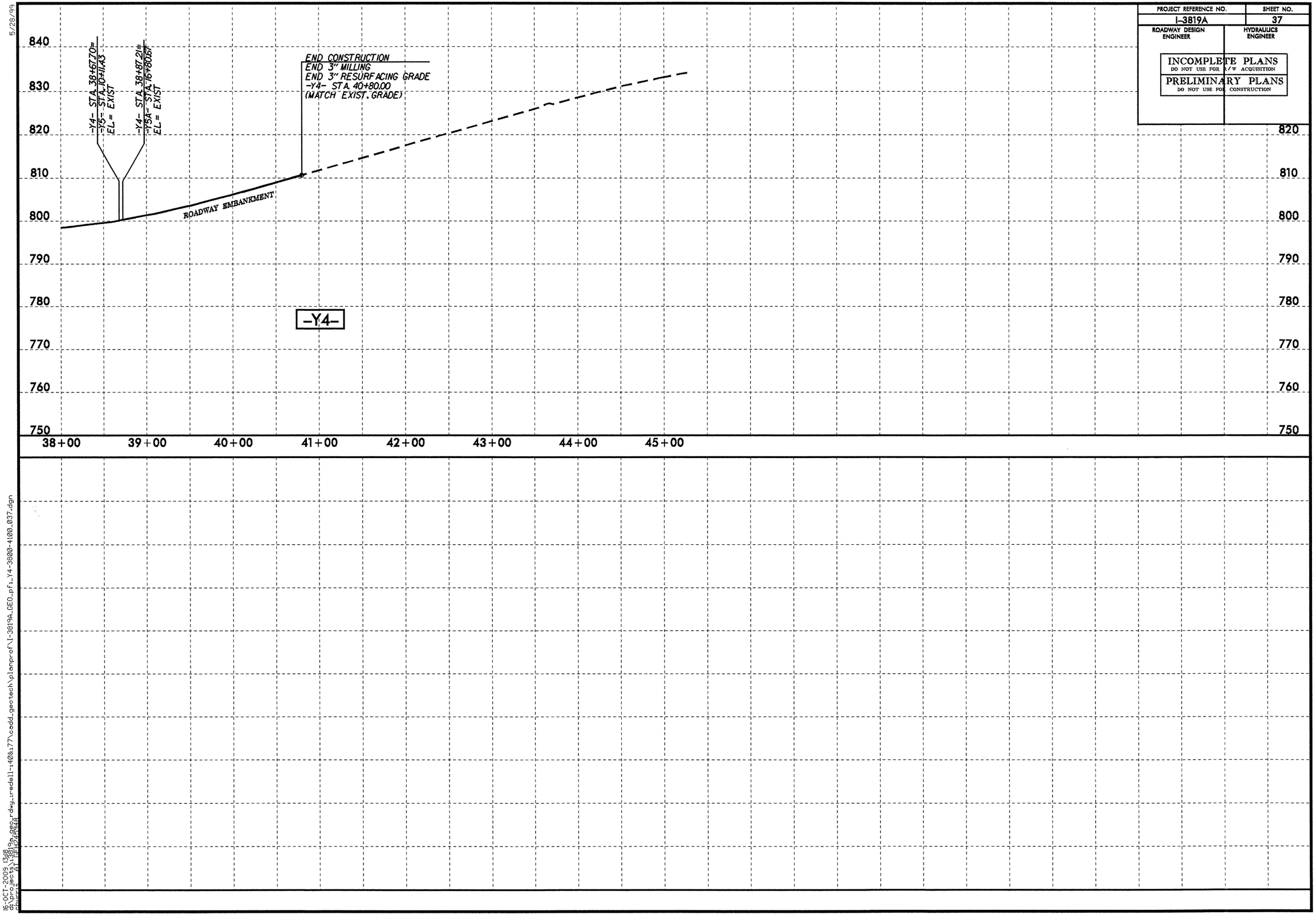
cbiggs AT DEH24818

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

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7/2/99

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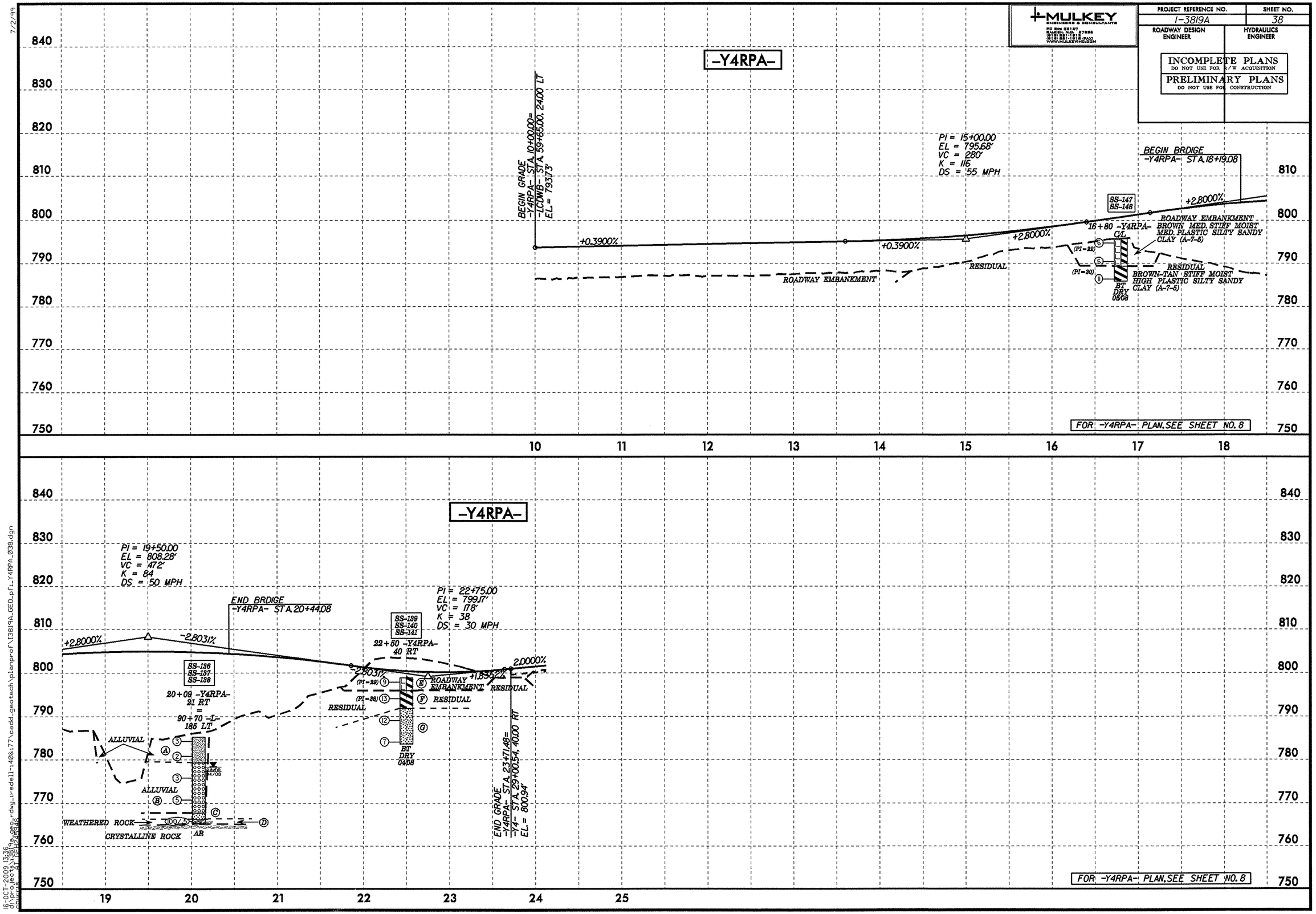
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



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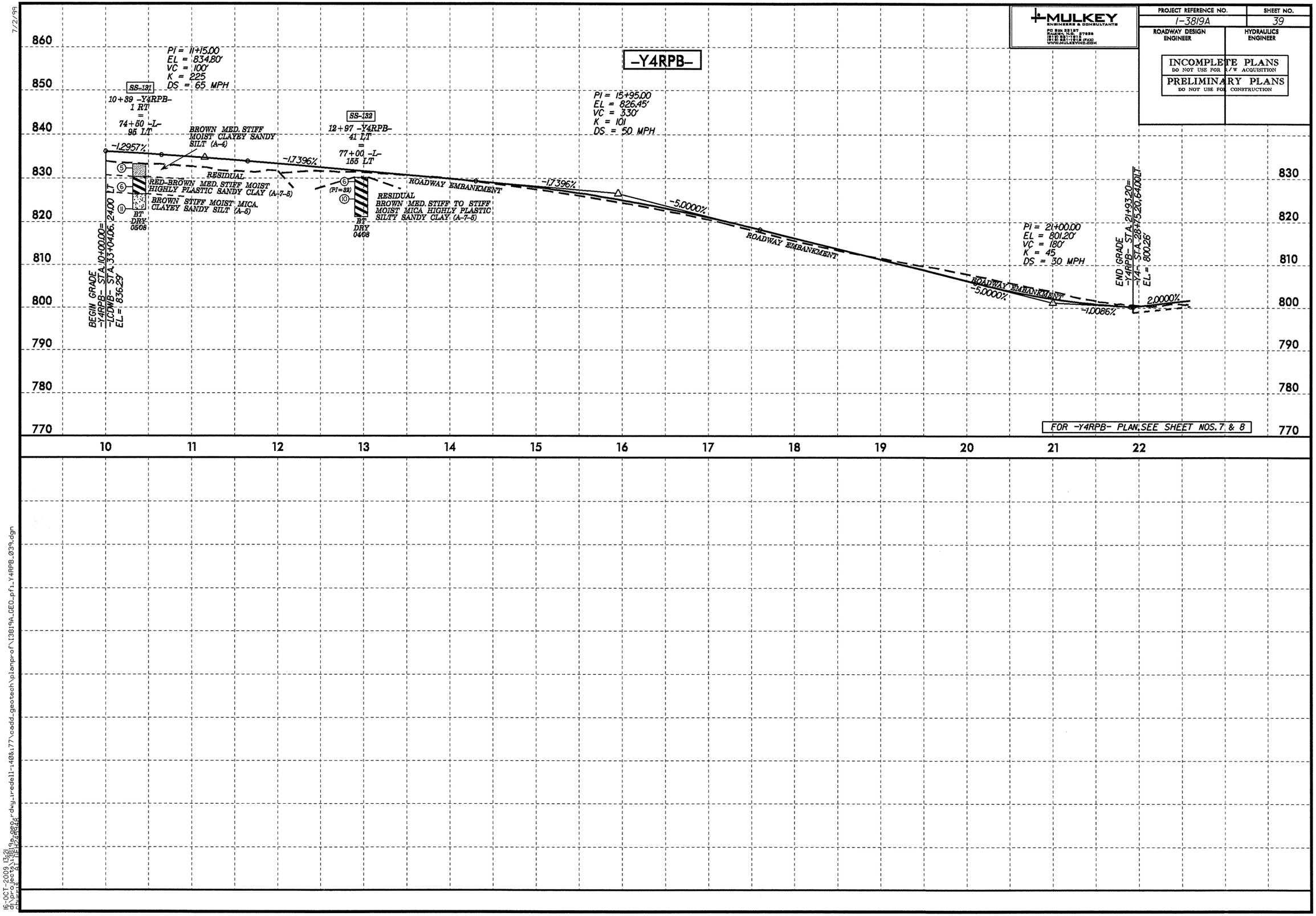

7/2/99
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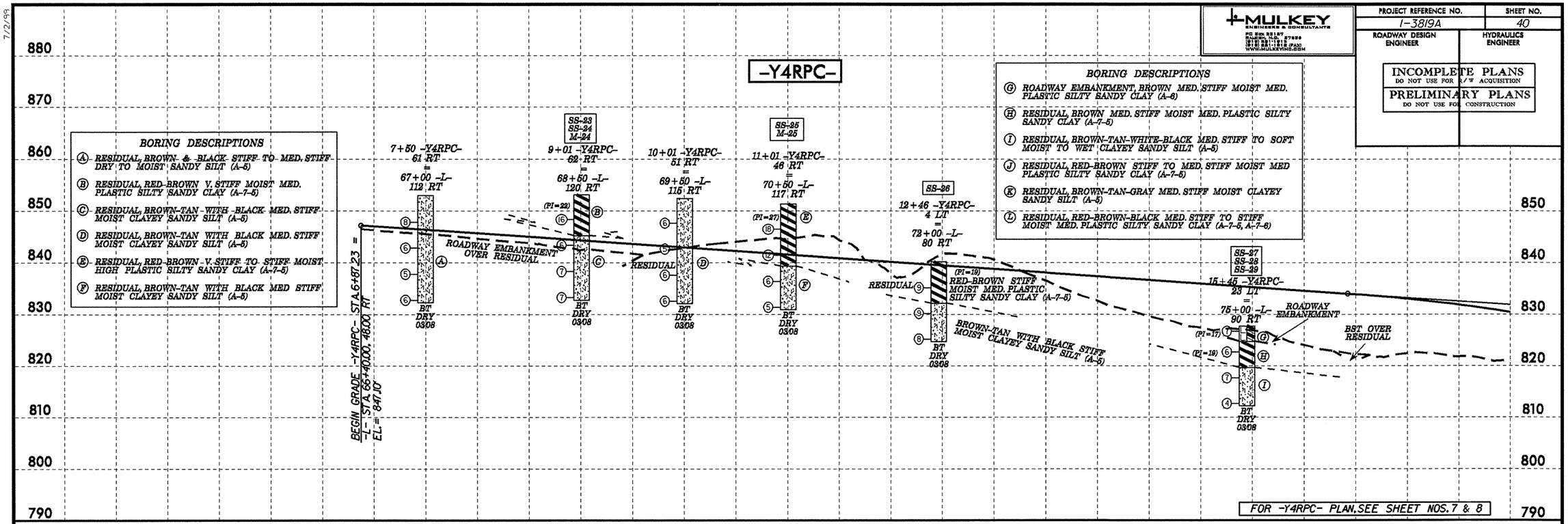
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



7/2/99

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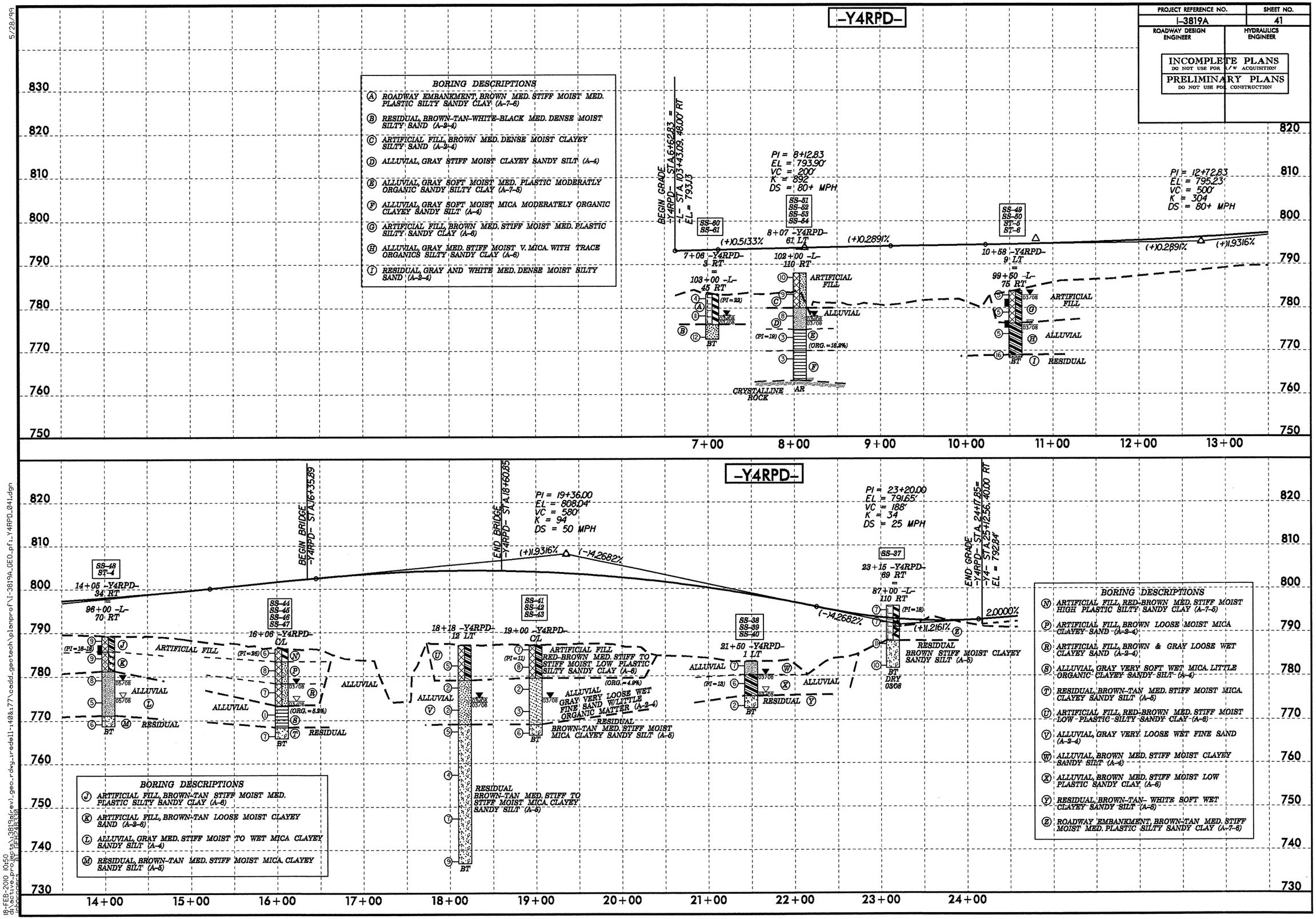
dimmick

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/28/99

18-FEB-2010 10:50
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johnpenn
BT (REF248330)

7/2/99

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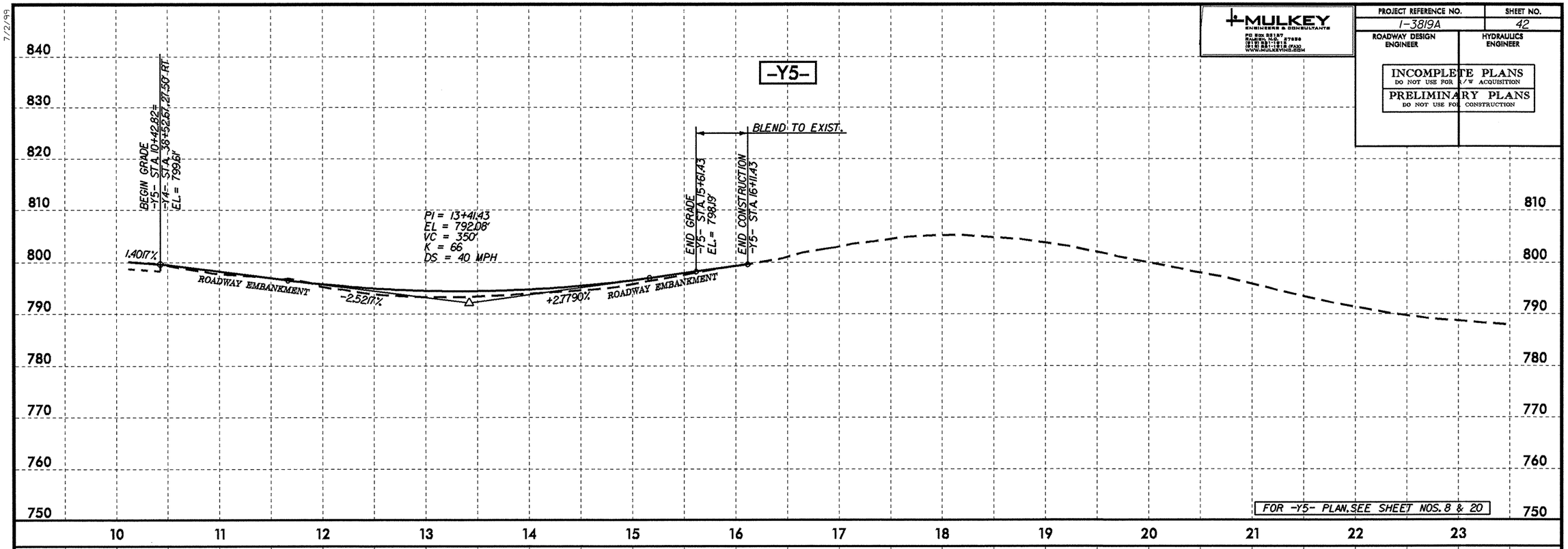
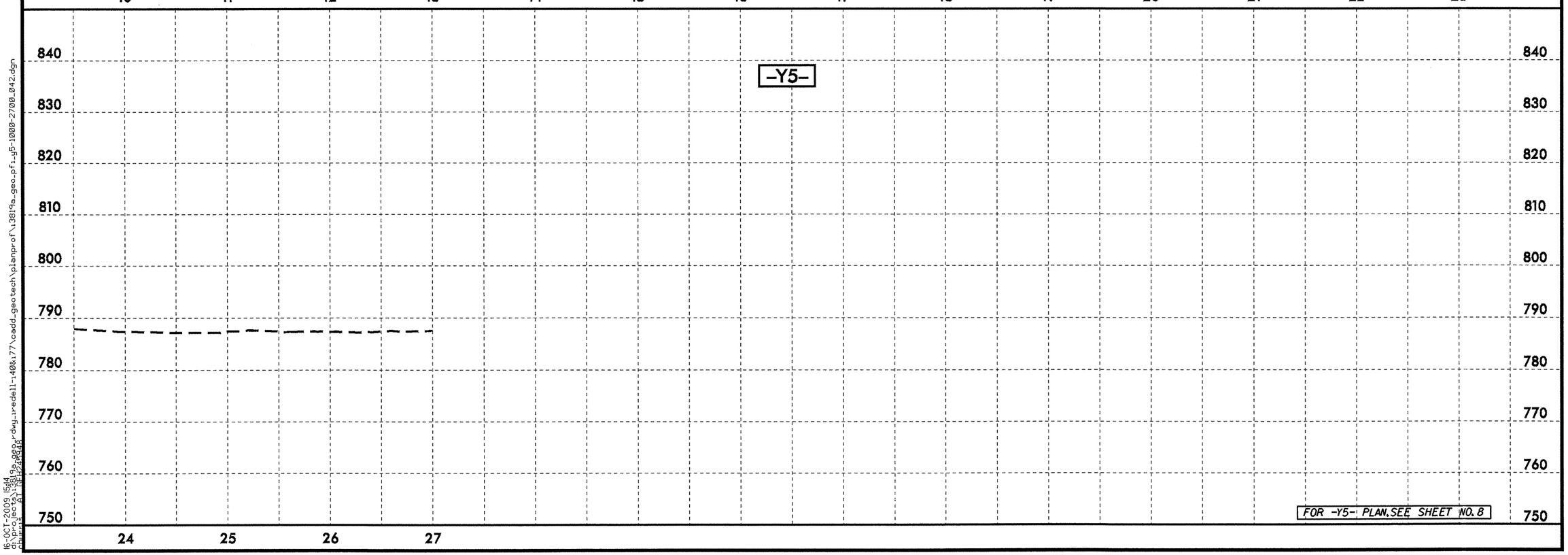
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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





16-OCT-2009 15:44
d:\projects\AT REHAB\48
chuerts
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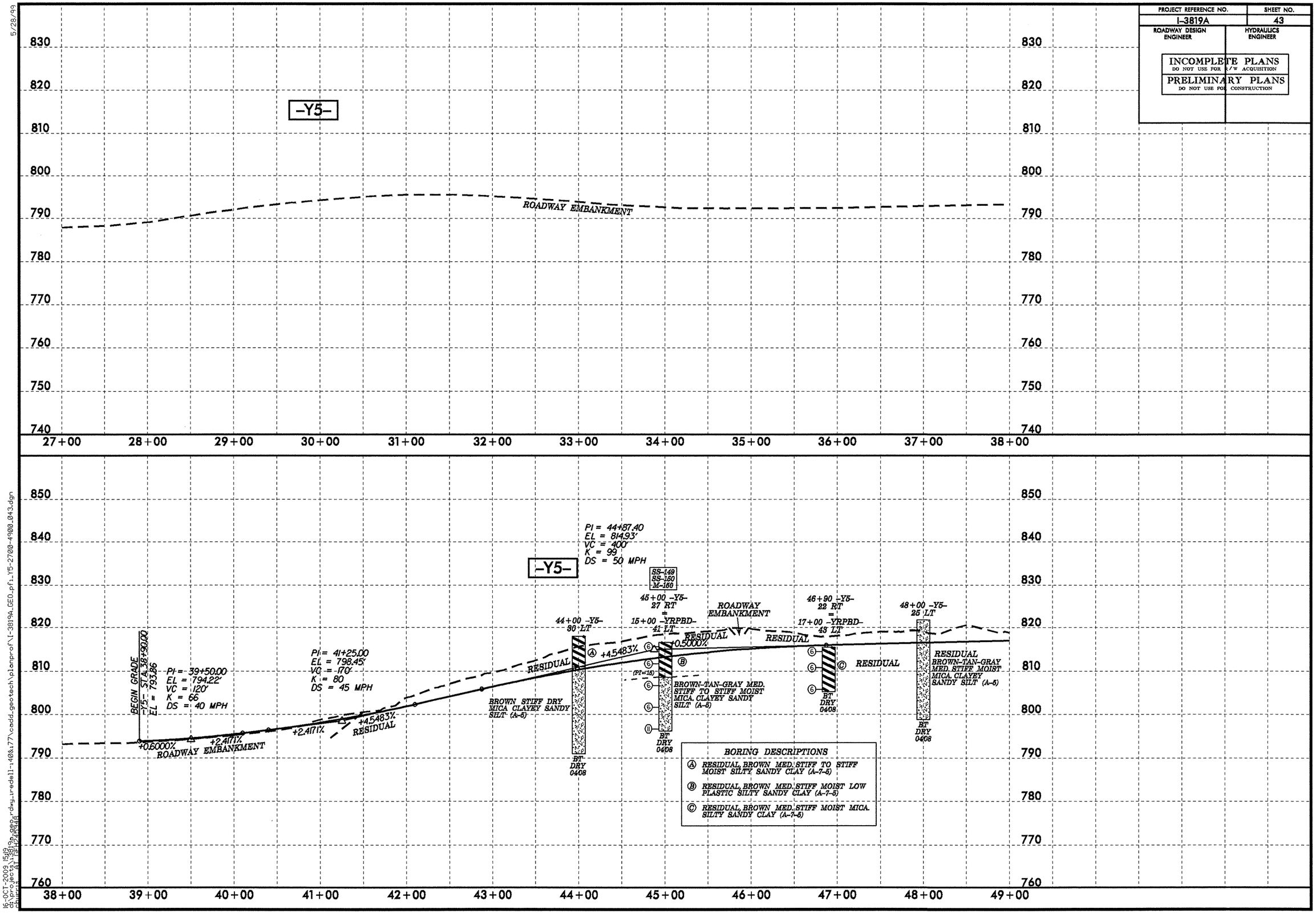
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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churis AT DEH240346

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BORING DESCRIPTIONS

(D) RESIDUAL, BROWN MED. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

(E) RESIDUAL, BROWN-TAN-GRAY MED. DENSE SAT. V. MICA. SILTY SAND (A-2-5)

(F) ALLUVIAL, BROWN & GRAY VERY SOFT MICA MED. PLASTIC SILTY SANDY CLAY (A-7-5)

(G) RESIDUAL, BROWN W/BLACK STREAKS VERY LOOSE TO LOOSE WET VERY MICA. SILTY SAND (A-2-5)

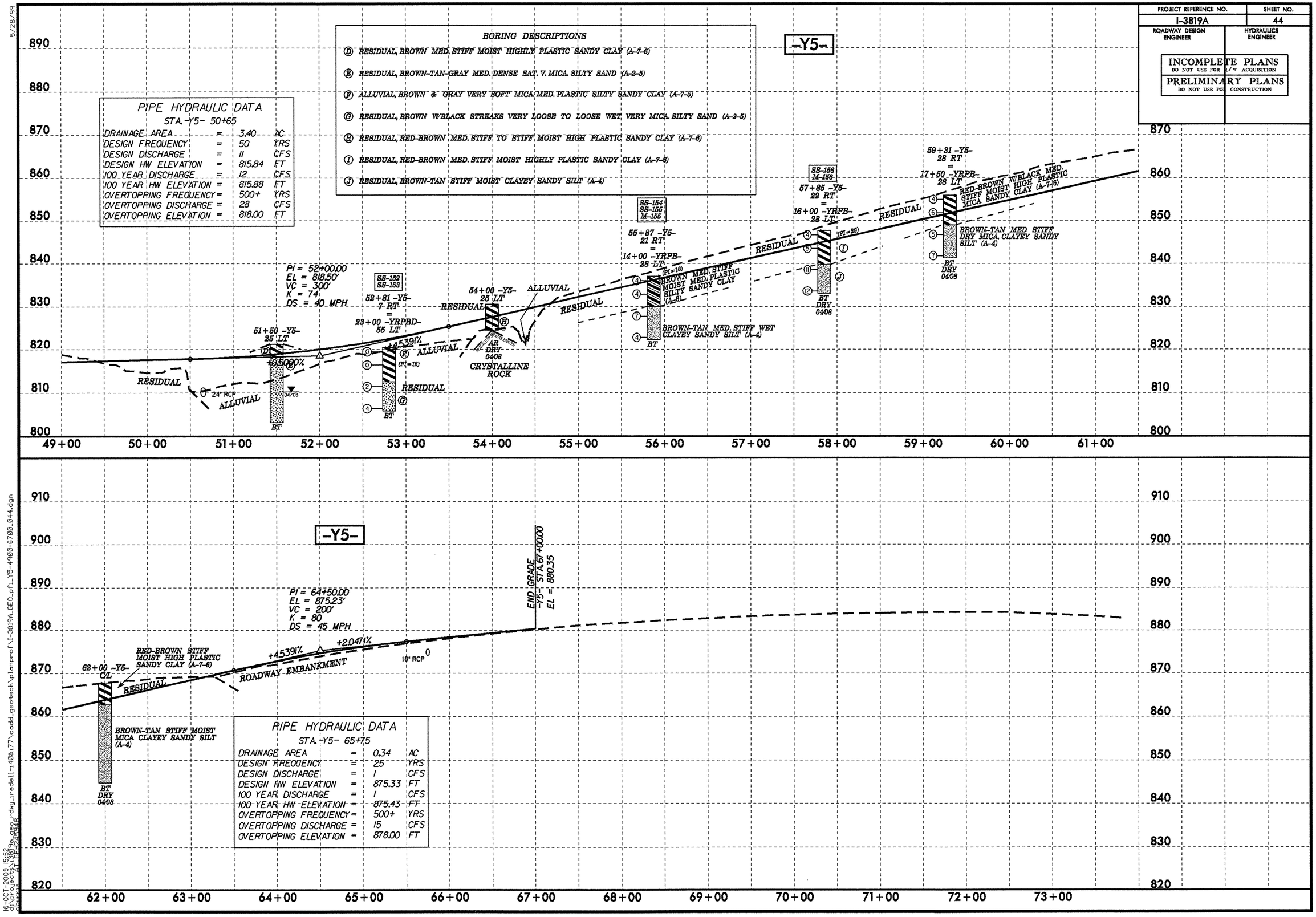
(H) RESIDUAL, RED-BROWN MED. STIFF TO STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-6)

(I) RESIDUAL, RED-BROWN MED. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

(J) RESIDUAL, BROWN-TAN STIFF MOIST CLAYEY SANDY SILT (A-4)

PIPE HYDRAULIC DATA
STA. -Y5- 50+65

DRAINAGE AREA	=	3.40	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11	CFS
DESIGN HW ELEVATION	=	815.84	FT
100 YEAR DISCHARGE	=	12	CFS
100 YEAR HW ELEVATION	=	815.88	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	28	CFS
OVERTOPPING ELEVATION	=	818.00	FT



PIPE HYDRAULIC DATA
STA. -Y5- 65+75

DRAINAGE AREA	=	0.34	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	1	CFS
DESIGN HW ELEVATION	=	875.33	FT
100 YEAR DISCHARGE	=	1	CFS
100 YEAR HW ELEVATION	=	875.43	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	15	CFS
OVERTOPPING ELEVATION	=	878.00	FT

5/28/99

16-OCT-2009 15:52
dlanier
chpm_geo_1_18819a_geo_rdwy_treadell-140&77\cadd_geotech\planprof\I-3819A_GEO_pfl_Y5-4900-6700_044.dgn

7/2/99

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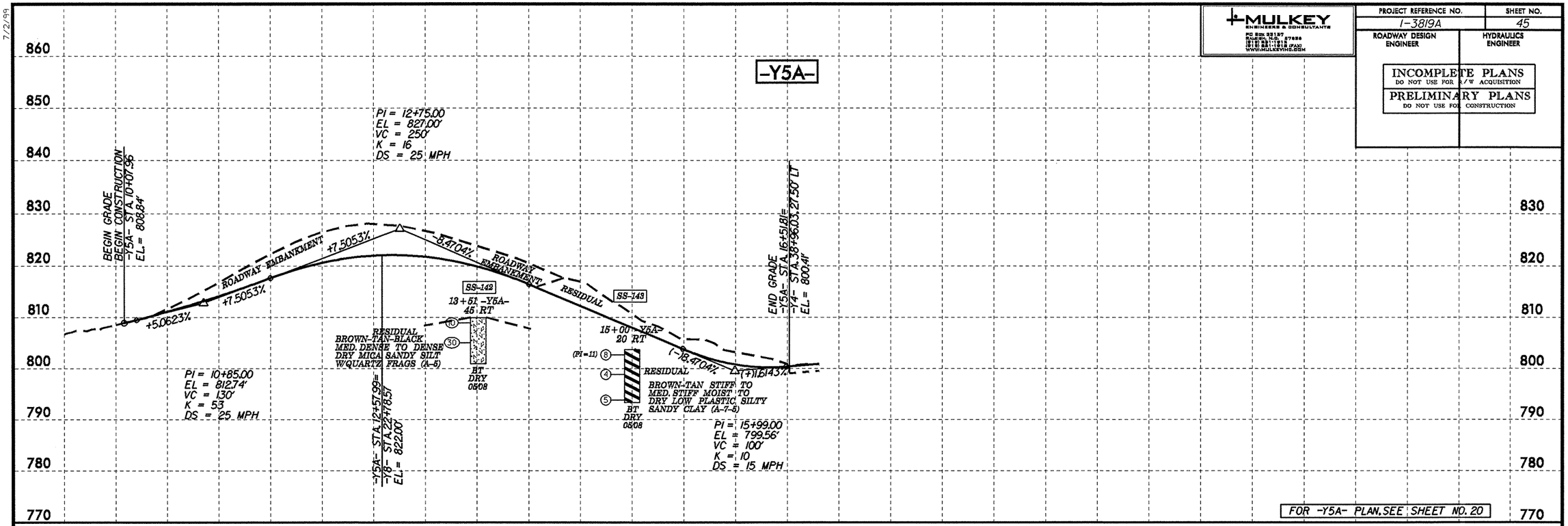
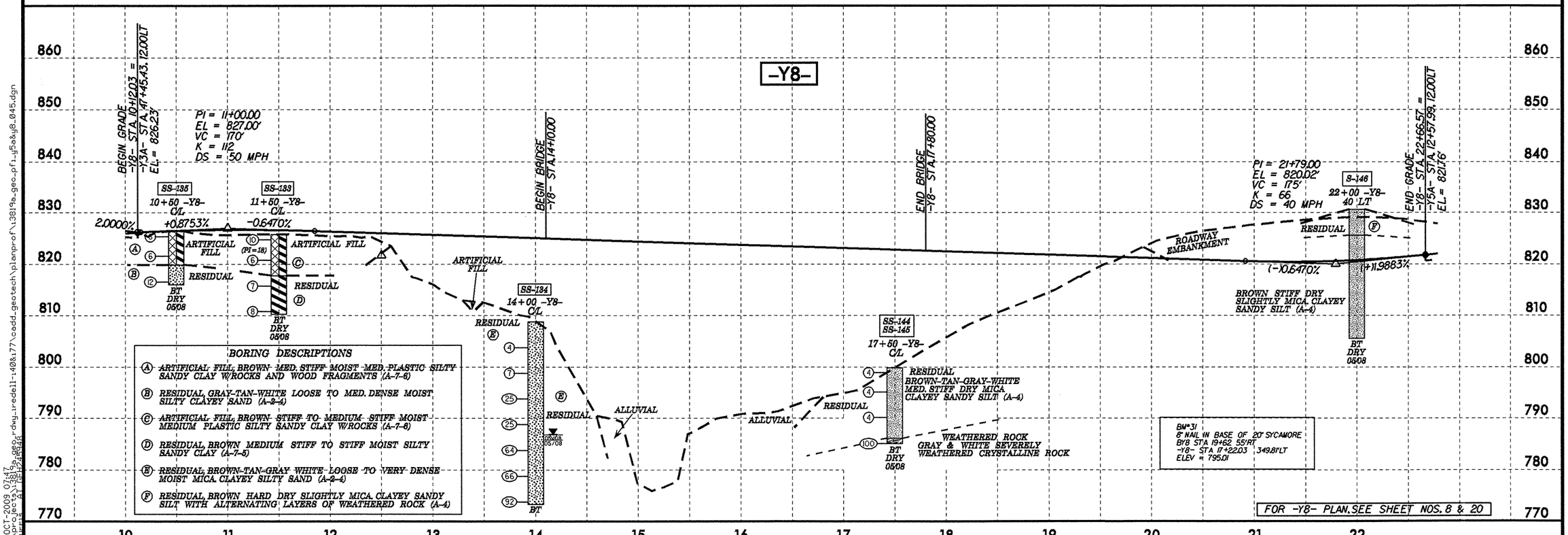
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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





BORING DESCRIPTIONS

(A) ARTIFICIAL FILL, BROWN MED. STIFF MOIST MED. PLASTIC SILTY SANDY CLAY W/ROCKS AND WOOD FRAGMENTS (A-7-6)

(B) RESIDUAL, GRAY-TAN-WHITE LOOSE TO MED. DENSE MOIST SILTY CLAYEY SAND (A-2-4)

(C) ARTIFICIAL FILL, BROWN STIFF TO MEDIUM STIFF MOIST MEDIUM PLASTIC SILTY SANDY CLAY W/ROCKS (A-7-6)

(D) RESIDUAL, BROWN MEDIUM STIFF TO STIFF MOIST SILTY SANDY CLAY (A-7-5)

(E) RESIDUAL, BROWN-TAN-GRAY WHITE LOOSE TO VERY DENSE MOIST MICA CLAYEY SILTY SAND (A-2-4)

(F) RESIDUAL, BROWN HARD DRY SLIGHTLY MICA CLAYEY SANDY SILT WITH ALTERNATING LAYERS OF WEATHERED ROCK (A-4)

19-OCT-2009 07:47
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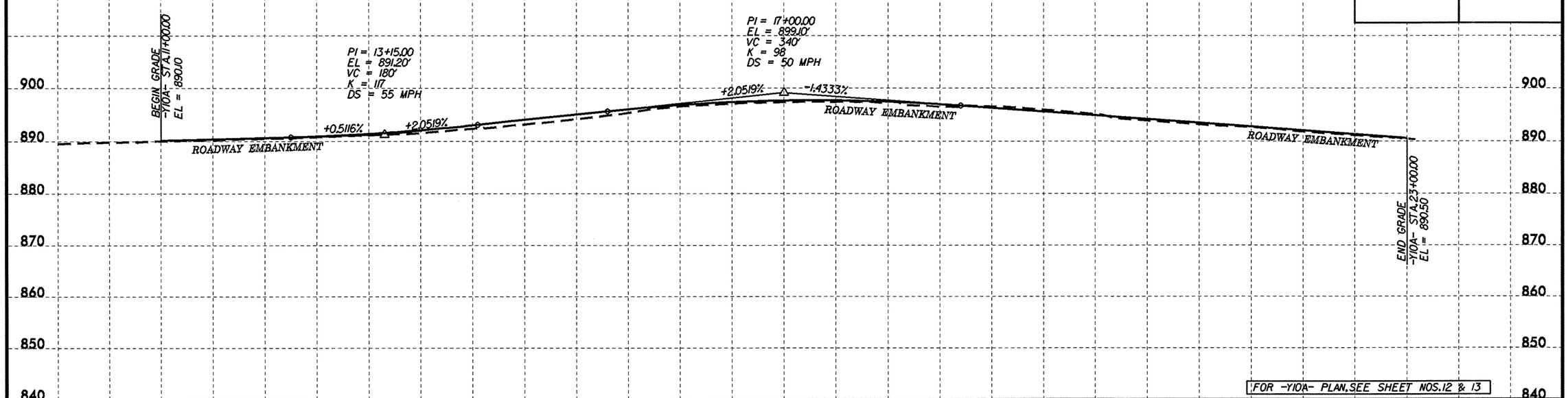
chuckpr AT NEHU24PC48

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

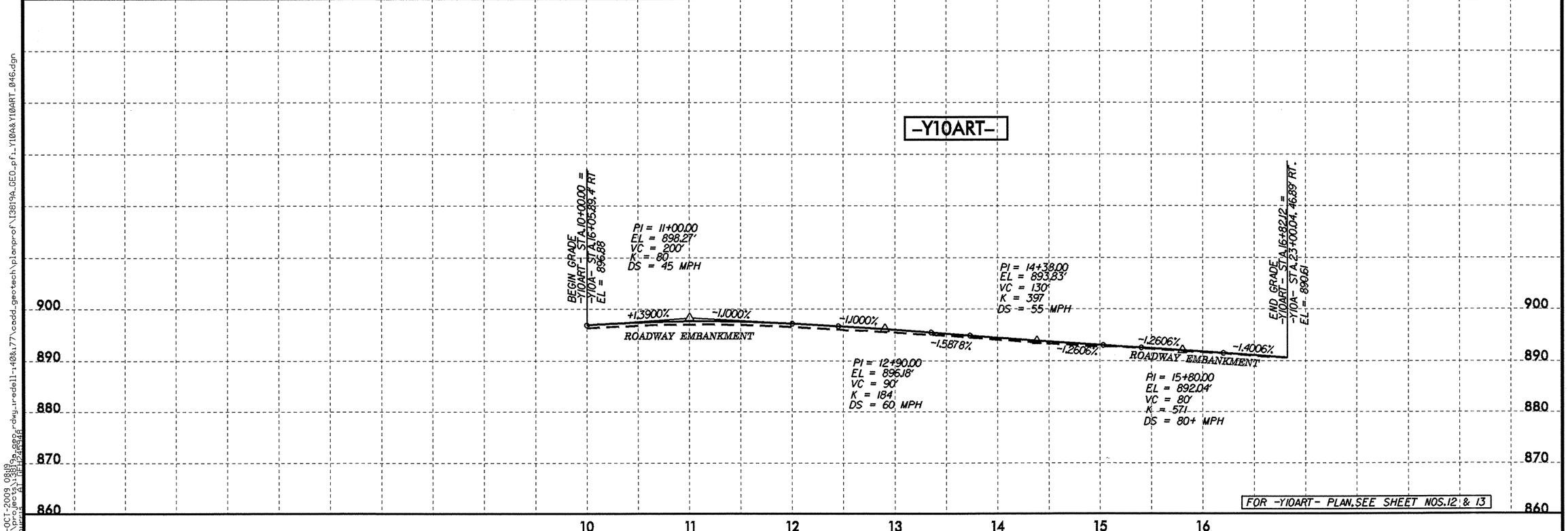
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y10A-



FOR -Y10A- PLAN, SEE SHEET NOS. 12 & 13

-Y10ART-



FOR -Y10ART- PLAN, SEE SHEET NOS. 12 & 13

19-OCT-2009 08:18
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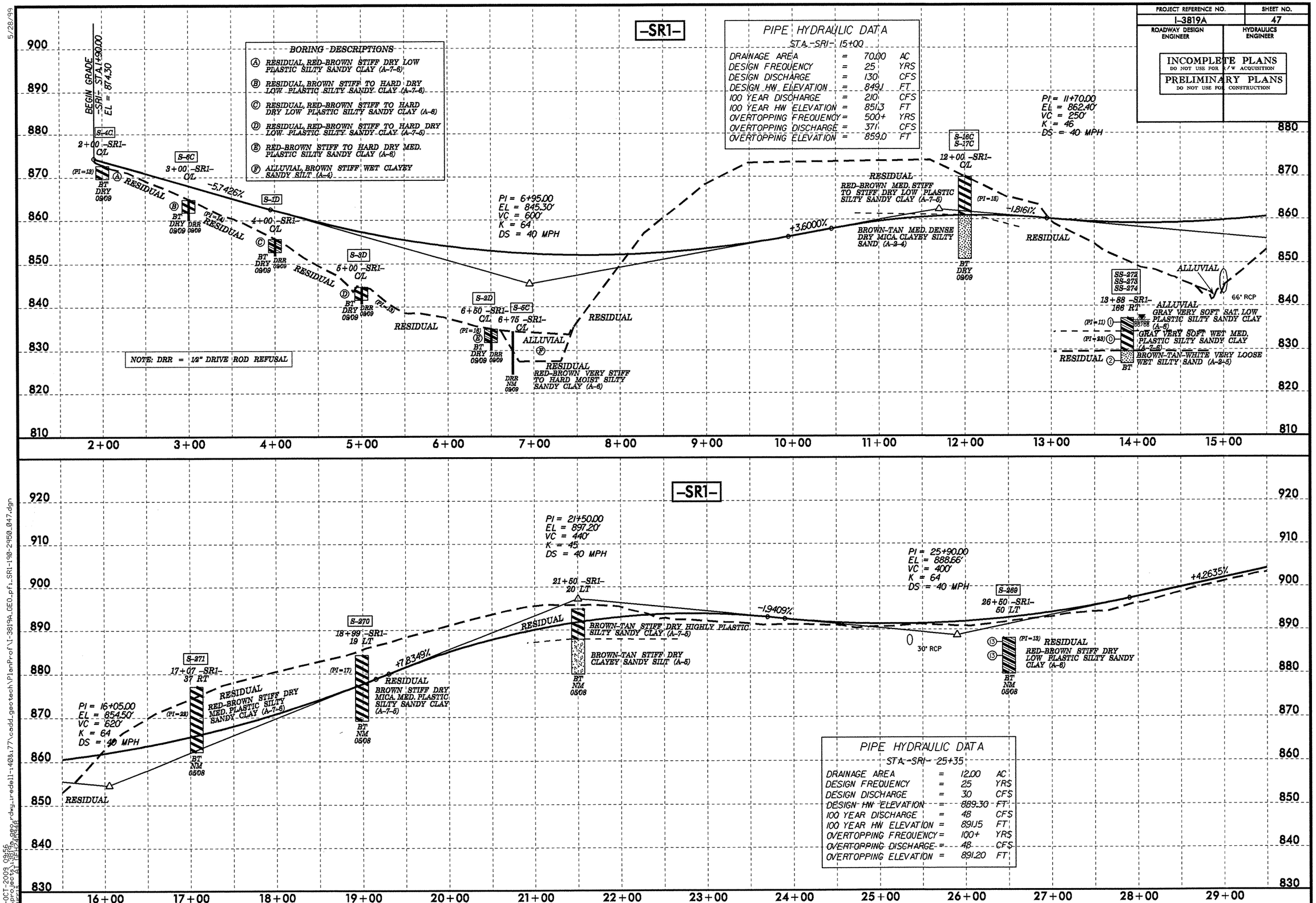
churiss AT REF:D24848

PROJECT REFERENCE NO.	SHEET NO.
I-3819A	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/28/99

22-OCT-2009 09:56
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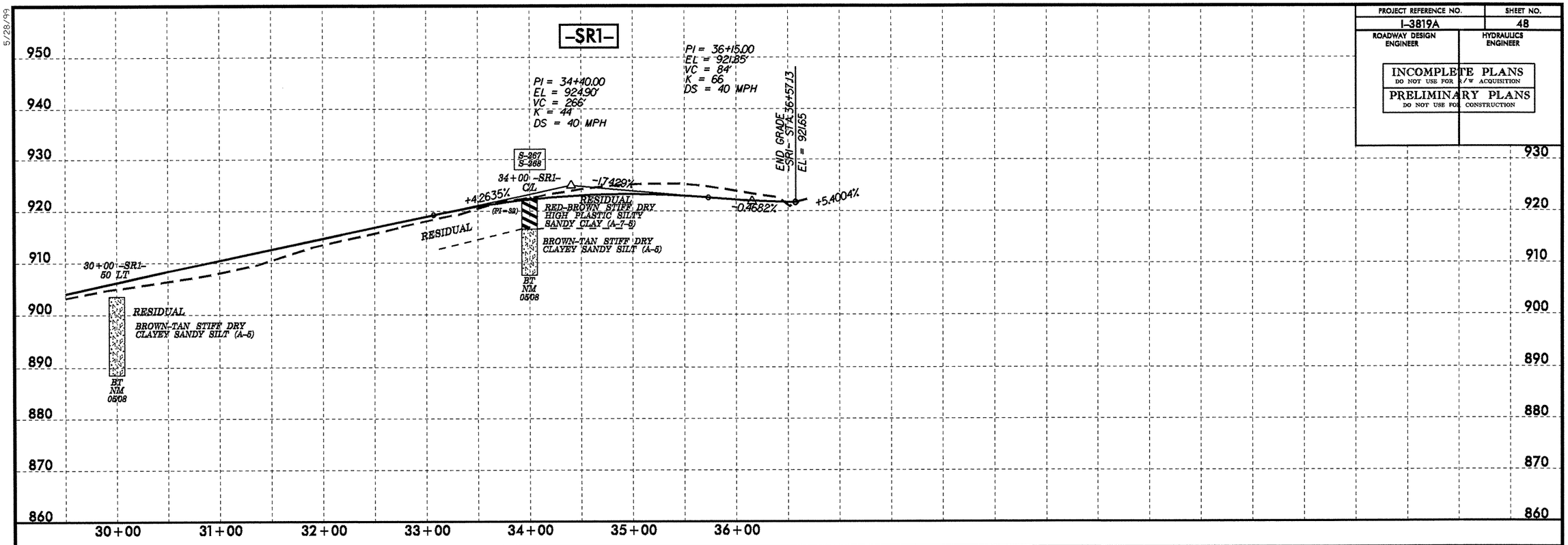
PROJECT REFERENCE NO.	SHEET NO.
I-3819A	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/28/99

22-OCT-2009 09:57
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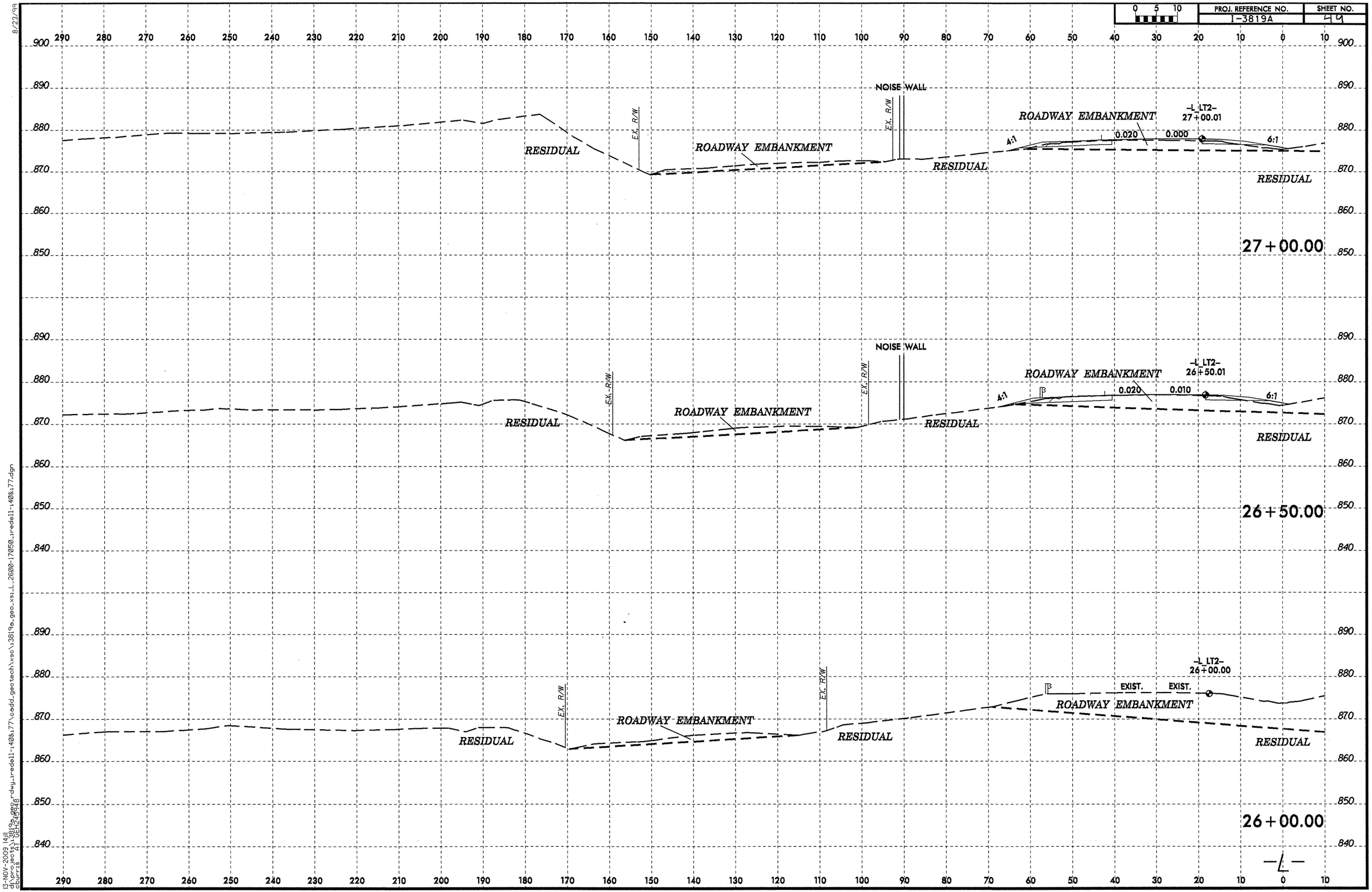
dmurphy, dmurphy



8/23/99
13-NOV-2009 14:11
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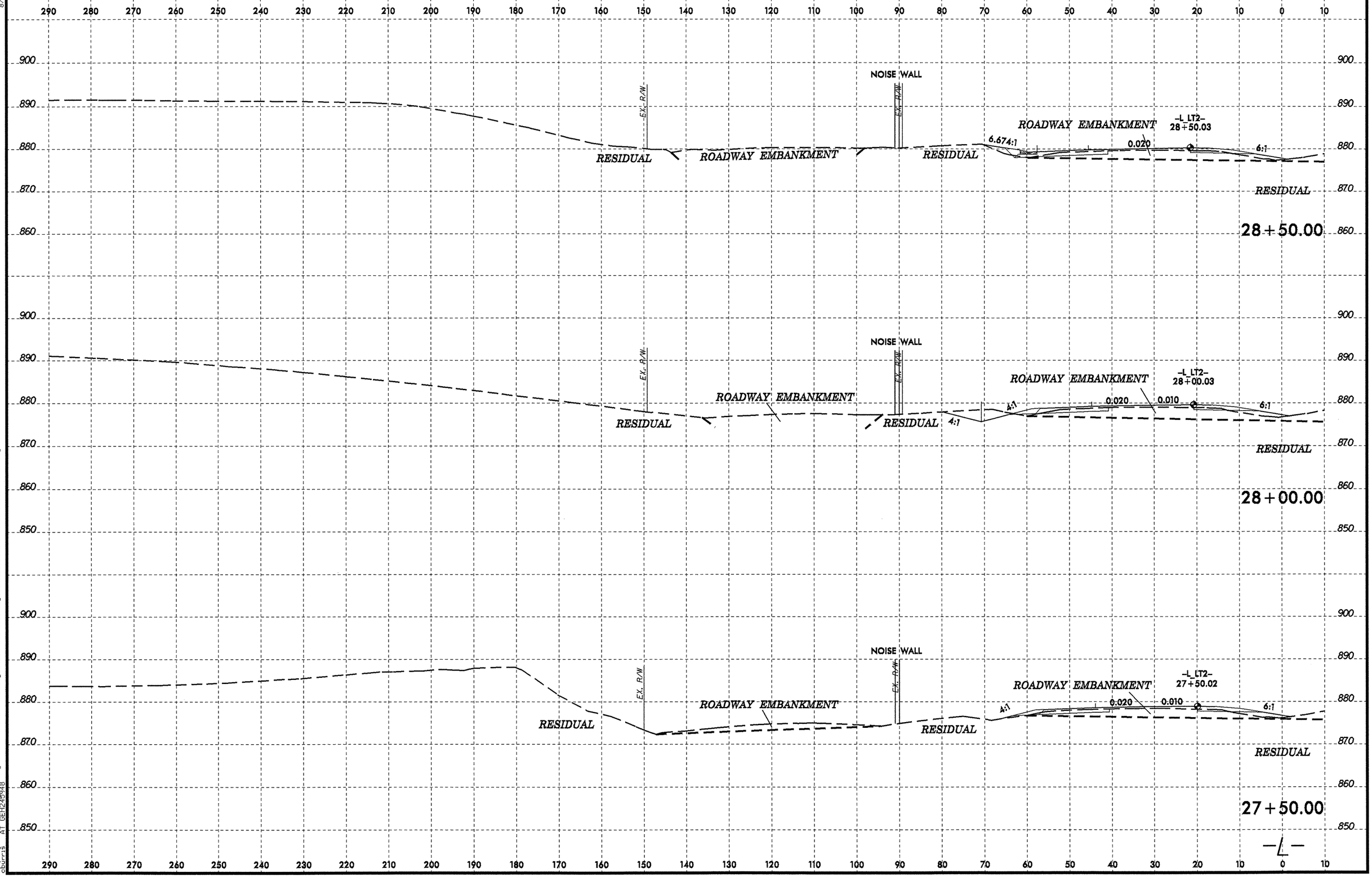
A1 OEL249948



8/23/99
13-NOV-2009 14:13
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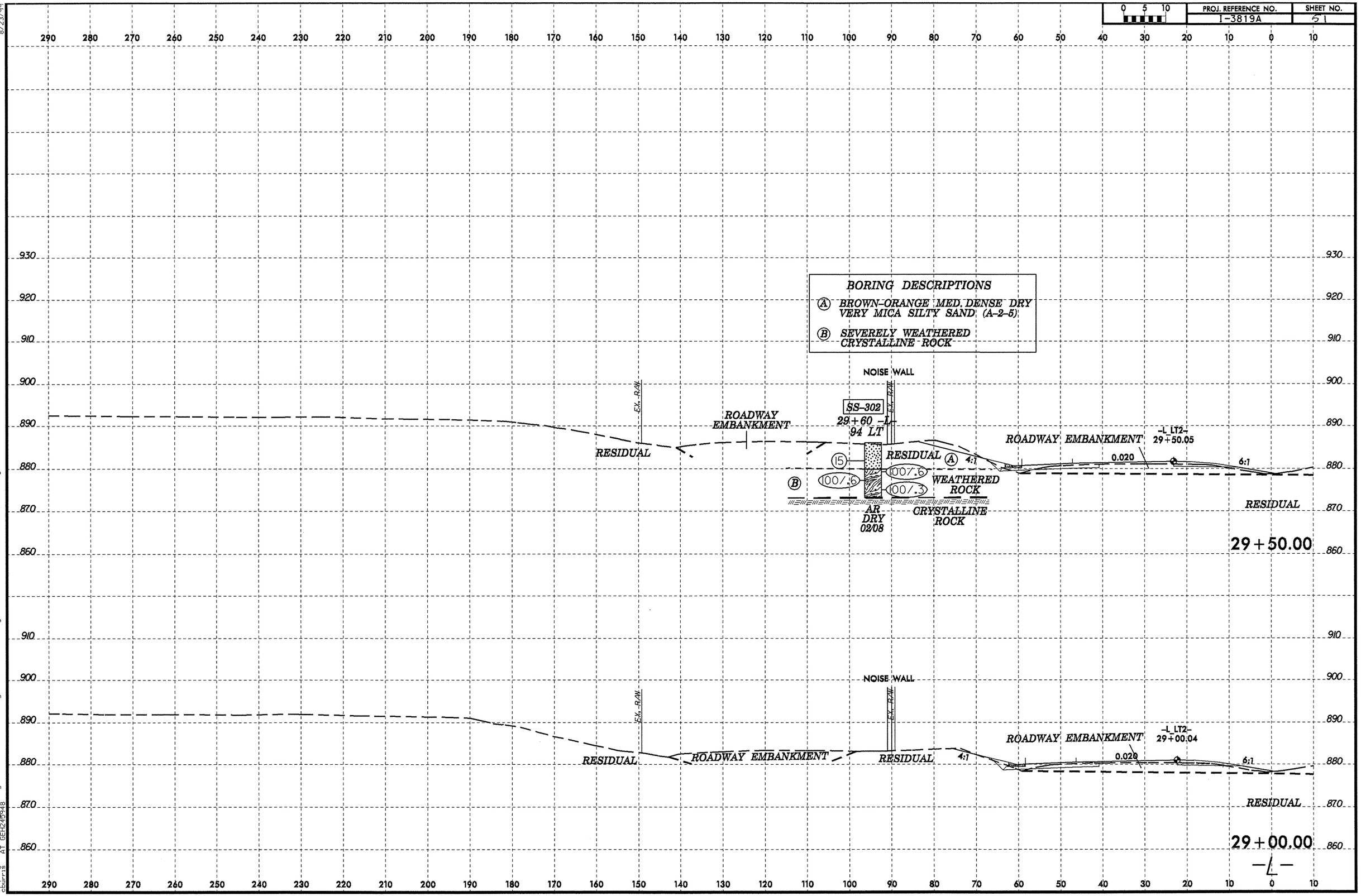
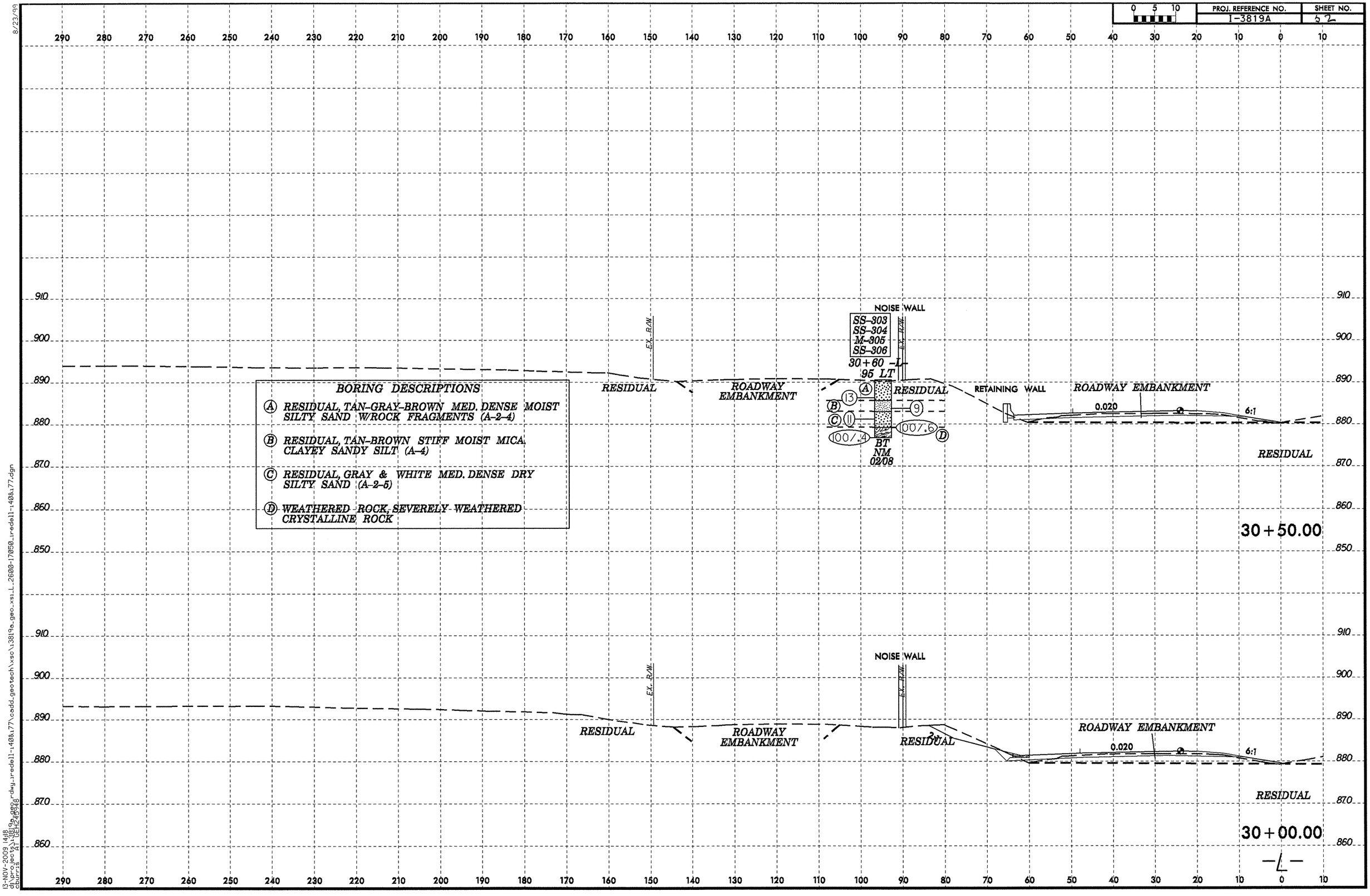
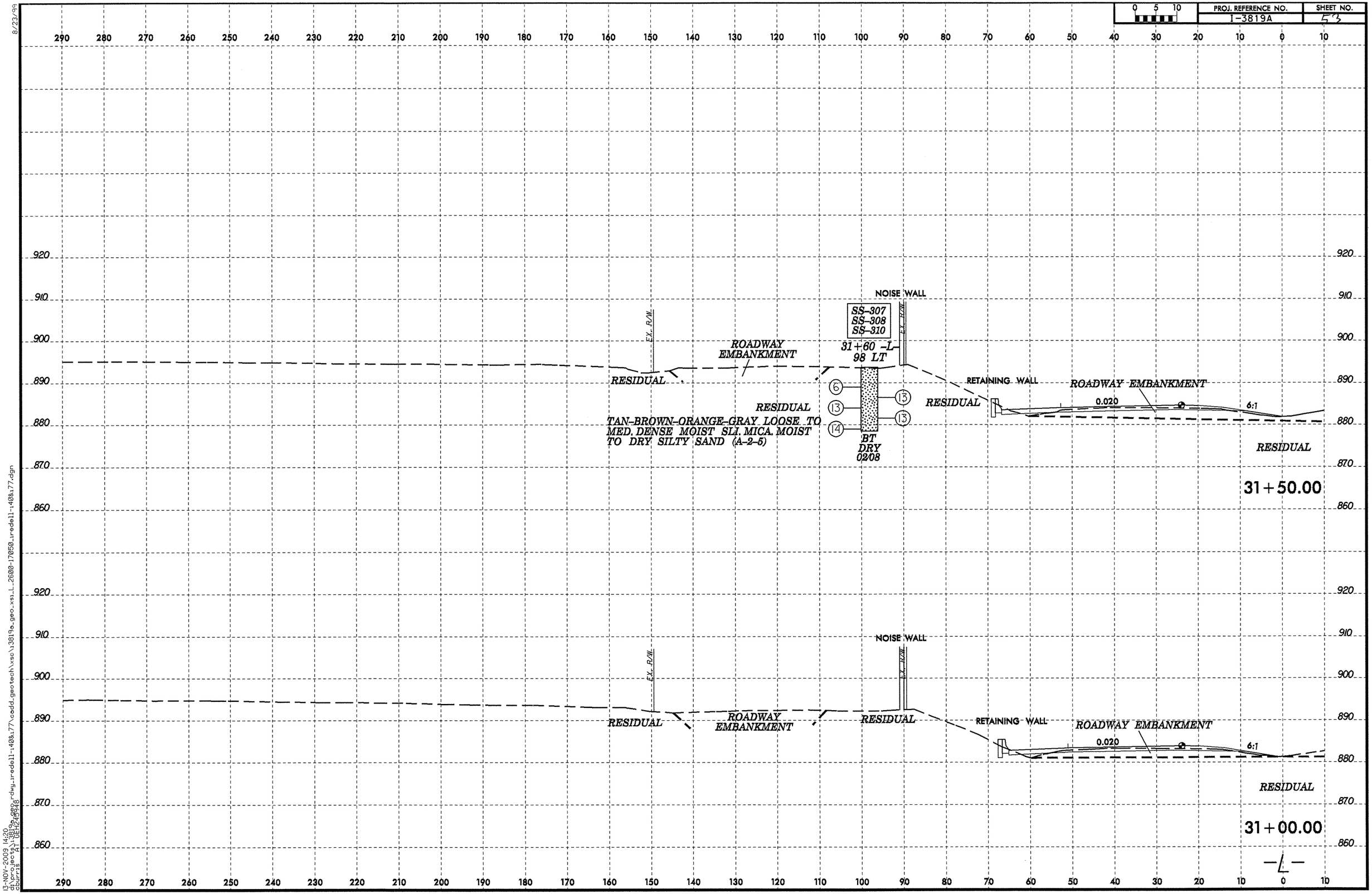
cburris AT GEH218948

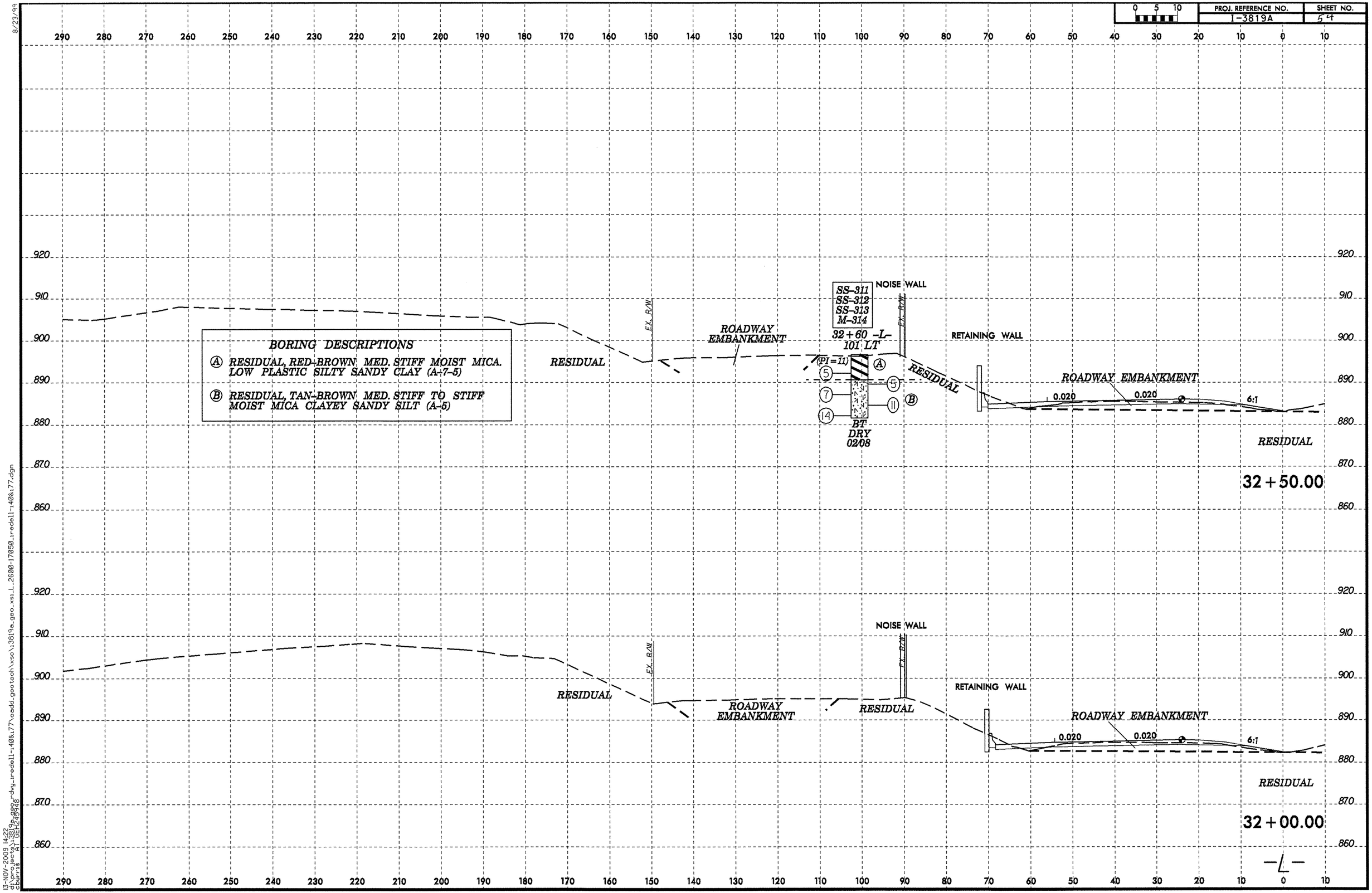

BORING DESCRIPTIONS
(A) BROWN-ORANGE MED. DENSE DRY VERY MICA SILTY SAND (A-2-5)
(B) SEVERELY WEATHERED CRYSTALLINE ROCK
NOISE WALL
EX. R/W
SS-302
29+60 -L-
94 LT
ROADWAY EMBANKMENT
RESIDUAL
15
100/.6
100/.6
100/.3
(B)
(A)
4:1
WEATHERED ROCK
CRYSTALLINE ROCK
AR
DRY
02/08
-L LT2-
29+50.05
0.020
6:1
29+50.00
-L LT2-
29+00.04
29+00.00
-L-

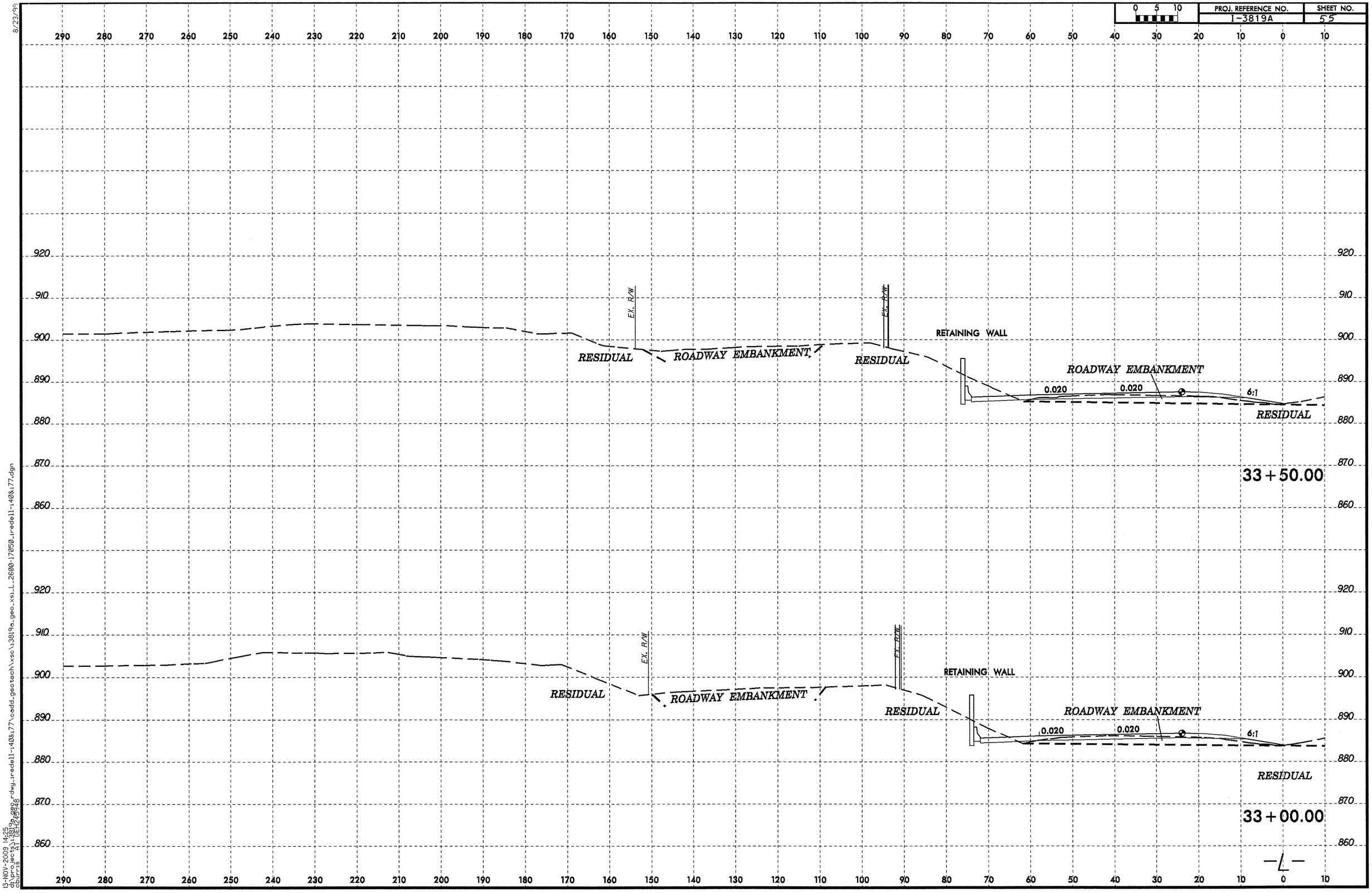
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	52



8/23/99
13-NOV-2009 14:18
d:\pwworking\de\d0819a\jobfiles\i3819a_geo_rdwy_rredell-1408&177\cadd_geotech\xsc\i3819a_geo_xsi_L_2600-17050_rredell-1408&177.dgn
cburris


PROJ. REFERENCE NO.
I-3819A
SHEET NO.
53
NOISE WALL
SS-307
SS-308
SS-310
31+60 -L-
98 LT
EX. R/W
ROADWAY EMBANKMENT
RESIDUAL
TAN-BROWN-ORANGE-GRAY LOOSE TO MED. DENSE MOIST SLI. MICA. MOIST TO DRY SILTY SAND (A-2-5)
BT
DRY
02/08
RETAINING WALL
0.020
6:1
31+50.00
31+00.00
-L-


BORING DESCRIPTIONS
Ⓐ RESIDUAL, RED-BROWN MED. STIFF MOIST MICA. LOW PLASTIC SILTY SANDY CLAY (A-7-5)
Ⓑ RESIDUAL, TAN-BROWN MED. STIFF TO STIFF MOIST MICA CLAYEY SANDY SILT (A-5)
SS-311
SS-312
SS-313
M-314
NOISE WALL
32+60 -L-
101' LT
(PI=11)
BT
DRY
02/08
EX. R/W
ROADWAY EMBANKMENT
RESIDUAL
RETAINING WALL
0.020
6:1
32+50.00
32+00.00
-L-



8/23/99
13-NOV-2009 14:25
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cburris

8/23/99

13-NOV-2009 14:30
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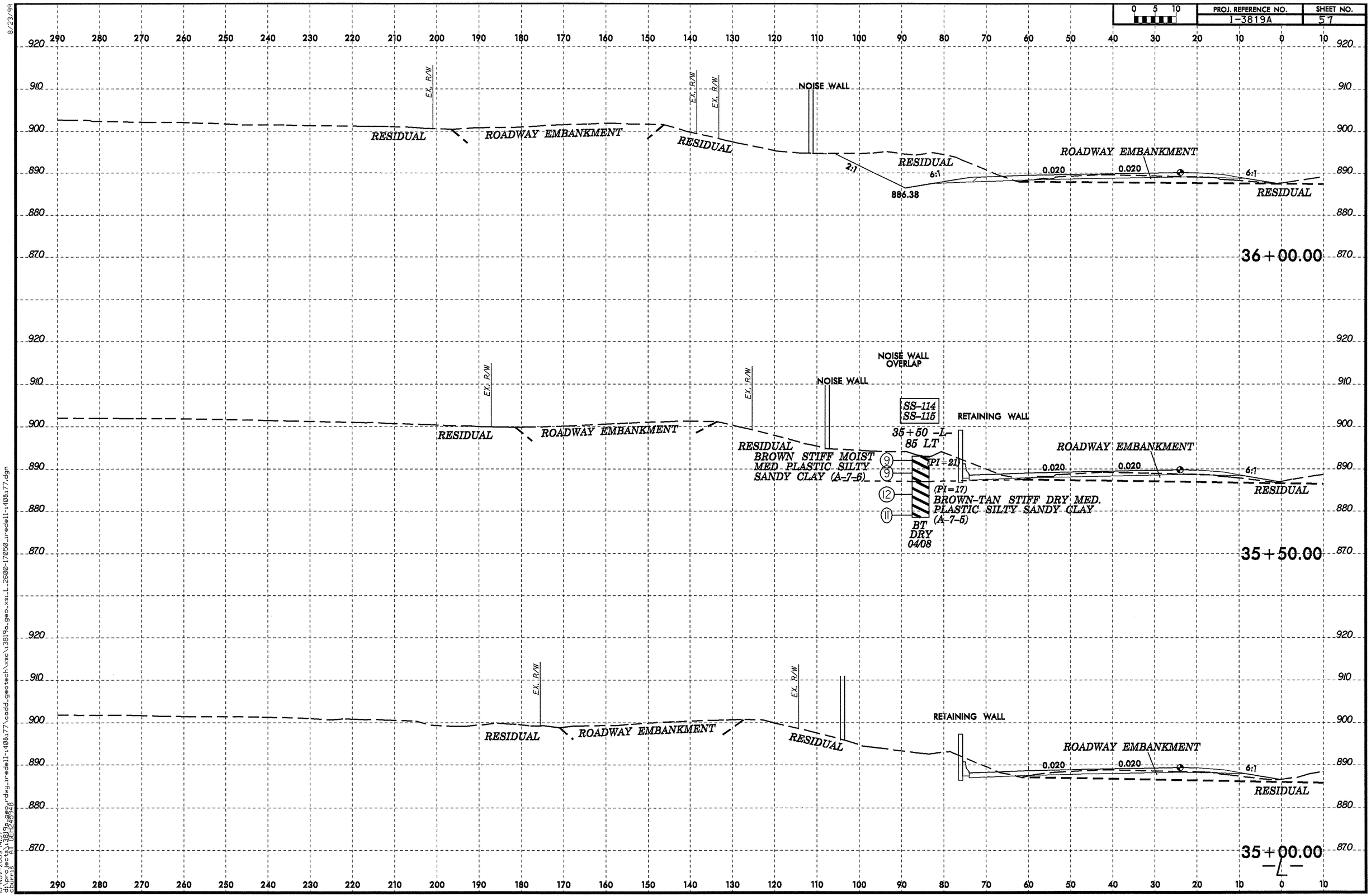
cburris
A1 DEL:249948



8/23/99
13-NOV-2009 14:37
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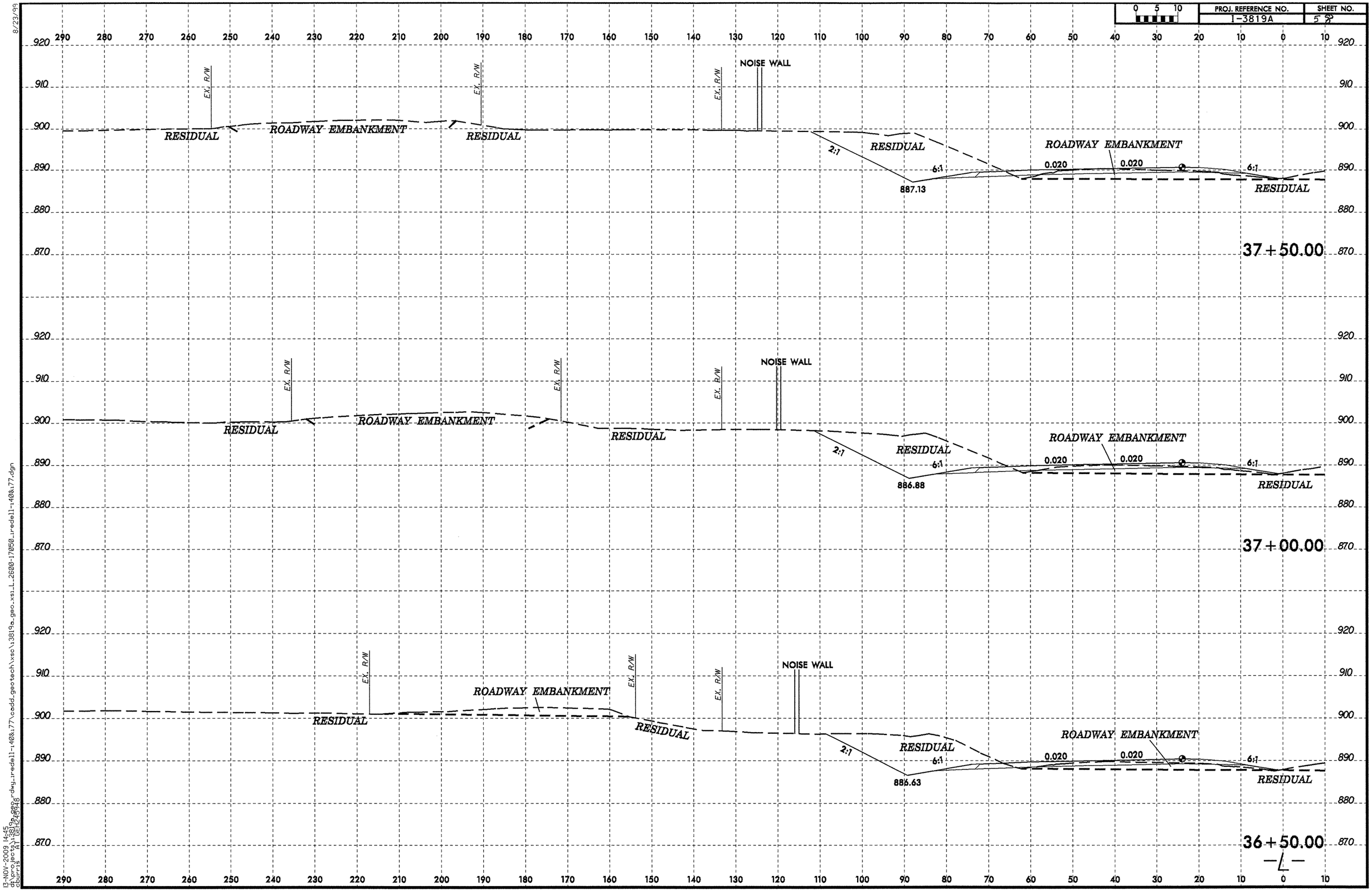
cburris
AT DEH245948



8/23/99
13-NOV-2009 14:45
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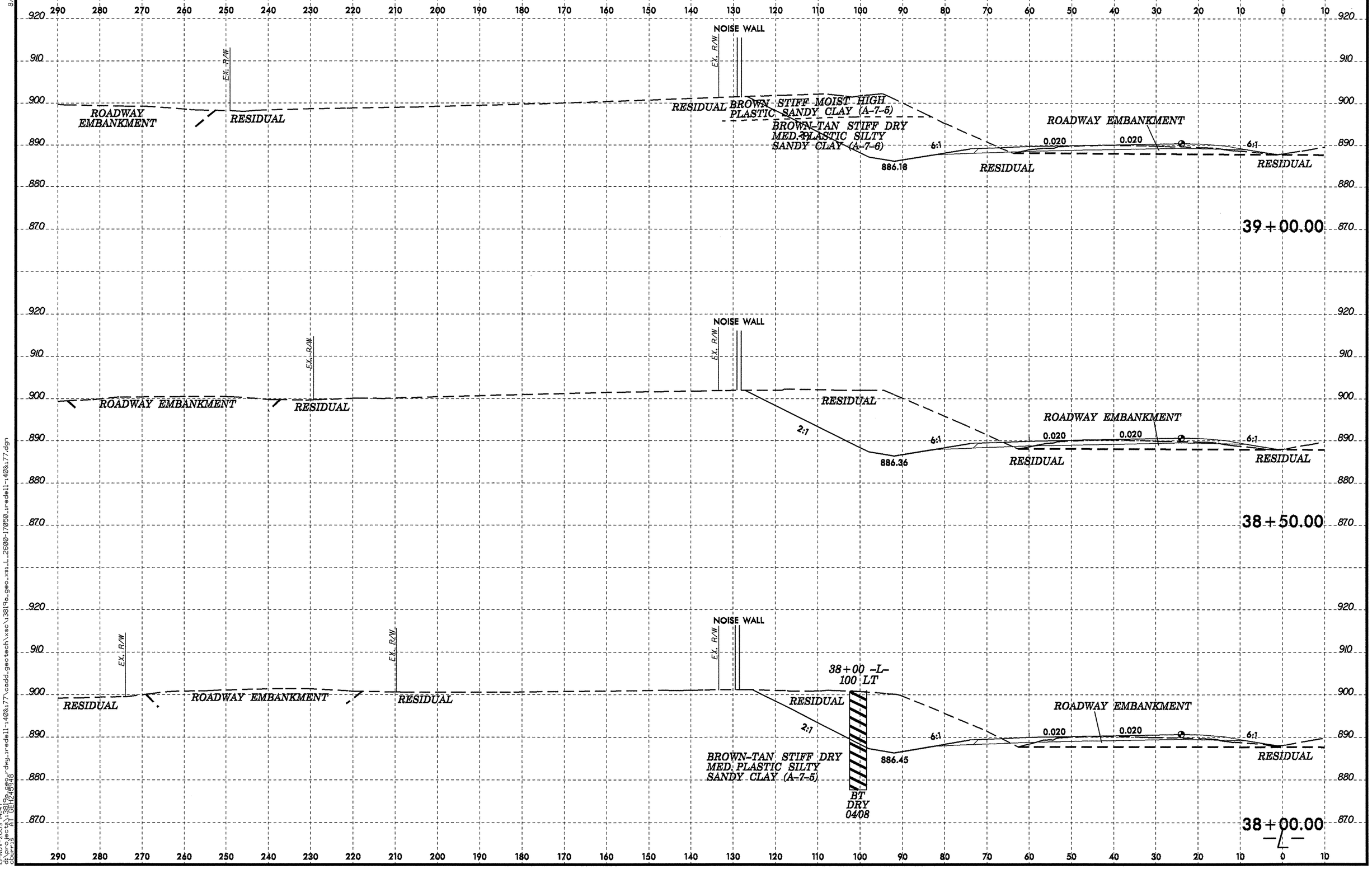
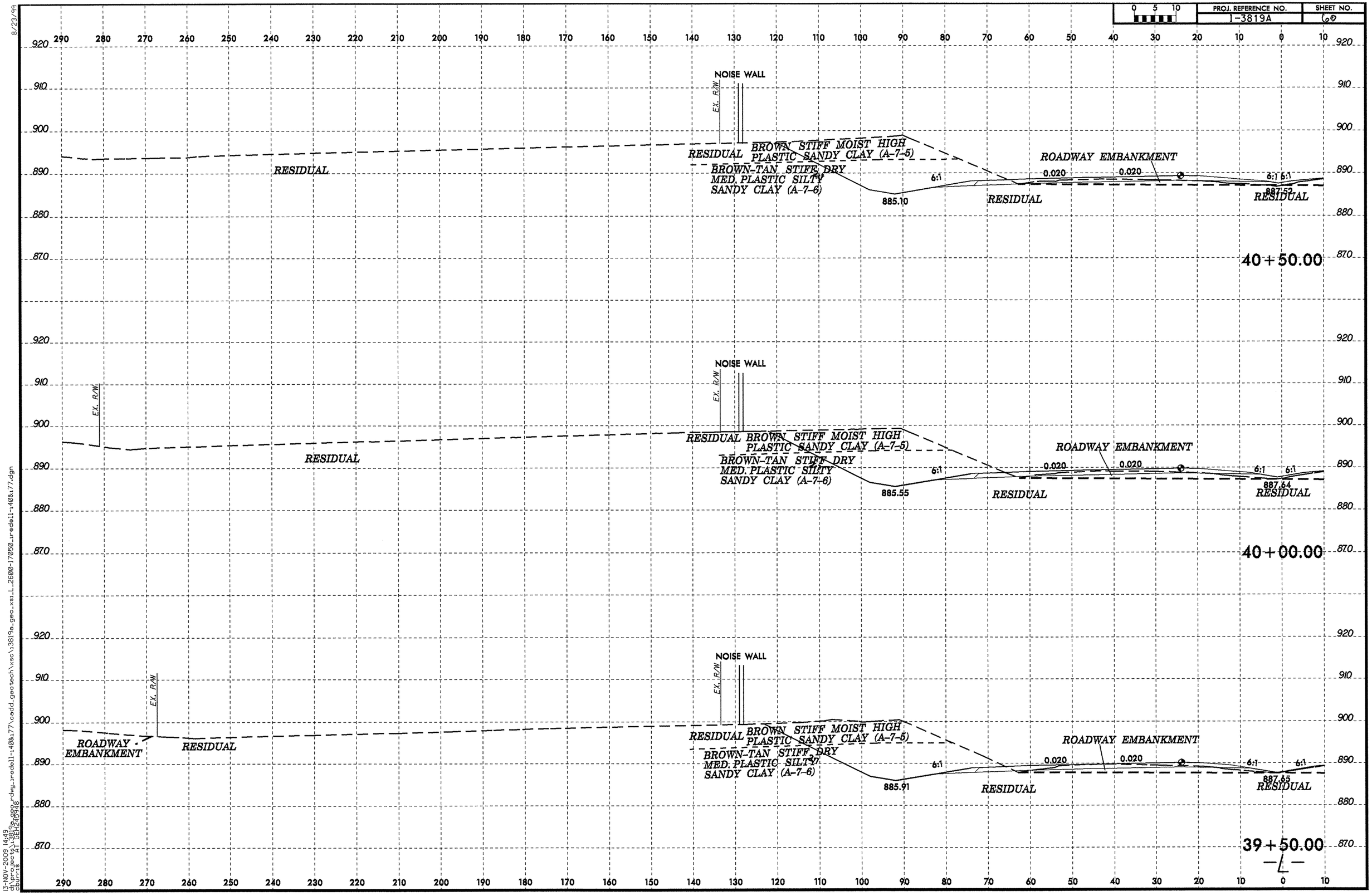
chuns



8/23/99
13-NOV-2009 14:47
cburris
d:\pwworking\sec\d0248948\i3819a_geo_rdwy_redell-140&77\cadd_geotech\xsc\i3819a_geo_xs_L_2600-17050_redell-140&77.dgn



8/23/99
13-NOV-2009 14:49
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cburris
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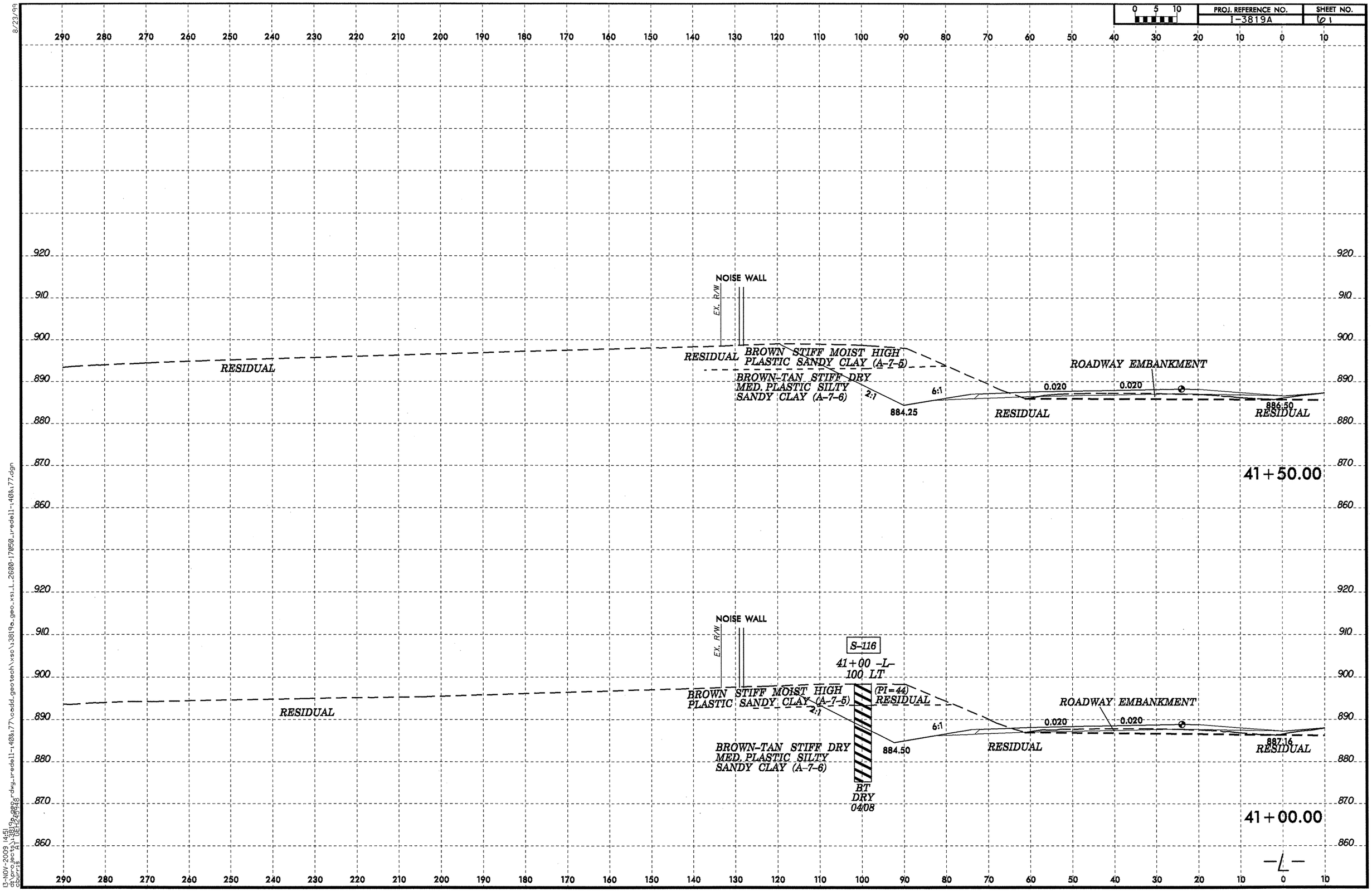
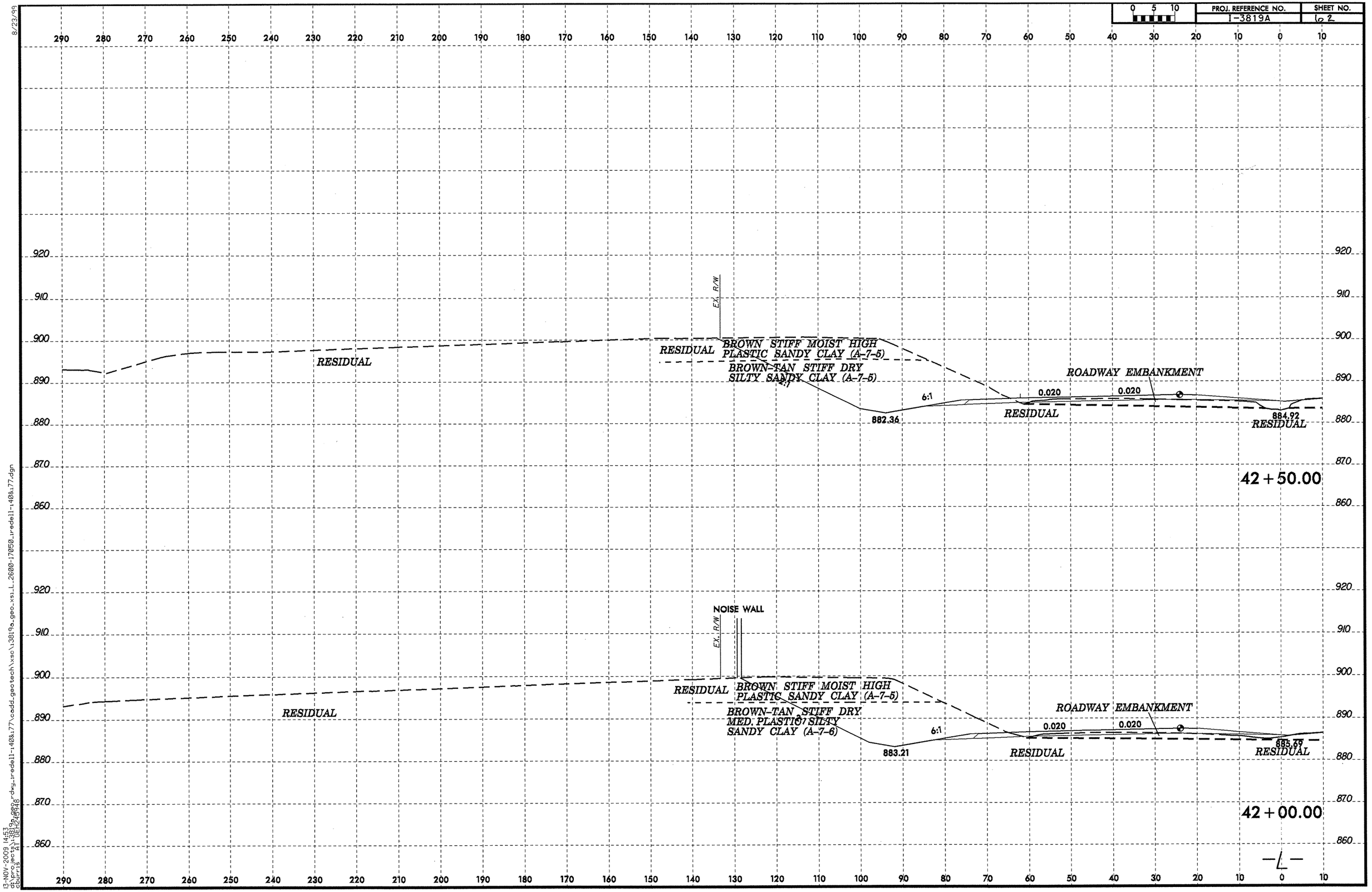

PROJ. REFERENCE NO.
I-3819A
SHEET NO.
NOISE WALL
EX. R/W
RESIDUAL
BROWN STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
BROWN-TAN STIFF DRY MED. PLASTIC SILTY SANDY CLAY (A-7-6)
2:1
6:1
884.25
0.020
ROADWAY EMBANKMENT
886.50
41+50.00
S-116
41+00 -L- 100 LT
(PI=44)
884.50
887.16
BT DRY 04/08
41+00.00
-L-

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	6 2



8/23/99

13-NOV-2009 14:53
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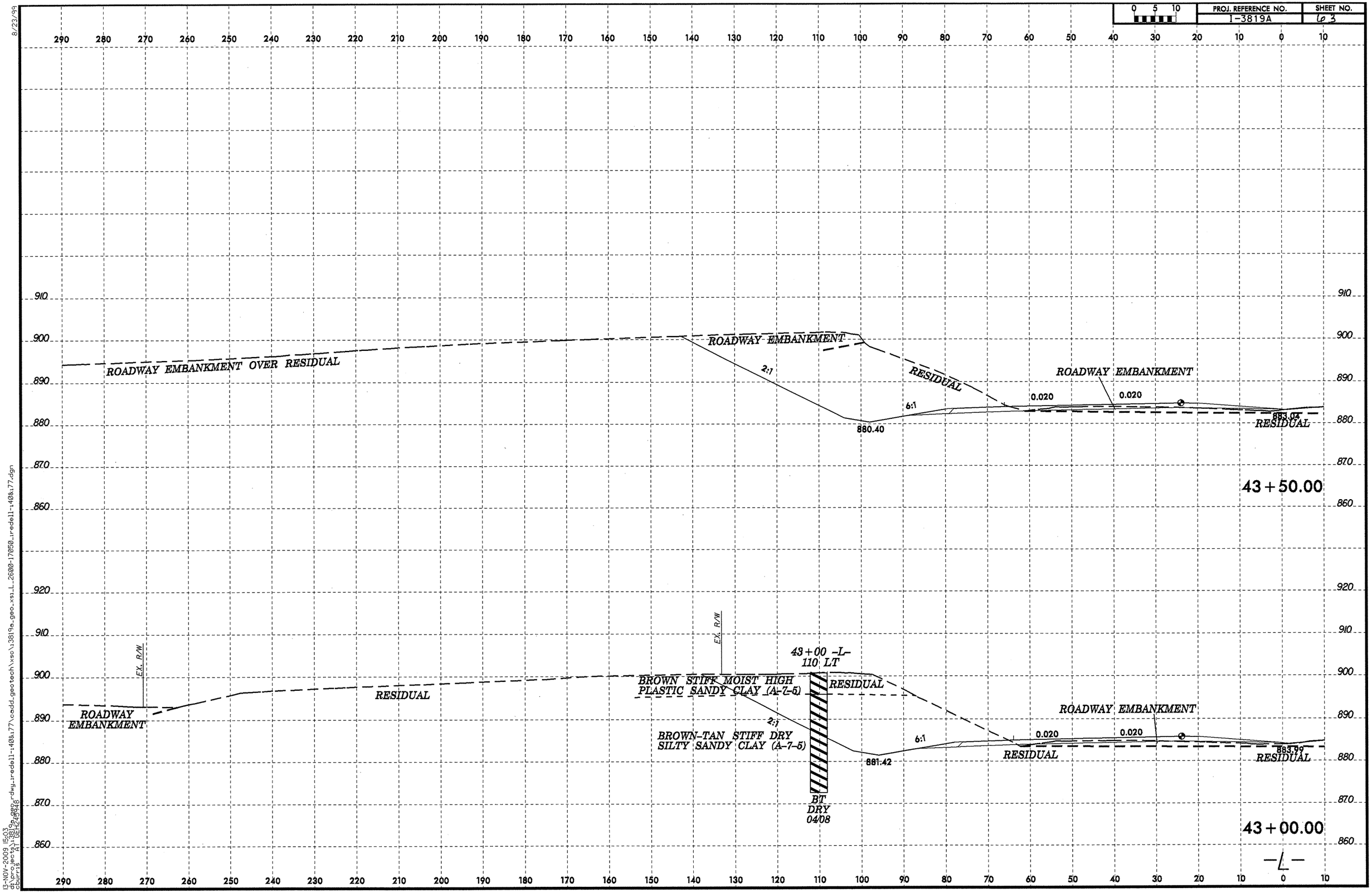
cburris FILE: DEL1245948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	63



8/23/99

13-NOV-2009 15:03
chpro(ex) $(BEHZ0046)
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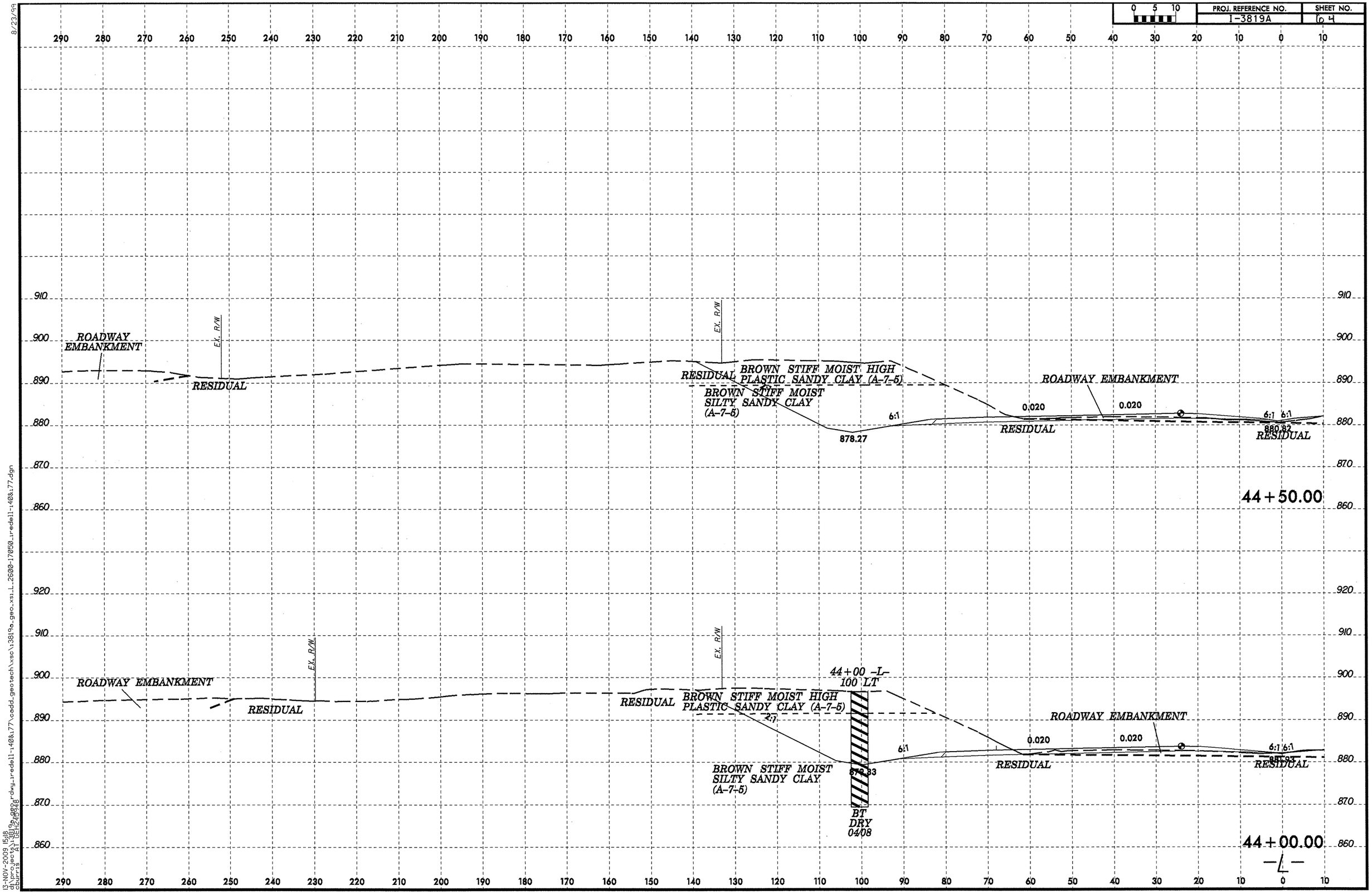

