CONTRACT: ID: R-2707C

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. *34497.1.2 (R-2707C)* F.A. PROJ. *NHF-74(14)*

COUNTY *CLEVELAND*

PROJECT DESCRIPTION *US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707C	1	277

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34497.1.4	NHF-74(14)	P.E.
		R/W & UTIL.

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

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PERSONNEL

R. W. TODD

J. P. ROGERS

M. L. SMITH

C. E. BURRIS

A. C. SMITH

INVESTIGATED BY *J. P. ROGERS*

CHECKED BY *C. B. LITTLE*

SUBMITTED BY *C. B. LITTLE*

DATE *NOVEMBER 2008*

NORTH CAROLINA LICENSED SEAL 11046 GEOLOGIST CLINTON B. LITTLE

DRAWN BY: *J. P. ROGERS & C.E. BURRIS*

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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 REFERENCE NO.	SHEET NO.
R-2707C	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, SETY 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 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
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	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL - LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL - PLASTIC LIMIT		
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, FELOSPAR, 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
- SOUNDING ROD
- SPT, CPT, OPT, DMT, VST, PMT - TEST BORING
- AUGER BORING
- CORE BORING
- MW - MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF - SPT REFUSAL

SAMPLE DESIGNATIONS

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

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [X] MOBILE B- 57
- [ ] 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
- [X] CASING [X] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

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

CORE SIZE:
- [ ] -B_____
- [X] -N Q
- [ ] -H_____

HAND TOOLS:
- [X] POST HOLE DIGGER
- [X] HAND AUGER
- [X] 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 FELOSPARS 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 FELOSPARS 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 FELOSPARS 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:

REVISED 02/23/06

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

November 20, 2008

STATE PROJECT:	34497.1.2 (R-2707C)
FEDERAL PROJECT:	NHF-74(14)
COUNTY:	Cleveland
DESCRIPTION	US 74 Shelby Bypass from West of NC 226 to East of NC 150
SUBJECT:	Geotechnical Report - Inventory

PROJECT DESCRIPTION

This project is located in south central Cleveland County, approximately six miles north of the city of Shelby. The –L- line is on new location for the entire project. Typical sections for the proposed -L- line call for a four-lane roadway with paved shoulders. Median width is 34'. There are three proposed interchanges that will connect the -L- alignment with existing NC 226, existing NC 18, and existing NC 150. A total of seven bridges are included in the scope of this project. Four of these bridges will be required for grade separations at -Y2-, -Y3-, -Y4-, and -Y9- over -L-. A dual structure water crossing is proposed at –L- line over the Broad River. The last two bridges will be required for railroad separation (-L- and -Y11- over -Y13-, CSX RR). The -L- alignment runs generally west to east. The following alignments were investigated:

Line	Station(s)
-L-	351+75.00 to 635+00.00 (5.38 miles)
Ramp A (RP A1) at NC 226	0+00.00 to 21+11.85 (0.40 miles)
Ramp D (RP D1)at NC 226	0+00.00 to 23+72.31 (0.45 miles)
Loop A (LP A1) at NC 226	0+00.00 to 11+20.63 (0.21 miles)
Loop D (LP D1) at NC 226	0+00.00 to 11+72.36 (0.22 miles)
Ramp A (RP A2) at NC 18	0+00.00 to 20+93.98 (0.40 miles)
Ramp B (RP B2) at NC 18	0+00.00 to 19+96.30 (0.38 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

2 3A

Ramp C (RP C2) at NC 18	0+00 to 16+26.54 (0.31 miles)
Ramp D (RP D2) at NC 18	0+00 to 16+16.61 (0.31 miles)
Loop B (LP B2) at NC 18	0+00 to 12+88.76 (0.24 miles)
Ramp A (RP A3) at NC 150	0+00 to 13+93.46 (0.26 miles)
Ramp B (RP B3) at NC 150	0+00 to 14+14.00 (0.27 miles)
Ramp C (RP C3) at NC 150	0+00 to 13+94.92 (0. 26 miles)
Loop C (LP C3) at NC 150	0+00 to 8+66.03 (0. 16 miles)
-Y1-	11+90.00 to 42+40.00 (0.58 miles)
-Y2-	23+85.00 to 33+25.00 (0.18 miles)
-Y3-	17+90.00 to 25+54.02 (0.14 miles)
-Y4-	15+02.00 to 34+76.31 (0.37 miles)
-Y8-	10+32.02 to 36+00.00 (0.49 miles)
-Y9-	10+70.00 to 36+00.00 (0.48 miles)
-Y11-	26+00.00 to 69+75.00 (0.83 miles)
-Y14-	22+00.00 to 49+00.00 (0.51 miles)
-Y15-	17+65.30 to 26+96.37 (0.18 miles)
-Y17- at SR 1	10+20.47 to 38+40.15 (0.53 miles)

The total length of lines investigated is 13.54 miles.

The initial field investigation was conducted between October 2005 and April 2006. Borings were conducted with a CME-550 drill machine with an automatic hammer. Standard Penetration Tests were conducted at selected locations utilizing hollow stem augers and additional borings were advanced with 6" continuous flight augers. 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.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Crystalline Rock: There is a considerable amount of hard rock on the project. Rock was encountered above or within 10' of the proposed grade at the following locations:

Line	Station(s)
-L-	355+00 to 358+00
-L-	360+50 to 362+50
-L-	377+00 to 379+00
-L-	388+00 to 402+50
-L-	412+50 to 413+00
-L-	417+00 to 421+50
-L-	423+00 to 424+00
-L-	428+50 to 438+50
-L-	439+50 to 446+50
-L-	447+50 to 450+00
-Loop A1-	1+50 to 4+50
-Ramp A1-	14+00 to 16+00
-Loop D1-	0+25 to 2+75

The rock lines depicted on the attached cross-sections and profiles are interpolated between borings and based primarily on 8" hollow stem auger and 6" standard auger refusal. Four core borings were performed in the rock cut encountered between Stations 388+00 to 402+50 –L-. The Mica Gneiss encountered in those borings had RQD's between 21% and 100%. These borings also confirmed what the Geologic map of North Carolina had indicated would be present in the area.
In addition, there are zones of weathered rock and/or layers with alternating very hard residual soils and weathered rock that occur above the depicted rock lines. According to the Geologic map of North Carolina and our core borings, the most likely rock type within the project corridor is Biotite/Mica Gneiss metamorphic rock (CZms & CZbg). These rocks are likely to become more schistose on the western end of the project near NC 226. The rock is described on the cross-sections and profiles as *Hard Crystalline Rock – Biotite/Mica Gneiss.* As stated previously, the hardness was determined on 8" hollow stem auger refusal, 6" standard auger refusal, and core borings. In addition, the pull down pressure on the feed cylinders on the CME-550 was observed to be 800 - 1000 psi in the areas of Hollow Stem/Standard Auger refusal.

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

Station 365+65 to 366+35 –L-, Left; Alluvial soils present in this location are associated with a topographical low area that- serves as a drainage feature for the surrounding pasture. The deposit is approximately eight feet thick and contains very soft to medium stiff sandy silt (A-4) and very loose coarse sand (A-1-b). At the time of our investigation, groundwater was not encountered in the two borings performed in this area.

Station 382+90 to 386+05 -L-; The alluvial deposits in this segment are associated with the Broad River Floodplain. A dual four-lane structure has been proposed for this water crossing. No borings were performed in this interval during our Roadway investigation. These alluvial soils will be addressed in detail during the subsequent structure investigation.

Station 503+20 to 509+00 –L-, Left; Alluvial soils present in this location are associated with a small stream that intersects the -Y5- alignment near Station 17+00. The stream continues in an easterly direction running parallel to the -L- line at an offset of 50' - 120'. The deposit is eight to 10' thick and contains primarily very loose to loose, silty, coarse and fine sand (A-2-4). At the time of our investigation, groundwater was encountered in this area between elevations 840' and 845'.

Station 538+15 to 539+15 -L- and 6+70 to 7+40 -Ramp D2-; Alluvial soils present in this location are associated with a small stream that drains the area north of existing Carter Road. The stream moves in a southerly direction while bisecting the proposed -L- line and -Ramp D2-. The deposit is six to seven feet thick and contains medium stiff sandy silt (A-4), loose to medium dense silty sand (A-2-4), and soft sandy clay (A-6). At the time of our investigation, groundwater was encountered in this area between elevation 875' and 890'.

A 3B

563+90 to 566+20 -L-; This pond is formed by an earthen dam located right of -L- centerline and fed by surface drainage from the northeast. It is also possible that a spring located outside the construction limits could be feeding the pond as well. Please refer to plan sheet 21 of the attached inventory plans for a graphical depiction of this area. The residual soils encountered in the immediate area around the pond consist of moderate to highly plastic, medium stiff to stiff sandy clays (A-7). No alluvial soils were encountered around the pond. Based on the residual soils immediately adjacent to the pond, we estimate up to three feet of wet plastic soils in the bottom of the pond.

Wells: Wells were encountered within 100' of the project corridor at the following locations:

Line	Station(s)	Offset
-L-	584+00	155' Rt.
-L-	584+75	115 Lt.
-L-	599+70	120 Rt.
-L-	608+90	55' Lt.

Plastic Clays: Highly Plastic clays (P1.≥ 26) were encountered with six feet of proposed grade at the following locations:

Line	Station(s)	P.I.
-L-	559+50 to 561+00	38
-L-	569+00 to 573+40	36
-L-	459+25 to 460+75	31-39
-L-	497+50 to 501+00	29-35
-L-	582+30 to 583+40	33
-Y4-	21+50 to 25+50	27
-RPB2-	15+35 to 17+35	34
-Y8REV-	10+75 to 14+15	31
-Y8REV-	18+50 to 26+10	26-43
-RPA3-	7+20 to 8+55	30
-RPC3-	11+50 to 14+00	36
-LPC3-	6+00 to 8+66	36
-Y11REV-	49+15 to-50+50	30

Highly Plastic cap clays (PI. ≥ 26) were encountered in the following cut sections:

Line	Station(s)	P.I.
-LPA1-	5+50,60' Lt.	29
-RPA1-	7+50 to 9+00	26
-L-	396+50 to 401+50	29
-L-	418+00 to 420+00	39
-L-	525+00 to 532+00	35
-L-	468+25 to 469+50	28
-L-	479+25 to 480+30	26
-L-	483+50 to 487+25	40

PHYSIOLOGRAPHY AND GEOLOGY

The project is located in the southwestern piedmont region of North Carolina. The terrain is rolling hills and steep valleys with generally narrow floodplains at stream crossings. Elevation relief (from highest point to lowest point) within the entire project corridor is approximately 245'. The majority of the project is open land but there are areas where homes and businesses will be affected. .Most of the wooded areas encountered in our investigation had not been logged. The entire project is within the southwestern 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/Mica 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 sandy silts (A-4, A-5). In areas where rock above grade was encountered, the clays tended to be cap clays extending up to 10' below the ground surface. It is in these areas of hard rock that the predominant soil is silty sand (A-2-4) with alternating zones of dense residual soil and weathered rock. A large majority of the residual silty sands encountered on this project were observed to be micaceous.

CULVERTS

Station 453+03 -L-

The proposed structure is a 2 @ 7' x 7" RCBC, Overall length = 3247. Five test borings were conducted in the vicinity of the proposed structure. The floor elevation, moving left to right, varies from 768.40' to 772.30'. The borings indicate that sandy residual soils are present near the proposed floor elevation. Weathered rock was encountered between elevation 761 '-766' in the three closest borings to the structure. Floodplain soils in the area consist of clayey and silty sands approximately ten feet or less in thickness.

Station 553+29 -L-

The proposed structure is a 2 @ 8' x 7' RCBC, Overall length = 330'. Two borings conducted in the vicinity indicate the top of residual soil between elevation 861 '- 866'. The proposed culvert has an inlet elevation = 864.8' and an outlet elevation = 861.0'. Three to nine feet of alluvial silts were present across this location. The culvert will be founded primarily on residual soil consisting of soft -to medium stiff sandy silt and very loose silty sand. We estimate very soft to soft alluvial silts extending down to elevation 860.50' at Station 553+50 -L-, 55' Lt. Neither weathered nor hard rock was encountered at this location.

Groundwater: Groundwater can occur at or very near the ground surface in floodplain areas. Groundwater will also be present in some of the cut sections. The profiles and cross-sections in the areas of rock above grade could be misleading because most of the auger borings did not penetrate deep enough to reach proposed grade. We anticipate that groundwater could occur above proposed grade in the following intervals:

6 of 36

Line	Station(s)
-L-	358+00 to 361+00
-L-	421+50 to 422+50
-L-	467+50 to 471+00
-L-	481+00 to 485+00
-L-	525+00 to 531+00
-Ramp A1-	1+00 to 8+00
-Loop Al-	4+00 to 8+00

Artificial Fill/Roadway Fill:

Station 613+ 15 to 616+75 —L-: This interval falls within the proposed interchange of alignment -L- and NC 150 at the easternmost portion of the project. The artificial fill soils encountered in this segment are approximately three to 11' thick and consist primarily of stiff to very stiff sandy clay (A-7, A-6). Please refer to Plan Sheet 25 of the attached Inventory Plans to view the extent of these soils left and right of centerline -L-. All other soils encountered in the immediate vicinity of these fill materials were residual clays. In addition, this area is currently being used by the NCDOT as a place to stockpile soil for use in road building activities. Due to the extremely dynamic nature of the materials that are either being taken out or brought in, none of the stockpiles we observered at the time of our investigation were mapped.

Due to the presence of utilities and high traffic volumes, none of the existing roadway fill soils along any of the proposed alignments were investigated by drilling. However, visual reconnaissance of side slopes and existing pavement was performed. No problems were observed with the existing roadway soils except for some minor erosion on the steeper side slopes.

Ponds: Three ponds were encountered within the project corridor at the following locations:

439+00 –L-, 160' right. This pond is approximately 60' south of the slope stake line at this location. The drainage outlet for this pond bisects the -L- line at Station 438+90 –L-. Alluvial soils associated with this drainage path are estimated to be five feet thick. Based on the rock line in the two cuts adjacent to this stream, we estimate that hard rock will be encountered below the stream between elevation 780' and 785'.

503+50 -L-, 100' right. At the time of our investigation, this pond had been drained. The water feeding into the pond appears to be coming primarily from surface drainage. It is also possible that a spring located outside the construction limits could be feeding the pond as well. Three to 11' of alluvial materials were encountered at the edge of the pond and downstream of the outlet, respectively. These materials consist of very loose silty sands (A-2-4) and very soft silt clays (A-7). Please refer to the attached profiles and cross-sections for a detailed, graphical depiction of this area.

Respectfully submitted,

JP Rogers

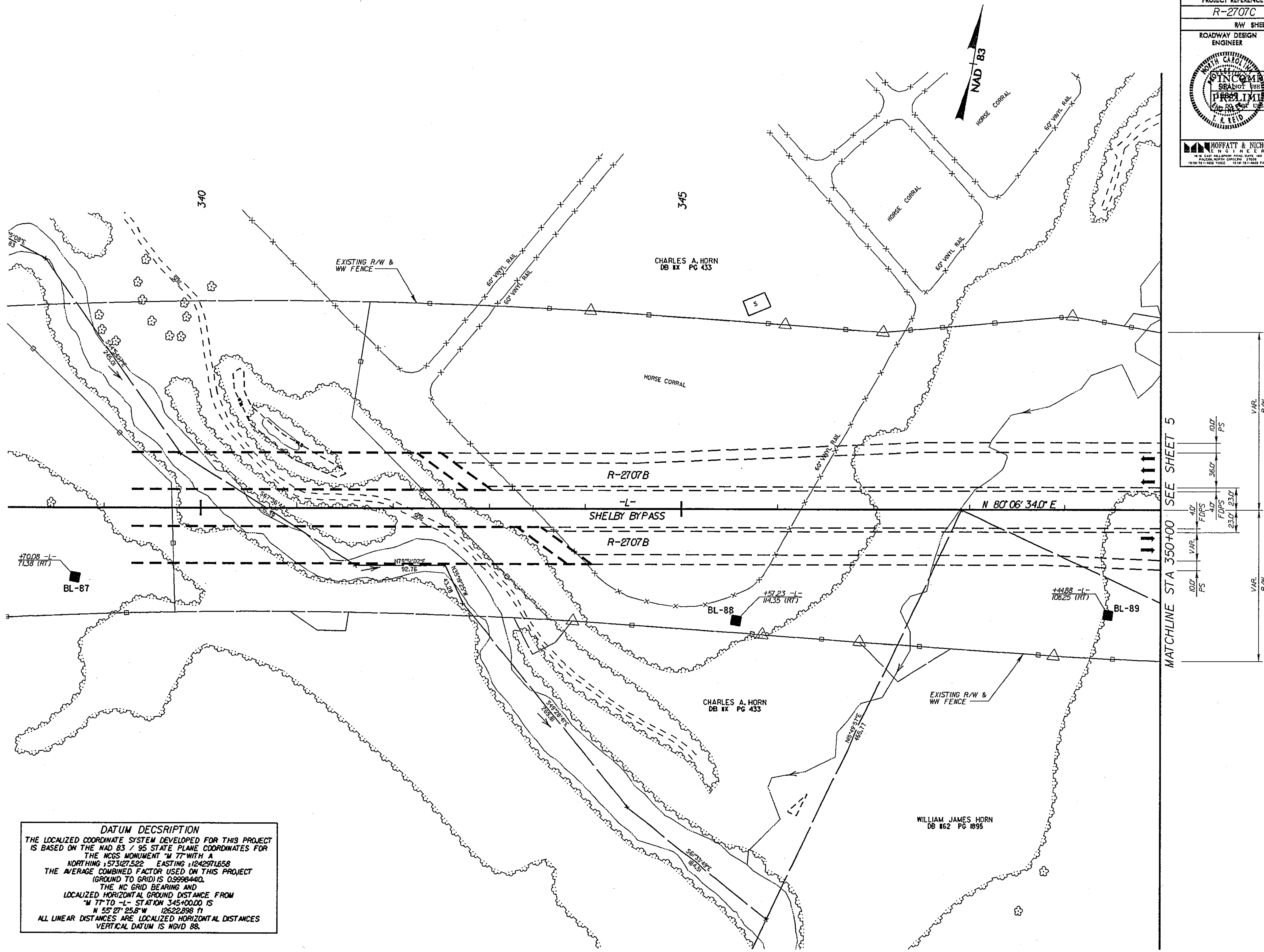
John P. Rogers
Project Geological Engineer

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

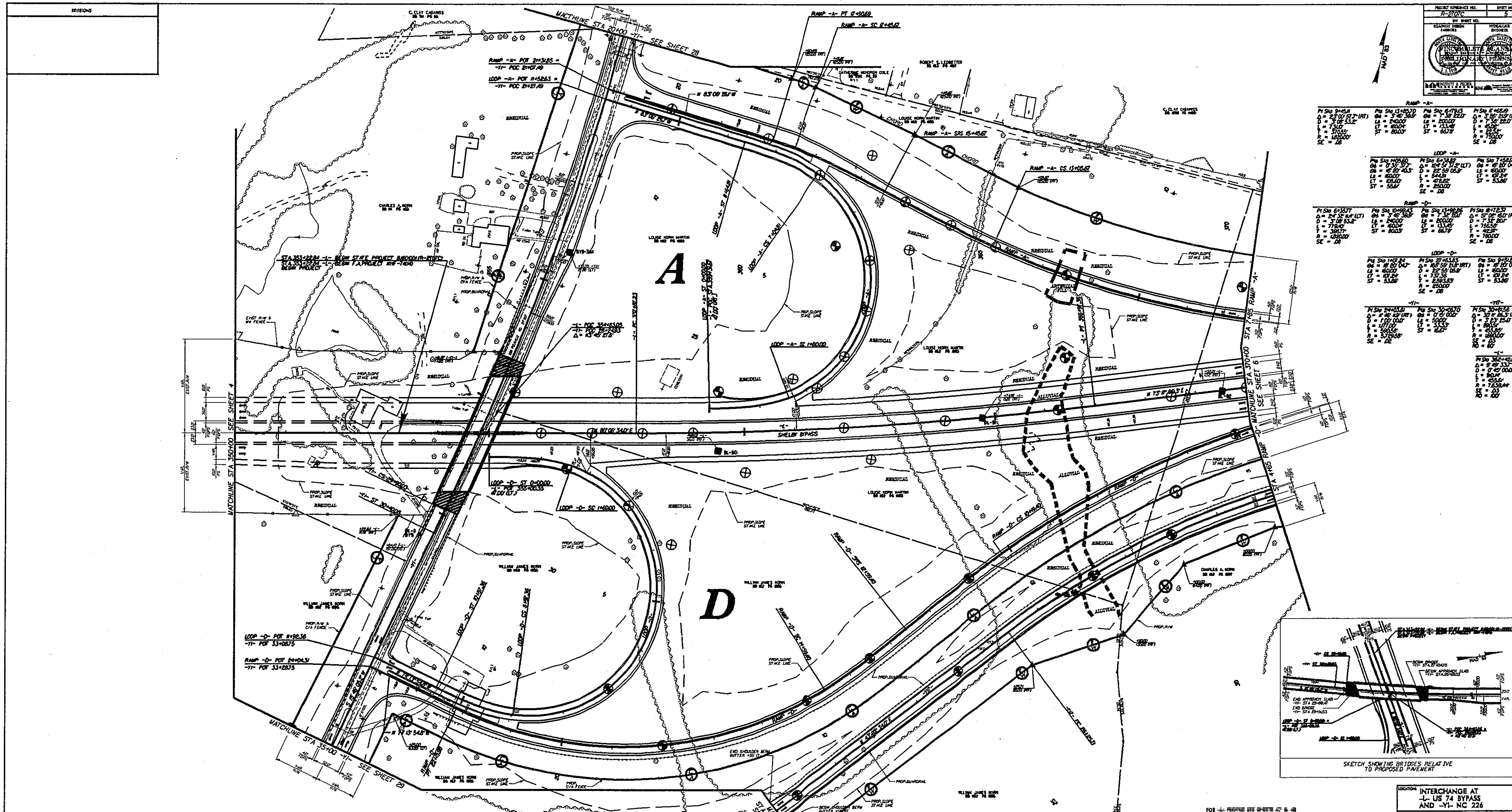
SDG Sungate Design Group, P.A.



DATUM DECSRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE NAD 83 / 95 STATE PLANE COORDINATES FOR THE NCGS MONUMENT "M 77" WITH A
NORTHING : 573127.522 EASTING : 1242971.658
THE AVERAGE COMBINED FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.99984410.
THE NC GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M 77" TO -L- STATION 345+00.00 IS
N 55° 27' 25.8" W 12622.898 ft
ALL LINEAR DISTANCES ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM IS NGVD 88.

FOR -L- PROFILE SEE SHEET 47



GRAPHIC SCALE

50 25 0 50 100

PLANS

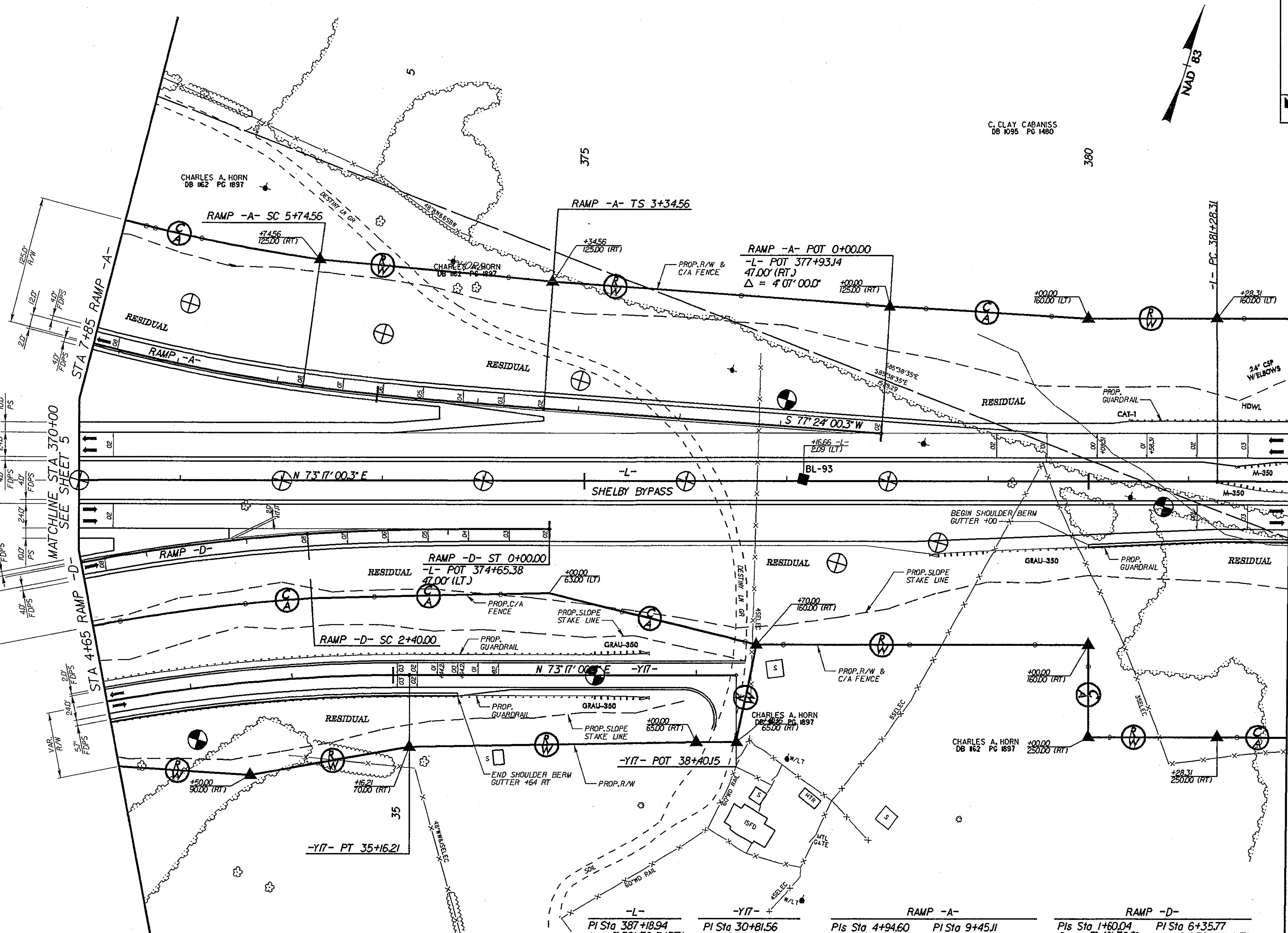
LOCATION:	INTERCHANGE AT -L- US 74 BYPASS AND -Y1- NC 226		
TIP NO.:	R-2707C	COUNTY:	CLEVELAND
DESIGNED BY:	T. HUFFMAN		
CHECKED BY:	T. REID	DATE:	5/29/02

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-L-
PI Sta 387+18.94
Δ = 8°50' 30.4" (RT)
D = 0°45' 00.0"
L = 1,178.90'
T = 590.62'
R = 7,639.44'
SE = .03
RO = 150'

-Y17-
PI Sta 30+81.56
Δ = 30°11' 26.3" (RT)
D = 3°23' 25.0"
L = 890.51'
T = 455.85'
R = 1,690.00'
SE = .03
RO = 60'

RAMP -A-	
PIs Sta 4+94.60	PI Sta 9+45.11
Θs = 3°46' 39.9"	Δ = 23°00' 57.7" (RT)
Ls = 240.00'	D = 3°08' 53.2"
LT = 160.04'	L = 731.10'
ST = 80.03'	T = 370.55'
	R = 1,820.00'
	SE = .08
	RO = 240'

RAMP -D-	
PIs Sta 1+60.04	PI Sta 6+35.77
Θs = 3°46' 39.9"	Δ = 24°32' 11.4" (LT)
Ls = 240.00'	D = 3°08' 53.2"
LT = 160.04'	L = 779.40'
ST = 80.03'	T = 395.77'
	R = 1,820.00'
	SE = .08
	RO = 240'

FOR -L- PROFILE SEE SHEET 48
FOR RAMP -A- PROFILE SEE SHEET 65
FOR RAMP -D- PROFILE SEE SHEET 66
FOR -Y17- PROFILE SEE SHEETS 94 & 95

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

-L-
PI Sta 387+18.94
Δ = 8° 50' 30.4" (RT)
D = 0° 45' 00.0"
L = 1,178.90'
T = 590.62'
R = 7,639.44'
SE = .03
RO = 150'

-Y2-
PI Sta 31+27.15
Δ = 96° 06' 18.7" (LT)
D = 6° 00' 00.0"
L = 1,601.75
T = 1,062.52'
R = 954.93'
SE = .06
RO = 150'

NAD 83

MATCHLINE STA 25+00 -Y2- SEE SHEET 30

MATCHLINE STA 382+00 SEE SHEET 6

MATCHLINE STA 394+00 SEE SHEET 8

DEBBIE ANN WEBBER DB 1240 PG 632

OLIVIA WITHROW DB 1065 PG 243

C. CLAY CABANISS DB 1095 PG 1480

CHARLES A. HORN DB 1162 PG 1897

ELSIE LOGAN DB 156 PG 523

OMAR MOLETTE DB 1171 PG 150

INICE BROOKS DB 132 PG 257

FIRST NATIONAL BANK OF SHELBY DB 1246 PG 572

CAROLYN ESKRIDGE LAURY DB 994E PG 61

MARTHA SEWELL GR DB 8H PG 168

FRANK TOMS, JR. DB 1269 PG 538

NON-JURISDICTIONAL

RESIDUAL

ALLUVIAL

PROP. GUARDRAIL

PROP. SLOPE STAKE LINE

PROP. R/W

PROP. R/W & C/A FENCE

TOE PROTECTION STA 386+00 TO 387+00 LT -L-, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

TOE PROTECTION STA 25+00 TO 28+00 LT -Y2-, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST 3 TON CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TON CL B RIP RAP
EST __ SY FILTER FABRIC

ENERGY DISSIPATOR SEE DETAIL

24" CSP W/ELBOWS

15" CSP W/ 2 ELBOWS

36" CSP

HDWL W/ SLUICE GATE

ROD AND LUG W/SLEEVE GASKET

COLLAR & EXTEND 24"

RETAIN

USE 6" DECKDRAINS 12" ON CENTERS W/ 12" PVC ATTACHED TO WESTBOUND BRIDGE

NO DECKDRAINS ON EASTBOUND BRIDGE

BEGIN BRIDGE -Y2- STA 25+74.14

END WW FENCE AT BRIDGE

BEGIN WW FENCE AT BRIDGE

END SHOULDER BERM GUTTER AT BRIDGE

REMOVE

-L- PT 393+07.22

-Y2- POC 33+25.00
END CONSTRUCTION

-L- POC 387+54.08
-Y2- POC 29+07.16
Δ = 62° 34' 38.2"

HAZARDOUS SPILL BASIN No. 3, SEE DETAIL 26
TOTAL CAPACITY REQUIRED W/3.5' DEPTH = 1,792 CY
TOTAL CAPACITY W/0.5' FREEBOARD = 1,802 CY

SHELBY BYPASS -L-

IMPACT ATTENUATOR TYPE 350

TYPE III

TYPE XI-MOD

GRAU-350

CAT-1

2GI

ISFD

ISFD ABAND

BL-94

BL-95

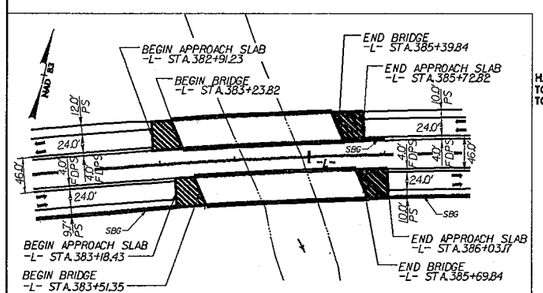
SR 1850 (ETCHISON RD) BYPASS

SR 1850 (ETCHISON RD)

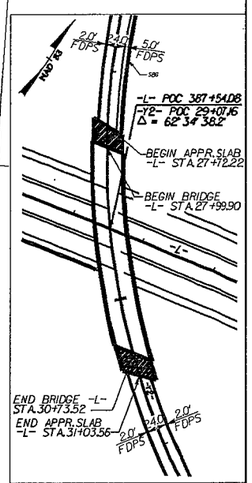
FIRST BROAD RIVER

SEE DETAIL 5

FOR -L- PROFILE SEE SHEETS 48 & 49
FOR -Y2- PROFILE SEE SHEET 82



SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT



SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
NOT TO BE USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

T. E. REID — HENRY WELLS, JR.

MOFFATT & NICHOL ENGINEERS — SDG Sungate Design Group, P.A.

NAD 83

FIRST BROAD RIVER

GARY ALSOBROOK
DB 1151 PG 2061

OLIVIA WITHROW
DB 1065 PG 243

FRANK THOMAS HANNAH
DB 15C PG 170

OMAR MOLETTE
DB 1171 PG 150

INICE BROOKS
DB 13E PG 254

FRANK TOMS, JR.
DB 1269 PG 538

FRANCES LEDFORD
DB 18T PG 364

SEE SHEET 7

SEE SHEET 9

MATCHLINE STA 394+00

MATCHLINE STA 406+00

-L- SHELBY BYPASS N 82° 07' 30.7" E

BL-97

BL-98

BL-99

+02.70 -L- 60.93 (RT)

+49.35 -L- 38.46 (RT)

+85.45 -L- 23.73 (LT)

RESIDUAL

ALLUVIAL

PROP. SLOPE STAKE LINE

PROP. GUARDRAIL

BEGIN SHOULDER BERM GUTTER +50

BEGIN SHOULDER BERM GUTTER +00

CAT-1

GRAU-350

ROD AND LUG W/SLEEVE GASKET

BEGIN WW FENCE

END WW FENCE

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

TOE PROTECTION STA 402+50 TO 404+00 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC
PLACE ON BANKS ONLY

TOE PROTECTION STA 405+00 TO 406+50 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

TOE PROTECTION STA 403+50 TO 404+00 -L- RT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

+70.00 200.00 (LT)
+50.00 150.00 (LT)
+50.00 200.00 (LT)
+50.00 150.00 (LT)
+26.00 160.00 (LT)
+00.00 270.00 (LT)

VAR. R/W
270.0' R/W
160.0' R/W
100' PS
97' PS
240' FDPS
40' FDPS
23.0'

FOR -L- PROFILE SEE SHEETS 49 & 50

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19331 I. B. REID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23331 HENRY WELLS, JR.

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX

SDG Sungate Design Group, P.A.
CIVIL ENGINEERING CONSULTANTS
3701-C Arco Corporate Drive
Raleigh, N.C. 27617

NAD 83

FRANK THOMAS HANNAH
DB 15C PG 170

415

416

165

TOE PROTECTION STA 405+00 TO 406+50 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC
PLACE ON BANKS ONLY

TOE PROTECTION STA 413+50 TO 416+00 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

+40.00
180.00 (LT)

ALLUVIAL

END SHOULDER BERM GUTTER +00 LT

PROP. SLOPE STAKE LINE

RESIDUAL

PROP. GUARDRAIL

GRAU-350

BEGIN SHOULDER BERM GUTTER +00 LT

CAT-1

END SHOULDER BERM GUTTER +00 LT

+33.42 -L-
8.94 (RT)

+79.80 -L-
0.79 (LT)

+06.40 -L-
0.78 (RT)

BL-100

BL-101

BL-102

N 82° 07' 30.7" E

-L-

SHELBY BYPASS

END SHOULDER BERM GUTTER +50 RT

BEGIN WW FENCE

END WW FENCE

+00.00
180.00 (RT)

+00.00
240.00 (RT)

+50.00
240.00 (RT)

+50.00
160.00 (RT)

TOE PROTECTION STA 403+50 TO 407+00 -L- RT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

PROP. SLOPE STAKE LINE

PROP. R/W & C/A FENCE

SOIL

MATCHLINE STA 406+00 SEE SHEET 8

MATCHLINE STA 418+00 SEE SHEET 10

VAR. R/W

160.0' R/W

97' PS

24.0'

23.0'

40' FDPS

02

100' PS

FOR -L- PROFILE SEE SHEETS 50 & 51

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS — SDG Sungate Design Group, P.A.

NAD 83

FRANK THOMAS HANNAH DB 15C PG 170

EMILE LOUIS GEBEL DB 17A PG 556

EMILE LOUIS GEBEL, JR. DB 1087 PG 2380

-L- TS 419+08.08

-L- SC 421+58.08

-L- SHELBY BYPASS

SEE SHEET 9

SEE SHEET 11

MATCHLINE STA 418+00

MATCHLINE STA 430+00

BL-103 BL-104 BL-105

N 82° 07' 30.7" E

RESIDUAL

JURISDICTIONAL

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

ROD AND LUG W/SLEEVE GASKET

END WW FENCE

BEGIN WW FENCE

END SHOULDER BERM GUTTER +00 LT

BEGIN SHOULDER BERM GUTTER +00 LT

PROP. GUARDRAIL

PROP. SLOPE STAKE LINE

PROP. R/W & C/A FENCE

TOE PROTECTION STA 425+50 TO 427+00 -L- RT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

GRAU-350

CAT-1

2026 S.F.

0.23 AC

+08.08 200.00 (LT)
+58.08 150.00 (LT)
+00.00 160.00 (LT)
+08.08 170.00 (RT)
+58.08 200.00 (RT)
+70.00 195.00 (RT)
+50.00 160.00 (RT)
+111.02 -L- 87.7 (LT)
+104.65 -L- 138.7 (LT)
+80.83 -L- 31.42 (RT)

-L-

PI Sta 426+03.33
Δ = 13° 11' 51.4" (LT)
D = 1° 30' 00.0"
L = 886.51
T = 445.25'
R = 3,819.72'
SE = .05

PIs Sta 420+74.76
θs = 1° 52' 30.0"
Ls = 250.00'
LT = 166.68'
ST = 83.34'

FOR -L- PROFILE SEE SHEETS 51 & 52

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA — PROFESSIONAL ENGINEER — SEAL — T. R. REID

NORTH CAROLINA — PROFESSIONAL ENGINEER — SEAL — HENRY WELLS, II

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

NAD 83

-L- CS 430+44.52

-L- ST 432+94.59

EMILE LOUIS GEBEL
DB 17A PG 556

435

440

+94.59
200.00 (LT)

+00.00
220.00 (LT)

+44.59
160.00 (LT)

+50.00
160.00 (LT)

PROP. R/W & C/A FENCE

PROP. SLOPE STAKE LINE

RESIDUAL

TOE PROTECTION STA 438+50 TO 439+20 -L- LT, SEE DETAIL 5
EST __ TONS CL II RIP RAP
EST __ SY FILTER FABRIC

+22.68
207.9 (LT)

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC
PLACE ON BANKS ONLY

BEGIN WW FENCE

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC

ROD AND LUG W/SLEEVE GASKET

END WW FENCE

ALLUVIAL

DR. GARY L. MANGUM
DB 1240 PG 2358

CAT-1

PROP. GUARDRAIL

+50.35 -L-
340.6 (LT)

GRAU-350

BL-108

BL-107

BL-106

+37.69 -L-
63.59 (RT)

MATCHLINE STA 430+00 SEE SHEET 10

MATCHLINE STA 442+00 SEE SHEET 12

160.0' R/W

VAR. R/W

10.0' PS

24.0'

23.0'

4.0' FDPS

05 04 03 02 01 00 01 02

-L-
SHELBY BYPASS
N 65°04'39.3" E

REMOVE

BEGIN WW FENCE

6' BASE DITCH, SEE DETAIL 6
EST 1,850 CY DDE

+44.59
160.00 (RT)

+94.59
210.00 (RT)

+70.00
240.00 (RT)

+60.00
240.00 (RT)

POND
W.E. 810.7

DRAIN POND
REMOVE DAM

PIER

GREEN HOUSE

MTL GATE

60" WD RAIL

48" WW/ISBW

30" WW/ISBW

60" WW

MH #2

8

2SFD

WD DK

60" BK

BST

CHARITH FARM RD

EMILE LOUIS GEBEL
DB 17A PG 556

DR. GARY L. MANGUM
DB 1240 PG 2358

N65°00'06"E
427.62'

N88°59'00"E
500.00

-L-

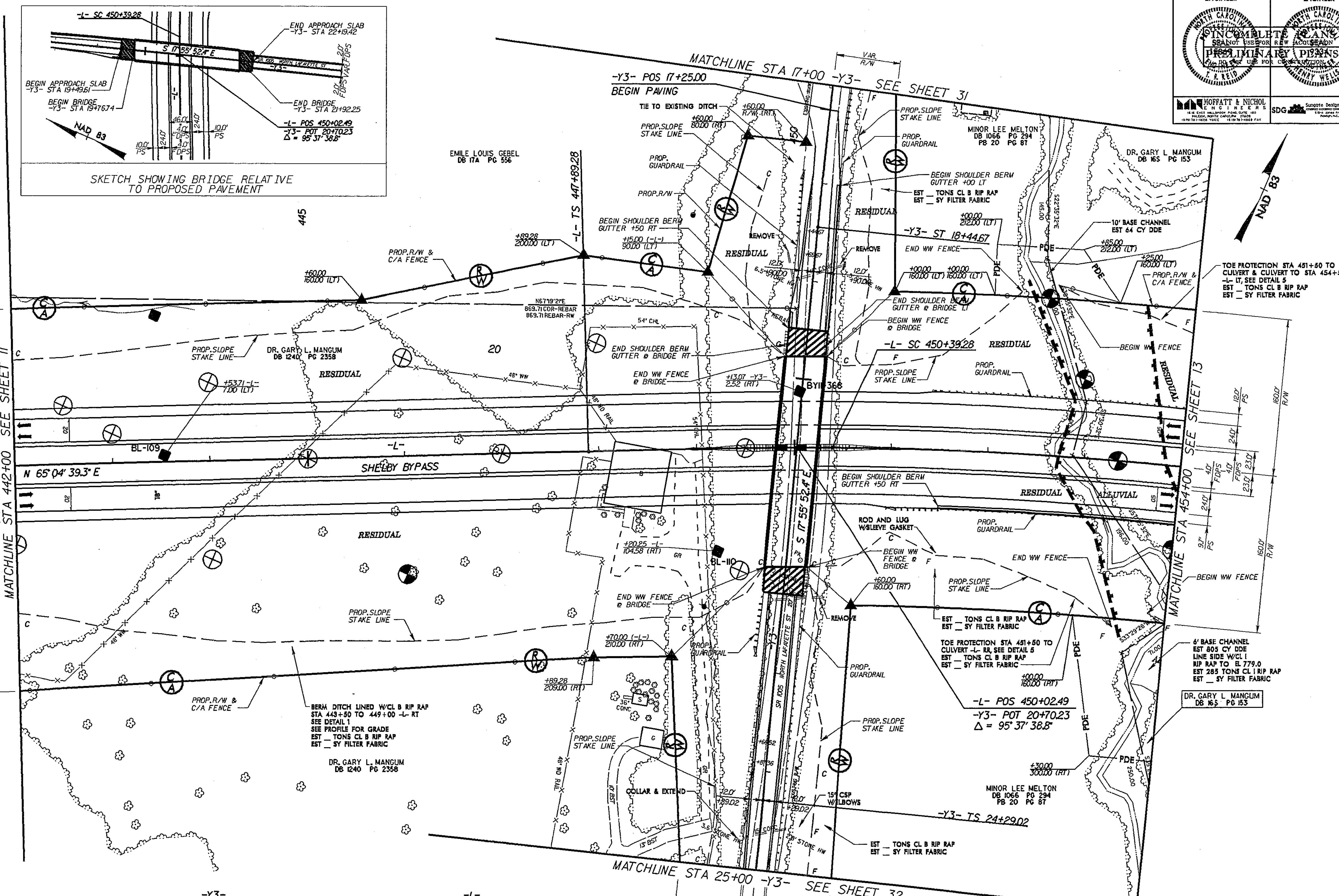
PI Sta 426+03.33	PIs Sta 431+27.93
△ = 13° 17' 51.4" (LT)	θs = 1° 52' 30.0"
D = 1° 30' 00.0"	Ls = 250.00'
L = 886.51	LT = 166.68'
T = 445.25'	ST = 83.34'
R = 3,819.72'	
SE = .05	

FOR -L- PROFILE SEE SHEETS 52 & 53

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.



-Y3-	
PI Sta 17+44.68	PI Sta 25+12.36
θs = 2° 30' 00.0"	θs = 1° 52' 30.0"
Ls = 150.00'	Ls = 125.00'
LT = 100.01'	LT = 83.34'
ST = 50.01'	ST = 41.67'

-L-	
PI Sta 449+55.95	PI Sta 456+70.39
θs = 1° 52' 30.0"	Δ = 18° 45' 49.5" (RT)
Ls = 250.00'	D = 1° 30' 00.0"
LT = 166.68'	L = 1,250.92
ST = 83.34'	T = 631.11'
	R = 3,819.72'
	SE = .05

FOR -L- PROFILE SEE SHEETS 53 & 54
FOR -Y3- PROFILE SEE SHEET 82

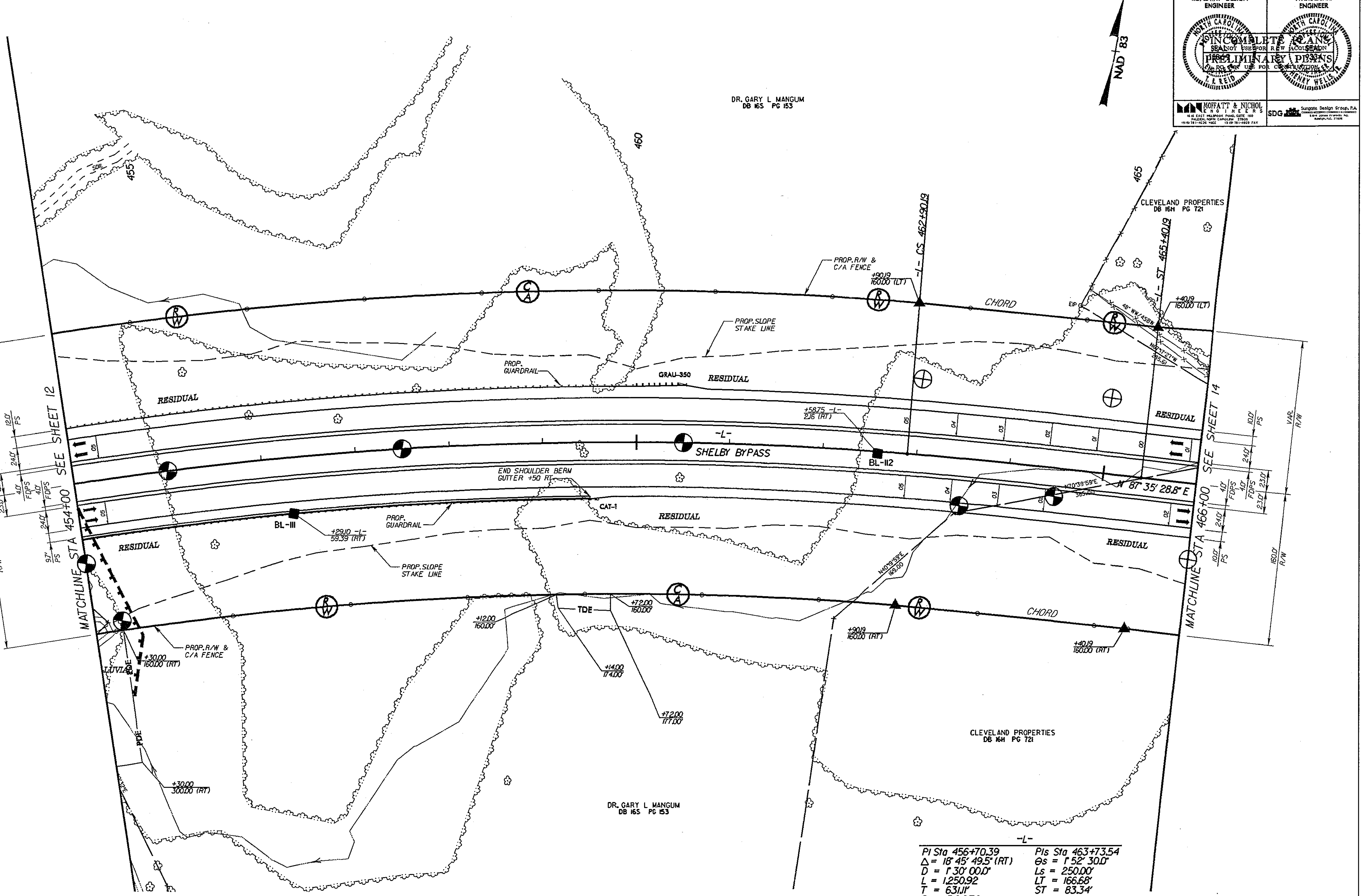
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-L-	
PI Sta 456+70.39	PIs Sta 463+73.54
Δ = 18° 45' 49.5" (RT)	Θs = 1° 52' 30.0"
D = 1° 30' 00.0"	Ls = 250.00'
L = 1,250.92	LT = 166.68'
T = 631.11'	ST = 83.34'
R = 3,819.72'	
SE = .05	

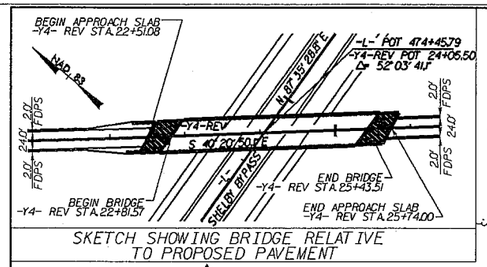
FOR -L- PROFILE SEE SHEETS 54 & 55

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
SEAL NOT USED FOR CONSTRUCTION
T. E. REID — JEREMY W. LIGHT

MOFFATT & NICHOL ENGINEERS — SDG Smoyer Design Group, P.A.



SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT

-Y4-REV
PI Sta 18+44.49
Δ = 13° 17' 22.9" (LT)
D = 3° 00' 00.0"
L = 442.99
T = 222.49'
R = 1,909.86'
SE = .05

PIs Sta 21+04.99
θs = 1° 48' 00.0"
Ls = 120.00'
LT = 80.00'
ST = 40.00'

MATCHLINE STA 19+00 -Y4-REV SEE SHEET 33

CLEVELAND PROPERTIES
DB 16H PG 721

JAMES RICHARD SPANGLER
DB 108 PG 2183

DR. GARY L MANGUM
DB 16S PG 153

CHESTER PEELER
DB 108 PG 2183

-L- POT 474+45.79
-Y4-REV POT 24+05.50
Δ = 52° 03' 41"

-Y4- TS 22+23.25
-Y4- SC 23+73.25
-Y4- CS 26+56.14
-Y4- ST 28+04.99
-Y18- POT 10+00.00
-Y18- POT 12+00.00
BEGIN CONSTRUCTION
-Y18- PC 13+65.16

-Y4-
PIs Sta 23+23.30
θs = 5° 37' 30.0"
Ls = 150.00'
LT = 100.05'
ST = 50.05'

PI Sta 25+16.33
Δ = 21° 13' 00.2" (LT)
D = 7° 30' 00.0"
L = 282.89'
T = 143.08'
R = 763.94'

PIs Sta 27+06.19
θs = 5° 37' 30.0"
Ls = 150.00'
LT = 100.05'
ST = 50.05'

-Y18-
PI Sta 15+25.20
Δ = 65° 15' 10.8" (LT)
D = 22° 55' 05.9"
L = 284.72'
T = 160.04'
R = 250.00'
SE = NC

MATCHLINE STA 466+00 SEE SHEET 13

MATCHLINE STA 478+00 SEE SHEET 15

MATCHLINE STA 28+00 -Y4-REV SEE SHEET 34

MATCHLINE STA 15+00 -Y18-

FOR -L- PROFILE SEE SHEET 55
FOR -Y4-REV PROFILE SEE SHEET 83
FOR -Y18- PROFILE SEE SHEET 96

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX

SDG Sungate Design Group, P.A.
CIVIL ENGINEERING CONSULTANTS
1 S.E. Jensen Avenue, Ste.
Ankeny, N.C. 27006

NAD 83

JAMES RICHARD SPANGLER
DB 1108 PG 2183

JOE HAMRICK
DB 90E PG 556

CHESTER PEELER
DB 1108 PG 2183

480

485

+80.00
200.00 (RT)

PROP. R/W &
C/A FENCE

PROP. SLOPE
STAKE LINE

PROP. GUARDRAIL

TOE PROTECTION STA 488+50 TO
493+00 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

RESIDUAL

+87.44 -L-
3622 (LT)

BL-116

+36.71 -L-
801 (LT)

BL-117

N 87° 35' 28.8" E SHELBY BYPASS

-L-

CAT-1

BEGIN SHOULDER BERM
GUTTER +00 LT

BEGIN SHOULDER BERM
GUTTER +00 RT

GRAU-350

SEE SHEET 14

SEE SHEET 16

MATCHLINE STA 478+00

MATCHLINE STA 490+00

VAR. R/W

10.0' PS

24.0'

23.0'

40' FDPS

02

SPECIAL 2' LATERAL BASE DITCH
STA 487+50 TO 488+50 -L- RT
SEE DETAIL 9
EST __ CY DDE

+70.00
190.00 (RT)

STD BERM DITCH LINED W/CL B RIP RAP
STA 484+00 TO 487+50 -L- RT, SEE DETAIL 1
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

2' LATERAL BASE DITCH LINED W/CL B RIP RAP
STA 488+50 TO 490+10 -L- RT, SEE DETAIL 7
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

JOE HAMRICK
DB 90E PG 556

FOR -L- PROFILE SEE SHEET 56

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032933 T. R. REID

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032933 HENRY WELSH, JR.

INCOMPLETE PLANS SEAL NOT USED FOR R/W ACQUISITION PRELIMINARY PLANS NOT FOR USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4628 FAX

SDG Sungate Design Group, P.A.
Licensed Architecture & Engineering
116 W. Jones Street, Suite 105
Raleigh, N.C. 27603

NAD 83

JOE HAMRICK
DB 90E PG 556

HAL DEDMON
DB 90E PG 556

CARRIE NORVILLE TESSNER
DB 17F PG 382

JOHN D. CROWDER, JR.
DB 15J PG 66

495

S30°57'57"W
300.13

500

MATCHLINE STA 490+00 SEE SHEET 15

MATCHLINE STA 502+00 SEE SHEET 17

VAR. R/W

97' PS

240'

230'

40' FDPS

120' PS

160' R/W

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC
PLACE ON BANKS ONLY

TOE PROTECTION STA 488+50 TO 493+00 -L- LT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

+50.00
160.00 (LT)

2' LATERAL BASE DITCH LINED W/CL B RIP RAP
SEE DETAIL 7
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

EST __ TONS CL I RIP RAP
EST __ SY FILTER FABRIC

PROP. R/W & C/A FENCE

+00.00
160.00 (LT)

5' BASE DITCH
SEE DETAIL 12
EST 50 CY DDE

END WW FENCE

BEGIN WW FENCE

PROP. SLOPE STAKE LINE

PROP. GUARDRAIL

2GI-B W/ FLAT GRATE

RESIDUAL

ALLUVIAL

CLASS IV METHOD

SHOULDER BERM GUTTER

+69.25 -L-
12.21 (LT)

SHOULDER BERM

ROD AND LUG W/SLEEVE GASKET

+27.71 -L-
11.31 (RT)

+90.44 -L-
11.84 (RT)

+04.17 -L-
14.63 (RT)

BL-118

BL-119

BL-120

BL-121

2GI-B

FS

N 87° 35' 28.8" E

-L- SHELBY BYPASS

S74°53'22"W
343.60

02

CAT-1

GRAU-350

CLASS IV

HDWL

END SHOULDER BERM GUTTER +00 RT

TOE PROTECTION STA 490+50 TO 492+00 -L- RT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

+50.00 -L-
160.00 (RT)

TOE PROTECTION STA 495+00 TO 495+50 -L- RT, SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

+00.00 -L-
160.00 (RT)

2' BASE DITCH
SEE DETAIL 12
EST __ CY DDE

PROP. R/W & C/A FENCE

S02°43'05"W
278.75

NELLIE MAE THRIFT
DB 16T PG 180

REBAR

GR

S

HTR

36" BK

S

S

S

PAL

ROY FRANKLIN WRAY
DB 16R PG 600

ISBKD

S04°43'05"W
125.05

EIP

FOR -L- PROFILE SEE SHEETS 56 & 57

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

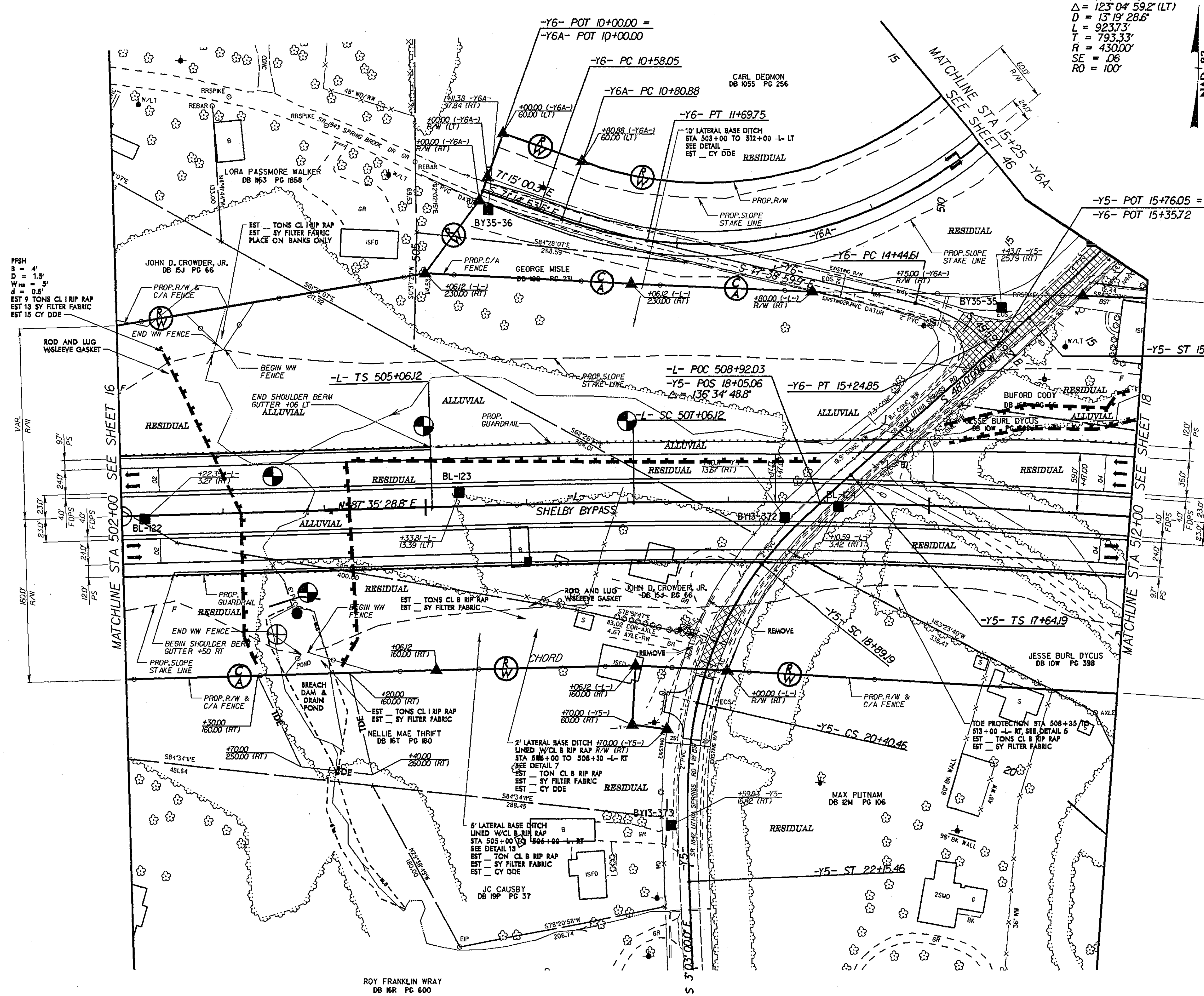
MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

NAD 83

-Y6A-

PI Sta 18+74.21
Δ = 123° 04' 59.2" (LT)
D = 13° 19' 28.6"
L = 923.73'
T = 793.33'
R = 430.00'
SE = .06
RO = 100'



-L-

PIs Sta 506+39.45	PI Sta 520+51.16
Θs = 1° 00' 00.0"	Δ = 26° 25' 21.1" (RT)
Ls = 200.00'	D = 1° 00' 00.0"
LT = 133.34'	L = 2,642.25
ST = 66.67'	T = 1,345.05'
	R = 5,729.58'
	SE = .04

-Y5-

PIs Sta 13+96.72	PI Sta 14+85.71
Θs = 21° 30' 00.0"	Δ = 30° 39' 00.8" (RT)
Ls = 200.00'	D = 38° 11' 49.9"
LT = 134.33'	L = 80.24'
ST = 67.57'	T = 41.11'
	R = 150.00'
PIs Sta 18+47.67	PI Sta 19+66.12
Θs = 10° 37' 30.0"	Δ = 25° 43' 00.0" (LT)
Ls = 125.00'	D = 17° 00' 00.0"
LT = 83.48'	L = 151.27
ST = 41.80'	T = 76.93'
	R = 337.03'
PIs Sta 20+99.17	
Θs = 14° 52' 30.0"	
Ls = 175.00'	
LT = 117.08'	
ST = 58.71'	

-Y6-

PI Sta 11+13.95	PI Sta 14+85.71
Δ = 6° 23' 59.7" (LT)	Δ = 30° 39' 00.8" (RT)
D = 5° 43' 46.5"	D = 38° 11' 49.9"
L = 111.70'	L = 80.24'
T = 55.91'	T = 41.11'
R = 1,000.00'	R = 150.00'

FOR -L- PROFILE SEE SHEETS 57 & 58
FOR -Y6A- PROFILE SEE SHEET 84

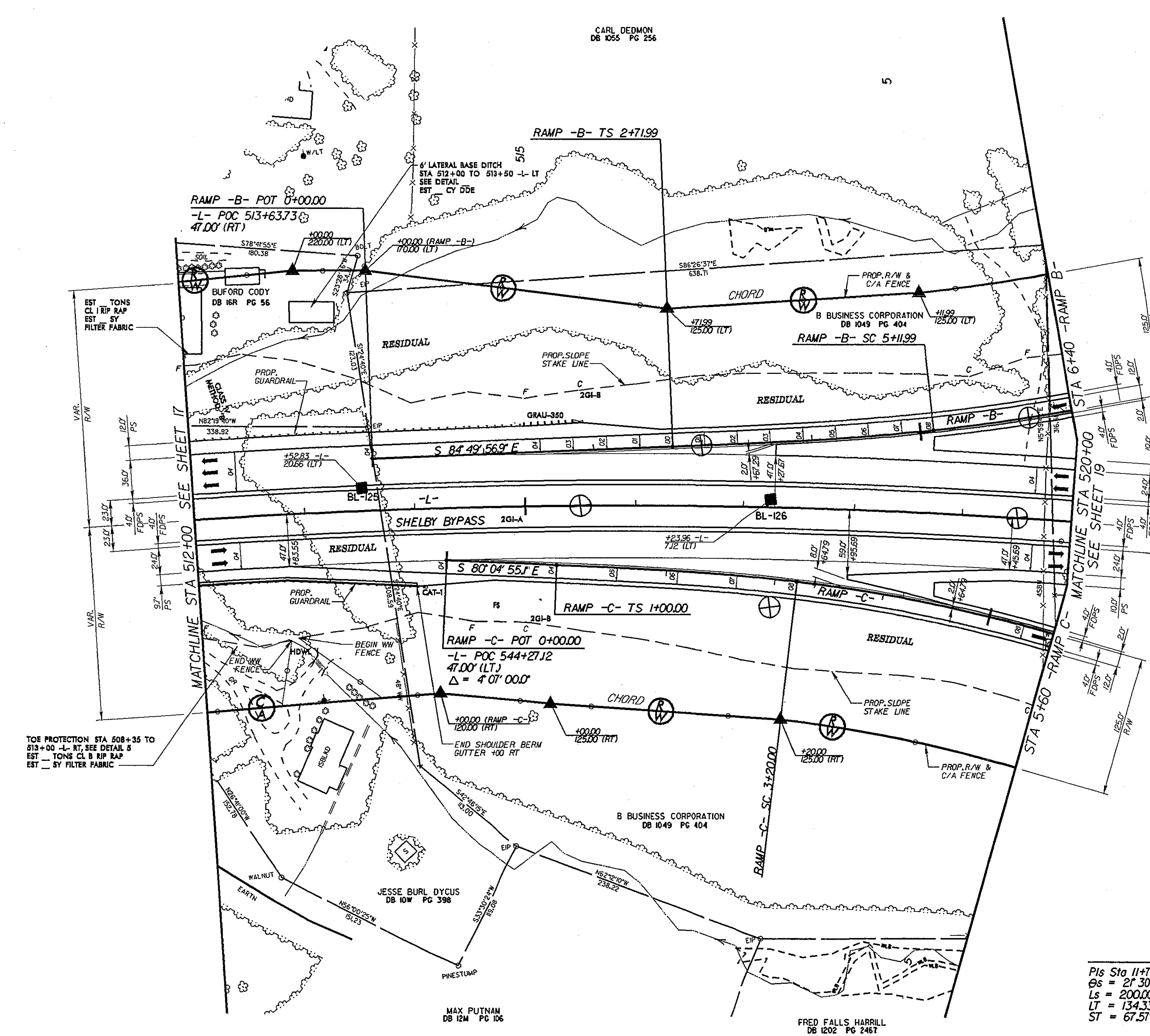
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

Sungate Design Group, P.A.



-L-

PI Sta 520+51.16
Δ = 26° 25' 21.1" (RT)
D = 1° 00' 00.0"
L = 2,642.25
T = 1,345.05'
R = 5,729.58'
SE = .04

RAMP -B-

PIs Sta 4+32.03	PI Sta 7+59.93
θs = 3° 46' 39.9"	Δ = 15° 30' 56.3" (LT)
Ls = 240.00'	D = 3° 08' 53.2"
LT = 160.04'	L = 492.85'
ST = 80.03'	T = 247.94'
	R = 1,820.00'
	SE = .08

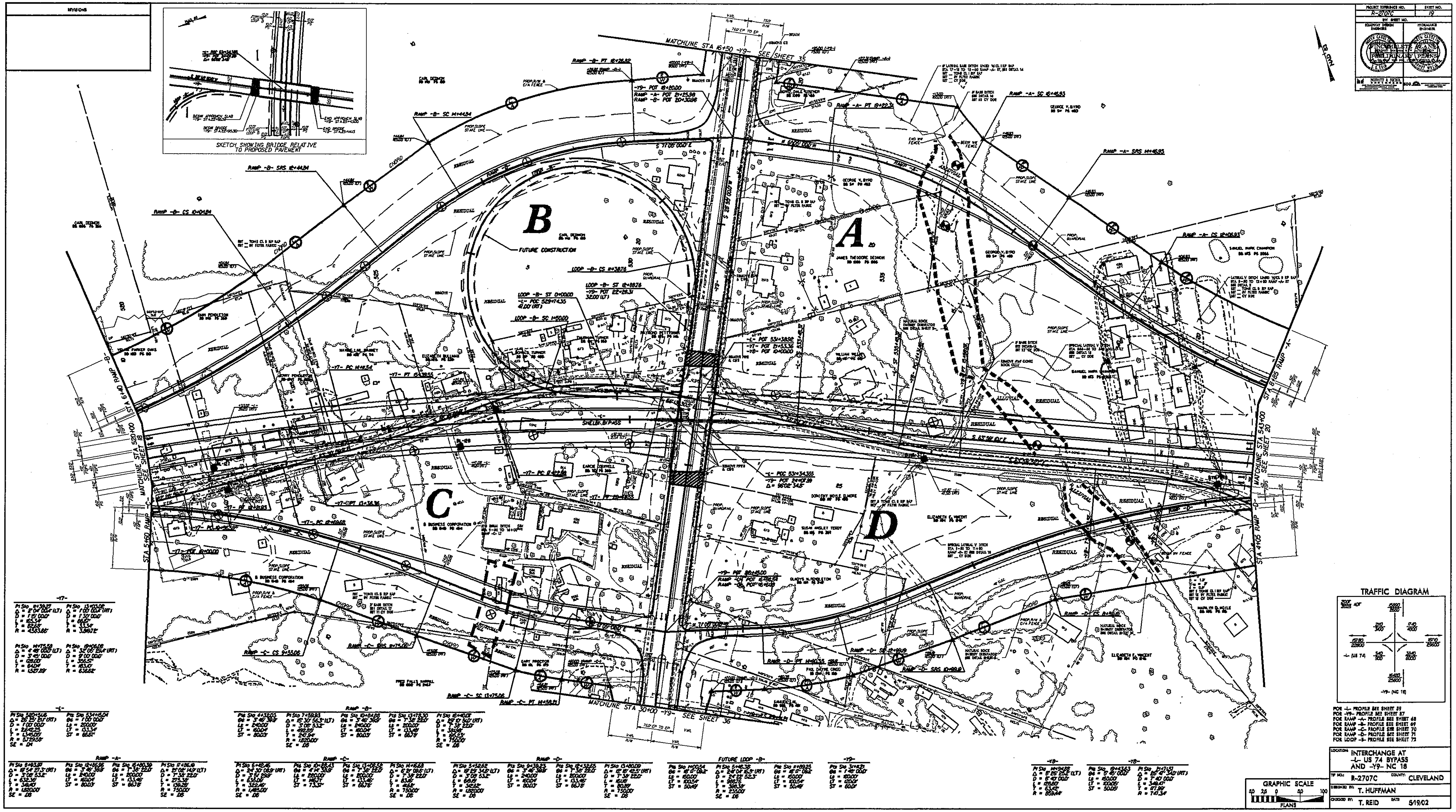
RAMP -C-

PIs Sta 2+46.71	PI Sta 6+42.46
θs = 4° 14' 38.9"	Δ = 24° 30' 08.9" (RT)
Ls = 220.00'	D = 3° 51' 29.9"
LT = 146.71'	L = 635.06'
ST = 73.37'	T = 322.46'
	R = 1,485.00'
	SE = .08

-Y5-

PIs Sta 11+72.78	PI Sta 12+84.24	PIs Sta 13+96.72
θs = 21° 30' 00.0"	Δ = 19° 29' 59.5" (RT)	θs = 21° 30' 00.0"
Ls = 200.00'	D = 21° 30' 00.0"	Ls = 200.00'
LT = 134.33'	L = 90.70	LT = 134.33'
ST = 67.57'	T = 45.79'	ST = 67.57'
	R = 266.49'	

FOR -L- PROFILE SEE SHEETS 58 & 59
FOR RAMP -B- PROFILE SEE SHEET 69
FOR RAMP -C- PROFILE SEE SHEET 70
FOR -Y6A- PROFILE SEE SHEET 84


SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT
MATCHLINE STA 16+50 -Y9- SEE SHEET 35
MATCHLINE STA 30+00 -Y9- SEE SHEET 36
A
B
C
D
FUTURE CONSTRUCTION
SHELBY BYPASS
TRAFFIC DIAGRAM
-Y9- (NC 18)
FOR -L- PROFILE SEE SHEET 59
FOR -Y9- PROFILE SEE SHEET 87
FOR RAMP -A- PROFILE SEE SHEET 68
FOR RAMP -B- PROFILE SEE SHEET 69
FOR RAMP -C- PROFILE SEE SHEET 70
FOR RAMP -D- PROFILE SEE SHEET 71
FOR LOOP -B- PROFILE SEE SHEET 72
GRAPHIC SCALE
PLANS
LOCATION: INTERCHANGE AT -L- US 74 BYPASS AND -Y9- NC 18
TIP NO.: R-2707C
COUNTY: CLEVELAND
DESIGNED BY: T. HUFFMAN
CHECKED BY: T. REID
DATE: 5/19/02
PROJECT REFERENCE NO. R-2707C
SHEET NO. 19

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
NOT TO BE USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS — SDG

NAD 83

GEORGE V. BYRD DB 5V PG 493

MARION ROGERS DB 9K PG 544 PB 8 PG 47

BOBBY HULL DB 1166 PG 2049

TOMMY WAYNE COSTNER DB 1248 PG 0710

RAMP -A- SC 5+74.56

RAMP -A- TS 3+34.56

RAMP -A- POT 0+00.00
-L- POT 551+87.42
47.00' (RT)
Δ = 4° 07' 00.0"

-L- PC 554+11.59

LATERAL V-DITCH LINED W/CL B RIP RAP
STA 5+97 TO 8+30 RAMP -A- RT, SEE DETAIL 2
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

6' BASE DITCH SEE DETAIL EST __ CY DDE

HENRY B. EDWARDS, JR. DB 1132 PG 827

SAMUEL MARK CHAMPION DB 873 PG 2256

MATCHLINE STA 543+00 SEE SHEET 19

MATCHLINE STA 555+00 SEE SHEET 21

-L- PI Sta 563+32.45
Δ = 13° 44' 47.7" (RT)
D = 0° 45' 00.0"
L = 1,832.88'
T = 920.86'
R = 7,639.44'
SE = .03
RO = 150.00'

RAMP -A-
PIs Sta 4+94.60
Θs = 3° 46' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.03'

PI Sta 8+93.97
Δ = 19° 54' 27.3" (RT)
D = 3° 08' 53.2"
L = 632.36'
T = 319.40'
R = 1,820.00'
SE = .08

RAMP -D-
PIs Sta 1+60.04
Θs = 3° 46' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.03'

PI Sta 5+52.62
Δ = 19° 29' 34.6" (LT)
D = 3° 08' 53.2"
L = 619.19'
T = 312.62'
R = 1,820.00'
SE = .08

-Y8-
PI Sta 21+71.57
Δ = 26° 47' 34.0" (RT)
D = 7° 40' 00.0"
L = 349.47'
T = 177.99'
R = 747.34'

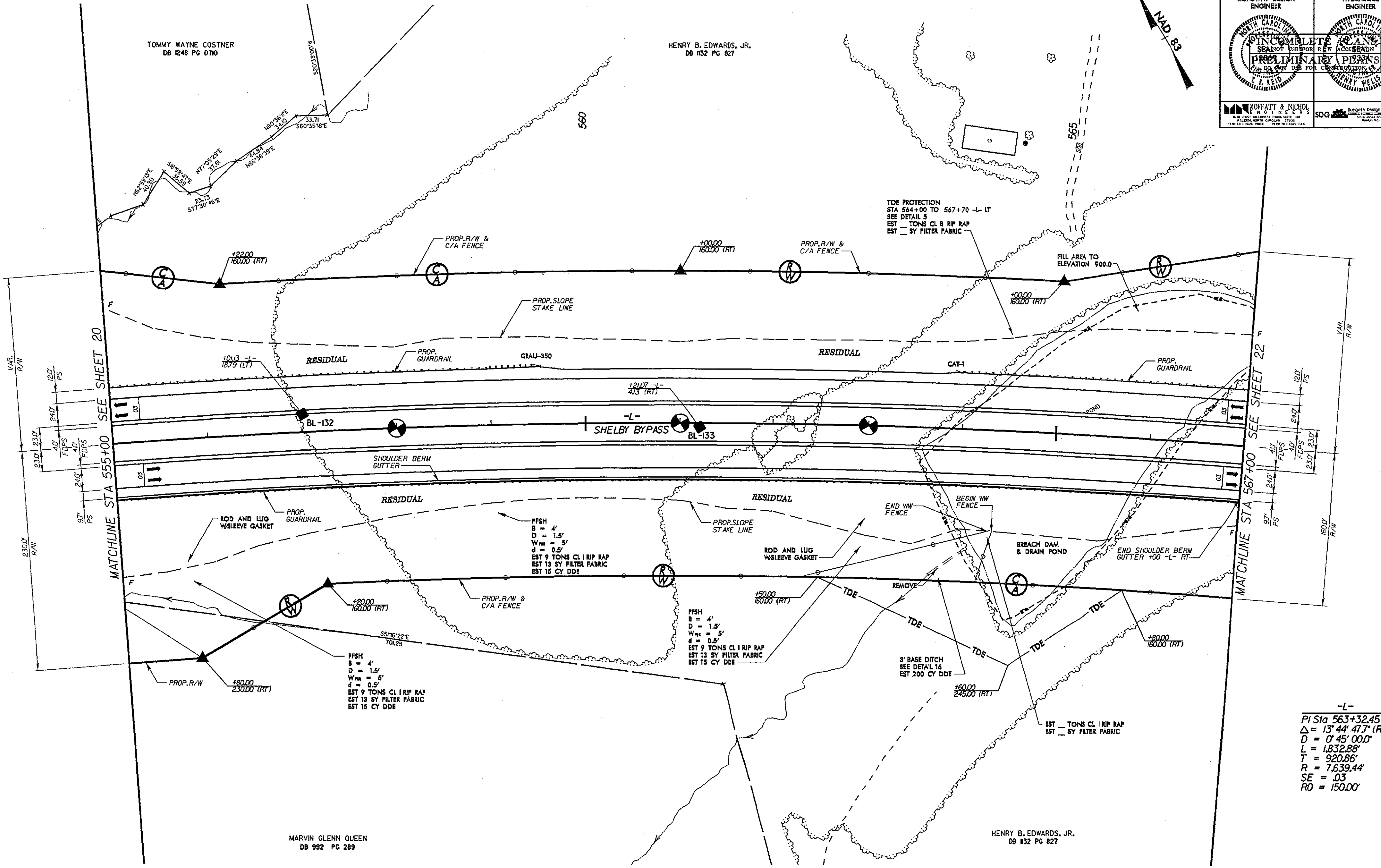
PIs Sta 23+93.09
Θs = 5° 45' 00.0"
Ls = 150.00'
LT = 100.05'
ST = 50.05'

FOR -L- PROFILE SEE SHEETS 59 & 60
FOR RAMP -A- PROFILE SEE SHEET 68
FOR RAMP -D- PROFILE SEE SHEET 71

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.



-L-
PI Sta 563+32.45
Δ = 13° 44' 47.7" (RT)
D = 0° 45' 00.0"
L = 1,832.88'
T = 920.86'
R = 7,639.44'
SE = .03
RO = 150.00'

FOR -L- PROFILE SEE SHEETS 60 & 61

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA L. A. REID SEAL 029324 ENGINEER	NORTH CAROLINA HENRY WELLS, IV SEAL 038844 ENGINEER

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

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

NAD 83

TOE PROTECTION
STA 564+00 TO 567+70 -L- LT
SEE DETAIL 5
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

END WW FENCE

2' BASE DITCH
SEE DETAIL 16
EST 5 CY DDE

+20.00
210.00 (LT)

FILL AREA TO
ELEV 900.0

+00.00
160.00 (LT)

BEGIN WW
FENCE

PROP. GUARDRAIL

GRAU-350

RESIDUAL

HENRY B. EDWARDS, JR.
DB 832 PG 827

-L- PT 572+44.35

+44.47
160.00 (LT)

PROP. R/W &
C/A FENCE

STD BERM DITCH
STA 572+50 TO 584+50 -L- LT

PROP. SLOPE
STAKE LINE

HARRIETTE P. BEAM
DB 6292 PG 63

+47.01 -L-
33.79 (RT)

-L-
SHELBY BYPASS

S 50° 14' 22.4" E

BL-134

CAT-1

PFSH
B = 4'
D = 1.5'
W_{FS} = 5'
d = 0.5'
EST 9 TON CL I RIP RAP
EST 13 SY FILTER FABRIC
EST 15 CY DDE

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST 3 TONS CL B RIP RAP
EST __ SY FILTER FABRIC

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

SPECIAL LATERAL V DITCH
LINED W/CL B RIP RAP
STA 578+50 TO 579+50 -L- RT
SEE DETAIL 20
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

MATCHLINE STA 567+00 SEE SHEET 21

MATCHLINE STA 579+00 SEE SHEET 23

VAR. R/W

160.0' R/W

12.0' PS

24.0'

40' FDPS

23.5'

10.0' PS

-L-
PI Sta 563+32.45
Δ = 13° 44' 47.7" (RT)
D = 0° 45' 00.0"
L = 1,832.88'
T = 920.86'
R = 7,639.44'
SE = .03
RO = 150.00'

FOR -L- PROFILE SEE SHEETS 61 & 62

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA — SEAL — 032161 — ENGINEER — KENNETH WELLS

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

MOFFATT & NICHOL ENGINEERS — 8914 EAST RALEIGH ROAD, SUITE 108, RALEIGH, NORTH CAROLINA 27615, (919) 781-4626 VOICE, (919) 781-4865 FAX

SDG Sungate Design Group, P.A. — 919 E. Jamie Drive, Suite 102, Holly Springs, NC 27540, (919) 557-5490 Phone, (919) 557-5499 FAX

NAD 83

HARRIETTE P. BEAM
DB 1262 PG 19

ANNIE LAURA GREENE
DB 6K PG 100

BOBBY SPAKE
DB 822 PG 1416

CHITTY-YOUNG FAMILY LIMITED PARTNERSHIP
DB 1140 PG 1193
PB 8 PG 88

JAMES D. QUEEN
DB 1113 PG 1874
PB 8 PG 88

JAMES MICHAEL YARBORO
DB 1110 PG 1054

HENRY B. EDWARDS, JR.
DB 1132 PG 827

EUNICE W. POSTON
DB 157 PG 283

-Y10- PC 19+01.74

-Y10- PT 20+51.90

-Y10- PC 20+71.85

S 39° 23' 48.7" W

-L- POT 583+53.95 =
-Y10- POC 22+64.82
Δ = 90° 45' 43.5"

-Y10- PT 26+81.40

-Y10- POT 24+65.00
-Y19- POT 13+99.25
Δ = 88° 05' 17.50"

-Y11-REV POT 26+00.00
BEGIN CONSTRUCTION

S 37° 23' 41.0" W

S 14° 31' 41.9" E

S 50° 14' 22.4" E

S 42° 57' 09.3" W

MATCHLINE STA 579+00 SEE SHEET 22

MATCHLINE STA 591+00 SEE SHEET 24

MATCHLINE STA 27+00 -Y11-REV

-L- SHELBY BYPASS

SR 1926 AIRPORT RD

N. CROSSEVIC CIR

NC 180 NORTH POST RD

STANDARD BERM DITCH
STA 572+50 TO 584+50 -L- LT

SPECIAL LATERAL V-DITCH
LINED W/CL B RIP RAP
STA 578+50 TO 579+50 -L- RT
SEE DETAIL 20
EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC
EST __ CY DDE

2' LATERAL BASE DITCH
STA 584+50 TO 589+10 -L- LT
SEE DETAIL 18
EST __ CY DDE

LATERAL V DITCH
STA 589+10 TO 591+00 -L- LT
SEE DETAIL 11
EST __ CY DDE

EST __ TONS CL B RIP RAP
EST __ SY FILTER FABRIC

BEGIN SHOULDER BERM GUTTER +00 LT

BEGIN SHOULDER BERM GUTTER +50 RT

PFSH
B = 4'
D = 1.5'
Wmax = 5'
d = 0.5'
EST 9 TONS CL I RIP RAP
EST 13 SY FILTER FABRIC
EST 15 CY DDE

PROP. SLOPE STAKE LINE

PROP. GUARDRAIL

PROP. R/W & C/A FENCE

REMOVE

ROD AND LUG W/SLEEVE GASKET

RETAIN

BL-135

BY17-384

-Y10-

PI Sta 19+76.83	PI Sta 23+76.72
Δ = 2° 00' 07.7" (RT)	Δ = 3° 33' 20.6" (RT)
D = 1° 20' 00.0"	D = 0° 35' 00.0"
L = 150.16'	L = 609.55'
T = 75.09'	T = 304.87'
R = 4,297.18'	R = 9,822.13'

FOR -L- PROFILE SEE SHEET 62
FOR -Y11-REV PROFILE SEE SHEETS 88 & 89

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

BOBBY SPAKE
DB 1122 PG 1416

HARRY GOLD
DB 76E PG 59

NAD 83

-L- POT 596+50.98
-Y13- POT 23+68.80
Δ = 125° 58' 37.1"

-L- POT 593+50.35
-Y11-REV POT 29+94.68
Δ = 35° 42' 40.5"

MATCHLINE STA 27+00 -Y11-

-Y13- PT 21+39.40

BY19-394

RAMP -B- SC 2+20.00

RAMP -B- CS 3+29.08

CHORD

RAMP -B- TS 0+00.00 =
-L- POT 598+25.00
59.00' (RT)

RAMP -B-

STA 4+71 RAMP -B-

MATCHLINE STA 603+00
SEE SHEET 25

-L-

SHELBY BYPASS

S 50° 14' 22.4" E

S 46° 07' 22.40" E

RAMP -C-

RAMP -C- ST 0+00.00 =
-L- POT 597+50.00
47.00' (LT)

MATCHLINE STA 591+00
SEE SHEET 23

S 14° 31' 41.9" E

-Y11-REV

S 75° 44' 14.7" W

-Y13- POT 27+98.10

-Y11-REV POT 32+37.97
-Y13- POT 25+44.28
Δ = 90° 15' 56.6"

BY19-395

BY18-338

MATCHLINE STA 39+00 -Y11-REV
SEE SHEET 41

RESIDUAL

PROP. GUARDRAIL

PROP. SLOPE STAKE LINE

PROP. R/W

PROP. R/W & C/A FENCE

END WW FENCE @ BRIDGE

BEGIN WW FENCE @ BRIDGE

END SHOULDER BERM GUTTER @ BRIDGE

REMOVE

TYPE III

TYPE XI-MOD

GRAU-350

M-350

PFSH
B = 4'
D = 1.5'
Wmax = 5'
d = 0.5'
EST 9 TONS CL II RIP RAP
EST 13 SY FILTER FABRIC
EST 15 CY DSE

EST 35 TONS CL B RIP RAP
EST — SY FILTER FABRIC

SPECIAL DITCH GRADE
STA 33+50 TO 36+00 -Y11-REV RT
SEE PROFILE FOR GRADE

EUNICE W. POSTON
DB 15T PG 283

HENRY SKIPPER
DB 15L PG 732

ROBERT DAVID MALONEY
DB 10L PG 473

HARRY GOLD
DB 76E PG 59

-Y11-PC 36+87.36

-Y11-REV TS 38+49.21

-Y11-
PI Sta 38+50.38
Δ = 36° 14' 03.9" (LT)
D = 11° 30' 00.0"
L = 315.08'
T = 163.01'
R = 498.22'

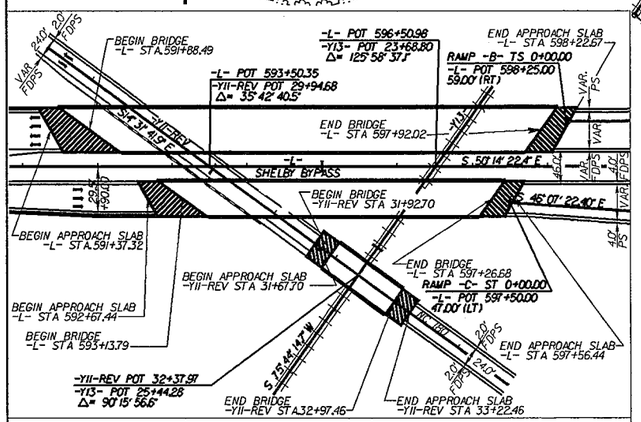
RAMP -B-
PI Sta 1+46.68
θs = 2° 31' 15.7"
Ls = 220.00'
LT = 146.68'
ST = 73.35'

PI Sta 2+74.55
Δ = 2° 30' 00.0" (LT)
D = 2° 17' 30.6"
L = 109.08'
T = 54.55'
R = 2,500.00'
SE = .08

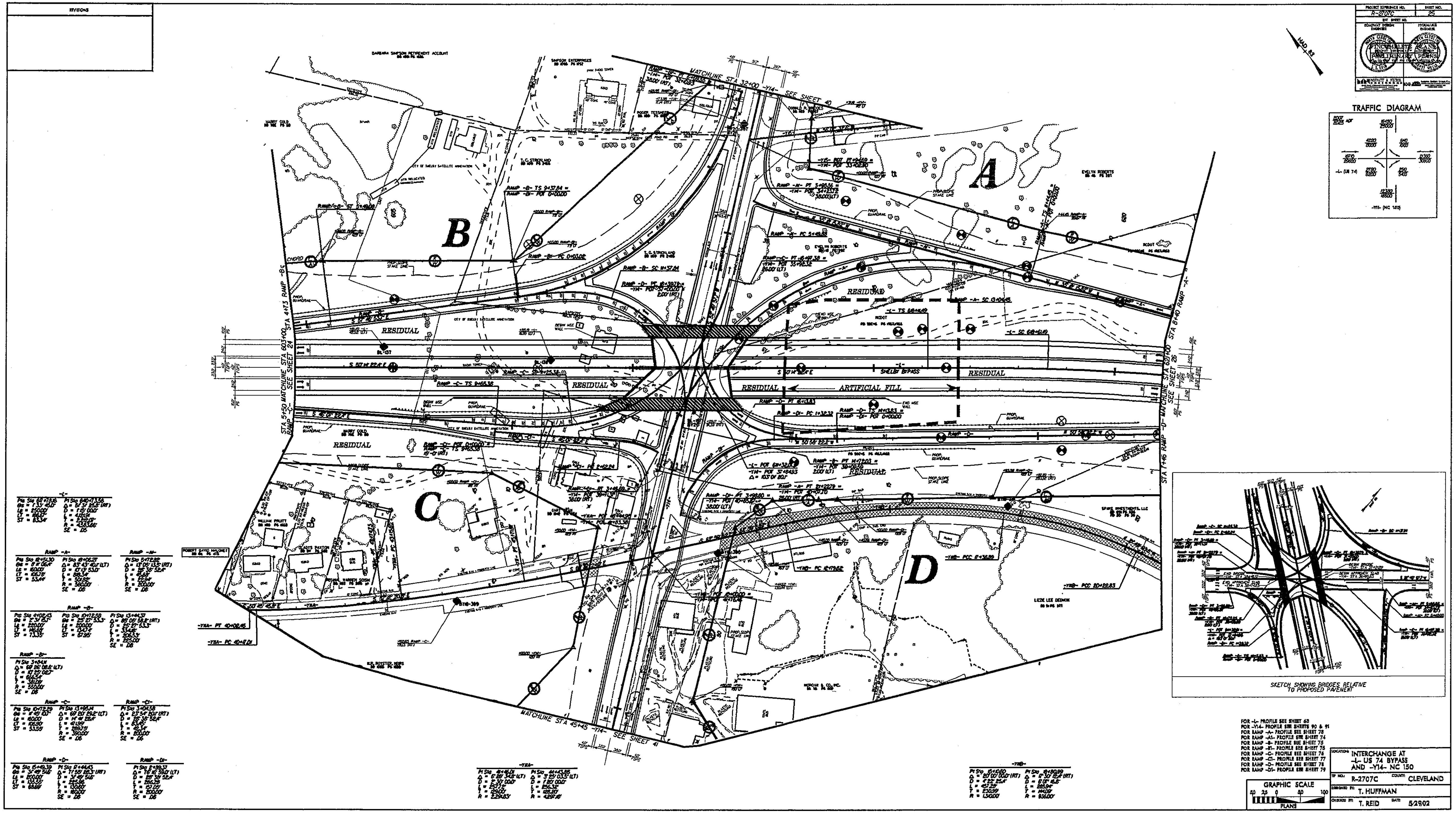
-Y13-
PI Sta 16+08.67
Δ = 32° 46' 01.2" (RT)
D = 3° 00' 00.0"
L = 1,092.23'
T = 561.50'
R = 1,909.86'

-Y11-REV
PIs Sta 39+82.63
θs = 6° 25' 00.0"
Ls = 200.00'
LT = 133.42'
ST = 66.75'

FOR -L- PROFILE SEE SHEETS 62 & 63
FOR RAMP B PROFILE SEE SHEET 75
FOR RAMP C PROFILE SEE SHEET 76
FOR -Y11-REV PROFILE SEE SHEETS 88 & 89



SKETCH SHOWING BRIDGES RELATIVE TO PROPOSED PAVEMENT


R-2707C
25
TRAFFIC DIAGRAM
MATCHLINE STA 32+00 -Y14- SEE SHEET 40
MATCHLINE STA 45+45 -Y14- SEE SHEET 41
A
B
C
D
RESIDUAL
ARTIFICIAL FILL
SKETCH SHOWING BRIDGES RELATIVE TO PROPOSED PAVEMENT
FOR -L- PROFILE SEE SHEET 63
FOR -Y14- PROFILE SEE SHEETS 90 & 91
FOR RAMP -A- PROFILE SEE SHEET 73
FOR RAMP -A1- PROFILE SEE SHEET 74
FOR RAMP -B- PROFILE SEE SHEET 75
FOR RAMP -B1- PROFILE SEE SHEET 76
FOR RAMP -C- PROFILE SEE SHEET 76
FOR RAMP -C1- PROFILE SEE SHEET 77
FOR RAMP -D- PROFILE SEE SHEET 78
FOR RAMP -D1- PROFILE SEE SHEET 79
GRAPHIC SCALE
PLANS
LOCATION: INTERCHANGE AT -L- US 74 BYPASS AND -Y14- NC 150
TIP NO.: R-2707C
COUNTY: CLEVELAND
DESIGNED BY: T. HUFFMAN
CHECKED BY: T. REID
DATE: 5/29/02

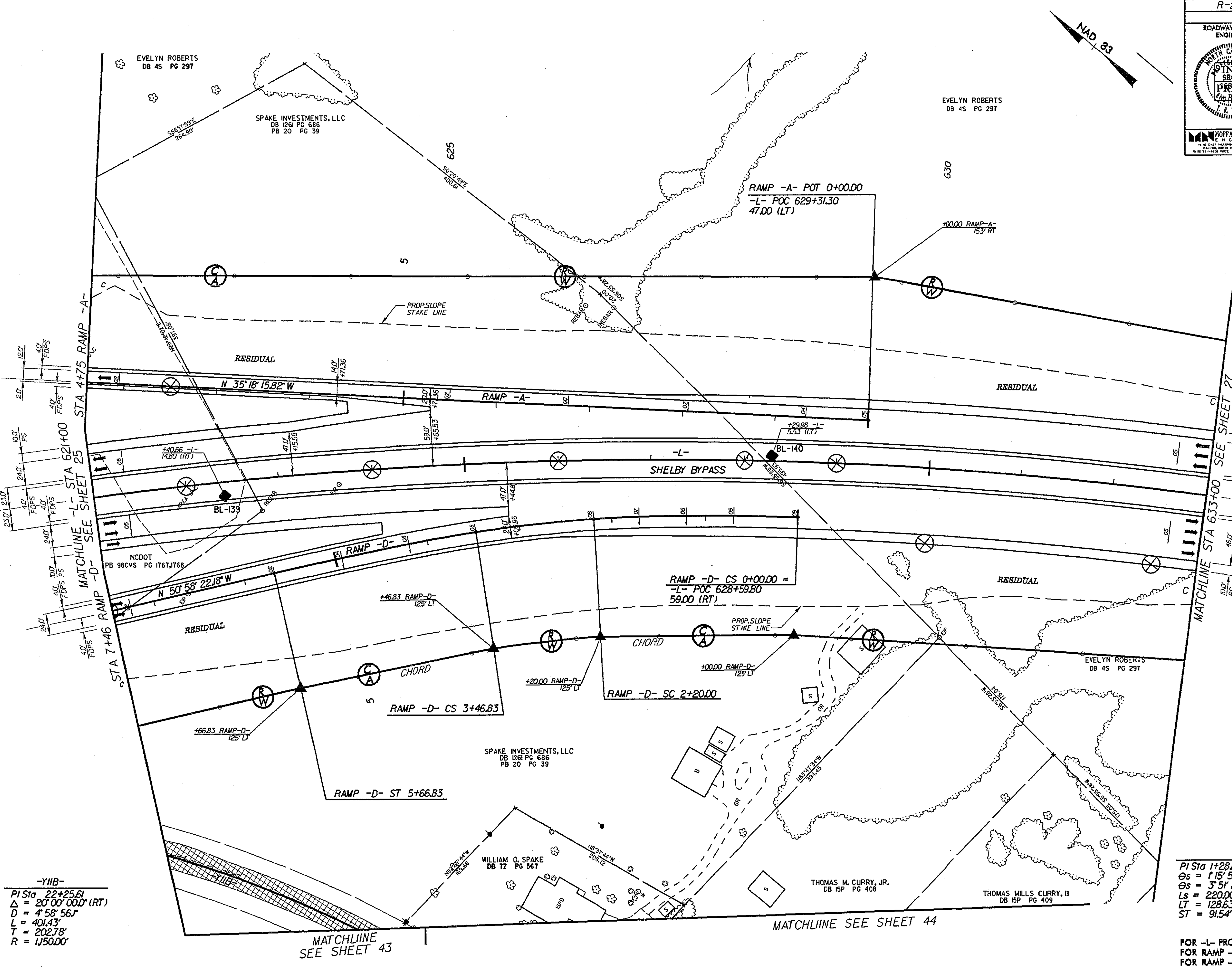
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-L-
PI Sta 640+73.56
Δ = 51° 31' 25.8" (RT)
D = 1° 15' 00.0"
L = 4,121.91
T = 2,212.07'
R = 4,583.66'
SE = .05

RAMP -D-
PI Sta 4+20.20
θs = 4° 14' 38.9"
Ls = 220.00'
LT = 146.71'
ST = 73.37'

RAMP -D-

PI Sta 1+28.63	PI Sta 2+83.45
θs = 1° 15' 58.7"	Δ = 4° 53' 36.5" (LT)
θs = 3° 51' 29.9"	D = 3° 51' 29.9"
Ls = 220.00'	L = 126.83
LT = 128.63'	T = 63.45'
ST = 91.54'	R = 1,485.00'
	SE = .05

-YIIB-
PI Sta 22+25.61
Δ = 20° 00' 00.0" (RT)
D = 4° 58' 56.1"
L = 401.43'
T = 202.78'
R = 1,150.00'

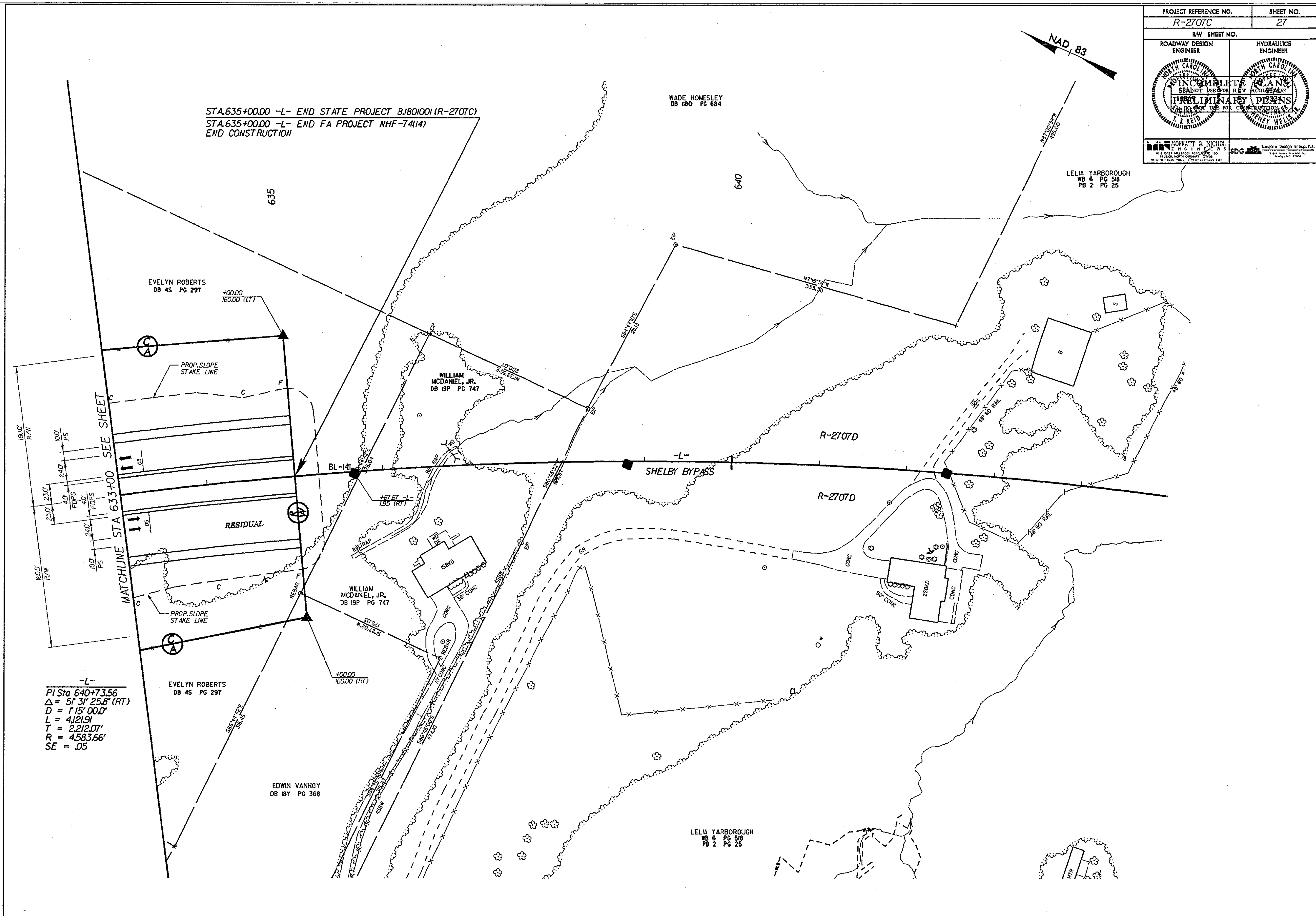
FOR -L- PROFILE SEE SHEETS 63 & 64
FOR RAMP -A- PROFILE SEE SHEET 73
FOR RAMP -D- PROFILE SEE SHEET 78

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SDG Sungate Design Group, P.A.