8/23/99
13-NOV-2009 15:18
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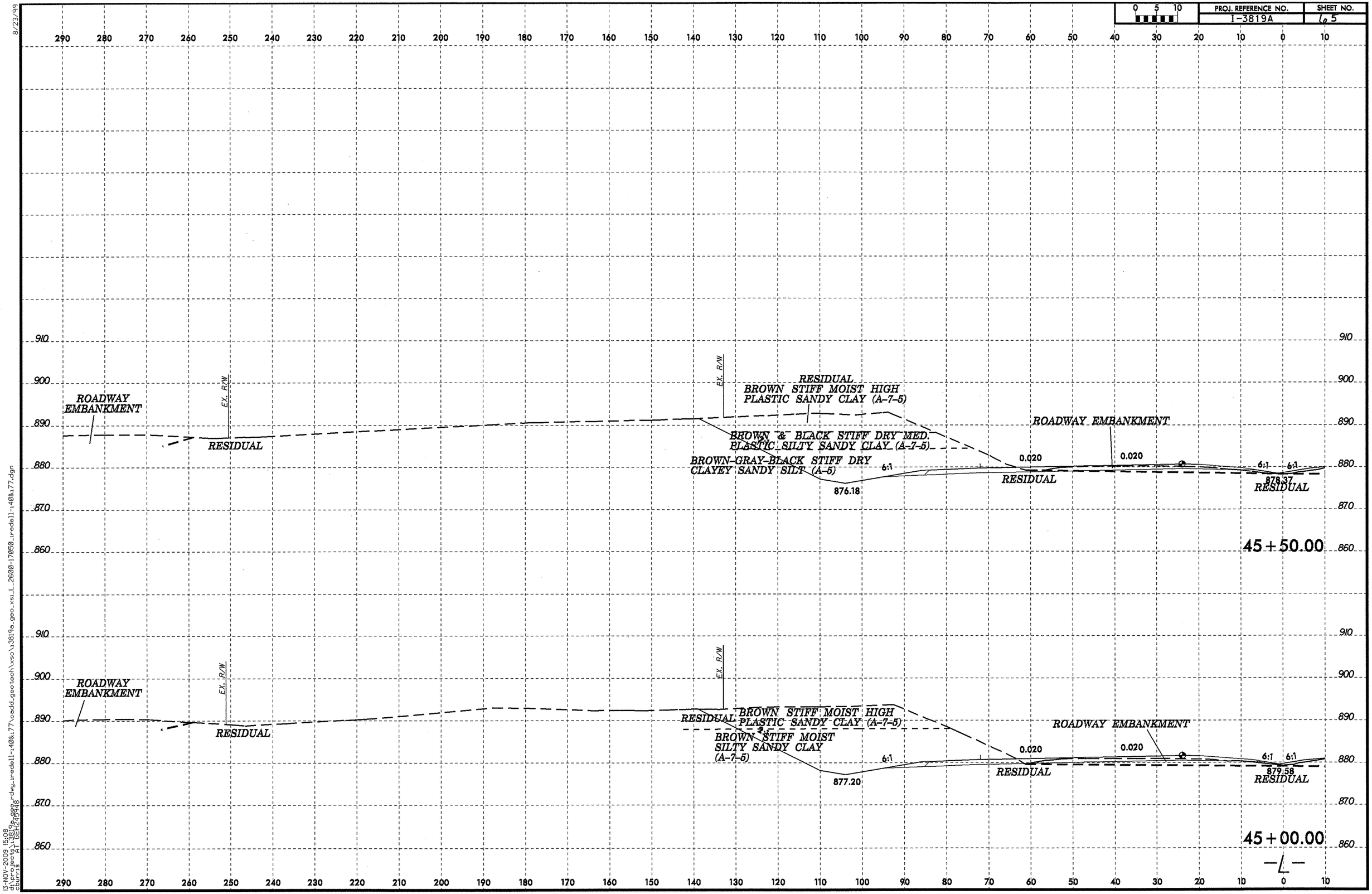
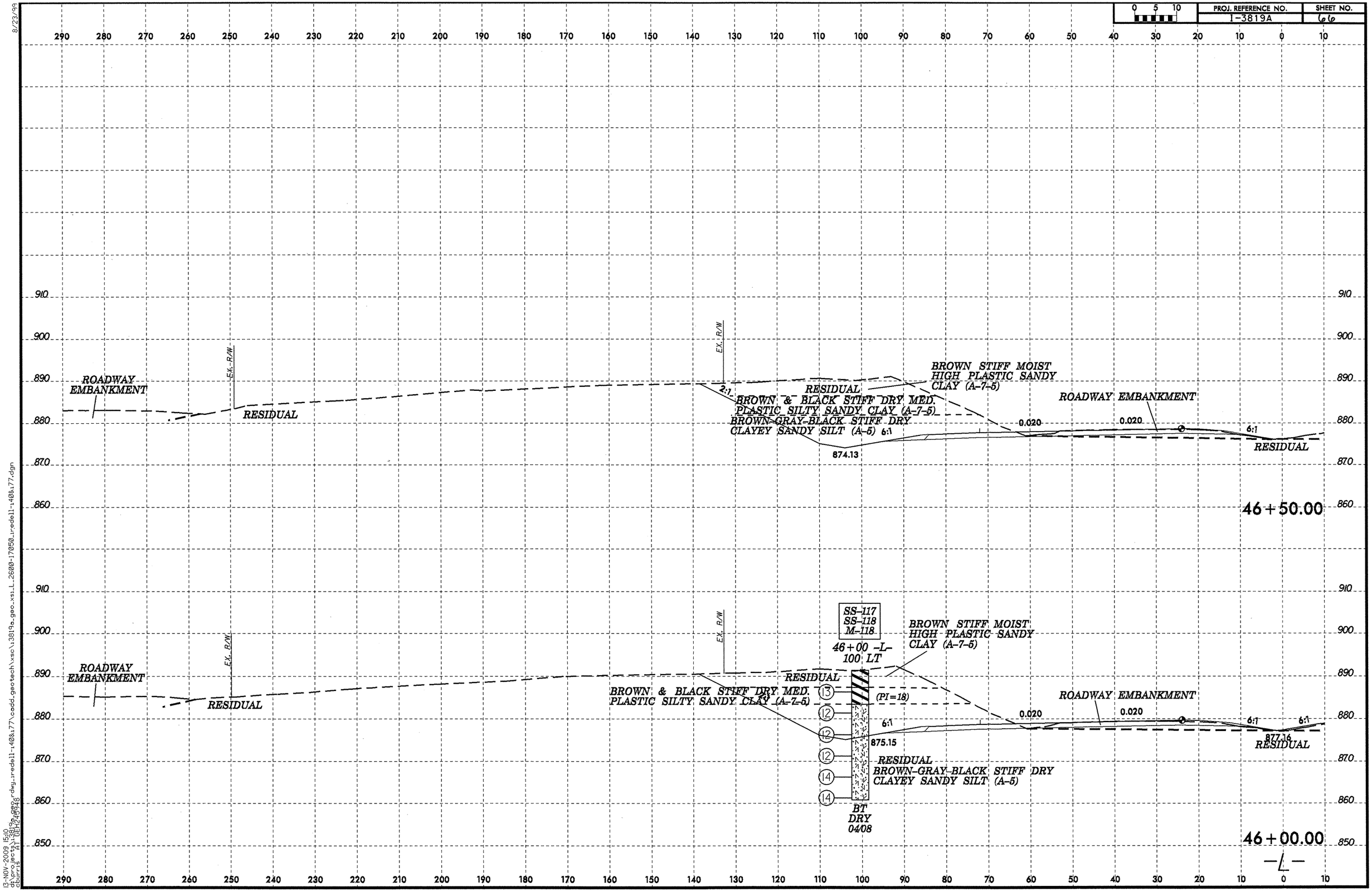
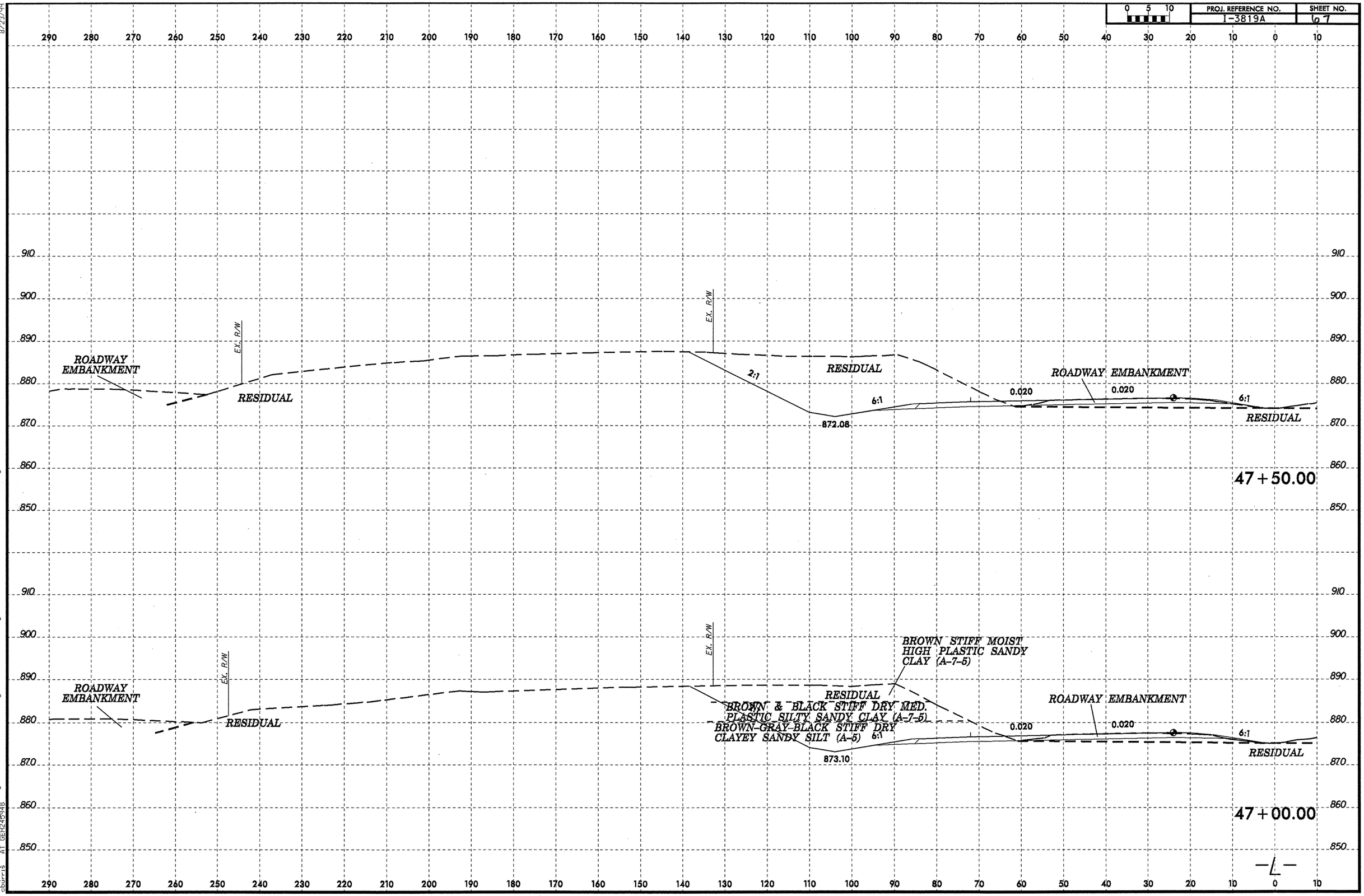
cburrs
A1 DEL2.48.48



8/23/99
13-NOV-2009 15:08
d:\projects\3819a_geo.dwg_iredell-140&177\cadd_geotech\xsc\13819a_geo_xsl_L_2600-17050_iredell-140&177.dgn
churris SELECT 24x48


0 5 10
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
66
46+50.00
ROADWAY EMBANKMENT
EX. R/W
RESIDUAL
BROWN & BLACK STIFF DRY MED. PLASTIC SILTY SANDY CLAY (A-7-5)
BROWN-GRAY-BLACK STIFF DRY CLAYEY SANDY SILT (A-5)
BROWN STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
2:1
6:1
874.13
0.020
ROADWAY EMBANKMENT
RESIDUAL
46+00.00
-L-
SS-117
SS-118
M-118
46+00 -L- 100 LT
(PI=18)
875.15
BT DRY 04/08
877.16
8/23/99
13-NOV-2009 15:10
dt:\pro_geo\13819a_geo.dgn
dgn\geo\13819a_geo.dgn
dwg..redell-140&17\cadd_geotech\xsc\13819a_geo.xsi_L_2600-17050_redell-140&17.dgn



8/23/99

13-NOV-2009 15:12
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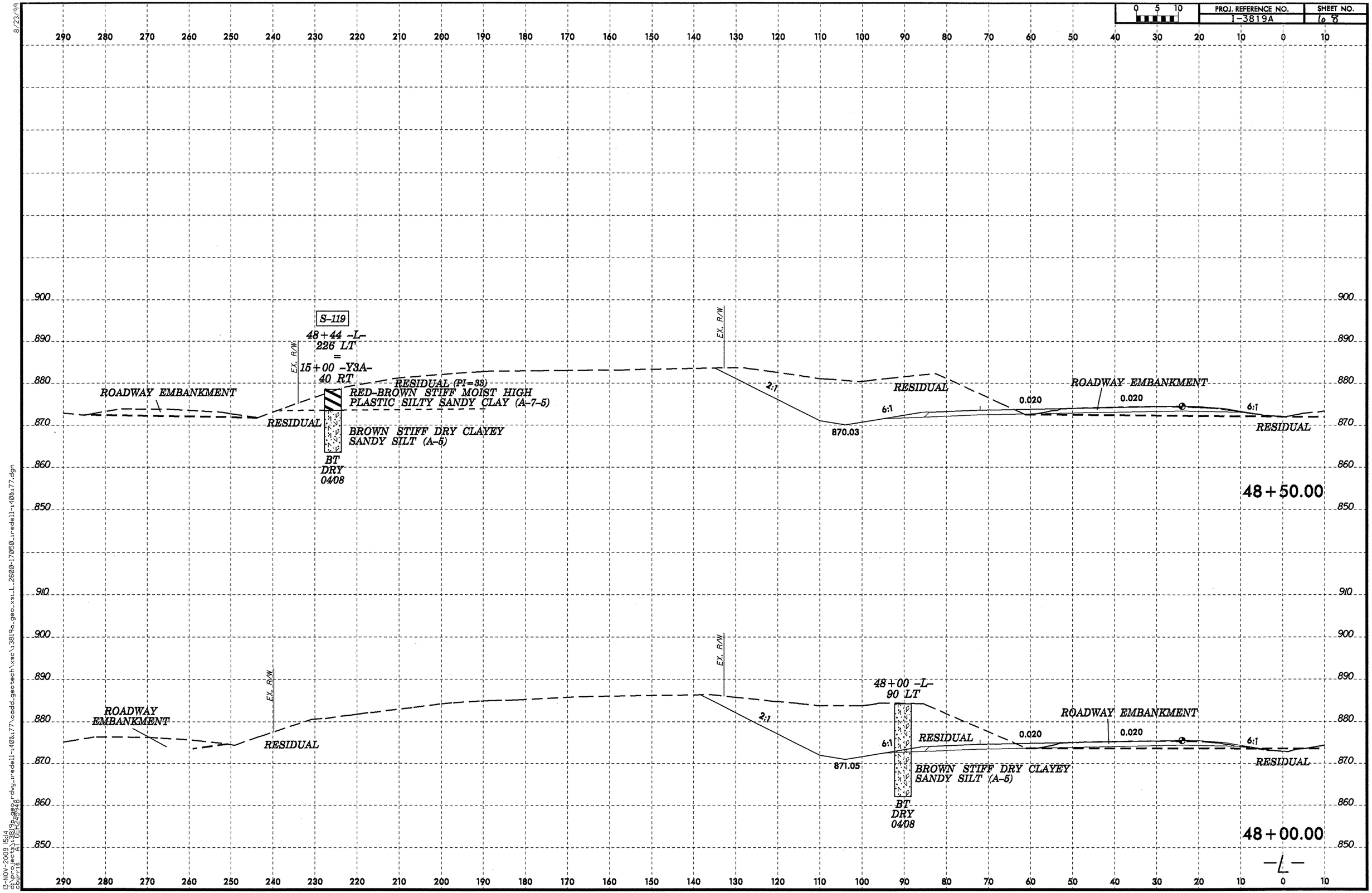
pburris A1 DETAILED

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	10



8/23/99

13-NOV-2009 15:14
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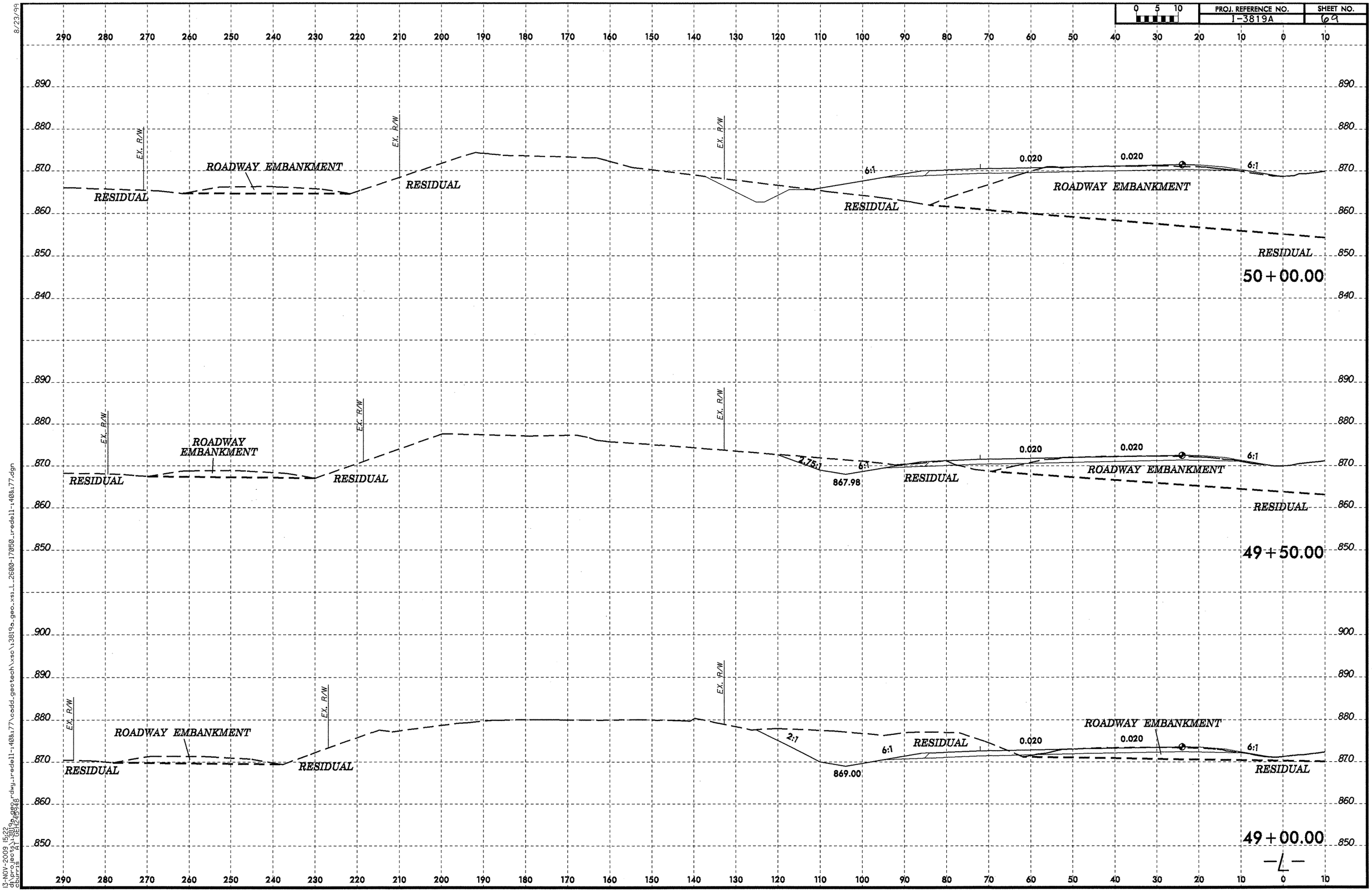
cburris AT GEE-CS-16



13-NOV-2009 15:22
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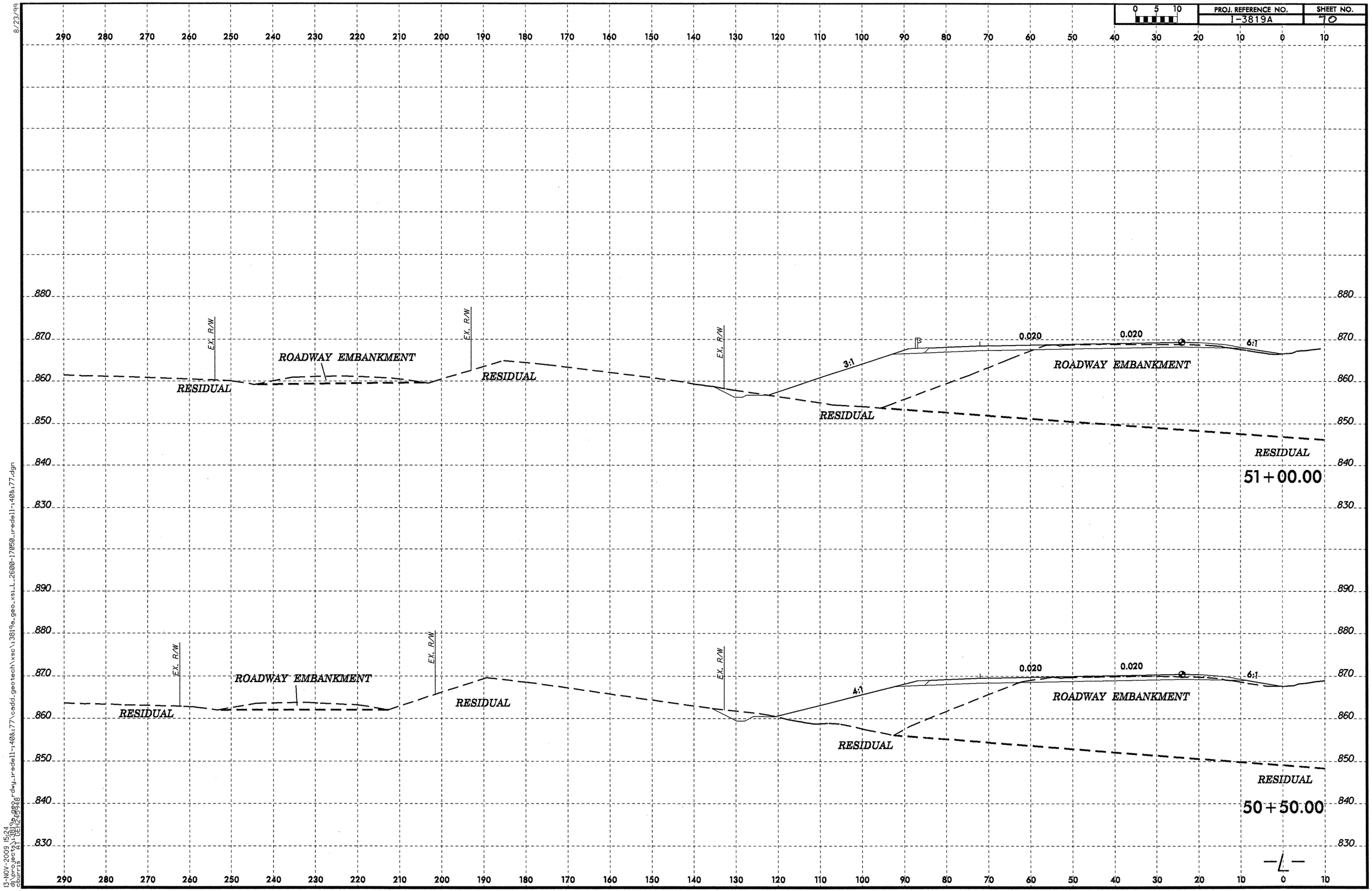
cburrs
A1 0E1.2 9948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	70



8/23/99
13-NOV-2009 15:24
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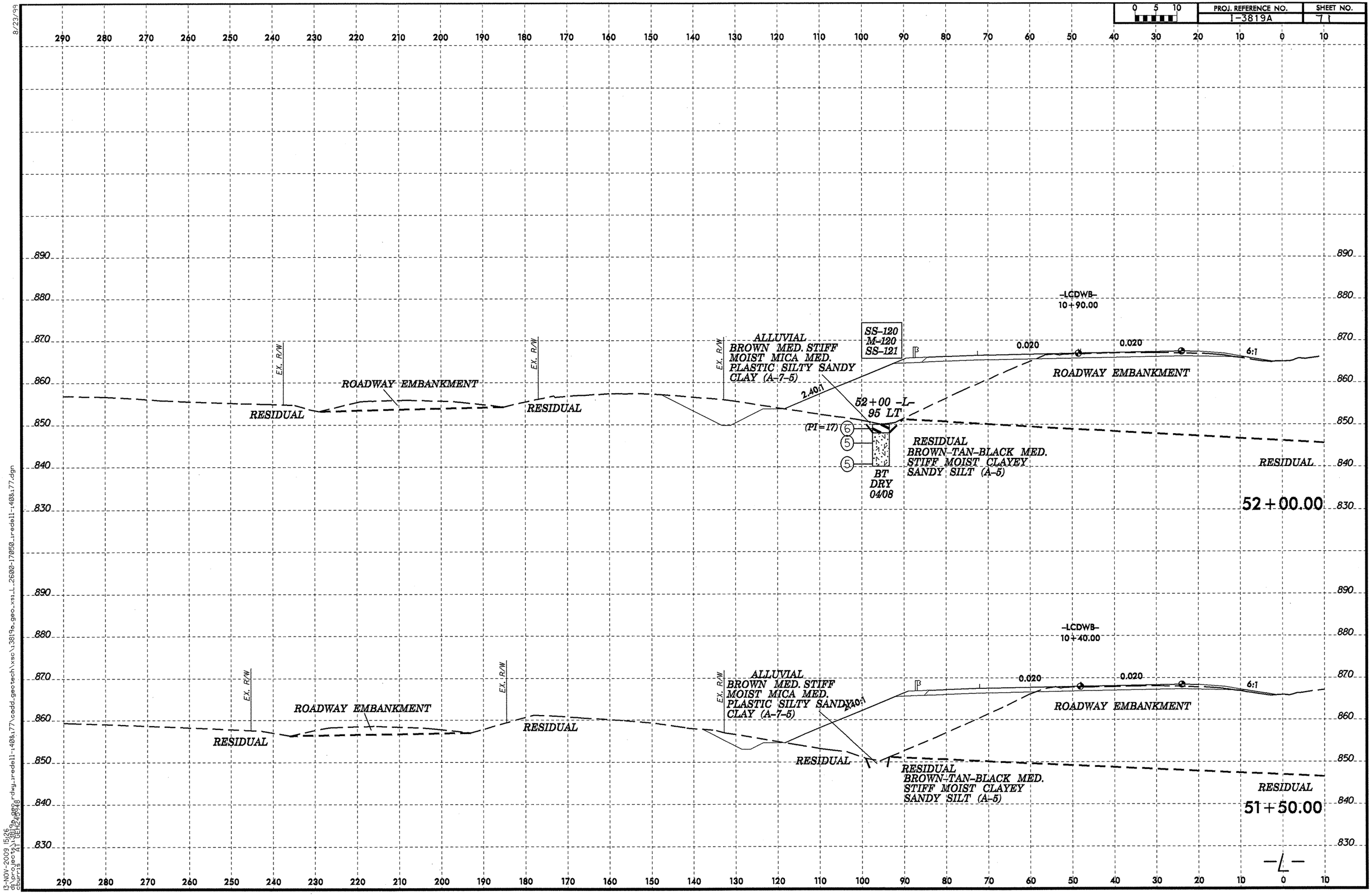
courtsa



8/23/99
13-NOV-2009 15:26
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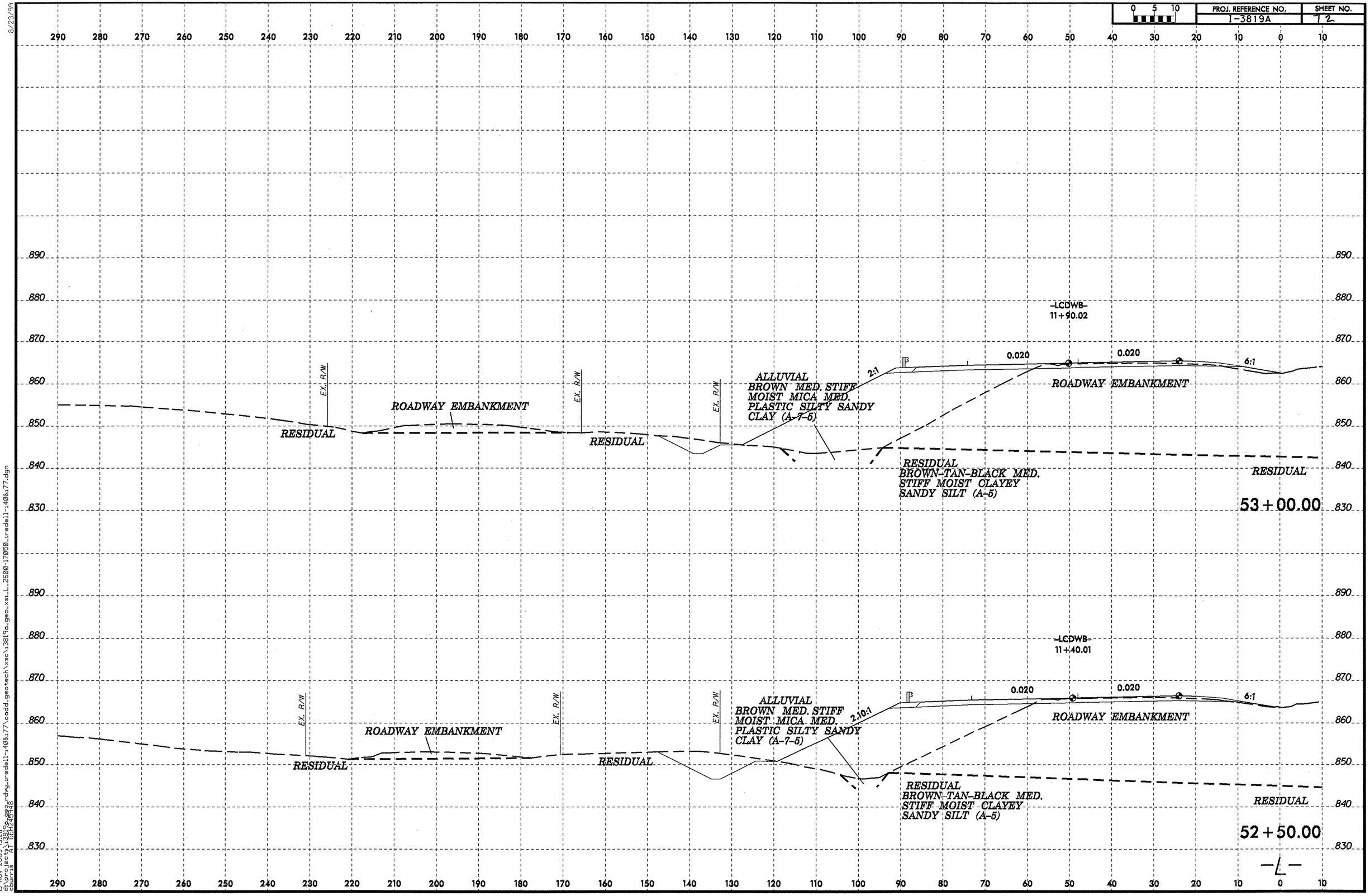
cburris AT DEH2-9348

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	12



8/23/99

13-NOV-2009 15:28
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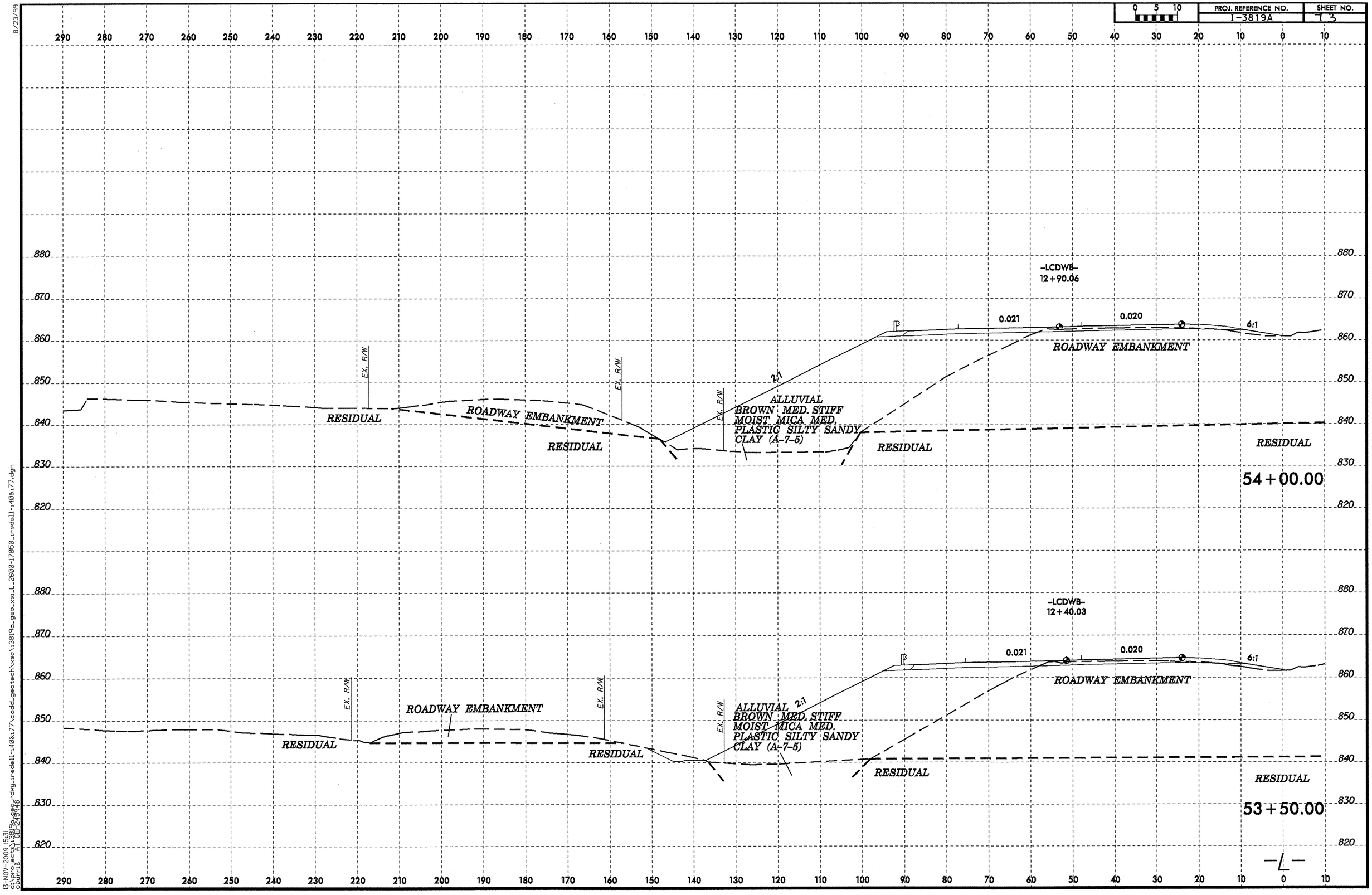
chpriag A DEL2694



8/23/99

13-NOV-2009 15:31
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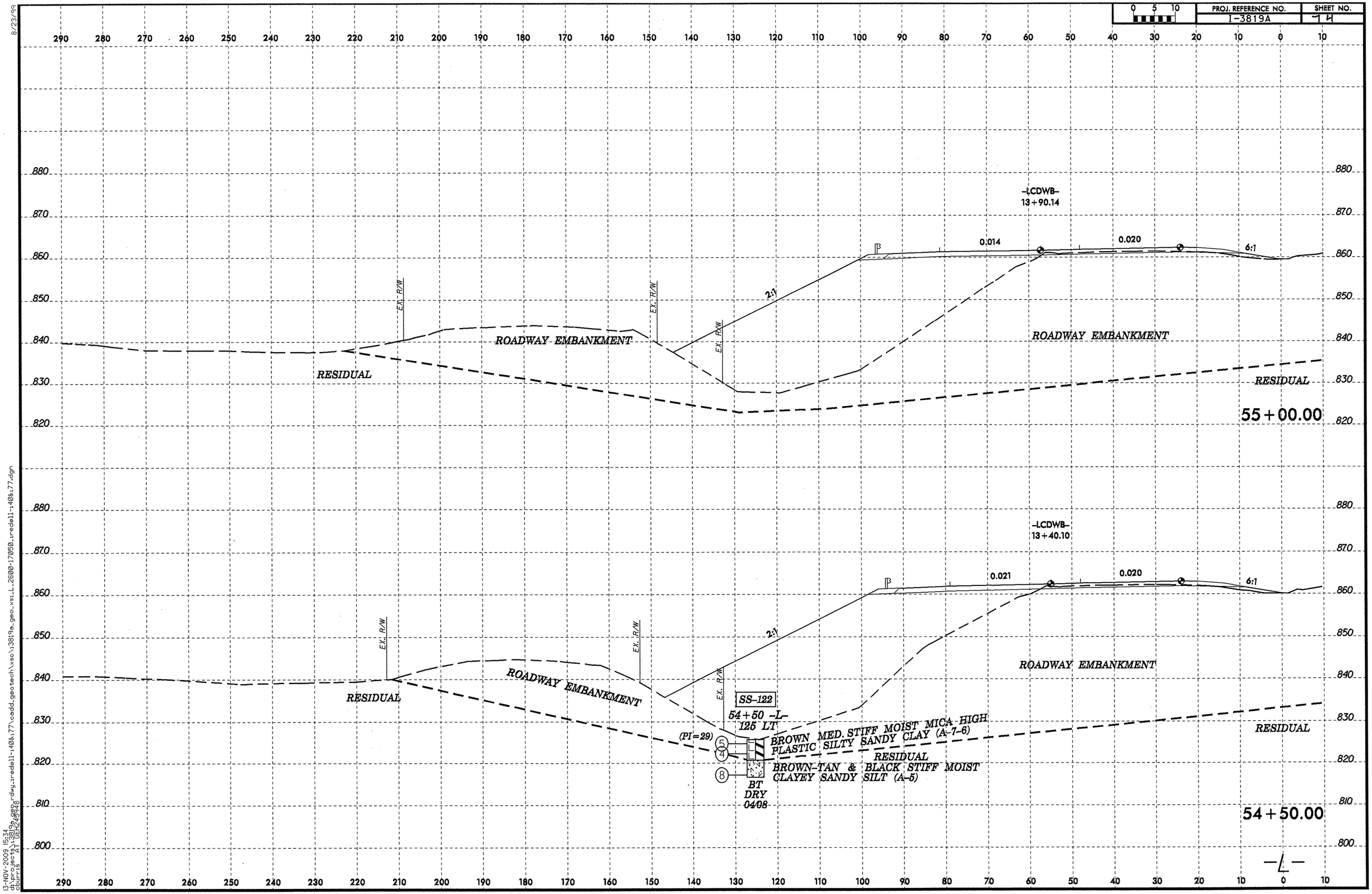
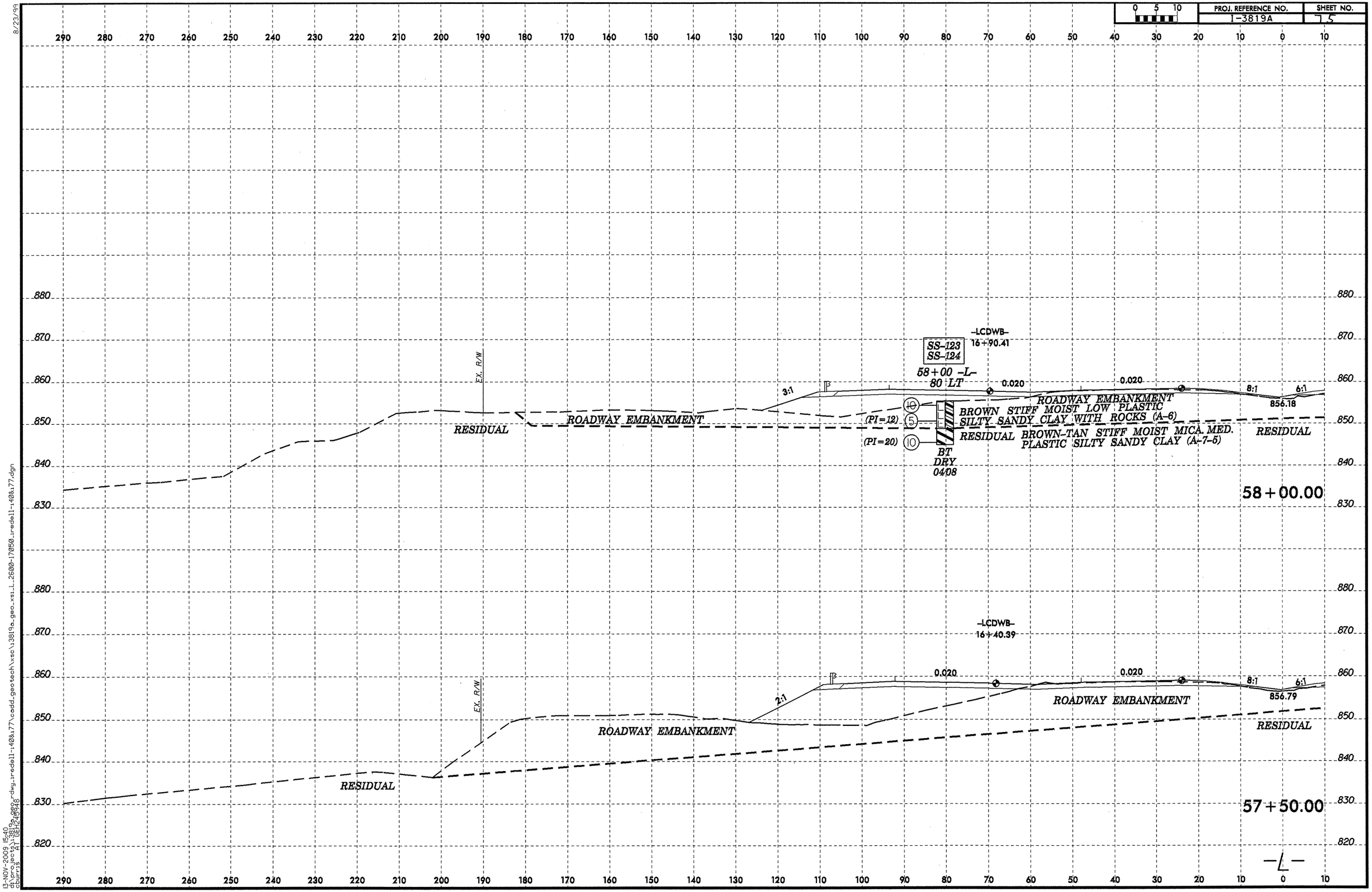
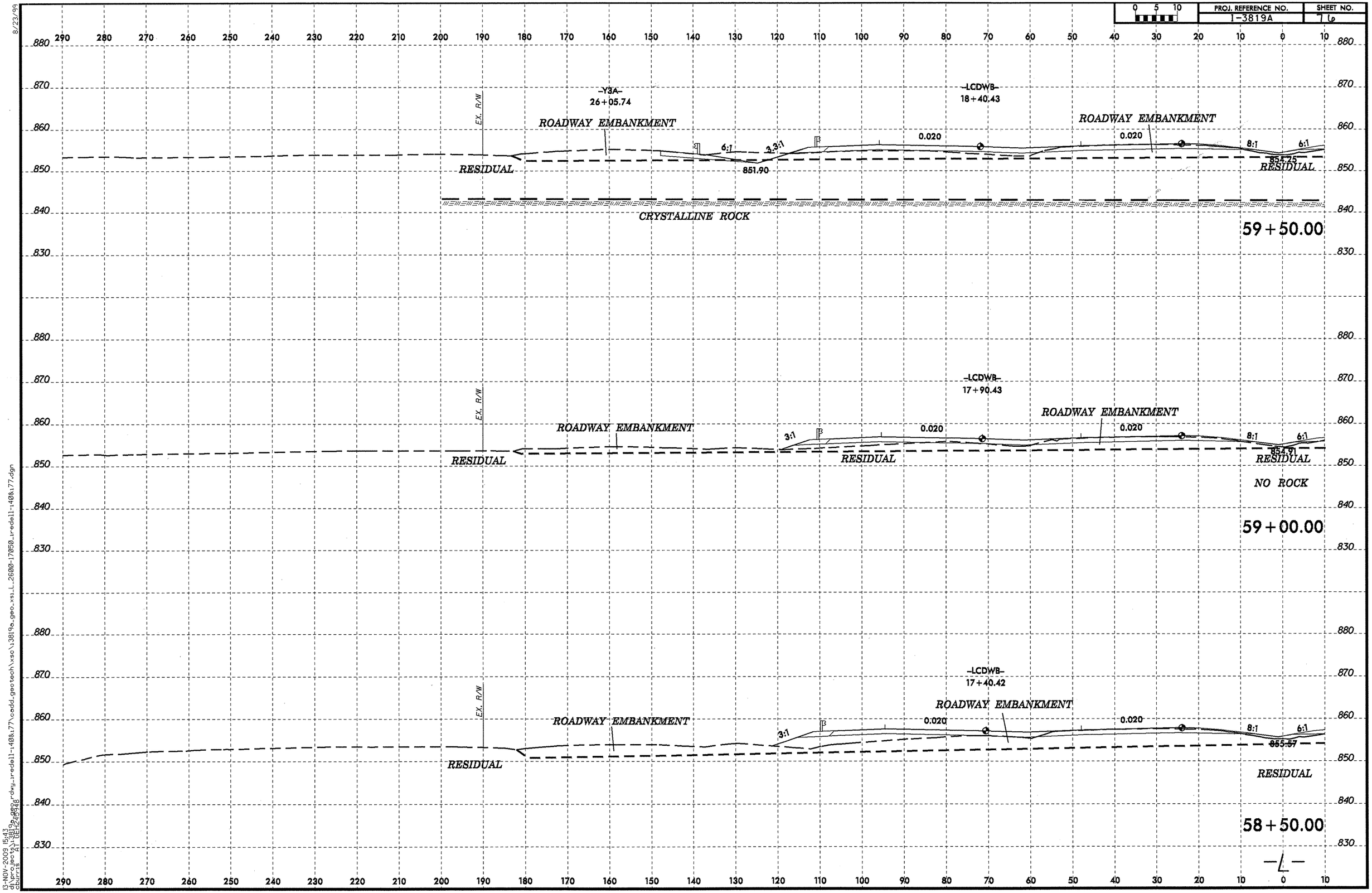
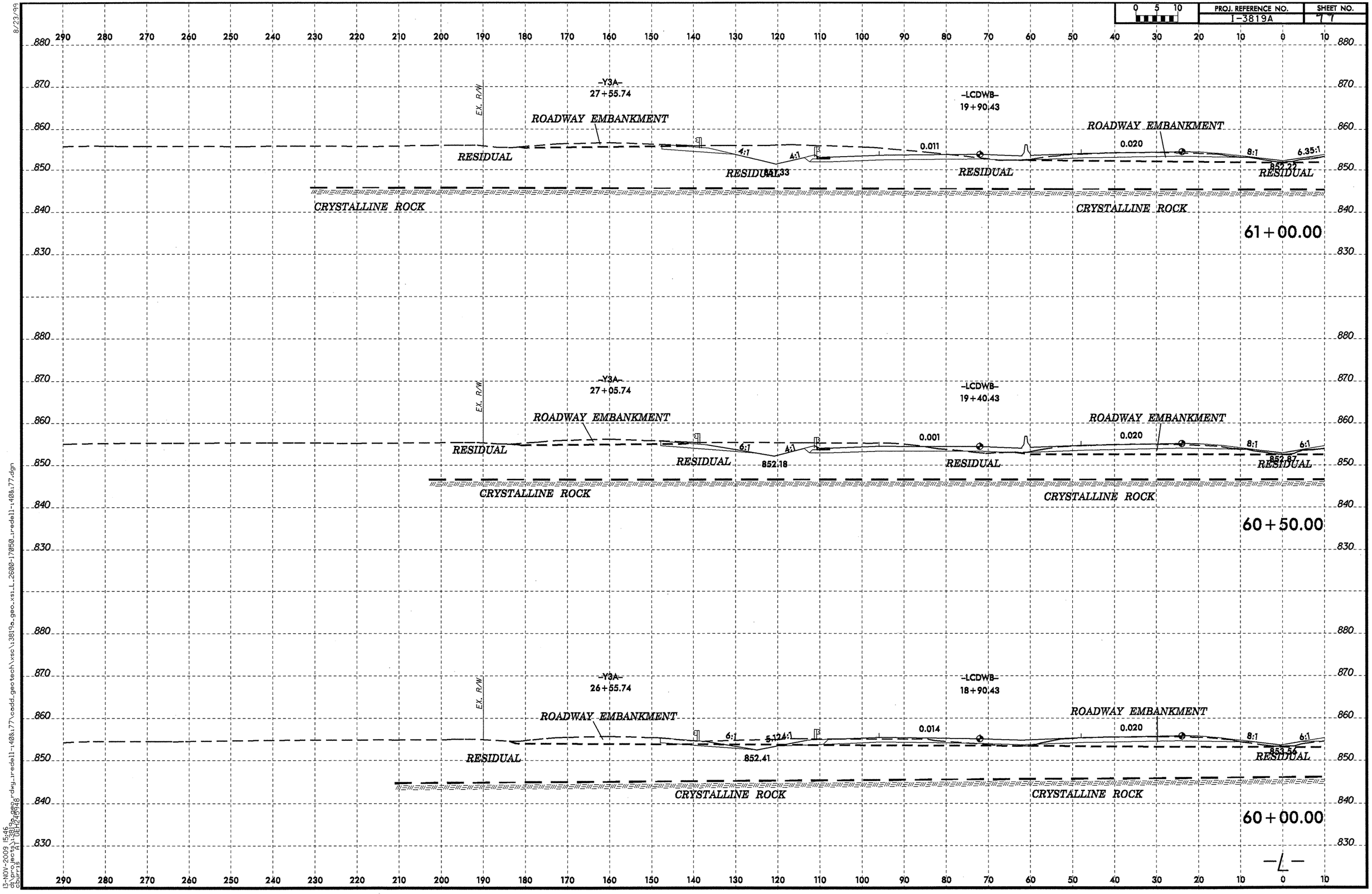
Bureau


PROJ. REFERENCE NO.
1-3819A
SHEET NO.
74
0 5 10
-LCDWB-
13+90.14
0.014
0.020
6:1
2:1
EX. R/W
ROADWAY EMBANKMENT
RESIDUAL
55+00.00
-LCDWB-
13+40.10
0.021
0.020
6:1
2:1
EX. R/W
ROADWAY EMBANKMENT
RESIDUAL
SS-122
54+50 -L-
125 LT
(PI=29)
BROWN MED. STIFF MOIST MICA HIGH PLASTIC SILTY SANDY CLAY (A-7-6)
RESIDUAL
BROWN-TAN & BLACK STIFF MOIST CLAYEY SANDY SILT (A-5)
BT
DRY
04/08
54+50.00
-L-
8/23/99
13-NOV-2009 15:34
churris
c:\temp\1819a_geo.rdwy_iredell-140&177\cadd_geotech\xsc\3819a_geo_xs1_L_2600-17050_iredell-140&177.dgn
AT GEH249948


PROJ. REFERENCE NO.
I-3819A
SHEET NO.
L5
0 5 10
EX. R/W
RESIDUAL
ROADWAY EMBANKMENT
SS-123
SS-124
-LCDWB-
16+90.41
58+00 -L-
80 LT
0.020
3:1
8:1
6:1
856.18
(PI=12)
(PI=20)
BROWN STIFF MOIST LOW PLASTIC SILTY SANDY CLAY WITH ROCKS (A-6)
RESIDUAL BROWN-TAN STIFF MOIST MICA. MED. PLASTIC SILTY SANDY CLAY (A-7-5)
BT
DRY
0408
58+00.00
-LCDWB-
16+40.39
2:1
856.79
57+50.00
-L-
13-NOV-2009 15:40
ch_project_1\3819a_geo.dgn
dwg_iredell-140&177\cadd_geotech\xsc\3819a_geo_xsl_2600-17050_iredell-140&177.dgn
courtsg
ALL DETAILS ON


PROJ. REFERENCE NO.
I-3819A
SHEET NO.
7 L
0 5 10
-Y3A-
26+05.74
EX. R/W
ROADWAY EMBANKMENT
6:1
3:1
851.90
RESIDUAL
CRYSTALLINE ROCK
-LCDWB-
18+40.43
0.020
ROADWAY EMBANKMENT
8:1
6:1
854.25
RESIDUAL
59+50.00
-LCDWB-
17+90.43
EX. R/W
ROADWAY EMBANKMENT
3:1
0.020
RESIDUAL
ROADWAY EMBANKMENT
0.020
8:1
6:1
854.91
RESIDUAL
NO ROCK
59+00.00
-LCDWB-
17+40.42
EX. R/W
ROADWAY EMBANKMENT
3:1
0.020
ROADWAY EMBANKMENT
0.020
8:1
6:1
855.57
RESIDUAL
RESIDUAL
58+50.00
-L-
8/23/99
13-NOV-2009 15:43
dh:\projects\3819a_geo_rdwy_rredell-140&177\cadd_geotech\xsc\13819a_geo_xs_L_2600-17050_rredell-140&177.dgn



8/23/99

13-NOV-2009 15:46
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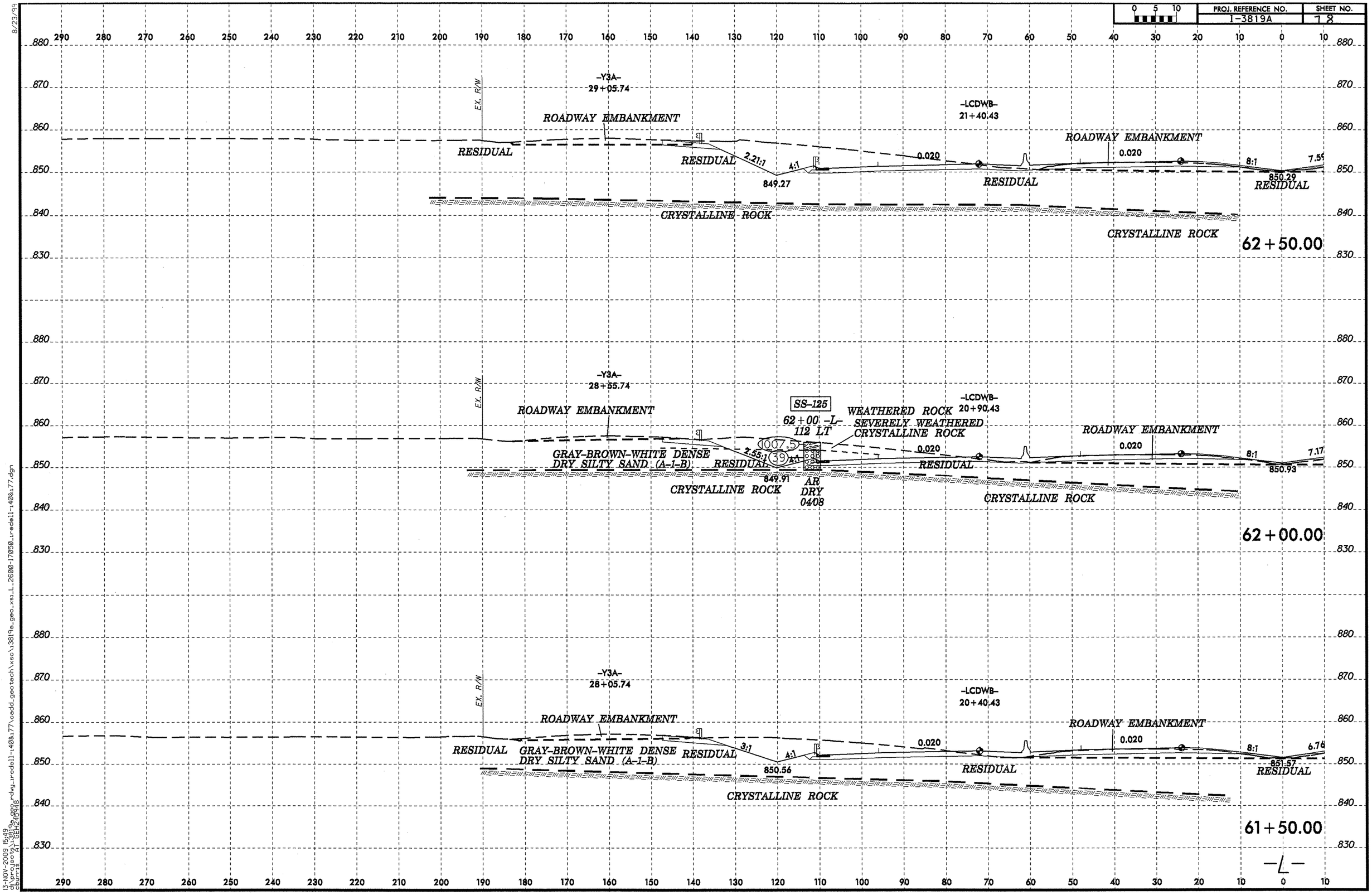
dgnrs: All DETAILS



8/23/99

13-NOV-2009 15:49
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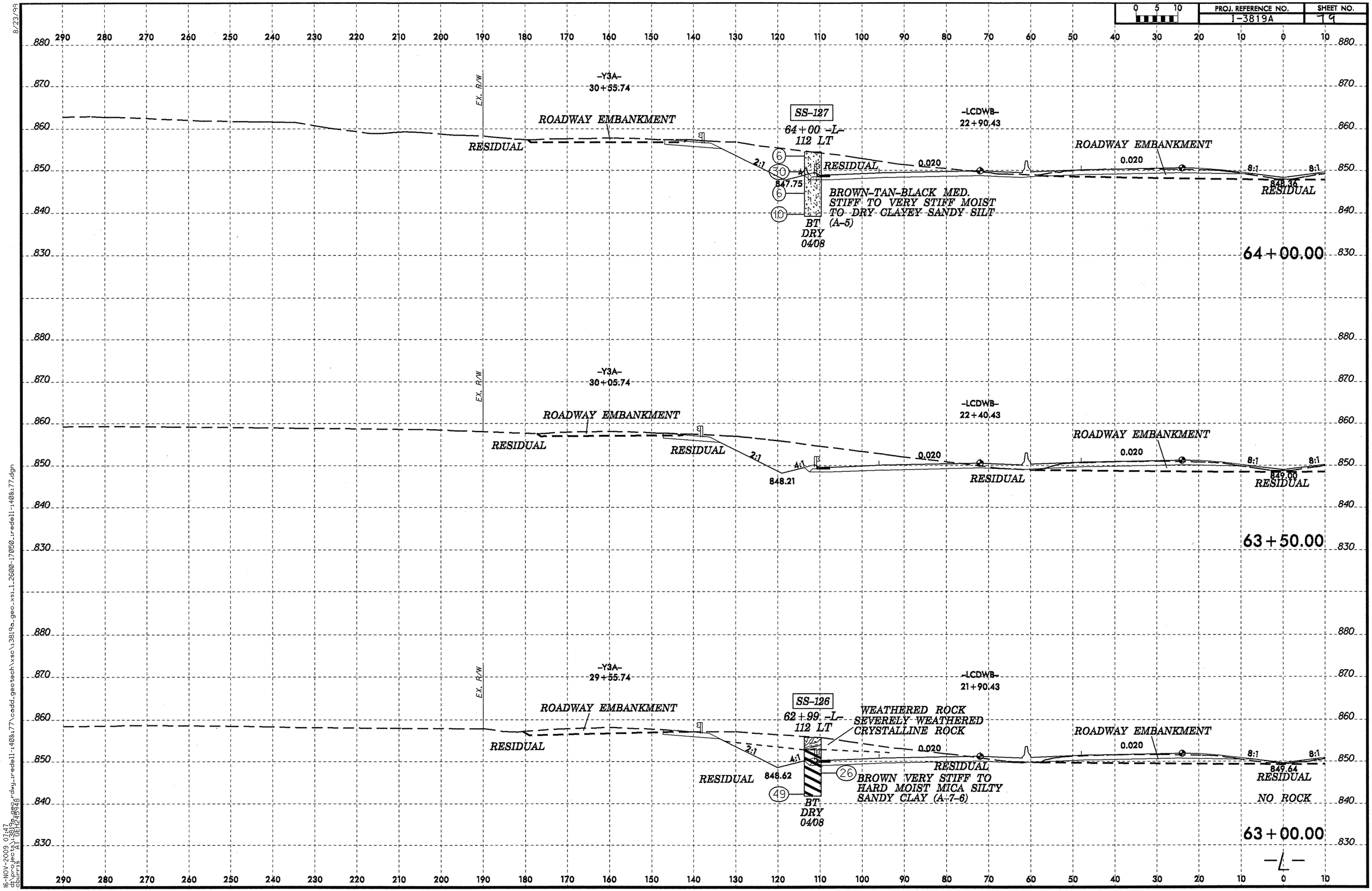
bburris AT DEL2038



8/23/99
16-NOV-2009 07:47
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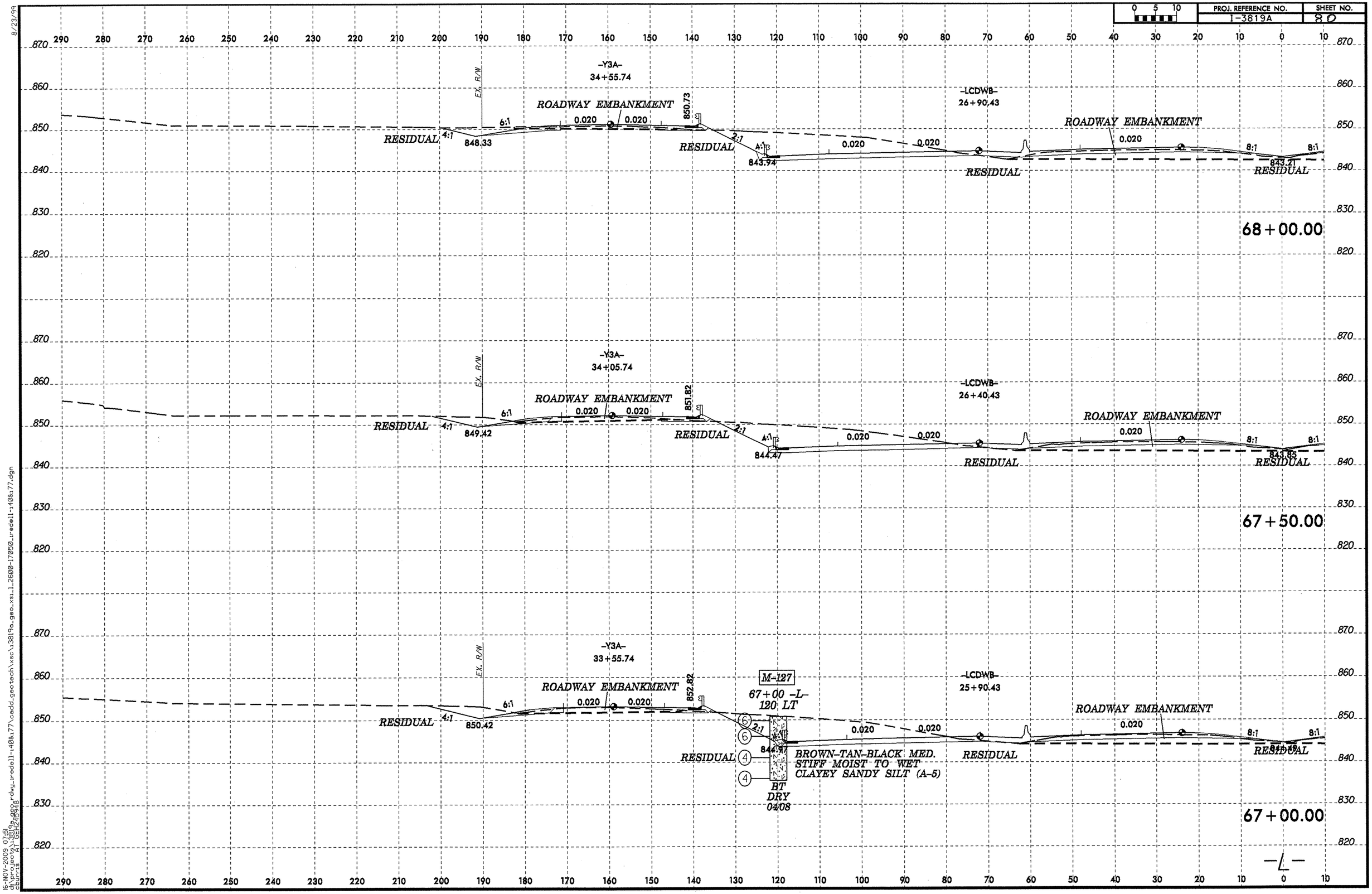
cburris
A1 GEL24 8.48



8/23/99
16-NOV-2009 07:51
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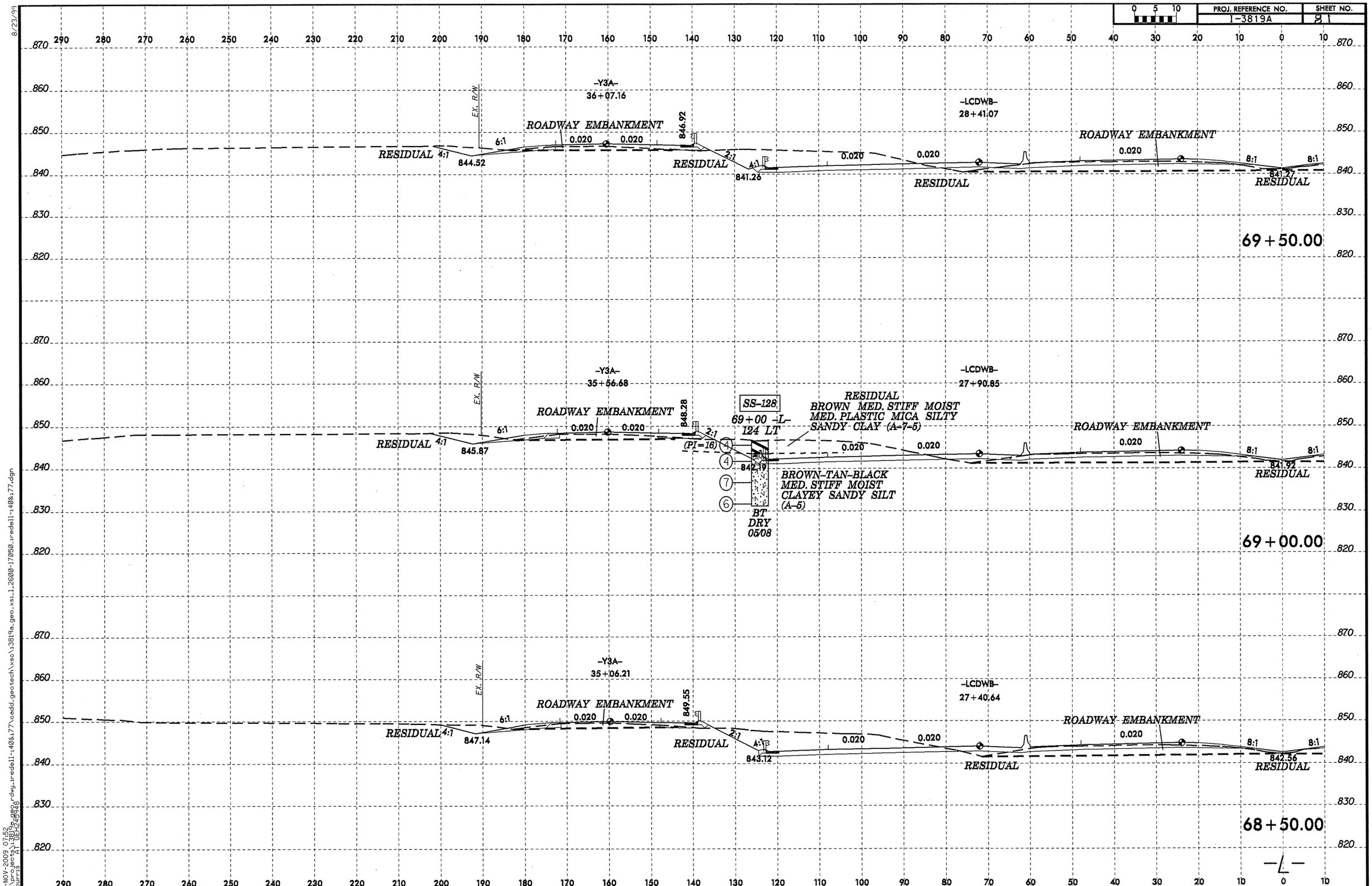
cburris



8/23/99

16-NOV-2009 07:52
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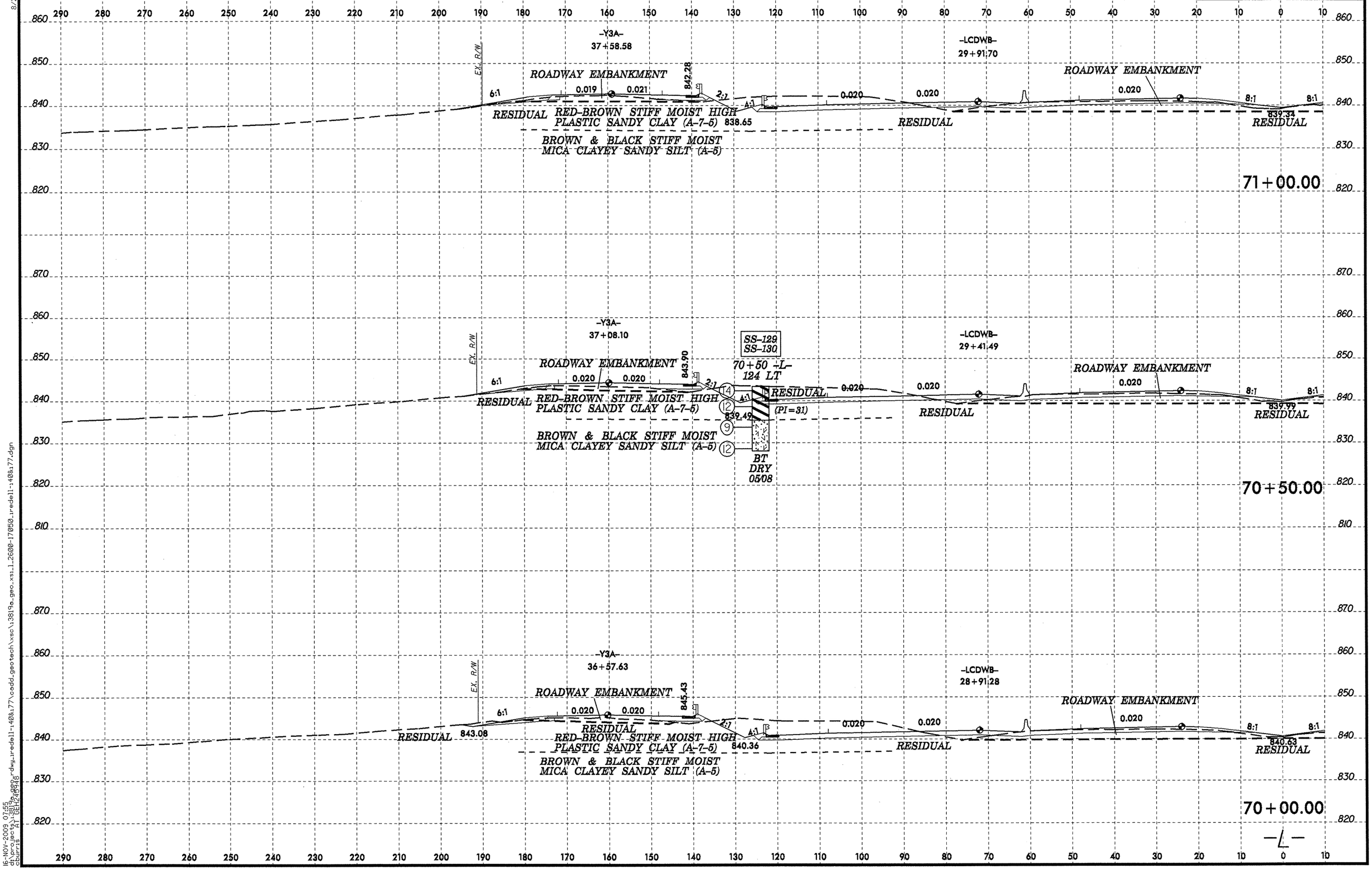
dburris AT DEHZ5348



8/23/99
16-NOV-2009 07:55
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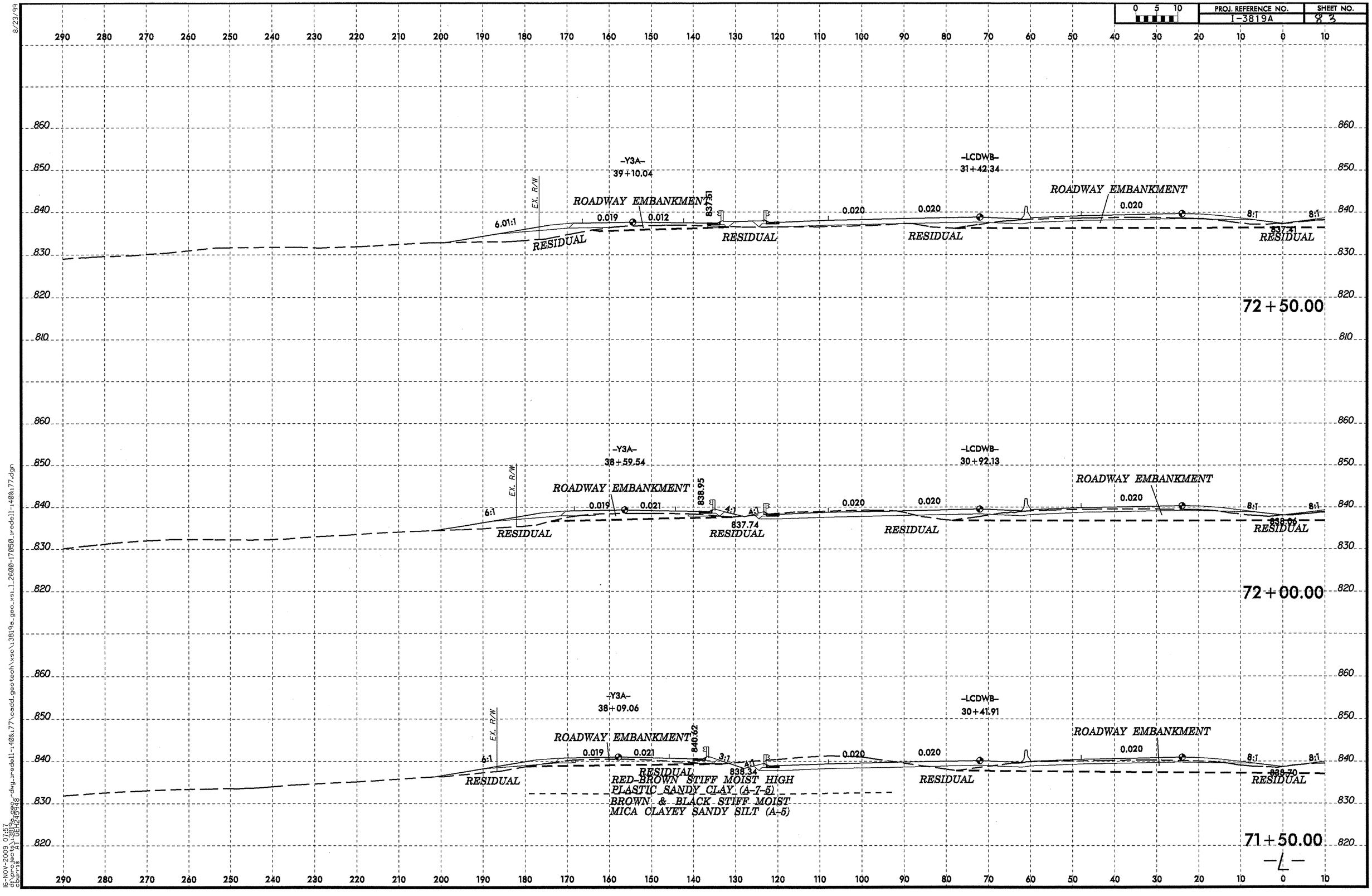
courtsj A DELTA 3.0



8/23/99
16-NOV-2009 07:57
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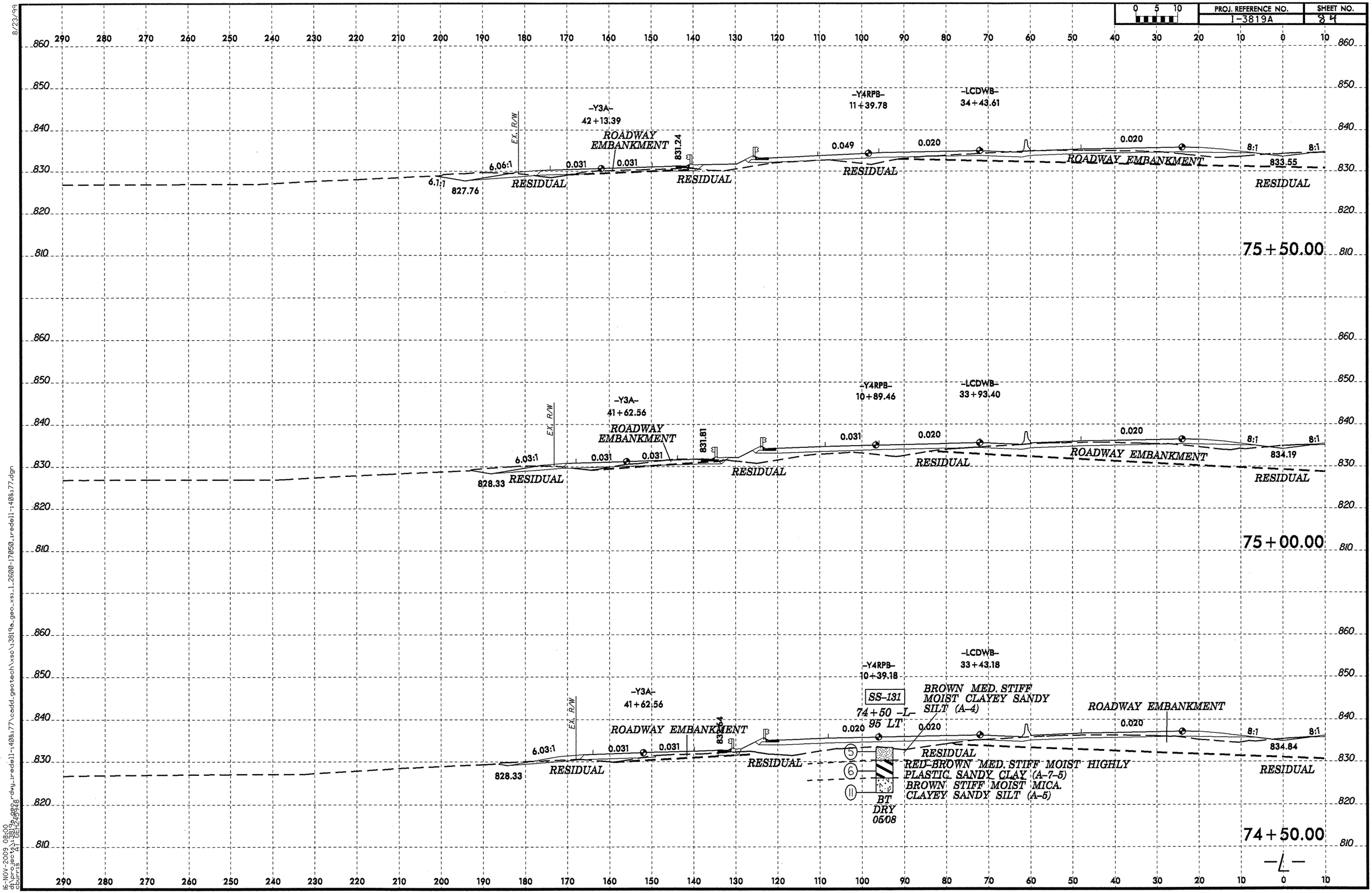

8/23/99
16-NOV-2009 08:00
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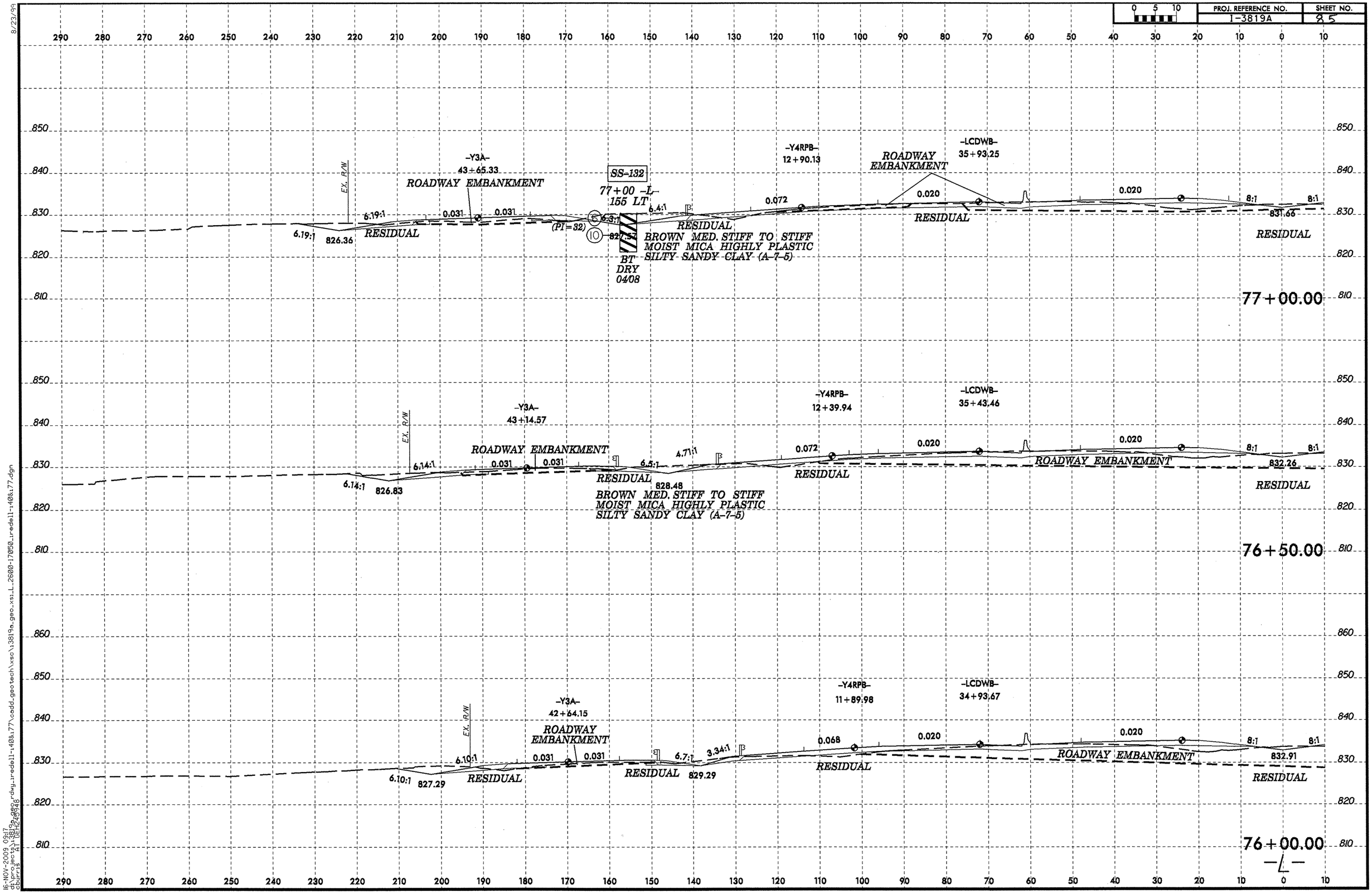

8/23/99
16-NOV-2009 09:17
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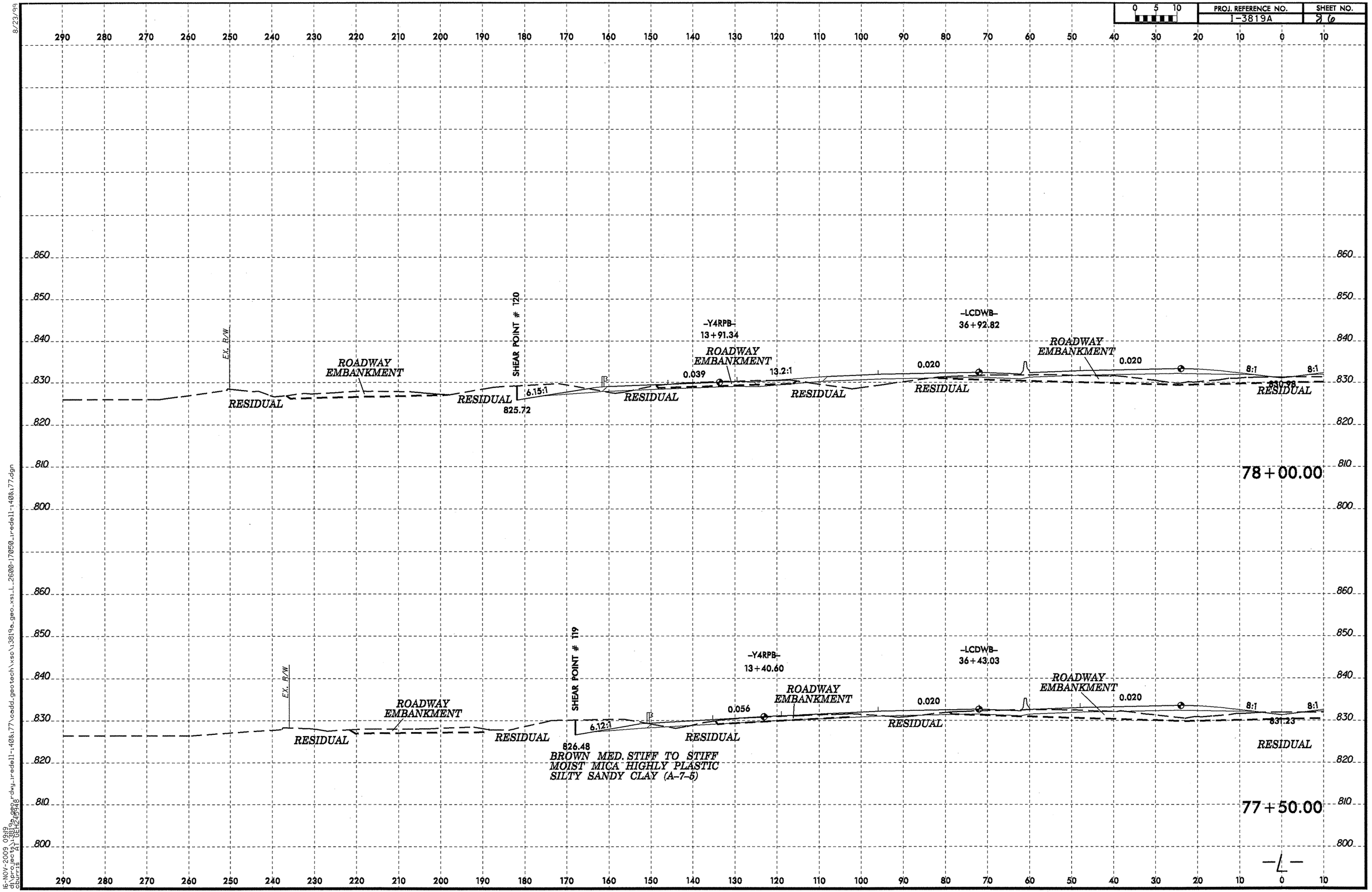

8/23/99

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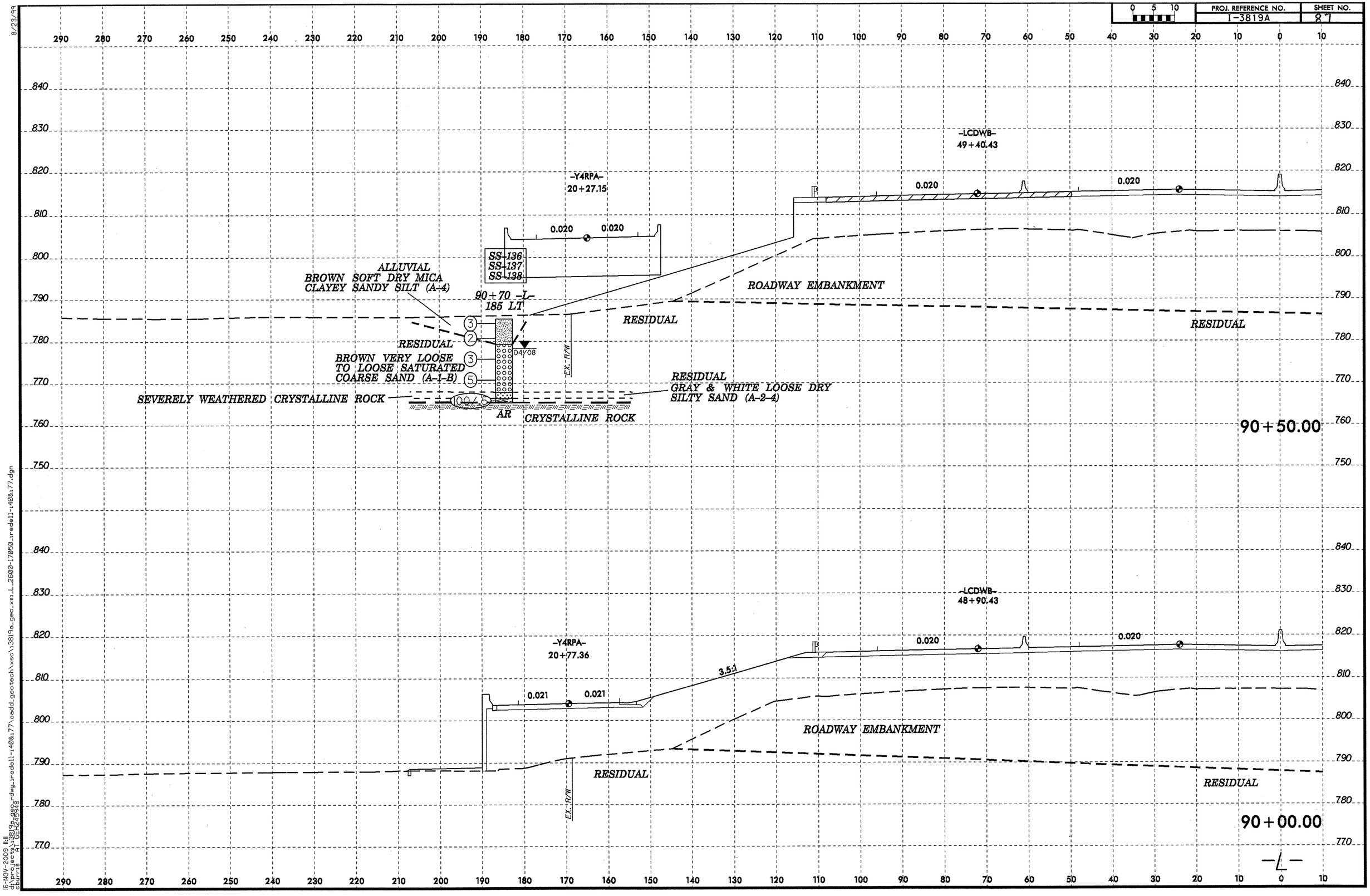

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16-NOV-2009 11:11
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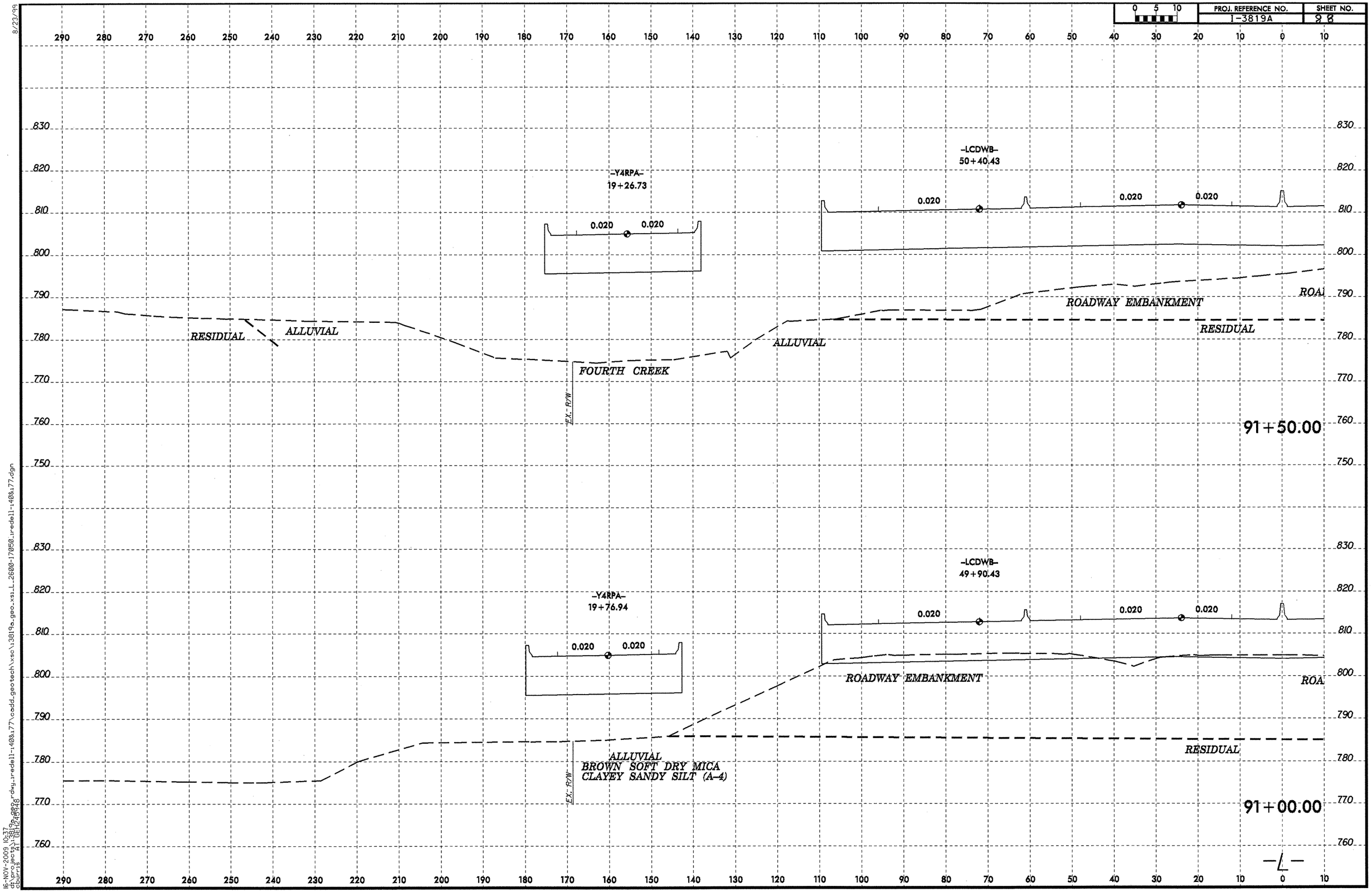
R1 DEF:4548



8/23/99

16-NOV-2009 10:37
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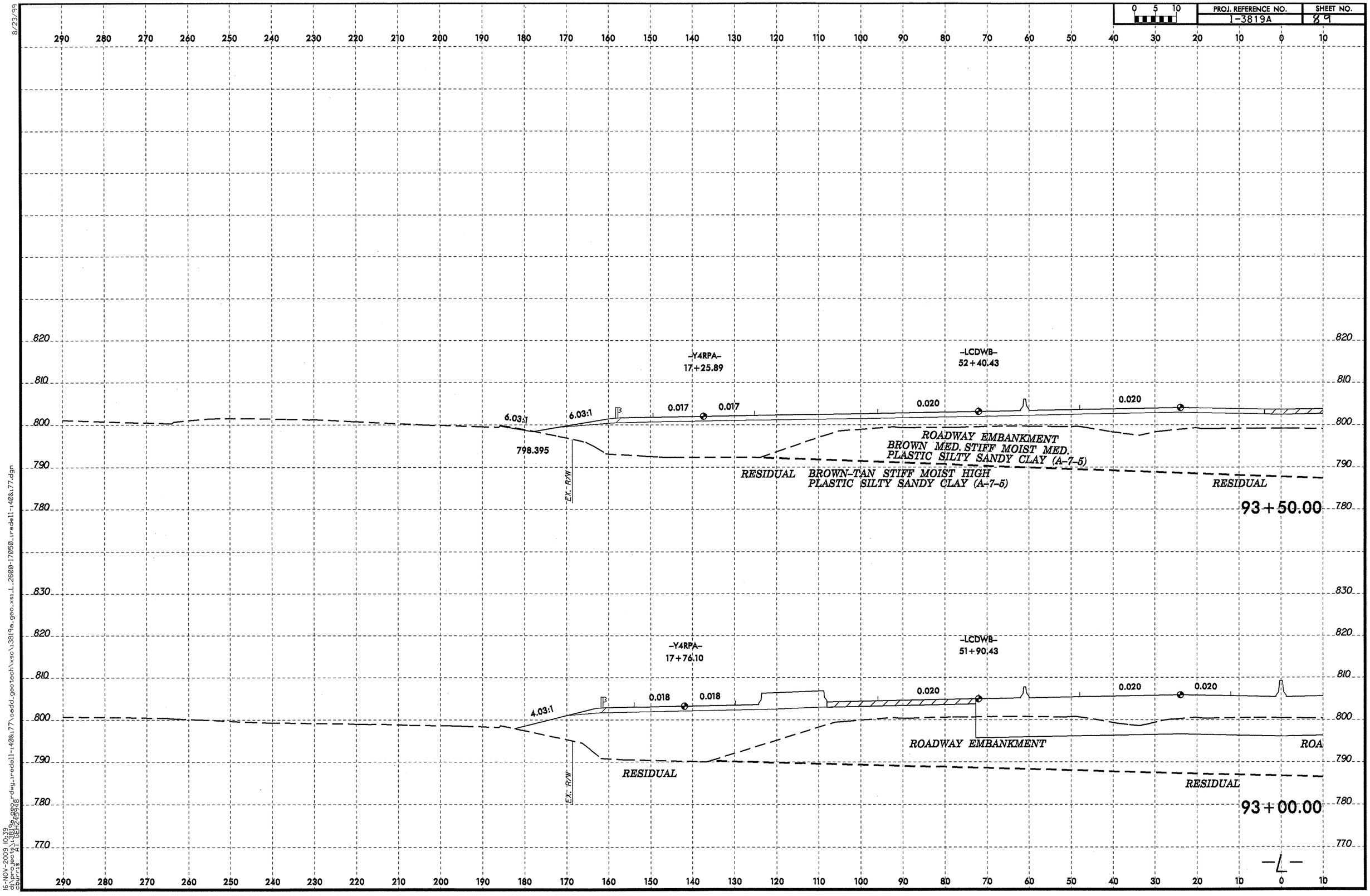
A1 BETA 10.18


PROJ. REFERENCE NO.
I-3819A
SHEET NO.
89
0 5 10
-Y4RPA-
17+25.89
-LCDWB-
52+40.43
6.03:1
6.03:1
0.017
0.017
0.020
0.020
798.395
EX. R/W
ROADWAY EMBANKMENT
BROWN MED. STIFF MOIST MED.
PLASTIC SILTY SANDY CLAY (A-7-5)
RESIDUAL BROWN-TAN STIFF MOIST HIGH
PLASTIC SILTY SANDY CLAY (A-7-5)
RESIDUAL
93+50.00
-Y4RPA-
17+76.10
-LCDWB-
51+90.43
4.03:1
0.018
0.018
0.020
0.020
0.020
EX. R/W
RESIDUAL
ROADWAY EMBANKMENT
ROA
RESIDUAL
93+00.00
-L-
8/23/99
16-NOV-2009 10:39
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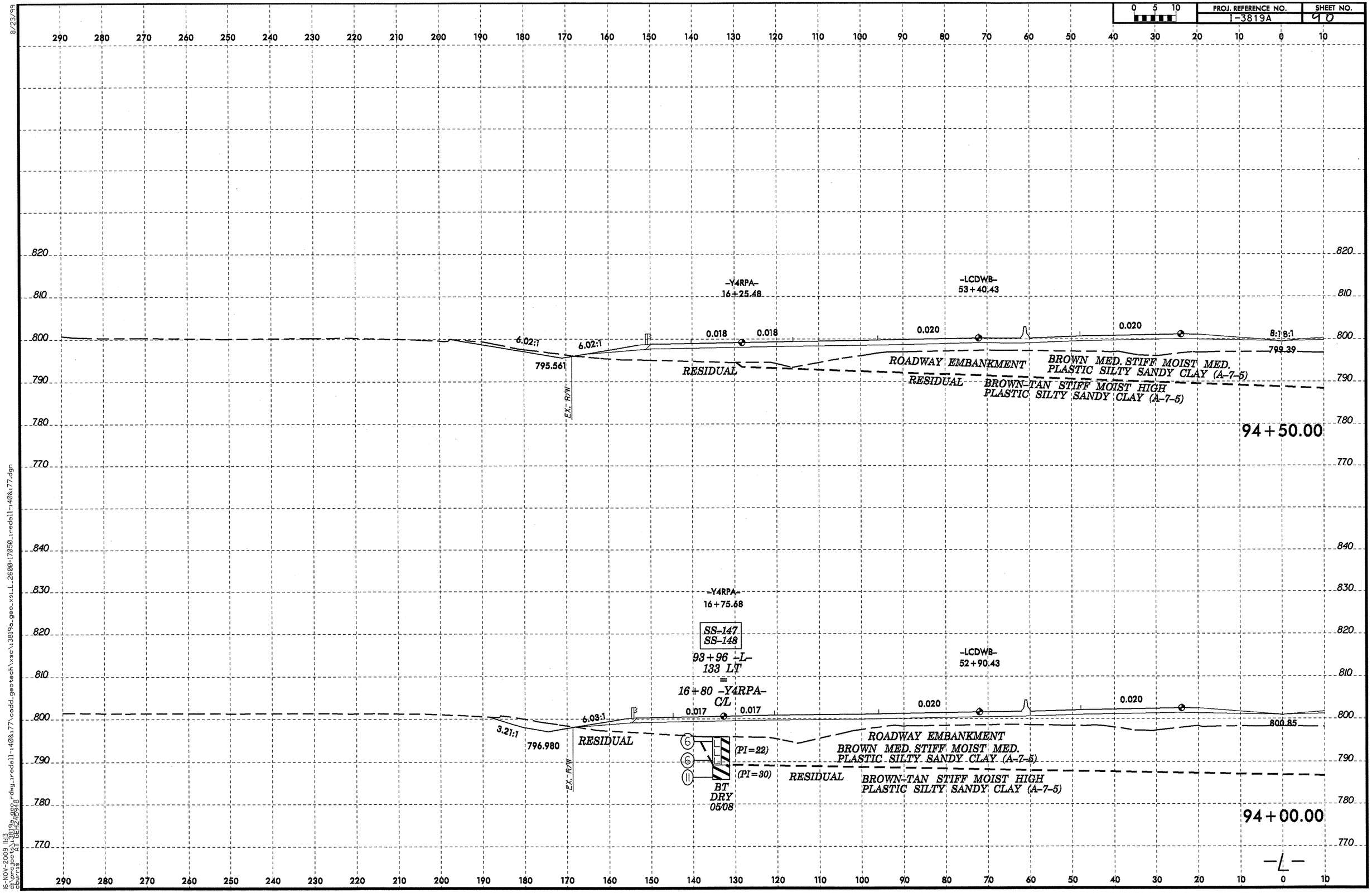
chrisg@AT GEH24948



8/23/99
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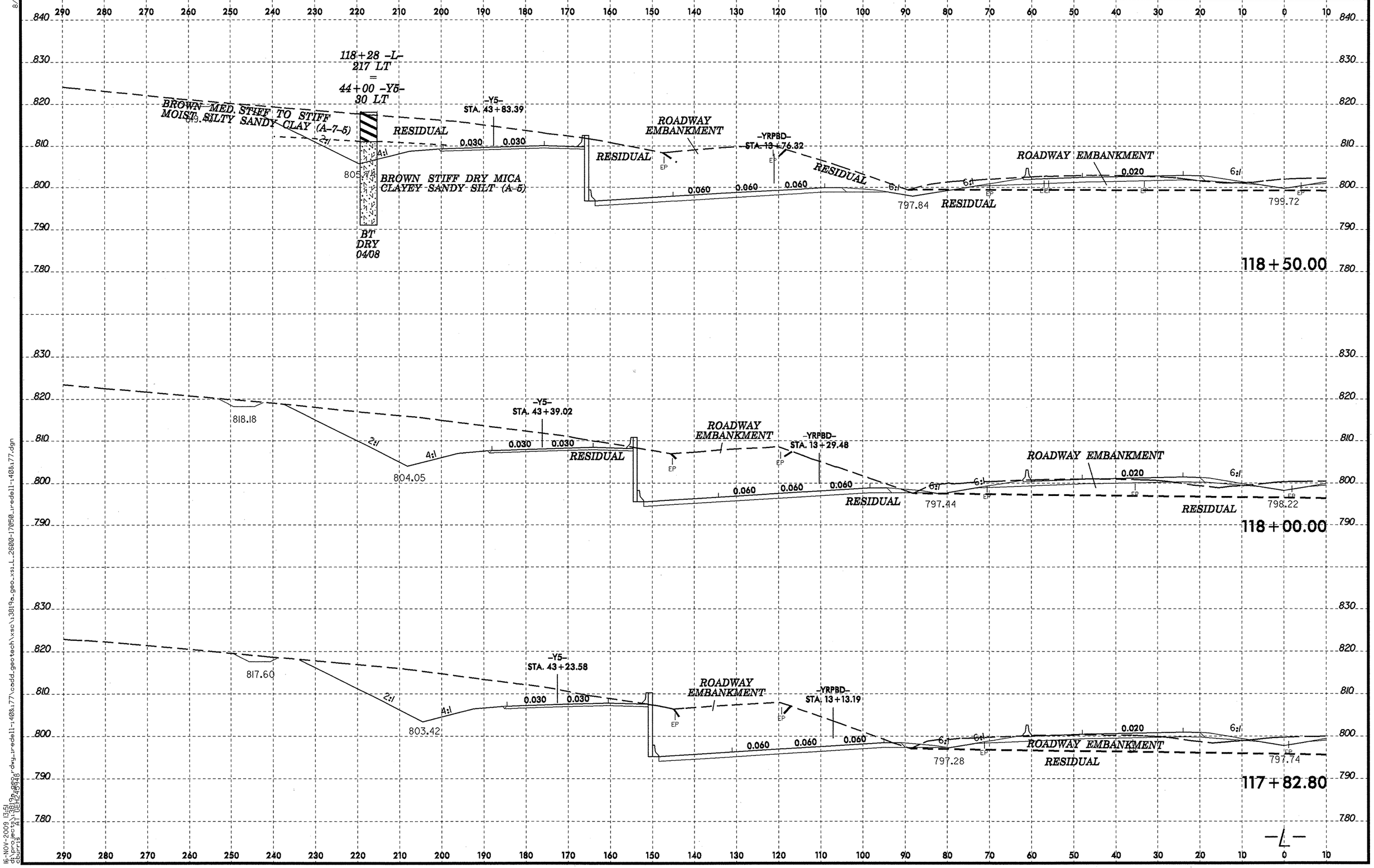

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16-NOV-2009 13:51
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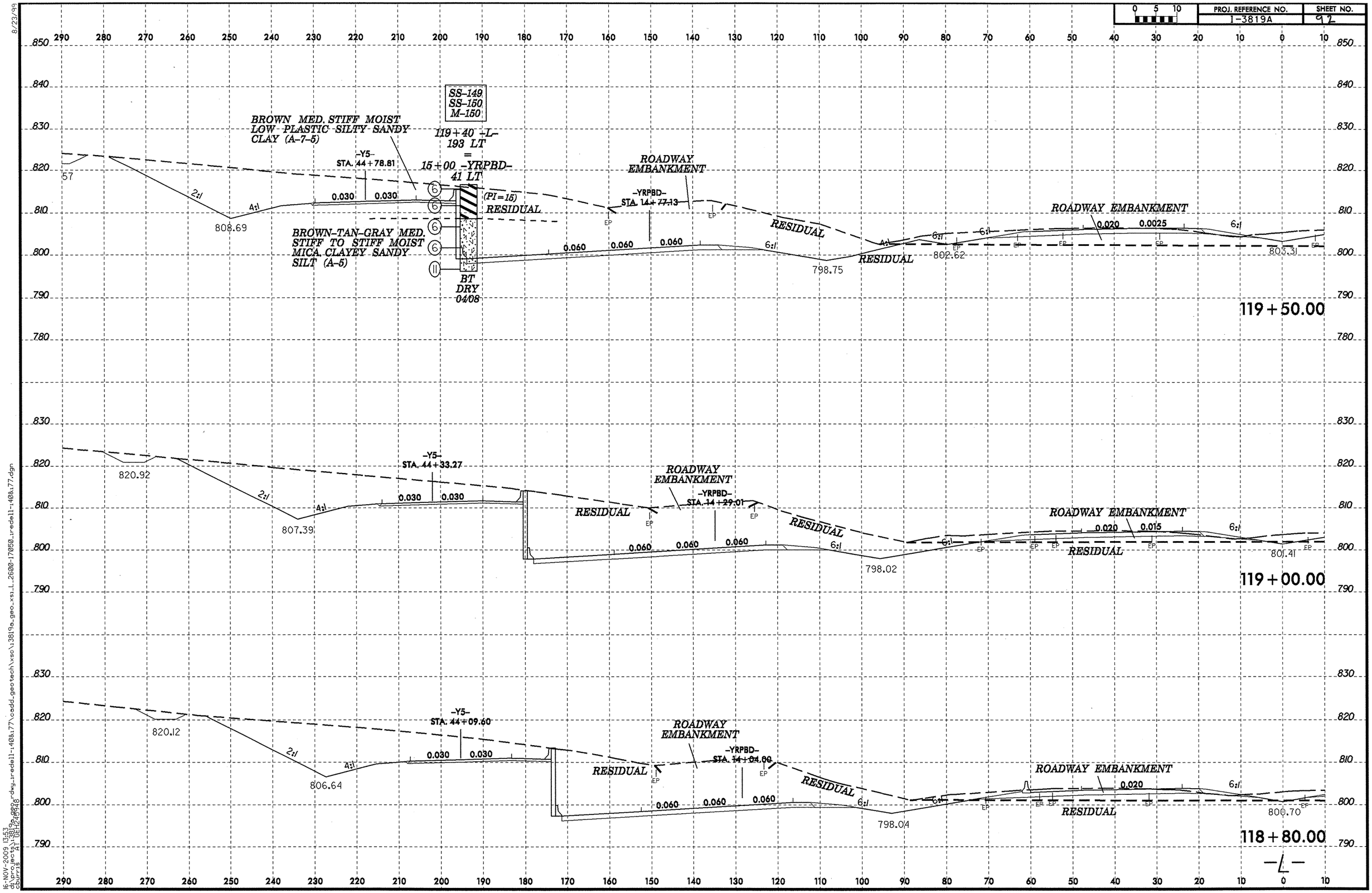

8/23/99

16-NOV-2009 13:53
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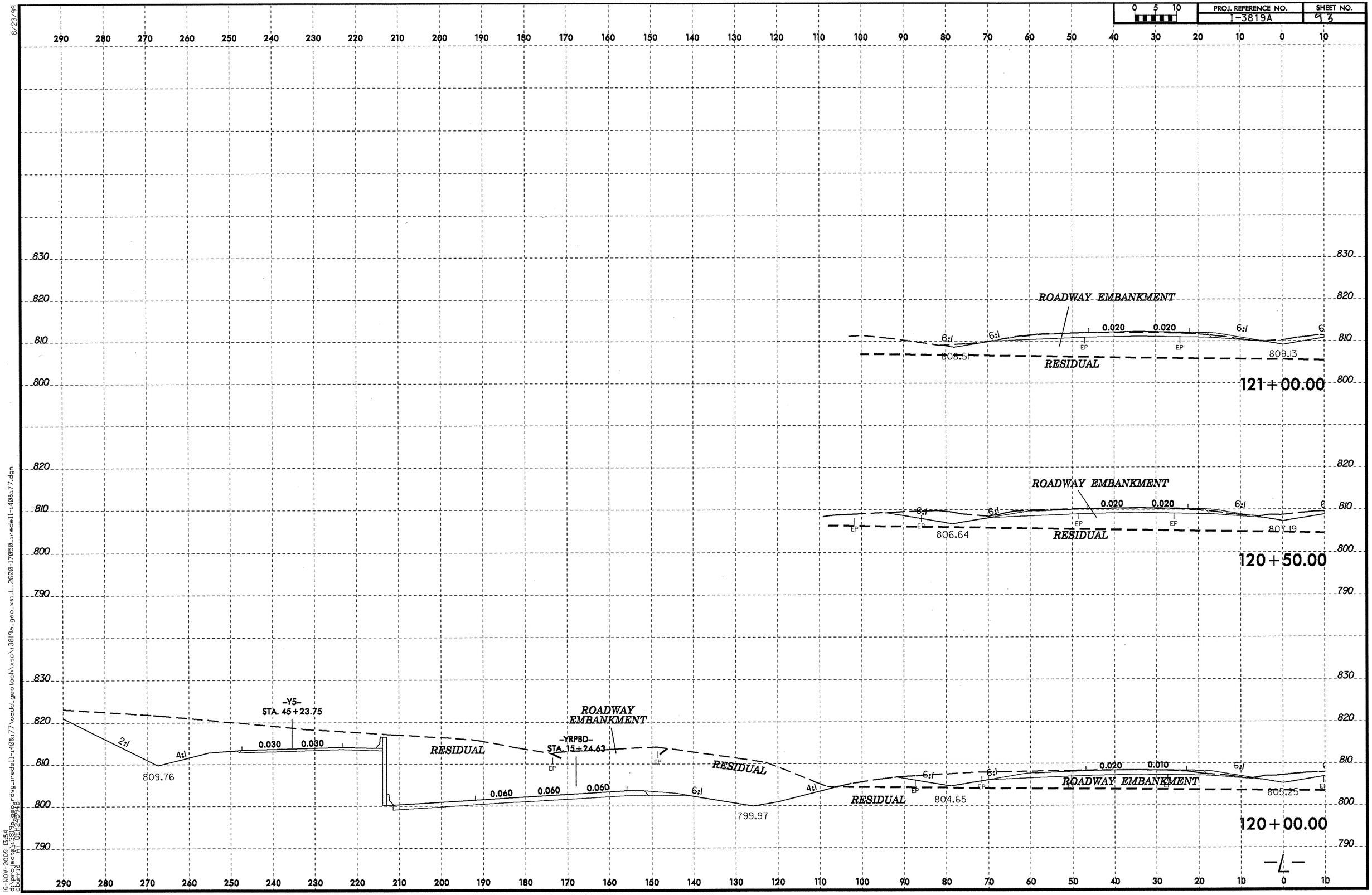

8/23/99

16-NOV-2009 13:54
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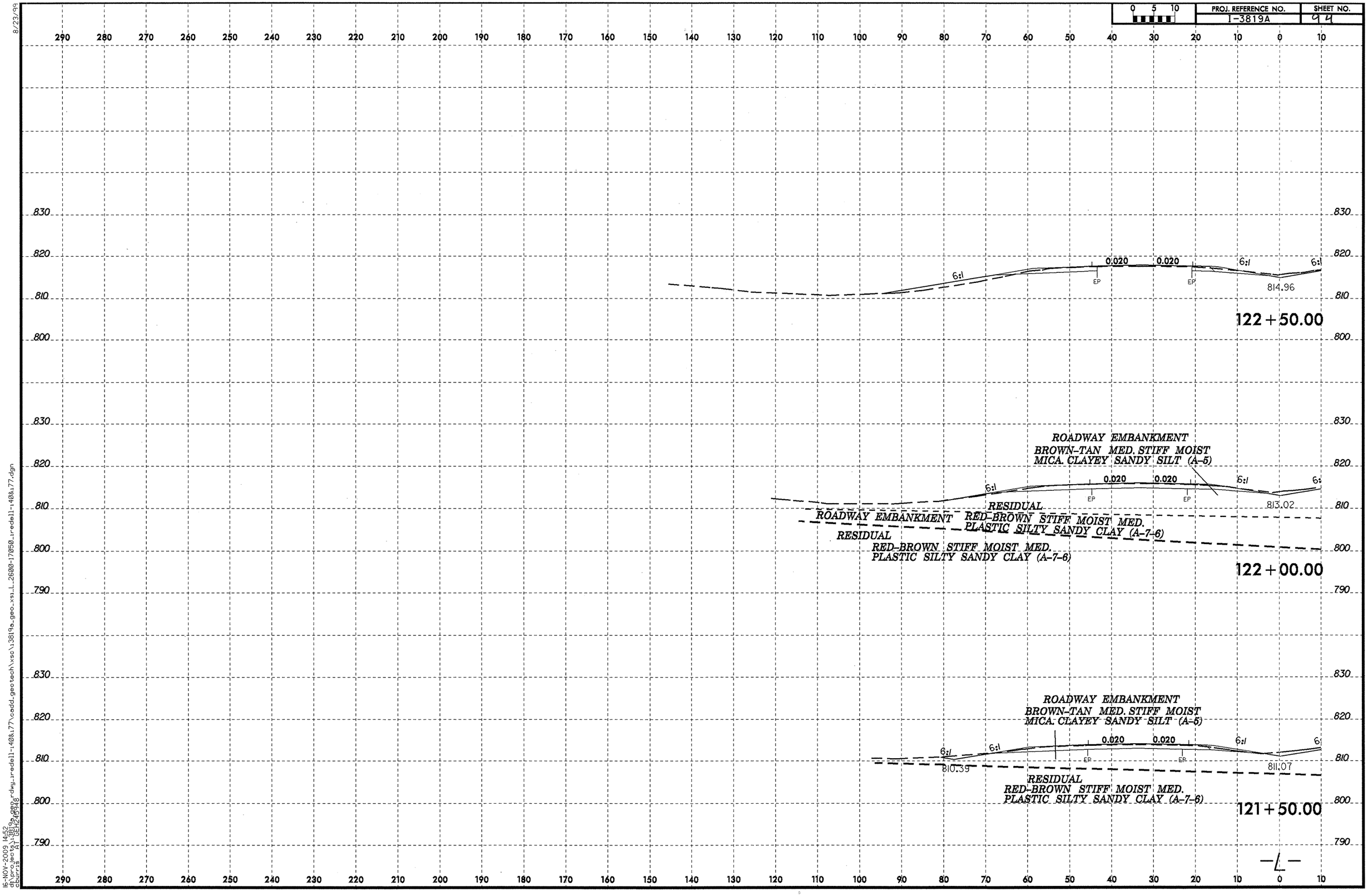

8/23/99
16-NOV-2009 14:52
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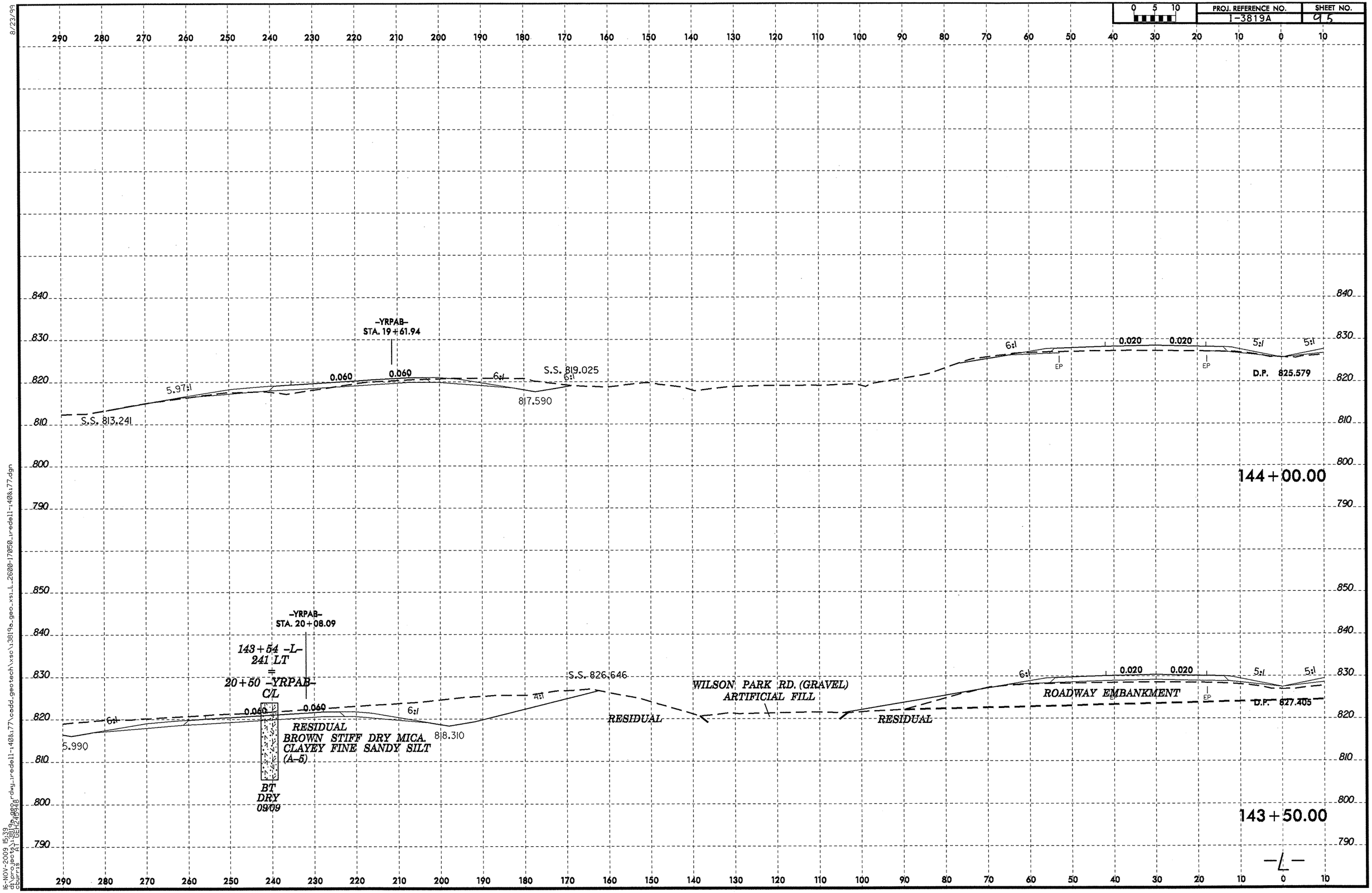

8/23/99
16-NOV-2009 15:39
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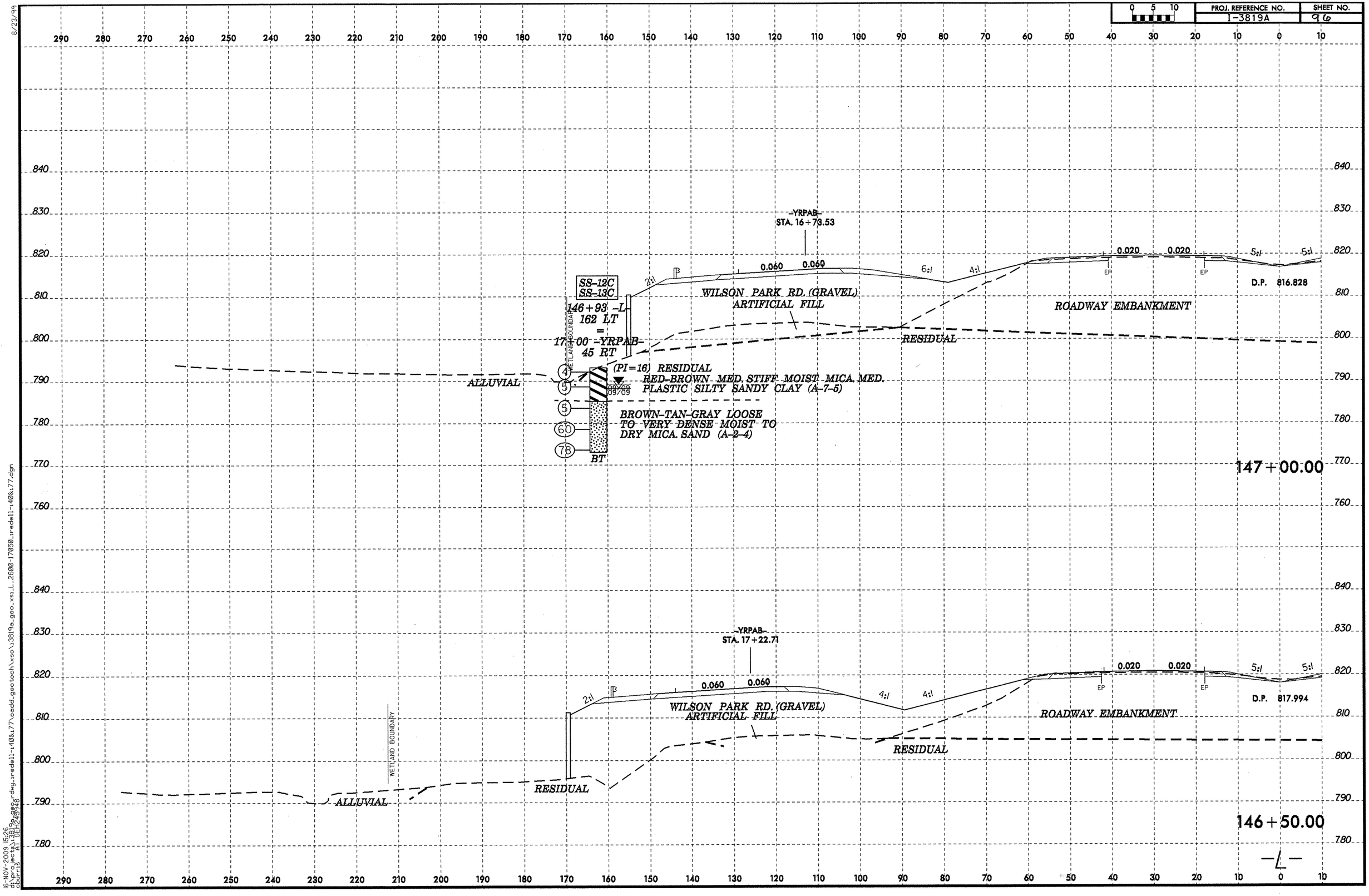
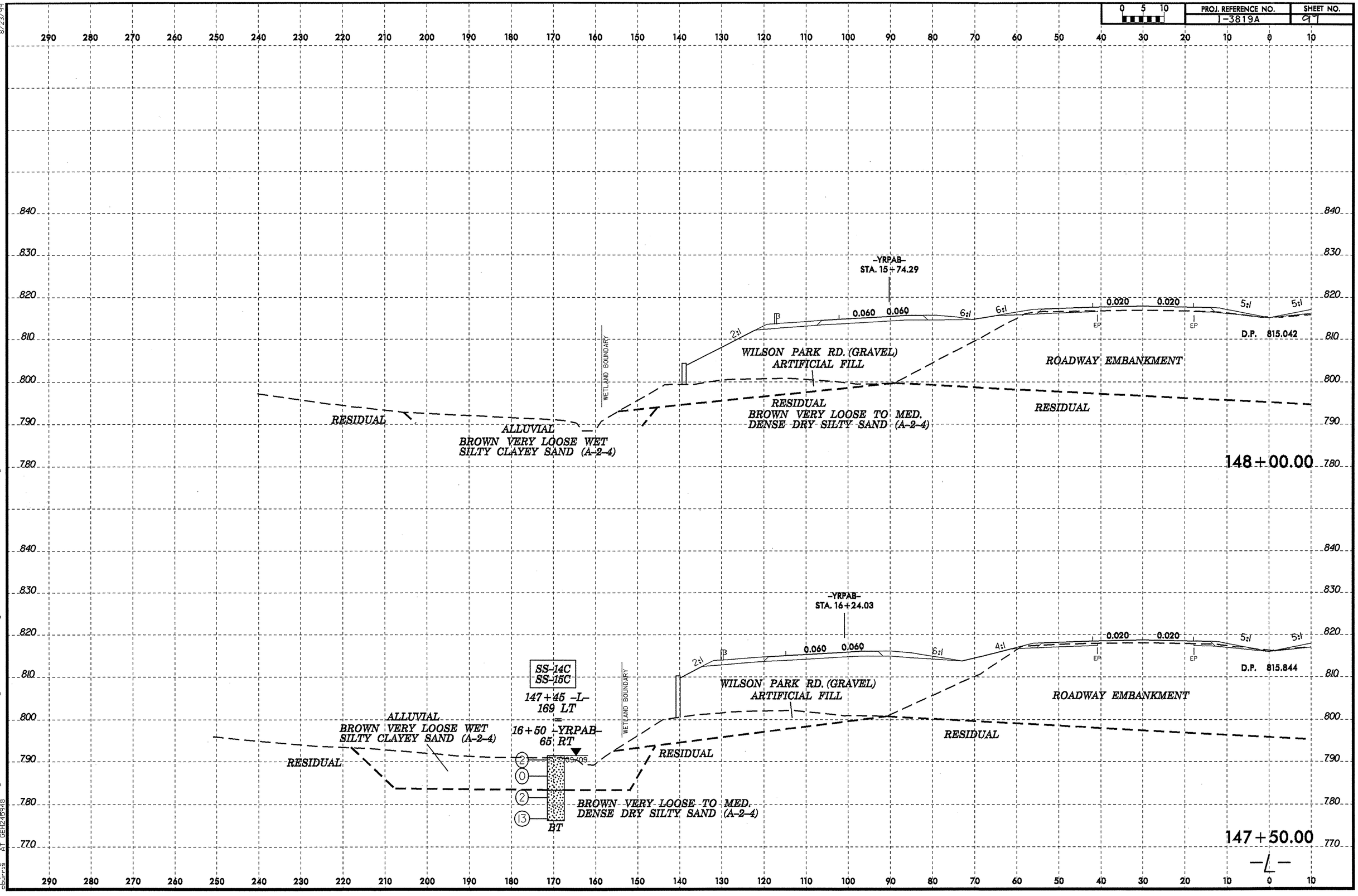

0 5 10
-YRPAB-
STA. 16+73.53
0.060
0.060
2:1
6:1
4:1
0.020
0.020
5:1
5:1
EP
D.P. 816.828
SS-12C
SS-13C
146+93 -L-
162 LT
=
17+00 -YRPAB-
45 RT
WETLAND BOUNDARY
WILSON PARK RD. (GRAVEL)
ARTIFICIAL FILL
ROADWAY EMBANKMENT
RESIDUAL
ALLUVIAL
(PI=16) RESIDUAL
RED-BROWN MED. STIFF MOIST MICA. MED.
PLASTIC SILTY SANDY CLAY (A-7-5)
BROWN-TAN-GRAY LOOSE
TO VERY DENSE MOIST TO
DRY MICA. SAND (A-2-4)
BT
147+00.00
-YRPAB-
STA. 17+22.71
D.P. 817.994
146+50.00
-L-



8/23/99

16-NOV-2009 16:15
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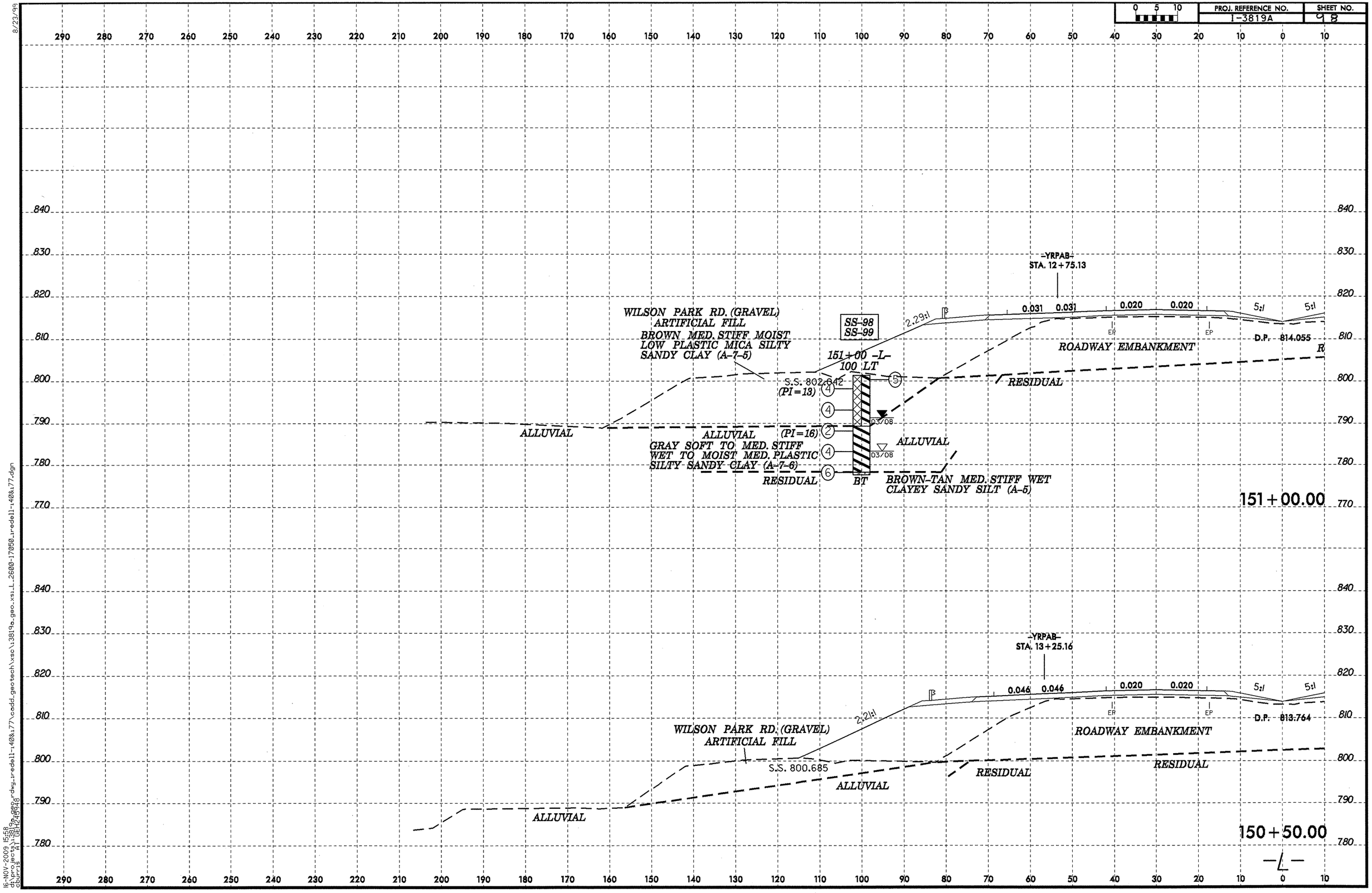
A1 0E1249948



8/23/99
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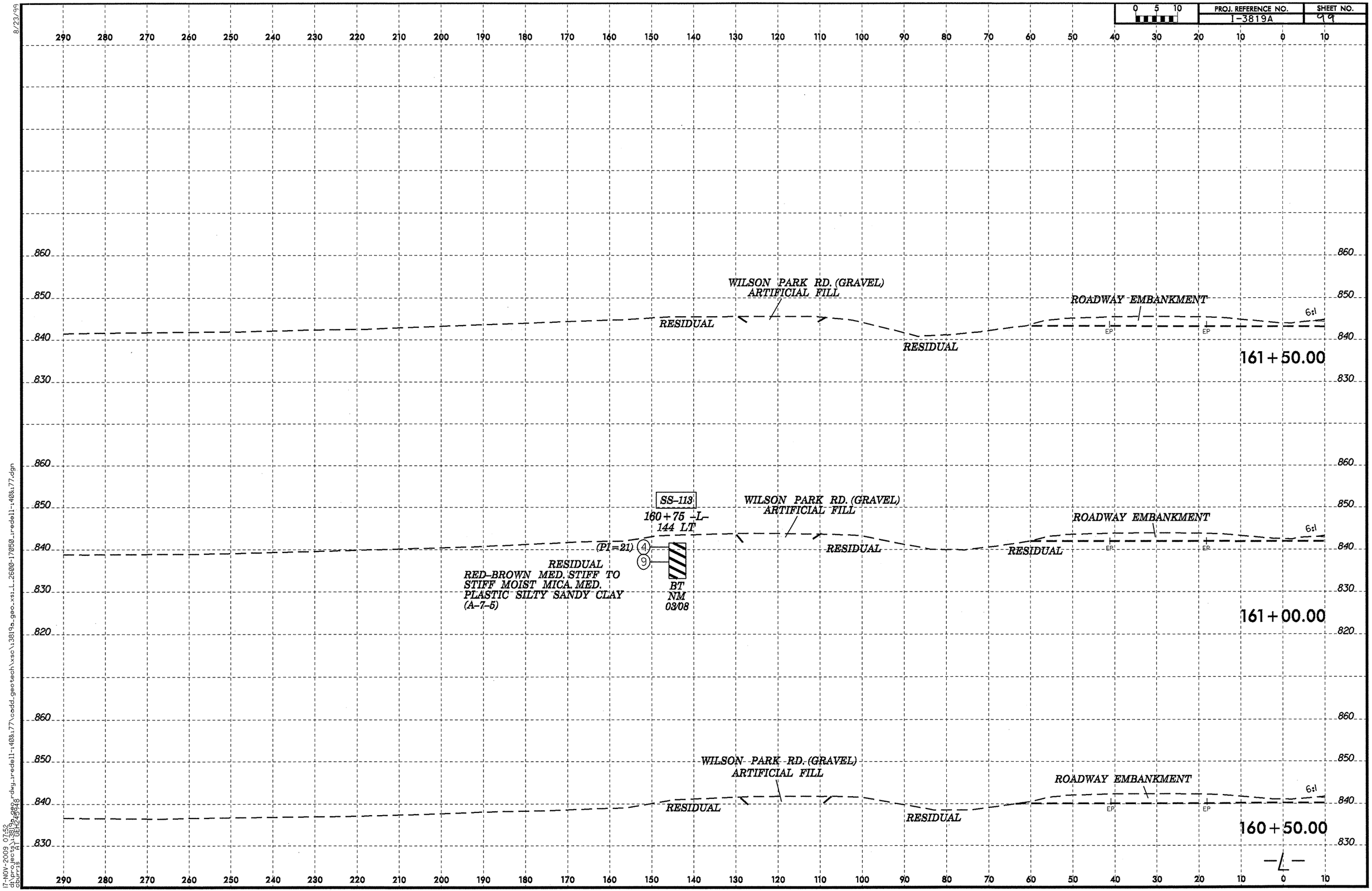
Courtis, Kyle (DEL)



8/23/99

17-NOV-2009 07:52
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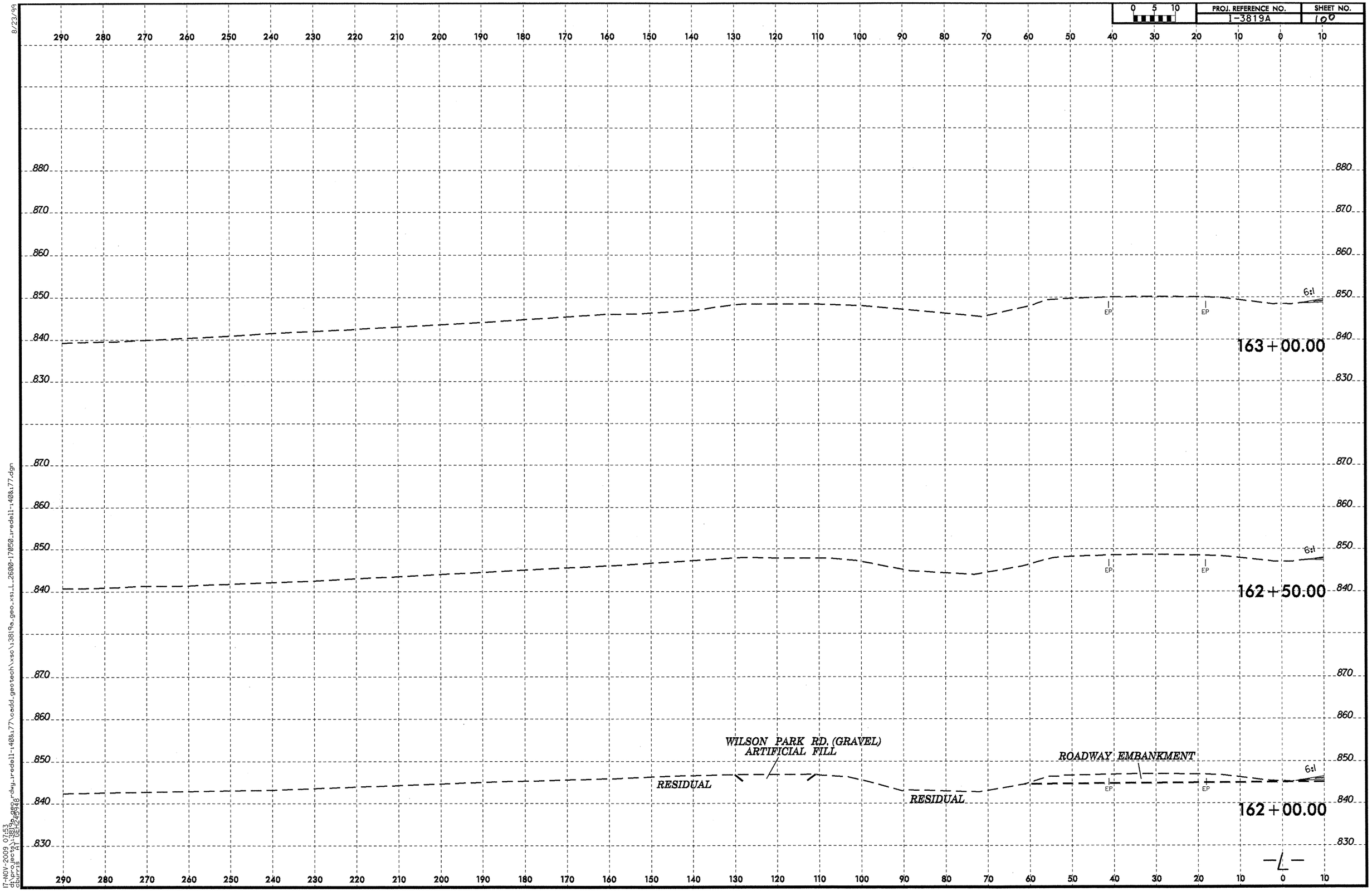
PT OEH245948



8/23/99

17-NOV-2009 07:53
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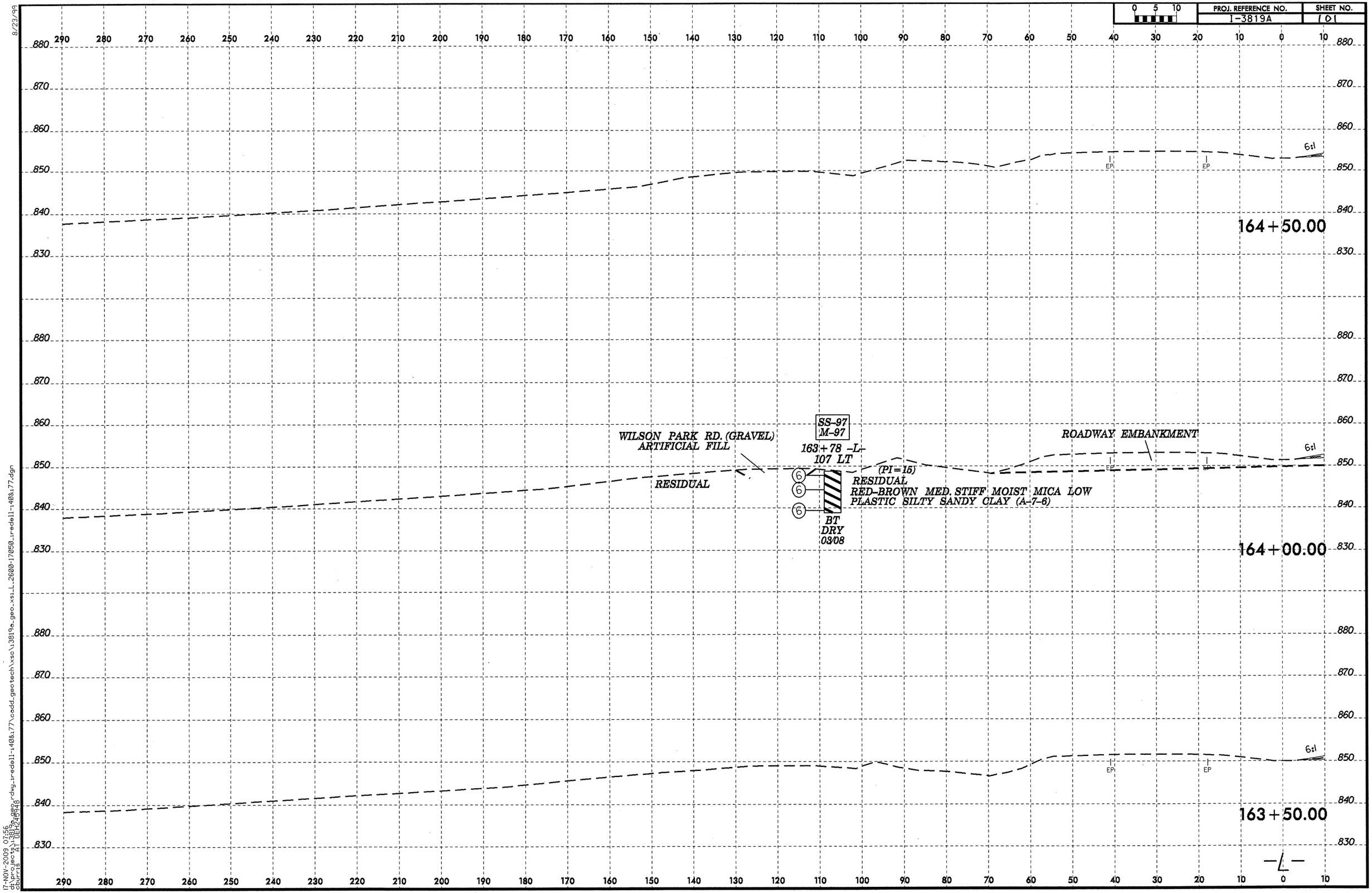

8/23/99

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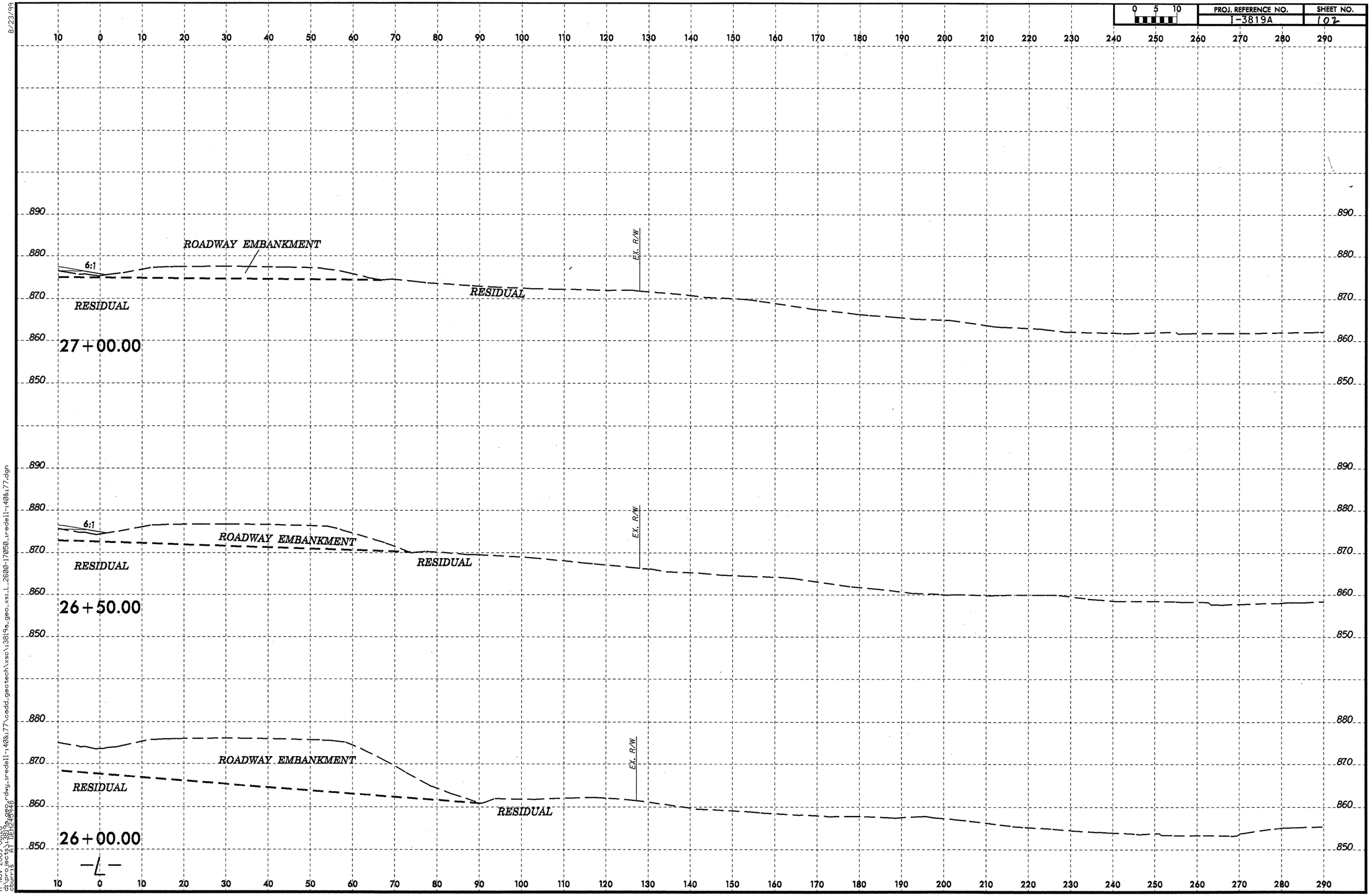
0 5 10
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
102
ROADWAY EMBANKMENT
RESIDUAL
6:1
EX. R/W
27+00.00
26+50.00
26+00.00
890
880
870
860
850
10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290
8/23/99
17-NOV-2009 08:20
d:\projects\3819a_geo_rdwy_ireddell-140&177\cadd_geotech\xsc\3819a_geo_xsi_L_2600-17050_ireddell-140&177.dgn
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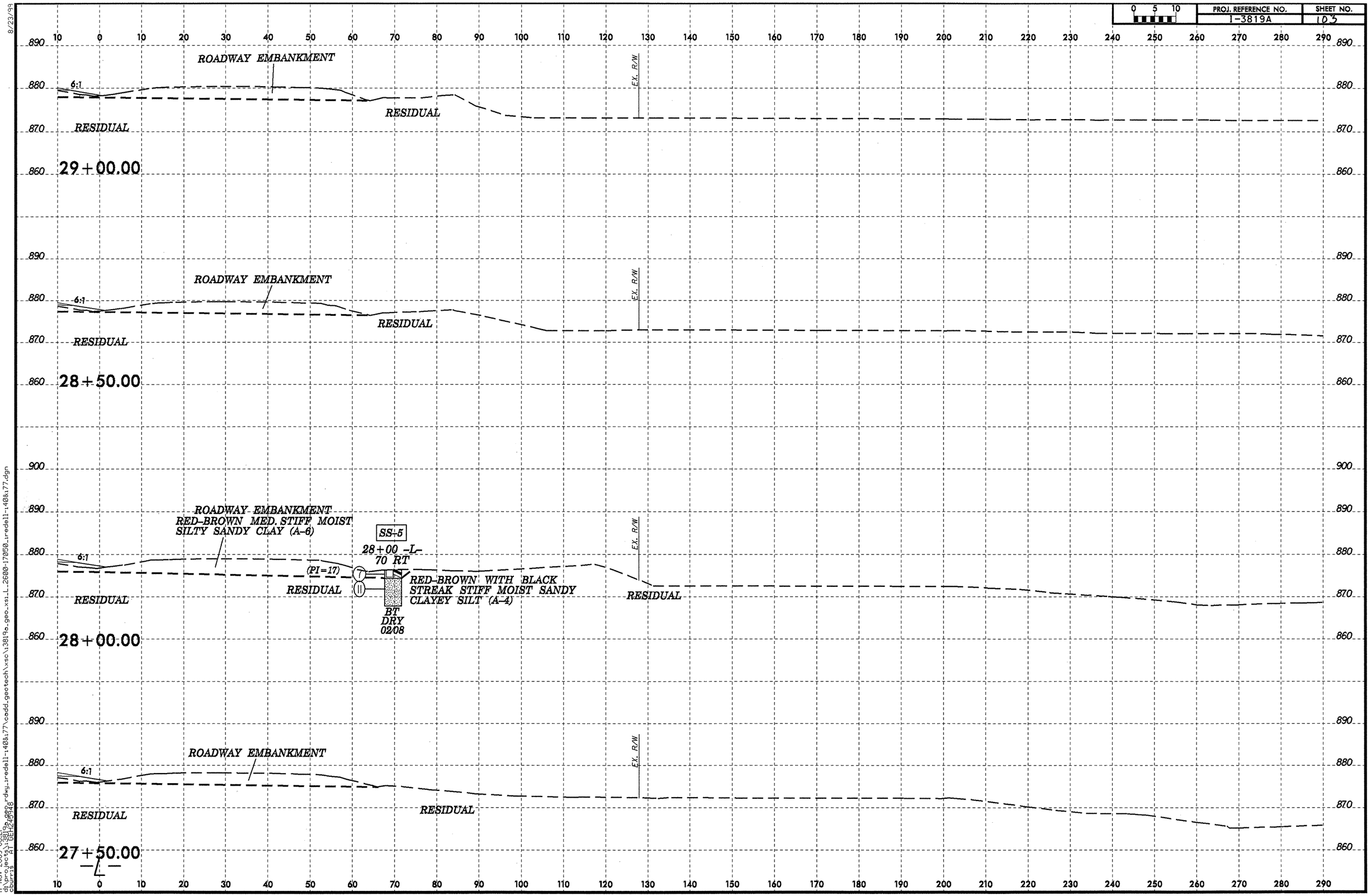
AT DEH249948



8/23/99

17-NOV-2009 08:21
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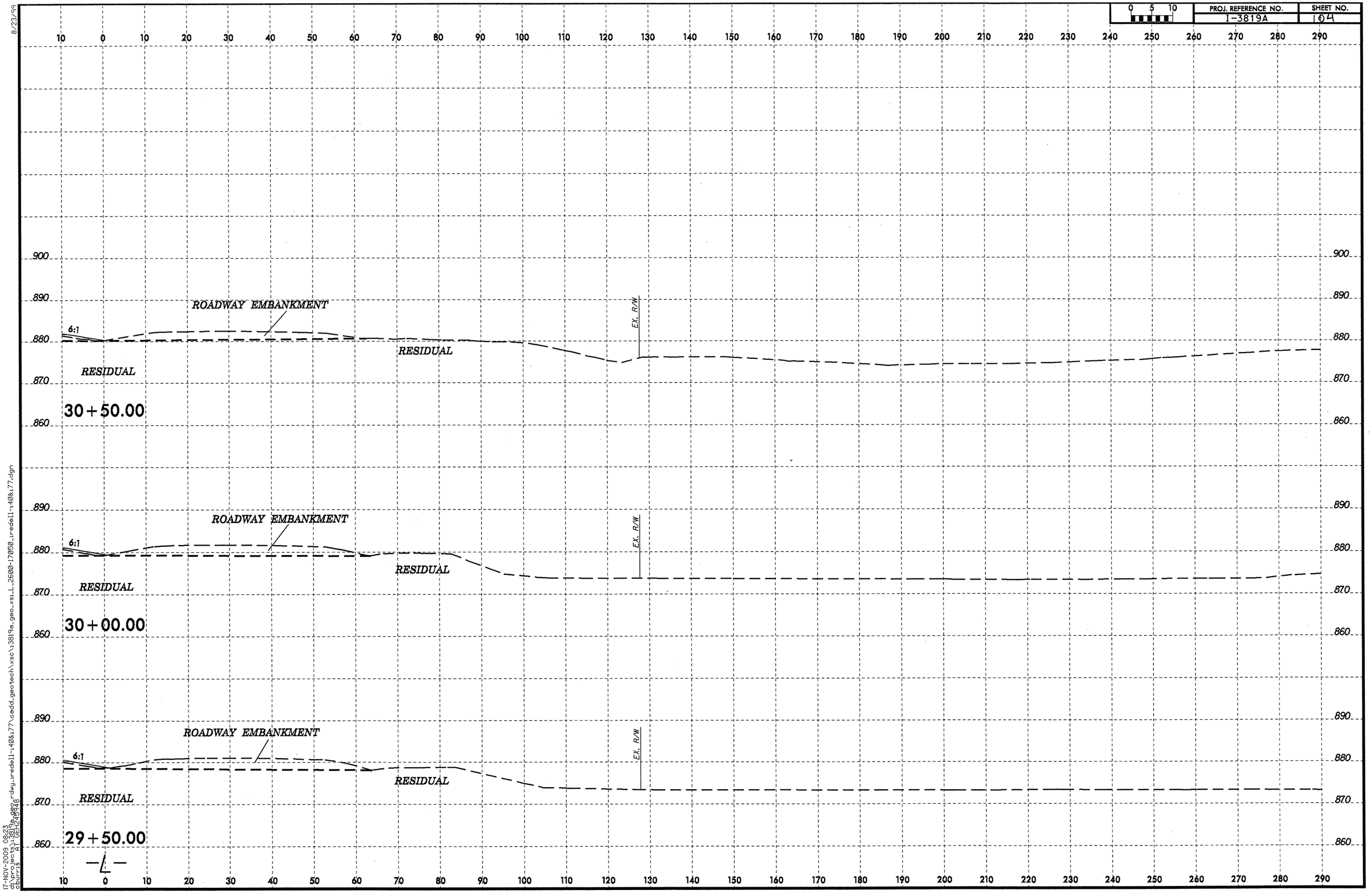
0 5 10
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
104
ROADWAY EMBANKMENT
RESIDUAL
6:1
EX. R/W
30+50.00
30+00.00
29+50.00
900
890
880
870
860
10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290
8/23/99
17-NOV-2009 08:23
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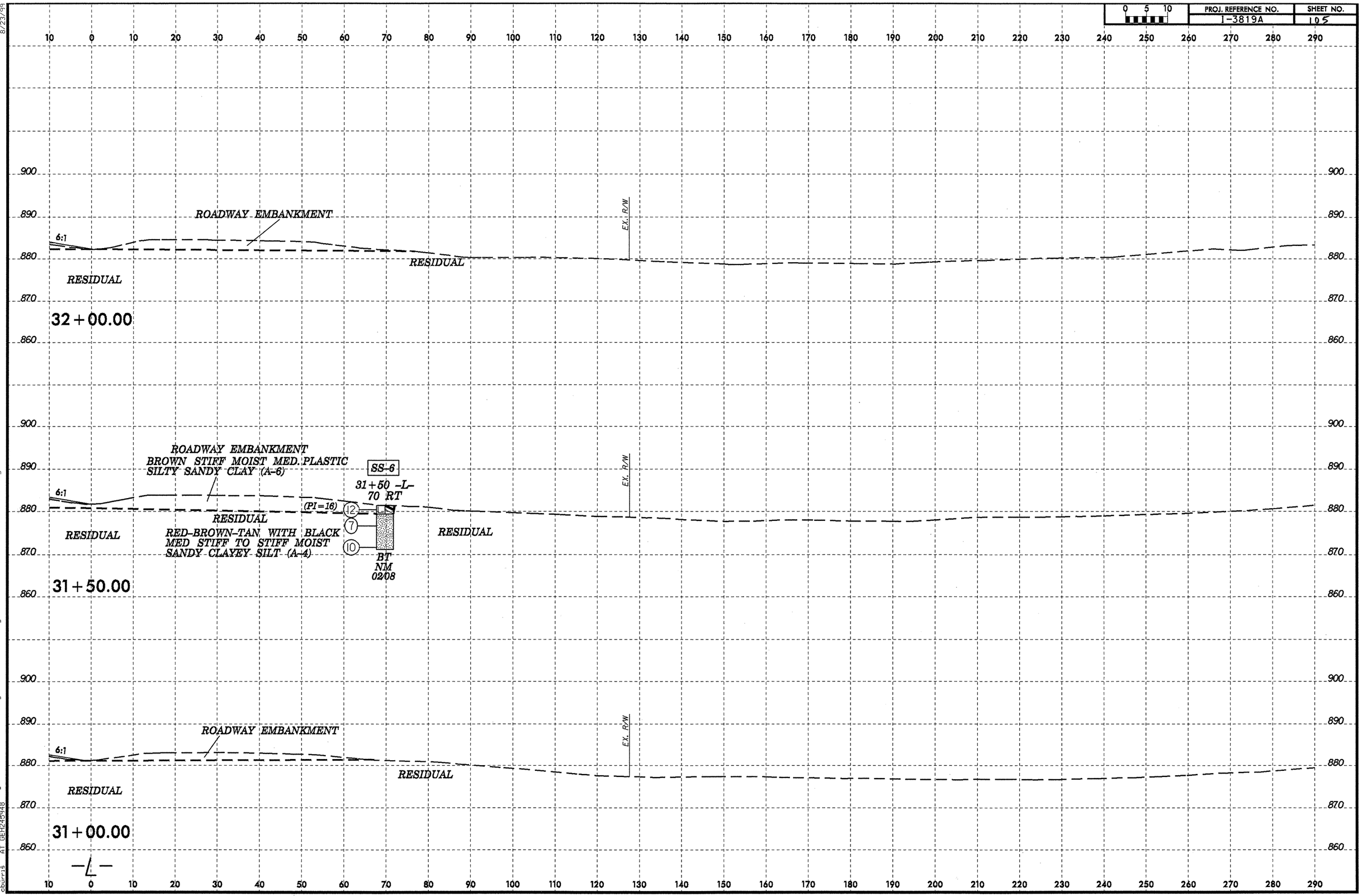
courts



8/23/99

17-NOV-2009 08:24
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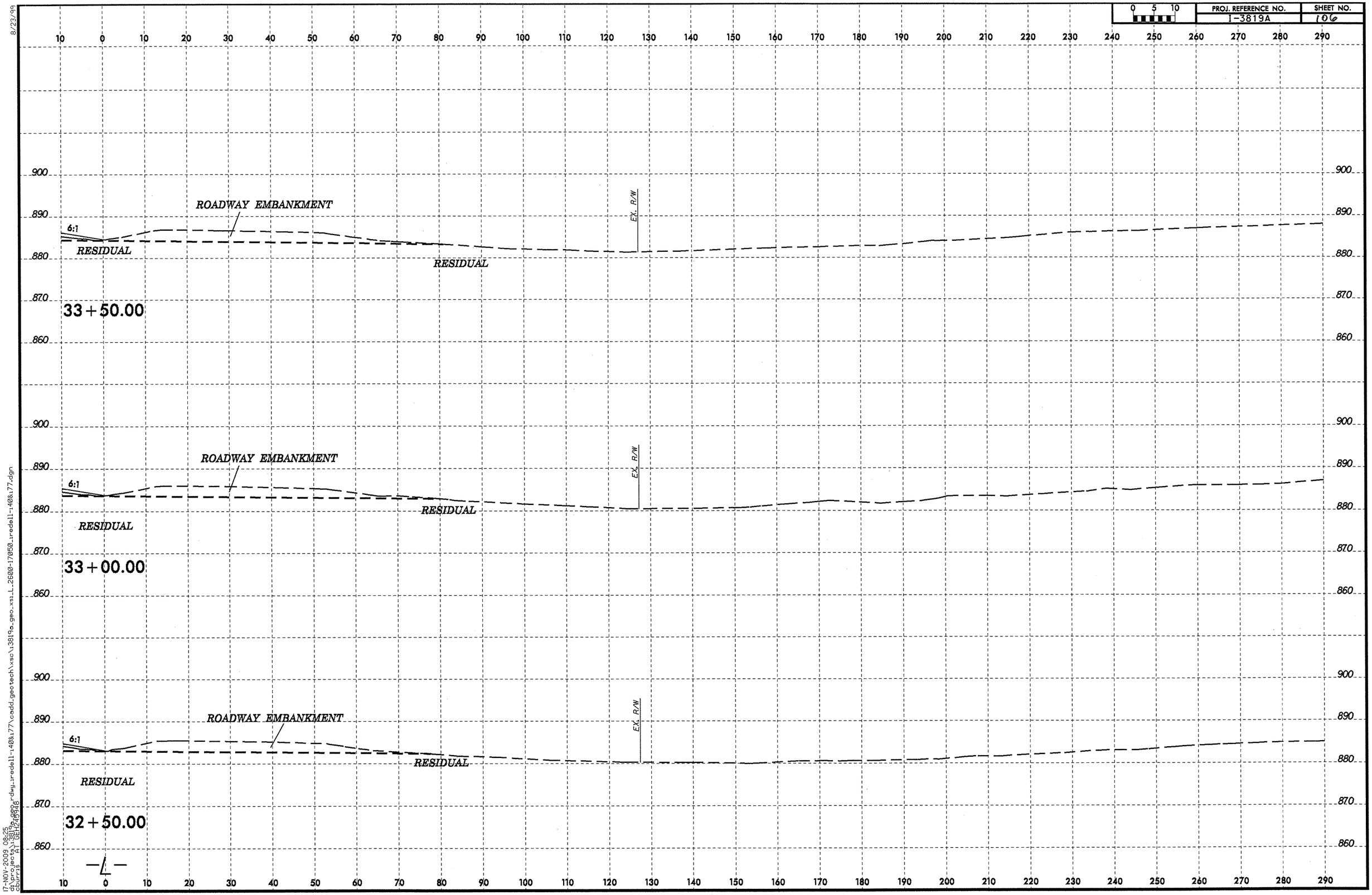
churrig



8/23/99

17-NOV-2009 08:25
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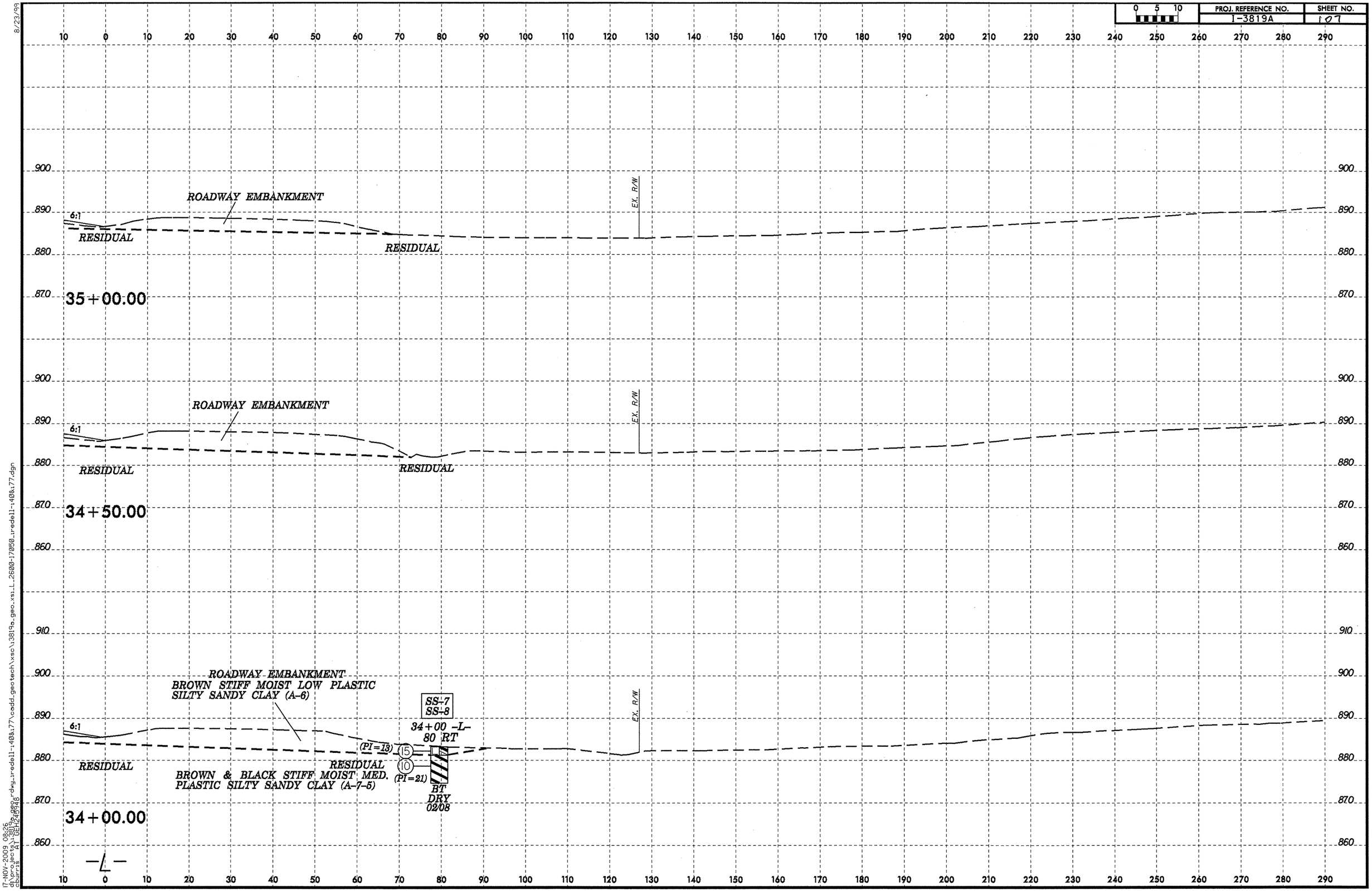

8/23/99

17-NOV-2009 08:26
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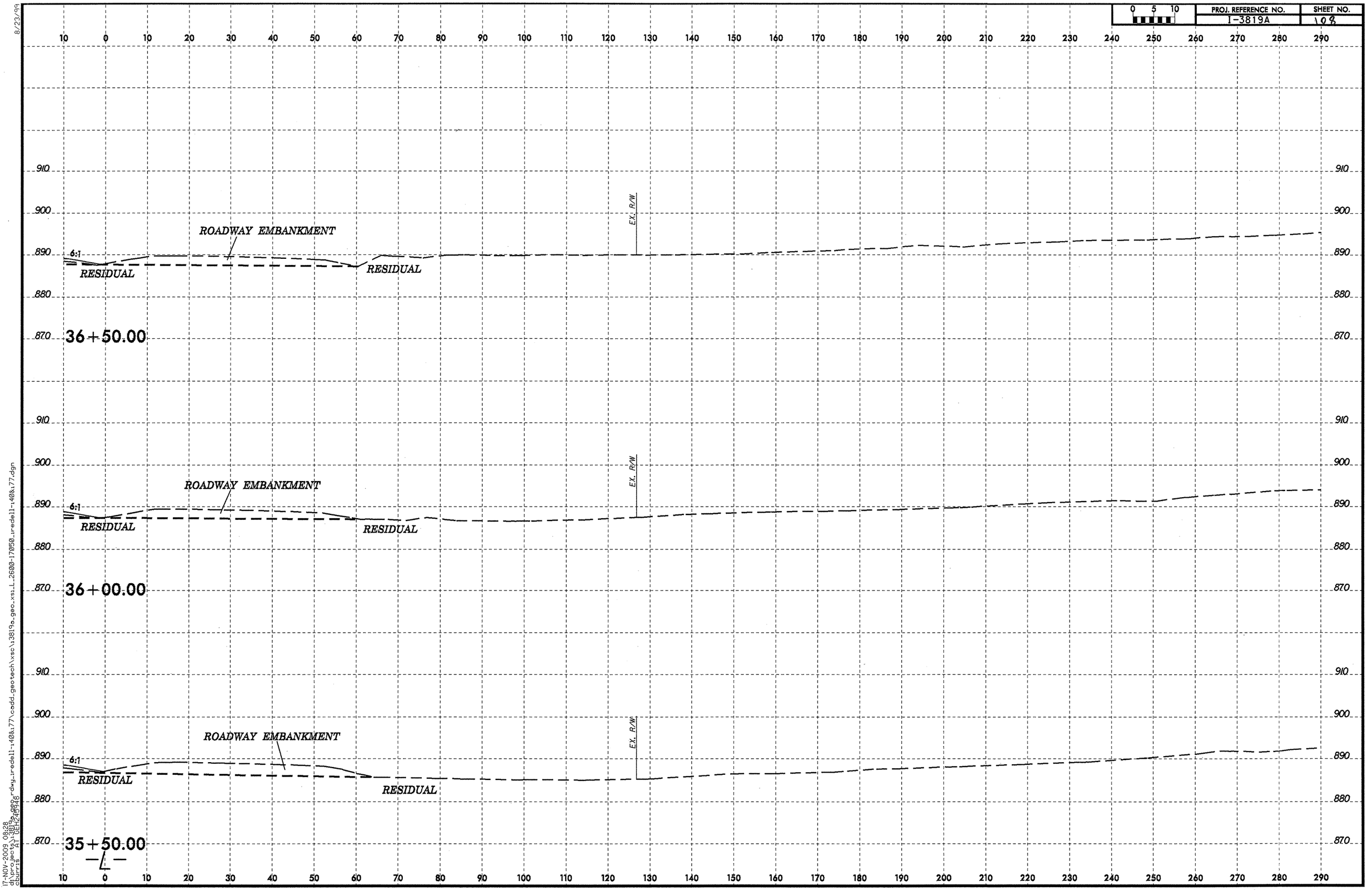

8/23/99

17-NOV-2009 08:28
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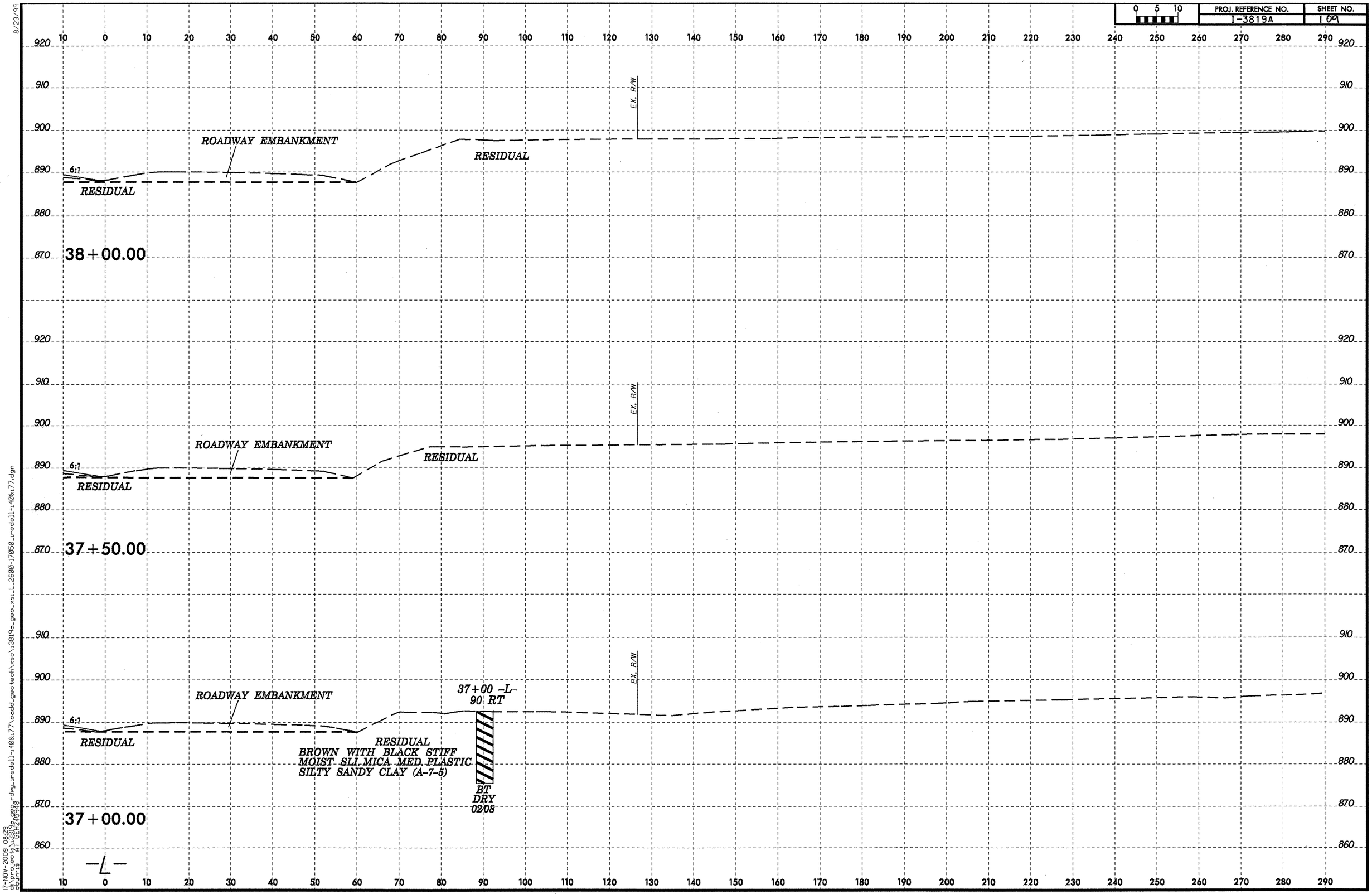
bburris A DELTA 4.0



8/23/99

17-NOV-2009 08:29
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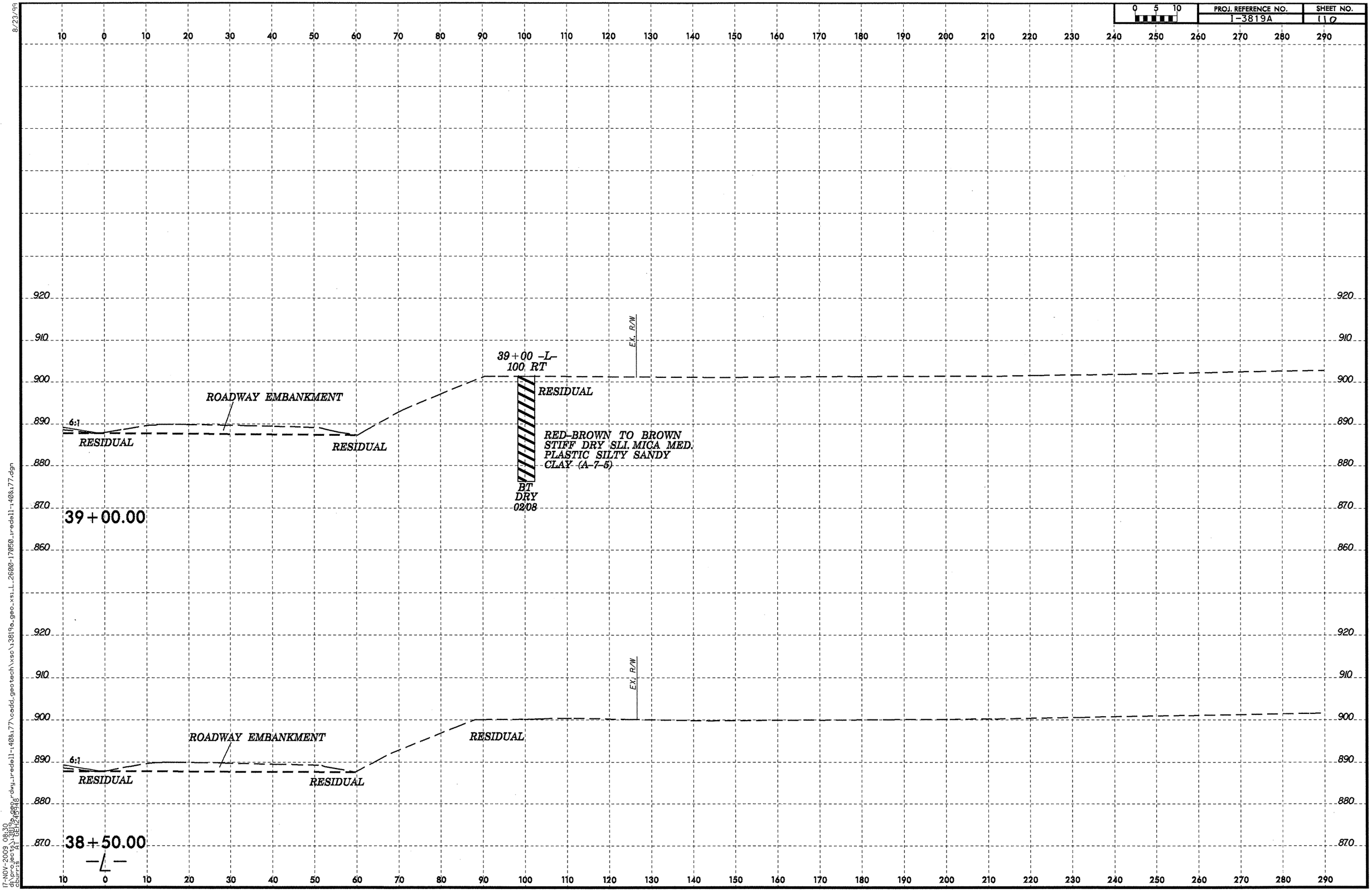
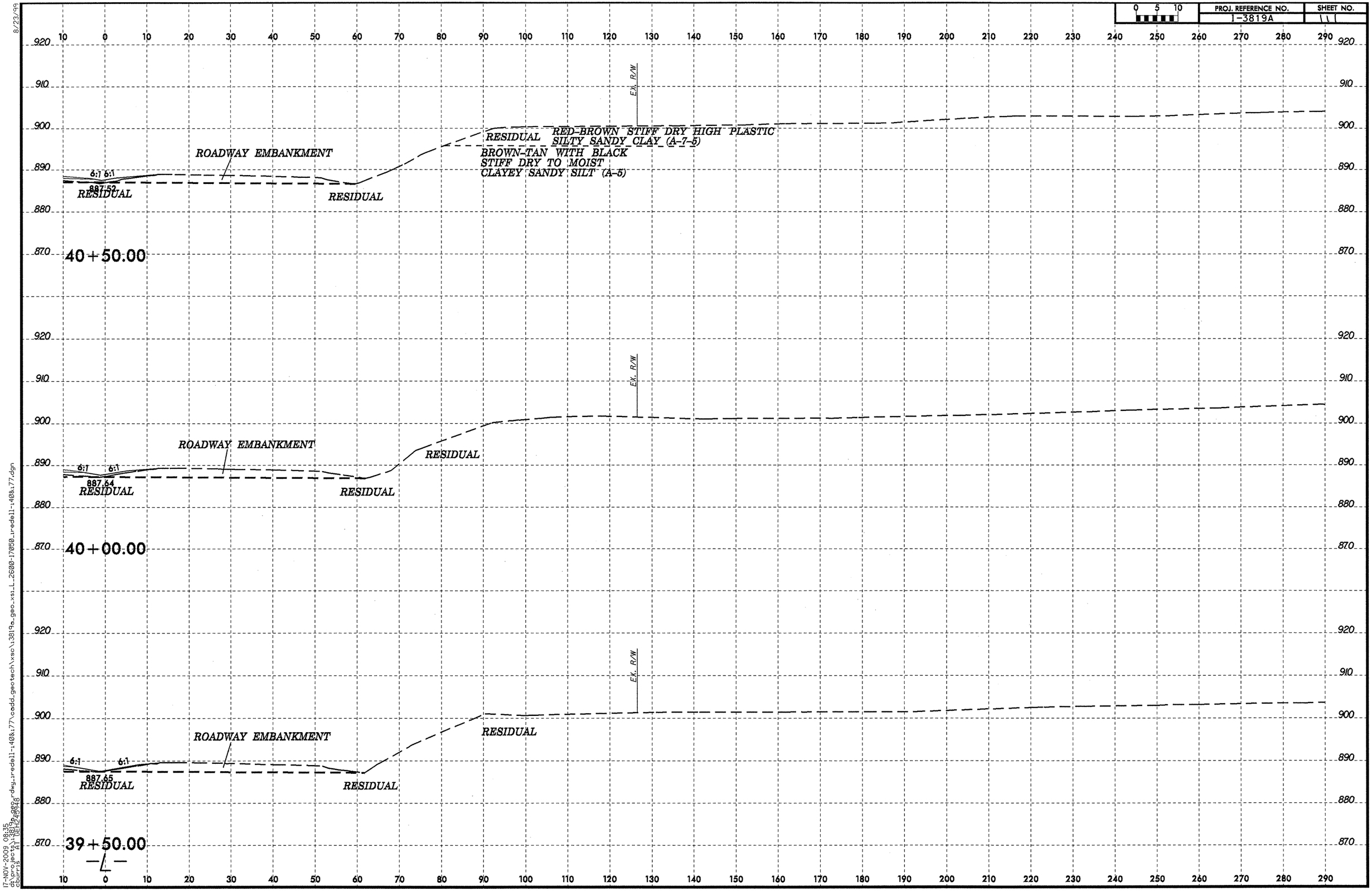
Courtis


PROJ. REFERENCE NO.
I-3819A
SHEET NO.
110
39+00 -L-
100 RT
EX. R/W
RESIDUAL
ROADWAY EMBANKMENT
6:1
RESIDUAL
RESIDUAL
RED-BROWN TO BROWN
STIFF DRY SLI. MICA MED.
PLASTIC SILTY SANDY
CLAY (A-7-5)
BT
DRY
02/08
39+00.00
EX. R/W
ROADWAY EMBANKMENT
RESIDUAL
6:1
RESIDUAL
RESIDUAL
38+50.00
-L-



8/23/99

17-NOV-2009 09:35
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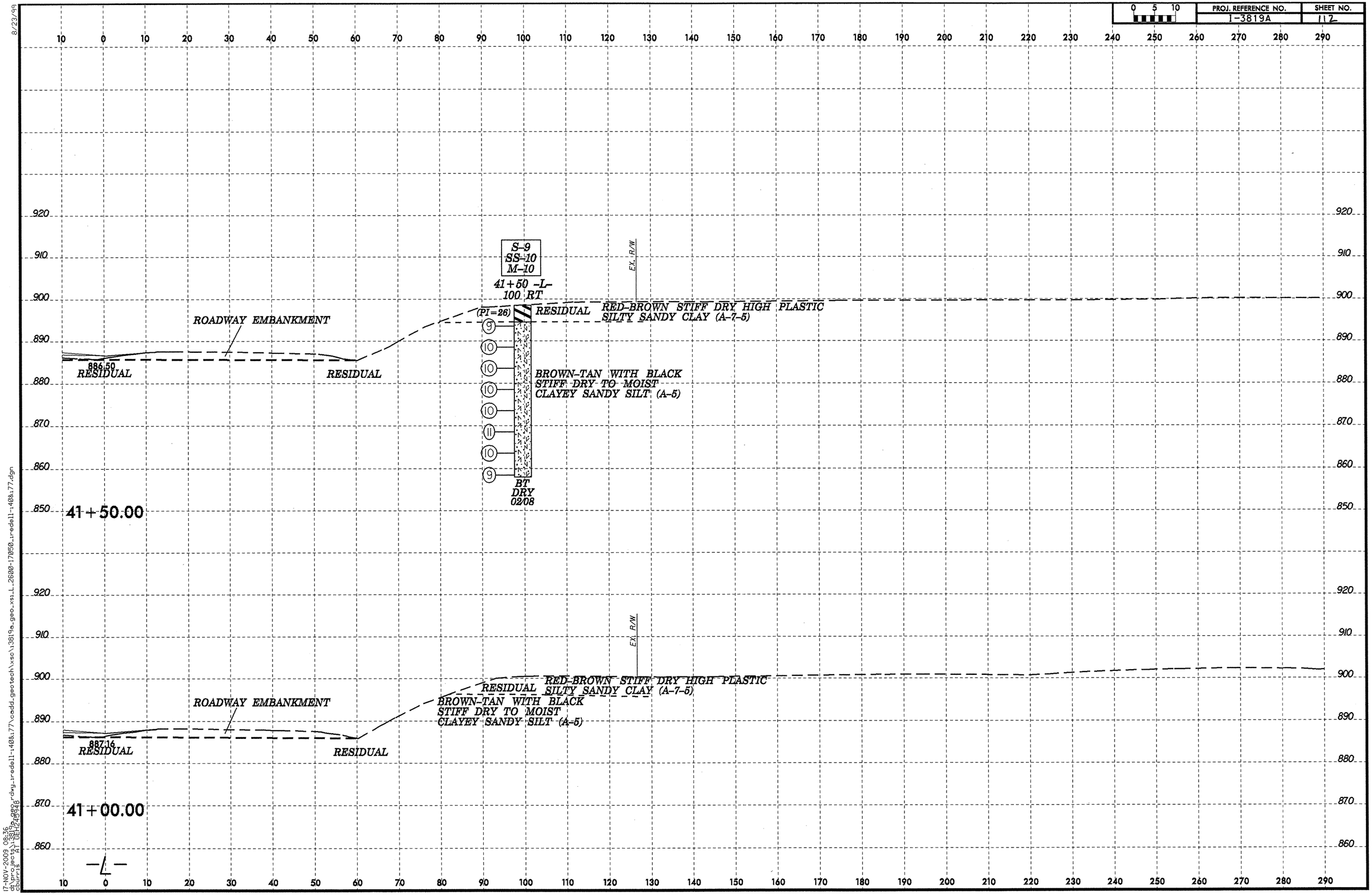

8/23/99
17-NOV-2009 08:36
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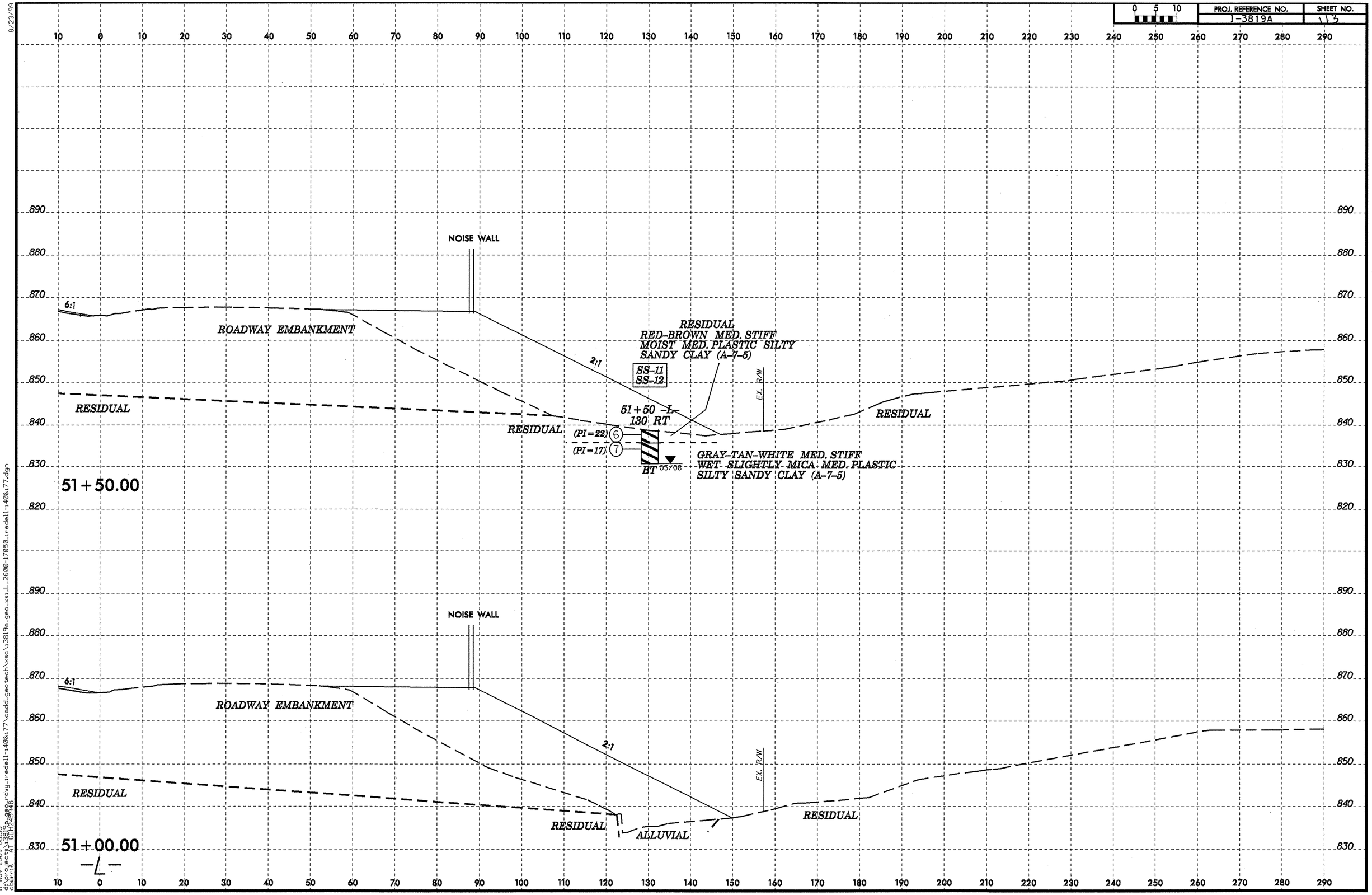
cburris AT DEH245948



8/23/99
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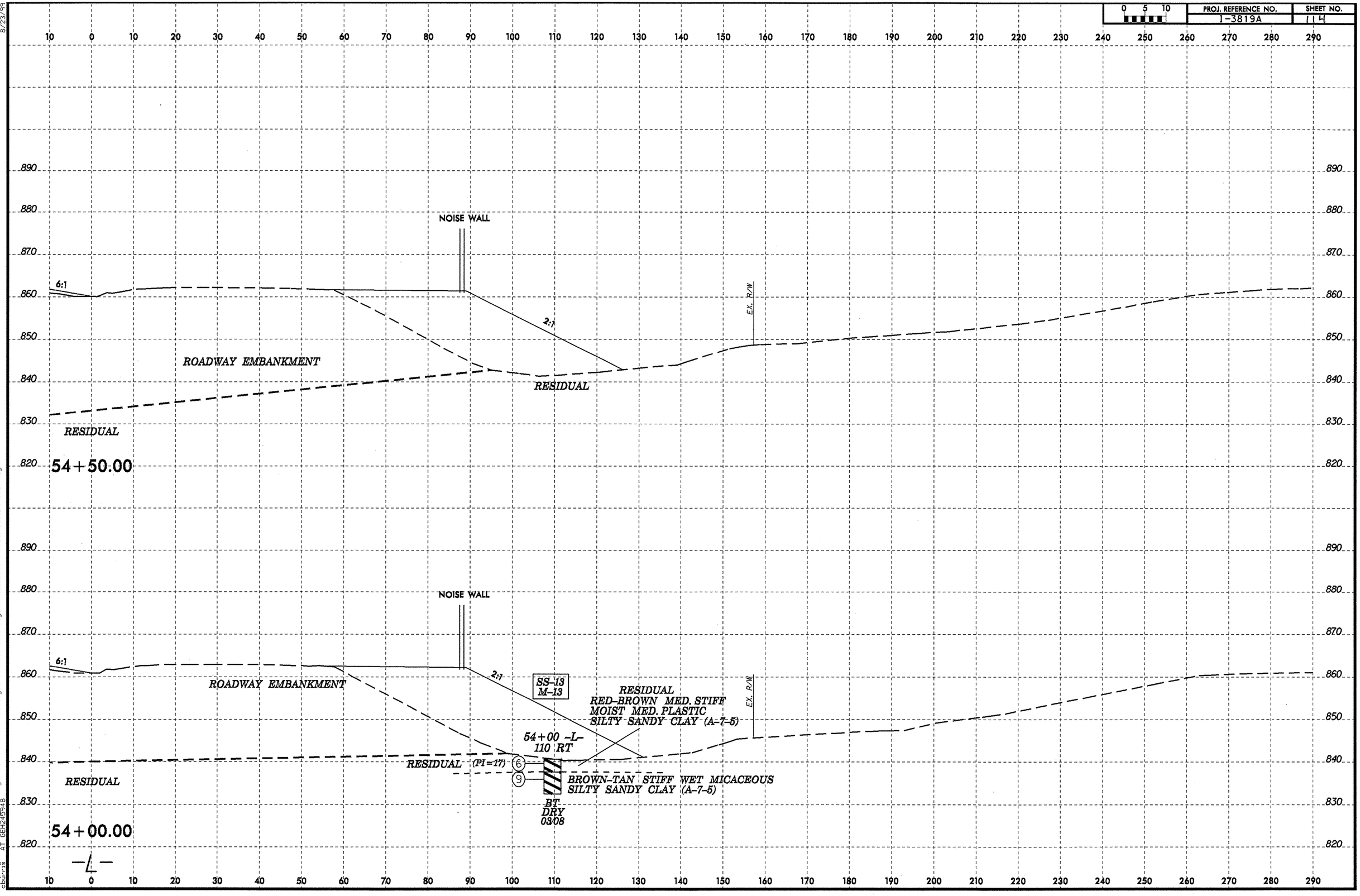

8/23/99
17-NOV-2009 08:54
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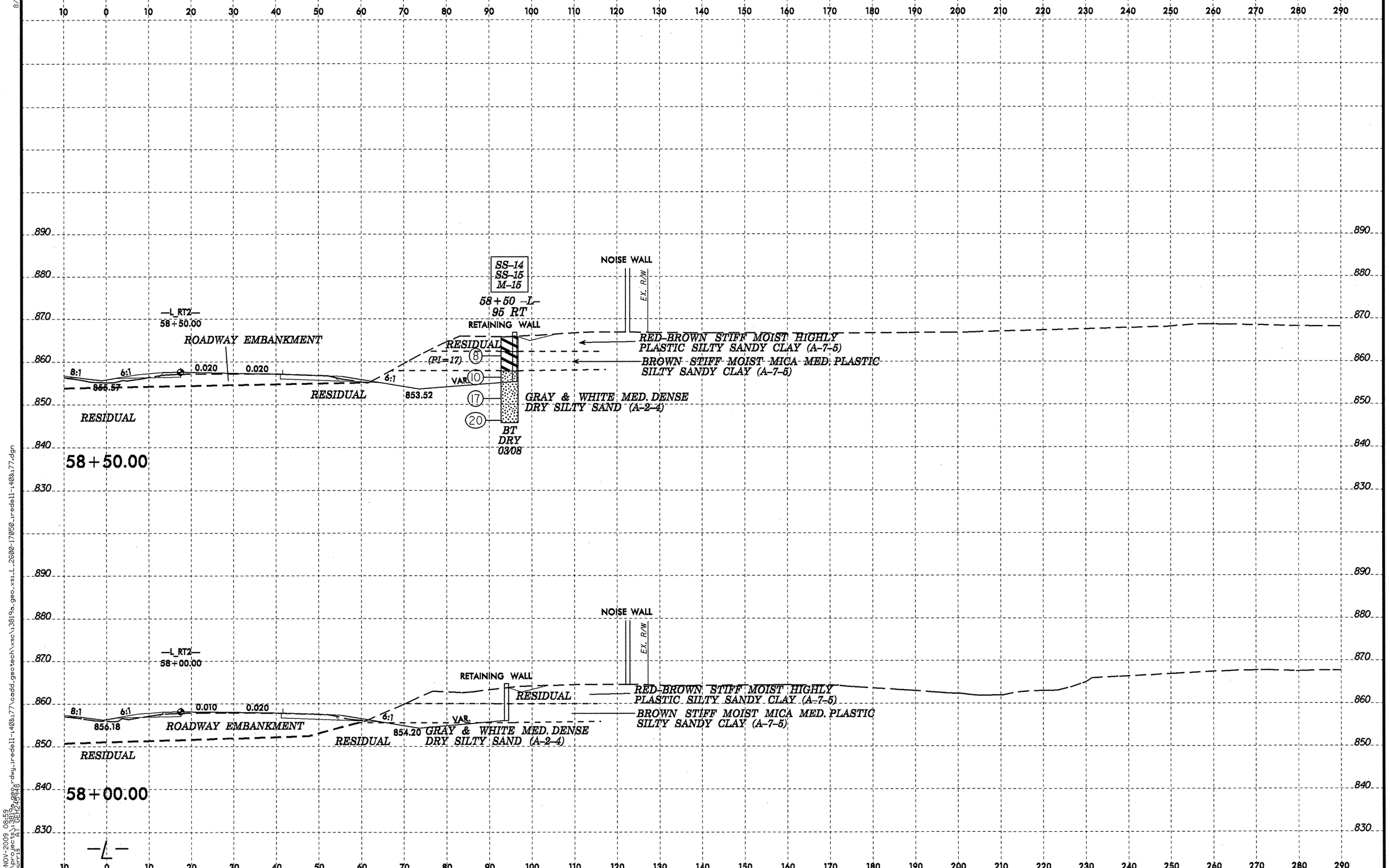

17-NOV-2009 08:59
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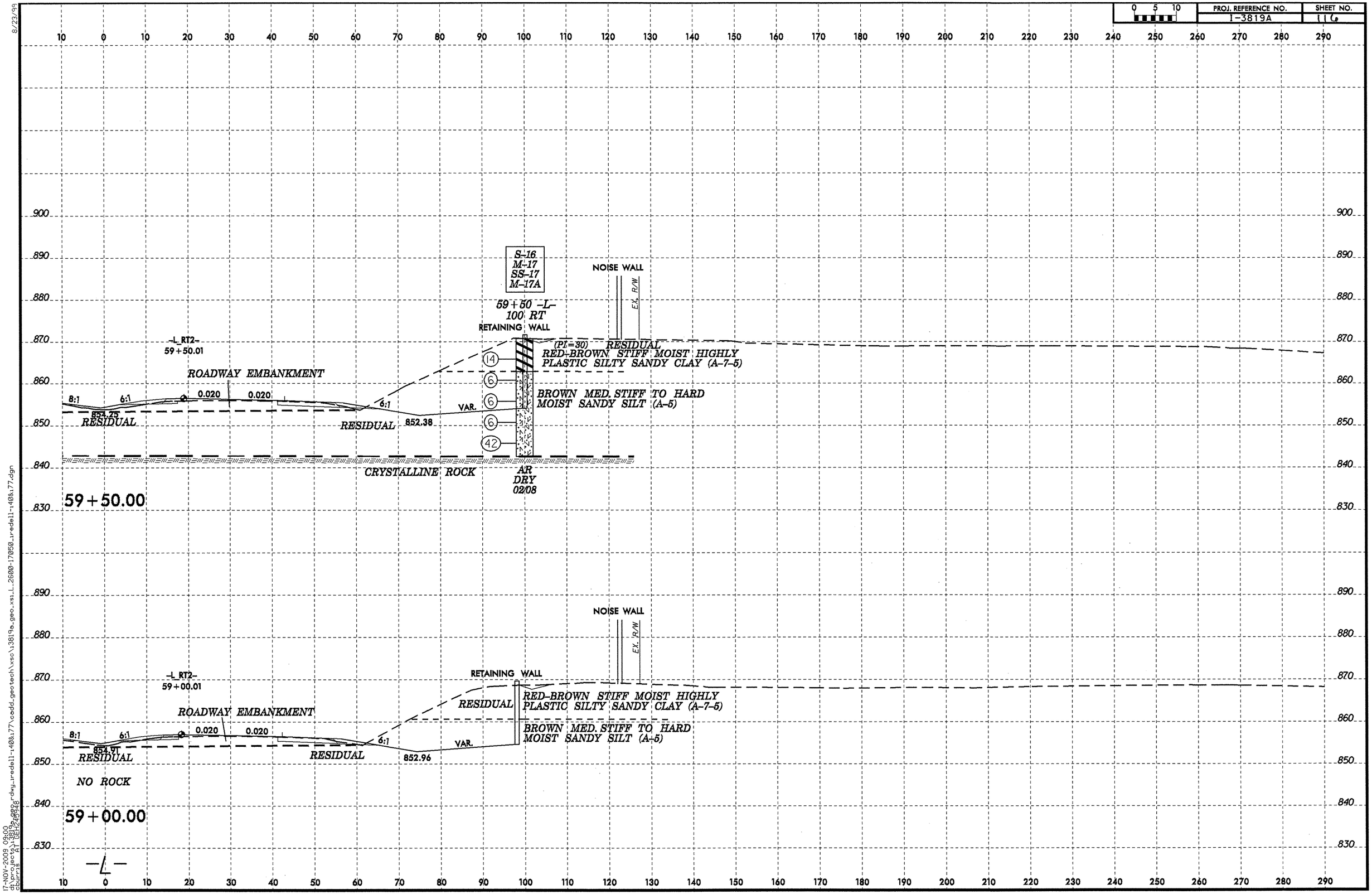

8/23/99

17-NOV-2009 09:00
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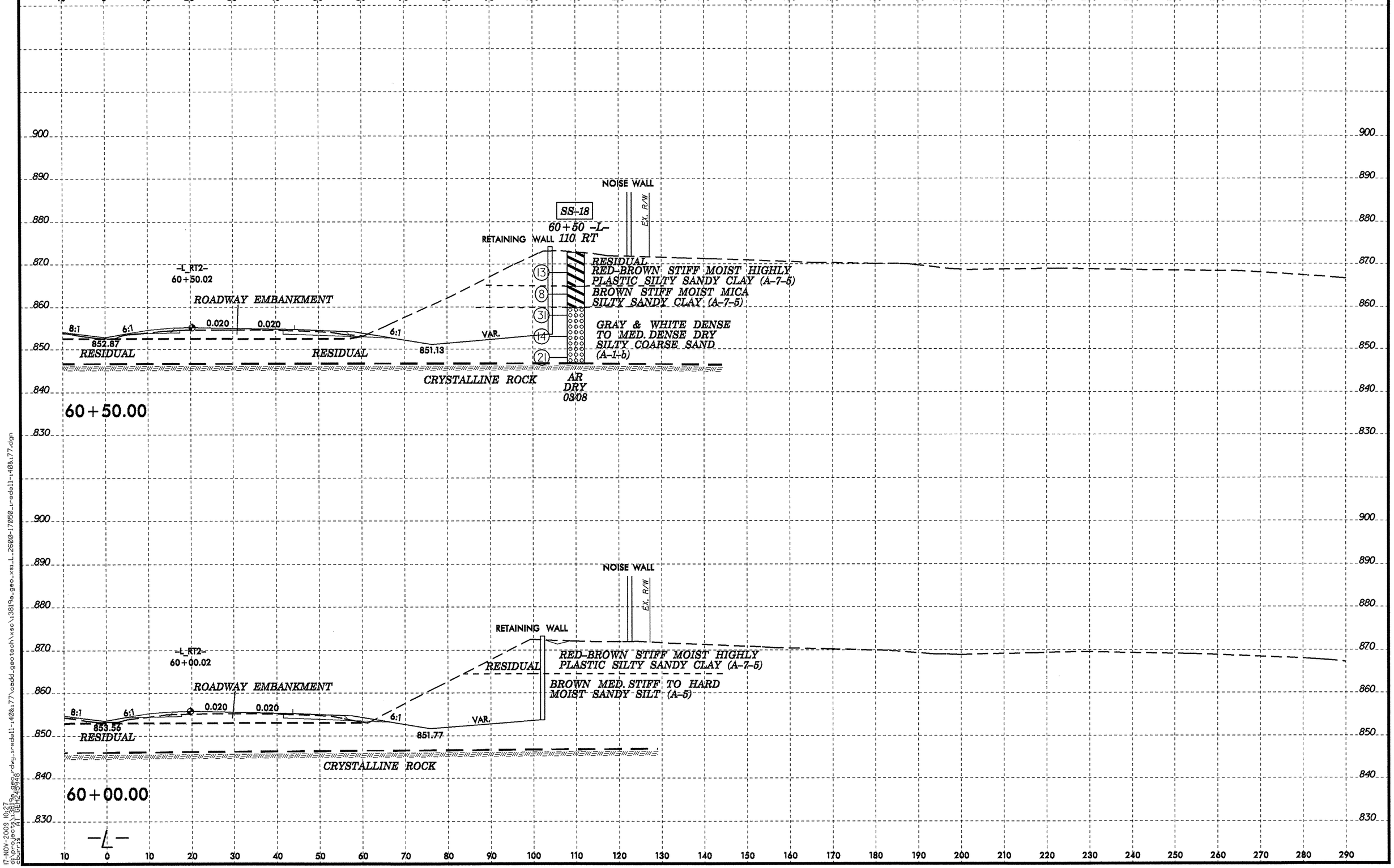

8/23/99
17-NOV-2009 10:27
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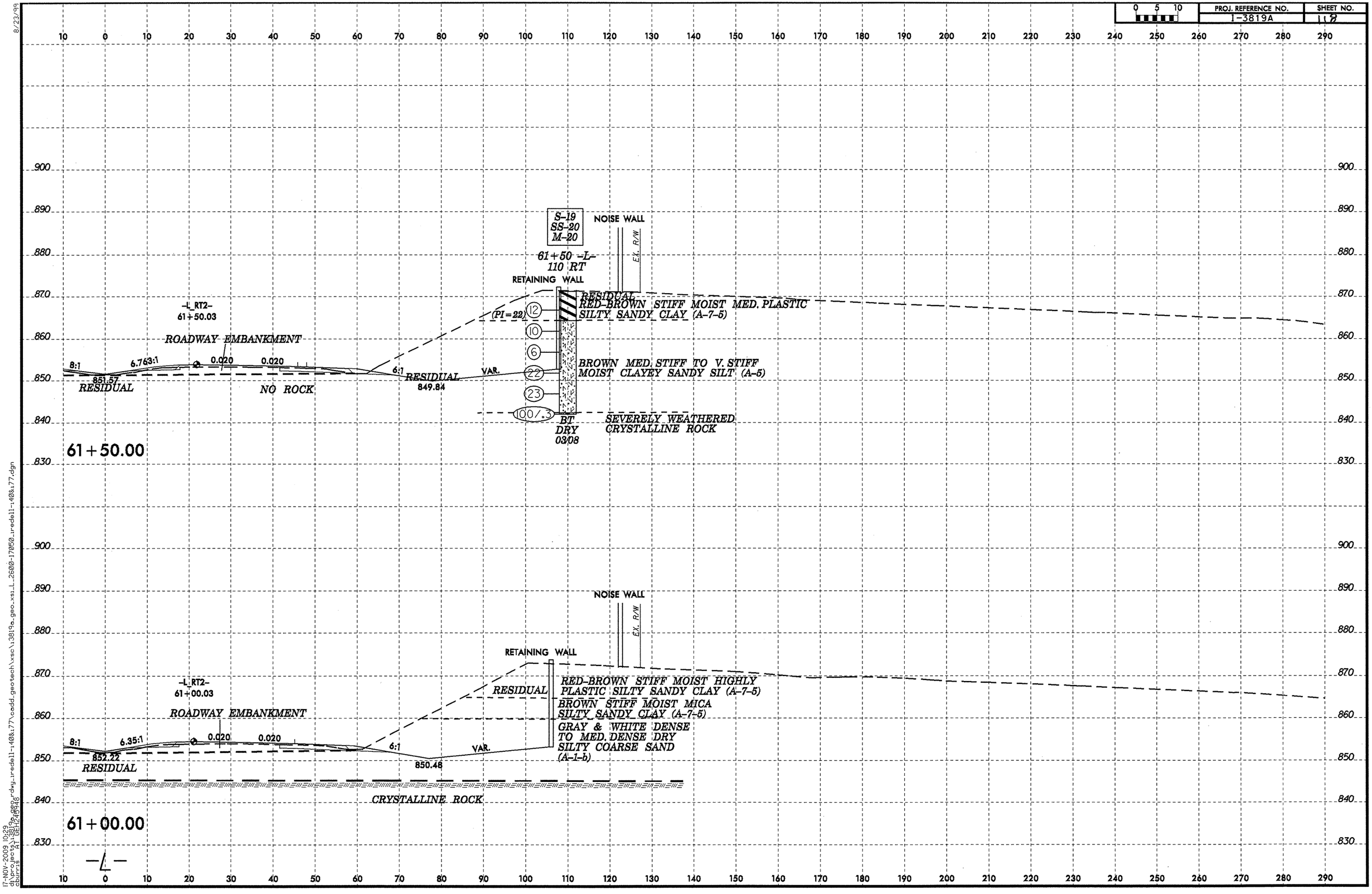

8/23/99
17-NOV-2009 10:29
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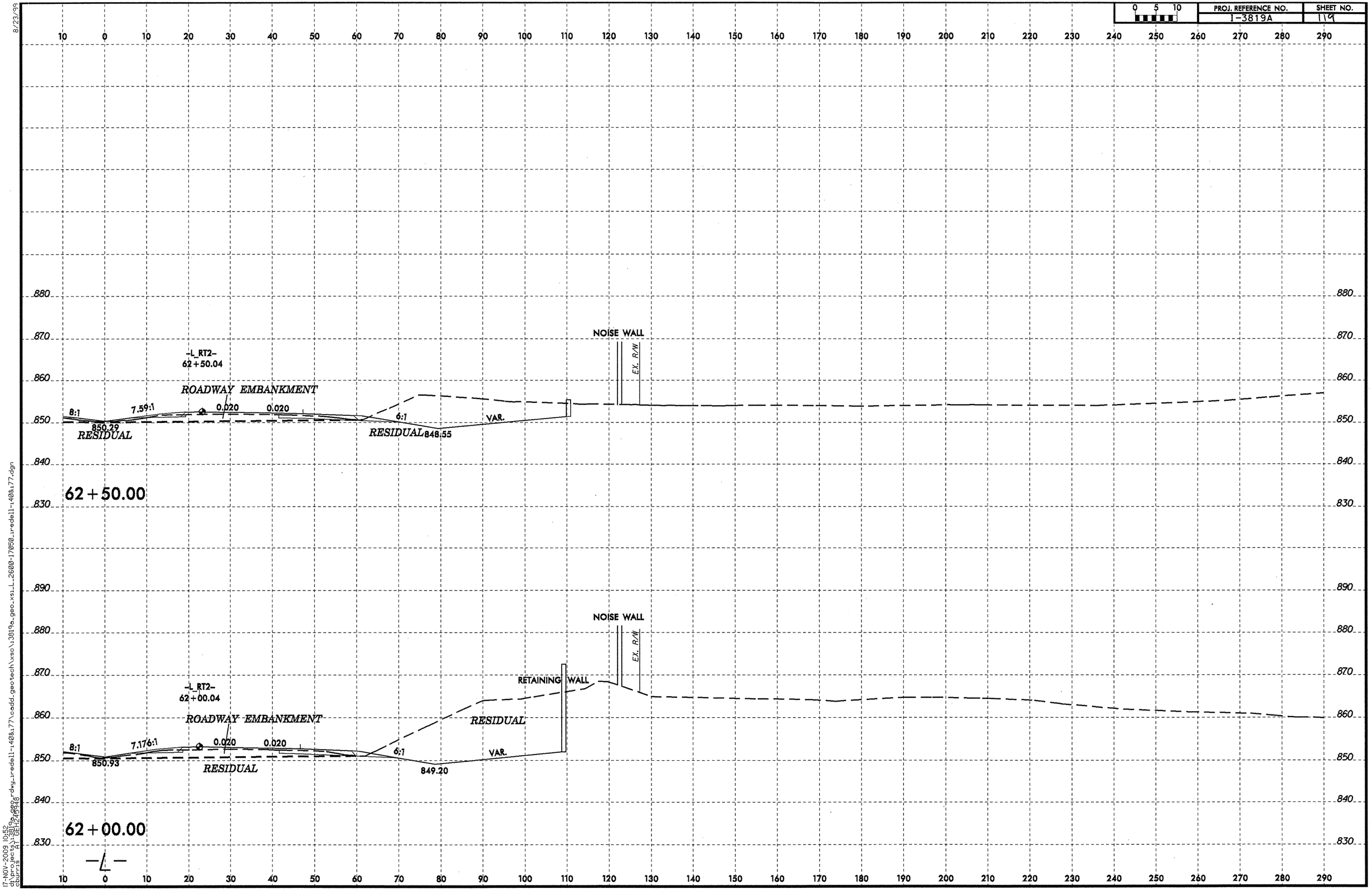
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	119



8/23/99

17-NOV-2009 10:52
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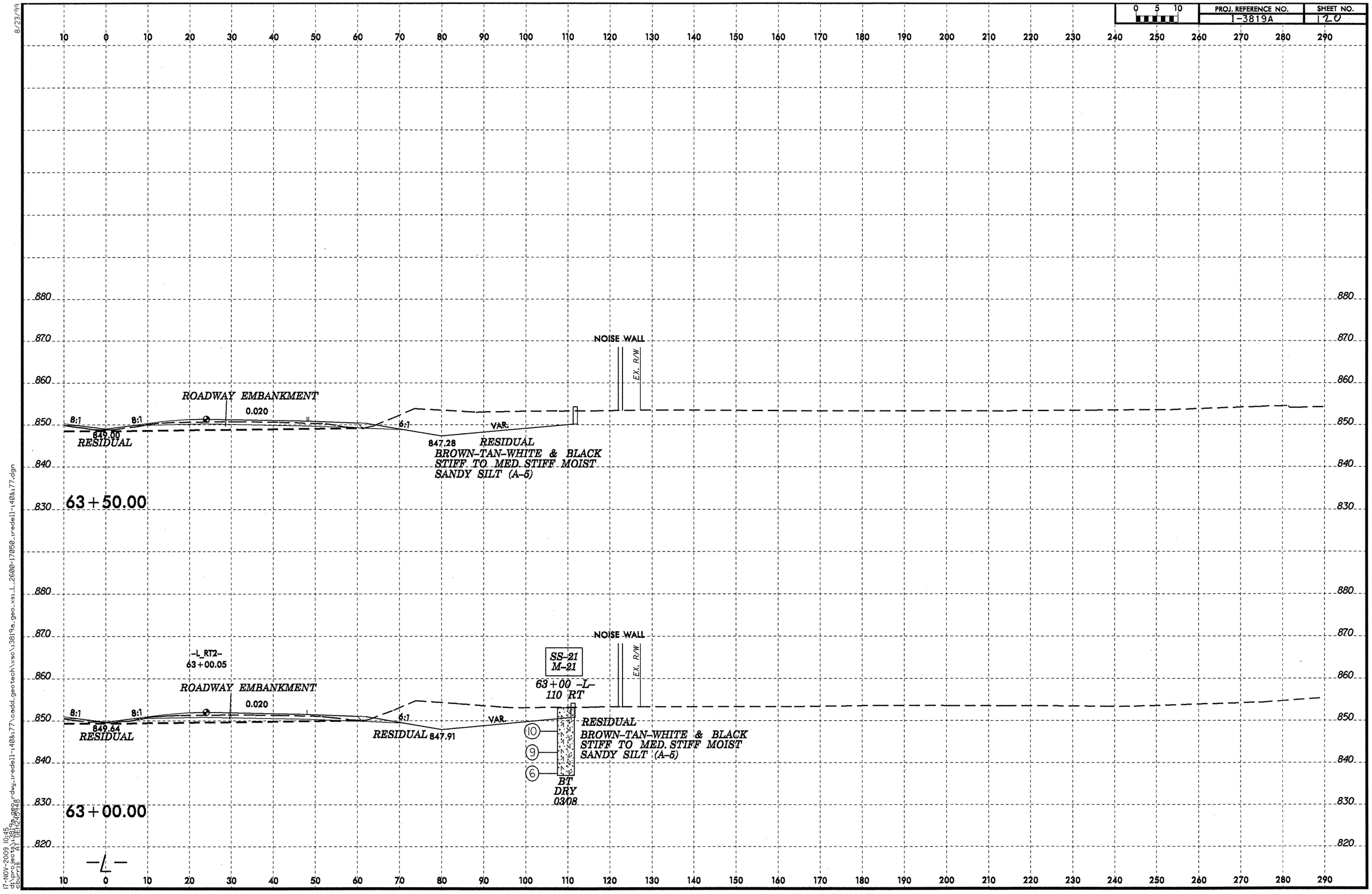

8/23/99
17-NOV-2009 10:45
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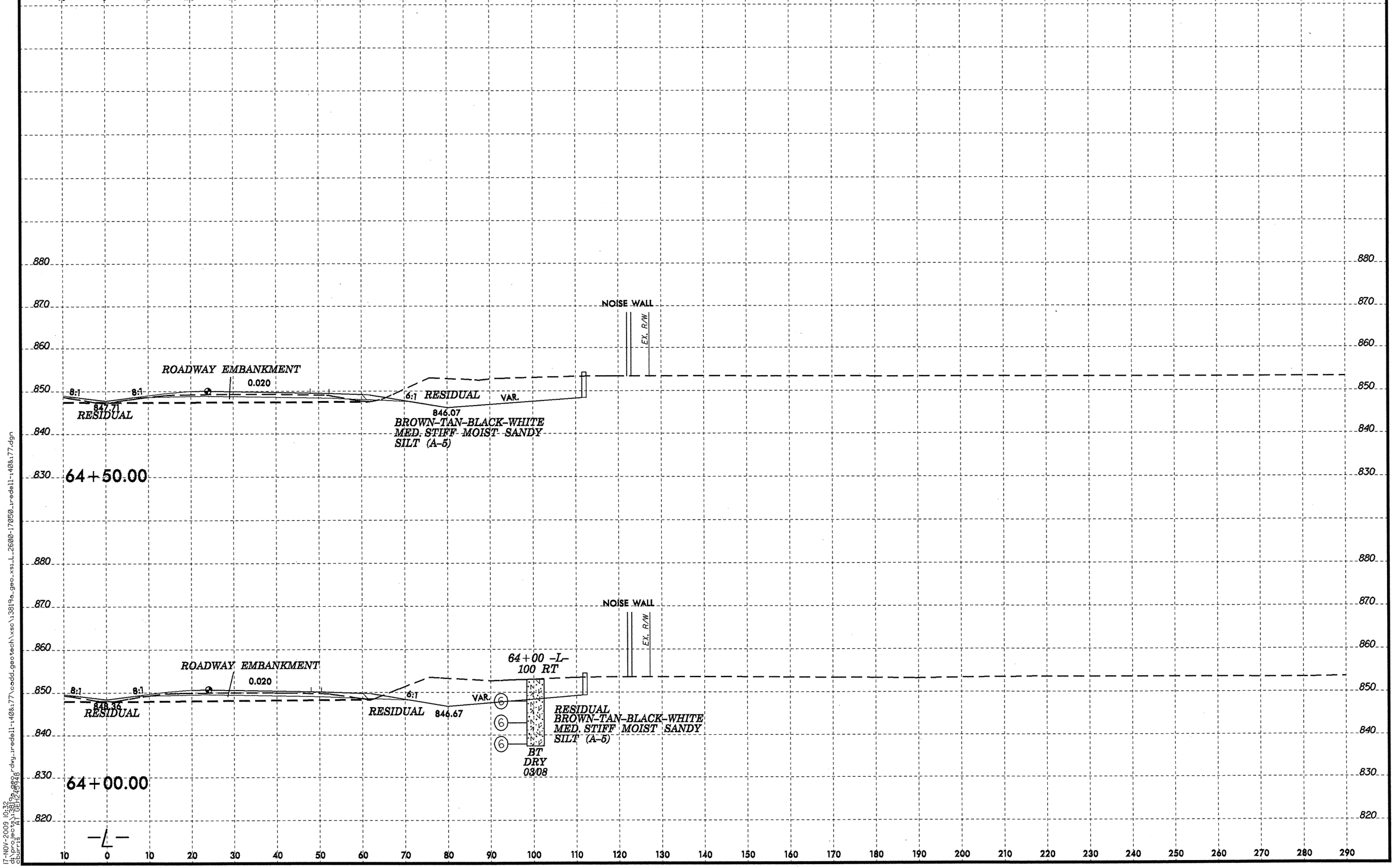
A1 (BETA)



8/23/99
17-NOV-2009 10:32
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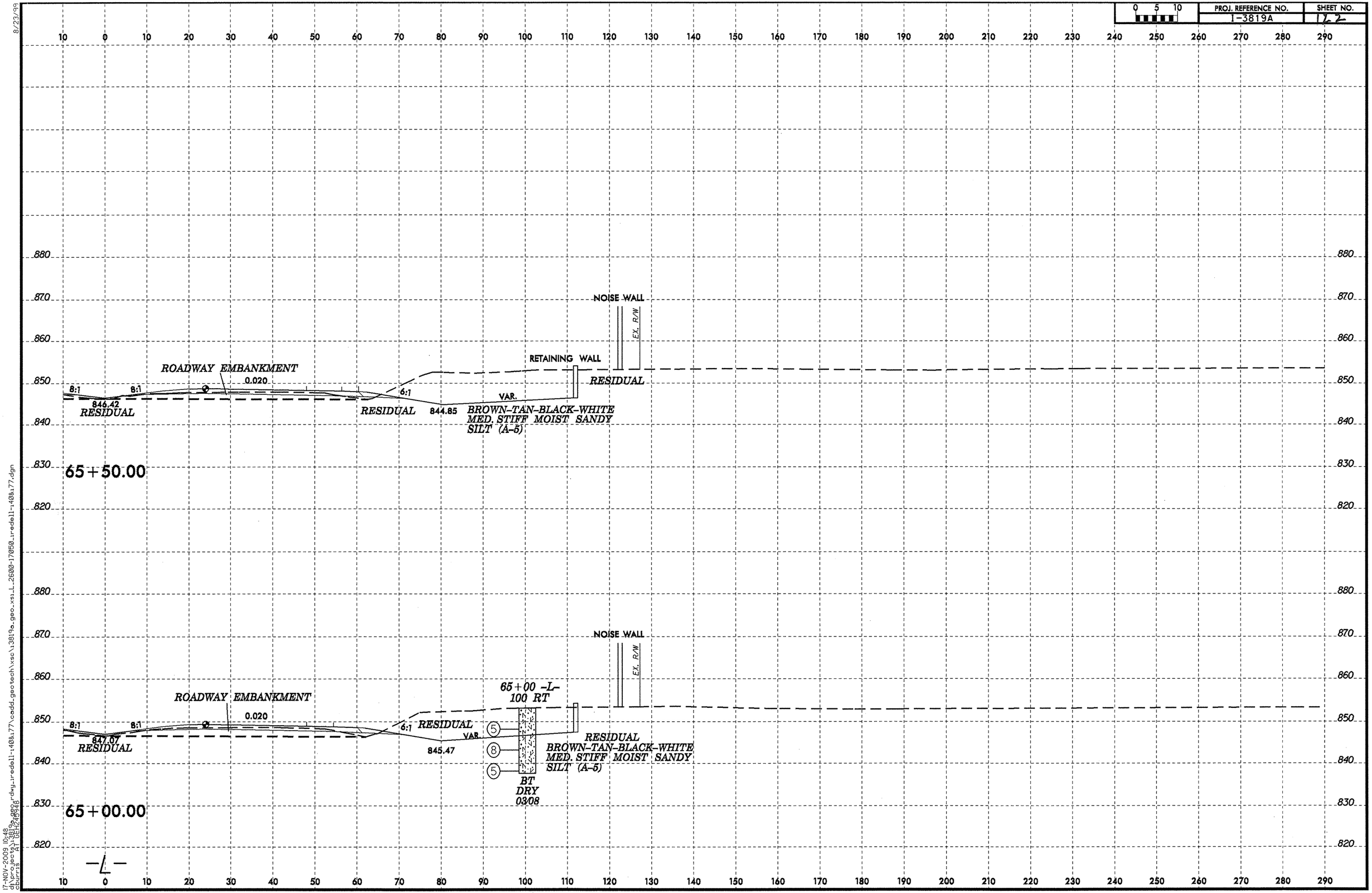
cburns AT DEH248948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	12