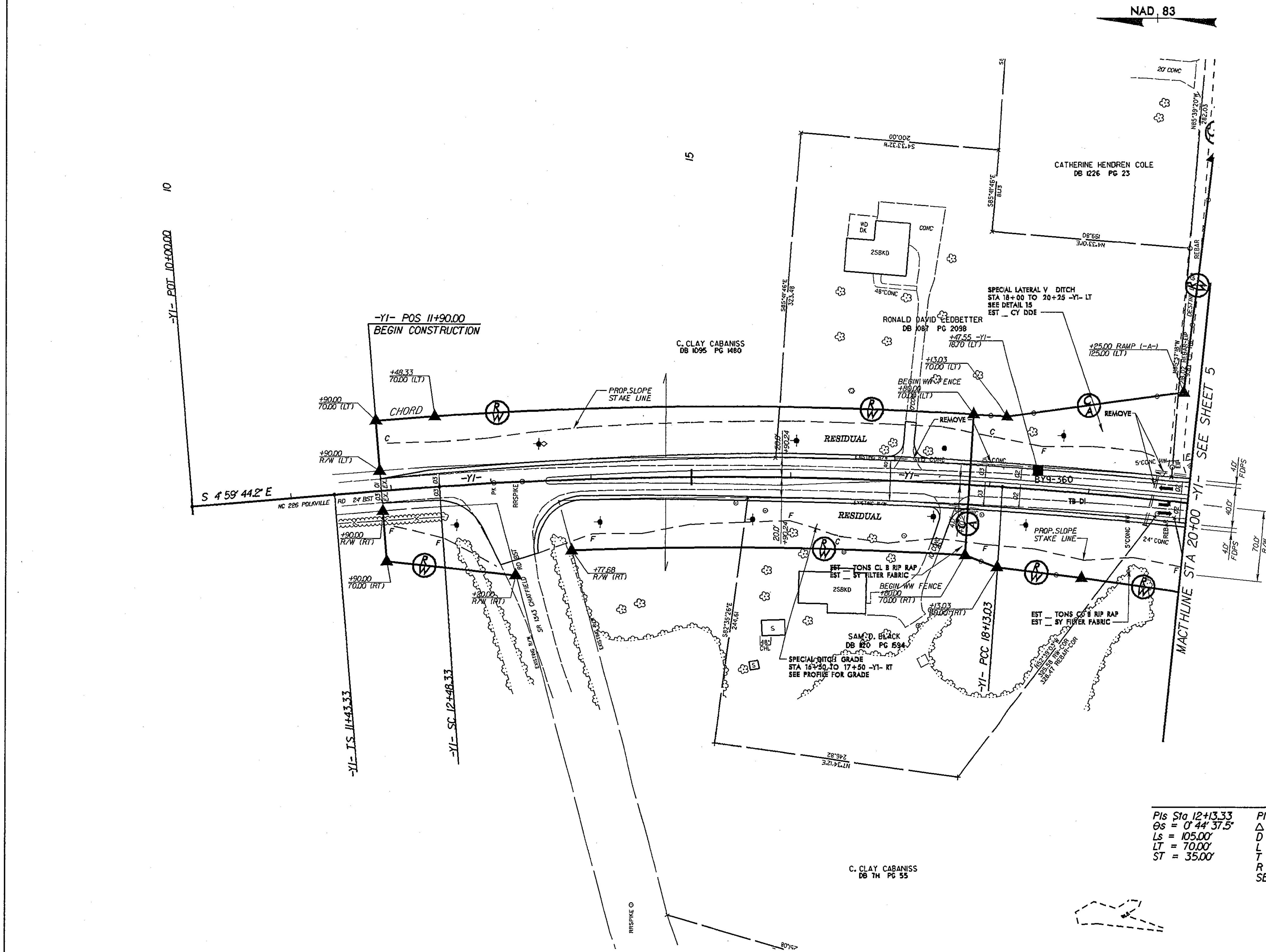
FOR -L- PROFILE SEE SHEET 64

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-Y1-

PIs Sta 12+13.33	PI Sta 15+31.14	PI Sta 24+03.61
Θs = 0° 44' 37.5"	Δ = 8° 00' 00.0" (RT)	Δ = 11° 46' 11.9" (RT)
Ls = 105.00'	D = 1° 25' 00.0"	D = 1° 00' 00.0"
LT = 70.00'	L = 564.71'	L = 1,177.00'
ST = 35.00'	T = 282.81'	T = 590.58'
	R = 4,044.41'	R = 5,729.58'
	SE = .03	SE = .02
		RO = 72'

FOR -Y1- PROFILE SEE SHEET 80

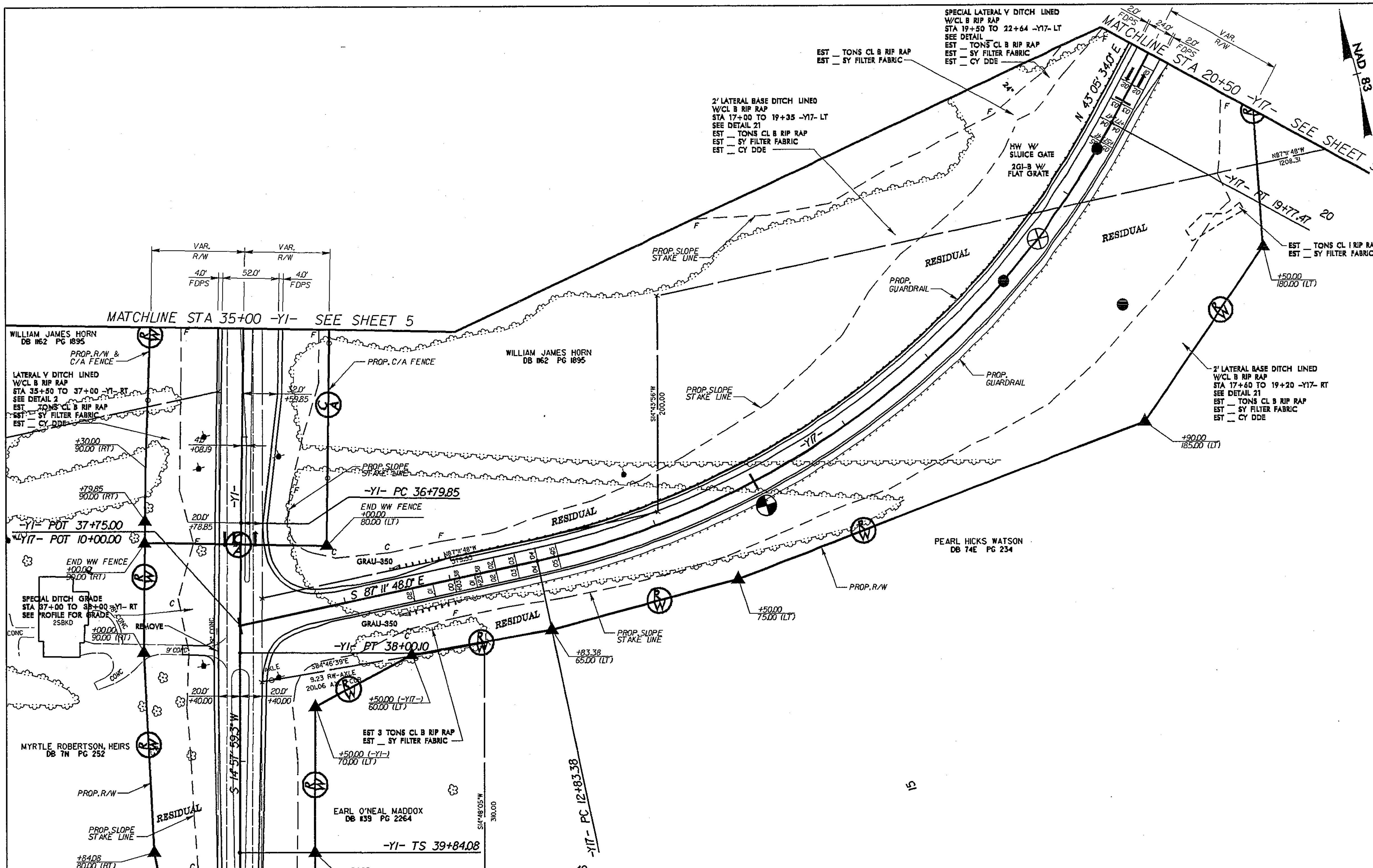
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-Y17-

PI Sta 16+53.97
Δ = 49° 42' 38.0" (LT)
D = 7° 09' 43.1"
L = 694.09'
T = 370.59'
R = 800.00'
SE = .05
RO = 100'

-Y1-

PI Sta 37+39.98	PIs Sta 40+17.41	PI Sta 42+29.87
Δ = 0° 48' 06.0" (LT)	θs = 0° 15' 00.0"	Δ = 3° 54' 51.5" (LT)
D = 0° 40' 00.0"	Ls = 50.00'	D = 1° 00' 00.0"
L = 120.25'	LT = 33.33'	L = 391.43'
T = 60.13'	ST = 16.67'	T = 195.79'
R = 8,594.37'		R = 5,729.58'
SE = NC		SE = NC

FOR -Y1- PROFILE SEE SHEETS 80 & 81
FOR -Y17- PROFILE SEE SHEETS 94 & 95

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

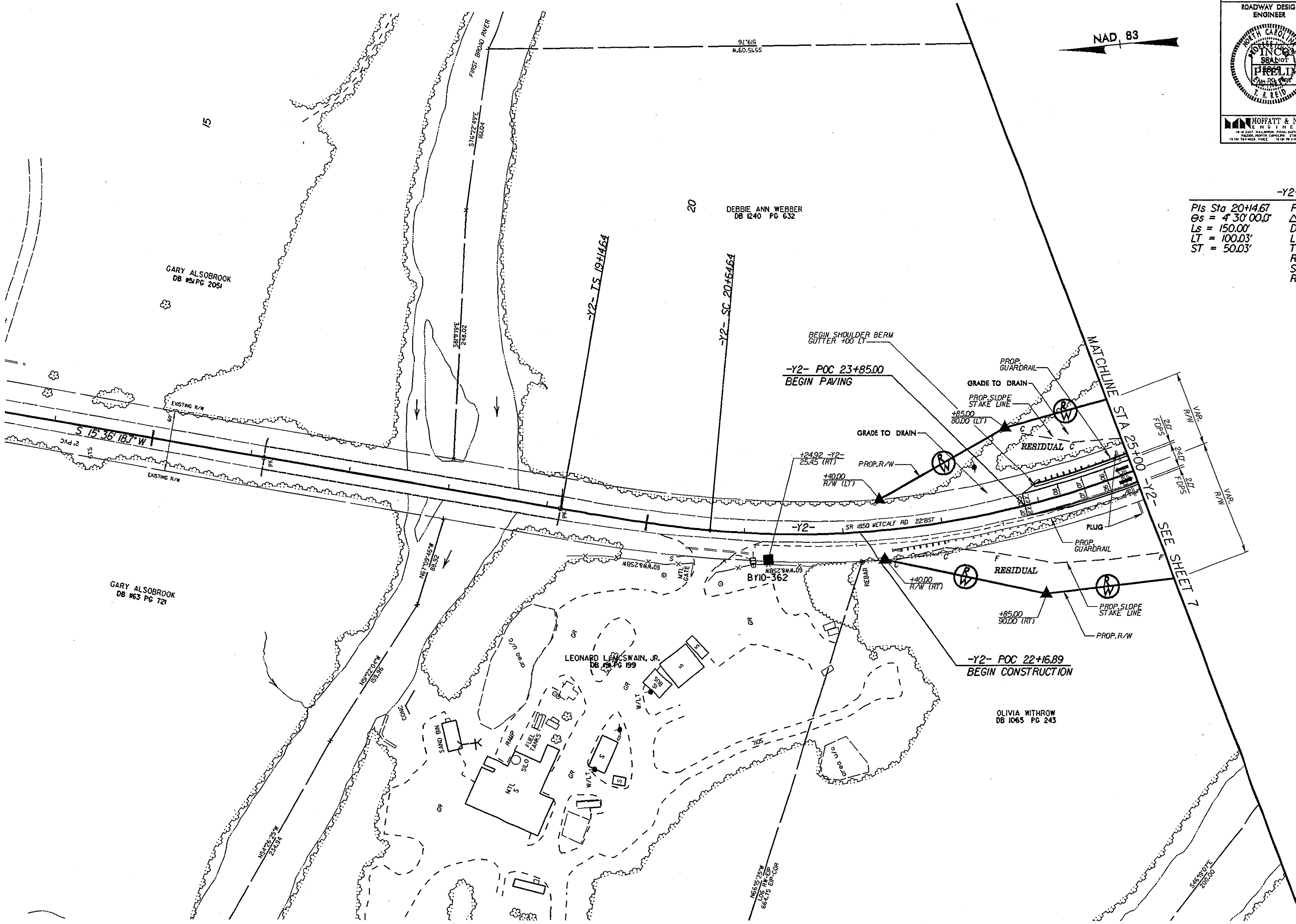
PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

-Y2-

PIs Sta 20+14.67	PI Sta 31+27.15
Θs = 4° 30′ 00.0″	Δ = 96° 06′ 18.7″ (LT)
Ls = 150.00′	D = 6° 00′ 00.0″
LT = 100.03′	L = 1,601.75
ST = 50.03′	T = 1,062.52′
	R = 954.93′
	SE = .06
	RO = 150′



FOR -Y2- PROFILE SEE SHEET 82

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

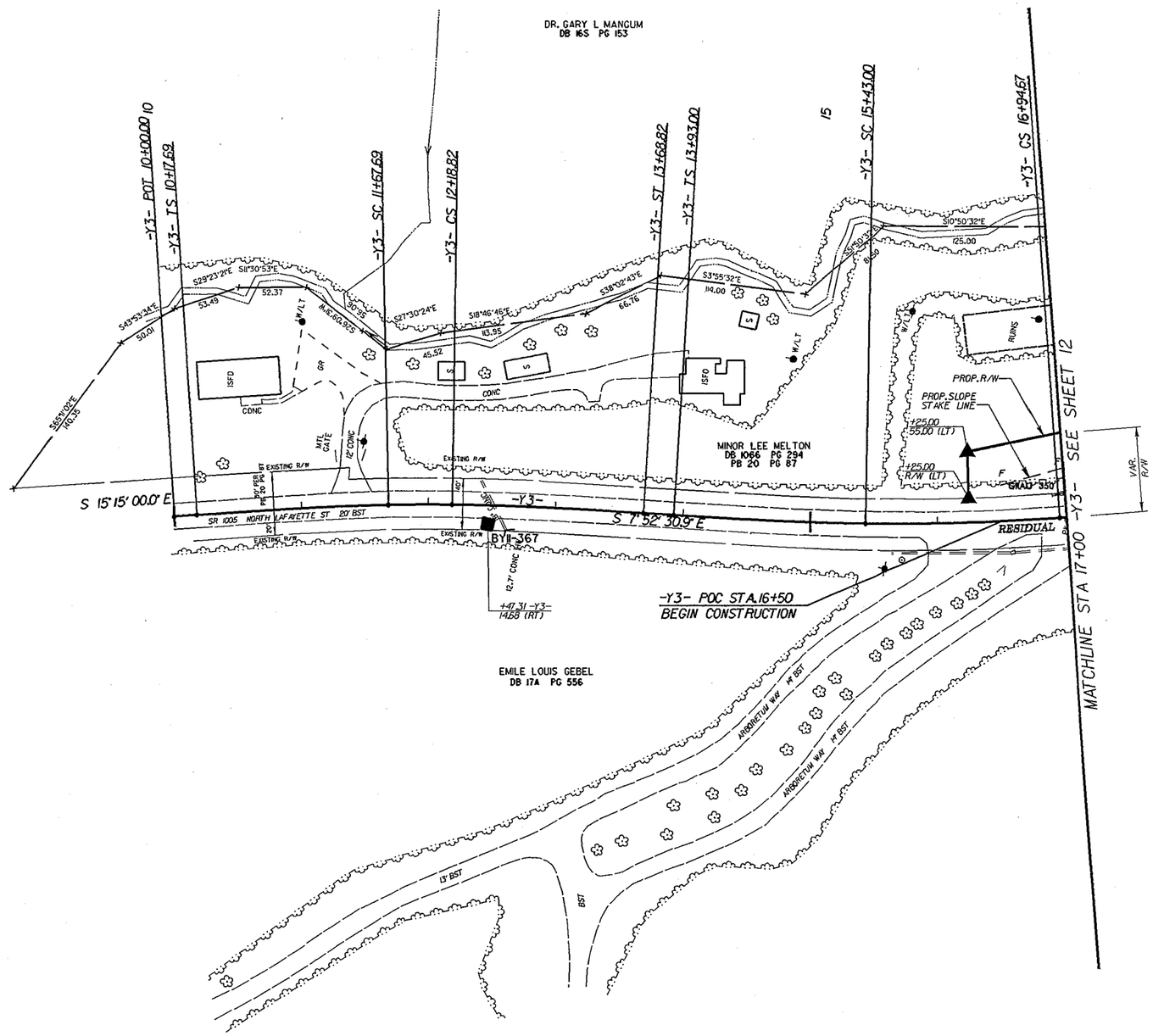
NORTH CAROLINA — SEAL — F. R. REID

NORTH CAROLINA — SEAL — JEFFREY WELLS

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

NAD 83



-Y3-

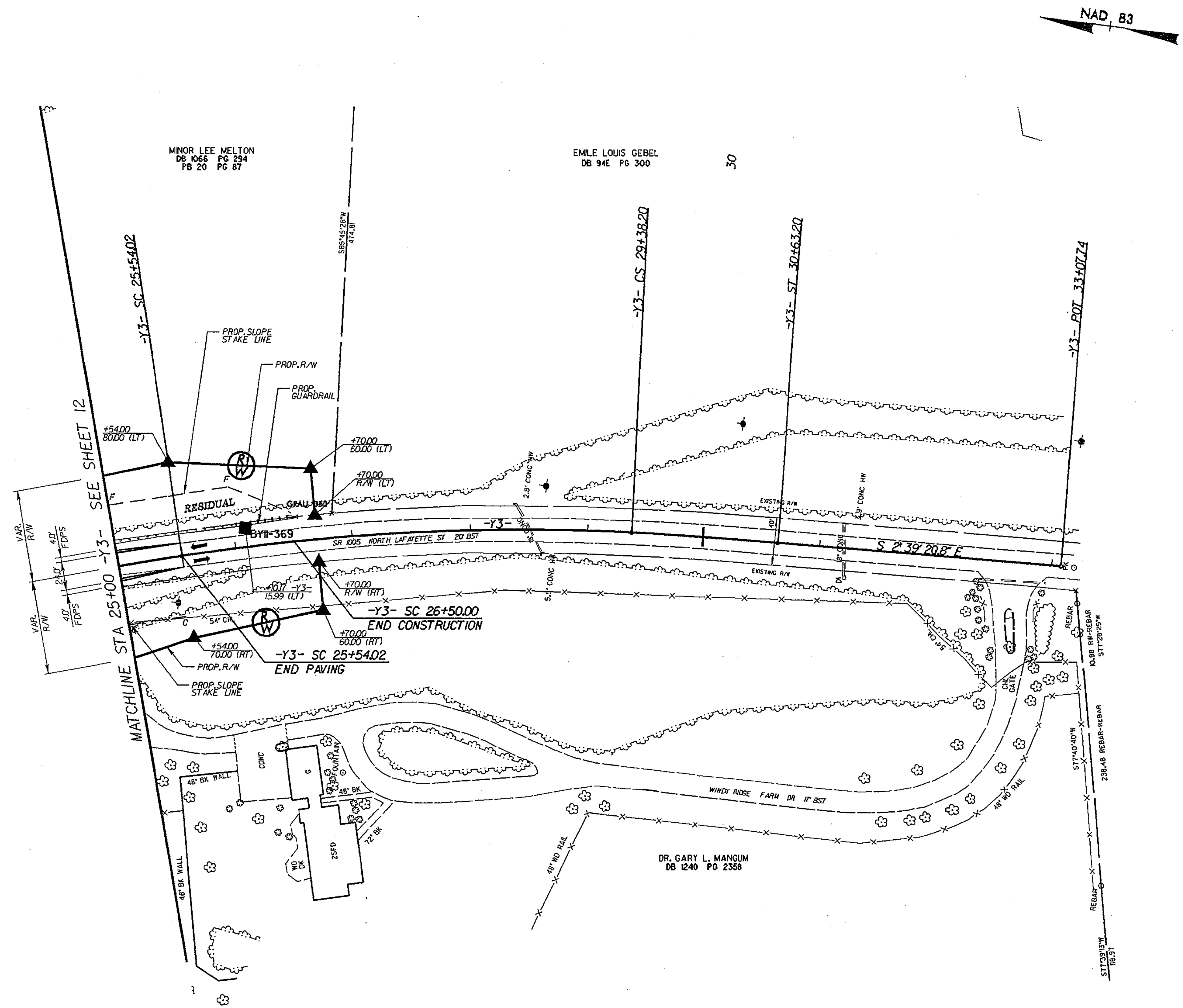
Pls Sta 11+17.70 θs = 2° 45' 00.0" Ls = 150.00' LT = 100.01' ST = 50.01'	Pl Sta 11+93.26 Δ = 1° 52' 29.1" (RT) D = 3° 40' 00.0" L = 511.3 T = 25.57' R = 1562.61'	Pls Sta 12+68.83 θs = 2° 45' 00.0" Ls = 150.00' LT = 100.01' ST = 50.01'
Pls Sta 14+93.01 θs = 2° 30' 00.0" Ls = 150.00' LT = 100.01' ST = 50.01'	Pls Sta 17+44.68 θs = 2° 30' 00.0" Ls = 150.00' LT = 100.01' ST = 50.01'	Pl Sta 16+18.88 Δ = 5° 03' 21.5" (LT) D = 3° 20' 00.0" L = 151.68 T = 75.89' R = 1,718.87'

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-Y3-

PIs Sta 25+12.36	PI Sta 27+46.76	PIs Sta 29+79.88
θs = 1° 52' 30.0"	Δ = 11° 31' 31.6" (RT)	θs = 1° 52' 30.0"
Ls = 125.00'	D = 3° 00' 00.0"	Ls = 125.00'
LT = 83.34'	L = 384.18	LT = 83.34'
ST = 41.67'	T = 192.74'	ST = 41.67'
	R = 1,909.86'	
	SE = .08	

FOR -Y3- PROFILE SEE SHEET 82

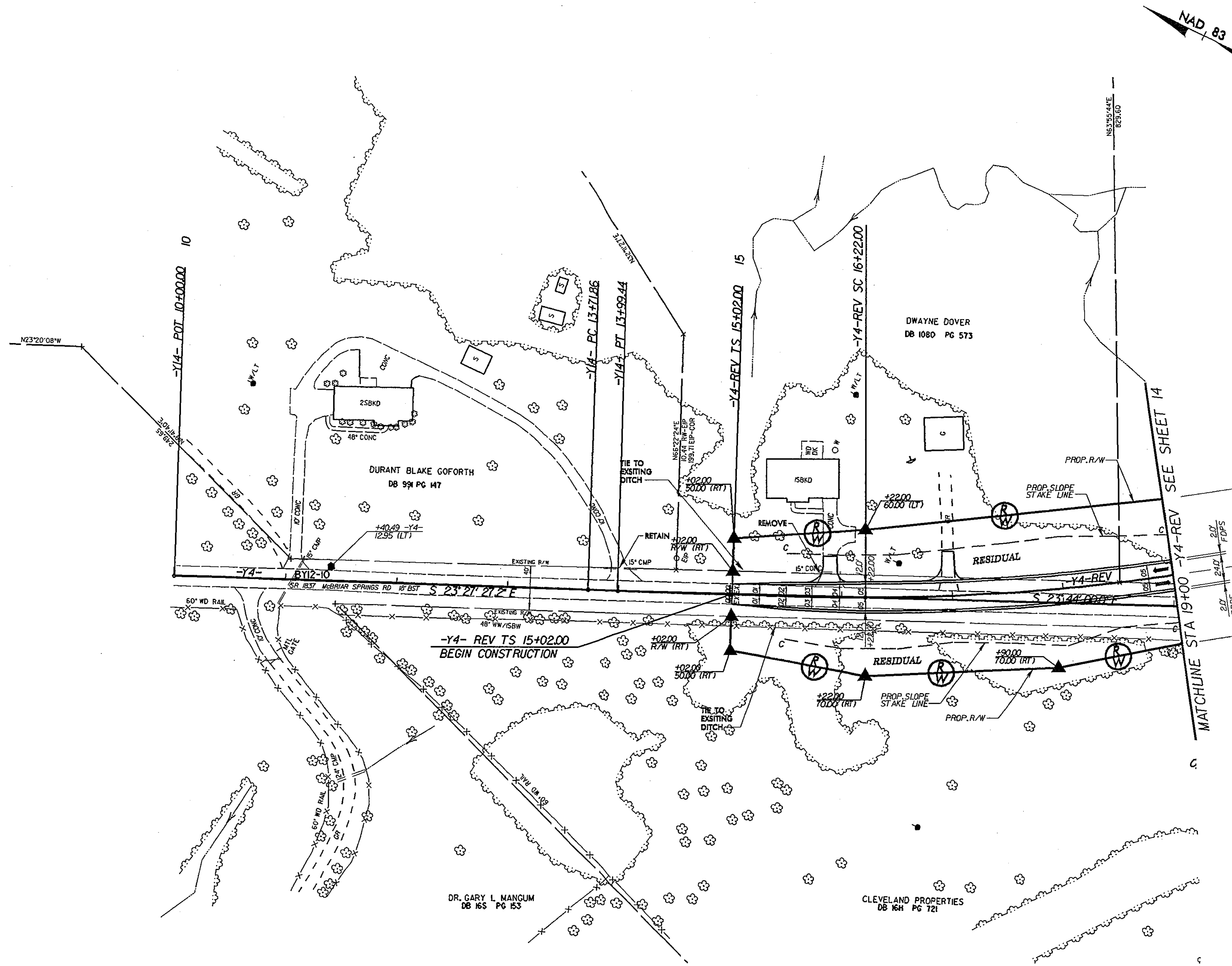
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG — Sungate Design Group, P.A.



-Y4-

PI Sta 13+85.65
Δ = 0°16' 32.7" (LT)
D = 1°00' 00.0"
L = 27.58'
T = 13.79'
R = 5,729.58'

-Y4-REV

PIs Sta 15+82.00	PI Sta 18+44.49
Θs = 1°48' 00.0"	Δ = 13°17' 22.9" (LT)
Ls = 120.00'	D = 3°00' 00.0"
LT = 80.00'	L = 442.99
ST = 40.00'	T = 222.49'
	R = 1,909.86'
	SE = .05

FOR -Y4-REV PROFILE SEE SHEET 83

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	34
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22683 F. R. REID

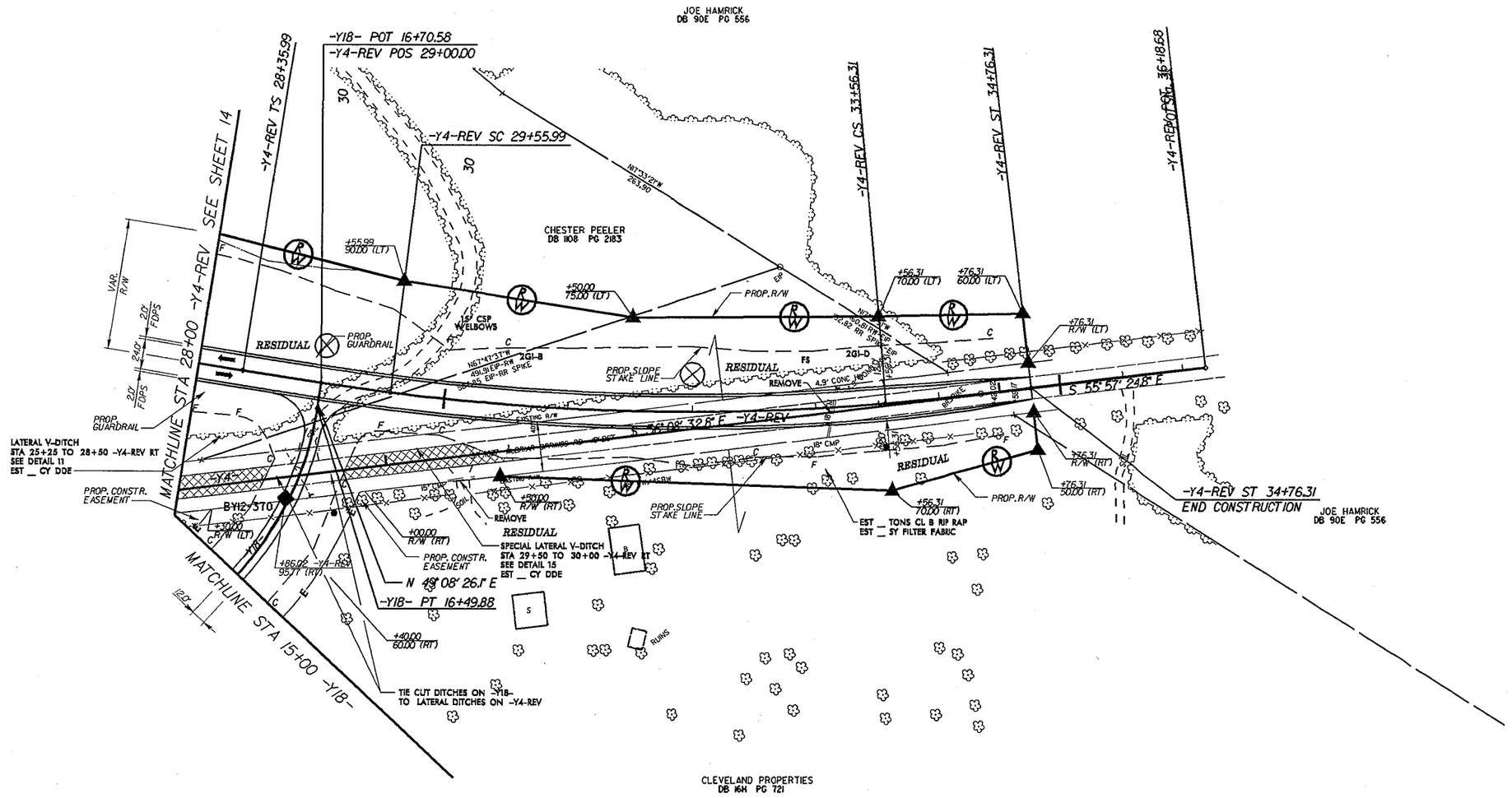
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19331 HENRY WELLS, JR.

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
4700 EAST MILLBROOK ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4669 FAX

SDG Sungate Design Group, P.A.
919-A Jones Franklin Rd.
Raleigh, N.C. 27606

NAD 83



-Y4-REV			-Y18-
PIs Sta 29+15.99	PI Sta 31+56.89	PIs Sta 33+96.31	PI Sta 15+25.20
θs = 1° 48' 00.0"	Δ = 12° 00' 34.7" (LT)	θs. = 1° 48' 00.0"	Δ = 65° 15' 10.8" (LT)
Ls = 120.00'	D = 3° 00' 00.0"	Ls = 120.00'	D = 22° 55' 05.9"
LT = 80.00'	L = 400.32	LT = 80.00'	L = 284.72'
ST = 40.00'	T = 200.90'	ST = 40.00'	T = 160.04'
	R = 1,909.86'		R = 250.00'
	SE = .05		

FOR -Y4-REV PROFILE SEE SHEET 83
FOR -Y18- PROFILE SEE SHEET 96

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	35
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
10 W. EAST MUSSOPIN POND, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 PHONE (919) 783-9369 FAX

SDG Sungate Design Group, P.A.
910-A Iowa Branch Rd.
Raleigh, N.C. 27606

NAD 83

JAMES LEE WEATHERS
DB 1210 PG 1712

JERRY DALE COSTNER
DB 1009 PG 433

FRIEDA LEDBETTER
DB 834 PG 484

RESIDUAL

KENNETH CROTTS
DB 16X PG 507

PATSY C. BOTTS
DB 14V PG 547

CARL DEDMON
DB 14U PG 190

-Y9- POT 10+00.00

BEGIN WW FENCE
+72.19
32.97 (LT)

BY15-12

POT +00.00

+63.00
R/W (LT)

+30.00
74.00 (LT)

PROP. CONSTR. EASEMENT

PROP. SLOPE STAKE LINE

+74.00
55.00 (LT)

+73.00
75.00 (LT)

+33.00
75.00 (LT)

+34.00
59.00 (LT)

+70.00
75.00 (LT)

PROP. R/W & C/A FENCE

25SK CHRISTIAN CHURCH

RETAIN

REMOVE DI

REMOVE

24" CONC C&G

NC 18 FALLSTON RD BST

EXISTING R/W

+48.85 -Y9-
37.42 (LT)

-Y9- POT 10+70.00
BEGIN CONSTRUCTION

+59.27
58.20 (RT)

PROP. SLOPE STAKE LINE

+60.00
58.00 (RT)

BEGIN WW FENCE
+60.00
70.00 (RT)

+20.00
75.00 (RT)

PROP. R/W & C/A FENCE

PROP. 36" Bbo W/W

ISBK BUS

ISFD

MATCHLINE STA 16+50 -Y9-

SEE SHEET 19

75.0' R/W

760' EP TO EP

VAR. R/W

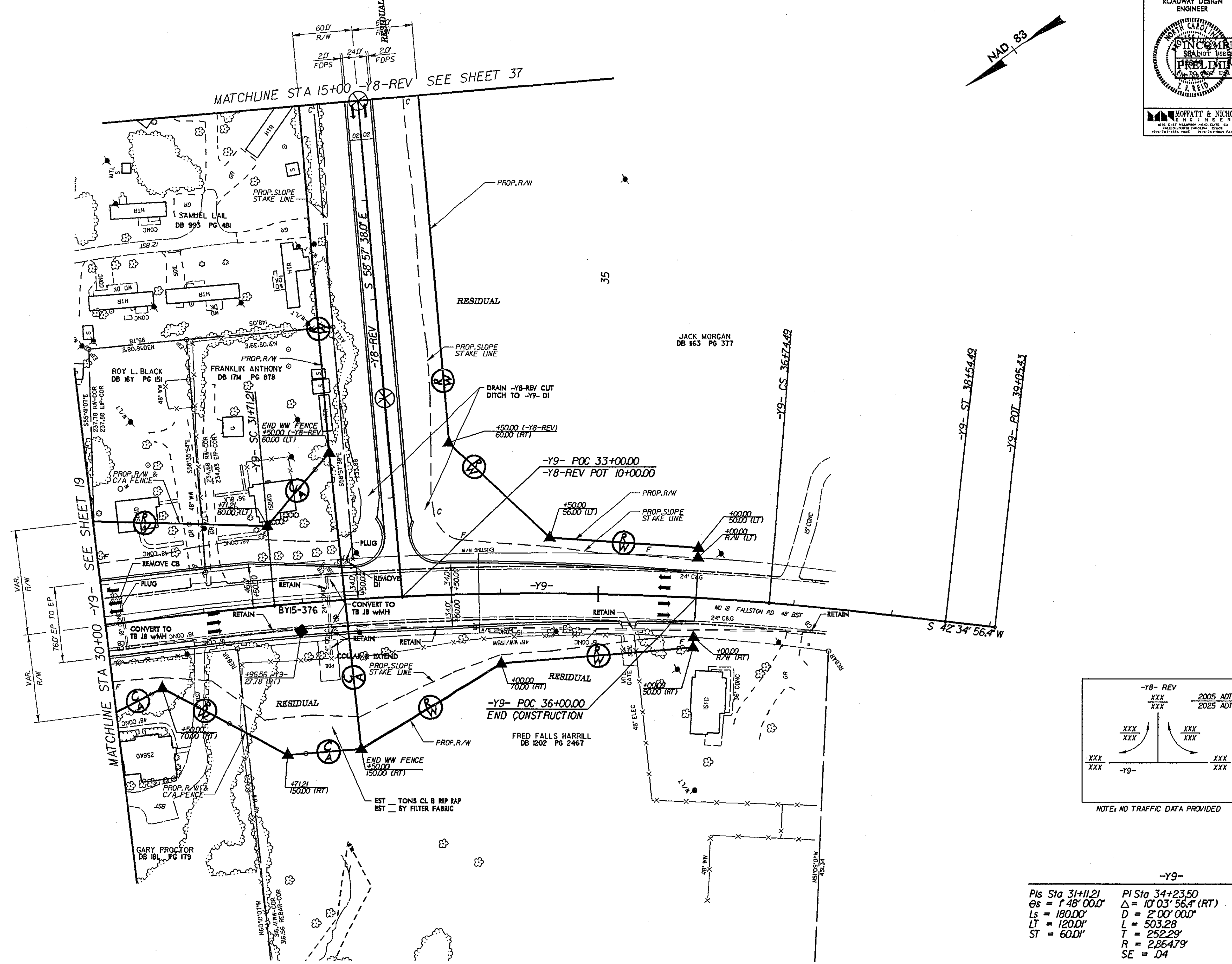
FOR -Y9- PROFILE SEE SHEET 87

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SDG Sungate Design Group, P.A.
915-A Jones Franklin Rd.
Raleigh, N.C. 27606



-Y9-

PIs Sta 31+11.21	PI Sta 34+23.50	PIs Sta 37+34.50
θs = 1°48' 00.0"	Δ = 10°03' 56.4" (RT)	θs = 1°48' 00.0"
Ls = 180.00'	D = 2°00' 00.0"	Ls = 180.00'
LT = 120.01'	L = 503.28	LT = 120.01'
ST = 60.01'	T = 252.29'	ST = 60.01'
	R = 2,864.79'	
	SE = .04	

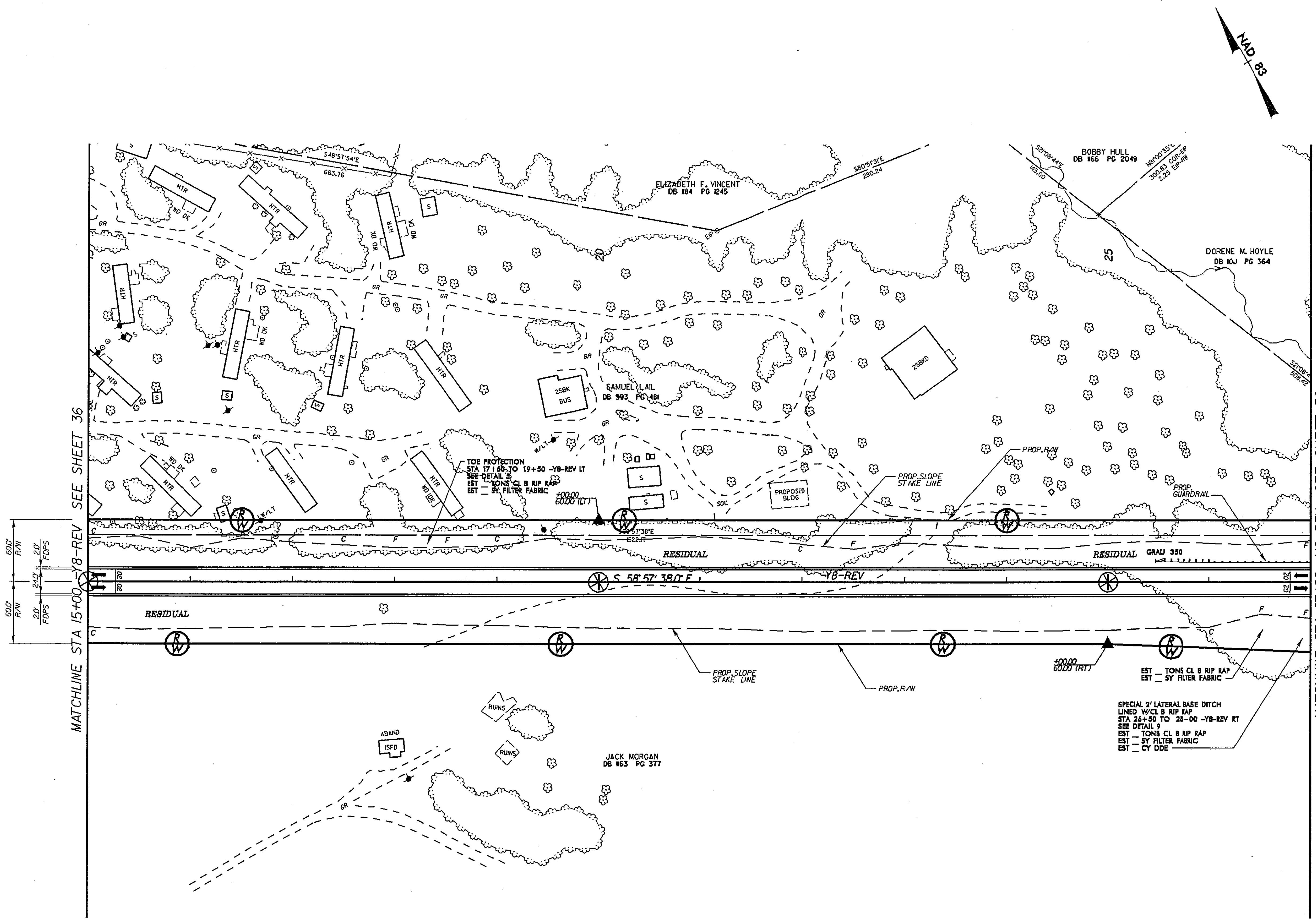
FOR -Y9- PROFILE SEE SHEET 87
FOR -Y8-REV PROFILE SEE SHEET 85

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

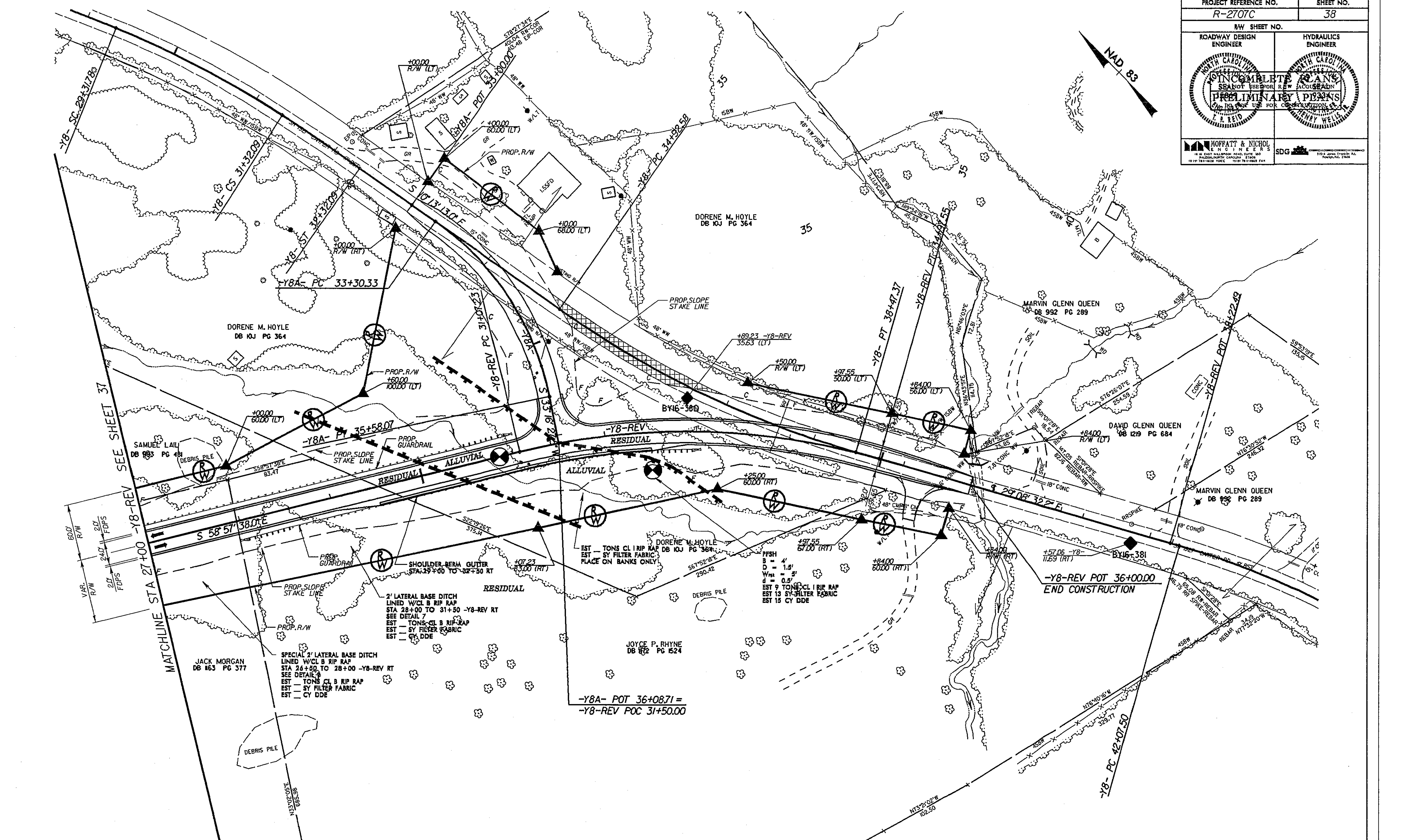


FOR -Y8-REV PROFILE SEE SHEET 85

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS



-Y8-		
PIs Sta 28+98.45	PI Sta 30+32.20	PIs Sta 31+65.43
Θs = 2° 34' 01.3"	Δ = 10° 17' 03.1" (RT)	Θs = 2° 34' 01.3"
Ls = 100.00'	D = 5° 08' 02.5"	Ls = 100.00'
LT = 66.67'	L = 200.31'	LT = 66.67'
ST = 33.34'	T = 100.43'	ST = 33.34'
	R = 1,116.00'	

-Y8-
PI Sta 36+71.61
Δ = 18° 55' 19.2" (LT)
D = 5° 20' 00.0"
L = 354.79'
T = 179.02'
R = 1,074.30'

-Y8-
PI Sta 43+89.21
Δ = 23° 17' 46.6" (RT)
D = 6° 30' 00.0"
L = 358.40'
T = 181.71'
R = 881.47'

-Y8A-
PI Sta 34+50.00
Δ = 43° 29' 40.5" (RT)
D = 19° 05' 54.9"
L = 227.74'
T = 119.67'
R = 300.00'
SE = .08

-Y8-REV
PI Sta 33+06.92
Δ = 29° 49' 05.8" (RT)
D = 7° 38' 22.0"
L = 390.32'
T = 199.69'
R = 750.00'
SE = .08
RO = 200'

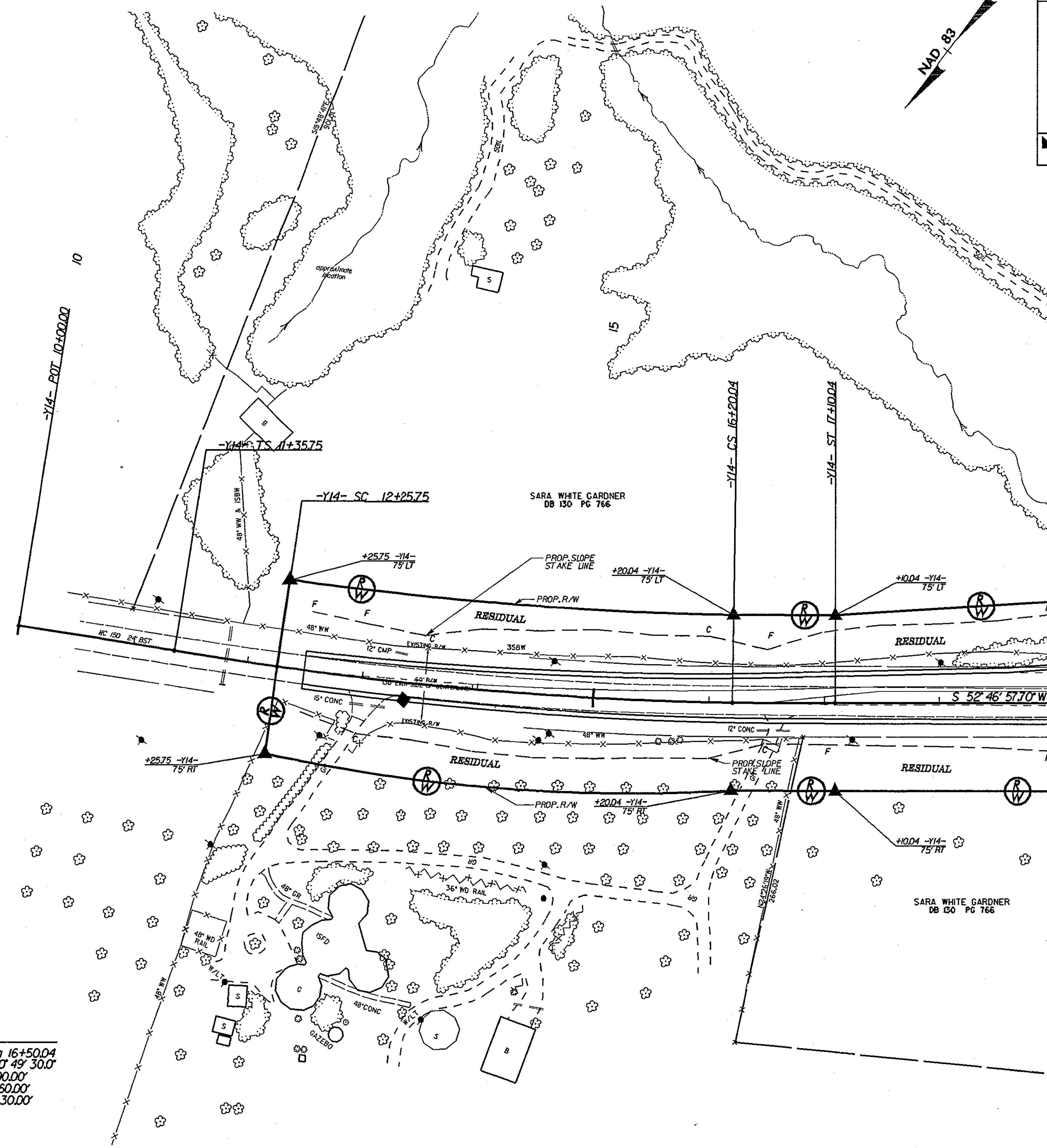
FOR -Y8A- PROFILE SEE SHEET 86
FOR -Y8-REV PROFILE SEE SHEET 85

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



-Y14-

Pls Sta 11+95.75	PI Sta 14+23.15	Pls Sta 16+50.04
Θs = 0° 49' 30.0"	Δ = 7° 13' 43.1" (LT)	Θs = 0° 49' 30.0"
Ls = 90.00'	D = 1° 50' 00.0"	Ls = 90.00'
LT = 60.00'	L = 394.29	LT = 60.00'
ST = 30.00'	T = 197.41'	ST = 30.00'
	R = 3,125.22'	

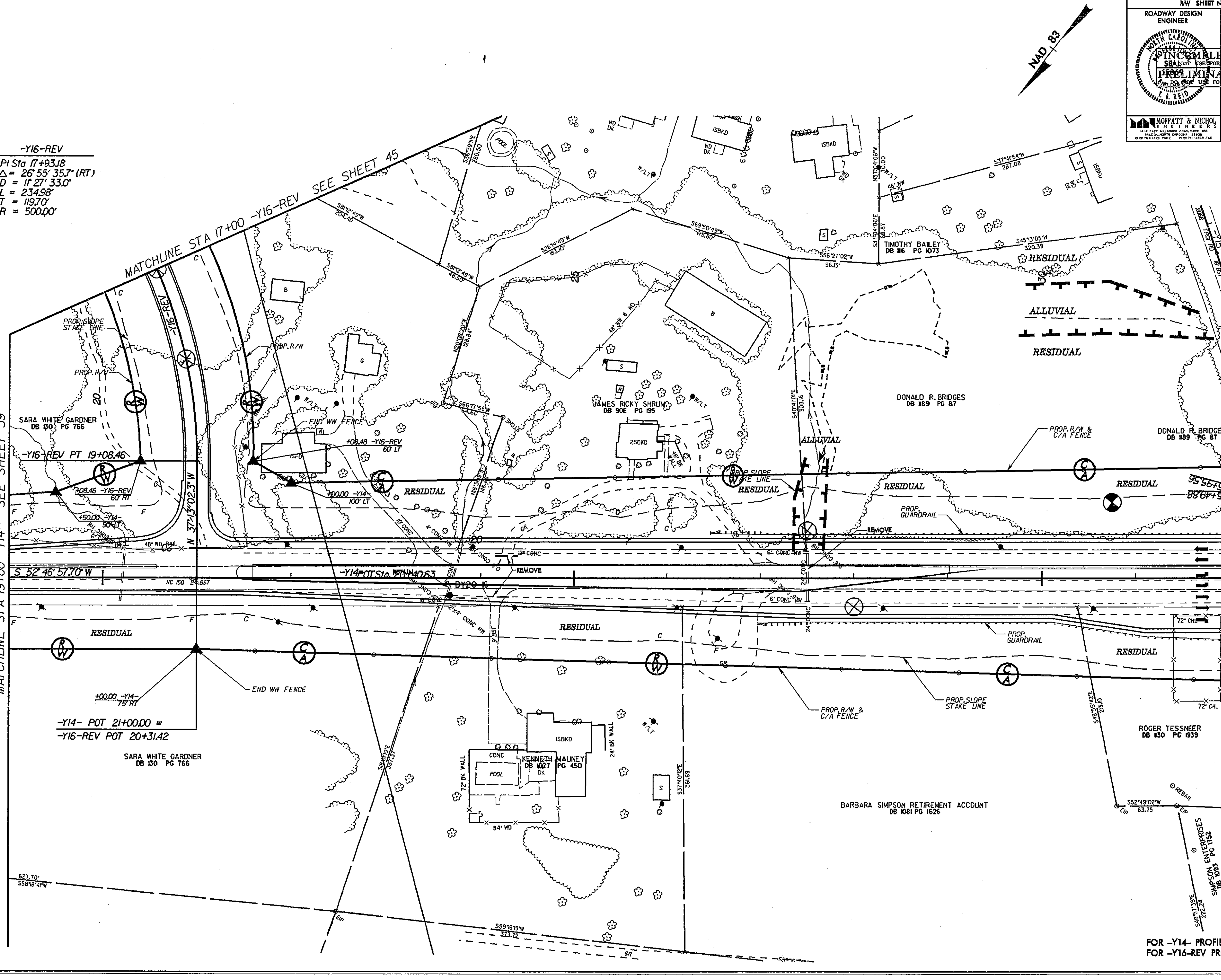
FOR -Y14- PROFILE SEE SHEET 90

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



FOR -Y14- PROFILE SEE SHEET 90
FOR -Y16-REV PROFILE SEE SHEET 92

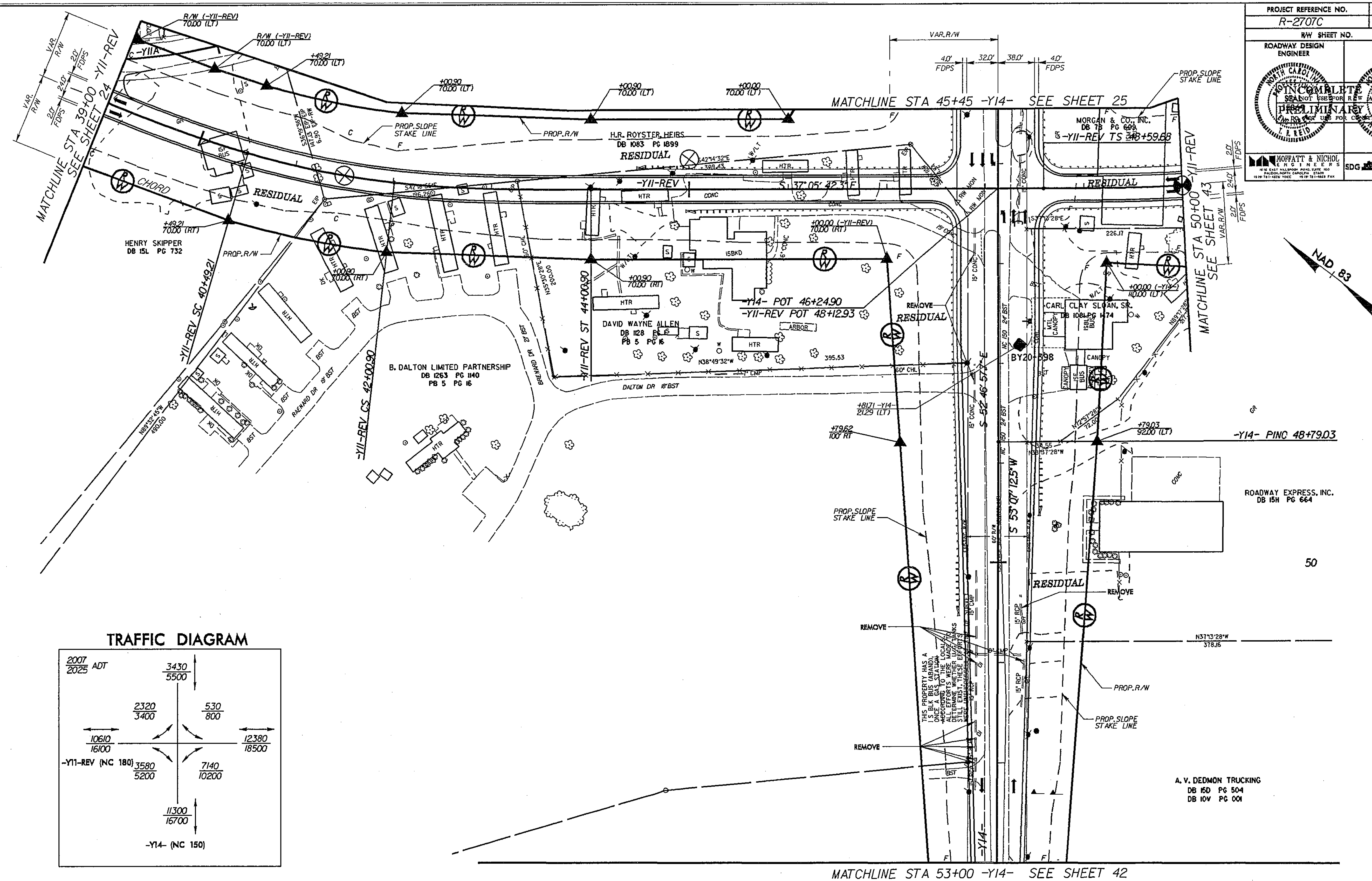
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	41
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL — ENGINEER — T. R. REID	NORTH CAROLINA PROFESSIONAL SEAL — ENGINEER — HENRY WELLS, JR.

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SDG Sungate Design Group, P.A.



TRAFFIC DIAGRAM

2007
2025 ADT
3430
5500
2320
3400
530
800
10610
16100
12380
18500
-Y11-REV (NC 180)
3580
5200
7140
10200
11300
16700
-Y14- (NC 150)

-Y11-REV

PIs Sta 39+82.63	PI Sta 41+25.24	PIs Sta 42+67.65	PIs Sta 49+93.10
θs = 6° 25' 00.0"	Δ = 9° 44' 00.4" (LT)	θs = 6° 25' 00.0"	θs = 6° 25' 00.0"
Ls = 200.00'	D = 6° 25' 00.0"	Ls = 200.00'	Ls = 200.00'
LT = 133.42'	L = 151.69	LT = 133.42'	LT = 133.42'
ST = 66.75'	T = 76.03'	ST = 66.75'	ST = 66.75'
	R = 892.92'		
	SE = .08		

FOR -Y11-REV PROFILE SEE SHEET 88
FOR -Y14- PROFILE SEE SHEET 91

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	42
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

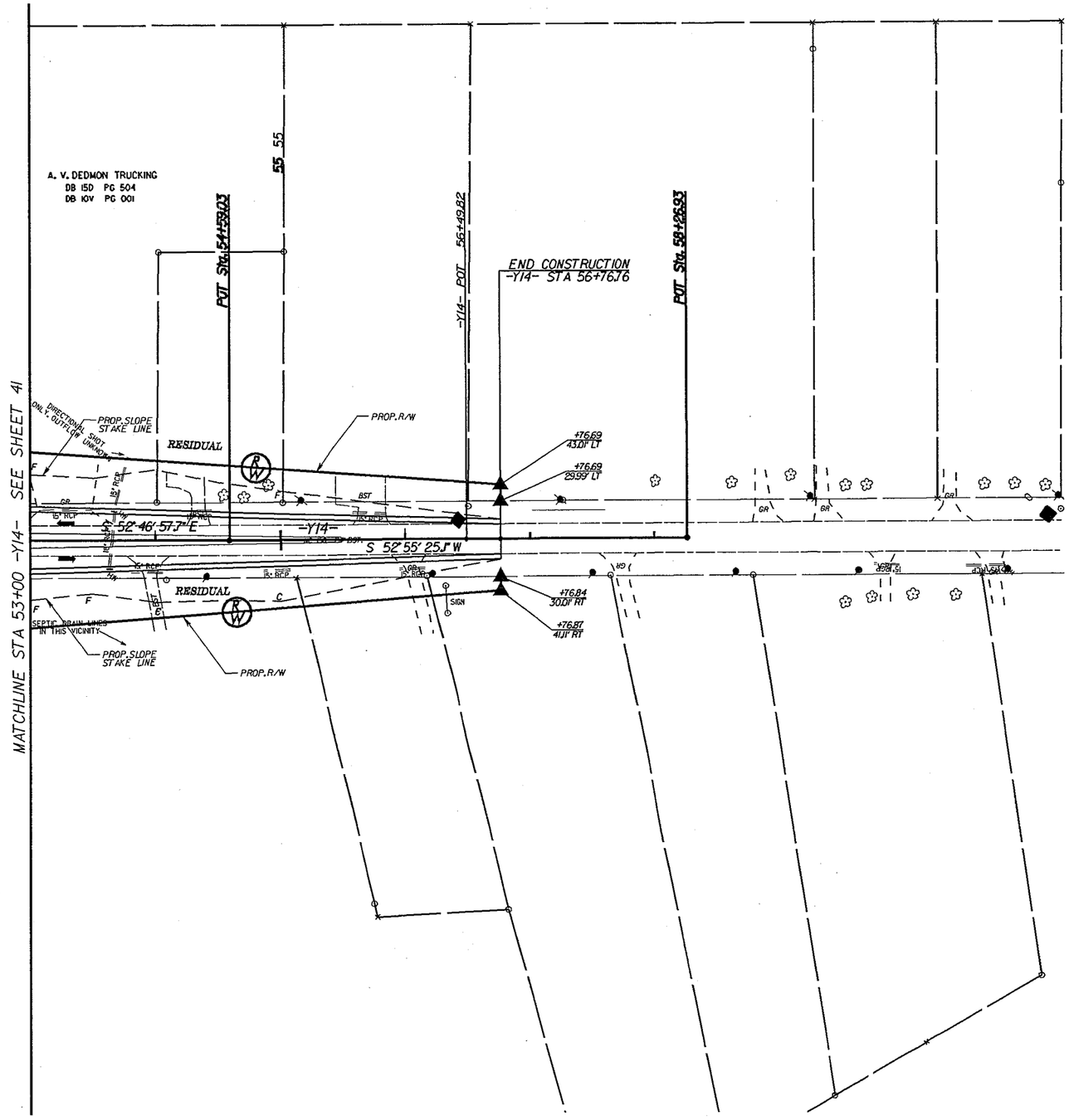
HYDRAULICS ENGINEER

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

NAD 83



FOR -Y14- PROFILE SEE SHEET 91

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	43
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

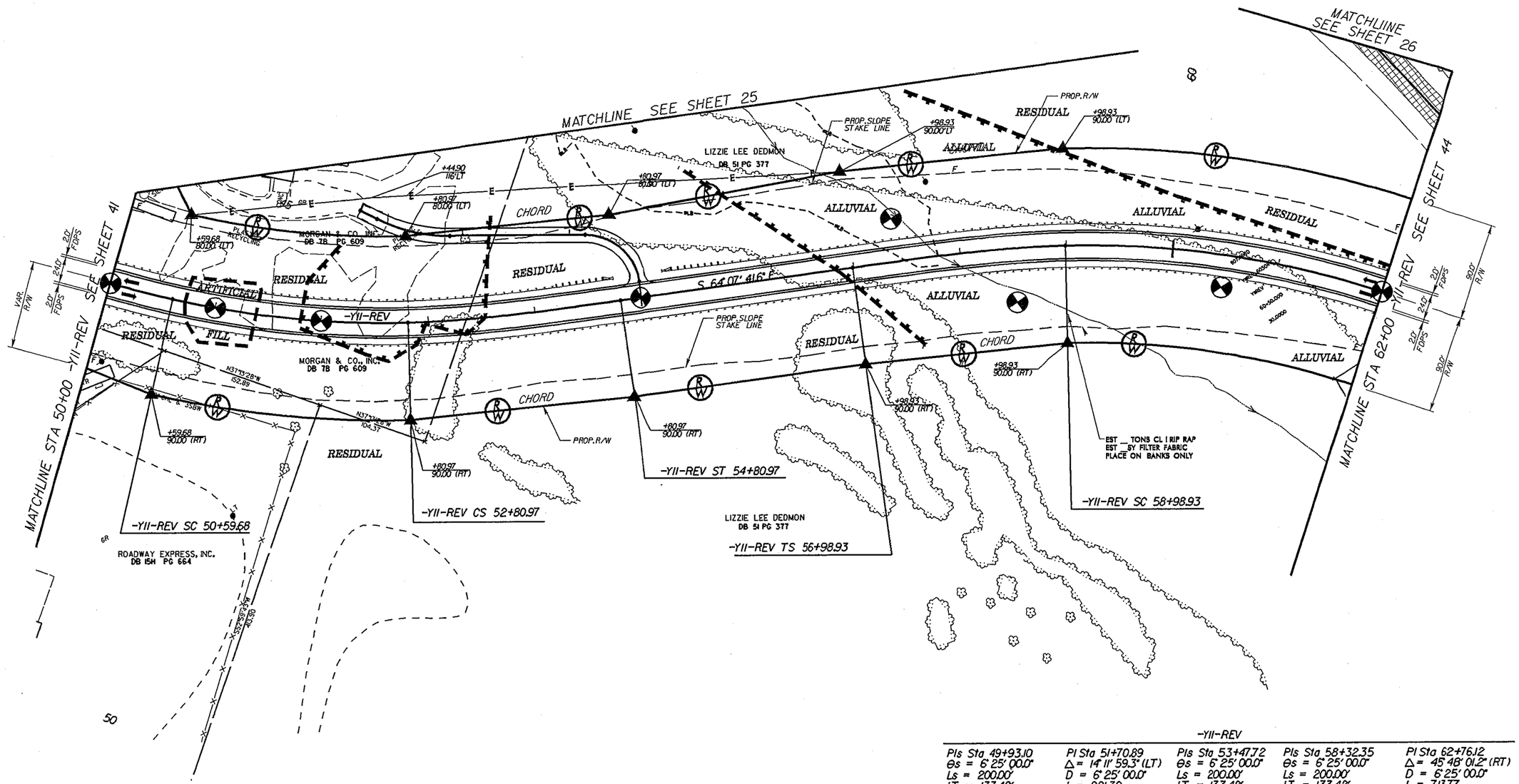
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15669 E. REID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23331 JIMMY WELLS

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

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

NAD 83



-Y11-REV

Pls Sta 49+93.10	Pl Sta 51+70.89	Pls Sta 53+47.72	Pls Sta 58+32.35	Pl Sta 62+76.12
θs = 6°25'00.0"	Δ = 14°11'59.3" (LT)	θs = 6°25'00.0"	θs = 6°25'00.0"	Δ = 45°48'01.2" (RT)
Ls = 200.00'	D = 6°25'00.0"	Ls = 200.00'	Ls = 200.00'	D = 6°25'00.0"
LT = 133.42'	L = 221.30	LT = 133.42'	LT = 133.42'	L = 713.77
ST = 66.75'	T = 111.22'	ST = 66.75'	ST = 66.75'	T = 377.19'
	R = 892.92'			R = 892.92'
	SE = .08			SE = .08

FOR -Y11-REV PROFILE SEE SHEETS 88 & 89

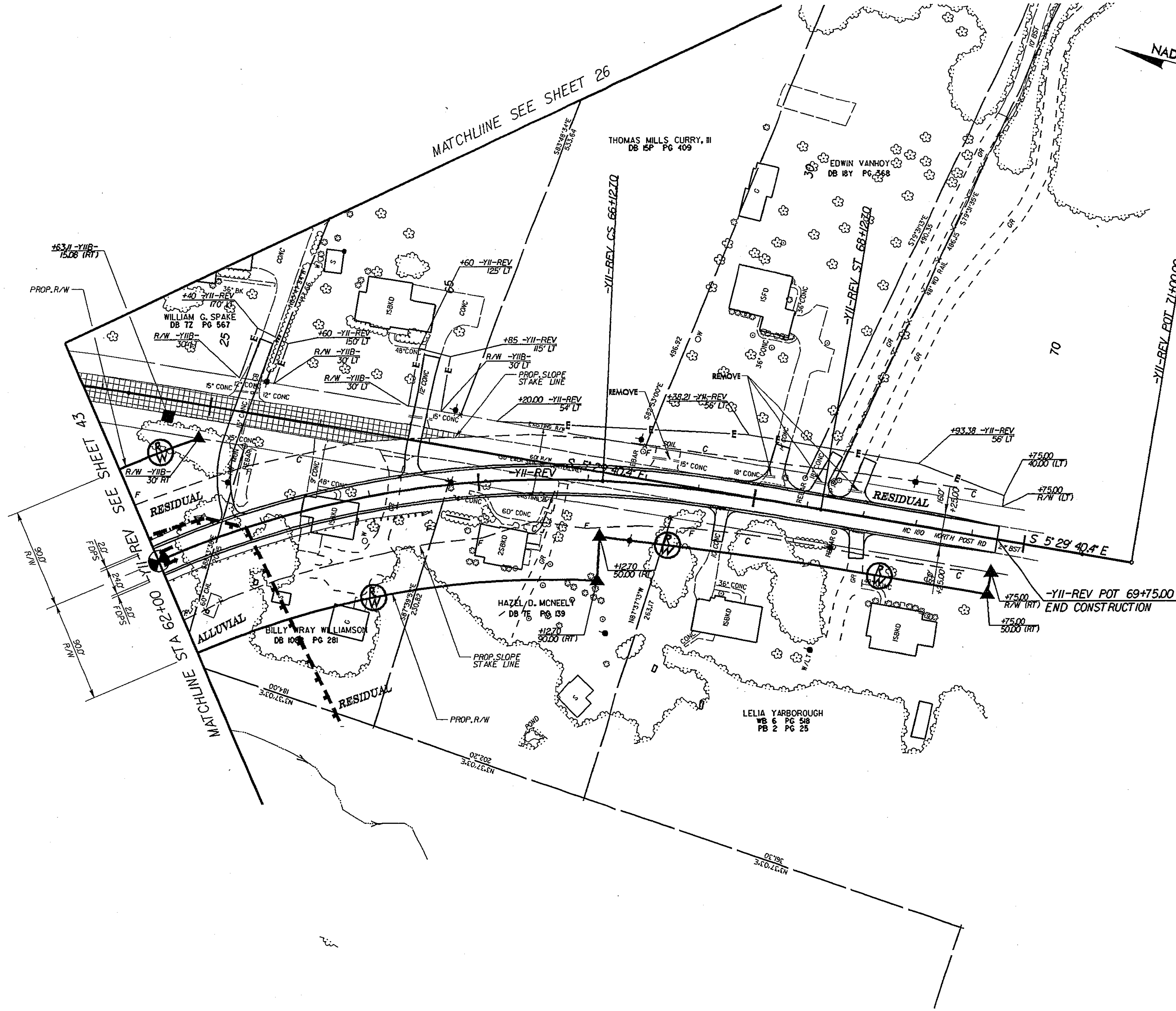
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	44
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15849 ENGINEER T. R. REID	NORTH CAROLINA PROFESSIONAL SEAL 9331 ENGINEER HENRY WELLS, JR.

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

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SDG Sungate Design Group, P.A.
915-4 Jones Franklin Rd.
Raleigh, N.C. 27606



-Y11-REV

PI Sta 62+76.12	PIs Sta 66+79.45
Δ = 45° 48' 01.2" (RT)	Θs = 6° 25' 00.0"
D = 6° 25' 00.0"	Ls = 200.00'
L = 713.77	LT = 133.42'
T = 377.19'	ST = 66.75'
R = 892.92'	
SE = .08	

FOR -Y11-REV PROFILE SEE SHEET 89

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	45
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
SEAL NOT USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

NAD 83

-Y16-REV PC 16+73.48

-Y16-REV PT 16+39.39

-Y16-REV STA 12+45.99 = -Y16A- STA 15+14.26

-Y16-REV PC 12+25.43

END CONSTRUCTION -Y16A- STA 13+75.00

END CONSTRUCTION -Y16-REV STA 10+00.00

POT Sta. 10+00.00

POT Sta. 17+00 -Y16-REV SEE SHEET 40

T42-13096 ELEV=868.73'

T42-13089 ELEV=888.55'

T42-13090 ELEV=877.14'

T41-807 ELEV=848.4'

PROP. SLOPE STAKE LINE

PROP. R/W

RESIDUAL

ALLUVIUM

MARGARET DIANE MITCHELL

SECRETARY OF HOUSING URBAN DEVELOPMENT

MARY CRAWLEY HARTSELL

THOMAS ERIC CLONINGER

-Y16-REV

PI Sta 17+93.18	PI Sta 14+45.11
Δ = 26° 55' 35.7" (RT)	Δ = 47° 26' 10.4" (LT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 234.98'	L = 413.96'
T = 119.70'	T = 219.67'
R = 500.00'	R = 500.00'

FOR -Y16-REV PROFILE SEE SHEET 92
FOR -Y16A- PROFILE SEE SHEET 93

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15842 ENGINEER T. R. REID

NORTH CAROLINA PROFESSIONAL SEAL 9331 ENGINEER HENRY WELLS, JR.

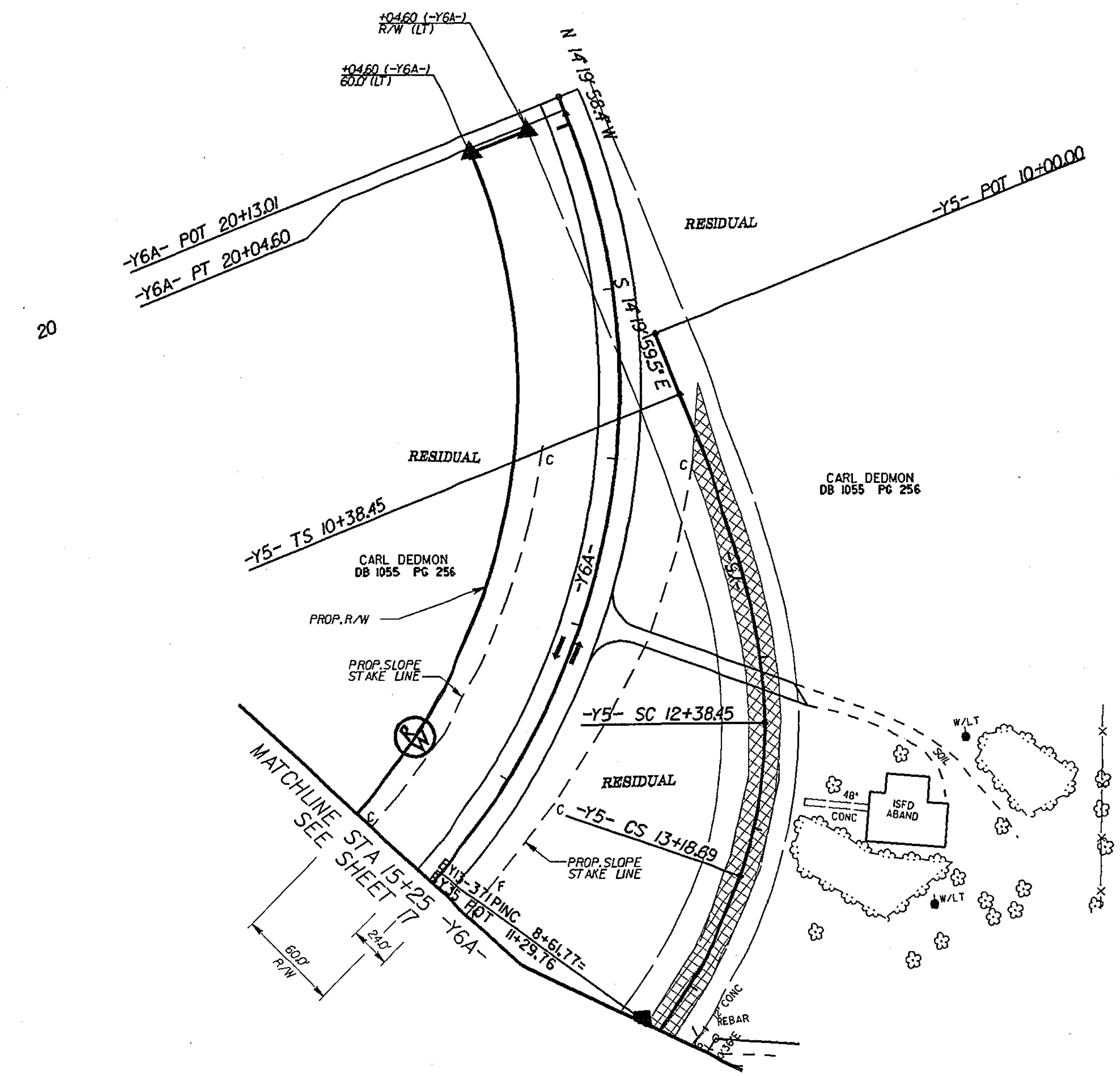
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SDG Sungate Design Group, P.A.

NAD 83

ADDITIONAL TOPO AND DTM COVERAGE REQUIRED



-Y6A-

PI Sta 18+74.21
Δ = 123° 04' 59.2" (LT)
D = 13° 19' 28.6"
L = 923.73'
T = 793.33'
R = 430.00'

-Y5-

PIs Sta 13+96.72	PI Sta 14+85.71
Θs = 21° 30' 00.0"	Δ = 30° 39' 00.8" (RT)
Ls = 200.00'	D = 38° 11' 49.9"
LT = 134.33'	L = 80.24'
ST = 67.57'	T = 41.11'
	R = 150.00'

FOR -Y6A- PROFILE SEE SHEET 84

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-L-

BM # 16
EL.= 735.98
N = 581328.8 E = 1232383.5
8 INCH NAIL IN BASE OF 24 INCH RED OAK
-L- STA. 342+75.40 178.25 (RT.)

PROPOSED GRADE (R-2707B)

(+)1.3143%

PROPOSED GRADE (R-2707B)

EXISTING GRADE

810 800 790 780 770 760 750 740 730 720

339+00 340+00 341+00 342+00 343+00 344+00 345+00 346+00 347+00 348+00 349+00 350+00 351+00

-L-

PI = 355+00.00
EL = 794.00'
K = 568
VC = 1,900'
DS = 70 MPH

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

WEATHERED ROCK (BIOTITEMICA GNEISS)

(+)1.3143%

(-)2.0323%

15H

PROPOSED GRADE

STA. 353+22.84 -L- BEGIN CONSTRUCTION
EL.= 786.41

356+00.0 -L- C/L

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

AR
DRY 10/05

357+00.0 -L- C/L

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

AR
DRY 10/05

HARD CRYSTALLINE ROCK (BIOTITEMICA GNEISS)

S-1
S-2

358+00.0 -L- C/L

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

BT
10/05

BRN/GRAY V. DENSE MOIST SILTY SAND (A-2-4)

359+00.0 -L- C/L

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST SANDY SILT (A-4)

BT
10/05

WEATHERED ROCK (BIOTITEMICA GNEISS)

360+00.0 -L- 80.0 RT

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST SANDY SILT (A-4)

AR
8/05

HARD CRYSTALLINE ROCK (BIOTITEMICA GNEISS)

BROWN VERY STIFF MOIST MICA SANDY SILT W/ ALTERNATING LAYERS OF WR STARTING AT 18'-19' (A-4)

S-8

361+00.0 -L- 100.0 LT

AR
8/05

361+50.0 -L- 80.0 LT

AR
8/05

362+00.0 -L- C/L
WR @ 2'

AR
8/05

830 820 810 800 790 780 770 760 750 740

351+00 352+00 353+00 354+00 355+00 356+00 357+00 358+00 359+00 360+00 361+00 362+00 363+00

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

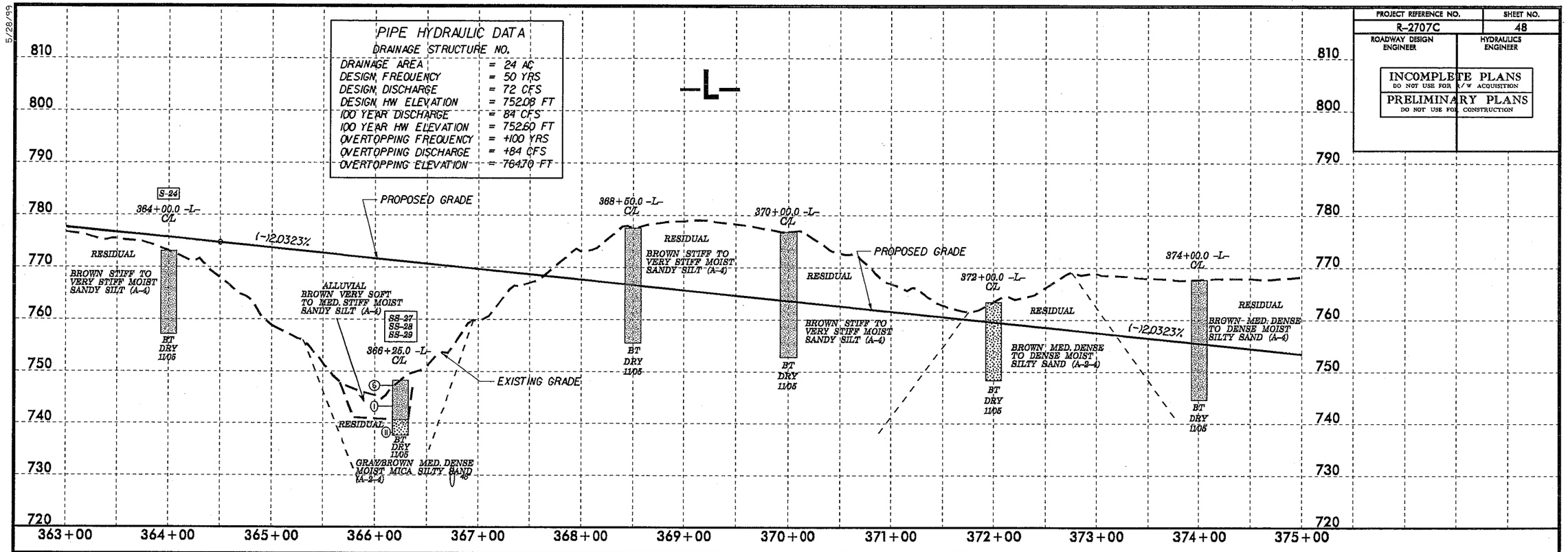
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

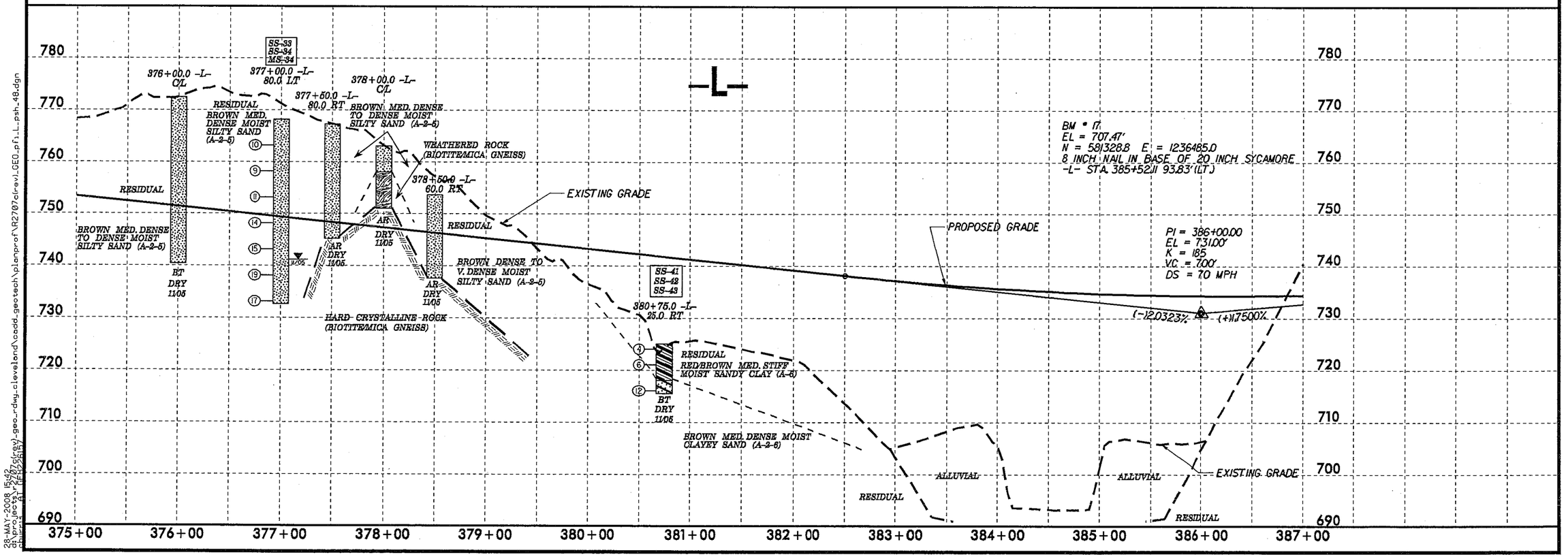
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 24 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 72 CFS
DESIGN HW ELEVATION	= 752.08 FT
100 YEAR DISCHARGE	= 84 CFS
100 YEAR HW ELEVATION	= 752.60 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +84 CFS
OVERTOPPING ELEVATION	= 764.70 FT





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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/14/99

890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690

387+00 388+00 389+00 390+00 391+00 392+00 393+00 394+00 395+00 396+00 397+00 398+00 399+00 400+00

390+00.0 -L- C/L

RESIDUAL

EXISTING GRADE

S-48

BROWN MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)

RED/BROWN STIFF MOIST SANDY CLAY (A-7)

BROWN STIFF MOIST SANDY SILT (A-5)

388+50.0 -L- C/L

AR DRY 11/05

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

392+00.0 -L- C/L

RESIDUAL

AR DRY 11/05

BROWN MED DENSE TO DENSE MOIST MICA, SILTY SAND WALTER. LAYERS OF WR STARTING AT 32'

SS-46
SS-46
MS-46

393+00.0 -L- 80.0 RT

BROWN LOOSE TO MED DENSE MOIST MICA SILTY SAND (A-2-5)

9 9 9 9 8 9 20

AR DRY 11/05

393+50.0 -L- C/L

RED-BROWN STIFF MOIST MICACEOUS SANDY CLAY (A-6)

BROWN LOOSE TO MEDIUM DENSE MOIST MICACEOUS SILTY SAND (A-2-4)

100/0.1

RESIDUAL

WEATHERED ROCK

01/05

BT

REC=95%
RQD=90%

WEATHERED ROCK (BIOTITE/MICA GNEISS)

BRN. MED. STIFF WET SANDY CLAY (A-6)

SS-50

395+00.0 -L- C/L

5 100

1/05

AR

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

S-51
S-52

396+50.0 -L- C/L

(PI=29)

RED/BROWN STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-6)

BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-5)

AR DRY 11/05

399+00.0 -L- C/L

RESIDUAL

RED/BROWN STIFF MOIST SANDY CLAY (A-7-6)

BROWN MED. DENSE TO VERY DENSE MOIST MICA SILTY SAND (A-2-5)

AR DRY 11/05

PROPOSED GRADE

(+)17.500%

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

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dbowers (2707C(rev))

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	50

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BM # 19
EL. = 743.84
N = 5816442 E = 1238547.5
8 INCH NAIL IN BASE OF 15 INCH WHITE OAK
-L- STA. 406+30.34 85.93' (LT.)

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 67 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 175 CFS
DESIGN HW ELEVATION	= 736.0 FT
100 YEAR DISCHARGE	= 205 CFS
100 YEAR HW ELEVATION	= 737.0 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +205 CFS
OVERTOPPING ELEVATION	= 759.0 FT

EXISTING GRADE

(+)17.500%

PROPOSED GRADE

RESIDUAL GRAY/WHITE LOOSE TO MED. DENSE MOIST TO WET SILTY SANDS

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

BRN. MED. DENSE TO V. DENSE MOIST MIC. SILTY SAND

ALLUVIAL GRAY/BRN. VERY LOOSE SAT. SILTY SAND (A-2-4)

RESIDUAL

ALLUVIAL BROWN LOOSE WET FINE CLAYEY SAND W/BOULDERS (A-1-b)

66"

RESIDUAL

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

408+60.0 -L- C/L

410+00.0 -L- C/L

EXISTING GRADE

RESIDUAL

RED/BRN. STIFF MOIST SANDY CLAY (A-7-6)

BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)

BT DRY 12/05

BT DRY 12/06

BROWN DENSE TO V. DENSE MOIST MICA SILTY SAND W/LAYER. LAYERS OF WR.

880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680

400+00 401+00 402+00 403+00 404+00 405+00 406+00 407+00 408+00 409+00 410+00 411+00 412+00

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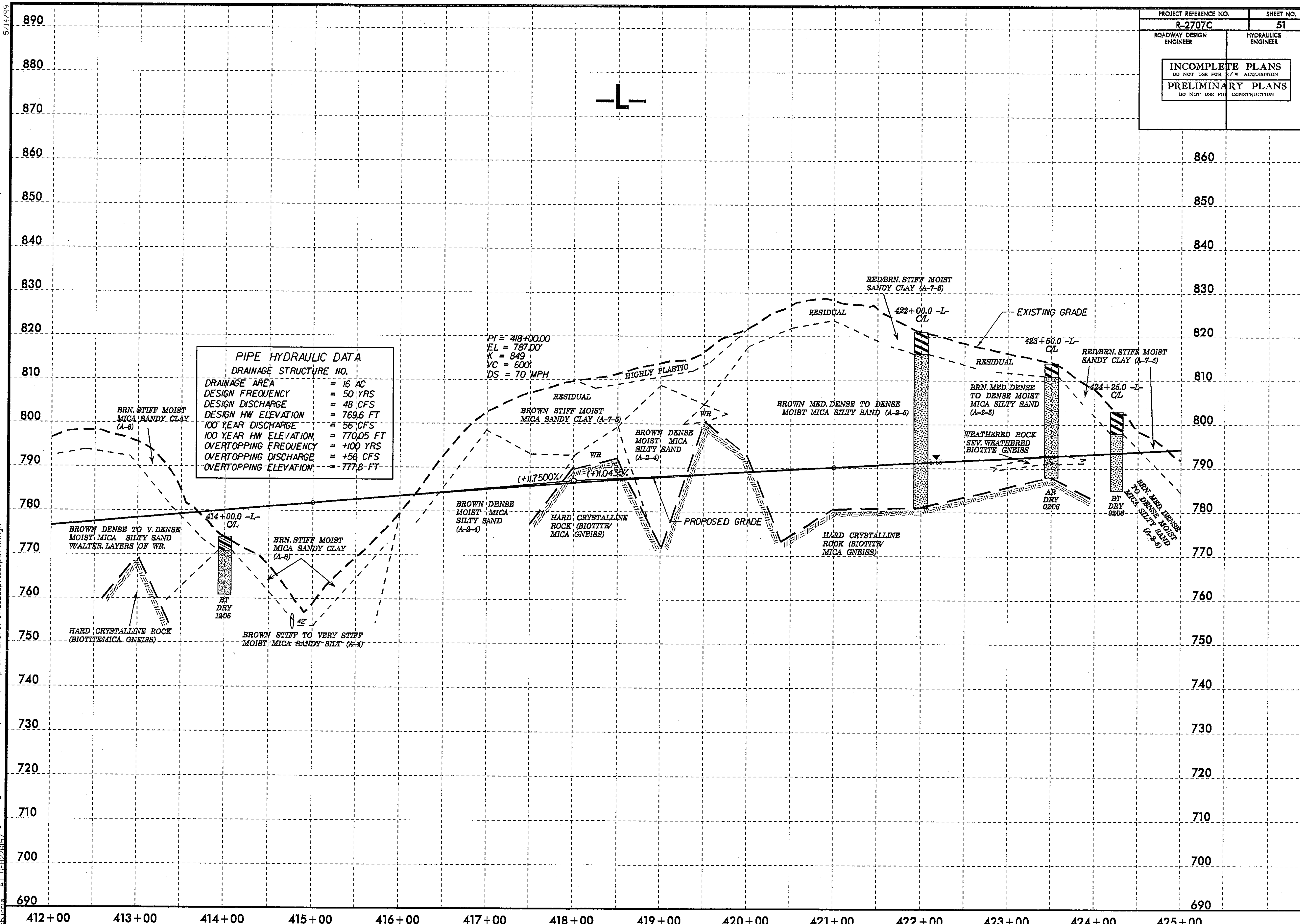
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	16 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	48 CFS
DESIGN HW ELEVATION	=	769.6 FT
100 YEAR DISCHARGE	=	56 CFS
100 YEAR HW ELEVATION	=	770.05 FT
OVERTOPPING FREQUENCY	=	+100 YRS
OVERTOPPING DISCHARGE	=	+56 CFS
OVERTOPPING ELEVATION	=	777.8 FT

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

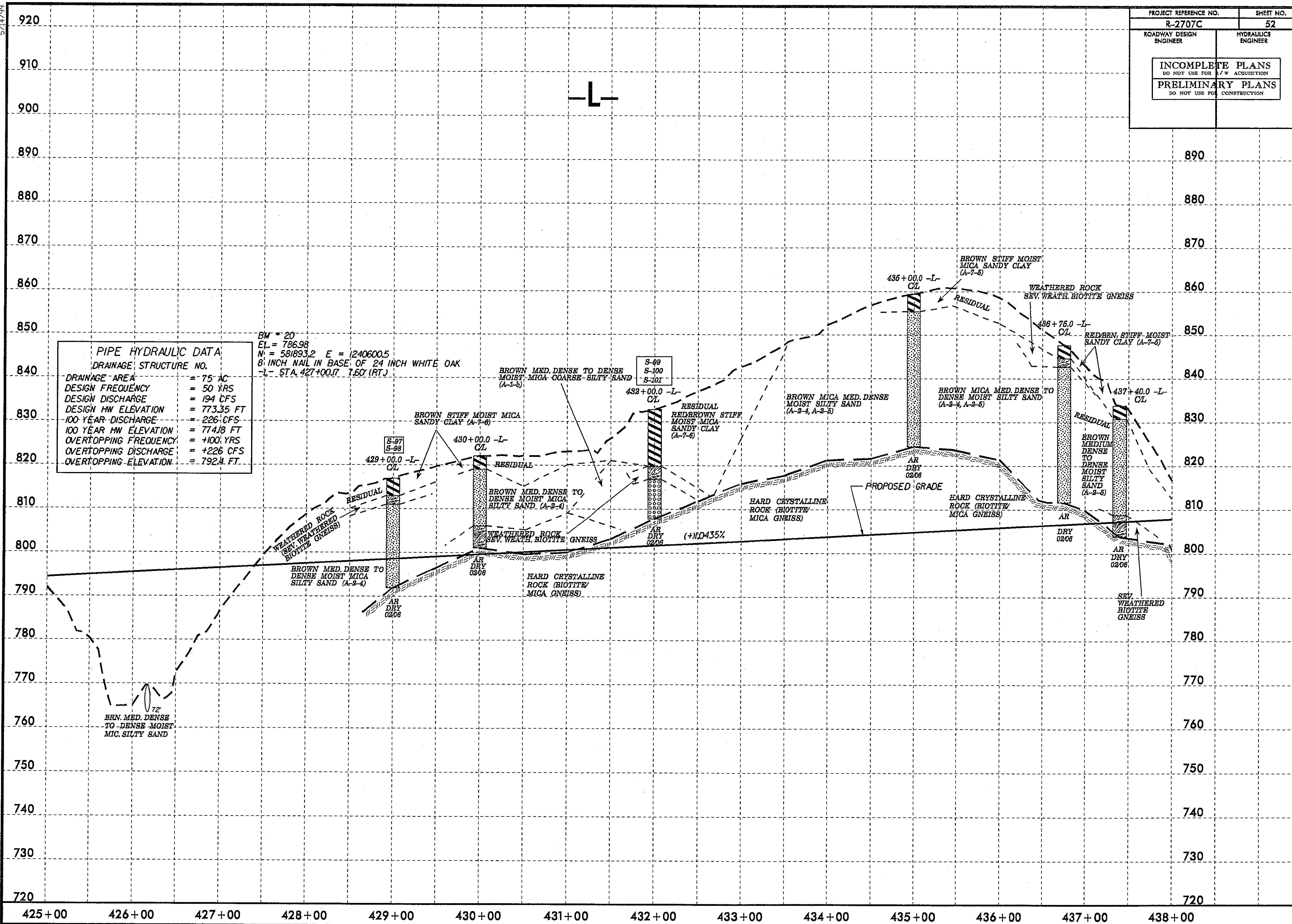
-L-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 75 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 194 CFS
DESIGN HW ELEVATION	= 773.35 FT
100 YEAR DISCHARGE	= 226 CFS
100 YEAR HW ELEVATION	= 774.18 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +226 CFS
OVERTOPPING ELEVATION	= 792.4 FT

BM # 20
EL = 786.98
N = 581893.2 E = 1240600.5
8 INCH NAIL IN BASE OF 24 INCH WHITE OAK
-L- STA. 427+00.17 7.60' (RT.)