8/23/99

17-NOV-2009 10:48
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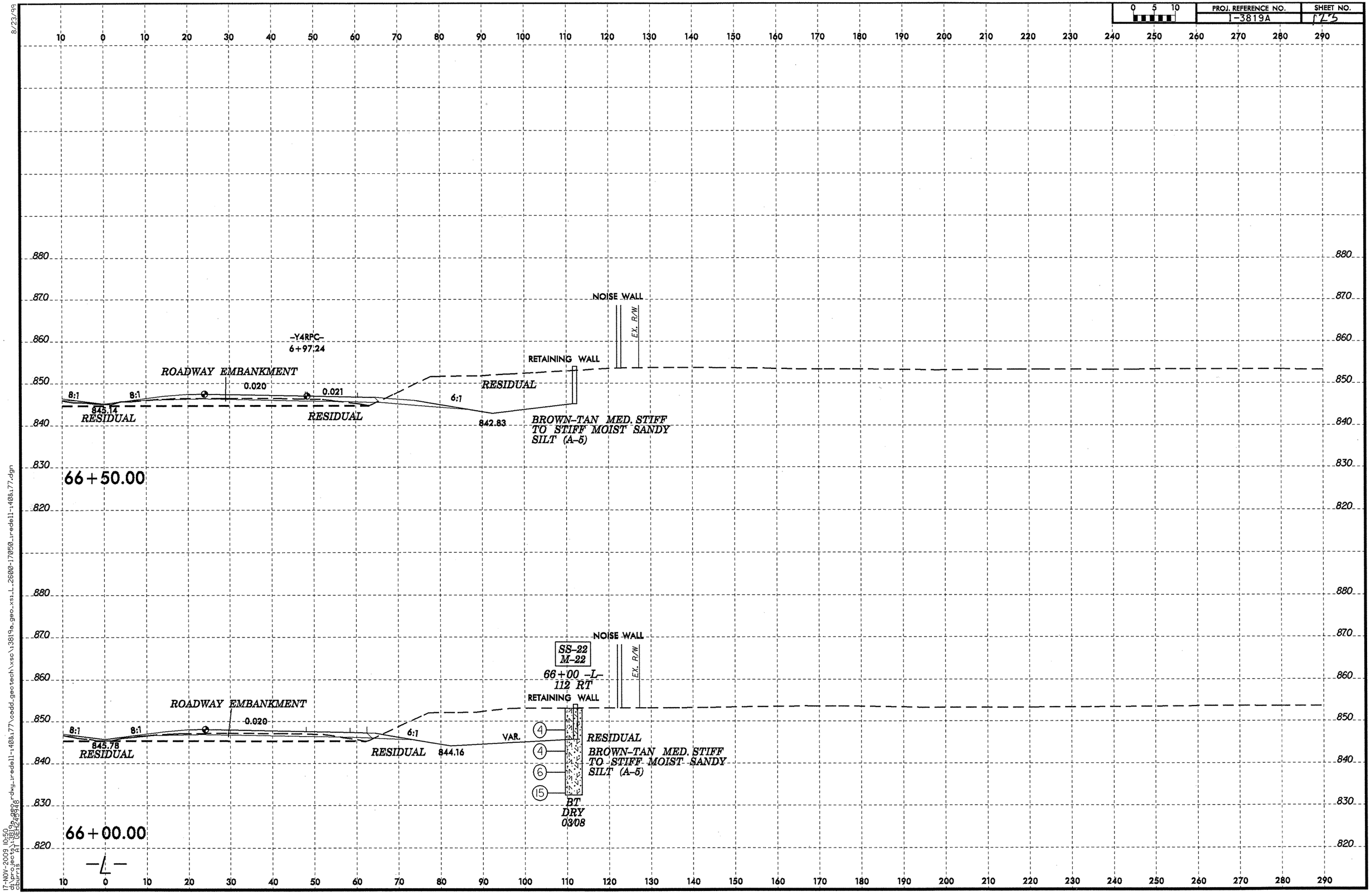

8/23/99
17-NOV-2009 10:50
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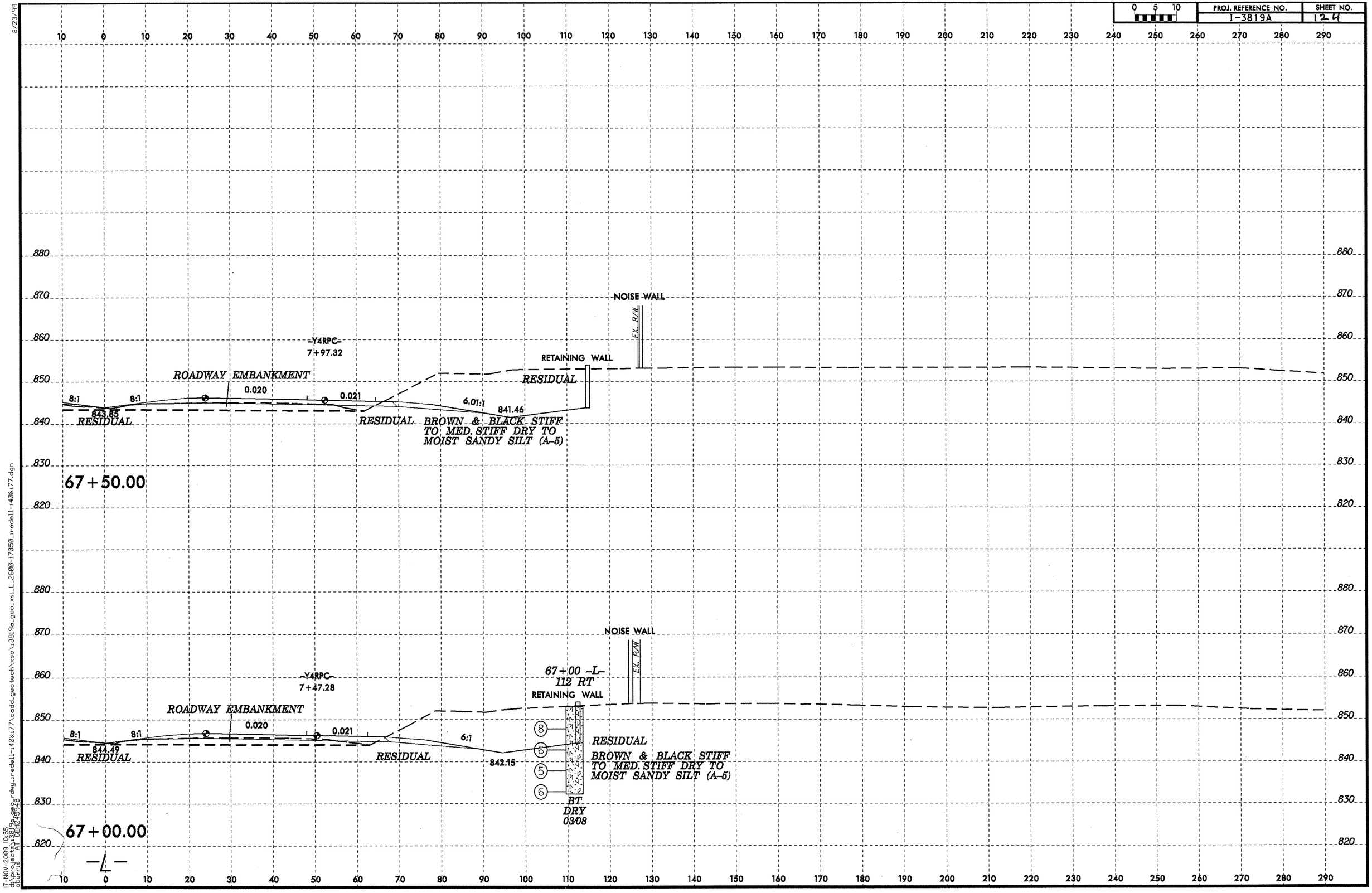
A1 DETAIL



8/23/99
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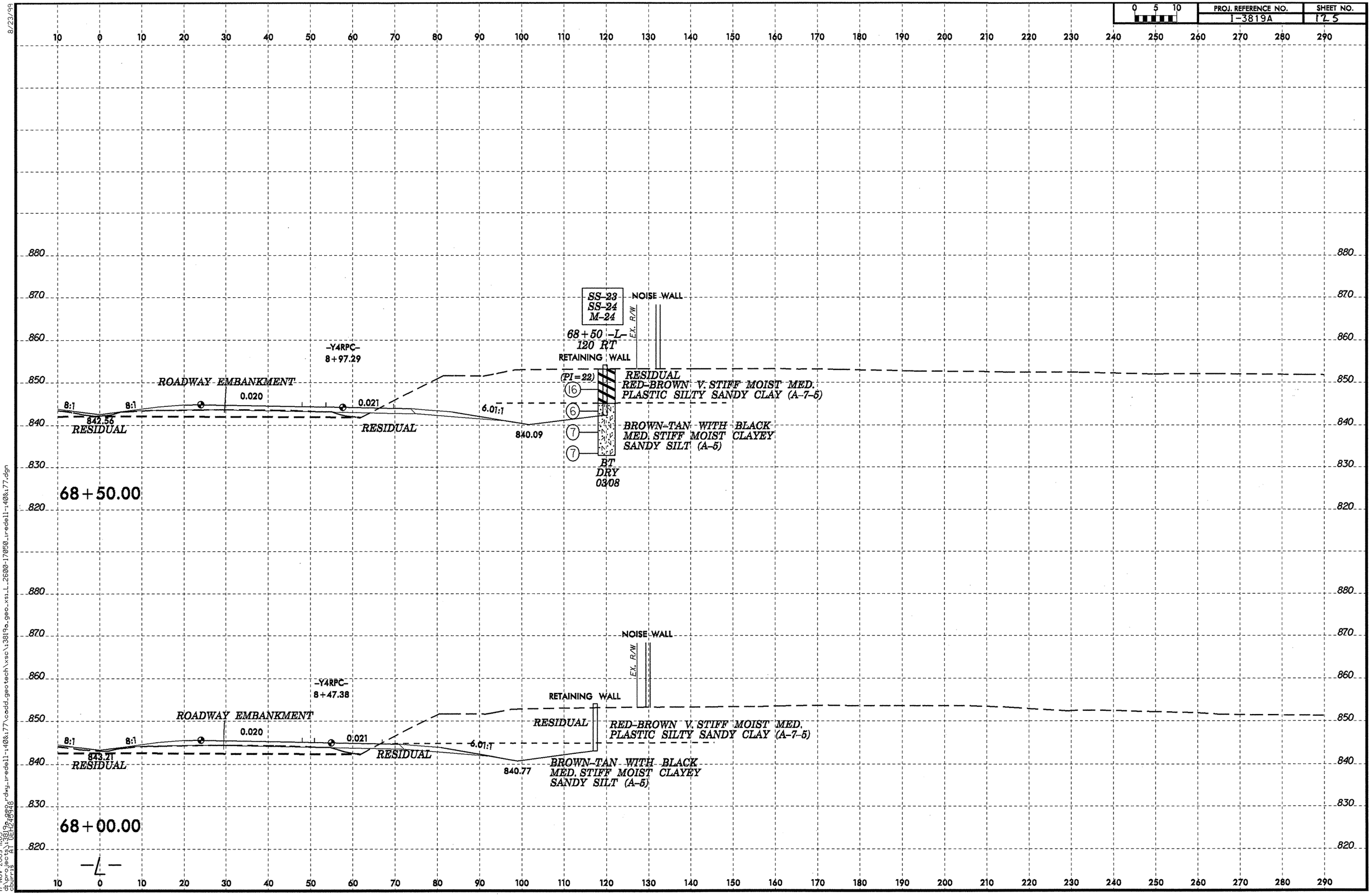
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	12.5



8/23/99

17-NOV-2009 11:03
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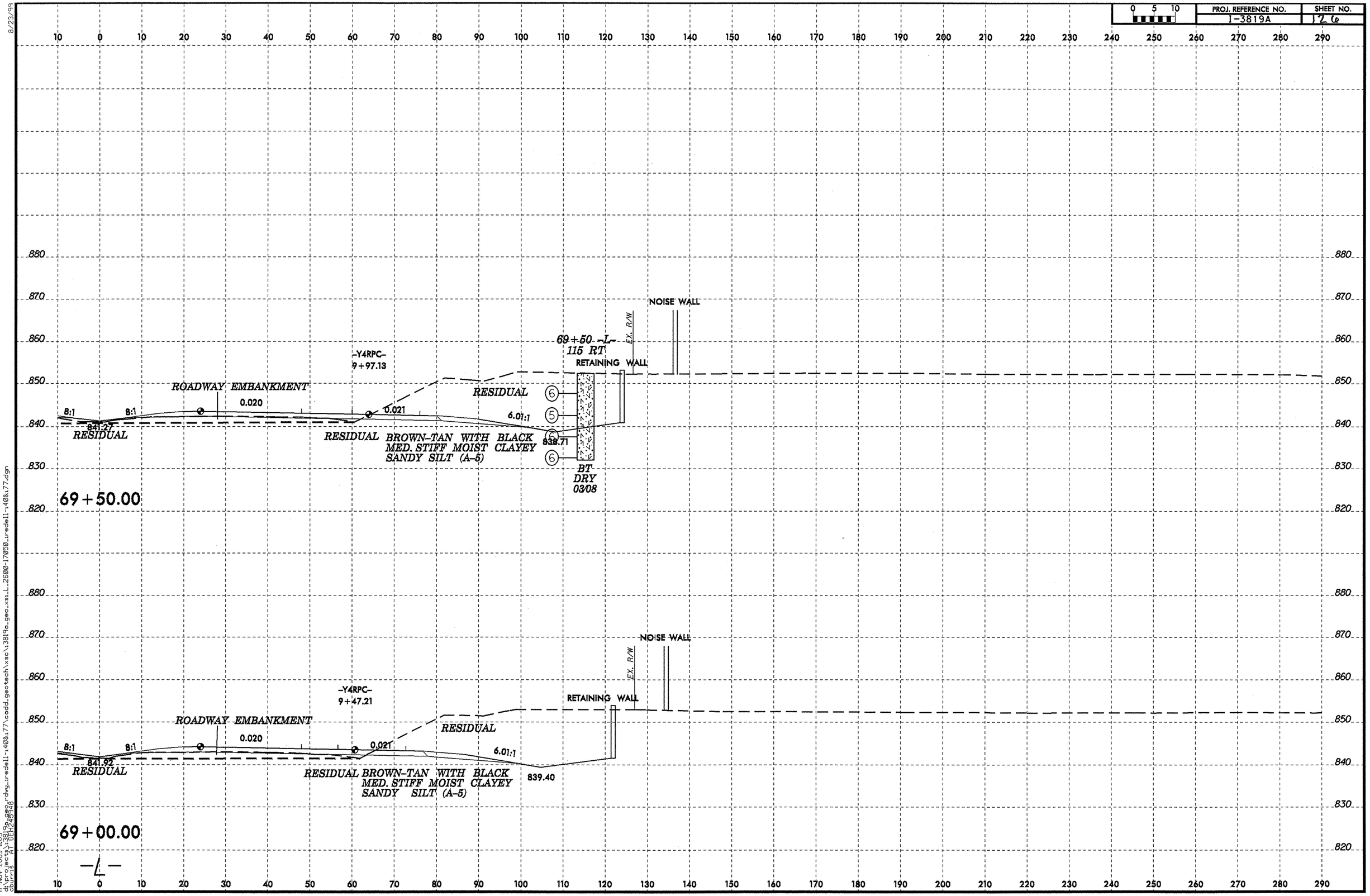
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	12



8/23/99

17-NOV-2009 11:05
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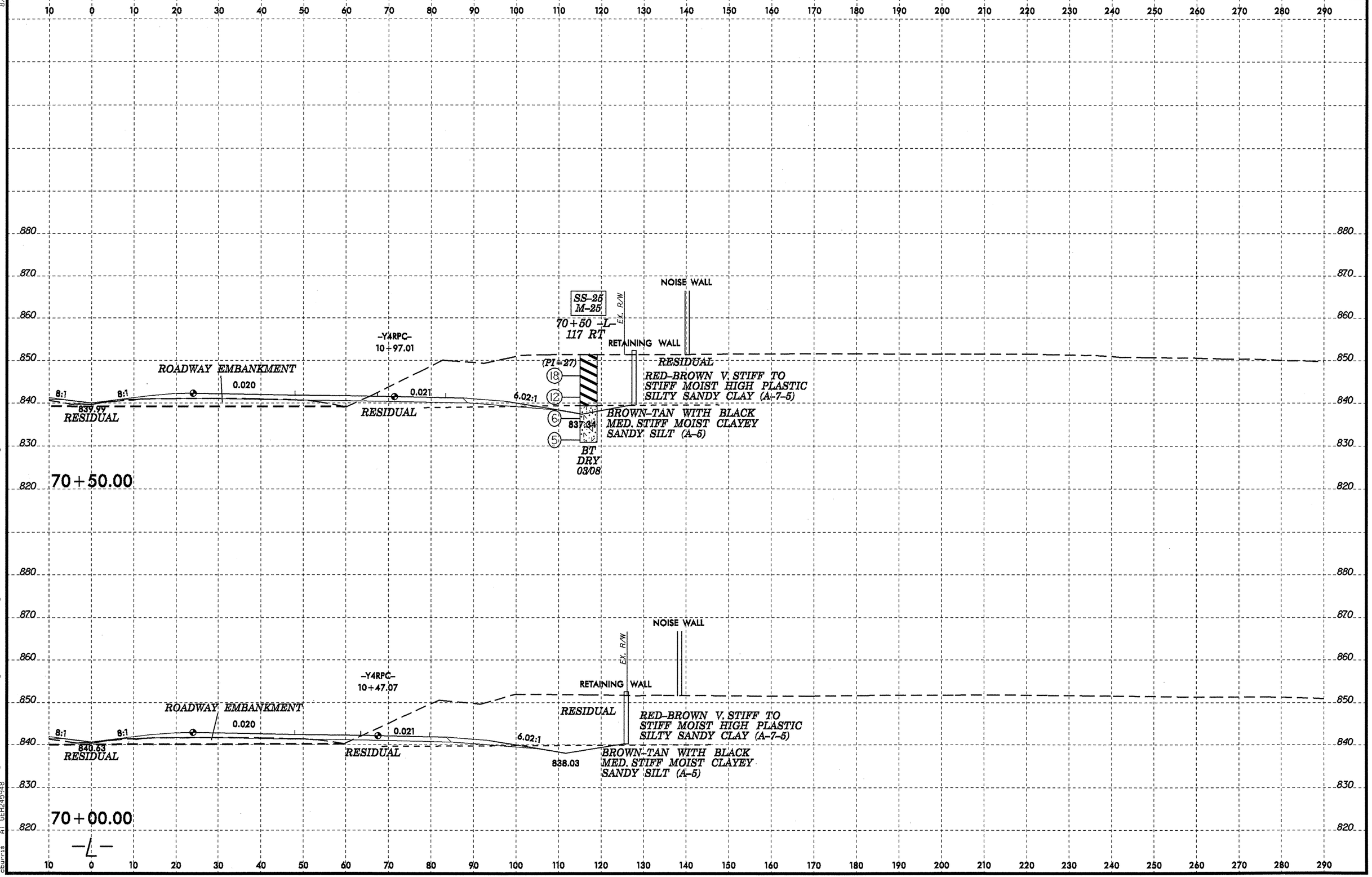

8/23/99
17-NOV-2009 11:07
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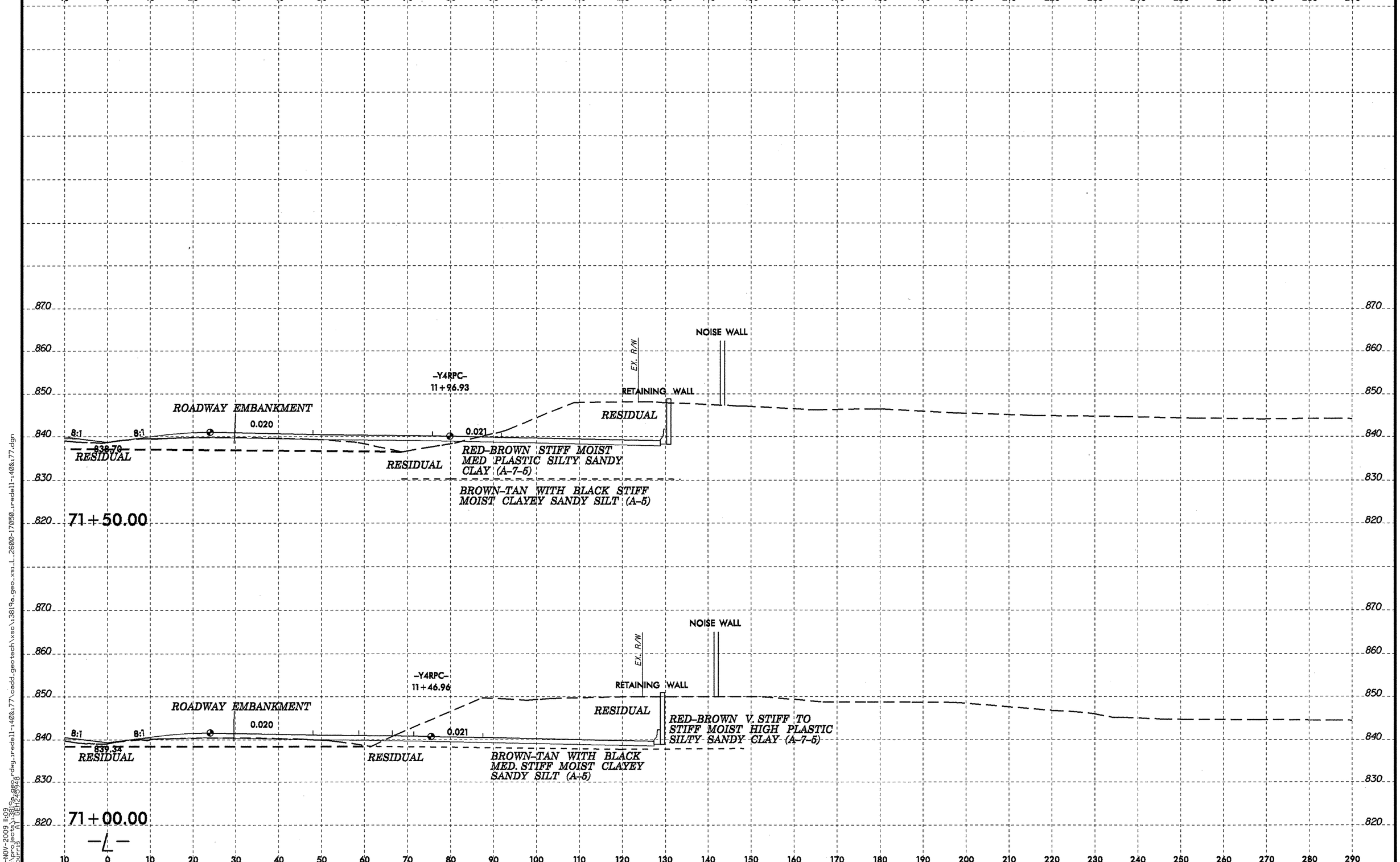

8/23/99
17-NOV-2009 11:09
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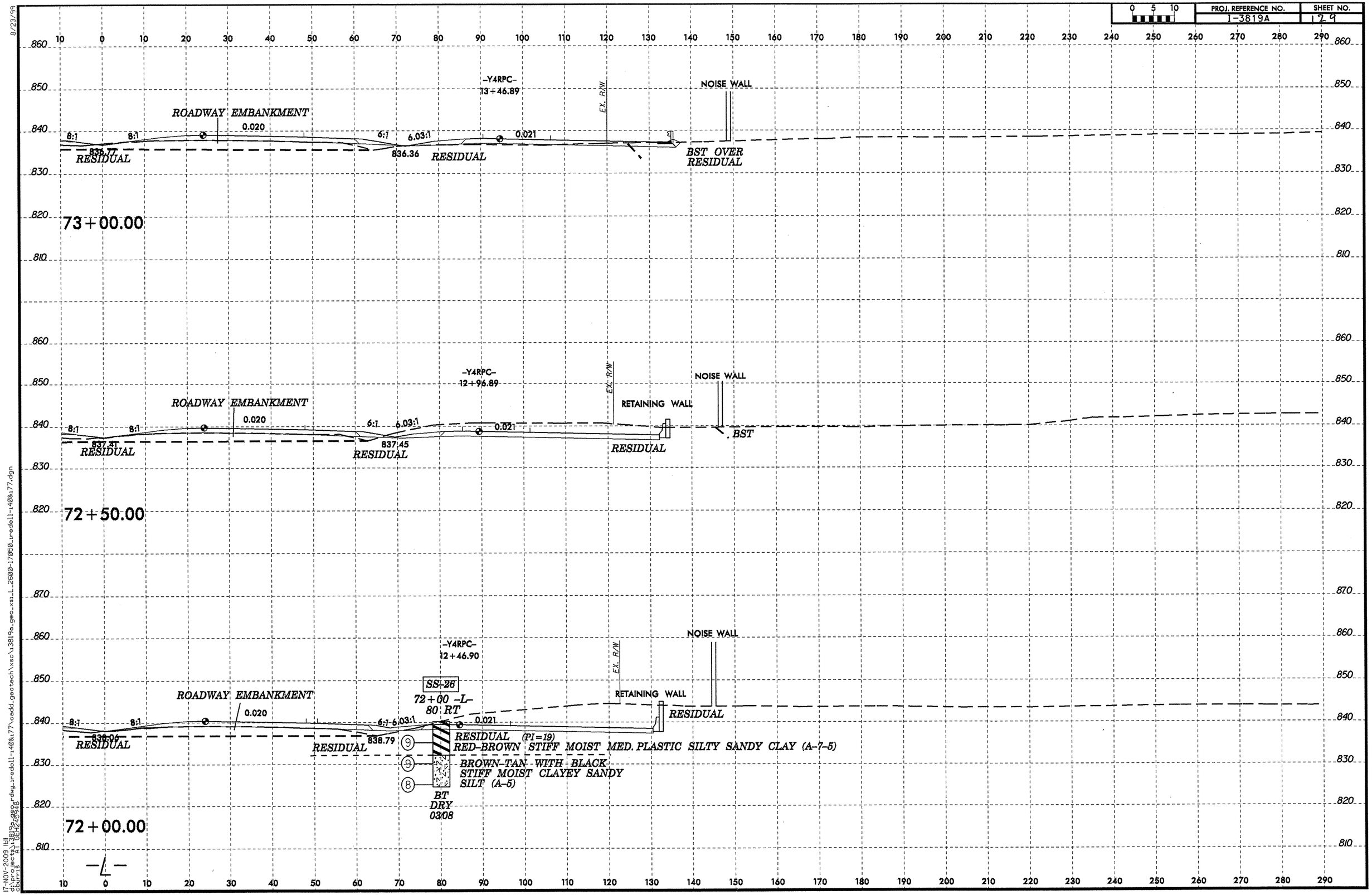
Courtesy of DELTA



8/23/99
17-NOV-2009 11:11
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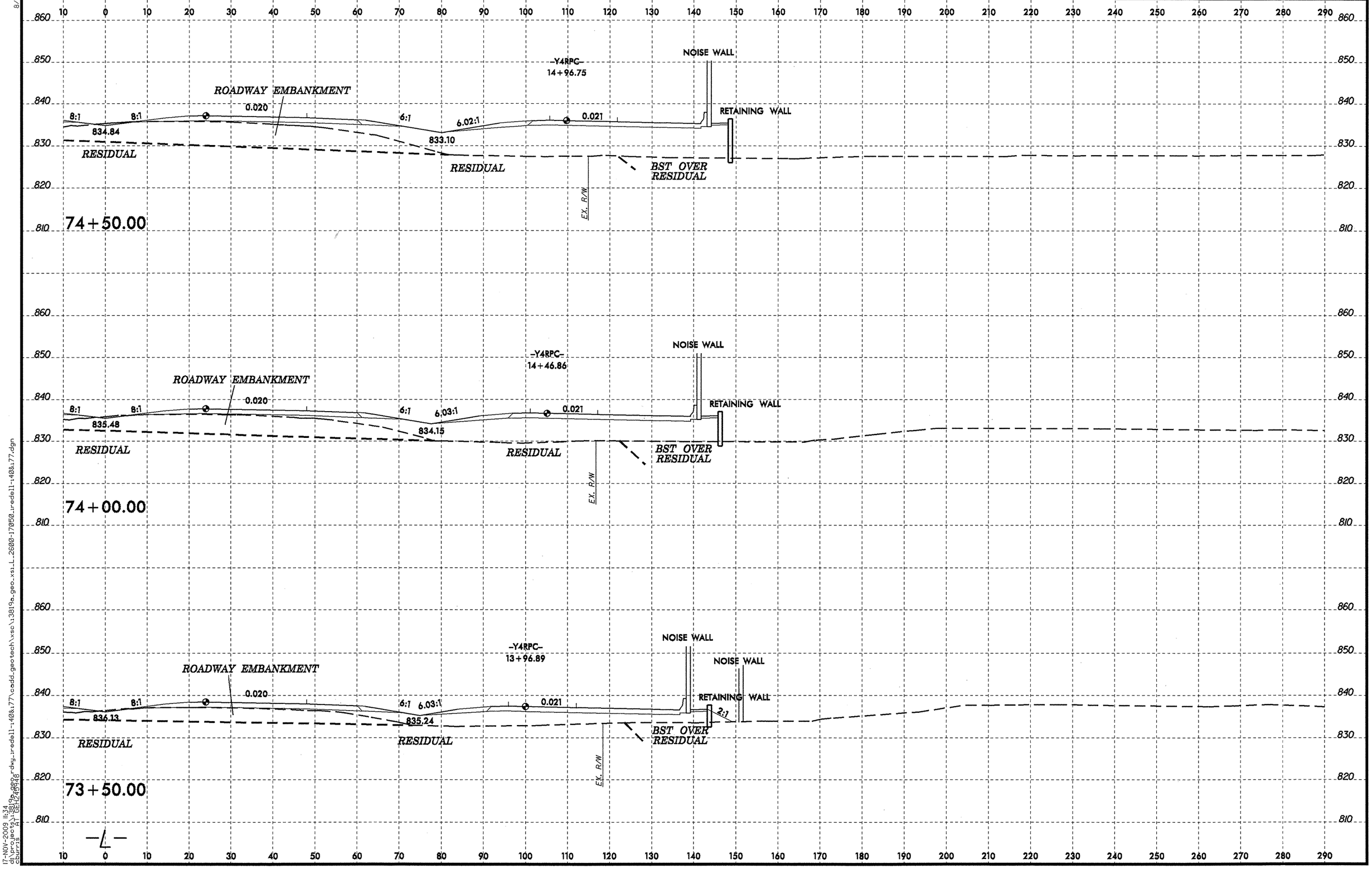

8/23/99
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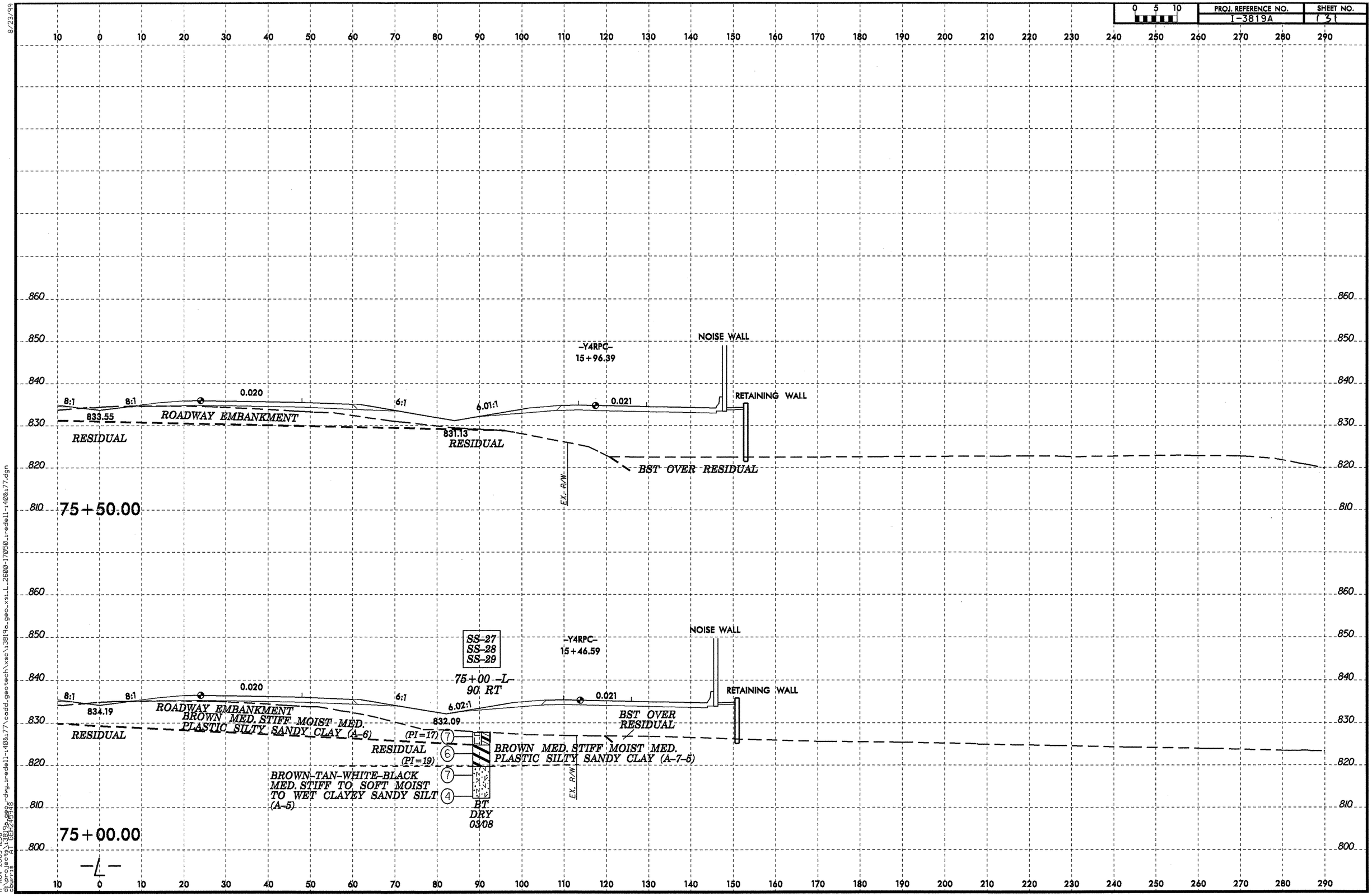
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
131
0 5 10
8/23/99
17-NOV-2009 11:36
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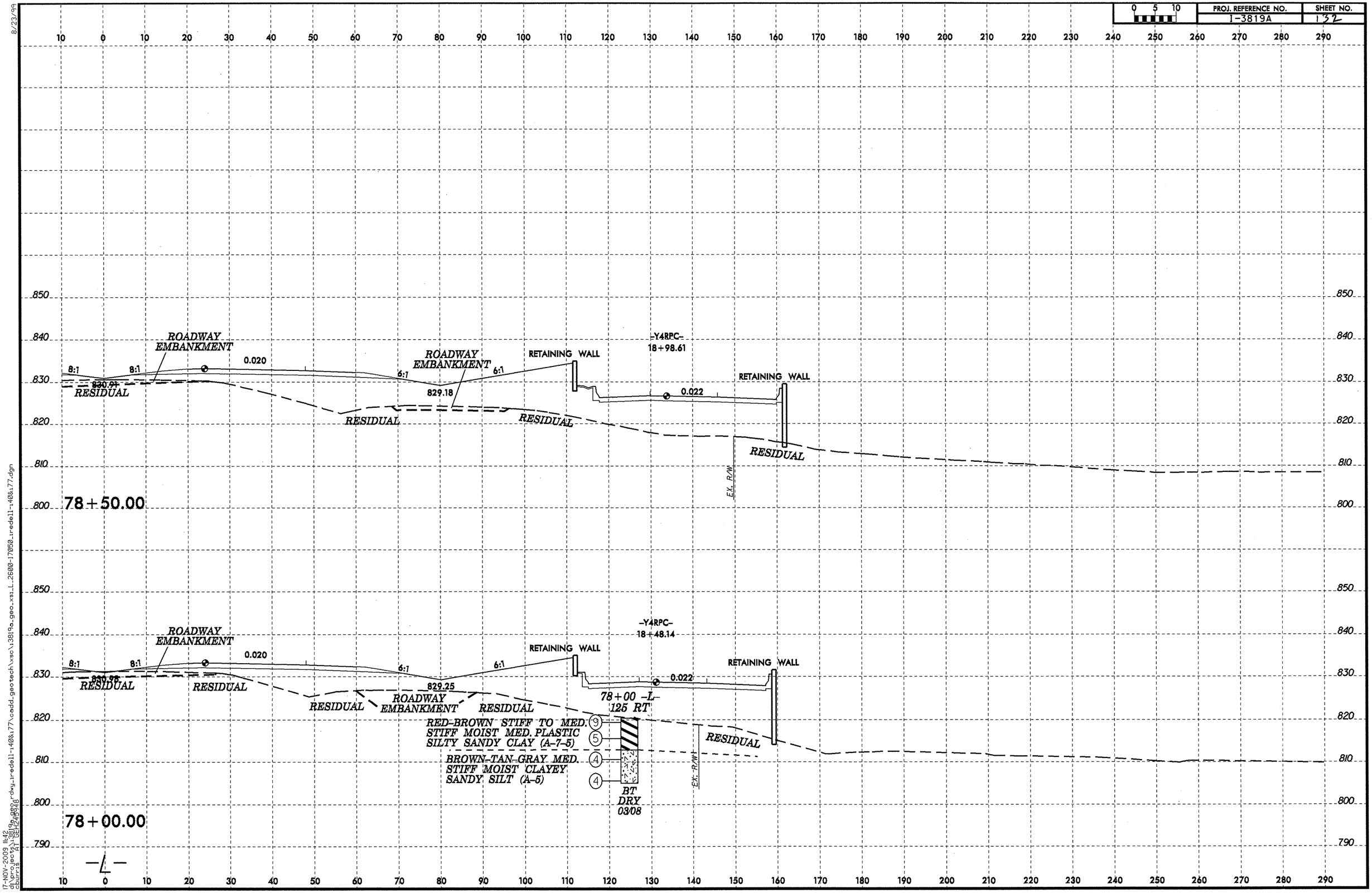
courtrs
75+50.00
NOISE WALL
-Y4RPC-
15+96.39
RETAINING WALL
8:1
8:1
0.020
6:1
6.01:1
0.021
833.55
ROADWAY EMBANKMENT
RESIDUAL
831.13
RESIDUAL
BST OVER RESIDUAL
EX. R/W
75+00.00
-L-
SS-27
SS-28
SS-29
-Y4RPC-
15+46.59
75+00 -L-
90 RT
NOISE WALL
RETAINING WALL
8:1
8:1
0.020
6:1
6.02:1
0.021
834.19
ROADWAY EMBANKMENT
BROWN MED. STIFF MOIST MED.
PLASTIC SILTY SANDY CLAY (A-6)
RESIDUAL
832.09
(PI=17)
7
RESIDUAL
(PI=19)
6
BROWN MED. STIFF MOIST MED.
PLASTIC SILTY SANDY CLAY (A-7-5)
BST OVER
RESIDUAL
7
BROWN-TAN-WHITE-BLACK
MED. STIFF TO SOFT MOIST
TO WET CLAYEY SANDY SILT
(A-5)
4
BT.
DRY
03/08
EX. R/W
75+00.00
-L-
860
850
840
830
820
810
800
10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	132



8/23/99

17-NOV-2009 11:42
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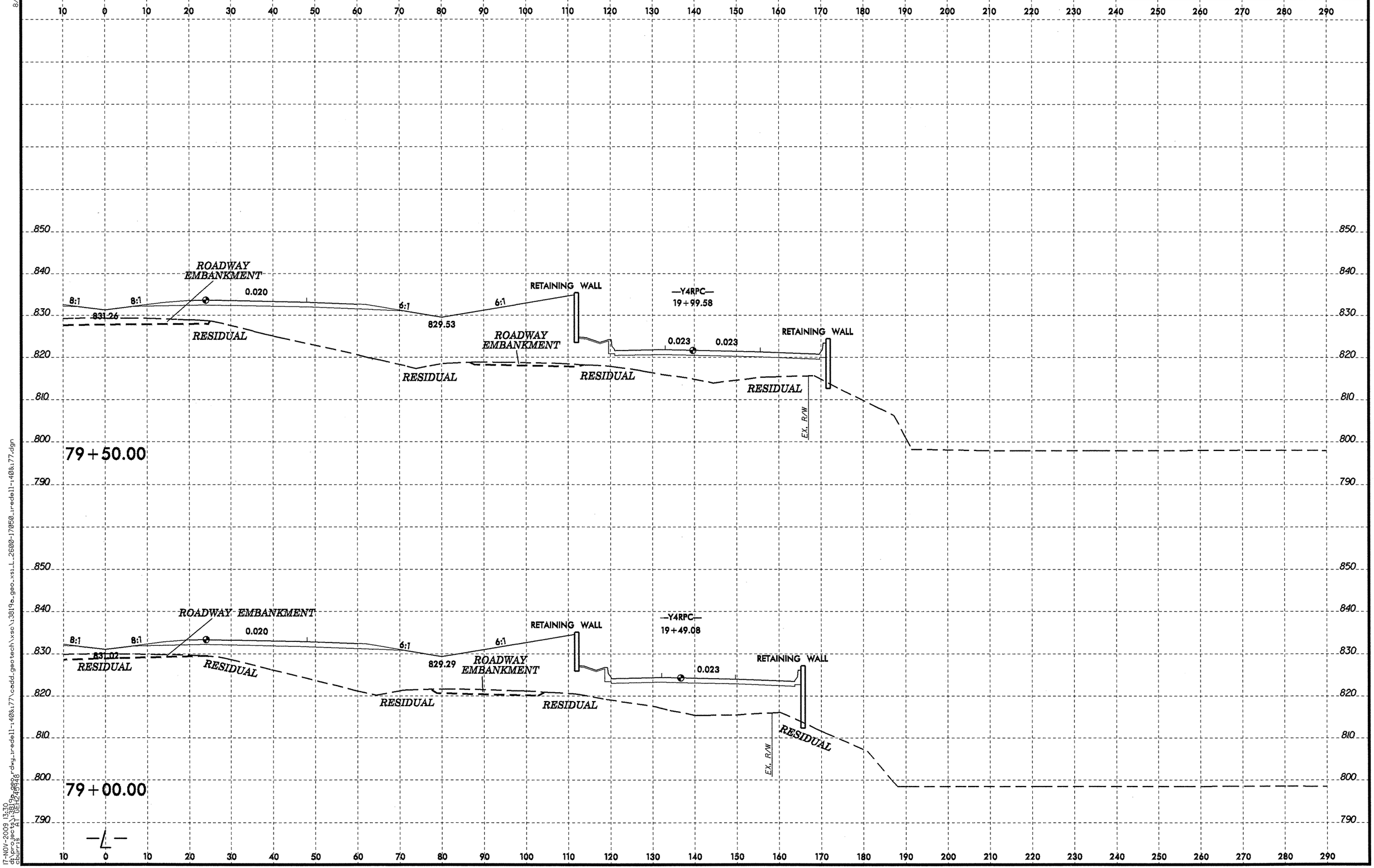

8/23/99
17-NOV-2009 13:30
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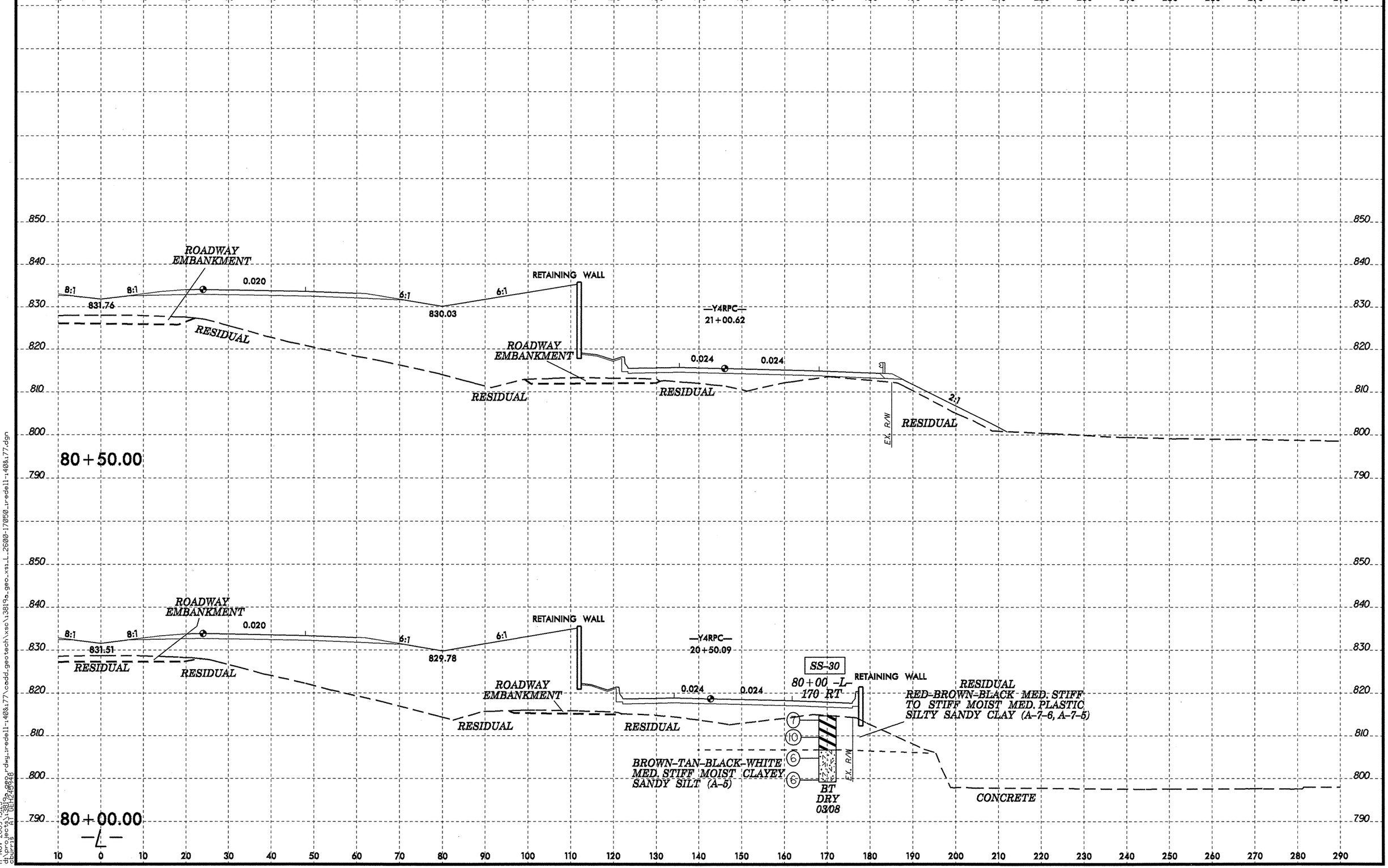
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	13



8/23/99

17-NOV-2009 13:25
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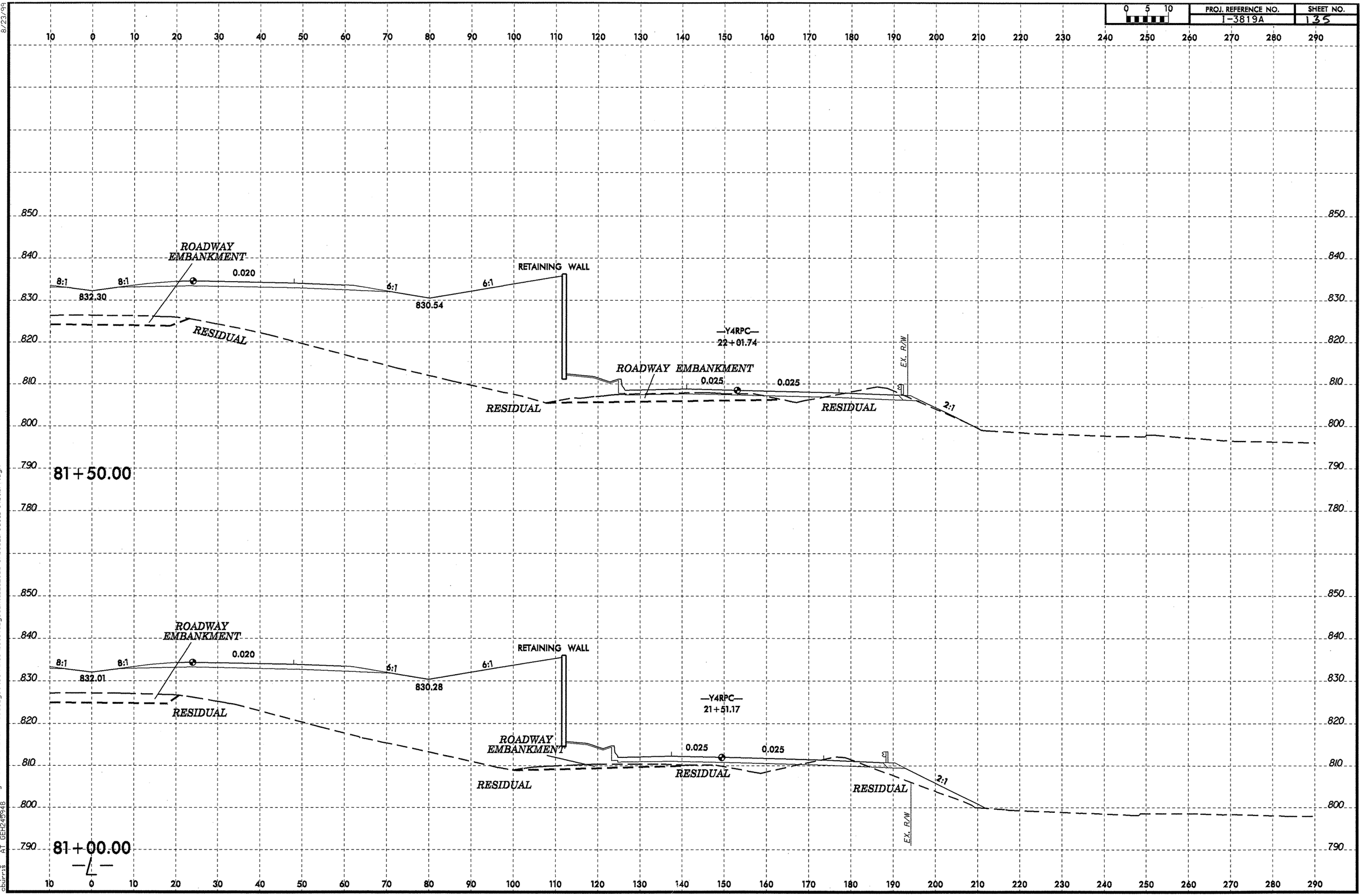
I-3819A	135



8/23/99

17-NOV-2009 13:22
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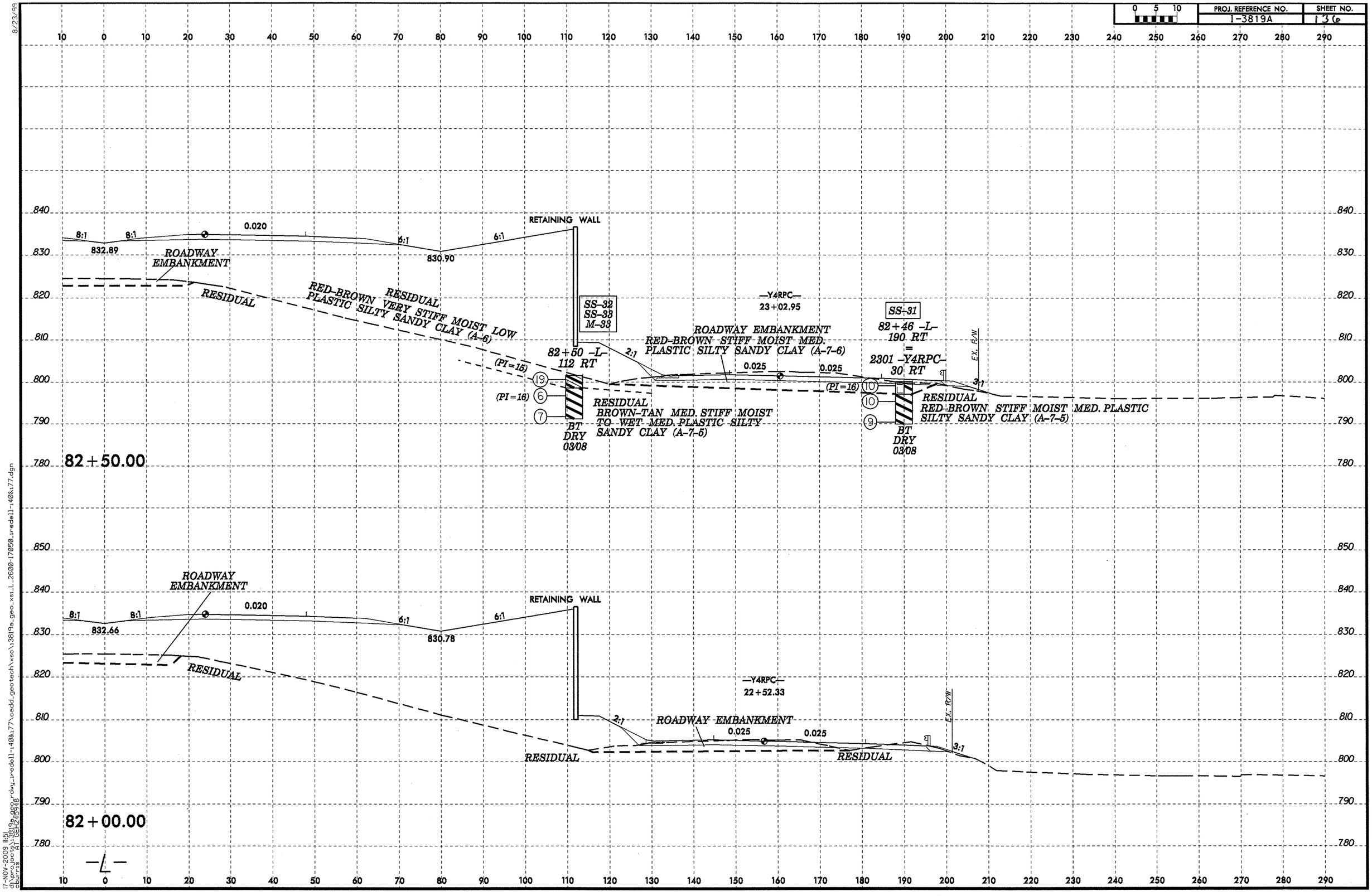
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	13G



8/23/99

17-NOV-2009 11:51
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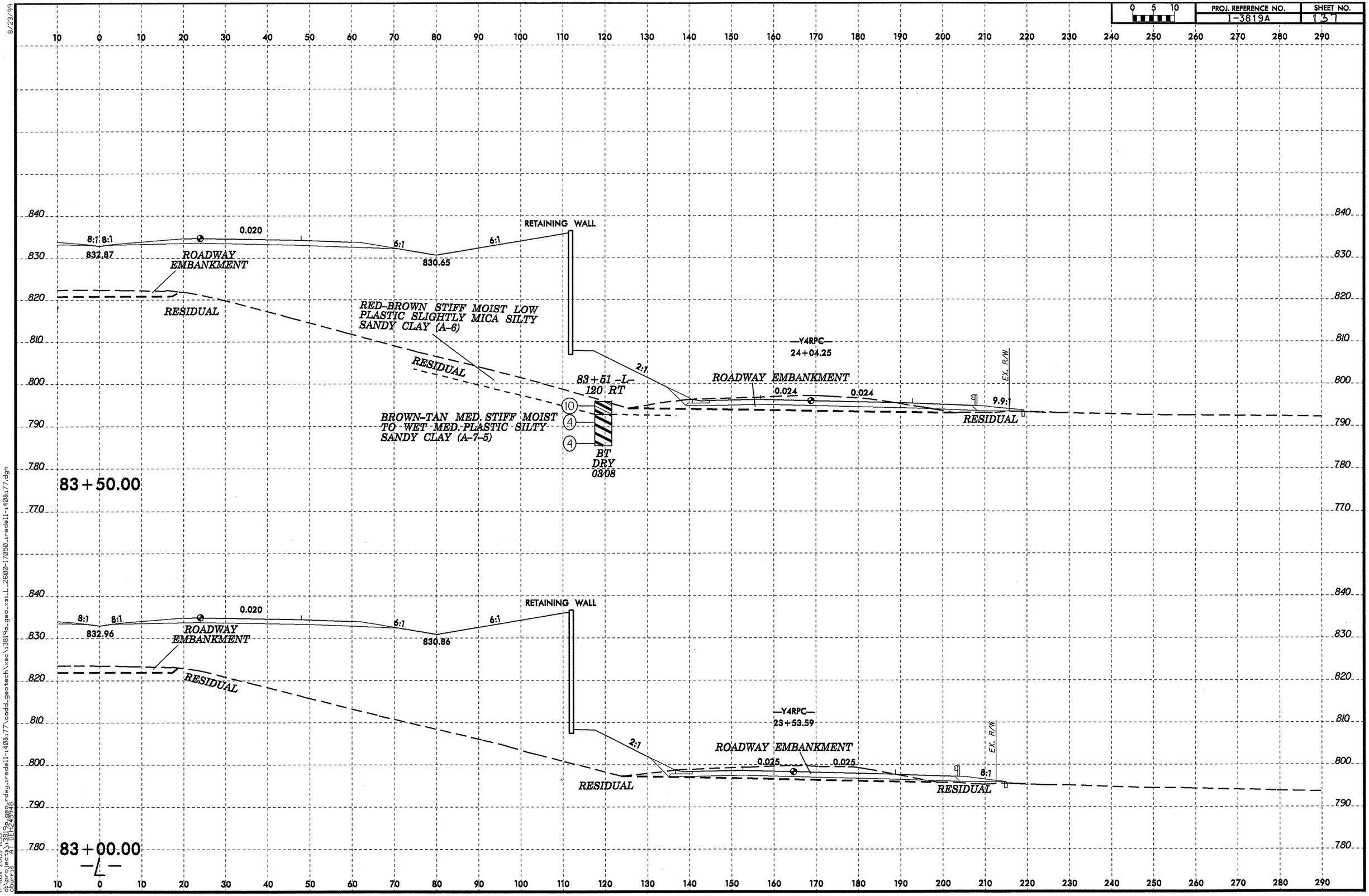
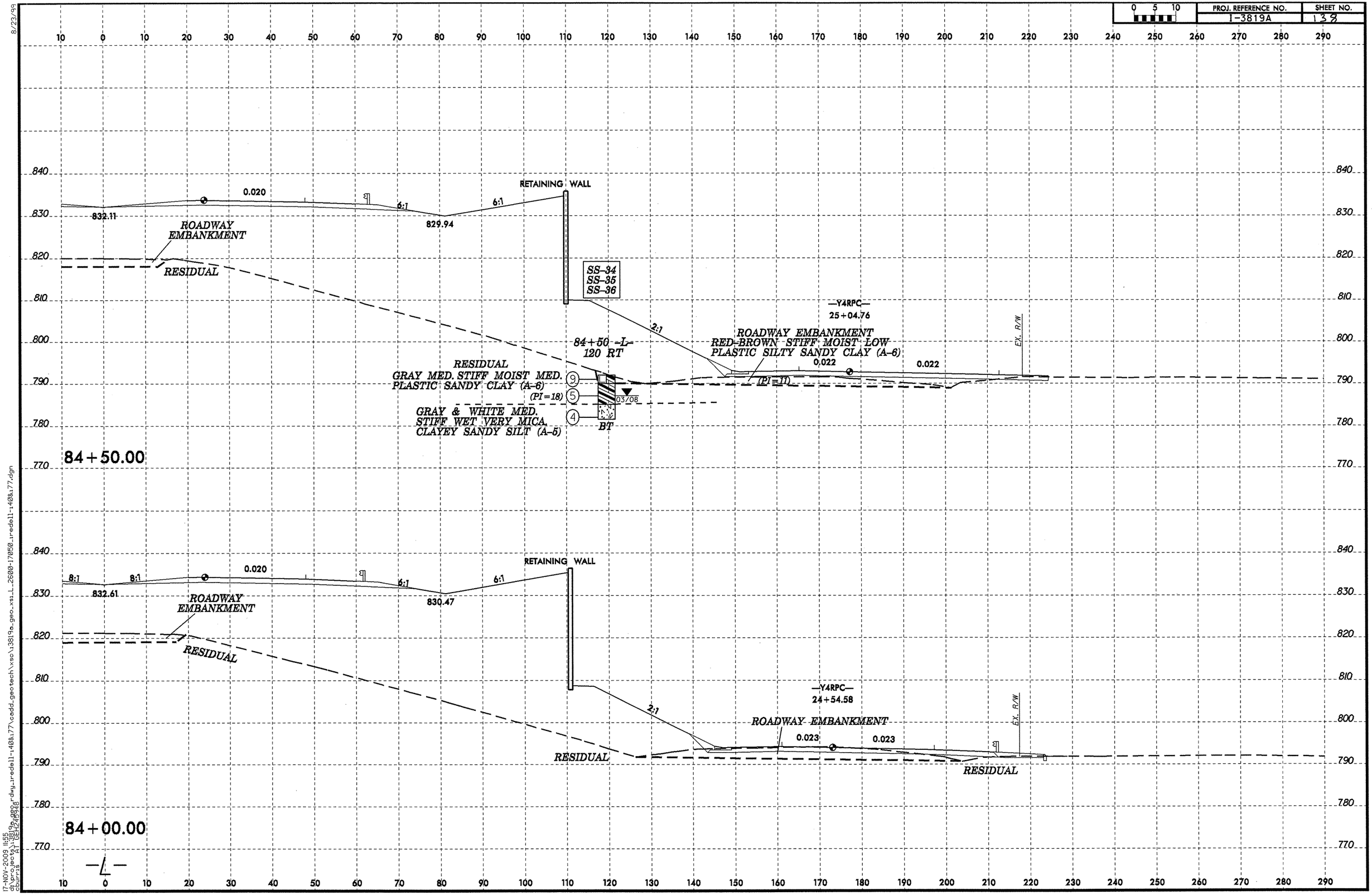

0 5 10
RETAINING WALL
8:1 8:1
0.020
6:1
6:1
832.87
830.65
ROADWAY EMBANKMENT
RESIDUAL
RED-BROWN STIFF MOIST LOW PLASTIC SLIGHTLY MICA SILTY SANDY CLAY (A-6)
RESIDUAL
2:1
83+51 -L- 120 RT
BROWN-TAN MED. STIFF MOIST TO WET MED. PLASTIC SILTY SANDY CLAY (A-7-5)
BT DRY 03/08
-Y4RPC-
24+04.25
ROADWAY EMBANKMENT
0.024
0.024
9.9:1
EX. R/W
RESIDUAL
83+50.00
RETAINING WALL
8:1 8:1
0.020
6:1
6:1
832.96
830.86
ROADWAY EMBANKMENT
RESIDUAL
2:1
-Y4RPC-
23+53.59
ROADWAY EMBANKMENT
0.025
0.025
8:1
EX. R/W
RESIDUAL
RESIDUAL
83+00.00
-L-



8/23/99
17-NOV-2009 11:55
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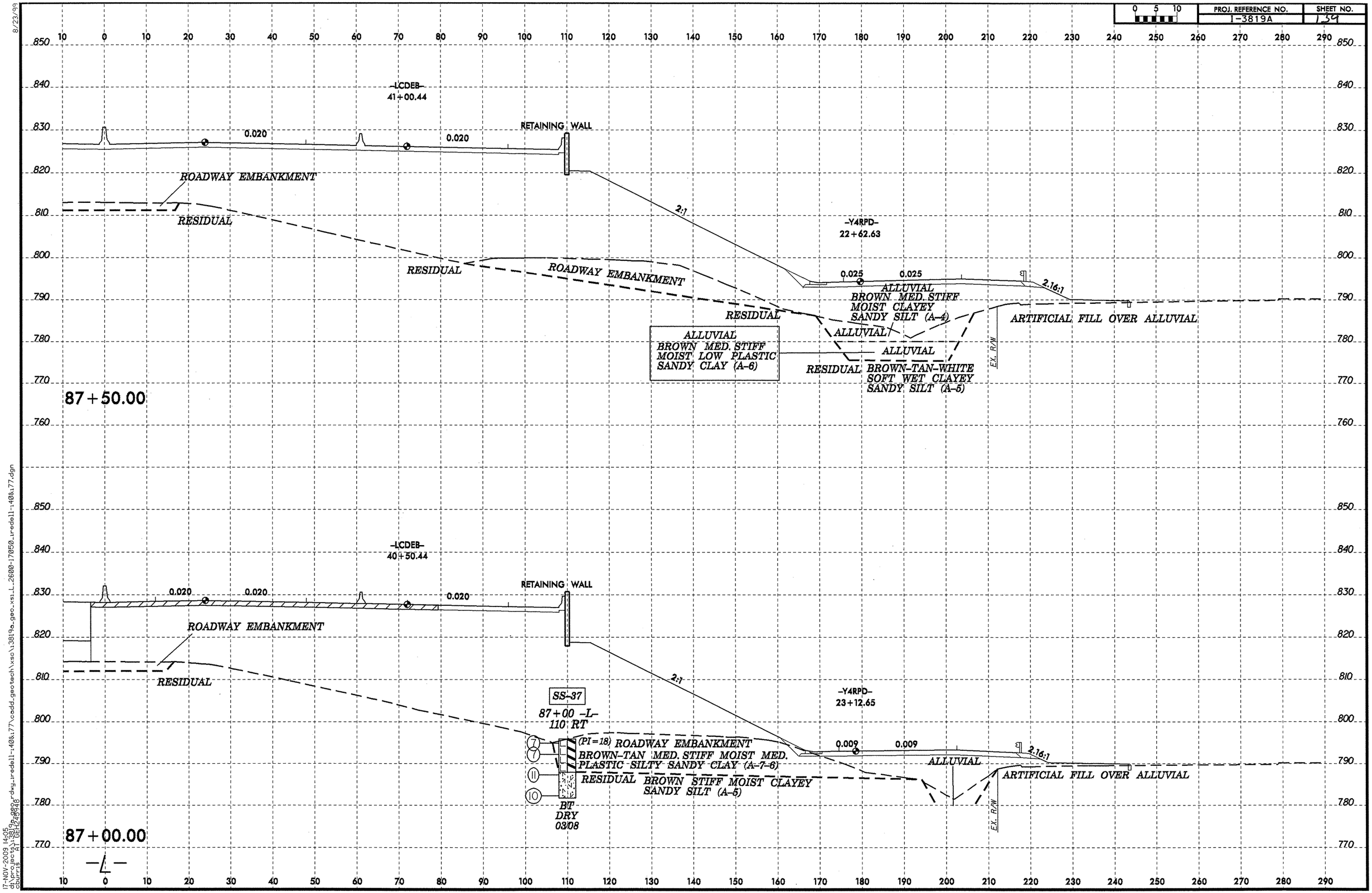

8/23/99

17-NOV-2009 14:05
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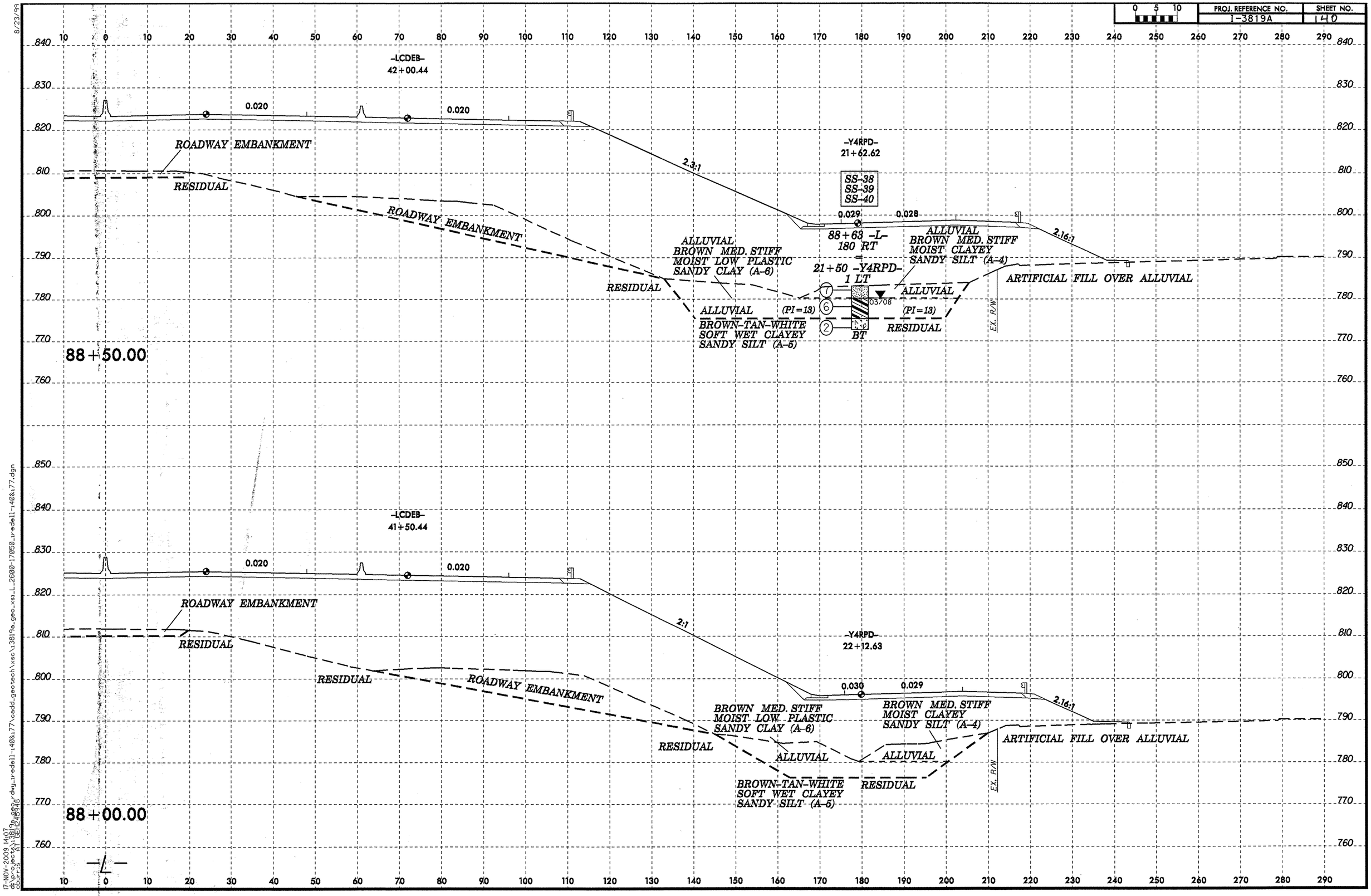
A1 DETAILS/18



8/23/99

17-NOV-2009 14:07
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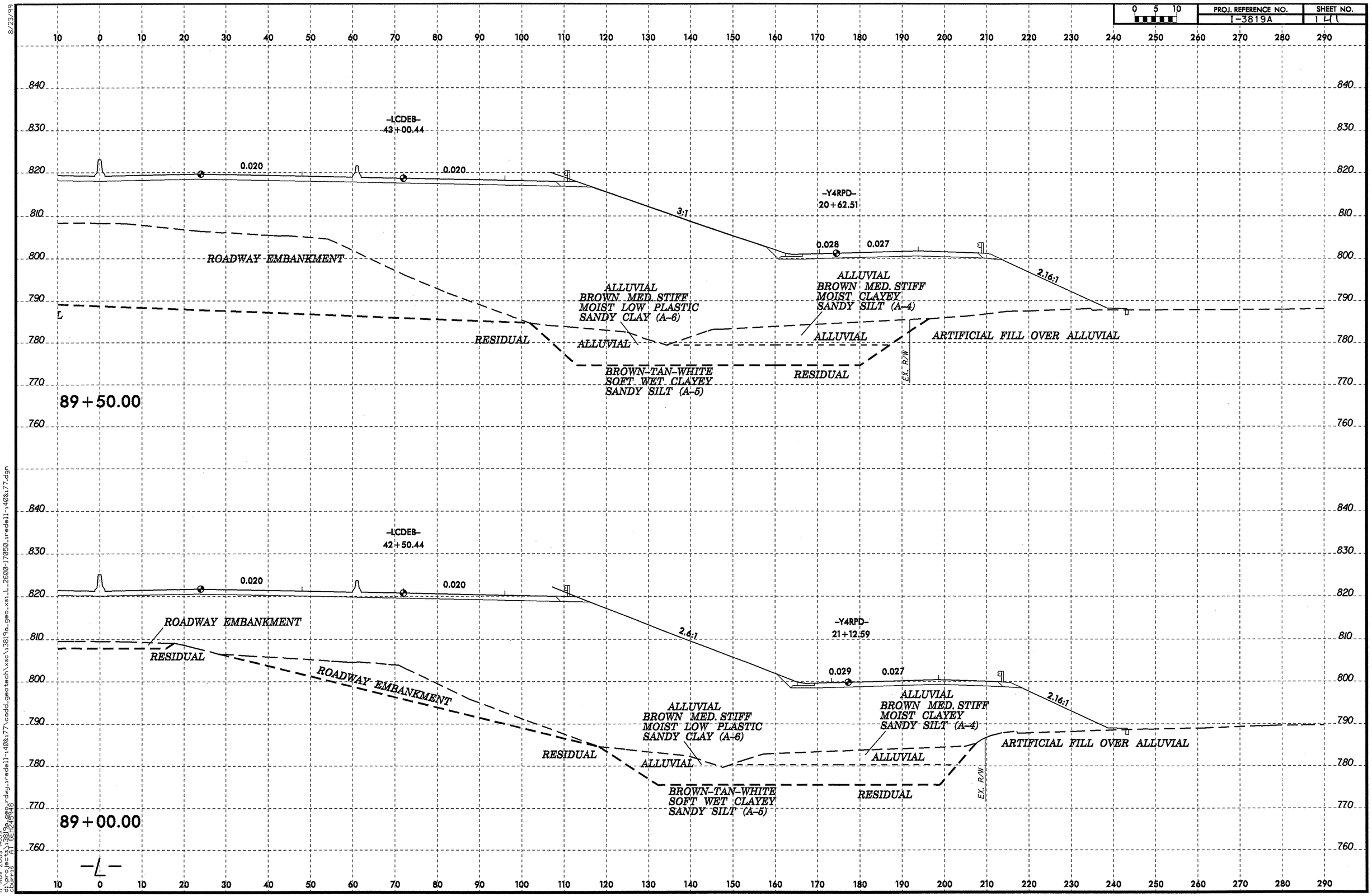
Bureau of Geotechnical Engineering



8/23/99

17-NOV-2009 14:09
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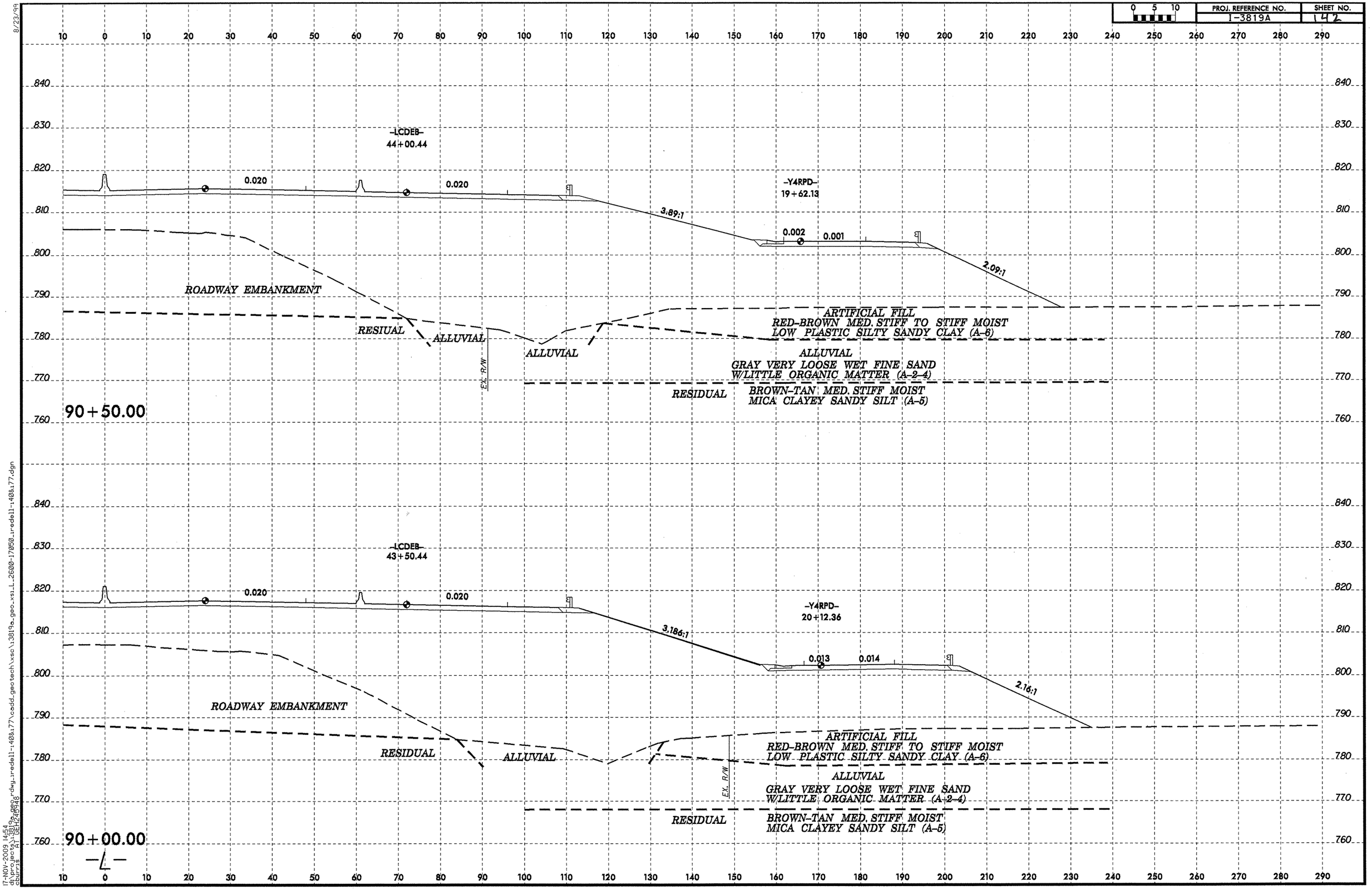

8/23/99

17-NOV-2009 14:54
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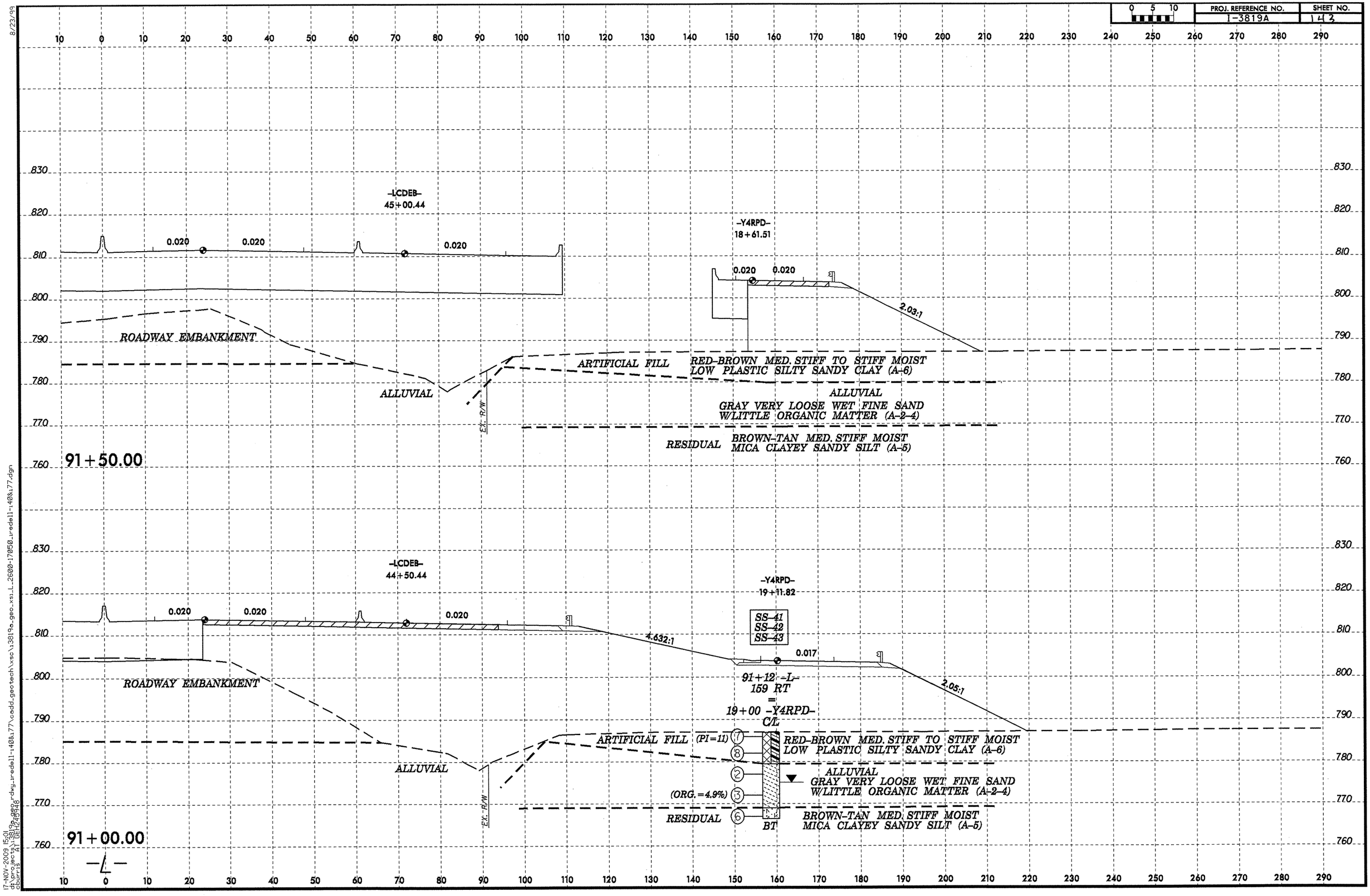
cburris



8/23/99
17-NOV-2009 15:01
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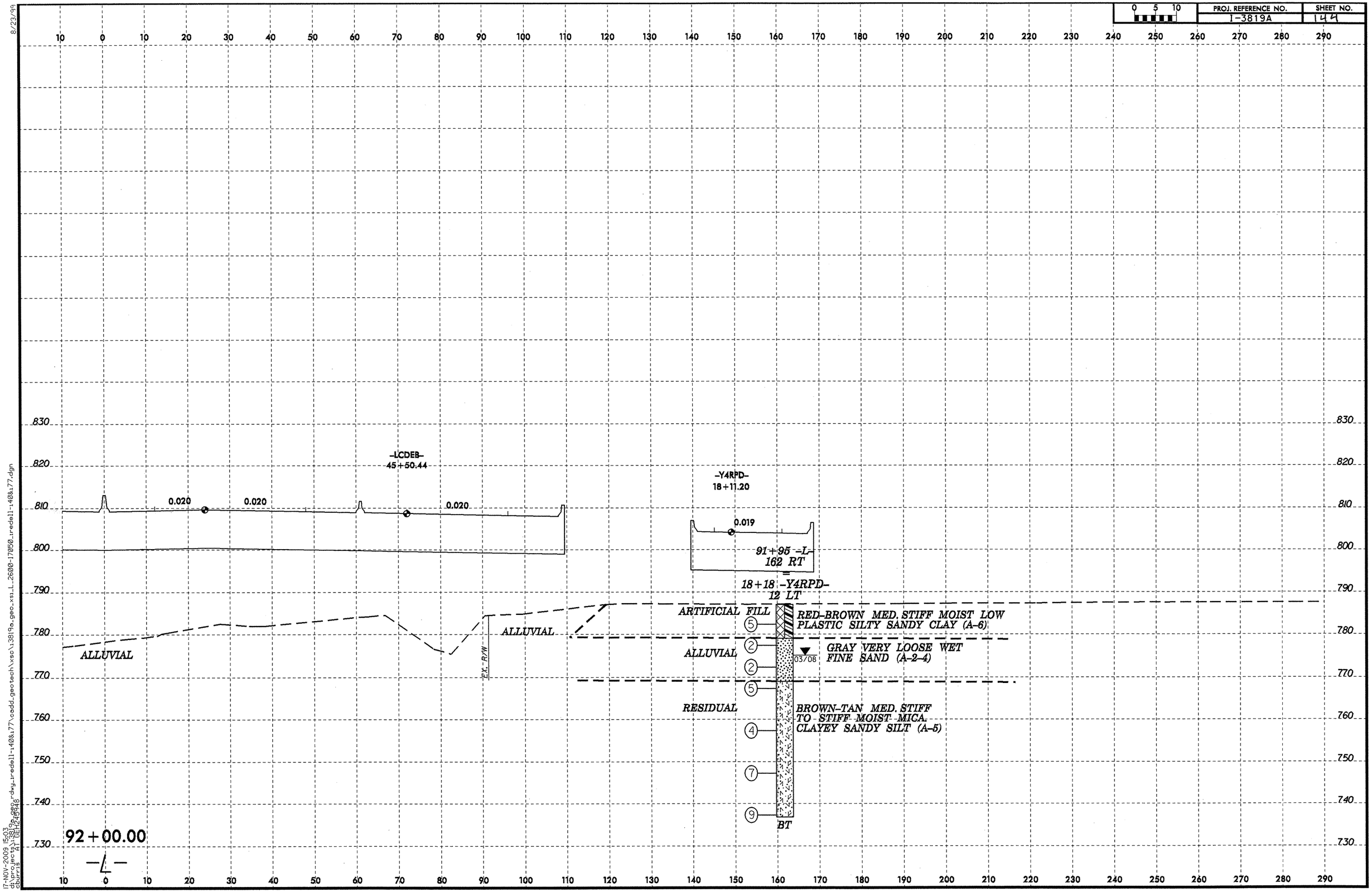

8/23/99

17-NOV-2009 15:03
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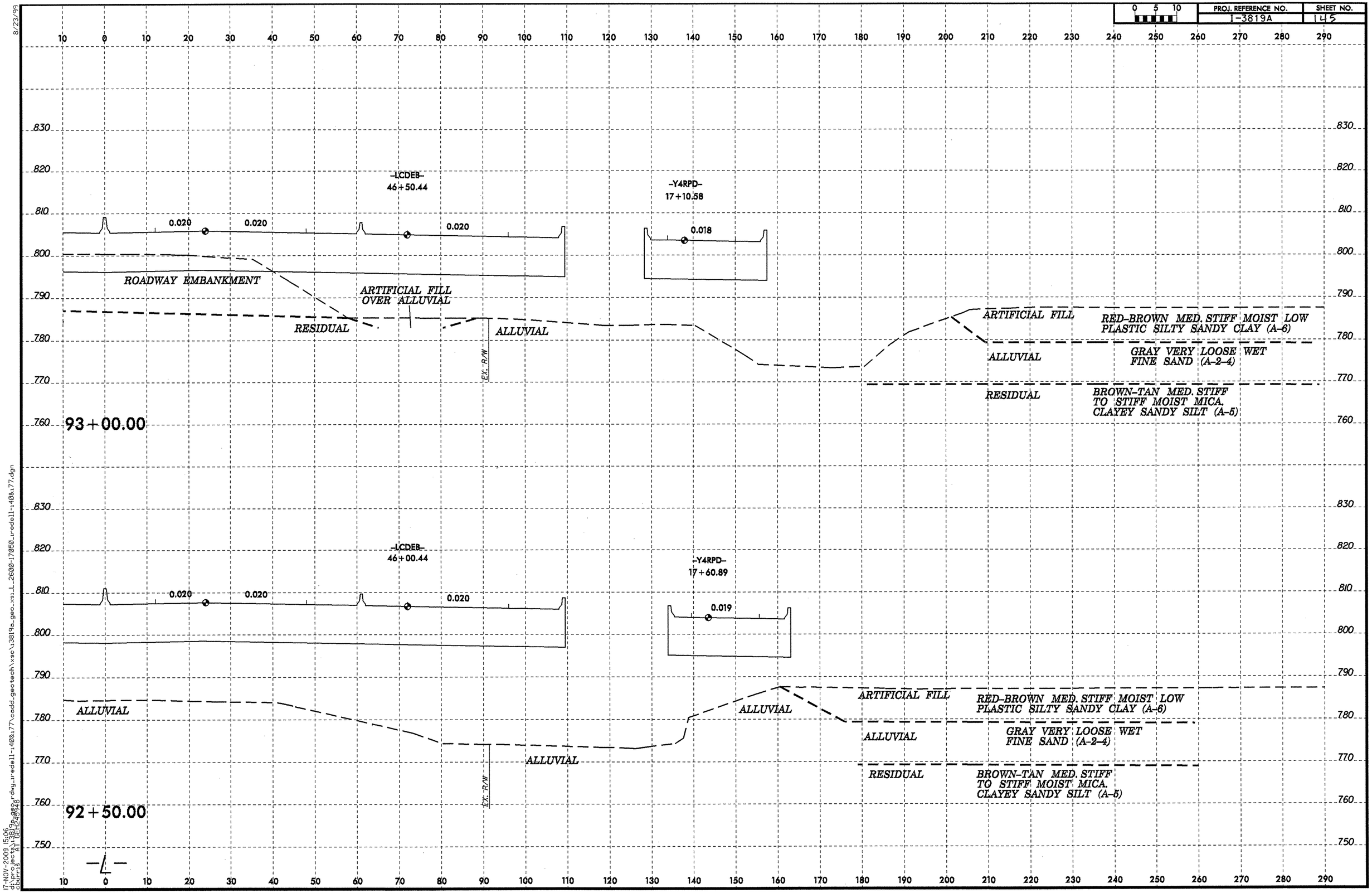

8/23/99
17-NOV-2009 15:06
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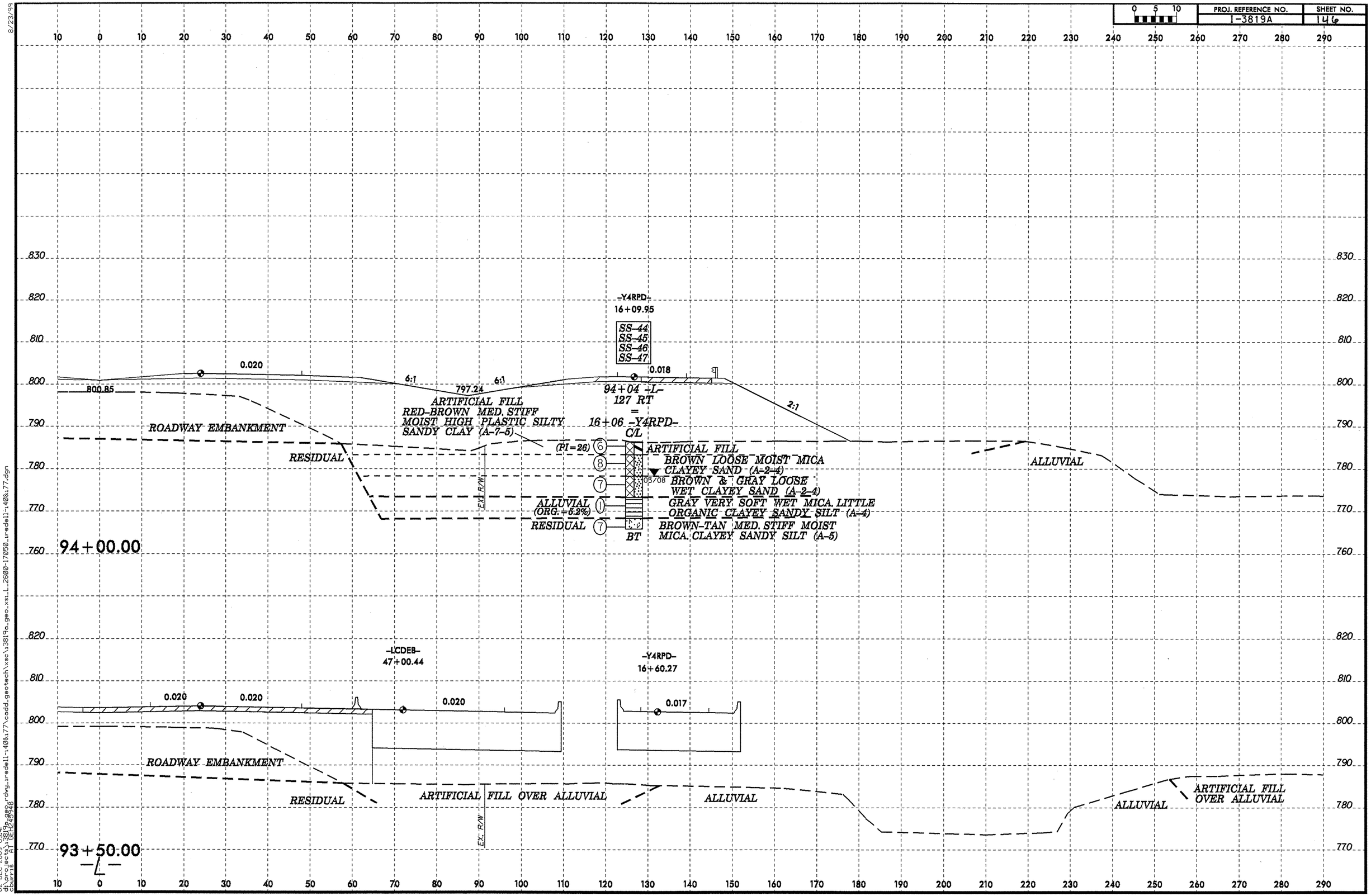

8/23/99
02-DEC-2009 09:41
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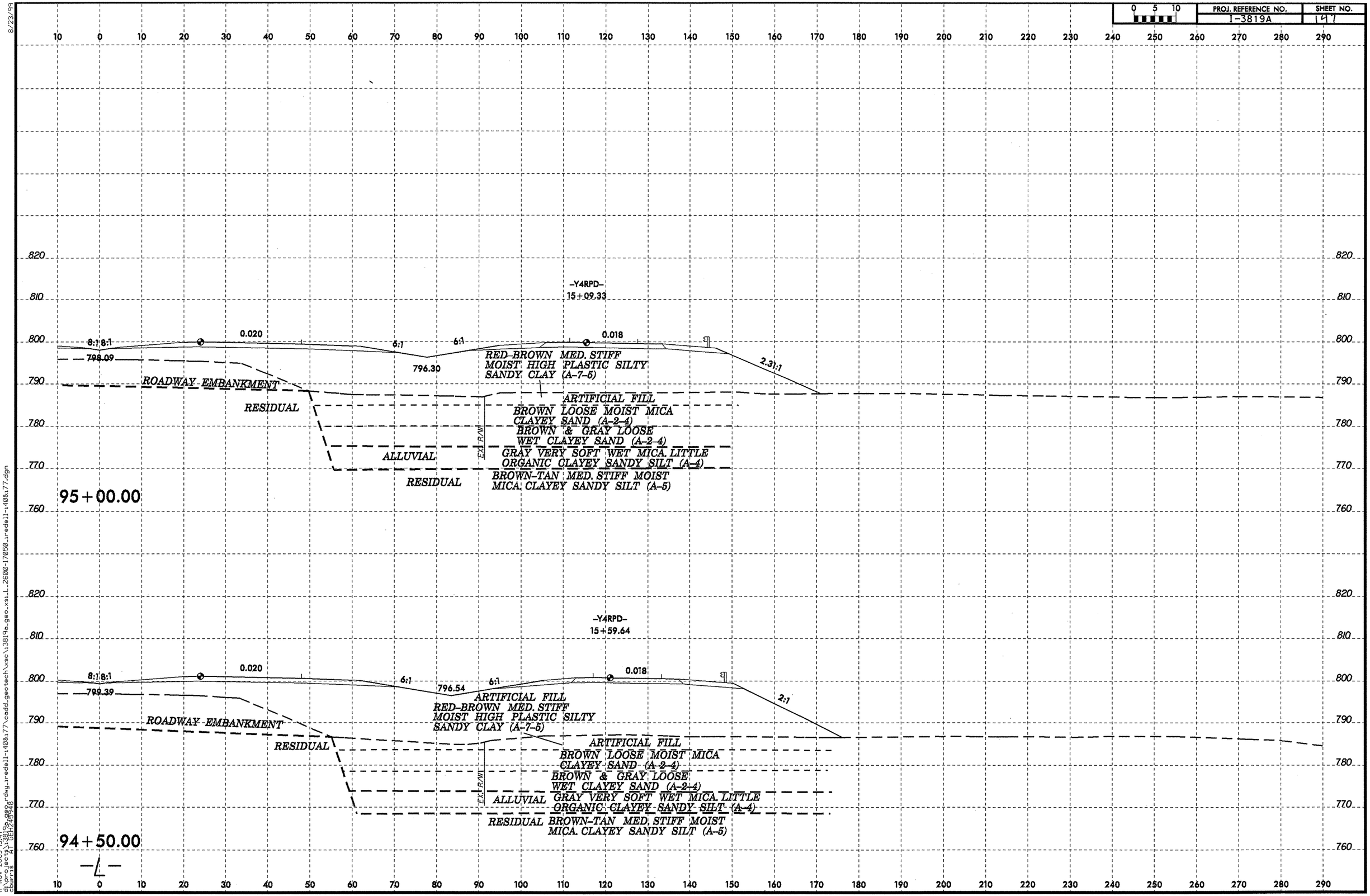

8/23/99
17-NOV-2009 15:47
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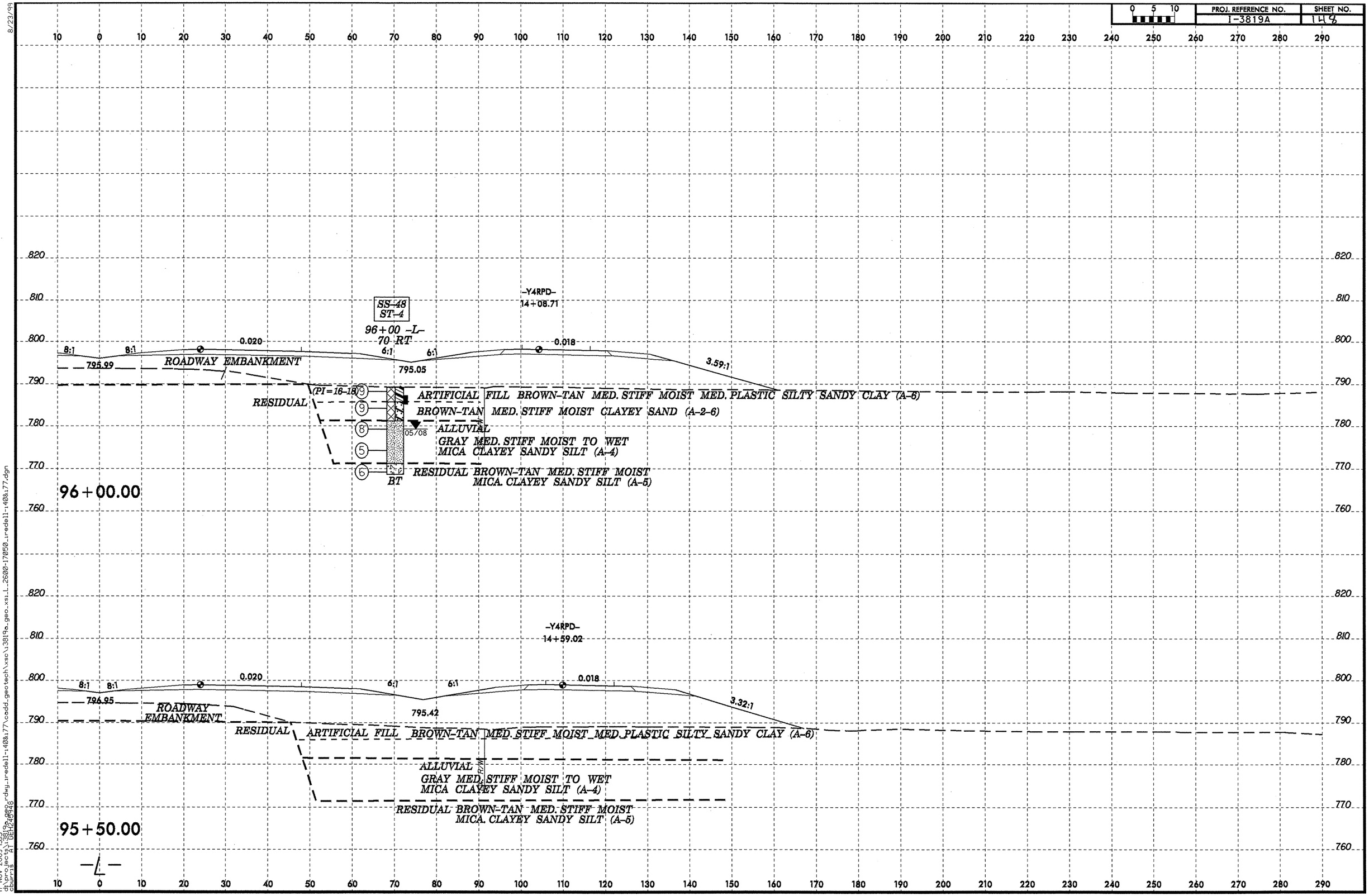
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	149



8/23/99

17-NOV-2009 15:16
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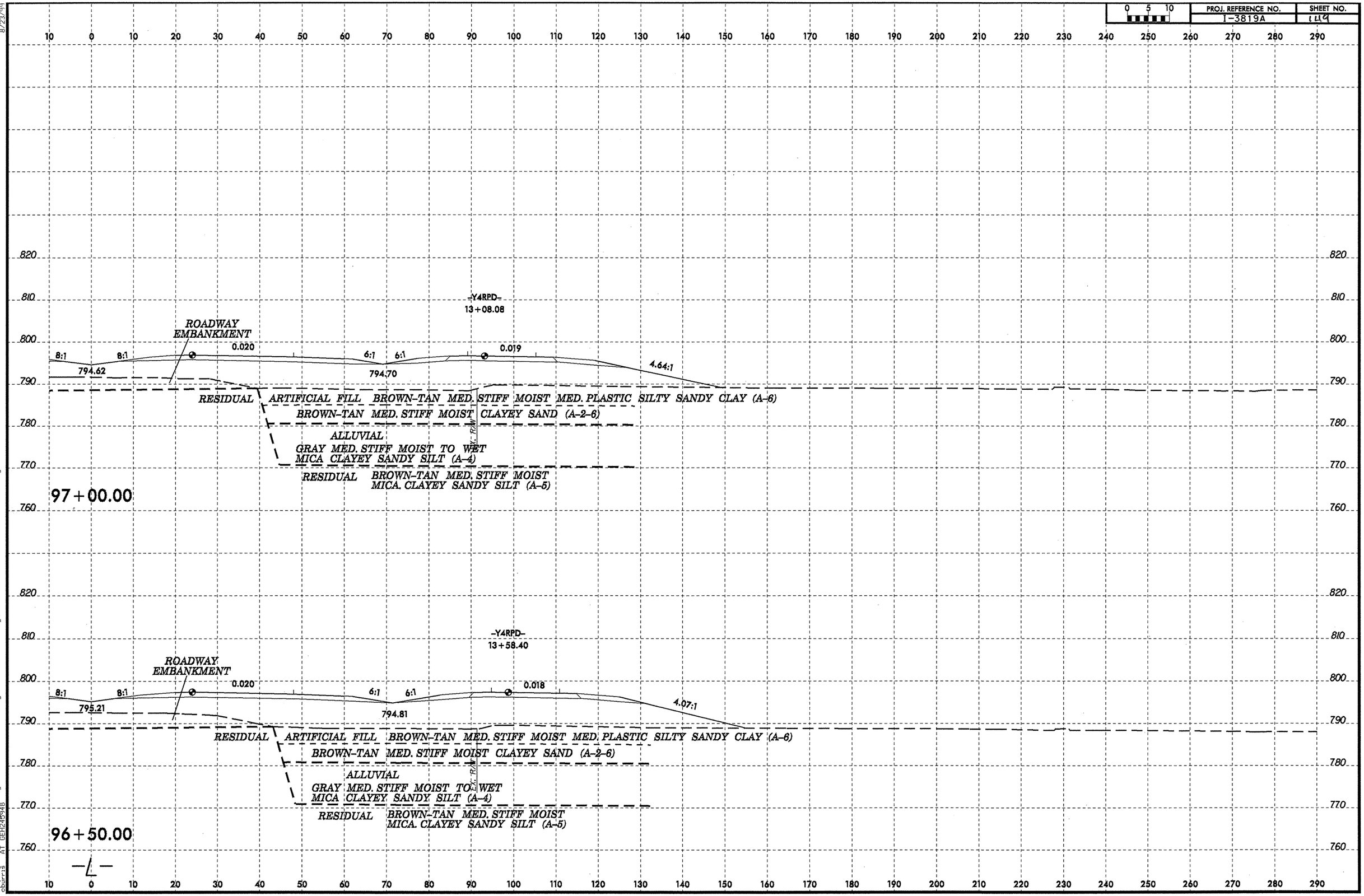
i3819a_geo.dwg_rredell-140&177\cadd_geotech\xsc\i3819a_geo_xsi_L_2600-17050_rredell-140&177.dgn



8/23/99
17-NOV-2009 15:18
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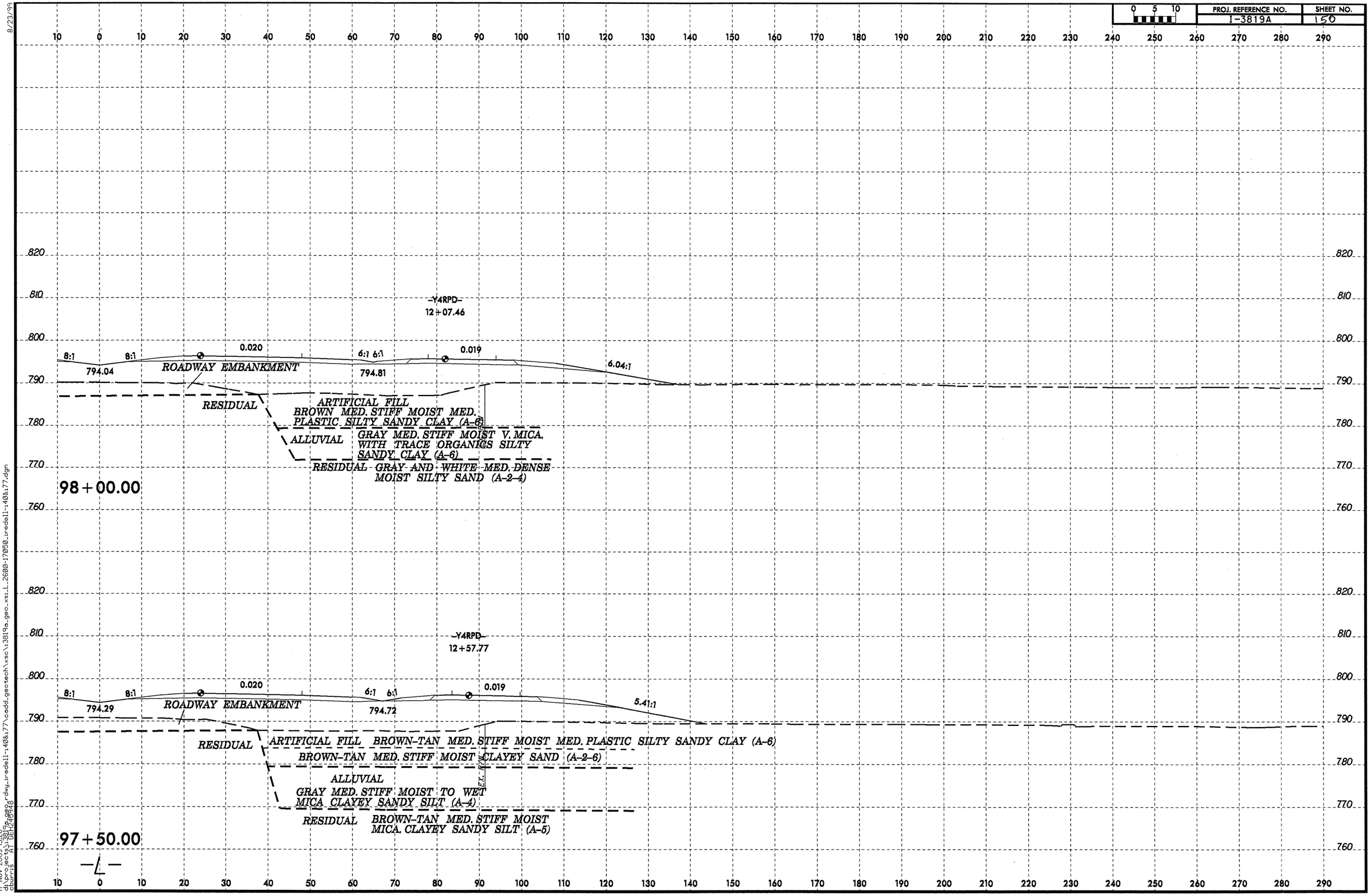
chris.ayl@dot.state.ak.us

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	150



8/23/99

17-NOV-2009 15:20
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PROJ. REFERENCE NO.	SHEET NO.
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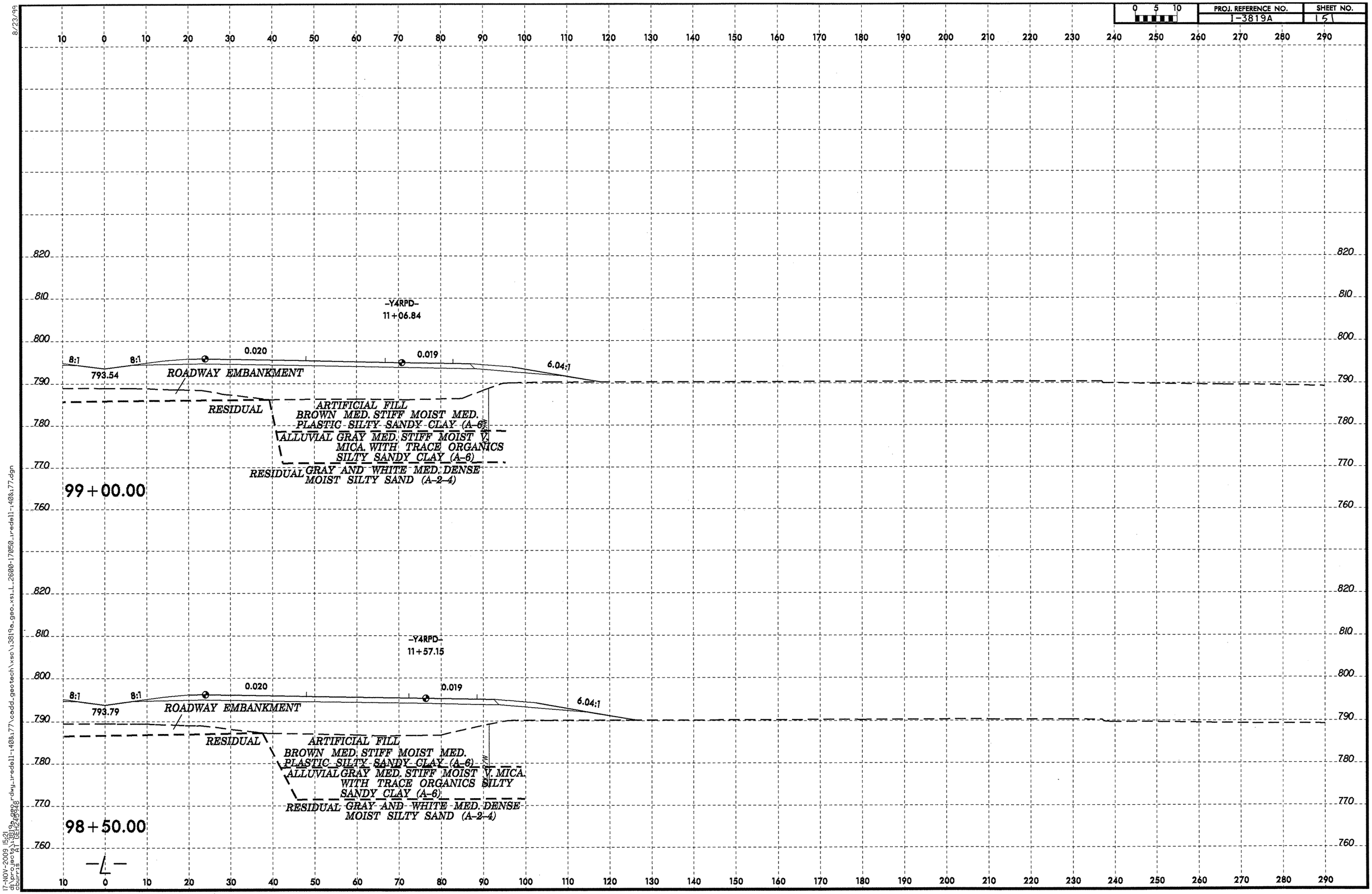

8/23/99

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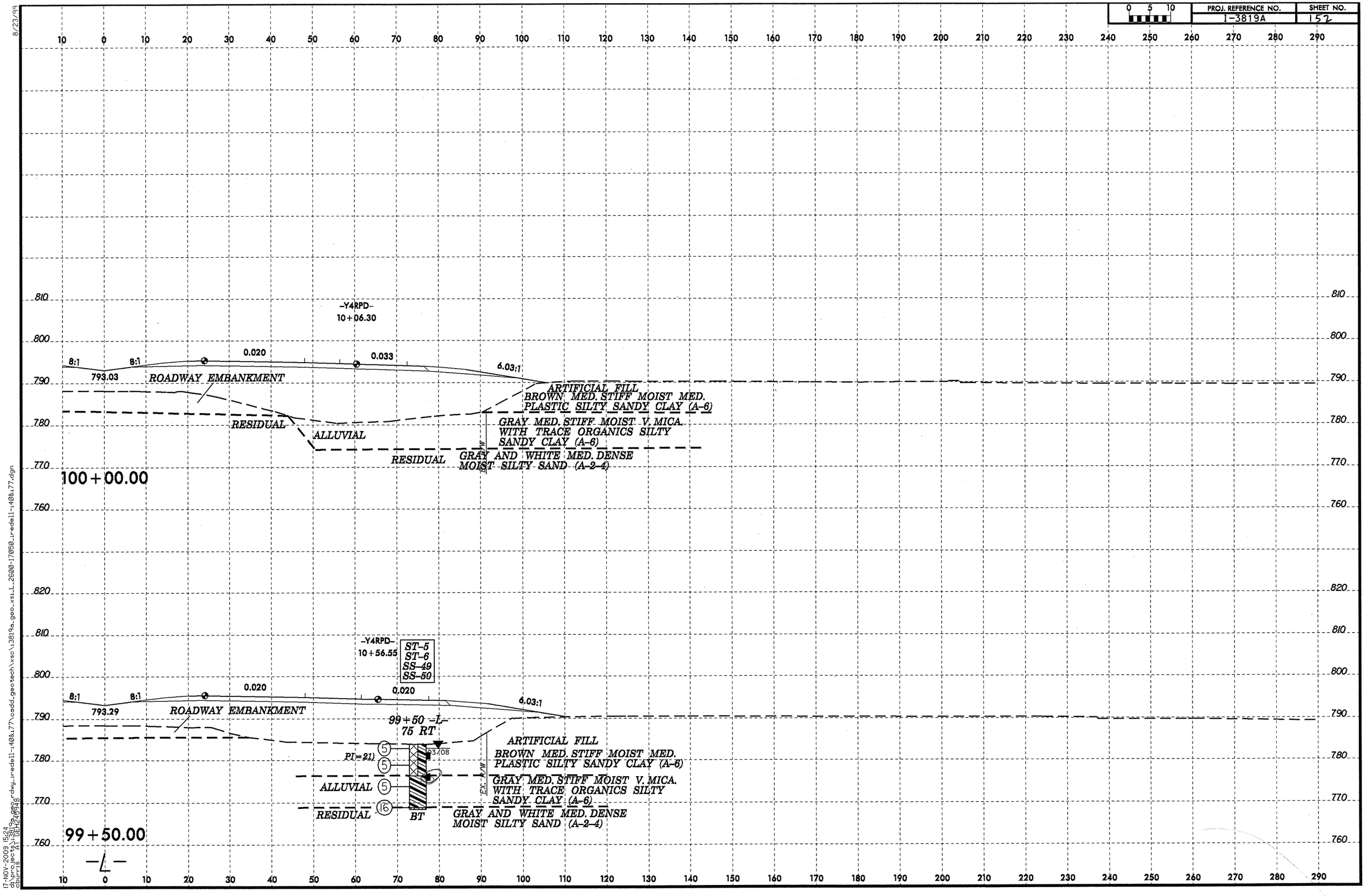

8/23/99
17-NOV-2009 15:24
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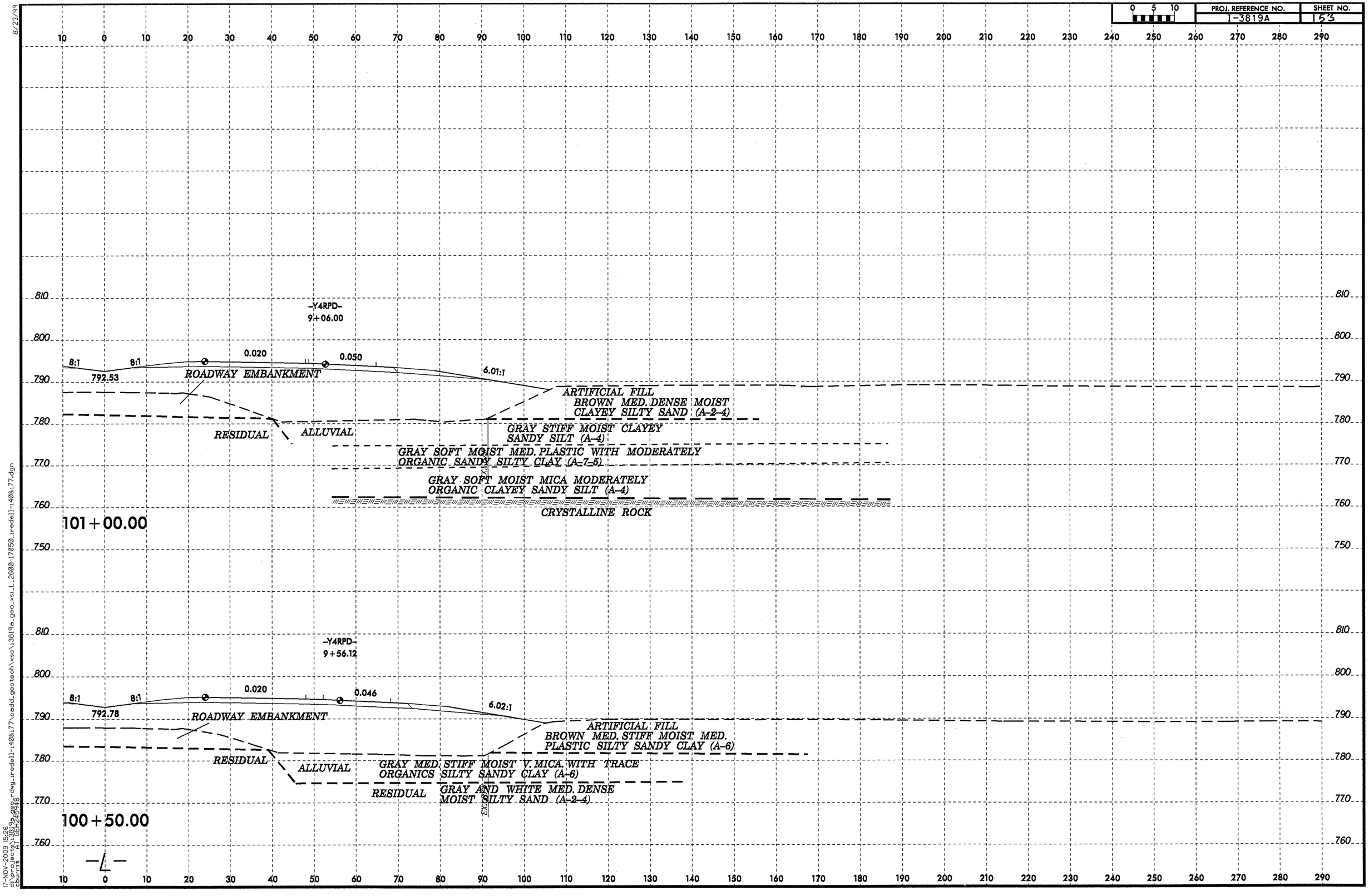
Courtney A. Duke



8/23/99
17-NOV-2009 15:26
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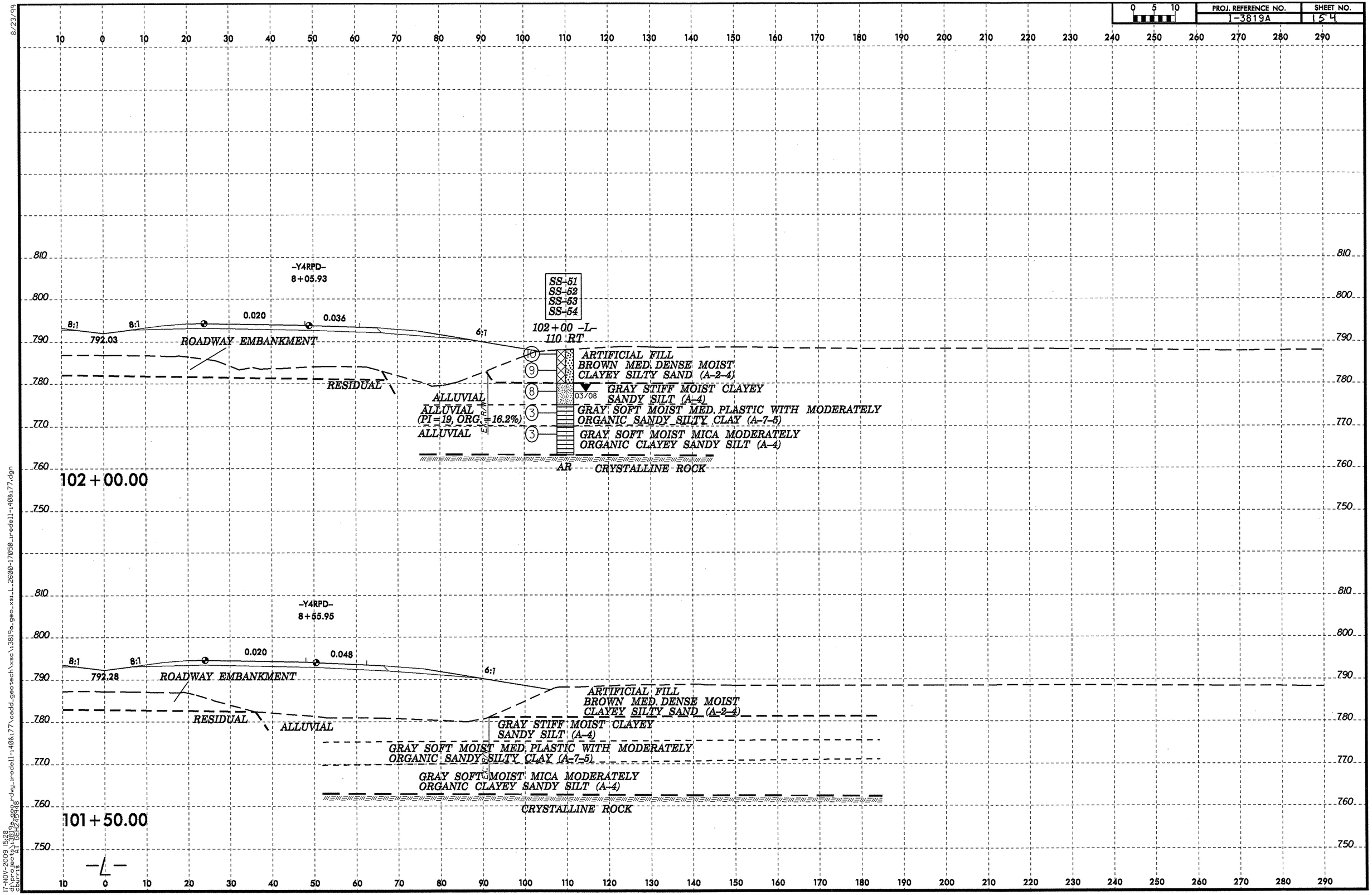

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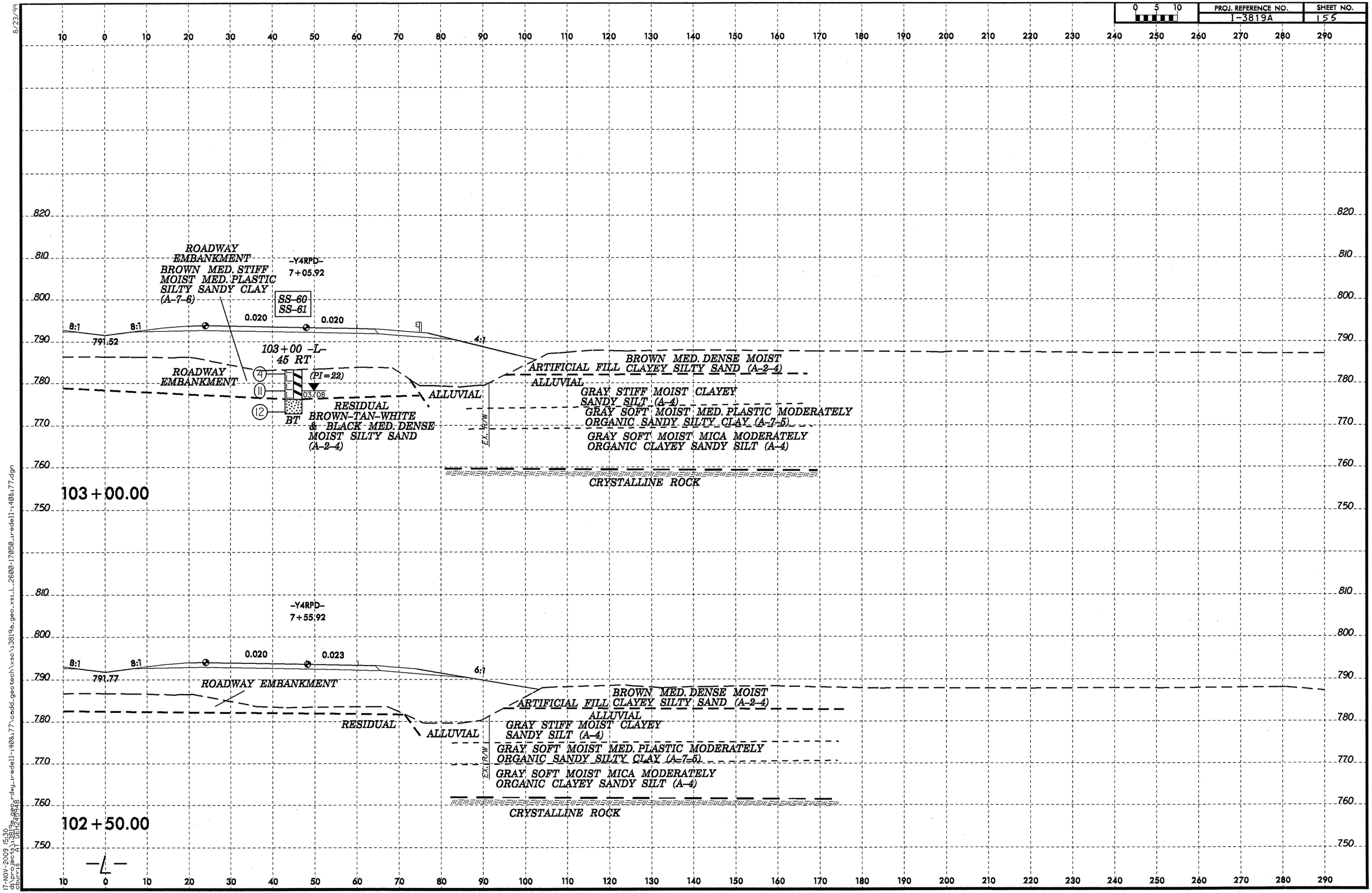

8/23/99
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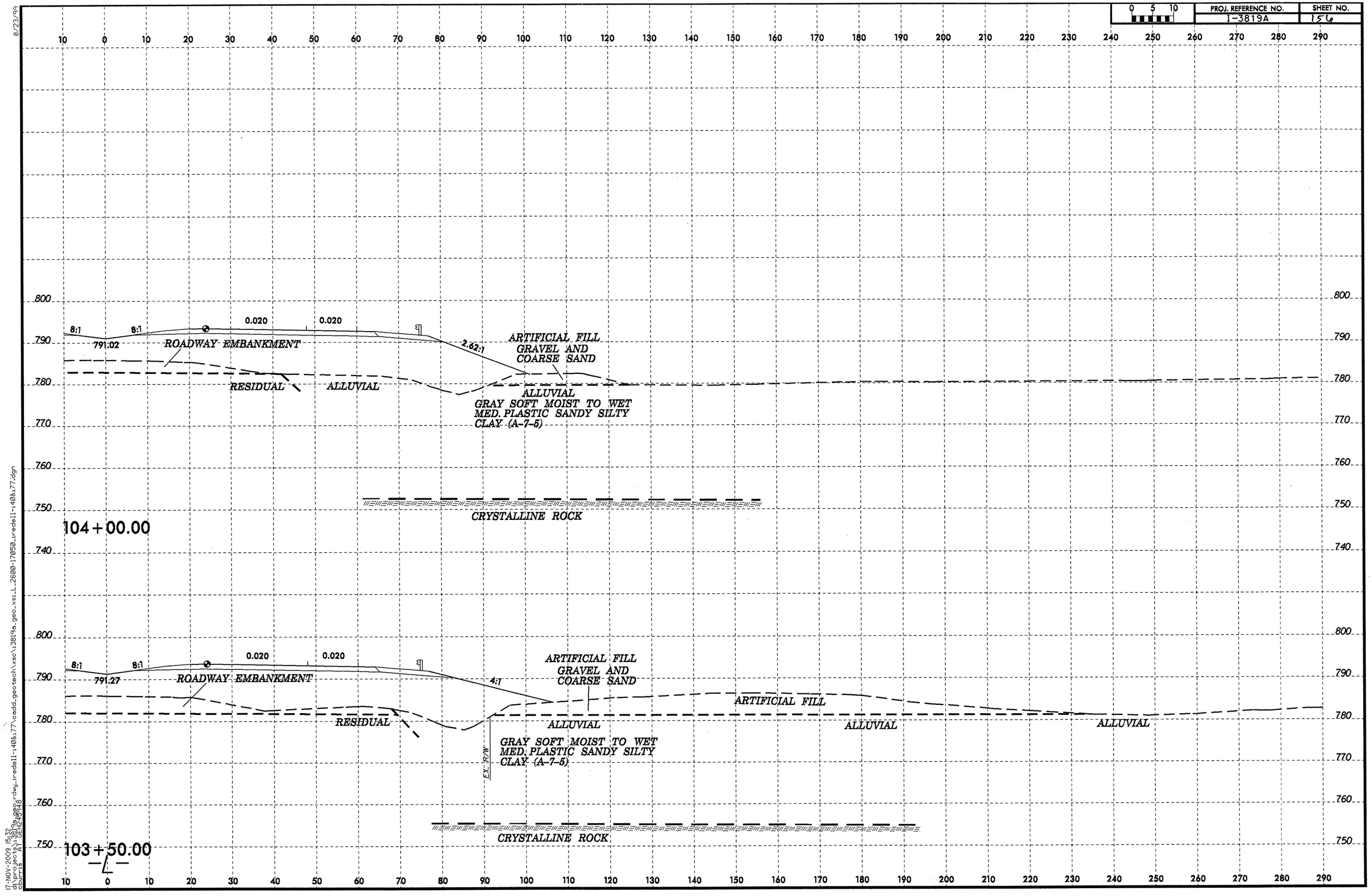

8/23/99
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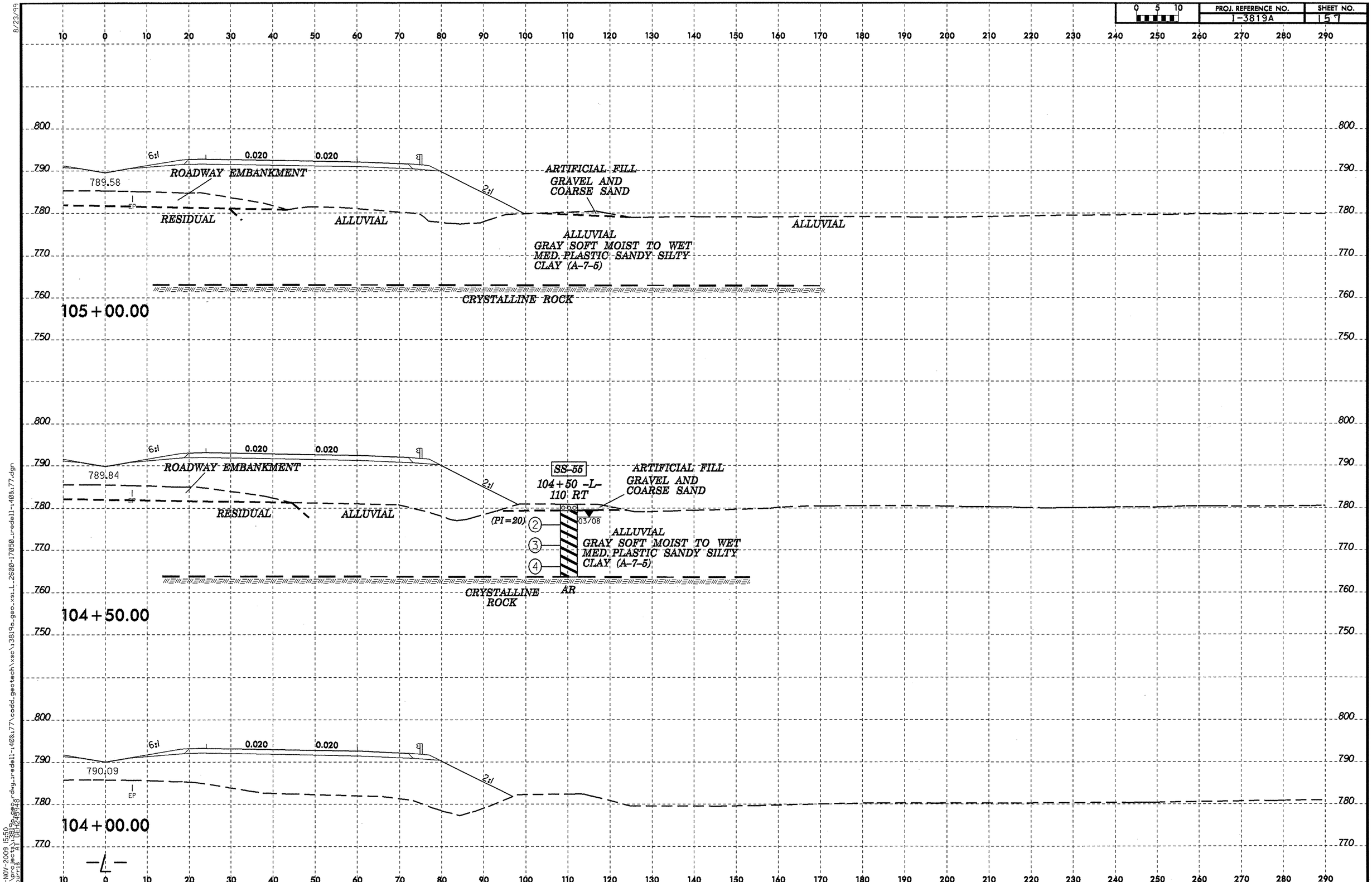

8/23/99
17-NOV-2009 15:50
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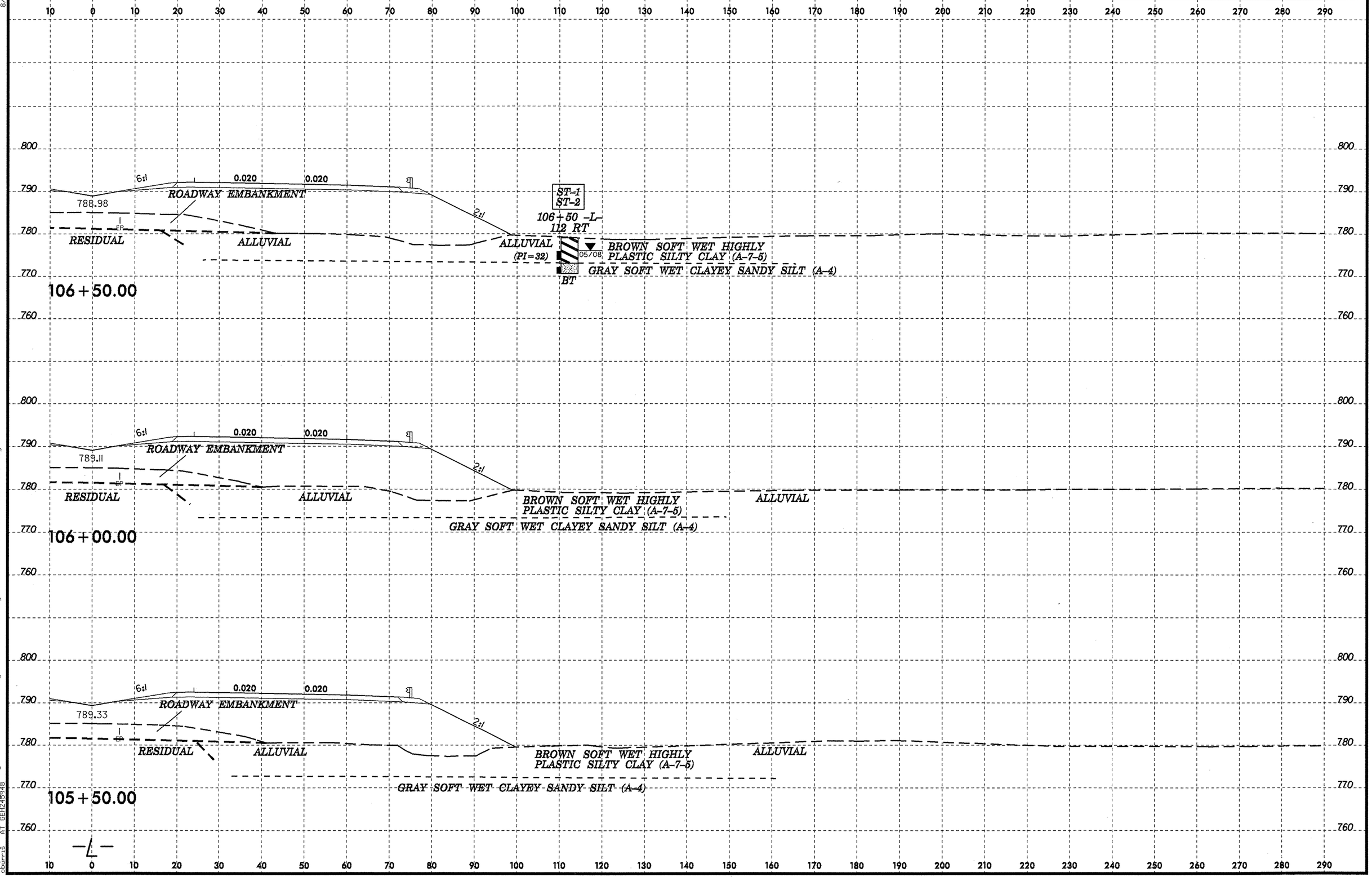

8/23/99
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PROJ. REFERENCE NO.	SHEET NO.
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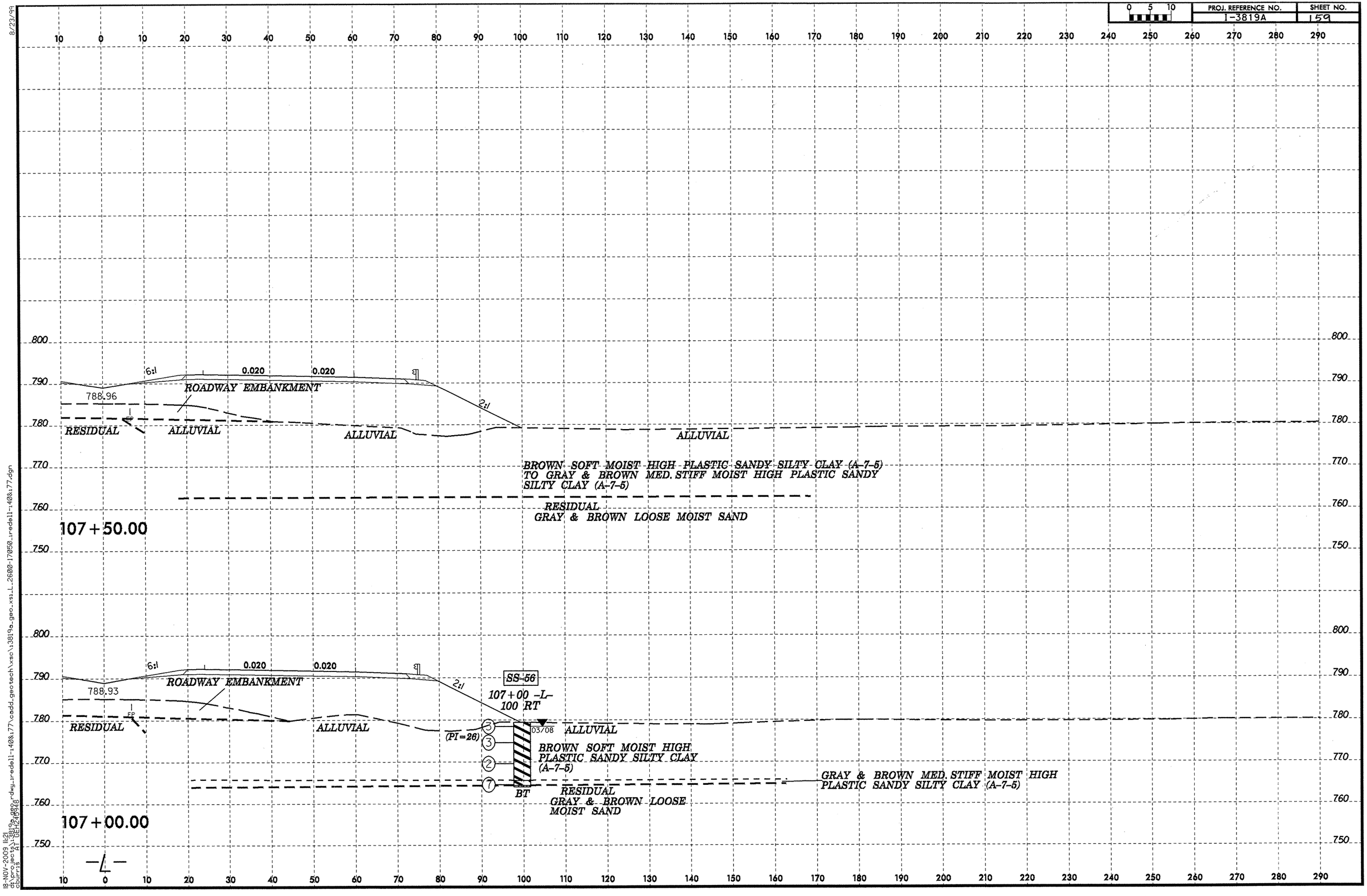

8/23/99

18-NOV-2009 11:21
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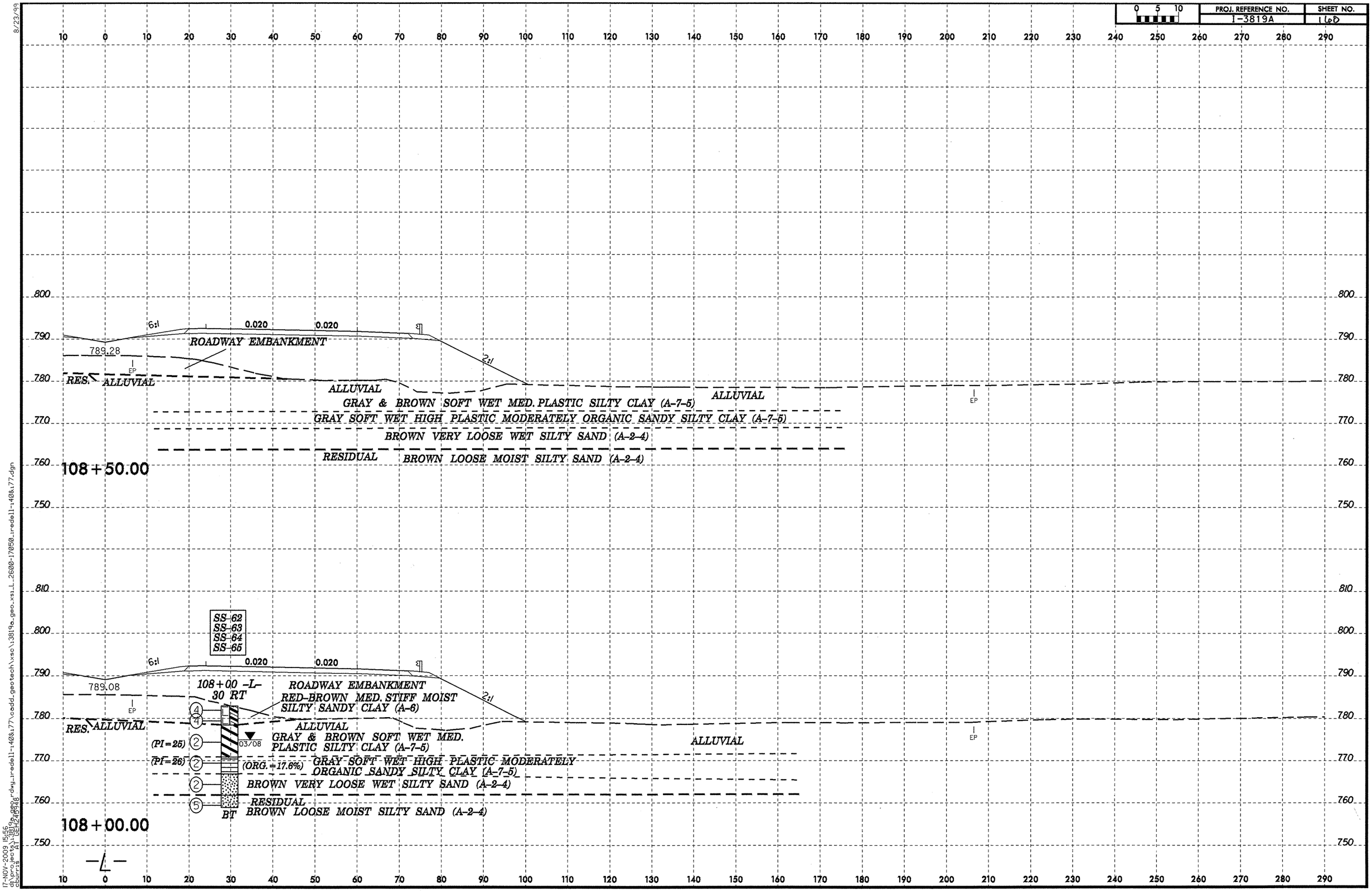
A1 GEH245948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	1 LeD



8/23/99

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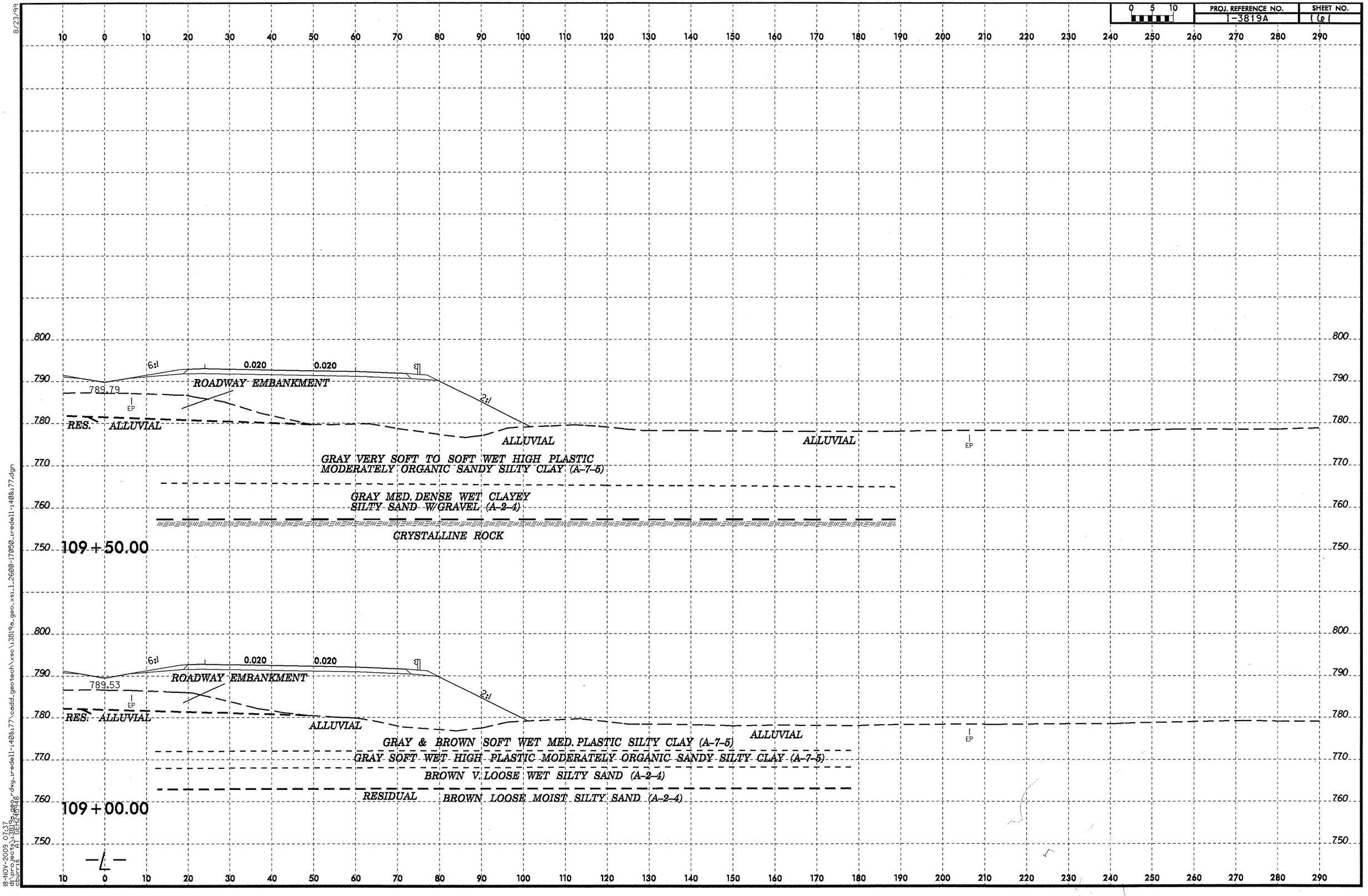
21 GEL 249948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	161



8/23/99

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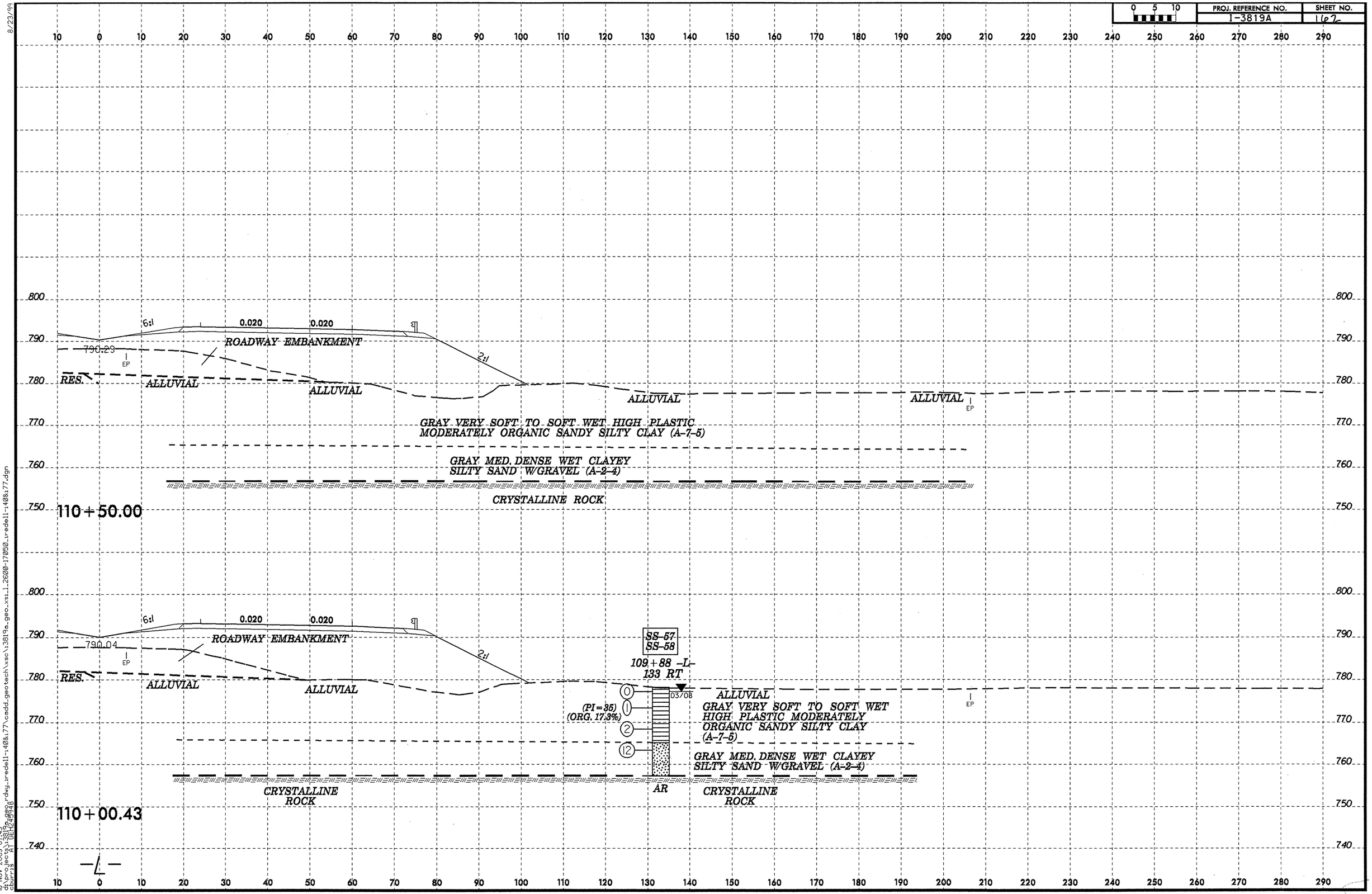
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	162



8/23/99

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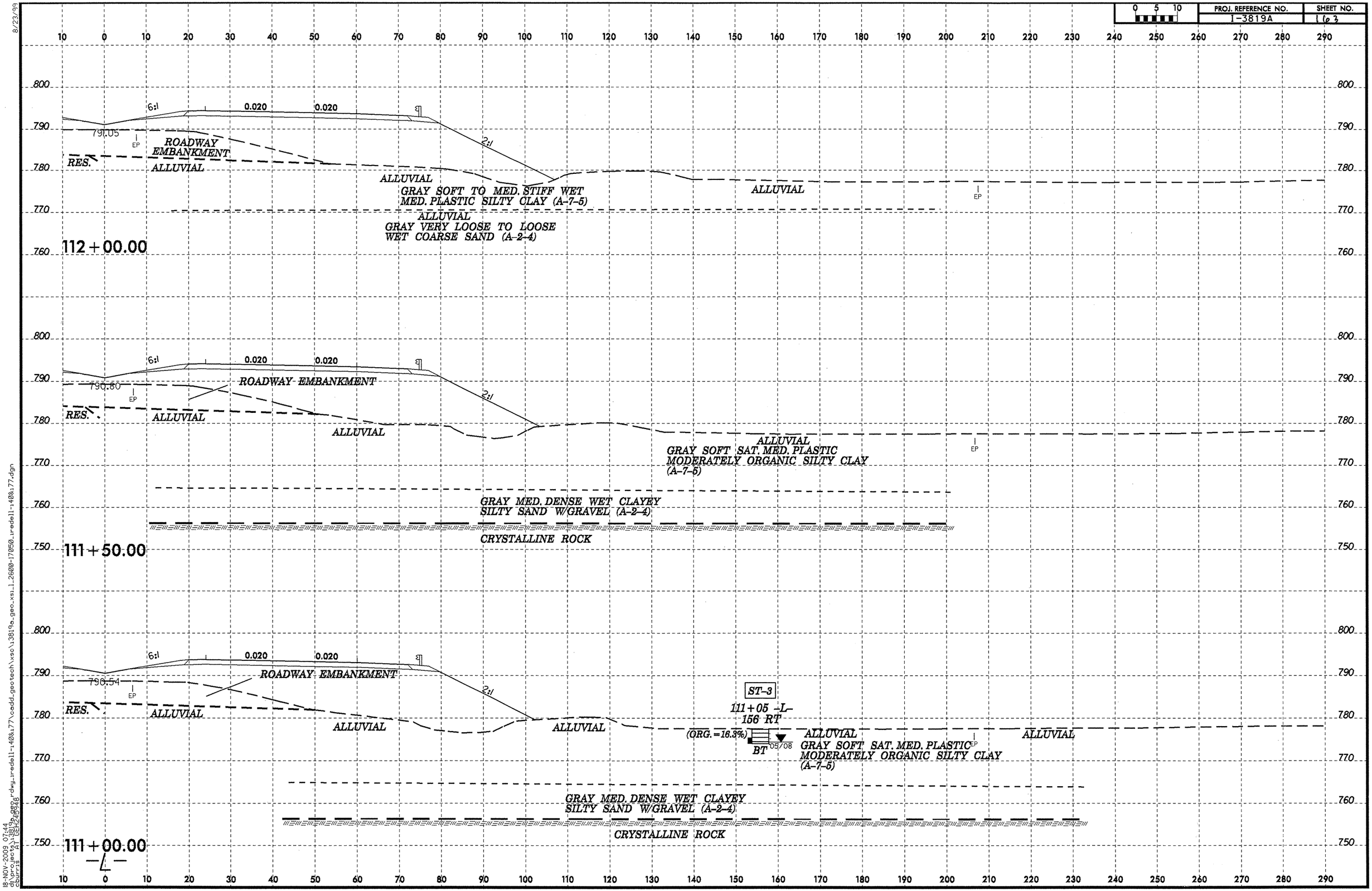

8/23/99

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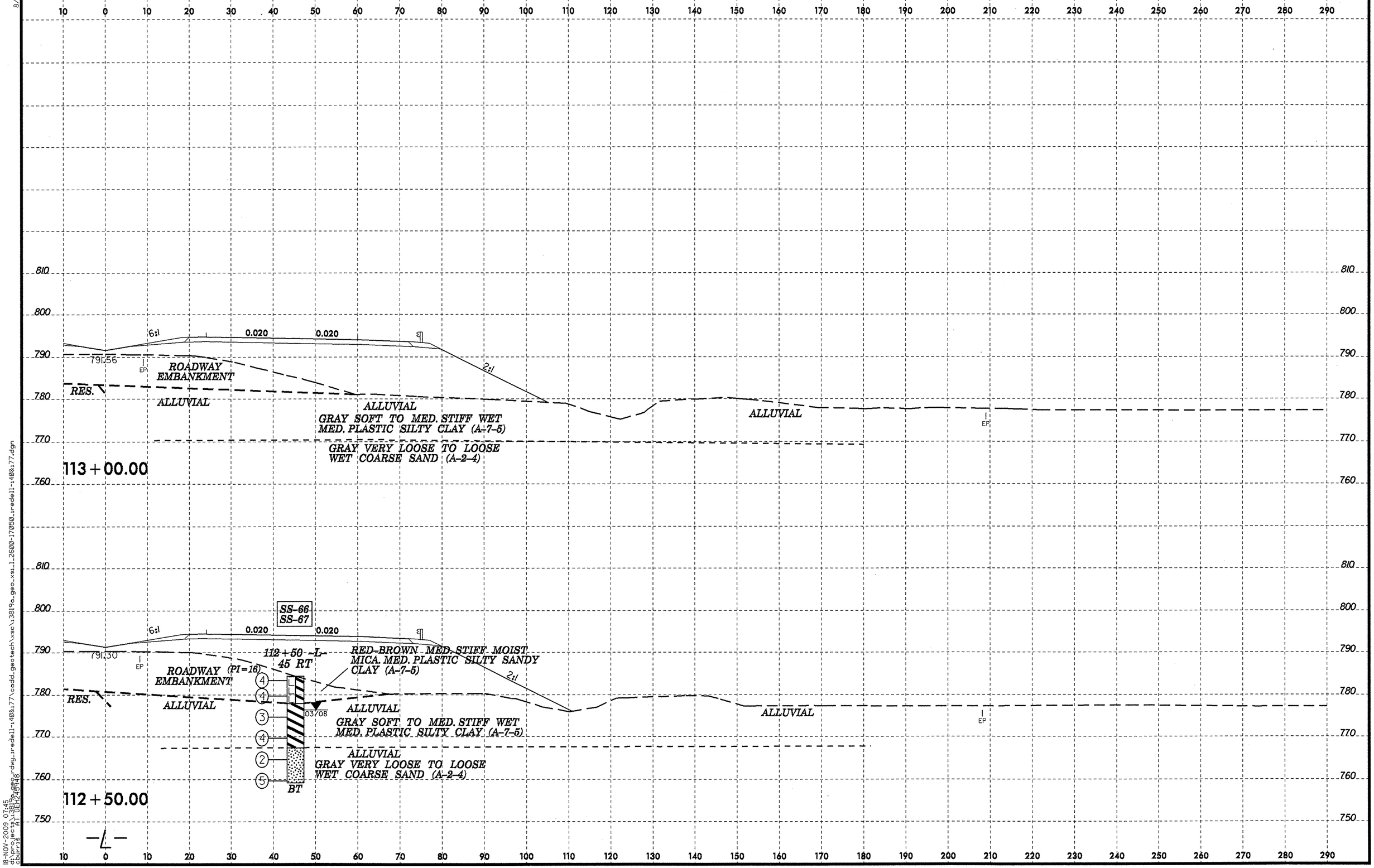

8/23/99

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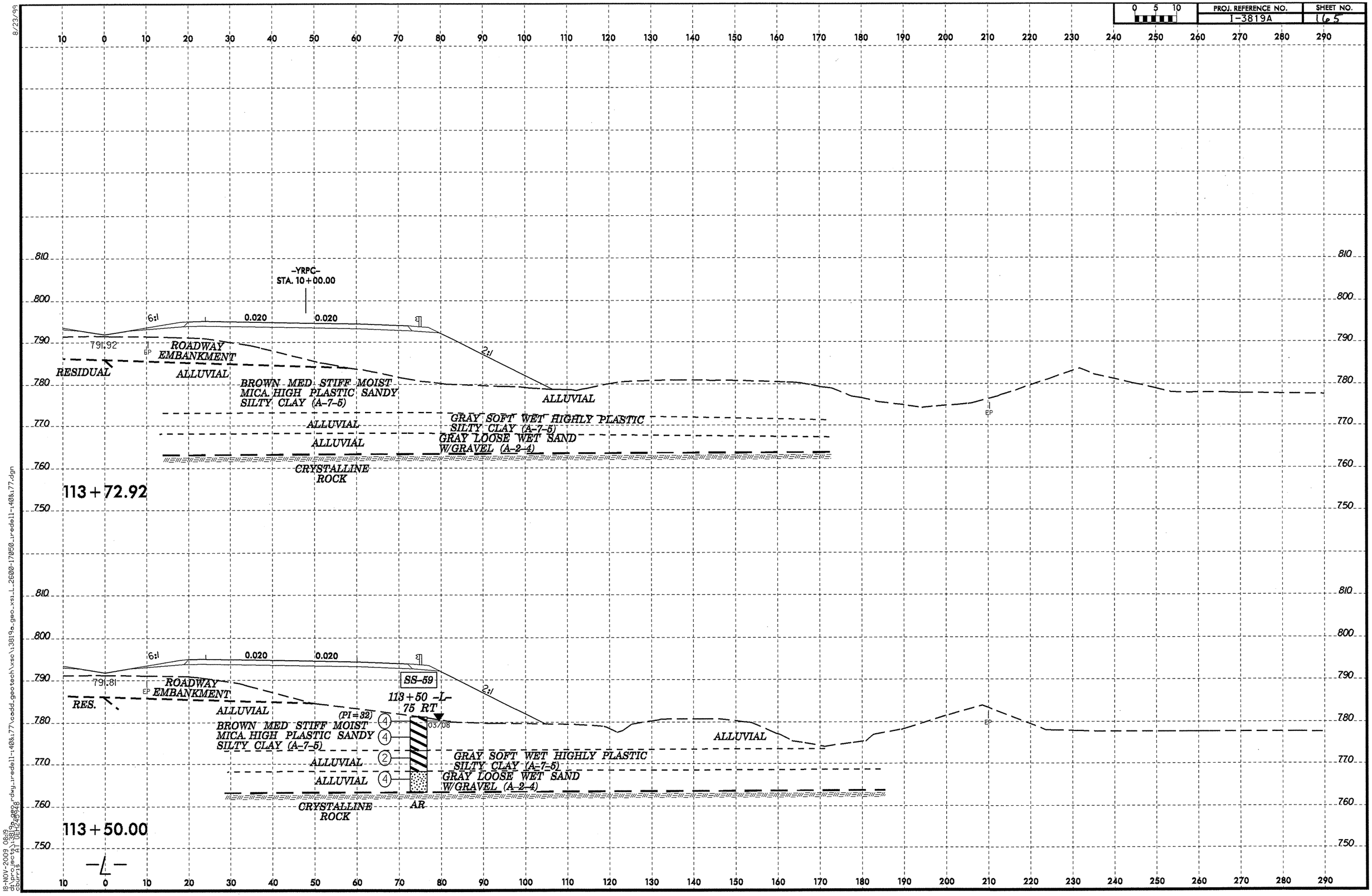
dbarrett 08/12/2008


-YRPC-
STA. 10+00.00
6:1
0.020
0.020
2:1
791.92
EP
ROADWAY
EMBANKMENT
RESIDUAL
ALLUVIAL
BROWN MED STIFF MOIST
MICA HIGH PLASTIC SANDY
SILTY CLAY (A-7-5)
ALLUVIAL
GRAY SOFT WET HIGHLY PLASTIC
SILTY CLAY (A-7-5)
ALLUVIAL
GRAY LOOSE WET SAND
W/GRAVEL (A-2-4)
ALLUVIAL
CRYSTALLINE
ROCK
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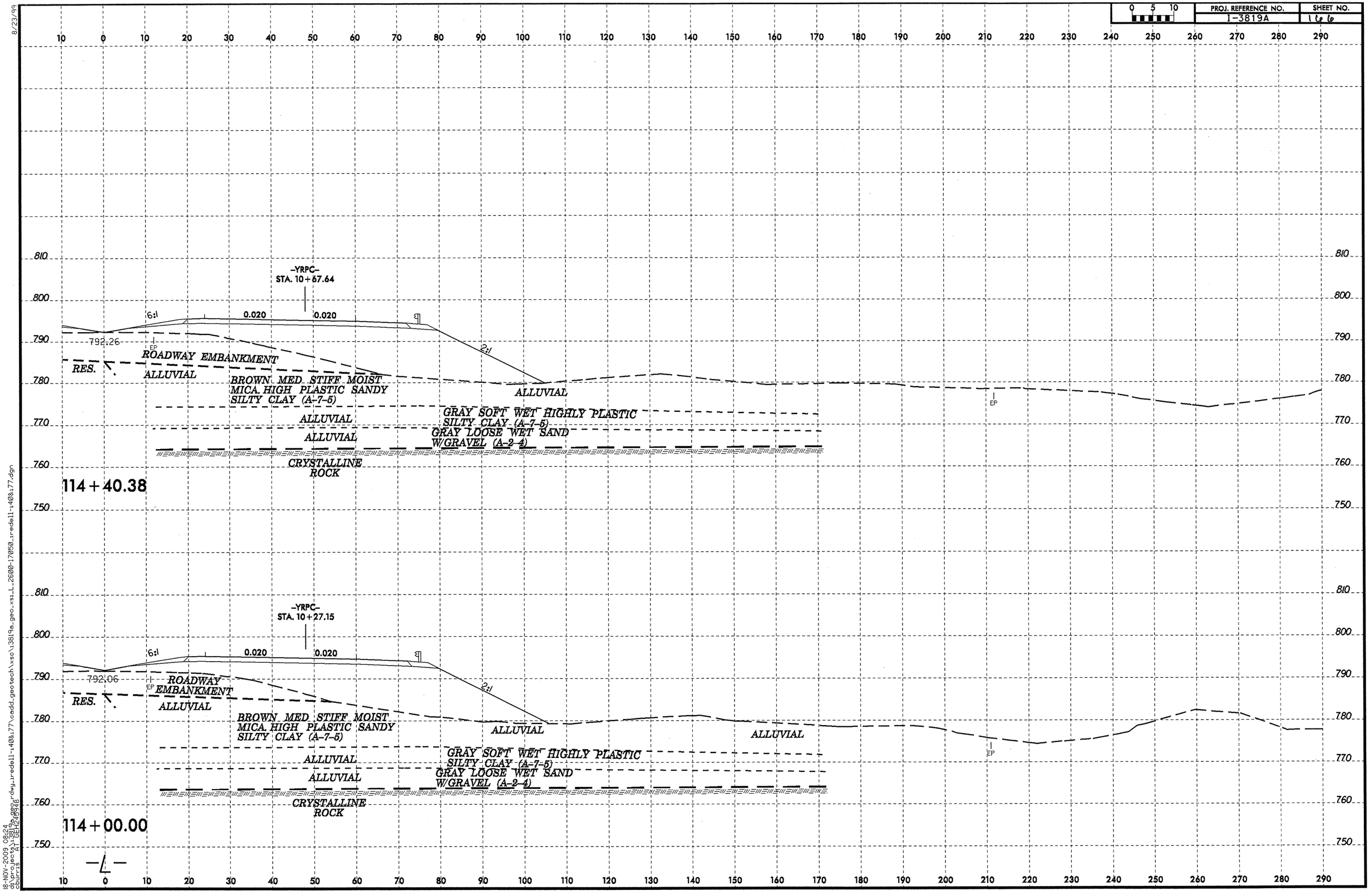
75 RT
(PI=32)
03/08
RES.
AR
113+50.00
-L-



8/23/99

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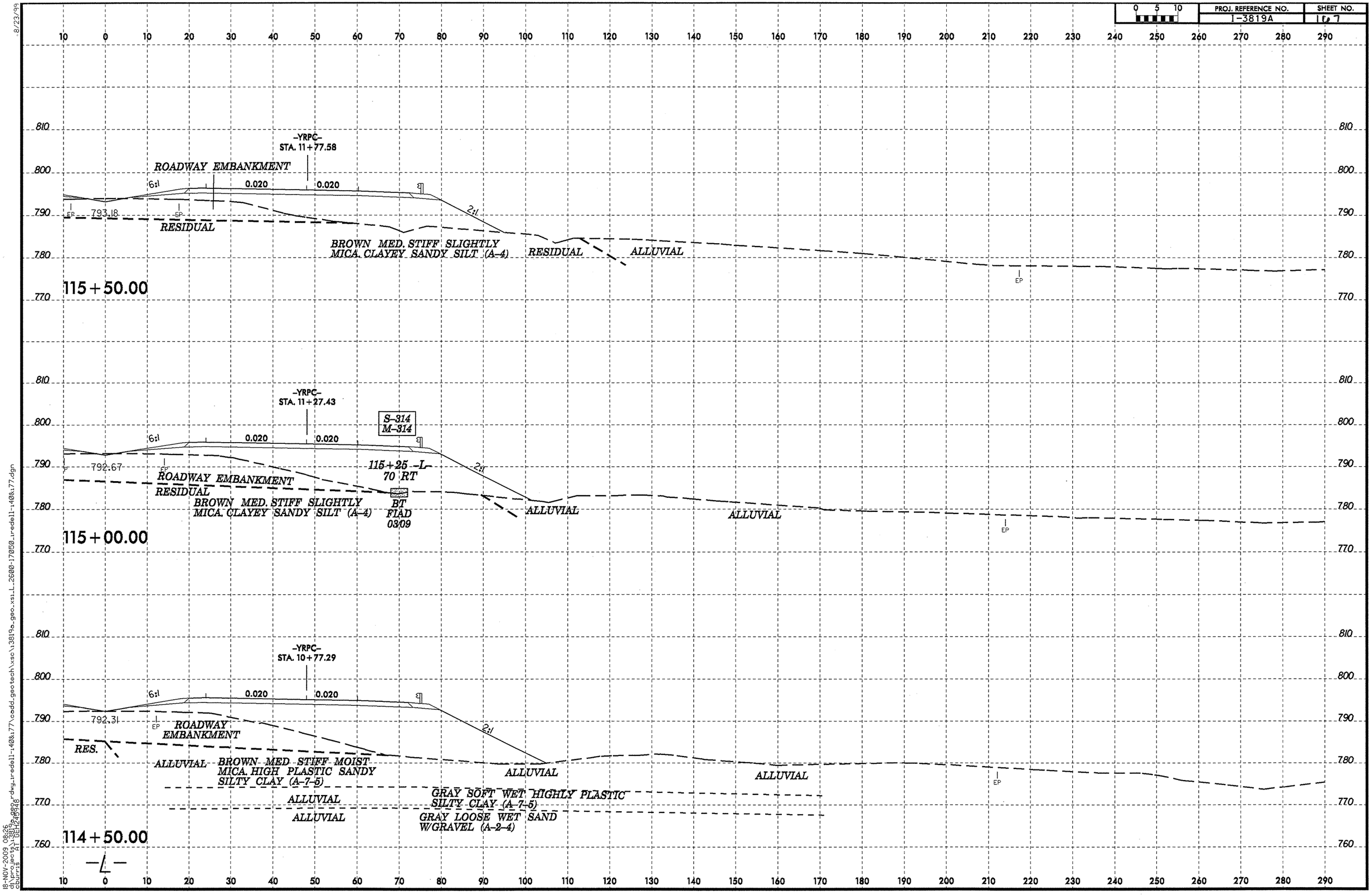

8/23/99
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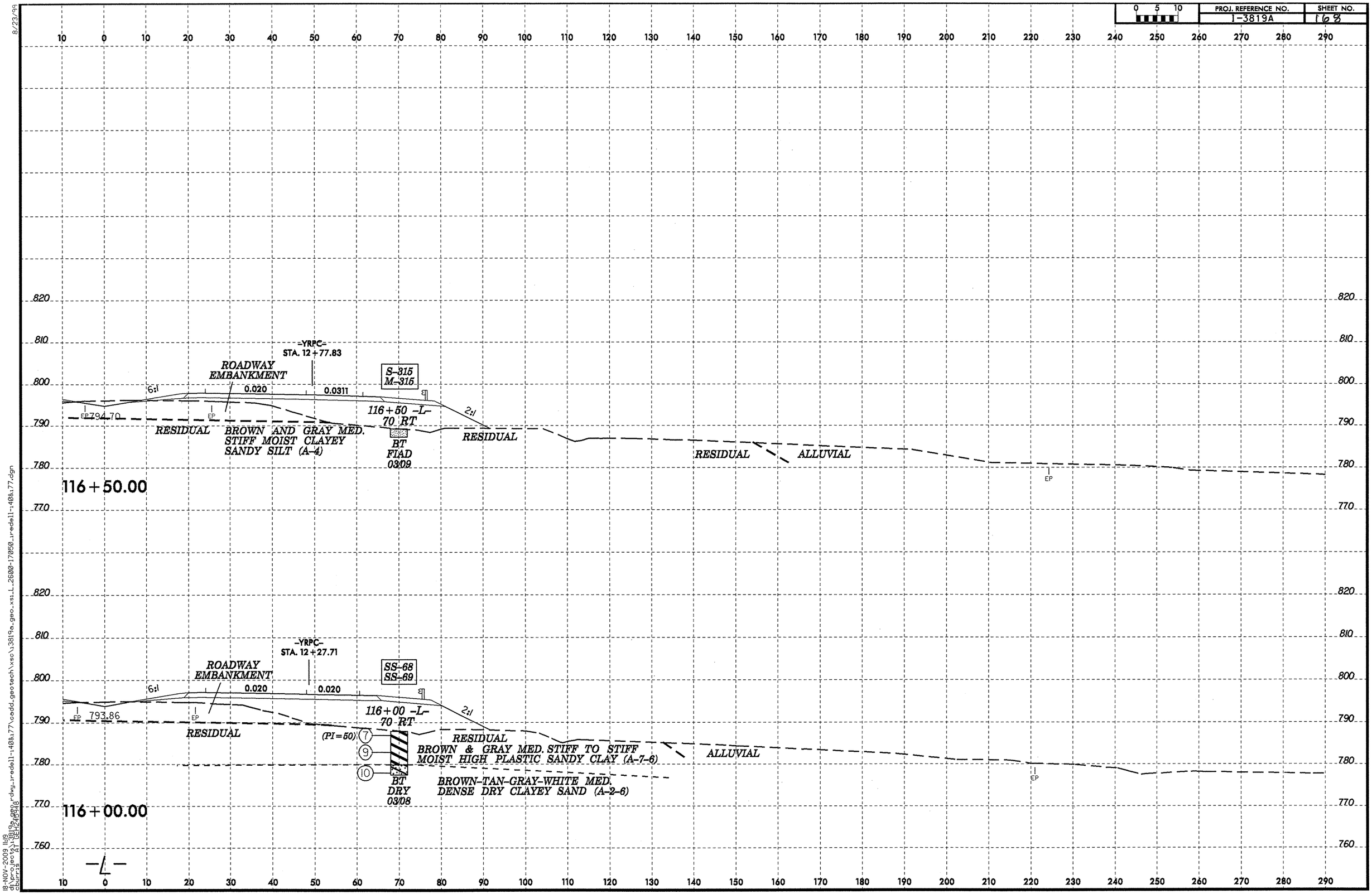

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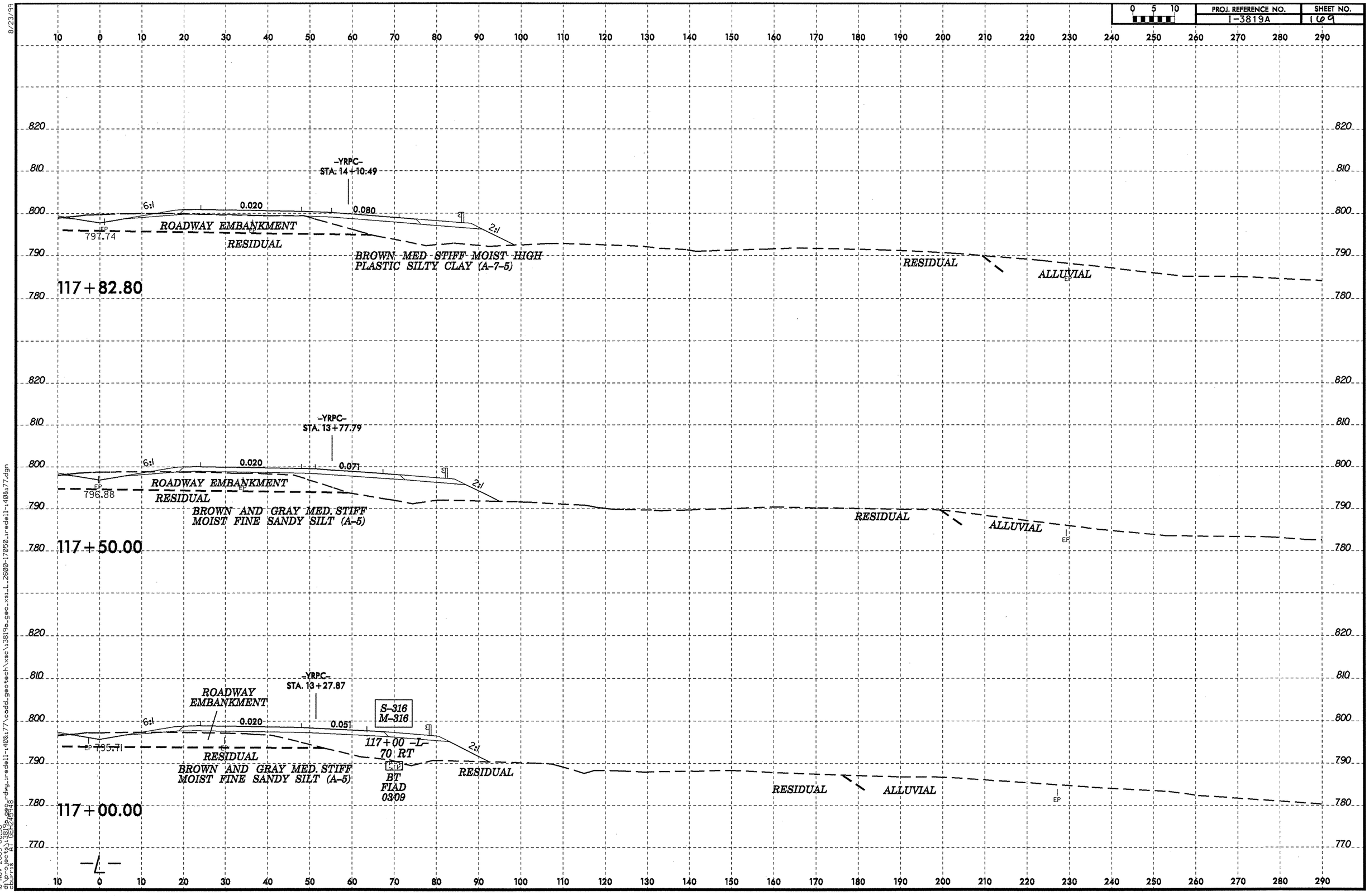
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
169
0 5 10
117+82.80
-YRPC-
STA. 14+10.49
6:1
0.020
0.080
2:1
EP
797.74
ROADWAY EMBANKMENT
RESIDUAL
BROWN MED STIFF MOIST HIGH
PLASTIC SILTY CLAY (A-7-5)
RESIDUAL
ALLUVIAL
117+50.00
-YRPC-
STA. 13+77.79
0.071
EP
796.88
BROWN AND GRAY MED. STIFF
MOIST FINE SANDY SILT (A-5)
117+00.00
-YRPC-
STA. 13+27.87
S-316
M-316
0.051
EP 795.71
117+00 -L-
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8/23/99
18-NOV-2009 08:30
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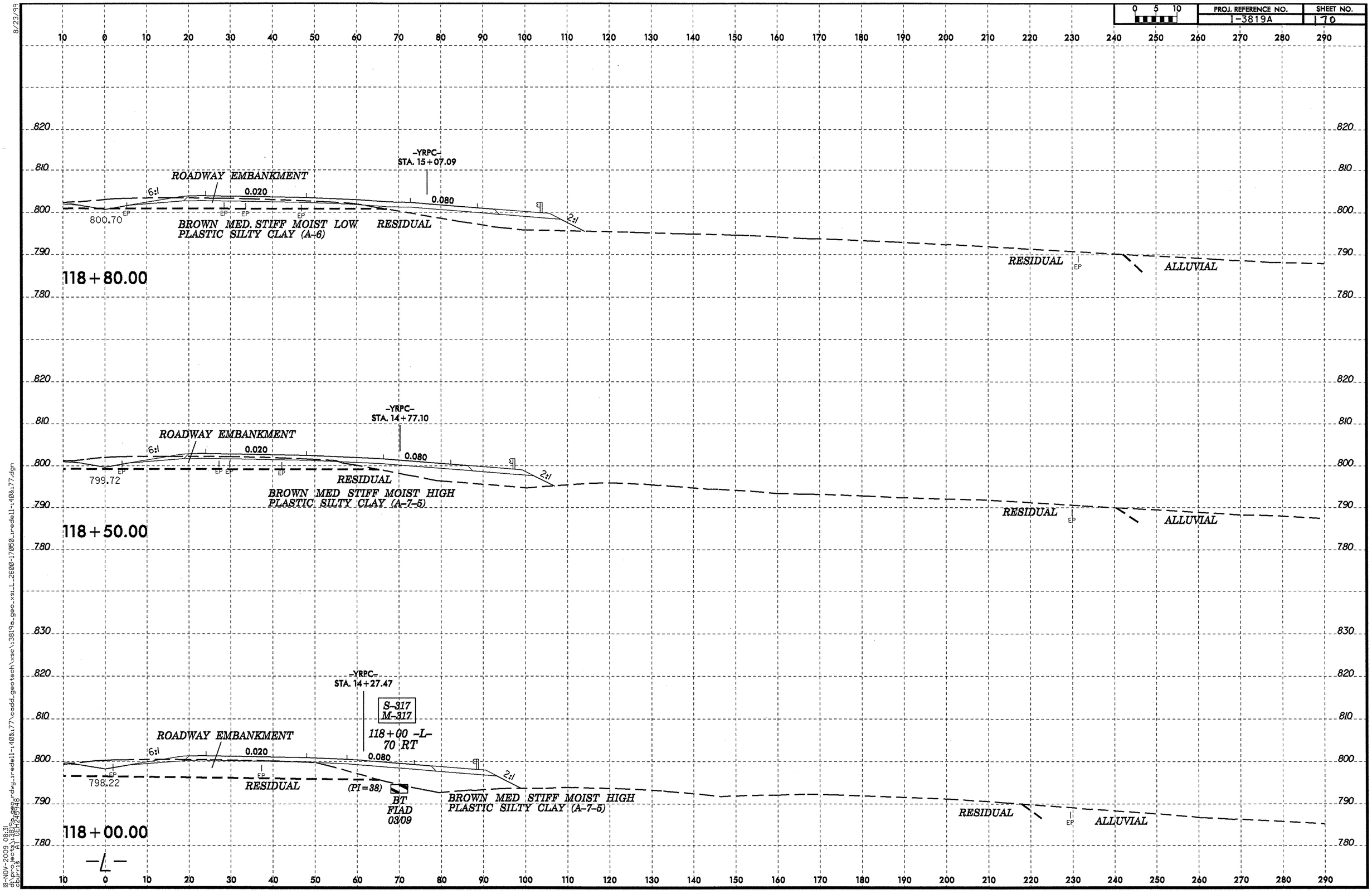

8/23/99
18-NOV-2009 08:31
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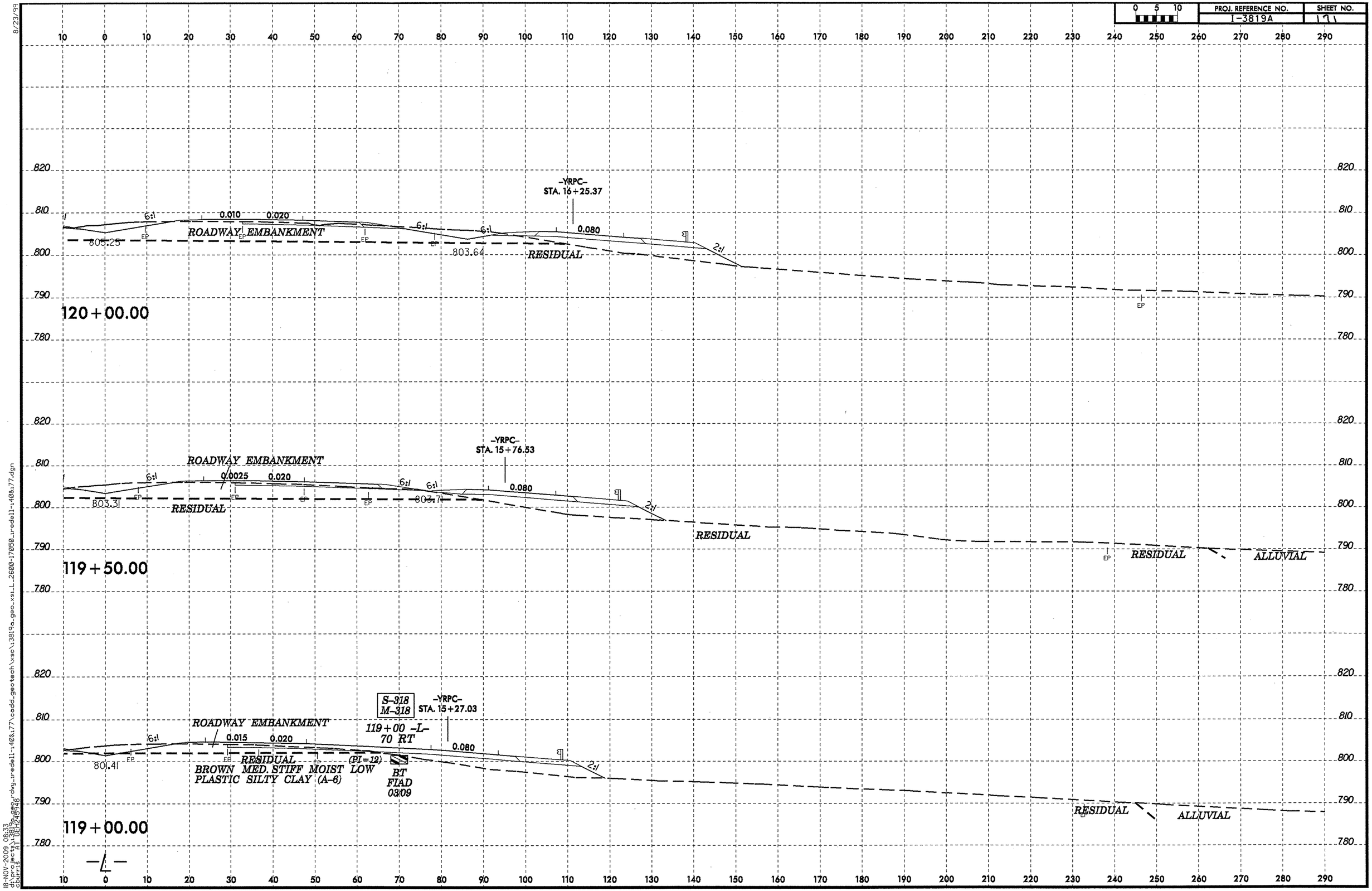
courtesy of DEHaynes

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	171



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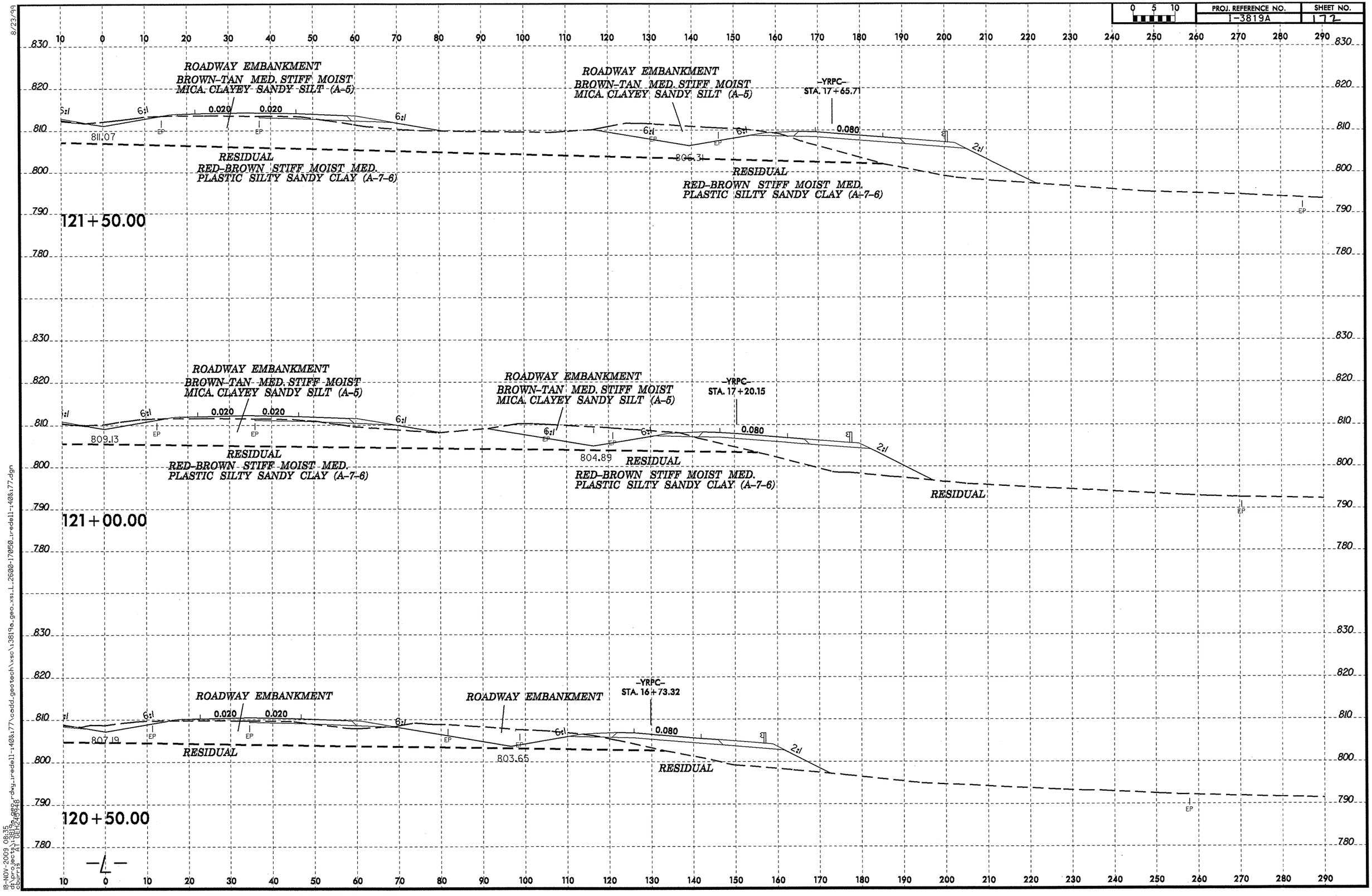

8/23/99

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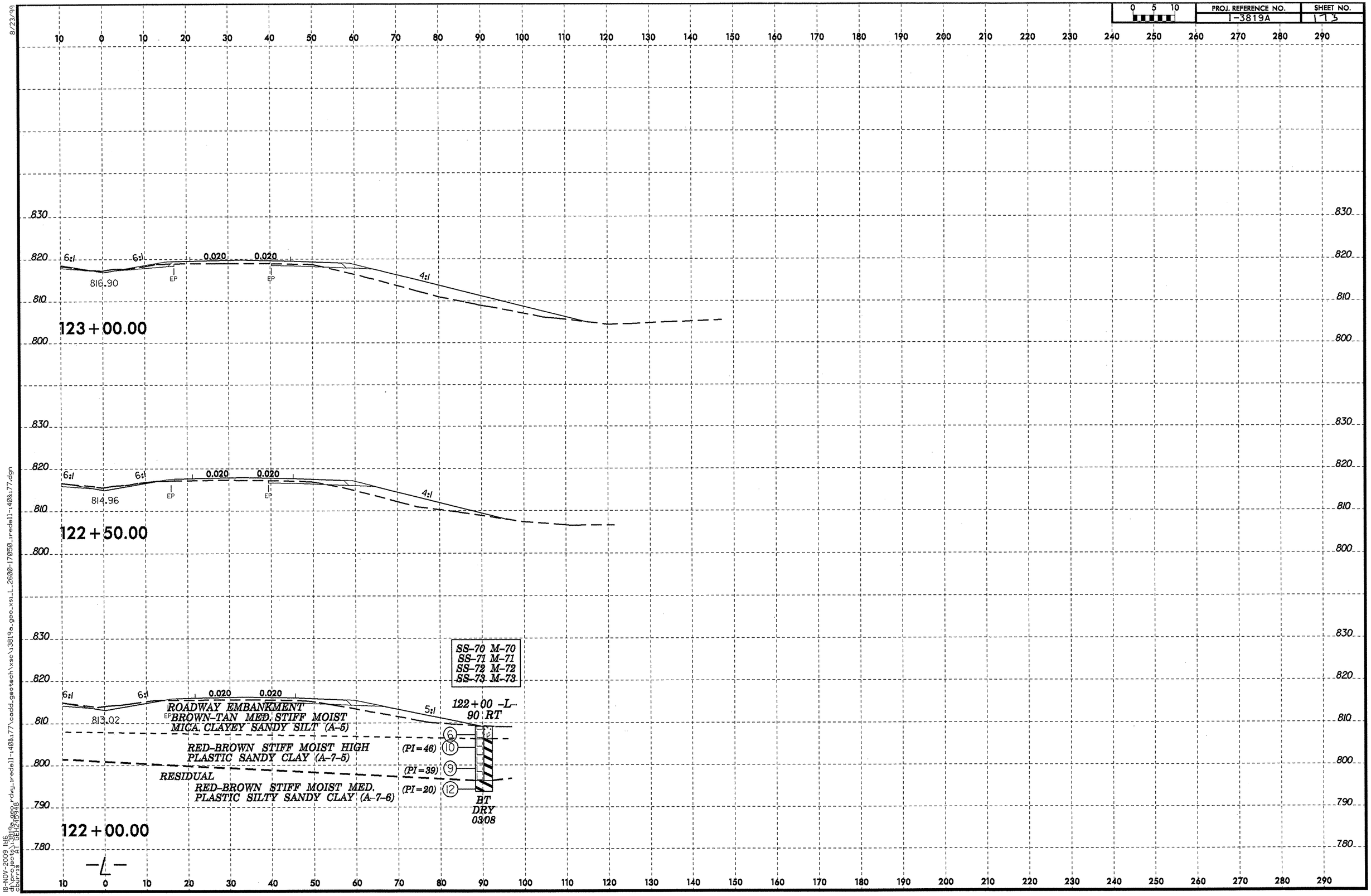

8/23/99
18-NOV-2009 11:16
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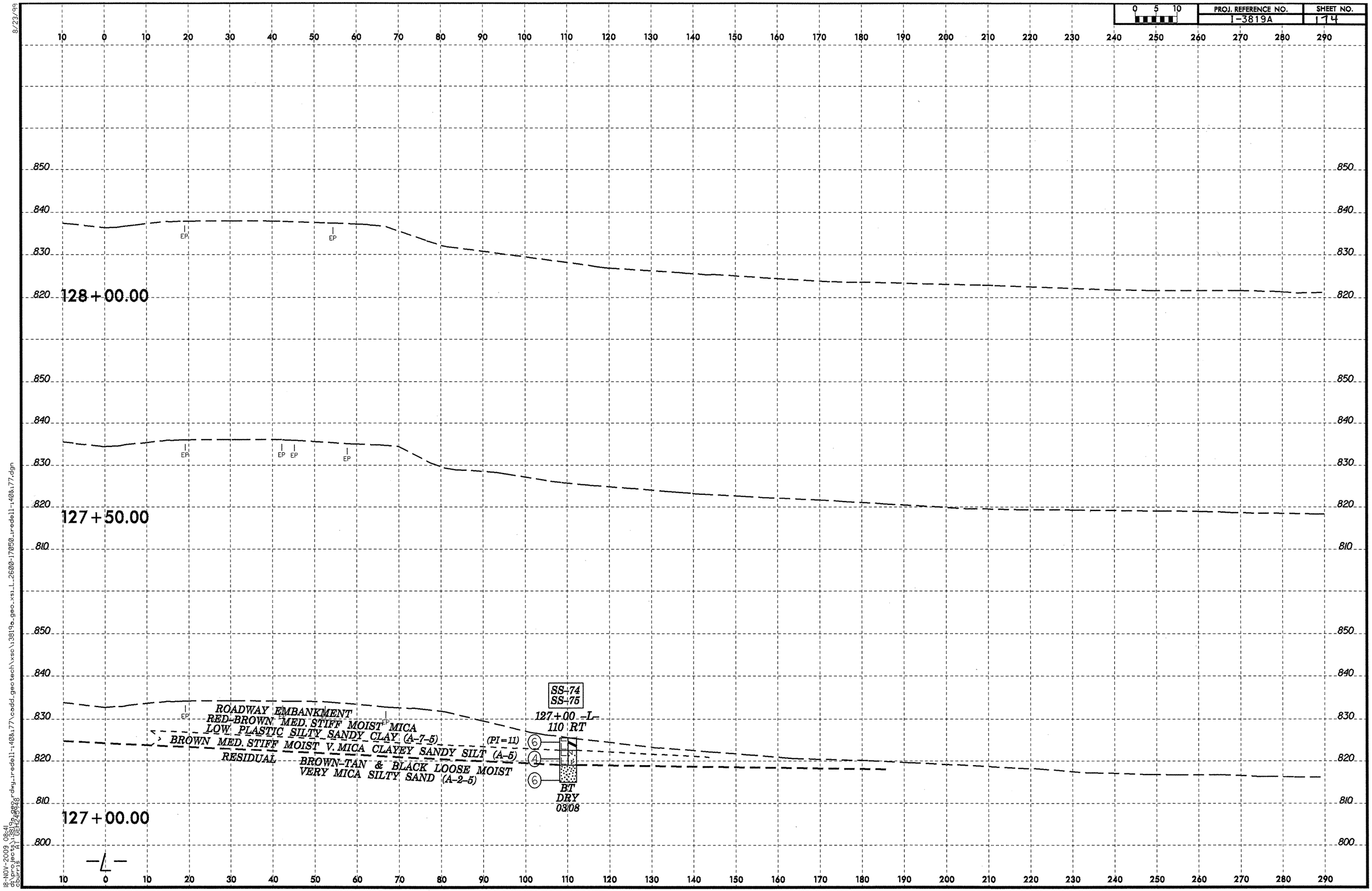

8/23/99

18-NOV-2009 08:41
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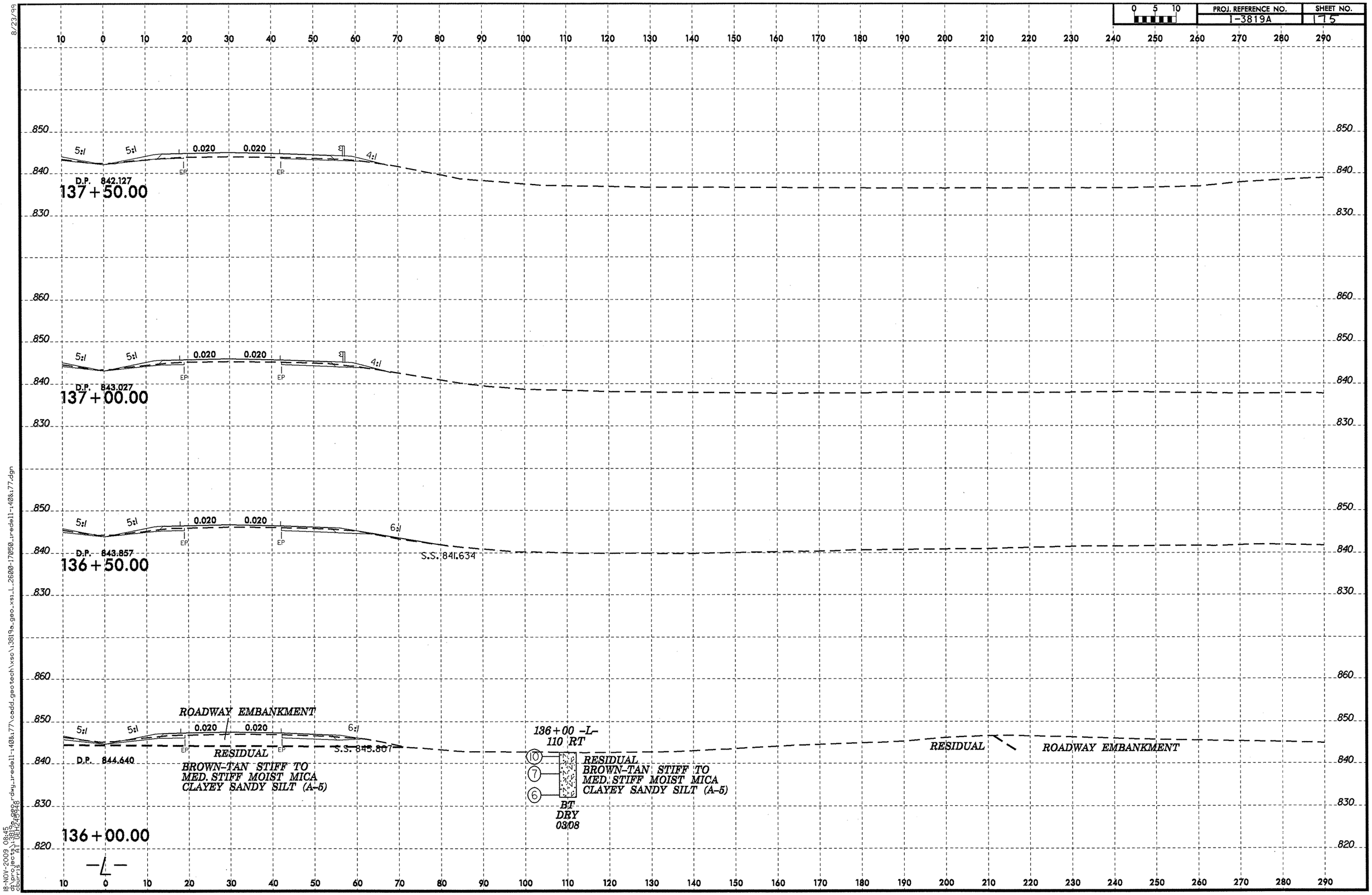

8/23/99

18-NOV-2009 08:45
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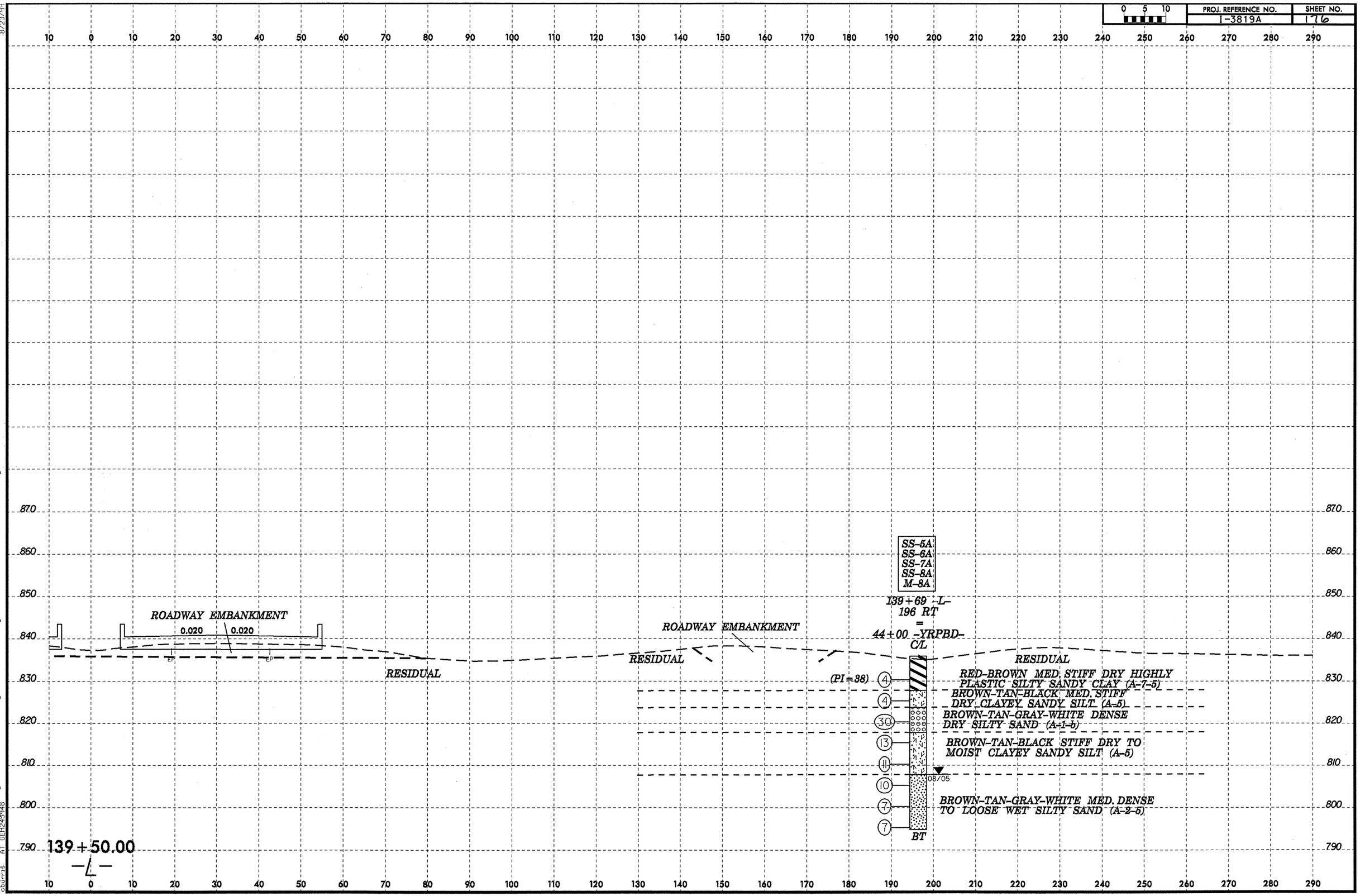

8/23/99
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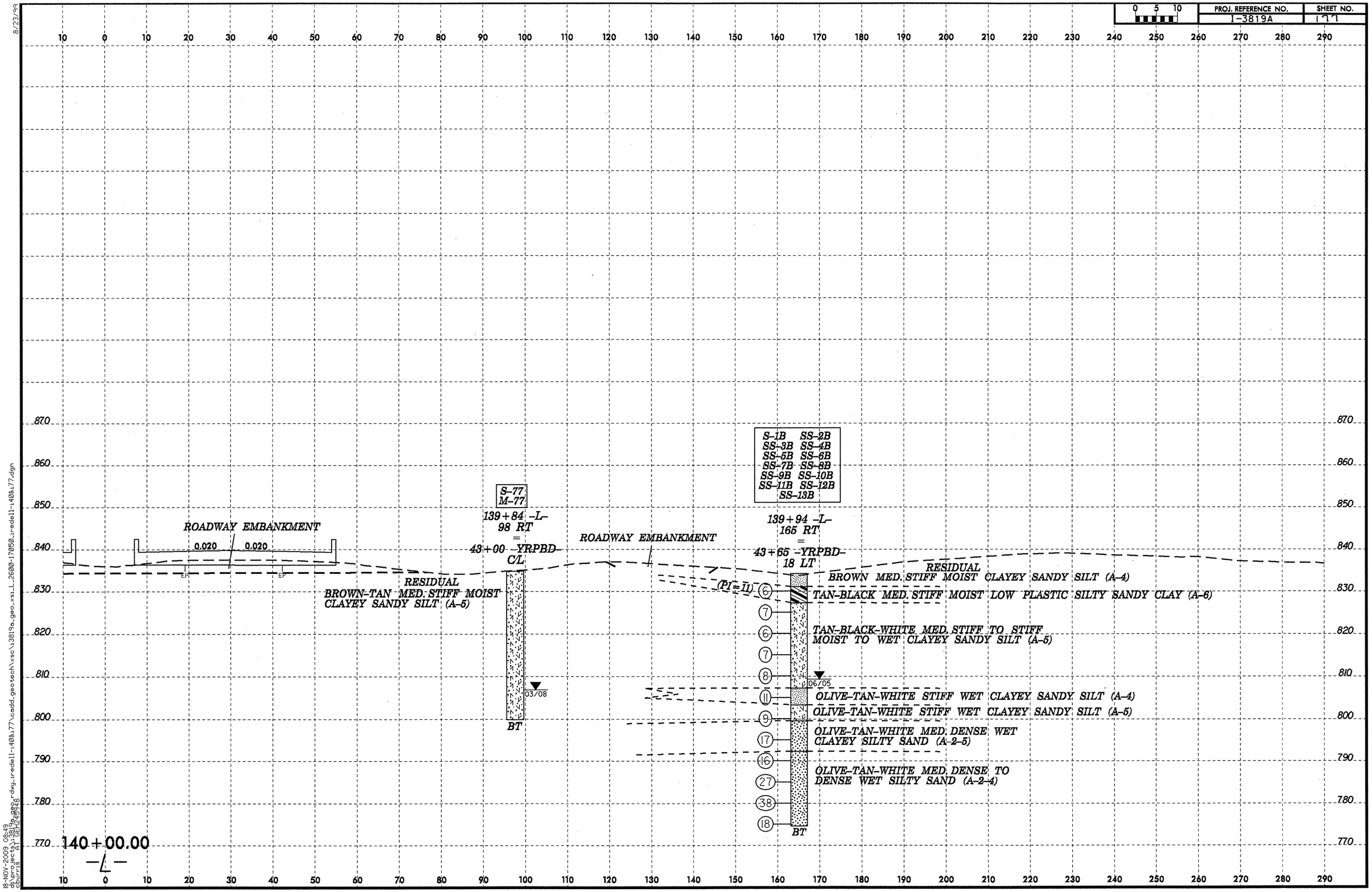
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	177



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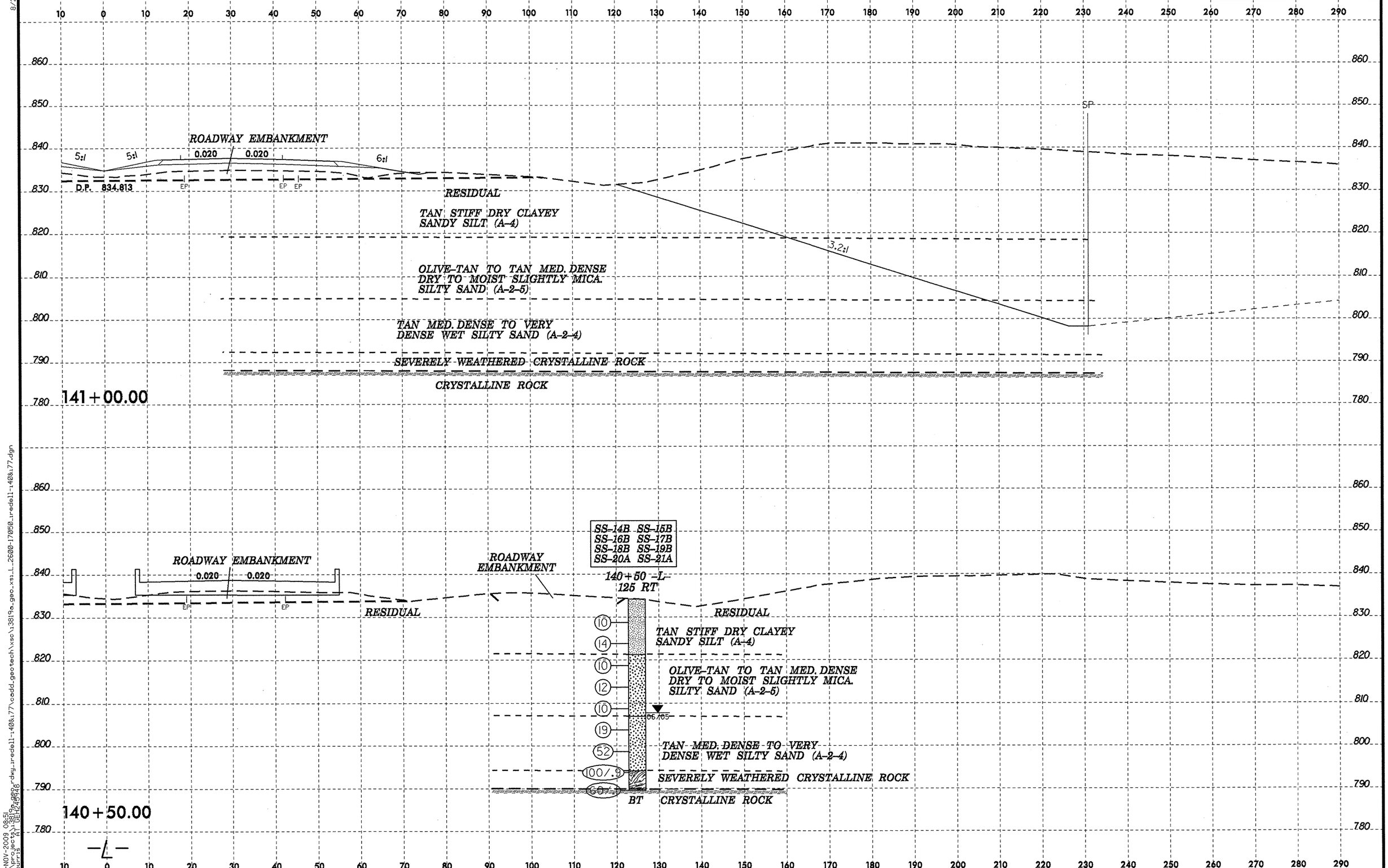

8/23/99
18-NOV-2009 08:51
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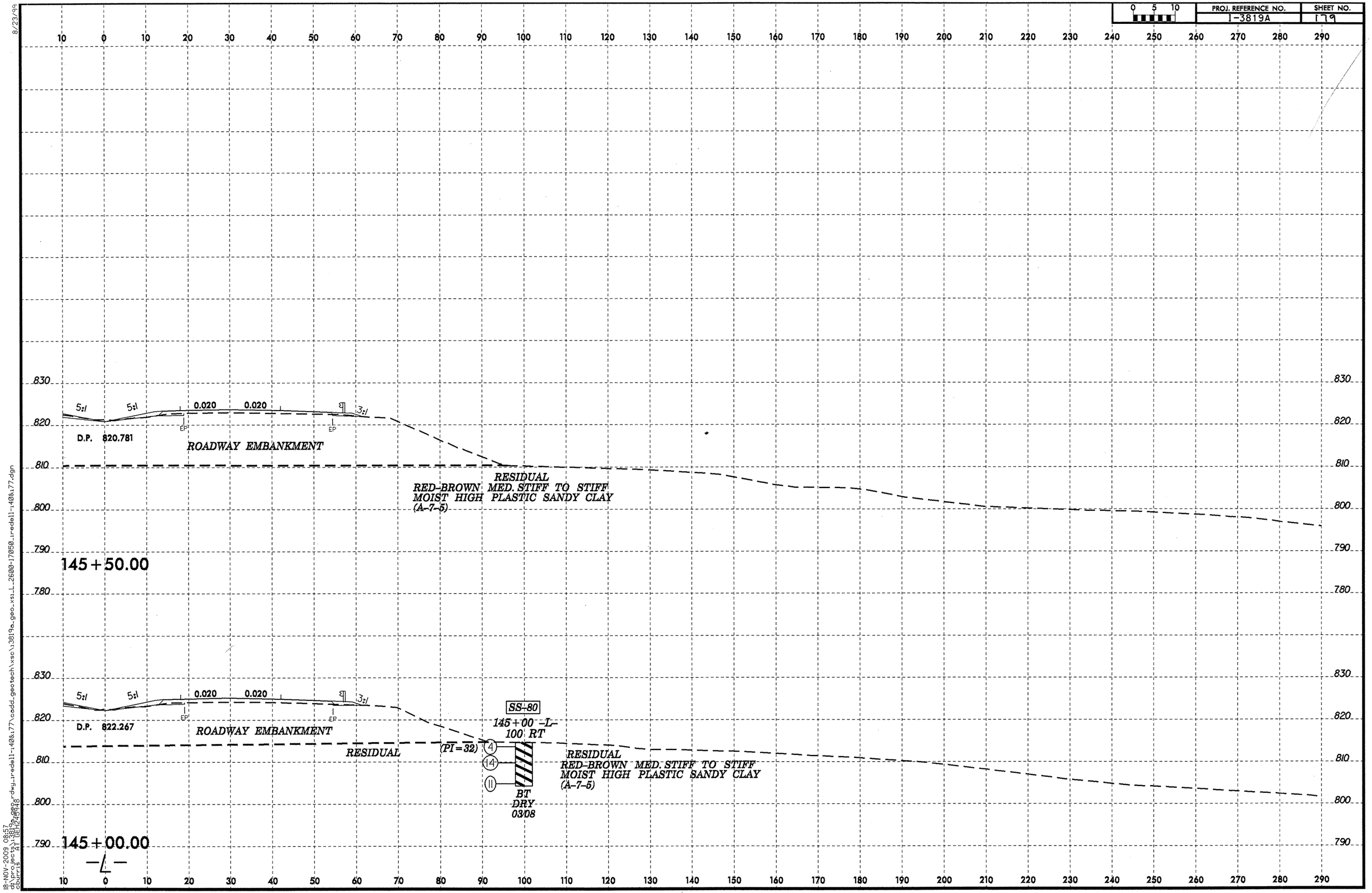

8/23/99
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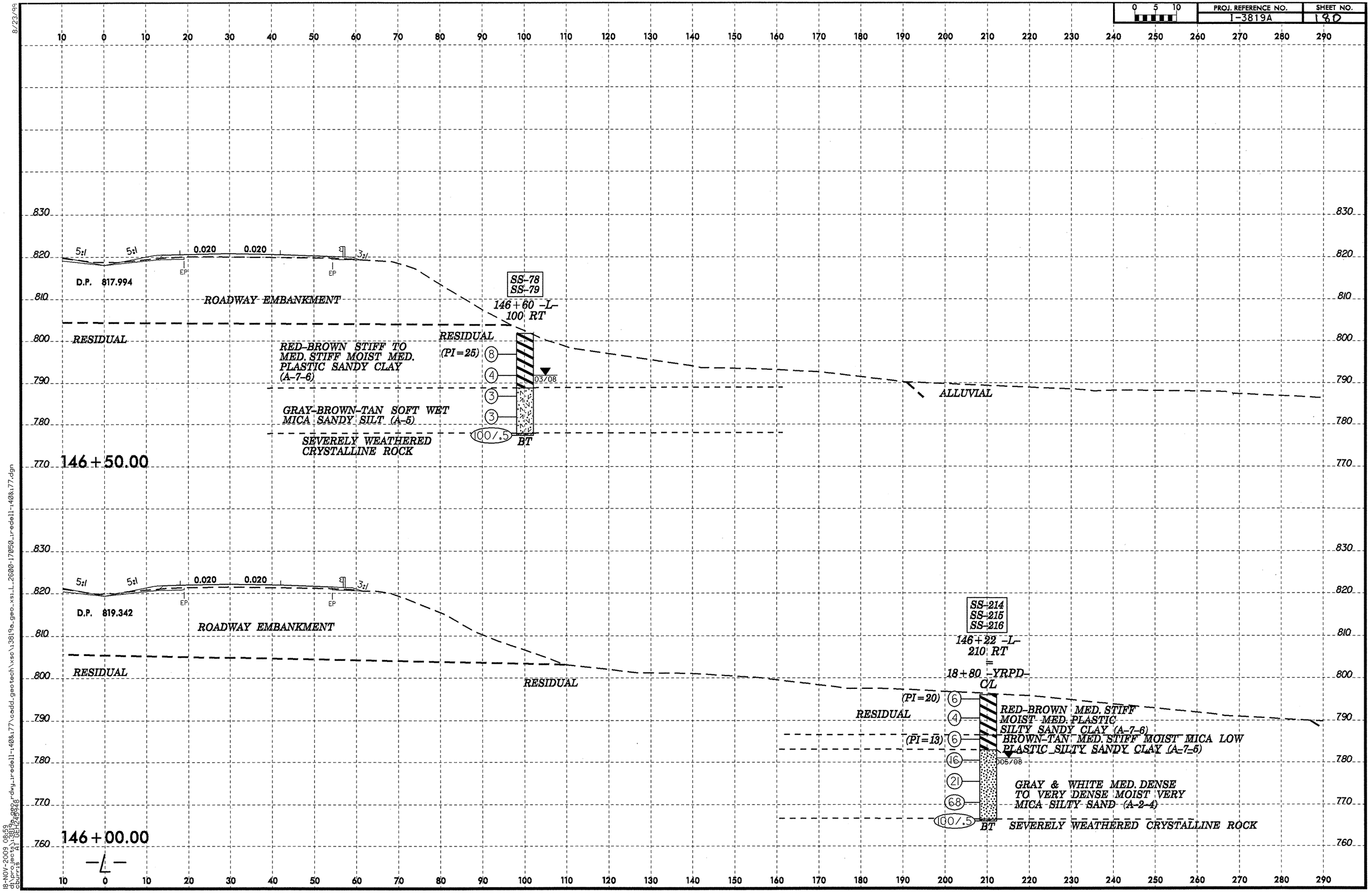
PROJ. REFERENCE NO.	SHEET NO.
I-3819A	180



8/23/99

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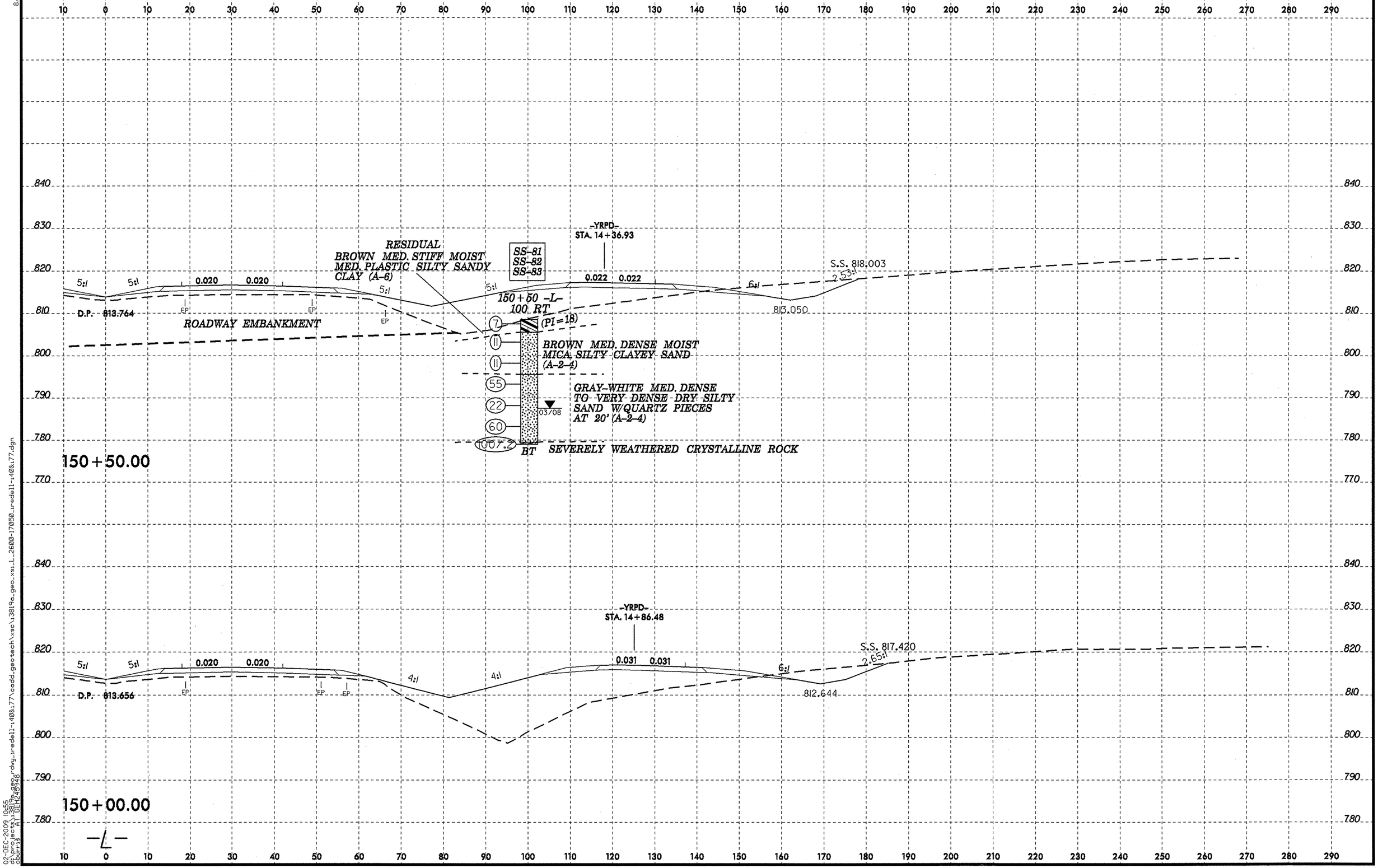