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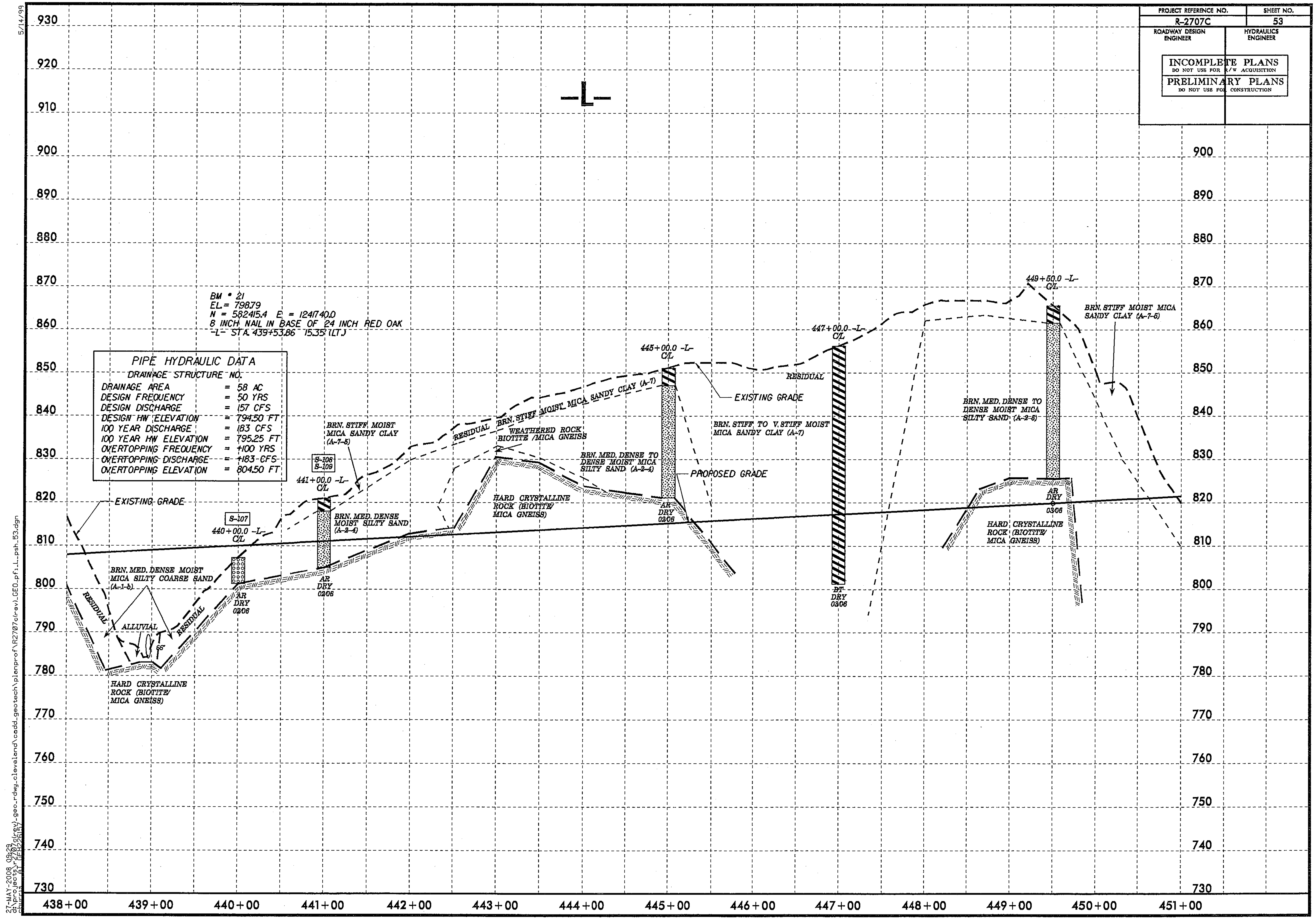
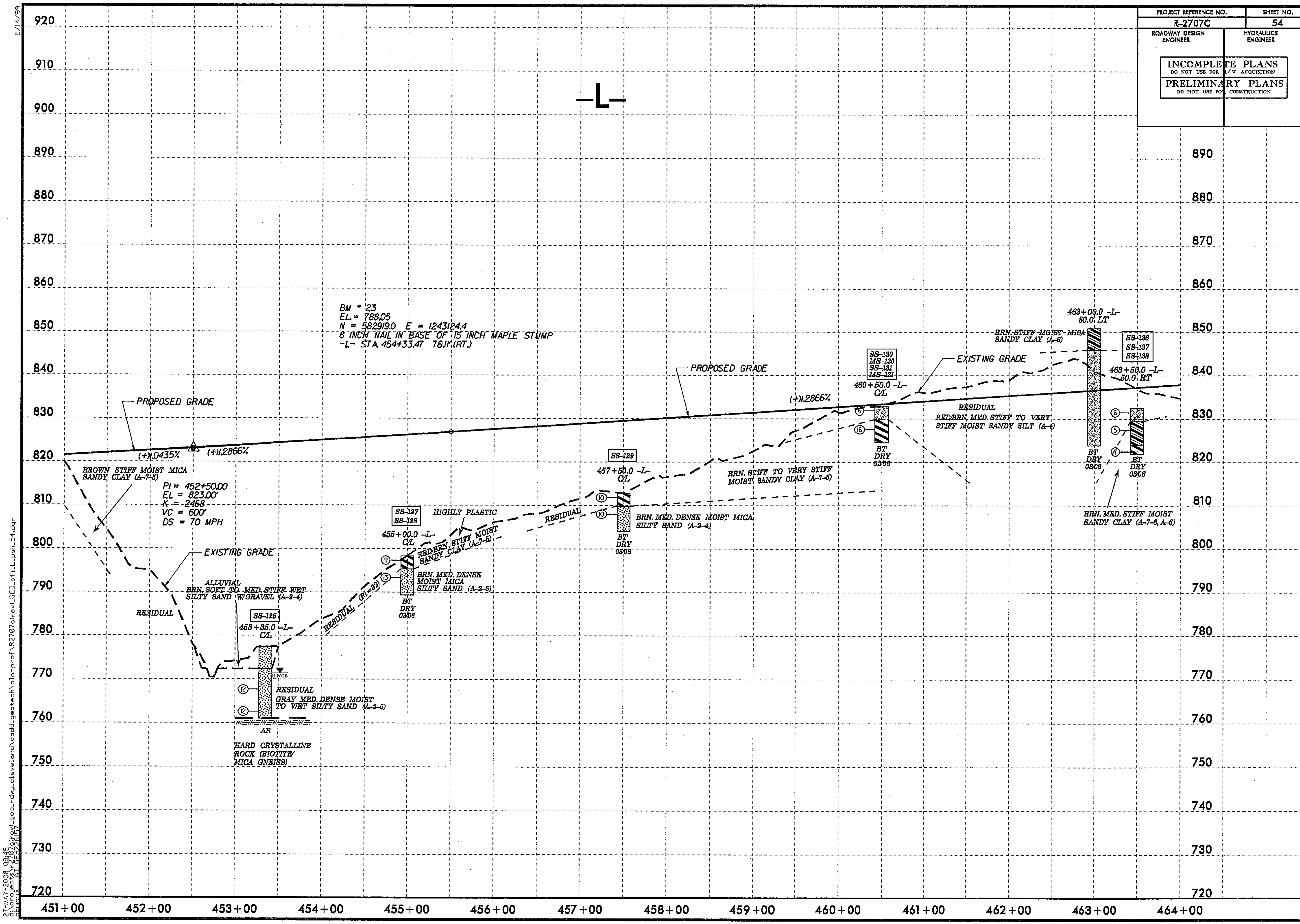

PROJECT REFERENCE NO.
R-2707C
SHEET NO.
53
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
BM • 21
EL.= 798.79
N = 582415.4 E = 1241740.0
8 INCH NAIL IN BASE OF 24 INCH RED OAK
-L- STA. 439+53.86 15.35' (LT.)
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DRAINAGE AREA = 58 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 157 CFS
DESIGN HW ELEVATION = 794.50 FT
100 YEAR DISCHARGE = 183 CFS
100 YEAR HW ELEVATION = 795.25 FT
OVERTOPPING FREQUENCY = +100 YRS
OVERTOPPING DISCHARGE = +183 CFS
OVERTOPPING ELEVATION = 804.50 FT
EXISTING GRADE
S-107
440+00.0 -L- C/L
AR DRY 02/06
S-108
S-109
441+00.0 -L- C/L
AR DRY 02/06
BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)
BRN. MED. DENSE MOIST SILTY SAND (A-2-4)
BRN. MED. DENSE MOIST MICA SILTY COARSE SAND (A-1-b)
RESIDUAL
ALLUVIAL
RESIDUAL
HARD CRYSTALLINE ROCK (BIOTITE/ MICA GNEISS)
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAY (A-7)
WEATHERED ROCK BIOTITE /MICA GNEISS
HARD CRYSTALLINE ROCK (BIOTITE/ MICA GNEISS)
BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-4)
445+00.0 -L- C/L
AR DRY 02/06
PROPOSED GRADE
EXISTING GRADE
BRN. STIFF TO V. STIFF MOIST MICA SANDY CLAY (A-7)
RESIDUAL
447+00.0 -L- C/L
BT DRY 03/06
449+50.0 -L- C/L
BRN. STIFF MOIST MICA SANDY CLAY (A-7-6)
BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)
AR DRY 03/06
HARD CRYSTALLINE ROCK (BIOTITE/ MICA GNEISS)
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
438+00
439+00
440+00
441+00
442+00
443+00
444+00
445+00
446+00
447+00
448+00
449+00
450+00
451+00


PROJECT REFERENCE NO. R-2707C
SHEET NO. 54
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
BM * 23
EL= 788.05
N = 582919.0 E = 1243124.4
8 INCH NAIL IN BASE OF 15 INCH MAPLE STUMP
-L- STA. 454+33.47 76.1' (RT.)
PROPOSED GRADE
(+)1.0435%
(+)1.2866%
PI = 452+50.00
EL = 823.00'
K = 24.68
VC = 600'
DS = 70 MPH
EXISTING GRADE
BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)
ALLUVIAL
BRN. SOFT TO MED. STIFF WET SILTY SAND W/GRAVEL (A-2-4)
RESIDUAL
SS-125
453+35.0 -L-
C/L
RESIDUAL
GRAY MED. DENSE MOIST TO WET SILTY SAND (A-2-5)
AR
HARD CRYSTALLINE ROCK (BIOTITE/ MICA GNEISS)
SS-127
SS-128
455+00.0 -L-
C/L
HIGHLY PLASTIC
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-5)
BT
DRY
03/06
SS-129
457+50.0 -L-
C/L
BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-4)
BRN. STIFF TO VERY STIFF MOIST SANDY CLAY (A-7-5)
SS-130
MS-130
SS-131
MS-131
460+50.0 -L-
C/L
(+)1.2866%
RESIDUAL
RED/BRN. MED. STIFF TO VERY STIFF MOIST SANDY SILT (A-4)
463+00.0 -L-
80.0' LT
BRN. STIFF MOIST MICA SANDY CLAY (A-6)
SS-136
SS-137
SS-138
463+50.0 -L-
50.0' RT
BRN. MED. STIFF MOIST SANDY CLAY (A-7-6, A-6)
5/14/99
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

950
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 18.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 58 CFS
DESIGN HW ELEVATION	= 847.2 FT
100 YEAR DISCHARGE	= 65 CFS
100 YEAR HW ELEVATION	= 847.7 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +65 CFS
OVERTOPPING ELEVATION	= 852.9 FT

SS-134
SS-135
ALLUVIAL
BRN. LOOSE MOIST SILTY SAND (A-2-4)
464+50.0 -L- 80.0 RT
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-4)
RED/BRN. STIFF MOIST SANDY CLAY (A-7-6)
BT DRY 03/06
466+00.0 -L- 80.0 RT
BT 03/06
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAYS (A-6, A-7-6)
467+00.0 -L- 80.0 LT
467+50.0 -L- 80.0 RT
BT DRY 03/06
BT 03/06
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)
RESIDUAL
BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
S-139
S-140A
469+00.0 -L- 80.0 LT
PI=28
BT 03/06
SS-140
SS-141
MS-141
470+00.0 -L- 100.0 LT
4
8
10
12
13
BT 03/06
RESIDUAL
BRN. MED. STIFF MOIST MICA SANDY CLAY (A-7-6)
471+00.0 -L- 80.0 RT
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)
11
12
13
BT 03/06
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)
11.2866%
EXISTING GRADE
PROPOSED GRADE
S-142
S-143
473+80.93 -L- 83.2014 RT
=
23+00.0 -Y4REV- C/L
BT DRY 03/06
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAY (A-7-6, A-6)
ALLUVIAL
BRN. LOOSE WET COARSE CLAYEY SAND (A-3)
S-237
476+30.0 -L- C/L
6
03/06
HAND AUGER REFUSAL
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAY (A-7-6, A-6)

464+00 465+00 466+00 467+00 468+00 469+00 470+00 471+00 472+00 473+00 474+00 475+00 476+00 477+00 478+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	56
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 6.2 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 19.6 CFS
DESIGN HW ELEVATION	= 851.3 FT
100 YEAR DISCHARGE	= 21.3 CFS
100 YEAR HW ELEVATION	= 851.65 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +35.0 CFS
OVERTOPPING ELEVATION	= 865.3 FT

970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770

S-144
S-145
480+00.0 -L- C/L
BT DRY 03/06
PROPOSED GRADE
(+)1.2866%
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA SANDY CLAY (A-7-6)
482+00.0 -L- 80.0 LT
BT 03/06
483+00.0 -L- 80.0 RT
BT 03/06
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA SANDY CLAY (A-7-6)
BRN. MED. STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-6)
SS-146
SS-147
SS-148
MS-148
484+60.0 -L- 110.0 LT
4 8 9 11 12 12 13 19 18 19
BT 03/06
TAN MED. DENSE MOIST MIC. SILTY SAND
TAN STIFF MOIST MICA SANDY SILT (A-6)
EXISTING GRADE
486+00.0 -L- C/L
BT DRY 03/06
RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT (A-6)
SS-149
SS-150
489+80.0 -L- C/L
RESIDUAL
4 5
BRN. LOOSE MOIST MICA SILTY SAND (A-2-4, A-2-5)
BT DRY 03/06
ALLUVIAL
BRN. V. LOOSE MOIST SILTY SAND (A-2-6)
SS-151
SS-152
490+85.0 -L- C/L
30°
RESIDUAL
3 4
BRN. LOOSE WET MICA CLAYEY SAND (A-2-7)
BT 03/06
SS-153
SS-154
491+60.0 -L- C/L
4 8
BT DRY 03/06
BRN. LOOSE MOIST CLAYEY SAND (A-2-6)
BRN. LOOSE MOIST SILTY SAND (A-2-4)

478+00 479+00 480+00 481+00 482+00 483+00 484+00 485+00 486+00 487+00 488+00 489+00 490+00 491+00 492+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	57

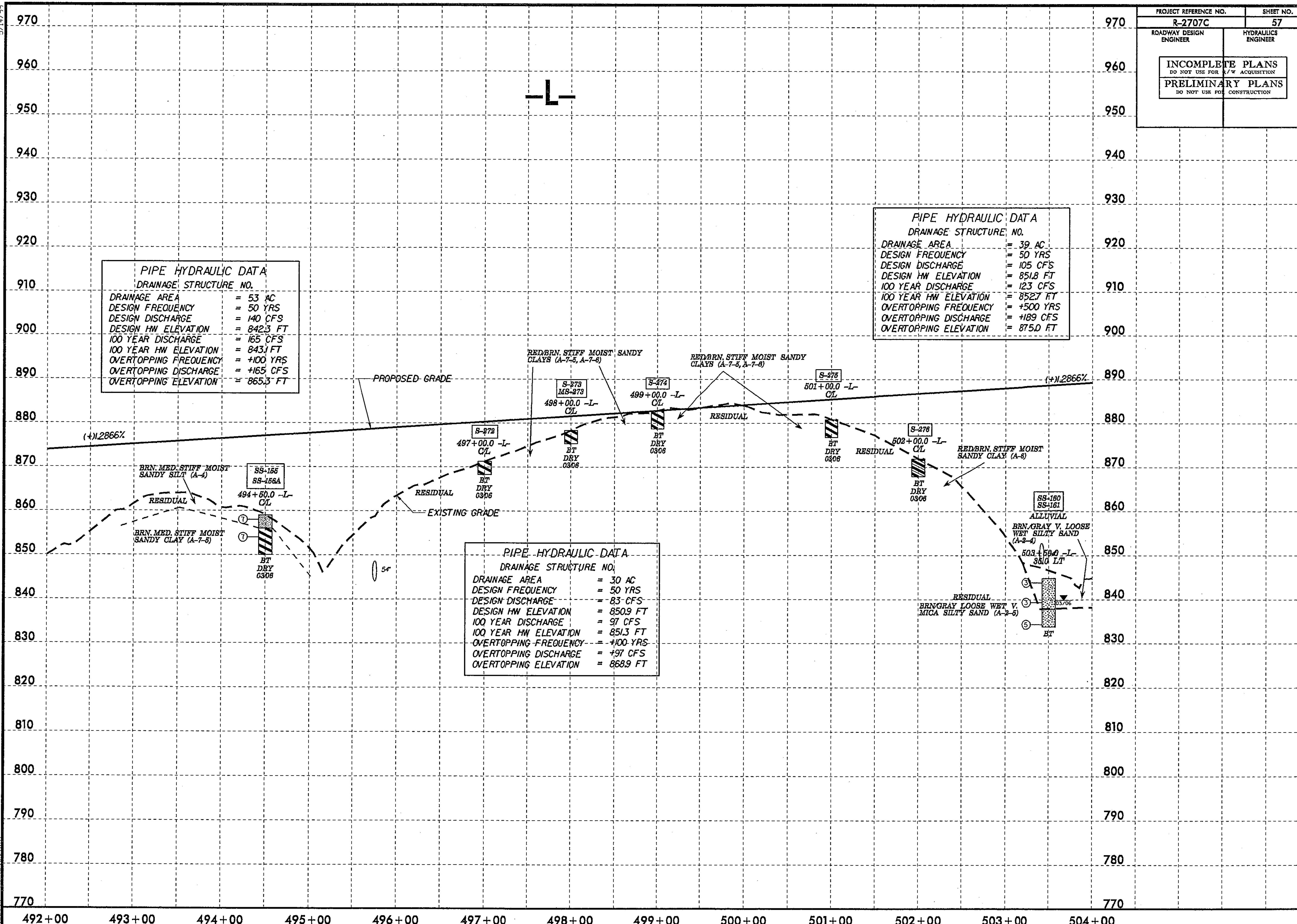
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 53 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 140 CFS
DESIGN HW ELEVATION	= 842.3 FT
100 YEAR DISCHARGE	= 165 CFS
100 YEAR HW ELEVATION	= 843.1 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +165 CFS
OVERTOPPING ELEVATION	= 865.3 FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 30 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 83 CFS
DESIGN HW ELEVATION	= 850.9 FT
100 YEAR DISCHARGE	= 97 CFS
100 YEAR HW ELEVATION	= 851.3 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +97 CFS
OVERTOPPING ELEVATION	= 868.9 FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 39 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 105 CFS
DESIGN HW ELEVATION	= 851.8 FT
100 YEAR DISCHARGE	= 123 CFS
100 YEAR HW ELEVATION	= 852.7 FT
OVERTOPPING FREQUENCY	= +500 YRS
OVERTOPPING DISCHARGE	= +189 CFS
OVERTOPPING ELEVATION	= 875.0 FT

5/14/99

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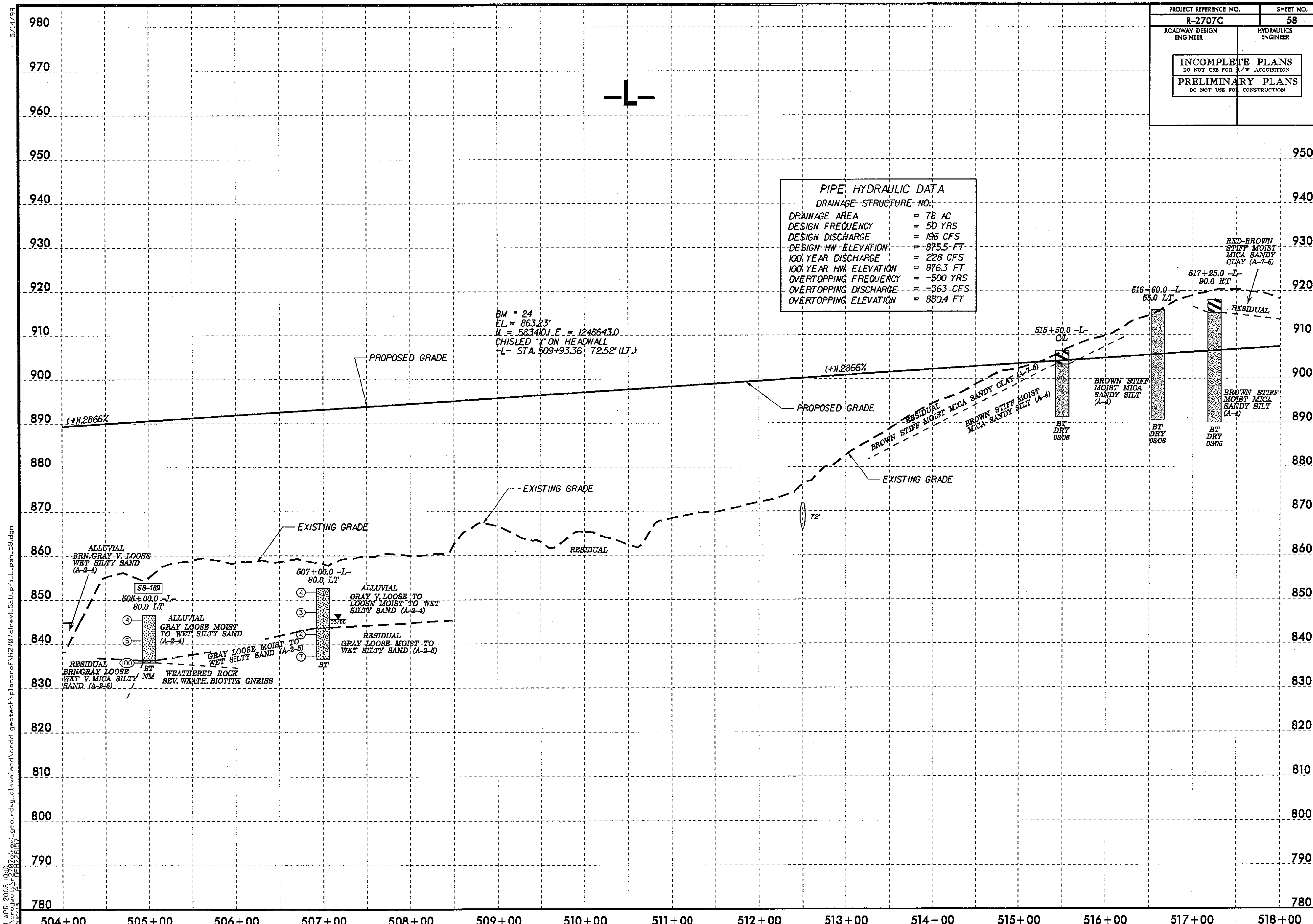
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	58
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 78 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 196 CFS
DESIGN HW ELEVATION	= 875.5 FT
100 YEAR DISCHARGE	= 228 CFS
100 YEAR HW ELEVATION	= 876.3 FT
OVERTOPPING FREQUENCY	= -500 YRS
OVERTOPPING DISCHARGE	= -363 CFS
OVERTOPPING ELEVATION	= 880.4 FT

5/14/99

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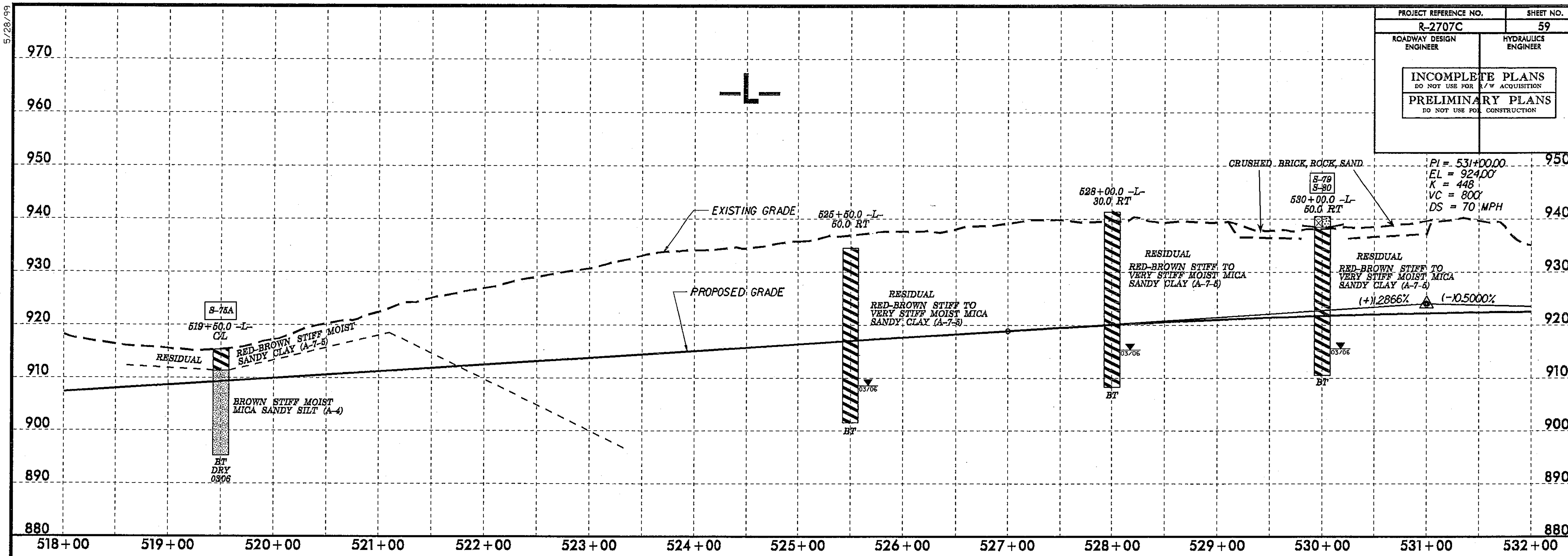
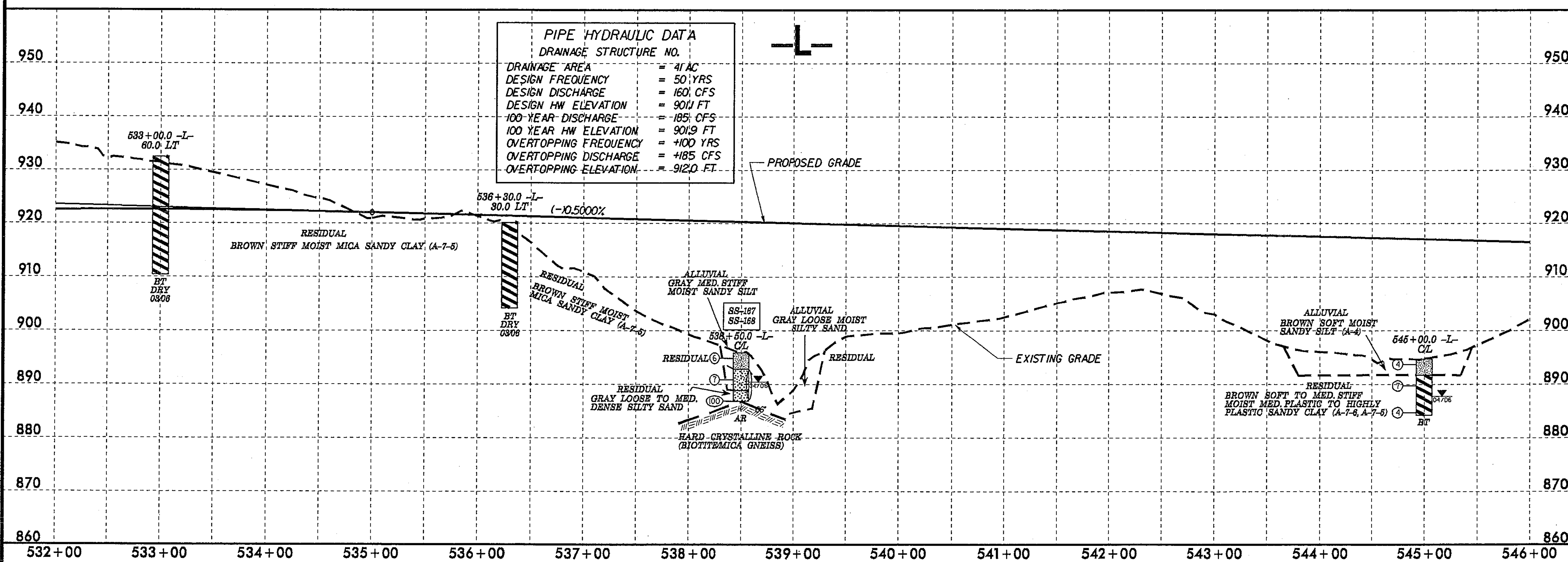
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	59
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 41 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 160 CFS
DESIGN HW ELEVATION	= 901.1 FT
100 YEAR DISCHARGE	= 185 CFS
100 YEAR HW ELEVATION	= 901.9 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +185 CFS
OVERTOPPING ELEVATION	= 912.0 FT

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	60
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	__ AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	730 CFS
DESIGN HW ELEVATION	=	871.7 FT
100 YEAR DISCHARGE	=	820 CFS
100 YEAR HW ELEVATION	=	872.5 FT
OVERTOPPING FREQUENCY	=	500 YRS
OVERTOPPING DISCHARGE	=	1290 CFS
OVERTOPPING ELEVATION	=	912.34 FT

BM # 25
EL = 870.32
N = 581826.4 E = 1252767.2
8 INCH NAIL IN BASE OF 24 INCH POPLAR
-L- STA. 554+38.86 66.67' (RT.)

PROPOSED GRADE

(-)0.5000%

PI = 557+00.00
EL = 911.00'
K = 325
VC = 700'
DS = 70 MPH

(-)0.5000% (+)1.6558%

EXISTING GRADE

RED/BRN. MED. STIFF MOIST SANDY CLAY (A-6)

SS-176
SS-177
550+00.0 -L-
C/L

RESIDUAL
(PI = 37)

BRN. SOFT TO STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-6)

BT
DRY
04/06

SS-90
558+00.0 -L-
C/L

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MICA SANDY CLAY (A-7-6)

BT
DRY
04/06

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MIC SANDY CLAY

CULVERT @ 553+29
SEE CROSS-SECTIONS

ALLUVIAL
GRAY SOFT TO MED. STIFF MOIST SANDY SILT (A-4)

SS-178
SS-179
552+60.0 -L-
150.0 LT

SS-161
553+29.0 -L-
C/L

ALLUVIAL
GRAY/BRN. SOFT TO MED. STIFF MOIST TO WET SANDY CLAY (A-6)

SS-91
SS-92
SS-93
554+50.0 -L-
C/L

RESIDUAL
TAN/BROWN VERY LOOSE WET TO SAT. MIC. SILTY SAND (A-2-6)

04/06

SCBC @ 0.4%

BT

TAN SOFT TO MED. STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
TAN HARD MOIST SANDY SILT (A-5)

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	__ AC
DESIGN FREQUENCY	=	50 YRS
DESIGN HW ELEVATION	=	730 CFS
BASE DISCHARGE	=	871.7 FT
BASE FREQUENCY	=	820 CFS
BASE HW ELEVATION	=	872.5 FT
OVERTOPPING DISCHARGE	=	500 YRS
OVERTOPPING FREQUENCY	=	1290 CFS
OVERTOPPING ELEVATION	=	912.34 FT

970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800

546+00 547+00 548+00 549+00 550+00 551+00 552+00 553+00 554+00 555+00 556+00 557+00 558+00 559+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	61
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

5/14/99

-L-

PROPOSED GRADE

SS-88
SS-89
561+00.0 -L-
C/L

SS-96
SS-97
563+00.0 -L-
C/L

SS-85
570+00.0 -L-
C/L

(+)1.6558%

SS-88
572+00.0 -L-
C/L

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MICA SANDY CLAY (A-7-5)
BT
DRY
0406

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MICA SANDY CLAY (A-7-6)
BT
DRY
0406

BRN. MED. STIFF TO STIFF MOIST MICA SANDY CLAY

RESIDUAL
BRN. MED. STIFF TO STIFF MOIST MICA SANDY CLAY (A-7-5)
BT
DRY
0406

BRN. MED. STIFF TO STIFF MOIST MICA SANDY CLAY

BT
DRY
0406

EXISTING GRADE

POND

50'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 44 AC
DESIGN FREQUENCY	= 50 YRS.
DESIGN DISCHARGE	= 120 CFS
DESIGN HW ELEVATION	= 902.5 FT
100 YEAR DISCHARGE	= 140 CFS
100 YEAR HW ELEVATION	= 903.2 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +140 CFS
OVERTOPPING ELEVATION	= 913.7 FT

1020 1010 1000 990 980 970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820

559+00 560+00 561+00 562+00 563+00 564+00 565+00 566+00 567+00 568+00 569+00 570+00 571+00 572+00 573+00

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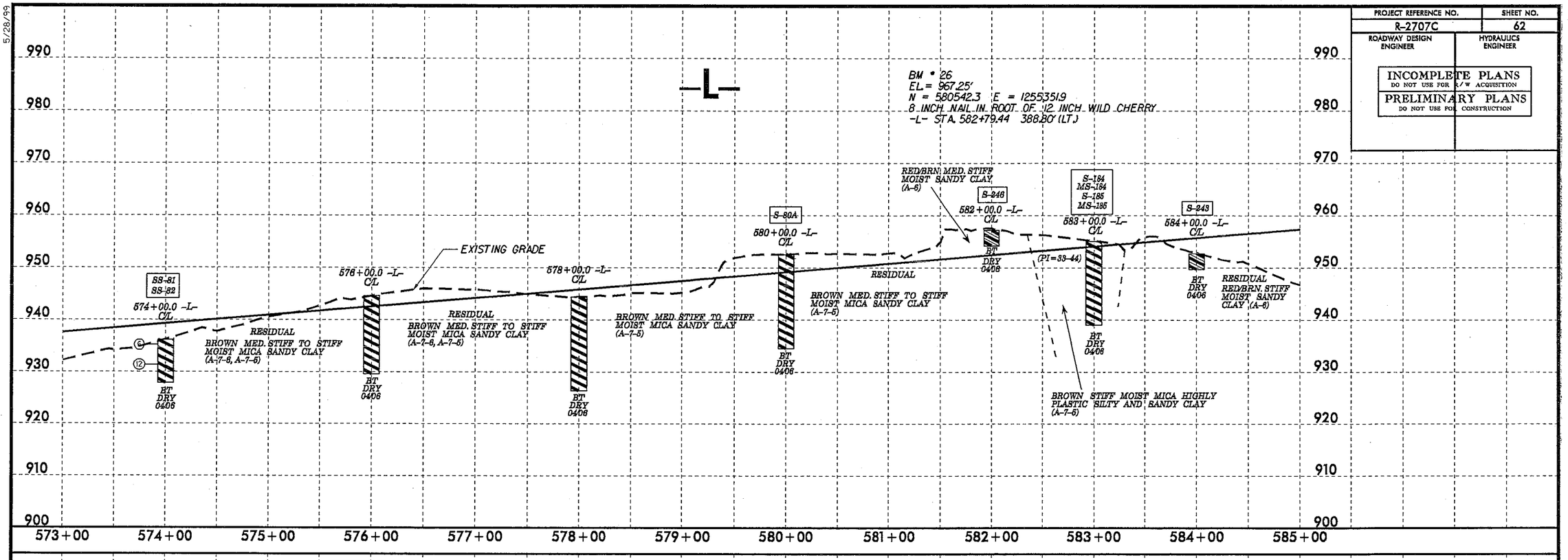
5/26/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	62
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

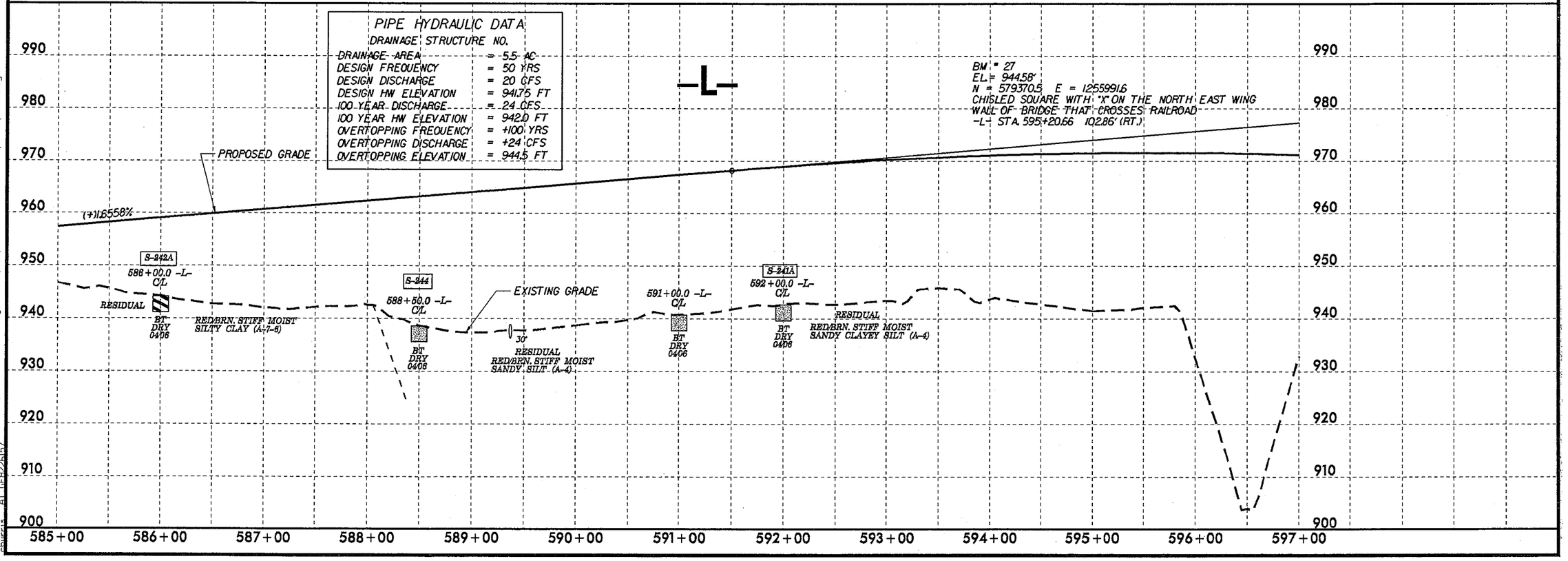
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 5.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 20 CFS
DESIGN HW ELEVATION	= 941.75 FT
100 YEAR DISCHARGE	= 24 CFS
100 YEAR HW ELEVATION	= 942.0 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +24 CFS
OVERTOPPING ELEVATION	= 944.5 FT



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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	63
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

PI = 598+00.00
EL = 978.89'
K = 249
VC = 1300'
DS = 70 MPH

(+)1.6558%

(-)13.5710%

-L-

PROPOSED GRADE

EXISTING GRADE

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 7.3 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 37 CFS
DESIGN HW ELEVATION	= 930.1 FT
100-YEAR DISCHARGE	= 43 CFS
100 YEAR HW ELEVATION	= 930.4 FT
OVERTOPPING FREQUENCY	= +100 YRS
OVERTOPPING DISCHARGE	= +43 CFS
OVERTOPPING ELEVATION	= 940 FT

RESIDUAL
BROWN V. STIFF MOIST SANDY CLAY (A-7-6)

SS-186
600+00.0 -L- C/L
RESIDUAL
(PI=38)
22
22
BT DRY 03/06
4'
BROWN V. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

SS-187
SS-188
602+50.0 -L- C/L
6
12
BT DRY 03/06
BROWN STIFF MOIST SANDY CLAY (A-7-6)

TAN MED. STIFF MOIST SANDY CLAY (A-6)
RESIDUAL

SS-189
SS-190
605+00.0 -L- C/L
4
13
BT DRY 03/06
RED/BRN. STIFF MOIST SANDY CLAY (A-7-6)

BRN. LOOSE MOIST SILTY SAND (A-2-4)
RESIDUAL

S-245
608+00.0 -L- C/L
(PI=32)
BT DRY 03/06
RESIDUAL
RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

EXISTING GRADE

PROPOSED GRADE

PI = 611+40.00
EL = 931.04'
K = 209
VC = 400'
DS = 70 MPH

(-)13.5710%

(-)1.6542%

S-195
SS-196
SS-197
SS-198
612+20.0 -L- 60.0 LT
RESIDUAL
(PI=21-29)
9
TAN MED. STIFF TO V. STIFF MOIST MED TO HIGHLY PLASTIC SANDY CLAY (A-7-6)
9
10
18
03/06
03/06
32
31
29
BROWN V. STIFF TO HARD MOIST MICA SANDY SILT (A-4)
BT

SS-207
SS-208
613+50.0 -L- C/L
16
24
BT DRY 03/06
RED/BRN. V. STIFF MOIST SILTY CLAY (A-7-6)

BROWN VERY STIFF MOIST SANDY CLAY (A-6)
ARTIFICIAL FILL

SS-205
SS-206
615+00.0 -L- 75.0 RT
21
16
BT DRY 03/06
RED/BRN. STIFF MOIST SANDY CLAY (A-6)

SS-204
615+50.0 -L- 75.0 LT
12
11
12
BT DRY 03/06
RED/BRN. STIFF MOIST HIGHLY PLASTIC (PI=48) SANDY CLAY (A-7-6)

ARTIFICIAL FILL
RED/BRN. MED STIFF TO STIFF MOIST SANDY CLAY (A-7-6)

SS-202
SS-202A
SS-202B
616+00.0 -L- 80.0 LT
12
7
12
BT DRY 03/06

SS-203
616+50.0 -L- C/L
10
8
12
BT DRY 03/06
RESIDUAL
RED/BROWN. STIFF MOIST SANDY CLAY (A-7-6)

617+00.0 -L- 80.0 LT
13
12
BT DRY 03/06
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-6)

EXISTING GRADE

PROPOSED GRADE

(-)1.6542%

SS-200
620+00.0 -L- 145.0 LT
10
5
BT DRY 03/06
BRN. STIFF MOIST SANDY CLAY (A-6)
RESIDUAL
RED/BRN. MED. STIFF MOIST SANDY CLAY (A-7-6)

S-199
622+00.0 -L- C/L
BT DRY 03/06
RED/BRN. MED. STIFF MOIST SANDY CLAY (A-7-6)

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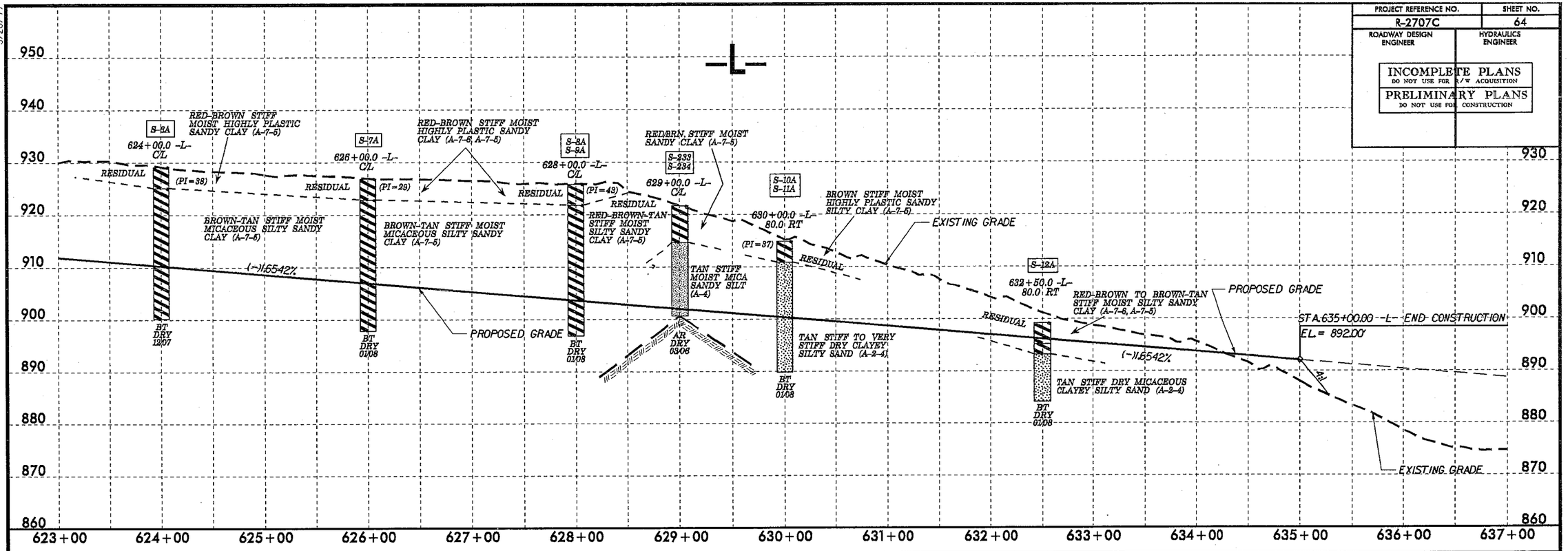
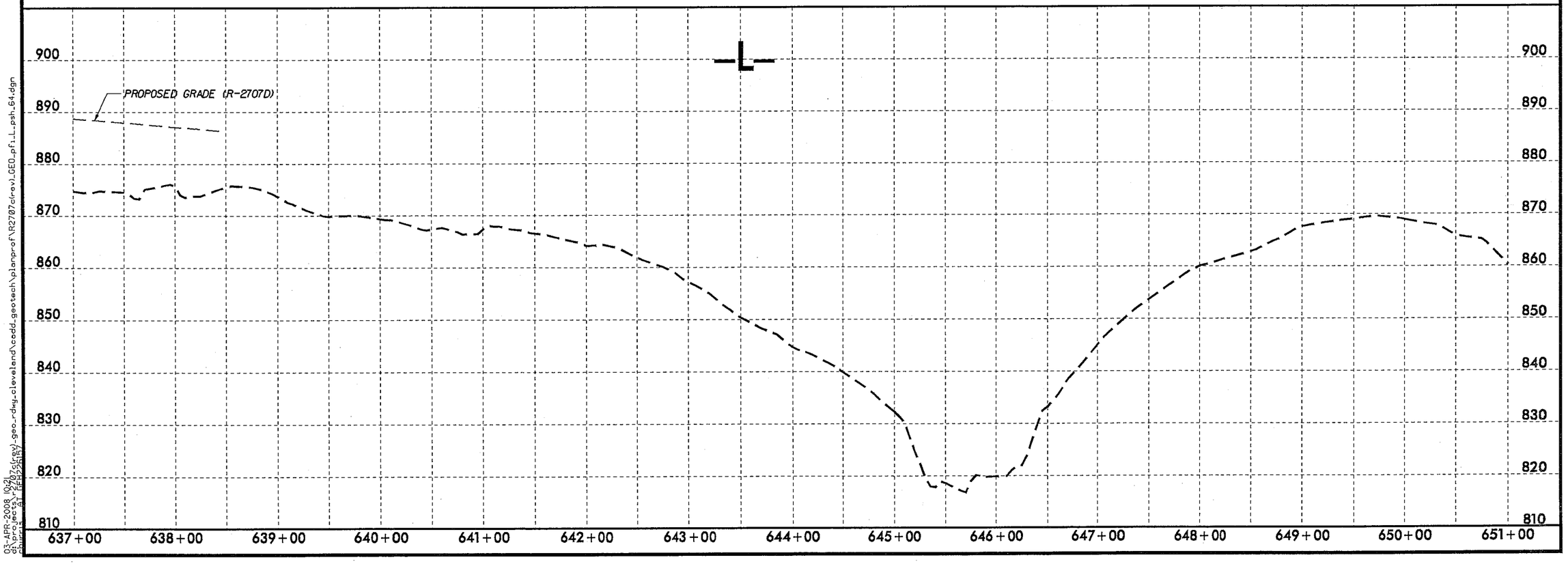
dlt (R2707c)

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	64
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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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	65

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

RAMP A @ -Y1- (NC 226)

BEGIN GRADE STA. 0+00.00
EL = 746.92

-L- EOP STA. 377+93.14
47.00' (RT)

SS-33
SS-34
MS-34

0+95.27 -RPA1-
26.2288 RT
=
377+00.0 -L-
80.0 LT

1+89.27 -RPA1-
60.7436 LT
=
376+00.0 -L-
C/L

3+00.0 -RPA1-
30.0 RT

EXISTING GRADE

5+00.0 -RPA1-
60.0 RT

5+81.69 -RPA1-
95.4480 LT
=
372+00.0 -L-
C/L

7+00.0 -RPA1-
60.0 RT

HIGHLY PLASTIC

S-30
SS-31
MS-1
SS-32

8+00.0 -RPA1-
60.0 RT

BROWN STIFF MOIST MICA, HIGHLY PLASTIC SANDY CLAY (A-7-6)

PI = 11+25.00
EL = 767.50'
K = 192
VC = 500'
DS = 70 mph

13+00.0 -RPA1-
C/L

SS-21
SS-22
SS-23

(+)4.4327%

(+)11.8293%

11+50.0 -RPA1-
C/L

RESIDUAL
BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-5, A-2-4)

RESIDUAL
BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-4)

RESIDUAL
BROWN LOOSE TO DENSE MOIST TO WET MICA SILTY SAND (A-2-5)

RESIDUAL
BROWN MED DENSE TO DENSE MOIST SILTY SAND (A-2-5)

RESIDUAL
BROWN LOOSE TO DENSE MOIST MICA SILTY SAND (A-2-5)

PROPOSED GRADE

RESIDUAL
BRN. MED. STIFF WET CLAYEY SAND (A-2-5)

RESIDUAL
RED-BROWN STIFF MOIST MICA SANDY SILT (A-4)

ARTIFICIAL FILL
BROWN- STIFF- MOIST SANDY SILT (A-4)

BROWN SOFT MOIST SANDY CLAY (A-7-6)

RESIDUAL
BRN. LOOSE WET CLAYEY SAND (A-2-5)

BT
DRY 11/06

(PI=26)

FOR PLAN SEE SHEET 5 & 6

RAMP A @ -Y1- (NC 226)

PI = 19+80.00
EL = 805.40'
K = 30
VC = 250'
DS = 35 mph

EXISTING GRADE

END GRADE STA. 21+11.85
EL = 800.20 (-Y1- EOP)

S-16

13+00.0 -RPA1-
C/L

14+00.0 -RPA1-
C/L

14+50.0 -RPA1-
80.0 LT

15+00.0 -RPA1-
C/L

16+00.0 -RPA1-
60.0 RT

18+00.0 -RPA1-
C/L

20+00.0 -RPA1-
C/L

(+)4.4327%

(-)13.9439%

RESIDUAL
RED-BROWN STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICA SANDY SILT (A-4)

SEVERELY WEATHERED CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

PROPOSED GRADE

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

AR
DRY 11/06

BT
DRY 11/06

FOR PLAN SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	66

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15682 HENRY W. REID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15682 HENRY W. REID

INCOMPLETE PLANS
SEAL NOT USED FOR REVIEW OR CONSTRUCTION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.

RAMP D @ -Y1- (NC 226)

BEGIN GRADE STA. 0+00.00
EL.= 753.58
-L- EOP STA. 374+65.38
47.00' (LT)

0+66.15 -RPD1-
47.1061 RT
=
374+00.0 -L-
C/L

PI = 1+85.00
EL = 757.35'
K = 652
VC = 300'
DS = 70 mph

2+61.85 -RPD1-
53.9679 RT
=
372+00.0 -L-
C/L

5+00.0 -RPD1-
C/L

PROPOSED GRADE

PI = 10+50.00
EL = 771.00'
K = 117
VC = 200'
DS = 70 mph

(+)2.0378%

(+)1.5780%

(+)1.5780%

(+)3.2900%

RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-6)

RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)

RESIDUAL
BROWN STIFF TO
VERY STIFF MOIST
MICA. SANDY CLAY
(A-7-6)

RESIDUAL

ALLUVIAL
BROWN VERY LOOSE
TO LOOSE MOIST
SILTY SAND

RESIDUAL

BROWN STIFF MOIST MICA.
SANDY CLAY (A-7-6)

SS-16
SS-17

11+00.0 -RPD1-
C/L

BROWN STIFF MOIST MICA.
SANDY CLAY (A-7-6)

RESIDUAL

BROWN STIFF TO
VERY STIFF MOIST
MICA. SANDY SILT
(A-5)

EXISTING GRADE

BT
DRY
11/06

BT
DRY
11/06

BT
DRY
11/06

BT
DRY
11/06

FOR PLAN SEE SHEET 5 & 6

RAMP D @ -Y1- (NC 226)

END GRADE STA. 23+72.31
EL.= 813.46 (-Y1- EOP)

PI = 22+05.00
EL = 809.00'
K = 481
VC = 300'
DS = 70 mph

(+)3.2900%

(+)2.6657%

PROPOSED GRADE

EXISTING GRADE

RESIDUAL
BRN. STIFF MOIST SANDY CLAY

BROWN VERY DENSE
MOIST MICA. SILTY SAND

BROWN MED. STIFF
MOIST SANDY SILT
(A-4)

SS-18
SS-19

13+60.0 -RPD1-
C/L

RESIDUAL

BROWN VERY DENSE
MOIST SILTY SAND
(A-2-4)

SS-20A

15+00.0 -RPD1-
C/L

RESIDUAL
BROWN LOOSE TO DENSE
MOIST MICA. SILTY SAND
(A-2-4)

SS-21A

18+00.0 -RPD1-
C/L

RESIDUAL

BRN. STIFF MOIST SANDY CLAY (A-6)

RESIDUAL

BROWN VERY DENSE
MOIST MICA. SILTY
SAND (A-2-4)

BT
DRY
11/06

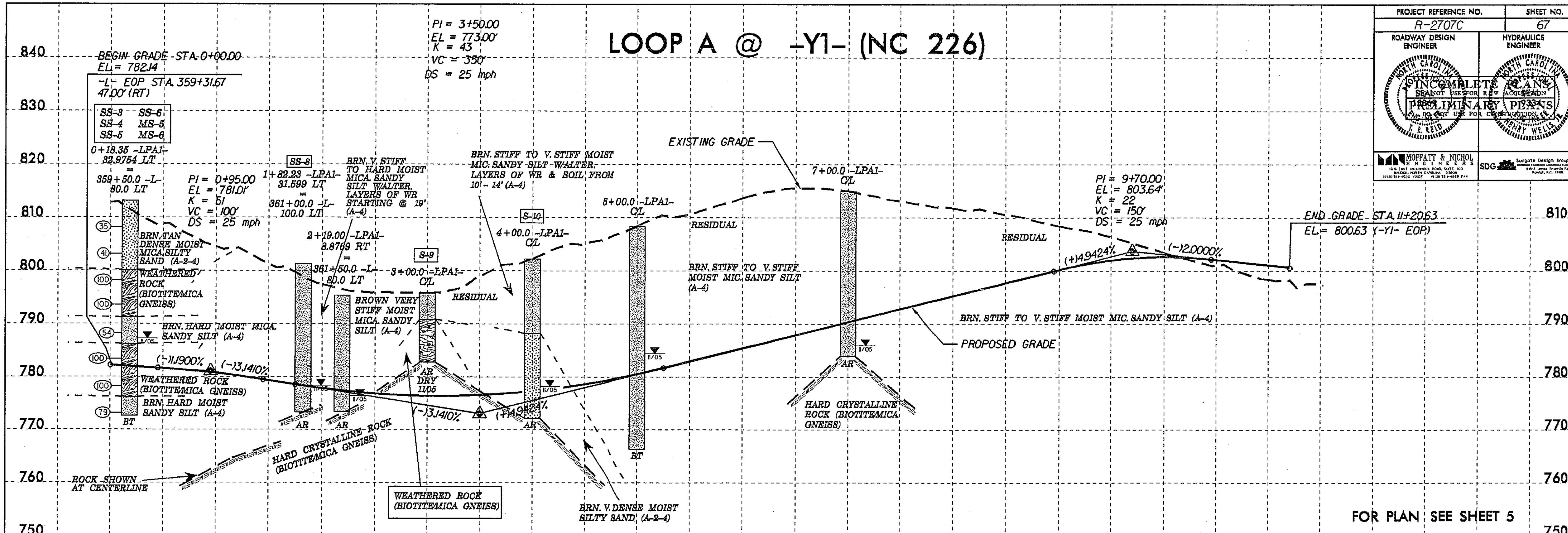
BT
DRY
11/06

BT
DRY
11/06

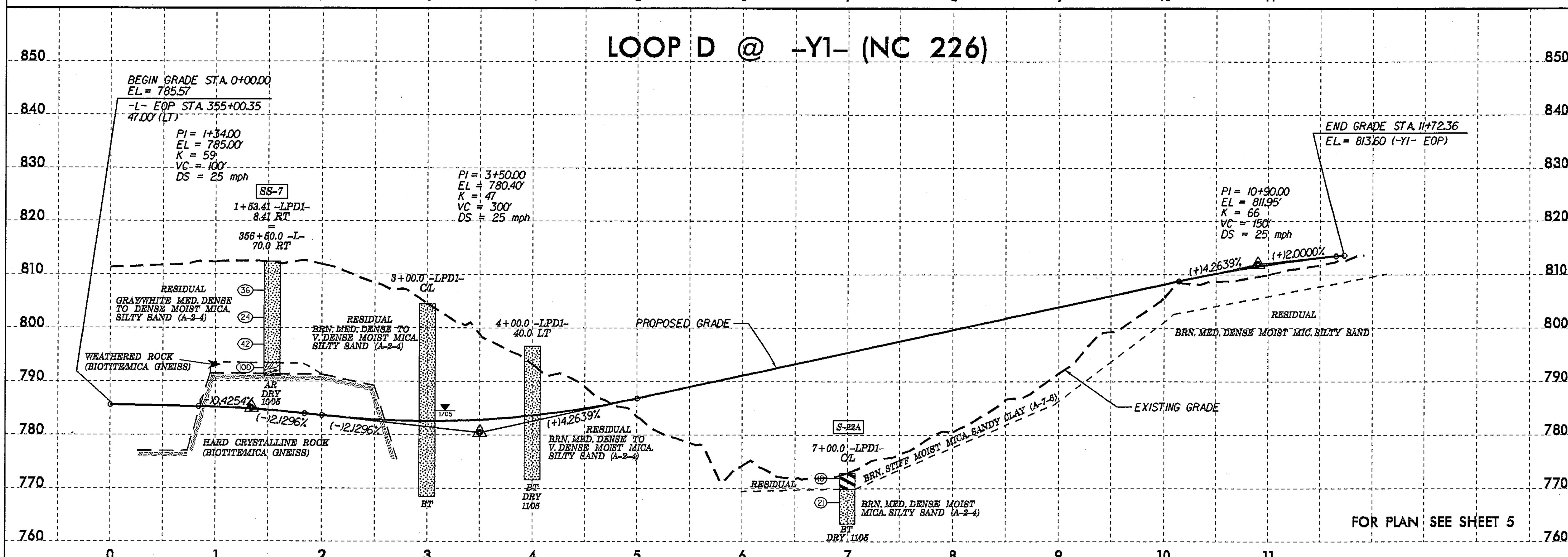
FOR PLAN SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	67

LOOP A @ -Y1- (NC 226)



LOOP D @ -Y1- (NC 226)



PROJECT REFERENCE NO.	SHEET NO.
R-2707C	68

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
NOT FOR BID
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sergent Design Group, P.A.

RAMP A @ -Y9- (NC 18)

BEGIN GRADE STA. 0+00.00
EL. = 913.08
-L- EOP STA. 551+87.42
47.00' (RT)

PROPOSED GRADE

PI = 6+39.00
EL = 915.55'
K = 186
VC = 300'
DS = 70 mph

(+)0.3866%

(+)2.0000%

EXISTING GRADE

SS-174
6+08.91 -RPA2-
5.5156 LT

SS-176
SS-177
1+83.56 -RPA2-
60.3329 LT
=
550+00.0 -L-
C/L

SS-169
SS-170
7+94.67 -RPA2-
3.2874 RT
=
544+00.0 -L-
140.0' LT

BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

RESIDUAL

BRN. MED. STIFF MOIST MICA SANDY SILT (A-5)

ALLUVIAL BRN. SOFT MOIST SANDY SILT (A-4)

RED/BRN. MED. STIFF MOIST SANDY CLAY (A-6)

RESIDUAL
BRN. SOFT TO STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)

RESIDUAL
BRN. MED. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)

(PI=37)

BT
DRY
02/06

FOR PLAN SEE SHEET 19 & 20

RAMP A @ -Y9- (NC 18)

BORING DESCRIPTION
(A) ALLUVIAL GRAY V. SOFT TO SOFT MOIST TO WET SANDY SILT (A-4)
(B) ALLUVIAL GRAY V. LOOSE WET SILTY SAND (A-2-4)

END GRADE STA. 20+93.98
EL. = 944.65 (-Y9- EOP)

PROPOSED GRADE

(+)2.0000%

EXISTING GRADE

SS-176A
SS-177A
14+50.00 -RPA2-
CL

SS-172A
SS-172B
16+30.0 -RPA2-
70.0 LT

SS-173A
SS-174A
SS-175A
16+70.0 -RPA2-
50.0 RT

HIGHLY PLASTIC RESIDUAL

RED/BRN. STIFF TO V. STIFF MOIST SANDY CLAY (A-7-6)

RESIDUAL
TAN V. SOFT TO SOFT WET SLI. MICA. SANDY CLAY (A-7-6)

RESIDUAL
BRN. MED. STIFF WET MICA. SANDY SILT (A-5)

RESIDUAL
RED/BRN. STIFF TO V. STIFF MOIST SANDY CLAY

(PI=37)

BT
DRY
02/06

FOR PLAN SEE SHEET 19

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	69

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
THESE PLANS ARE NOT TO BE USED FOR RIGHT OF WAY ACQUISITION
PRELIMINARY PLANS
THESE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 150
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4649 FAX

SDG Sungate Design Group, P.A.
3 N. James Franklin Rd.
Franklin, SC. 27006

RAMP B @ -Y9- (NC 18)

970 960 950 940 930 920 910 900 890 880

BEGIN GRADE STA 0+00.00
EL = 902.62
-L- EOP STA 513+63.73
47.00' (RT)

1+86.23 -RPB2-
50.0275' RT
=
515+50.0 -L-
C/L

2+98.98 -RPB2-
0.2610 LT
=
516+60.0 -L-
55.0' LT

PI = 3+72.00
EL = 907.55'
K = 297
VC = 200'
DS = 70 mph

S-76

6+00.0 -RPB2-
C/L

EXISTING GRADE

PROPOSED GRADE

PI = 11+70.00
EL = 912.75'
K = 200
VC = 700'
DS = 70 mph

S-165
S-166

12+00.0 -RPB2-
C/L

11+00.0 -RPB2-
C/L

S-277
S-278

(+)11.3249%

(+)0.6518%

(+)0.6518%

(+)4.1463%

BRN. STIFF MOIST MICA. SANDY CLAY (A-7-6)

RESIDUAL

BRN. STIFF MOIST MICA. SANDY SILT (A-4)

BT
DRY
02/06

RESIDUAL
BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-6)

BRN. STIFF MOIST MICA. SANDY SILT (A-4)

BT
DRY
02/06

ALLUVIAL
GRAY V. LOOSE TO LOOSE SAT. SILTY SAND (A-2-4)

BT
DRY
02/06

-RESIDUAL-
GRAY V. LOOSE TO LOOSE SAT. V. MICA. SILTY SAND (A-2-6)

02/06

BRN. STIFF MOIST TO WET V. MICA. SANDY CLAY (A-7-5)

BT

FOR PLAN SEE SHEET 18 & 19

0 1 2 3 4 5 6 7 8 9 10 11 12 13

RAMP B @ -Y9- (NC 18)

990 980 970 960 950 940 930 920 910 900

END GRADE STA 19+96.30
EL = 944.45' (-Y9- EOP)

PI = 18+86.30
EL = 942.45'
K = 93
VC = 200'
DS = 50 mph

S-163
S-164

HIGHLY PLASTIC CLAY

EXISTING GRADE

16+00.0 -RPB2-
C/L

18+00.0 -RPB2-
C/L

14+00.0 -RPB2-
C/L

(+)4.1463%

(+)2.0000%

RESIDUAL
(PI=34)

RESIDUAL

RESIDUAL

BRN. STIFF MOIST SANDY CLAY (A-7-6)

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

BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

PROPOSED GRADE

BT
DRY
02/06

02/06

BT

02/06

BT

FOR PLAN SEE SHEET 19

13 14 15 16 17 18

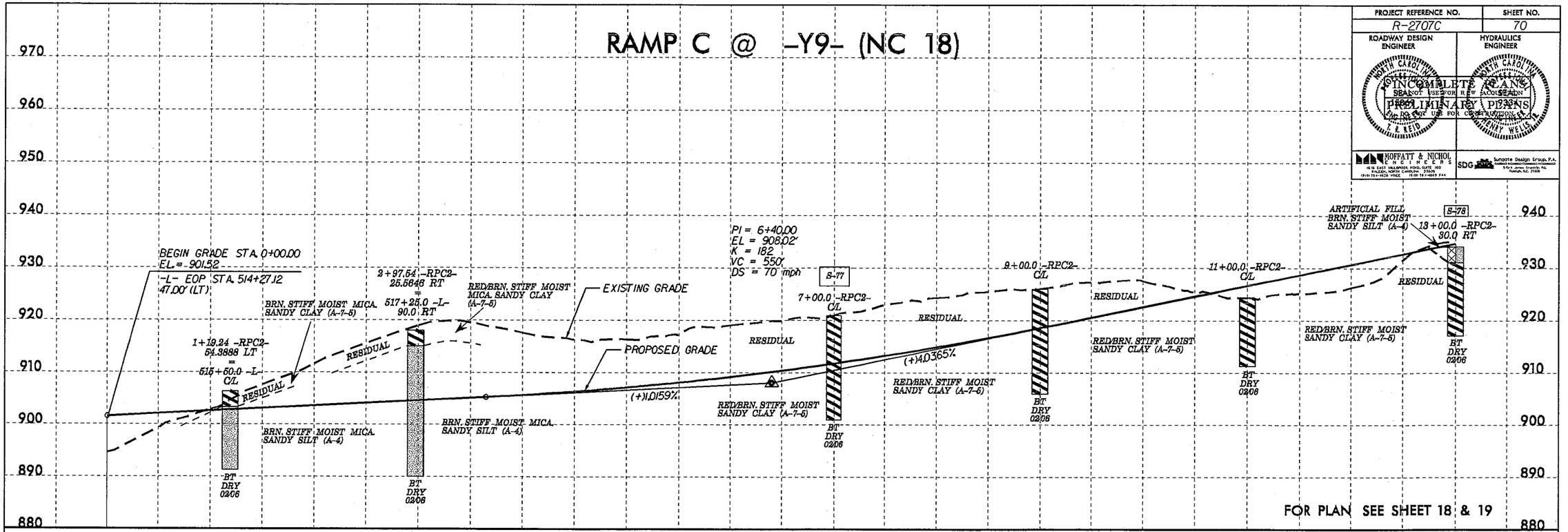
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	70

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

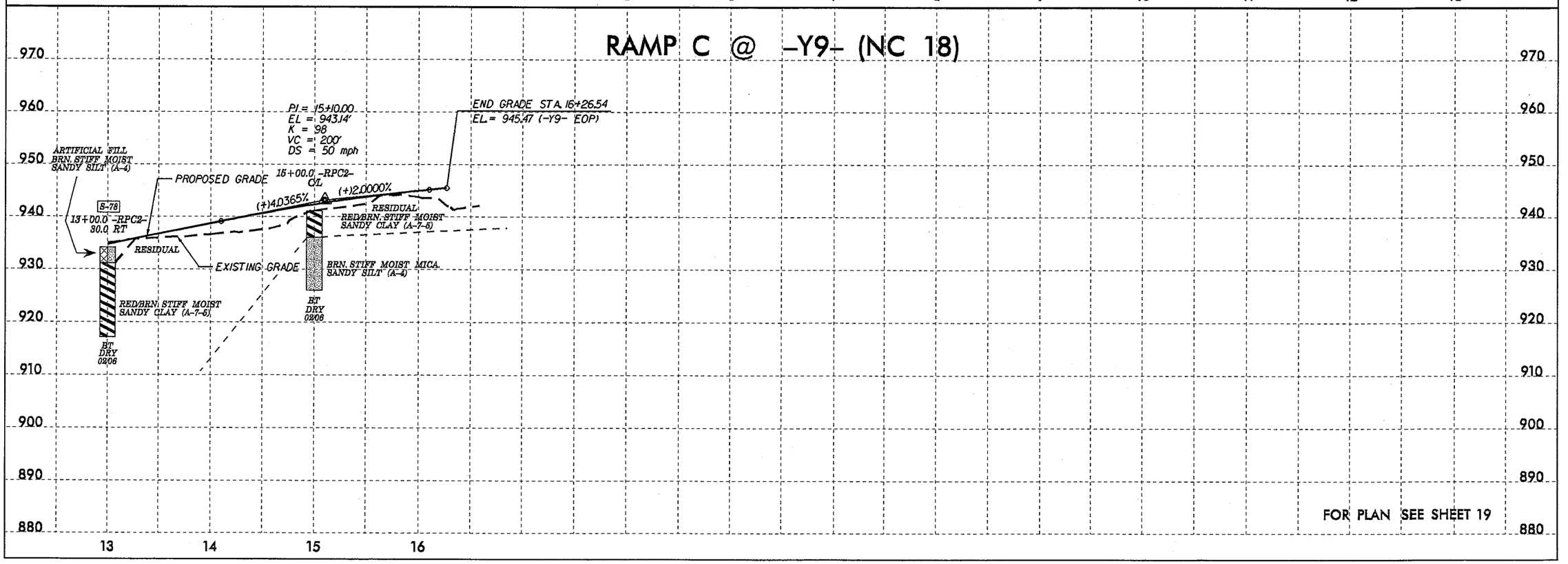
INCOMPLETE PLANS
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS — SDG Sungate Design Group, P.A.

RAMP C @ -Y9- (NC 18)



FOR PLAN SEE SHEET 18 & 19



FOR PLAN SEE SHEET 19

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	71

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

RAMP D @ -Y9- (NC 18)

PROFILE SHOWN 50.0 LT OF RAMP D

SS-169A
SS-170A
SS-171A

6+70.0 -RPD2- 50.0 LT

ALLUVIAL
BRN. SOFT MOIST SANDY SILT (A-4)

883.99

ALLUVIAL
BRN. SOFT MOIST SANDY CLAY (A-6)

02706

RESIDUAL

BRN. MED. STIFF MOIST MICA SANDY SILT (A-5)

BT

BEGIN GRADE STA. 0+00.00
EL = 915.49
-L- EOP STA. 547+05.16
47.00' (LT)

PI = 2+25.00
EL = 916.62'
K = 37.4
VC = 300'
DS = 70 mph

PROPOSED GRADE

(+)0.5025%

(-)0.3000%

(-)0.3000%

(+)3.2464%

PI = 6+50.00
EL = 915.35'
K = 113
VC = 400'
DS = 50 mph

EXISTING GRADE

2+07.66 -RPD2- 49.6445 LT = 545+00.0 -L- 100.0 RT

ALLUVIAL
BRN. SOFT MOIST SANDY SILT (A-4)

RESIDUAL
BRN. MED. STIFF TO STIFF MOIST SANDY CLAY (A-7-6, A-7-6)

02705

BT

RESIDUAL

ALLUVIAL AS ABOVE

RESIDUAL

HORSE PASTURE

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MICA SANDY SILT

970 960 950 940 930 920 910 900 890 880 870 860

0 1 2 3 4 5 6 7 8 9 10 11 12 13

FOR PLAN SEE SHEET 19 & 20

RAMP D @ -Y9- (NC 18)

PI = 15+00.00
EL = 942.94'
K = 160
VC = 200'
DS = 50 mph

END GRADE STA. 16+16.51
EL = 945.27' (-Y9- EOP)

PROPOSED GRADE

(+)3.2464%

(+)2.0000%

HORSE PASTURE

EXISTING GRADE

RESIDUAL
BROWN MED. STIFF TO STIFF MOIST MICA SANDY SILT

970 960 950 940 930 920 910 900

13 14 15 16

FOR PLAN SEE SHEET 19

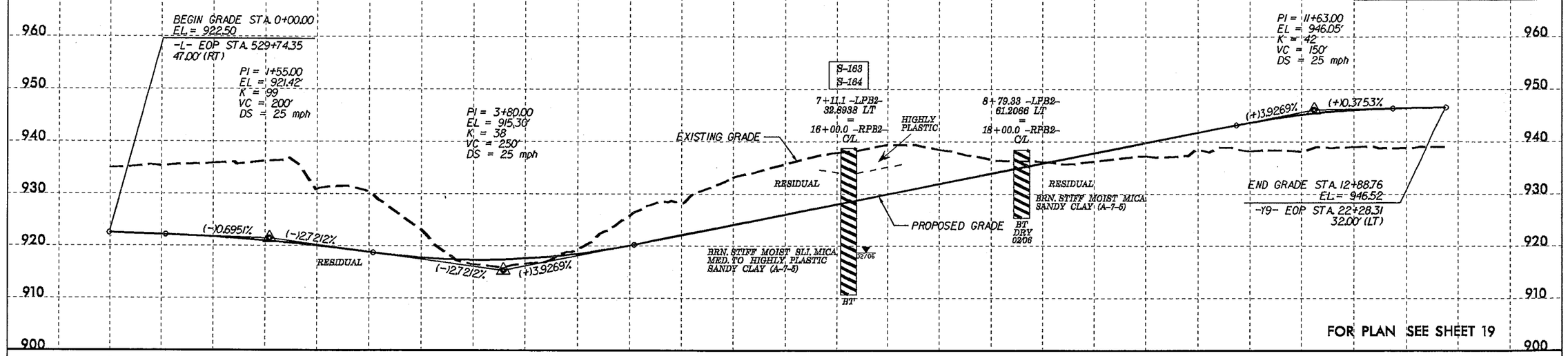
LOOP B @ -Y9- (NC 18)

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	72

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

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

MOFFATT & NICHOL ENGINEERS — SDG Supporte Design Group, P.A.



5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	73
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMP –A– @–Y14– (NC 150)

BEGIN GRADE STA 0+00.00
EL = 902.61

PI = 1+20.00
EL = 904.63'
K = 1080
VC = 140'
DS = 70 mph

PI = 5+00.00
EL = 911.50'
K = 1924
VC = 420'
DS = 70 mph

PI = 9+40.00
EL = 918.50'
K = 173
VC = 460'
DS = 65 mph

S-8A
S-9A
1+31.28 –A3SP–
48.8804 LT
=
628+00.0 –L–
C/L

S-7A
3+31.01 –A3SP–
58.9678 LT
=
626+00.0 –L–
C/L

S-6A
5+30.11 –A3SP–
77.7675 LT
=
624+00.0 –L–
C/L

7+50.0 –A3SP–
C/L

S-13A
9+50.0 –A3SP–
C/L

SS-14A
SS-15B
11+50.0 –A3SP–
C/L

SS-212
SS-213
RPA3 950C
12+98.36 –A3SP–
56.1674 RT
=
1–61.03 –A3SPB–
48.906 RT

EXISTING GRADE
PROPOSED GRADE

RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY SILTY CLAY (A-7-6)

RESIDUAL
RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

RESIDUAL
BROWN-TAN STIFF MOIST SLIGHTLY MICACEOUS SILTY SANDY CLAY (A-7-6)

RESIDUAL
TAN LOOSE DRY CLAYEY SILTY SAND (A-2-4)

RED-BROWN-TAN STIFF MOIST SILTY SANDY CLAY (A-7-6)

RED-BROWN-TAN STIFF MOIST MICACEOUS SILTY SANDY CLAY (A-7-5)

BROWN-TAN STIFF MOIST MICACEOUS SILTY SANDY CLAY (A-7-5)

RED-BROWN STIFF DRY CLAYEY SANDY SILT (A-4)

RED-BROWN-TAN MEDIUM DENSE TO VERY DENSE DRY CLAYEY SILTY SAND (A-2-4)

BRN. MED. STIFF TO STIFF MOIST SANDY CLAY (A-7-6, A-7-5)

(+)1.6792%
(+)1.8092%
(+)1.5909%
(+)1.8092%
(+)1.5909%
(+)4.2494%

(PI=48)
(PI=29)
(PI=38)

BT DRY 01/08
BT DRY 12/07
BT DRY 01/08
BT DRY 01/08
BT DRY 01/08
BT DRY 02/06

0 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00

960 950 940 930 920 910 900 890 880 870

FOR PLAN SEE SHEETS 25 & 26

RAMP –A– @–Y14– (NC 150)

END GRADE STA 18+05.44
EL = 955.35

PI = 17+50.00
EL = 952.92'
K = 749
VC = 100'
DS = 70 mph

(+)4.3830%
(+)4.2494%

PROPOSED GRADE
EXISTING GRADE

S-19S SS-19T
SS-19B SS-19B
17+99.27 –A3SP–
8.7492 LT
=
612+20.0 –L–
60.0 LT

SS-15A
SS-16A
17+00.0 –A3SP–
C/L

15+00.0 –A3SP–
C/L

RED-BROWN MEDIUM STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

RESIDUAL

RED-BROWN MEDIUM STIFF TO STIFF DRY TO MOIST SANDY SILTY CLAY (A-7-6)

RESIDUAL

(PI=33)
(PI=21-29)

TAN MED. STIFF TO V. STIFF MOIST SANDY CLAY (A-7-5)

BRN. V. STIFF TO HARD MOIST MICA SANDY SILT (A-4)

BT DRY 01/08
BT DRY 01/08
02/06
02/06
BT

14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00

980 970 960 950 940 930 920 910 900 890

FOR PLAN SEE SHEET 25

28-MAY-2008 14:05
d:\proj_geo\c\2707c(rev)_geo_rdwy_cleveland\voodd_geotech\planprof\r-2707c(rev)_geo_pf1_spur-ramps_73-79.dgn
dlwood

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	74
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

RAMP -A1- @-Y14- (NC 150)

1020 1010 1000 990 980 970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820

PI = 3+60.00
EL = 945.03'
K = 48
VC = 304'
DS = 40 mph

END GRADE STA 5+95.56
EL = 942.26

BEGIN GRADE STA 2+01.97
EL = 936.88

(+)5.1583%

(-)1.1766%

PROPOSED GRADE

PROJECTED GRADE

EXISTING GRADE

SS-201
MS-201
RPA3_800C
0+13.43 -A3SPB-
22.2144 RT
=
11+57.86 -A3SP-
22.219 RT
(PI=30)

BRN. STIFF MOIST SANDY CLAY (A-7-6)

BRN. STIFF TO V. STIFF MOIST SANDY CLAY (A-6)
BT
DRY
02/08

SS-212
SS-213
RPA3_950C
1+61.03 -A3SPB-
48.908 RT
=
12+98.35 -A3SP-
56.1674 RT

BRN. MED. STIFF TO STIFF MOIST SANDY CLAY (A-7-6, A-7-6)
BT
DRY
02/08

SS-210
SS-211
RPA3_1200C
4+09.99 -A3SPB-
54.7812 RT

BRN. STIFF TO V. STIFF MOIST SANDY CLAY (A-7-6, A-7-6)
BT
DRY
02/08

FOR PLAN SEE SHEET 25

0 1+00 2+00 3+00 4+00 5+00

28-MAY-2008 11:34
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driver: pscript.drv (08/2007)

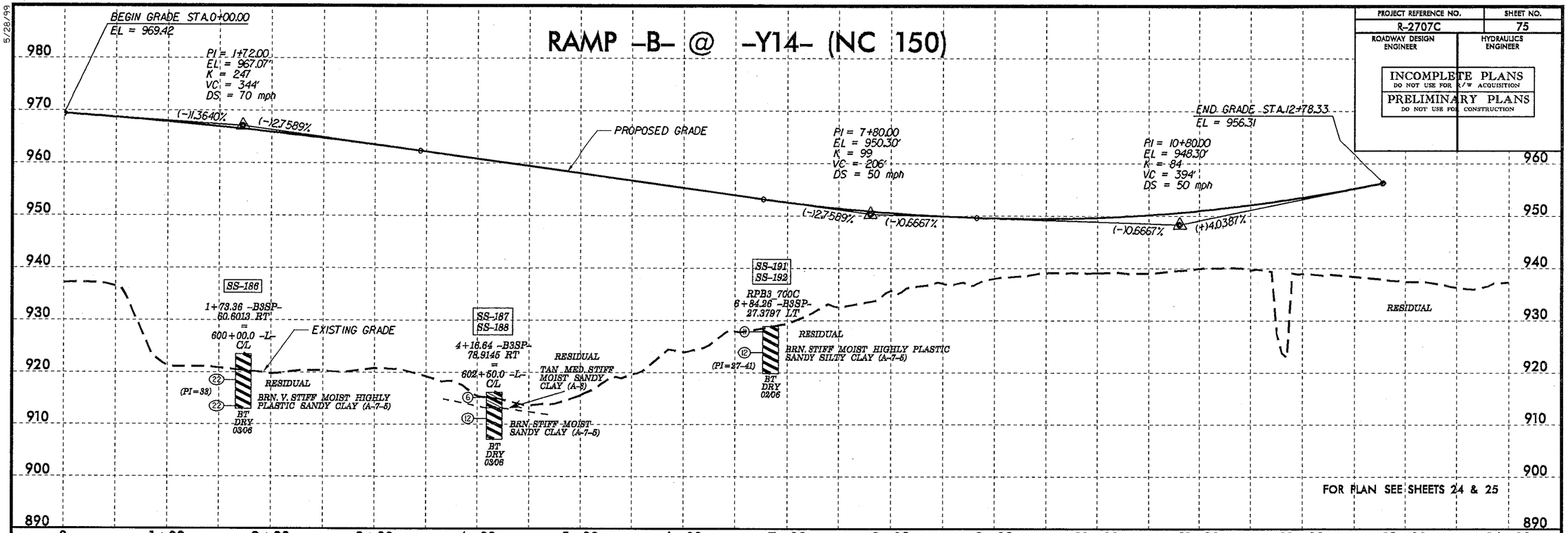
5/26/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	75
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

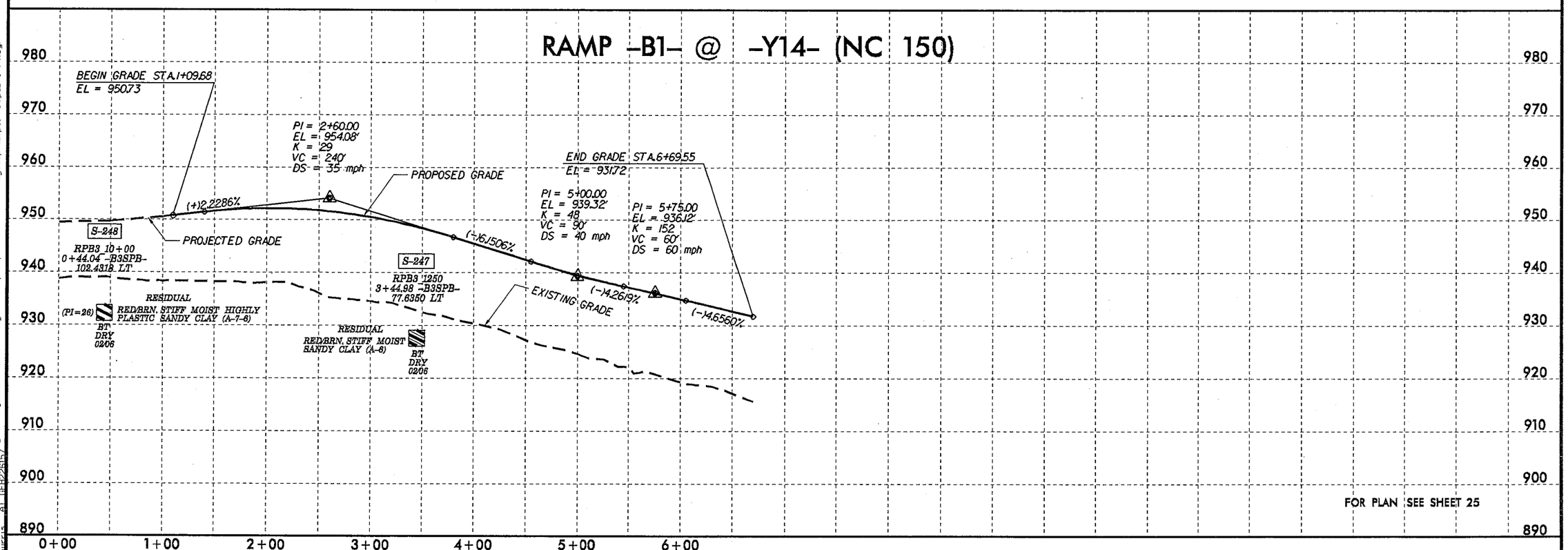
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMP –B– @ –Y14– (NC 150)



RAMP –B1– @ –Y14– (NC 150)



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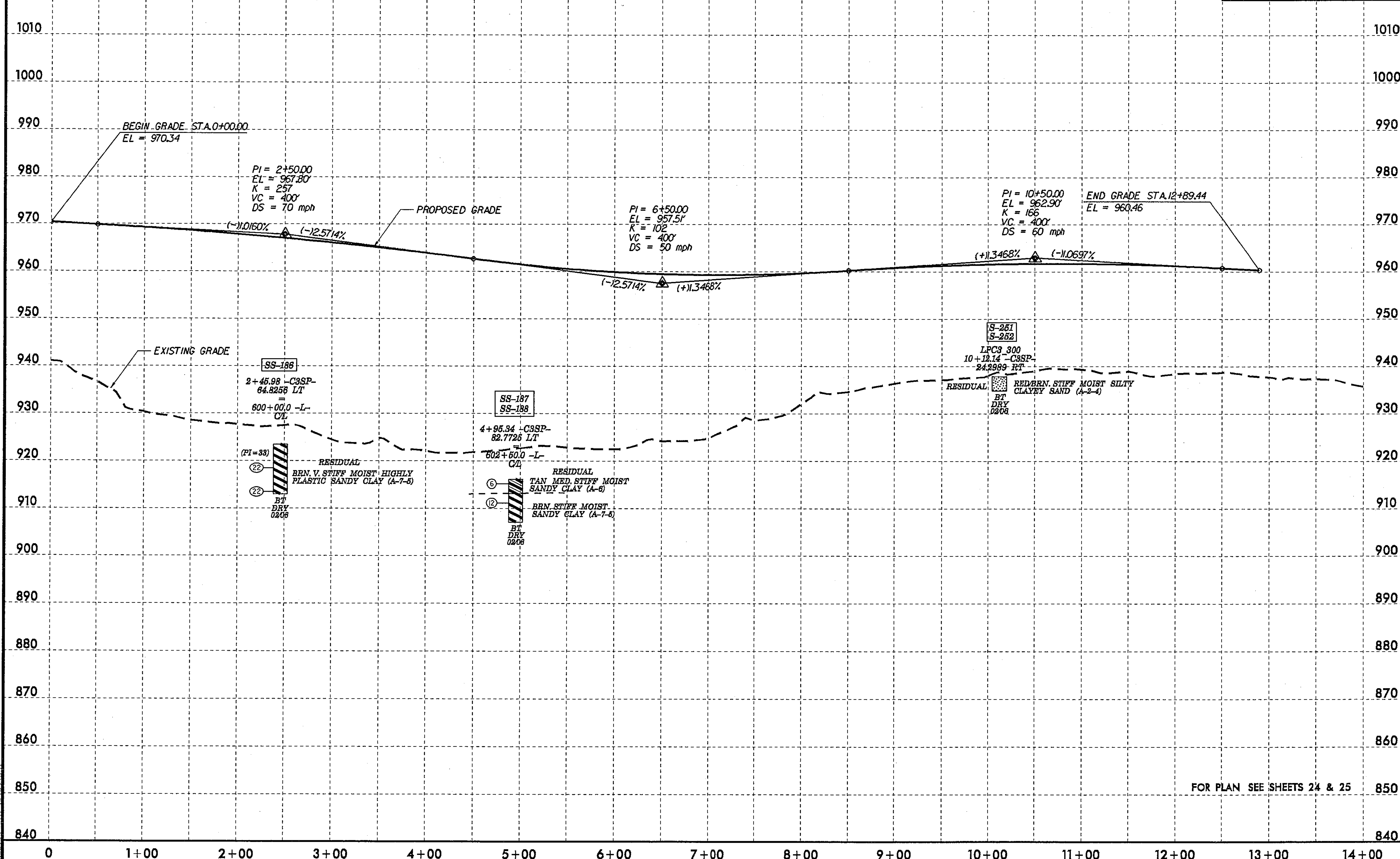
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	76
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMP -C- @ -Y14- (NC 150)



FOR PLAN SEE SHEETS 24 & 25

5/14/99

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cburris AT GFH226157

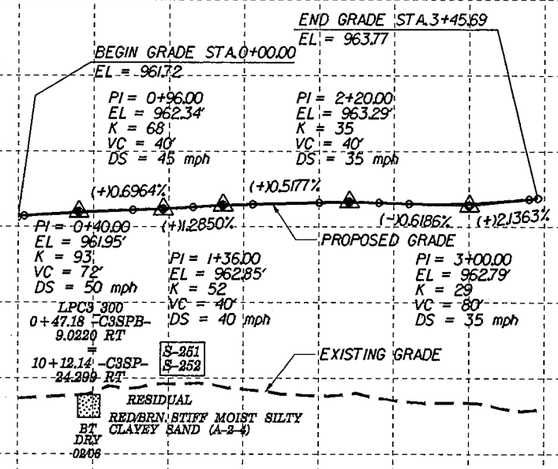
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMP -C1- @ -Y14- (NC 150)



FOR PLAN SEE SHEET 25

1030 1020 1010 1000 990 980 970 960 950 940 930 920 910 900 890 880 870 860 850 840 830

0 1+00 2+00 3+00

28-MAY-2008 08:27
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	78
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMP -D- @ -Y14- (NC 150)

PI = 0+50.00
EL = 901.63'
K = 251
VC = 54'
DS = 70 mph

BEGIN GRADE STA 0+00.00
EL = 900.79

PI = 2+20.00
EL = 904.13'
K = 521
VC = 190'
DS = 70 mph

PI = 4+80.00
EL = 907.00'
K = 85
VC = 330'
DS = 50 mph

BORING DESCRIPTIONS

(A) RESIDUAL BROWN-TAN STIFF TO VERY STIFF MOIST MICACEOUS SILTY SANDY CLAY (A-7-5)

(B) RESIDUAL BROWN STIFF MOIST MICACEOUS HIGHLY PLASTIC (PI=31) SANDY CLAY (A-7-6)

S-8A
S-9A
0+68.82 -D3SP- 59.0701 RT = 628+00.0 -L- C/L
RESIDUAL RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY SILTY CLAY (A-7-5)
(PI=43)
RED-BROWN-TAN STIFF MOIST SILTY SANDY CLAY (A-7-6)
(+)11.4690%
(+)11.6841%
BT DRY 01/08

S-7A
2+52.38 -D3SP- 64.6283 RT = 626+00.0 -L- C/L
RESIDUAL RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
(PI=29)
RED-BROWN-TAN STIFF MOIST MICACEOUS SILTY SANDY CLAY (A-7-6)
(+)11.1041%
BT DRY 01/08

S-6A
4+42.95 -D3SP- 86.2797 RT = 624+00.0 -L- C/L
RESIDUAL (PI=38)
RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)
BROWN-TAN STIFF MOIST MICACEOUS SILTY SANDY CLAY (A-7-5)
(+)11.1041%
(+)5.0000%
BT DRY 01/08

EXISTING GRADE
PROPOSED GRADE

RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
RPD 750C 7+50.0 -D3SP- C/L
RESIDUAL
BROWN-TAN STIFF DRY MICACEOUS SILTY SANDY CLAY (A-7-5)
12/07
BT

SS-1A
SS-2A
RPD 850C 8+50.0 -D3SP- C/L
RESIDUAL
12/07
BT
WEATHERED ROCK

RPD 900C 9+00.0 -D3SP- C/L
SS-5A
RPD 960L 9+50.0 -D3SP- 30.0 LT
RESIDUAL BROWN-TAN DENSE DRY MICACEOUS CLAYEY SILTY SAND (A-2-4)
BT DRY 12/07
SEV. WEATHERED CRYSTALLINE ROCK
AR DRY 12/07
CRYSTALLINE ROCK
WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK

SS-3A
RPD 1200C 12+00.0 -D3SP- C/L
RESIDUAL
BROWN-TAN-RED STIFF MOIST SANDY CLAY (A-7-6)
BROWN-TAN-RED STIFF MOIST SILTY SANDY CLAY (A-7-6)
BT DRY 12/07

FOR PLAN SEE SHEETS 25 & 26

END GRADE STA 16+87.22
EL = 959.95

(+)5.0000%
(-)0.8253%

PI = 15+60.00
EL = 961.00'
K = 44
VC = 254'
DS = 40 mph

PROPOSED GRADE
EXISTING GRADE

SS-4A
RPD 1500L 15+00.0 -D3SP- 60.0 LT
RESIDUAL
BROWN MEDIUM STIFF TO STIFF MOIST SILTY SANDY CLAY (A-5)
BT DRY 12/07

FOR PLAN SEE SHEET 25

28-MAY-2008 15:00
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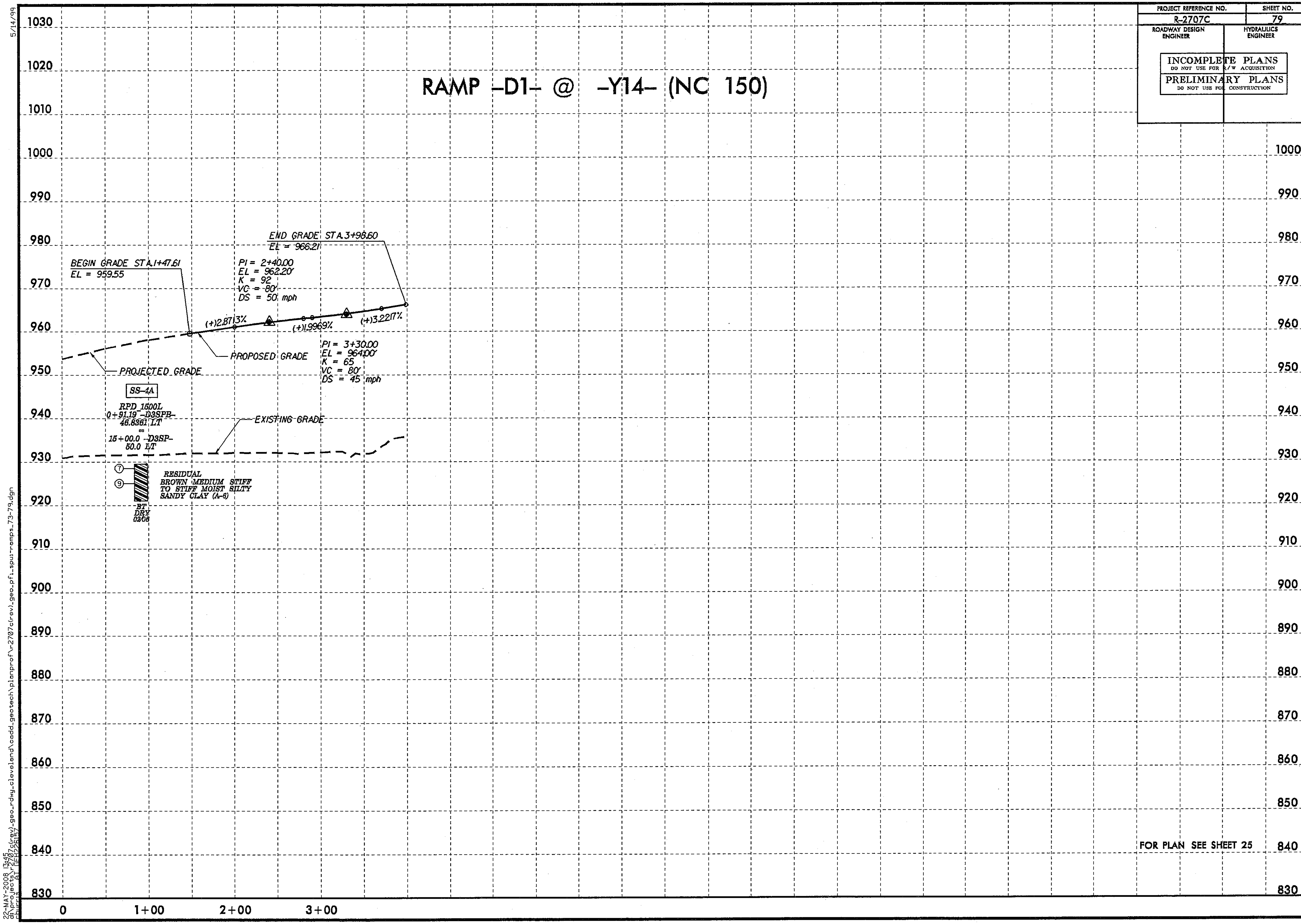


PROJECT REFERENCE NO. R-2707C
SHEET NO. 79
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
RAMP -D1- @ -Y14- (NC 150)
END GRADE STA.3+98.60
EL = 966.21
BEGIN GRADE STA.1+47.61
EL = 959.55
PI = 2+40.00
EL = 962.20'
K = 92
VC = 80'
DS = 50 mph
(+)2.8713%
(+)1.9969%
(+)3.2217%
PI = 3+30.00
EL = 964.00'
K = 65
VC = 80'
DS = 45 mph
PROPOSED GRADE
PROJECTED GRADE
SS-4A
RPD_1500L
0+91.19 -D3SPB-
46.8361 LT
=
15+00.0 -D3SP-
50.0 LT
EXISTING GRADE
7
9
RESIDUAL
BROWN MEDIUM STIFF
TO STIFF MOIST SILTY
SANDY CLAY (A-6)
BT
DRY
02/08
1030
1020
1010
1000
990
980
970
960
950
940
930
920
910
900
890
880
870
860
850
840
830
0
1+00
2+00
3+00
FOR PLAN SEE SHEET 25
5/14/99
22-MAY-2008 13:45

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	80

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL T. R. REID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL JOHNNY WELSH JR.

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS

MOFFATT & NICHOL ENGINEERS — 16 E. EAST HILLSBORO ROAD, SUITE 160, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-4628 FAX

SDG Sungate Design Group, P.A. — 3704 Jenna Dr., Raleigh, N.C. 27609

-Y1- NC 226

BEGIN GRADE STA. 11+90.00
EL. = 805.54

PI = 15+28.00
EL = 809.65'
K = 82
VC = 340'
DS = 50 mph

(+)1.2164%

(-)2.9285%

PI = 19+60.00
EL = 797.00'
K = 98
VC = 450'
DS = 50 mph

(-)2.9285%

(+)1.6860%

PROPOSED GRADE

EXISTING GRADE

RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT

RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT

FOR PLAN SEE SHEET 5 & 28

860 850 840 830 820 810 800 790 780 770

12 13 14 15 16 17 18 19 20 21 22 23 24

-Y1- NC 226

27+25.25 -Y1-
29.9142 LT
=
35+50.0 -L-
80.0 LT

PI = 28+20.00
EL = 811.50'
K = 213
VC = 250'
DS = 50 mph

(+)1.6860%

(+)0.5120%

PI = 34+25.00
EL = 814.60'
K = 285
VC = 100'
DS = 50 mph

(+)0.5120%

(+)0.8530%

PROPOSED GRADE

EXISTING GRADE

RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT (A-4)

RESIDUAL
BROWN STIFF MOIST MICA SANDY SILT

10'/05'

AR

HARD CRYSTALLINE ROCK (BIOTITEMICA GNIESS)

FOR PLAN SEE SHEET 5 & 29

860 850 840 830 820 810 800 790 780 770

25 26 27 28 29 30 31 32 33 34 35 36 37

-Y1- NC 226

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	81

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

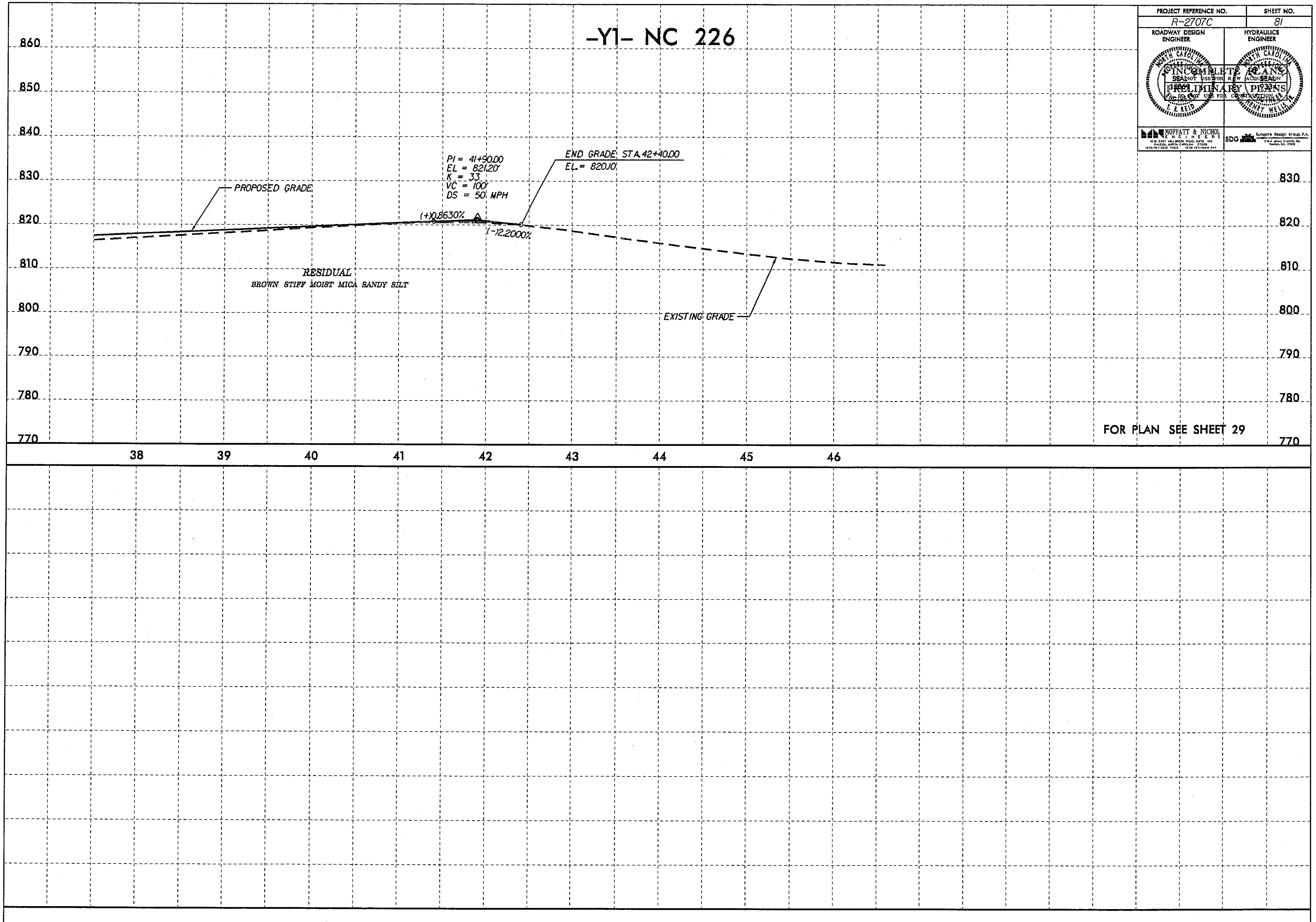
INCOMPLETE PLANS

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS

SDG Sungate Design Group, P.A.