8/23/99
02-DEC-2009 10:55
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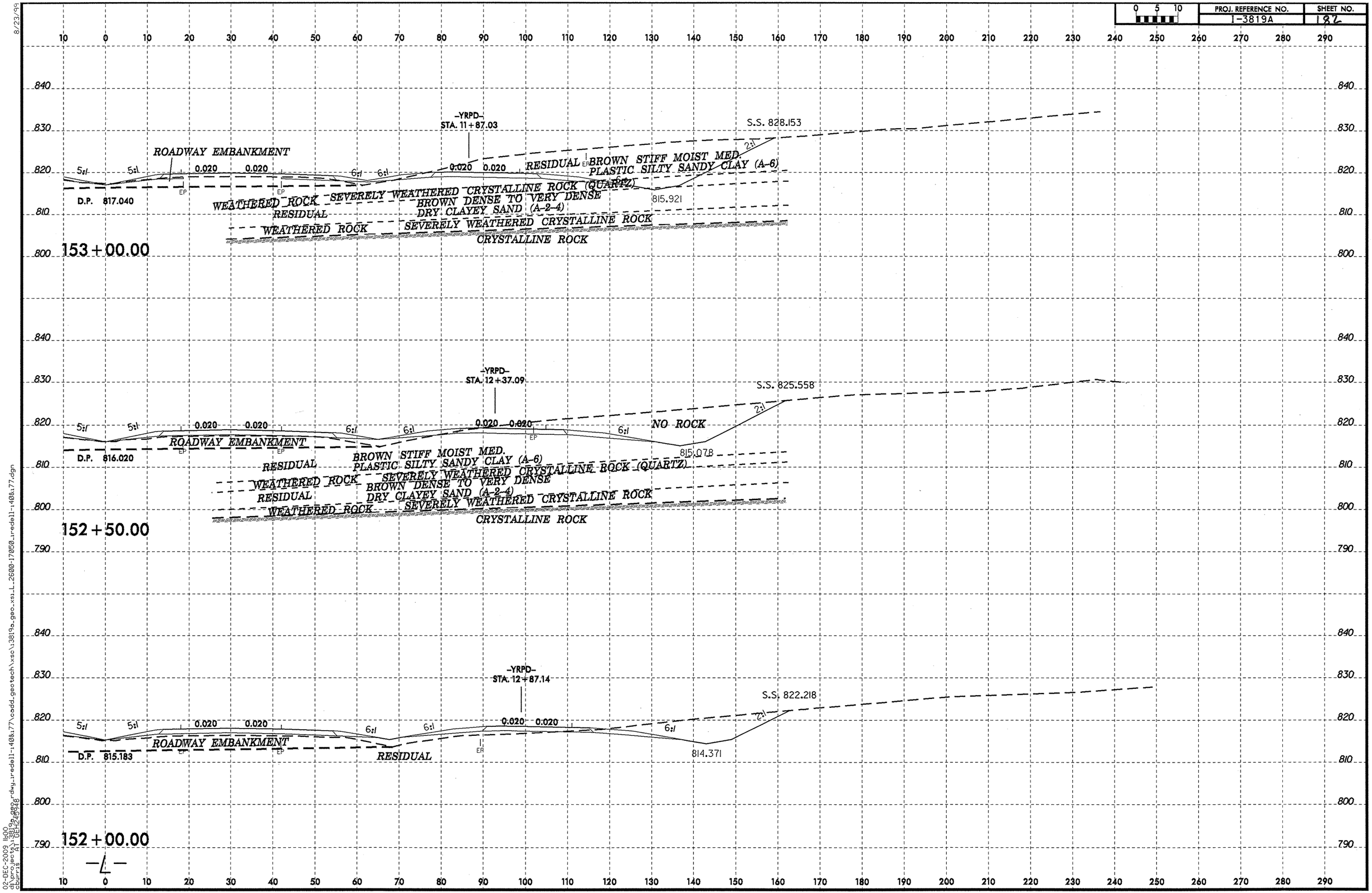

8/23/99
02-DEC-2009 11:00
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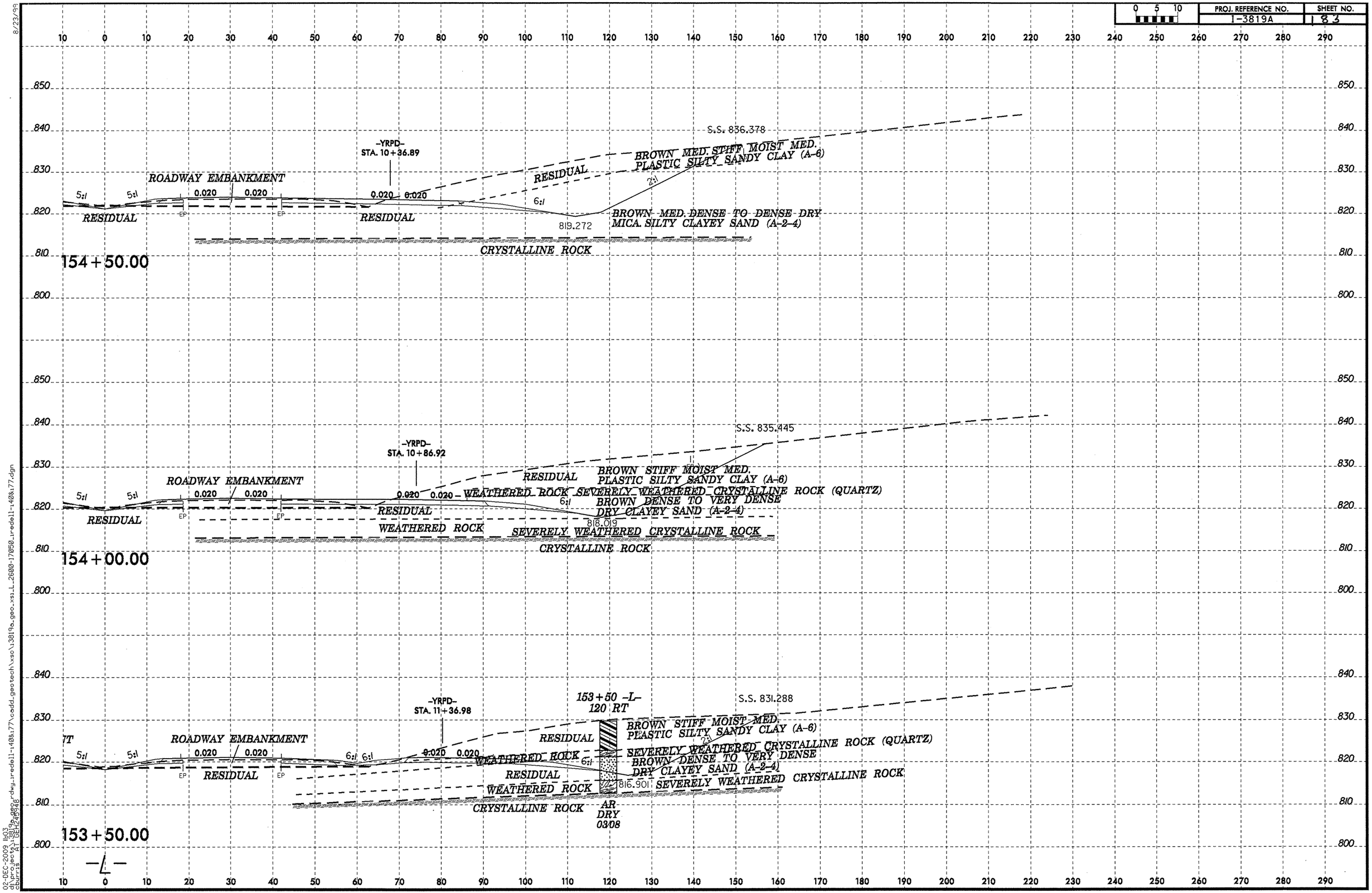
courtsa DELTA-CAD



8/23/99
02-DEC-2009 11:03
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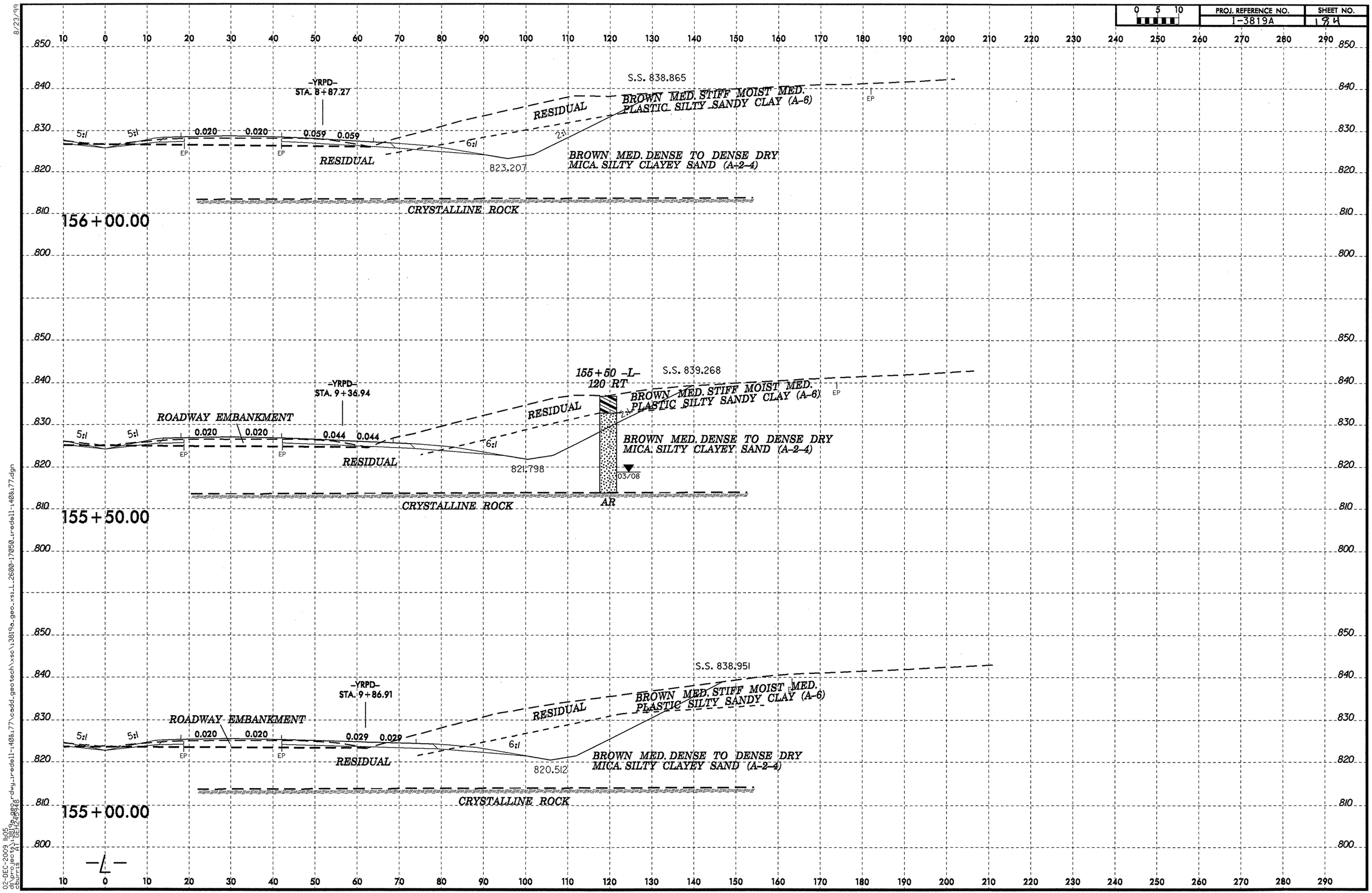
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I-3819A
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156
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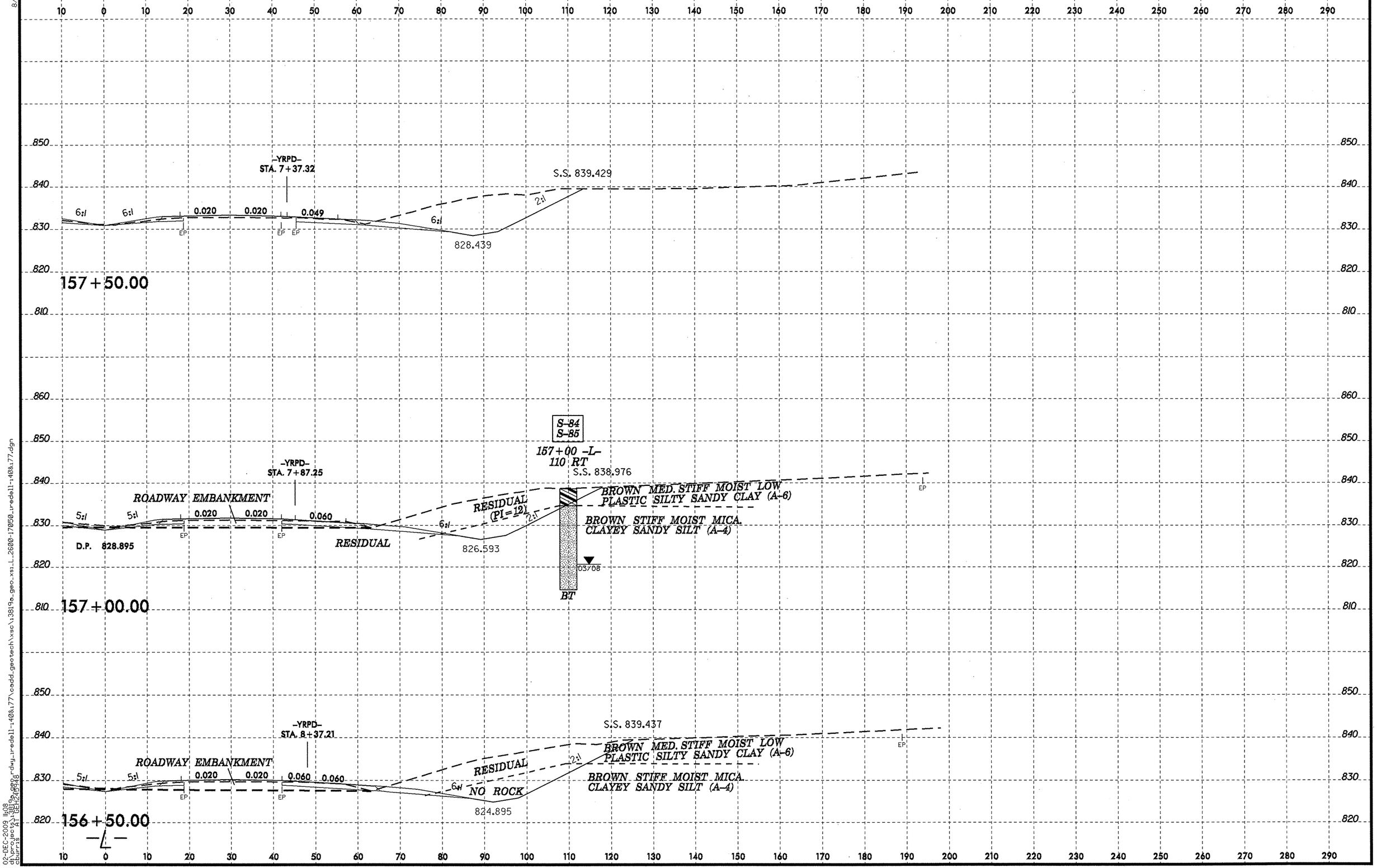
S.S. 838.865
RESIDUAL
BROWN MED. STIFF MOIST MED. PLASTIC SILTY SANDY CLAY (A-6)
BROWN MED. DENSE TO DENSE DRY MICA SILTY CLAYEY SAND (A-2-4)
823.207
CRYSTALLINE ROCK
156+00.00
-YRPD-
STA. 9+36.94
155+50 -L-
120 RT
S.S. 839.268
ROADWAY EMBANKMENT
821.798
AR
155+50.00
-YRPD-
STA. 9+86.91
S.S. 838.951
820.512
155+00.00
-L-



8/23/99
02-DEC-2009 11:08
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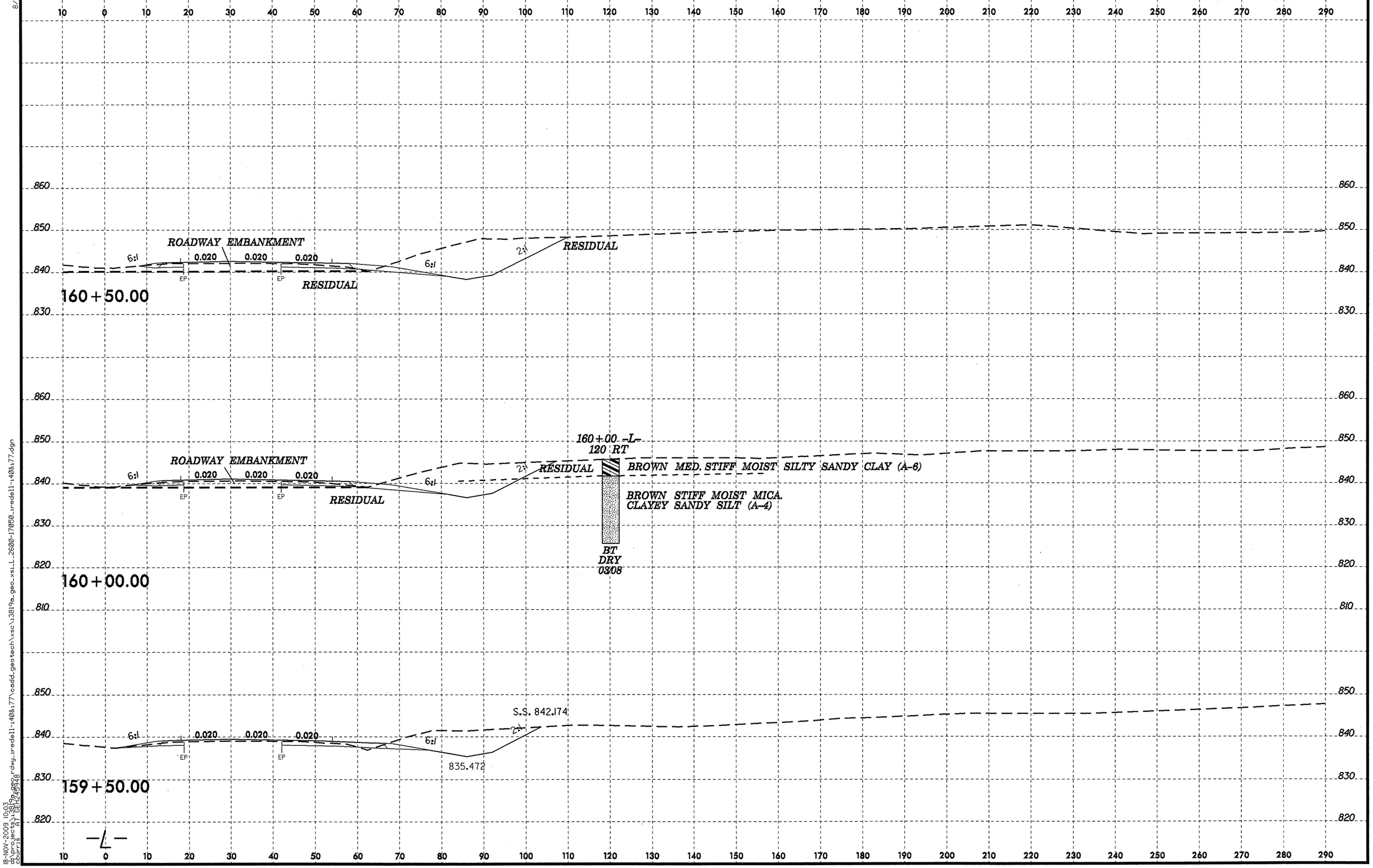
drawing name: 3819a_geo_xsl_L_2600-17050_redell-408.77\cadd_geotech\xsc\13819a_geo_xsl_L_2600-17050_redell-408.77.dgn



8/23/99
18-NOV-2009 10:03
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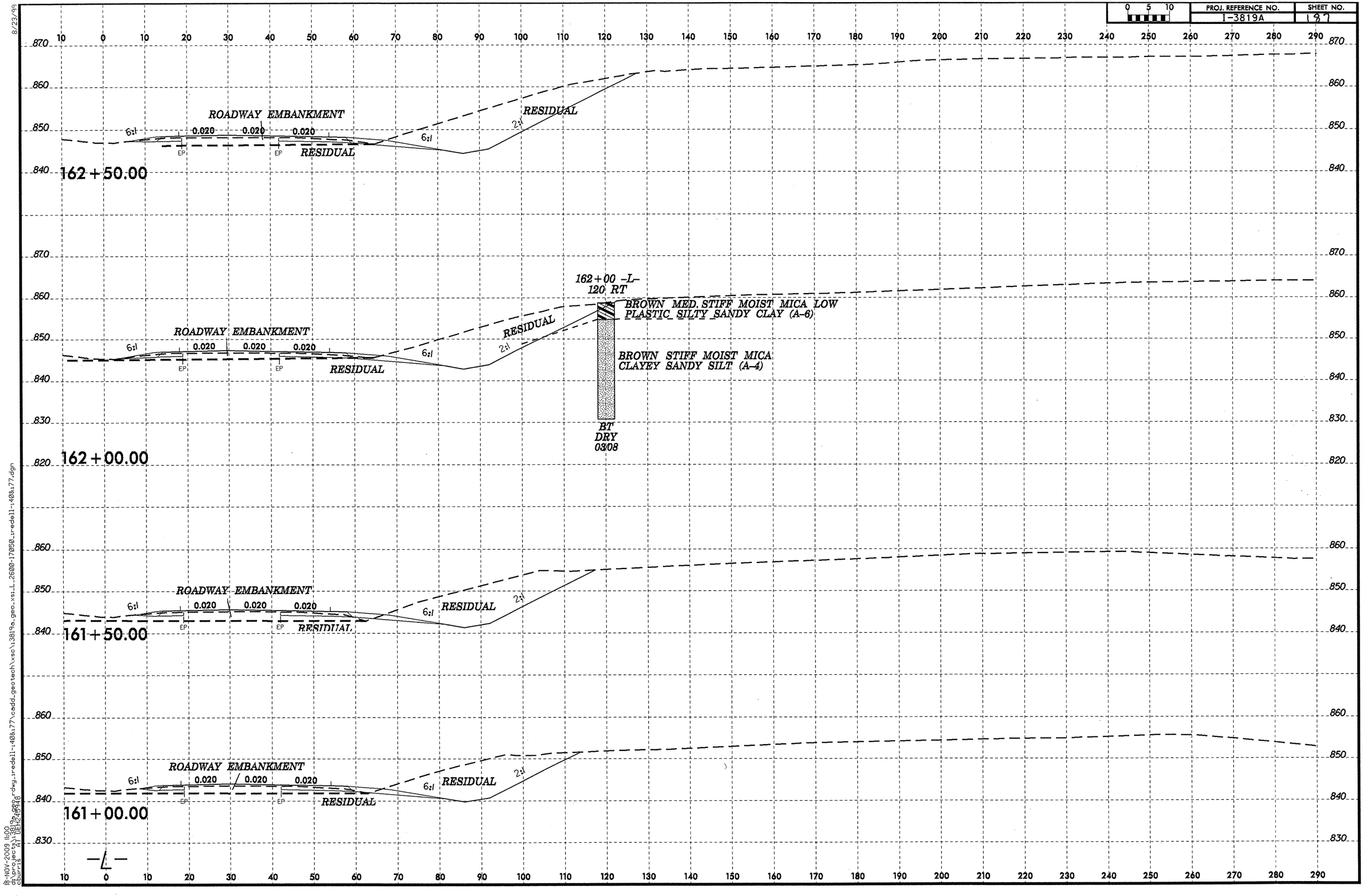

8/23/99
18-NOV-2009 11:00
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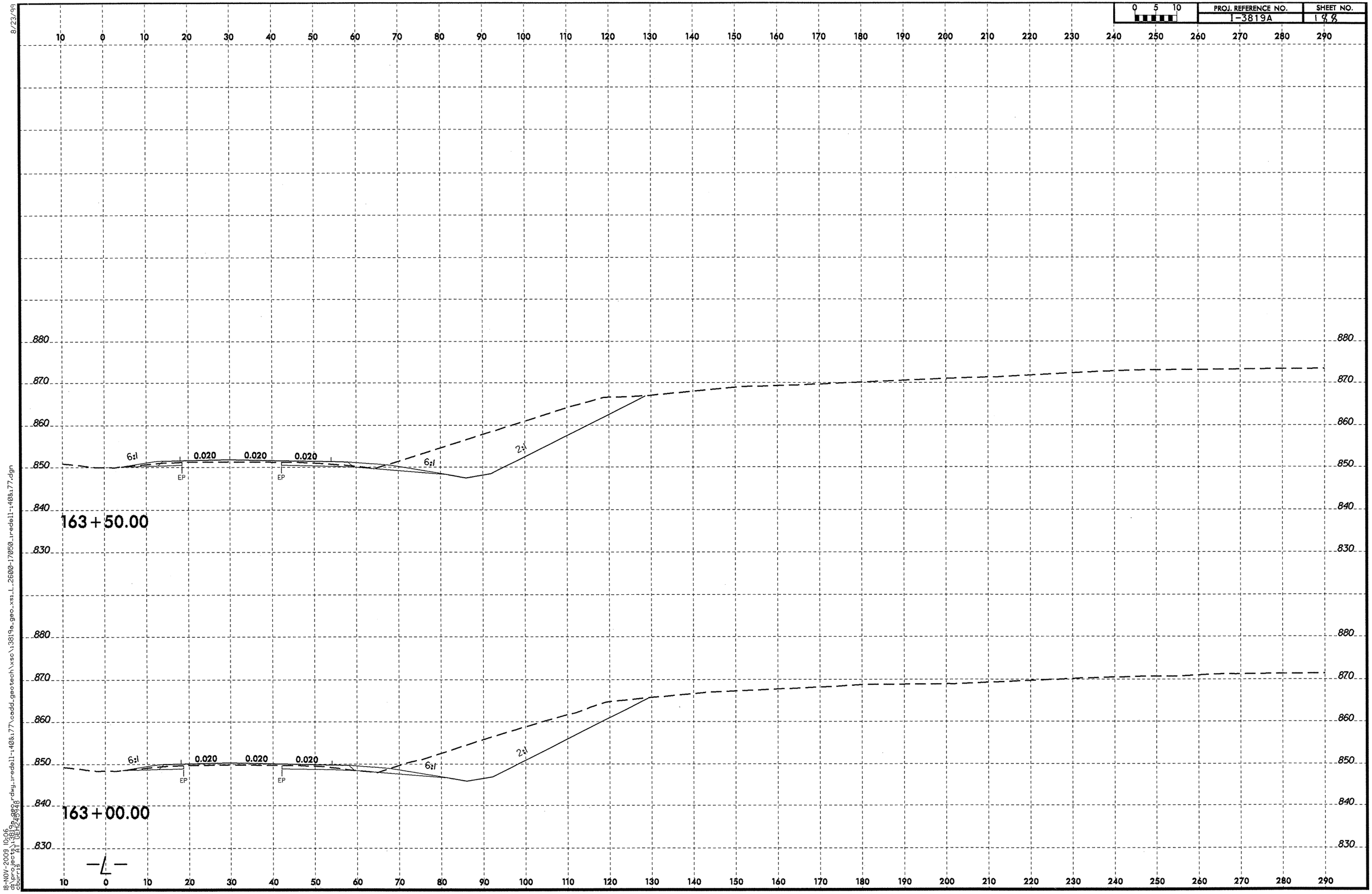
cburris



8/23/99

18-NOV-2009 10:06
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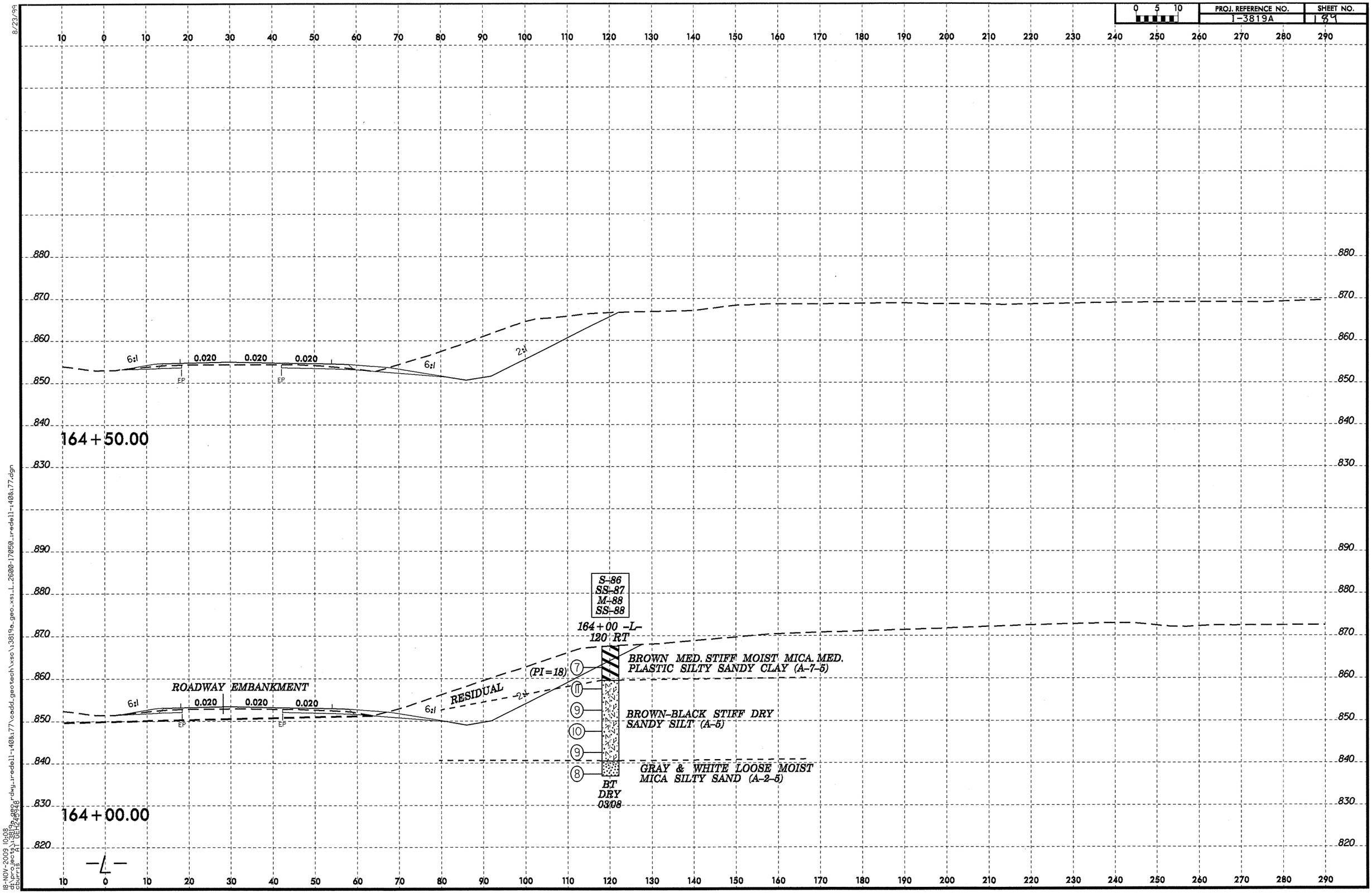
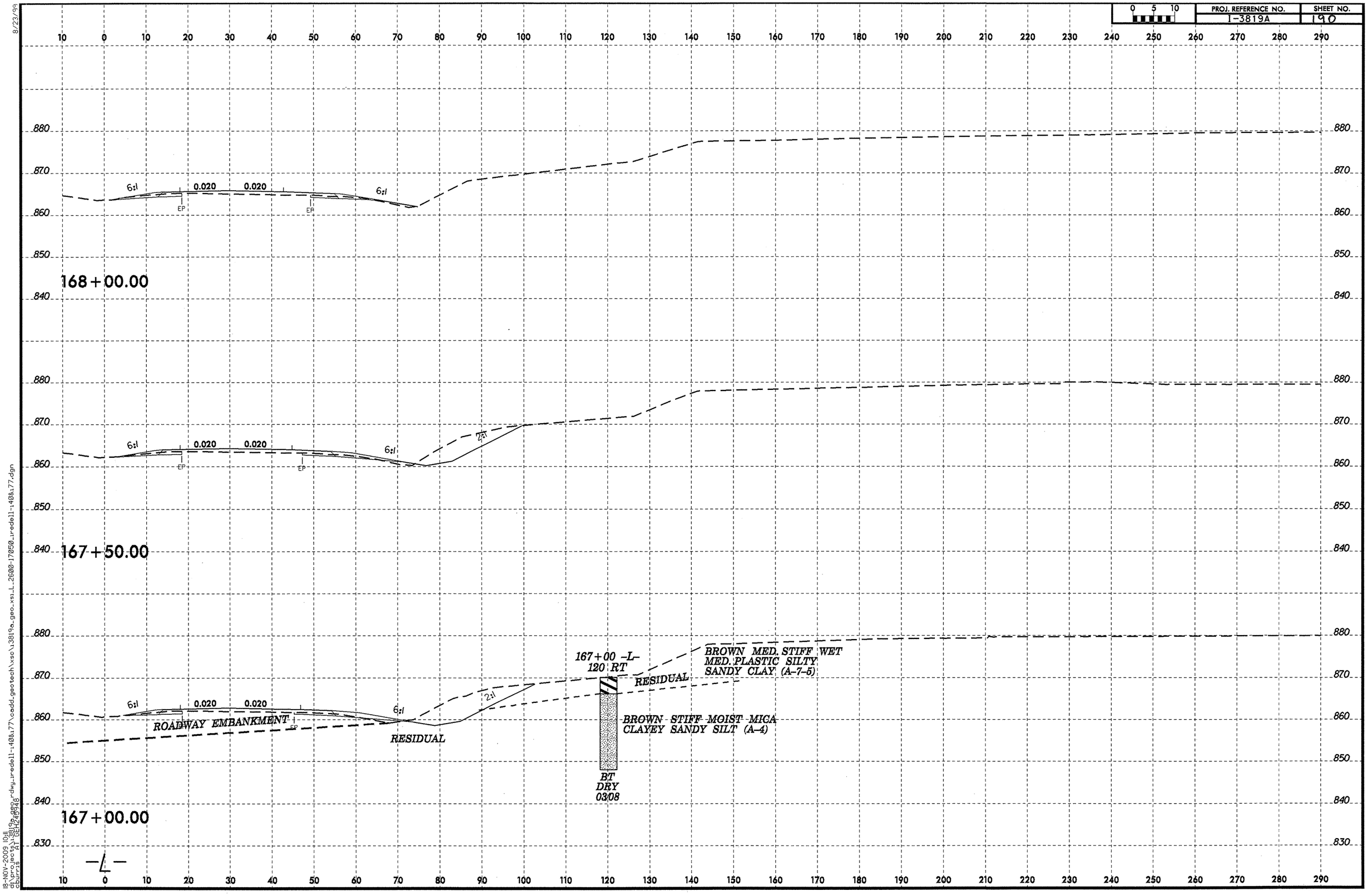
Journey AT DETAILS


0 5 10
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
189
164+50.00
6:1
0.020
0.020
0.020
EP
EP
6:1
2:1
ROADWAY EMBANKMENT
RESIDUAL
(PI=18)
S-86
SS-87
M-88
SS-88
164+00 -L-
120 RT
BROWN MED. STIFF MOIST MICA. MED. PLASTIC SILTY SANDY CLAY (A-7-5)
BROWN-BLACK STIFF DRY SANDY SILT (A-5)
GRAY & WHITE LOOSE MOIST MICA SILTY SAND (A-2-5)
BT
DRY
03/08
164+00.00
-L-
8/23/99
18-NOV-2009 10:08
d:\projects\13819a\rdwy_iredell-140&177\cadd_geotech\xsc\13819a_geo_xsl_L_2600-17050_iredell-140&177.dgn



8/23/99

18-NOV-2009 10:11
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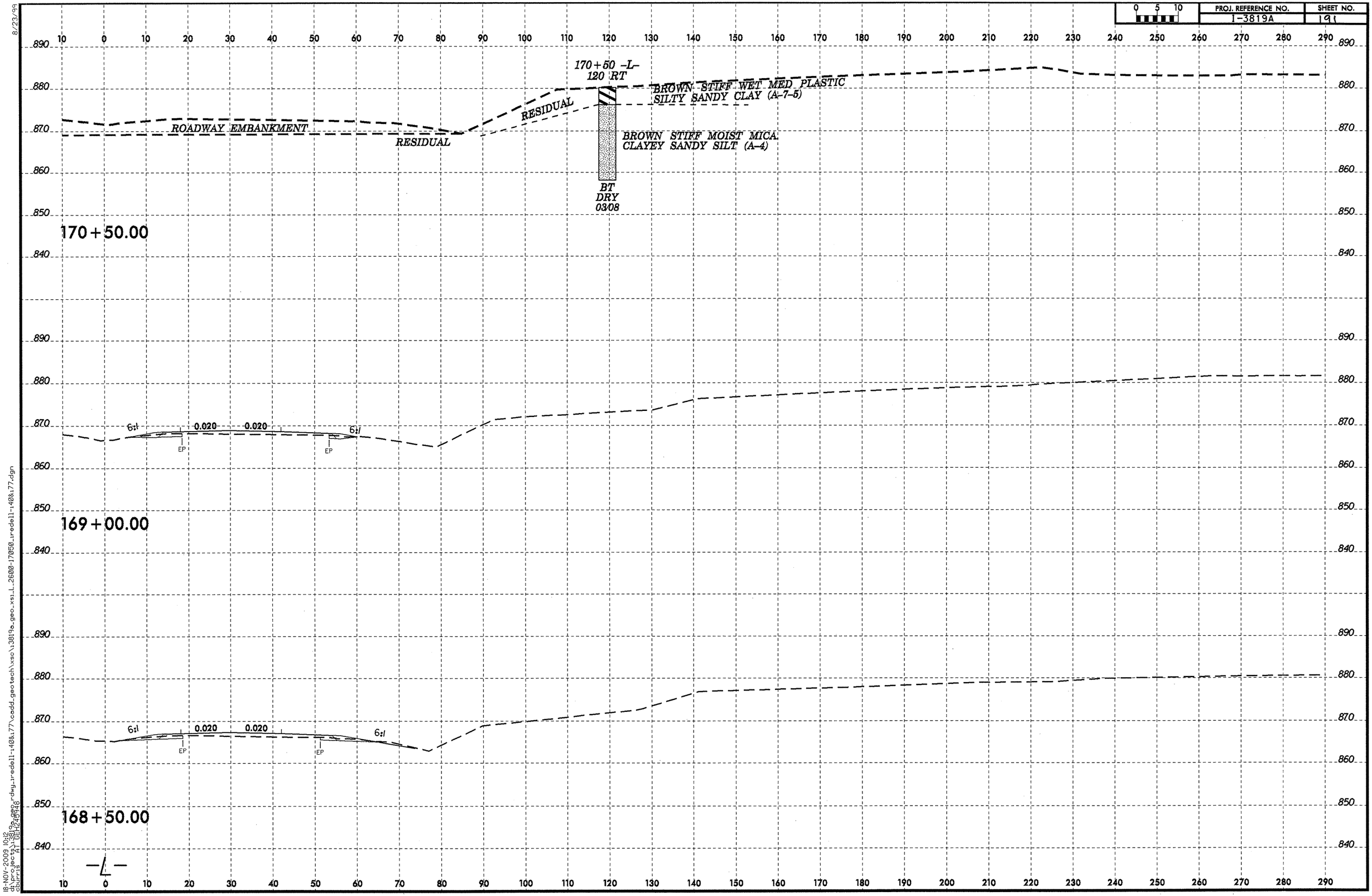
cburris A1 DEL2.5.48



8/23/99

18-NOV-2009 10:12
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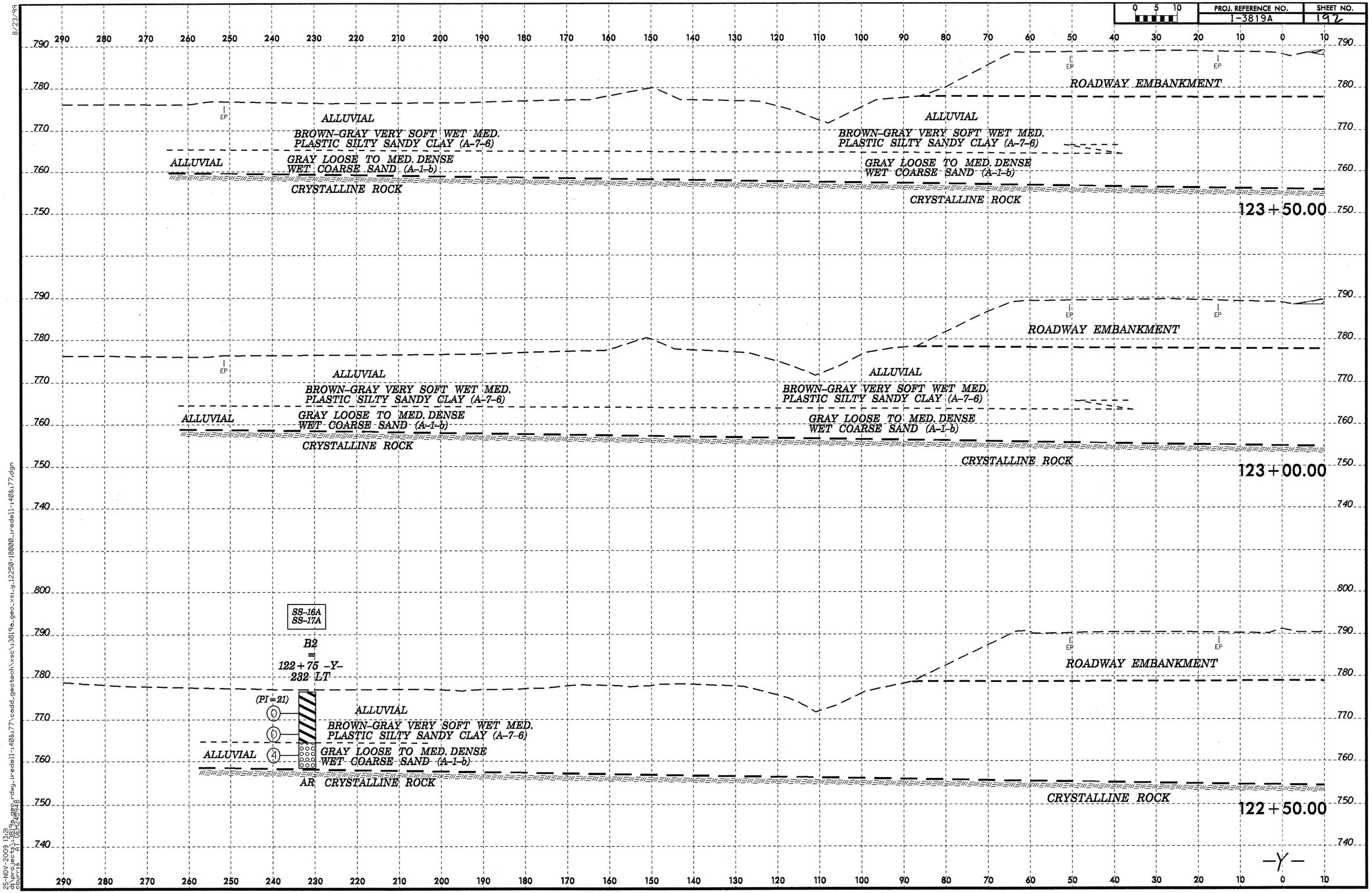
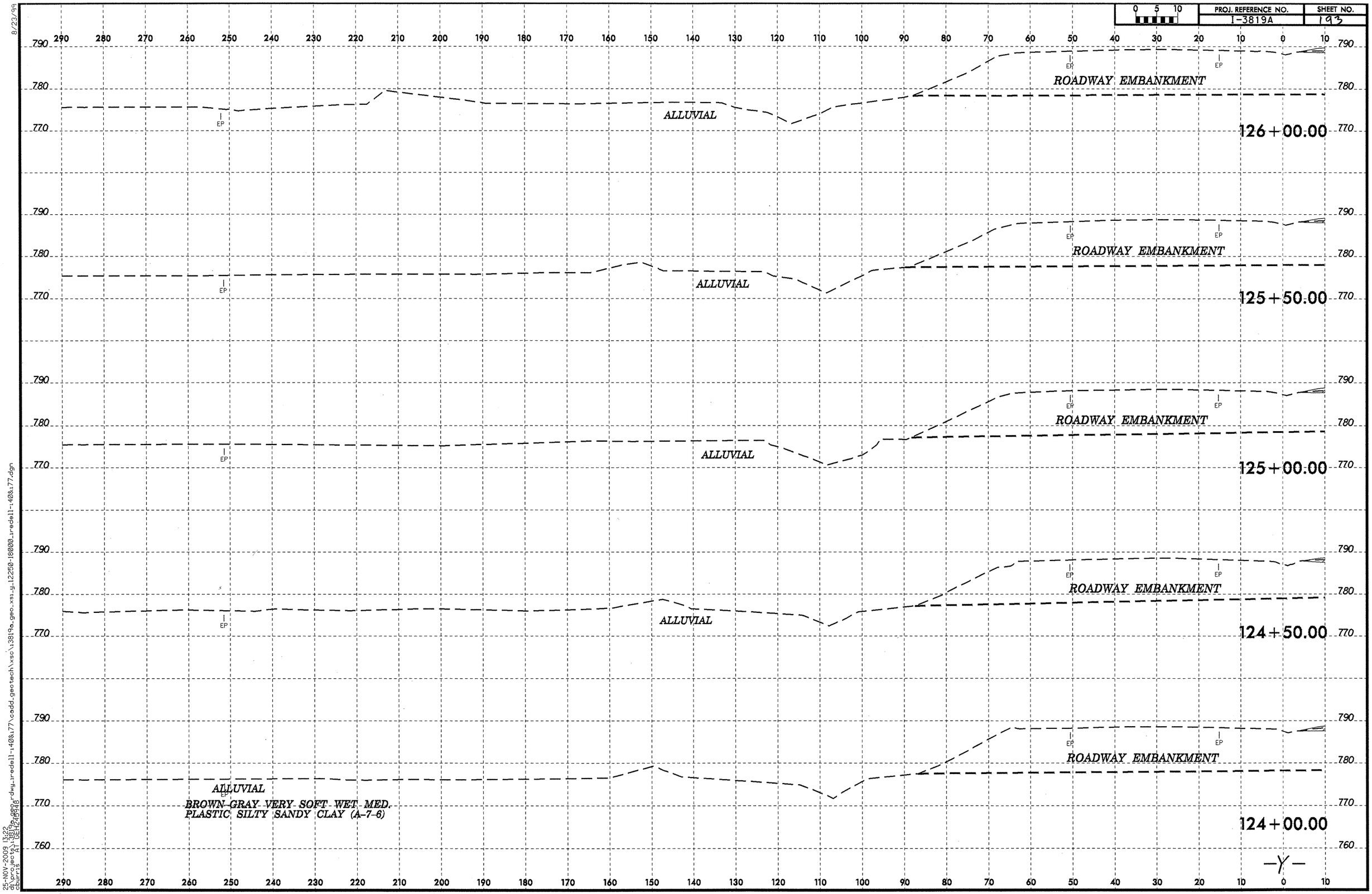

PROJ. REFERENCE NO.
1-3819A
SHEET NO.
192
0 5 10
ROADWAY EMBANKMENT
ALLUVIAL
BROWN-GRAY VERY SOFT WET MED. PLASTIC SILTY SANDY CLAY (A-7-6)
GRAY LOOSE TO MED. DENSE WET COARSE SAND (A-1-b)
CRYSTALLINE ROCK
EP
123+50.00
123+00.00
SS-16A
SS-17A
B2
=
122+75 -Y-
232 LT
(PI=21)
AR
122+50.00
-Y-



8/23/99

25-NOV-2009 13:22
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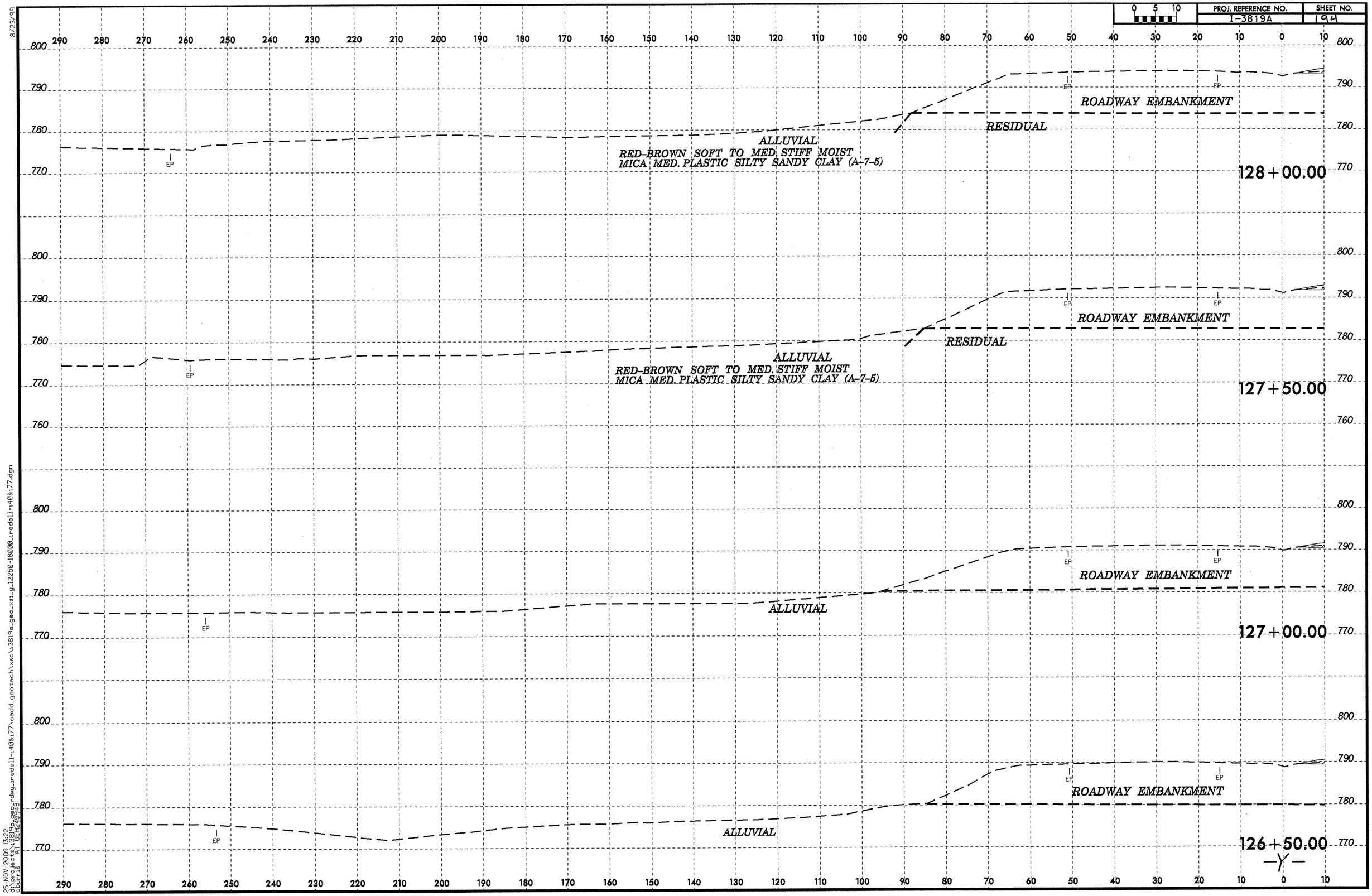
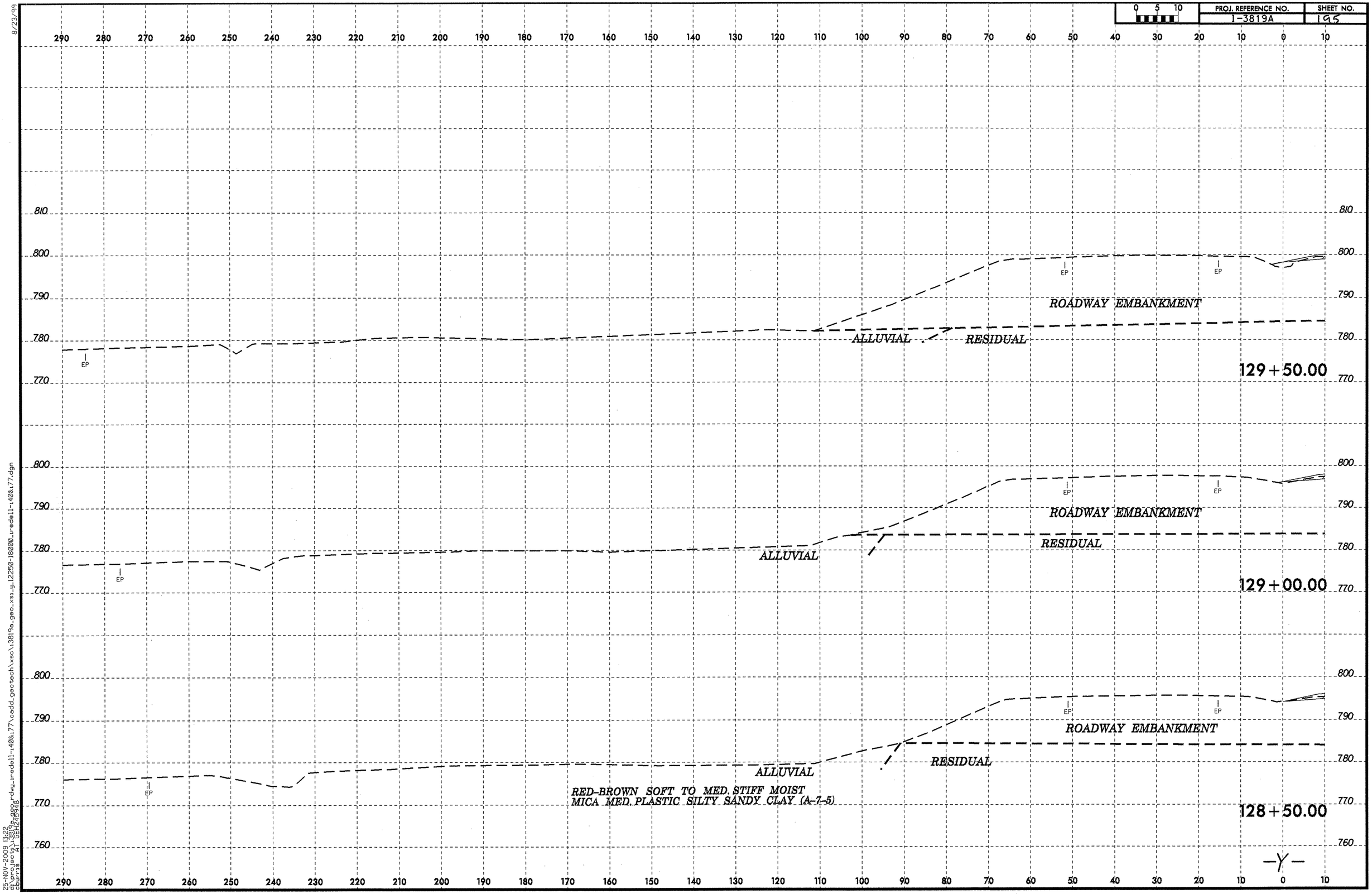
sburris AT DEL12-5948



8/23/99
25-NOV-2009 13:22
d:\projects\3819a_geo.dwg_redell-140&177\cadd_geotech\xsc\3819a_geo_xsi_y12250-18000_redell-140&177.dgn
cburris A1 DEH2459948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	195



8/23/99

25-NOV-2009 13:22
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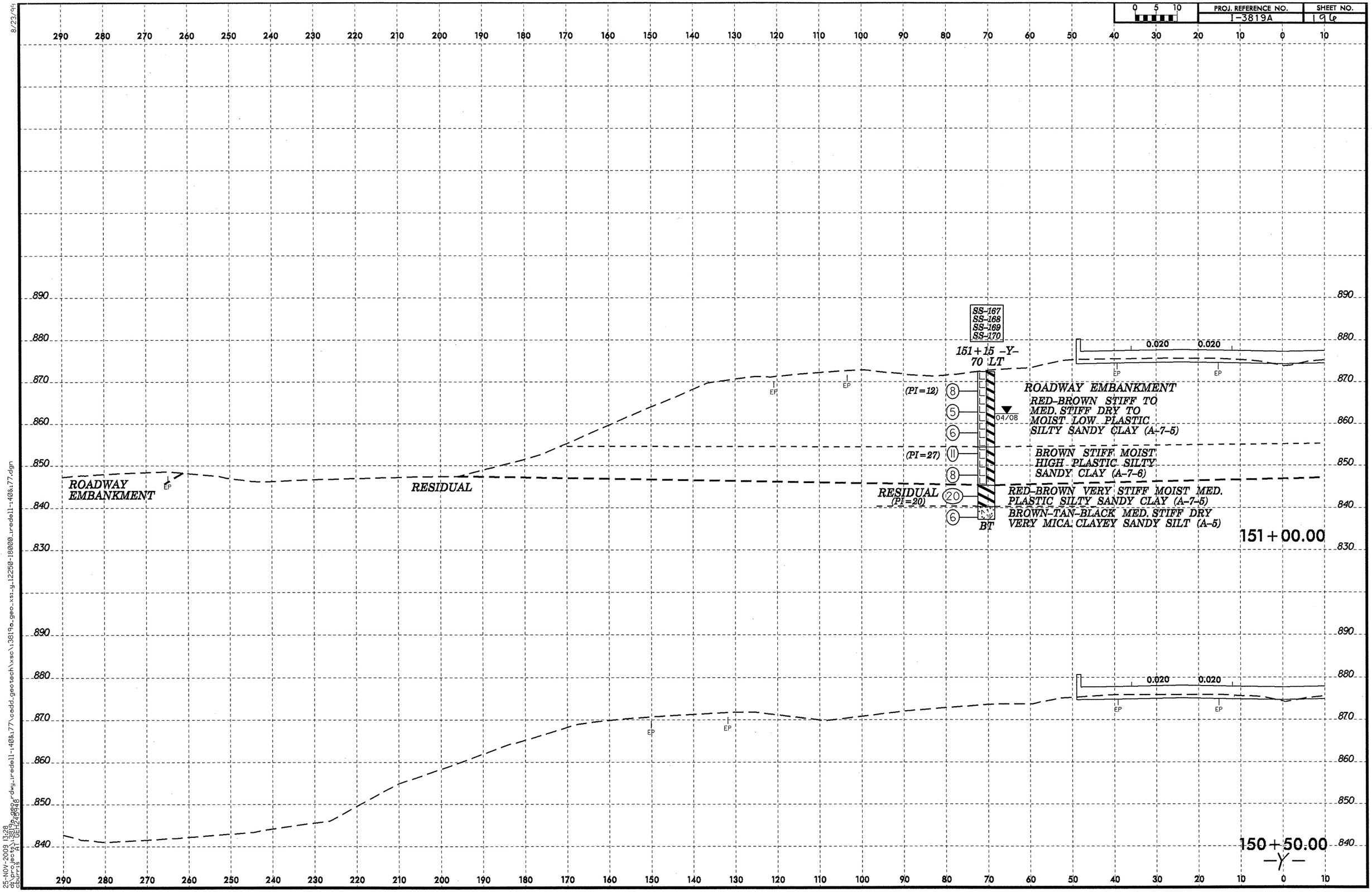
cburris AT DEL24548



8/23/99
25-NOV-2009 13:28
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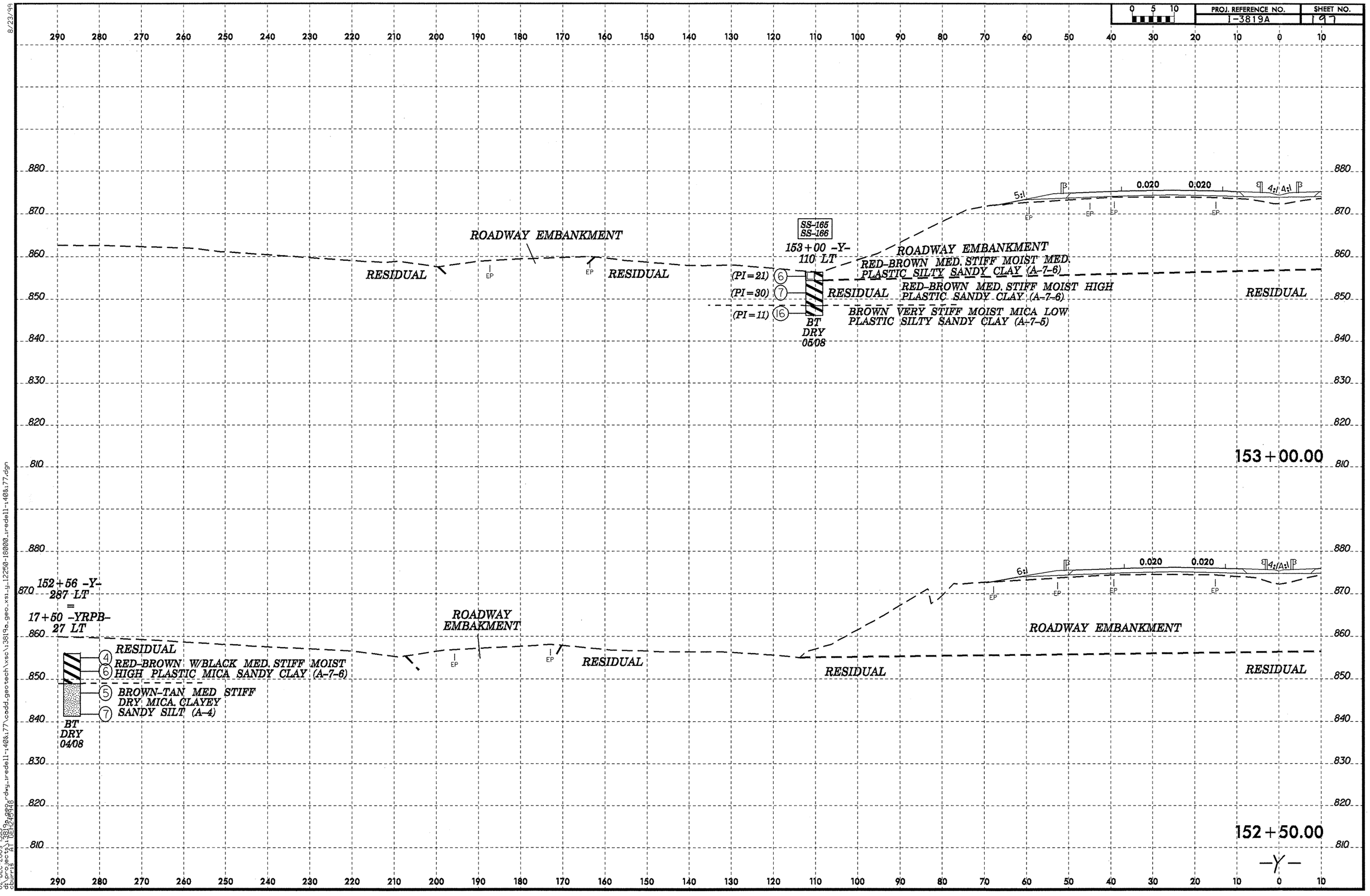
cburris



8/23/99
02-DEC-2009 13:15
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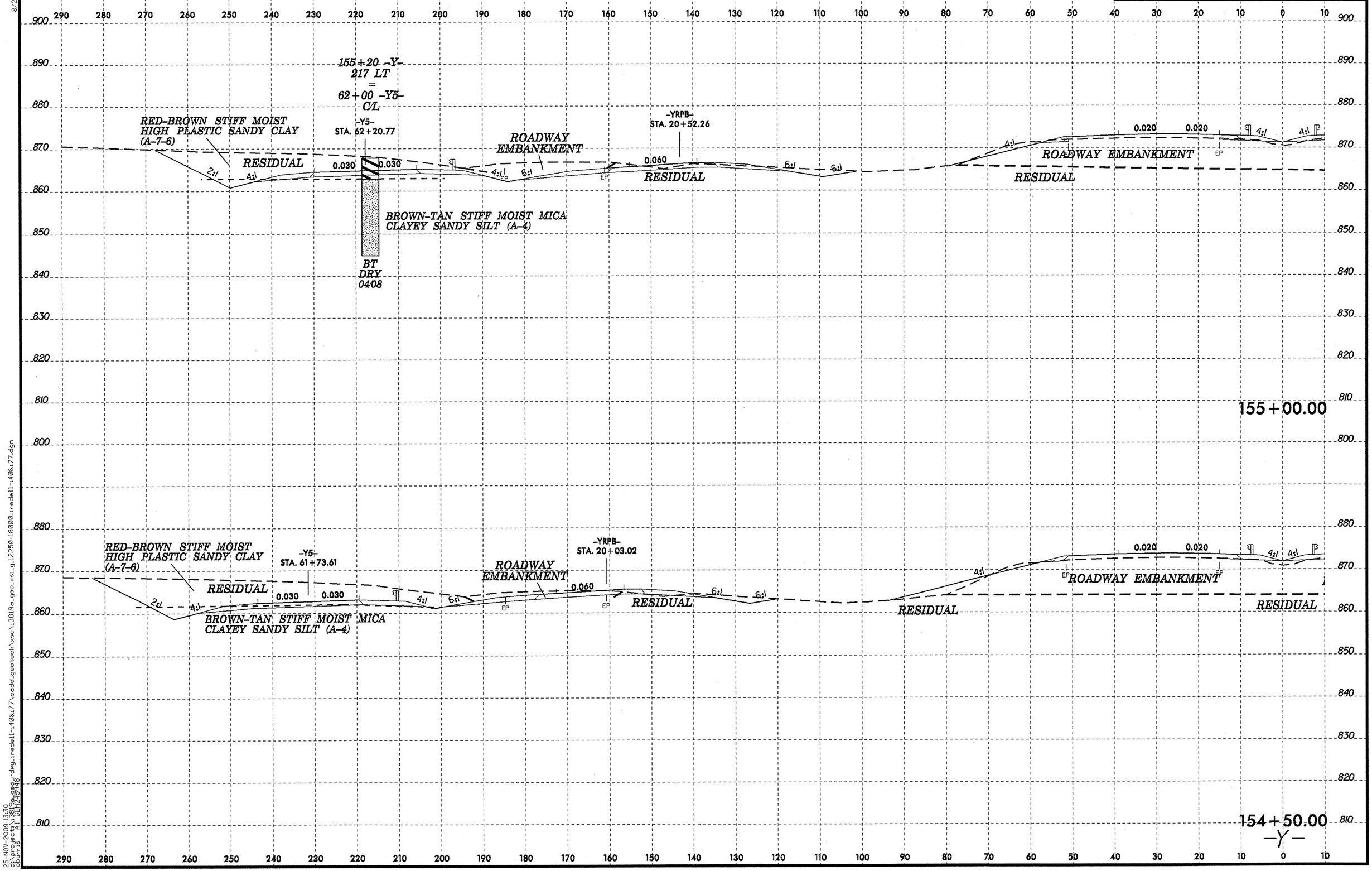
cburrs



8/23/99
25-NOV-2009 13:30
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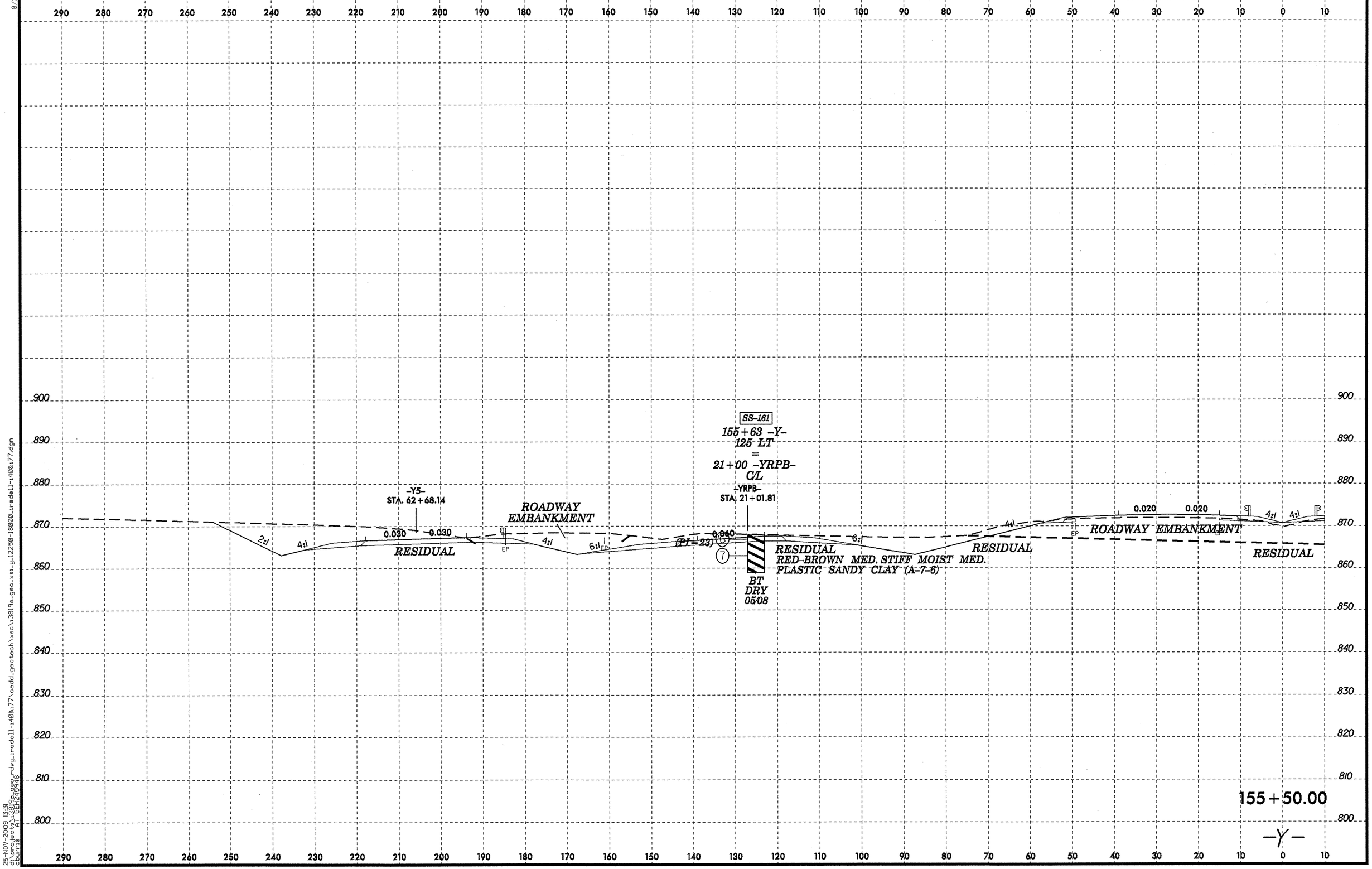
cburris AT DEL2419948



8/23/99
25-NOV-2009 13:31
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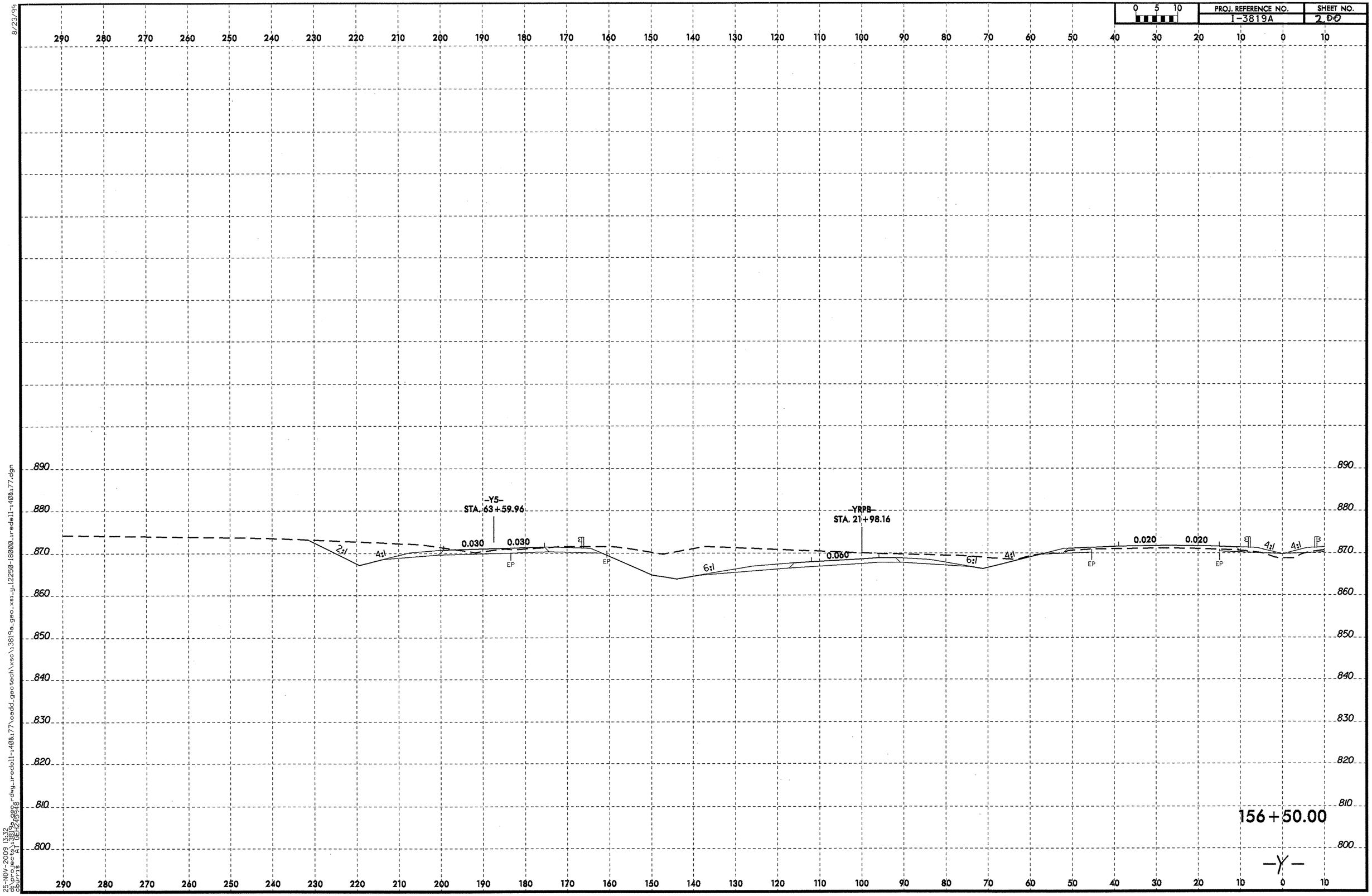
dburris A1 DEN29948



8/23/99

25-NOV-2009 13:32
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dbprog:A1 (BEI2258)
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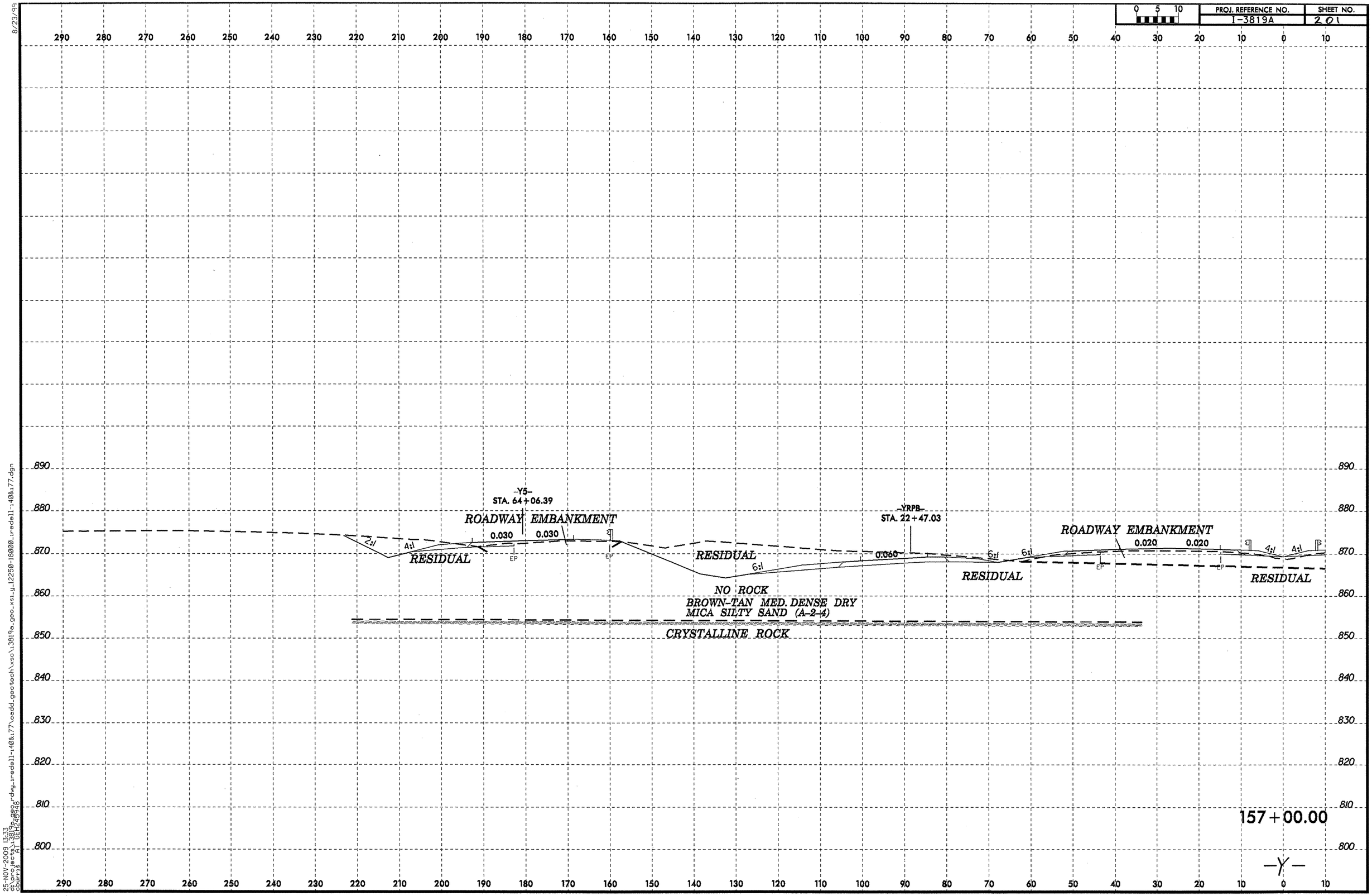
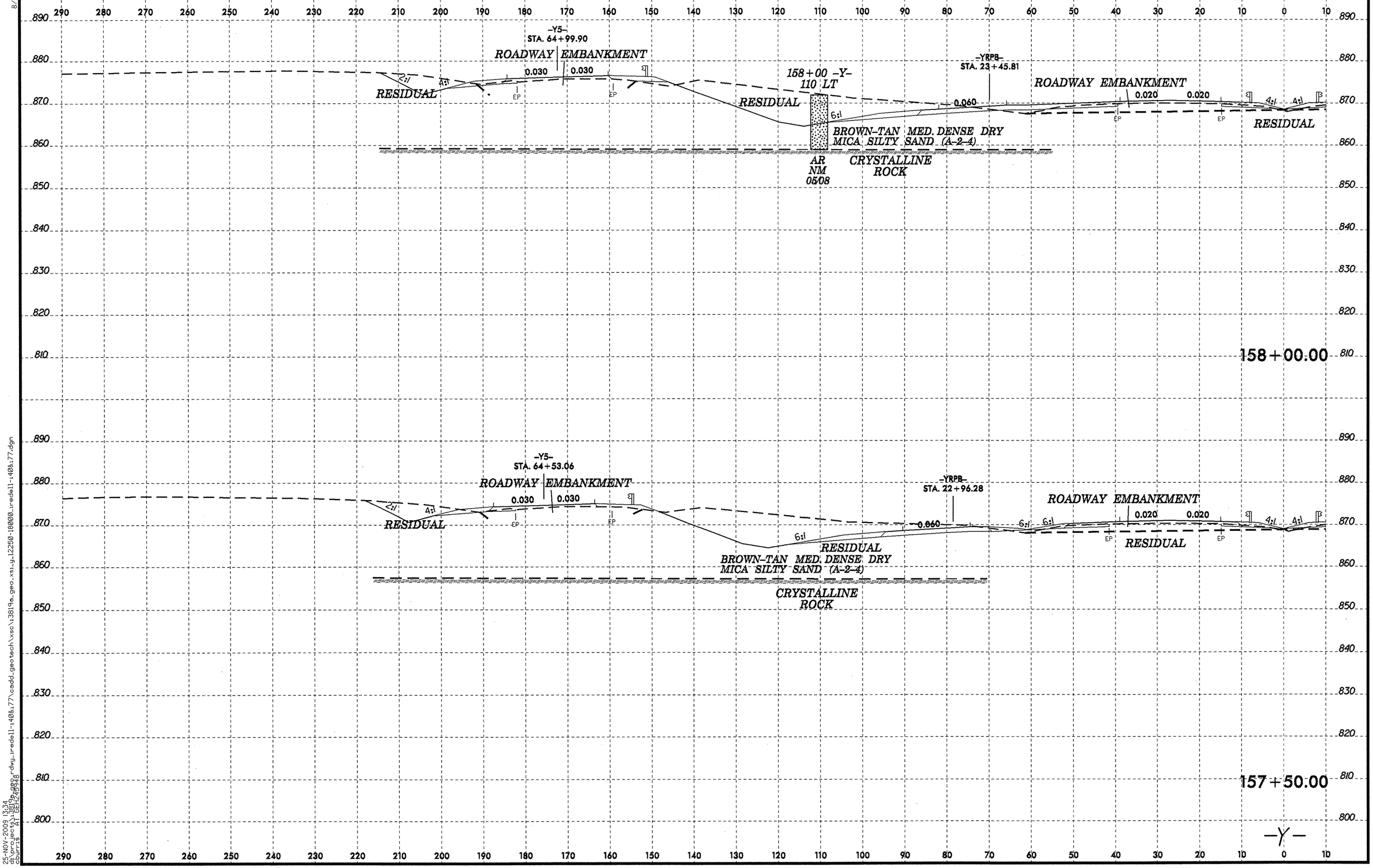

0 5 10
PROJ. REFERENCE NO.
I-3819A
SHEET NO.
201
290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10
890
880
870
860
850
840
830
820
810
800
-Y5-
STA. 64+06.39
ROADWAY EMBANKMENT
0.030
0.030
2:1
4:1
RESIDUAL
EP
EP
RESIDUAL
6:1
NO ROCK
BROWN-TAN MED. DENSE DRY
MICA SILTY SAND (A-2-4)
CRYSTALLINE ROCK
-YRPB-
STA. 22+47.03
0.060
6:1
6:1
RESIDUAL
EP
EP
ROADWAY EMBANKMENT
0.020
0.020
4:1
4:1
RESIDUAL
157+00.00
-Y-
8/23/99
25-NOV-2009 13:33
dt:projects\3819a\dwg\redell-140&177\cadd\geotech\xsc\3819a_geo_xsl_g12250-18000_redell-140&177.dgn
cburris

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	202



8/23/99

25-NOV-2009 13:34
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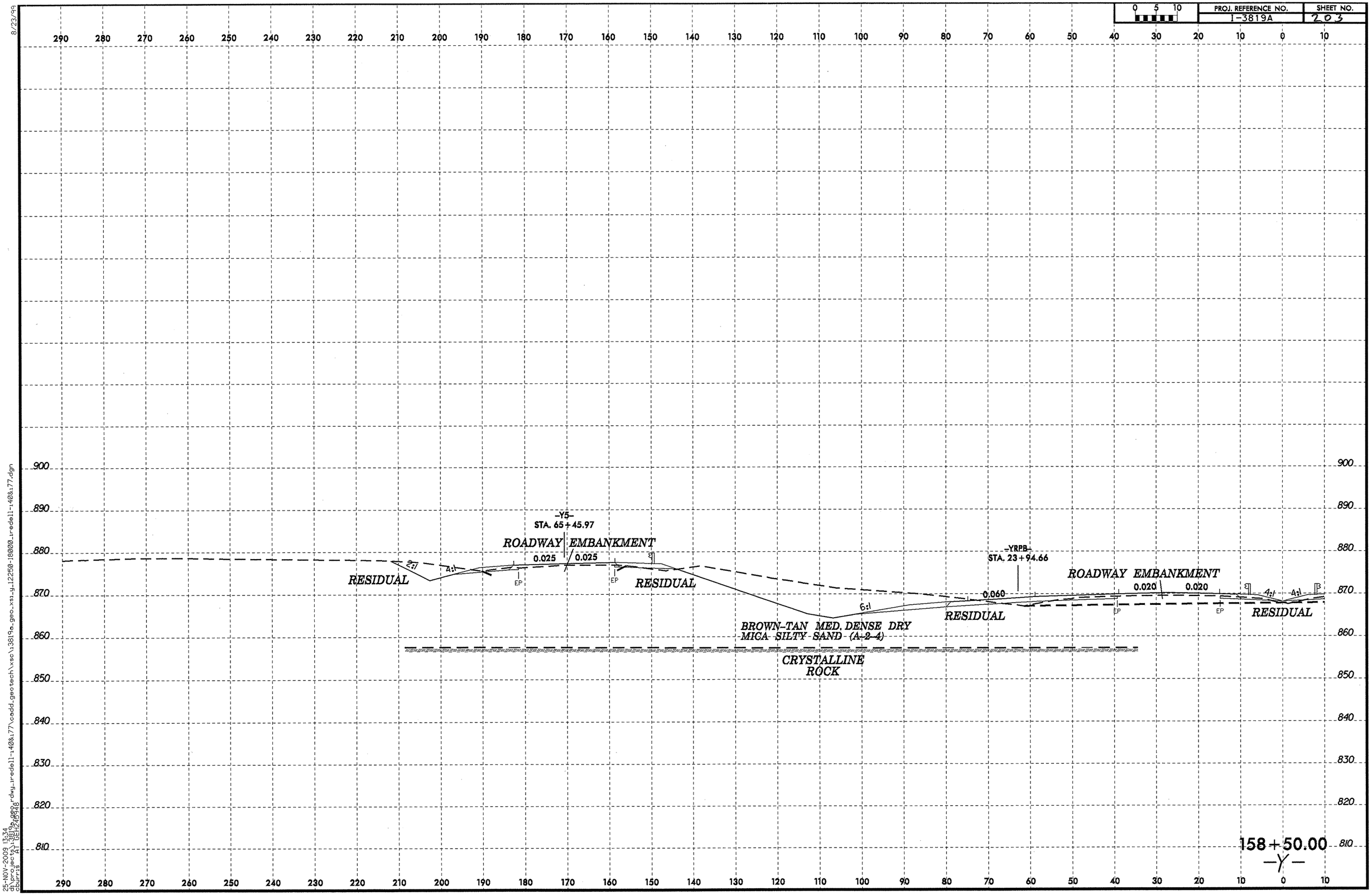

8/23/99
25-NOV-2009 13:34
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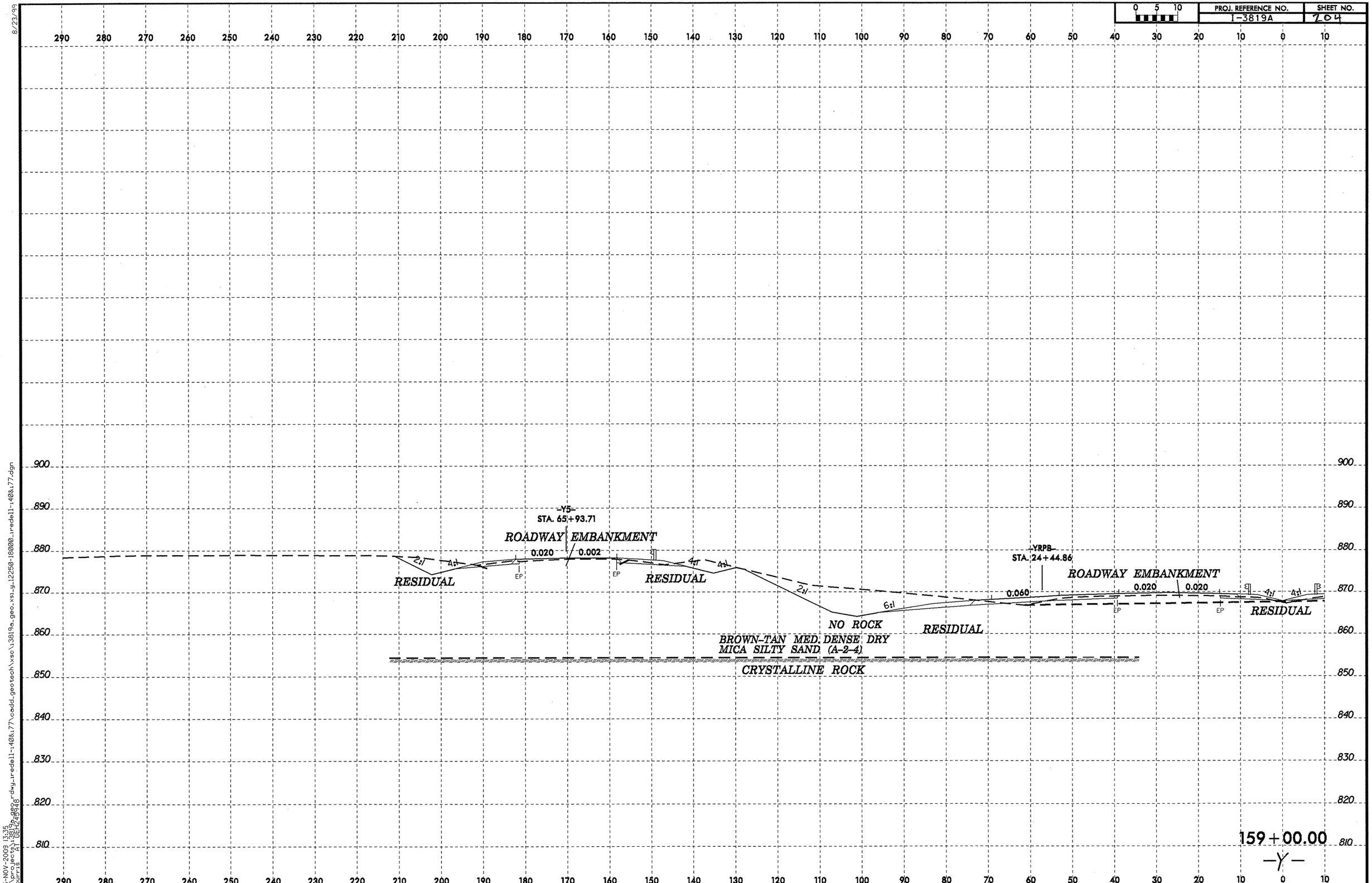
cburris AT DEH245946



8/23/99
25-NOV-2009 13:35
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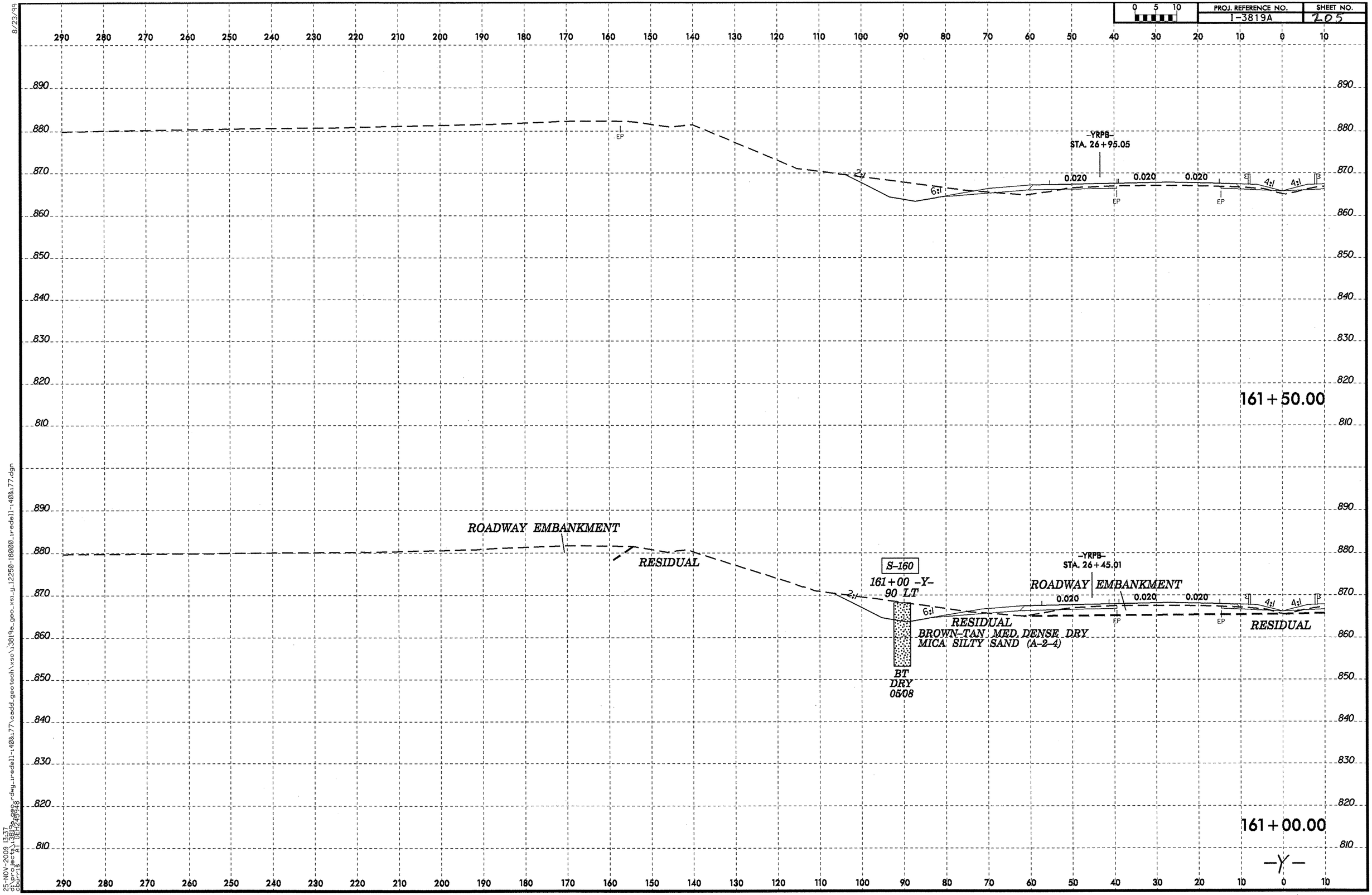

8/23/99

25-NOV-2009 13:37
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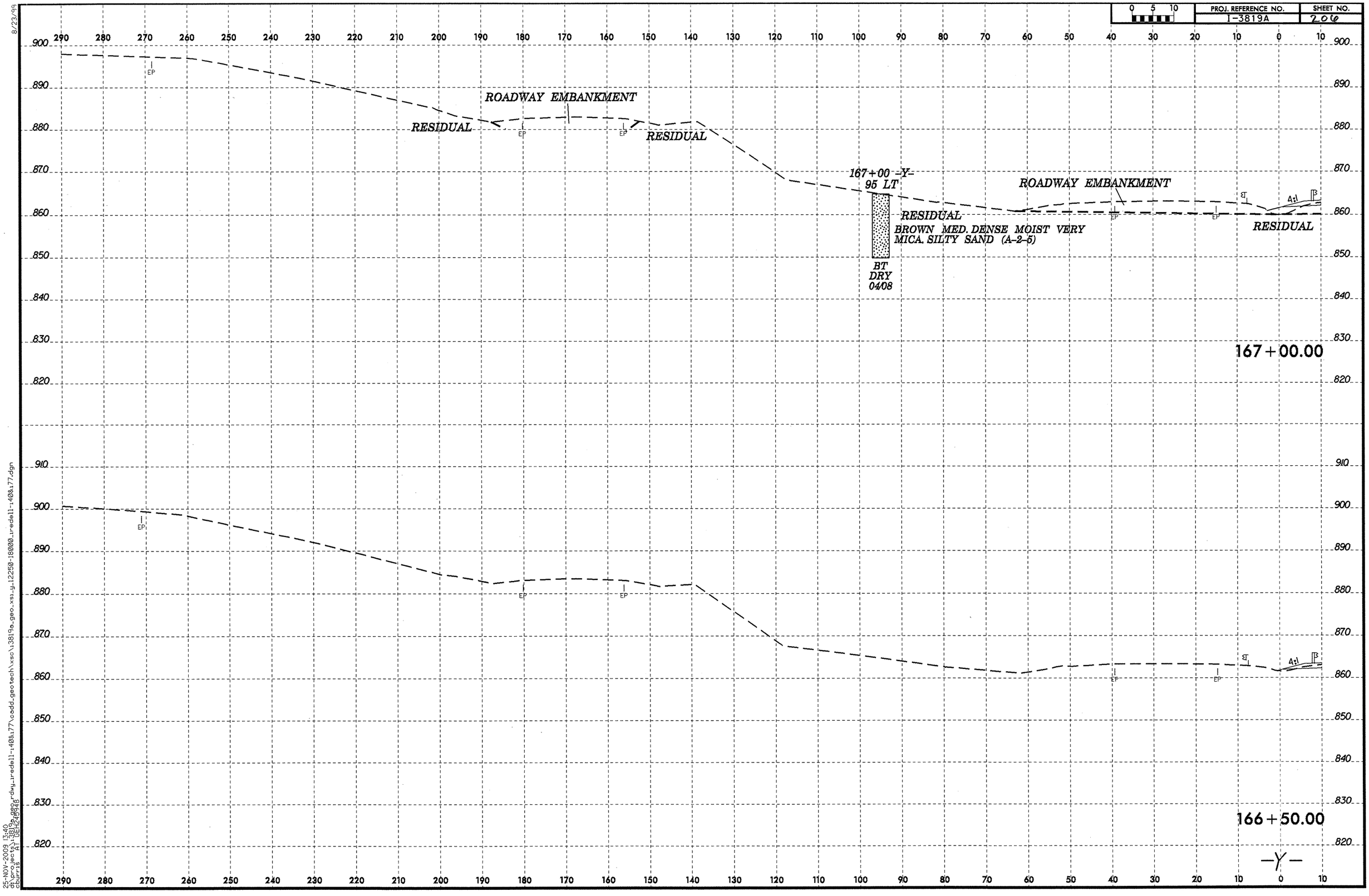

8/23/99

25-NOV-2009 13:40
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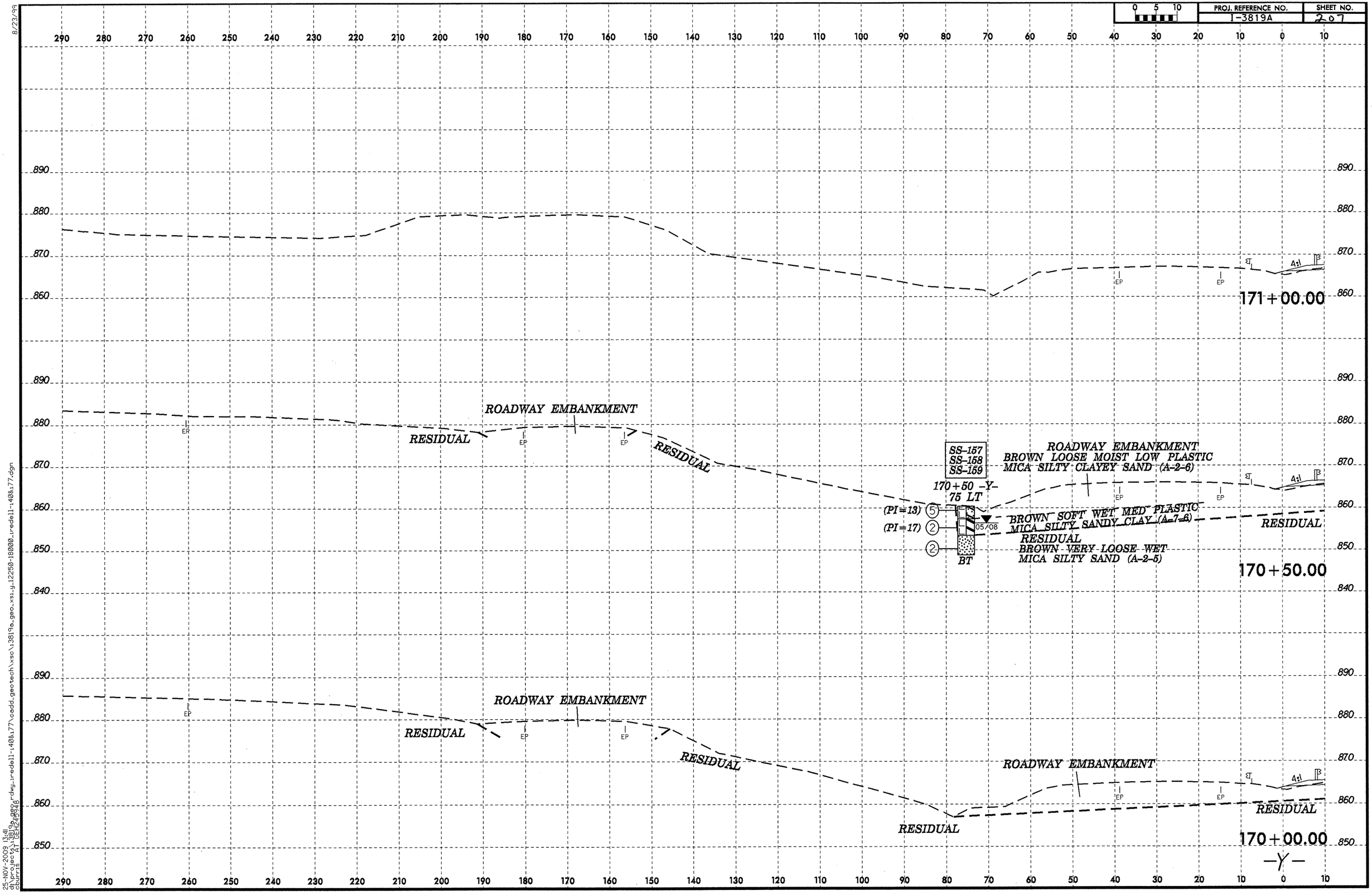
PROJ. REFERENCE NO.
1-3819A
SHEET NO.
207
0 5 10
290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10
890
880
870
860
850
840
171+00.00
170+50.00
170+00.00
-Y-
ROADWAY EMBANKMENT
RESIDUAL
EP
ER
SS-157
SS-158
SS-159
170+50 -Y-
75 LT
(PI=13)
(PI=17)
05/08
BT
ROADWAY EMBANKMENT
BROWN LOOSE MOIST LOW PLASTIC
MICA SILTY CLAYEY SAND (A-2-6)
BROWN SOFT WET MED PLASTIC
MICA SILTY SANDY CLAY (A-7-6)
RESIDUAL
BROWN VERY LOOSE WET
MICA SILTY SAND (A-2-5)
4:1
8/23/99
25-NOV-2009 13:41
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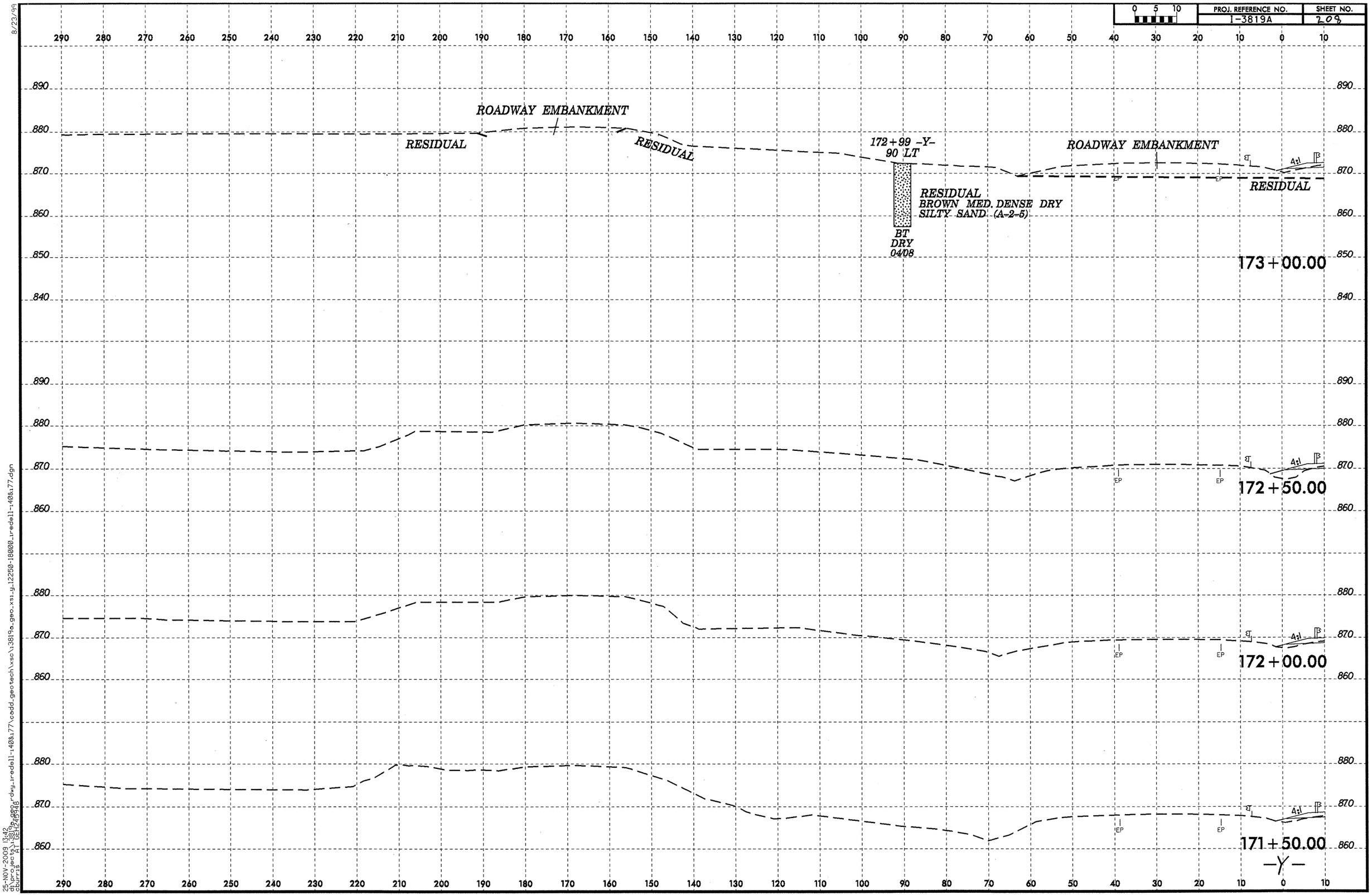
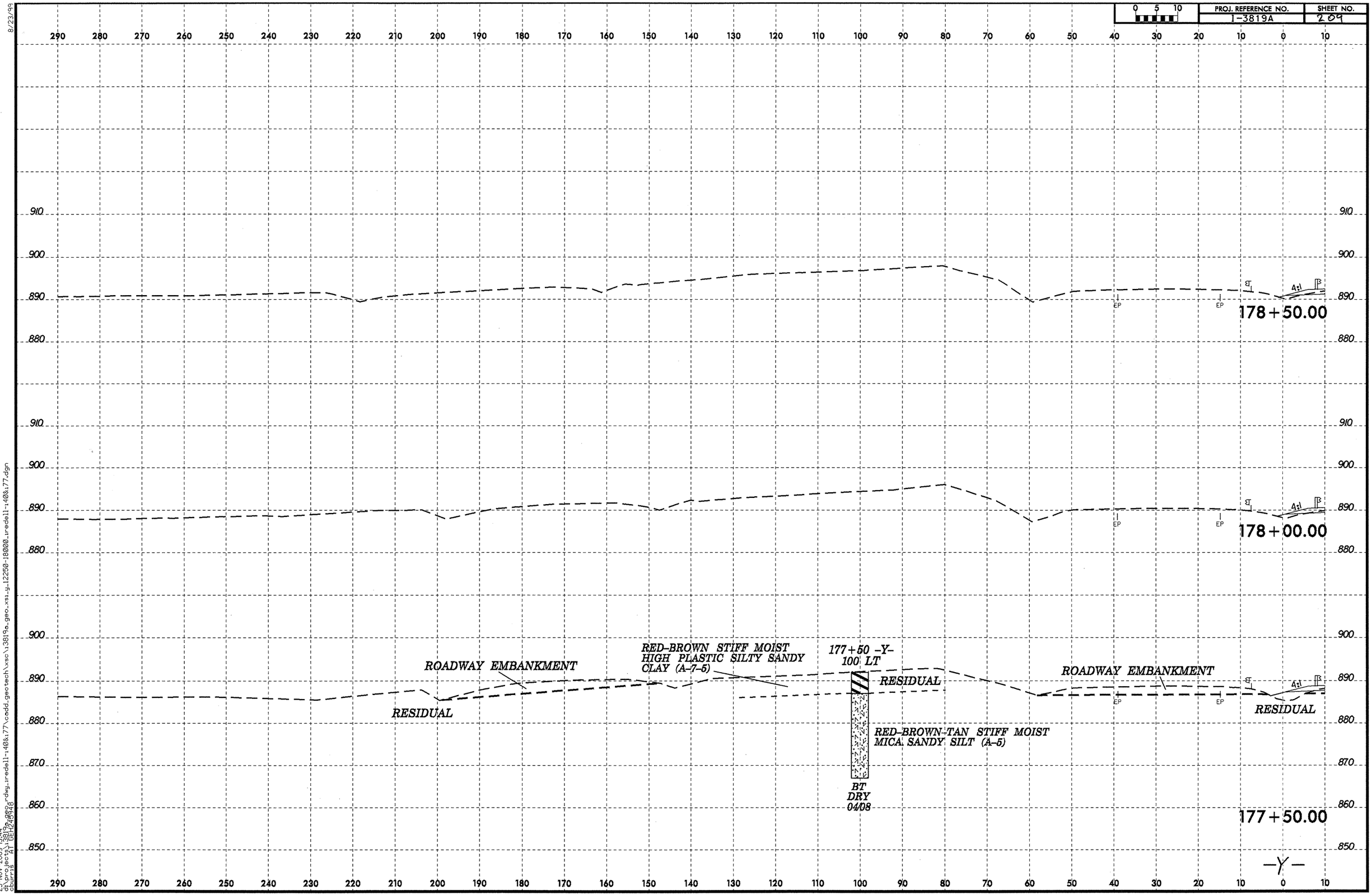
dburris KY DETAIL


PROJ. REFERENCE NO.
1-3819A
SHEET NO.
209
ROADWAY EMBANKMENT
RESIDUAL
RESIDUAL
172+99 -Y-
90 LT
RESIDUAL
BROWN MED. DENSE DRY
SILTY SAND (A-2-5)
BT
DRY
04/08
ROADWAY EMBANKMENT
RESIDUAL
173+00.00
172+50.00
172+00.00
171+50.00
-Y-
EP
4:1
8/23/99
25-NOV-2009 13:42
dh\projects\3819a\dwg\redell-1408x77\cadd_geotech\xsc\13819a_geo_xsi_g_12250-18000_redell-1408x77.dgn
dgnuser



8/23/99

25-NOV-2009 13:44
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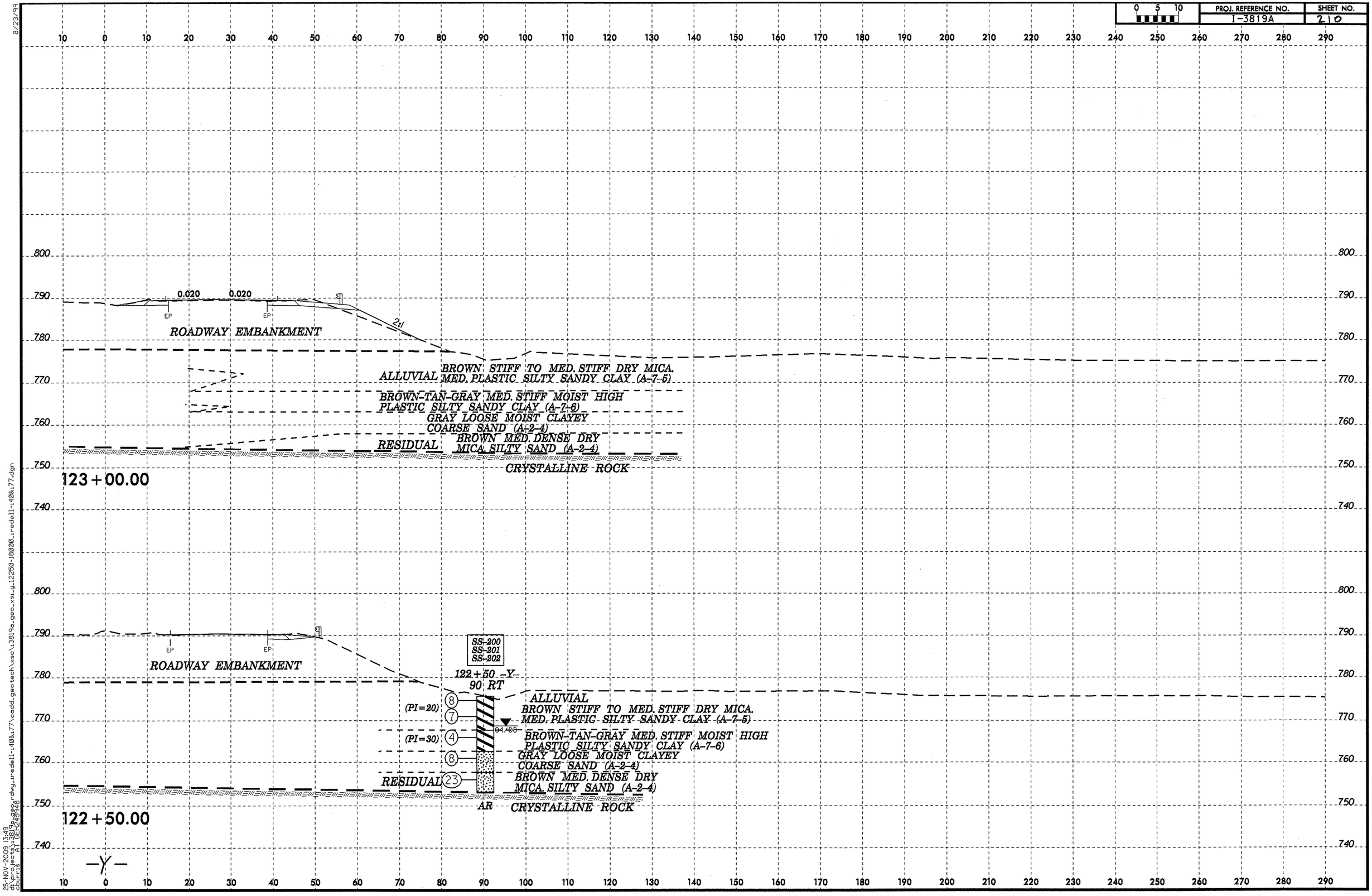

8/23/99
25-NOV-2009 13:49
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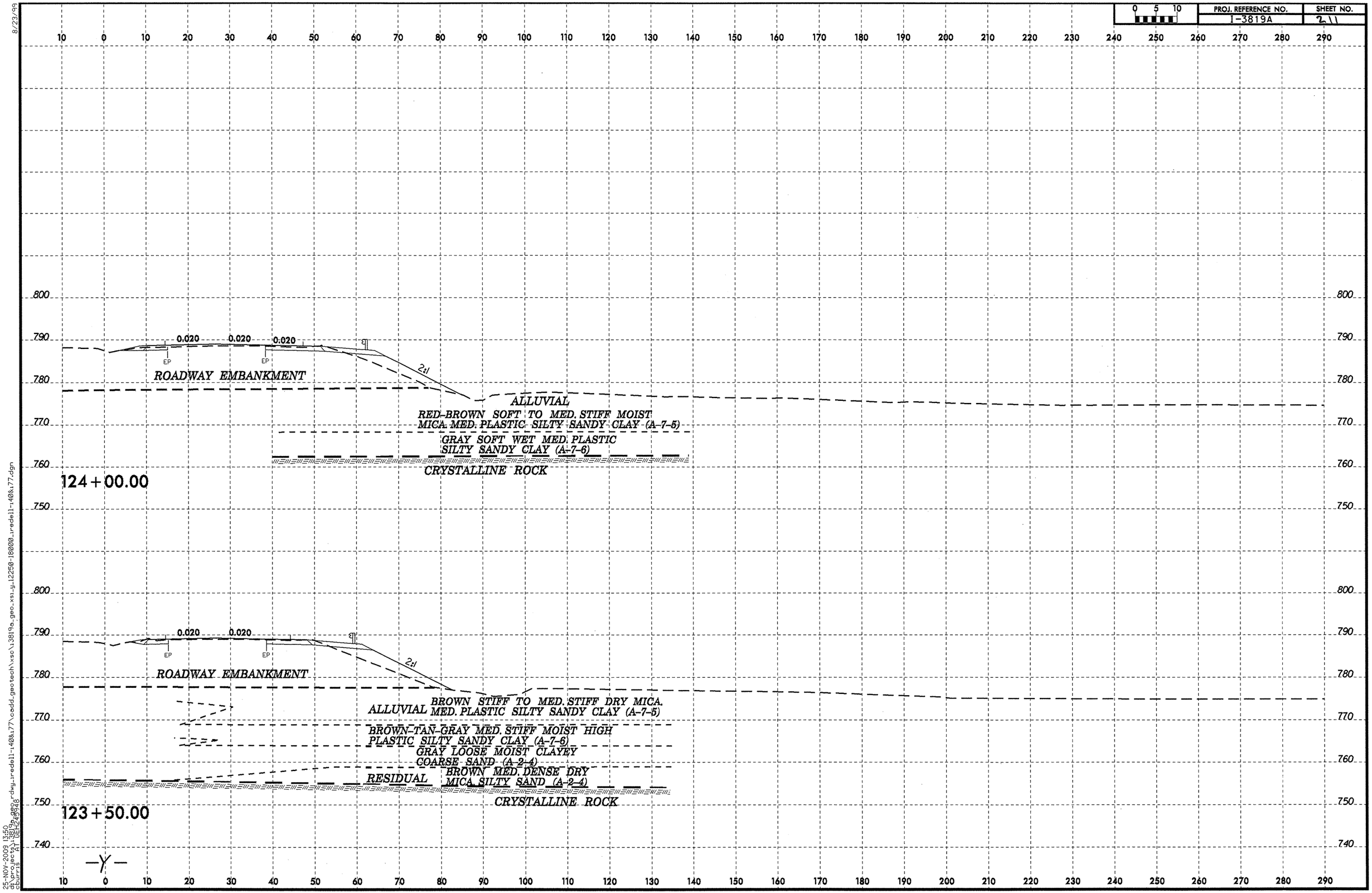
dburris AT DEL249948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	2.11



8/23/99

25-NOV-2009 13:50
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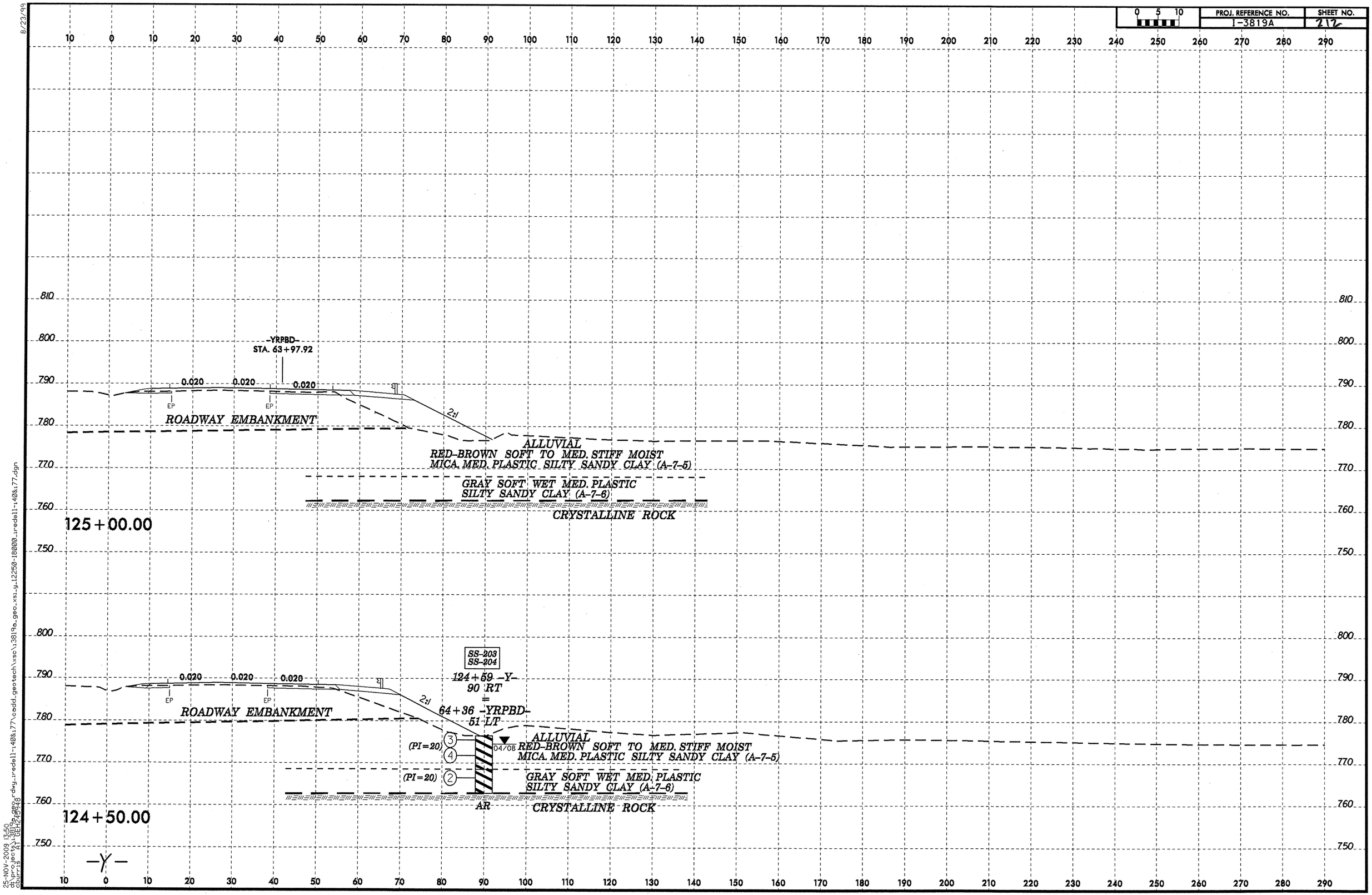
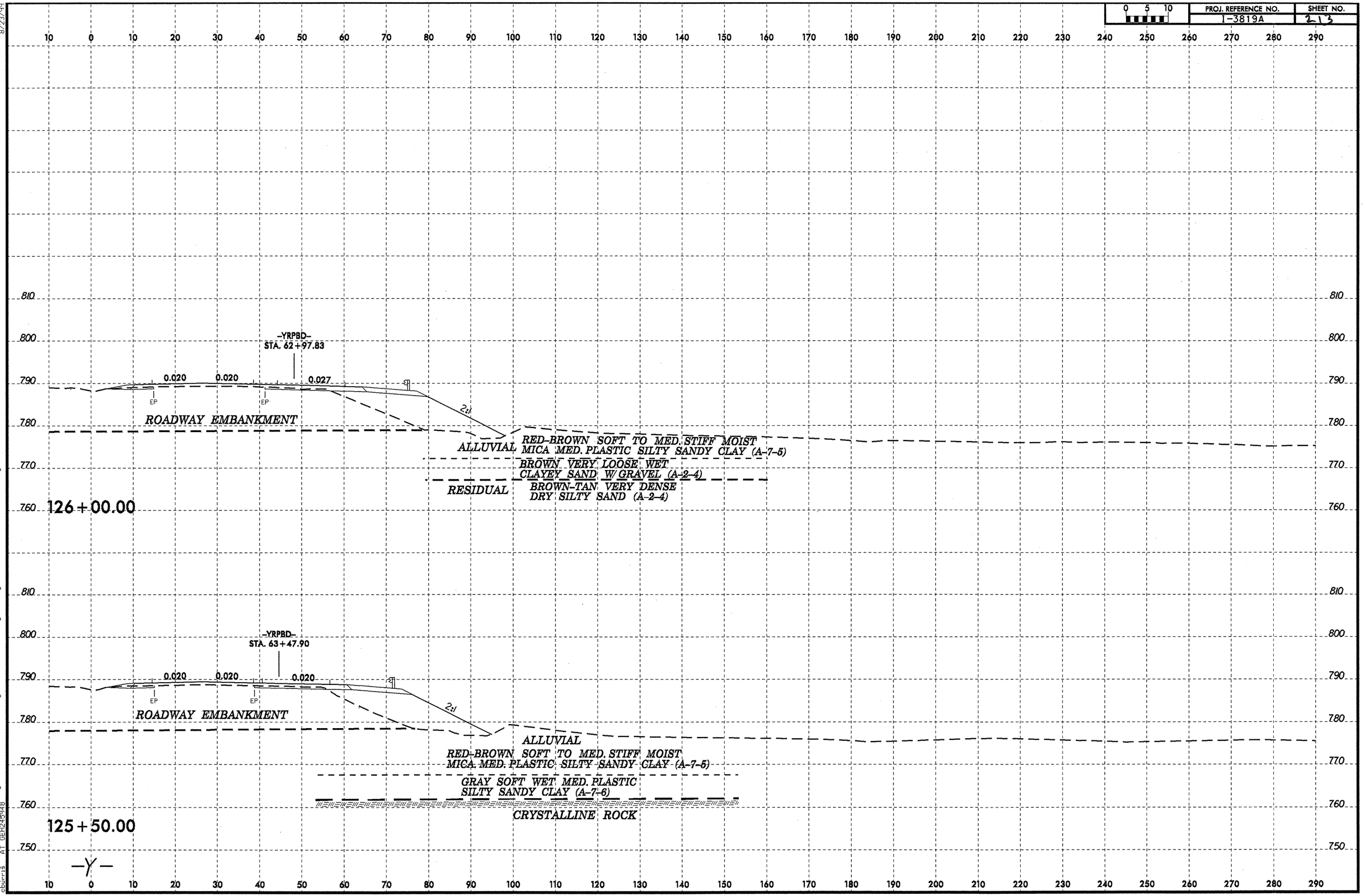


8/23/99

25-NOV-2009 13:50
d:\projects\3819a_geo_rdwy_iredell-140&177\cadd_geotech\xsc\3819a_geo_xs_y12250-18000_iredell-140&177.dgn
courris AT DEH249948

PROJ. REFERENCE NO.	SHEET NO.
I-3819A	2-13



8/23/99

25-NOV-2009 13:51
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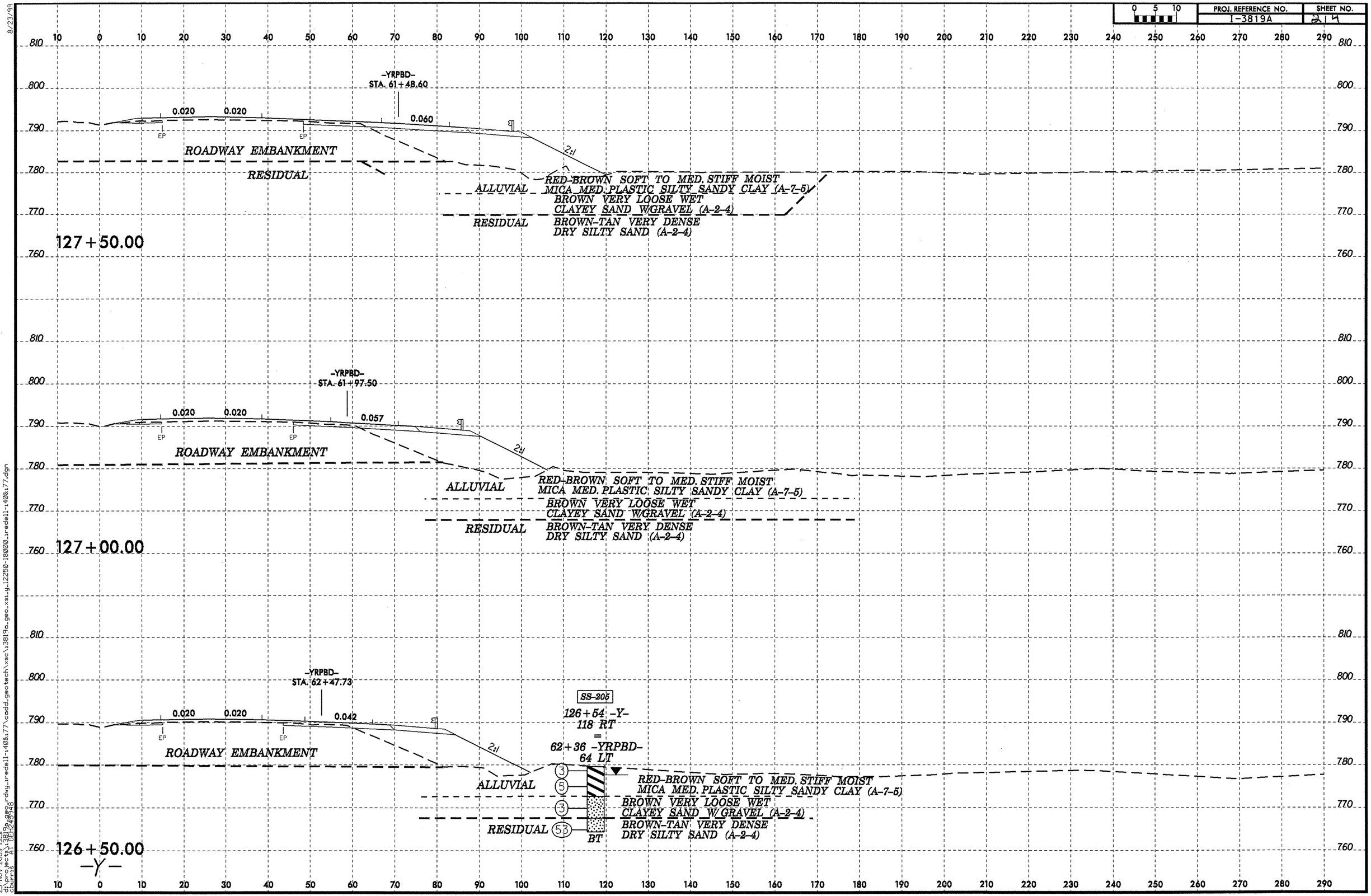
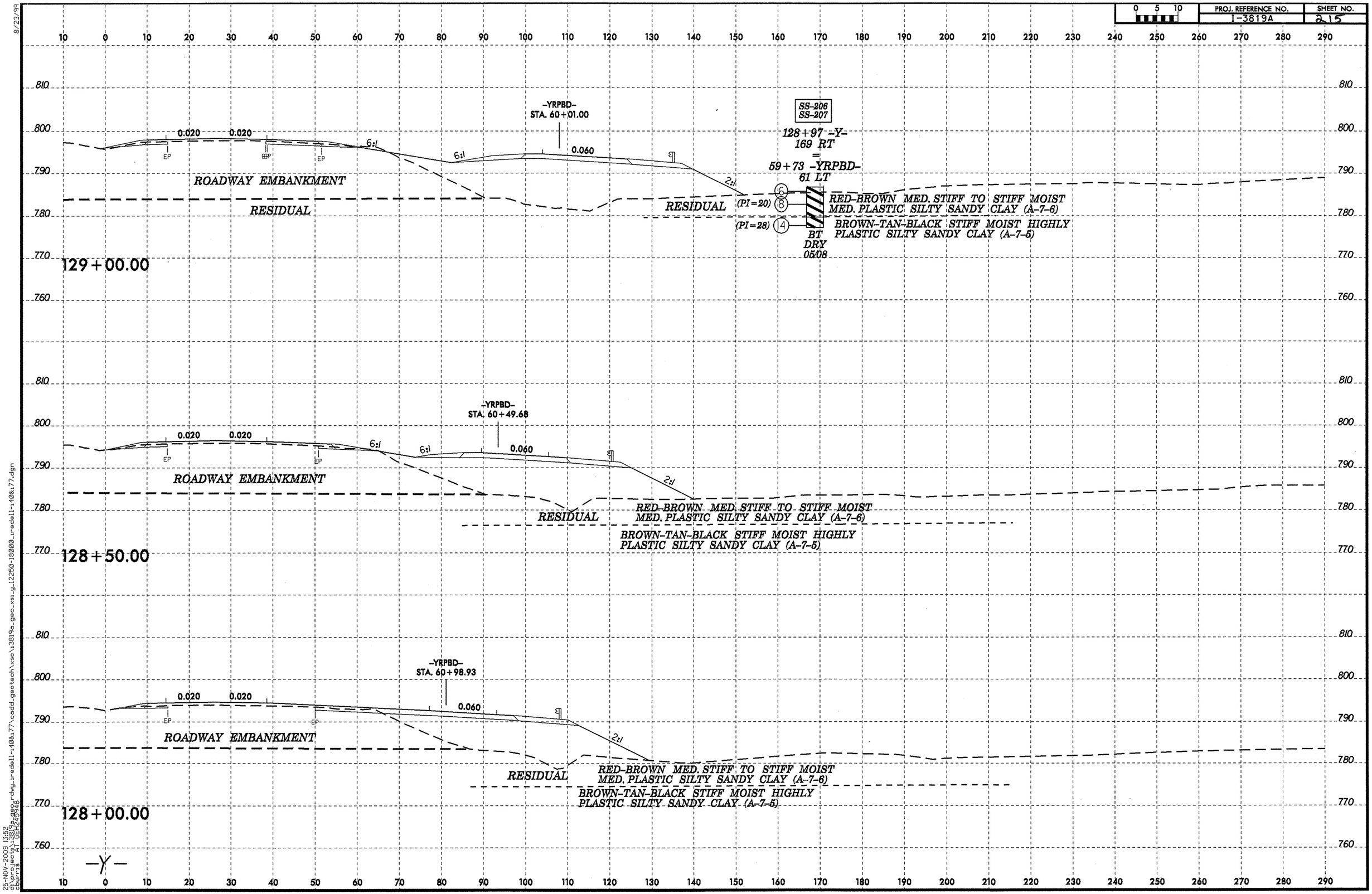
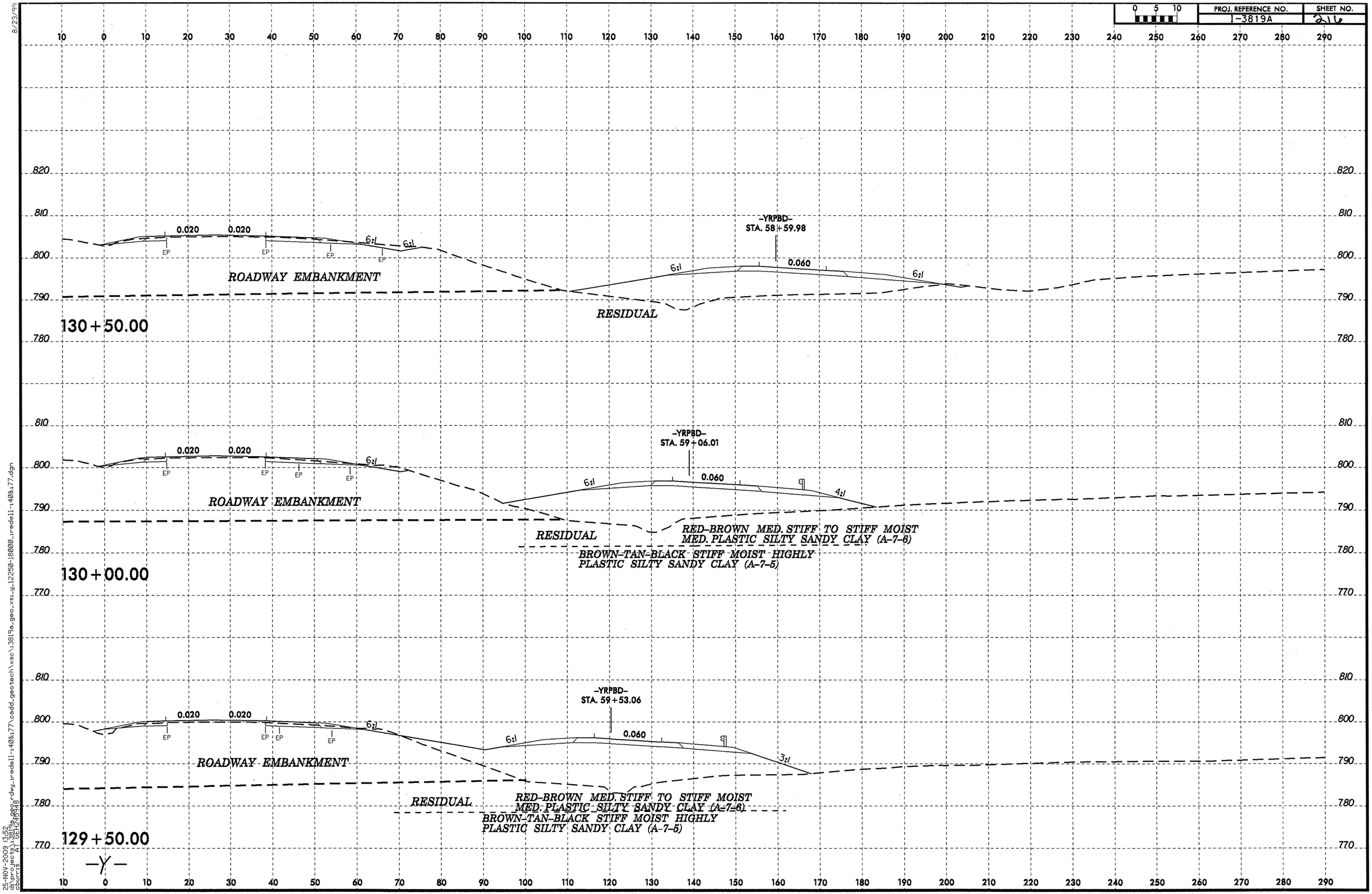
dburns A1 USE:4.96



8/23/99
25-NOV-2009 13:51
d:\projects\3819a_geo_xsi.dwg redell-1408.77
cbyrns A1 (BEIGE)
d:\projects\3819a_geo_xsi_g12250-18000_redell-1408.77.dgn


-YRPBD-
STA. 60+01.00
SS-206
SS-207
128+97 -Y-
169 RT
=
59+73 -YRPBD-
61 LT
0.020
0.020
0.060
6:1
6:1
2:1
EP
ROADWAY EMBANKMENT
RESIDUAL
RESIDUAL
(PI=20)
(PI=28)
RED-BROWN MED. STIFF TO STIFF MOIST
MED. PLASTIC SILTY SANDY CLAY (A-7-6)
BROWN-TAN-BLACK STIFF MOIST HIGHLY
PLASTIC SILTY SANDY CLAY (A-7-5)
BT
DRY
05/08
129+00.00
-YRPBD-
STA. 60+49.68
128+50.00
-YRPBD-
STA. 60+98.93
128+00.00
-Y-



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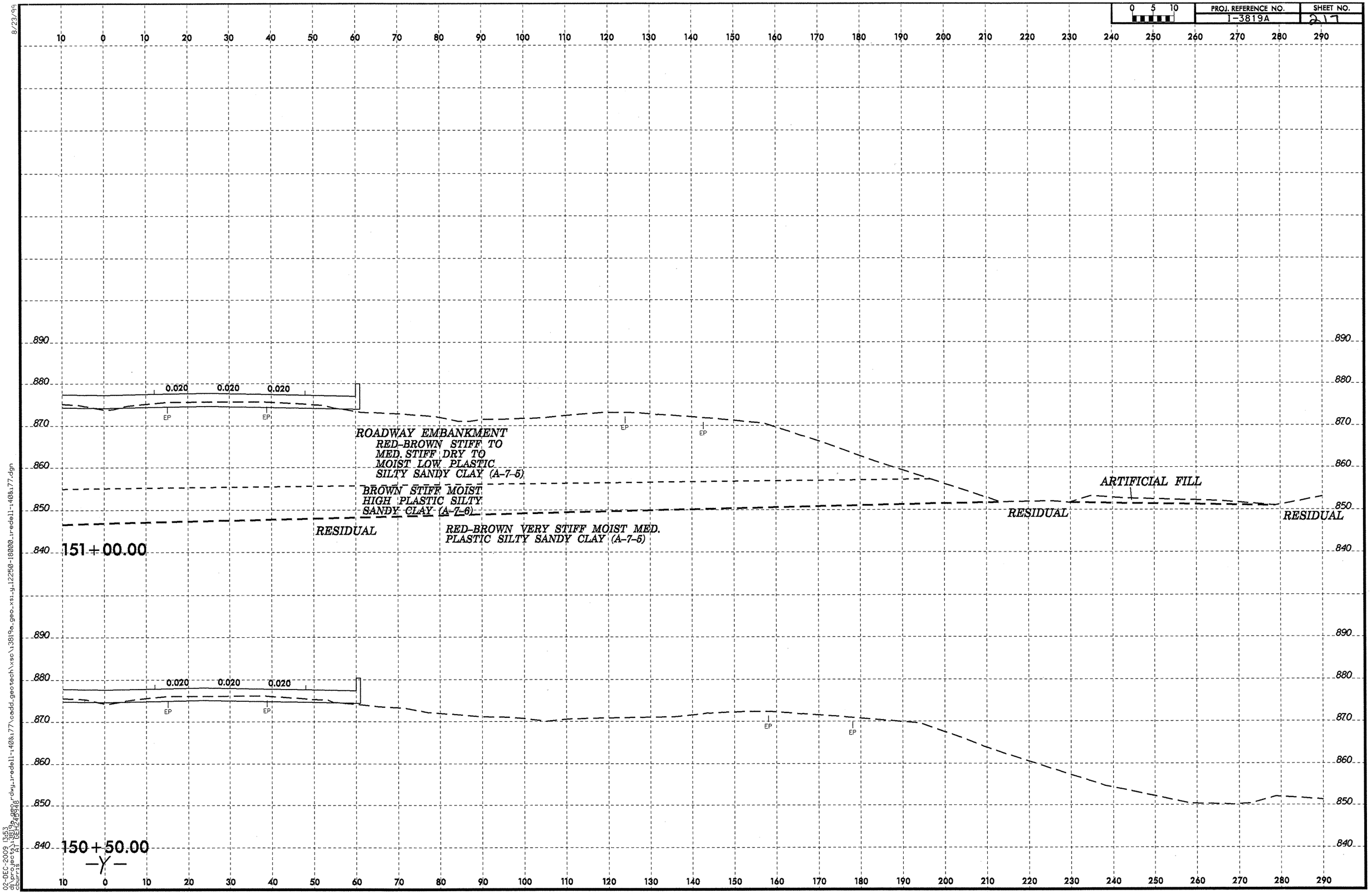

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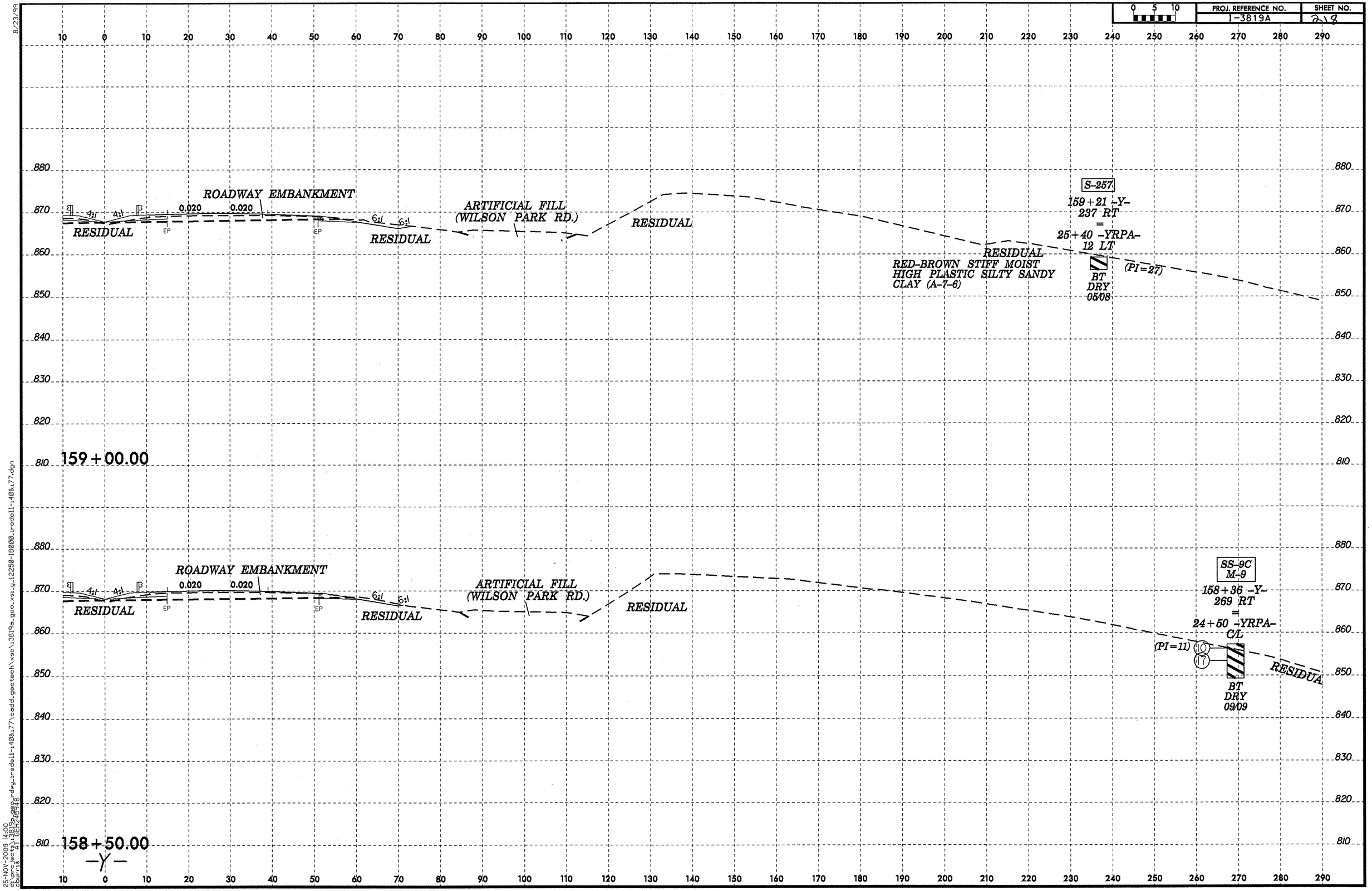
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I-3819A
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EP
RESIDUAL
ARTIFICIAL FILL
(WILSON PARK RD.)
S-257
159+21 -Y-
237 RT
=
25+40 -YRPA-
12 LT
(PI=27)
RED-BROWN STIFF MOIST
HIGH PLASTIC SILTY SANDY
CLAY (A-7-6)
BT
DRY
05/08
158+50.00
-Y-
SS-9C
M-9
158+36 -Y-
269 RT
=
24+50 -YRPA-
C/L
(PI=11)
10
17
BT
DRY
09/09
RESIDUAL

8/23/99
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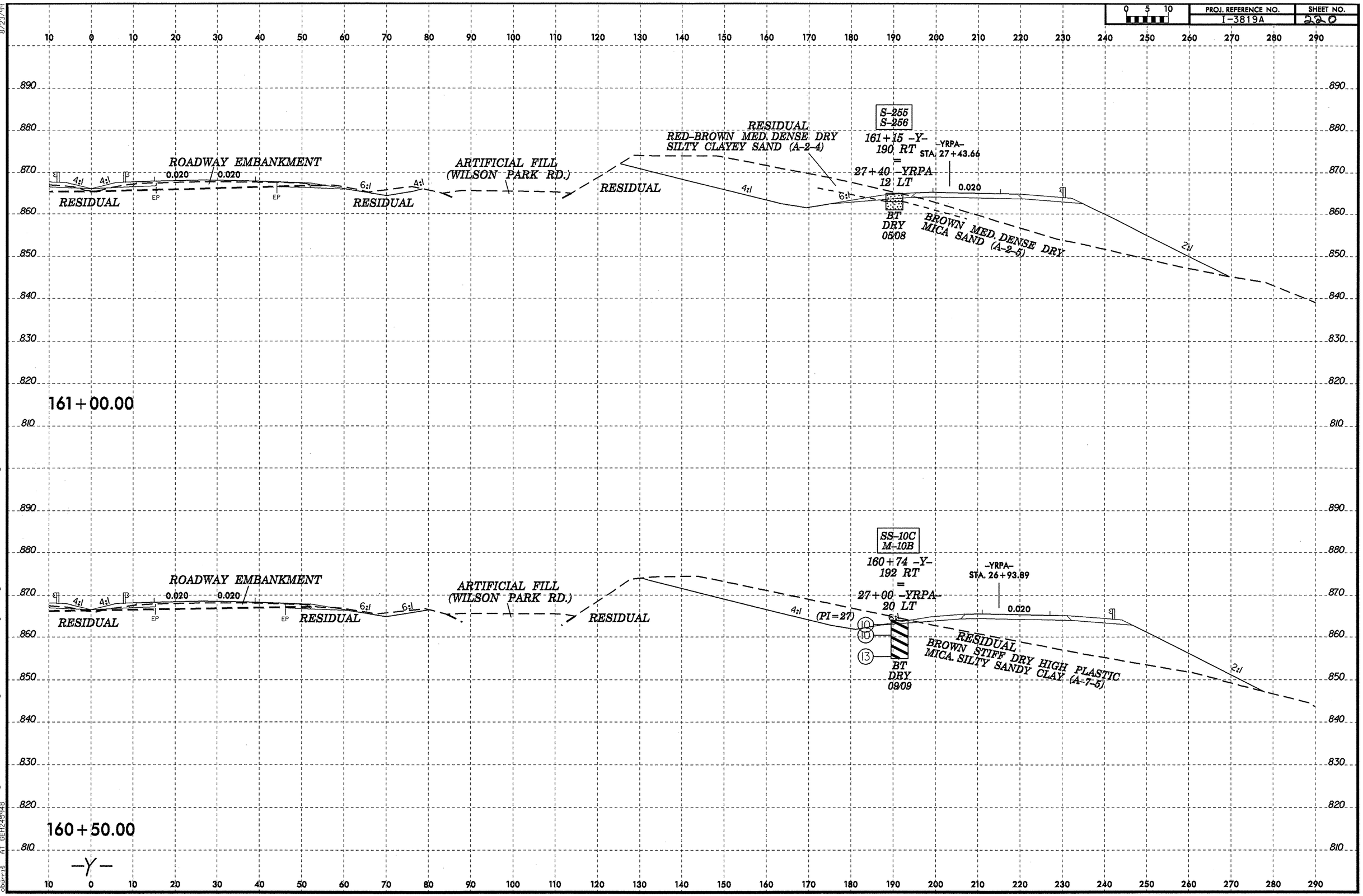

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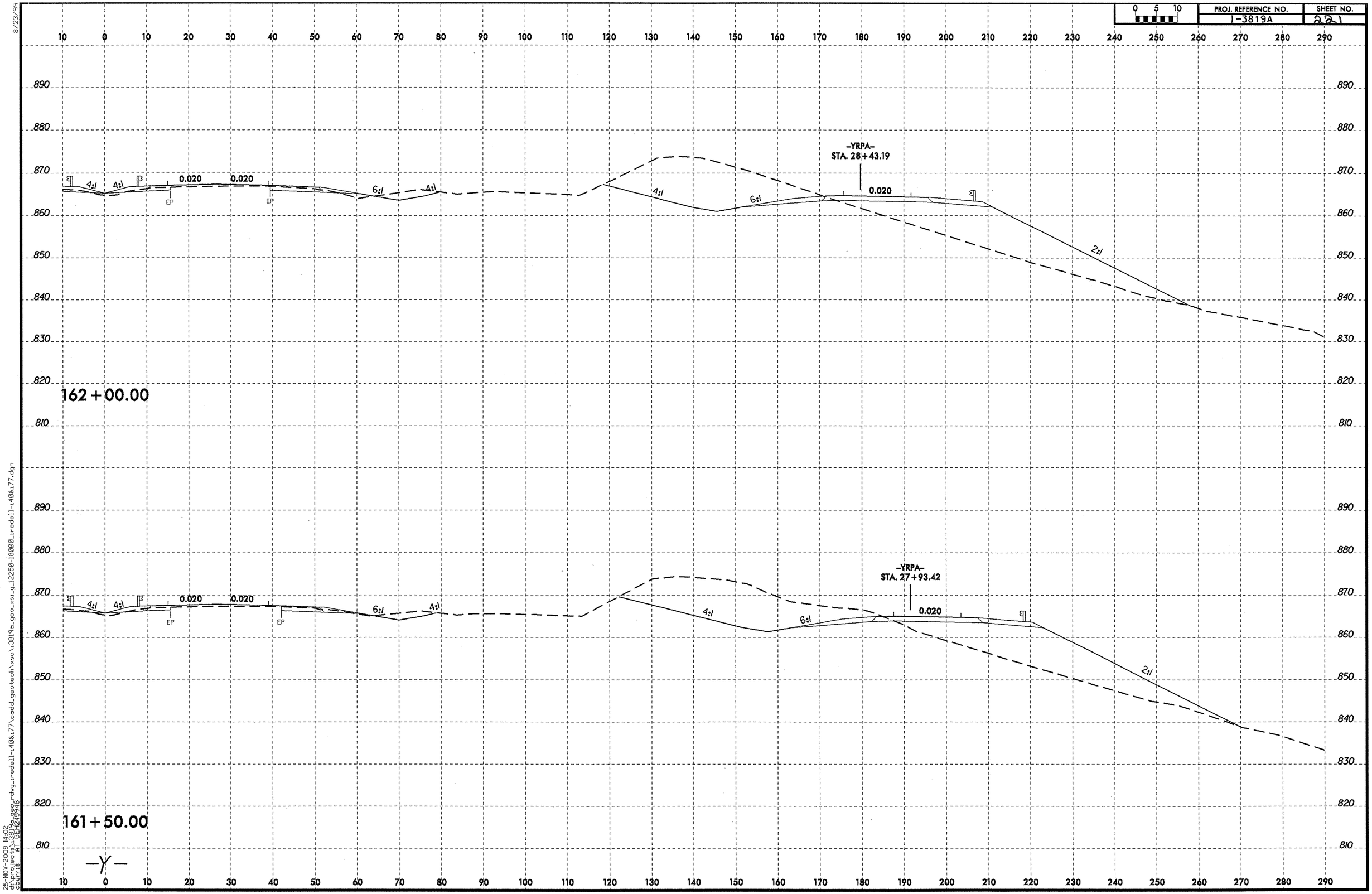

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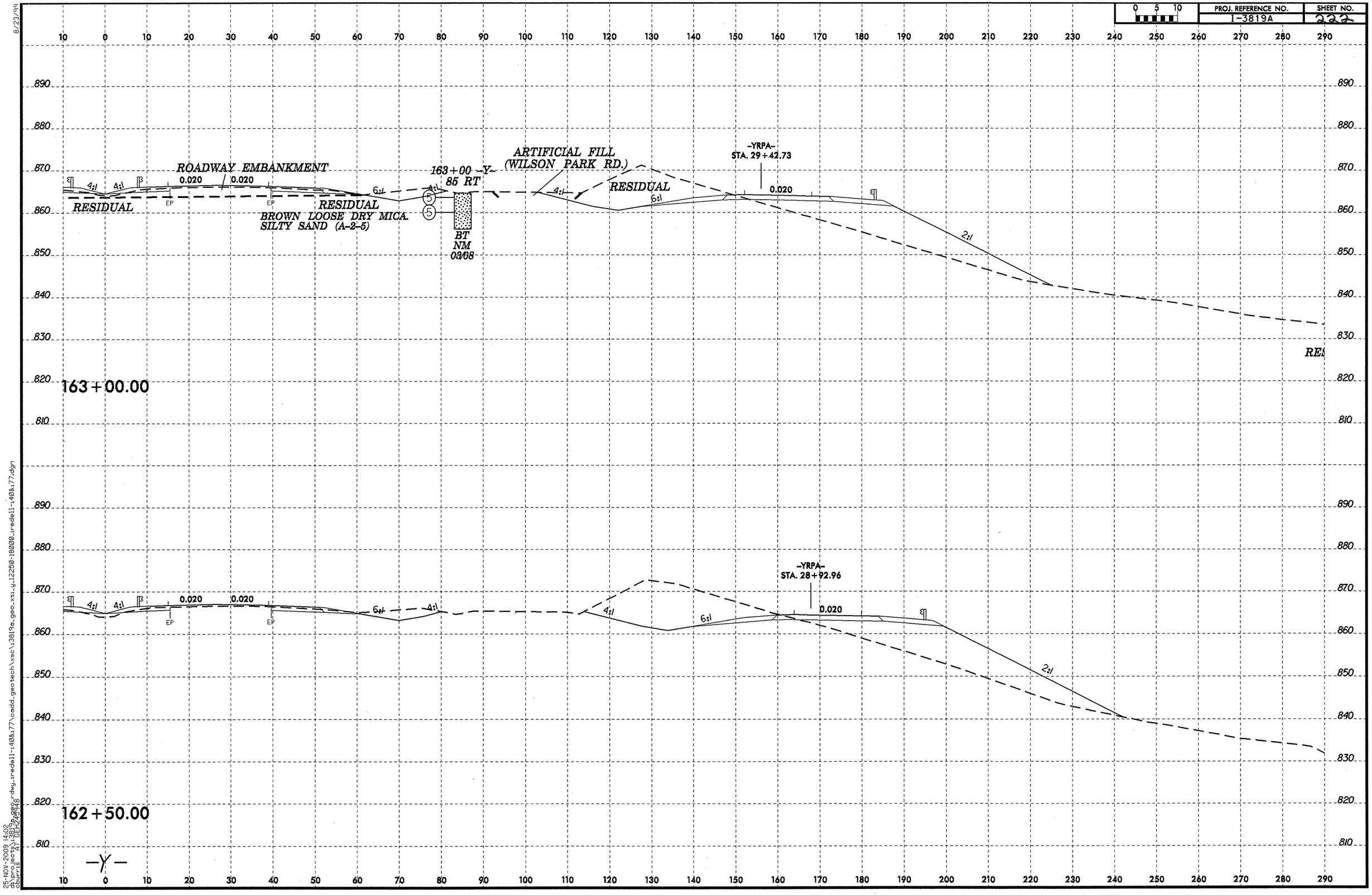

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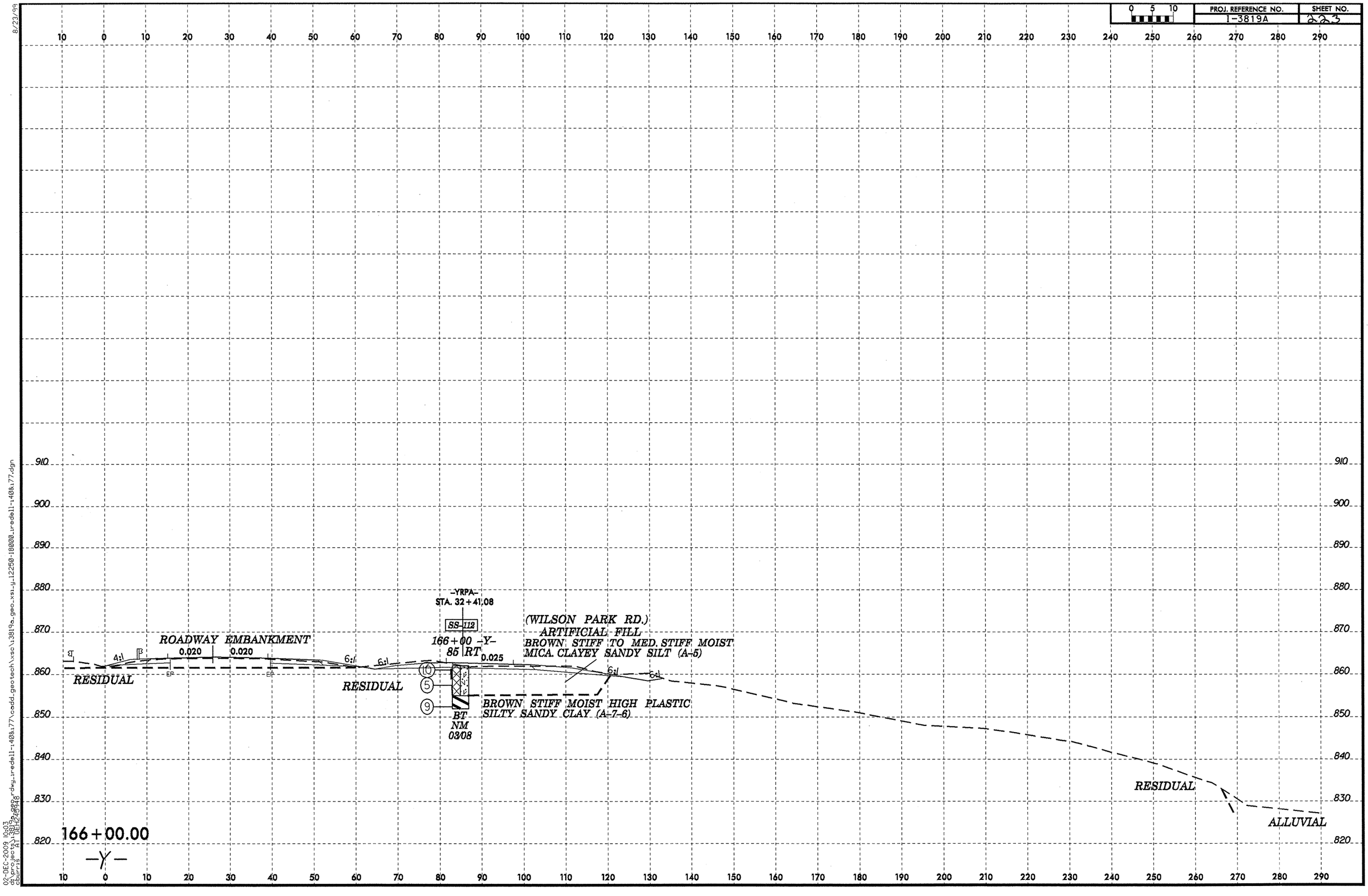

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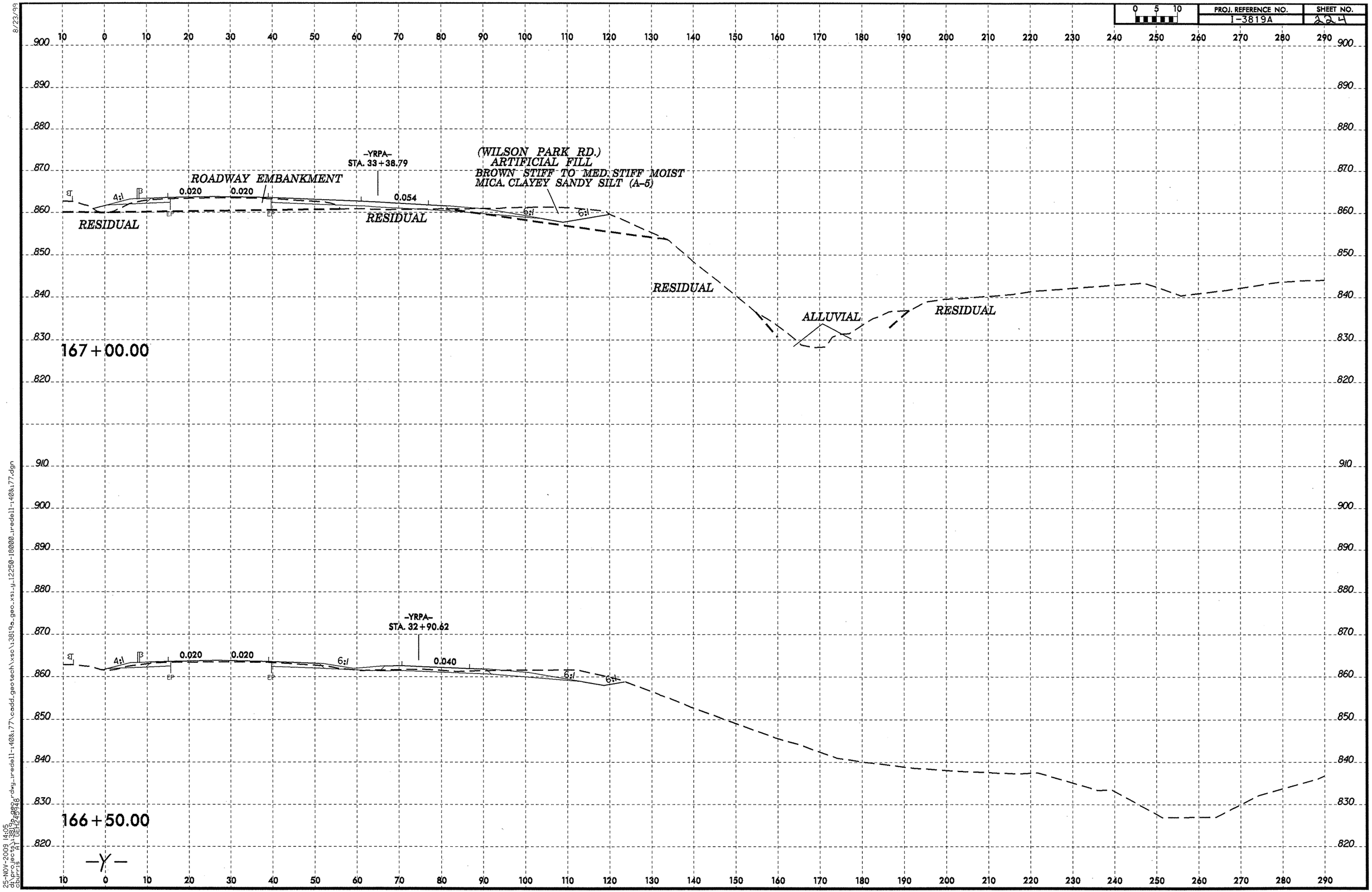

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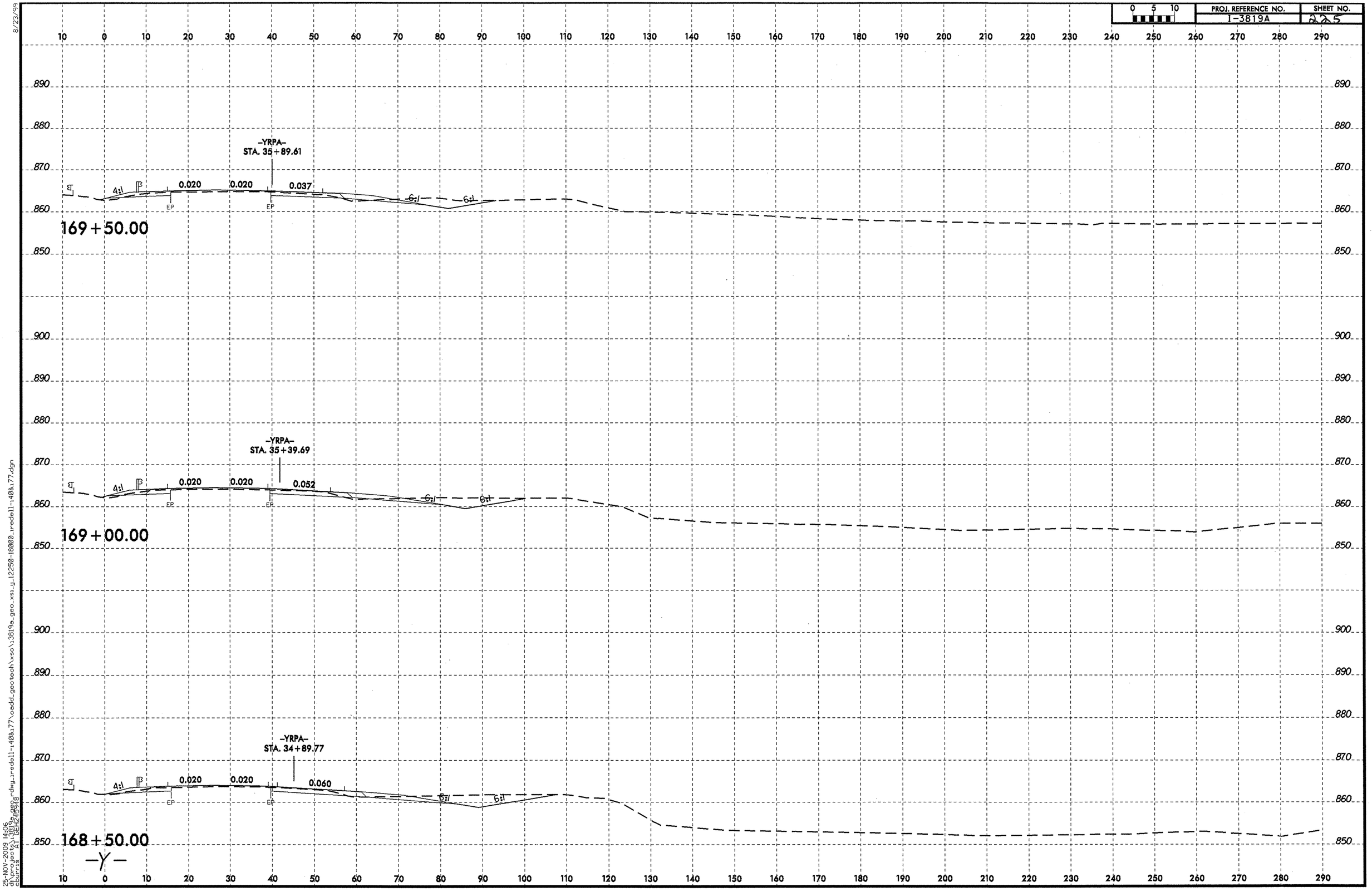

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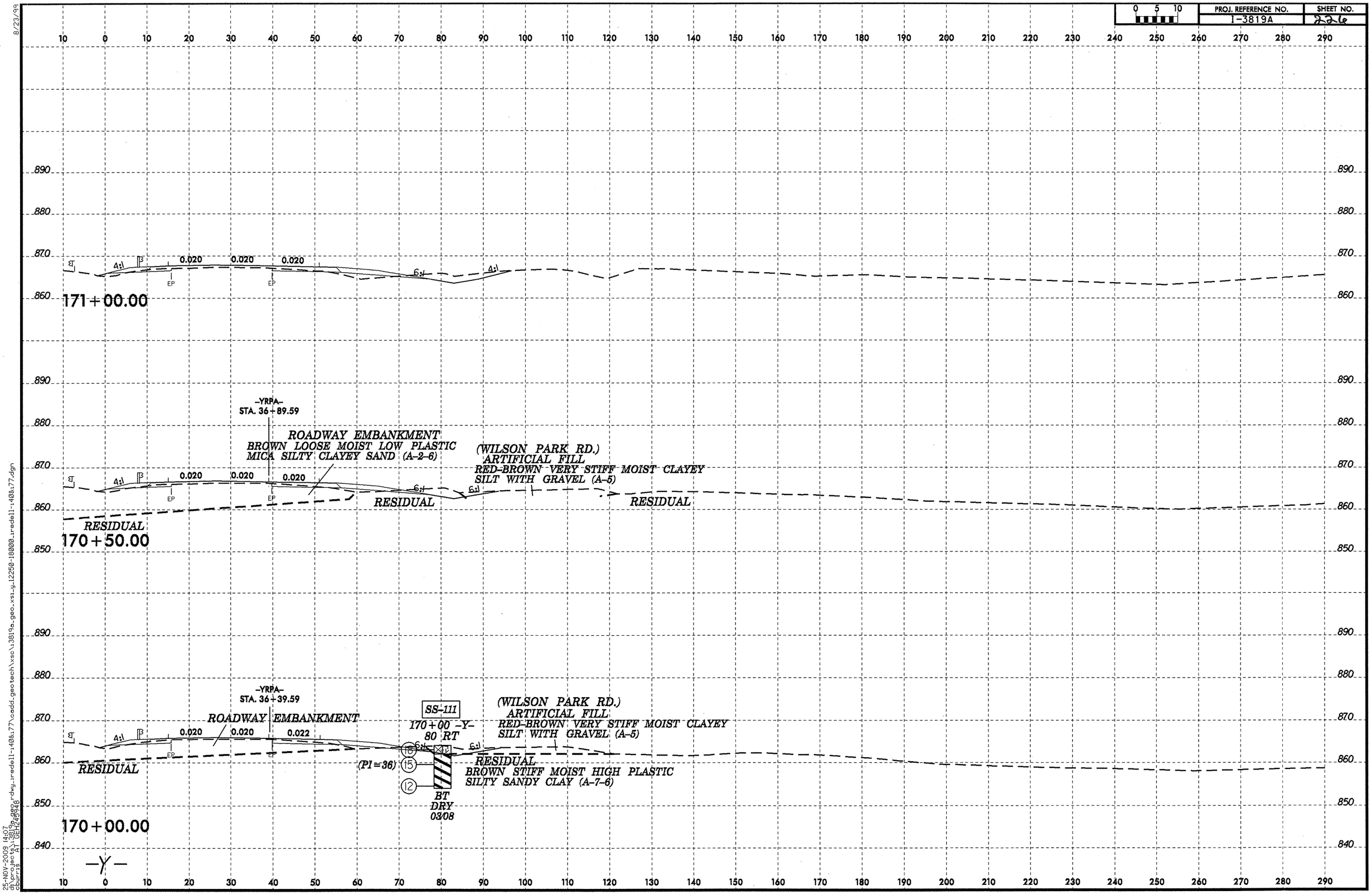

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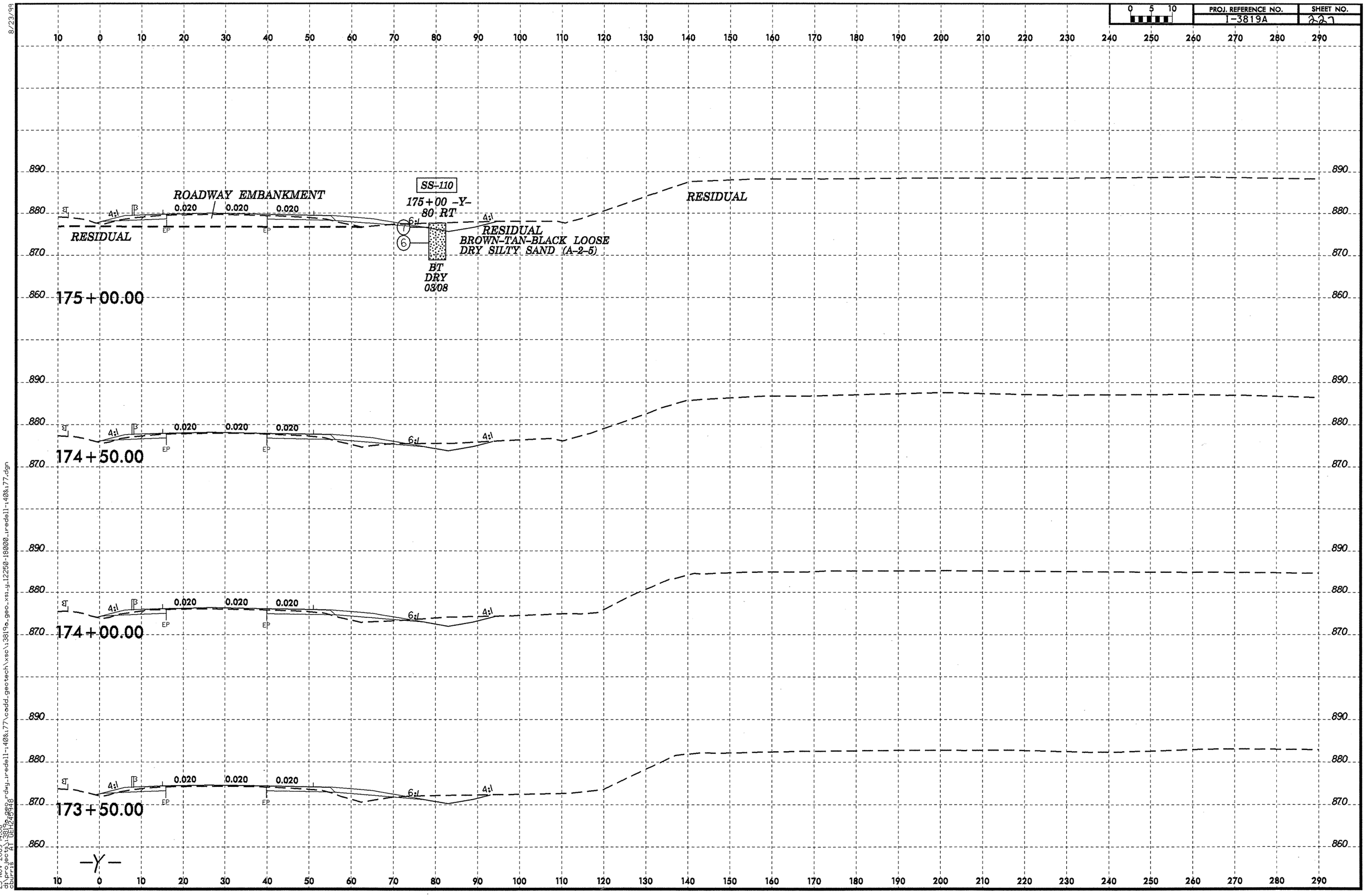

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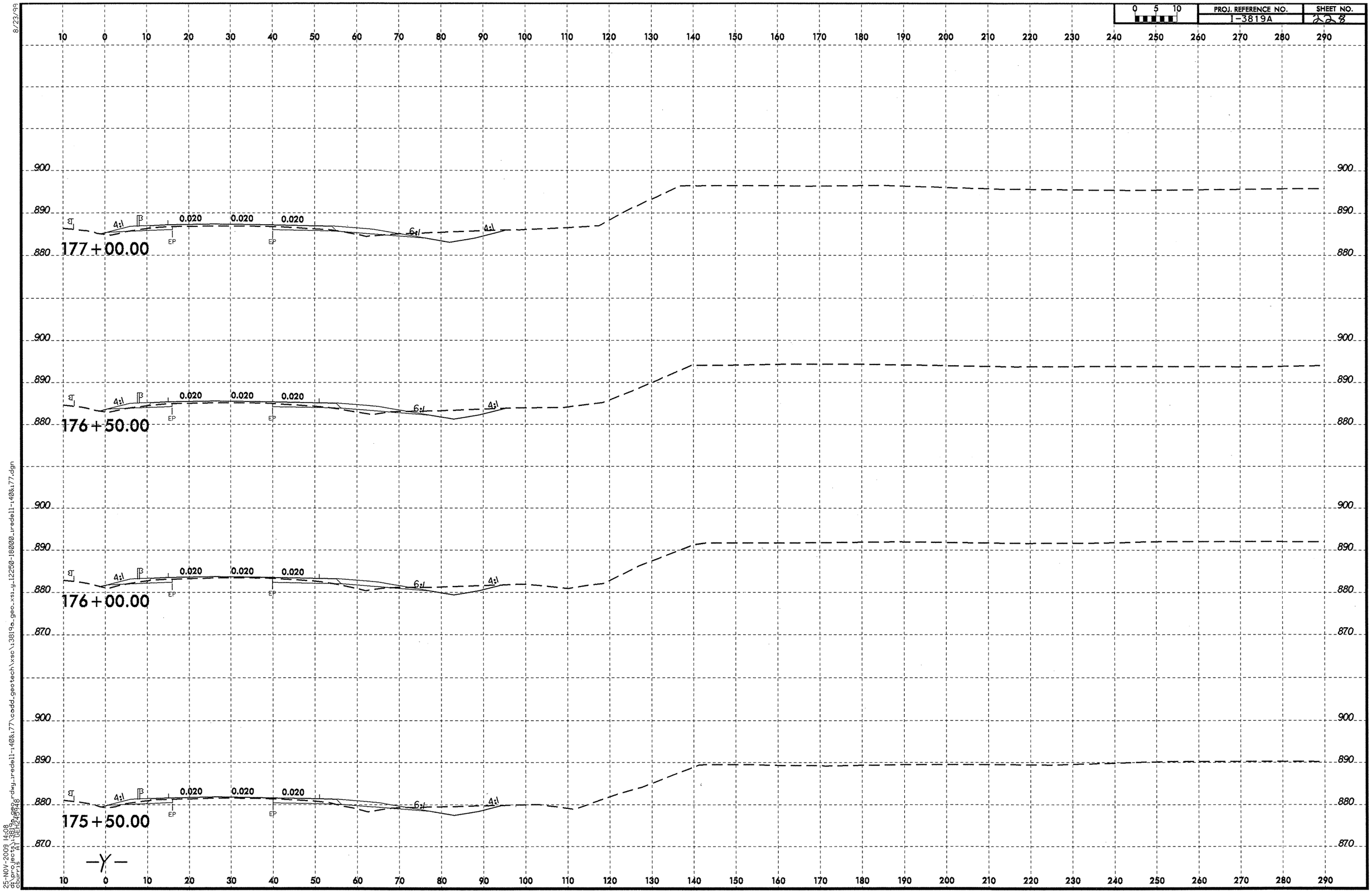

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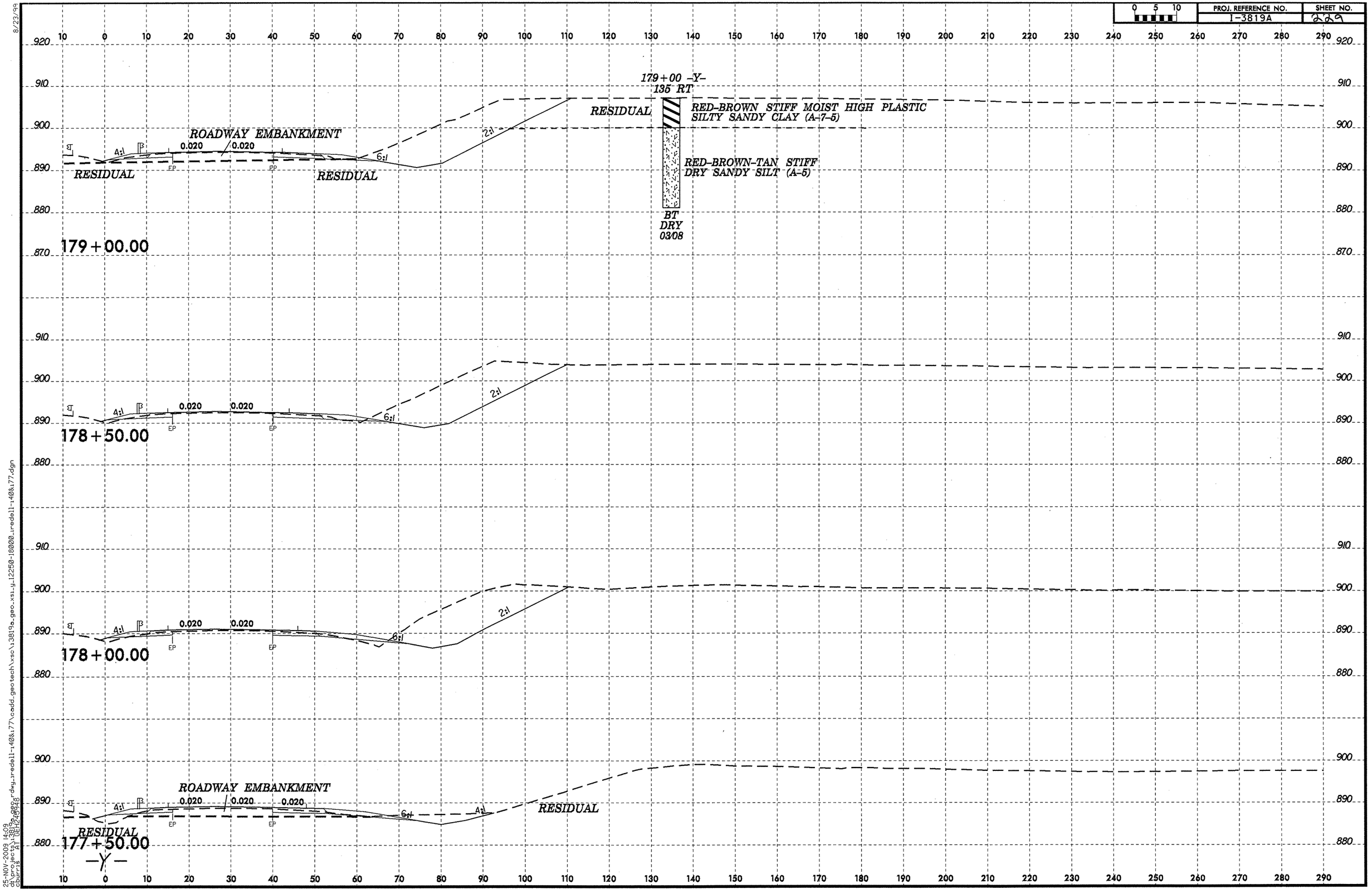

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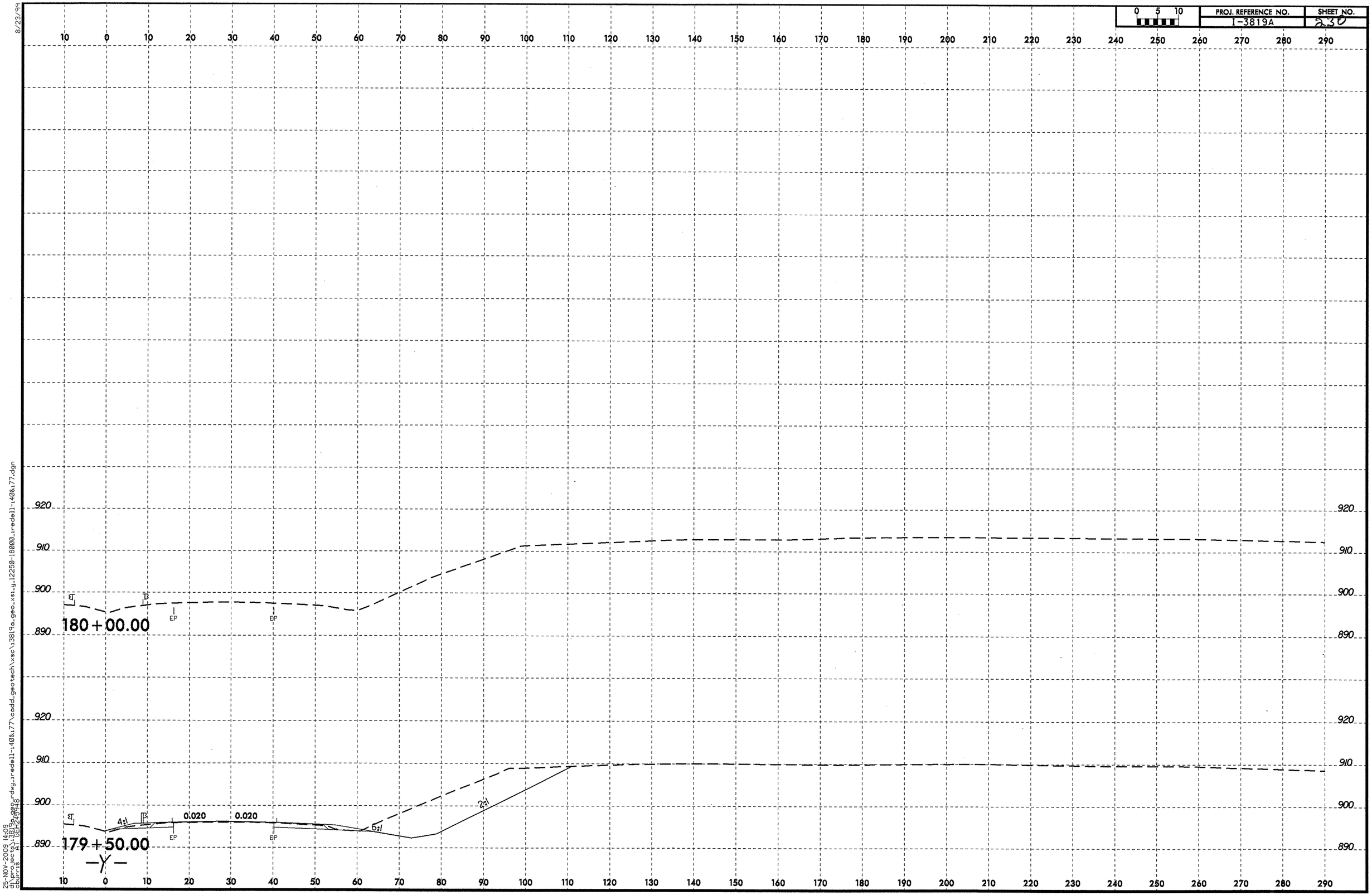

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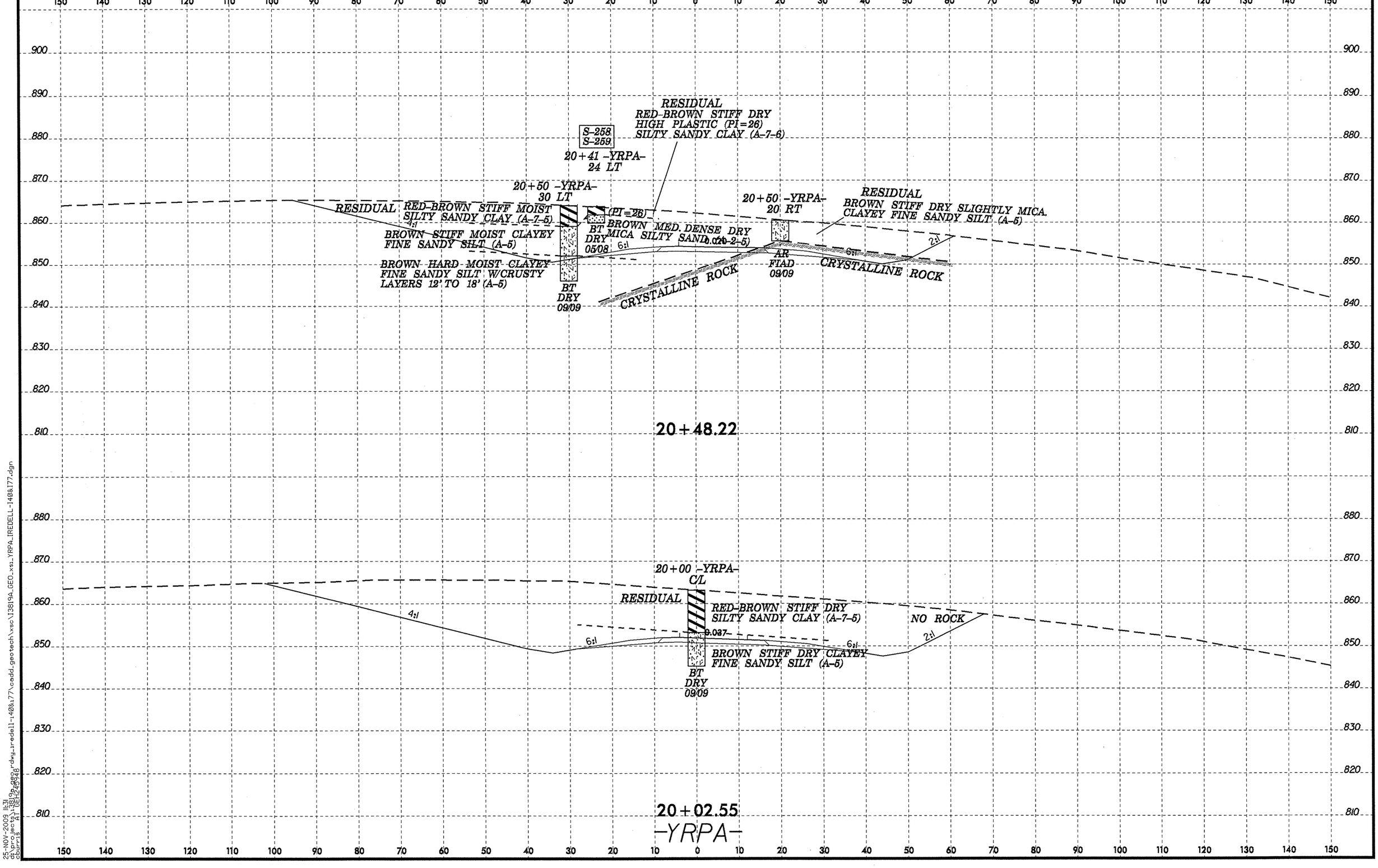

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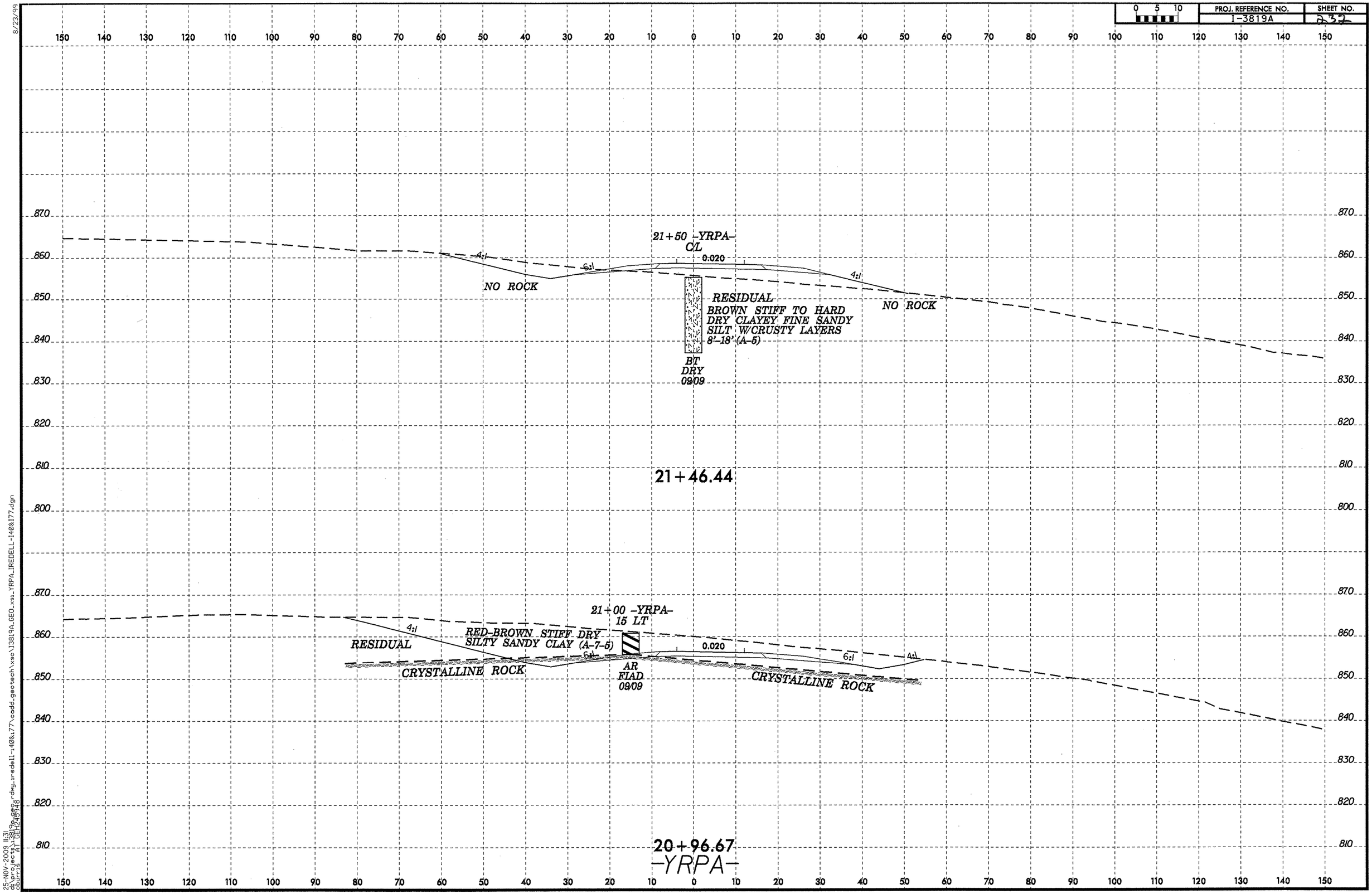

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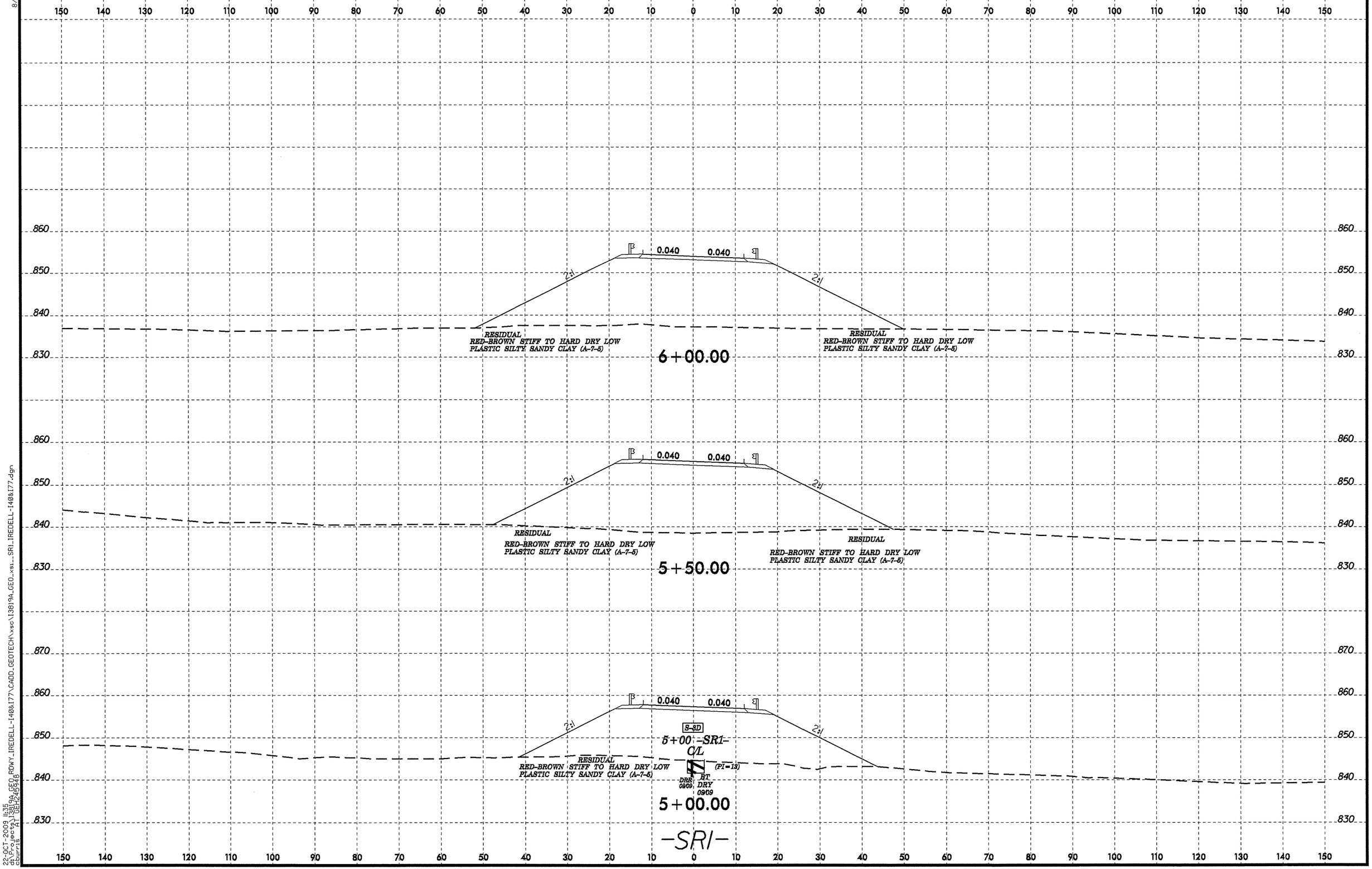

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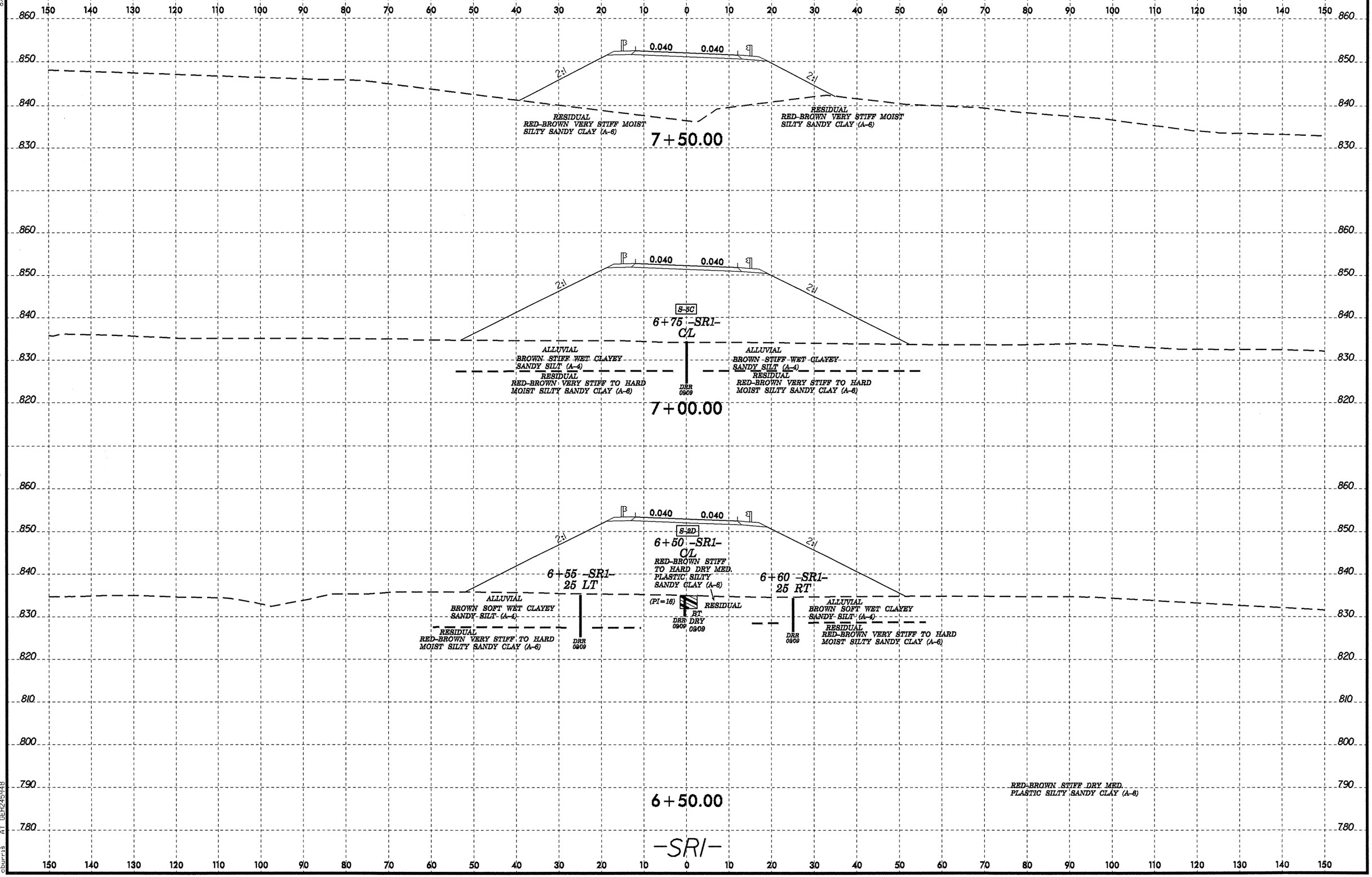

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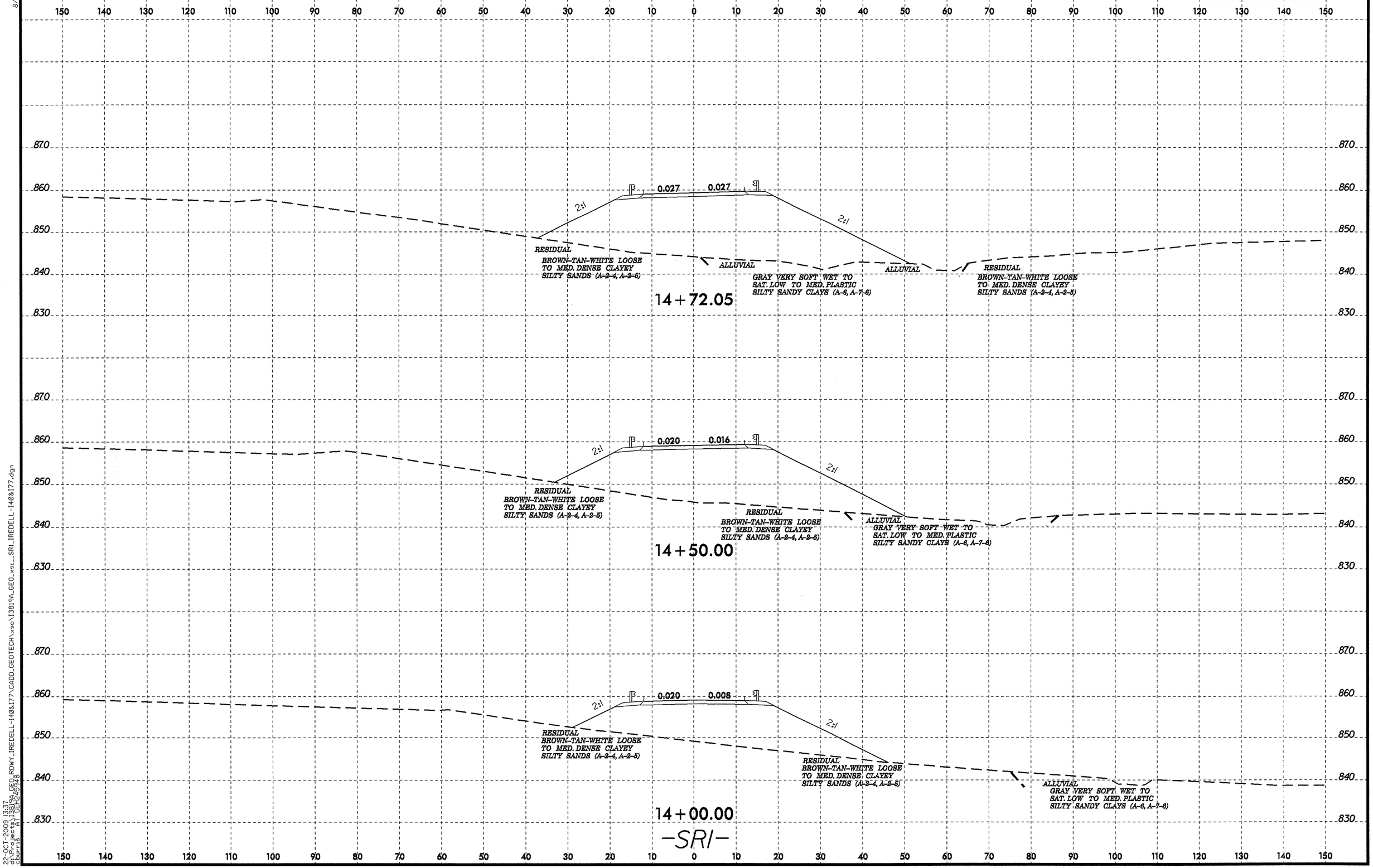

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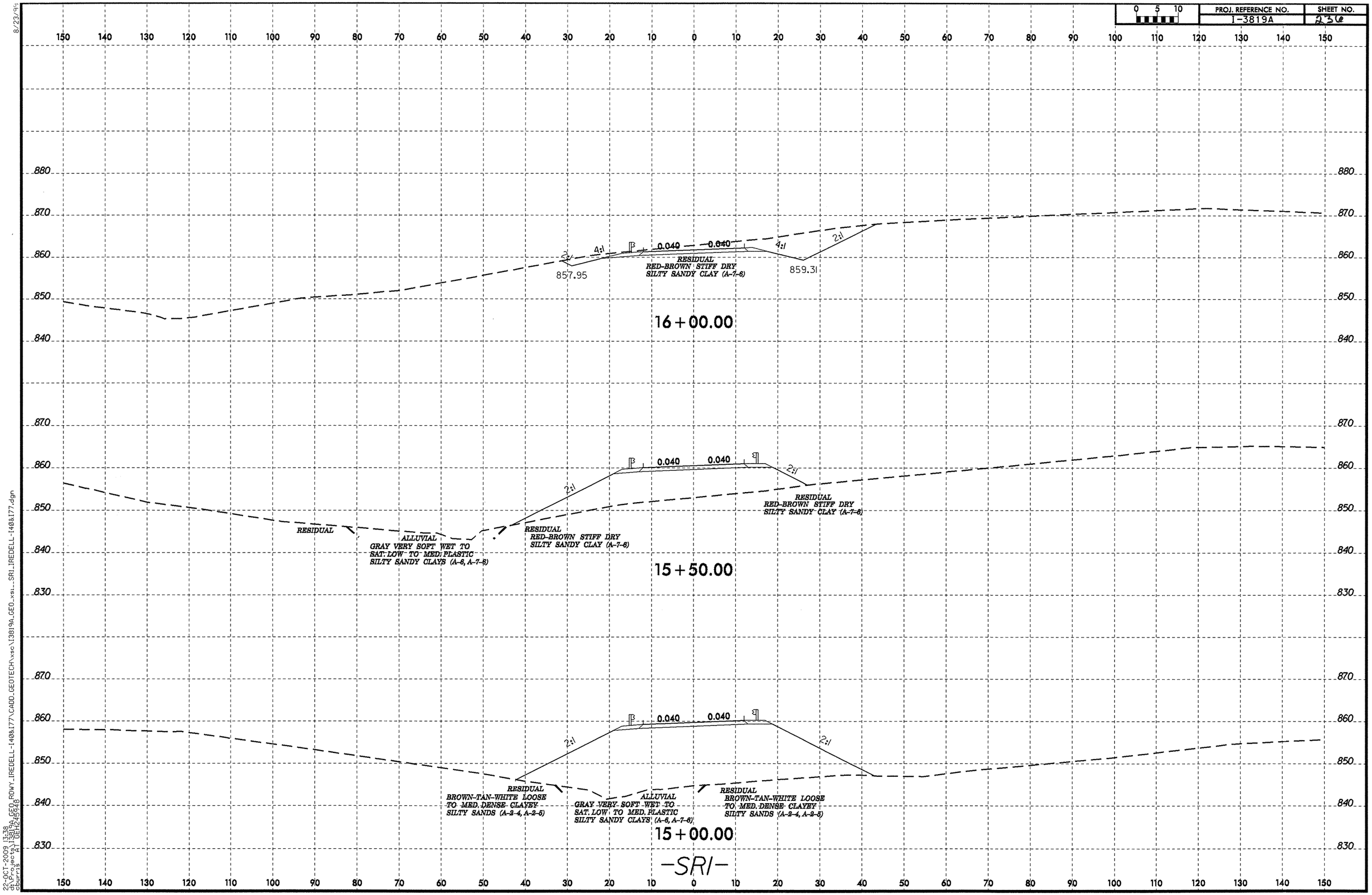

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Line or Boring ID
SS-1	100 RT	15+00	4.50-6.00	A-5(0)	44	5	22.0	46.6	19.3	12.1	98	86	38	-	-	L
SS-1A	30 RT	13+15	3.60-5.10	A-7-5(7)	50	11	12.7	33.9	31.3	22.1	100	95	62	-	-	Y2DW
S-1B	18 LT	43+65	0.00-3.20	A-4(1)	33	7	29.6	24.6	21.6	24.2	96	78	48	-	-	YRPBD
SS-1C	17 RT	50+35	5.00-6.50	A-2-5(0)	50	NP	41.1	40.7	14.1	4.0	98	71	25	-	-	YRPBD
S-1D	CL	4+00	0.00-3.00	A-6(6)	36	14	23.0	22.0	24.7	30.3	99	86	57			SR1
M-2	100 RT	15+00	14.50-16.00				0.0	0.0	0.0	0.0		0	0	6.2	-	L
M-2A	100 RT	15+00	19.50-21.00				0.0	0.0	0.0	0.0		0	0	39.3	-	L
M-2B	30 RT	13+15	8.60-10.10				0.0	0.0	0.0	0.0		0	0	35.8	-	Y2DW
SS-2	100 RT	15+00	14.50-16.00	A-5(0)	43	NP	15.5	53.9	22.5	8.1	100	93	39	-	-	L
SS-2A	30 RT	13+15	8.60-10.10	A-5(5)	46	10	15.5	35.9	28.5	20.1	100	94	57	-	-	Y2DW
SS-2B	18 LT	43+65	3.20-4.70	A-6(5)	40	11	20.4	29.6	31.9	18.1	100	89	56	-	-	YRPBD
SS-2C	17 RT	50+35	25.00-26.50	A-5(0)	51	NP	32.3	37.1	22.6	8.1	100	80	37	-	-	YRPBD
S-2D	CL	6+50	0.00-3.00	A-6(7)	40	16	24.8	20.0	22.9	32.3	99	84	58			SR1
M-3A	30 RT	13+15	13.60-15.10				0.0	0.0	0.0	0.0		0	0	43.3	-	Y2DW
M-3C	17 RT	50+35	30.00-31.50				0.0	0.0	0.0	0.0		0	0	18.7	-	YRPBD
SS-3	80 RT	19+00	0.00-1.50	A-7-5(18)	59	24	14.7	14.5	14.2	56.5	97	87	71	-	-	L
SS-3A	30 RT	13+15	13.60-15.10	A-5(4)	48	10	25.5	29.1	25.3	20.1	99	84	51	-	-	Y2DW
SS-3B	18 LT	43+65	8.20-9.70	A-5(3)	45	7	19.2	34.1	28.6	18.1	100	90	56	-	-	YRPBD
SS-3C	17 RT	50+35	30.00-31.50	A-2-4(0)	34	NP	59.1	27.2	11.7	2.0	100	58	17	-	-	YRPBD
S-3D	CL	5+00	0.00-3.00	A-7-5(10)	47	13	12.5	24.6	36.6	26.2	99	93	69			SR1
SS-4	100 RT	25+50	0.00-1.50	A-6(5)	40	17	20.8	21.4	19.5	38.3	79	69	49	-	-	L
SS-4A	17 RT	50+35	40.00-41.50	A-1-a(0)	24	NP	51.6	30.6	15.7	2.0	46	28	11	-	-	YRPBD
SS-4B	18 LT	43+65	13.20-14.70	A-5(0)	41	NP	20.4	35.3	30.2	14.1	100	88	54	-	-	YRPBD
S-4C	CL	2+00	0.00-3.00	A-7-6(7)	41	13	18.3	21.6	23.8	36.3	100	91	63			SR1
SS-5	70 RT	28+00	3.50-5.00	A-4(2)	39	7	25.6	28.3	5.8	40.4	98	81	51	-	-	L
SS-5A	CL	44+00	4.50-6.00	A-7-5(34)	77	38	11.7	12.7	17.1	58.5	100	93	78	-	-	YRPBD
SS-5B	18 LT	43+65	18.20-19.70	A-5(1)	49	NP	14.3	38.9	34.7	12.1	100	93	56	-	-	YRPBD
S-5C	CL	6+75	0.00-7.00	A-4(1)	29	9	32.9	26.6	16.2	24.2	99	81	43			SR1
SS-6	70 RT	31+50	0.00-1.50	A-6(8)	40	16	20.2	19.6	19.9	40.4	99	86	62	-	-	L
SS-6A	CL	44+00	9.50-11.00	A-5(2)	42	4	19.0	31.0	31.9	18.1	100	89	57	-	-	YRPBD
SS-6B	18 LT	43+65	23.20-24.70	A-5(1)	49	NP	13.9	37.9	32.1	16.1	100	93	56	-	-	YRPBD
S-6C	CL	3+00	0.00-3.00	A-7-6(8)	42	14	17.0	20.6	24.1	38.3	100	92	65			SR1
SS-7	80 RT	34+00	0.00-1.50	A-6(8)	40	13	18.4	18.6	22.7	40.4	100	89	66	-	-	L
SS-7A	CL	44+00	14.50-16.00	A-1-b(0)	31	NP	42.3	30.2	19.4	8.1	63	44	21	-	-	YRPBD
SS-7B	18 LT	43+65	28.20-29.70	A-4(0)	35	NP	25.6	39.9	20.4	14.1	97	84	41	-	-	YRPBD
S-7C	25 RT	24+50	0.00-18.00	A-7-6(19)	53	24	13.5	14.1	15.8	56.5	100	93	75			YRPAB
M-8A	CL	44+00	29.50-31.00				0.0	0.0	0.0	0.0		0	0	46.2	-	YRPBD
SS-8	80 RT	34+00	3.50-5.00	A-7-5(15)	56	21	19.8	12.7	19.1	48.4	99	86	69	-	-	L
SS-8A	CL	44+00	29.50-31.00	A-2-5(0)	43	NP	40.3	35.1	18.5	6.0	82	57	26	-	-	YRPBD
SS-8B	18 LT	43+65	33.20-34.70	A-5(0)	42	NP	28.6	35.5	25.8	10.1	98	80	42	-	-	YRPBD
S-8C	CL	15+00	0.00-23.00	A-5(4)	45	6	17.4	26.2	30.2	26.2	100	90	62			YRPA
S-9	100 RT	41+50	0.00-4.00	A-7-5(24)	66	26	12.5	11.9	17.1	58.5	100	92	78	-	-	L
SS-9A	70 LT	23+12	3.50-5.00	A-5(4)	55	10	20.8	35.7	25.4	18.1	100	88	51	-	-	YRPAB
SS-9B	18 LT	43+65	38.20-39.70	A-2-5(0)	42	NP	38.5	32.3	19.2	10.1	98	72	34	-	-	YRPBD
SS-9C	CL	24+50	0.00-1.50	A-7-5(8)	58	11	20.2	23.4	14.0	42.4	100	87	61			YRPA
M-9	CL	24+50	0.00-1.50											25.9		YRPA
M-10	100 RT	41+50	14.00-15.50				0.0	0.0	0.0	0.0		0	0	25.2	-	L
M-10A	70 LT	23+12	38.50-40.00				0.0	0.0	0.0	0.0		0	0	20.6	-	YRPAB
M-10B	20 LT	27+00	0.00-1.50											22.3		YRPA
SS-10	100 RT	41+50	4.00-5.50	A-5(4)	45	8	22.2	29.1	32.6	16.1	99	84	56	-	-	L
SS-10A	70 LT	23+12	28.50-30.00	A-2-4(0)	37	NP	27.0	46.6	18.3	8.1	100	87	33	-	-	YRPAB
SS-10B	18 LT	43+65	43.20-44.70	A-2-4(0)	34	NP	34.6	39.0	19.4	7.1	100	78	33	-	-	YRPBD
SS-10C	20 LT	27+00	0.00-1.50	A-7-5(20)	63	27	14.9	18.2	20.5	46.4	99	90	70			YRPA
SS-11	130 RT	51+50	0.00-1.50	A-7-5(14)	53	22	16.6	20.7	18.1	44.6	98	88	66	-	-	L
SS-11A	16 RT	33+89	4.00-5.50	A-7-6(18)	53	26	15.9	17.7	15.9	50.4	100	91	69	-	-	YRPBD
SS-11B	18 LT	43+65	48.20-49.70	A-2-4(0)	32	NP	39.8	40.1	15.0	5.0	93	69	26	-	-	YRPBD
S-11C	CL	10+50	0.00-23.00	A-5(2)	51	6	17.6	43.2	27.1	12.1	100	92	50			YRPA
SS-12	130 RT	51+50	3.50-5.00	A-7-5(10)	57	17	15.0	33.7	27.0	24.3	100	92	59	-	-	L
SS-12A	16 RT	33+89	9.00-10.50	A-2-4(0)	35	NP	46.1	41.8	9.1	3.0	85	59	15	-	-	YRPBD
SS-12B	18 LT	43+65	53.20-54.70	A-2-4(0)	34	NP	32.8	45.8	15.4	6.0	97	78	28	-	-	YRPBD
SS-12C	45 RT	17+00	0.00-1.50	A-7-5(9)	57	16	18.6	27.7	13.2	40.5	99	89	57			YRPAB
M-13	110 RT	54+00	0.00-1.50				0.0	0.0	0.0	0.0		0	0	33.7	-	L
SS-13	110 RT	54+00	0.00-1.50	A-7-5(9)	48	17	20.5	22.9	20.1	36.5	99	86	61	-	-	L
SS-13B	18 LT	43+65	58.20-59.70	A-2-4(0)	40	NP	42.5	40.6	11.8	5.0	94	67	22	-	-	YRPBD
SS-13C	45 RT	17+00	8.60-10.10	A-2-4(0)	33	NP	46.6	42.5	6.9	4.0	99	69	18			YRPAB
SS-14	95 RT	58+50	3.50-5.00	A-7-5(8)	53	17	19.9	17.0	26.6	36.5	79	67	54	-	-	L
SS-14B	125 RT	140+50	4.50-6.00	A-4(0)	28	4	19.0	40.4	20.4	20.2	100	92	48	-	-	L
SS-14C	65 RT	16+50	0.00-1.50	A-2-4(0)	29	4	39.3	35.0	11.5	14.2	99	75	30			YRPAB
M-15	95 RT	58+50	8.50-10.00				0.0	0.0	0.0	0.0		0	0	18.1	-	L
SS-15	95 RT	58+50	8.50-10.00	A-2-4(0)	36	NP	49.3	31.0	15.6	4.1	97	64	23	-	-	L
SS-15B	125 RT	140+50	9.50-11.00	A-4(0)	36	NP	28.3	40.6	17.0	14.1	100	86	38	-	-	L
SS-15C	65 RT	16+50	8.70-10.20	A-2-4(0)	28	NP	47.8	39.7	10.5	2.0	93	63	19			YRPAB
S-16	100 RT	59+50	0.00-4.00	A-7-5(21)	61	30	17.6	15.6	18.1	48.7	100	89	69	-	-	L
SS-16B	125 RT	140+50	14.50-16.00	A-2-5(0)	48	NP	25.7	53.5	12.7	8.1	100	89	28	-	-	L
S-16C	CL	12+00	0.00-9.00	A-7-5(15)	55	15	11.5	15.8	18.0	54.7	100	92	77			SR1
M-17	100 RT	59+50	14.00-15.50				0.0	0.0	0.0	0.0		0	0	15.6	-	L
M-17A	100 RT	59+50	19.00-20.50				0.0	0.0	0.0	0.0		0	0	19.6	-	L
SS-17	100 RT	59+50	14.00-15.50	A-5(0)	48	NP	29.0	42.6	22.3	6.1	100	85	38	-	-	L
SS-17B	125 RT	140+50	19.50-21.00	A-2-5(0)	45	NP	33.7	47.3	12.9	6.1	100	82	27	-	-	L
S-17C	CL	12+00	9.00-19.00	A-2-4(0)	32	4	34.0	31.6	18.2	16.2	87	68	35			SR1
SS-18	110 RT	60+50	13.80-15.30	A-1-b(0)	36	NP	43.0	31.6	19.3	6.1	56	38	17	-	-	L
SS-18B	125 RT	140+50	24.50-26.00	A-2-5(0)	48	NP	28.1	45.5	18.4	8.1	99	86	33	-	-	L
S-19	110 RT	61+50	0.00-3.50	A-7-5(22)	63	22	10.3	12.6	16.2	60.9	100	94	79	-	-	L
SS-19B	125 RT	140+50	29.50-31.00	A-2-4(0)	34	NP	40.6	41.6	11.7	6.1	99	76	23	-	-	L
M-20	110 RT	61+50	18.50-20.00				0.0	0.0	0.0	0.0		0	0	20.8	-	L
SS-20	110 RT	61+50	13.50-15.00	A-5(2)	44	6	19.9	32.5	31.4	16.2	91	80	50	-	-	L
SS-20A	125 RT	140+50	34.50-36.00	A-2-4(0)	34	NP	37.8	43.6	12.5	6.1	100	79	24	-	-	L
M-21	110 RT	63+00	4.50-6.00				0.0	0.0	0.0	0.0		0	0	34.2	-	L
SS-21	110 RT	63+00	4.50-6.00	A-5(1)	41	8	24.5	40.0	27.4	8.1	91	79	40	-	-	L
SS-21A	125 RT	140+50	39.50-41.00	A-2-4(0)	33	NP	40.4	41.4	12.1	6.1	97	72	24	-	-	L