FOR PLAN SEE SHEET 29

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	82

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19641 T. E. REID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19641 HENRY WELLS, JR.

INCOMPLETE PLANS
SEAL NOT USED FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE +1 (919) 781-4628 FAX

SDG Sungate Design Group, P.A.
Consulting Engineers
110 S. Jones Franklin Rd.
Raleigh, N.C. 27606

-Y2- SR 1850 METCALF ROAD

PROFILE AT 90.0' RT -Y2-

ALLUVIAL
GRAY V. LOOSE TO LOOSE SAT. SILTY SAND (A-2-4)

S-240A

27+00.0 -Y2- 90.0 RT

RESIDUAL

BT DRY 0306

RESIDUAL BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-4)

BM # 18
EL.= 778.74'
N = 581169.5 E = 1236857.1
8 INCH NAIL IN BASE OF 20 INCH WHITE OAK
-Y2- STA. 30+98.41 28.12' (LT.)

END GRADE STA. 33+25.00
EL. = 780.81

33+00.0 -Y2- 60.0 LT

32+00.0 -Y2- 40.0 LT

RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY

BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-4)

PROPOSED GRADE

BEGIN GRADE STA. 23+85.00
EL. = 742.27

(+) 4.1000%

EXISTING GRADE

BT DRY 0306

BT DRY 0306

BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-4)

FOR PLAN SEE SHEET 7 & 30

-Y3- SR 1005 NORTH LAFAYETTE STREET

BM # 22
EL.= 830.34'
N = 583077.3 E = 1242588.9
8 INCH NAIL IN ROOT OF 10 INCH POPLAR
-Y3- STA. 18+12.62 31.46' (RT.)

PI = 21+04.00
EL = 851.50'
K = 85
VC = 350'
DS = 50 mph

S-120
S-121

22+00.0 -Y3- 46.0 RT
=
449+40 -L- 125.0 RT
867.17'

BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)

20+70.0 -Y3- 50.0 RT

END GRADE STA. 25+54.02
EL.= 865.64

BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)

(+)3.1421%

PROPOSED GRADE

EXISTING GRADE

BEGIN GRADE STA. 17+90.00
EL. = 828.77

(+)7.2389%

BROWN MED. DENSE TO DENSE MICA SILTY SAND (A-2-4)

BROWN MED. DENSE TO DENSE MICA SILTY SAND (A-2-4)

AR DRY 0306

HARD CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

BT DRY 0306

FOR PLAN SEE SHEET 12 & 32

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	83

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA SEAL T. R. REID

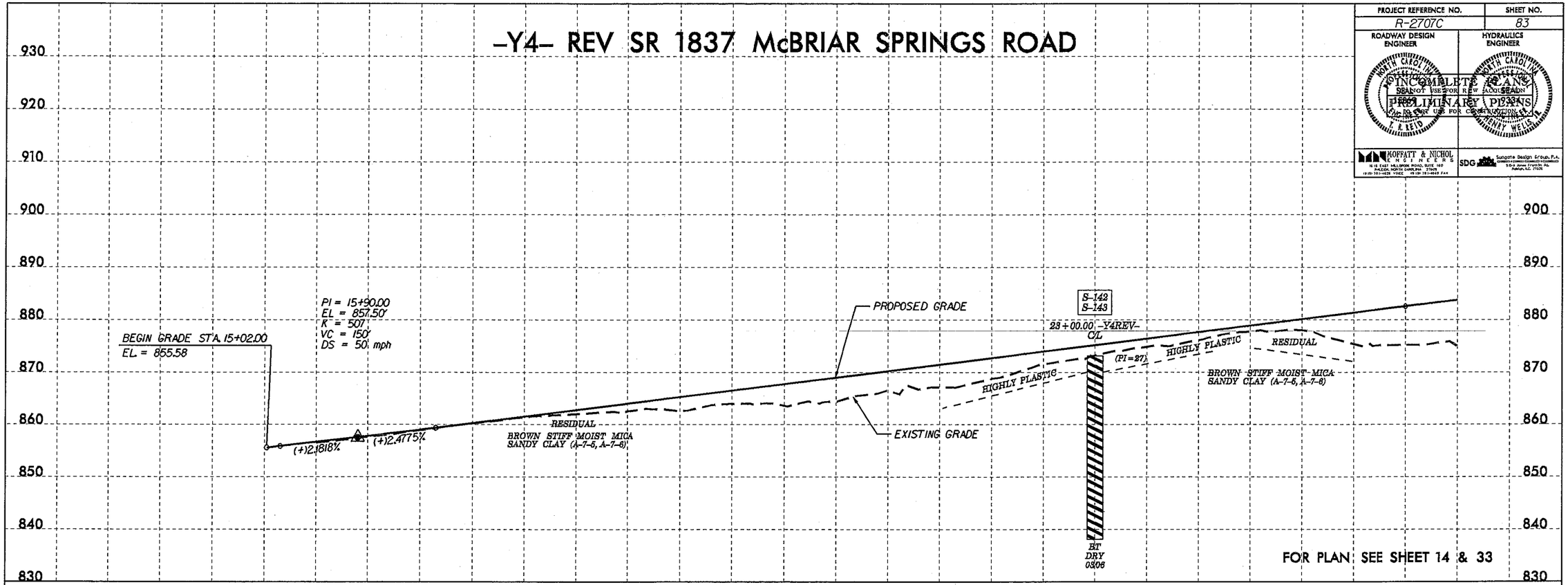
NORTH CAROLINA SEAL KENNETH WELSH JR.

INCOMPLETE PLANS
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

MOFFATT & NICHOL ENGINEERS
901 E. EAST HILLSBOROUGH ROAD, SUITE 105
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4628 FAX

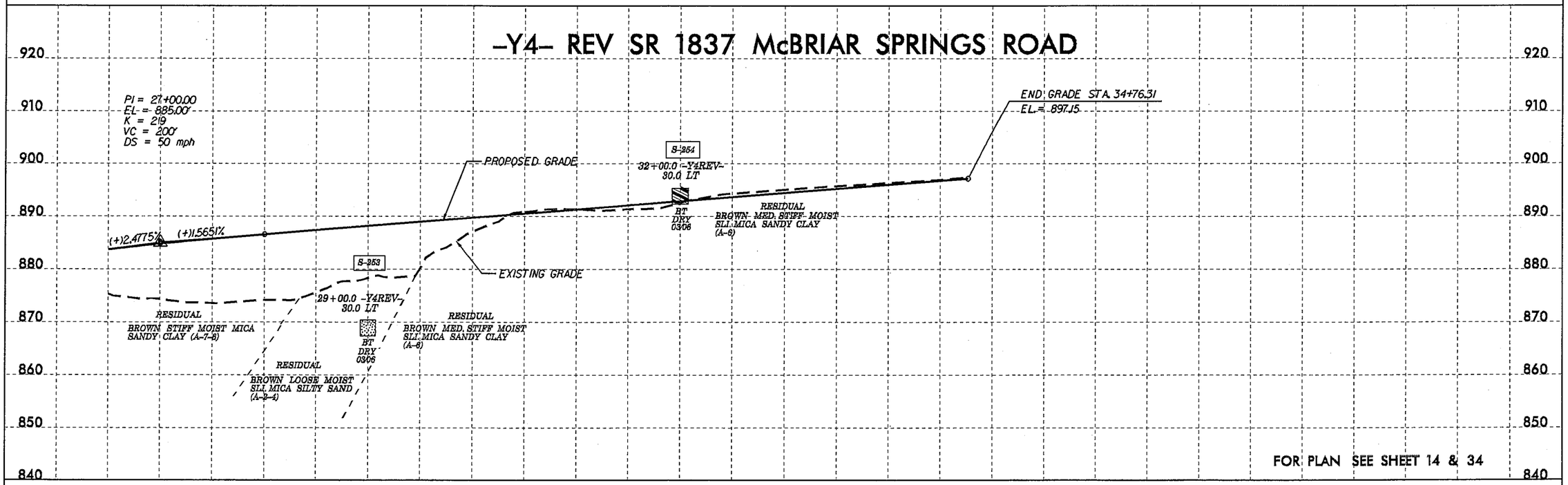
SDG Sungate Design Group, P.A.
Engineering Consultants
900 Jones Franklin Road
Raleigh, N.C. 27606

-Y4- REV SR 1837 McBRIAR SPRINGS ROAD



FOR PLAN SEE SHEET 14 & 33

-Y4- REV SR 1837 McBRIAR SPRINGS ROAD



FOR PLAN SEE SHEET 14 & 34

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	84

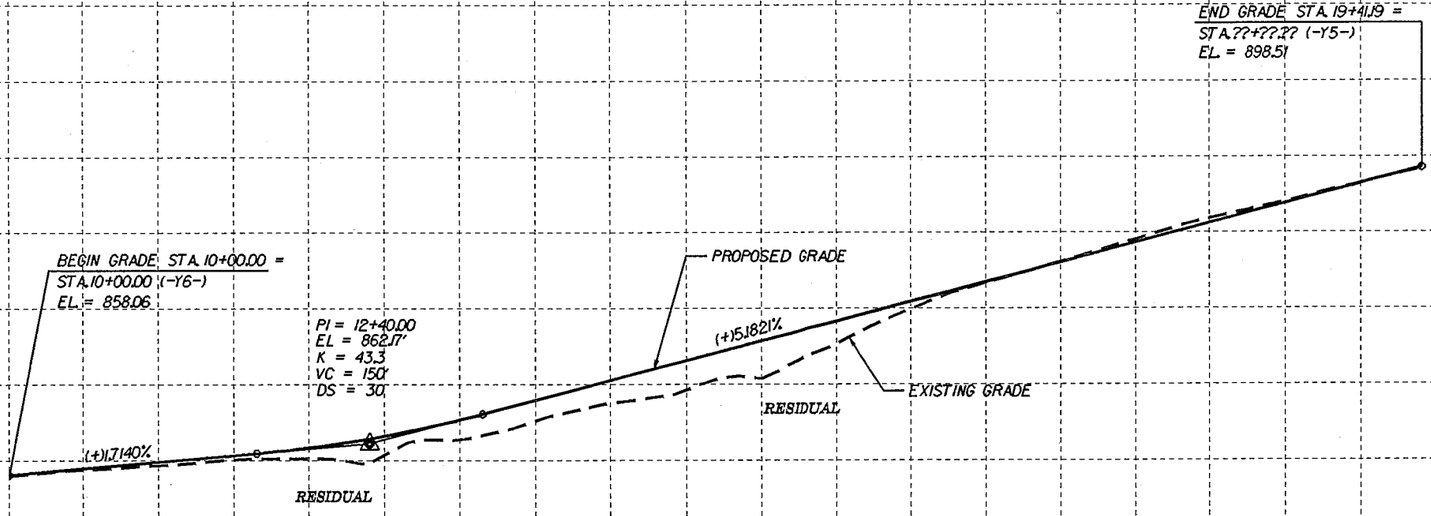
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y6A- SR 1843 SPRING BROOK DRIVE



FOR PLAN SEE SHEETS 17 & 46

960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

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cburris

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	85

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

NOT FOR CONSTRUCTION
PRELIMINARY PLANS
Do Not Use For Construction Purposes
E. REID
HENRY WELLS

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

-Y8- REV SR 1927 CARTER ROAD

PI = 12+20.00
EL = 954.01'
K = 44
VC = 350'
DS = 30 mph

S-165
S-166
12+00.0 -Y8- REV C/L
(+)4.0000%
(-)4.0240%
HIGHLY PLASTIC
HIGHLY PLASTIC (PI=31)
RESIDUAL
BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)
BROWN MED. DENSE MOIST CLAYEY SAND (A-2-6)
BT DRY 03/06
BEGIN GRADE STA. 10+32.02
EL = 946.49
15+00.0 -Y8- REV C/L
PROPOSED GRADE
EXISTING GRADE
RESIDUAL
BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)
BT DRY 03/06
BROWN STIFF MOIST MICA SANDY CLAY (A-7-5)
S-167A
15+00.0 -Y8- REV C/L
HIGHLY PLASTIC
HIGHLY PLASTIC (PI=43)
RESIDUAL
BROWN STIFF MOIST SANDY CLAY (A-7-5)
BT DRY 03/06

FOR PLAN SEE SHEET 36 & 37

-Y8- REV SR 1927 CARTER ROAD

S-198A
25+00.0 -Y8- REV C/L
HIGHLY PLASTIC CLAY (PI=26)
RED/BROWN STIFF MOIST SANDY CLAY (A-7-6)
BT DRY 03/06
PROPOSED GRADE
EXISTING GRADE
RESIDUAL
BROWN LOOSE MOIST SILTY SAND (A-2-4)
SS-182
30+85.0 -Y8- REV C/L
ALLUVIAL
AR
HARD CRYSTALLINE ROCK (BIOTITE MICA GNEISS)
SS-183
SS-184A
32+60.0 -Y8- REV 40.0 RT
ALLUVIAL BROWN LOOSE MOIST CLAYEY SAND (A-2-6)
RESIDUAL BROWN STIFF MOIST SANDY CLAY (A-6)
BT
END GRADE STA. 36+00.00
EL = 860.56
PI = 35+50.00
EL = 860.25'
K = 22
VC = 100'
DS = 30 mph
(-)4.0240%
(+)0.6200%

FOR PLAN SEE SHEET 37 & 38

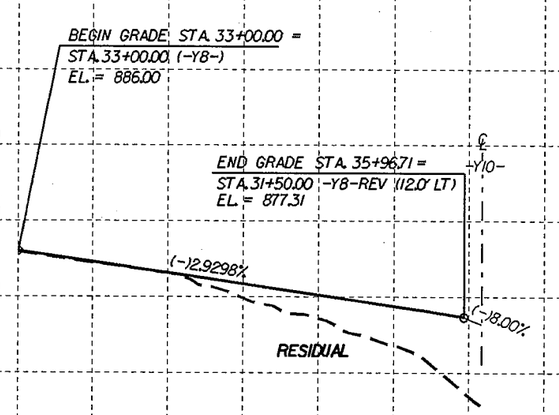
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	86
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y8A- SR 1926 CARTER ROAD CONNECTOR

970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770



FOR -Y8A- PLAN SEE SHEET 38

940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770

33+00 34+00 35+00 36+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	87

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

MOFFATT & NICHOL ENGINEERS
SDG Sungate Design Group, P.A.

-Y9- NC 18

BEGIN GRADE STA. 10+70.00
EL. = 947.36

P.I. = 12+90.00
EL = 946.70'
K = 643
VC = 200'
DS = 50 mph

P.I. = 16+50.00
EL = 944.50'
K = 186
VC = 200'
DS = 50 mph

(−)0.3000%
(−)0.6111%
(−)0.6111%
(+)0.4667%

PROPOSED GRADE

EXISTING GRADE

RED/BRN. MED. STIFF TO STIFF MOIST SANDY CLAY

RED/BRN. MED. STIFF TO STIFF MOIST SANDY CLAY

FOR PLAN SEE SHEET 19 & 35

1000 990 980 970 960 950 940 930 920 910

11 12 13 14 15 16 17 18 19 20 21 22 23

-Y9- NC 18

PI = 24+00.00
EL = 948.00'
K = 67.4
VC = 600'
DS = 50 mph

PI = 32+61.00
EL = 944.35'
K = 172
VC = 300'
DS = 50 mph

END GRADE STA. 36+00.00
EL = 948.81

(+)0.4667%
(−)0.4239%
(−)0.4239%
(+)1.3156%

PROPOSED GRADE

EXISTING GRADE

RED/BRN. MED. STIFF TO STIFF MOIST SANDY CLAY

RED/BRN. MED. STIFF TO STIFF MOIST SANDY CLAY

FOR PLAN SEE SHEET 19 & 36

1000 990 980 970 960 950 940 930 920 910

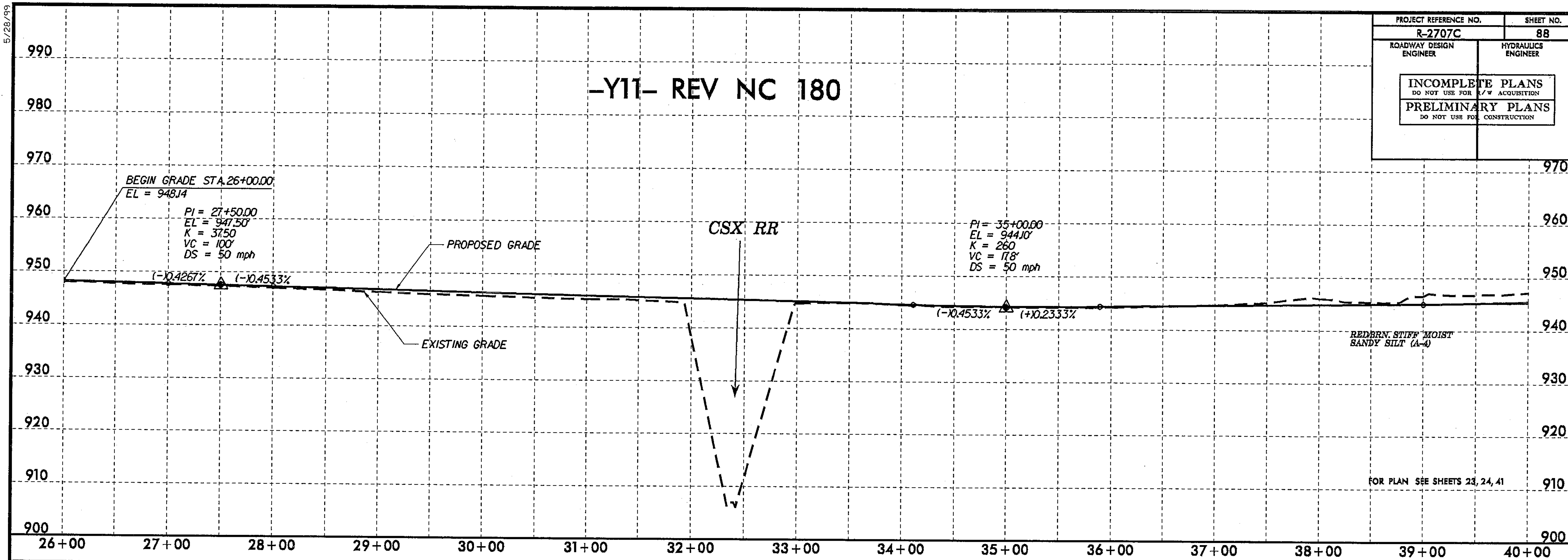
24 25 26 27 28 29 30 31 32 33 34 35 36

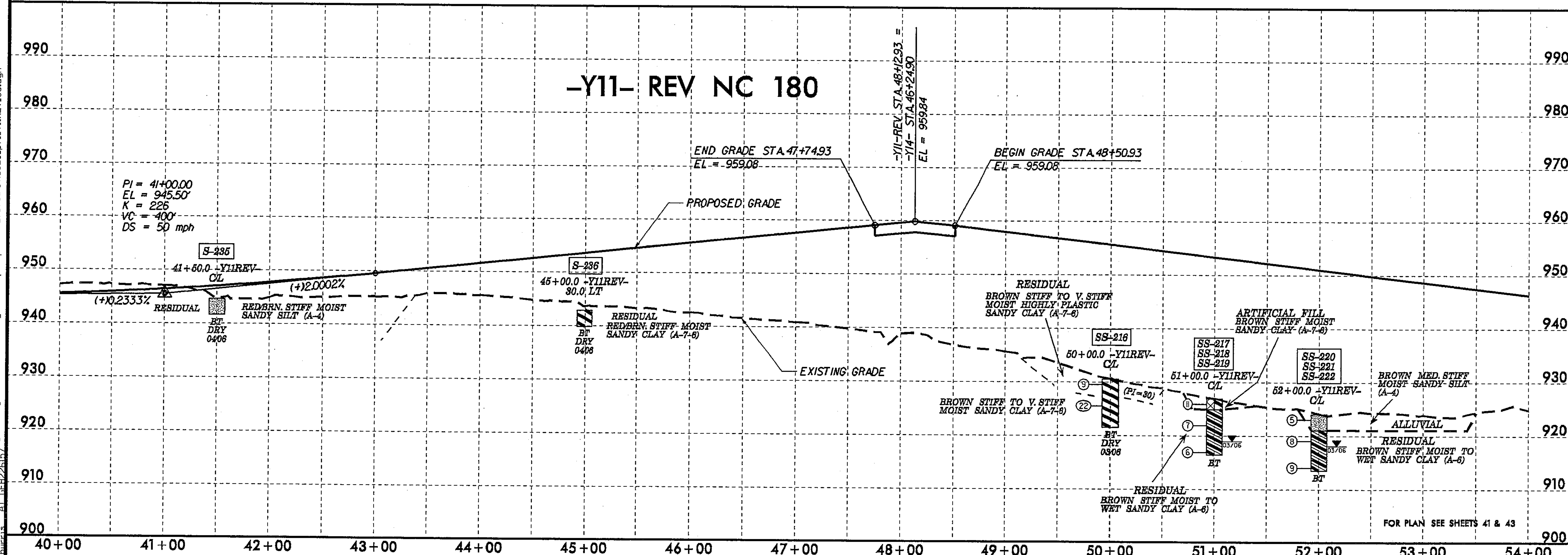
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	88
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99





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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	89
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y11- REV NC 180

SS-223
55+00.0 -Y11REV- C/L
HIGHLY PLASTIC CLAY
RESIDUAL
RED/BRN. MED. STIFF TO V. STIFF MOIST SANDY CLAY (A-7-5)
(PI=26)
BT
DRY
03/08

ALLUVIAL
BROWN MED. STIFF MOIST SANDY SILT (A-4)
SS-224
SS-225
SS-226
57+40.0 -Y11REV- 40.0 LT
GRAY SOFT MOIST SANDY CLAY (A-6)
RESIDUAL
BRN. MED. STIFF TO HARD MOIST SANDY CLAY (A-7-5)
03/06
BT

BRN./GRAY SOFT TO MED. STIFF MOIST SANDY CLAY (A-6)
SS-227
58+60.0 -Y11REV- 50.0 RT
03/06
03/06
BT
RESIDUAL
BRN. V. STIFF MOIST SANDY CLAY (A-6)

ALLUVIAL
BRN. MED. STIFF MOIST SANDY SILT (A-7-5)
SS-228
SS-229
60+50.0 -Y11REV- 30.0 RT
BRN/GRAY STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
03/06
(PI=26)
BT
RESIDUAL
BROWN STIFF MOIST SANDY CLAY (A-7-5)

SS-230
SS-231
SS-232
62+00.0 -Y11REV- C/L
ALLUVIAL
03/06
BT
BRN. LOOSE MOIST SILTY SAND (A-2-4)
BRN. MED. STIFF WET SANDY CLAY (A-6)
RESIDUAL
BROWN V. STIFF MOIST SANDY SILT (A-4)

PROPOSED GRADE
PI = 64+50.00
EL = 921.84'
K = 231
VC = 400'
DS = 50 mph
(-)2.3290%
(-)0.5938%
EXISTING GRADE

FOR PLAN SEE SHEETS 43 & 44

960 950 940 930 920 910 900 890 880 870
54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00 67+00 68+00

-Y11- REV NC 180

PROPOSED GRADE
END GRADE STA.69+75.00
EL = 918.72
RESIDUAL
BROWN V. STIFF MOIST SANDY SILT (A-4)
EXISTING GRADE

FOR PLAN SEE SHEET 44

960 950 940 930 920 910 900 890 880 870
68+00 69+00 70+00 71+00

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	90
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y14- NC 150

BEGIN GRADE STA 12+50.00
EL = 887.80'
(+)2.4569%
(-)2.5364%
PI = 14+75.00
EL = 893.33'
K = 84
VC = 420'
DS = 50 mph
EXISTING GRADE
PROPOSED GRADE
RESIDUAL
BRN, MED. STIFF MOIST TO WET SANDY CLAY
PI = 21+00.00
EL = 877.48'
K = 99
VC = 7.40'
DS = 50 mph
(-)2.5364%
(+)4.9512%

930 920 910 900 890 880 870 860 850 840

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

FOR PLAN SEE SHEETS 39 & 40

-Y14- NC 150

PROPOSED GRADE
(+)4.9513%
EXISTING GRADE

S-257
28+00.0 -Y14- 30.0' RT
BT DRY 03/06
ALLUVIAL
BROWN LOOSE SAT. SILTY SAND (A-2-4)
S-258
27+50.0 -Y14- 50.0' LT
03/06
BT
RESIDUAL
BRN, MED, STIFF MOIST TO WET SANDY CLAY (A-6)
RESIDUAL
RED/BRN, MED. STIFF MOIST SANDY CLAY (A-6)

30+75.0 -Y14- 80.0 LT
TAN STIFF MOIST SANDY CLAY (A-6)
RESIDUAL
RED/BRN, MED. DENSE MOIST SILTY SAND (A-2-4)
BT DRY 03/08

S-195
SS-196
SS-197
SS-198
37+06.65 -Y14- 72.2115 LT
=
612+20.0 -L- 60.0 LT
RESIDUAL
TAN MED. STIFF TO VERY STIFF MED. TO HIGHLY PLASTIC SANDY CLAY (A-7-5)
(PI=21-29)
03/06
03/06
RESIDUAL
BROWN VERY STIFF TO HARD MOIST MICA SANDY SILT (A-4)
BT

960 950 940 930 920 910 900 890 880 870

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00

FOR PLAN SEE SHEETS 40 & 25

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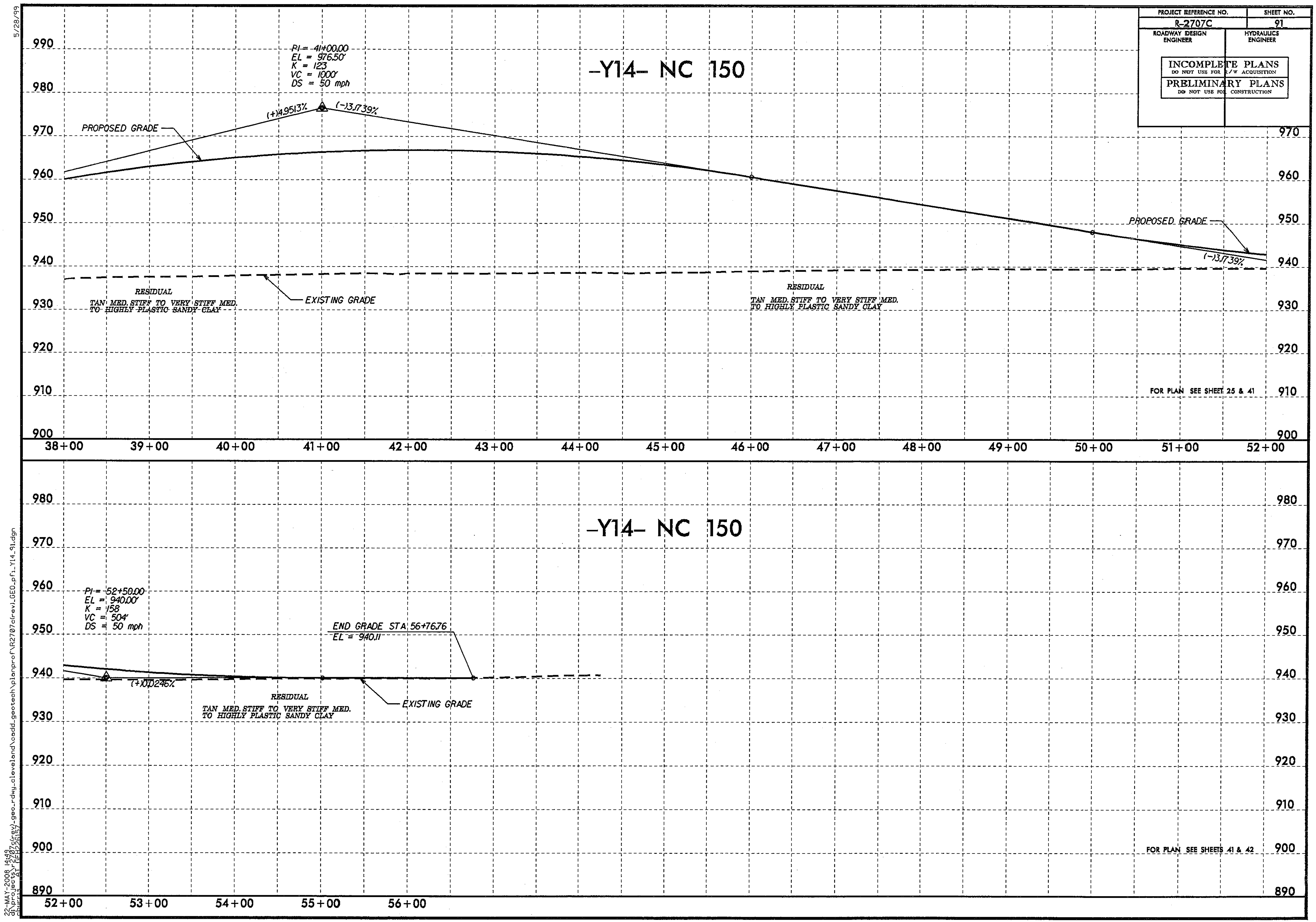
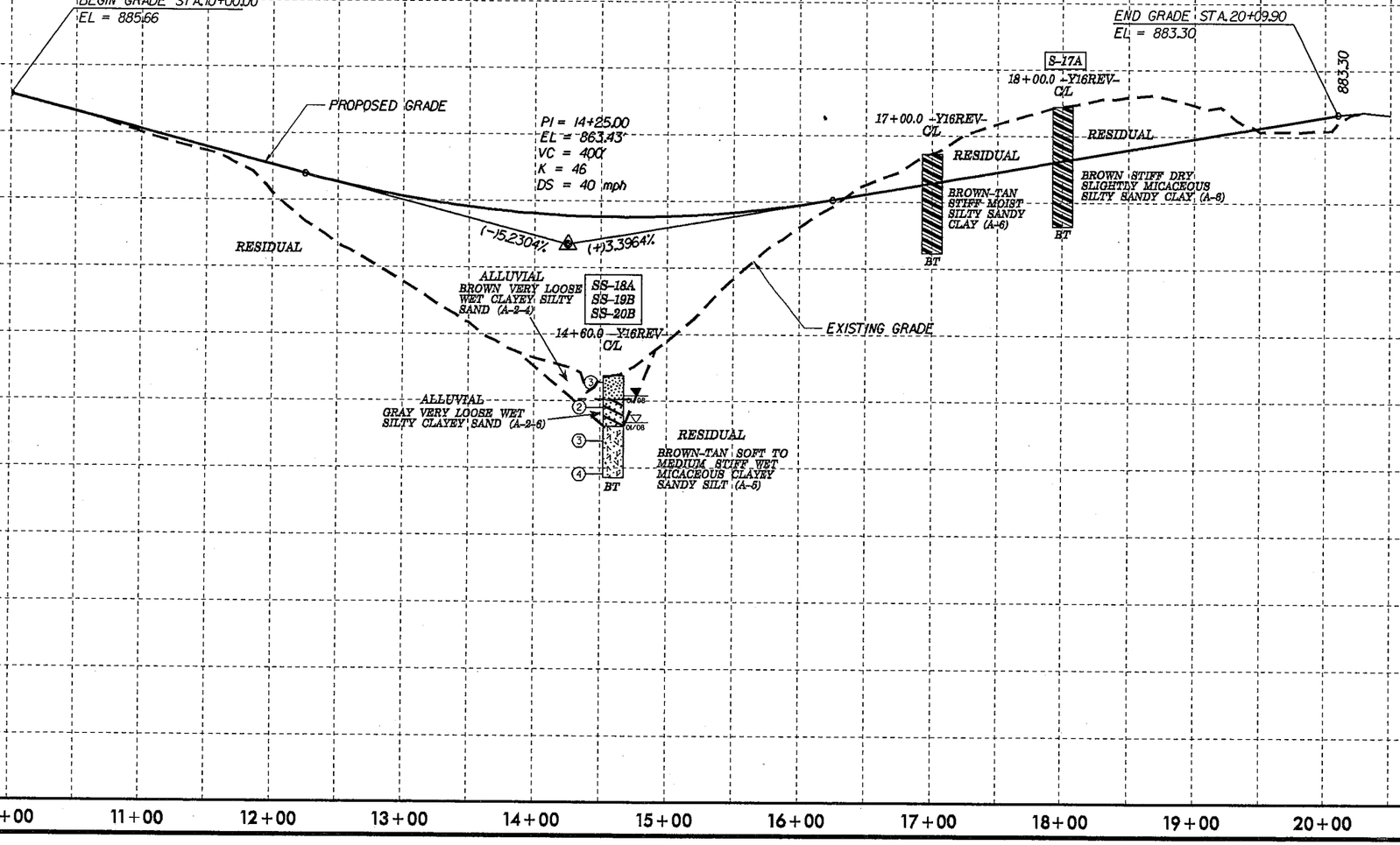

PROJECT REFERENCE NO.
R-2707C
SHEET NO.
91
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/28/99
-Y14- NC 150
PI = 41+00.00
EL = 976.50'
K = 123
VC = 1000'
DS = 50 mph
(+)4.9513%
(-)3.1739%
PROPOSED GRADE
EXISTING GRADE
RESIDUAL
TAN MED. STIFF TO VERY STIFF MED. TO HIGHLY PLASTIC SANDY CLAY
(-)3.1739%
FOR PLAN SEE SHEET 25 & 41
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
46+00
47+00
48+00
49+00
50+00
51+00
52+00
-Y14- NC 150
PI = 52+50.00
EL = 940.00'
K = 158
VC = 504'
DS = 50 mph
END GRADE STA 56+76.76
EL = 940.11
(+)0.0246%
RESIDUAL
TAN MED. STIFF TO VERY STIFF MED. TO HIGHLY PLASTIC SANDY CLAY
EXISTING GRADE
FOR PLAN SEE SHEETS 41 & 42
52+00
53+00
54+00
55+00
56+00

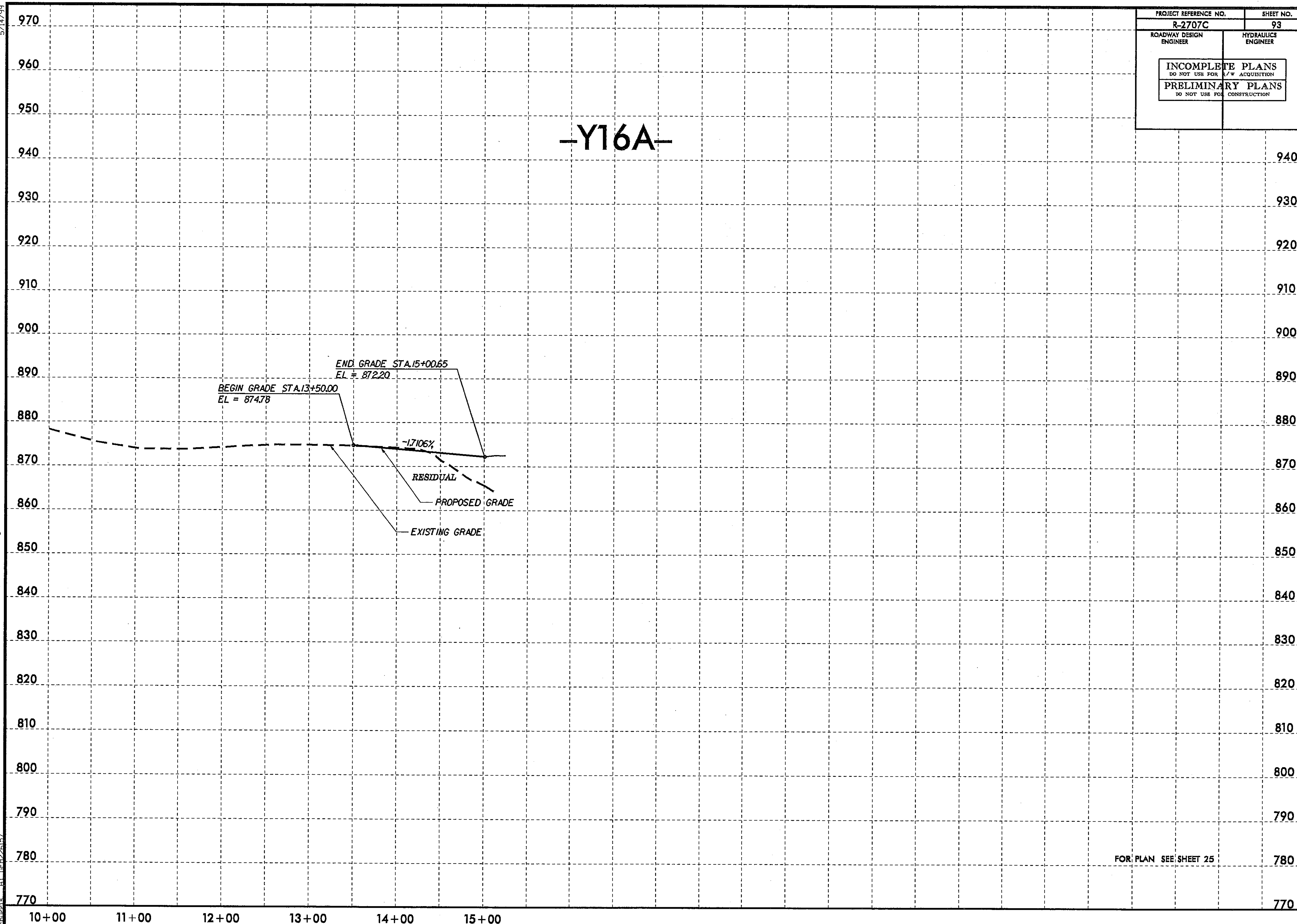
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	92
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y16- REV





5/14/99

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churris AT GFH226157

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	94
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y17- SERVICE ROAD 1

880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680

(-12.0000%

(-15.4847%

PI = 11+00.00
EL = 815.59'
K = 43
VC = 150'
DS = 30 mph

BEGIN GRADE STA. 10+20.47
EL = 817.18

PROPOSED GRADE

EXISTING GRADE

RESIDUAL
BRN. MED. STIFF TO STIFF
MOIST MICA SANDY CLAY
(A-7-6, A-7-6)

SS-42A
SS-43A
15+00.0 -Y17-
25.0' RT

RESIDUAL

9
10

BT
DRY
11/06

BRN. MED. STIFF TO STIFF
MOIST MICA SANDY CLAY
(A-7-6, A-7-6)

S-281
18+50.00 -Y17-
100.0' RT
726.26'
724.26'

ALLUVIAL
BRN. V. LOOSE TO
LOOSE SILTY SAND
(A-2-4)

DRIVE ROD
REFUSAL
DRY 4/06

RESIDUAL
BRN. V. LOOSE TO
LOOSE SILTY SAND
(A-2-4)

S-279
S-280
18+50.0 -Y17-
C/L

RESIDUAL
BROWN LOOSE
MOIST SILTY SAND
(A-2-4)

18+00.0 -Y17-
C/L

19+50.0 -Y17-
C/L

DRIVE ROD
REFUSAL
DRY 4/06

BT
DRY
11/05

DRIVE ROD
REFUSAL
DRY 4/06

RED/BRN. MED. STIFF
MOIST SANDY CLAY
(A-7-6)

PI = 21+50.00
EL = 758.00'
K = 42
VC = 200'
DS = 30 mph

(-15.4847%

(-0.7692%

SS-19A
21+00.0 -Y17-
C/L

11
6

RESIDUAL
BRN. MED. STIFF TO STIFF
MOIST MICA SANDY SILT
(A-4)

BT
DRY
11/05

FOR PLAN SEE SHEETS 29 & 5

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

22-MAY-2008 15:10
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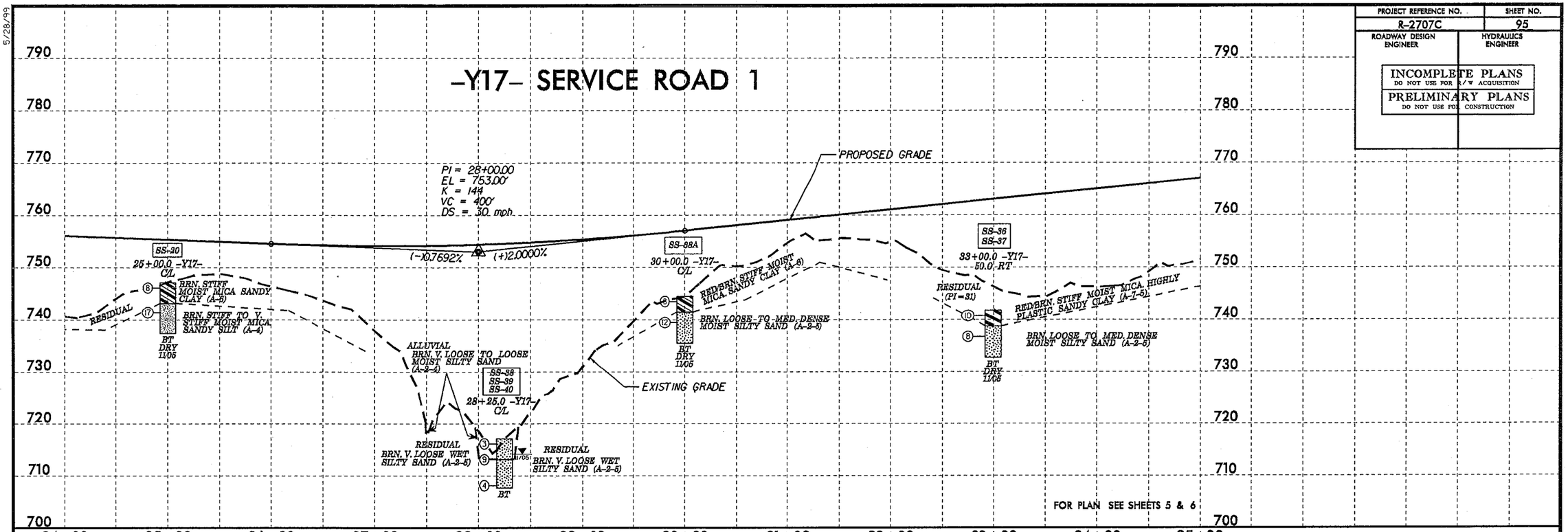
(jhirst)

5/28/99

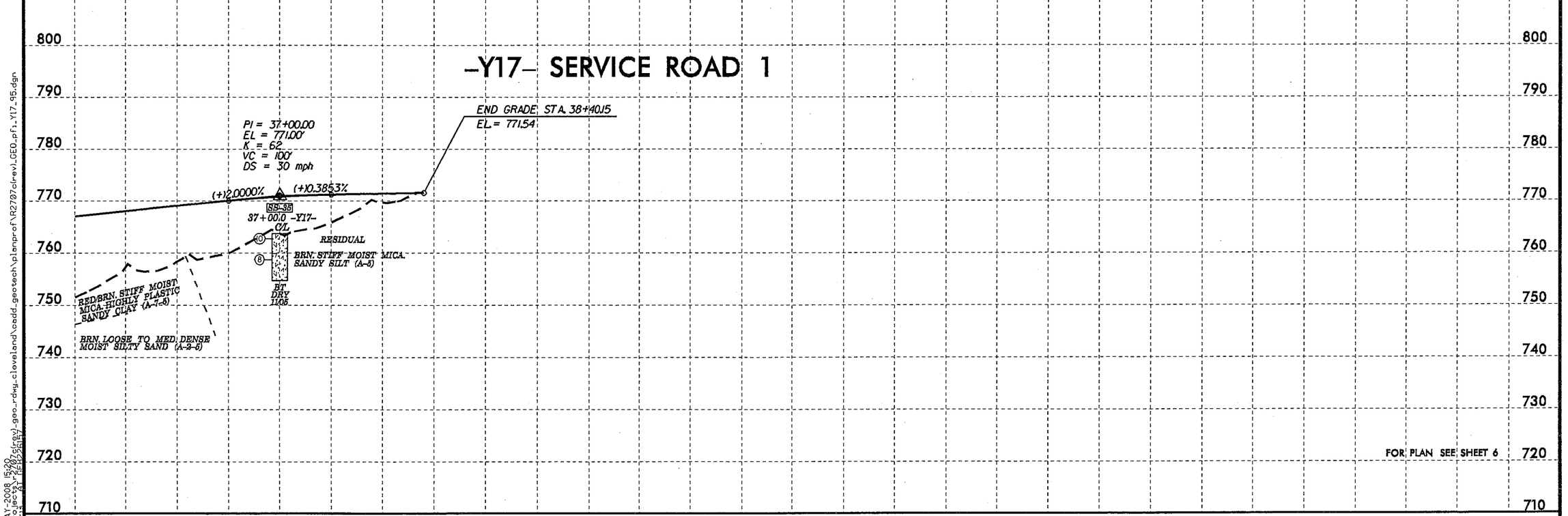
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	95
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y17- SERVICE ROAD 1



-Y17- SERVICE ROAD 1



PROJECT REFERENCE NO.	SHEET NO.
R-2707C	96

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
PRELIMINARY PLANS
NOT FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION

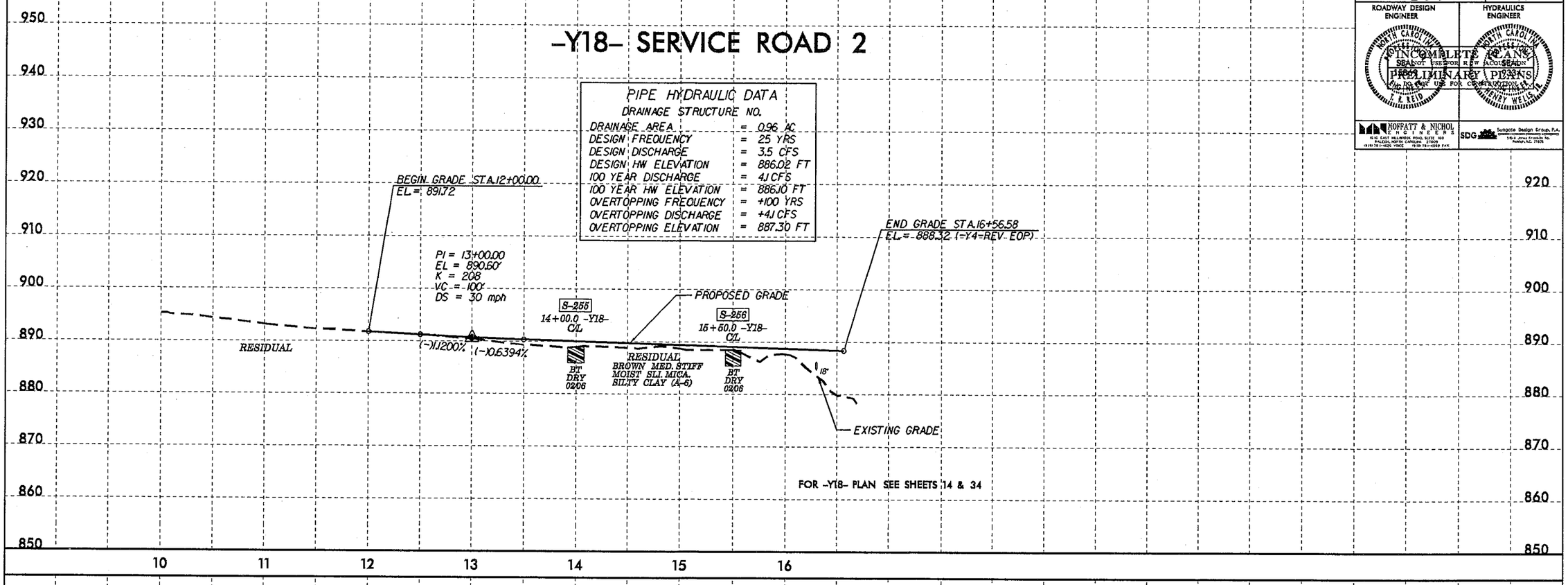
MOFFATT & NICHOL ENGINEERS — SDG Sungate Design Group, P.A.

-Y18- SERVICE ROAD 2

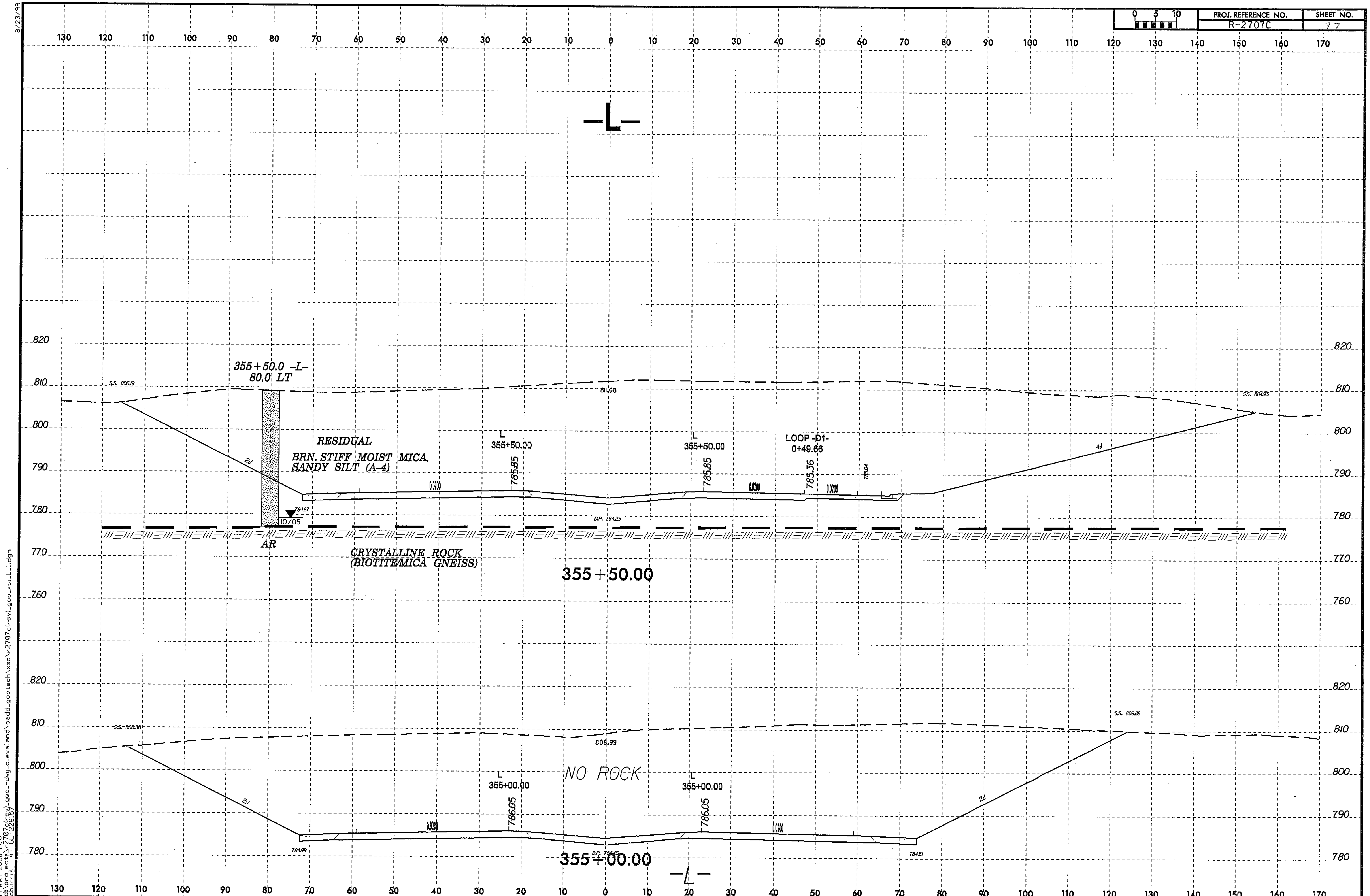
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

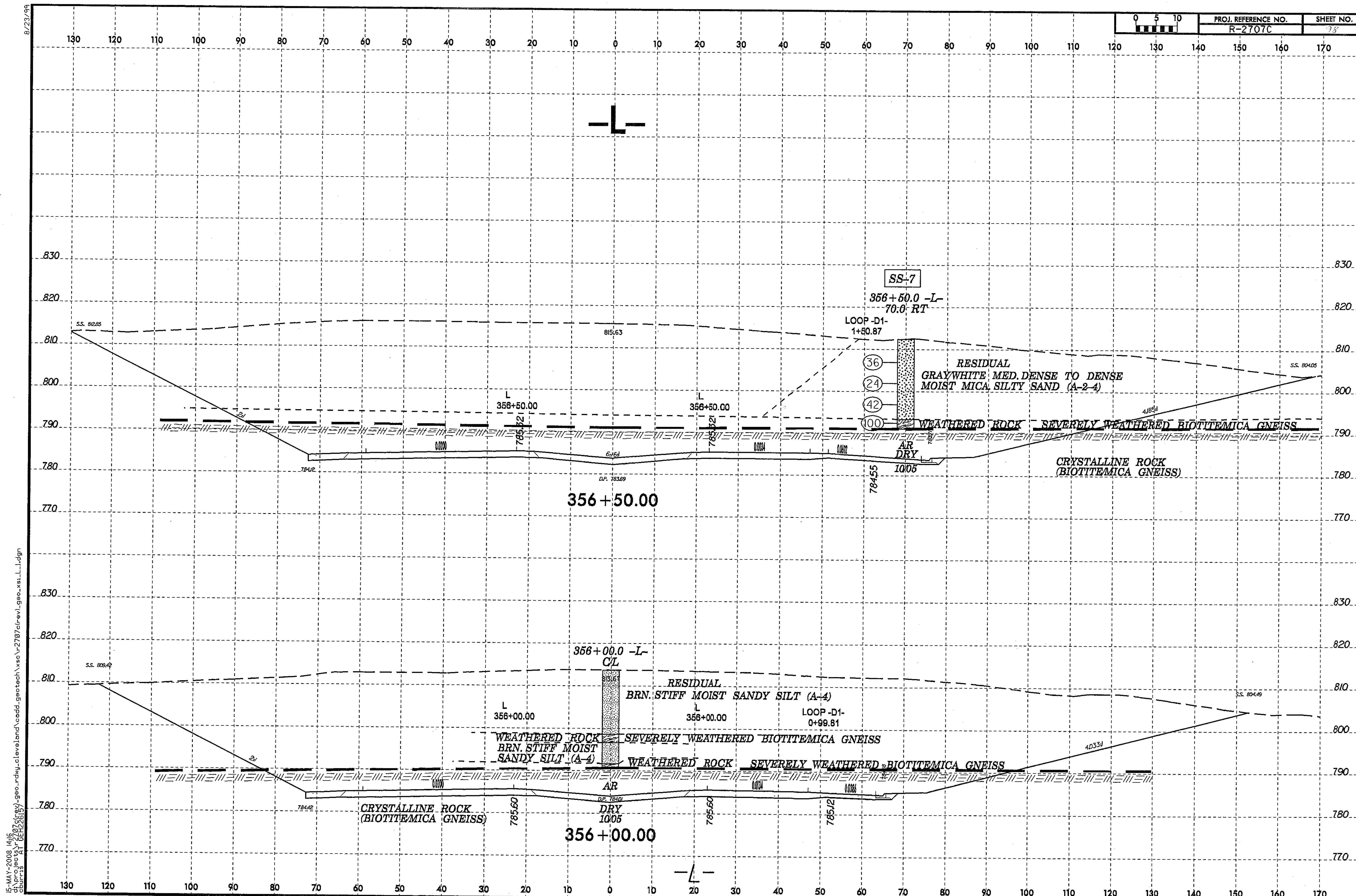
DRAINAGE AREA	=	0.96 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	3.5 CFS
DESIGN HW ELEVATION	=	886.02 FT
100 YEAR DISCHARGE	=	4.1 CFS
100 YEAR HW ELEVATION	=	886.10 FT
OVERTOPPING FREQUENCY	=	+100 YRS
OVERTOPPING DISCHARGE	=	+4.1 CFS
OVERTOPPING ELEVATION	=	887.30 FT



FOR -Y18- PLAN SEE SHEETS 14 & 34



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
355+50.0 -L-
80.0 LT
RESIDUAL
BRN. STIFF MOIST MICA. SANDY SILT (A-4)
AR
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
LOOP -D1-
0+49.66
355+50.00
NO ROCK
355+00.00
-L-



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
SS-7
356+50.0 -L-
70.0' RT
LOOP -D1-
1+50.87
RESIDUAL
GRAY/WHITE MED. DENSE TO DENSE
MOIST MICA SILTY SAND (A-2-4)
WEATHERED ROCK SEVERELY WEATHERED BIOTITE/MICA GNEISS
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
DRY
10/05
356+50.00
356+00.0 -L-
C/L
RESIDUAL
BRN. STIFF MOIST SANDY SILT (A-4)
LOOP -D1-
0+99.81
WEATHERED ROCK SEVERELY WEATHERED BIOTITE/MICA GNEISS
BRN. STIFF MOIST
SANDY SILT (A-4)
WEATHERED ROCK SEVERELY WEATHERED BIOTITE/MICA GNEISS
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
356+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	99

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

-L-

830 820 810 800 790 780 770

S.S. BH.88

357+00.0 -L-
C/L
816.09

RESIDUAL
BRN. STIFF TO V. STIFF MOIST
MICA. SANDY SILT (A-4)

L
357+00.00

78498

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

78378

AR
DRY
1005
D.P. 7814

357+00.00

-L-

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

15-MAY-2008 14:18
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cburris

8/23/99

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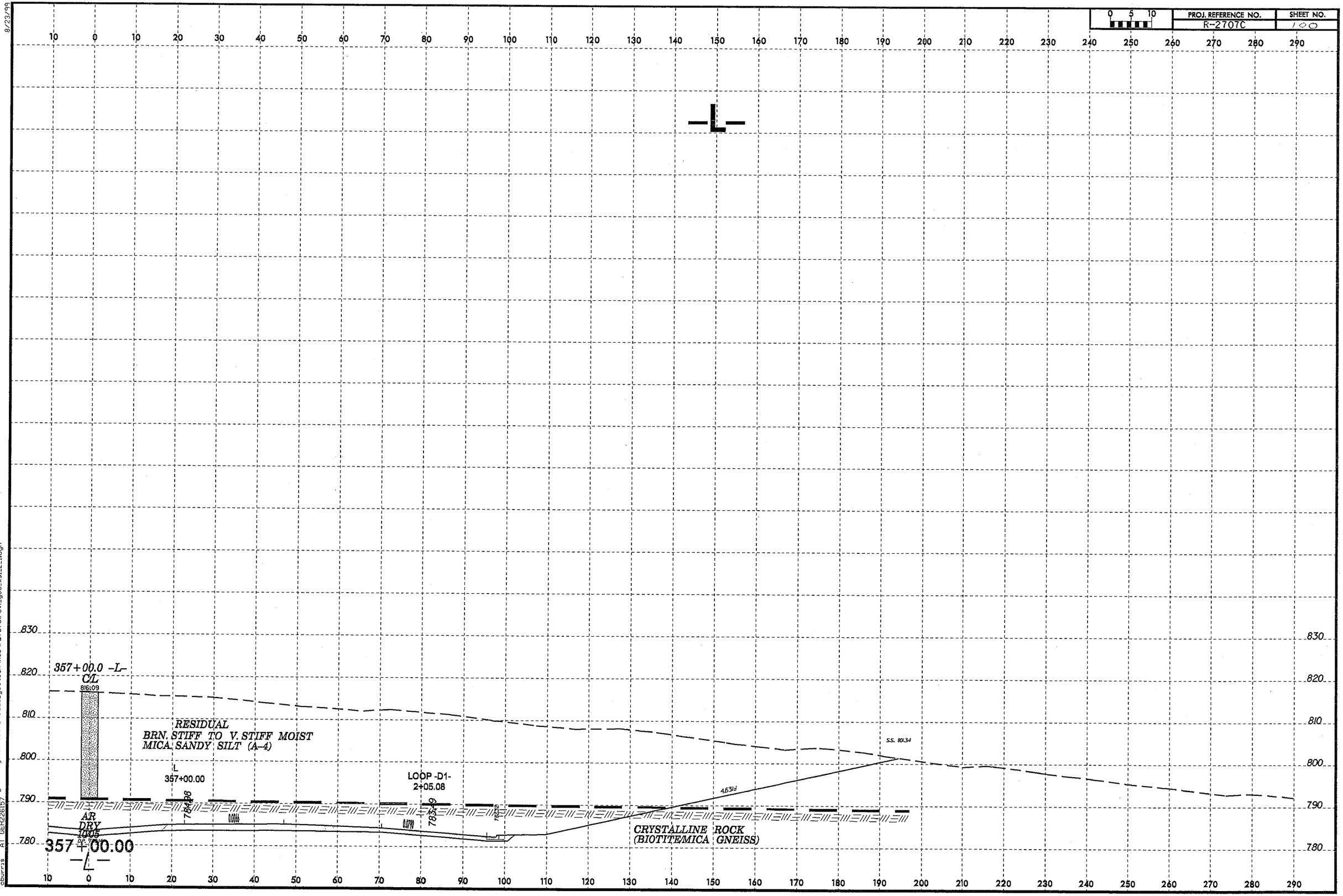
	R-2707C	100



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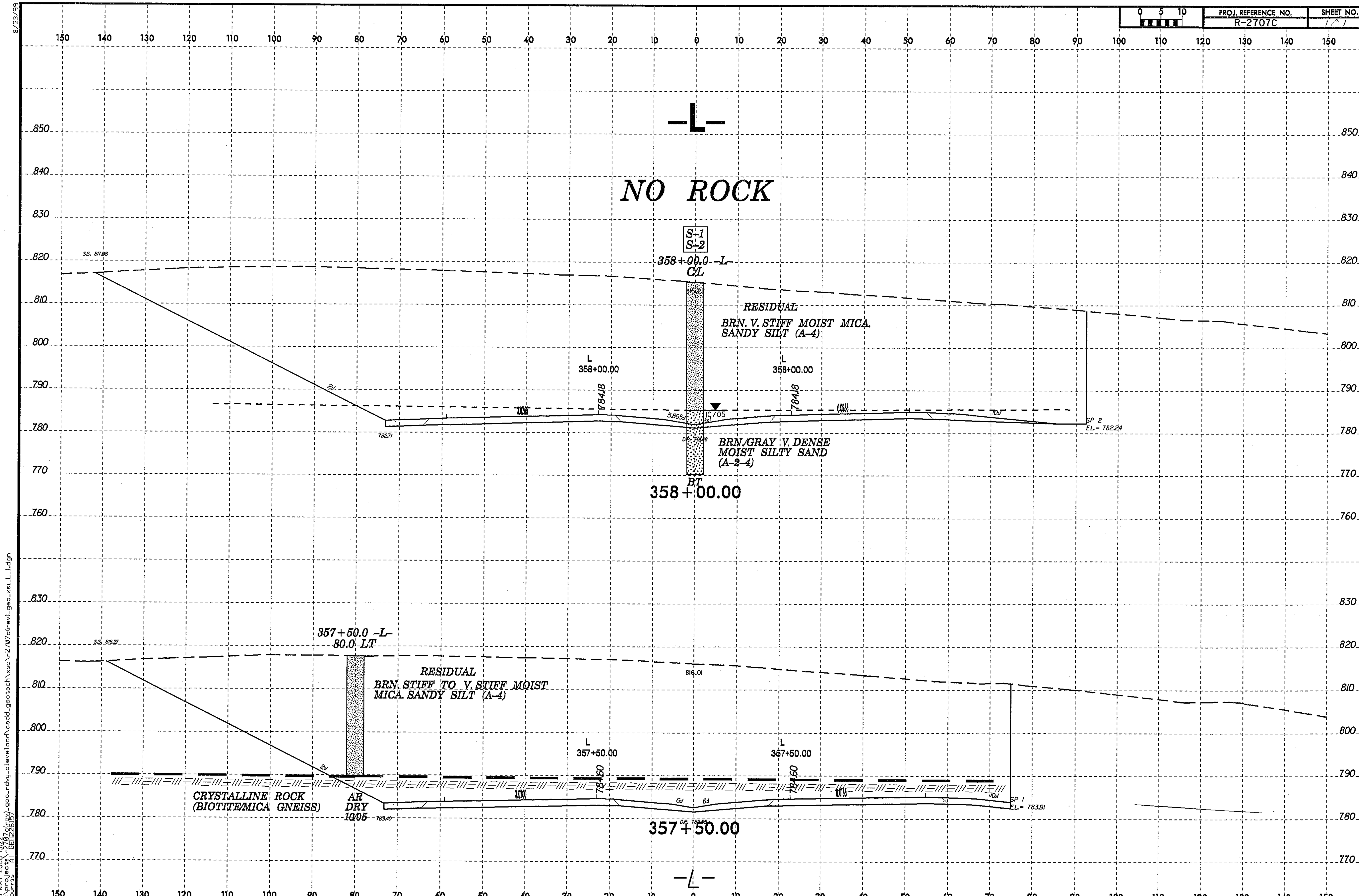
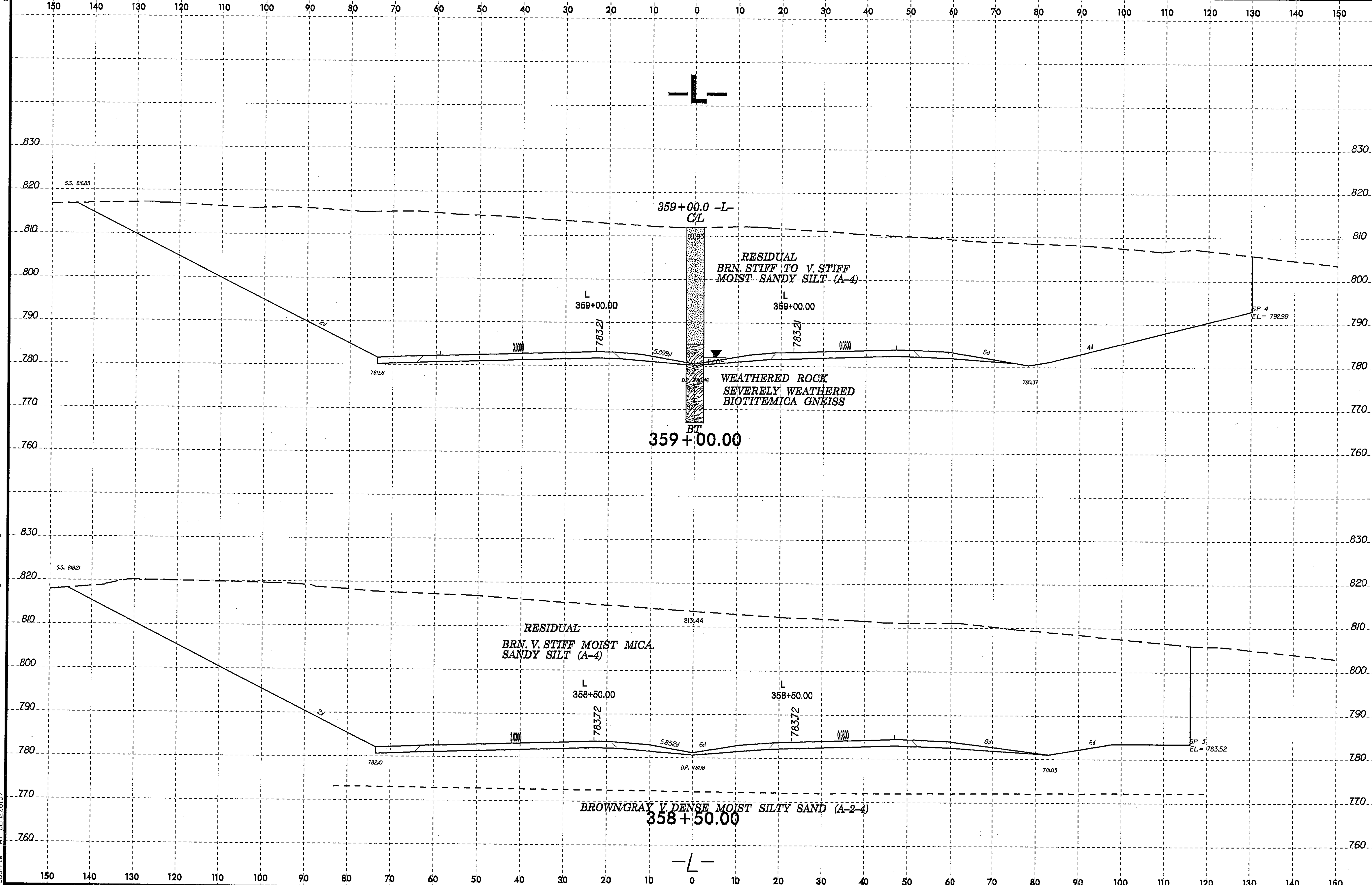


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
NO ROCK
S-1
S-2
358+00.0 -L-
C/L
RESIDUAL
BRN. V. STIFF MOIST MICA. SANDY SILT (A-4)
BRN/GRAY V. DENSE MOIST SILTY SAND (A-2-4)
BT
L
358+00.00
SP 2
EL= 782.24
358+00.00
357+50.0 -L-
80.0 LT
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA. SANDY SILT (A-4)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR
DRY
10/05
L
357+50.00
SP 1
EL= 783.91
357+50.00
-L-
8/23/99
28-MAY-2008 15:22

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	102



8/23/99

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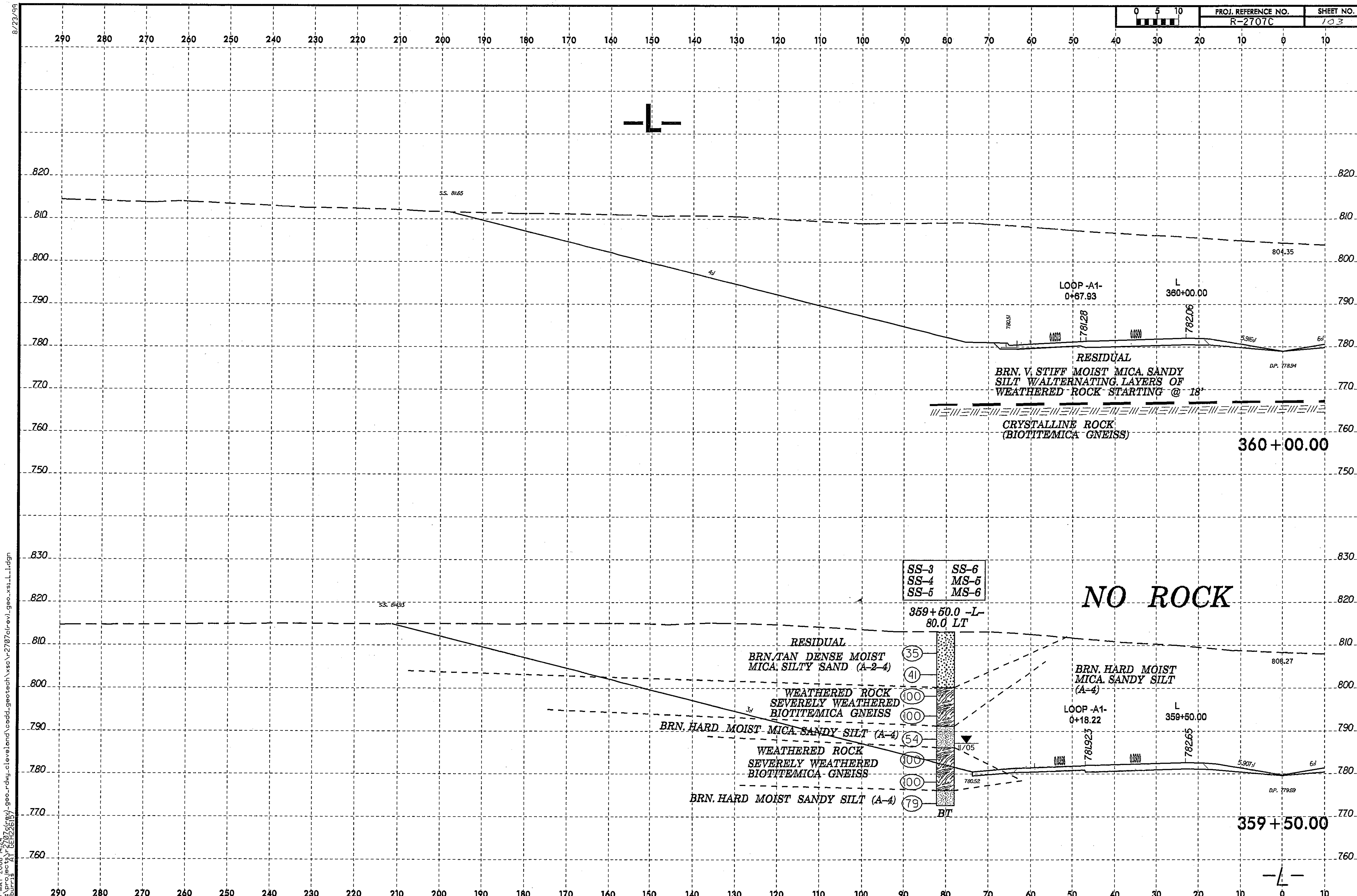
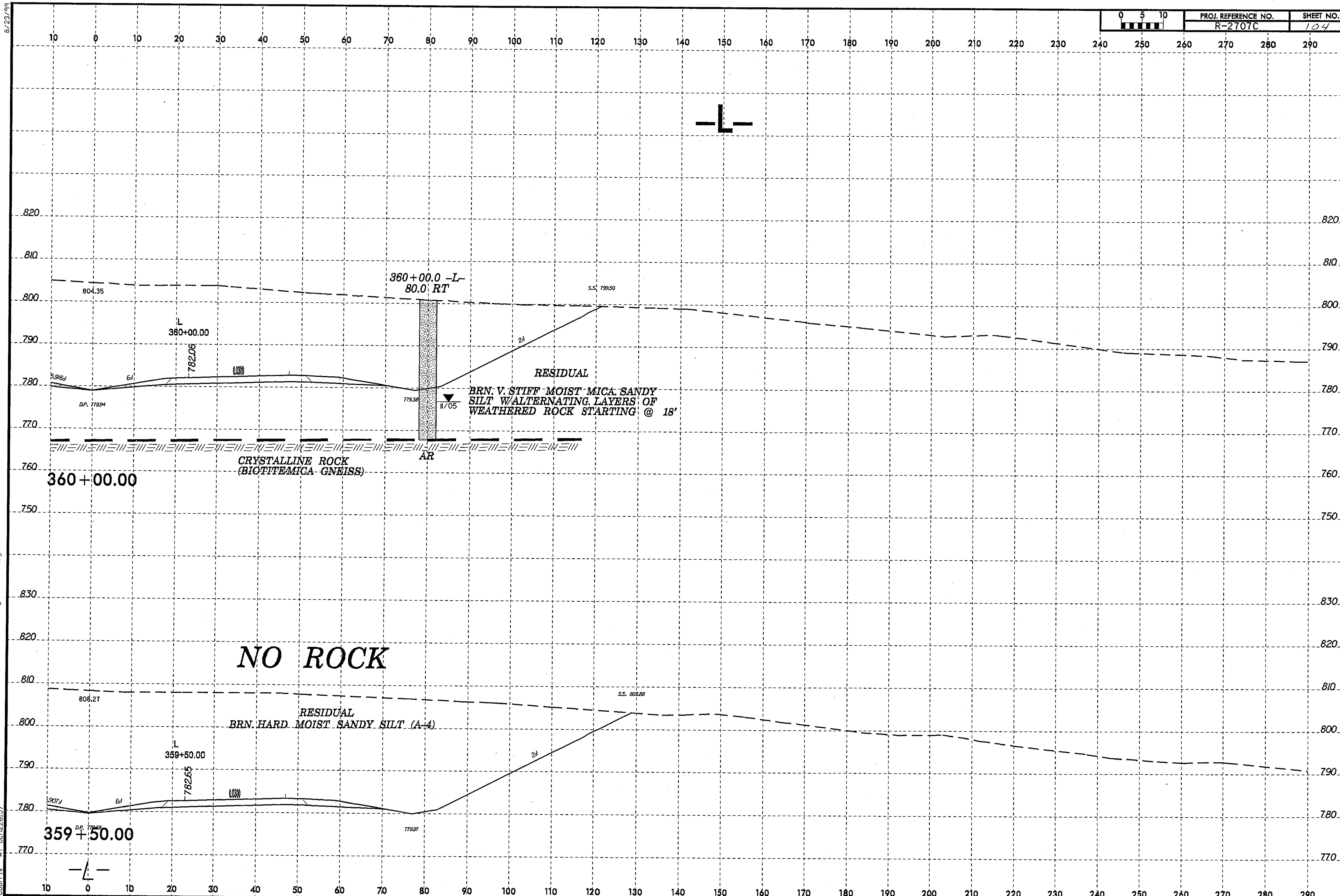
cburris AT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
103
-L-
S.S. 811.65
804.35
LOOP -A1-
0+67.93
L
360+00.00
781.28
782.06
RESIDUAL
BRN. V. STIFF MOIST MICA. SANDY SILT W/ALTERNATING LAYERS OF WEATHERED ROCK STARTING @ 18'
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
360+00.00
SS-3 SS-6
SS-4 MS-5
SS-5 MS-6
359+50.0 -L-
80.0 LT
NO ROCK
S.S. 814.93
RESIDUAL
BRN./TAN DENSE MOIST MICA. SILTY SAND (A-2-4)
WEATHERED ROCK
SEVERELY WEATHERED BIOTITE/MICA GNEISS
BRN. HARD MOIST MICA. SANDY SILT (A-4)
WEATHERED ROCK
SEVERELY WEATHERED BIOTITE/MICA GNEISS
BRN. HARD MOIST SANDY SILT (A-4)
BRN. HARD MOIST MICA. SANDY SILT (A-4)
35
41
100
100
54
100
100
79
BT
11/05
808.27
LOOP -A1-
0+18.22
L
359+50.00
781.923
782.65
359+50.00
-L-

8/23/99



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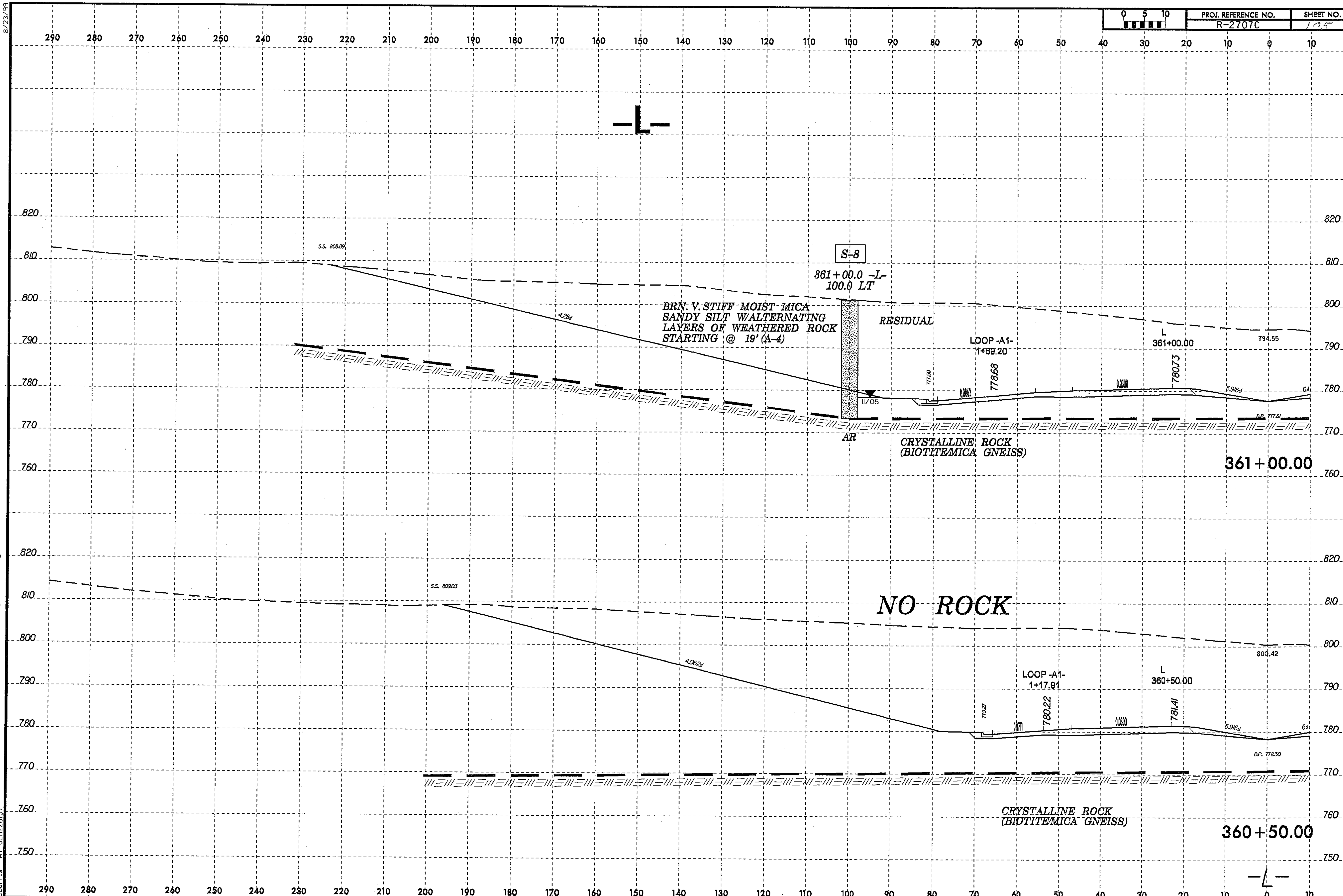
cburris AT DEH226157



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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	106

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

—L—

810
800
790
780
770
760

794.55
361+00.00
S.S. 785.81
78073
5.916J
6J
2J
RESIDUAL
BRN. V. STIFF MOIST MICA SANDY SILT W/ALTERNATING LAYERS OF WEATHERED ROCK STARTING @ 19' (A-4)
D.P. 777.81
778.05
CRYSTALLINE ROCK (BIOTITE MICA GNEISS)
361+00.00

NO ROCK

800.42
360+50.00
S.S. 792.56
781.41
5.916J
6J
2J
D.P. 778.30
778.73
CRYSTALLINE ROCK (BIOTITE MICA GNEISS)
360+50.00
—L—

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

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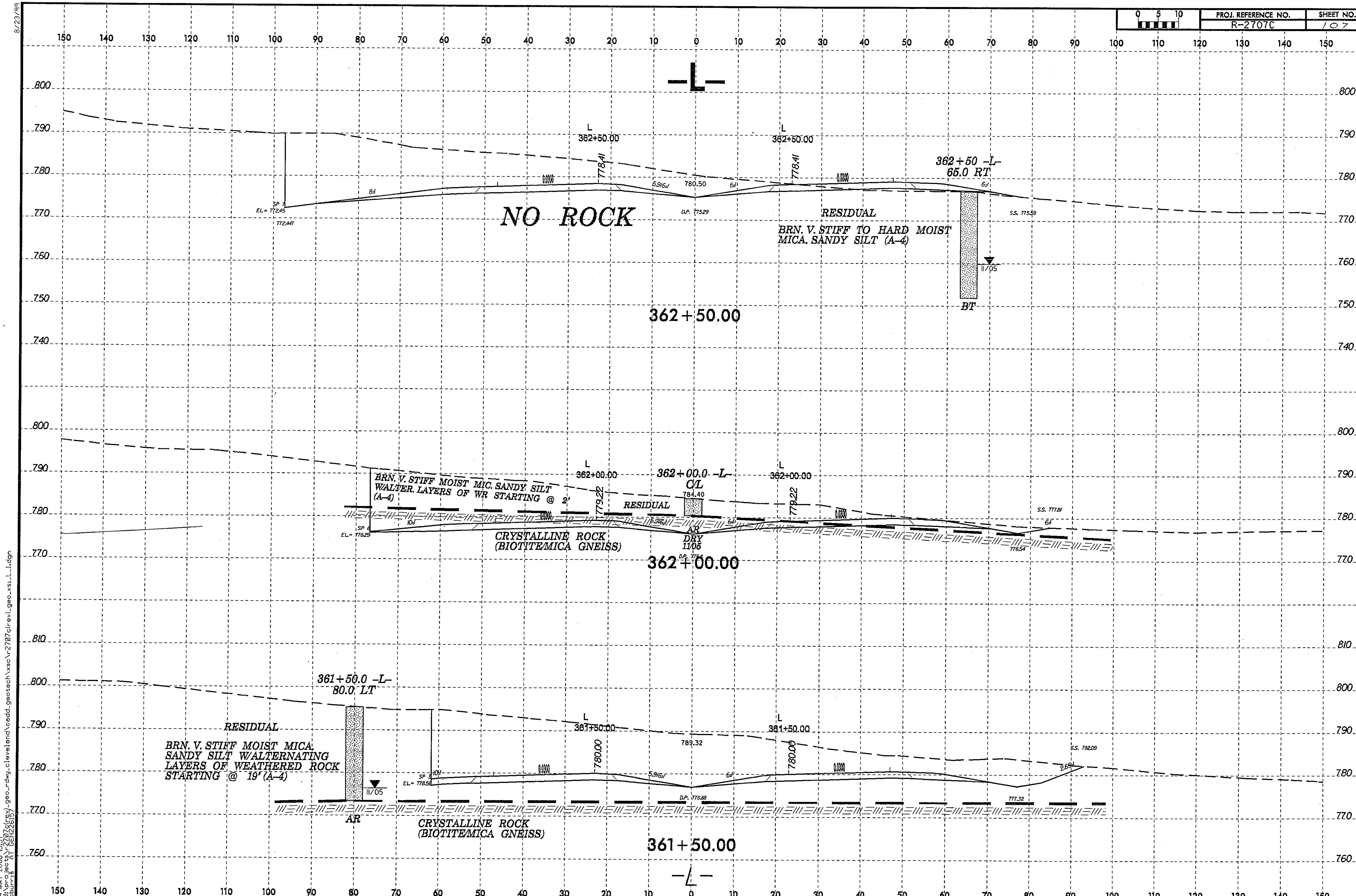
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
107
-L-
NO ROCK
362+50 -L-
65.0 RT
RESIDUAL
BRN. V. STIFF TO HARD MOIST MICA. SANDY SILT (A-4)
BT
362+50.00
362+00.0 -L-
C/L
BRN. V. STIFF MOIST MIC. SANDY SILT W/ALTER. LAYERS OF WR STARTING @ 2' (A-4)
RESIDUAL
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR
DRY
11/05
362+00.00
361+50.0 -L-
80.0 LT
RESIDUAL
BRN. V. STIFF MOIST MICA. SANDY SILT W/ALTERNATING LAYERS OF WEATHERED ROCK STARTING @ 19' (A-4)
AR
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
361+50.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	108

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

790 780 770 760 750 740 730 720

-L-

L 366+50.00 — 770.63 — 0.91(-) — 6.0(-) — L 366+50.00 — 770.63

4.0(-) — DP. 767.52 — 4.0(-) — 4.0(-) SP 10 EL= 756.17 — 755.434

SS-25
SS-26

BRN. V. LOOSE WET CLAYEY COARSE SAND (A-1-b)

366+50.0 -L- 100.0 LT

SS. 751.05

ALLUVIAL

RESIDUAL
BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-4)

750.94

2 3 11

BT
DRY
11/05

366+50.00

L 366+00.00 — 771.65 — 0.91(-) — 6.0(-) — L 366+00.00 — 771.65

4.0(-) — DP. 768.53 — 4.0(-) — 4.0(-) SP 9 EL= 754.43 — 753.733

SS-27
SS-28
SS-29

366+25.0 -L- CL

SS. 751.37

6 1 11

BT
DRY
11/05

ALLUVIAL BRN. V. SOFT TO MED. STIFF MOIST SANDY SILT (A-4)

RESIDUAL
GRY/BRN MED. DENSE MOIST MICA. SILTY SAND (A-2-4)

366+00.00

-L-

790 780 770 760 750 740 730 720

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

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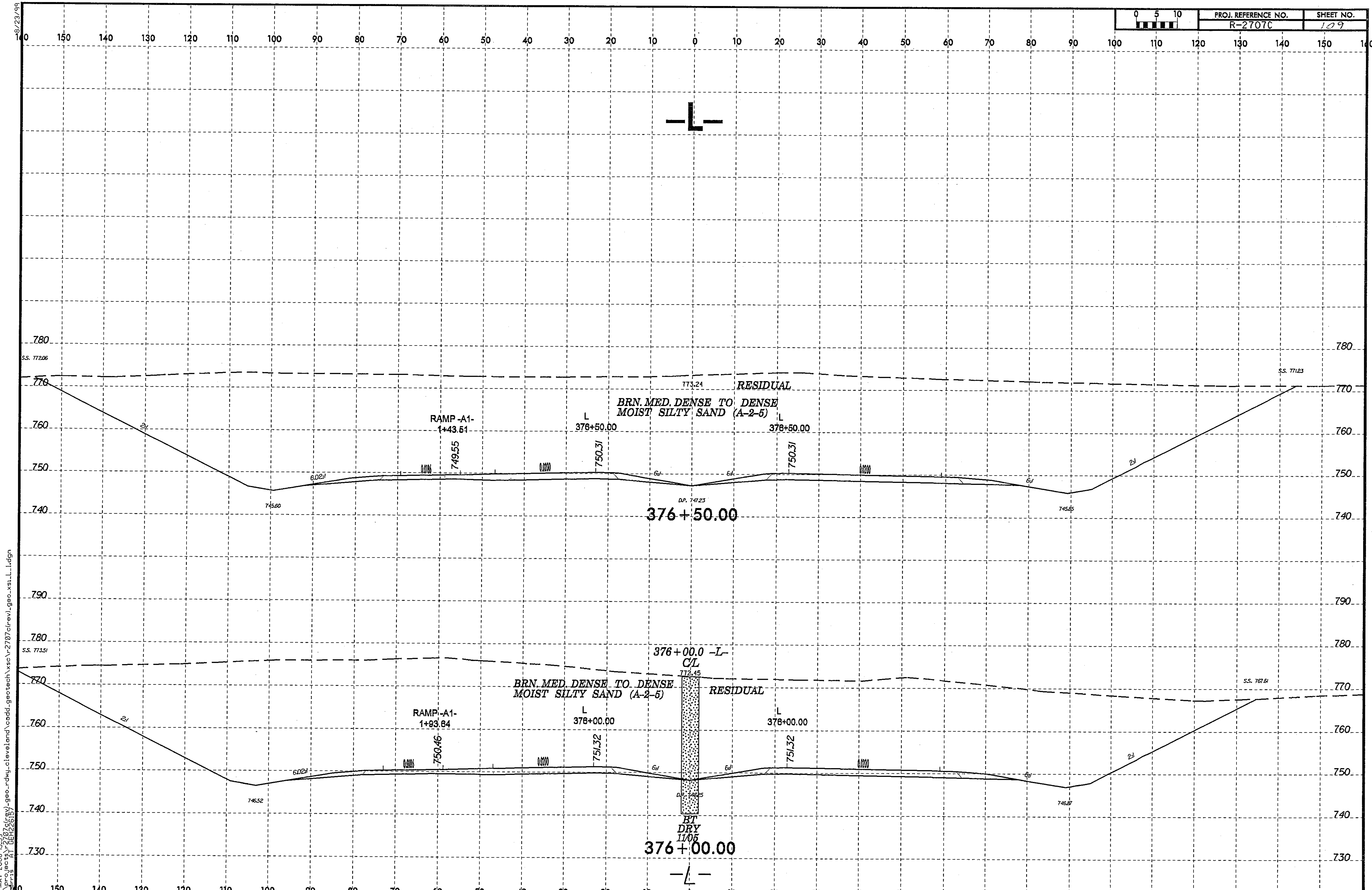
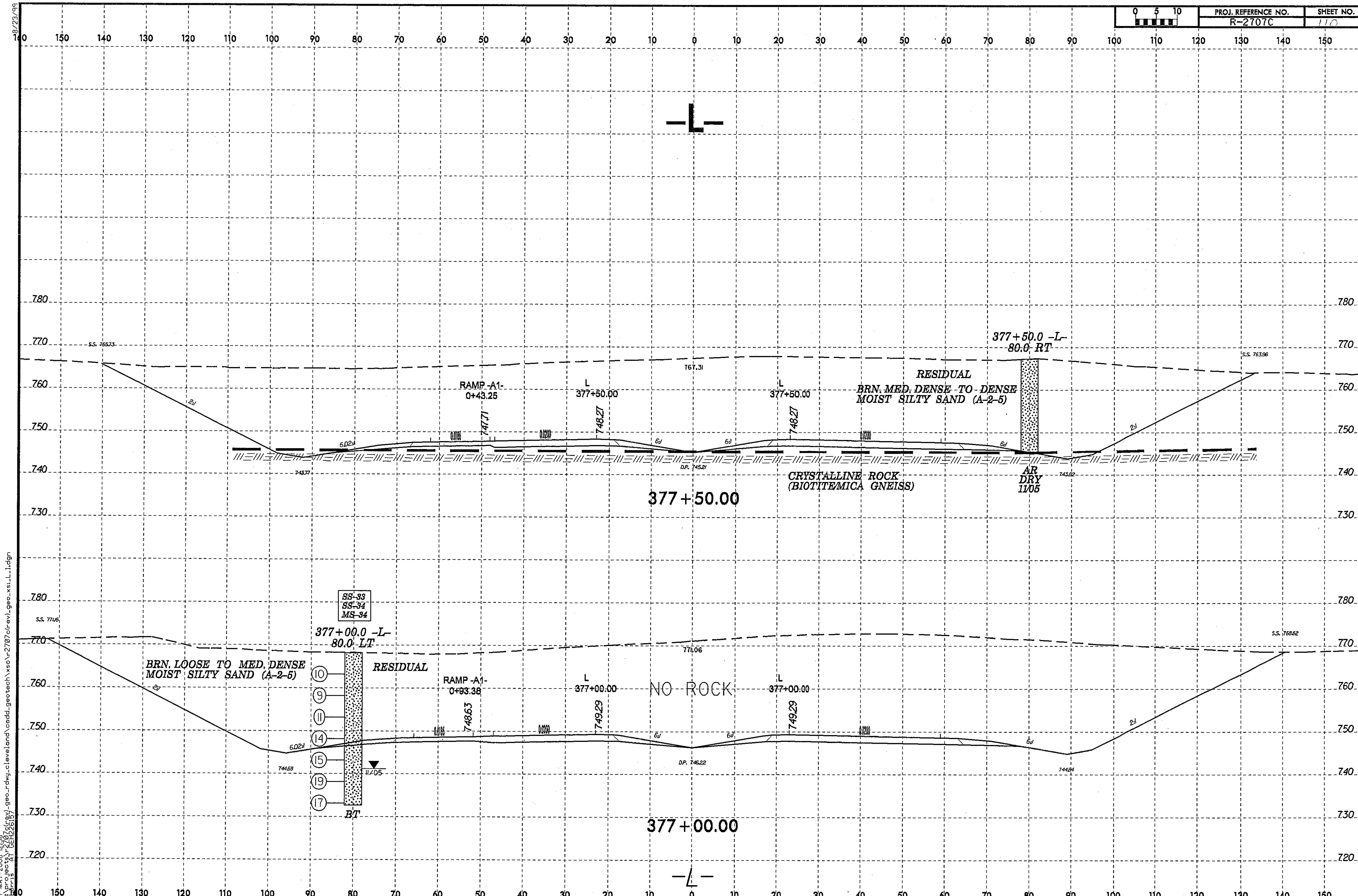
aburris
4.1 DEH22615


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
109
-L-
RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
RAMP -A1-
1+43.61
749.55
L
376+50.00
750.31
L
376+50.00
750.31
773.24
376+50.00
376+00.0 -L-
C/L
772.45
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
RESIDUAL
RAMP -A1-
1+93.84
750.46
L
376+00.00
751.32
L
376+00.00
751.32
BT
DRY
11/05
376+00.00
-L-


PROJ. REFERENCE NO. R-2707C
SHEET NO. 110
-L-
377+50.0 -L- 80.0 RT
RESIDUAL
BRN. MED. DENSE TO DENSE MOIST SILTY SAND (A-2-5)
RAMP -A1- 0+43.25
L 377+50.00
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR DRY 11/05
377+50.00
SS-33
SS-34
MS-34
377+00.0 -L- 80.0 LT
BRN. LOOSE TO MED. DENSE MOIST SILTY SAND (A-2-5)
RESIDUAL
RAMP -A1- 0+93.38
L 377+00.00
NO ROCK
BT
377+00.00
-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	1 / 1

-L-

L 379+00.00 — L 379+00.00

NO ROCK

745.23 — 749.59 — 745.23

SS. 752.255 — 2:1 — 6.0:1 — 0.020 — 6:1 — 6:1 — 0.020 — 4.75:1 — 6:1 — SS. 743.243

741.259 — D.P. 742.810 — 741.038

379+00.00

L 378+50.00 — L 378+50.00

746.24 — 757.02 — 746.24

SS. 757.226 — 2:1 — 6:1 — 6:1 — 0.020 — 6:1 — 2:1 — SS. 750.465

741.818 — D.P. 743.560 — 741.858

378+50.0 -L- 60.0 RT

BRN. DENSE TO V. DENSE MOIST SILTY SAND (A-2-5) RESIDUAL

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

AR DRY 11/05

378+50.00

378+00.0 -L- C/L

BRN. MED. DENSE TO DENSE MOIST SILTY SAND (A-2-5)

763.03

L 378+00.00 — L 378+00.00

SS. 764.02 — 2:1 — 6:1 — 6:1 — 2:1 — SS. 758.77

747.26 — AR DRY 11/05 D.P. 744.41 — 747.26

742.82 — CRYSTALLINE ROCK (BIOTITE/MICA GNEISS) — 742.20

378+00.00

-L-

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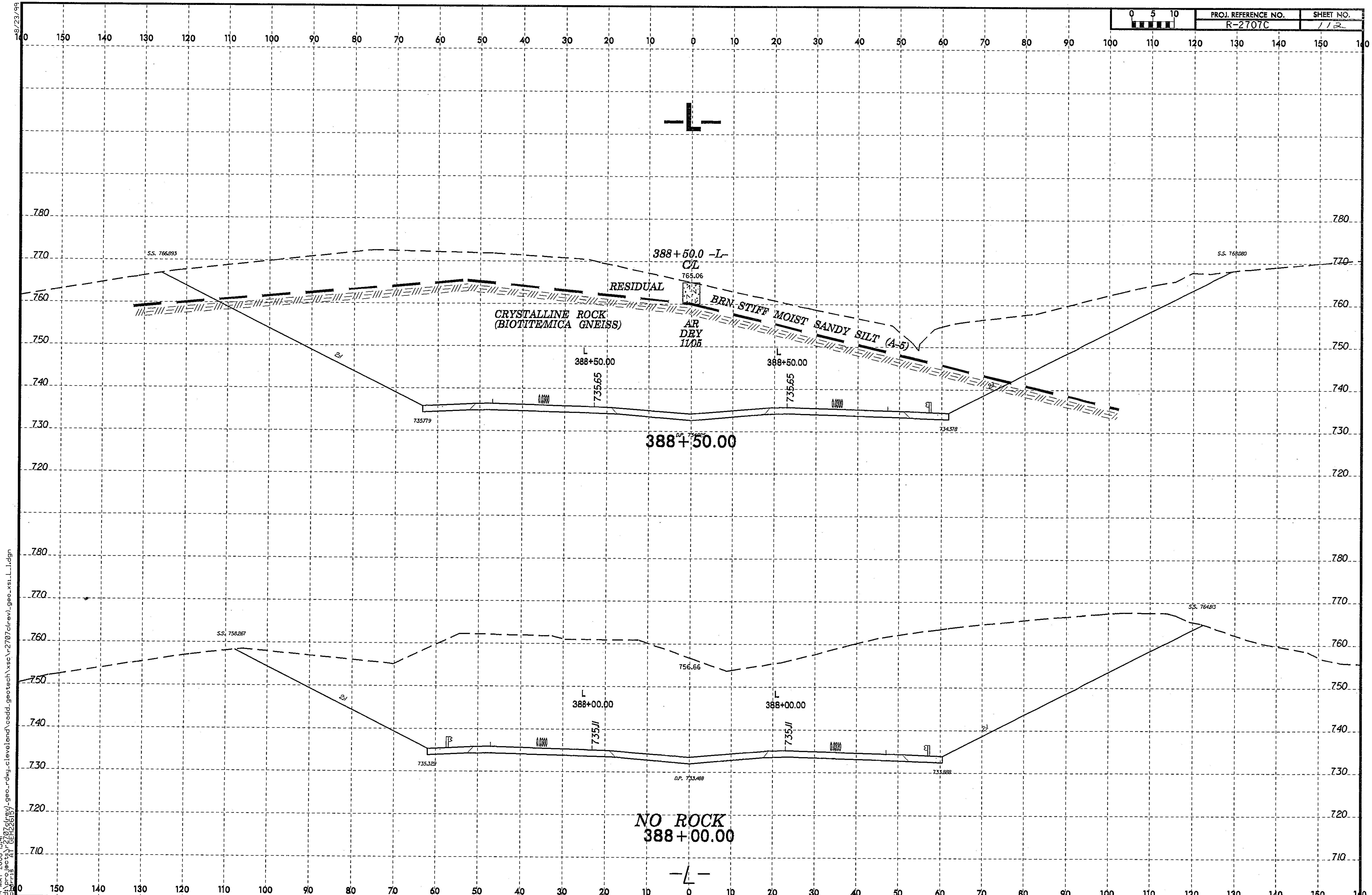
cferrell



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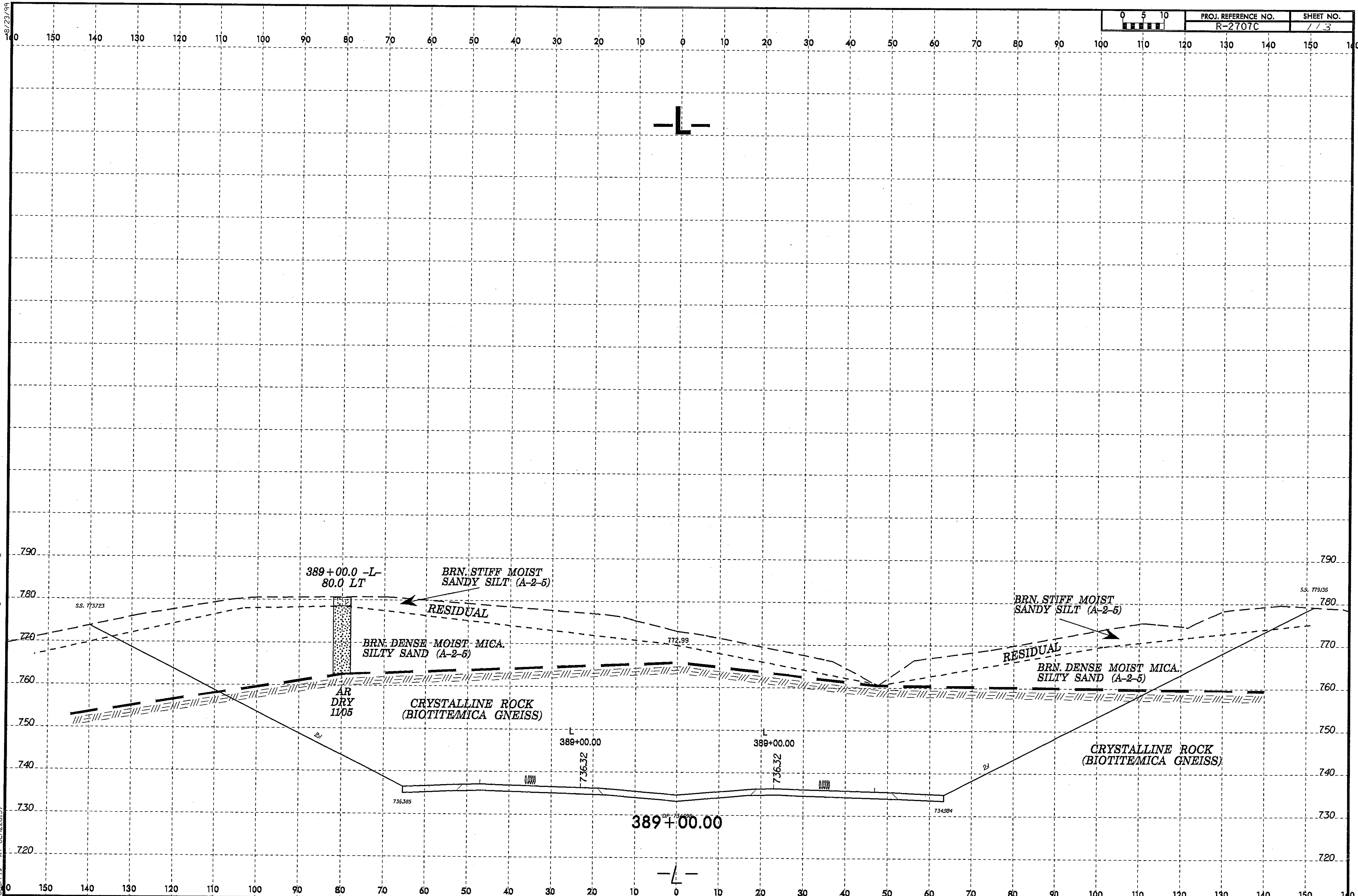
cdrris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	113



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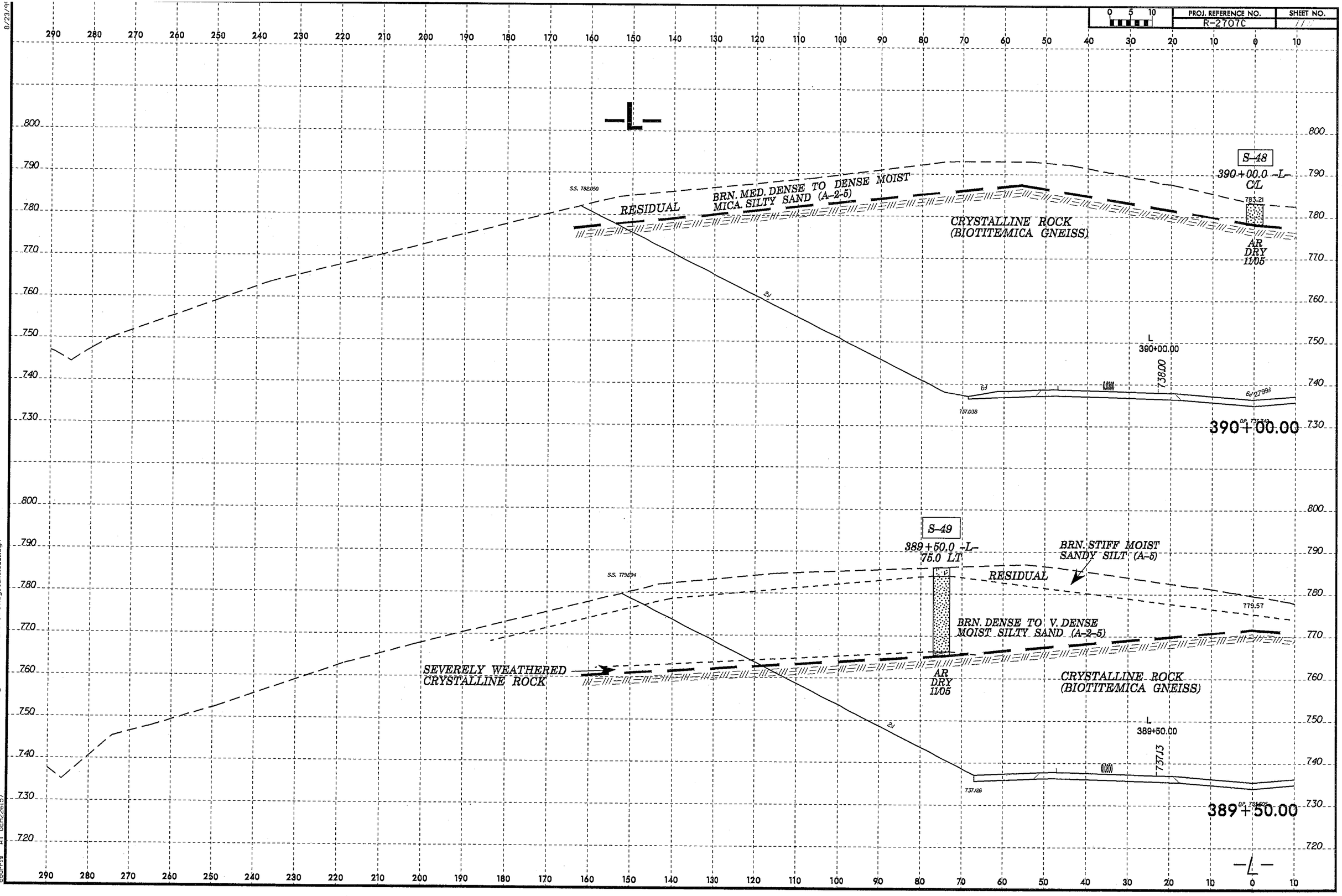

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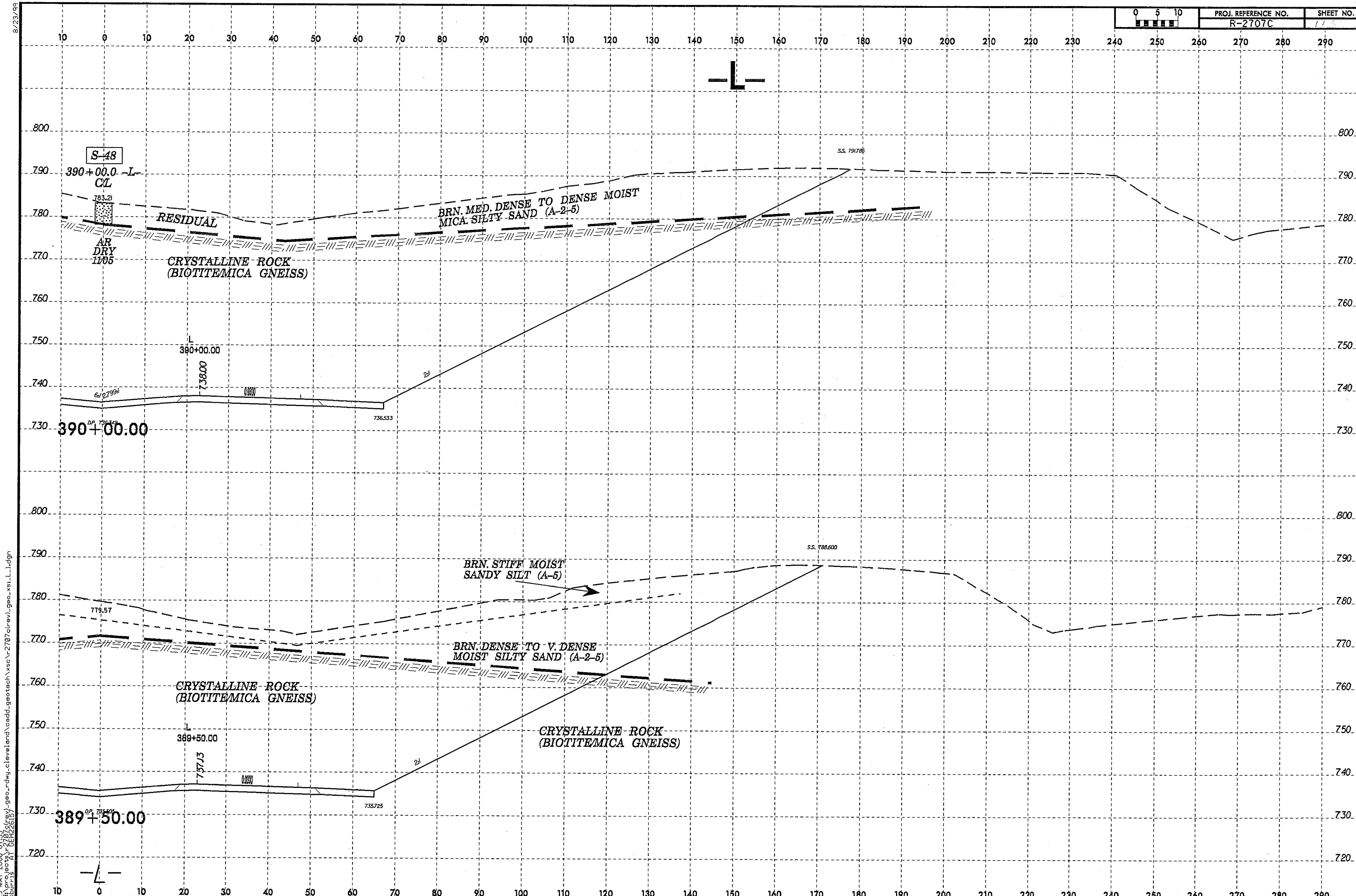
R-2707C	



8/23/99

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cburris AT OEH22615?