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Line or Boring ID
M-22	112 RT	66+00	9.20-10.70				0.0	0.0	0.0	0.0		0	0	19.2	-	L
SS-22	112 RT	66+00	4.20-5.70	A-5(2)	56	6	23.1	38.3	30.4	8.1	100	88	46	-	-	L
SS-23	120 RT	68+50	3.80-5.30	A-7-5(22)	60	22	7.1	14.2	26.0	52.7	100	97	82	-	-	L
SS-23A	52 LT	20+83	3.50-5.00	A-5(3)	47	8	23.0	32.9	23.8	20.2	100	87	51	-	-	YRPC
M-24	120 RT	68+50	8.80-10.30				0.0	0.0	0.0	0.0		0	0	31.6	-	L
SS-24	120 RT	68+50	8.80-10.30	A-5(5)	50	6	15.6	28.6	35.5	20.3	100	91	62	-	-	L
SS-24A	52 LT	20+83	8.50-10.00	A-6(8)	40	17	22.4	23.0	18.2	36.4	100	87	58	-	-	YRPC
M-25	117 RT	70+50	8.90-10.40				0.0	0.0	0.0	0.0		0	0	18.9	-	L
SS-25	117 RT	70+50	3.90-5.40	A-7-5(22)	62	27	13.8	15.4	18.1	52.7	100	94	74	-	-	L
SS-25A	52 LT	20+83	13.50-15.00	A-7-6(18)	61	32	23.4	18.0	12.1	46.5	100	86	61	-	-	YRPC
SS-26	80 RT	72+00	4.00-5.50	A-7-5(12)	54	19	19.0	21.6	16.9	42.5	100	91	63	-	-	L
SS-26A	52 LT	20+83	18.50-20.00	A-7-5(50)	82	44	2.0	7.9	25.5	64.6	100	99	93	-	-	YRPC
SS-27	90 RT	75+00	0.00-1.50	A-6(10)	40	17	16.8	20.0	12.8	50.5	100	91	67	-	-	L
SS-28	90 RT	75+00	4.00-5.50	A-7-5(14)	51	19	14.3	21.2	20.1	44.4	100	91	69	-	-	L
SS-28A	52 LT	20+83	28.50-30.00	A-5(0)	42	4	25.3	39.8	24.8	10.1	100	86	43	-	-	YRPC
SS-29	90 RT	75+00	9.00-10.50	A-5(2)	41	7	21.4	34.3	30.2	14.1	100	88	50	-	-	L
SS-30	170 RT	80+00	0.00-1.50	A-7-6(13)	49	20	18.4	18.0	17.3	46.4	100	87	67	-	-	L
SS-30A	52 LT	20+83	38.50-40.00	A-2-5(0)	49	NP	34.5	47.9	11.5	6.1	100	80	24	-	-	YRPC
SS-31	30 RT	23+00	0.00-1.50	A-7-6(9)	41	16	17.0	22.2	10.4	50.5	100	91	64	-	-	Y4RPC
SS-31A	52 LT	20+83	43.50-45.00	A-2-4(0)	39	NP	32.9	43.6	15.4	8.1	100	82	29	-	-	YRPC
SS-32	112 RT	82+50	0.00-1.50	A-6(5)	39	15	26.0	25.2	16.4	32.3	96	80	50	-	-	L
SS-32A	52 LT	20+83	48.50-50.00	A-2-5(0)	42	NP	34.3	44.8	12.7	8.1	100	82	28	-	-	YRPC
M-33	112 RT	82+50	3.90-5.40				0.0	0.0	0.0	0.0		0	0	52.4	-	L
SS-33	112 RT	82+50	3.90-5.40	A-7-5(11)	54	16	15.1	26.2	20.3	38.3	100	92	64	-	-	L
SS-34	120 RT	84+50	0.00-1.50	A-6(3)	29	11	25.4	26.6	13.6	34.3	100	85	51	-	-	L
SS-35	120 RT	84+50	4.00-5.50	A-6(4)	35	18	26.2	30.7	8.8	34.3	98	84	44	-	-	L
SS-36	120 RT	84+50	9.00-10.50	A-5(0)	69	NP	22.2	45.0	16.6	16.1	100	87	43	-	-	L
SS-37	110 RT	87+00	0.00-1.50	A-7-6(10)	45	18	20.4	21.8	17.5	40.4	98	84	61	-	-	L
SS-38	CL	21+50	0.00-1.50	A-4(1)	31	8	27.9	32.9	13.0	26.2	99	85	42	-	-	Y4RPD
SS-39	CL	21+50	4.00-5.50	A-6(2)	32	13	16.8	43.0	8.0	32.3	97	90	44	-	-	Y4RPD
SS-40	CL	21+50	9.00-10.50	A-5(2)	43	10	24.2	37.5	22.1	16.1	100	86	46	-	-	Y4RPD
SS-41	CL	19+00	0.00-1.50	A-6(4)	40	11	23.0	29.3	17.5	30.3	99	86	52	-	-	Y4RPD
SS-42	CL	19+00	9.00-10.50	A-2-4(0)	21	NP	32.5	55.3	4.1	8.1	99	91	15	-	4.9	Y4RPD
SS-43	CL	19+00	19.00-20.50	A-5(1)	49	5	21.2	42.2	20.5	16.1	100	87	47	-	-	Y4RPD
SS-44	CL	16+06	0.00-1.50	A-7-5(19)	61	26	17.6	17.6	18.5	46.4	100	89	68	-	-	Y4RPD
SS-45	CL	16+06	4.00-5.50	A-2-4(0)	21	3	41.2	37.9	4.7	16.1	100	79	24	-	-	Y4RPD
SS-46	CL	16+06	9.00-10.50	A-2-4(0)	21	NP	17.1	57.3	3.4	22.2	100	97	33	-	-	Y4RPD
SS-47	CL	16+06	14.00-15.50	A-4(1)	29	9	11.9	47.0	12.8	28.3	100	98	46	-	5.2	Y4RPD
SS-48	70 RT	96+00	0.00-1.50	A-6(5)	40	16	21.9	32.8	11.1	34.2	100	89	49	-		L
SS-49	75 RT	99+50	9.00-10.50	A-6(0)	35	11	29.2	35.0	19.7	16.1	89	74	36	-	-	L
SS-50	75 RT	99+50	14.00-15.50	A-2-4(0)	28	NP	34.0	43.5	16.5	6.0	95	78	29	-	-	L
SS-51	110 RT	102+00	0.00-1.50	A-2-4(0)	30	5	36.4	31.4	18.1	14.1	93	72	34	-	-	L
SS-52	110 RT	102+00	8.90-10.40	A-4(1)	35	8	26.2	31.4	20.3	22.1	100	86	47	-	-	L
SS-53	110 RT	102+00	13.90-15.40	A-7-5(23)	63	19	5.0	10.1	40.6	44.3	100	97	87	-	16.2	L
SS-54	110 RT	102+00	18.90-20.40	A-4(0)	31	6	6.8	55.7	21.3	16.1	100	100	44	-	-	L
SS-55	110 RT	104+50	3.80-5.30	A-7-5(23)	58	20	1.4	12.7	29.6	56.3	100	100	89	-	-	L
SS-56	100 RT	107+00	0.00-1.50	A-7-5(25)	57	26	7.0	10.3	22.3	60.4	100	96	84	-	-	L
SS-57	133 RT	109+88	3.80-5.30	A-7-5(39)	77	35	4.0	8.5	35.2	52.3	100	99	89	-	17.3	L
SS-58	133 RT	109+88	13.80-15.30	A-2-4(0)	24	NP	58.0	32.7	5.2	4.0	95	64	11	-	-	L
SS-59	75 RT	113+50	0.00-1.50	A-7-5(28)	67	32	11.3	14.1	24.3	50.3	100	93	78	-	-	L
SS-60	45 RT	103+00	0.00-1.50	A-7-6(4)	44	22	33.0	31.8	15.1	20.1	98	78	39	-	-	L
SS-61	45 RT	103+00	9.00-10.50	A-2-4(0)	29	NP	40.6	43.3	12.1	4.0	100	81	23	-	-	L
SS-62	30 RT	108+00	0.00-1.50	A-6(6)	39	13	19.3	29.4	21.1	30.2	100	89	57	-	-	L
SS-63	30 RT	108+00	7.50-9.00	A-7-5(31)	59	25	0.6	2.2	28.8	68.4	100	100	98	-	-	L
SS-64	30 RT	108+00	12.50-14.00	A-7-5(28)	65	26	3.8	11.5	26.4	58.4	100	98	87	-	17.6	L
SS-65	30 RT	108+00	17.50-19.00	A-2-4(0)	27	NP	24.4	57.2	10.3	8.0	100	95	23	-	-	L
SS-66	45 RT	112+50	0.00-1.50	A-7-5(12)	52	16	13.7	20.5	15.5	50.3	100	92	70	-	-	L
SS-67	45 RT	112+50	18.70-20.20	A-2-4(0)	20	NP	62.5	28.0	4.5	5.0	99	62	12	-	-	L
SS-68	70 RT	116+00	0.00-1.50	A-7-6(30)	76	50	20.8	18.6	5.5	55.1	100	88	63	-	-	L
SS-69	70 RT	116+00	9.00-10.50	A-2-6(1)	40	20	62.7	15.1	1.8	20.4	82	42	20	-	-	L
M-70	90 RT	122+00	1.00-2.50				0.0	0.0	0.0	0.0		0	0	32.5	-	L
SS-70	90 RT	122+00	1.00-2.50	A-5(2)	46	6	19.6	38.6	21.4	20.4	100	90	50	-	-	L
M-71	90 RT	122+00	4.00-5.50				0.0	0.0	0.0	0.0		0	0	34.4	-	L
SS-71	90 RT	122+00	4.00-5.50	A-7-5(41)	84	46	9.0	14.9	8.8	67.3	100	95	78	-	-	L
M-72	90 RT	122+00	9.00-10.50				0.0	0.0	0.0	0.0		0	0	39.8	-	L
SS-72	90 RT	122+00	9.00-10.50	A-7-5(35)	79	39	10.6	14.3	9.8	65.3	100	93	78	-	-	L
M-73	90 RT	122+00	14.00-15.50				0.0	0.0	0.0	0.0		0	0	33.8	-	L
SS-73	90 RT	122+00	14.00-15.50	A-7-6(6)	49	20	35.3	21.0	15.1	28.6	99	77	46	-	-	L
SS-74	110 RT	127+00	0.00-1.50	A-7-5(6)	52	11	19.6	30.2	19.6	30.6	100	89	56	-	-	L
SS-75	110 RT	127+00	9.00-10.50	A-2-5(0)	57	NP	31.2	49.4	13.3	6.1	100	86	26	-	-	L
M-76	90 RT	132+00	0.00-1.50				0.0	0.0	0.0	0.0		0	0	47.3	-	L
SS-76	90 RT	132+00	0.00-1.50	A-5(5)	53	10	14.7	39.0	25.9	20.4	100	94	54	-	-	L
M-77	CL	43+00	25.00-25.50				0.0	0.0	0.0	0.0		0	0	34.9	-	YRPBD
S-77	CL	43+00	0.00-35.00	A-5(0)	42	NP	20.4	41.2	24.1	14.3	100	92	46	-	-	YRPBD
SS-78	100 RT	146+60	4.00-5.50	A-7-6(13)	46	25	20.2	21.0	9.8	49.0	100	89	61	-	-	L
SS-79	100 RT	146+60	14.00-15.50	A-5(0)	50	NP	23.1	47.3	21.4	8.2	100	90	39	-	-	L
SS-80	100 RT	145+00	0.00-1.50	A-7-5(25)	72	32	16.1	15.7	9.0	59.2	100	90	71	-	-	L
SS-81	100 RT	150+50	0.00-1.50	A-6(5)	39	18	28.3	29.9	15.6	26.3	100	85	46	-	-	L
SS-82	100 RT	150+50	4.30-5.80	A-2-4(0)	32	NP	36.6	38.2	11.1	14.1	100	80	30	-	-	L
SS-83	100 RT	150+50	19.30-20.80	A-2-4(0)	31	NP	48.3	36.2	11.5	4.0	86	59	18	-	-	L
S-84	110 RT	157+00	0.00-4.00	A-6(6)	39	12	16.4	30.3	27.1	26.3	100	92	59	-	-	L
S-85	110 RT	157+00	4.00-24.00	A-4(0)	30	7	39.0	27.1	17.8	16.2	97	71	37	-	-	L
S-86	120 RT	164+00	0.00-4.00	A-7-5(9)	57	18	27.1	19.8	12.7	40.4	98	80	55	-	-	L
SS-87	120 RT	164+00	9.00-10.50	A-5(0)	48	NP	30.4	38.9	24.6	6.0	100	83	37	-	-	L
M-88	120 RT	164+00	29.00-30.50				0.0	0.0	0.0	0.0		0	0	32.1	-	L
SS-88	120 RT	164+00	29.00-30.50	A-2-5(0)	43	NP	38.6	41.0	16.4	4.0	100	77	26	-	-	L
M-97	107 LT	163+78	0.00-1.50				0.0	0.0	0.0	0.0		0	0	29.8	-	L
SS-97	107 LT	163+78	0.00-1.50	A-7-6(4)	44	15	34.3	24.2	17.2	24.2	99	76	45	-	-	L
SS-98	100 LT	151+00	0.00-1.50	A-7-5(4)	44	13	25.1	27.5	23.2	24.2	93	79	49	-	-	L
SS-99	100 LT	151+00	12.10-13.60	A-7-6(8)	45	16	19.6	25.1	23.0	32.3	100	89	60	-	-	L

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Line or Boring ID
SS-102	65 RT	10+36	0.00-1.50	A-7-5(16)	54	21	13.5	17.2	20.8	48.5	100	93	72	-	-	YRPA
SS-103	65 RT	10+36	7.60-9.10	A-5(0)	51	NP	17.2	46.5	26.3	10.1	100	94	45	-	-	YRPA
S-104	40 RT	35+00	9.00-19.00	A-5(0)	44	NP	24.4	39.4	22.0	14.1	97	85	41	-	-	YRPBD
S-105A	40 RT	35+00	0.00-9.00	A-7-5(10)	48	16	17.8	21.0	20.8	40.4	100	90	64	-	-	YRPBD
SS-110	80 RT	175+00	0.00-1.50	A-2-5(0)	51	8	32.3	44.0	15.6	8.1	100	84	29	-	-	Y
SS-111	80 RT	170+00	3.40-4.90	A-7-6(20)	61	36	22.8	18.6	16.2	42.4	100	87	61	-	-	Y
SS-112	85 RT	166+00	0.00-1.50	A-5(3)	54	9	23.0	34.3	12.3	30.3	100	86	48	-	-	Y
SS-113	144 LT	160+75	0.00-1.50	A-7-5(16)	63	21	14.7	22.4	14.3	48.5	100	91	67	-	-	L
SS-114	85 LT	35+50	0.00-1.50	A-7-6(14)	47	21	16.6	17.8	13.1	52.5	100	91	68	-	-	L
SS-115	85 LT	35+50	8.00-9.50	A-7-5(14)	53	17	12.2	20.9	32.5	34.5	100	94	73	-	-	L
S-116	100 LT	41+00	0.00-5.00	A-7-5(34)	74	44	15.2	14.4	9.5	60.9	100	90	73	-	-	L
SS-117	100 LT	46+00	4.10-5.60	A-7-5(13)	52	18	14.4	19.5	25.6	40.6	99	91	69	-	-	L
M-118	100 LT	46+00	14.10-15.60				0.0	0.0	0.0	0.0		0	0	22.0	-	L
SS-118	100 LT	46+00	9.10-10.60	A-5(2)	45	7	19.1	40.6	26.2	14.2	100	89	50	-	-	L
S-119	40 RT	15+00	0.00-5.00	A-7-5(26)	63	33	14.6	14.4	12.2	58.8	100	91	74	-	-	Y3A
M-120	95 LT	52+00	0.00-1.50				0.0	0.0	0.0	0.0		0	0	37.9	-	L
SS-120	95 LT	52+00	0.00-1.50	A-7-5(9)	51	17	23.3	22.1	20.1	34.5	99	82	59	-	-	L
SS-121	95 LT	52+00	3.40-4.90	A-5(3)	44	4	17.4	30.6	33.7	18.3	99	88	60	-	-	L
SS-122	125 LT	54+50	0.00-1.50	A-7-6(17)	56	29	19.5	20.7	19.3	40.6	99	86	63	-	-	L
SS-123	80 LT	58+00	0.00-1.50	A-6(3)	39	12	28.2	24.1	21.3	26.4	89	72	47	-	-	L
SS-124	80 LT	58+00	8.80-10.30	A-7-5(10)	57	20	22.9	26.2	24.5	26.4	100	84	57	-	-	L
SS-125	112 LT	62+00	2.70-4.20	A-1-b(0)	30	NP	42.2	35.5	18.3	4.1	63	45	18	-	-	L
SS-126	112 LT	63+00	7.50-9.00	A-7-6(3)	43	15	31.8	27.8	20.1	20.3	91	72	42	-	-	L
M-127	120 LT	67+00	8.70-10.20				0.0	0.0	0.0	0.0		0	0	43.5	-	L
SS-127	112 LT	64+00	0.00-1.50	A-5(0)	45	4	23.9	41.9	22.1	12.1	100	87	43			L
SS-128	124 LT	69+00	0.00-1.50	A-7-5(11)	50	16	13.6	23.5	30.6	32.4	100	92	68			L
SS-129	124 LT	70+50	0.00-1.50	A-7-5(25)	61	31	12.8	13.8	6.7	66.8	100	94	75			L
SS-130	124 LT	70+50	8.80-10.30	A-5(0)	49	5	23.7	43.9	20.2	12.1	100	86	41			L
SS-131	95 LT	74+50	0.00-1.50	A-4(1)	27	10	27.7	32.2	15.8	24.3	100	84	44			L
SS-132	155 LT	77+00	0.00-1.50	A-7-5(23)	69	32	17.0	18.0	18.4	46.6	100	91	68			L
SS-133	CL	11+50	0.00-1.50	A-7-6(7)	43	18	20.2	21.7	17.6	40.5	87	76	54			Y8
SS-134	CL	14+00	4.00-5.50	A-2-4(0)	40	NP	29.0	44.5	14.2	12.3	98	83	33			Y8
SS-135	CL	10+50	8.80-10.30	A-2-4(0)	38	NP	25.9	45.6	14.2	14.3	100	87	35			Y8
SS-136	185 LT	90+70	0.00-1.50	A-4(1)	32	7	11.8	43.3	16.2	28.6	100	99	50			L
SS-137	185 LT	90+70	8.50-10.00	A-1-b(0)	25	NP	82.3	12.0	1.6	4.1	92	31	6			L
SS-138	185 LT	90+70	18.50-19.50	A-2-4(0)	32	NP	43.1	41.7	11.1	4.1	89	65	19			L
SS-139	40 RT	22+50	0.00-1.50	A-7-6(17)	53	29	16.8	21.2	4.8	57.2	100	90	64			Y4RPA
SS-140	40 RT	22+50	3.80-5.30	A-7-6(13)	64	38	32.1	19.8	7.3	40.9	93	73	47			Y4RPA
SS-141	40 RT	22+50	8.80-10.30	A-2-4(0)	39	8	38.8	32.7	18.3	10.2	83	60	29			Y4RPA
SS-142	45 RT	13+50	0.00-1.50	A-5(0)	43	3	24.5	41.9	27.5	6.1	98	84	41			Y5A
SS-143	20 RT	15+00	0.00-1.50	A-7-5(8)	52	11	13.5	29.4	32.6	24.5	100	93	65			Y5A
SS-144	CL	17+50	0.00-1.50	A-4(0)	33	NP	29.0	39.4	19.3	12.3	98	82	40			Y8
SS-145	CL	17+50	13.80-14.80	A-1-b(0)	26	NP	41.3	35.3	17.3	6.1	68	48	21			Y8
S-146	40 LT	22+00	5.00-25.00	A-4(0)	34	6	33.1	25.1	23.4	18.4	88	68	41			Y8
SS-147	CL	16+80	0.00-1.50	A-7-5(12)	53	22	19.2	20.6	17.3	42.9	93	82	59			Y4RPA
SS-148	CL	16+80	8.40-9.90	A-7-5(25)	78	30	13.3	22.9	23.0	40.9	100	92	70			Y4RPA
SS-149	35 LT	15+00	0.00-1.50	A-7-5(8)	66	15	21.7	28.4	15.2	34.7	100	89	54			YRPBD
M-150	35 LT	15+00	18.90-20.40				0.0	0.0	0.0	0.0		0	0	33.3	-	YRPBD
SS-150	35 LT	15+00	8.90-10.40	A-5(0)	43	NP	25.5	37.6	24.6	12.3	100	87	43			YRPBD
SS-151	40 LT	18+50	0.00-1.50	A-5(4)	60	9	14.7	44.7	18.1	22.5	100	93	49			YRPBD
SS-152	55 LT	23+00	0.00-1.50	A-7-5(4)	47	16	30.6	28.6	14.2	26.6	99	82	45			YRPBD
SS-153	55 LT	23+00	8.10-9.60	A-2-5(0)	53	NP	41.5	38.8	11.5	8.2	100	78	24			YRPBD
SS-154	28 LT	14+00	0.00-1.50	A-6(4)	32	16	28.7	25.9	17.2	28.3	100	83	49			YRPB
M-155	28 LT	14+00	8.20-9.70				0.0	0.0	0.0	0.0		0	0	47.5	-	YRPB
SS-155	28 LT	14+00	8.20-9.70	A-4(0)	40	9	35.2	32.7	13.9	18.2	96	77	36			YRPB
M-156	28 LT	16+00	0.00-1.50				0.0	0.0	0.0	0.0		0	0	26.4	-	YRPB
SS-156	28 LT	16+00	0.00-1.50	A-7-6(17)	52	29	20.4	17.6	7.5	54.5	100	88	64			YRPB
SS-157	75 LT	170+50	0.00-1.50	A-2-6(1)	36	13	45.3	22.7	11.7	20.2	97	67	33			Y
SS-158	75 LT	170+50	4.10-5.60	A-7-6(8)	42	17	24.7	21.5	15.4	38.5	99	86	57			Y
SS-159	75 LT	170+50	9.10-11.60	A-2-5(0)	60	6	29.6	43.9	18.4	8.1	100	87	32			Y
S-160	90 LT	161+00	0.00-15.00	A-2-4(0)	33	NP	40.5	39.7	13.8	6.1	100	77	24			Y
SS-161	CL	21+00	0.00-1.50	A-7-6(12)	44	23	23.5	16.6	7.3	52.6	100	86	62			YRPB
SS-163	CL	26+00	0.00-1.50	A-6(3)	32	13	30.6	25.1	16.0	28.3	99	80	47			YRPBD
SS-164	CL	26+00	2.00-3.50	A-7-5(5)	65	11	29.6	26.5	21.7	22.3	99	80	48			YRPBD
SS-165	110 LT	153+00	0.00-1.50	A-7-6(9)	44	21	22.7	25.3	17.6	34.4	100	86	56			Y
SS-166	110 LT	153+00	3.90-5.40	A-7-6(18)	52	30	19.2	17.4	6.7	56.7	100	88	65			Y
SS-167	70 LT	151+15	3.60-5.10	A-7-5(2)	44	12	32.6	27.5	15.6	24.3	98	77	43			Y
SS-168	70 LT	151+15	18.60-20.10	A-7-6(17)	53	27	19.0	16.8	13.6	50.6	99	87	66			Y
SS-169	70 LT	151+15	28.60-30.10	A-7-5(13)	66	20	23.7	18.6	13.2	44.5	100	84	61			Y
SS-170	70 LT	151+15	33.60-35.10	A-5(2)	61	6	20.9	40.1	16.8	22.3	100	92	45			Y
SS-200	90 RT	122+50	0.00-1.50	A-7-5(15)	50	20	10.2	21.3	23.8	44.7	100	94	73	-	-	Y
SS-201	90 RT	122+50	8.70-10.20	A-7-6(20)	58	30	9.8	26.6	20.9	42.7	100	95	68	-	-	Y
SS-202	90 RT	122+50	18.70-20.20	A-2-4(0)	36	4	46.0	35.4	13.5	5.1	89	64	21	-	-	Y
SS-203	51 LT	64+36	0.00-1.50	A-7-5(13)	51	20	17.1	19.5	22.8	40.7	100	89	67	-	-	YRPBD
SS-204	51 LT	64+36	9.10-10.60	A-7-6(12)	42	20	1.6	38.2	25.6	34.6	100	100	68	-	-	YRPBD
SS-205	64 LT	62+36	8.70-10.20	A-2-4(0)	28	NP	56.2	23.8	8.8	11.2	87	56	20	-	-	YRPBD
SS-206	61 LT	59+73	0.00-1.50	A-7-6(10)	41	20	22.0	20.7	14.6	42.7	100	88	60	-	-	YRPBD
SS-207	61 LT	59+73	8.00-9.50	A-7-5(16)	58	28	18.3	24.4	24.8	32.5	100	88	62	-	-	YRPBD
S-208	58 LT	56+03	0.00-20.00	A-7-5(4)	46	16	28.7	29.5	17.5	24.4	100	83	46	-	-	YRPBD
S-209	87 LT	53+42	0.00-6.00	A-7-5(6)	47	15	25.6	25.0	18.9	30.5	99	83	53	-	-	YRPBD
S-210	CL	46+50	0.00-5.00	A-7-5(28)	67	37	14.4	15.2	13.4	56.9	100	92	73	-	-	YRPBD
S-211	CL	26+50	0.00-5.00	A-7-6(20)	54	29	15.9	16.9	16.5	50.8	100	91	70	-	-	YRPD
S-212	50 RT	24+00	0.00-6.00	A-7-6(29)	65	38	12.9	14.1	6.3	66.7	100	92	74	-	-	YRPD
S-213	50 RT	24+00	6.00-30.00	A-7-5(11)	55	15	12.7	25.1	27.9	34.3	100	93	66	-	-	YRPD
SS-214	CL	18+80	0.00-1.50	A-7-6(9)	43	20	22.0	22.4	11.1	44.4	99	87	58	-	-	YRPD
SS-215	CL	18+80	9.50-11.00	A-7-5(2)	51	13	25.7	40.0	16.2	18.2	100	88	41	-	-	YRPD
SS-216	CL	18+80	14.50-16.00	A-2-4(0)	34	NP	39.9	47.7	9.4	3.0	100	81	18	-	-	YRPD
S-255	12 LT	27+40	0.00-2.00	A-2-4(0)	39	NP	22.1	51.9	11.9	14.2	100	83	30	-	-	YRPA
S-256	12 LT	27+40	2.00-4.00	A-2-5(0)	49	NP	47.4	38.9	9.6	4.1	90	68	16	-	-	YRPA
S-257	12 LT	25+40	0.00-3.00	A-7-6(16)	51	27	20.3	16.0	13.1	50.7	98	85	64	-	-	YRPA

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Line or Boring ID
S-258	24 LT	20+41	0.00-2.00	A-7-6(17)	54	26	19.7	16.6	13.1	50.7	100	88	66	-	-	YRPA
S-259	24 LT	20+41	2.00-4.00	A-2-5(0)	53	NP	31.8	49.2	12.9	6.1	100	78	23	-	-	YRPA
S-260	14 RT	24+34	0.00-2.00	A-7-6(21)	56	30	15.4	15.0	8.8	60.8	100	93	71	-	-	YRPA
S-261	14 RT	24+34	2.00-3.00	A-1-b(0)	50	NP	46.3	45.6	6.1	2.0	63	47	8	-	-	YRPA
S-267	CL	34+00	0.00-6.00	A-7-5(27)	62	32	12.2	12.8	14.3	60.8	100	93	78	-	-	SRI
S-268	CL	34+00	6.00-15.00	A-5(5)	42	10	21.1	25.5	27.1	26.3	100	89	60	-	-	SRI
SS-269	50 LT	26+50	0.00-1.50	A-6(5)	33	13	25.7	21.9	15.9	36.5	100	86	55	-	-	SRI
S-270	19 LT	18+99	0.00-15.00	A-7-5(15)	61	17	9.7	23.9	21.8	44.6	100	96	72	-	-	SRI
S-271	37 RT	17+07	0.00-15.00	A-7-6(17)	51	22	11.1	17.2	14.9	56.7	100	95	75	-	-	SRI
SS-272	166 RT	13+88	0.00-1.50	A-6(3)	33	11	19.9	33.0	18.7	28.4	100	90	52	-	-	SRI
SS-273	166 RT	13+88	3.80-5.30	A-7-5(11)	73	23	20.7	36.7	24.4	18.2	100	91	52	-	-	SRI
SS-274	166 RT	13+88	8.80-10.30	A-2-5(0)	42	NP	37.1	39.1	15.7	8.1	98	78	31	-	-	SRI
SS-300	234 LT	22+90	0.50-1.50	A-7-5(12)	53	12	8.4	25.5	33.9	32.1	100	96	74	-	-	L
SS-301	234 LT	22+90	8.90-9.90	A-5(0)	41	10	21.9	50.0	22.1	6.0	100	89	37	-	-	L
SS-302	94 LT	29+60	3.70-4.70	A-2-5(0)	53	10	37.6	39.4	17.1	6.0	90	72	25	-	-	L
SS-303	95 LT	30+60	3.80-4.80	A-2-4(0)	34	5	36.5	38.0	19.5	6.0	94	72	31	-	-	L
SS-304	95 LT	30+60	6.30-7.30	A-4(0)	35	3	27.9	36.9	23.1	12.0	88	72	37	-	-	L
M-305	95 LT	30+60	6.30-7.30				0.0	0.0	0.0	0.0		0	0	18.8	-	L
SS-306	95 LT	30+60	8.80-9.80	A-2-5(0)	44	NP	29.7	43.8	18.5	8.0	96	78	32	-	-	L
SS-307	98 LT	31+60	4.20-5.20	A-2-5(0)	43	NP	32.7	41.4	17.9	8.0	94	75	32	-	-	L
SS-308	98 LT	31+60	9.20-10.20	A-2-5(0)	55	NP	25.7	49.4	10.8	14.1	97	83	32	-	-	L
SS-310	98 LT	31+60	14.20-15.20	A-2-5(0)	50	NP	35.3	40.0	16.7	8.0	83	65	25	-	-	L
SS-311	100 LT	32+60	4.00-5.00	A-7-5(8)	52	11	15.7	25.5	28.7	30.1	99	89	65	-	-	L
SS-312	100 LT	32+60	6.50-7.50	A-5(2)	55	6	15.7	44.8	23.5	16.1	98	90	47	-	-	L
SS-313	100 LT	32+60	9.00-10.00	A-5(3)	57	10	20.7	39.2	22.1	18.1	100	90	46	-	-	L
M-314	100 LT	32+60	9.00-10.00				0.0	0.0	0.0	0.0		0	0	25.8	-	L
S-314	70 RT	115+25	1.00-2.00	A-4(3)	33	9	24.4	25.0	28.4	22.2	100	86	54	-	-	L
M-314A	70 RT	115+25	1.00-2.00				0.0	0.0	0.0	0.0		0	0	23.6	-	L
S-315	70 RT	116+50	1.00-2.00	A-4(0)	26	5	33.1	32.3	20.6	14.1	100	81	39	-	-	L
M-315	70 RT	116+50	1.00-2.00				0.0	0.0	0.0	0.0		0	0	19.3	-	L
S-316	70 RT	117+00	1.00-2.00	A-5(3)	45	8	19.0	35.7	25.2	20.2	100	90	53	-	-	L
M-316	70 RT	117+00	1.00-2.00				0.0	0.0	0.0	0.0		0	0	35.4	-	L
S-317	70 RT	118+00	1.00-2.00	A-7-5(34)	69	38	7.1	15.9	16.5	60.5	100	97	80	-	-	L
M-317	70 RT	118+00	1.00-2.00				0.0	0.0	0.0	0.0		0	0	33.6	-	L
S-318	70 RT	119+00	1.00-2.00	A-6(3)	31	12	27.4	27.6	16.7	28.2	100	85	49	-	-	L
M-318	70 RT	119+00	1.00-2.00				0.0	0.0	0.0	0.0		0	0	19.5	-	L
ST-1	112 RT	106+50	3.20-5.20	A-7-5(36)	68	32	1.4	7.9	40	50.7	100	100	92	-	-	L
ST-2	112 RT	106+50	7.00-8.50	A-4(1)	30	8	7.9	54.2	17.7	20.2	100	99	48	-	-	L
ST-3	156 RT	111+05	2.00-3.40	A-7-5(21)	63	16	5.9	7.6	45.7	40.8	100	97	88	-	16.3	L
ST-4 (1&2)	75 RT	96+00	2.00-4.10	A-6(5)	38	18	17.0	39.4	9.2	34.4	100	92	49	-	-	L
ST-4 (3)	75 RT	96+00	2.00-4.10	A-2-6(1)	38	16	58.6	15.6	4.6	21.2	99	53	27	-	-	L
ST-5	65 RT	99+50	2.00-3.70	A-7-6(12)	44	21	9.0	34.3	20.0	36.7	100	98	64	-	-	L
ST-6	65 RT	99+50	7.00-8.60	A-6(6)	39	15	7.8	45.1	24.7	22.4	100	99	56	-	-	L

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B1	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. 1.0
COLLAR ELEV. 777.4 ft	TOTAL DEPTH 14.7 ft	NORTHING 754,273	EASTING 1,446,710 — 24 HR. 1.0
DRILL MACHINE CME-550X	DRILL METHOD H.S. Augers		HAMMER TYPE Automatic
START DATE 08/03/05	COMP. DATE 08/03/05	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	780									777.4 GROUND SURFACE	0.0
775	773.9	3.5								**ALLUVIAL** GRAY VERY SOFT WET TO SATURATED MED. PLASTIC (PI=19) SILTY SANDY CLAY (A-6)	
			0	0	0	0	SS-18A	W			
770	768.9	8.5									
			0	0	0	0		Sat.			
765	763.9	13.5								764.9	12.5
			17	60	40/.2	100/.7	SS-19A	D		**RESIDUAL** GRAY-WHITE DENSE DRY SILTY SAND (A-2-4) 763.4 / 762.7	14.0 / 14.7
760										**WEATHERED ROCK** SEVERELY WEATHERED CRYSTALLINE ROCK	
755										Boring Terminated at Elevation 762.7 ft IN SEVERELY WEATHERED CRYSTALLINE ROCK	
750											
745											
740											
735											
730											
725											
720											
715											
710											
705											
700											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 239

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B2	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 776.5 ft	TOTAL DEPTH 18.0 ft	NORTHING 752,914	EASTING 1,447,849 — 24 HR. 4.0
DRILL MACHINE CME-550X	DRILL METHOD H.S. Augers		HAMMER TYPE Automatic
START DATE 08/03/05	COMP. DATE 08/03/05	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 18.0 ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	780									776.5 GROUND SURFACE	0.0
775	772.5	4.0								**ALLUVIAL** BROWN-GRAY VERY SOFT WET MED. PLASTIC (PI=21) SILTY SANDY CLAY (A-7-6)	
			0	0	0	0	SS-16A	W			
770	767.5	9.0									
			1	0	0	0		W			
765	762.5	14.0								764.5	12.0
			2	2	2	4	SS-17A	W		**ALLUVIAL** GRAY LOOSE TO MED. DENSE WET COARSE SAND (A-1-b)	
760										758.5	18.0
755										Boring Terminated BY AUGER REFUSAL at Elevation 758.5 ft ON CRYSTALLINE ROCK	
750											
745											
740											
735											
730											
725											
720											
715											
710											
705											
700											

NCDOT GEOTECHNICAL ENGINEERING UNIT
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SHEET

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B3	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 821.1 ft	TOTAL DEPTH 3.0 ft	NORTHING 755,575	EASTING 1,450,831 — 24 HR. NM
DRILL MACHINE N/A	DRILL METHOD Hand Auger		HAMMER TYPE N/A
START DATE 05/08/08	COMP. DATE 05/08/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	825									821.1 GROUND SURFACE	0.0
820							S-265	D		**RESIDUAL** RED-BROWN STIFF MED. PLASTIC (PI=16) SILTY SANDY CLAY (A-7-6)	
										818.1	3.0
815										Boring Terminated at Elevation 818.1 ft IN STIFF SILTY SANDY CLAY	
810											
805											
800											
795											
790											
785											
780											
775											
770											
765											
760											
755											
750											
745											

NCDOT BORE SINGLE I-3819A_GEO_BH_RDWY_IREDELL_I40&I77.GPJ NC_DOT.GDT 09/25/09

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BORELOG REPORT

SHEET 240

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B4	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 805.7 ft	TOTAL DEPTH 3.0 ft	NORTHING 755,611	EASTING 1,450,533 — 24 HR. NM
DRILL MACHINE N/A	DRILL METHOD Hand Auger		HAMMER TYPE N/A
START DATE 05/08/08	COMP. DATE 05/08/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	810									805.7 GROUND SURFACE	0.0
805							S-266	D		**RESIDUAL** RED-BROWN STIFF DRY SILTY SANDY CLAY (A-6)	
										802.7	3.0
800										Boring Terminated at Elevation 802.7 ft IN STIFF SILTY SANDY CLAY	
795											
790											
785											
780											
775											
770											
765											
760											
755											
750											
745											
740											
735											
730											

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SHEET

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B5	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. 1.0
COLLAR ELEV. 798.9 ft	TOTAL DEPTH 10.8 ft	NORTHING 755,618	EASTING 1,449,534 — 24 HR. 1.0
DRILL MACHINE CME-550X	DRILL METHOD H.S. Augers		HAMMER TYPE Automatic
START DATE 03/19/08	COMP. DATE 03/19/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	800										
	798.9	0.0								798.9 GROUND SURFACE	0.0
			2	1	2	3	SS-100	W		**ALLUVIAL** BROWN SOFT WET MED. PLASTIC (PI=17) SILTY SANDY CLAY (A-6)	
795	794.6	4.3									
			1	1	1	2		W		791.9	7.0
790	789.6	9.3								**RESIDUAL** BROWN-TAN-WHITE VERY LOOSE WET MICA. SILTY SAND (A-2-5)	
			1	1	1	2	SS-101	W		788.1	10.8
										Boring Terminated at Elevation 788.1 ft IN VERY LOOSE SILTY SAND	
785											
780											
775											
770											
765											
760											
755											
750											
745											
740											
735											
730											
725											
720											

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SHEET 241

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B6	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 797.3 ft	TOTAL DEPTH 11.0 ft	NORTHING 755,623	EASTING 1,449,505 — 24 HR. 1.0
DRILL MACHINE CME-550X	DRILL METHOD H.S. Augers		HAMMER TYPE Automatic
START DATE 08/02/05	COMP. DATE 08/02/05	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	800										
	797.3	0.0								797.3 GROUND SURFACE	0.0
			1	1	1	2	SS-13A	M		**ALLUVIAL** BROWN SOFT MOIST MED. PLASTIC (PI=17) SILTY SANDY CLAY (A-6)	
795	792.8	4.5								794.3	3.0
			1	0	0	0	SS-14A	Sat.		**ALLUVIAL** BROWN VERY LOOSE SATURATED SILTY CLAYEY SAND (A-2-6)	
790	787.8	9.5								789.8	7.5
			2	2	2	4	SS-15A	W		**RESIDUAL** BROWN-TAN-GRAY-WHITE LOOSE WET SILTY SAND (A-2-4)	
785										786.3	11.0
										Boring Terminated at Elevation 786.3 ft IN LOOSE SILTY SAND	
780											
775											
770											
765											
760											
755											
750											
745											
740											
735											
730											
725											
720											

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BORELOG REPORT

SHEET

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B7	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 809.8 ft	TOTAL DEPTH 3.0 ft	NORTHING 755,704	EASTING 1,449,248 — 24 HR. NM
DRILL MACHINE N/A	DRILL METHOD Hand Auger		HAMMER TYPE N/A
START DATE 05/08/08	COMP. DATE 05/08/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	810									809.8 GROUND SURFACE	0.0
							S-264	D		**RESIDUAL** RED-BROWN STIFF DRY HIGH PLASTIC (PI=31) SILTY SANDY CLAY (A-7-5) 806.8	3.0
805										Boring Terminated at Elevation 806.8 ft IN STIFF SILTY SANDY CLAY	
800											
795											
790											
785											
780											
775											
770											
765											
760											
755											
750											
745											
740											
735											
730											

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SHEET 242

PROJECT NO. 34192.1.2	ID. I-3819A	COUNTY IREDELL	GEOLOGIST Todd, R. W.
SITE DESCRIPTION I-40/I-77 INTERCHANGE			GROUND WTR (ft)
BORING NO. B8	STATION N/A	OFFSET N/A	ALIGNMENT N/A — 0 HR. NM
COLLAR ELEV. 839.1 ft	TOTAL DEPTH 4.0 ft	NORTHING 755,994	EASTING 1,448,845 — 24 HR. NM
DRILL MACHINE N/A	DRILL METHOD Hand Auger		HAMMER TYPE N/A
START DATE 05/08/08	COMP. DATE 05/08/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	840									839.1 GROUND SURFACE	0.0
							S-262	D		**RESIDUAL** RED-BROWN STIFF DRY HIGH PLASTIC (PI=27) SANDY CLAY (A-7-6) 837.1	2.0
835							S-263	D		**RESIDUAL** BROWN MED. DENSE DRY MICA SAND (A-2-5) 835.1	4.0
										Boring Terminated at Elevation 835.1 ft IN MED. DENSE DRY SAND	
830											
825											
820											
815											
810											
805											
800											
795											
790											
785											
780											
775											
770											
765											
760											

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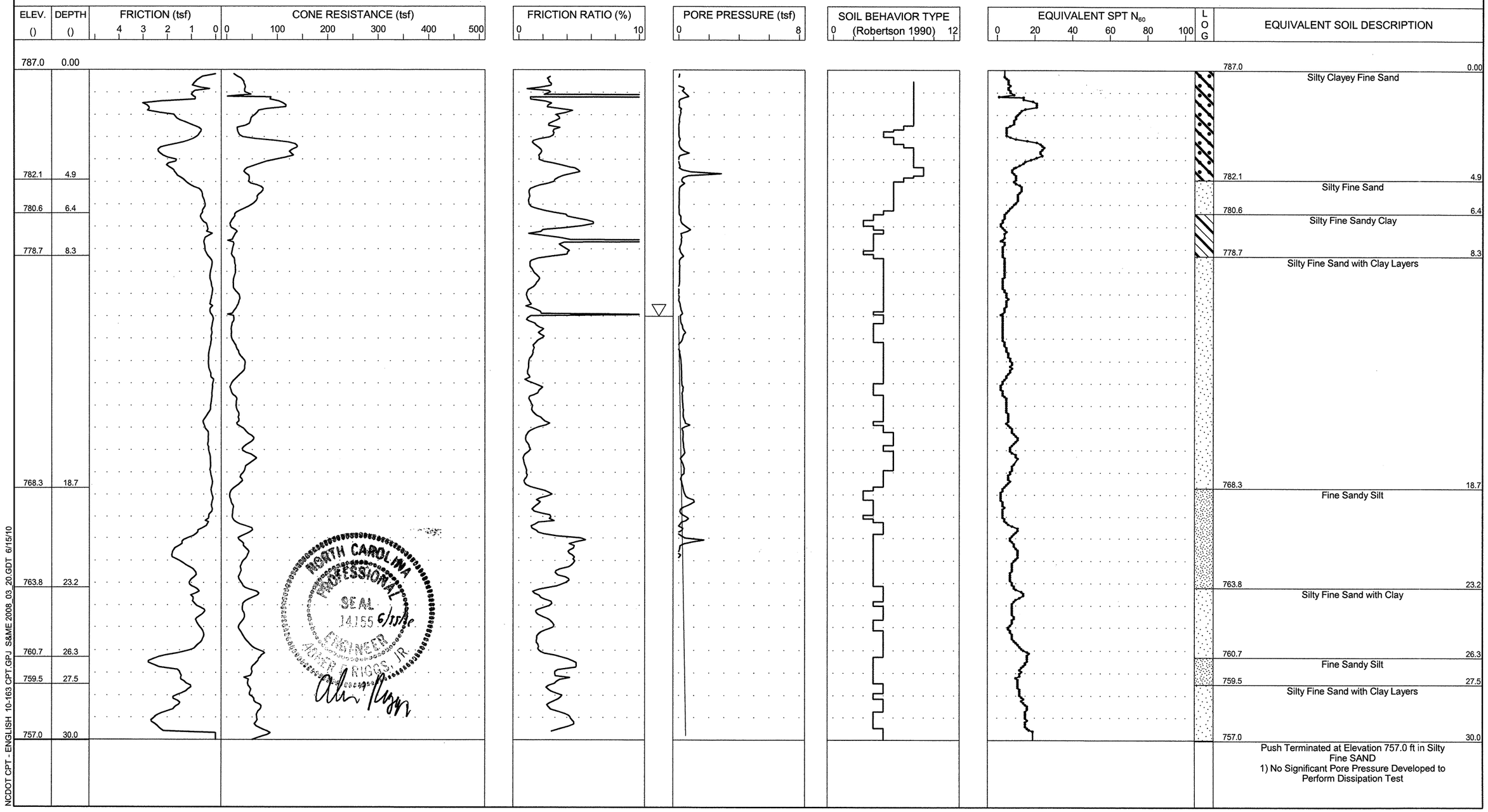
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 30.0	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 1	**BORING LOCATION** 91+51	**OFFSET** 155.0 RT	**ALIGNMENT** -L-	**0 HR.** 11.0	**DATE STARTED** 6/2/2010	**COMPLETED** 6/2/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 787.0	**NORTHING** 753,979.0	**EASTING** 1,444,355.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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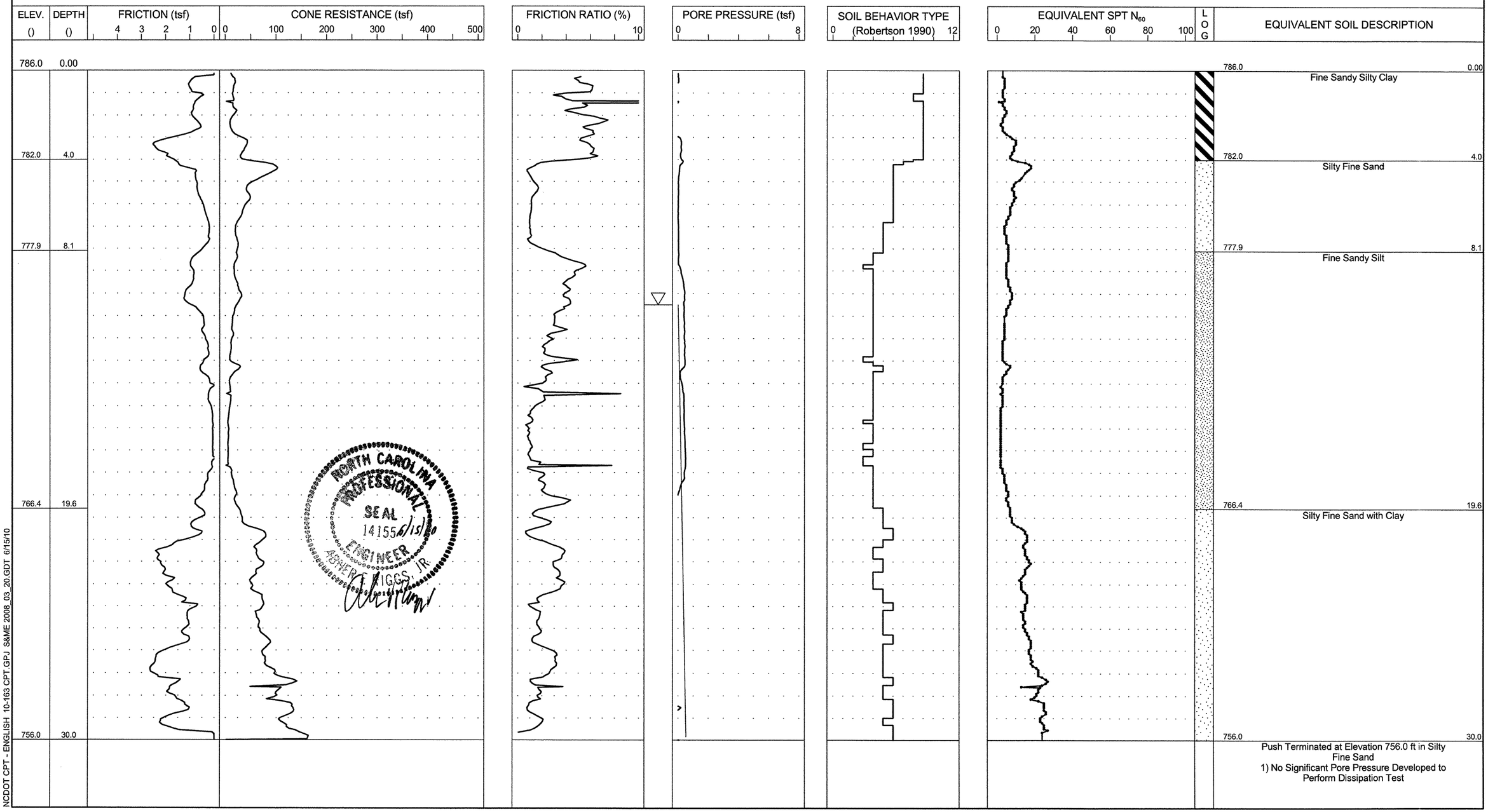
SHEET 1 OF 1

PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 30.0	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 2	**BORING LOCATION** 93+99	**OFFSET** 127.0 RT	**ALIGNMENT** -L-	**0 HR.** 10.5	**DATE STARTED** 6/2/2010	**COMPLETED** 6/2/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 786.0	**NORTHING** 754,048.0	**EASTING** 1,444,595.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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BORING LOG

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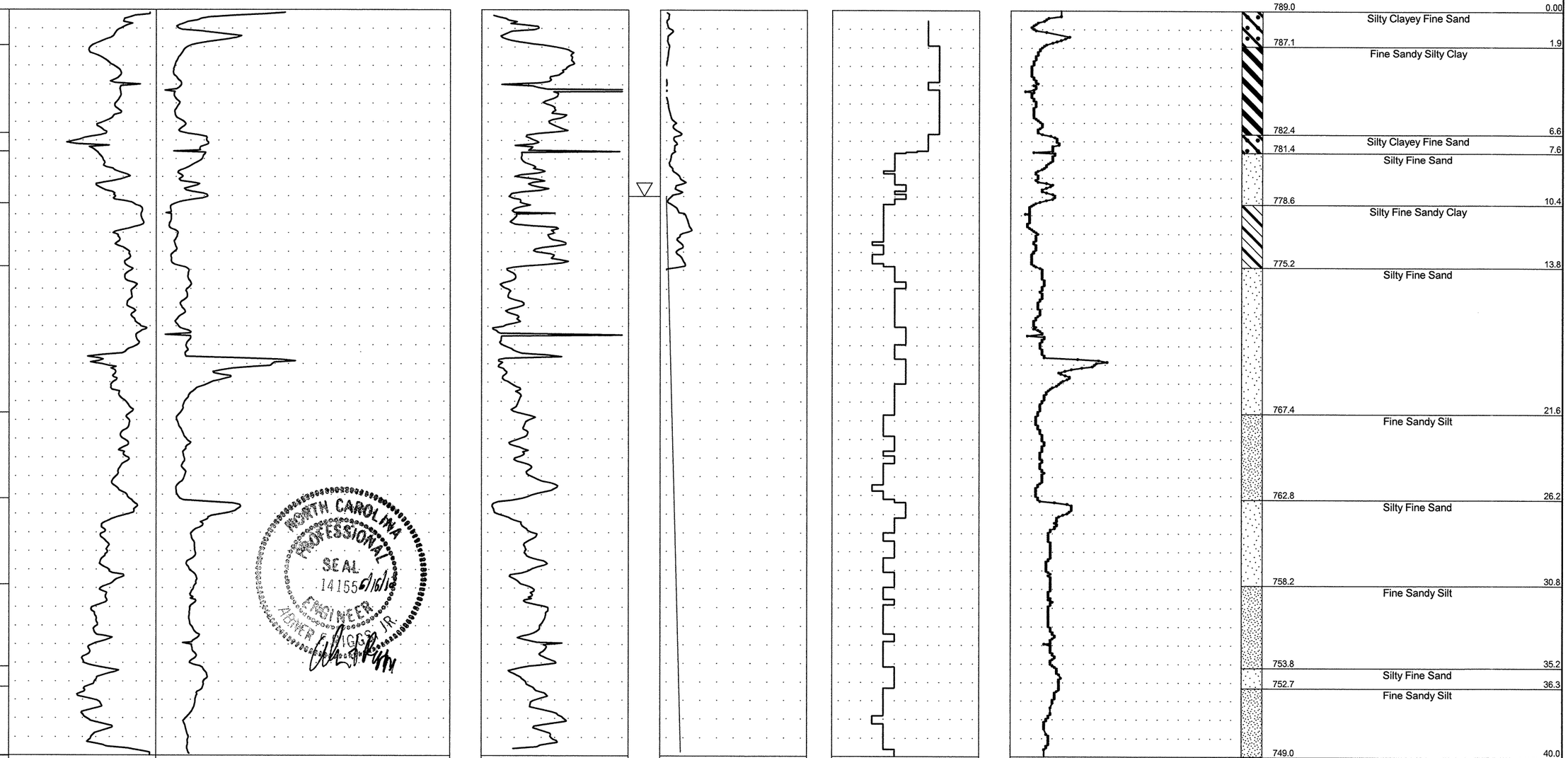
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 40.0	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push / **HAMMER TYPE** N/A
BORING NO. B- 3	**BORING LOCATION** 96+15	**OFFSET** 85.0 RT / **ALIGNMENT** -L-	**0 HR.** 10.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 789.0	**NORTHING** 754,126.0	**EASTING** 1,444,800.0	**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



EQUIVALENT SOIL DESCRIPTION	
789.0	0.00
Silty Clayey Fine Sand	
787.1	1.9
Fine Sandy Silty Clay	
782.4	6.6
Silty Clayey Fine Sand	
781.4	7.6
Silty Fine Sand	
778.6	10.4
Silty Fine Sandy Clay	
775.2	13.8
Silty Fine Sand	
767.4	21.6
Fine Sandy Silt	
762.8	26.2
Silty Fine Sand	
758.2	30.8
Fine Sandy Silt	
753.8	35.2
Silty Fine Sand	
752.7	36.3
Fine Sandy Silt	
749.0	40.0

Push Terminated at Elevation 749.0 ft in Fine Sandy Silt
1) No Significant Pore Pressure Developed to Perform Dissipation Test

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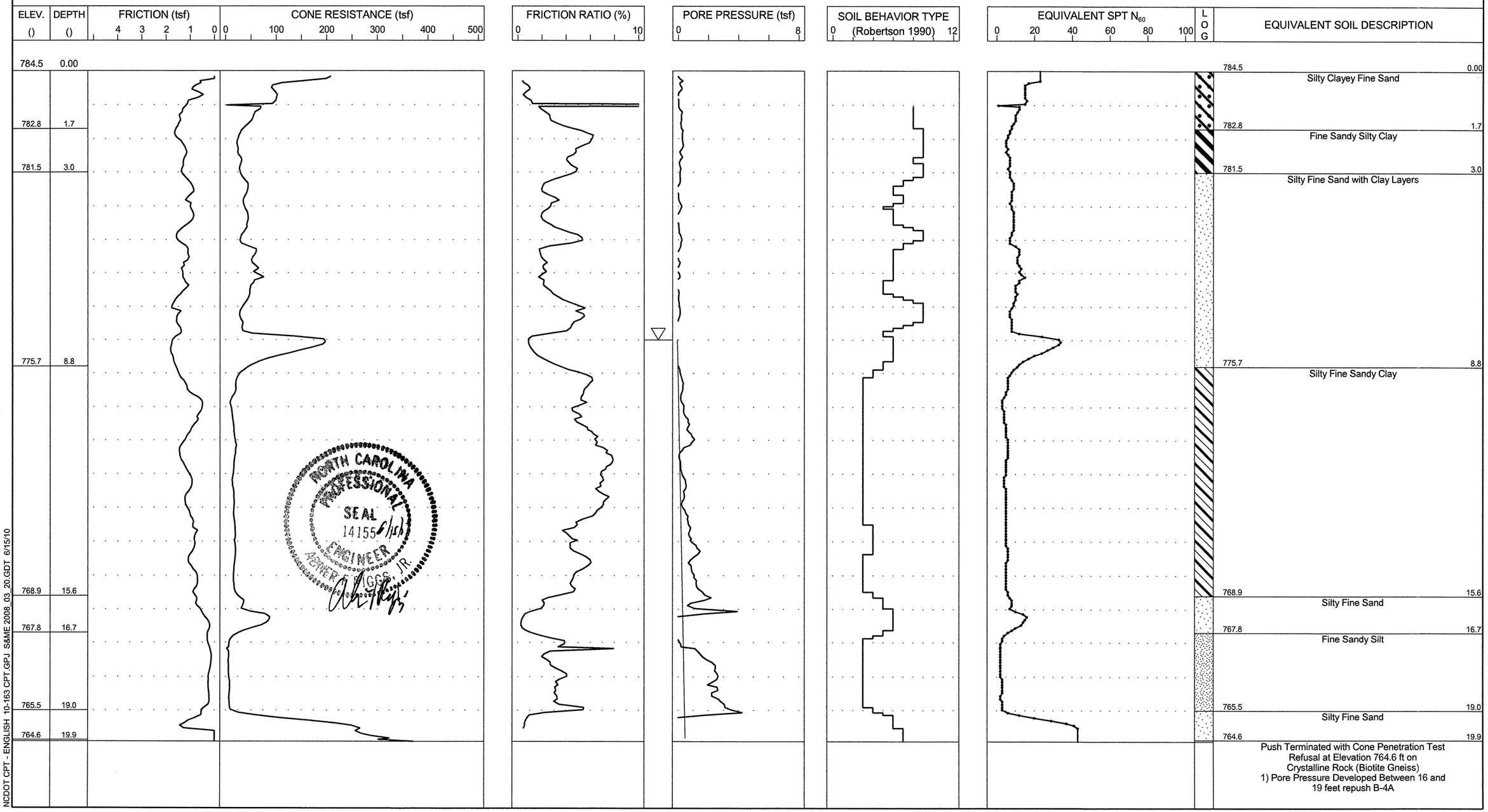
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 19.9	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 4	**BORING LOCATION** 99+50	**OFFSET** 95.0 RT	**ALIGNMENT** -L-	**0 HR.** 8.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 784.5	**NORTHING** 754,183.0	**EASTING** 1,445,130.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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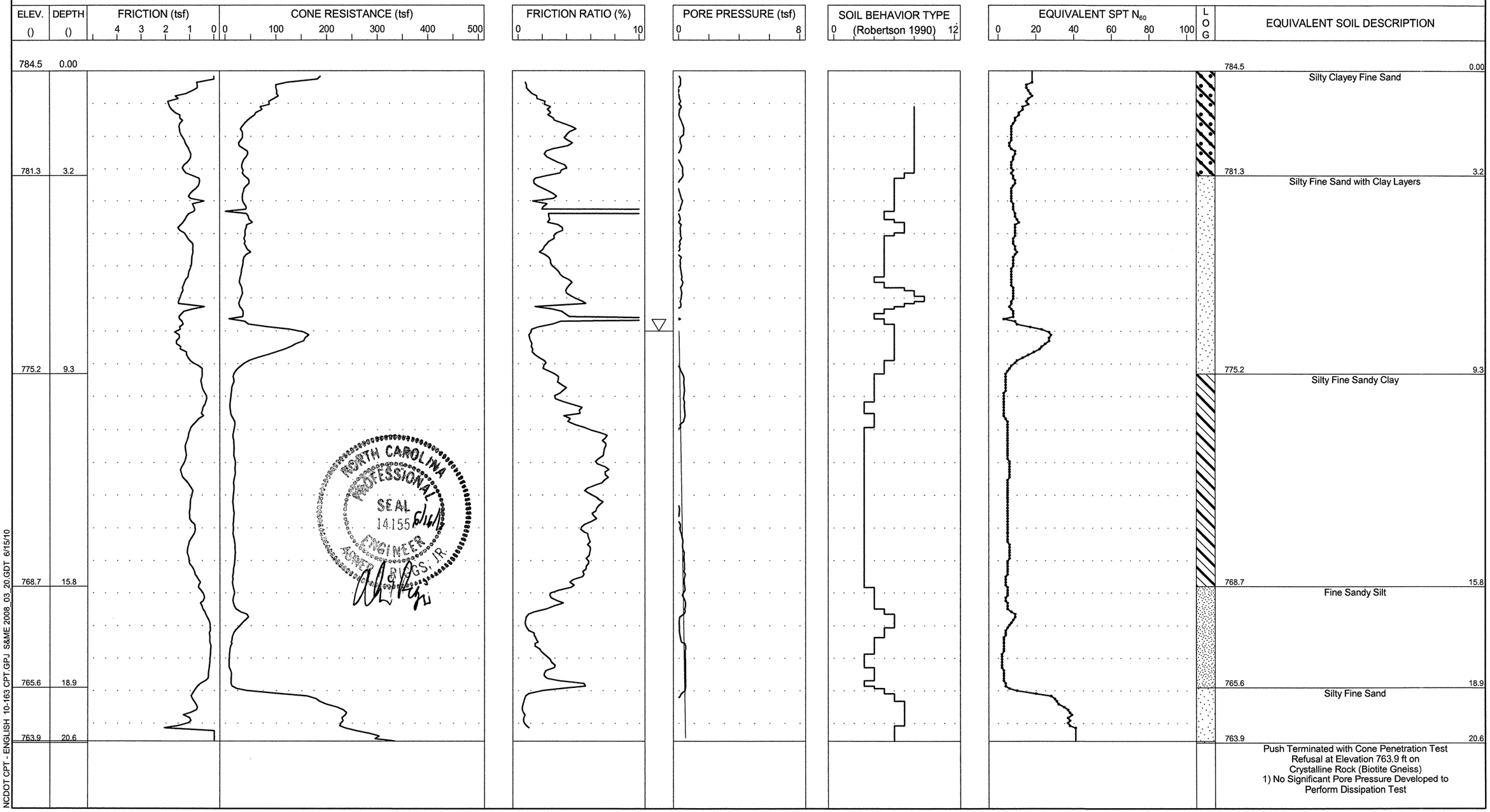
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 20.6	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 4A	**BORING LOCATION** 99+50	**OFFSET** 95.0 RT	**ALIGNMENT** -L-	**0 HR.** 8.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 784.5	**NORTHING** 754,183.0	**EASTING** 1,445,130.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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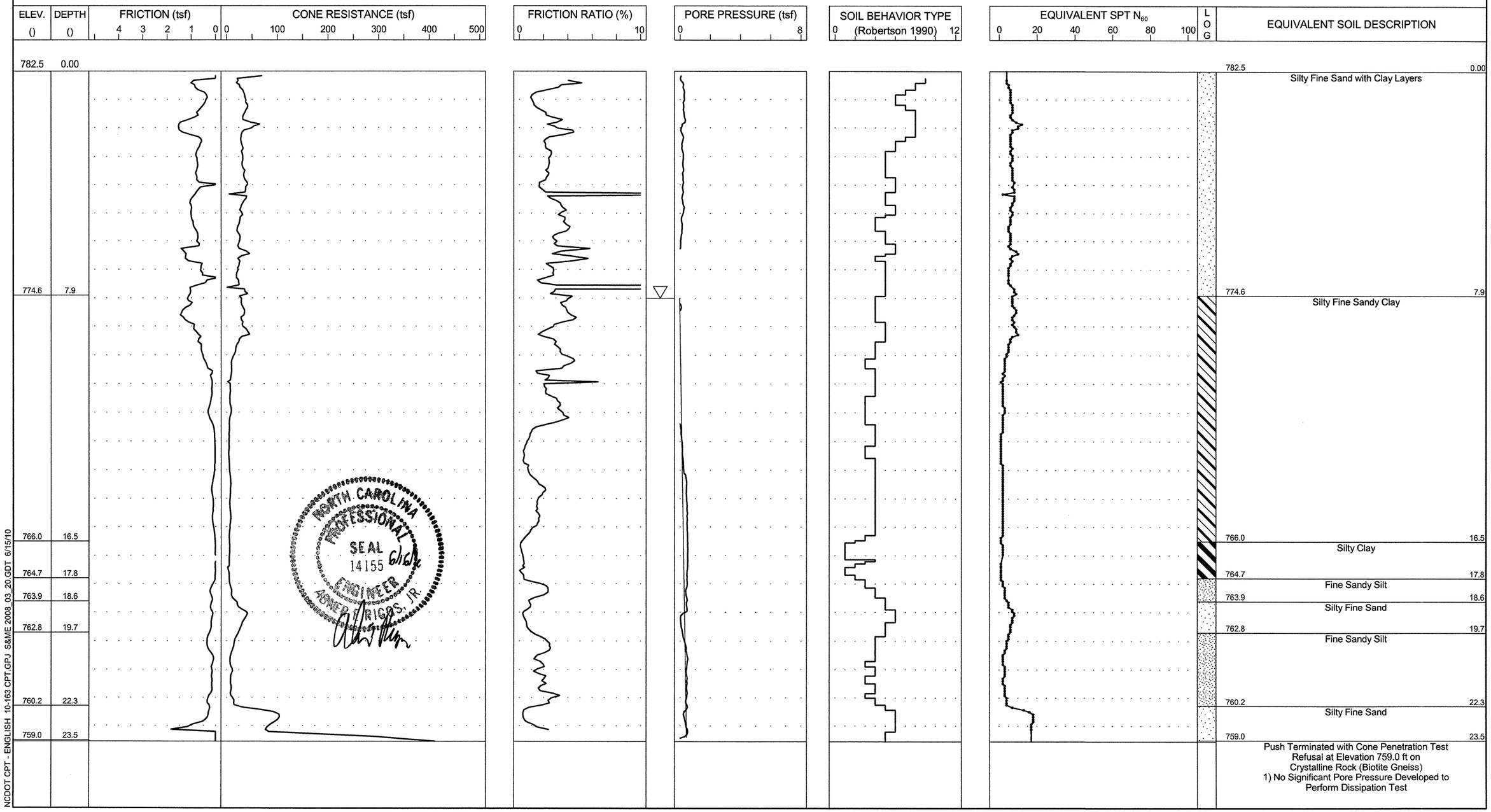
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 23.5	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 5	**BORING LOCATION** 101+50	**OFFSET** 95.0 RT	**ALIGNMENT** -L-	**0 HR.** 8.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 782.5	**NORTHING** 754,207.0	**EASTING** 1,445,329.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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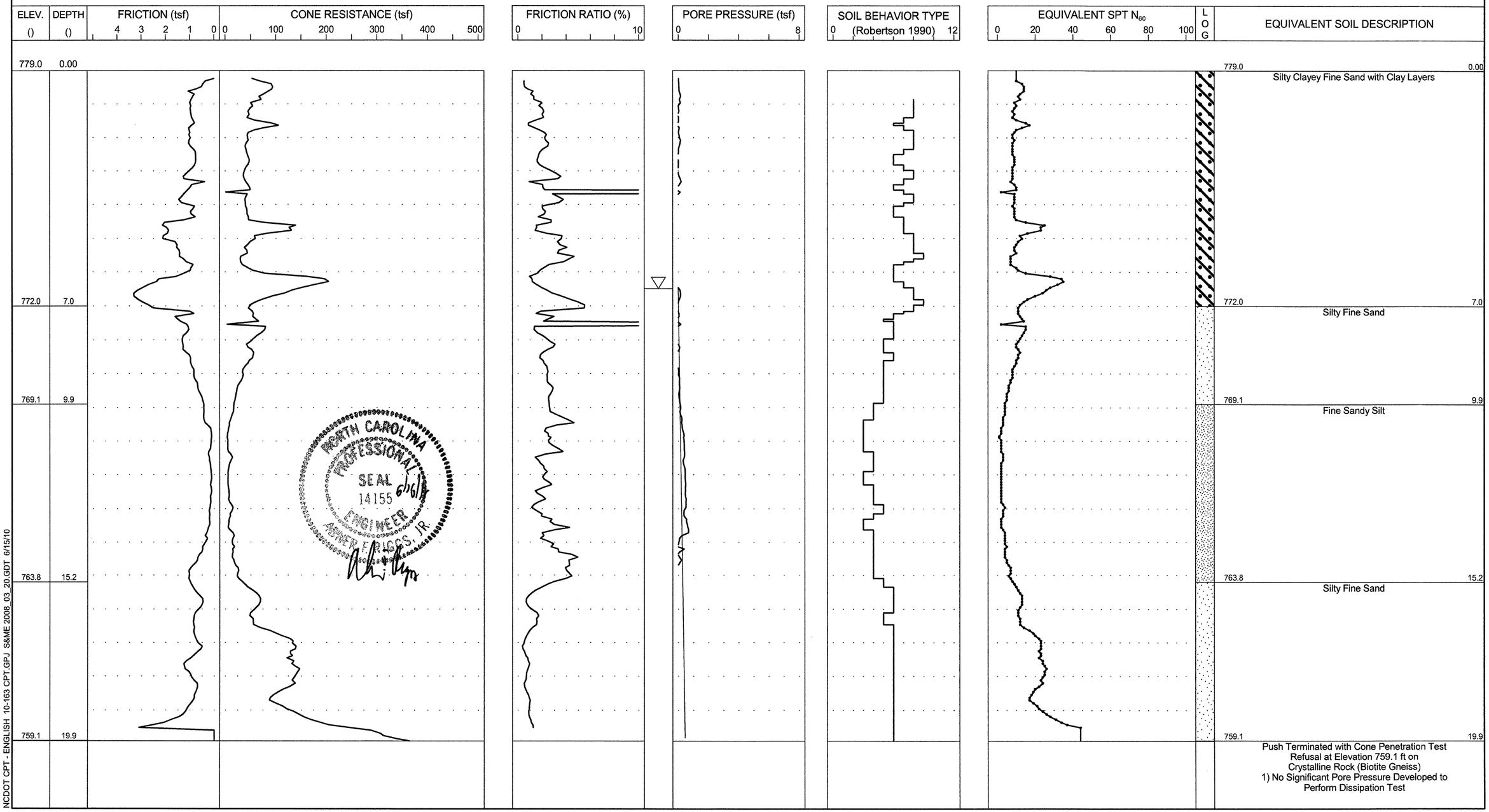
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 19.9	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 6	**BORING LOCATION** 103+00	**OFFSET** 83.0 RT	**ALIGNMENT** -L-	**0 HR.** 6.5	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 779.0	**NORTHING** 754,244.0	**EASTING** 1,445,475.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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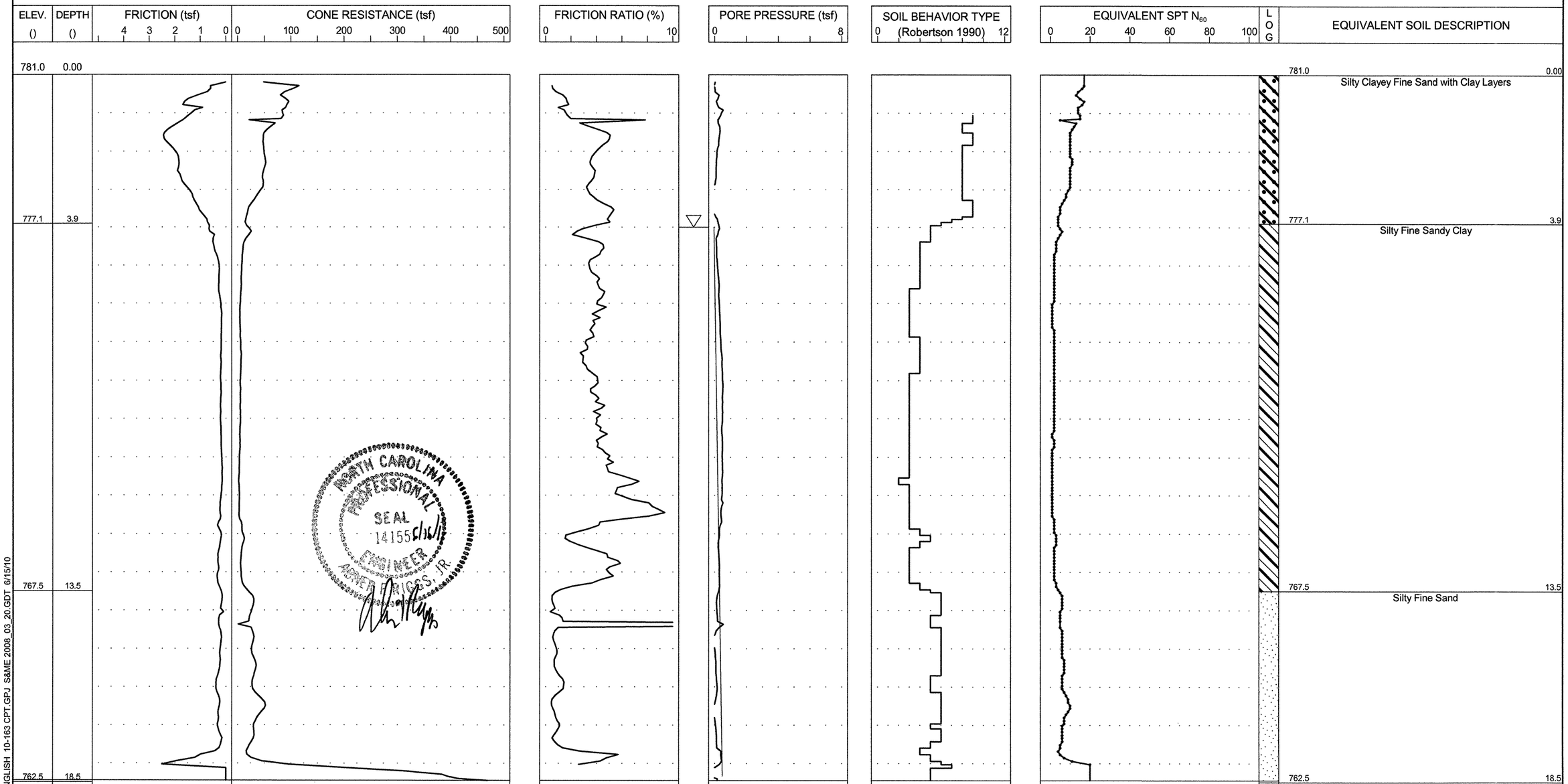
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 18.5	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 7	**BORING LOCATION** 104+50	**OFFSET** 55.0 RT	**ALIGNMENT** -L-	**0 HR.** 4.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 781.0	**NORTHING** 754,298.0	**EASTING** 1,445,618.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



NCDOT CPT - ENGLISH 10-163 CPT.GPJ S&ME 2008_03_20.GDT 6/15/10

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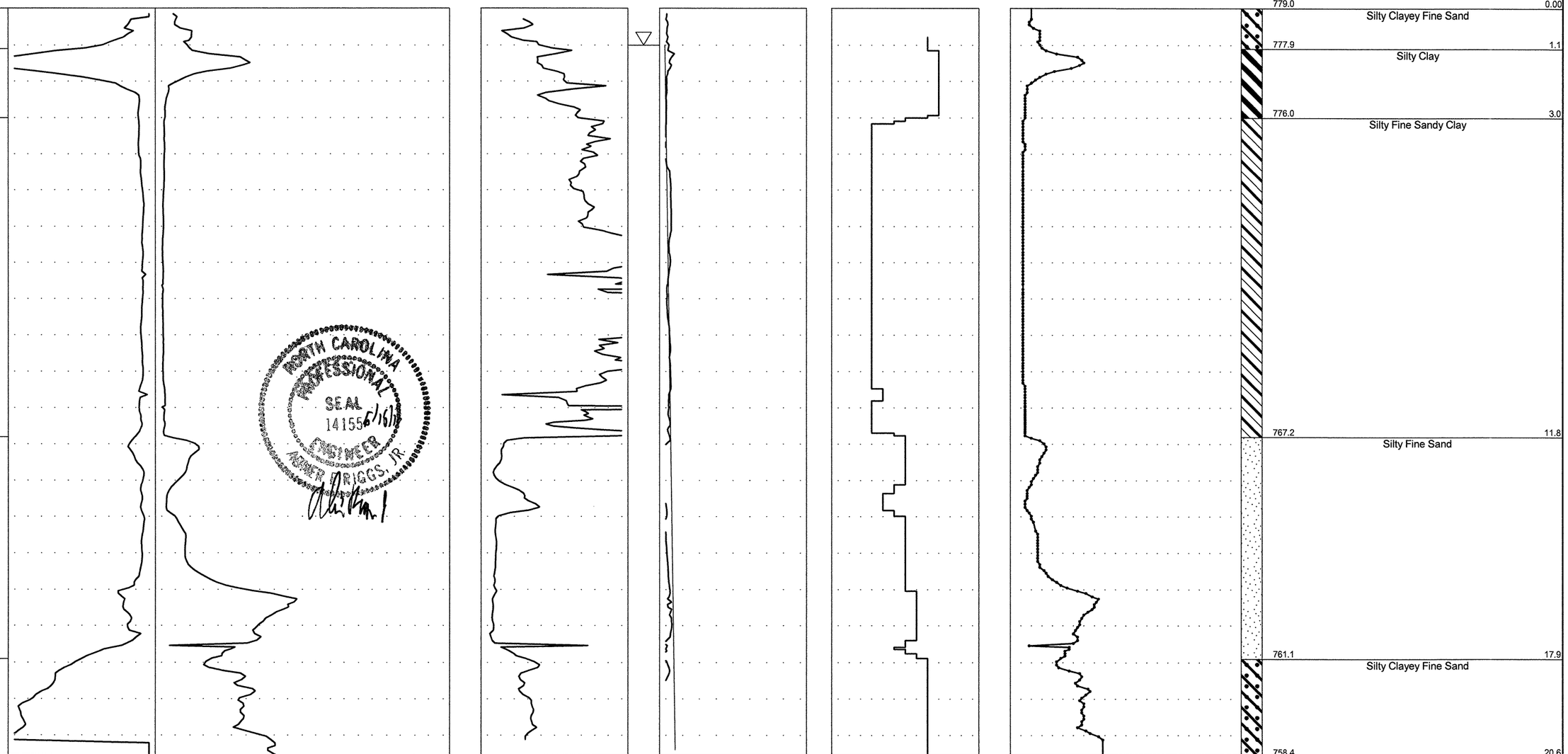
BORING LOG

SHEET 1 OF 1

PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 20.6	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 8	**BORING LOCATION** 106+50	**OFFSET** 124.0 RT / **ALIGNMENT** -L-	**0 HR.** 1.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A	
COLLAR ELEV. 779.0	**NORTHING** 754,264.0	**EASTING** 1,445,827.0	**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker		



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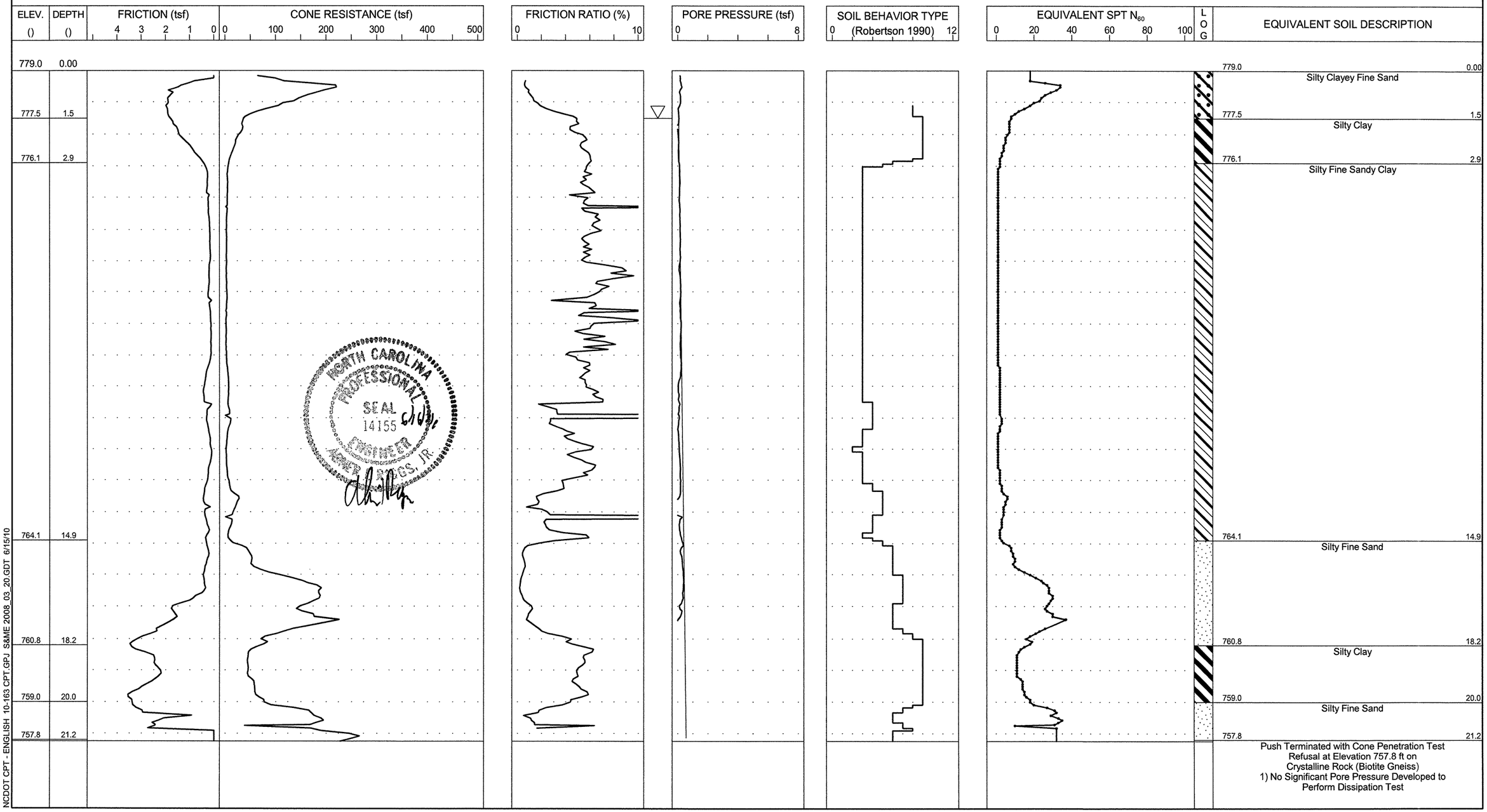
SHEET 1 OF 1

PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 21.2	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B- 9	**BORING LOCATION** 107+50	**OFFSET** 70.0 RT	**ALIGNMENT** -L-	**0 HR.** 1.5	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 779.0	**NORTHING** 754,334.0	**EASTING** 1,445,916.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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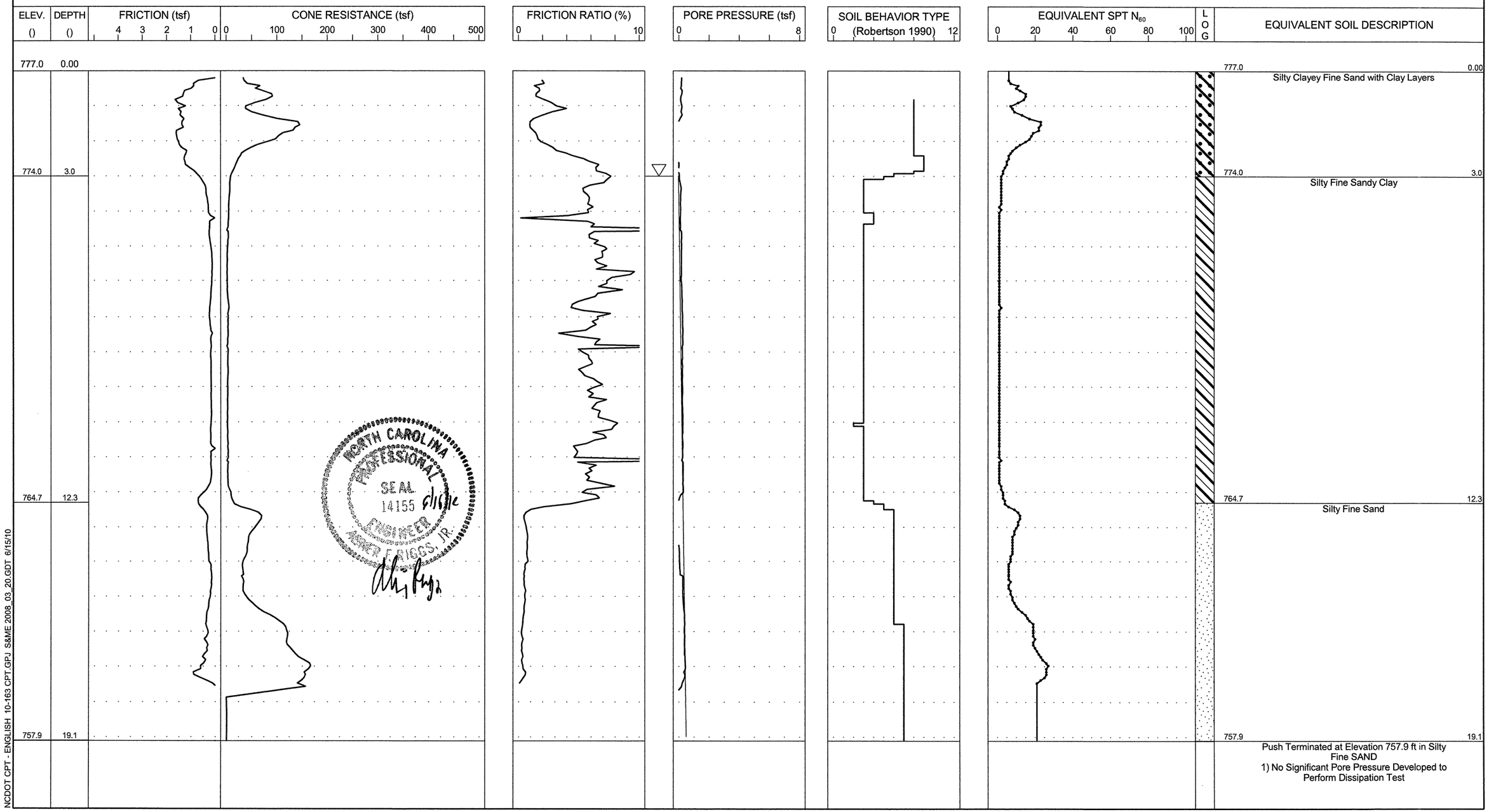
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 19.1	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B-10	**BORING LOCATION** 109+00	**OFFSET** 85.0 RT	**ALIGNMENT** -L-	**0 HR.** 3.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 777.0	**NORTHING** 754,345.0	**EASTING** 1,446,067.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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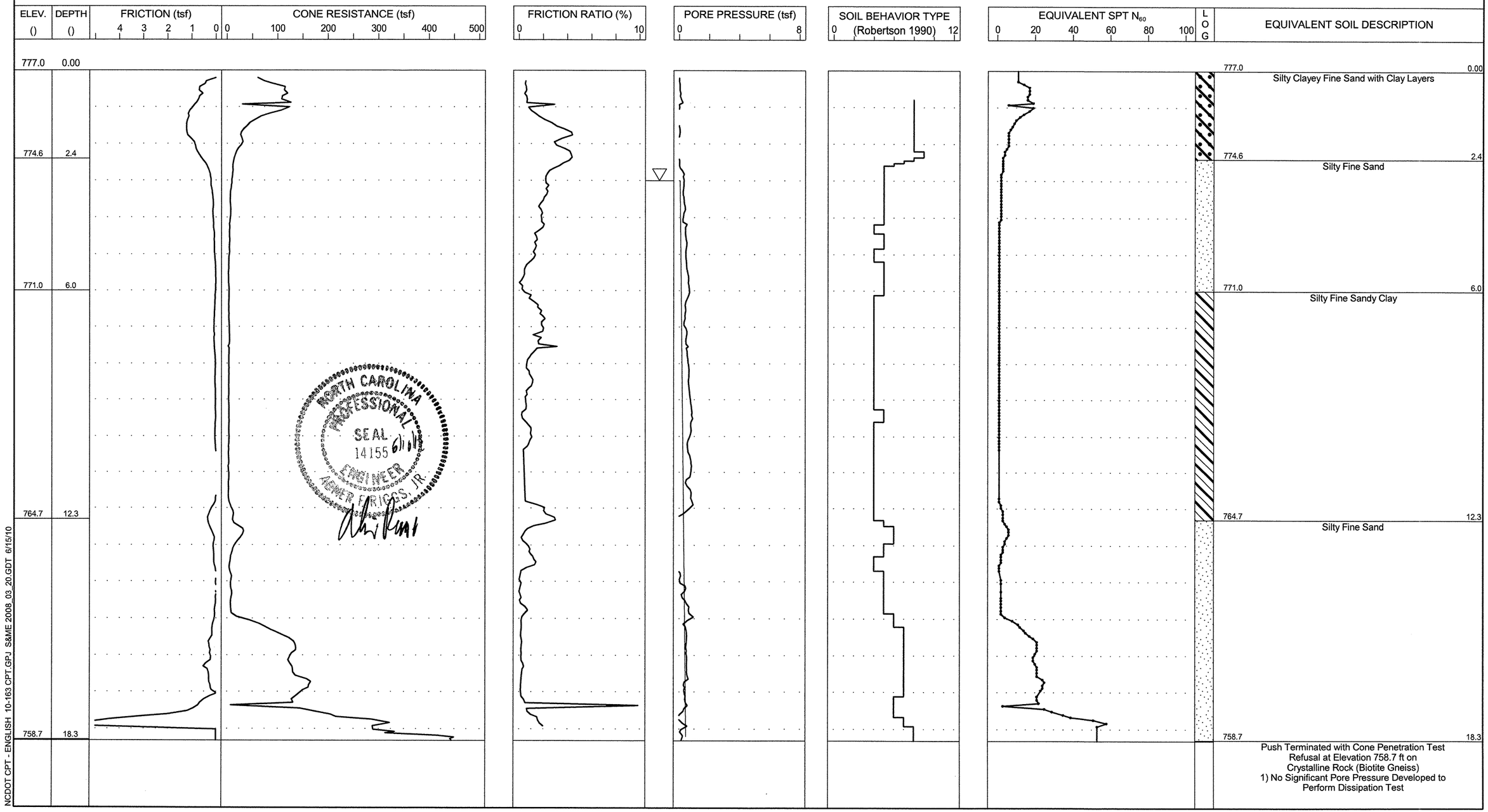
SHEET 1 OF 1

PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 18.3	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push / **HAMMER TYPE** N/A
BORING NO. B-11	**BORING LOCATION** 110+50	**OFFSET** 85.0 RT / **ALIGNMENT** -L-	**0 HR.** 3.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 777.0	**NORTHING** 754,370.0	**EASTING** 1,446,215.0	**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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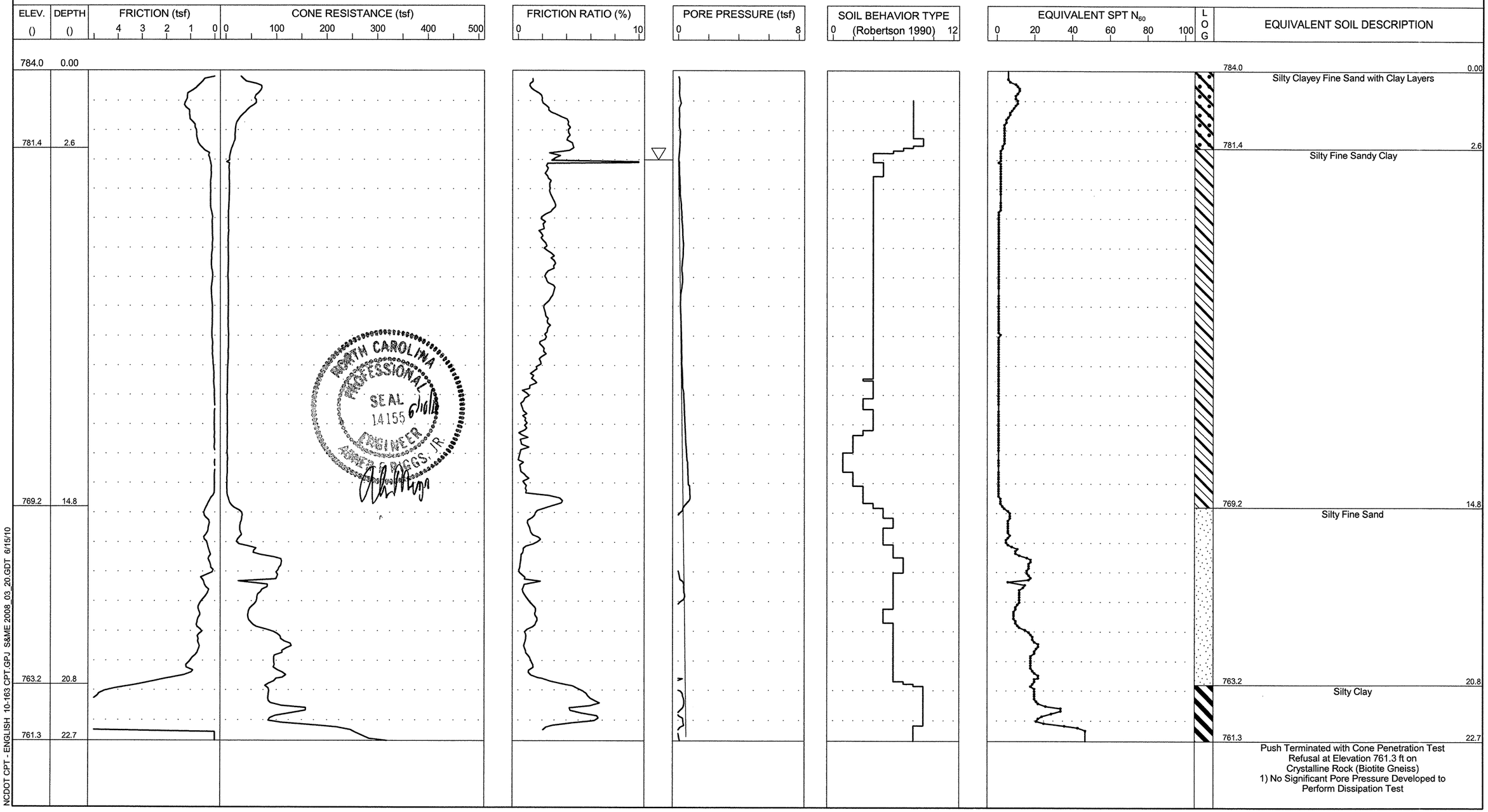
PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 22.7	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B-12	**BORING LOCATION** 112+00	**OFFSET** 45.0 RT	**ALIGNMENT** -L-	**0 HR.** 3.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 784.0	**NORTHING** 754,436.0	**EASTING** 1,446,356.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



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BORING LOG

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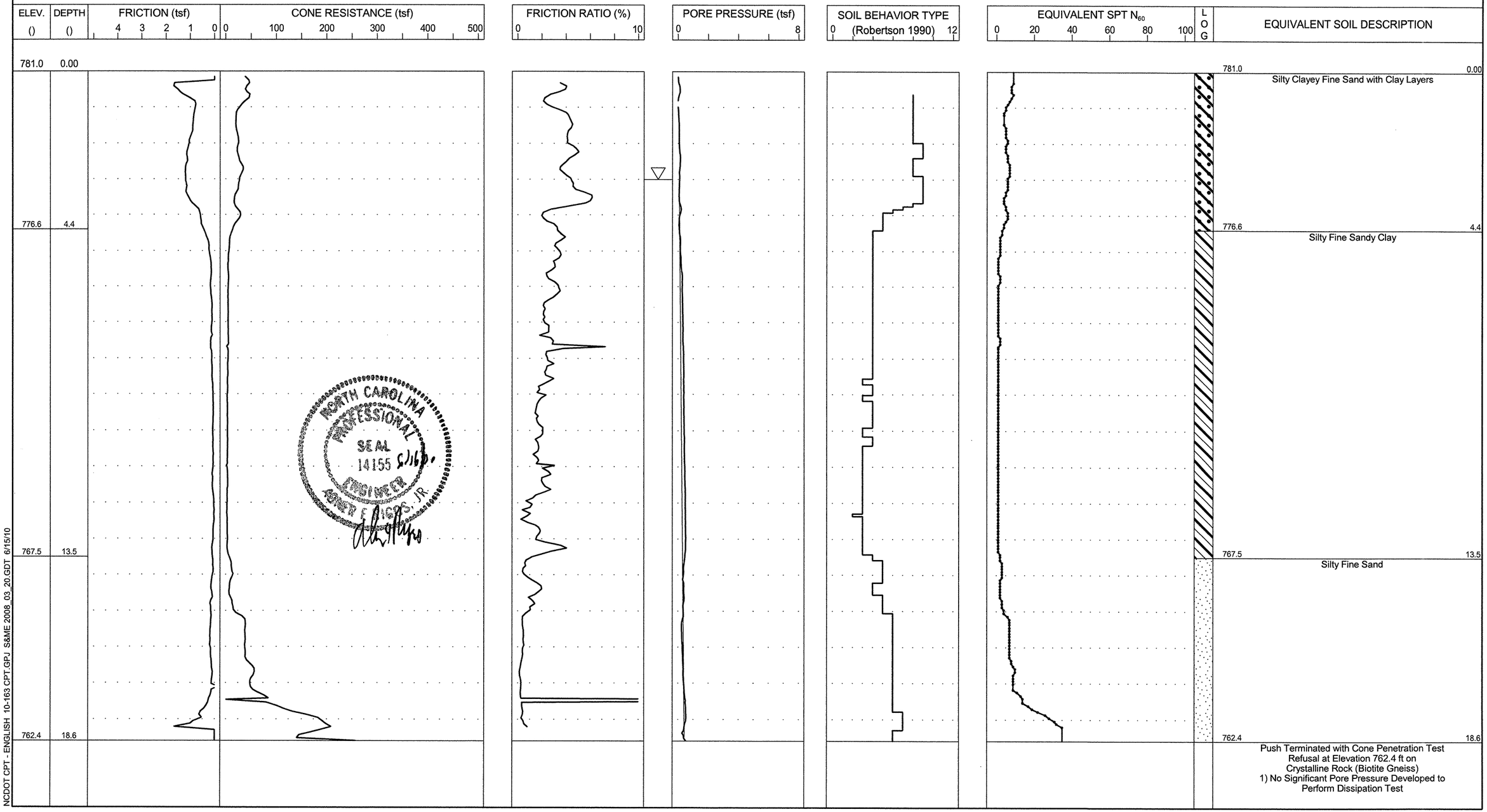
SHEET 1 OF 1

PROJECT NO. 34192.1.2	**ID.** I-3819A	**COUNTY** Iredell	**GEOLOGIST** B. Riggs	**TYPE OF CONE** 1.75 In. PEIZO CONE	**ROD TYPE** 1.75 in Dia.	**MAXIMUM DOWN PRESSURE** Approximately 920 tsf	
SITE DESCRIPTION I-40/I-77 Interchange Including I-40 from SR 2003 to SR 2158			**GROUND WATER ()**	**TOTAL DEPTH** 18.6	**DRILL MACHINE** CPT-ATV	**DRILL METHOD** Direct Push	**HAMMER TYPE** N/A
BORING NO. B-13	**BORING LOCATION** 113+50	**OFFSET** 80.0 RT	**ALIGNMENT** -L-	**0 HR.** 3.0	**DATE STARTED** 6/3/2010	**COMPLETED** 6/3/2010	**SURFACE WATER DEPTH** N/A
COLLAR ELEV. 781.0	**NORTHING** 754,430.0	**EASTING** 1,446,510.0		**24 HR.** N/M	**DRILLER:** M. Cox	**TECHNICIAN** J. Walker	



NCDOT CPT - ENGLISH 10-163 CPT.GPJ S&ME 2008_03_20.GDT 6/15/10

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34192.1.2	1	7

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34192.1.2 (I-3819A) F.A. PROJ. FSTR HPPIMS-40-2(141)152

COUNTY IREDELL

PROJECT DESCRIPTION I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 (RADIO ROAD) TO WEST OF SR 2158 (OLD MOCKSVILLE ROAD) & I-77 FROM SOUTH OF I-40 TO SOUTH OF SR 2171 (JANE SOWER ROAD) IN STATESVILLE

SITE DESCRIPTION NOISE WALL ALONG SOUTH SIDE OF I-40, FROM RADIO ROAD TO APPROXIMATELY 1500 FEET WEST OF RADIO ROAD.

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	BORING LOCATION PLAN
4-7	BORE LOGS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL

F. COX

D. RHODES

C. BALDWIN

INVESTIGATED BY AMEC E&I. Inc.

CHECKED BY B. DEOBALD

SUBMITTED BY M. LEAR

DATE JUNE 6th, 2012

NORTH CAROLINA GEOLOGICAL SOCIETY SEAL 1927 MICHAEL B. LEAR 6/6/2012

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

SEAL SIGNATURE

NC Engineering F-1253 NC Geology C-247

DRAWN BY: R. RAHIE

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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.

PROJECT: 34192.1.2

ID: I-3819A

PROJECT REFERENCE NO.	SHEET NO.
34192.1.2	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-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
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 / PLASTIC INDEX	6 MX		NP	40 MX / 10 MX	41 MN / 10 MX	40 MX / 11 MN	41 MN / 11 MN	40 MX / 10 MX	41 MN / 10 MX	40 MX / 11 MN	41 MN / 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
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/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >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
GRAIN SIZE 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		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR 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	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

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
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] 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 (RQD) - 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.

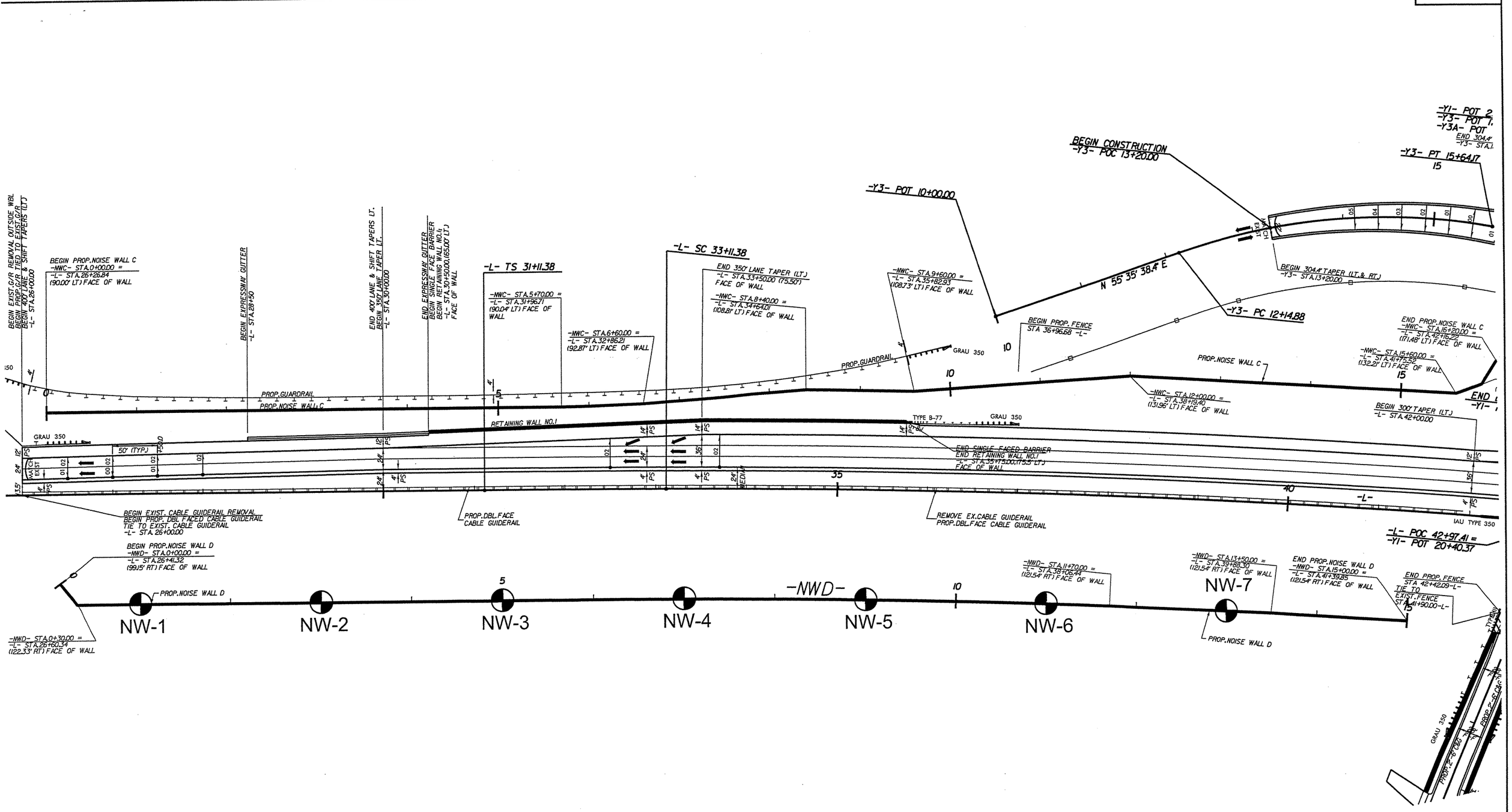
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: COLLAR ELEVATIONS DETERMINED FROM ELECTRONIC FILES BY NCDOT.
ELEVATION: FT.

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING
CI - CAVE IN

REVISED 09/23/09

SHEET: 3



0 50' 100' 200'

SCALE (FEET)
1" : 100'

NAD 83

BORING LOCATION PLAN
NOISE WALL ALONG SOUTH SIDE OF I-40, FROM
RADIO RD TO APPROX. 1500 FEET WEST OF RADIO RD
NCDOT PROJECT NO. 34192.1.2 (I-3819A)
F.A. No. FSTR HPPIMS-40-2(141)152
IREDELL COUNTY, NORTH CAROLINA

AMEC ENVIRONMENT AND INFRASTRUCTURE, INC.
DURHAM, NORTH CAROLINA

REVISIONS	DRAWN:	R.R.	DATE:	06/06/12
	DFT CHECK:	J.P.H.	JOB :	6468-12-1451
	ENG CHECK:	W.B.D.	DWG:	1

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-1	**STATION** 1+00	**OFFSET** CL	**ALIGNMENT** -NWD- — **0 HR.** Dry/CI=25.0
COLLAR ELEV. 871.9 ft	**TOTAL DEPTH** 25.2 ft	**NORTHING** 752,835	**EASTING** 1,438,057 — **24 HR.** Dry/CI=24.5
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
875											
	871.9	0.0								871.9 GROUND SURFACE	0.0
870			2	6	5	11		M		**RESIDUAL** Reddish brown, stiff, moist, fine sandy, silty CLAY (A-7-6) with mica	
	868.4	3.5	5	4	9	13		M			
865										864.9 Brown, stiff to medium stiff, moist, micaceous, fine sandy SILT (A-4); saprolitic	7.0
	863.4	8.5	4	4	4	8		M			
860											
	858.4	13.5	5	4	3	7		M			
855										853.9 Driller indicates harder drilling at 18.0 feet.	18.0
	853.4	18.5	60/0.1			60/0.1				**WEATHERED ROCK** BIOTITE GNEISS with seams of CRYSTALLINE ROCK: BIOTITE GNEISS	
850											
	848.4	23.5	60/0.1			60/0.1					
	846.8	25.1	60/0.1			60/0.1				846.8 Auger Refusal at 25.1 feet.	25.1
										846.7 **CRYSTALLINE ROCK** BIOTITE GNEISS	25.2
										Boring Terminated with Standard Penetration Test Refusal at Elevation 846.7 ft in Crystalline Rock: BIOTITE GNEISS	

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-2	**STATION** 3+00	**OFFSET** CL	**ALIGNMENT** -NWD- — **0 HR.** 24.0
COLLAR ELEV. 873.3 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 752,890	**EASTING** 1,438,249 — **24 HR.** Dry/CI=23.0
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
875											
	873.3	0.0								873.3 GROUND SURFACE	0.0
870			3	3	3	6		M		**RESIDUAL** Reddish brown, medium stiff, moist, silty CLAY (A-7-6) with trace fine sand and little mica	
	869.8	3.5	5	6	6	12		D		870.3 Reddish brown to gray, stiff to hard, dry, fine sandy SILT (A-4)	3.0
865											
	864.8	8.5	8	12	32	44		D			
860											
	859.8	13.5	8	25	12	37		D			
855										856.3 Brown, stiff to medium stiff, moist to wet, micaceous, fine sandy SILT (A-4)	17.0
	854.8	18.5	5	4	5	9		M			
850											
	849.8	23.5	3	4	5	9		W			
845											
	844.8	28.5	3	3	4	7		W		841.3 Brown, hard, moist, fine to coarse sandy SILT (A-4) with mica and gravel sized rock fragments	32.0
840											
	839.8	33.5	11	15	18	33		M		838.3 Boring Terminated at Elevation 838.3 ft in Residual: Hard, fine to coarse sandy SILT (A-4)	35.0

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-3	**STATION** 5+00	**OFFSET** CL	**ALIGNMENT** -NWD-	**0 HR.** Dry/CI=20.0
COLLAR ELEV. 878.6 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 752,946	**EASTING** 1,438,441	**24 HR.** Dry/CI=20.0
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
880											
	878.6	0.0								878.6 GROUND SURFACE	0.0
			2	3	2	5		M		**RESIDUAL** Dark reddish brown, medium stiff to stiff, moist, silty CLAY (A-7-6) with little to trace fine to coarse sand	
875	875.1	3.5									
			3	3	4	7		M			
870	870.1	8.5									
			4	5	6	11		M		866.6 Orangish brown, medium stiff to stiff, moist, SILT (A-4) with trace fine sand and mica; saprolitic	12.0
865	865.1	13.5									
			3	3	3	6		M			
860	860.1	18.5									
			2	3	3	6		M			
855	855.1	23.5									
			2	3	3	6		M			
850	850.1	28.5									
			2	4	4	8		M			
845	845.1	33.5									
			3	4	6	10		M		843.6 Boring Terminated at Elevation 843.6 ft in Residual: Stiff, SILT (A-4)	35.0

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-4	**STATION** 7+00	**OFFSET** CL	**ALIGNMENT** -NWD-	**0 HR.** 28.0
COLLAR ELEV. 881.0 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 753,001	**EASTING** 1,438,633	**24 HR.** Dry/CI=28.0
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
885											
	881.0	0.0								881.0 GROUND SURFACE	0.0
880			4	4	5	9		M		**RESIDUAL** Dark reddish brown, stiff, moist, silty CLAY (A-7-6)	
	877.5	3.5									
			3	3	6	9		M			
875											
	872.5	8.5									
			5	6	7	13		M		869.0 Orangish brown and brown, medium stiff to stiff, moist to wet, clayey, fine sandy SILT (A-4) with trace mica, coarse sand, and gravel sized rock fragments; saprolitic	12.0
870											
	867.5	13.5									
			4	4	5	9		M			
865											
	862.5	18.5									
			2	3	2	5		M			
860											
	857.5	23.5									
			4	5	6	11		M			
855											
	852.5	28.5									
			2	1	3	4		W			
850											
	847.5	33.5									
			4	4	6	10		W		846.0 Boring Terminated at Elevation 846.0 ft in Residual: Stiff, SILT (A-4)	35.0

NCDOT BORE DOUBLE I3819A_GEO_SWAL_I-40 NOISE WALL D.GPJ NC_DOT.GDT 6/6/12

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-5	**STATION** 9+00	**OFFSET** CL	**ALIGNMENT** -NWD-
COLLAR ELEV. 884.6 ft	**TOTAL DEPTH** 40.0 ft	**NORTHING** 753,053	**EASTING** 1,438,826
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. 29.0; 24 HR. 28.0

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
885										
	884.6	0.0	2	1	2	3		M		884.6 GROUND SURFACE 0.0 — RESIDUAL: Dark reddish brown to orangish brown, soft to very stiff, moist, silty CLAY (A-7-6); saprolitic
880	881.1	3.5	2	3	4	7		M		
875	876.1	8.5	7	8	9	17		M		
870	871.1	13.5	6	8	10	18		M		
865	866.1	18.5	3	3	2	5		M		862.6 22.0 — Orangish brown to brown, stiff to very stiff, moist to saturated, clayey SILT (A-4) with trace fine sand and mica; saprolitic
860	861.1	23.5	5	5	5	10		M		
855	856.1	28.5	7	6	7	13		Sat.		
850	851.1	33.5	8	7	8	15		Sat.		
845	846.1	38.5	3	5	7	12		Sat.		844.6 40.0 — Boring Terminated at Elevation 844.6 ft in Residual: Stiff, SILT (A-4)

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-6	**STATION** 11+00	**OFFSET** CL	**ALIGNMENT** -NWD-
COLLAR ELEV. 894.4 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 753,102	**EASTING** 1,439,020
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/30/12	**COMP. DATE** 05/30/12	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR.Dry/Cl=30.0; 24 HR.Dry/Cl=30.0

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
895										
	894.4	0.0	3	4	5	9		M		894.4 GROUND SURFACE 0.0 — RESIDUAL: Dark reddish brown, stiff, moist, silty CLAY (A-7-6)
890	890.9	3.5	6	7	8	15		M		887.4 7.0 — Orangish brown to brown, stiff, moist, fine sandy SILT (A-4) with mica; saprolitic
885	885.9	8.5	5	4	5	9		M		
880	880.9	13.5	4	4	8	12		M		
875	875.9	18.5	4	5	7	12		M		
870	870.9	23.5	3	5	7	12		M		
865	865.9	28.5	5	5	5	10		M		
860	860.9	33.5	3	4	4	8		M		859.4 35.0 — Boring Terminated at Elevation 859.4 ft in Residual: Stiff, fine sandy SILT (A-4)

ICDOT BORE DOUBLE I3819A_GEO_SWAL_I-40 NOISE WALL D.GPJ NC_DOT.GDT 6/6/12

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34192.1.2	**TIP** I-3819A	**COUNTY** IREDELL	**GEOLOGIST** C. Baldwin
SITE DESCRIPTION Noise wall D along south side of I-40, from Radio Rd. to approximately 1500 ft west of Radio Rd.			**GROUND WTR (ft)**
BORING NO. NW-7	**STATION** 13+00	**OFFSET** CL	**ALIGNMENT** -NWD-	**0 HR.** Dry/CI=31.0
COLLAR ELEV. 901.4 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 753,147	**EASTING** 1,439,215	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 3/01/11		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 05/31/12	**COMP. DATE** 05/31/12	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
905											
	901.4	0.0								901.4 GROUND SURFACE	0.0
900			4	6	5	11		M		**RESIDUAL** Reddish brown, stiff to very stiff, moist, silty CLAY (A-7-6) with mica	
	897.9	3.5	9	11	14	25		M			
895											
	892.9	8.5	7	8	9	17		M			
890											
	887.9	13.5	5	5	7	12		M			
885										884.4	17.0
	882.9	18.5	7	8	12	20		M		Reddish brown and black, stiff to very stiff, moist to wet, fine sandy SILT (A-4) with mica; saprolitic	
880											
	877.9	23.5	10	10	10	20		M			
875											
	872.9	28.5	3	3	5	8		W			
870											
	867.9	33.5	8	8	9	17		M		866.4	35.0
										Boring Terminated at Elevation 866.4 ft in Residual: Very stiff, fine sandy SILT (A-4)	

CDOT BORE DOUBLE I3819A_GEO_SWAL_I-40 NOISE WALL D.GPJ NC_DOT.GDT 6/6/12