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	116

RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-6)

798.63

SS. 786.59

BRN. MED. DENSE TO DENSE MOIST MICA. SILTY SAND (A-2-5)

2d

CRYSTALLINE ROCK (MICA GNEISS)

L
391+00.00

739.75

6d

737.90

391+00.00

RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

390+50 -L-
100.0 LT

390+50.0 -L-
75.0 LT

RESIDUAL
RED-BROWN STIFF MOIST SANDY CLAY (A-7-5)
BROWN MEDIUM DENSE TO DENSE MOIST MICACEOUS SILTY SAND (A-2-5)

791.96

SS. 783.873

BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)

100/.1
100/.4

SEVERELY WEATHERED MICA GNEISS

BT
DRY
12/05

2d

01/08

REC=98%
RQD=97%

CRYSTALLINE ROCK
GRAY SLIGHTLY TO VERY SLIGHTLY WEATHERED, HARD, MICA GNEISS

L
390+50.00

738.88

6d

737.308

BT

390+50.00

14-MAY-2008 13:44
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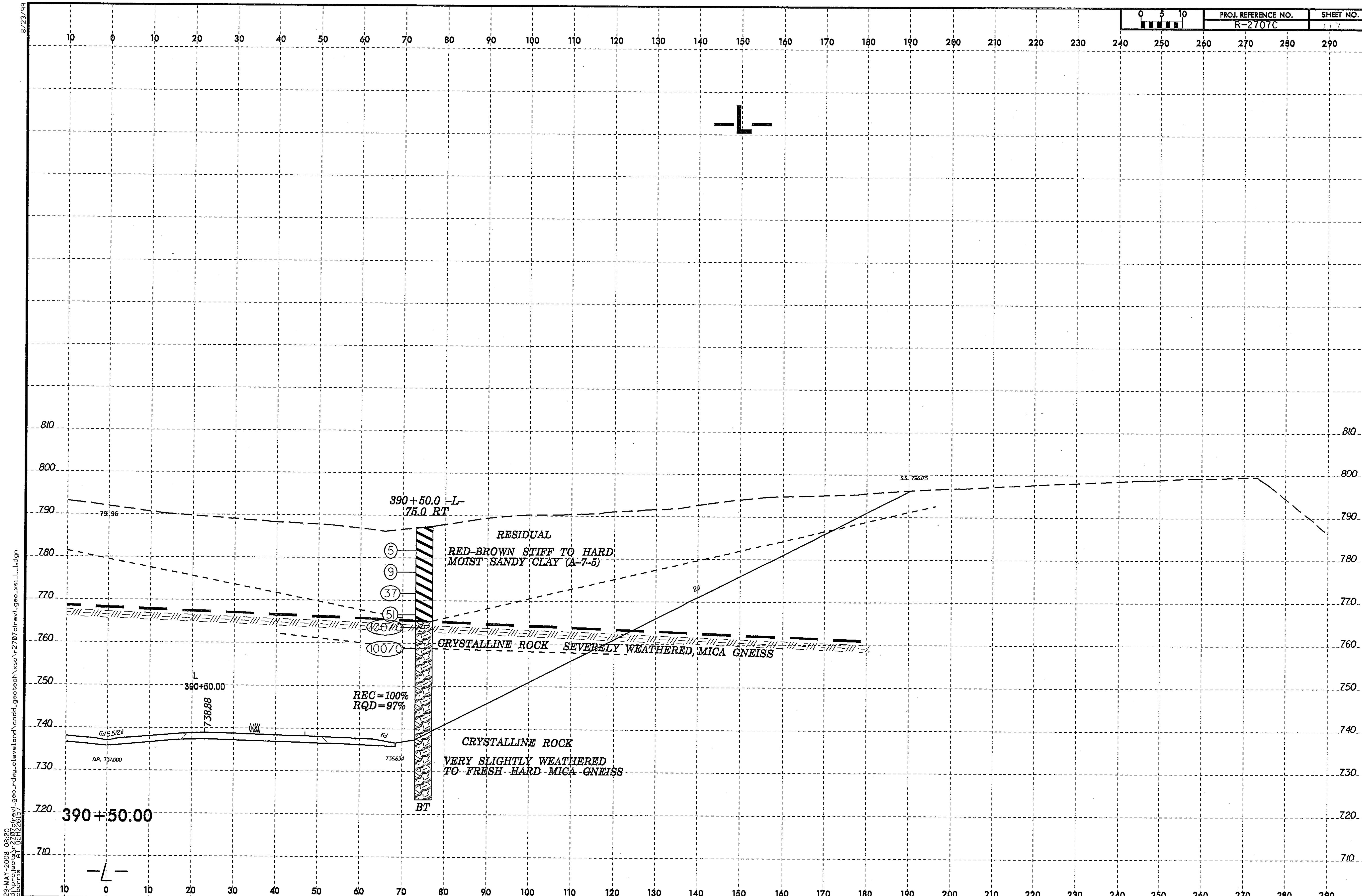
Bureau REPRODUCTION


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
390+50.0 -L-
75.0 RT
RESIDUAL
RED-BROWN STIFF TO HARD
MOIST SANDY CLAY (A-7-5)
5
9
37
51
100/0
100/0
CRYSTALLINE ROCK SEVERELY WEATHERED, MICA GNEISS
REC=100%
RQD=97%
CRYSTALLINE ROCK
VERY SLIGHTLY WEATHERED
TO FRESH HARD MICA GNEISS
BT
L
390+50.00
738.88
390+50.00
-L-
810
800
790
780
770
760
750
740
730
720
710

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	1 / 8

391+50.0 -L-
80.0 LT

RESIDUAL

RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

804.00

S.S. 788744

BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)

WEATHERED ROCK

SEVERELY WEATHERED MICA GNEISS

WEATHERED ROCK

AR
DRY
11/05

CRYSTALLINE ROCK
(MICA GNEISS)

L
391+50.00

740.63

6d

6d

5.820d

738.503

DP. 738.20

391+50.00
-L-

820
810
800
790
780
770
760
750
740
730

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

15-MAY-2008 14:37
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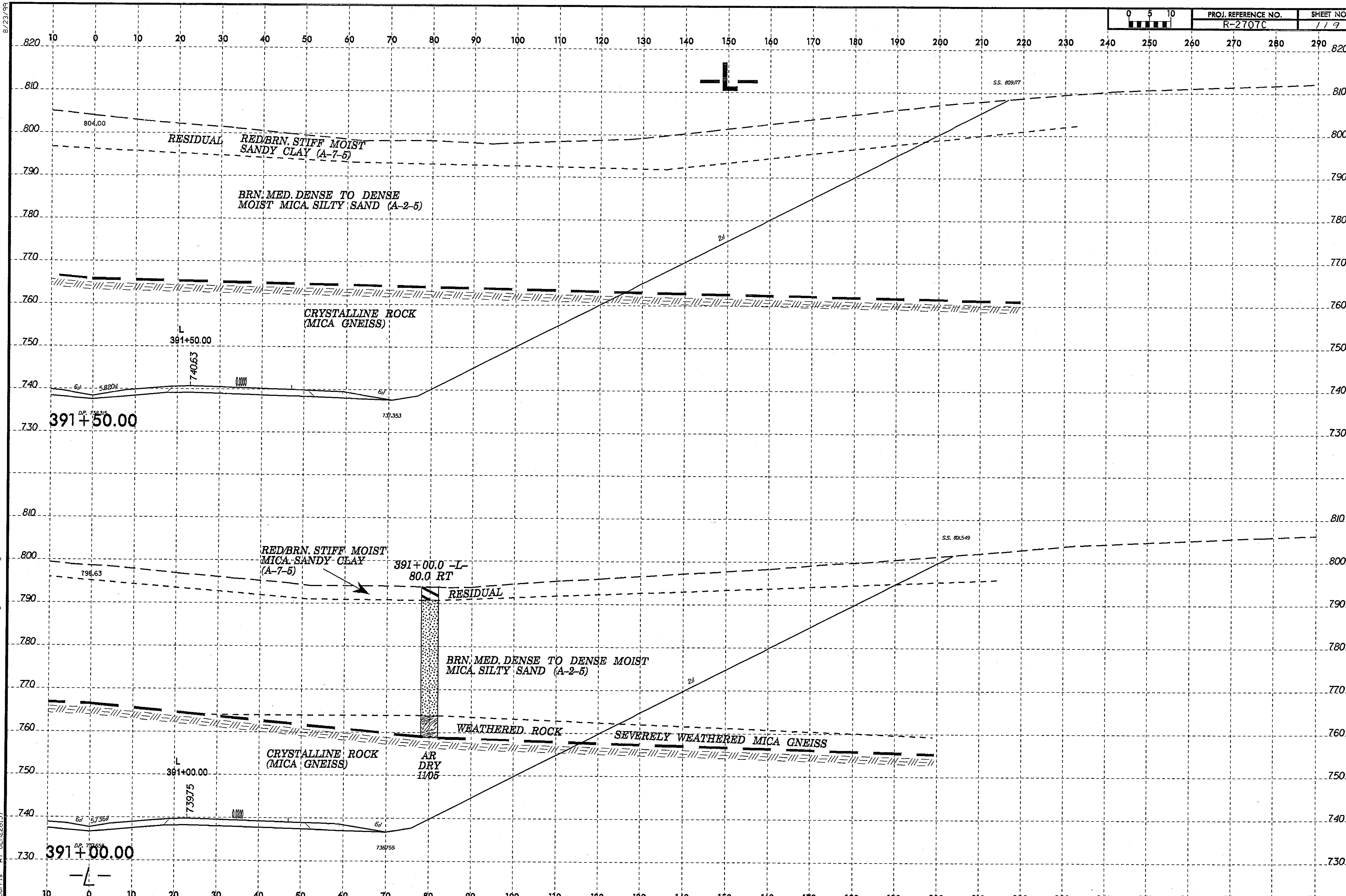
courris

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	119



8/23/99

15-MAY-2008 14:47
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cburris AT 0EH22615?

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	120

RESIDUAL — RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE MOIST MICA. SILTY SAND W/ALTERNATING. LAYERS OF WEATHERED ROCK STARTING @ 32' (A-2-5)

CRYSTALLINE ROCK (MICA GNEISS)

392+00.0 -L- C/L

808.25

AR DRY 11/05

L 392+00.00

741.50

739.00

5.862d

392+00.00

14-MAY-2008 13:46
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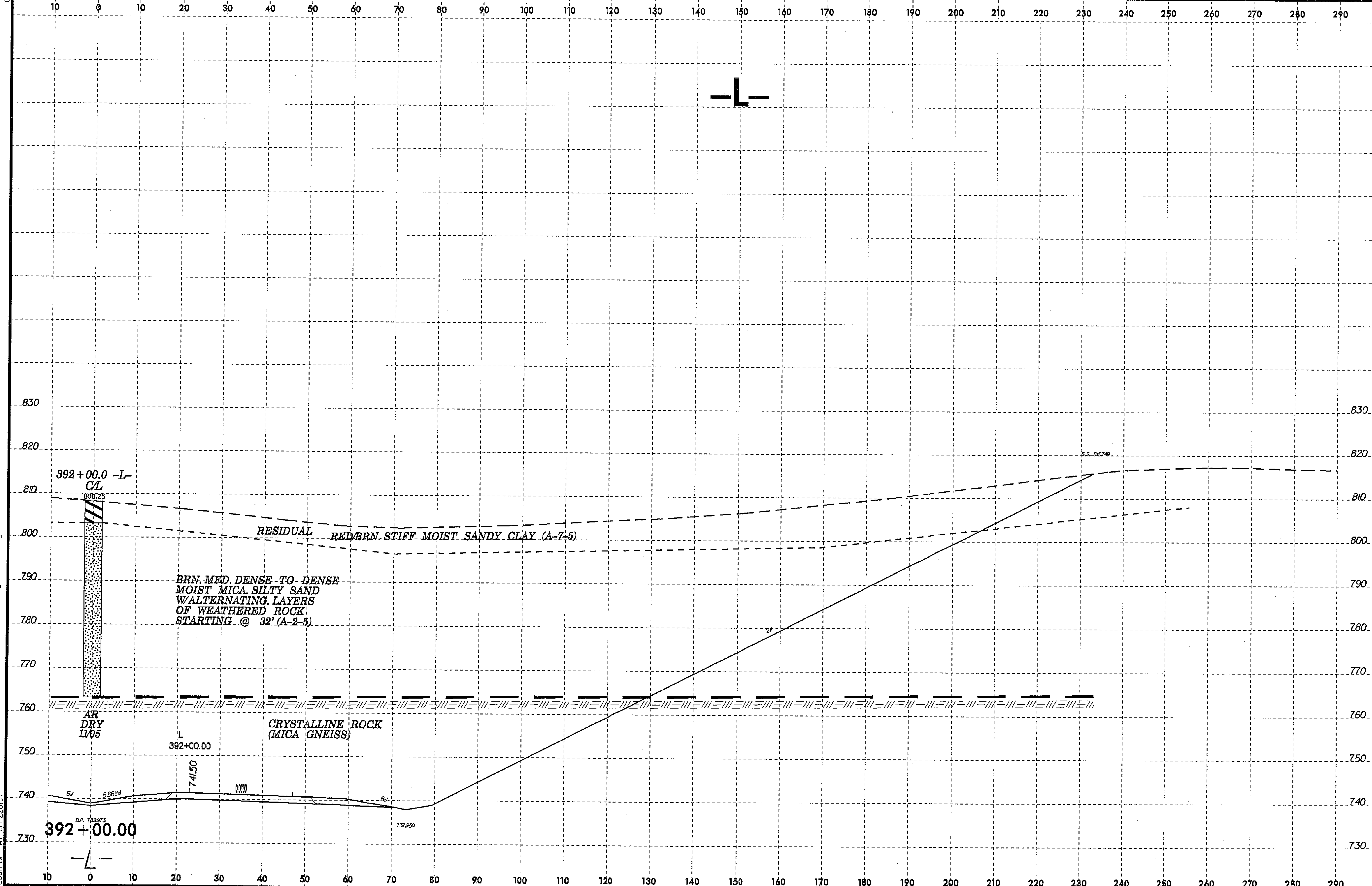
cburris AT GEH26157

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	121



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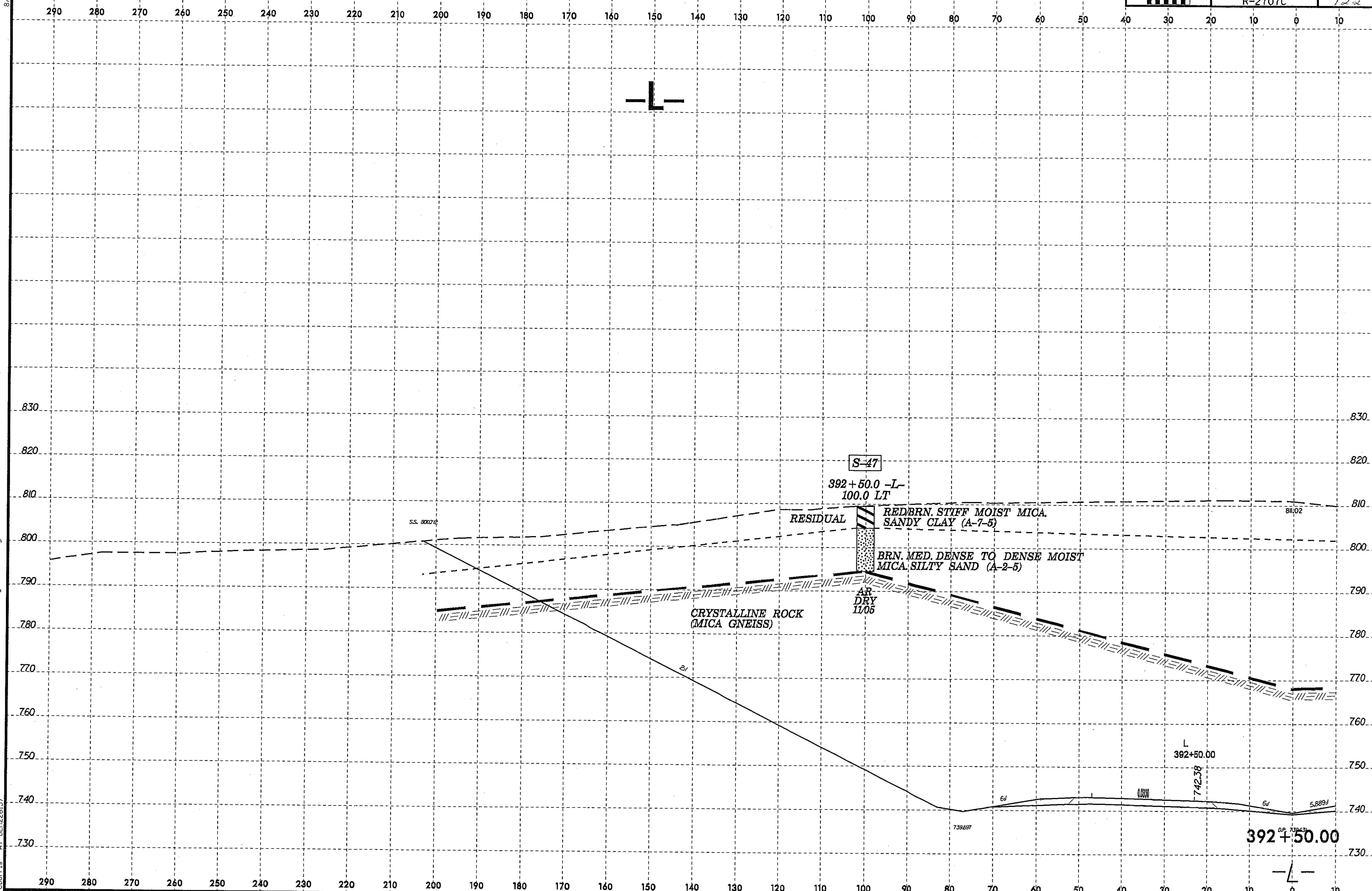
cburris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	122



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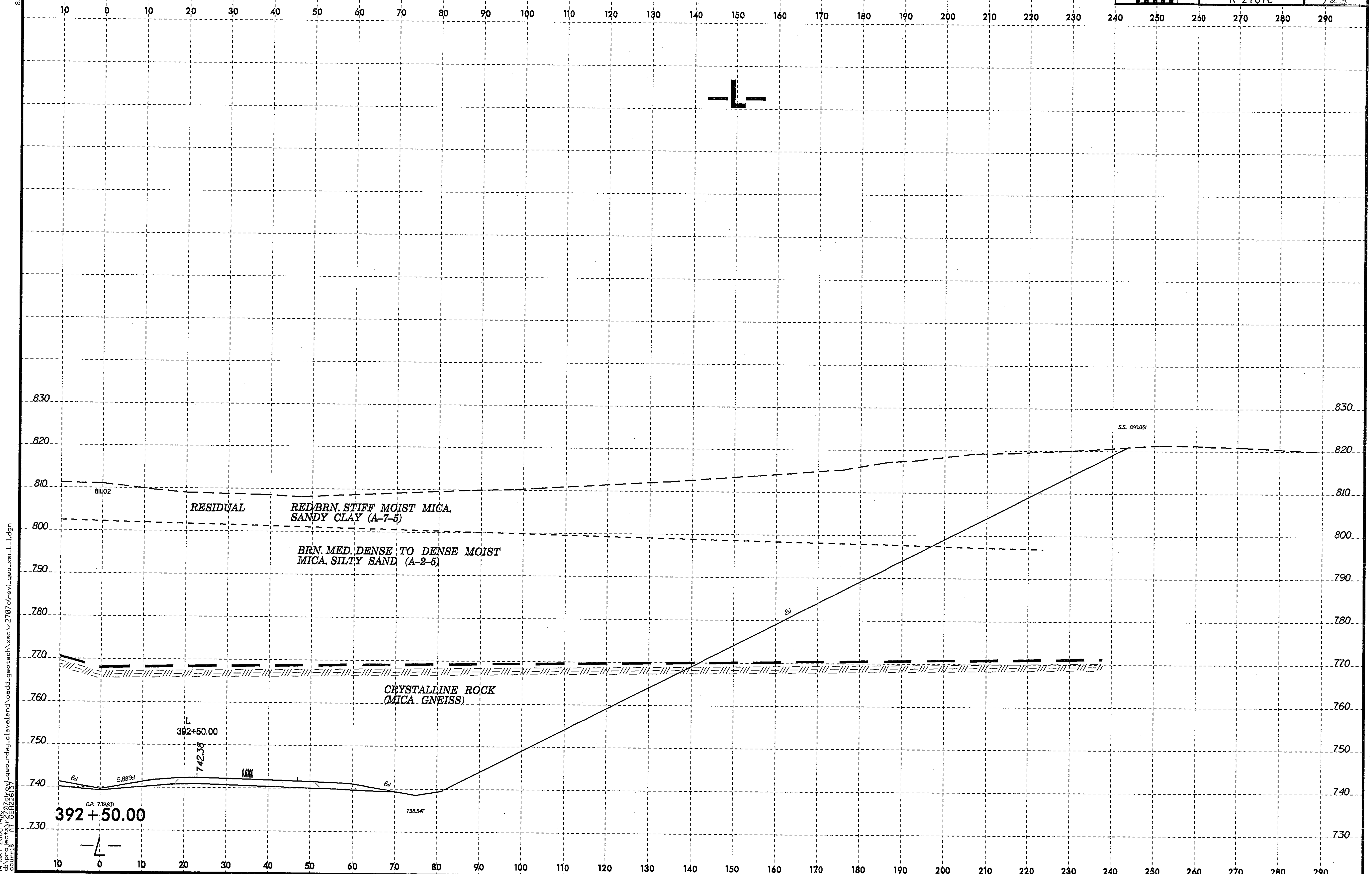
cburris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	123



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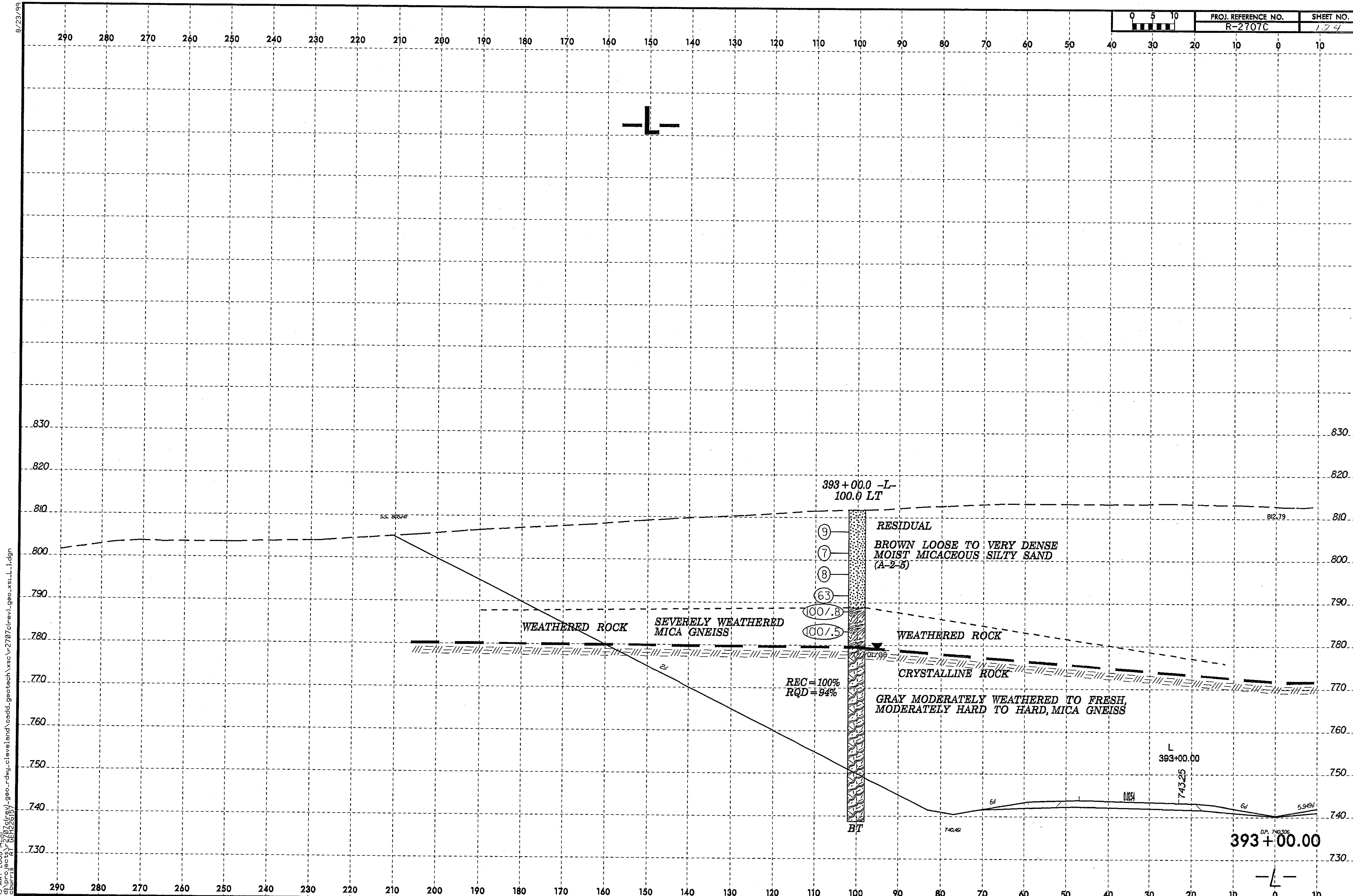
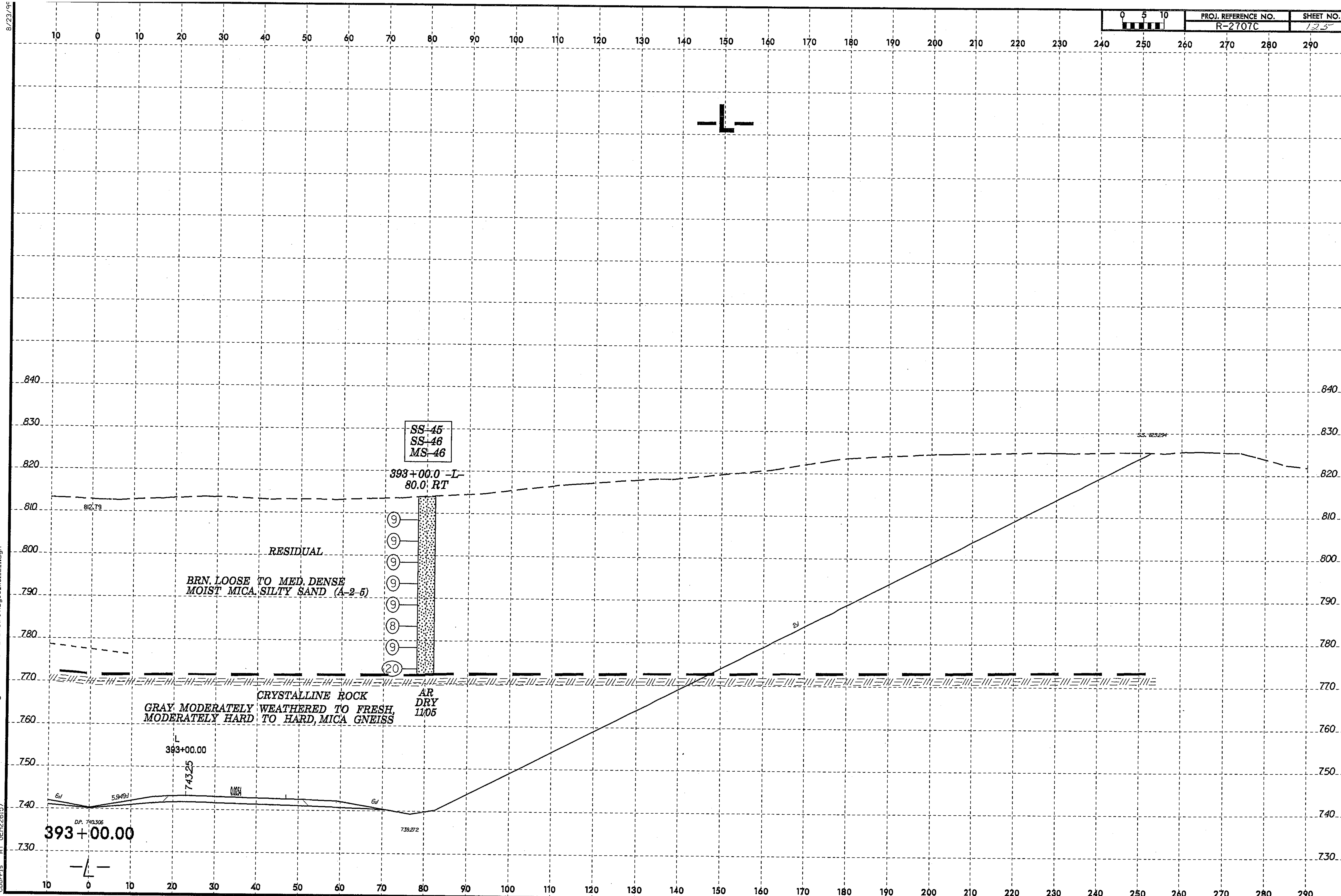
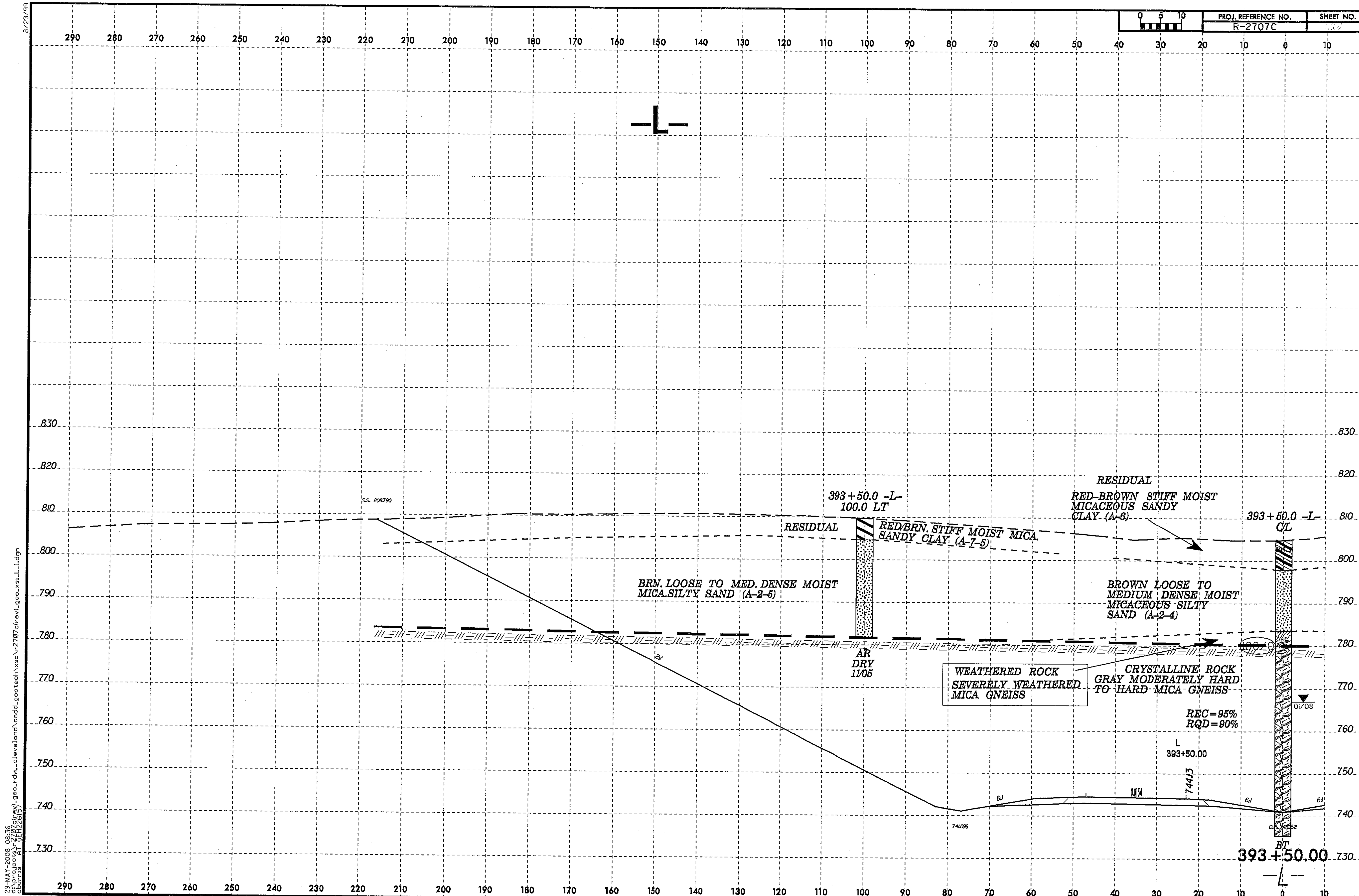
cburris AT GEH226157



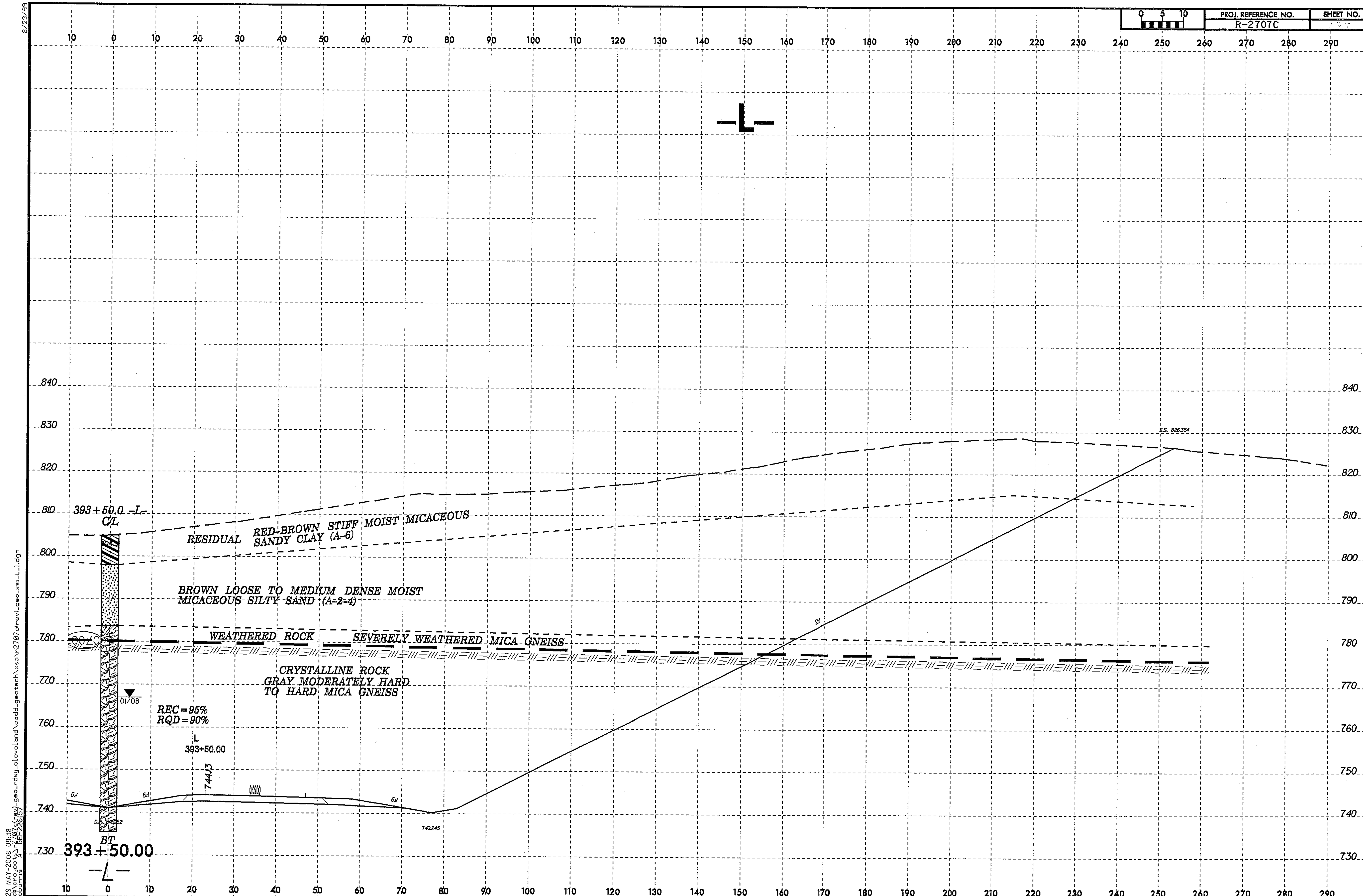
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
393 + 00.0 -L-
100.0 LT
RESIDUAL
BROWN LOOSE TO VERY DENSE MOIST MICACEOUS SILTY SAND (A-2-5)
WEATHERED ROCK
SEVERELY WEATHERED MICA GNEISS
WEATHERED ROCK
CRYSTALLINE ROCK
REC = 100%
RQD = 94%
GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD, MICA GNEISS
BT
393+00.00
393 + 00.00
-L-



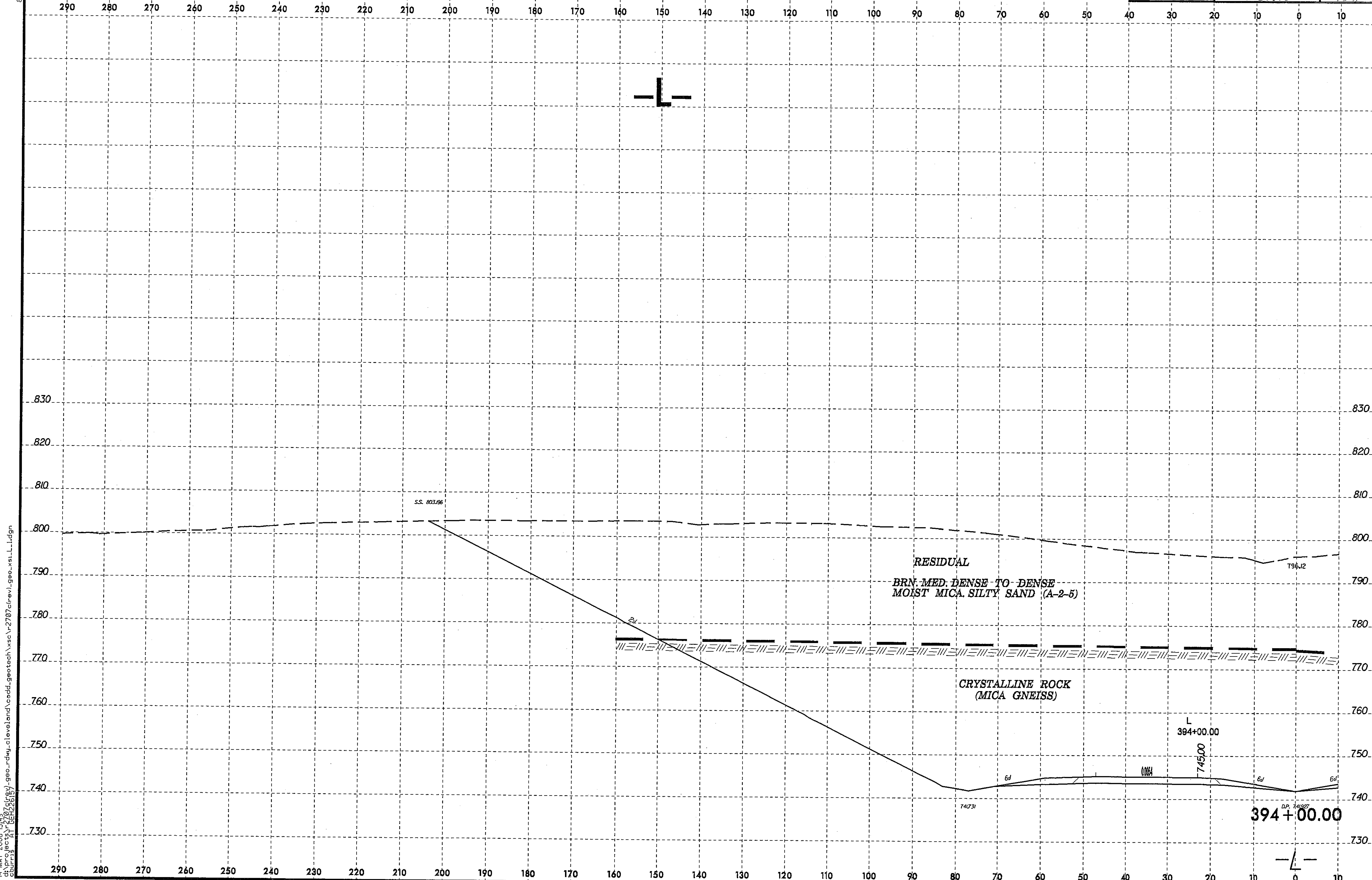
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
125
-L-
SS-45
SS-46
MS-46
393+00.0 -L-
80.0 RT
RESIDUAL
BRN. LOOSE TO MED. DENSE
MOIST MICA. SILTY SAND (A-2-5)
CRYSTALLINE ROCK
GRAY MODERATELY WEATHERED TO FRESH,
MODERATELY HARD TO HARD, MICA GNEISS
AR
DRY
11/05
393+00.00
743.25
393+00.00
-L-



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
830
820
810
800
790
780
770
760
750
740
730
S.S. 808790
393+50.0 -L-
100.0 LT
RESIDUAL
RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)
BRN. LOOSE TO MED. DENSE MOIST MICA. SILTY SAND (A-2-5)
AR
DRY
11/05
WEATHERED ROCK
SEVERELY WEATHERED MICA GNEISS
RESIDUAL
RED-BROWN STIFF MOIST MICACEOUS SANDY CLAY (A-6)
393+50.0 -L-
C/L
BROWN LOOSE TO MEDIUM DENSE MOIST MICACEOUS SILTY SAND (A-2-4)
CRYSTALLINE ROCK
GRAY MODERATELY HARD TO HARD MICA GNEISS
REC=95%
RQD=90%
01/08
L
393+50.00
BT
393+50.00
-L-
29-MAY-2008 08:36


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
393+50.0 -L-
C/L
RESIDUAL RED-BROWN STIFF MOIST MICACEOUS SANDY CLAY (A-6)
BROWN LOOSE TO MEDIUM DENSE MOIST MICACEOUS SILTY SAND (A-2-4)
WEATHERED ROCK SEVERELY WEATHERED MICA GNEISS
CRYSTALLINE ROCK GRAY MODERATELY HARD TO HARD MICA GNEISS
REC=95%
RQD=90%
01/08
L
393+50.00
744.13
740.245
BT
393+50.00
-L-
29-MAY-2008 08:38

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	128



8/23/99
14-MAY-2008 13:49
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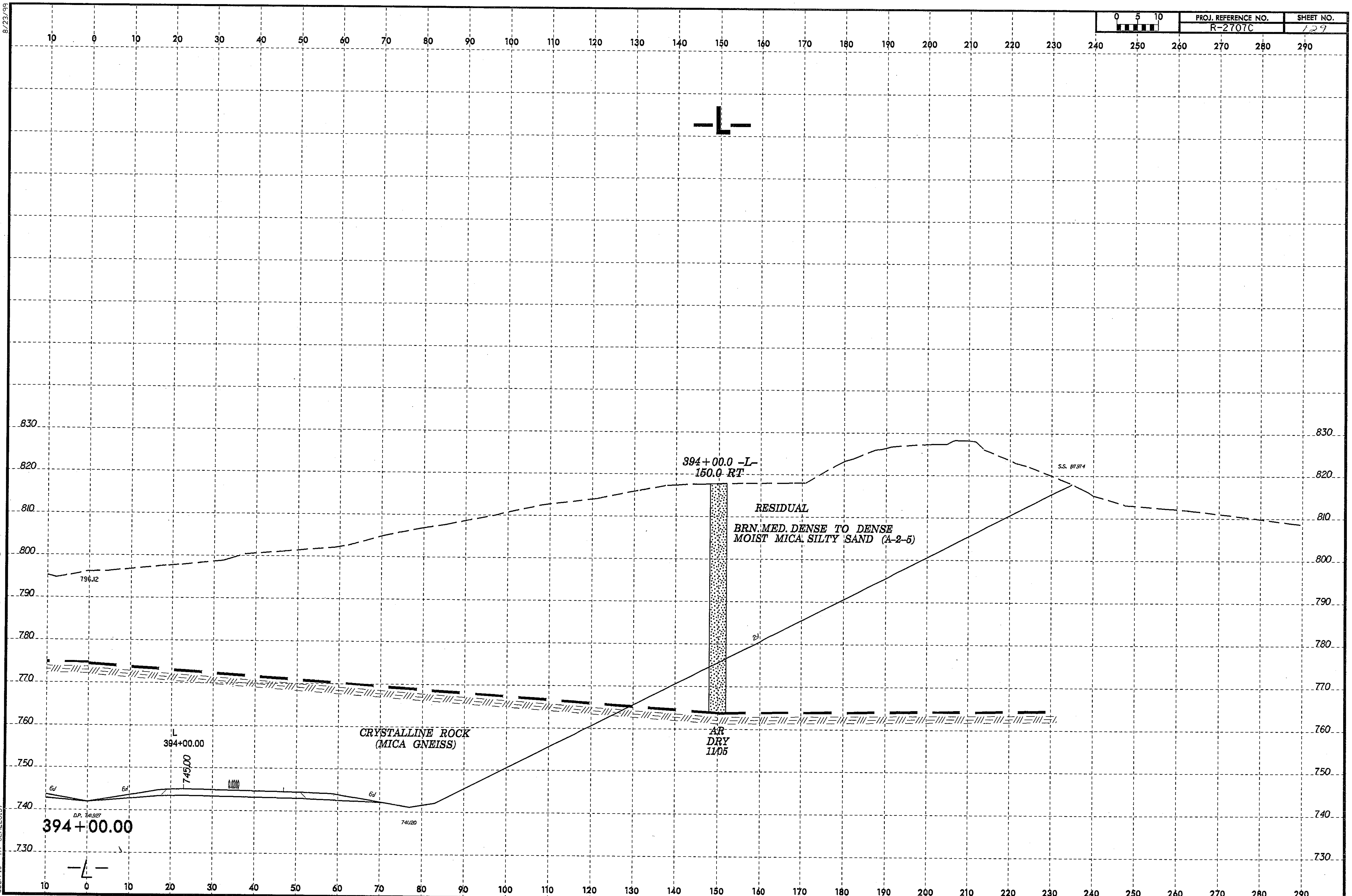
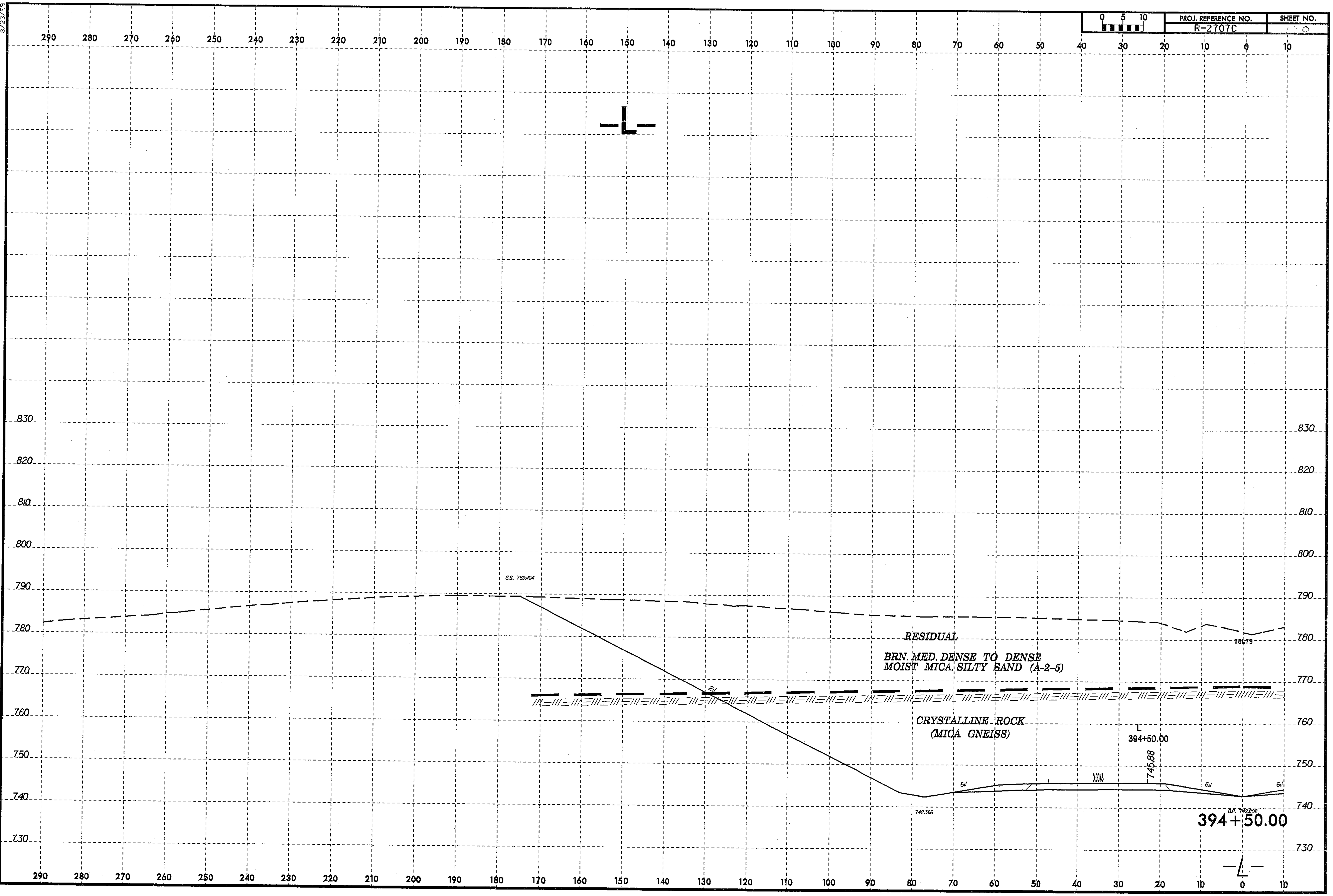
cburris AT GEH226157


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
0 5 10
-L-
394+00.0 -L-
150.0 RT
RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST MICA SILTY SAND (A-2-5)
CRYSTALLINE ROCK
(MICA GNEISS)
AR
DRY
11/05
L
394+00.00
745.00
796.12
741.20
394+00.00
-L-
830
820
810
800
790
780
770
760
750
740
730



8/23/99

14-MAY-2008 13:50
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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	131

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

840
830
820
810
800
790
780
770
760
750
740
730

-L-

S.S. 826732

781.79

RESIDUAL

BRN. MED. DENSE TO DENSE
MOIST MICA. SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(MICA GNEISS)

L
394+50.00

745.88

6d 6d 6d 2d

BF. 742.802

741.995

394+50.00

-L-

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

14-MAY-2008 14:44
d:\projects\r2707c(rev)_geo_rdwg_cleveland\roadd_geotech\xsc\r2707c(rev)_geo_xsi_L_1.dgn
cburris
AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	132

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

-L-

830 820 810 800 790 780 770 760 750 740 730

SS 766738

RESIDUAL — BRN. MED. STIFF WET SANDY CLAY (A-6)

WEATHERED ROCK — SEVERELY WEATHERED MICA GNEISS

CRYSTALLINE ROCK (MICA GNEISS)

395+00.00

746.75

6d 0.01% 6d 6d

743.06†

D.P. 743.67†

SS-50
395+00.0 -L-
C/L

5
100
11/05
AR

395+00.00

-L-

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

15-MAY-2008 14:55
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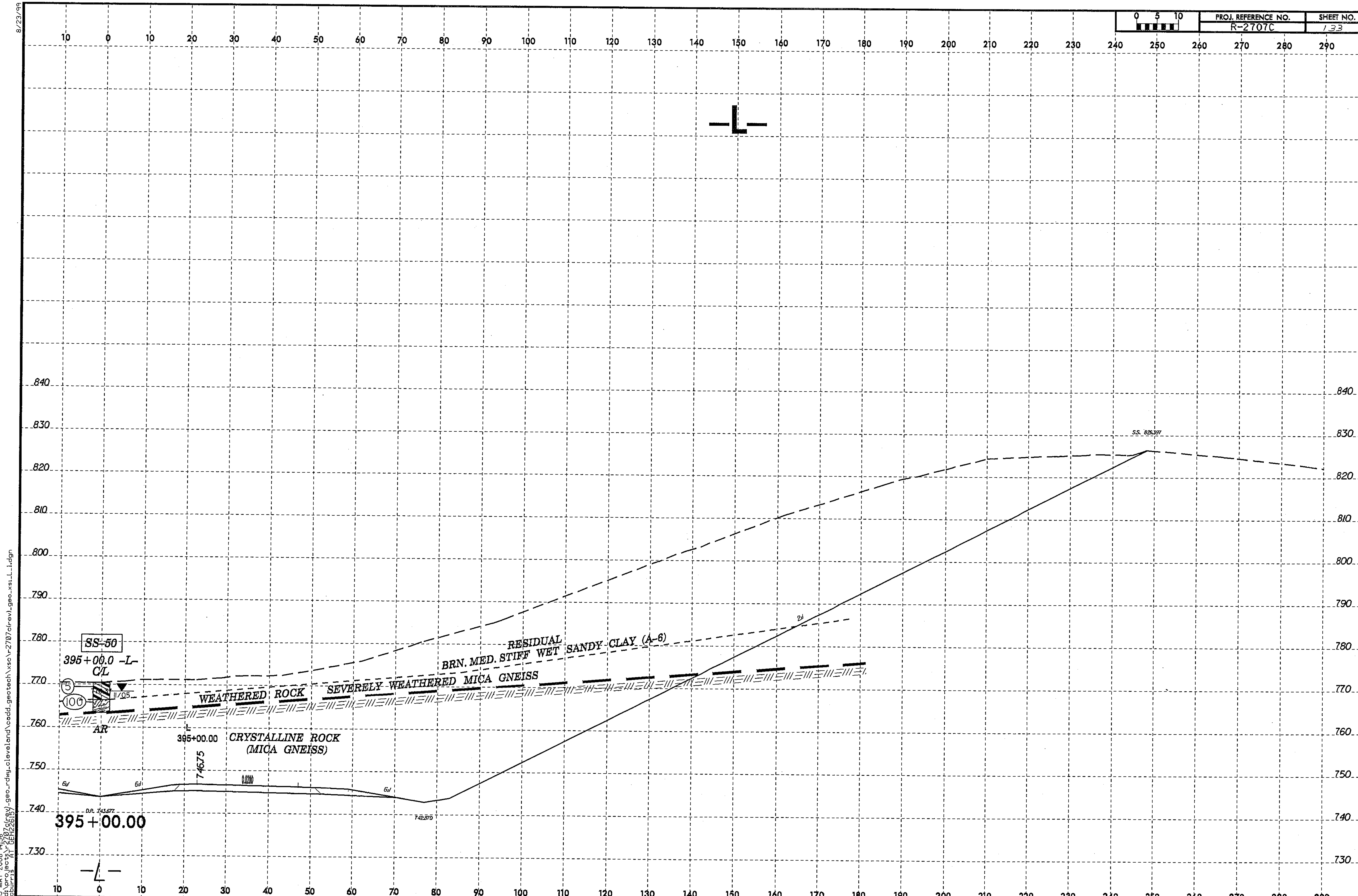
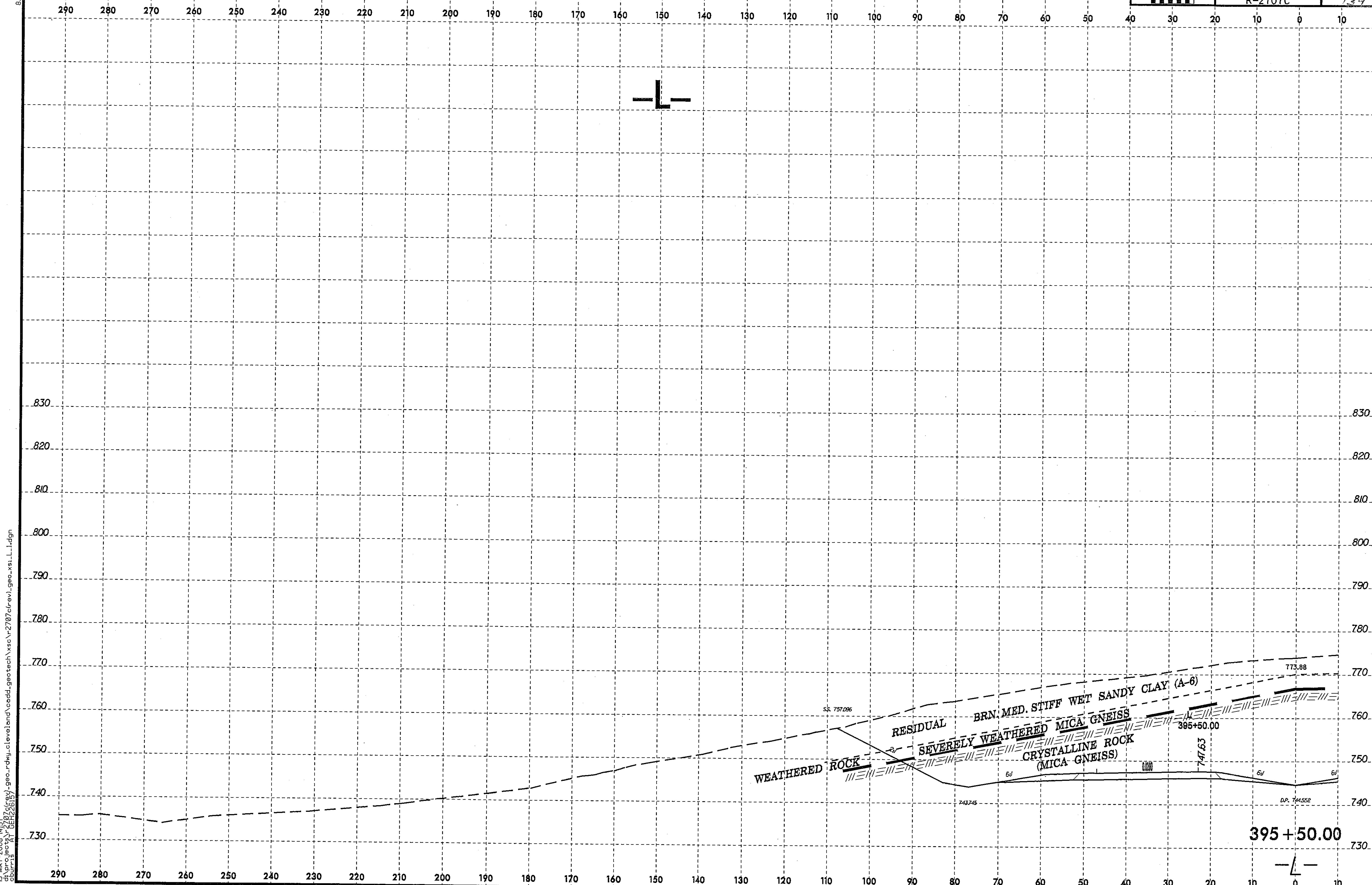
Courtesy of GEOPAK(tm)



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
133
-L-
SS-50
395+00.0 -L-
C/L
11/05
RESIDUAL
BRN. MED. STIFF WET SANDY CLAY (A-6)
WEATHERED ROCK
SEVERELY WEATHERED MICA GNEISS
AR
CRYSTALLINE ROCK
(MICA GNEISS)
395+00.00
746.75
395+00.00
-L-

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	134



15-MAY-2008 14:57
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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	135

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

840 830 820 810 800 790 780 770 760 750 740 730

S.S. 827089

RESIDUAL
BRN. MED. STIFF WET SANDY CLAY (A-6)

SEVERELY WEATHERED MICA GNEISS

WEATHERED ROCK

773.88

L
395+50.00

CRYSTALLINE ROCK
(MICA GNEISS)

747.63

6d 6d 6d

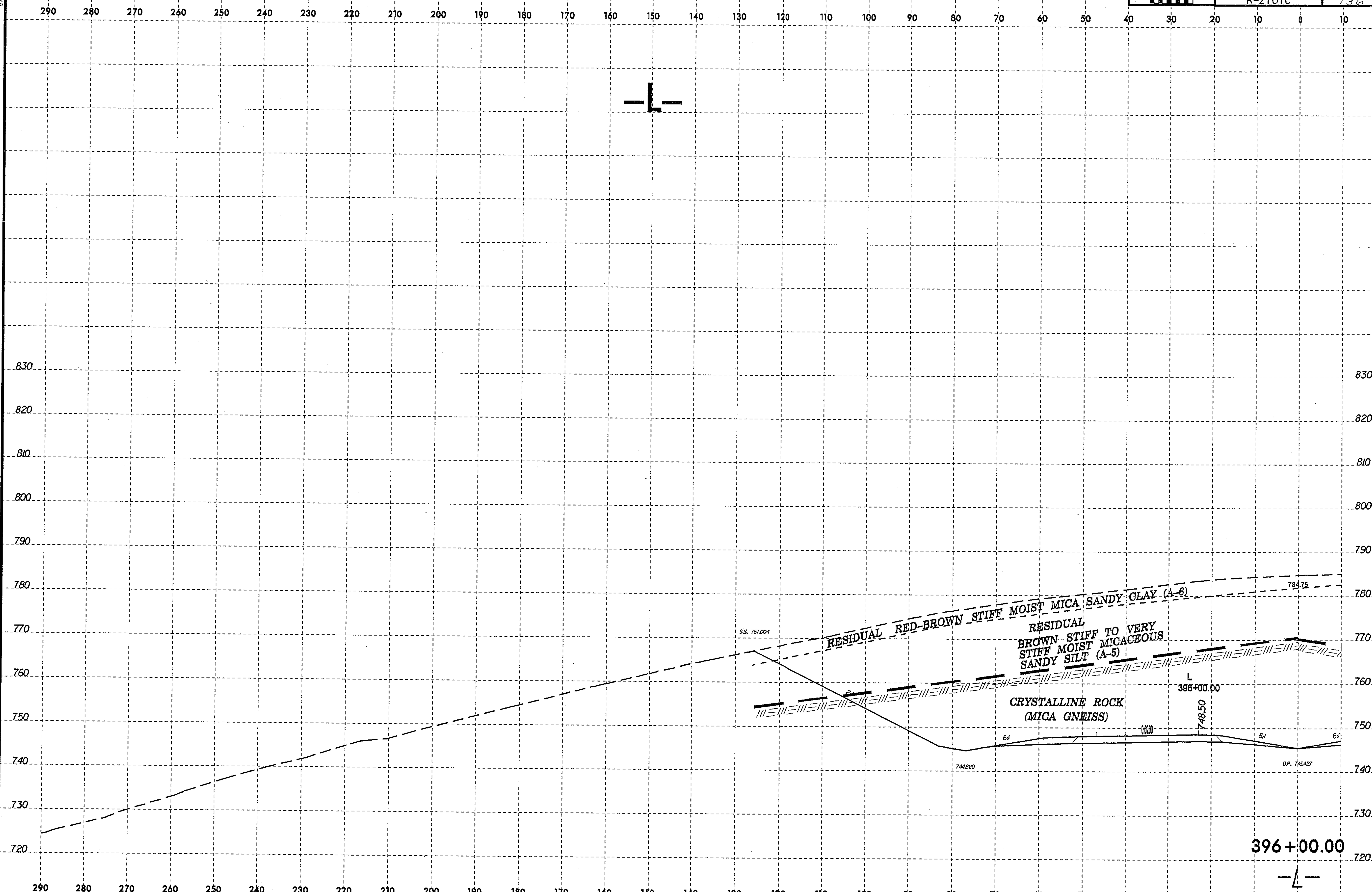
D.P. 744552

743745

395+50.00

15-MAY-2008 14:58
d:\projects\r-2707c\roadway_cleveland\cadd_geotech\xsc\r-2707c-revl-geo_rdwy_cleveland\cadd_geotech\xsc\r-2707c-revl-geo.xsl_L_1.dgn
oburns AT GEH2261(7)

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	136



396+00.00

-L-

16-MAY-2008 14:35
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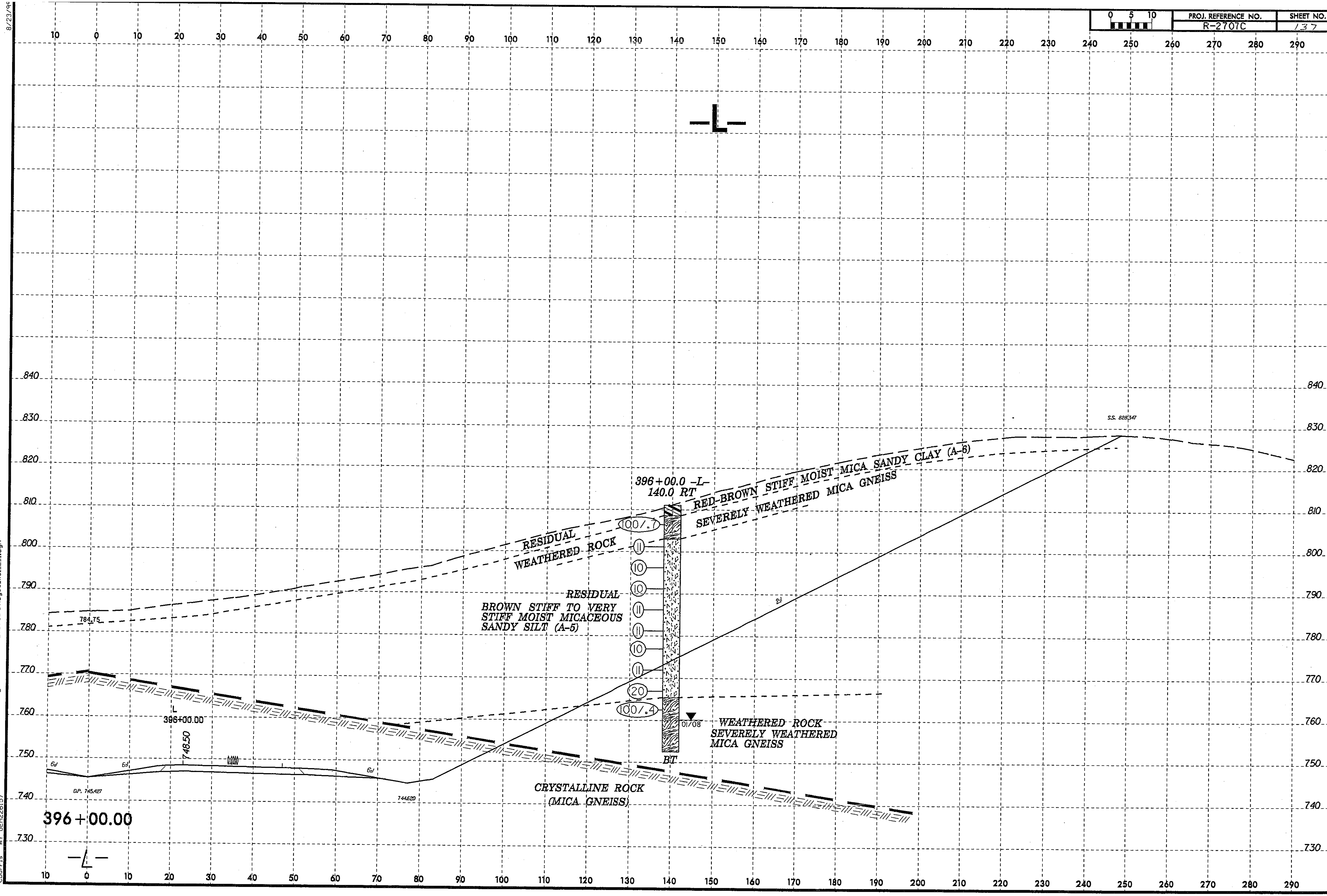
cburris AT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
137
-L-
396+00.0 -L-
140.0 RT
RED-BROWN STIFF MOIST MICA SANDY CLAY (A-6)
SEVERELY WEATHERED MICA GNEISS
RESIDUAL
WEATHERED ROCK
RESIDUAL
BROWN STIFF TO VERY STIFF MOIST MICACEOUS SANDY SILT (A-5)
WEATHERED ROCK
SEVERELY WEATHERED MICA GNEISS
CRYSTALLINE ROCK
(MICA GNEISS)
100/.7
100/.4
01/08
BT
784.75
748.50
396+00.00
396+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	139

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

840 830 820 810 800 790 780 770 760 750 740 730

S-51
S-52

396+50.0 -L- C/L

795.48

RESIDUAL
RED/BRN. STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-6)
(PI=29)

S.S. 775.812

BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)

AR
DRY
11:05

L
396+50.00

CRYSTALLINE ROCK
(MICA GNEISS)

749.38

745.495

D.P. 746.302

396+50.00

-L-

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

29-MAY-2008 09:01
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bburris AT GEH22615

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	139

S-51
S-52

396+50.0 -L-
CL

795.48

RESIDUAL
RED/BRN. STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-6)
(PI=29)

BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-5)

CRYSTALLINE ROCK
(MICA GNEISS)

AR
DRY
1105

-L-
396+50.00

749.38

6d

DP. 746.302

396+50.00
-L-

745.495

S.S. 829.856

840
830
820
810
800
790
780
770
760
750
740

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

29-MAY-2008 09:02
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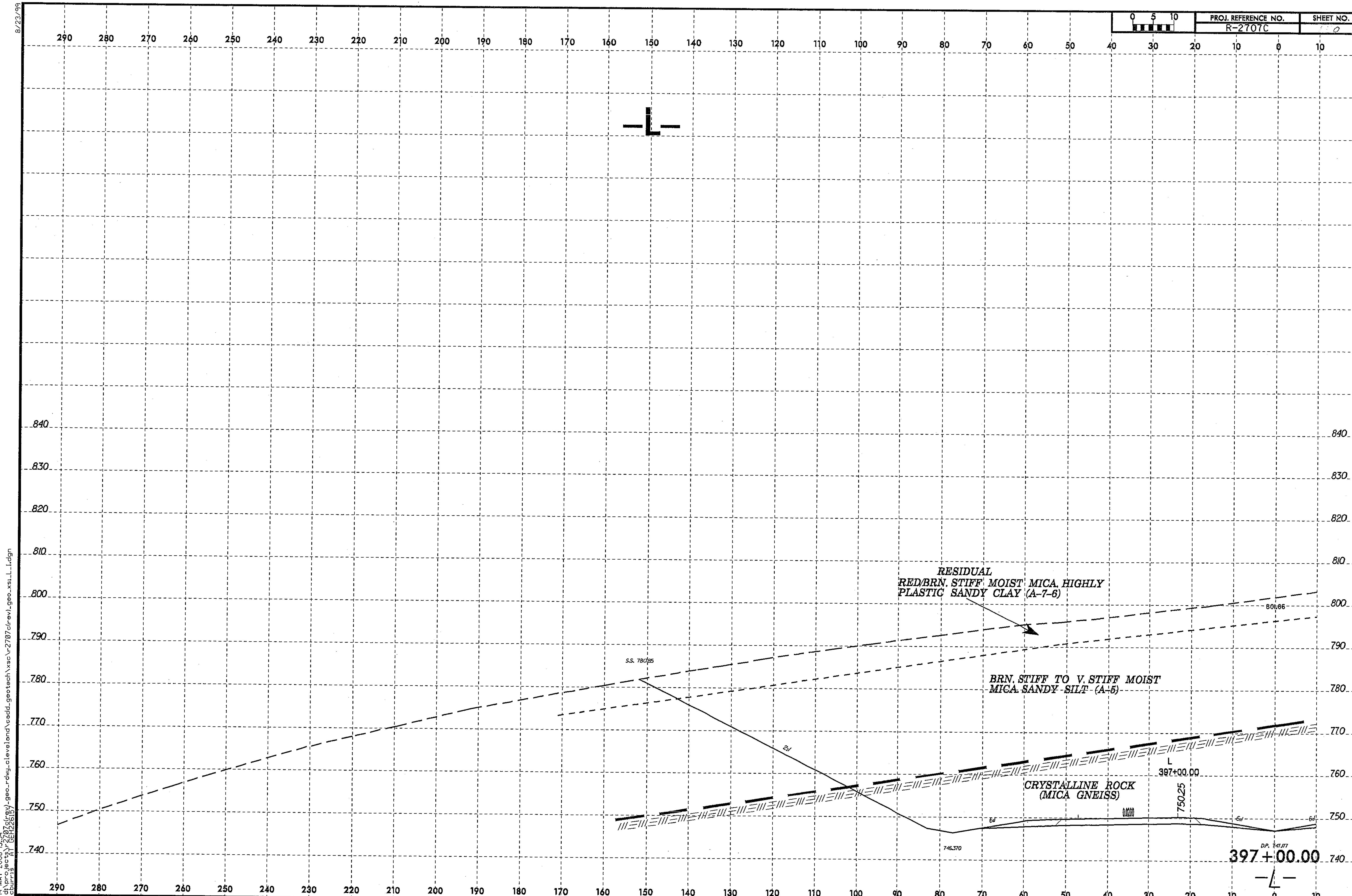
Burris Al DEI2257



8/23/99

14-MAY-2008 13:54
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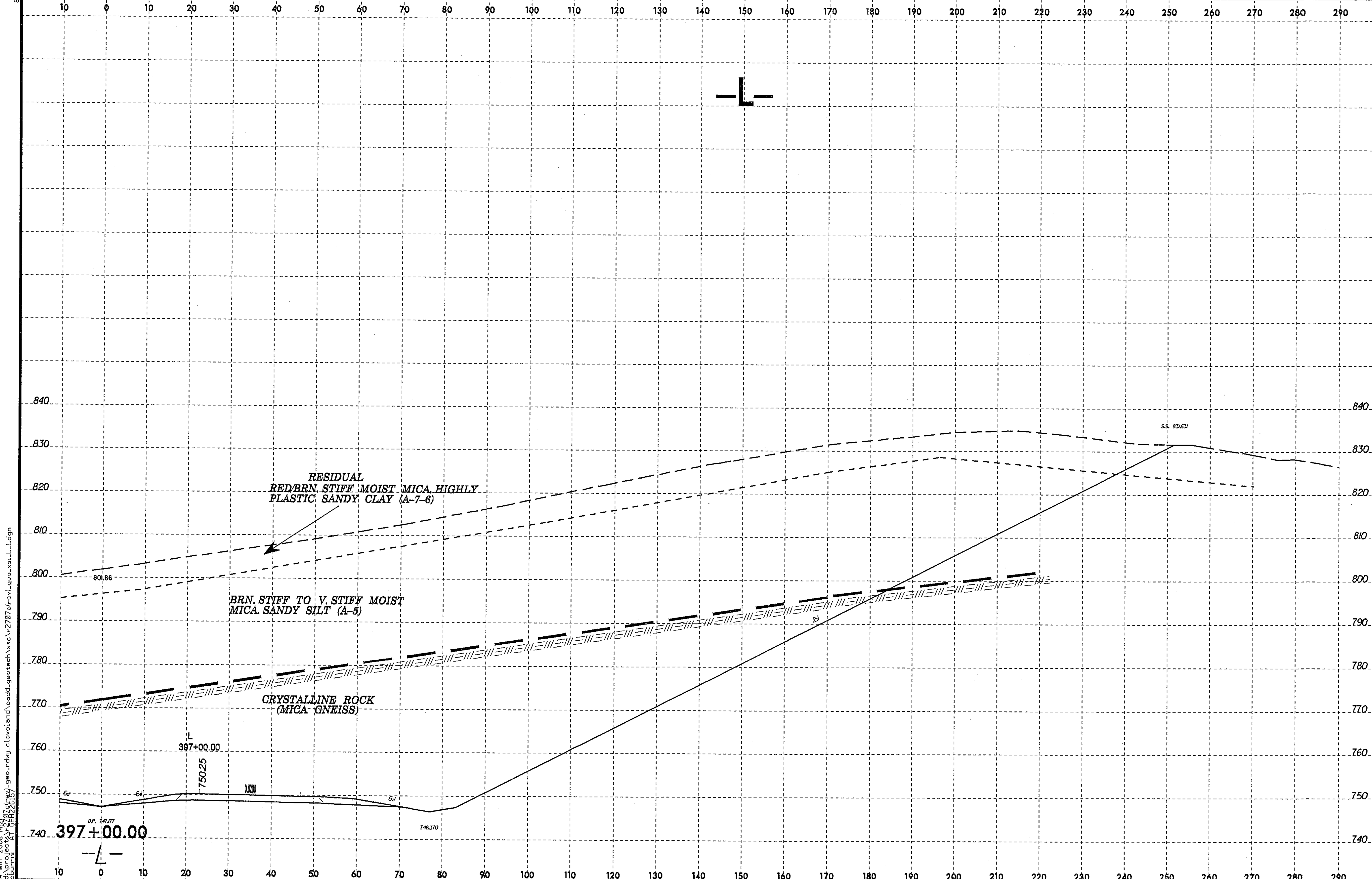
cburris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	1411



8/23/99

14-MAY-2008 14:21
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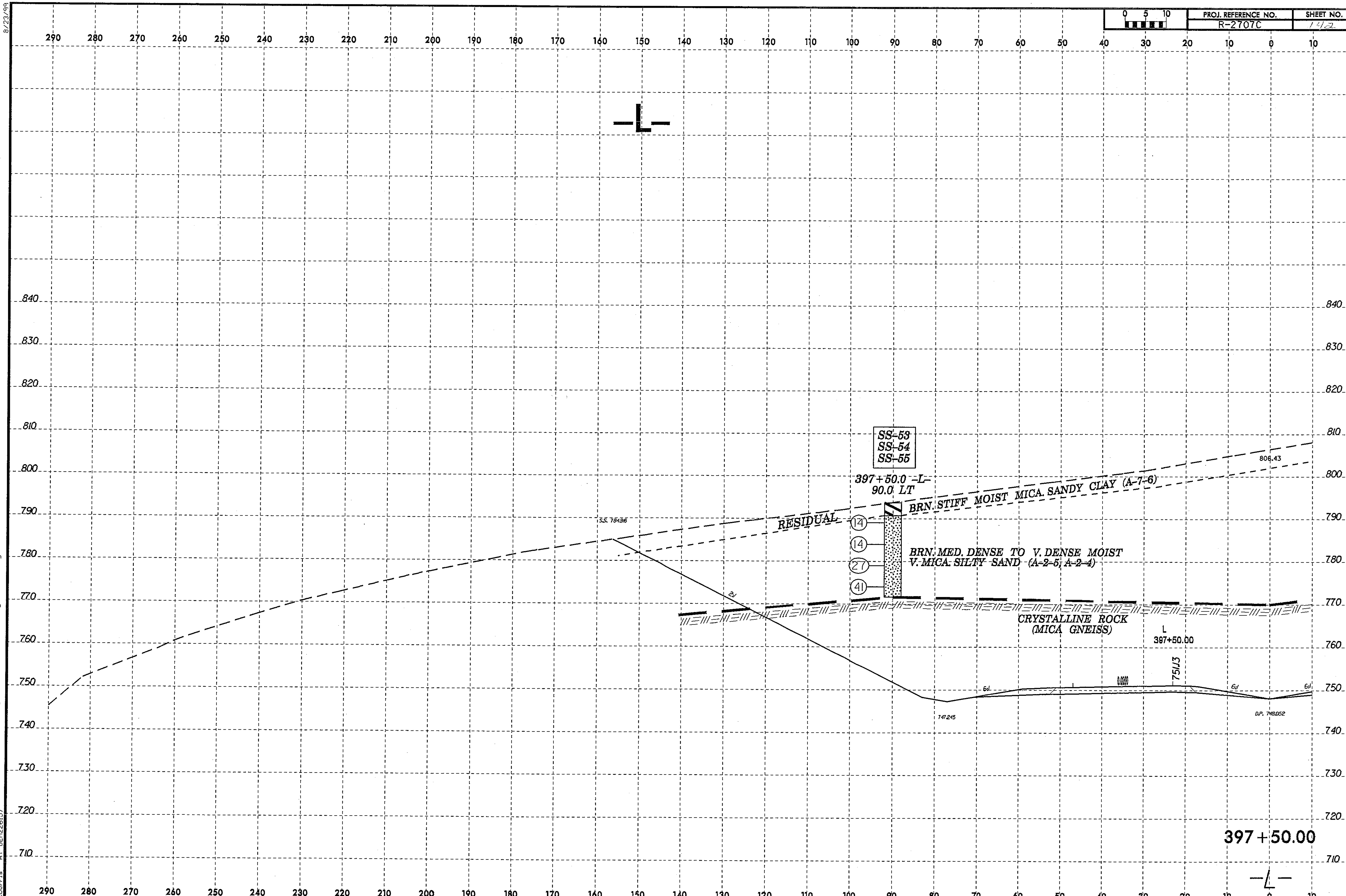
cburris AT GEH226157



8/23/99
14-MAY-2008 13:55
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dburris AT GEH226157

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	143

0 5 10

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

840 830 820 810 800 790 780 770 760 750 740

-L-

RESIDUAL BRN. STIFF MOIST MICA SANDY CLAY (A-7-6)

806.43

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

CRYSTALLINE ROCK (MICA GNEISS)

L
397+50.00

75/3

6d 6d 6d

23

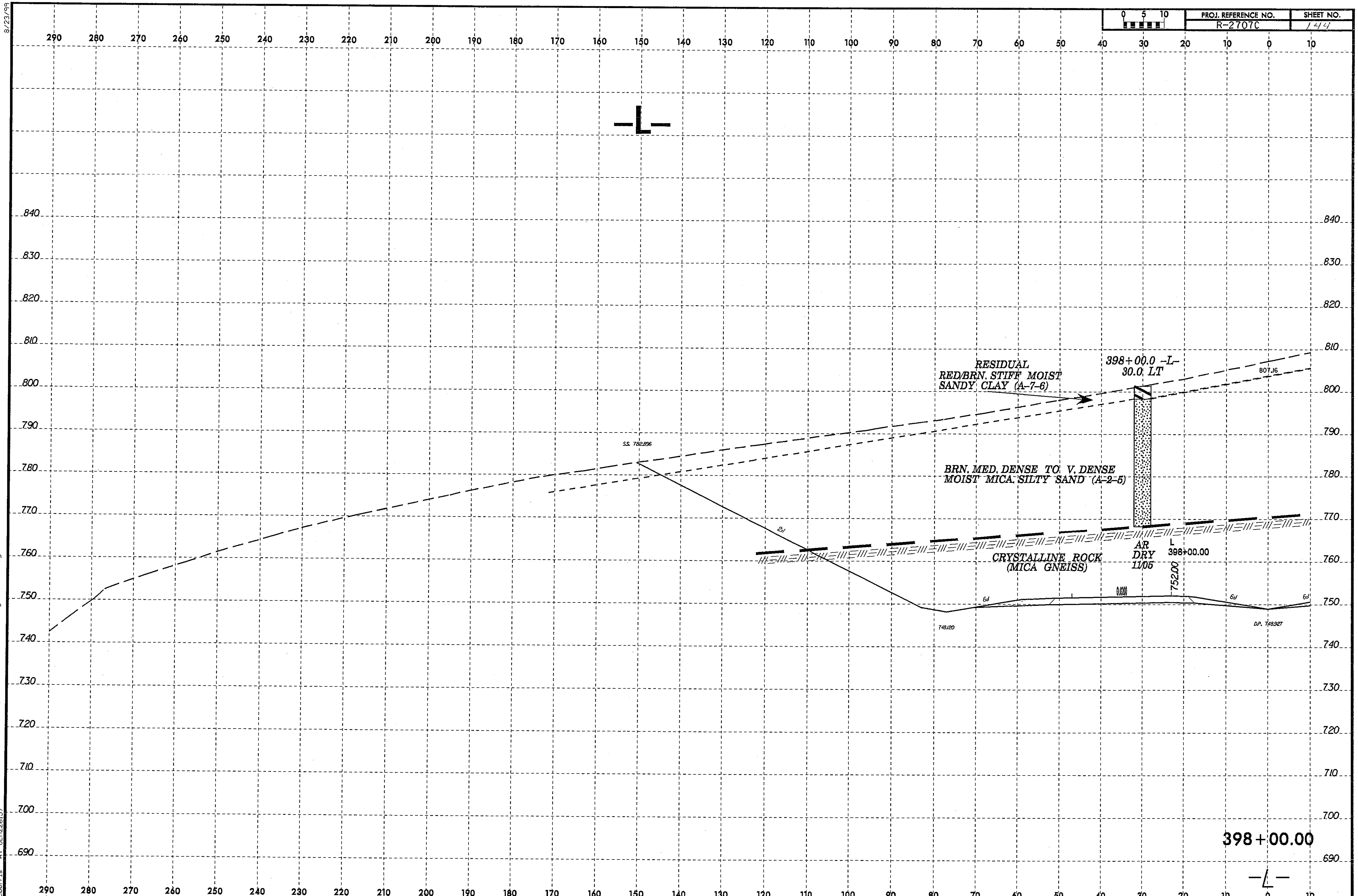
SS. 833.323

747.245

397+50.00

-L-

14-MAY-2008 14:22
d:\projects\8.2707(sv)_geo_rdwg_cleveland\roddl_geotech\xsc\r2707clrevl_geo_xsL_1.dgn
dburris (ZEPHYR\DOT)



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL
RED/BRN. STIFF MOIST
SANDY CLAY (A-7-6)
398+00.0 -L-
30.0 LT
807.16
SS. 782.896
BRN. MED. DENSE TO V. DENSE
MOIST MICA. SILTY SAND (A-2-5)
AR
DRY
11/05
L
398+00.00
CRYSTALLINE ROCK
(MICA GNEISS)
752.00
748.120
DP. 748.927
398+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	145

398+00.0 -L-
150.0 RT

RESIDUAL

RED-BROWN STIFF MOIST HIGHLY PLASTIC SILTY CLAY (A-7-6)

BROWN DENSE TO VERY DENSE MOIST MICACEOUS SILTY SAND (A-2-5)

807.16

WEATHERED ROCK
SEVERELY WEATHERED MICA GNEISS

AR
NM
01/08

CRYSTALLINE ROCK
(MICA GNEISS)

S.S. 834.404

2d

-L-
398+00.00

752.00

6d

D.P. 748.927

748.120

398+00.00

-L-

14-MAY-2008 14:23
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dburris ATT_GEN26157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	146

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

850 840 830 820 810 800 790 780 770 760 750 740 730 720

805.08

S.S. 780.997

RESIDUAL RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

BRN. MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-5)

2d

398+50.00

CRYSTALLINE ROCK
(MICA GNEISS)

752.88

6d 6d 6d

748.995

D.P. 749.802

398+50.00
—L—

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

14-MAY-2008 13:57
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cburris
ATT 6EH25167

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	147

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

850 840 830 820 810 800 790 780 770 760 750 740

RESIDUAL

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

805.08

S.S. 835.78

BRN. MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-6)

2:1

398+50.00

CRYSTALLINE ROCK
(MICA GNEISS)

752.88

6:1 6:1 6:1

D.P. 749.802

748.995

398+50.00

14-MAY-2008 14:24
d:\projects\r-2707c(rev)-geo_rdwy_cleveland\cadd_geotech\xse\r-2707c(rev)_geo_xsL_1.dgn
bburris ATT_GEN126(5)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	145

399+00.0 -L- C/L

802.24

(A-7-6)

RESIDUAL — RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

S.S. 777.496

BRN. MED. DENSE TO V. DENSE MOIST MICA SILTY SAND (A-2-5)

2d

L 399+00.00

753.75

AR DRY 11/05

CRYSTALLINE ROCK (MICA GNEISS)

0.0100

6d

6d

6d

749.870

D.P. 750.677

399+00.00

-L-

14-MAY-2008 13:57
d:\projects\r2707(rev)_geo_rdwy_cleveland\vadd_geotech\xsc\r2707(rev)_geo_xsi_l_1.dgn
dburris
A1 OER(26.15)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	149

399+00.0 -L-
C/L
802.24

RESIDUAL

BRN. MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-5)

AR
DRY
11/05

399+00.00

CRYSTALLINE ROCK
(MICA GNEISS)

753.75

6d 6d 6d

DP. 760.677

749.870

399+00.00

SS: 835.31'

2d

14-MAY-2008 14:25
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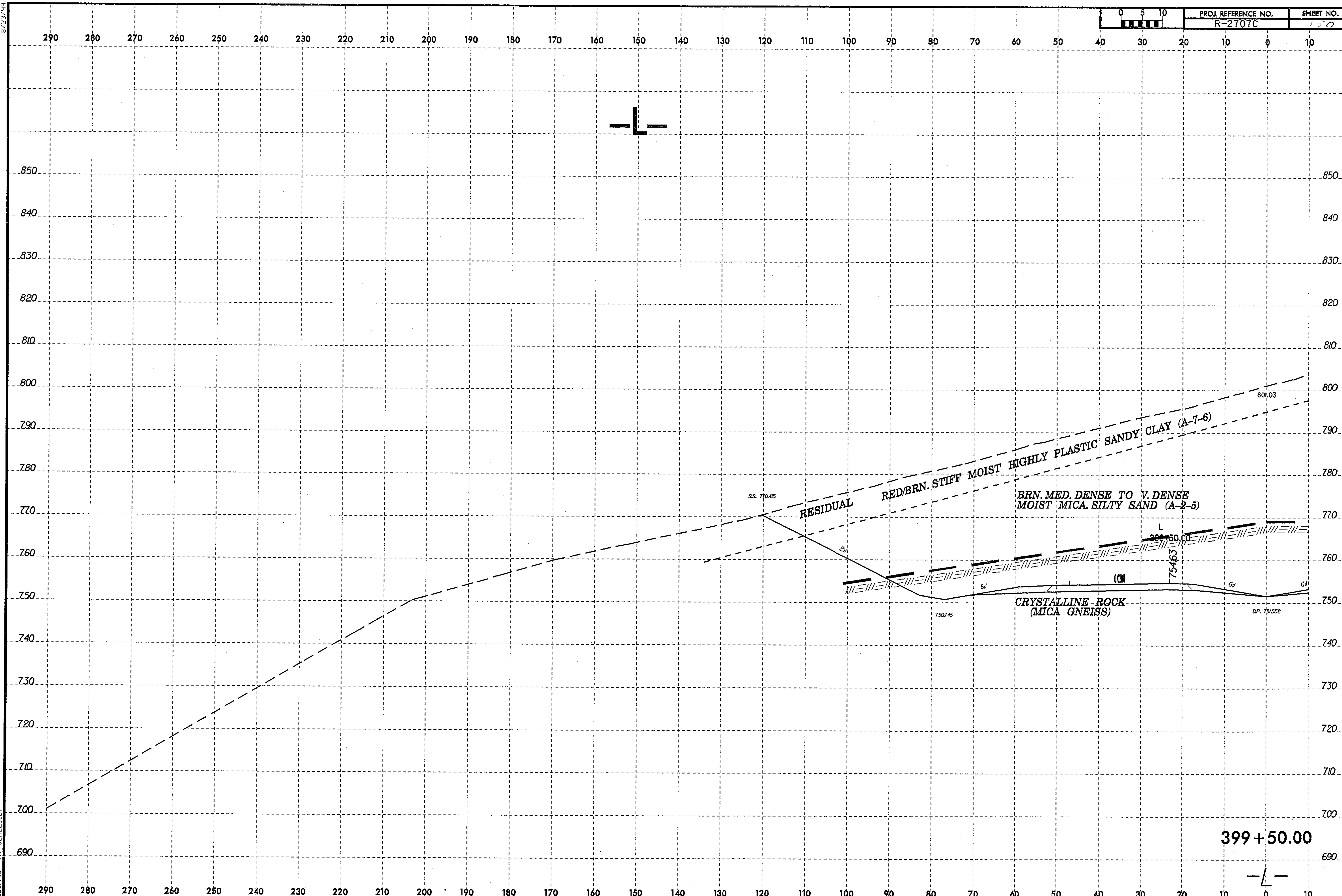
cburris AT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL
RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
BRN. MED. DENSE TO V. DENSE
MOIST MICA. SILTY SAND (A-2-5)
CRYSTALLINE ROCK
(MICA GNEISS)
399+50.00

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	15-7

399+50.0 -L-
140.0 RT

RESIDUAL

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)

801.03

BRN. MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(MICA GNEISS)

AR
DRY
12/05

SS. 836413

-L-
399+50.00

75463

D.P. 750552

750745

399+50.00

-L-

14-MAY-2008 14:26
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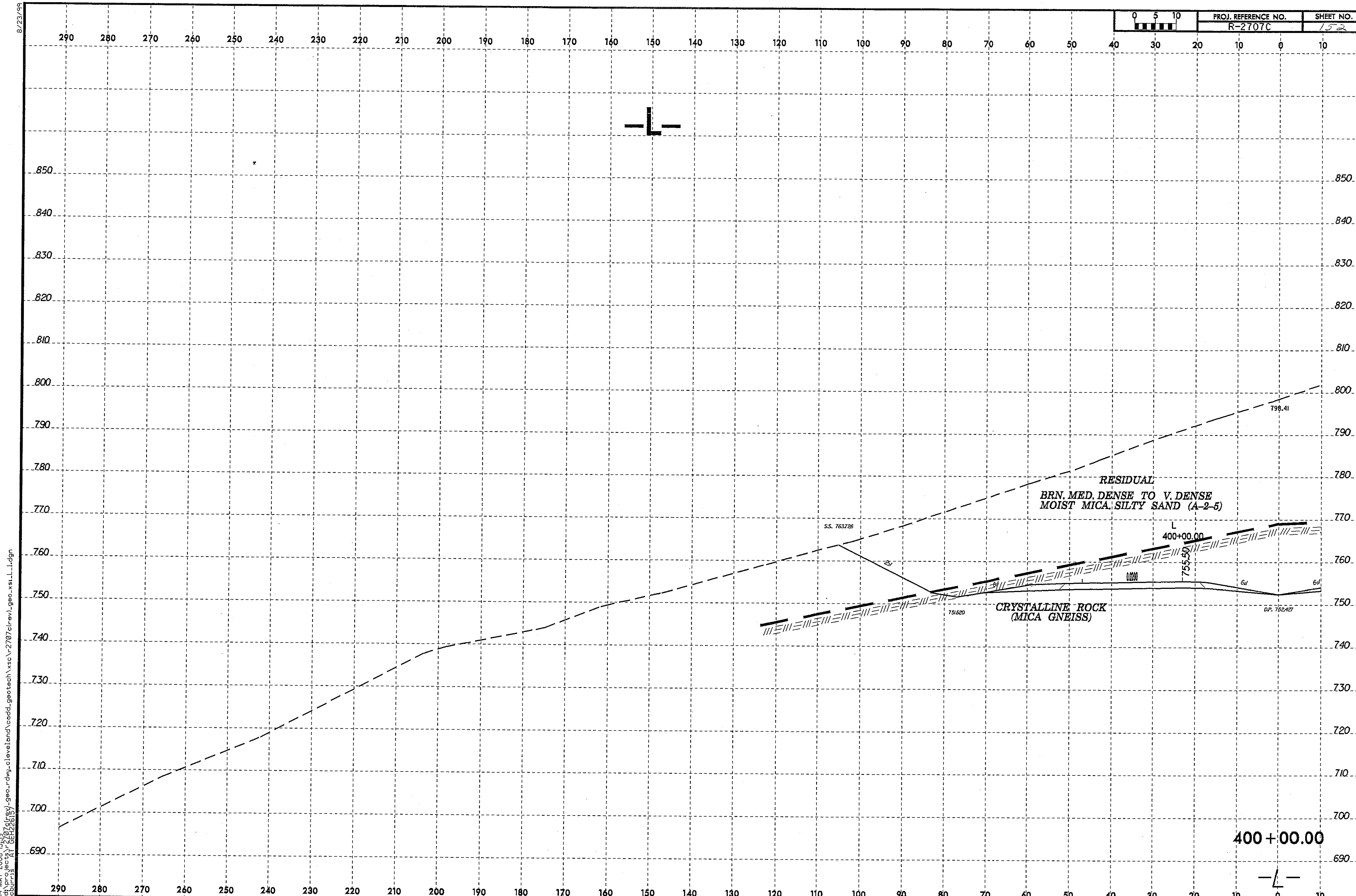
cburris
AT DEH226167

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	152



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	1 OF 3

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850 840 830 820 810 800 790 780 770 760 750 740

SS. 837.295

798.41

RESIDUAL
BRN. MED. DENSE TO V. DENSE
MOIST MICA. SILTY SAND (A-2-5)

400+00.00

CRYSTALLINE ROCK
(MICA GNEISS)

755.50

6d 6d 6d

D.P. 752.481

751.620

400+00.00

14-MAY-2008 14:27
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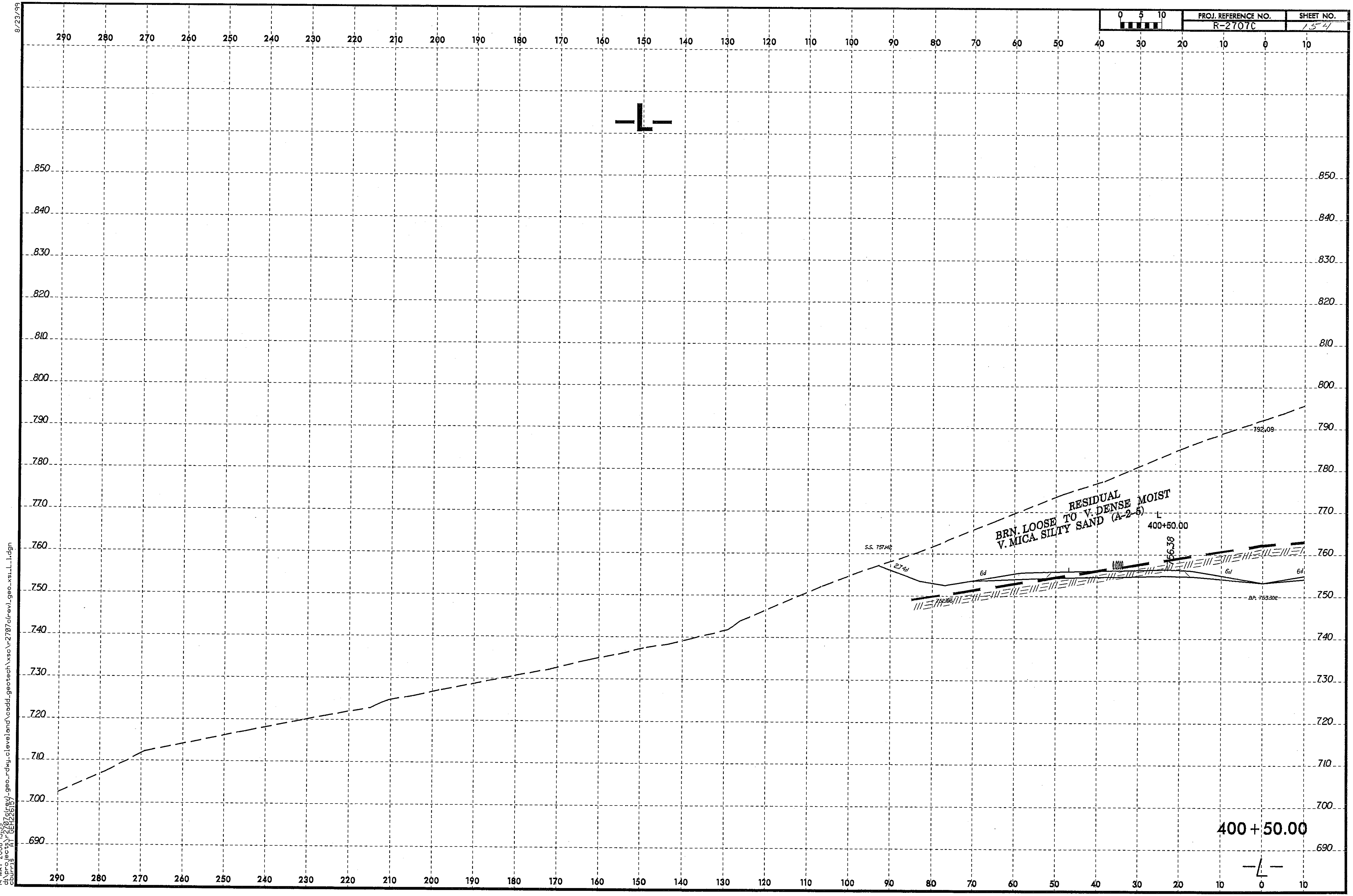
dburris



8/23/99

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cburris AT GEH226157

8/23/99

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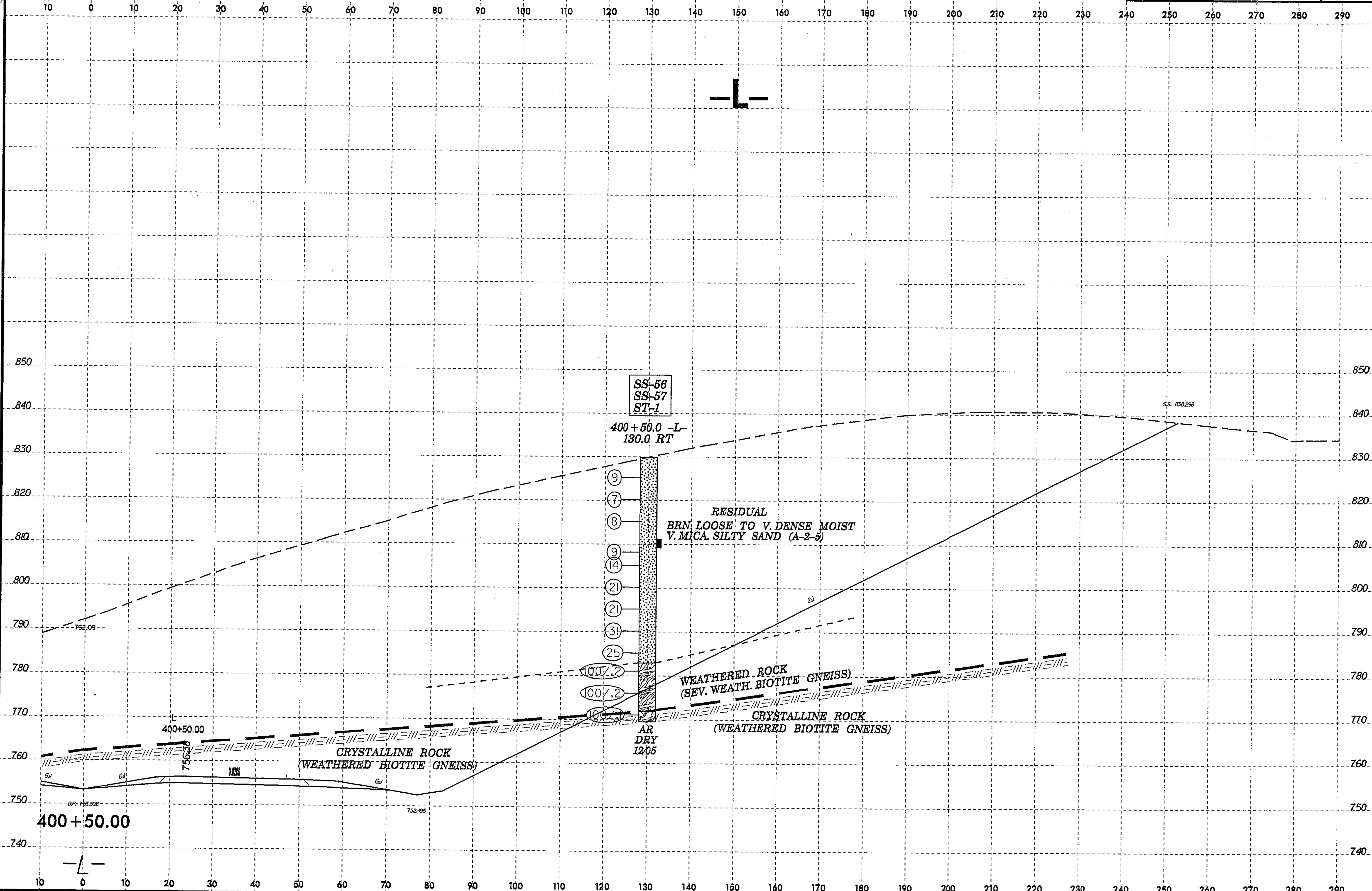
R-2707C	



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cburris AT GEH226157

8/23/99

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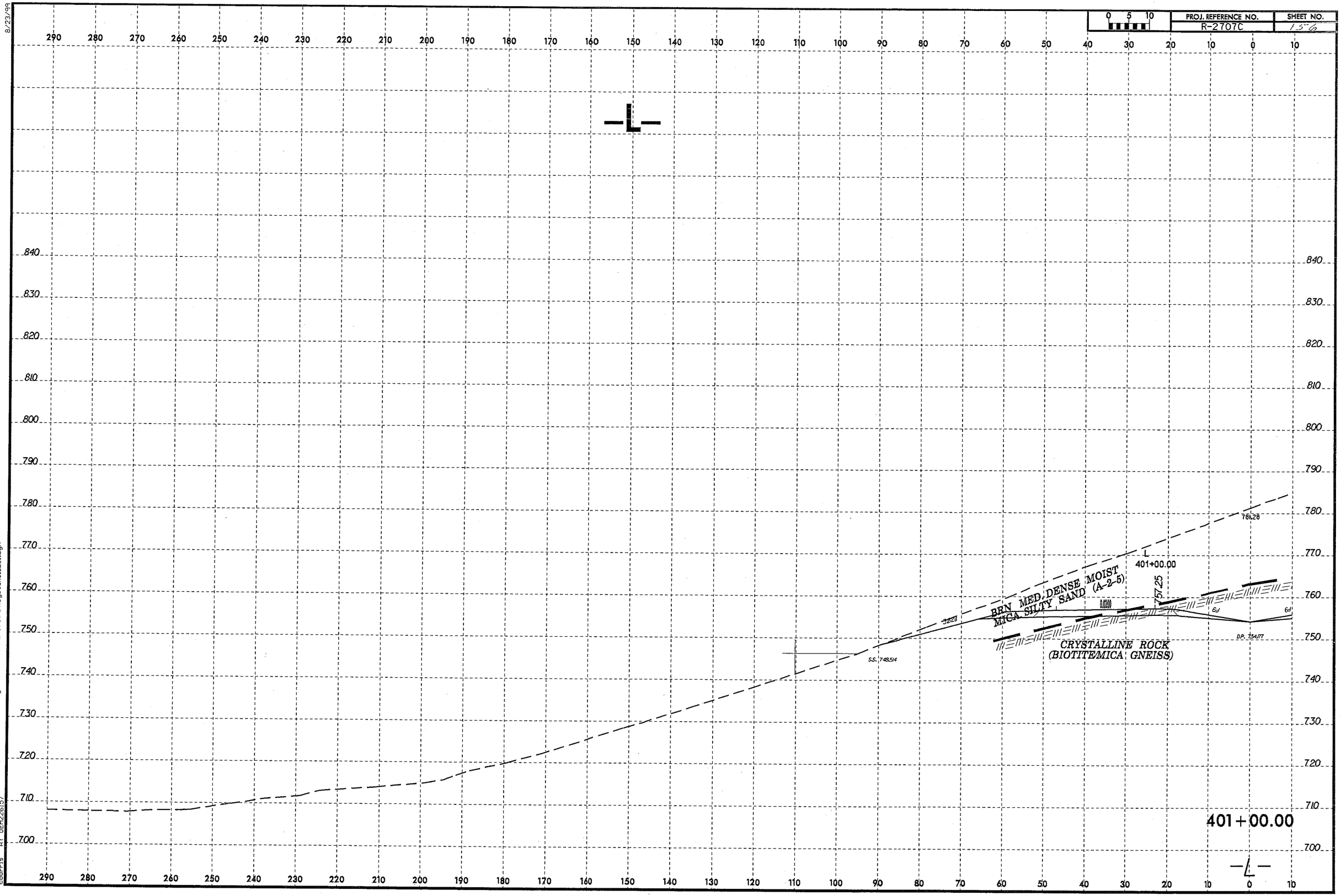
	R-2707C	15-6



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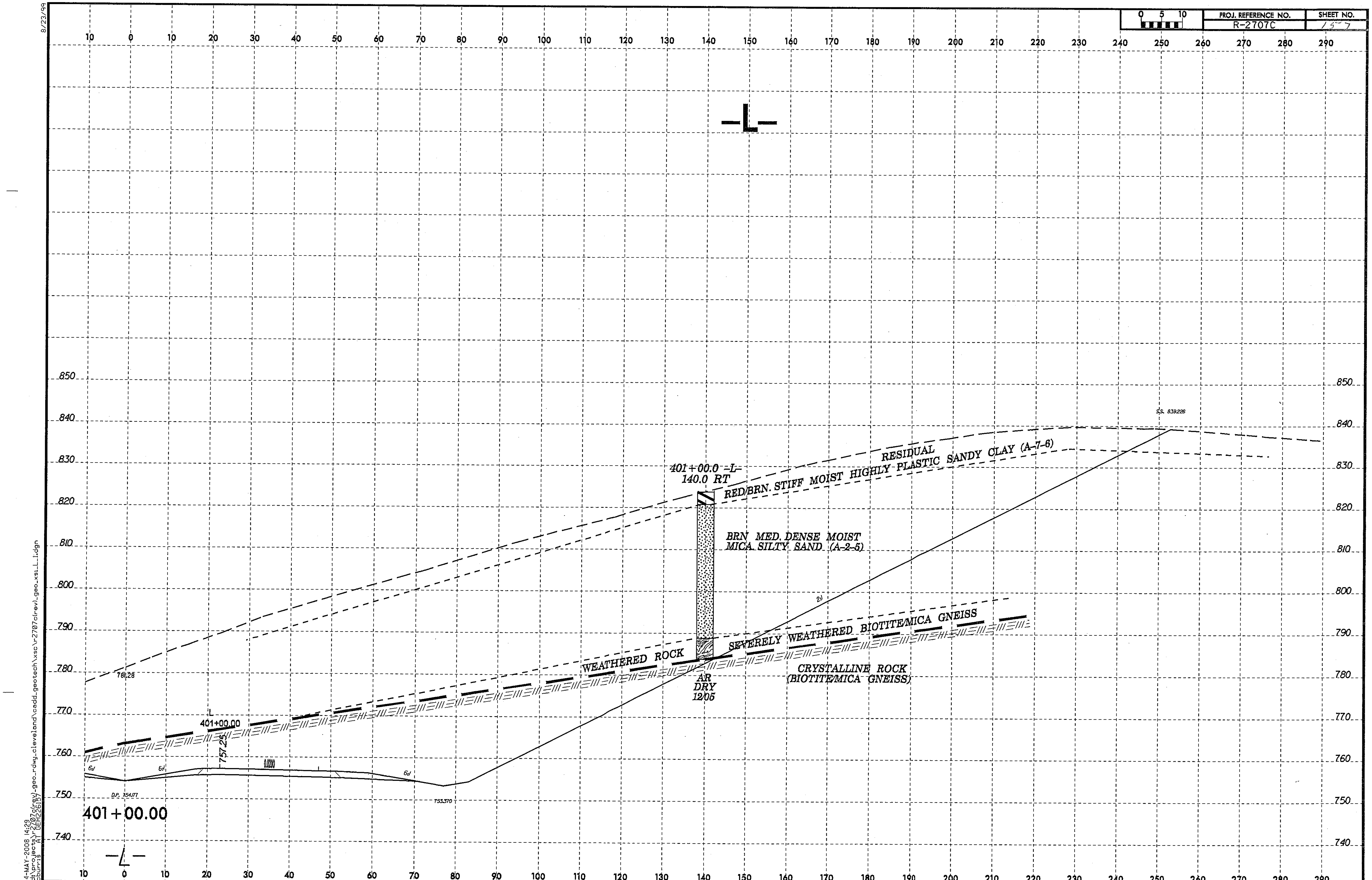

8/23/99
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
157
0 5 10
-L-
401+00.0 -L-
140.0 RT
RESIDUAL
RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-6)
BRN MED. DENSE MOIST
MICA. SILTY SAND (A-2-5)
WEATHERED ROCK
SEVERELY WEATHERED BIOTITE/MICA GNEISS
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
DRY
12/05
S.S. 839.226
L
401+00.00
757.25
781.28
753.370
401+00.00
-L-
850
840
830
820
810
800
790
780
770
760
750
740
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
14-MAY-2008 14:29
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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	159

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

840 830 820 810 800 790 780 770 760 750 740 730 720 710 700

L
401+50.00

768.23

768.13

0.030

6:1 6:1

D.P. 765.05

2:1

RESIDUAL
BRN LOOSE TO MED. DENSE
MOIST MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

S.S. 729.13

401+50.00

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

14-MAY-2008 14:01
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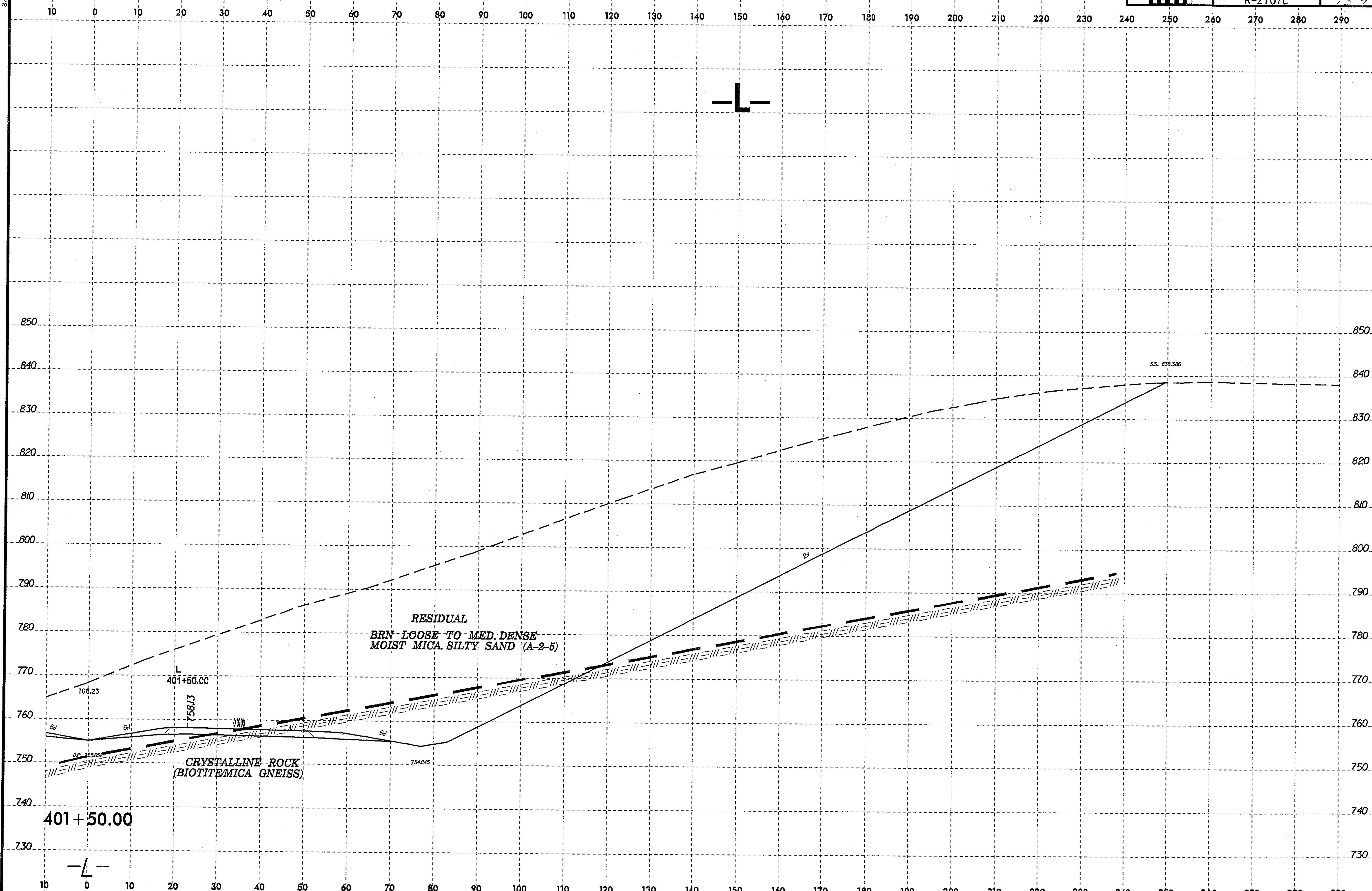
cburris AT DEH2615)

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	159



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cburris AT GEH226157

8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	

L
402+00.00

759.00

6d 6d

758.31

D.P. 755.927

2d

RESIDUAL BRN LOOSE TO MED. DENSE MOIST MICA. SILTY SAND (A-2-5)

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

S.S. 708.221

402+00.00

14-MAY-2008 14:02
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bburris

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	16

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

840 830 820 810 800 790 780 770 760 750 740 730 720 710 700

S.S. 833.04

RESIDUAL
BRN LOOSE TO MED. DENSE
MOIST MICA. SILTY SAND (A-2-5)

L
402+00.00
759.00

6d 6d 6d

758.31

D.P. 755.927

755.120

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

402+00.00

—L—

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

840 830 820 810 800 790 780 770 760 750 740 730 720 710 700

14-MAY-2008 14:31
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cburris RT GEN22615

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	162

NO ROCK

L
402+50.00

759.88

D.P. 756.802

747.20

SS-62
SS-63
402+50.0 -L-
120.0 LT

12/05

ALLUVIAL BRN/GRAY V. SOFT WET TO SAT. SANDY CLAY (A-7-5)

RESIDUAL
GRAY/WHITE LOOSE WET
SILTY SAND (A-2-5)

RESIDUAL
BRN LOOSE TO MED. DENSE
MOIST MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

402+50.00

-L-

14-MAY-2008 14:02
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cburris
AT GEH2615)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	163

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

840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680

-L-

S.S. 89.526

-24-

NO ROCK

L
402+50.00

759.88

6d 6d 6d

DP. 756.802

755.995

T47.20

RESIDUAL
BRN LOOSE TO MED. DENSE
MOIST MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

402+50.00

-L-

14-MAY-2008 14:33
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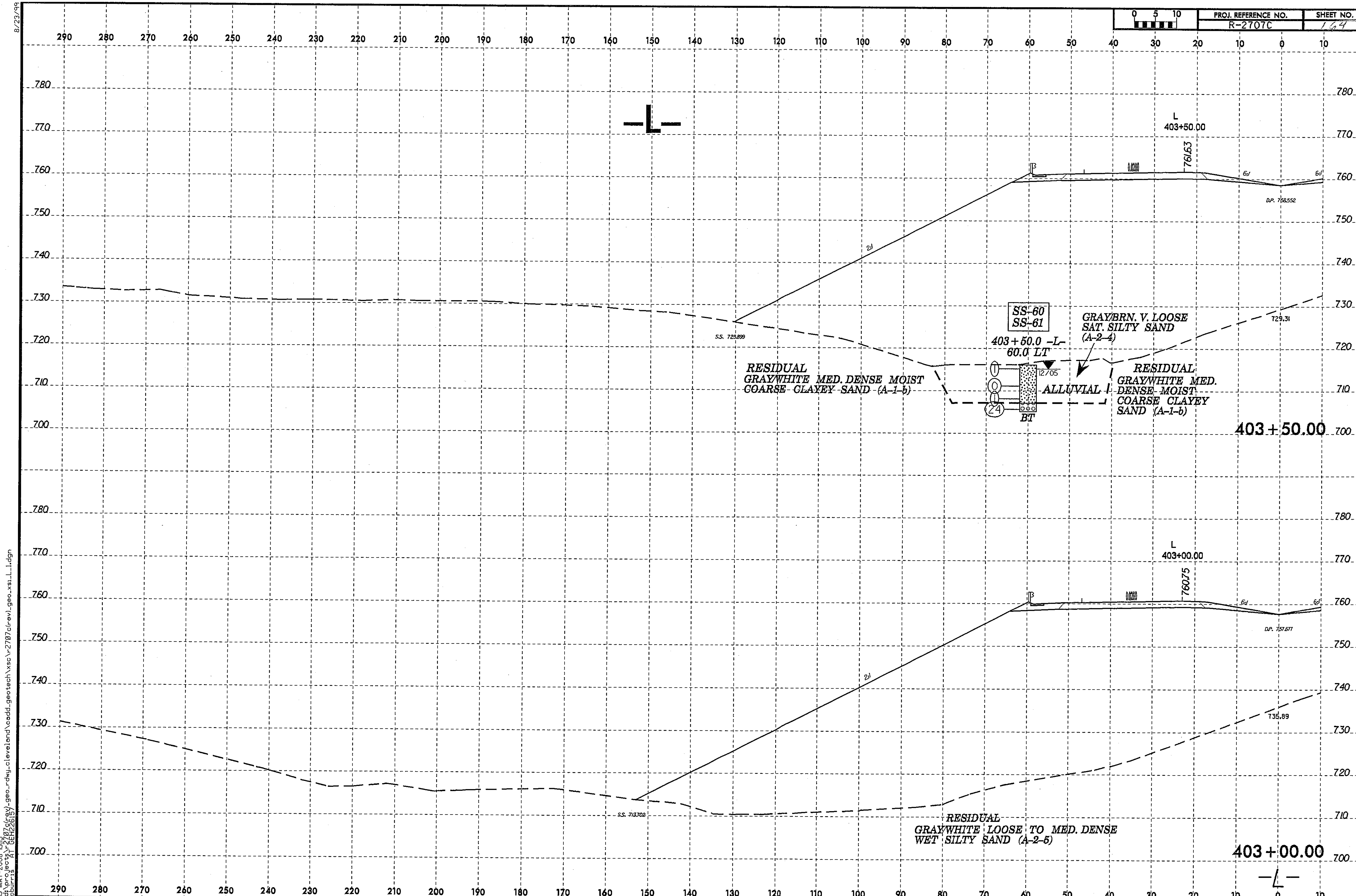
cburris AT GEN226157


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
L
403+50.00
761.63
SS-60
SS-61
403+50.0 -L-
60.0 LT
12/05
GRAY/BRN. V. LOOSE
SAT. SILTY SAND
(A-2-4)
RESIDUAL
GRAY/WHITE MED. DENSE MOIST
COARSE CLAYEY SAND (A-1-b)
ALLUVIAL
RESIDUAL
GRAY/WHITE MED.
DENSE MOIST
COARSE CLAYEY
SAND (A-1-b)
BT
729.31
403+50.00
L
403+00.00
760.75
735.89
RESIDUAL
GRAY/WHITE LOOSE TO MED. DENSE
WET SILTY SAND (A-2-5)
403+00.00
-L-
15-MAY-2008 15:13
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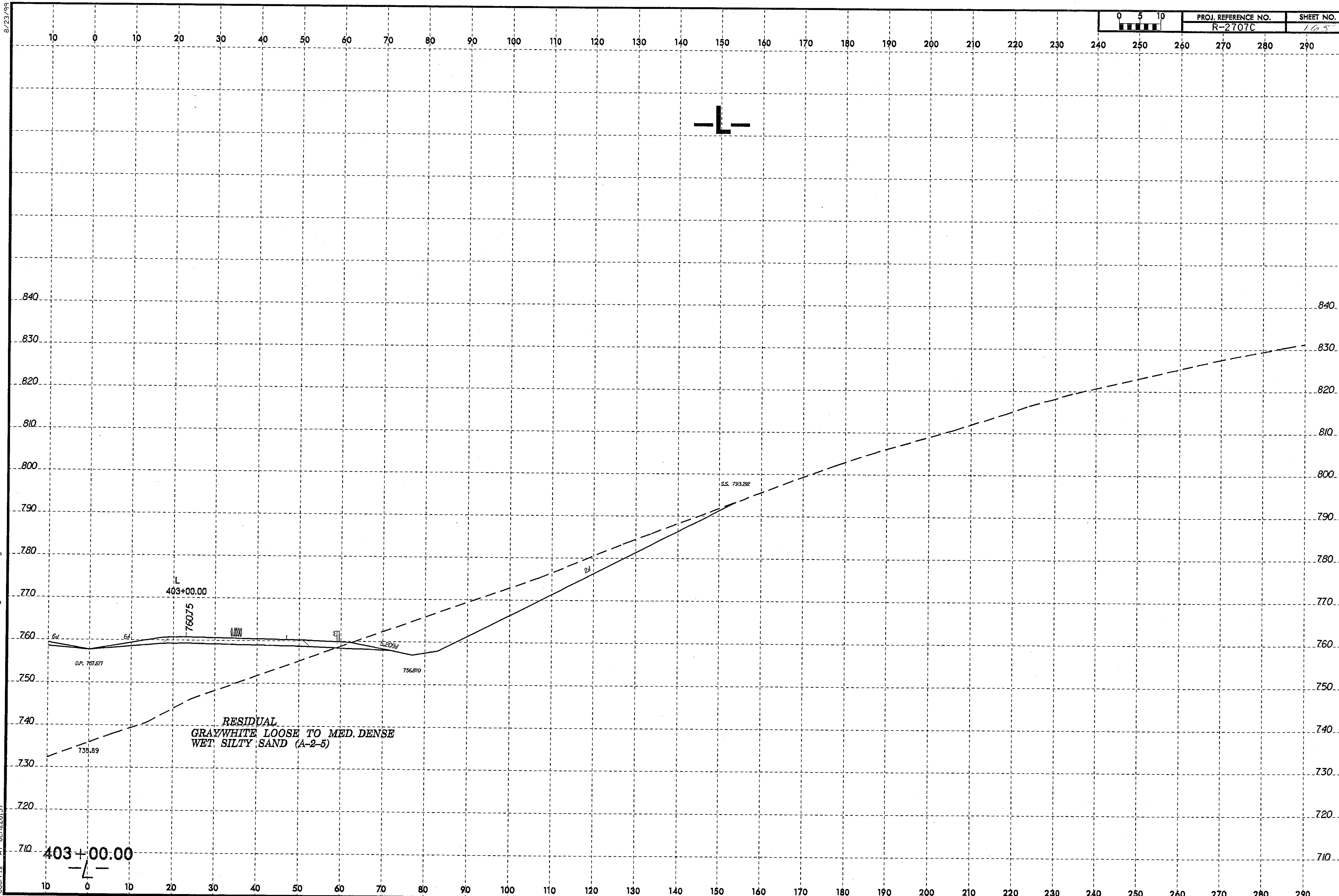
cburris AT GEH22615



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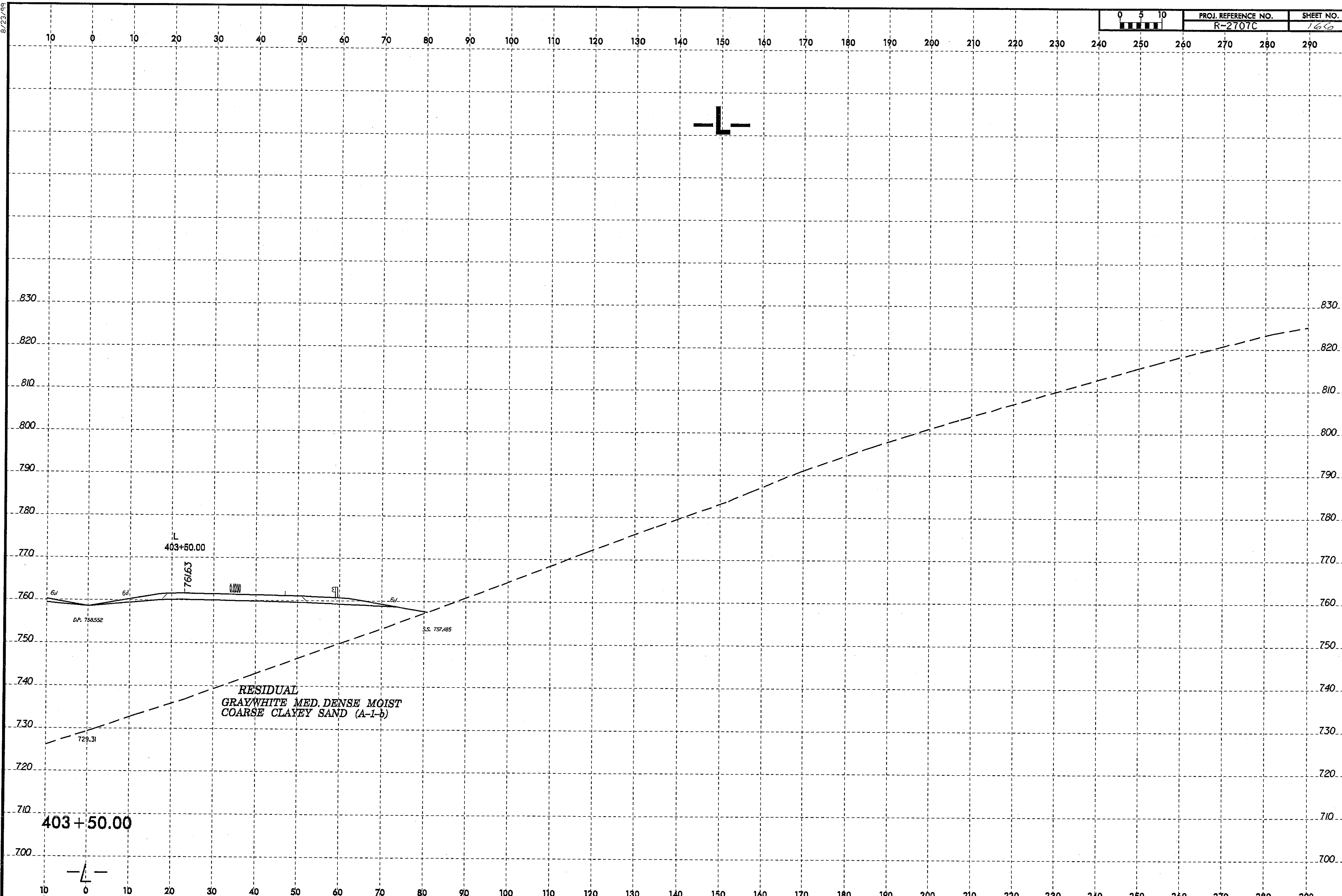
cburris AT GEH226157



8/23/99
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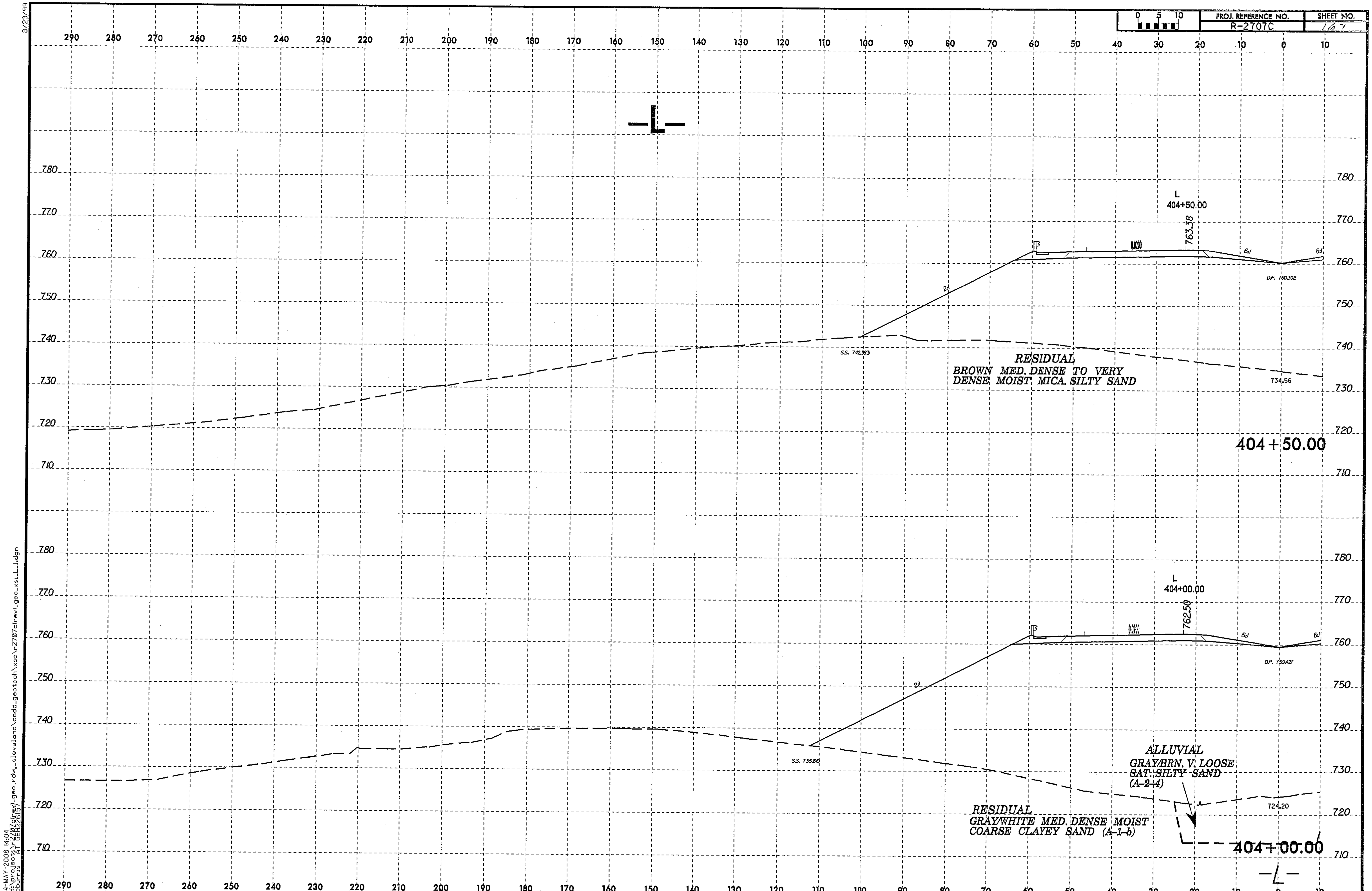
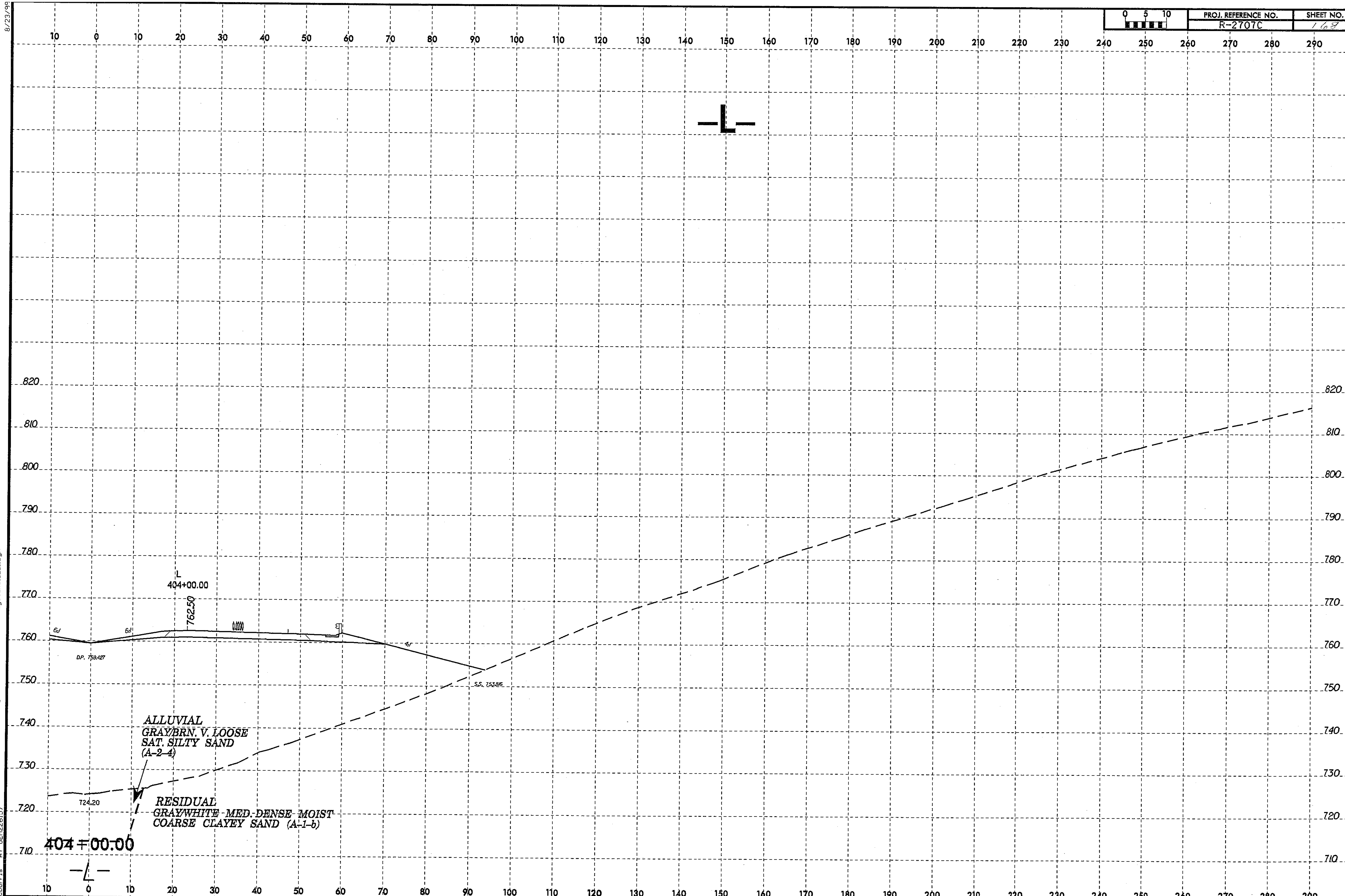
cburris AT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
167
-L-
L
404+50.00
763.38
S.S. 742.383
D.P. 760.302
RESIDUAL
BROWN MED. DENSE TO VERY DENSE MOIST MICA. SILTY SAND
734.56
404+50.00
L
404+00.00
762.50
D.P. 759.427
S.S. 735.86
ALLUVIAL
GRAY/BRN. V. LOOSE SAT. SILTY SAND (A-2-4)
RESIDUAL
GRAY/WHITE MED. DENSE MOIST COARSE CLAYEY SAND (A-1-b)
724.20
404+00.00
-L-
14-MAY-2008 14:04
cburris AT GEH226157
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	168



8/23/99

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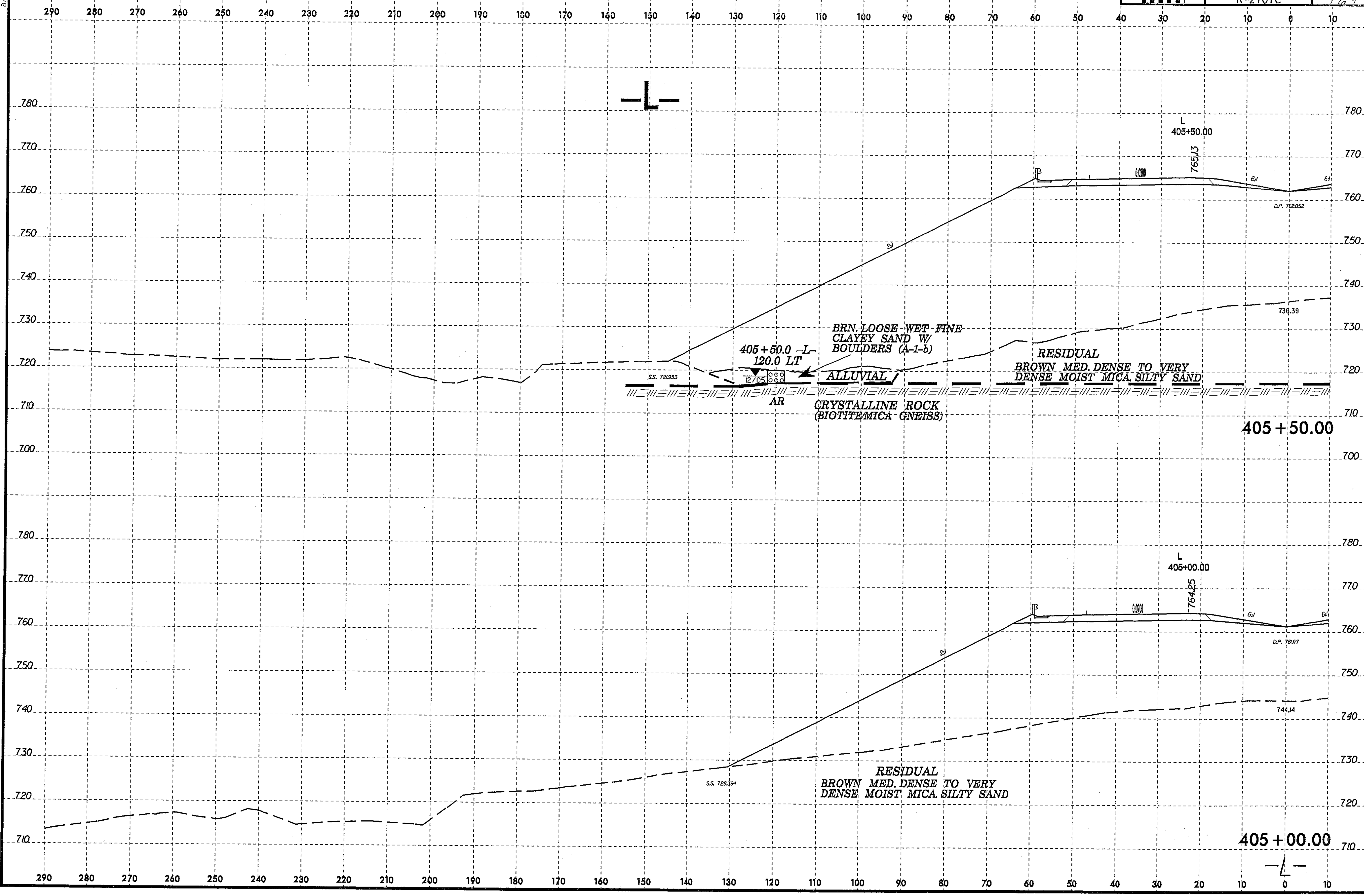
cburris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	169



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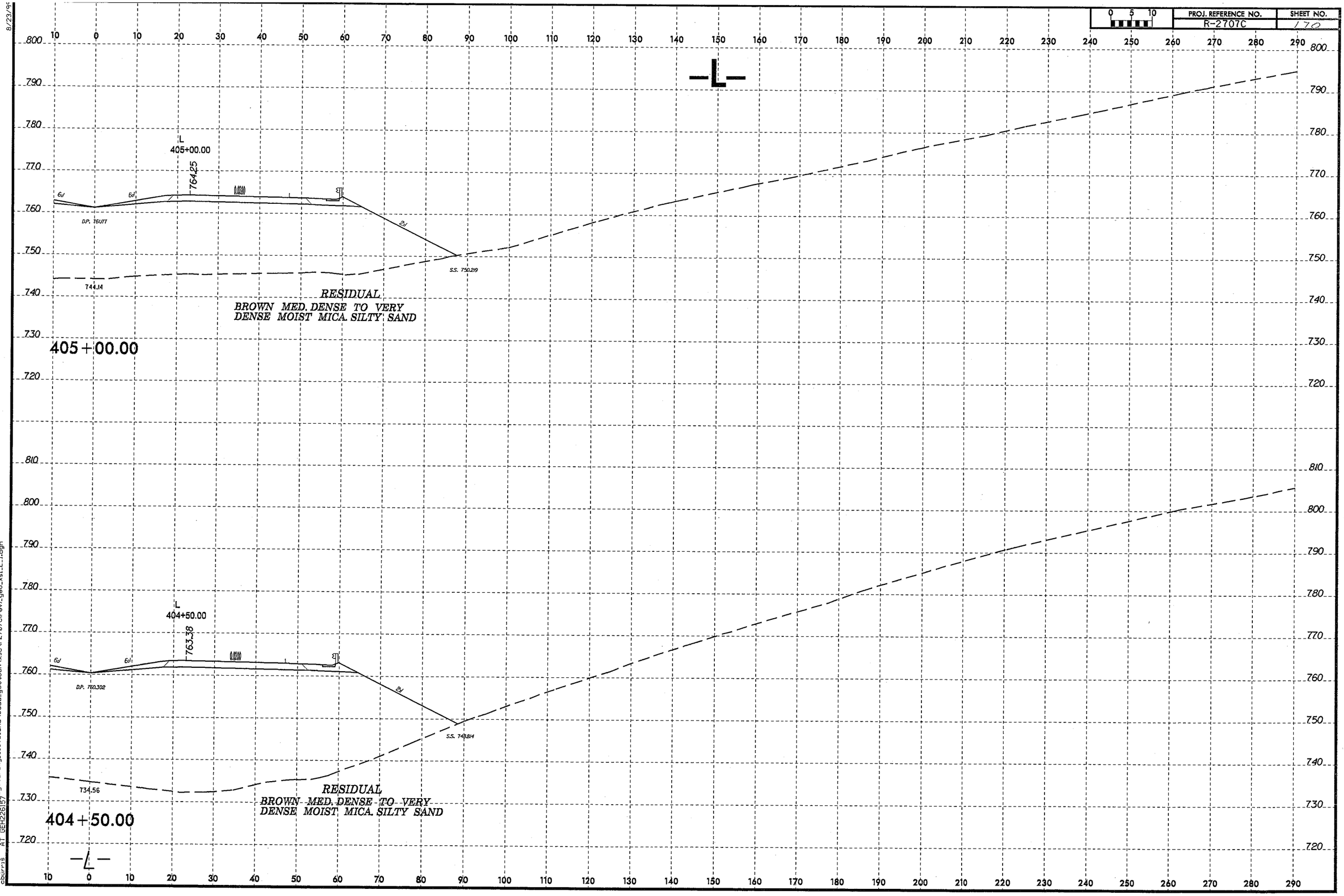
cburris AT OEH226157

8/23/99

8/23/95

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	170



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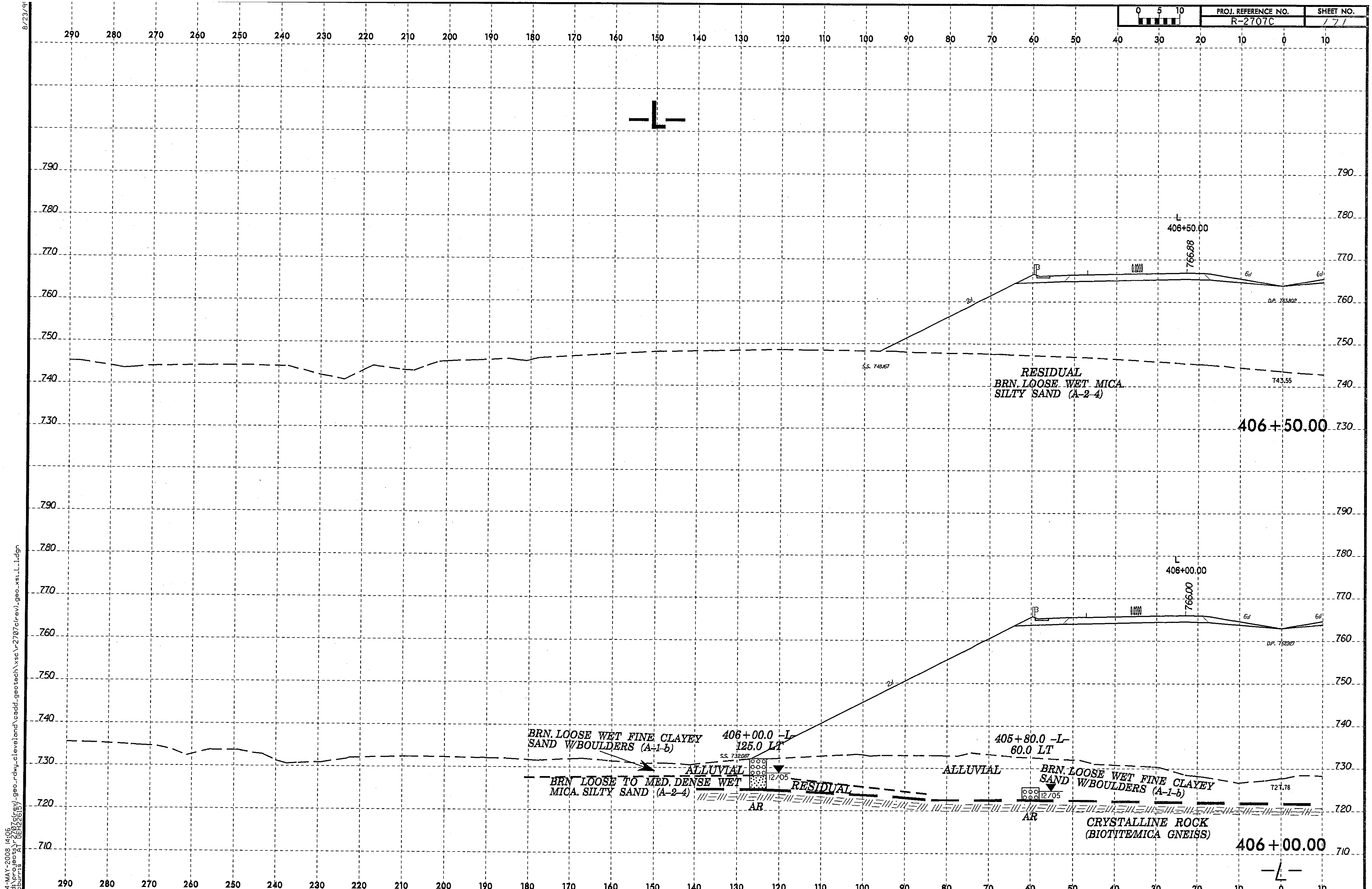
courris AI DEI22815


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
171
-L-
406+50.00
766.88
D.P. 763.802
S.S. 748.167
743.55
RESIDUAL
BRN. LOOSE WET MICA. SILTY SAND (A-2-4)
406+50.00
406+00.00
766.00
D.P. 762.921
BRN. LOOSE WET FINE CLAYEY SAND W/BOULDERS (A-1-b)
406+00.0 -L- 125.0 LT
S.S. 732.087
12/05
ALLUVIAL
RESIDUAL
AR
BRN. LOOSE TO MED. DENSE WET MICA. SILTY SAND (A-2-4)
405+80.0 -L- 60.0 LT
ALLUVIAL
BRN. LOOSE WET FINE CLAYEY SAND W/BOULDERS (A-1-b)
12/05
AR
721.78
CRYSTALLINE ROCK
(BIOTITE MICA GNEISS)
406+00.00
-L-
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cburris AT GEH226157

8/23/95

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	172

L
406+00.00
766.00

6:1 6:1 0.020 ST 2:1

DF. 762.527

406+00.00

T27.78
ALLUVIAL

BRN. LOOSE WET FINE CLAYEY SAND W/BOULDERS (A-1-b)

RESIDUAL
BROWN MED. DENSE TO V. DENSE MOIST MICA. SILTY SAND

S.S. 736.541

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

L
405+50.00
765.13

6:1 6:1 0.020 ST 2:1

DF. 762.052

S.S. 746.051

736.39

RESIDUAL
BROWN MED. DENSE TO VERY DENSE MOIST MICA. SILTY SAND

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

405+50.00

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

790 780 770 760 750 740 730 720 710 700

15-MAY-2008 15:28
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bburris AT GEH2815)

8/23/99

PROJ. REFERENCE NO. R-2707C

SHEET NO. 173

406+50.00 -L-
766.88
6:1
6:1
2:1
D.P. 763802
743.55
SS-64
SS-65
SS-66
ALLUVIAL
BRN. SOFT WET
SANDY SILT (A-4)
406+50.0 -L-
110.0 RT
SS. 731688
12/05
ALLUVIAL
BRN. MED. DENSE MOIST
FINE SILTY SAND (A-1-b)
RESIDUAL
BRN. LOOSE WET MICA. SILTY SAND (A-2-4)
RESIDUAL
BRN. LOOSE WET MICA. SILTY SAND (A-2-4)
AR
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
406+50.00 -L-

14-MAY-2008 14:40
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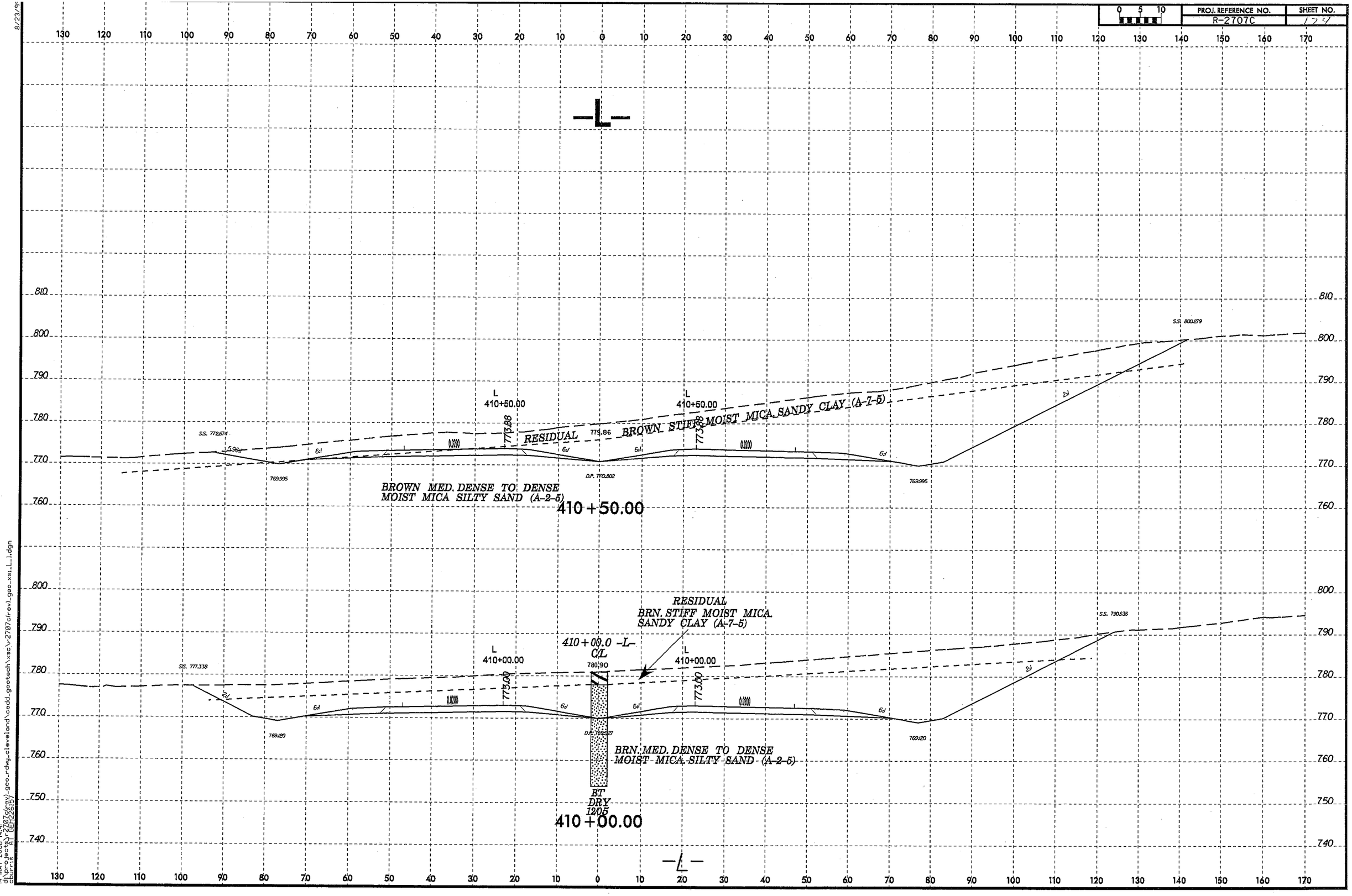
dburris
PLT: DEM26015

8/23/95

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	17



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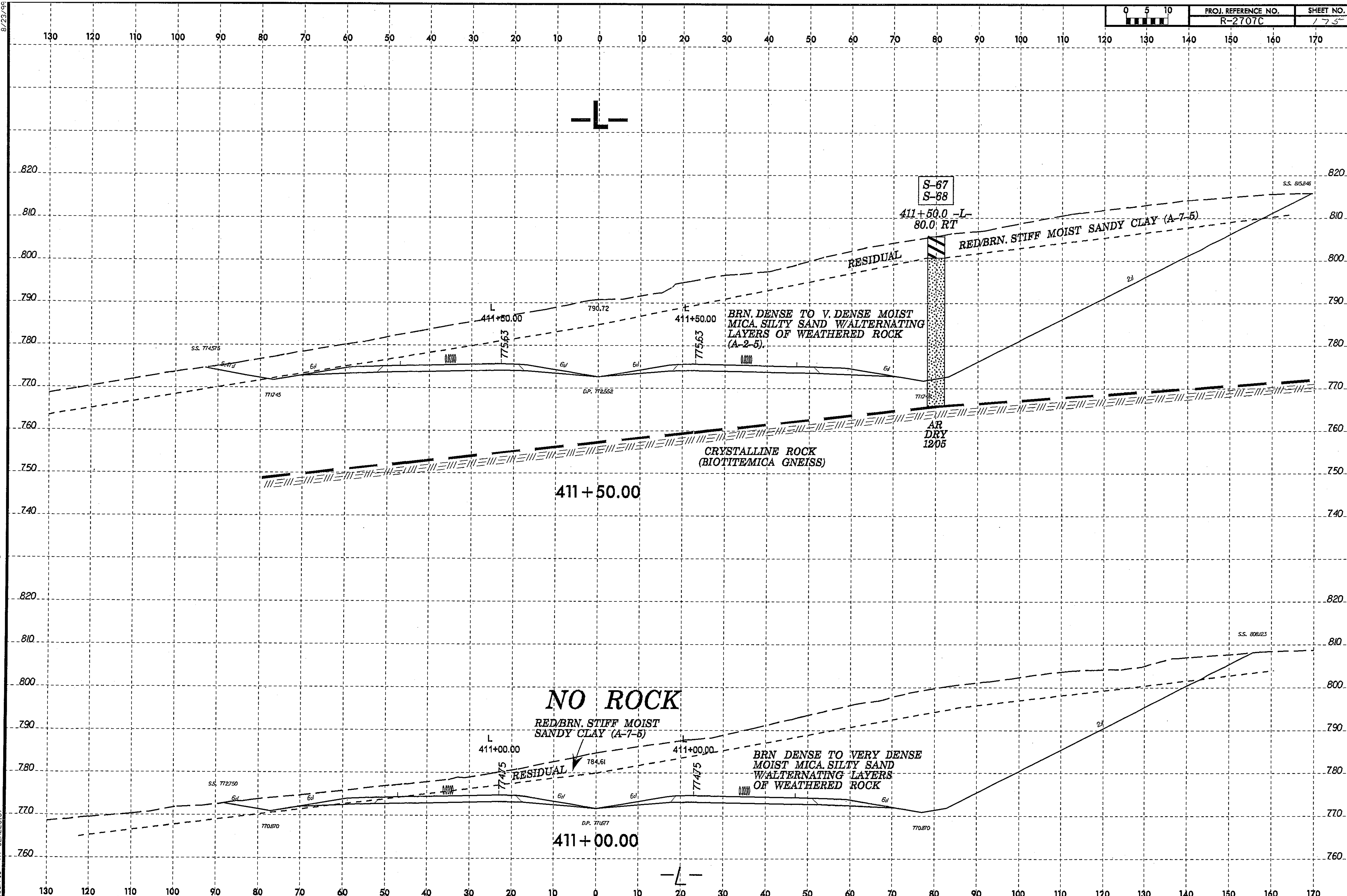
Bourne, Al (GEH26157)



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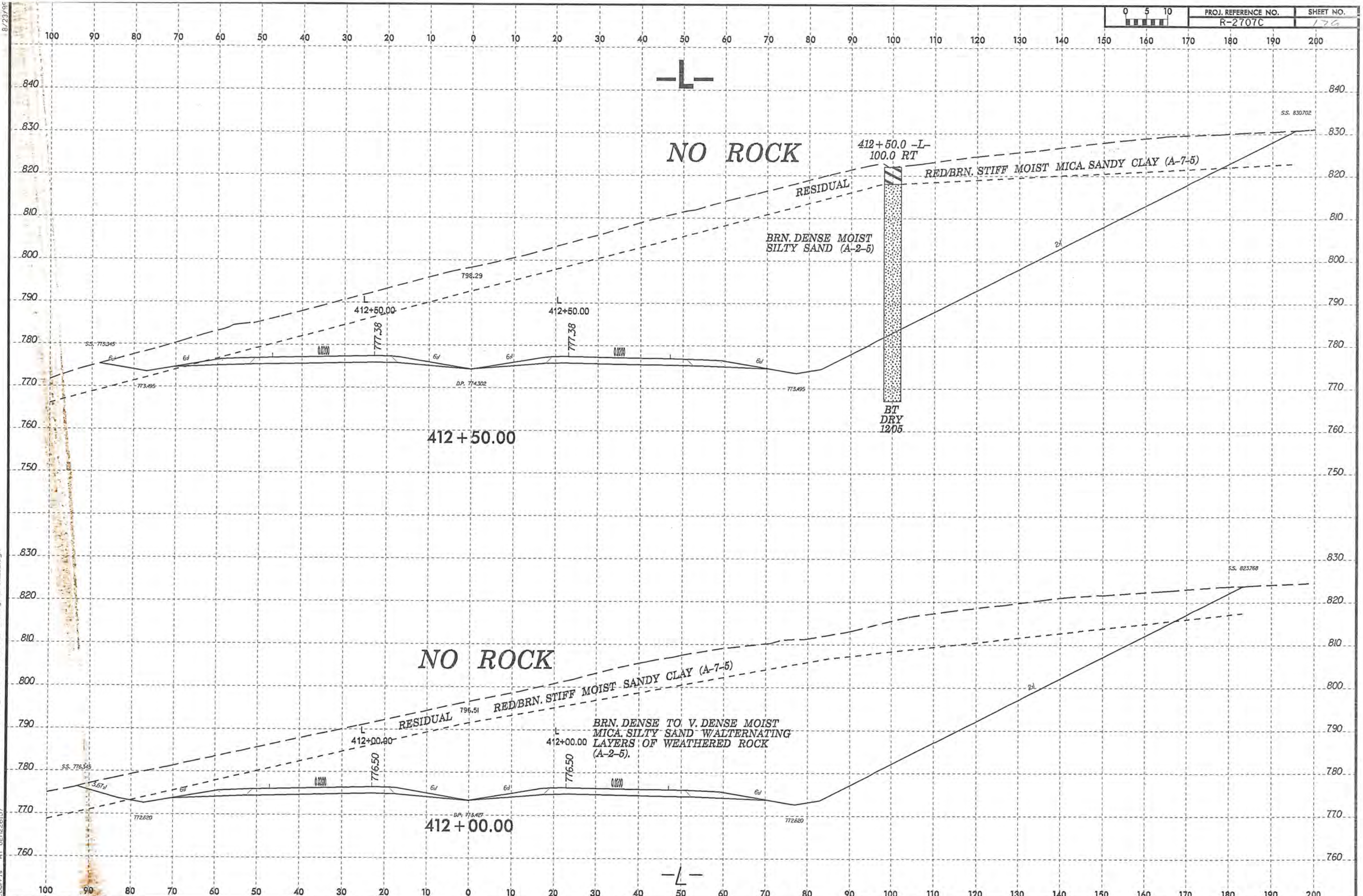
cburris AT GEH226157
8/23/99


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
NO ROCK
412+50.0 -L-
100.0 RT
RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)
RESIDUAL
BRN. DENSE MOIST SILTY SAND (A-2-5)
BT
DRY
12/05
412+50.00
NO ROCK
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
BRN. DENSE TO V. DENSE MOIST MICA. SILTY SAND W/ALTERNATING LAYERS OF WEATHERED ROCK (A-2-5).
412+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	1 2 2

RESIDUAL
RED/BRN. STIFF MOIST
MICA SANDY CLAY (A-7-5)

L
413+00.00

795.51

778.25

6:1

6:1

3:1

BRN. MED. DENSE MOIST
MICA SILTY SAND (A-2-5)

D.P. 775.171

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

S.S. 745.264

413+00.00

15-MAY-2008 08:45
d:\projects\2707\drawings\geo_rdwy_cleveland\cadd_geotech\xsc\r-2707c(rev)_geo_xs1_1_2.dgn
cburris

8/23/9

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	178

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

850 840 830 820 810 800 790 780 770 760

SS-69 SS-70
MS-70 ST-2
413+00.0 -L-
120.0 RT

S.S. 837.53

RESIDUAL RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

9
11
13
22
16
16
100

BRN. MED. DENSE MOIST
MICA. SILTY SAND (A-2-5)

12.705

(SEV. WEATH. BIOTITE GNEISS)

WEATHERED ROCK

CRYSTALLINE ROCK
(BIOTITE MICA GNEISS)

795.51

413+00.00

778.25

6d 6d 6d

D.P. 775.77

774.370

413+00.00

27-MAY-2008 15:34
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dburris
CELL26(15)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	179

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

850 840 830 820 810 800 790 780 770 760 750 740 730

-L-

NO ROCK

L
413+50.00

779.13

784.48

6d

6d

DP. 776.052

24"

S.S. 746.907

RESIDUAL

RED/BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE MICA. SILTY SAND (A-2-5)

413+50.00

-L-

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

16-MAY-2008 08:39
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Bourne, Al DEHAZEN57

8/23/94

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	

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

850 840 830 820 810 800 790 780 770 760 750

NO ROCK

413+50.00 -L-
140.0 RT

RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

RESIDUAL

BRN. MED. DENSE TO DENSE
MICA. SILTY SAND (A-2-5)

AR
DRY
12/05

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

S.S. 841009

L
413+50.00

784.48

779.13

DP. 776052

775.245

6d

413+50.00

-L-

29-MAY-2008 09:23
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dburris AT GEH226157

8/23/99

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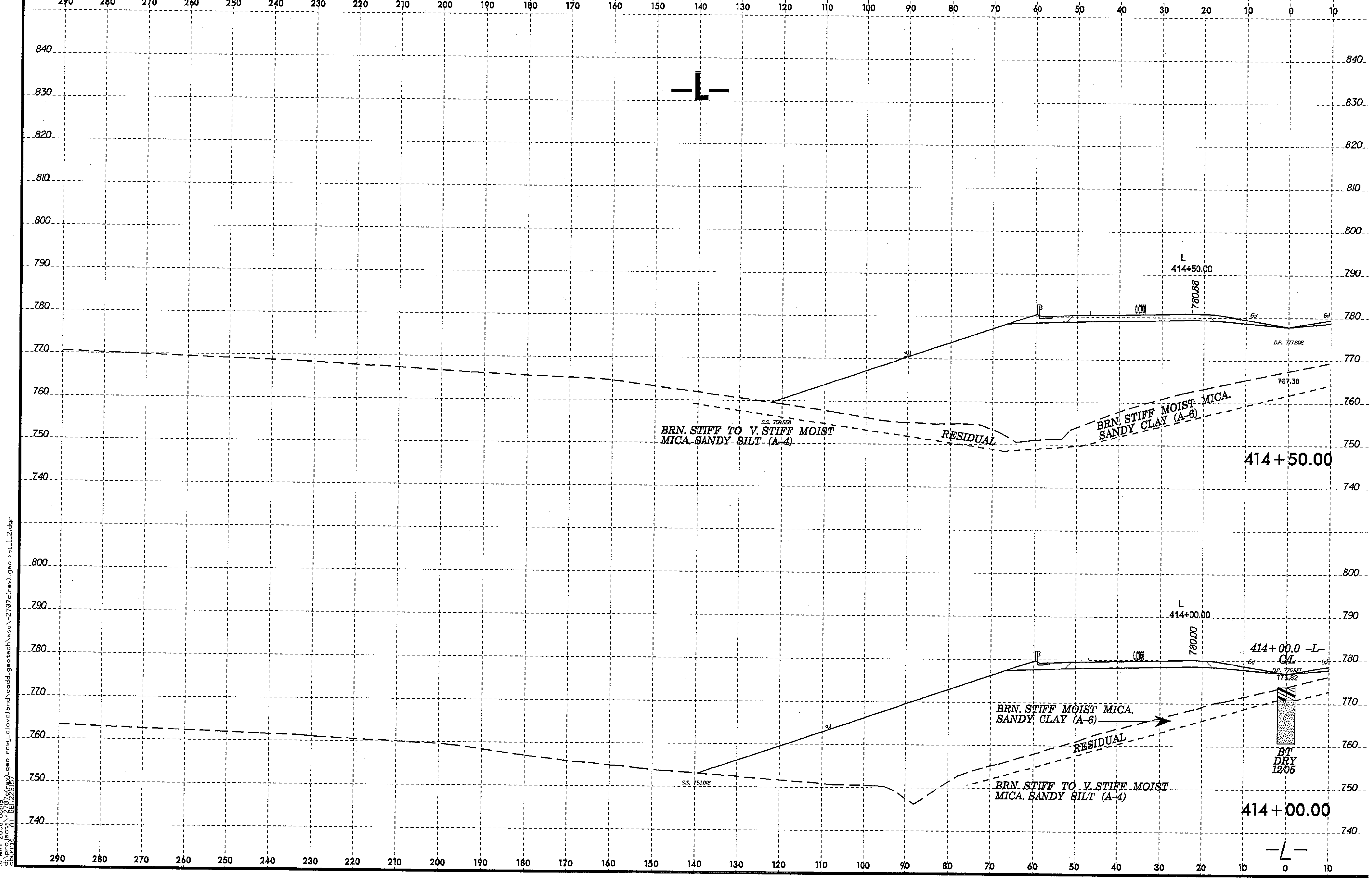
R-2707C	181



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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	

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

850 840 830 820 810 800 790 780 770 760 750 740

S.S. 841236

RESIDUAL
BRN. STIFF MOIST MICA.
SANDY CLAY (A-6)

414+00.00 -L-
C/L

6d 6d 6d

DF. 776927
775.82

780.00

414+00.00

776820

BRN. STIFF TO V. STIFF MOIST
MICA. SANDY SILT (A-4)

BT
DRY
12/05

414+00.00

-L-

15-MAY-2008 09:02
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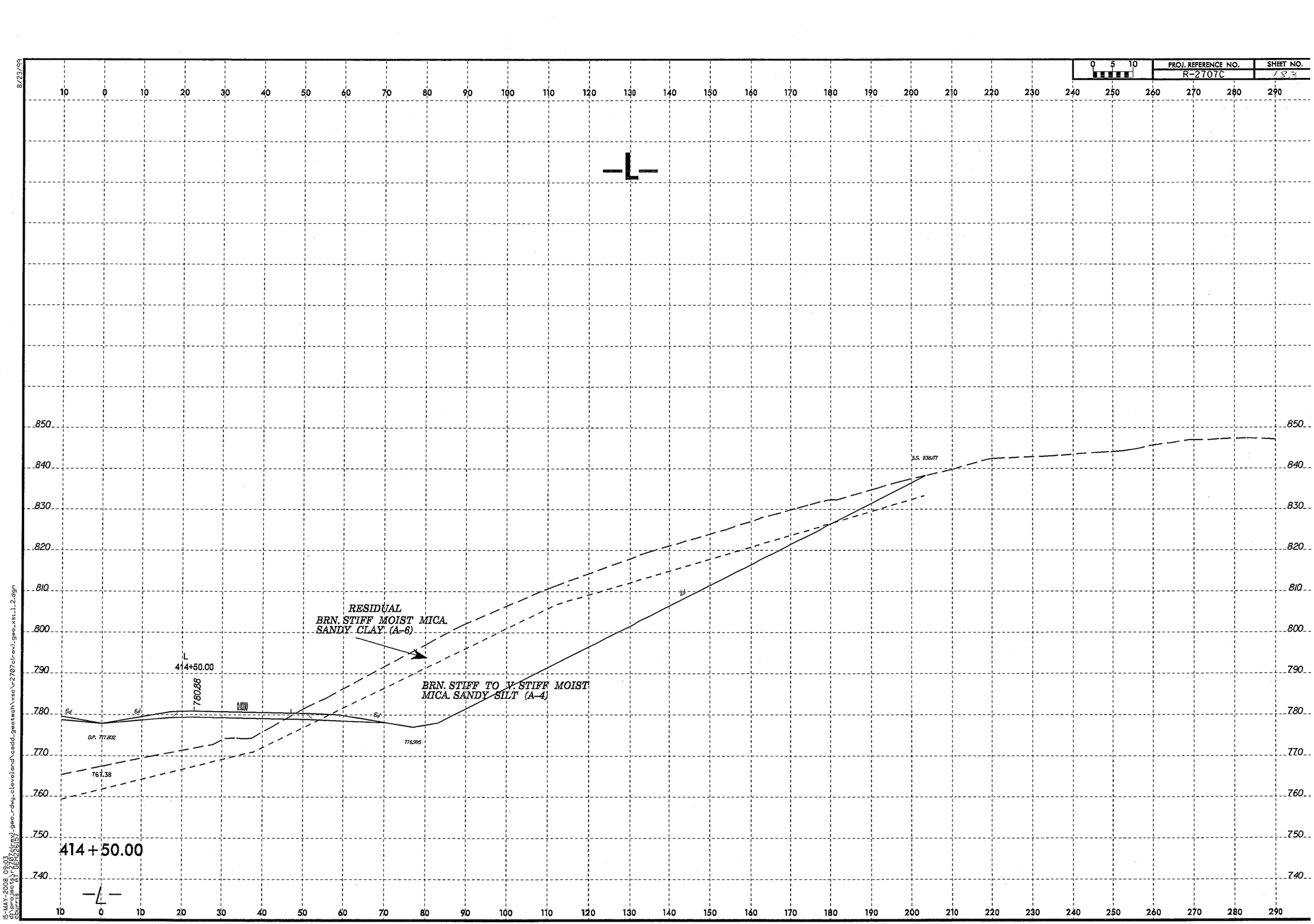
dburris_geo

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	183

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

850 840 830 820 810 800 790 780 770 760 750 740



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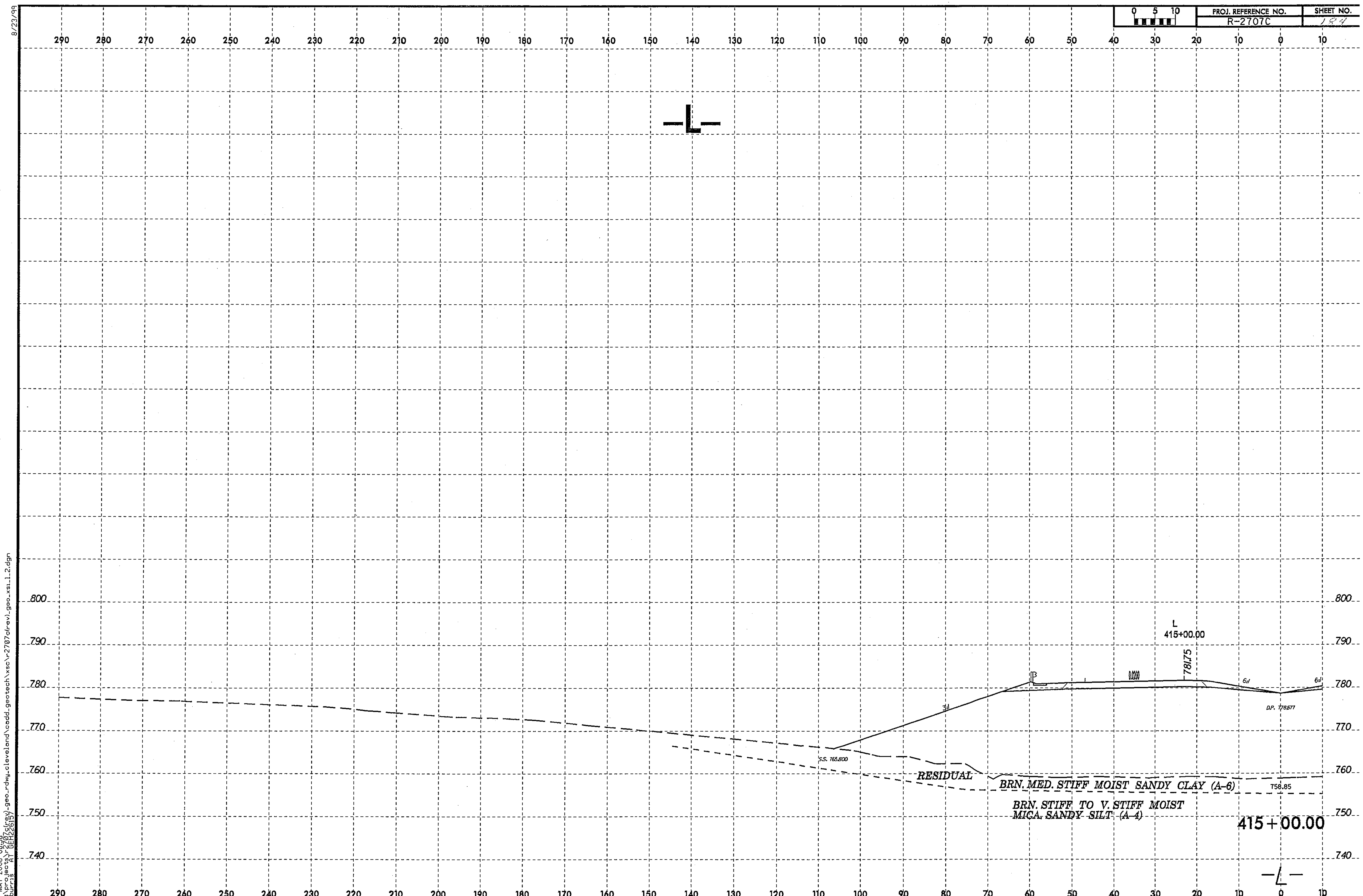
dburris



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
L
415+00.00
781.75
S.S. 765.800
D.P. 778.577
RESIDUAL
BRN. MED. STIFF MOIST SANDY CLAY (A-6)
758.85
BRN. STIFF TO V. STIFF MOIST
MICA. SANDY SILT (A-4)
415+00.00
-L-
8/23/99
15-MAY-2008 08:58

8/23/99

0 5 10

PROJ. REFERENCE NO. R-2707C

SHEET NO. 195

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

850 840 830 820 810 800 790 780 770 760 750 740

-L-

L
415+00.00

78.75

6d 6d 6d

DP. 778.67

SS-71
SS-72

415+00.0 -L-
55.0 RT

RESIDUAL

T77.810

BRN. MED. STIFF MOIST
SANDY CLAY (A-6)

2d

S.S. 812.440

8
10

BRN. STIFF TO V. STIFF MOIST
MICA. SANDY SILT (A-4)

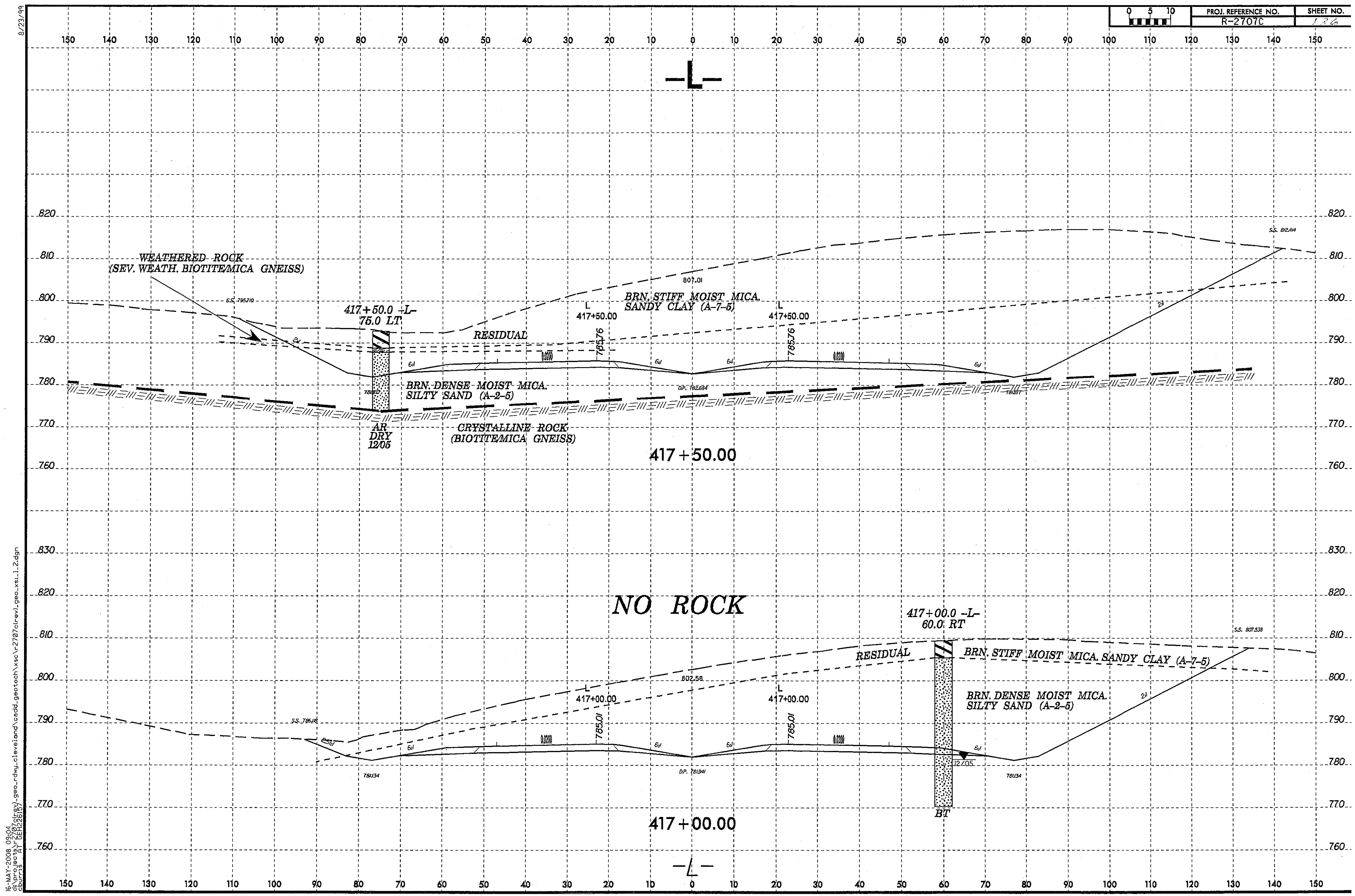
758.85

BT
DRY
12/05

415+00.00

-L-

15-MAY-2008 09:05
dlyons
d:\projects\2707c\roy_geo_rdwy_cleveland\roddl_geotech\xsc\r-2707croy1_geo_xs_l_2.dgn



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
WEATHERED ROCK
(SEV. WEATH. BIOTITE/MICA GNEISS)
417+50.0 -L-
75.0 LT
RESIDUAL
BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)
BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)
AR
DRY
12/05
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
417+50.00
NO ROCK
417+00.0 -L-
60.0 RT
RESIDUAL
BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)
BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)
12/05
BT
417+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	127

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

830 820 810 800 790 780 770

—L—

S.S. 806.877

418+50.0 —L—
80.0 LT

611.29

BRN. STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-5)

RESIDUAL

2:1

WEATHERED ROCK

(SEV. WEATH. BIOTITEMICA GNEISS)

418+50.00

L

418+50.00

L

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

AR
DRY
02/06

783.274

6:1

0.020

0.010

783.475

D.P. 794.080

418+50.00

S.S. 818.105

S.S. 802.440

418+00.0 —L—
80.0 LT

809.72

WEATHERED ROCK
(SEV. WEATHERED
BIOTITEMICA GNEISS)

RESIDUAL

02/06

BRN. STIFF MOIST MICA HIGHLY
PLASTIC SANDY CLAY (A-7-5)

418+00.00

L

418+00.00

L

786.47

786.47

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

782.590

D.P. 783.397

418+00.00

S.S. 815.476

—L—

16-MAY-2008 09:06
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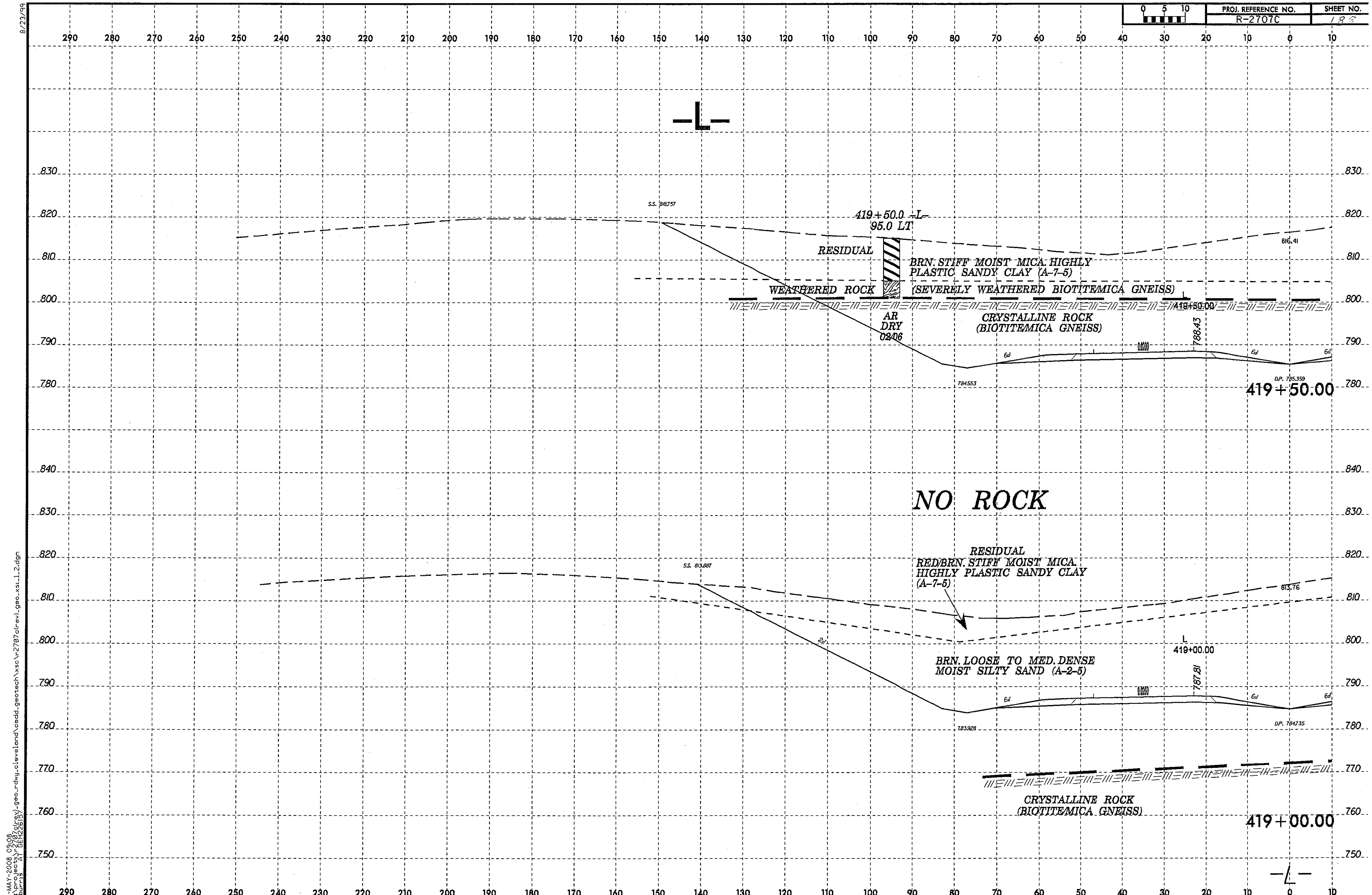
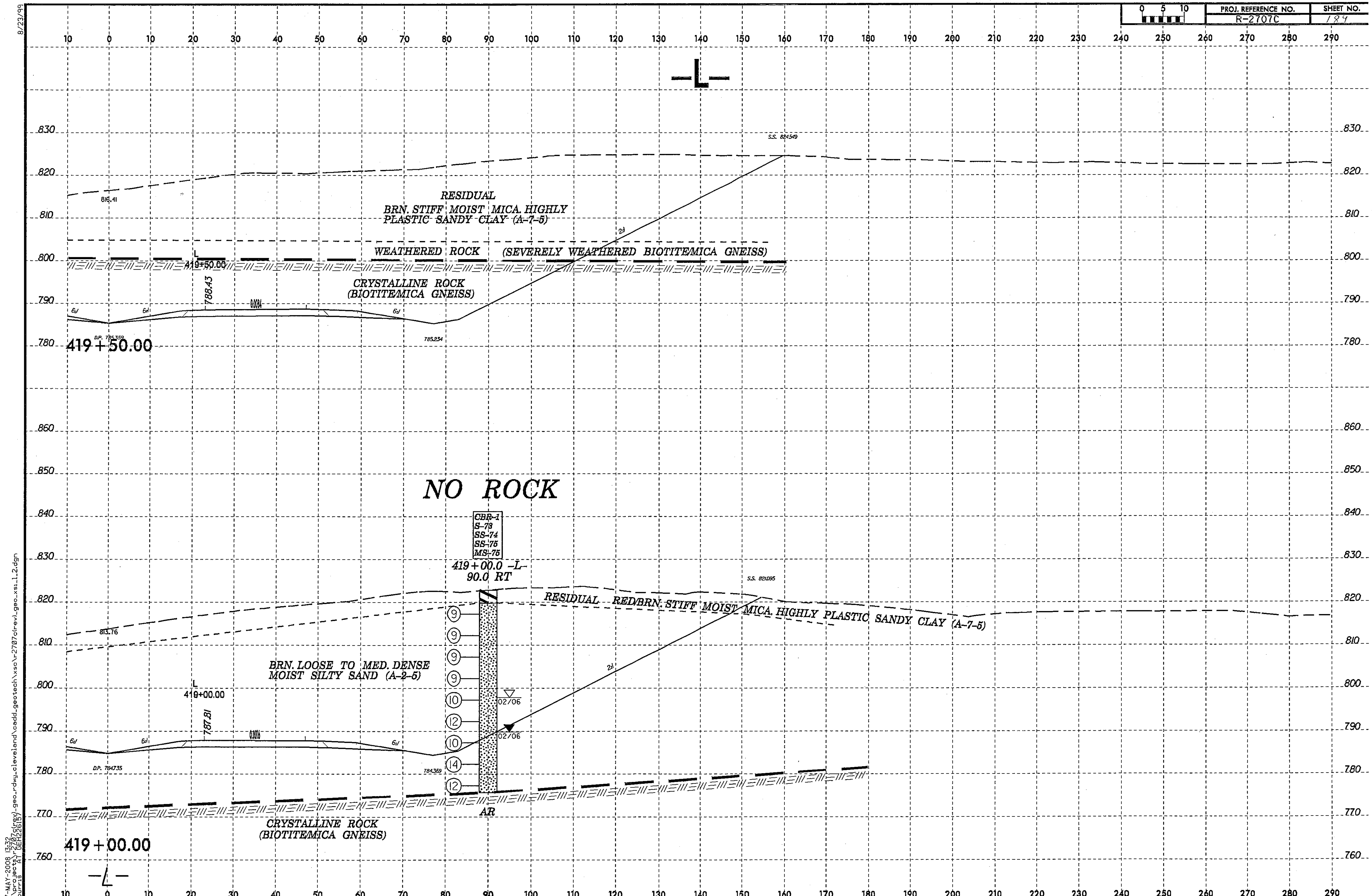
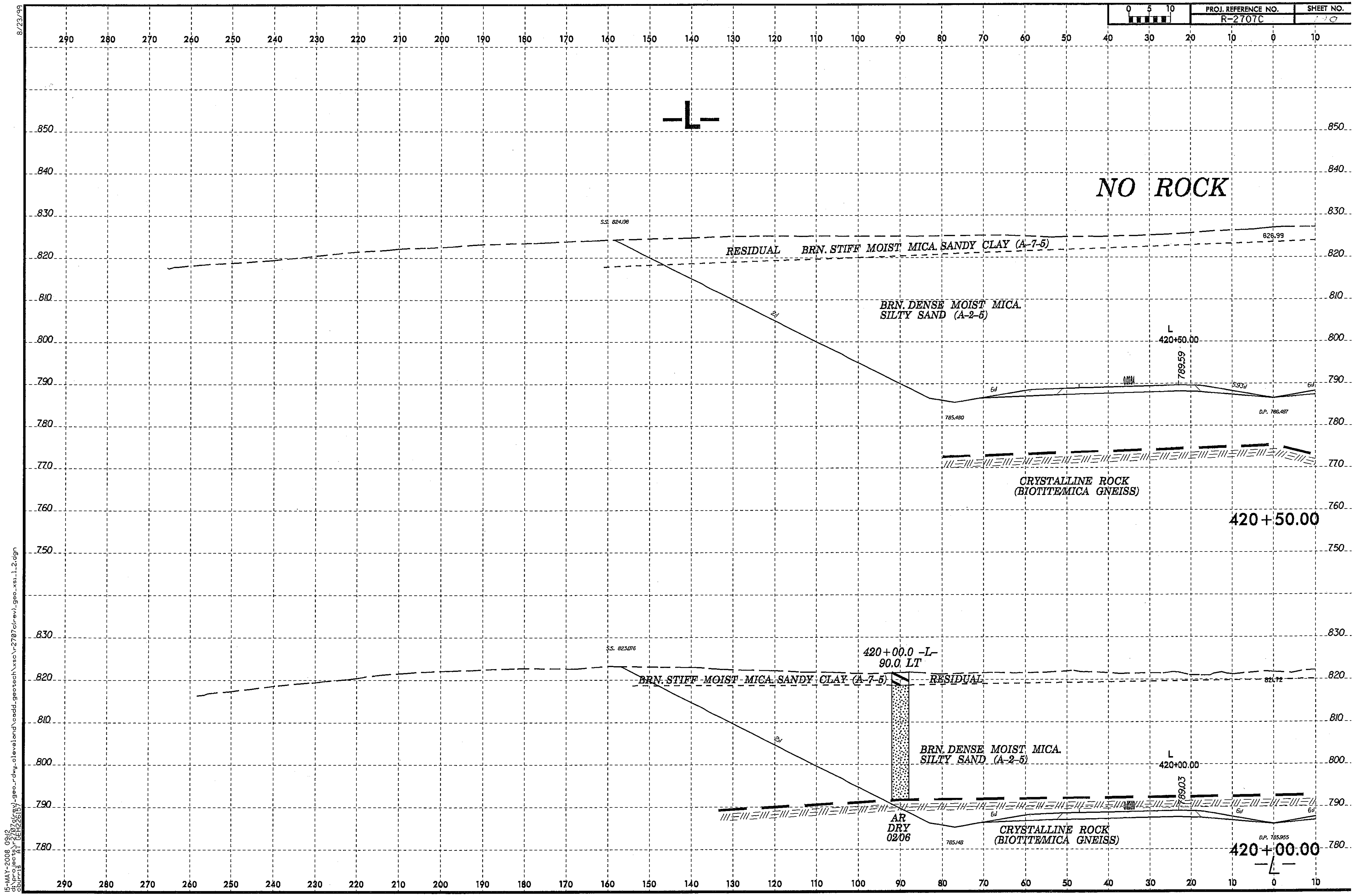
cburris AT GEH2515



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
8/23/99
-L-
419+50.0 -L-
95.0 LT
RESIDUAL
BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)
WEATHERED ROCK
(SEVERELY WEATHERED BIOTITE/MICA GNEISS)
AR
DRY
02/06
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
419+50.00
NO ROCK
RESIDUAL
RED/BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)
BRN. LOOSE TO MED. DENSE MOIST SILTY SAND (A-2-5)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
419+00.00
-L-


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL
BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)
WEATHERED ROCK (SEVERELY WEATHERED BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
419+50.00
NO ROCK
CBR-1
S-73
SS-74
SS-75
MS-76
419+00.0 -L-
90.0 RT
RESIDUAL RED/BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)
BRN. LOOSE TO MED. DENSE MOIST SILTY SAND (A-2-5)
02/06
AR
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
419+00.00
-L-


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
8/23/99
-L-
NO ROCK
RESIDUAL BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)
BRN. DENSE MOIST MICA SILTY SAND (A-2-5)
L
420+50.00
789.59
785.480
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
420+50.00
420+00.0 -L-
90.0 LT
BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)
RESIDUAL
BRN. DENSE MOIST MICA SILTY SAND (A-2-5)
L
420+00.00
789.03
AR
DRY
02/06
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
420+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	191

NO ROCK

420+50.0 -L-
90.0 RT

BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)

BT

826.99

L
420+50.00

789.59

6d

6d

DP. 785457

786875

782.06

S.S. 831041

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

420+50.00

RESIDUAL BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

S.S. 826959

BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)

L
420+00.00

789.03

6d

6d

6d

DP. 785655

785069

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

420+00.00

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dburris (Bentley)

8/22/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	19.2

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

840 830 820 810 800 790 780 770

S.S. 820.655

RESIDUAL — BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

826.15

BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)

2d

L
421+50.00

790.55

6d

5.67.2d

DP. 787.465

785.90

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

421+50.00

421+00.0 –L–
90.0 LT

S.S. 823.955

RESIDUAL — BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

828.12

BRN. DENSE MOIST MICA. SILTY SAND (A-2-5)

L
421+00.00

790.13

5.84.8d

DP. 786.984

785.736

WEATHERED ROCK
(SEV. WEATH. BIOTITE/MICA GNEISS)

AR
DRY
02/06

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

421+00.00

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

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dburris (FLEXSYS)

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	193

0 5 10

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

850 840 830 820 810 800 790 780 770

—L—

SS. 838836

826.15

RESIDUAL

BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. DENSE MOIST MICA SILTY SAND (A-2-5)

L
421+50.00

790.65

6:1

6:1

DP. 787.465

788532

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

421+50.00

SS. 836189

828.12

RESIDUAL

BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. DENSE MOIST MICA SILTY SAND (A-2-5)

L
421+00.00

790.13

6:1

6:1

DP. 786384

787652

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

421+00.00

—L—

15-MAY-2008 09:19
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eburris AT GEH2615)

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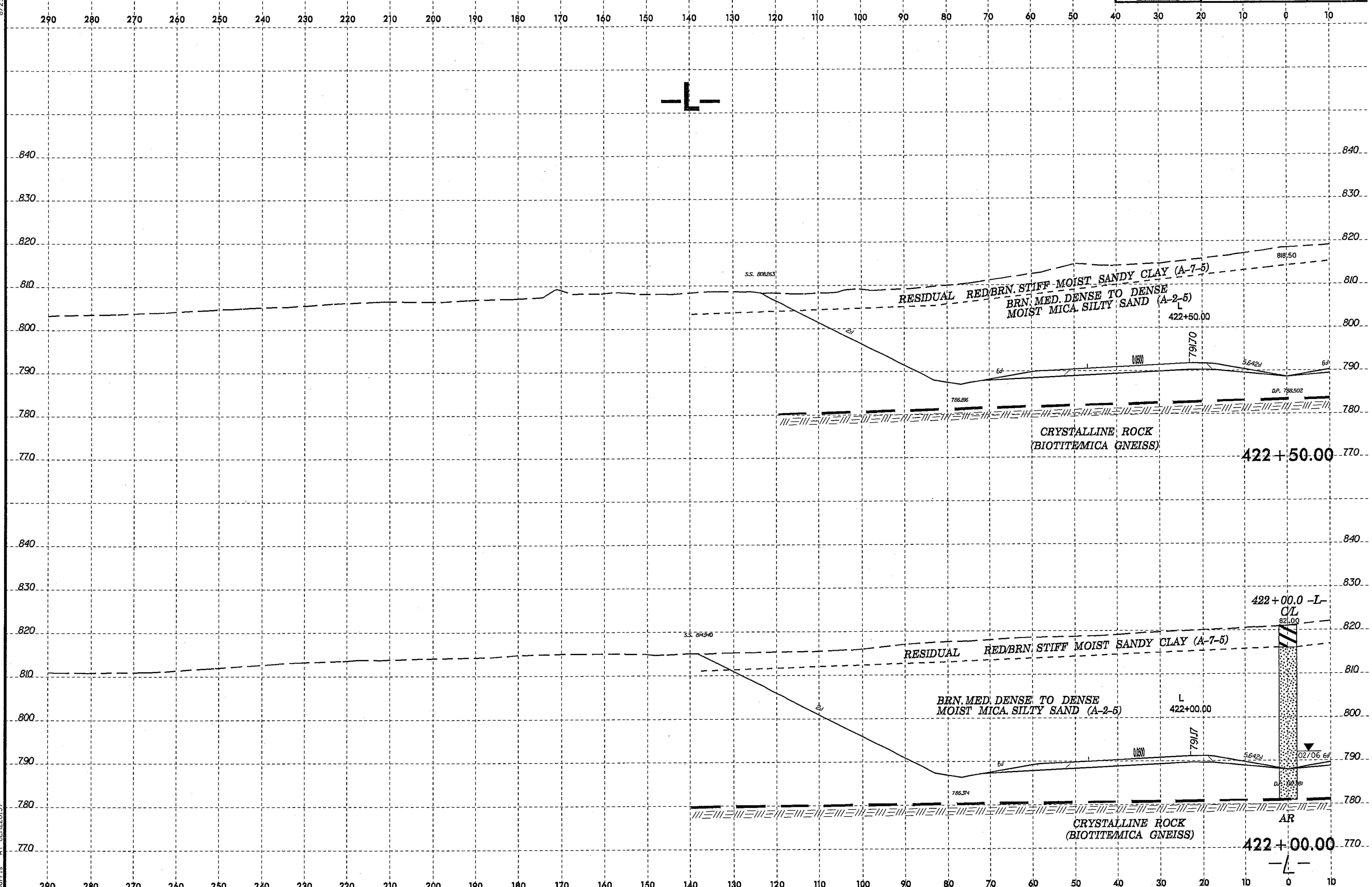

8/23/99

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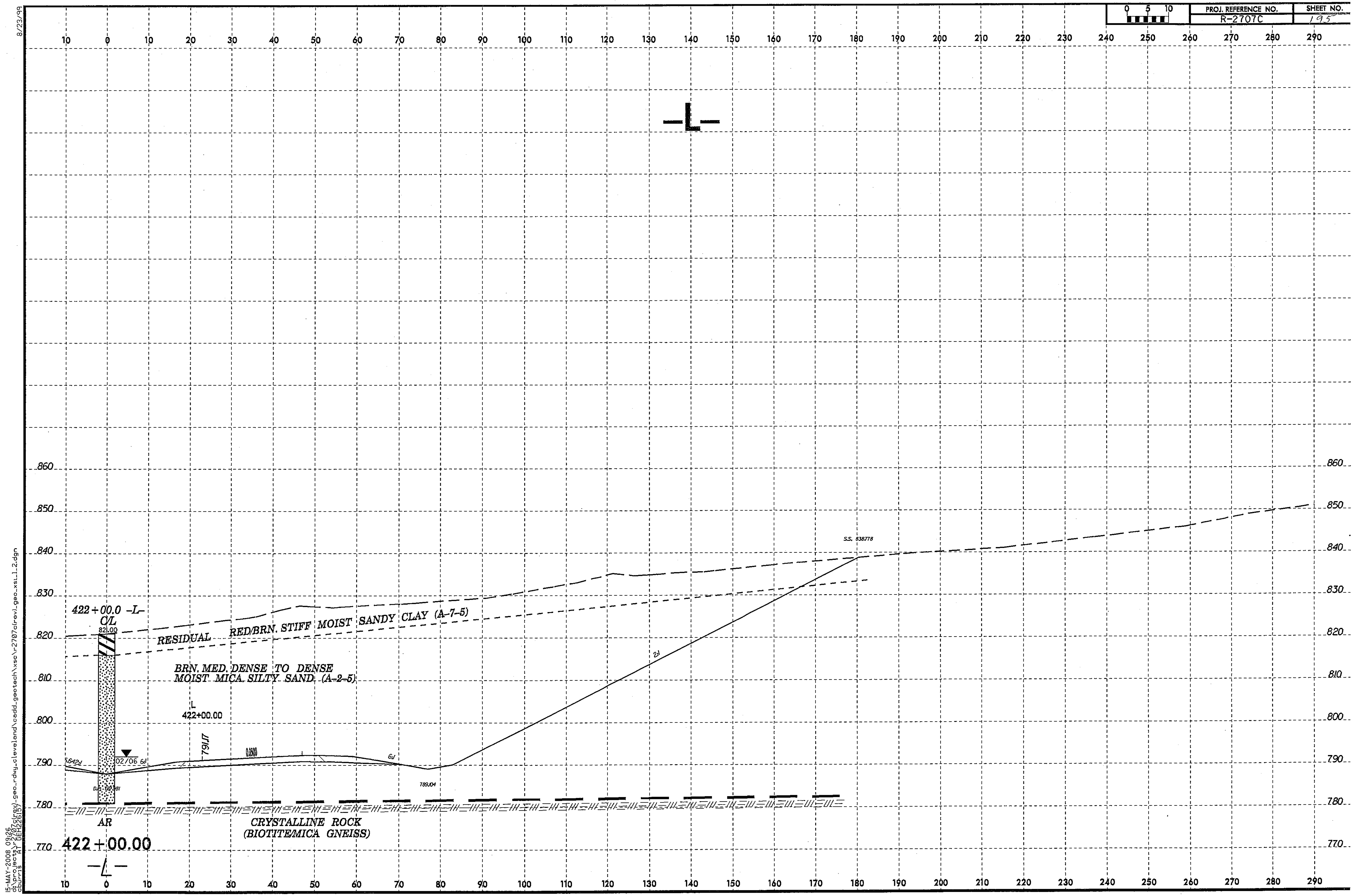
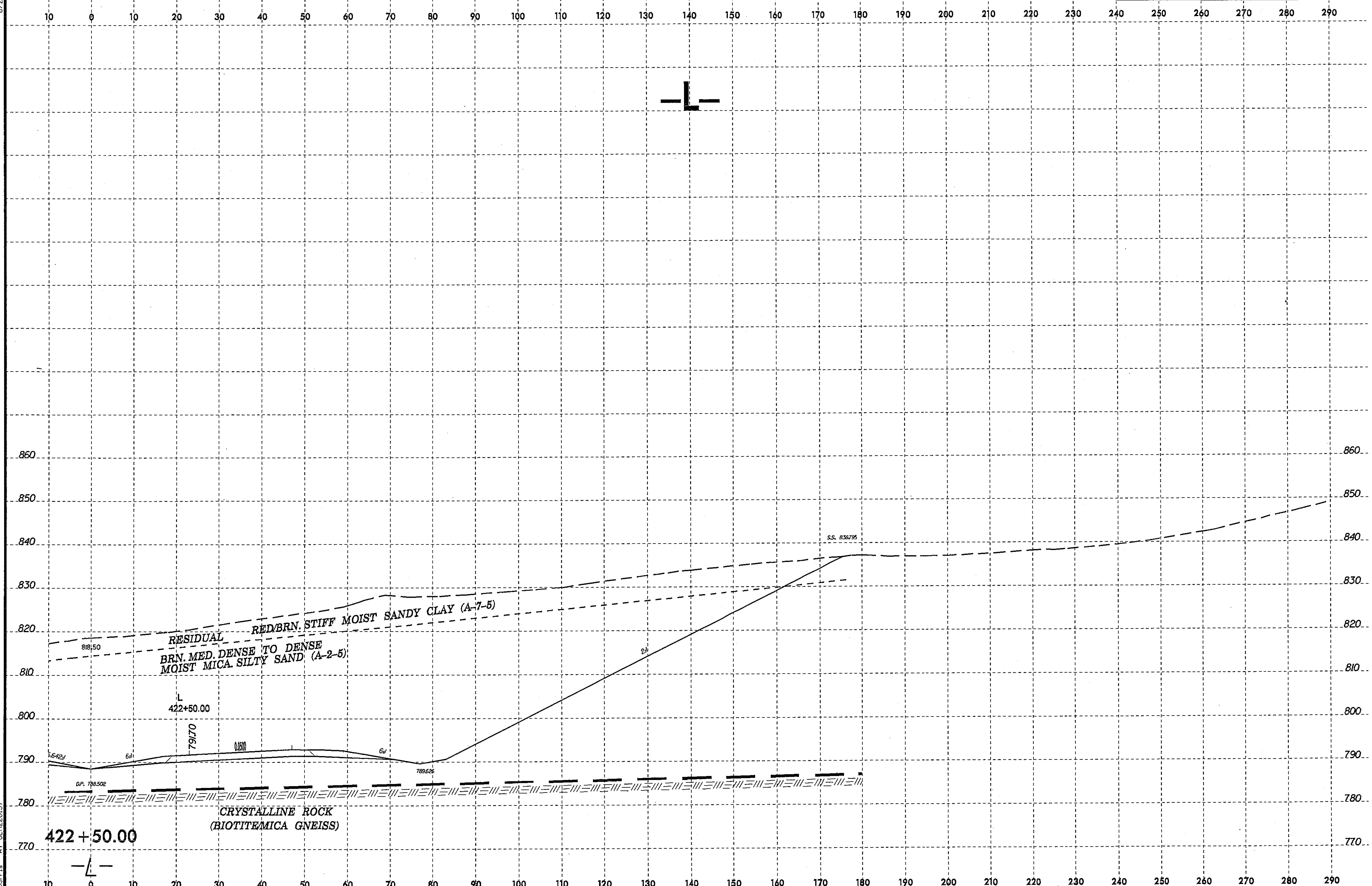
cburris AT GEH22615



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
195
-L-
422+00.0 -L-
C/L
821.00
RESIDUAL RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
BRN. MED. DENSE TO DENSE
MOIST MICA. SILTY SAND. (A-2-5)
-L-
422+00.00
S.S. 838778
02/06
AR
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
422+00.00
-L-
860
850
840
830
820
810
800
790
780
770

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	196



8/23/99

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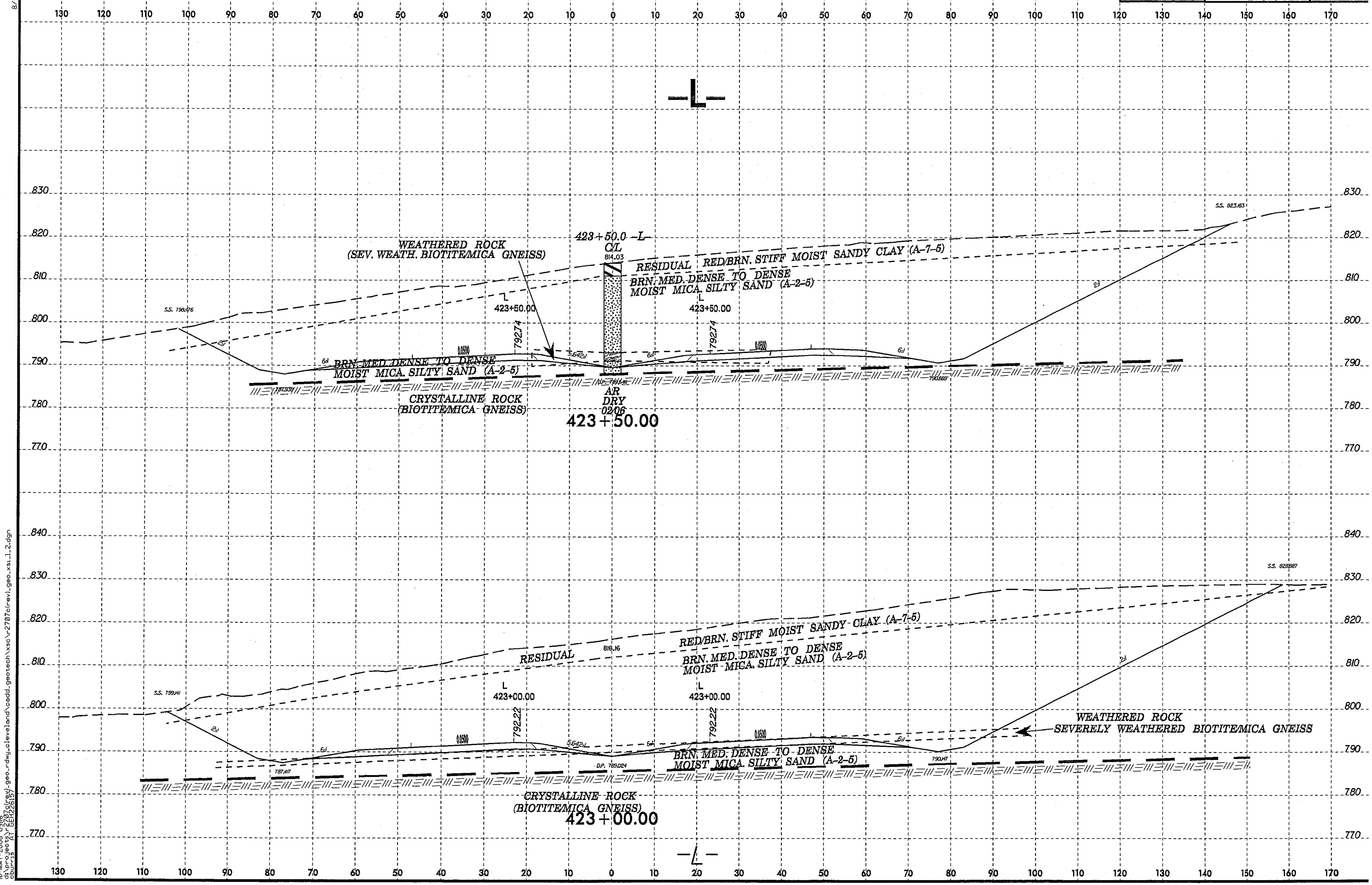
cburris AT GEH226157

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	197



8/23/99

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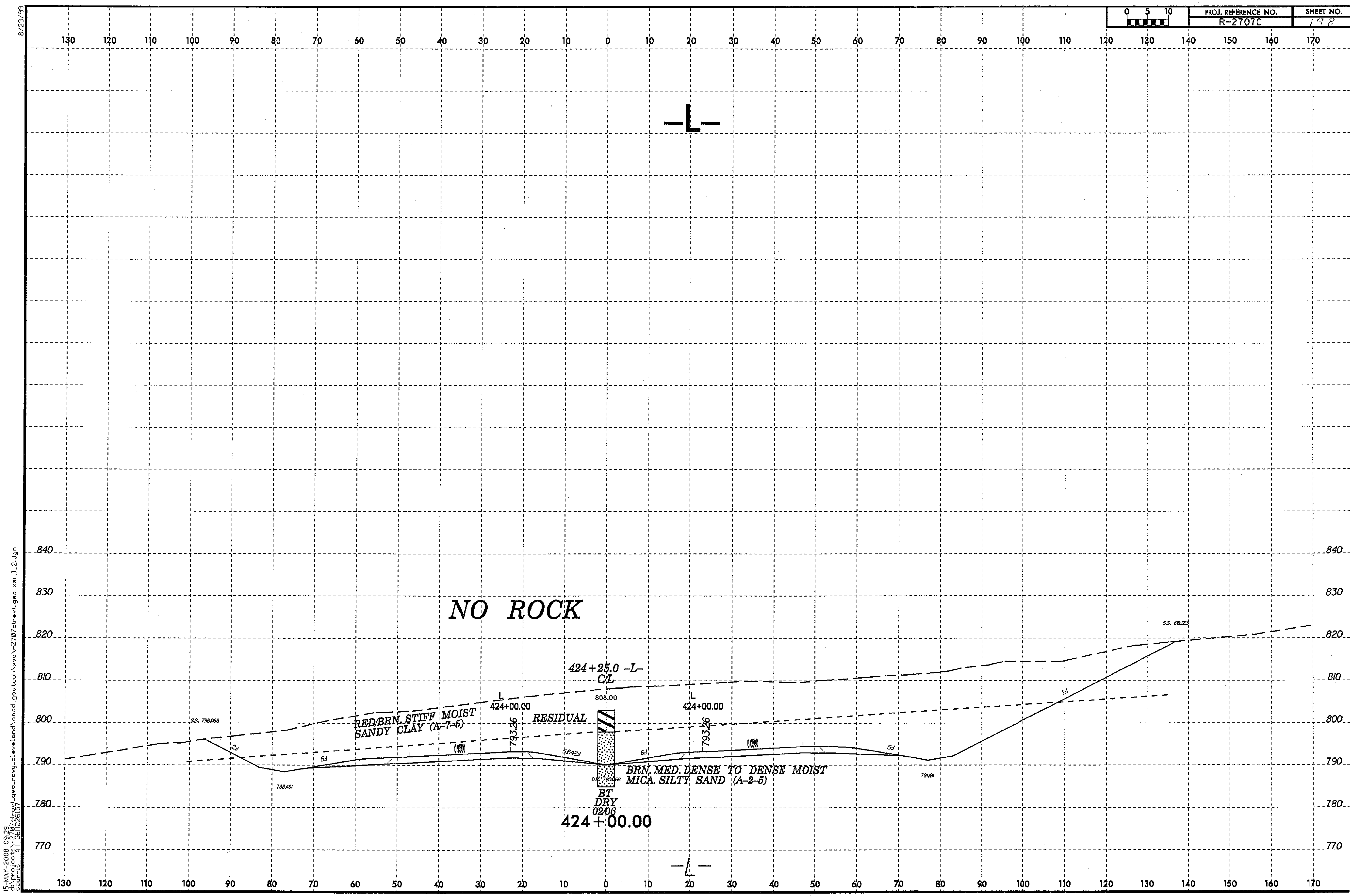
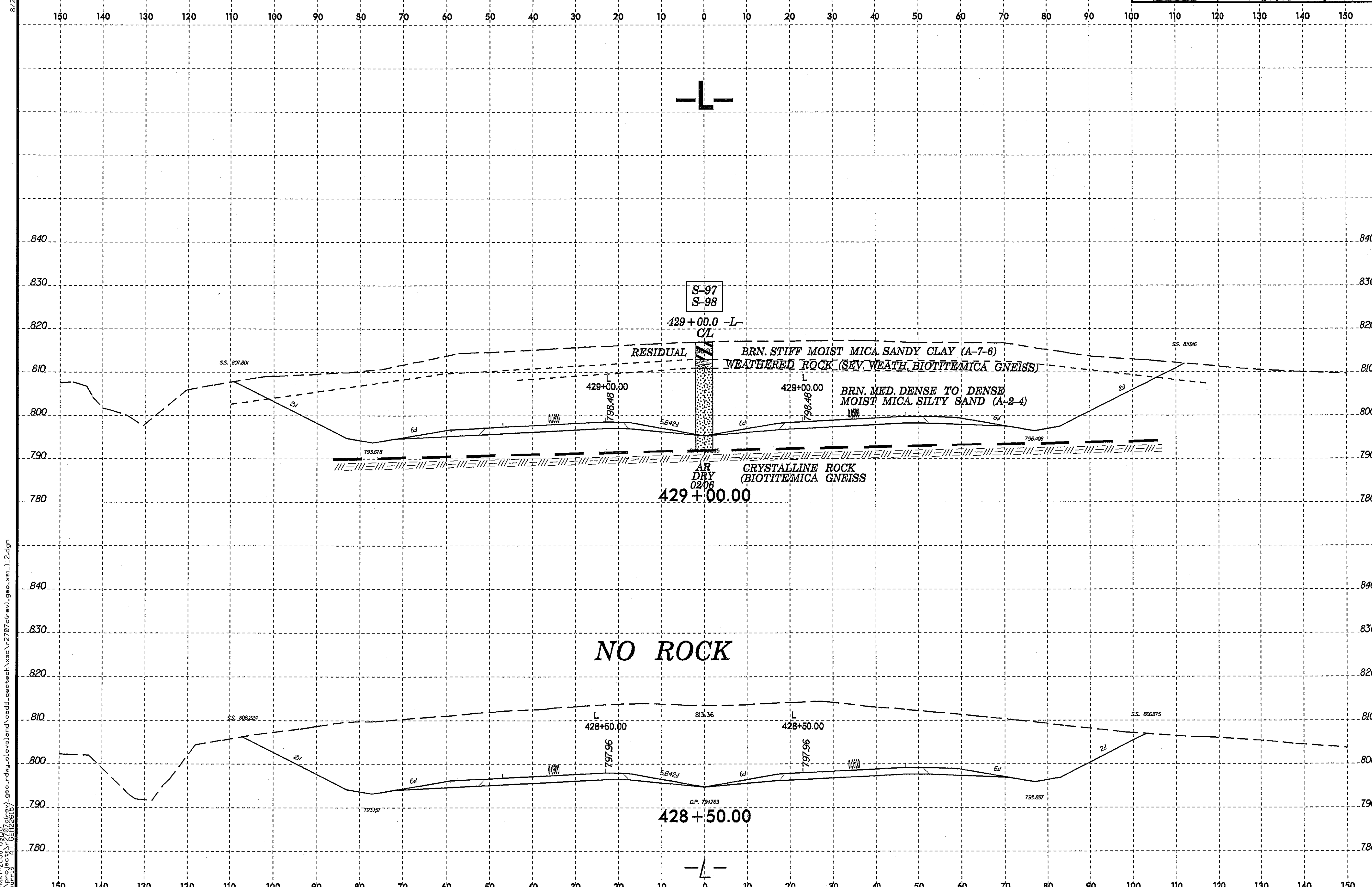

PROJ. REFERENCE NO.
R-2707C
SHEET NO.
8/23/99
-L-
NO ROCK
424+25.0 -L-
C/L
808.00
L
424+00.00
L
424+00.00
793.26
793.26
RED/BRN. STIFF MOIST
SANDY CLAY (A-7-5)
RESIDUAL
BRN. MED. DENSE TO DENSE MOIST
MICA. SILTY SAND (A-2-5)
BT
DRY
02/06
424+00.00
-L-
840
830
820
810
800
790
780
770

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	199



8/23/99

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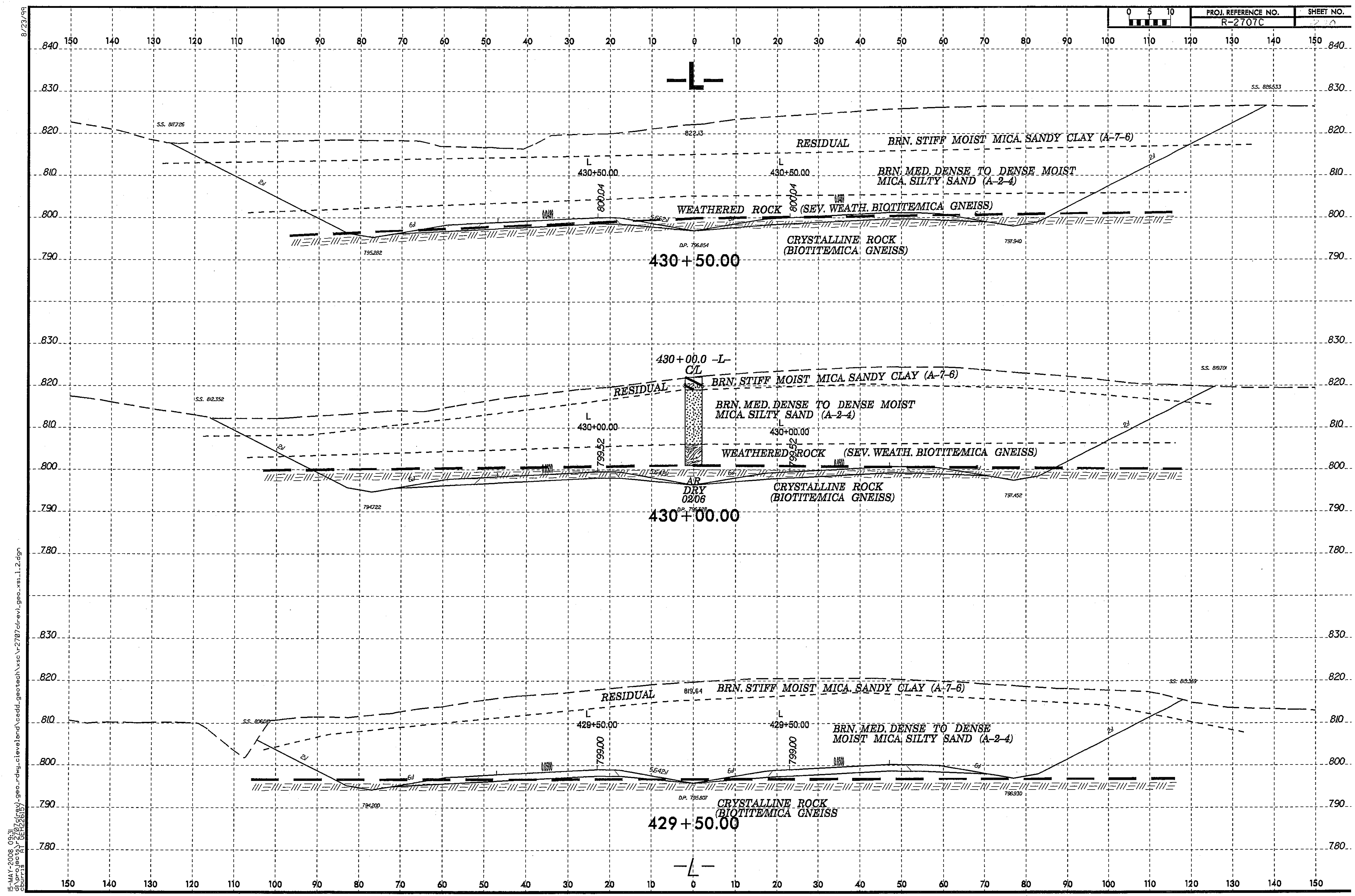

PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAY (A-7-6)
BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-4)
WEATHERED ROCK (SEV. WEATH. BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
430+50.00
430+00.0 -L-
C/L
AR
DRY
02/06
430+00.00
429+50.00
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS
8/23/99

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	201

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

840
830
820
810
800
790

S.S. 827.824

2:1

823.05

L
431+00.00

800.57

5.844

6:1

DP. 797.416

796.156

L
431+00.00

800.57

431+00.0 -L-
50.0 RT

RESIDUAL

RED/BRN. STIFF MOIST SANDY CLAY (A-7-6)

BRN. MED. DENSE TO DENSE MOIST
MICA. SILTY SAND (A-2-4)

WEATHERED ROCK

(SEV. WEATH. BIOTITE/MICA GNEISS)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

AR
DRY
02/06

798.099

S.S. 830.692

431+00.00
-L-

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

15-MAY-2008 09:26
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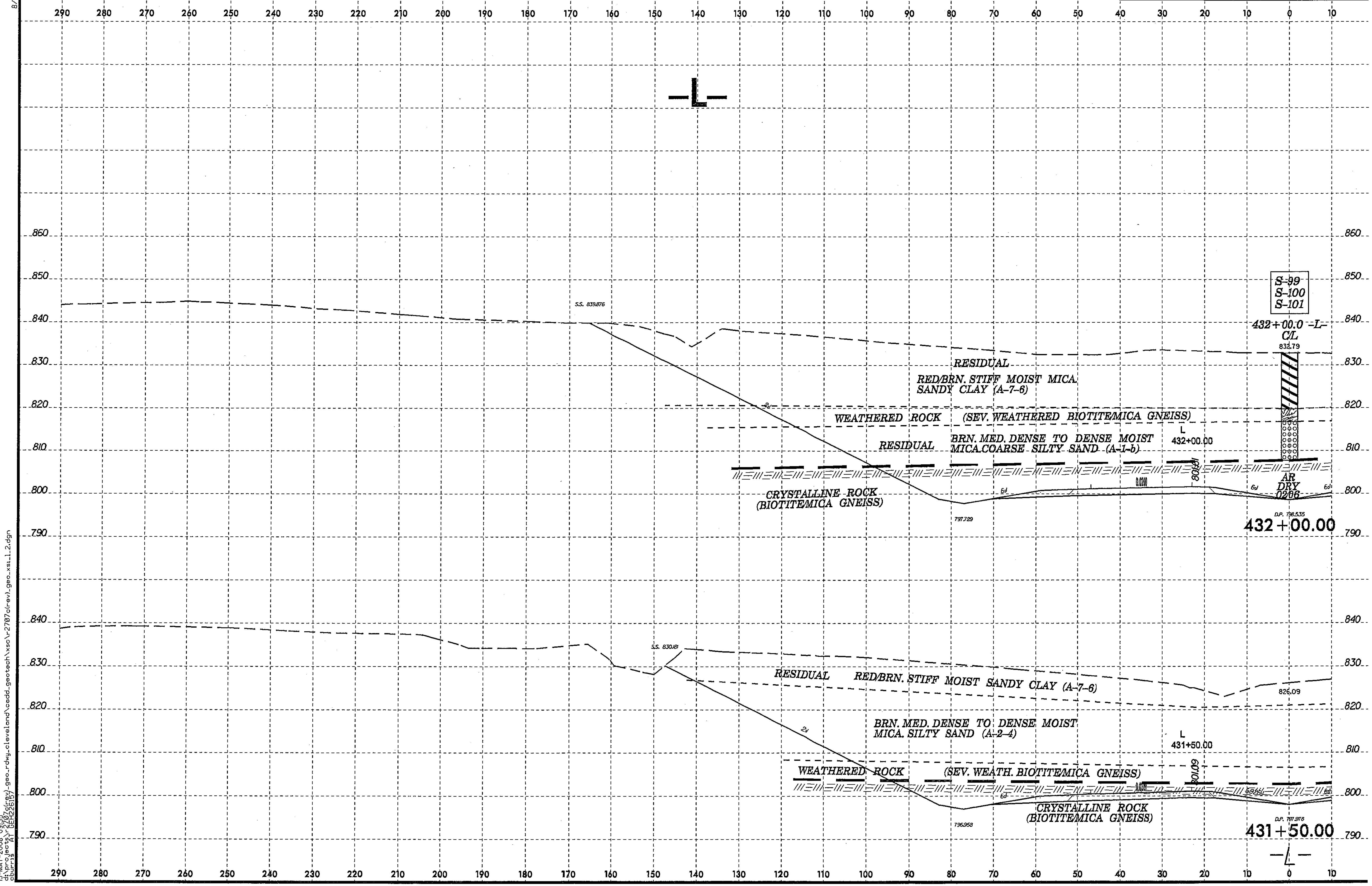
PROJ. REFERENCE NO.	SHEET NO.
R-2707C	202



8/23/99

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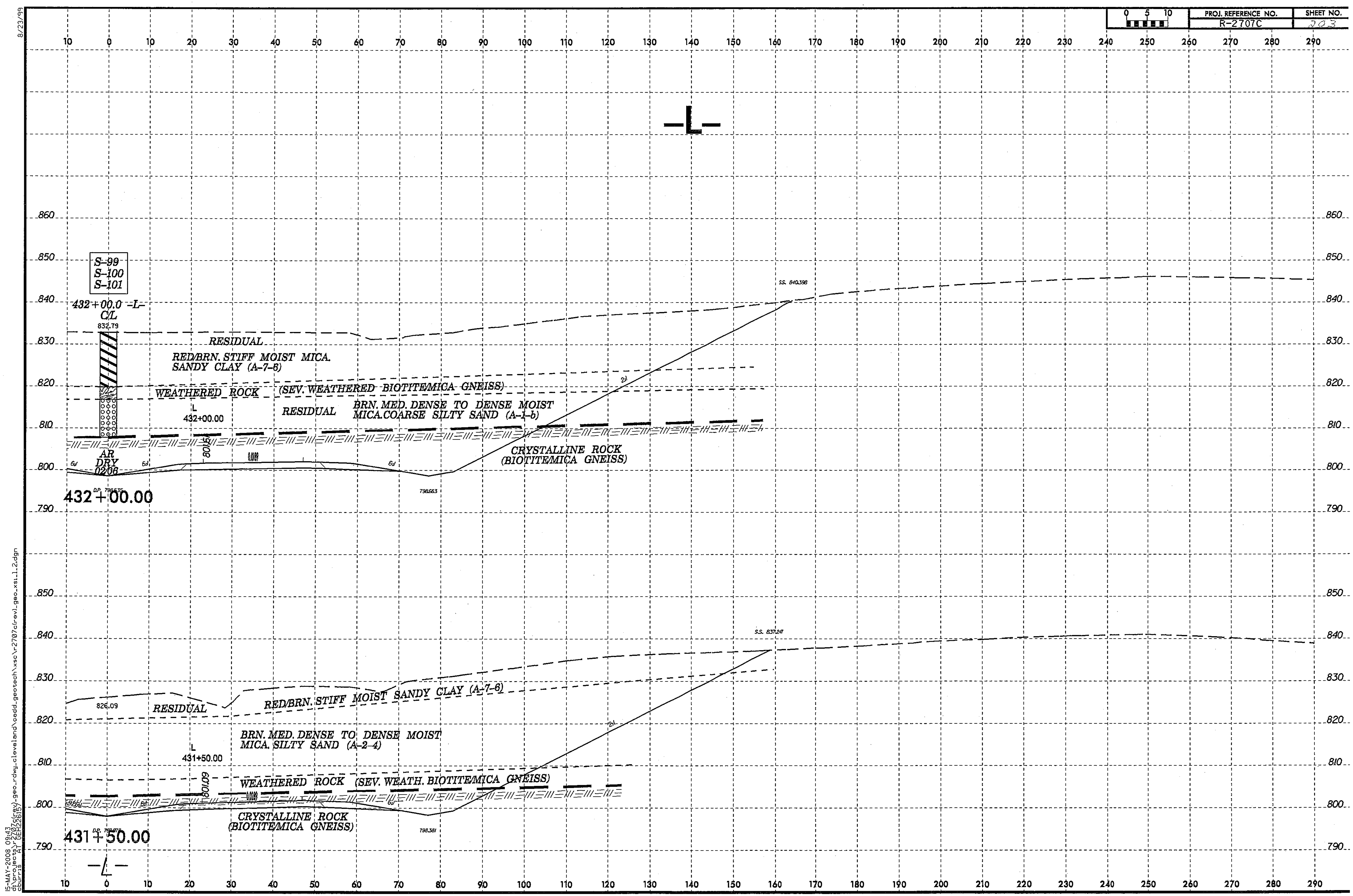
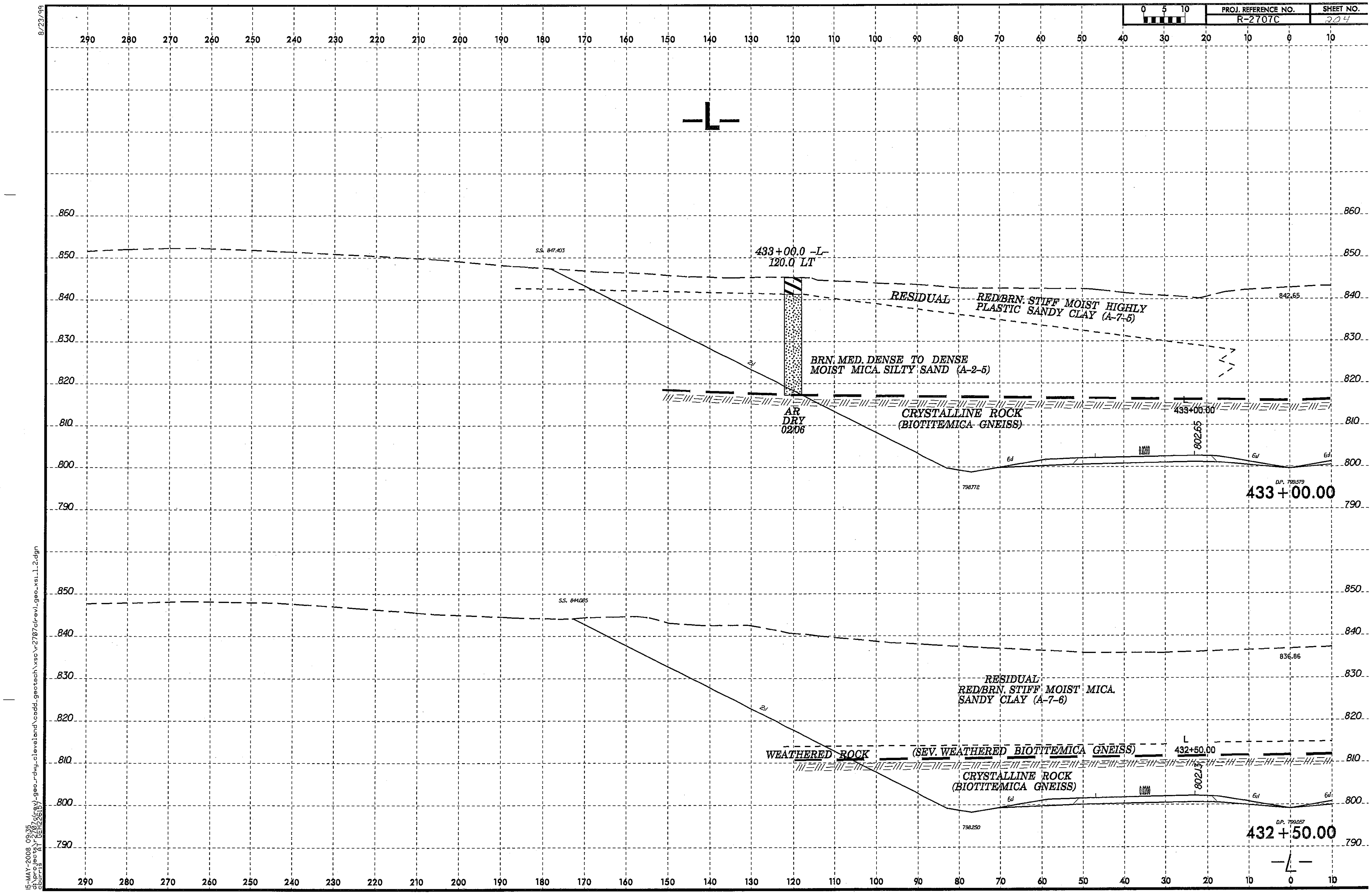
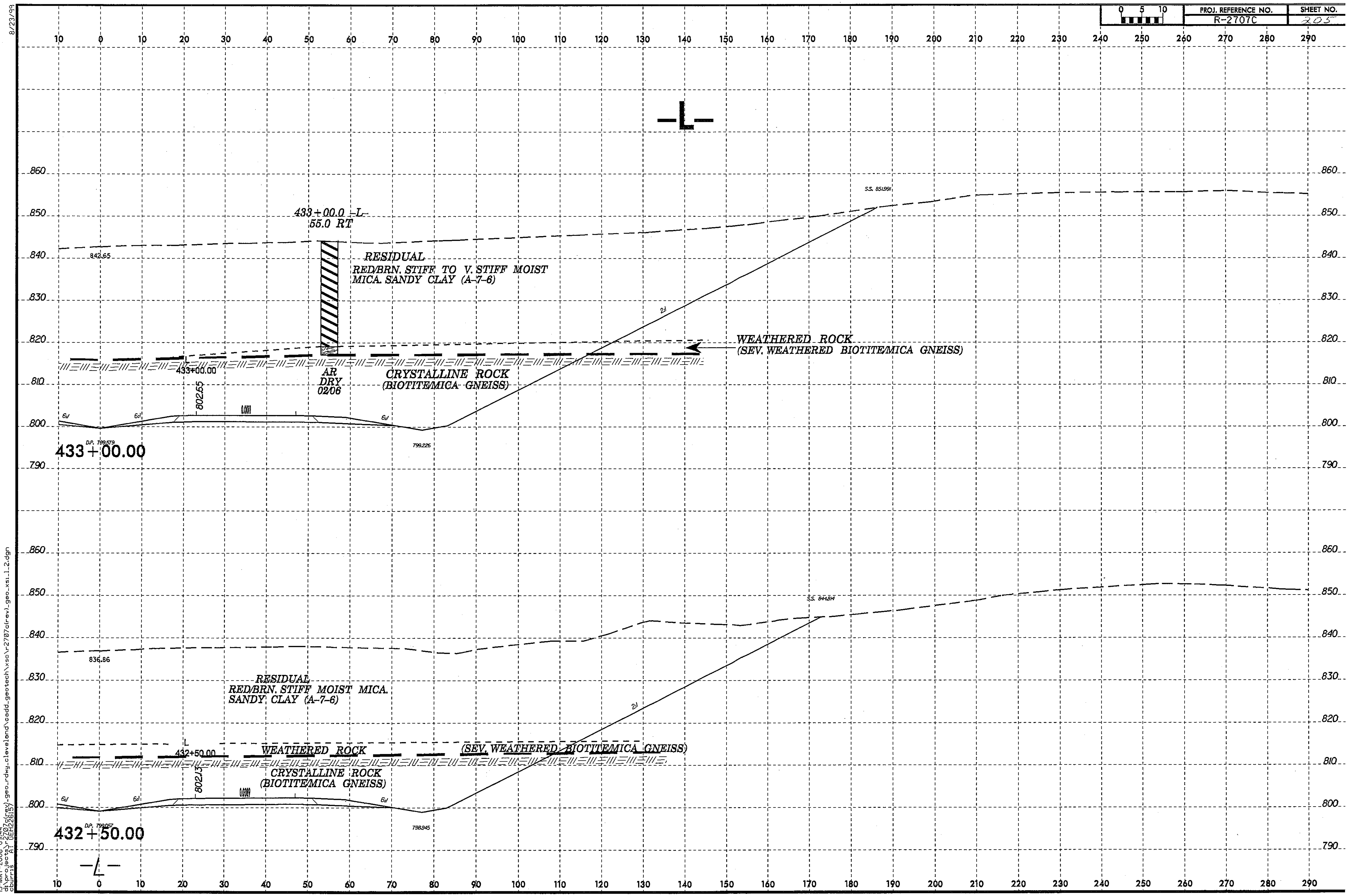
cburris AT GEH22615


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
203
-L-
S-99
S-100
S-101
432+00.0 -L-
C/L
832.79
RESIDUAL
RED/BRN. STIFF MOIST MICA. SANDY CLAY (A-7-6)
WEATHERED ROCK (SEV. WEATHERED BIOTITE/MICA GNEISS)
L
432+00.00
RESIDUAL
BRN. MED. DENSE TO DENSE MOIST MICA.COARSE SILTY SAND (A-1-b)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR
DRY
0208
432+00.00
SS. 840.398
826.09
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-6)
BRN. MED. DENSE TO DENSE MOIST MICA. SILTY SAND (A-2-4)
L
431+50.00
WEATHERED ROCK (SEV. WEATH. BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
431+50.00
SS. 837.247
-L-


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
204
-L-
433+00.0 -L-
120.0 LT
RESIDUAL
RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)
BRN. MED. DENSE TO DENSE MOIST MICA SILTY SAND (A-2-5)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
DRY
02/06
433+00.00
802.65
842.65
433+00.00
RESIDUAL
RED/BRN. STIFF MOIST MICA SANDY CLAY (A-7-6)
WEATHERED ROCK
(SEV. WEATHERED BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
432+50.00
836.86
432+50.00
-L-

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	205



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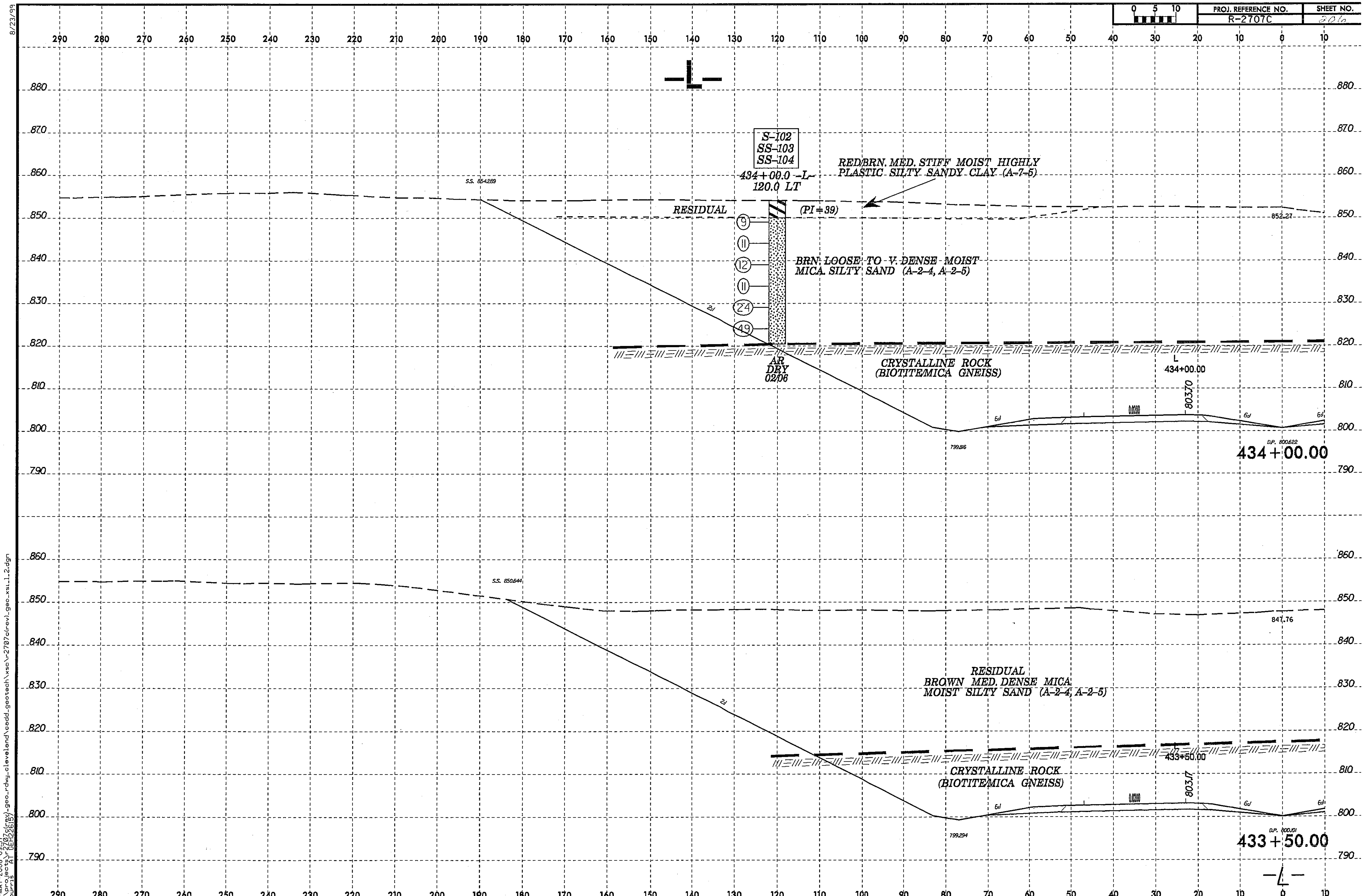
cburris AT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
S-102
SS-103
SS-104
434+00.0 -L-
120.0 LT
RED/BRN. MED. STIFF MOIST HIGHLY PLASTIC SILTY SANDY CLAY (A-7-5)
(PI=39)
RESIDUAL
BRN. LOOSE TO V. DENSE MOIST MICA. SILTY SAND (A-2-4, A-2-5)
AR
DRY
02/06
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
434+00.00
434+00.00
RESIDUAL
BROWN MED. DENSE MICA MOIST SILTY SAND (A-2-4, A-2-5)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
433+50.00
433+50.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	24

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

870 860 850 840 830 820 810 800 790

SS 860.234

852.27

RESIDUAL
BRN. LOOSE TO V. DENSE MOIST
MICA. SILTY SAND (A-2-4, A-2-5)

2:1

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

434+00.00

803.70

6:1 6:1 0.020 6:1

799.816

D.P. 800.622

434+00.00

SS 859.964

847.76

RESIDUAL
BROWN MED. DENSE MICA
MOIST SILTY SAND (A-2-4, A-2-5)

2:1

433+50.00

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

803.37

6:1 6:1 6:1

799.508

D.P. 800.001

433+50.00

15-MAY-2008 09:45
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	208

435+00.0 -L-
CL
858.38

SS. 855.390

RESIDUAL BRN. STIFF MOIST MICA HIGHLY PLASTIC SANDY CLAY (A-7-5)

BRN. MICA MED. DENSE
MOIST SILTY SAND (A-2-5)

2d

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

L
435+00.00

AR
DRY
02/06

804.74

6d

800.859

D.P. 800.566

435+00.00

SS. 856.568

856.78

RESIDUAL
BRN. LOOSE TO V. DENSE MOIST
MICA SILTY SAND (A-2-4, A-2-5)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

L
434+50.00

804.22

860.337

D.P. 800.144

434+50.00

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

870 860 850 840 830 820 810 800 790

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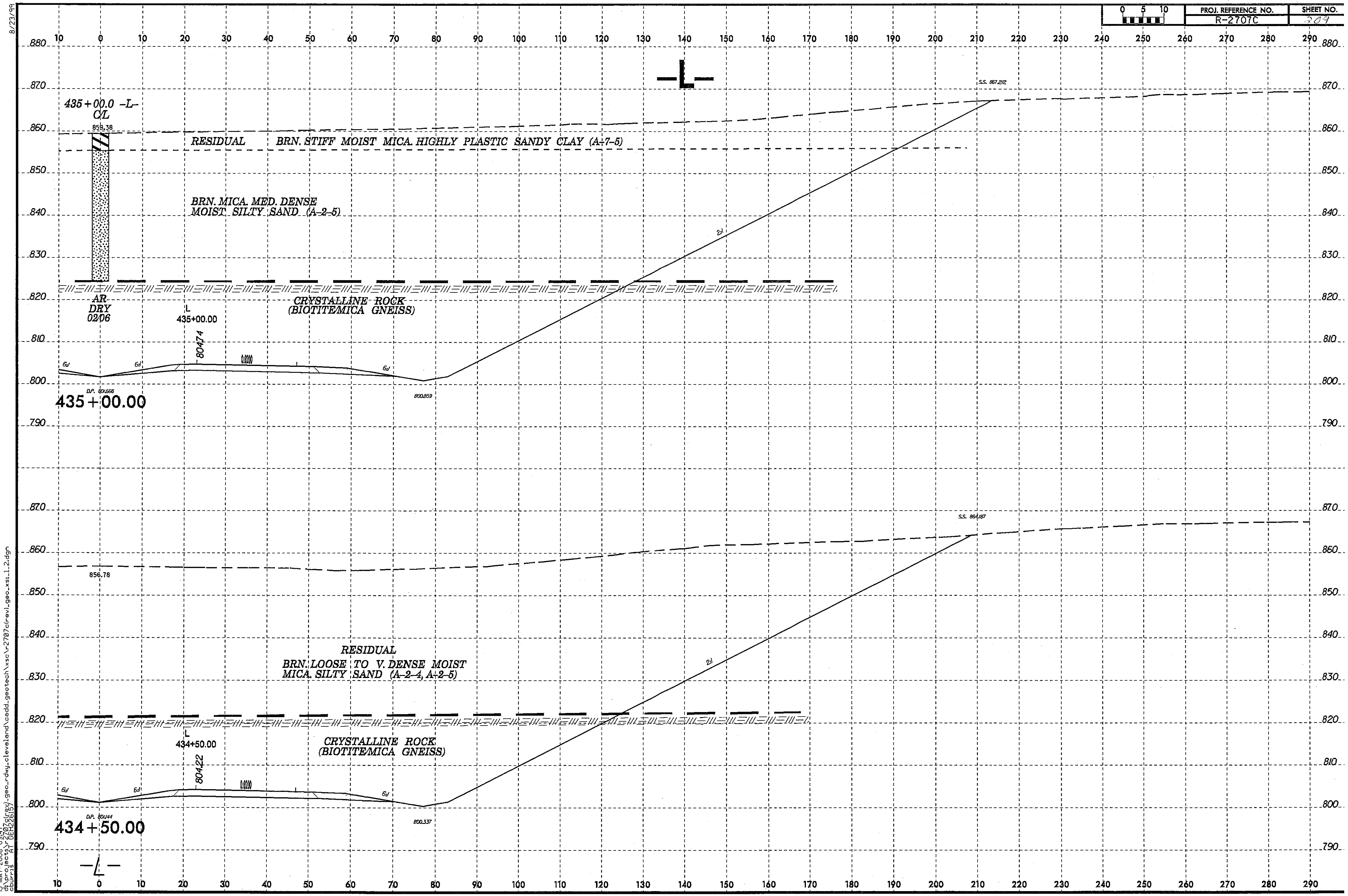
dburris

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	209



8/23/99

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cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	3.10

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

870 860 850 840 830 820 810 800 790

S.S. 849.495

RESIDUAL

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)

858.51

BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-5)

2d

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

436+00.00

805.78

6d

6d

6d

604.903

D.P. 802.78

436+00.00

435+50.0 -L- 80.0 LT

S.S. 853.733

BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)

RESIDUAL

860.61

BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-5)

2d

WEATHERED ROCK (SEV. WEATHERED) BIOTITE/MICA GNEISS)

AR DRY 02/06

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

435+50.00

805.26

6d

6d

6d

801.381

D.P. 802.88

435+50.00

-L-

15-MAY-2008 09:38
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Users: ATLEE(26157)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	211

435+50.0 -L-
80.0 RT

RESIDUAL

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)

BRN. MED. DENSE MOIST
MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

AR
DRY
02/06

860.61

S.S. 867.588

L
435+50.00

805.26

DP. 802.188

801.381

435+50.00

-L-

15-MAY-2008 09:48
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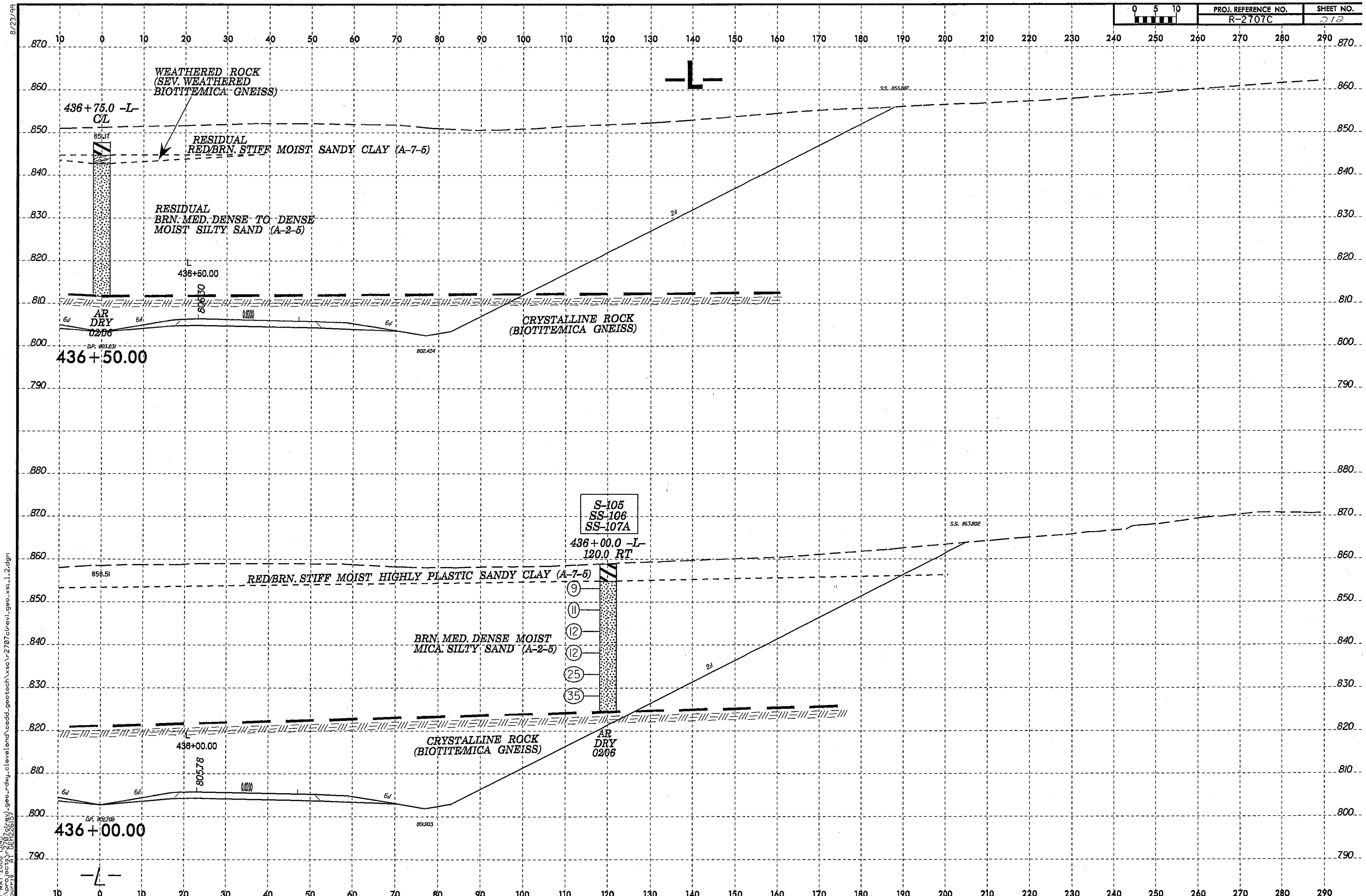
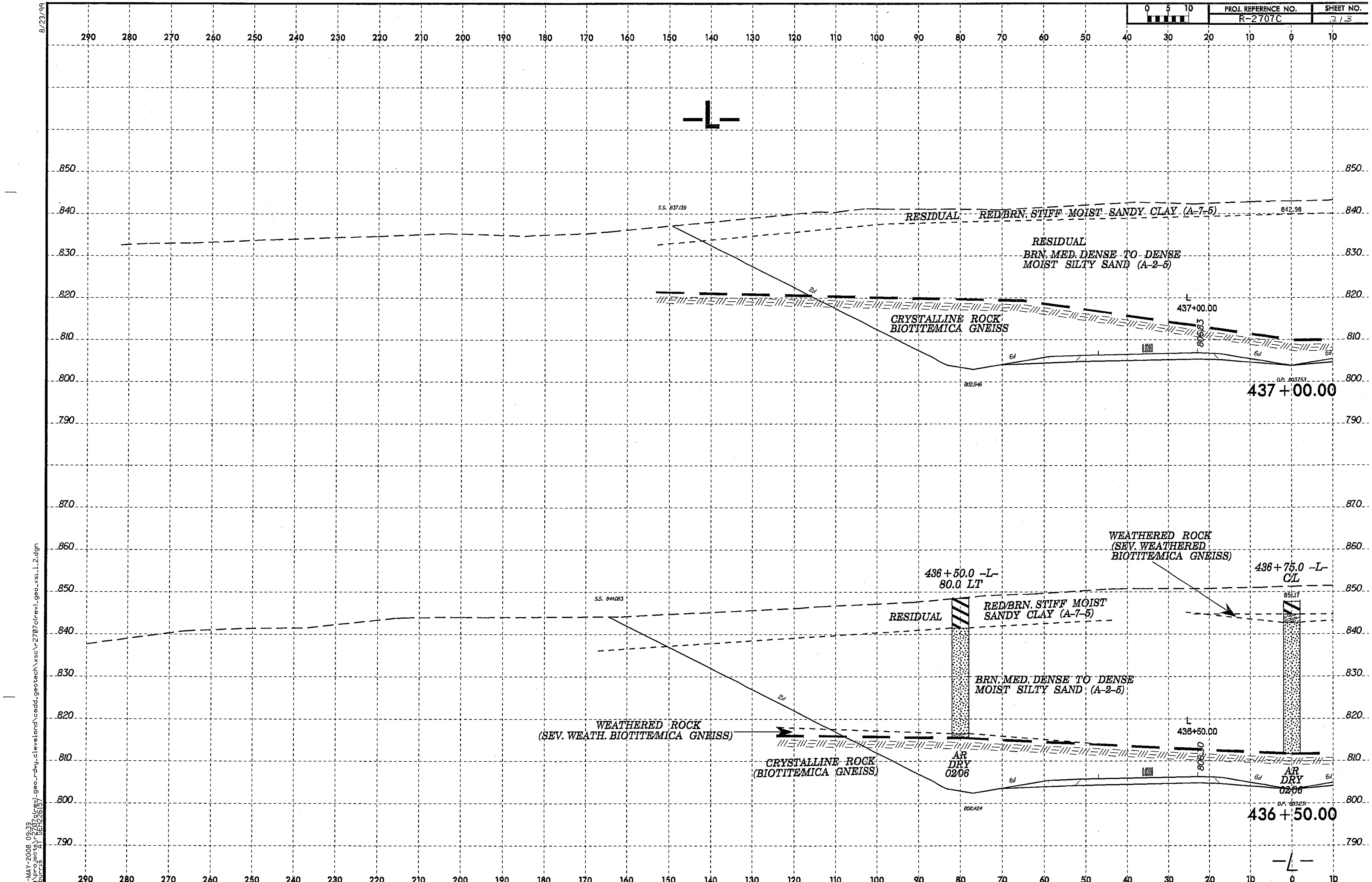
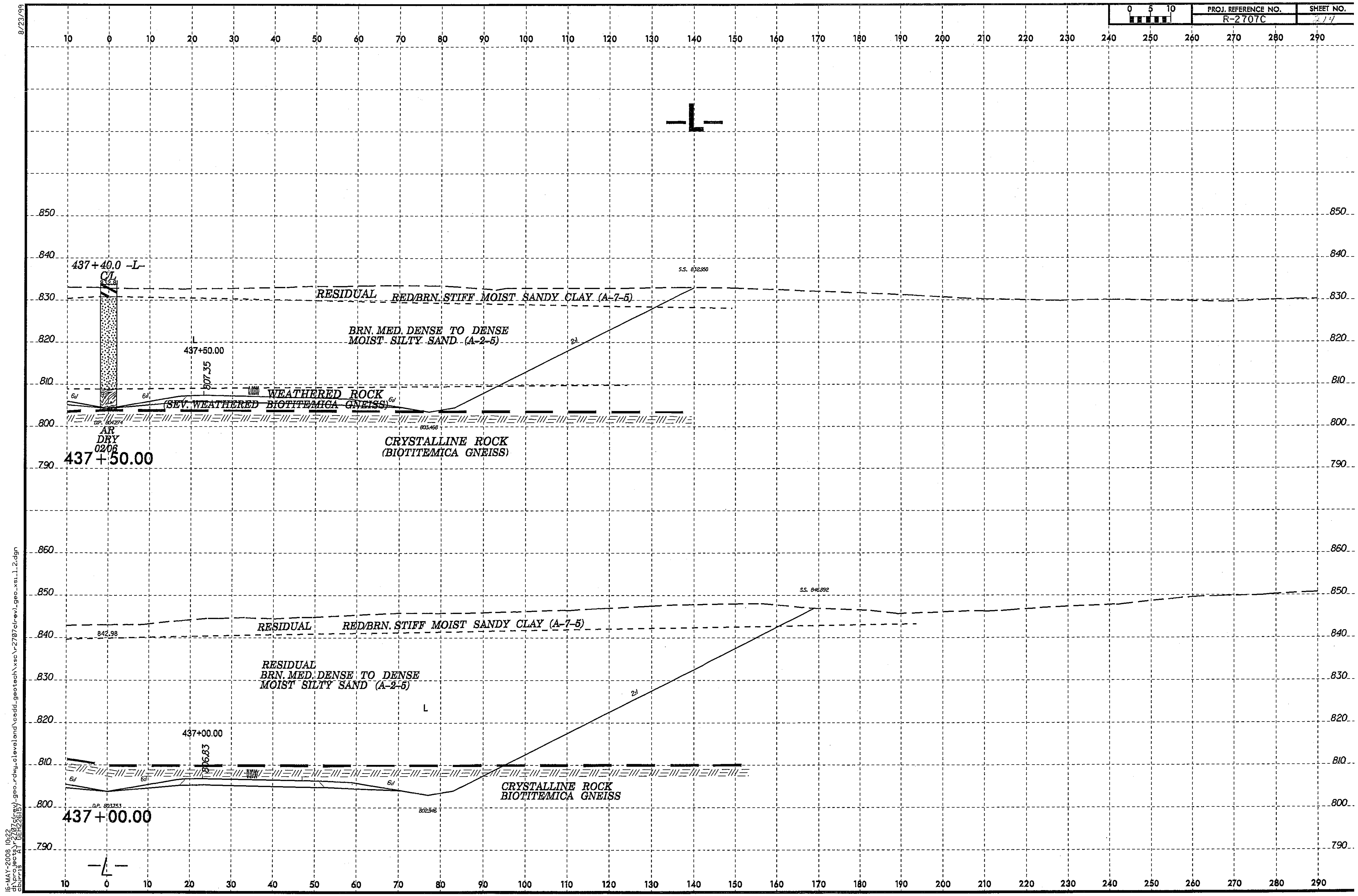

PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
WEATHERED ROCK (SEV. WEATHERED BIOTITE/MICA GNEISS)
436+75.0 -L- C/L
RESIDUAL RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
RESIDUAL BRN. MED. DENSE TO DENSE MOIST SILTY SAND (A-2-5)
436+50.00
AR DRY 02/06
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
436+50.00
S-105
SS-106
SS-107A
436+00.0 -L- 120.0 RT
RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)
BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-5)
9
11
12
12
25
35
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR DRY 02/06
436+00.00
436+00.00
-L-



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
213
-L-
RESIDUAL RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
CRYSTALLINE ROCK
BIOTITEMICA GNEISS
437+00.00
WEATHERED ROCK
(SEV. WEATHERED
BIOTITEMICA GNEISS)
436+50.0 -L-
80.0 LT
436+75.0 -L-
C/L
RESIDUAL
RED/BRN. STIFF MOIST
SANDY CLAY (A-7-5)
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
WEATHERED ROCK
(SEV. WEATH. BIOTITEMICA GNEISS)
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
AR
DRY
02/06
436+50.00



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
0 5 10
-L-
437+40.0 -L-
C/L
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
437+50.00
807.35
WEATHERED ROCK
(SEV. WEATHERED BIOTITEMICA GNEISS)
AR
DRY
02/06
437+50.00
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
842.98
RESIDUAL
BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)
437+00.00
806.83
CRYSTALLINE ROCK
BIOTITEMICA GNEISS
437+00.00
-L-
8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	215

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

-L-

830 820 810 800 790

S.S. 820.48

RESIDUAL RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

2:1

L
438+00.00

816.60

807.87

6:1

BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)

801.99

DP. 804.96

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

438+00.00

850 840 830 820 810 800 790

437+40.0 -L-
C/L
812.81

S.S. 829.17

RESIDUAL

RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)

2:1

L
437+50.00

807.35

6:1

WEATHERED ROCK
(SEV. WEATHERED BIOTITE/MICA GNEISS)

803.44

DP. 804.71

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

AR
DRY
02/06

437+50.00

-L-

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

16-MAY-2008 10:21
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churis

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	276

L
438+50.00

808.39

6d

DP. 805.318

SS. 803.027

794.82

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

438+50.00
—L—

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Users

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	217

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

830 820 810 800 790 780 770

L
438+50.00

808.39

6d 6d 6d

D.P. 805.38

804.51

794.82

S.S. 812.465

2d

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

438+50.00

L
438+00.00

807.87

816.60

RESIDUAL RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)

6d 6d 6d

BRN. MED. DENSE TO DENSE
MOIST SILTY SAND (A-2-5)

D.P. 804.96

S.S. 817.88

2d

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

438+00.00

16-MAY-2008 10:34
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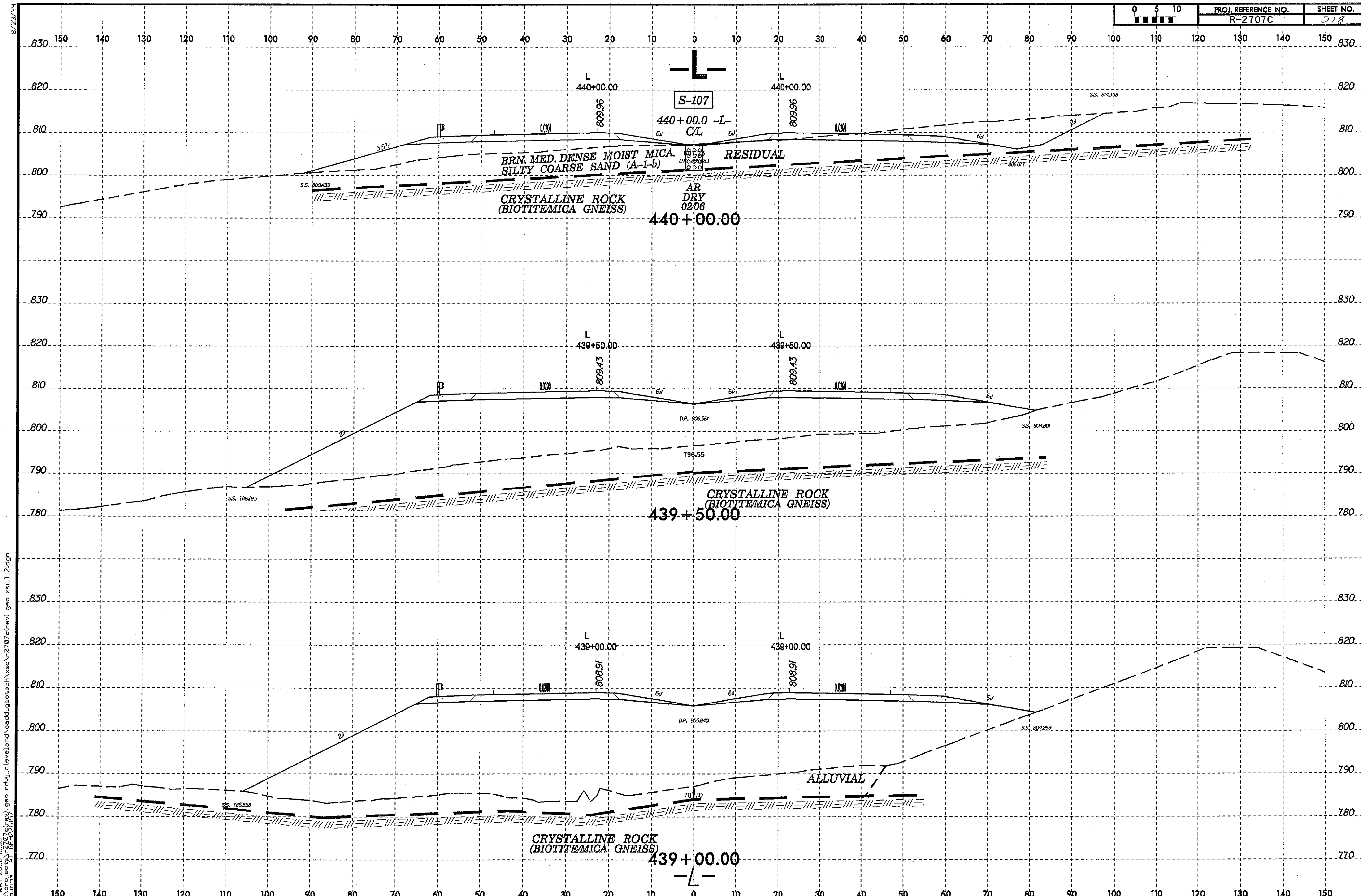
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
S-107
440+00.0 -L-
C/L
L
440+00.00
809.96
BRN. MED. DENSE MOIST MICA.
SILTY COARSE SAND (A-1-b)
RESIDUAL
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
AR
DRY
02/06
440+00.00
L
439+50.00
809.43
798.55
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
439+50.00
L
439+00.00
808.91
ALLUVIAL
787.10
CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)
439+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	21

441+50.00

S.S. 836.595

RESIDUAL BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE MOIST SILTY SAND (A-2-4)

S.S. 818.976

826.30

441+50.00 441+50.00

811.52 811.52

807.842 D.P. 808.448 807.842

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

S-108
S-109

441+00.0 -L- C/L

441+00.00 441+00.00

S.S. 828.816

S.S. 815.704

RESIDUAL BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE MOIST SILTY SAND (A-2-4)

811.00 811.00

807.310 807.120

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

AR DRY 02/06

441+00.00

440+50.00 440+50.00

S.S. 821.070

S.S. 809.248

RESIDUAL BROWN MED. DENSE MOIST SILTY SAND (A-2-4)

810.48 810.48

806.789 D.P. 807.405

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

440+50.00

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dburris AT DEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	220

442+00.0 -L-
80.0 RT

BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE MOIST SILTY SAND (A-2-4)

WEATHERED ROCK

BRN. MED. DENSE MOIST SILTY SAND (A-2-4)

(SEV. WEATHERED BIOTITE/MICA GNEISS)

S.S. 842.566

RESIDUAL

832.83

S.S. 821633

L
442+00.00

812.04

L
442+00.00

812.04

2d

6d

0.020

0.020

2d

6d

808163

DP. 808970

808163 AR
DRY
02/06

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

442+00.00

-L-

850
840
830
820
810
800
790

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

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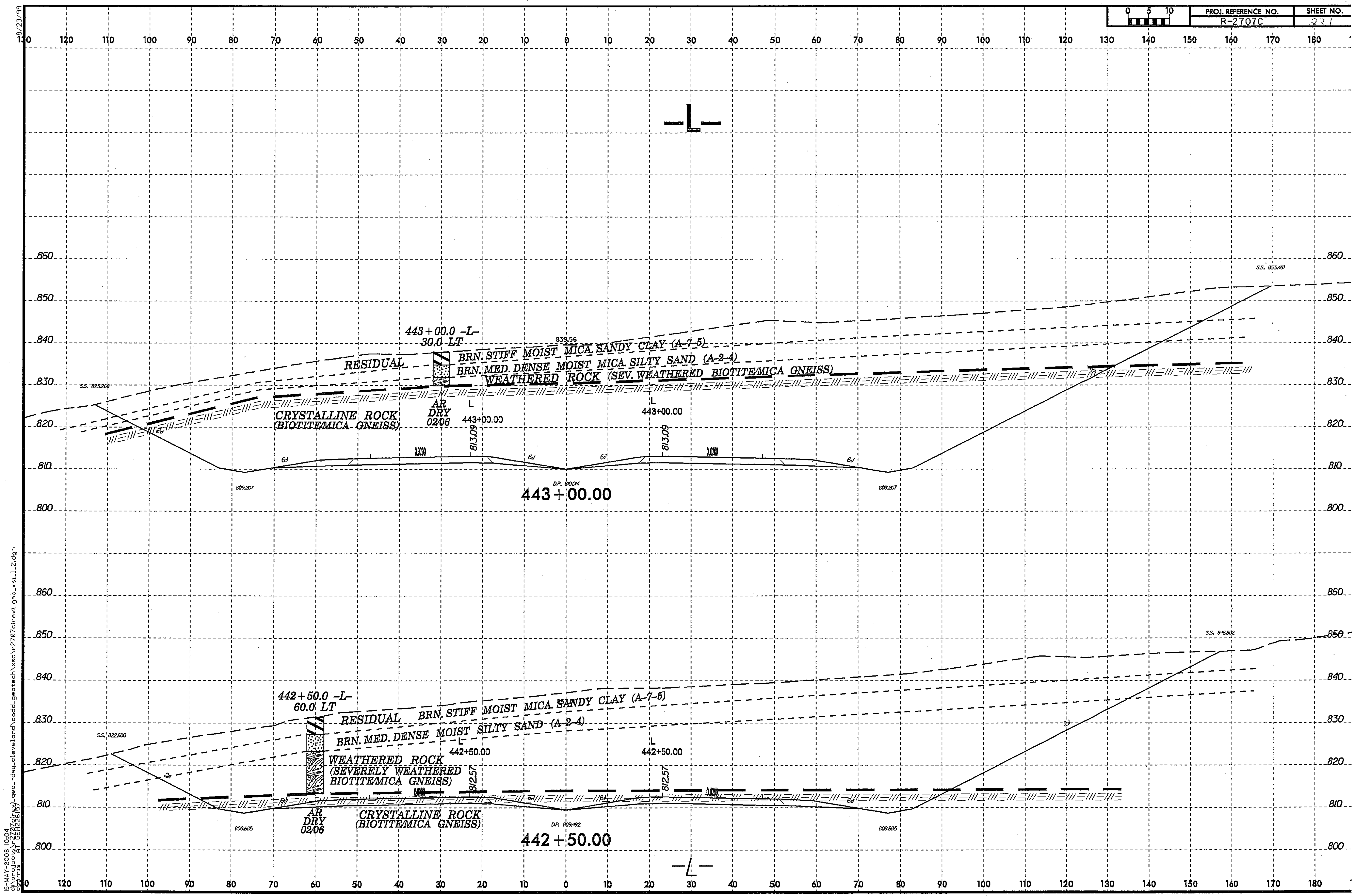
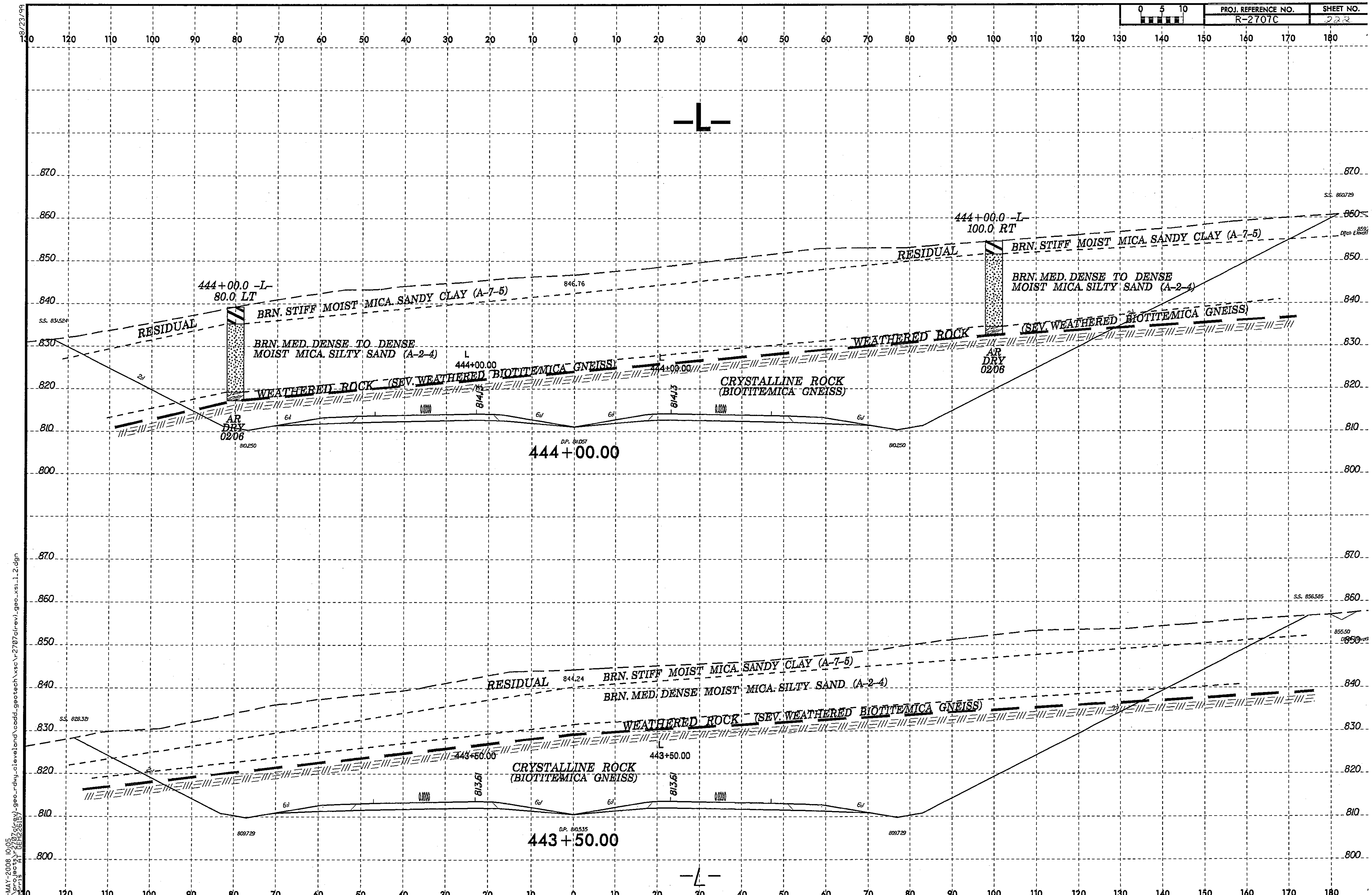

PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
443+00.0 -L-
30.0 LT
RESIDUAL
BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)
BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-4)
WEATHERED ROCK (SEV. WEATHERED BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
DRY
02/06
443+00.00
813.09
443+00.00
442+50.0 -L-
60.0 LT
RESIDUAL BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)
BRN. MED. DENSE MOIST SILTY SAND (A-2-4)
WEATHERED ROCK
(SEVERELY WEATHERED
BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
DRY
02/06
442+50.00
812.57
442+50.00
-L-



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
444+00.0 -L-
80.0 LT
444+00.0 -L-
100.0 RT
RESIDUAL
BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)
BRN. MED. DENSE TO DENSE MOIST MICA. SILTY SAND (A-2-4)
WEATHERED ROCK (SEV. WEATHERED BIOTITE/MICA GNEISS)
CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)
AR DRY 02/06
444+00.00
443+50.00
BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-4)

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	223

130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

870 860 850 840 830 820 810 800

S.S. 833735

RESIDUAL

849.30

BRN. STIFF MOIST MICA SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE
MOIST MICA SILTY SAND (A-2-4)

L
444+50.00

814.65

L
444+50.00

814.65

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

2d

6d

6d

6d

6d

810.72

810.72

D.P. 811.579

444+50.00

S.S. 862.996

15-MAY-2008 10:06
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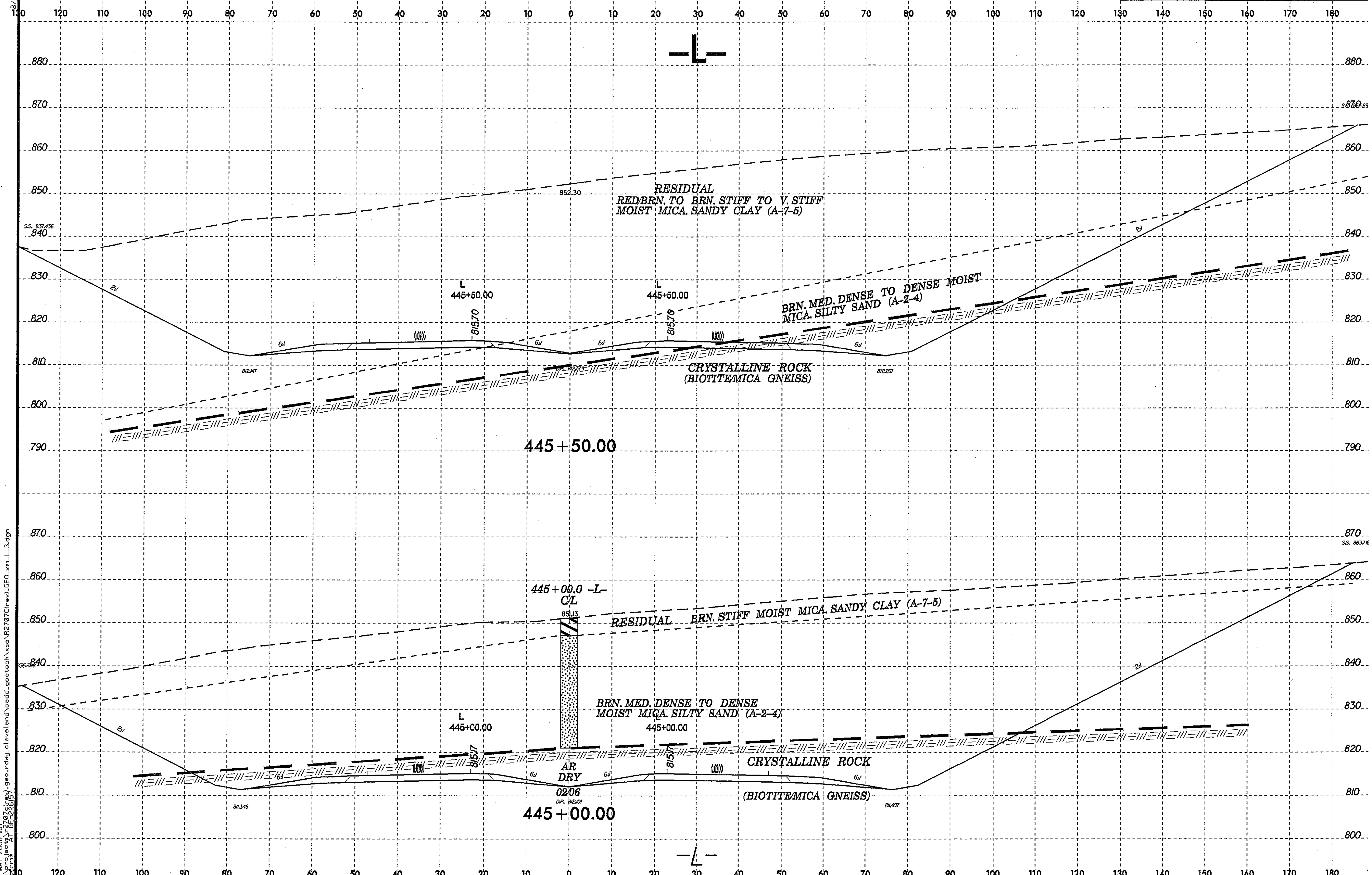
ROY KEEHAN (RKY)
Default

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	224



16-MAY-2008 dgn
8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	225

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

870 860 850 840 830 820 810 800 790

RESIDUAL
BRN. STIFF TO V. STIFF MOIST
MICA. SANDY CLAY (A-7-5)

NO ROCK

851.95

L
446+50.00

816.74

6J

803.45

446+50.00

S-110
S-111
446+00.0 -L-
100.0 LT

SS. @ 847.19

850.85

RESIDUAL
RED/BRN. TO BRN. STIFF TO V. STIFF
MOIST MICA. SANDY CLAY (A-7-5)

L
446+00.00

816.22

812.54

BT
DRY
02/06

446+00.00
-L-

15-MAY-2008 11:22
dburris
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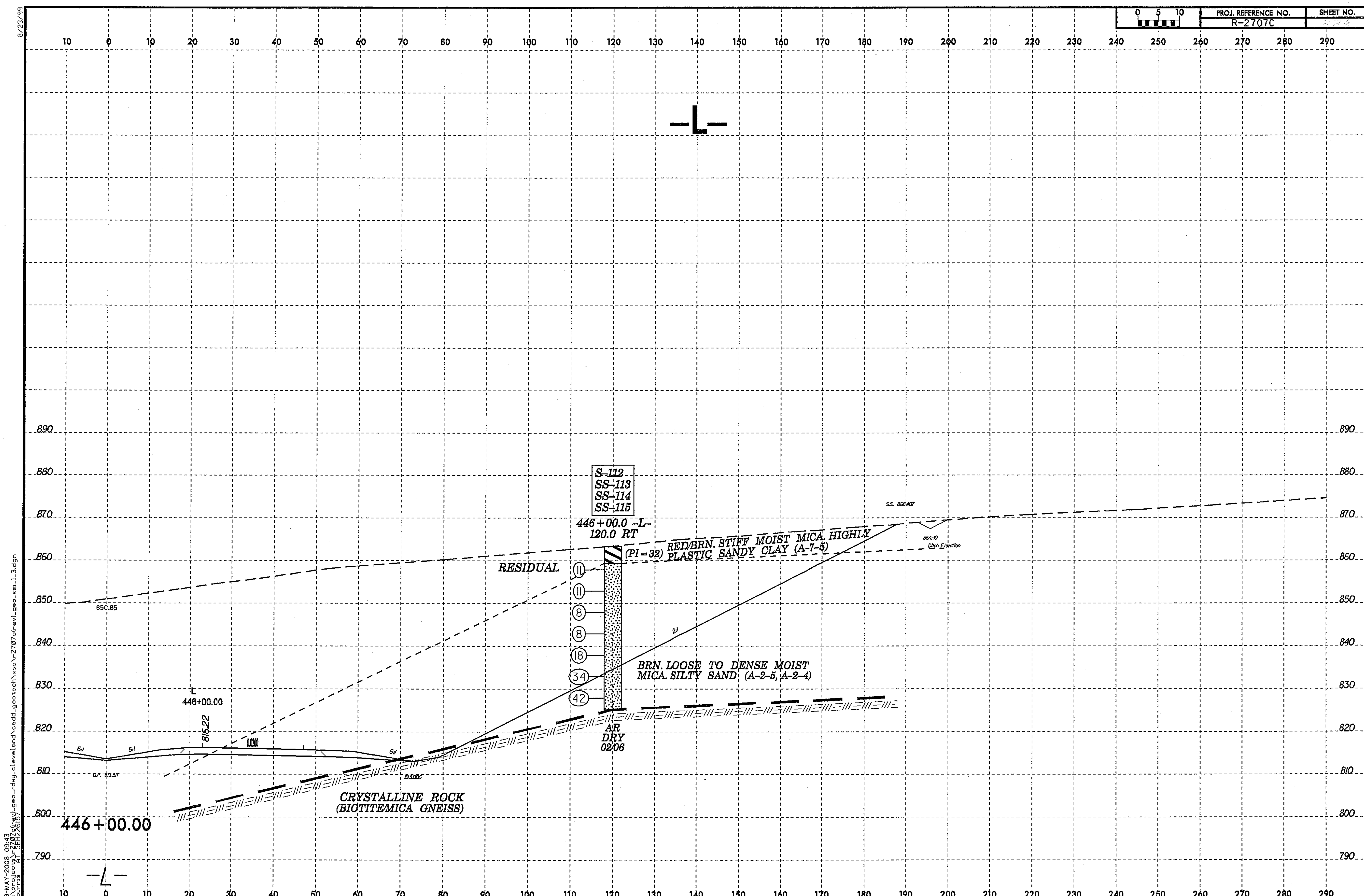
ATT GEH226157



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
S-112
SS-113
SS-114
SS-115
446+00.0 -L-
120.0 RT
(PI=32) RED/BRN. STIFF MOIST MICA. HIGHLY PLASTIC SANDY CLAY (A-7-5)
RESIDUAL
BRN. LOOSE TO DENSE MOIST MICA. SILTY SAND (A-2-5, A-2-4)
AR
DRY
02/06
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
L
446+00.00
816.22
850.85
446+00.00
-L-
8/23/99
29-MAY-2008 09:43

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	227

447+00.0 -L- C/L

RESIDUAL

BRN. STIFF TO V. STIFF MOIST MICA. SANDY CLAY (A-7-5)

L 447+00.00

817.26

6d 6d 6d

2:1

S.S. 868.97

867.90 Ditch Elevation

BT DRY 0206

447+00.00

NO ROCK

RESIDUAL

BRN. STIFF TO V. STIFF MOIST MICA. SANDY CLAY (A-7-5)

L 446+50.00

816.74

6d 6d 6d

2:1

S.S. 869.89

867.70 Ditch Elevation

446+50.00

-L-

16-MAY-2008 11:27
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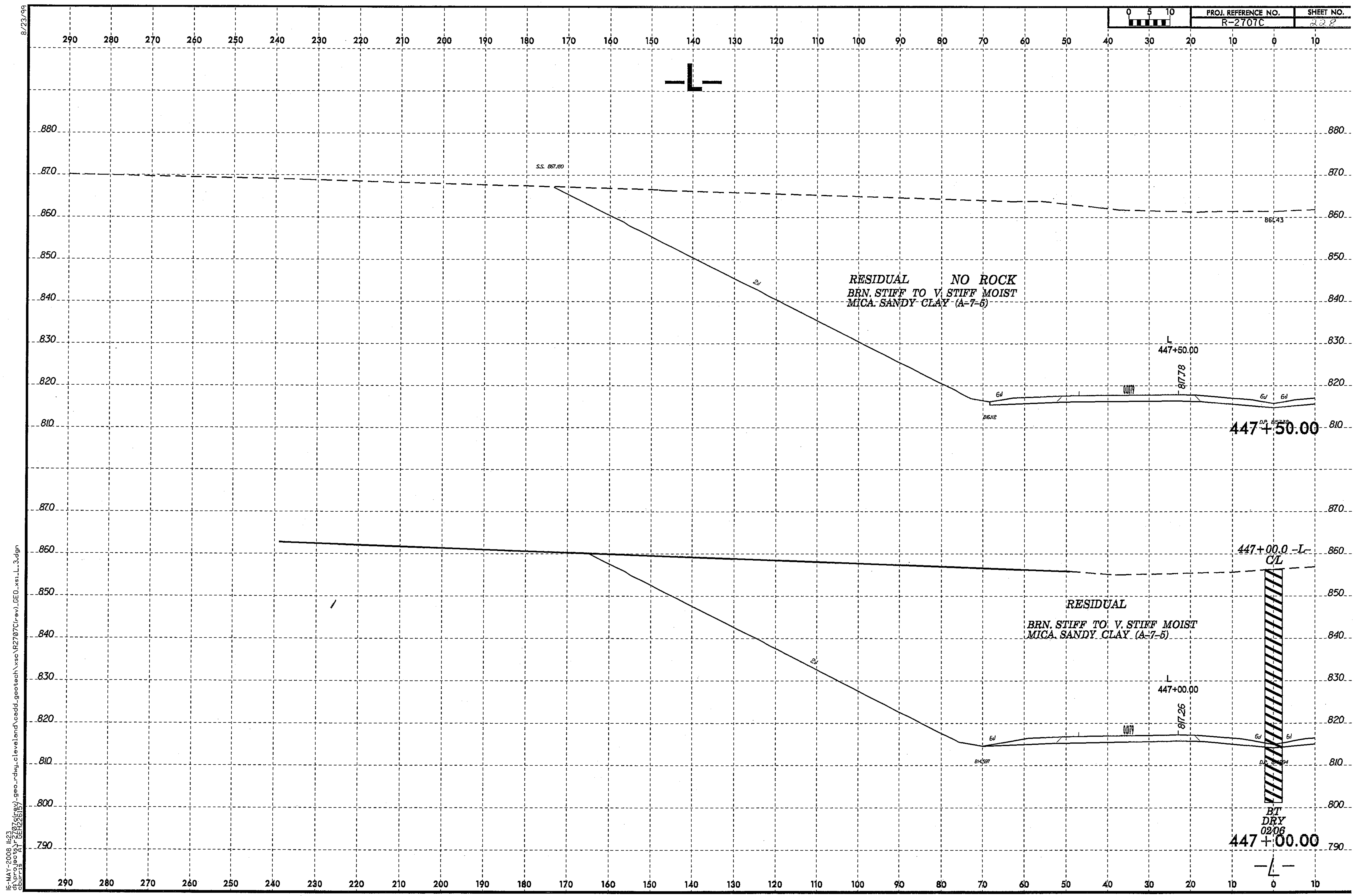
dburris



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL NO ROCK
BRN. STIFF TO V. STIFF MOIST
MICA. SANDY CLAY (A-7-5)
L
447+50.00
447+50.00
447+00.0 -L-
C/L
RESIDUAL
BRN. STIFF TO V. STIFF MOIST
MICA. SANDY CLAY (A-7-5)
L
447+00.00
BT
DRY
02/06
447+00.00
-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	

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

880 870 860 850 840 830 820 810

RESIDUAL

BRN. MED. STIFF MOIST MICA. SANDY CLAYS (A-6, A-7-5)

865.75

S.S. 871.083

869.00
Ditch Elevation

BRN. LOOSE TO V. DENSE MOIST
MICA. SILTY SAND (A-2-4, A-2-5)

2:1

L
448+00.00

818.30

6:1 6:1

VDOT

811.132

448+00.00

RESIDUAL NO ROCK

BRN. STIFF TO V. STIFF MOIST
MICA. SANDY CLAY (A-7-5)

861.43

S.S. 869.036

868.00
Ditch Elevation

2:1

L
447+50.00

817.78

6:1 6:1 6:1

861.045

447+50.00

27-MAY-2008 14:07
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User:burris
PLT SCALE:1.0000

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	229

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

890 880 870 860 850 840 830 820 810 800 790

S-116
SS-117
SS-118
SS-119
448+00.0 -L-
110.0 LT

S.S. 869.088

RESIDUAL

BRN. MED. STIFF MOIST MIC. SANDY CLAY (A-6)

865.75

4
5
26
68
39
19
13
100

BRN. LOOSE TO V. DENSE MOIST MICA. SILTY SAND (A-2-4, A-2-5)

WEATHERED ROCK

(SEV. WEATH. BIOTITE/MICA GNEISS)

L
448+00.00

818.30

64.64

817.649

D.P. 816.471

AR
DRY
03/06

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

448+00.00

-L-

27-MAY-2008 14:06
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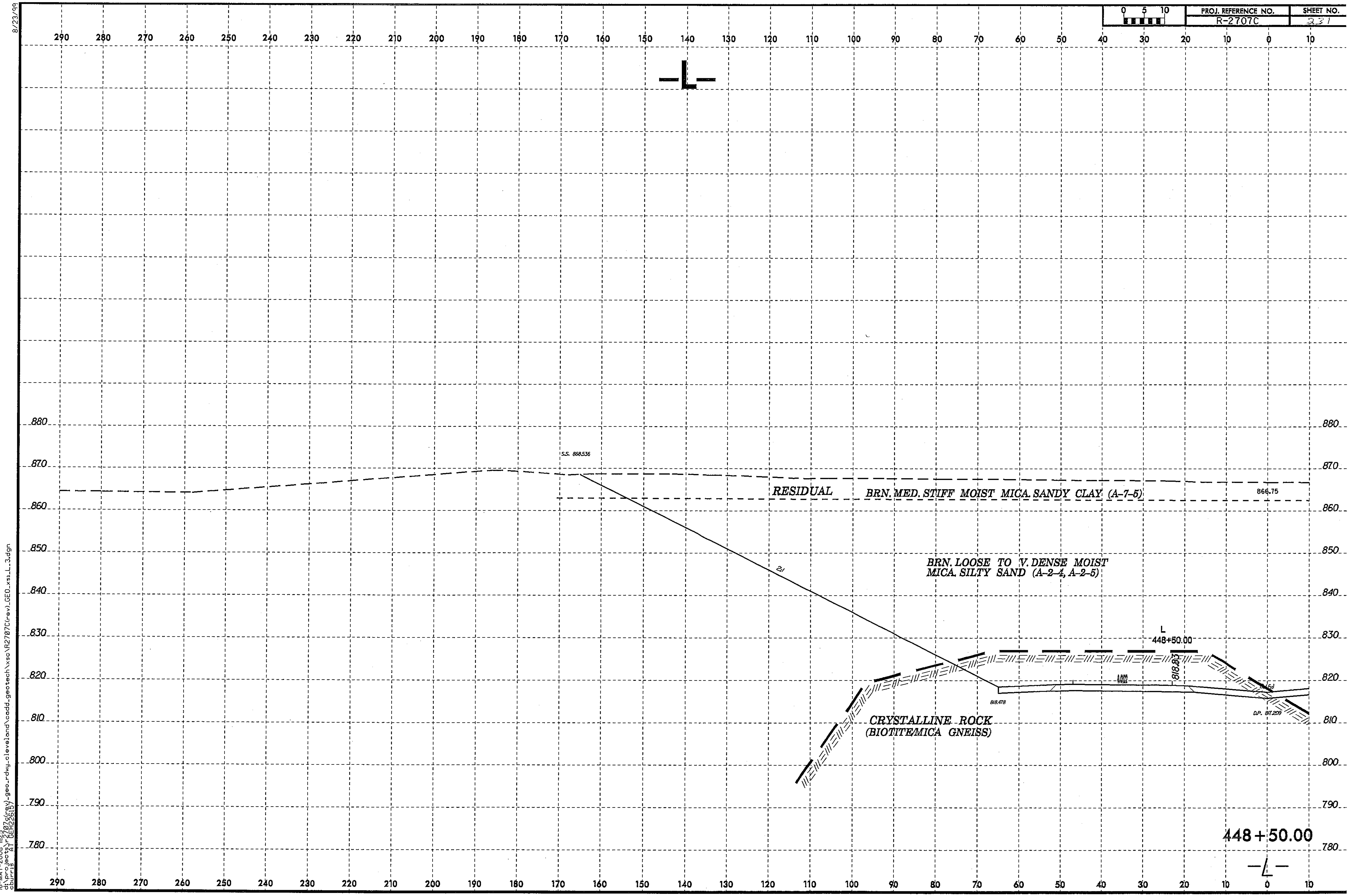
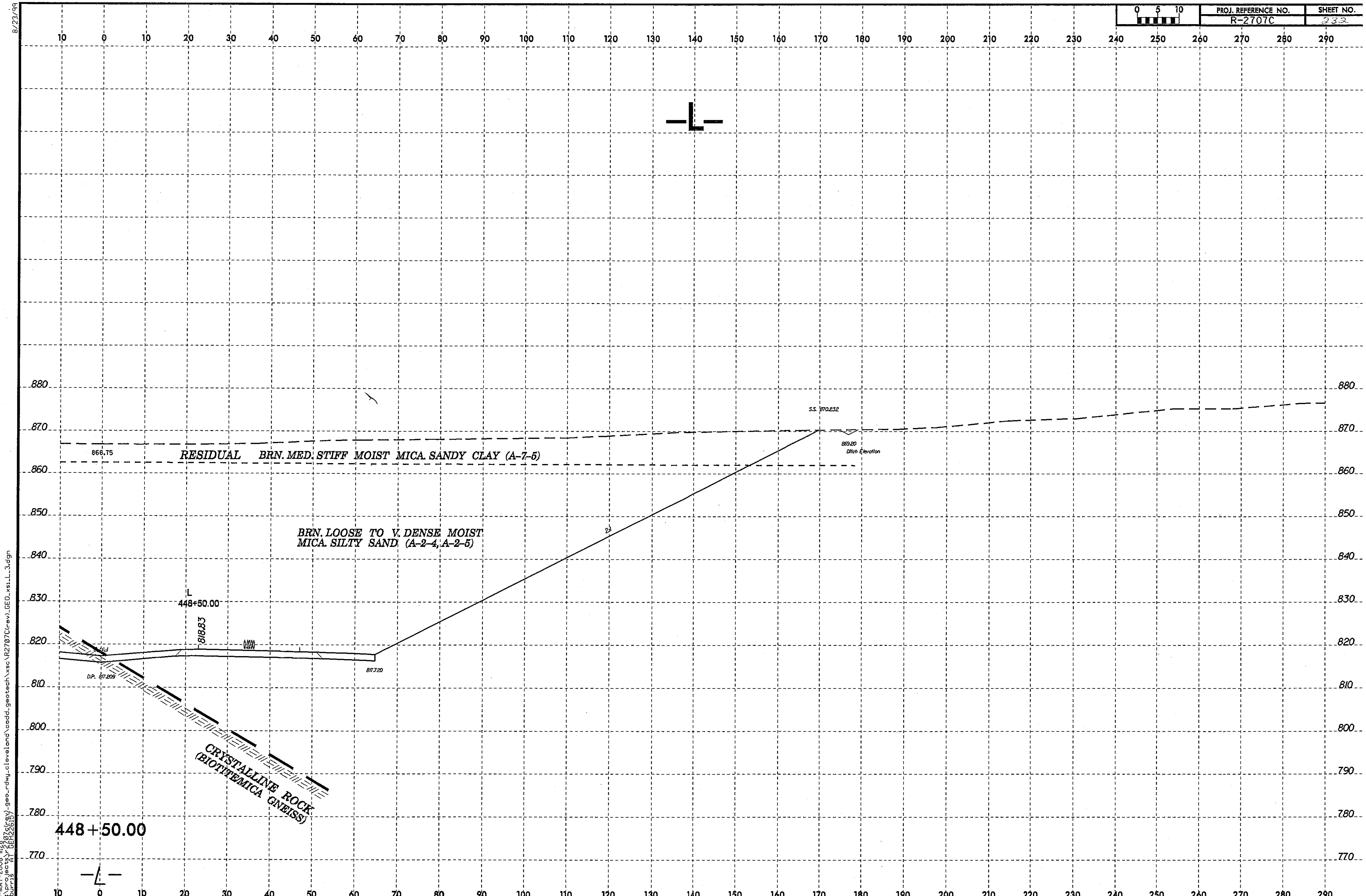
dbarrett





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cburris AT DEH22616

8/23/99

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	233

0 5 10

RESIDUAL BRN. MED. STIFF MOIST MICA SANDY CLAY (A-7-5)

RESIDUAL
BRN. MED. DENSE TO DENSE MOIST
MICA SILTY SAND (A-2-5)

CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)

S.S. 862.039

866.77

2:1

L
449+00.00

819.306

D.P. 817.744

449+00.00
—L—

16-MAY-2008 11:26
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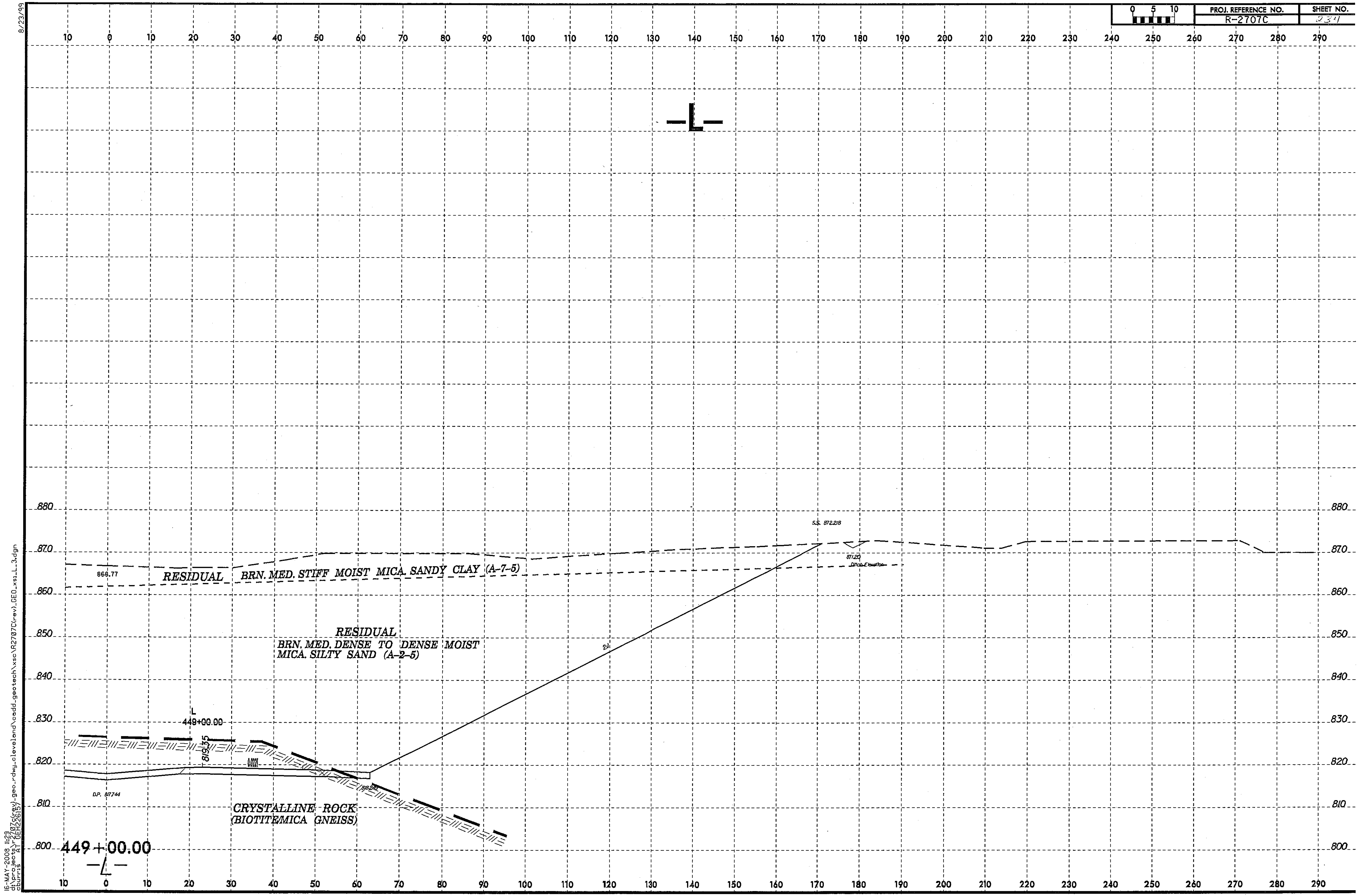
Default


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
234
-L-
880
870
860
850
840
830
820
810
800
S.S. 872.218
871.20
Ditch Elevation
866.77
RESIDUAL BRN. MED. STIFF MOIST MICA. SANDY CLAY (A-7-5)
RESIDUAL
BRN. MED. DENSE TO DENSE MOIST
MICA. SILTY SAND (A-2-5)
L
449+00.00
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
449+00.00
-L-
8/23/99
16-MAY-2008 11:29
d:\projects\r2707c(rev)-geo-rdwy-cleveland\cadd-geotech\xsc\R2707C(rev)_GEO_xsi_L_3.dgn
cburris AT GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	

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

860 850 840 830 820 810 890 880 870 860 850 840 830 820 810 800 790

NO ROCK

RESIDUAL

BRN. STIFF MOIST MICA. SANDY CLAY (A-7-5)

BRN. MED. DENSE TO DENSE
MOIST MICA. SILTY SAND (A-2-5)

SS. 839.589

SS. 854.91

850.11

L
450+00.00

820.40

821.023

818.817

450+00.00

S-120
S-121
449+40.0 -L-
125.0 RT
=
22+00 -Y3-
46 RT

449+50.0 -L-
C/L
865.57

SS. 863.925

SS. 861.49

CRYSTALLINE ROCK
(BIOTITEMICA GNEISS)

AR
DRY
03/06

BT
DRY
03/06

449+50.00

29-MAY-2008 10:01
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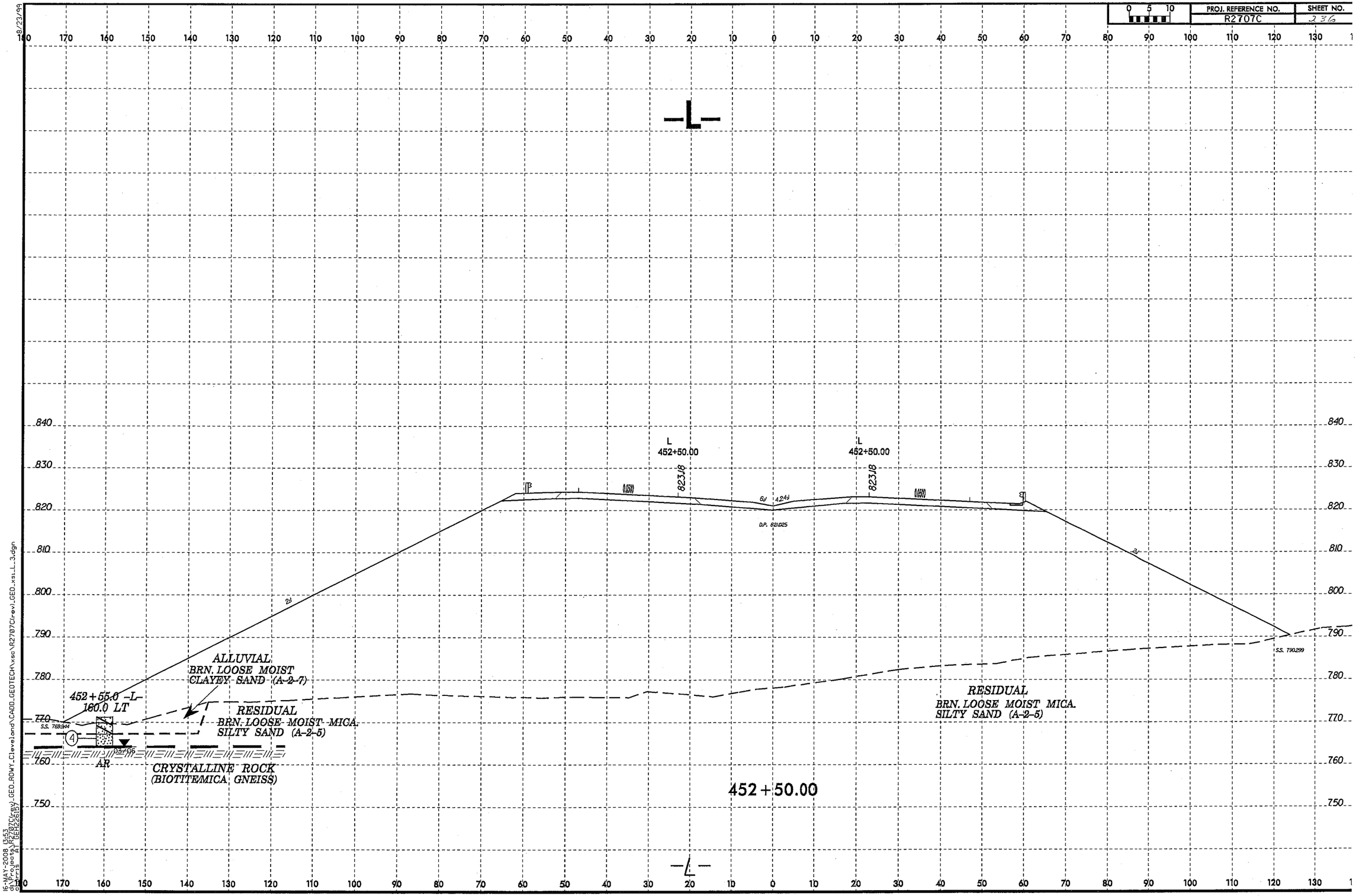
dburris

9/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R2707C	236



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dlt\Projects\R2707C(rev)\GEO_ROWY_Cleveland\CADD_GEOTECH\xsc\R2707C(rev)_GEO_xsL_3.dgn

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	237

L

L
453+00.00

L
453+00.00

823.77

823.77

0.020

6V

4.93d

0.020

D.P. 821.196

2d

4d

SS-126
452+95.0 -L-
80.0 LT

S.S. 776.500

BRN. V. LOOSE TO LOOSE MOIST CLAYEY SAND (A-2-7) — ALLUVIAL

BRN. V. LOOSE TO MED. DENSE MOIST SILTY SAND (A-2-5) — RESIDUAL

(SEV. WEATHERED BIOTITEMICA GNEISS) — WEATHERED ROCK

CRYSTALLINE ROCK (BIOTITEMICA GNEISS)

3

100

03/06

AR

774.19

S.S. 782.474

453+00.00

L

840 830 820 810 800 790 780 770 760 750

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

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dfrank (Frank Rogers)

8/23/99

PROJ. REFERENCE NO. R-2707C

SHEET NO. 238

-L-

L 453+50.00

L 453+50.00

824.37

824.37

0.450

0.450

5.22d

D.P. 821.77

2d

2d

SS-125

453+35.0 -L- C/L

777.50

03.06

BRN. SOFT TO MED. STIFF WET SILTY SAND W/GRAVEL (A-2-4)

BRN. SOFT TO MED. STIFF WET SILTY SAND W/GRAVEL (A-2-4)

S.S. 780.308

S.S. 778.487

ALLUVIAL

ALLUVIAL

ALLUVIAL

ALLUVIAL

RESIDUAL GRAY MED. DENSE MOIST TO WET SILTY SAND (A-2-5)

RESIDUAL GRAY MED. DENSE MOIST TO WET SILTY SAND (A-2-5)

RESIDUAL GRAY MED. DENSE MOIST TO WET SILTY SAND (A-2-5)

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

AR

453+50.00

-L-

840 830 820 810 800 790 780 770 760 750 740

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

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default
AT GEH226167

8/23/99

PROJ. REFERENCE NO. R-2707C

SHEET NO. 239

L
454+00.00
824.98

0.050

6:1

5.42%

D.P. 822.68

2:1

SS. 788.50

783.79

RESIDUAL BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-5)

S-124
454+00.0 -L-
85.0 RT

03.06

3
15

ALLUVIAL BRN. V. LOOSE SILTY SAND W/GRAVEL (A-2-4)

RESIDUAL BRN. MED. DENSE MOIST MICA SILTY SAND (A-2-5)

AR

CRYSTALLINE ROCK (BIOTITE/MICA GNEISS)

454+00.00

16-MAY-2008 11:26
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8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	

0 5 10

130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

840 830 820 810 800 790 780 770 760 750

826.22 826.22

0.050 0.050

6.0% 5.64% 2:1 2:1 3:1

DP. 823.028

SS-127
SS-128
455+00.0 -L-
C/L
798.29

RESIDUAL (PI=32)

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)

BRN. MED. DENSE MOIST MICA. SILTY SAND (A-2-5)

SS. 799.87

SS. 790.33

BT
DRY
03/06

455+00.00

L
454+50.00

825.59 825.59

0.050 0.050

6.0% 5.56% 2:1 2:1 3:1

DP. 822.569

SS. 795.393

RESIDUAL RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A-7-5)

791.38

BROWN MED. DENSE MOIST MICA SILTY SAND (A-2-5)

S-122
SS-123
454+30.0 -L-
150.0 RT

ALLUVIAL SS. 784.81

BRN. LOOSE MOIST TO WET CLAYEY SAND (A-2-7)

RESIDUAL

BRN. V. LOOSE TO LOOSE WET MICA. SILTY SAND (A-2-5)

03/06

BT

454+50.00

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dburgess
Project: R-2707C

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	241

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

-L-

860
850
840
830
820
810

S.S. 852.460

463+00.0 -L-
80.0 LT

RESIDUAL

BRN. STIFF MOIST MICA. SANDY CLAY (A-6)

BRN. STIFF TO V. STIFF MOIST SANDY SILT (A-4)

834.379

BT
DRY
03/06

836.51

841.01

836.51

S.S. 822.419

463+00.00

-L-

860
850
840
830
820
810

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

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cburris

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	242

S-132
S-133
465+00.0 -L-
80.0 LT

S.S. 855.121

85474
Ditch Elevation

RESIDUAL

BRN. STIFF MOIST MICA SANDY CLAY (A-6)

BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-4)

839.08

839.08

839.10

835.876

03/06

BT

D.P. 836.009

835.20
Ditch Elevation

8.8:1

6:1

2:1

2.0

465+00.00
-L-

19-MAY-2008 08:25
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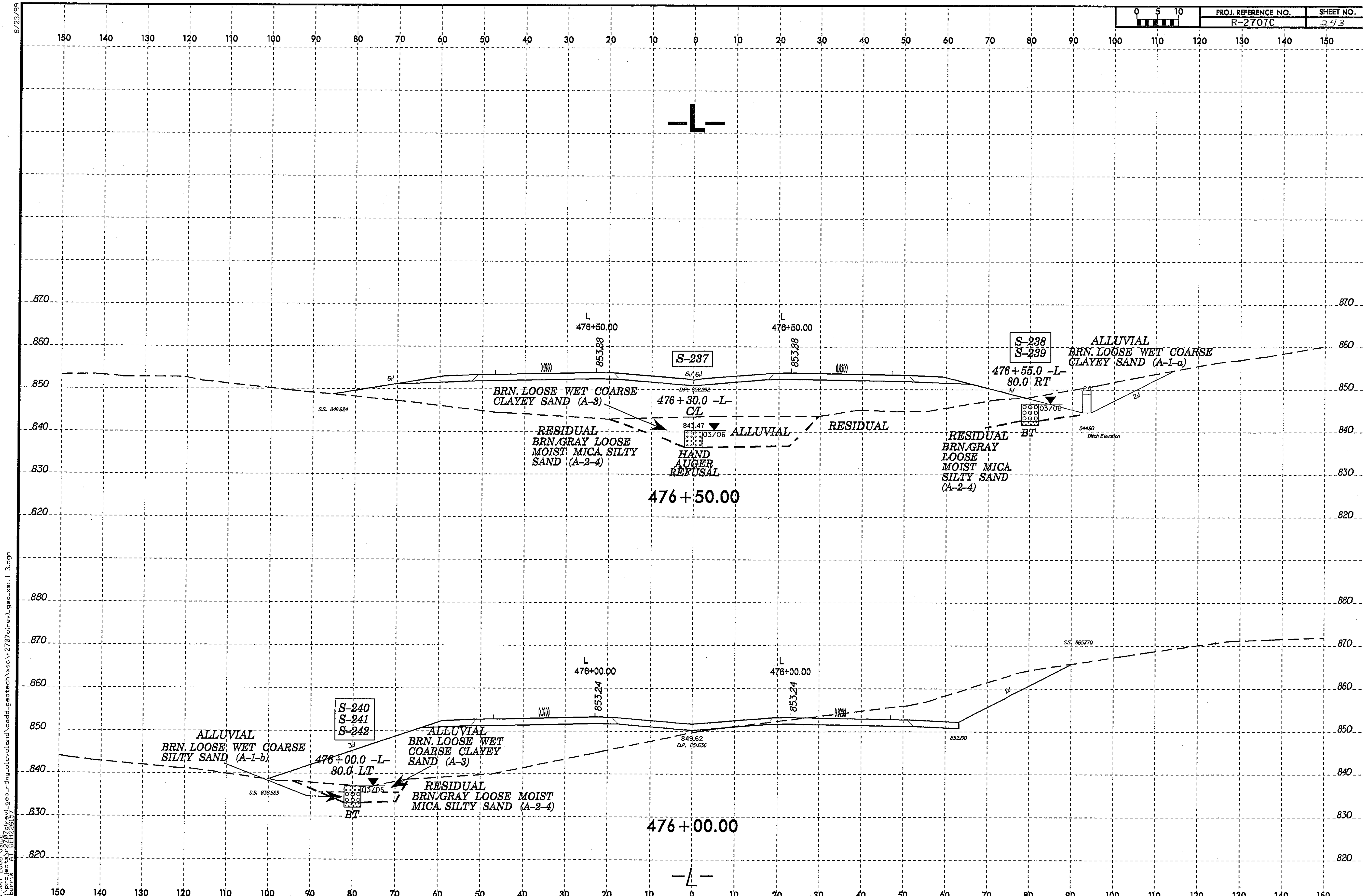
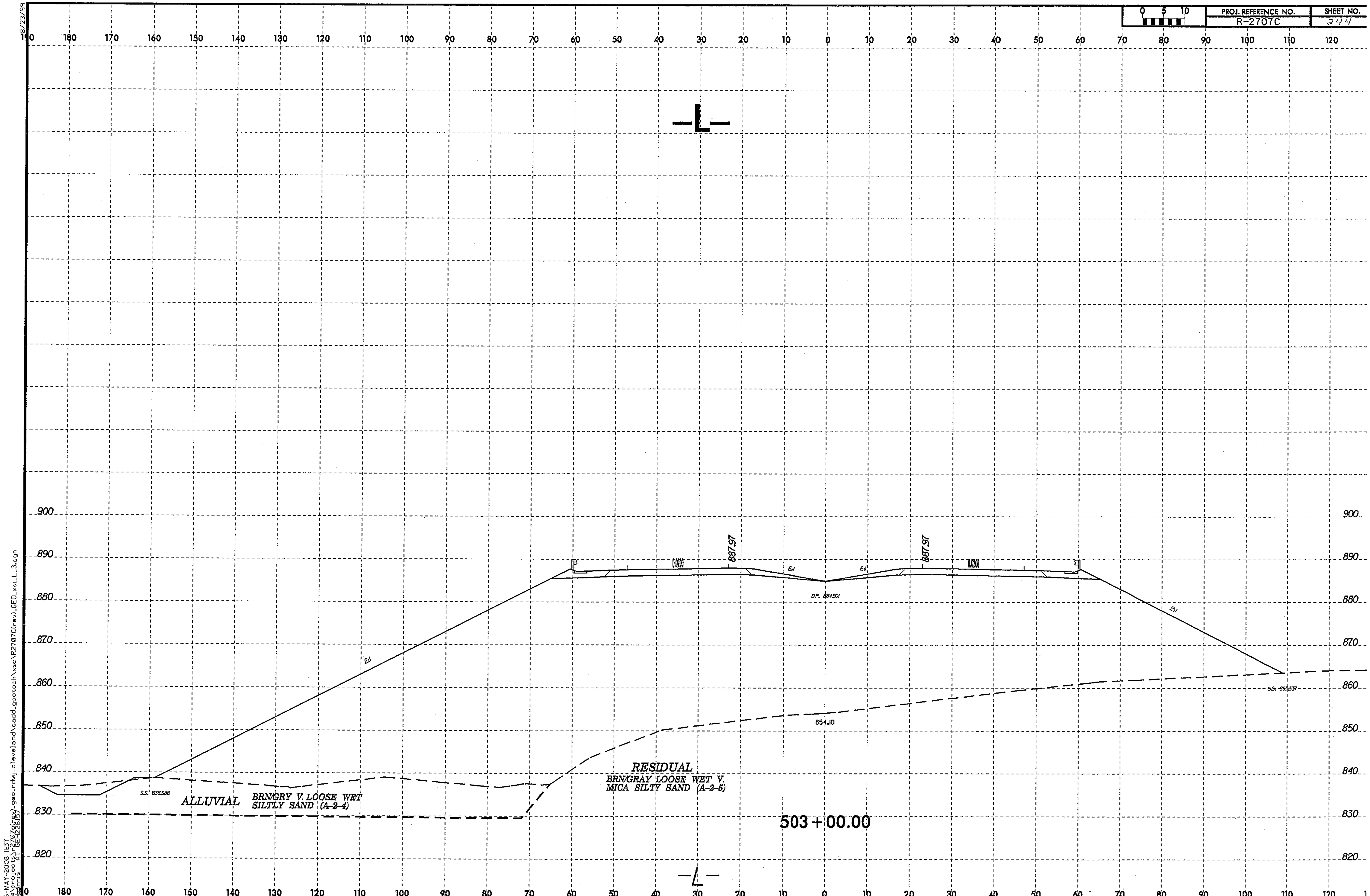

-L-
S-237
476+30.0 -L-
C/L
BRN. LOOSE WET COARSE CLAYEY SAND (A-3)
RESIDUAL BRN/GRAY LOOSE MOIST MICA SILTY SAND (A-2-4)
843.47
03706
ALLUVIAL
HAND AUGER REFUSAL
RESIDUAL
S-238
S-239
476+55.0 -L-
80.0 RT
ALLUVIAL BRN. LOOSE WET COARSE CLAYEY SAND (A-1-a)
RESIDUAL BRN/GRAY LOOSE MOIST MICA SILTY SAND (A-2-4)
BT
476+50.00
S-240
S-241
S-242
476+00.0 -L-
80.0 LT
ALLUVIAL BRN. LOOSE WET COARSE SILTY SAND (A-1-b)
ALLUVIAL BRN. LOOSE WET COARSE CLAYEY SAND (A-3)
RESIDUAL BRN/GRAY LOOSE MOIST MICA SILTY SAND (A-2-4)
BT
849.62
476+00.00
-L-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R-2707C
SHEET NO.
-L-
887.97
887.97
2:1
6:1
6:1
2:1
D.P. 884.901
854.10
S.S. 838.688
ALLUVIAL
BRN/GRY V. LOOSE WET SILTLY SAND (A-2-4)
RESIDUAL
BRN/GRAY LOOSE WET V. MICA SILTY SAND (A-2-5)
503 + 00.00
-L-
900
890
880
870
860
850
840
830
820
16-MAY-2008
8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	2 of 5

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

900 890 880 870 860 850 840 830

—L—

889.26

2:1

6d

6d

D.P. 886.88

196.3650

168.8370

152.2870

SS. 845660

837.2845

ALLUVIAL

RESIDUAL

BRN. V. LOOSE TO LOOSE WET SILTY SAND (A-2-4)

BRNGRAY LOOSE WET SILTY SAND (A-2-5)

844.70

504+00.00

888.62

2:1

6d

6d

D.P. 885.544

192.3098

170.2690

157.7135

SS. 842.343

835.9155

SS-160
SS-161

503+50.0 —L—
35.0 LT

ALLUVIAL

BRN/GRAY V. LOOSE WET SILTY SAND (A-2-4)

RESIDUAL

BRN/GRAY LOOSE WET V. MICA SILTY SAND (A-2-5)

3 3 5

03/06

BT

846.50

ALLUVIAL

RESIDUAL

503+50.00

—L—

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

16-MAY-2008 14:18
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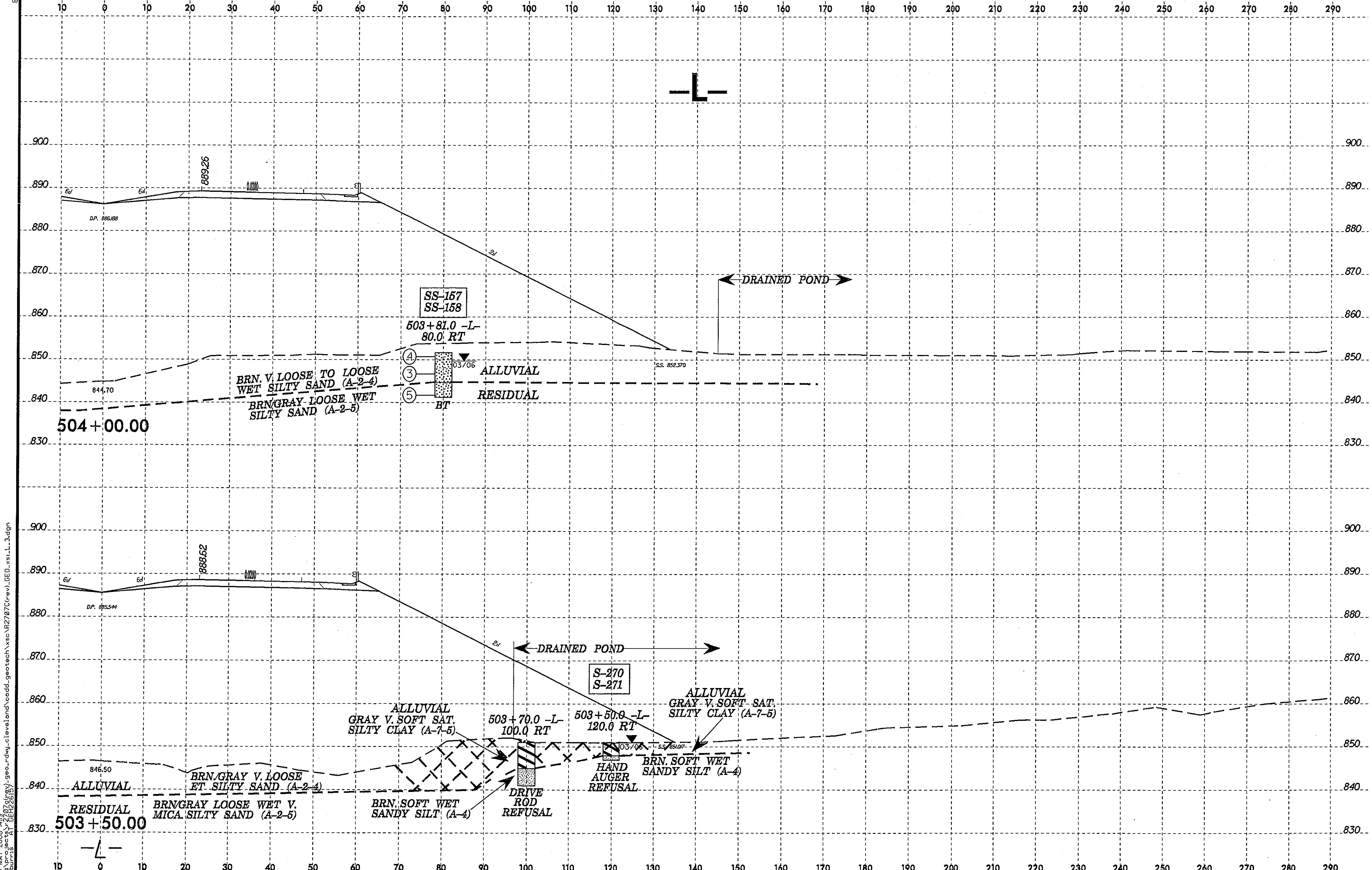
PROJ. REFERENCE NO. R-2707C | SHEET NO. 246



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cburris AT GEH226157

8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	247

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

940 930 920 910 900 890 880

RAMP -A2-
7+42.27

917.67

2.05d

898.00
Ditch Elevation

910.728

4.11d

4d

L
544+50.00

917.25

6d

6d

D.P. 914.177

ALLUVIAL BRN. SOFT MOIST SANDY SILT (A-4)

894.55

RESIDUAL BRN. MED. STIFF MOIST MICA MED. PLASTIC TO HIGHLY PLASTIC SANDY CLAY (A-7-5, A-7-6)

544+50.00

RAMP -A2-
7+93.80

918.65

2.87d

897.54
Ditch Elevation

909.840

4.14d

4d

L
544+00.00

917.50

6d

6d

D.P. 914.427

SS-169
SS-170

544+00.0 -L-
140.0 LT

(PI=24-27) (4) (7)

ALLUVIAL BRN. SOFT MOIST SANDY SILT (A-4)

895.95

RESIDUAL
BRN. MED. STIFF MOIST MICA MED. PLASTIC TO HIGHLY PLASTIC SANDY CLAY (A-7-5)

BT
DRY
04/06

544+00.00
-L-

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

16-MAY-2008 11:39
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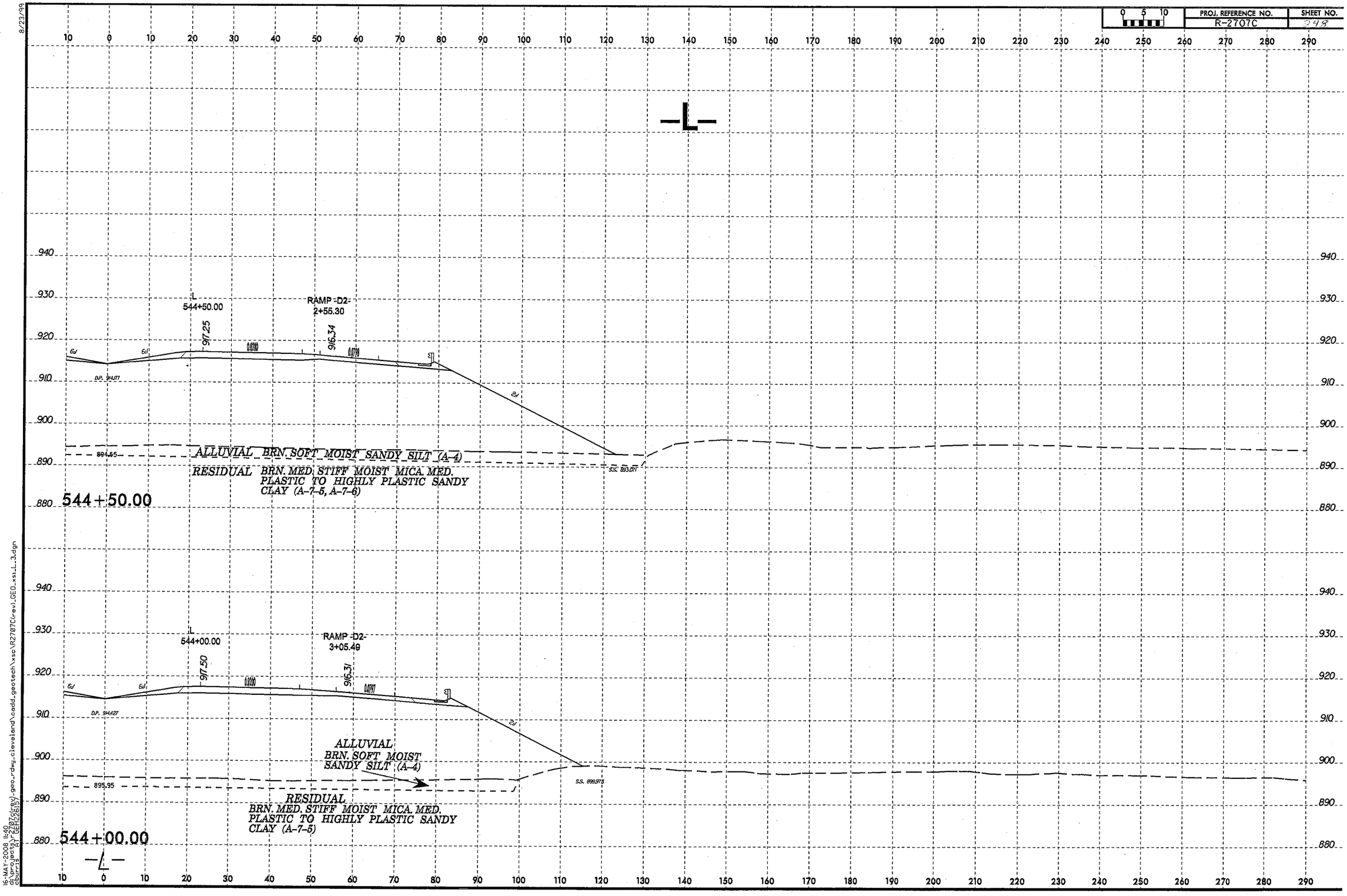
Bburris
4.11 (DEN2B(39))

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	248



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dbrown GEOPAK

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	249

RAMP A2
6+91.08

L
545+00.00

96.85

917.00

911.522

89976
Ditch Elevation

D.P. 913921

BRN SOFT MOIST SANDY SILT (A-4)

ALLUVIAL

RESIDUAL
BRN. SOFT TO MED. STIFF MOIST MED. PLASTIC TO HIGHLY PLASTIC SANDY CLAY (A-7-5, A-7-6)

545+00.0 -L-
C/L
894.73
04/06
BT
545+00.00
-L-

16-MAY-2008 11:40
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Users: GEOPAK(US)

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	

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

940
930
920
910
900
890
880
870

L
545+00.00

RAMP -D2-
2+05.20

917.00

916.29

6d

6d

DP. 913.87'

2d

SS-171
SS-172
SS-173

545+00.0 -L-
C/L
894.13

4
7
4

BRN SOFT MOIST SANDY SILT (A-4)

RESIDUAL

BRN. SOFT TO MED. STIFF MOIST MED. PLASTIC TO HIGHLY PLASTIC SANDY CLAY (A-7-5, A-7-6)

04/06

BT

545+00.00

545+00.0 -L-
100.0 RT

4
9
3

ALLUVIAL

RESIDUAL

BRN. SOFT MOIST SANDY SILT (A-4)

S.S. 892.47'

BRN/GRAY SOFT TO STIFF MOIST MICA. SANDY CLAY (A-7-6, A-7-5)

04/06

BT

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

19-MAY-2008 10:03
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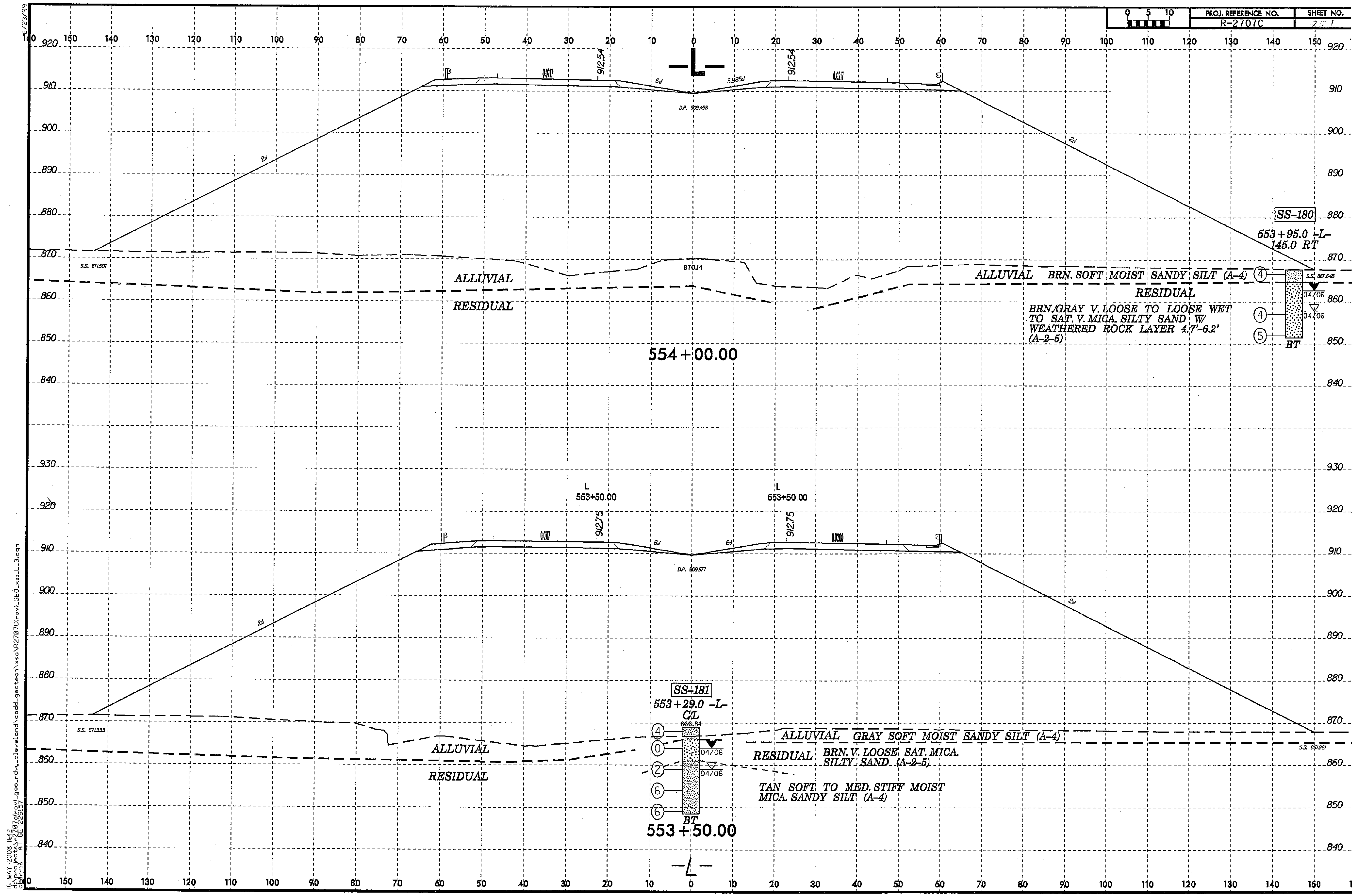
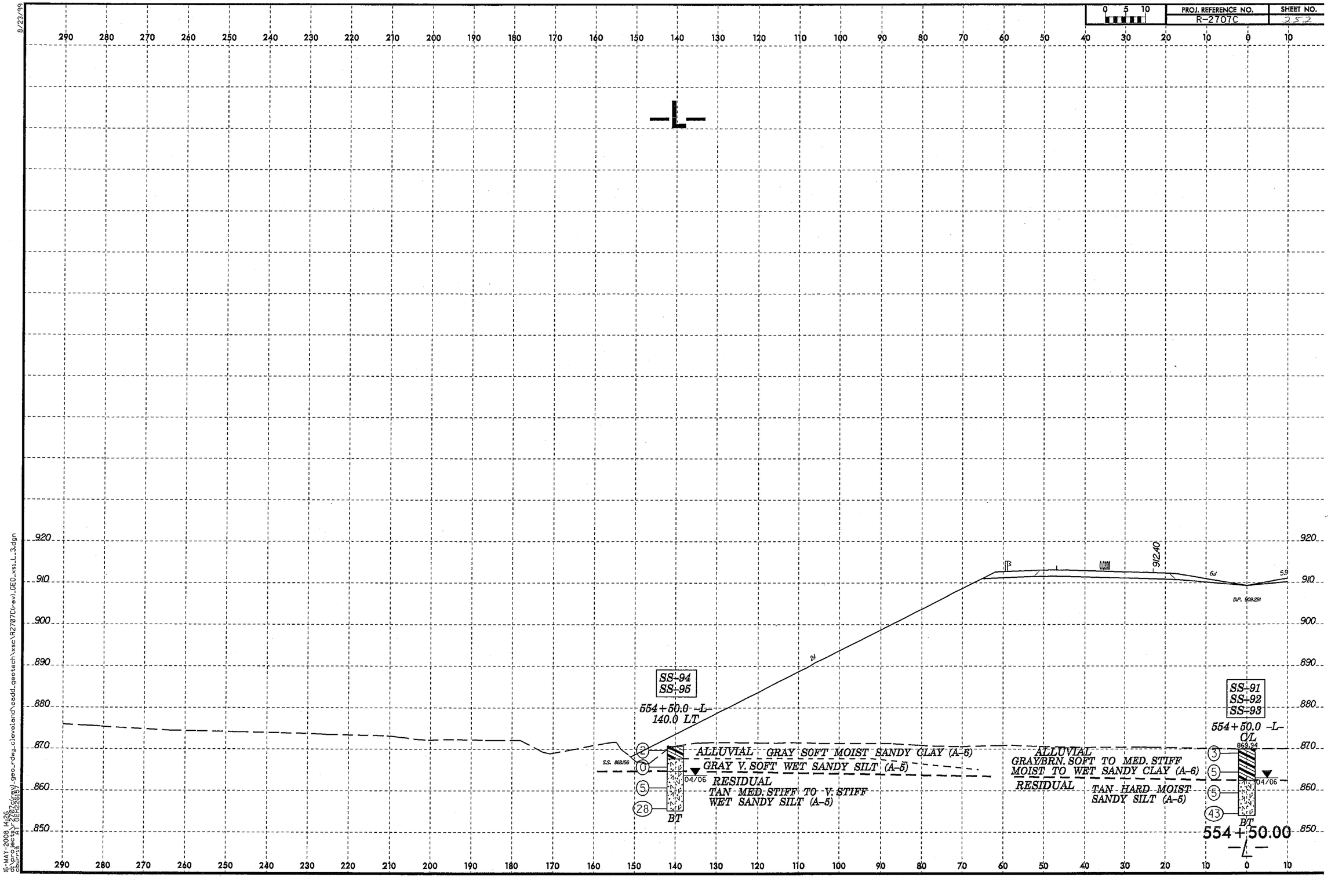


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
554+00.00
ALLUVIAL
RESIDUAL
SS-180
553+95.0 -L-
145.0 RT
ALLUVIAL BRN. SOFT MOIST SANDY SILT (A-4)
RESIDUAL
BRN./GRAY V. LOOSE TO LOOSE WET TO SAT. V. MICA. SILTY SAND W/ WEATHERED ROCK LAYER 4.7'-6.2' (A-2-5)
BT
L
553+50.00
SS-181
553+29.0 -L-
C/L
ALLUVIAL GRAY SOFT MOIST SANDY SILT (A-4)
RESIDUAL BRN. V. LOOSE SAT. MICA. SILTY SAND (A-2-5)
TAN SOFT TO MED. STIFF MOIST MICA. SANDY SILT (A-4)
BT
553+50.00
16-MAY-2008

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	25.2



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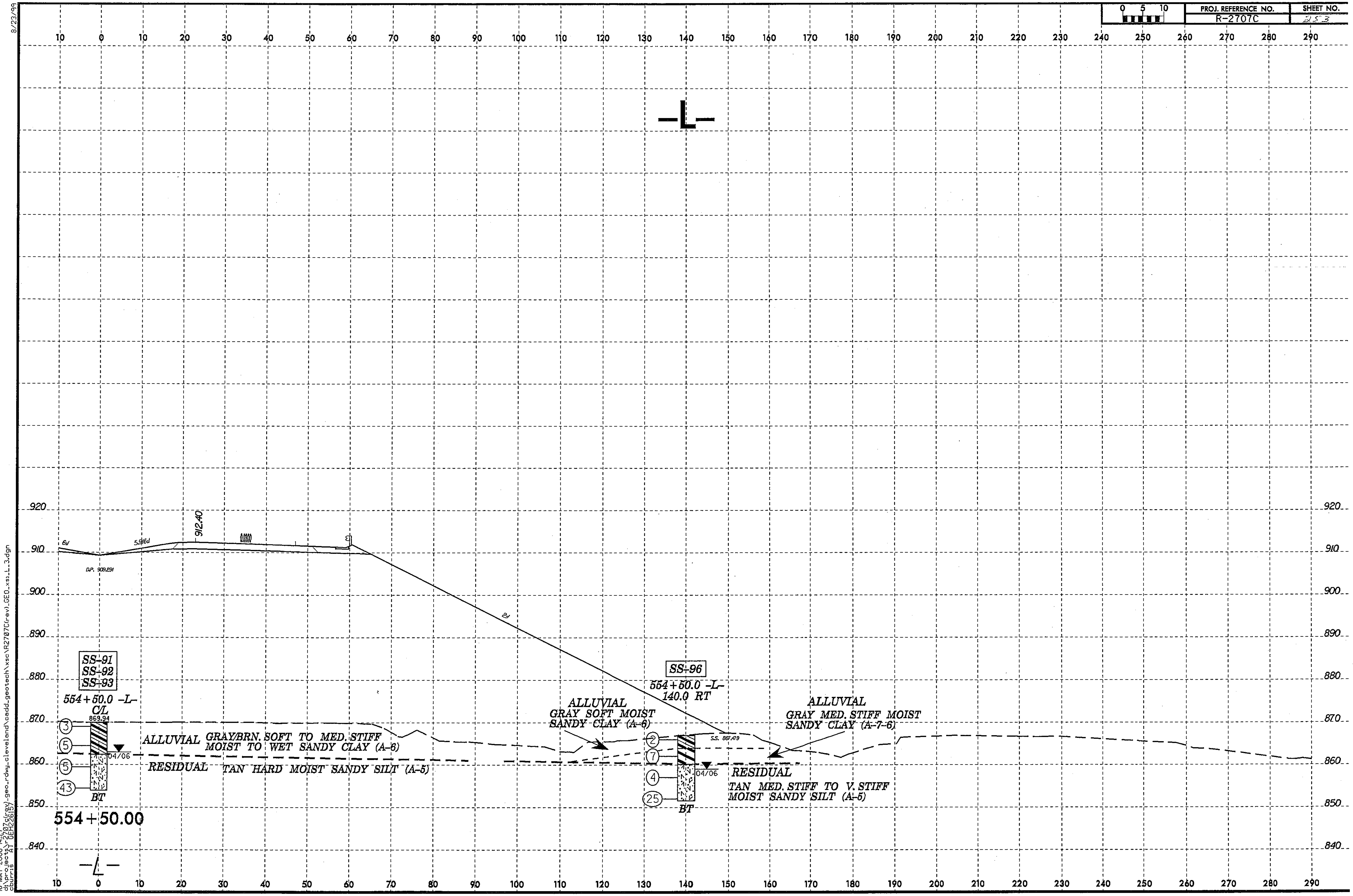
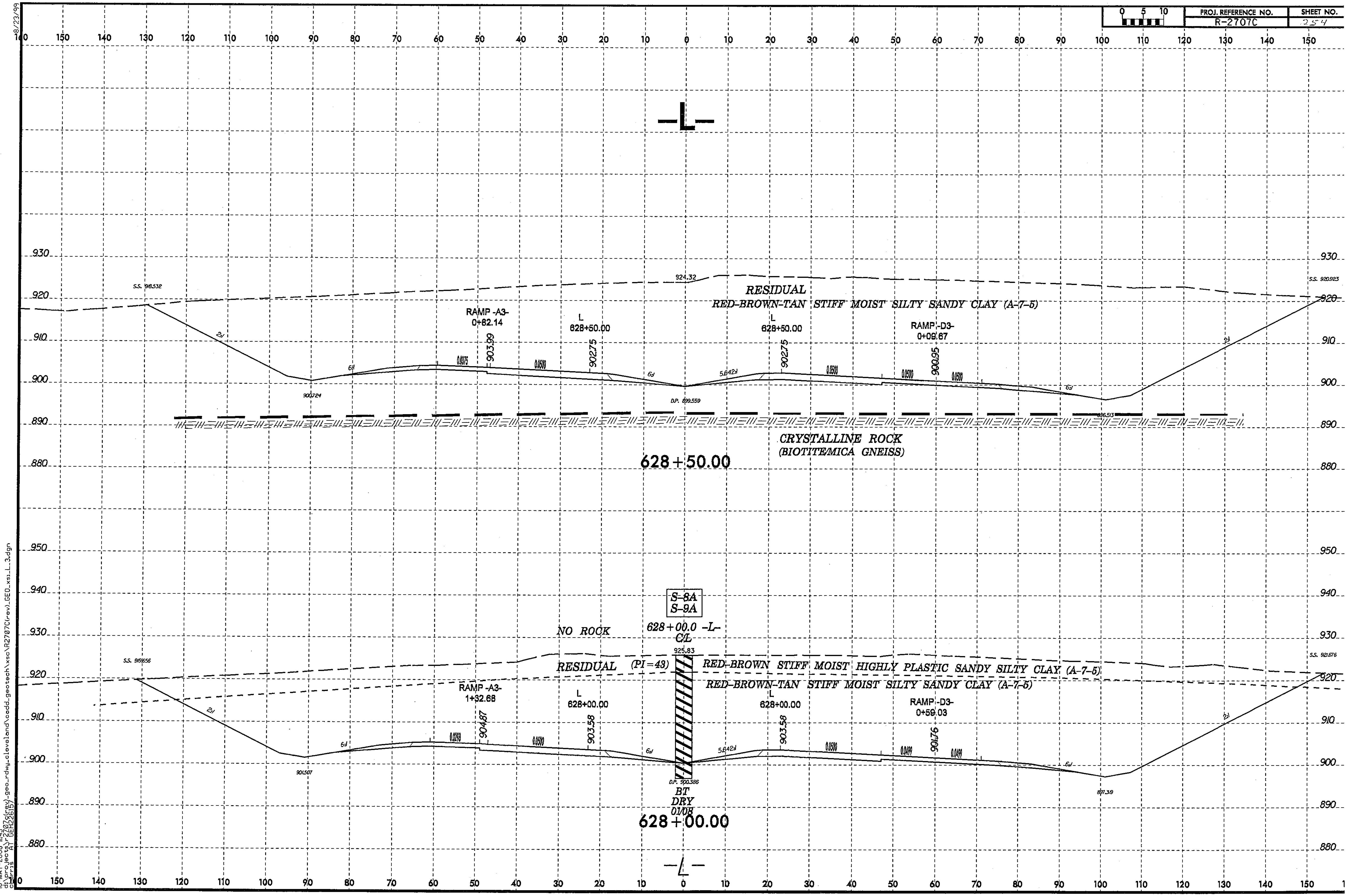
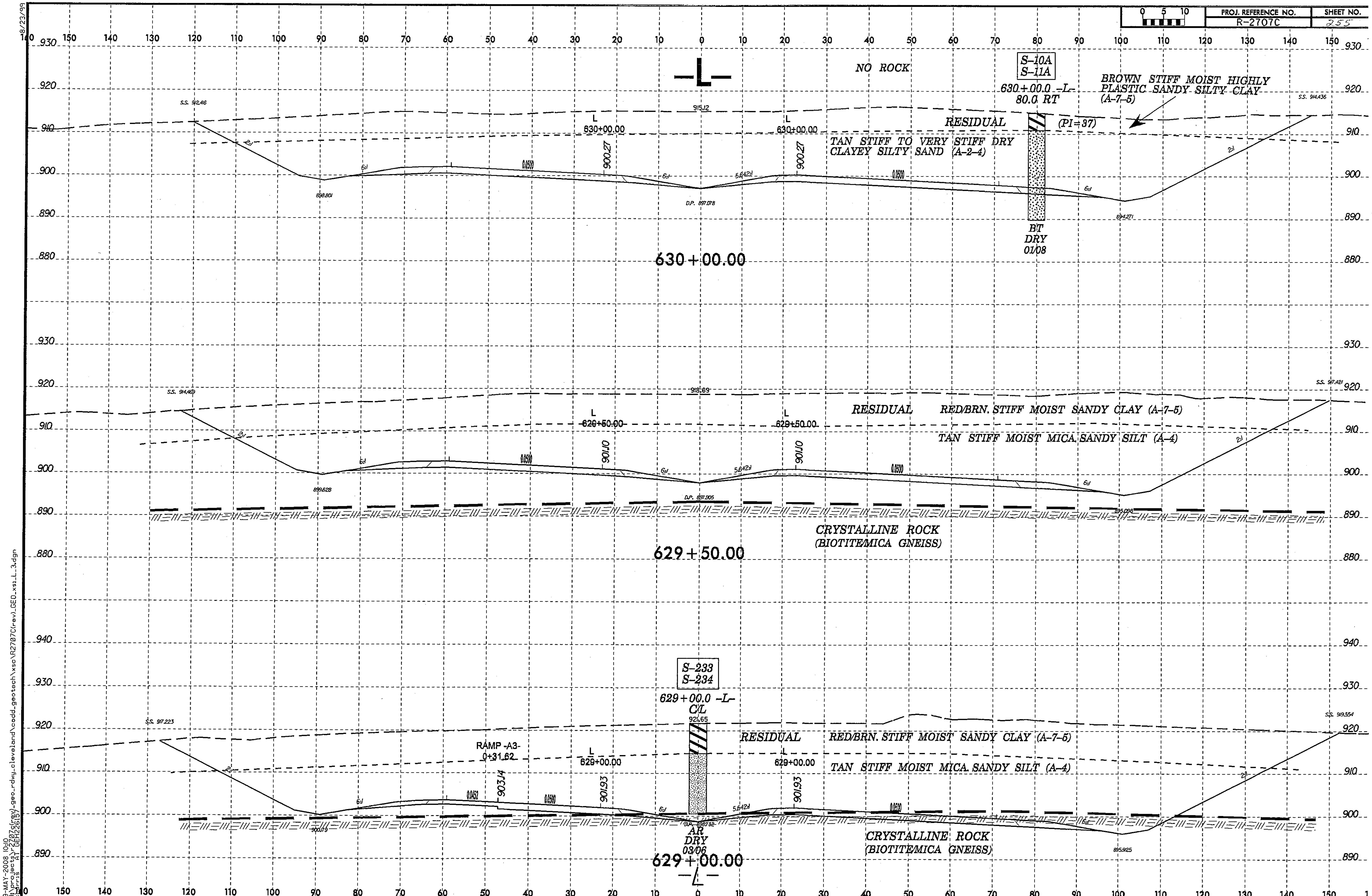
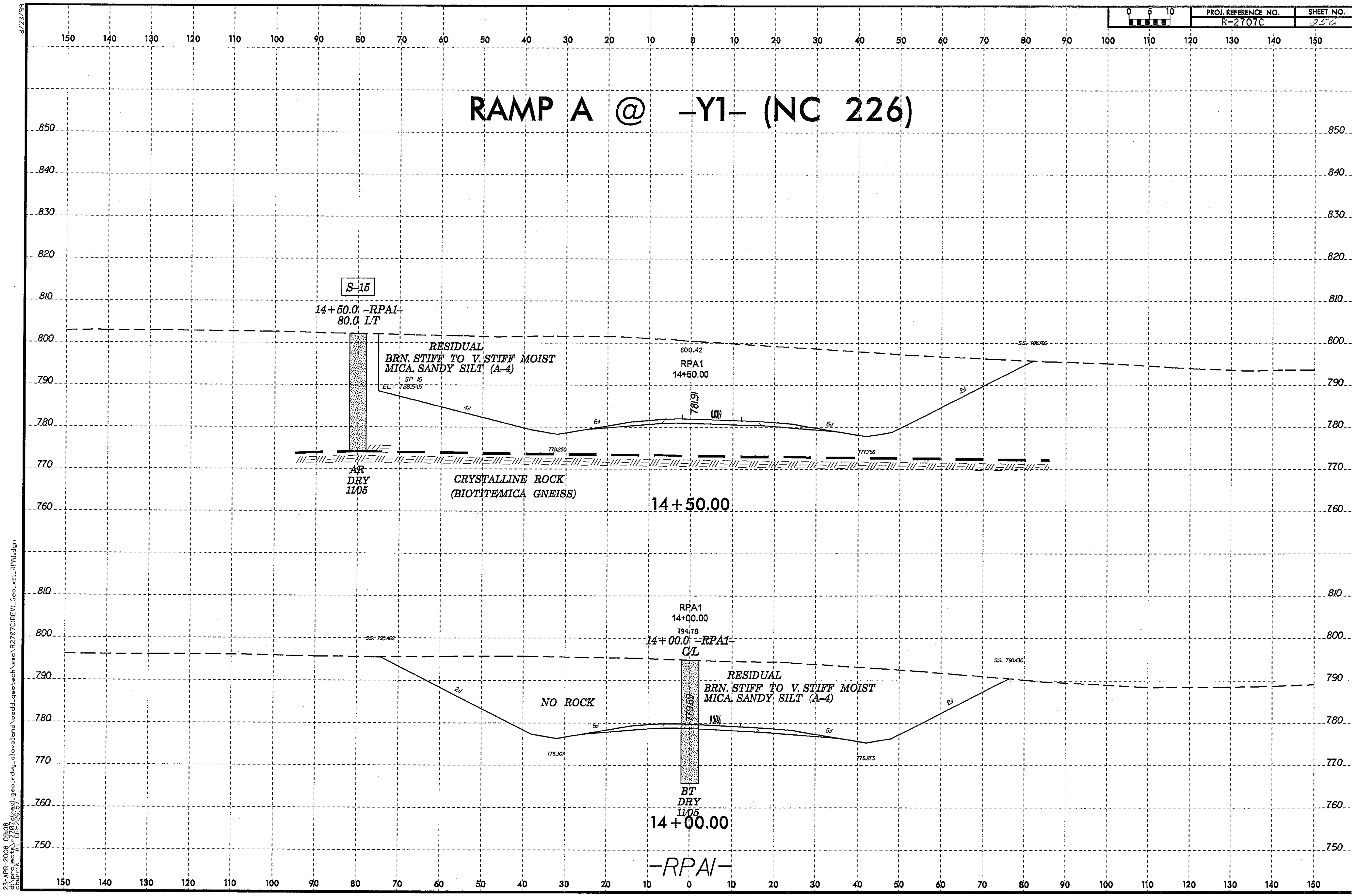


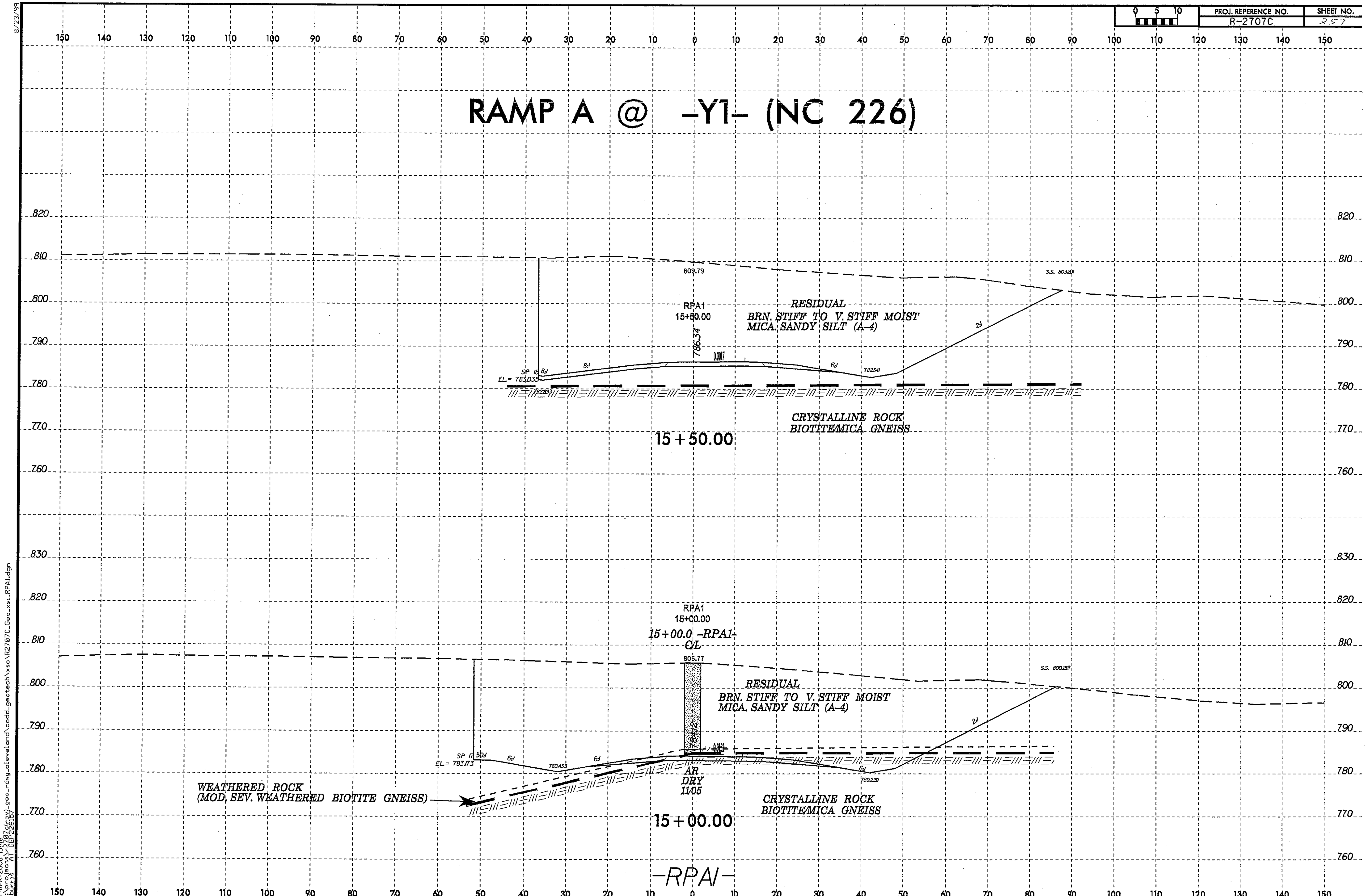
PROJ. REFERENCE NO.
R-2707C
SHEET NO.
0 5 10
-L-
912.40
D.P. 909.291
SS-91
SS-92
SS-93
554+50.0 -L-
C/L
869.94
04/06
BT
554+50.00
ALLUVIAL GRAY/BRN. SOFT TO MED. STIFF MOIST TO WET SANDY CLAY (A-6)
RESIDUAL TAN HARD MOIST SANDY SILT (A-5)
SS-96
554+50.0 -L-
140.0 RT
ALLUVIAL
GRAY SOFT MOIST SANDY CLAY (A-6)
ALLUVIAL
GRAY MED. STIFF MOIST SANDY CLAY (A-7-6)
RESIDUAL
TAN MED. STIFF TO V. STIFF MOIST SANDY SILT (A-5)
920
910
900
890
880
870
860
850
840
-L-


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
-L-
RESIDUAL
RED-BROWN-TAN STIFF MOIST SILTY SANDY CLAY (A-7-5)
RAMP -A3-
0+82.14
L
628+50.00
RAMP -D3-
0+09.67
924.32
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
628+50.00
S-8A
S-9A
628+00.0 -L-
C/L
NO ROCK
RESIDUAL (PI=43)
RED-BROWN STIFF MOIST HIGHLY PLASTIC SANDY SILTY CLAY (A-7-5)
RED-BROWN-TAN STIFF MOIST SILTY SANDY CLAY (A-7-5)
RAMP -A3-
1+32.68
L
628+00.00
RAMP -D3-
0+59.03
925.83
BT
DRY
01/08
628+00.00
-L-



PROJ. REFERENCE NO.
R-2707C
SHEET NO.
255
-L-
NO ROCK
S-10A
S-11A
630+00.0 -L-
80.0 RT
BROWN STIFF MOIST HIGHLY PLASTIC SANDY SILTY CLAY (A-7-5)
RESIDUAL
(PI=37)
TAN STIFF TO VERY STIFF DRY CLAYEY SILTY SAND (A-2-4)
BT
DRY
01/08
630+00.00
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
TAN STIFF MOIST MICA SANDY SILT (A-4)
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
629+50.00
S-233
S-234
629+00.0 -L-
C/L
RAMP -A3-
0+31.62
RESIDUAL
RED/BRN. STIFF MOIST SANDY CLAY (A-7-5)
TAN STIFF MOIST MICA SANDY SILT (A-4)
AR
DRY
03/06
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
629+00.00
-L-


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
256
RAMP A @ -Y1- (NC 226)
S-15
14+50.0 -RPA1-
80.0 LT
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-4)
800.42
RPA1
14+50.00
AR
DRY
11/05
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
14+50.00
RPA1
14+00.00
794.78
14+00.0 -RPA1-
C/L
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA SANDY SILT (A-4)
NO ROCK
BT
DRY
11/05
14+00.00
-RPA1-



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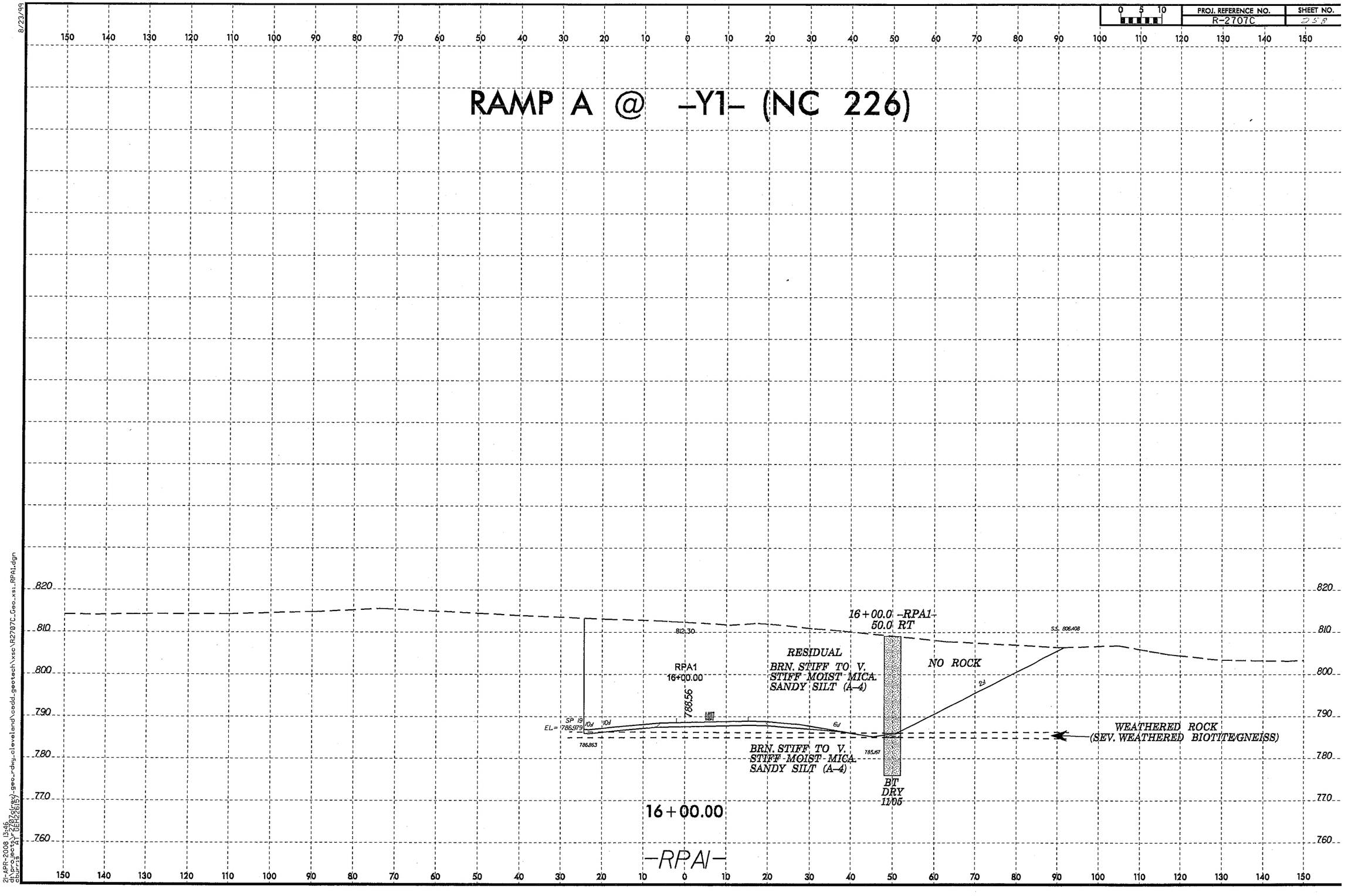
cburris AT GEH226157

8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	D58

RAMP A @ –Y1– (NC 226)



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dburris (DEPSCRIBE)

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	35-9

LOOP A @–Y1– (NC 226)

RESIDUAL
BRN. V. STIFF TO HARD MOIST MICA SANDY SILT W/ALTERNATING LAYERS OF WR STARTING @ 2.0'

CRYSTALLINE ROCK (BIOTITEMICA GNEISS)

796.78
LPA1
2+54.44

10:1 SF 6
EL= 776.286

2+54.44

2+19.00 –LPA1–
8.8769 RT
=
361+50.0 –L–
80.0 LT

RESIDUAL
BRN. V. STIFF TO HARD MOIST MICA SANDY SILT W/ALTERNATING LAYERS OF WR STARTING @ 19' (A-4)

796.79
LPA1
2+10.51

10:1 SF 5
EL= 778.559

CRYSTALLINE ROCK (BIOTITEMICA GNEISS)

AR

2+10.51

–LPA1–

810 800 790 780 770 760 820

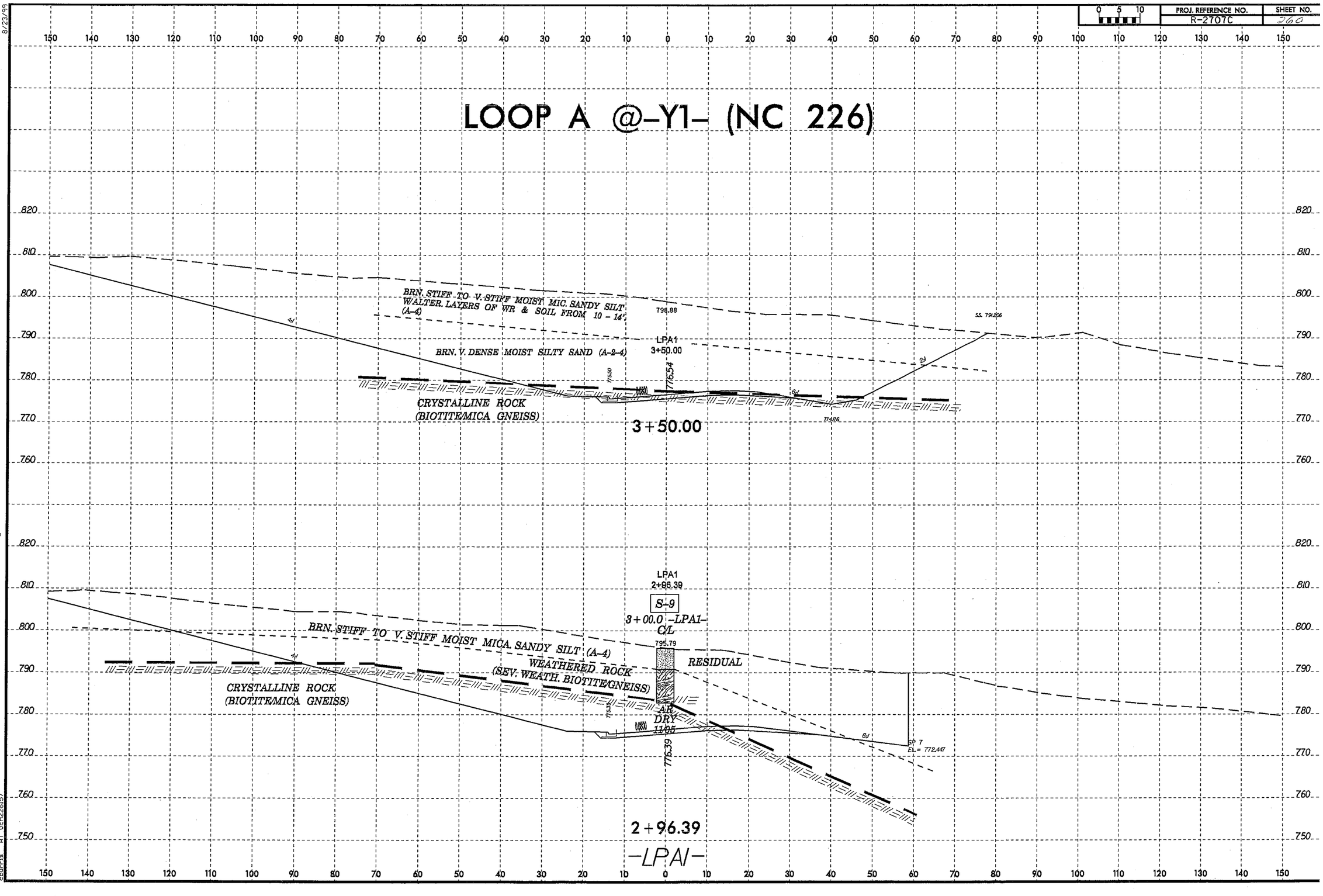
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

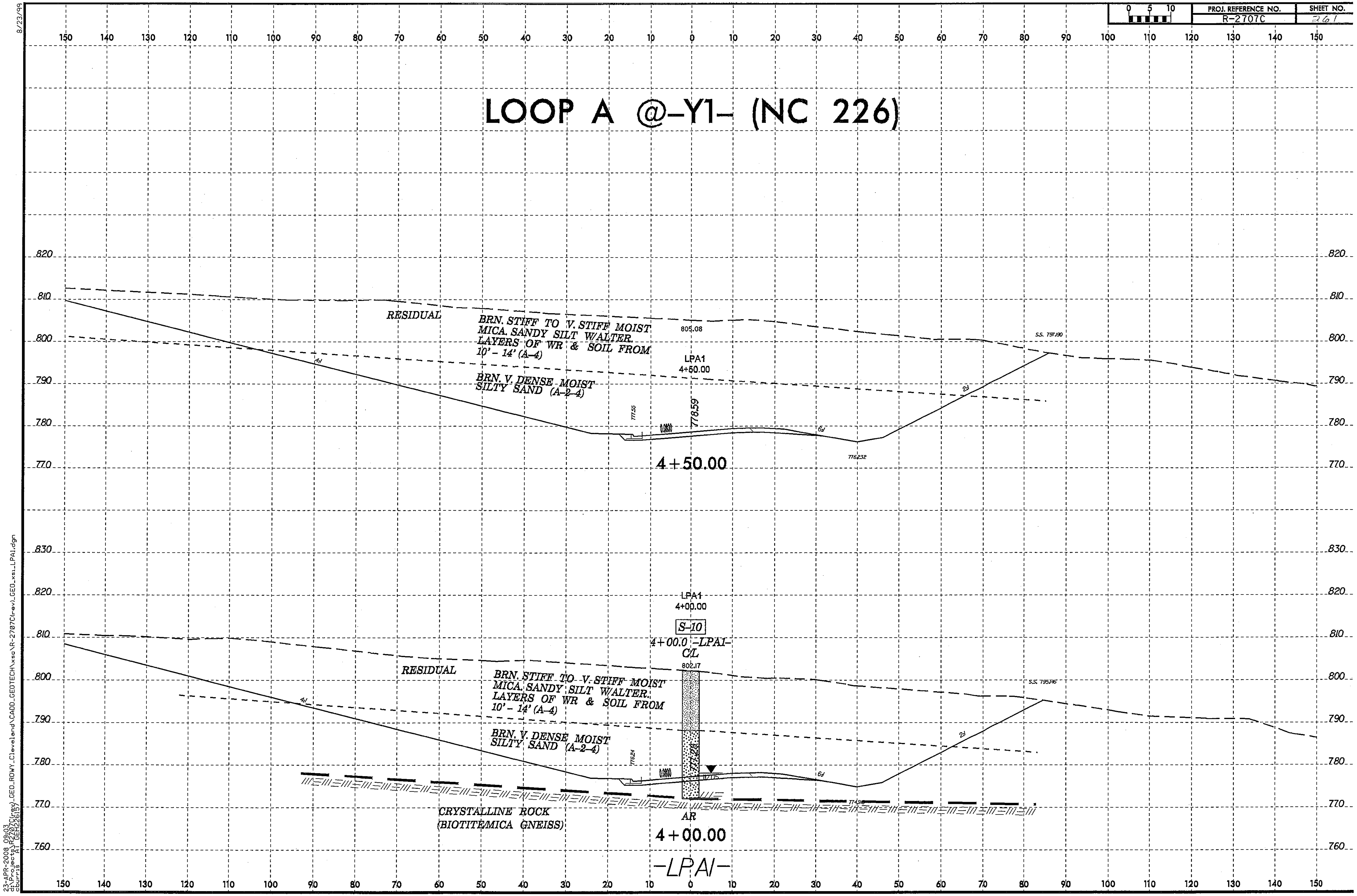
23-APR-2008 09:0
d:\Projects\R2707C(rev)_GEO_RDWY_Cleveland\CADD_GEOTECH\xsc\R-2707C(rev)_GEO_xsc_LPA1.dgn
dbrown

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	260

LOOP A @-Y1- (NC 226)




PROJ. REFERENCE NO.
R-2707C
SHEET NO.
261
LOOP A @-Y1- (NC 226)
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA. SANDY SILT W/ALTER. LAYERS OF WR & SOIL FROM 10' - 14' (A-4)
BRN. V. DENSE MOIST SILTY SAND (A-2-4)
LPA1
4+50.00
805.08
778.59
4+50.00
RESIDUAL
BRN. STIFF TO V. STIFF MOIST MICA. SANDY SILT W/ALTER. LAYERS OF WR & SOIL FROM 10' - 14' (A-4)
BRN. V. DENSE MOIST SILTY SAND (A-2-4)
LPA1
4+00.00
S-10
4+00.0 -LPA1-
C/L
802.17
777.28
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
AR
4+00.00
-LPA1-
23-APR-2008 09:03
cburris
8/23/99

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	262

LOOP A @–Y1– (NC 226)

SS–11
SS–12
SS–13
SS–14
MS–14

5+50.0 –LPA1–
60.0 LT

RED/BRN. STIFF MOIST HIGHLY PLASTIC SANDY CLAY (A–7–6) (PI=29)
BRN. V. STIFF MOIST SANDY CLAY (A–6) 17
WEATHERED ROCK (SEV. WEATH. BIOTITEGNEISS) 100
BRN. HARD MOIST V. MICA. SANDY SILT (A–4) 58
WEATHERED ROCK (SEV. WEATH. BIOTITEGNEISS) 100
BRN. HARD MOIST V. MIC. SANDY SILT (A–4) 46
100
WEATHERED ROCK (SEV. WEATH. BIOTITE GNEISS) 100
100
BT

11/05

810.52
LPA1
5+50.00
782.88
7884
6d
6d
50:1
SP 17
EL= 783.73
780525

5+50.00

LPA1
5+10.06
5+00.0 –LPA1–
C/L
809.26

BRN. STIFF TO V. STIFF MOIST
MICA. SANDY SILT (A–4)

7939
786.54
11/05
6d
4:1
SP 16
EL= 788.545
785516

BT

5+10.06
–LPA1–

840 830 820 810 800 790 780 770 760

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

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A1 GEH226157

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707C	263

LOOP A @–Y1– (NC 226)

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

830 820 810 800 790 780

SS. BI5076

4H

815.13

LPA1
6+33.80

786.99

787.03

10d

SP 19
EL= 786.979

6+33.80

SS. BI4850

812.99

4d

LPA1
5+90.27

783.94

784.87

8d

SP 18
EL= 783.035

5+90.27
–LPA1–

23-APR-2008 09:05
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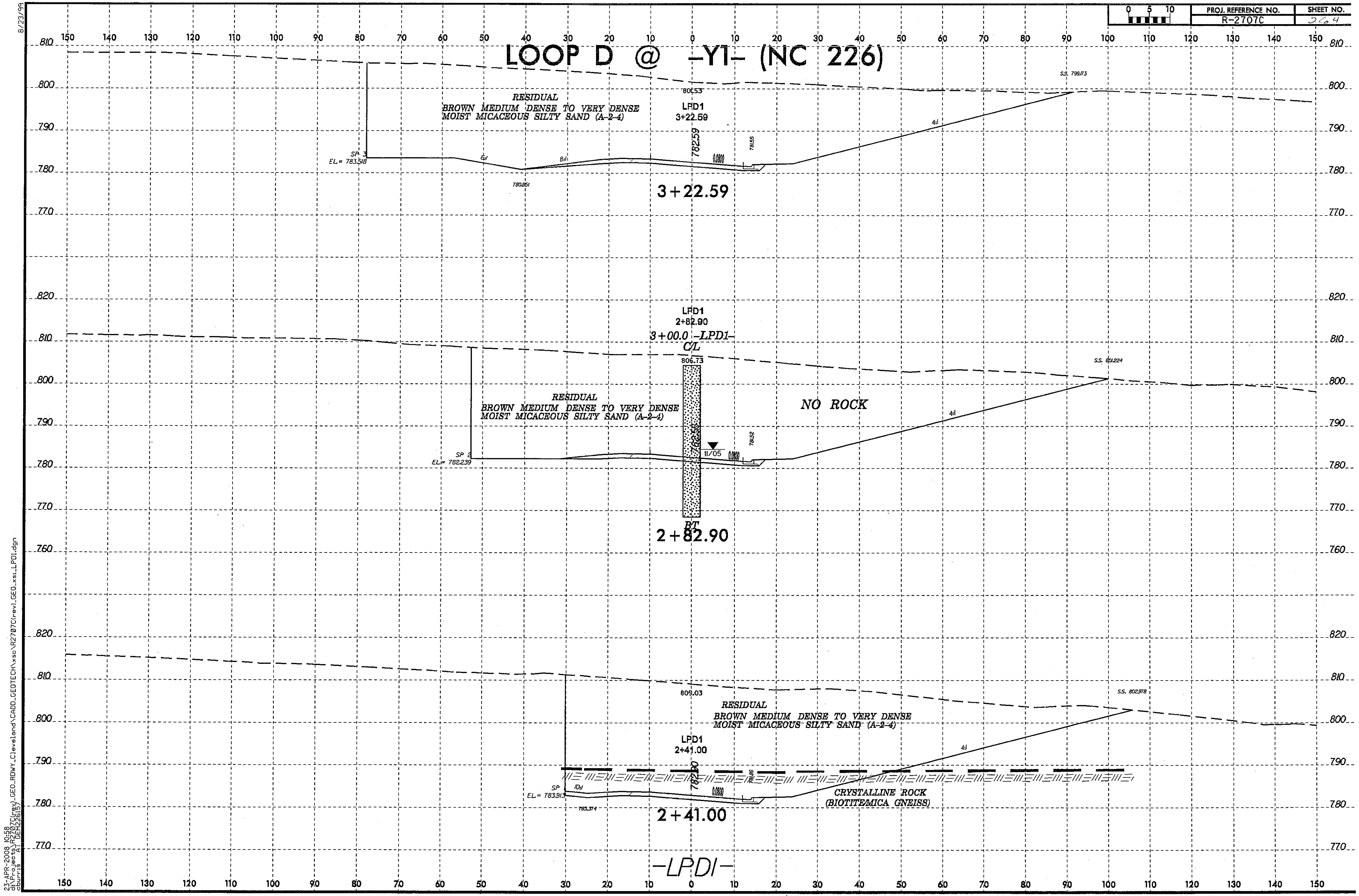
cburris
GEH226157


PROJ. REFERENCE NO.
R-2707C
SHEET NO.
264
LOOP D @ -Y1- (NC 226)
RESIDUAL
BROWN MEDIUM DENSE TO VERY DENSE
MOIST MICACEOUS SILTY SAND (A-2-4)
LPD1
3+22.59
806.53
SP 3
EL= 783.518
3+22.59
LPD1
2+82.90
3+00.0 -LPD1-
C/L
806.73
RESIDUAL
BROWN MEDIUM DENSE TO VERY DENSE
MOIST MICACEOUS SILTY SAND (A-2-4)
NO ROCK
11/05
SP 2
EL= 782.239
BT
2+82.90
809.03
RESIDUAL
BROWN MEDIUM DENSE TO VERY DENSE
MOIST MICACEOUS SILTY SAND (A-2-4)
LPD1
2+41.00
SP
EL= 783.913
CRYSTALLINE ROCK
(BIOTITE/MICA GNEISS)
2+41.00
-LPDI-
8/23/99
23-APR-2008 10:58

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
MS-1	60 RT	8+00	29.00-30.50				0.0	0.0	0.0	0.0		0	0	22	-	RP-A1
SS-1A	CL	9+00	0.00-1.50	A-7-6(20)	60	31	13.2	22.4	7.5	56.9	99	87	66	-	-	RP-D
S-1	CL	358+00	0.00-30.00	A-4(0)	32	4	26.5	37.8	19.6	16.1	98	82	44	-	-	L
SS-2A	CL	9+00	3.50-5.00	A-7-5(20)	58	24	12.8	17.3	21.1	48.8	100	94	74	-	-	RP-D
S-2	CL	358+00	30.00-45.00	A-2-4(0)	25	NP	51.9	28.3	11.8	8.0	98	62	25	-	-	L
SS-3A	CL	12+00	0.00-1.50	A-7-6(13)	48	25	19.5	22.2	9.6	48.8	100	90	61	-	-	RP-D
SS-3	80 LT	359+50	4.00-5.50	A-2-4(0)	35	3	34.2	40.2	17.6	8.0	94	75	32	-	-	L
SS-4A	50 LT	15+00	0.00-1.50	A-6(5)	38	20	26.2	31.3	10.0	32.5	100	86	46	-	-	RP-D
S-4	80 LT	359+50	24.00-25.50	A-4(0)	33	NP	27.9	40.4	25.6	6.0	99	83	41	-	-	L
SS-5A	30 LT	9+50	2.80-4.30	A-2-4(0)	30	1	29.3	45.3	13.2	12.2	100	71	30	-	-	RP-D
MS-5	80' LT	359+50	29.00-29.80				0.0	0.0	0.0	0.0		0	0	17	-	-L-
SS-5	80 LT	359+50	29.00-29.80	A-2-4(0)	29	NP	32.6	46.4	13.0	8.0	96	80	30	-	-	L
MS-6	80' LT	359+50	34.00-35.00				0.0	0.0	0.0	0.0		0	0	19	-	-L-
SS-6	80 LT	359+50	34.00-35.00	A-4(0)	31	NP	31.4	42.4	18.2	8.0	99	80	37	-	-	L
S-6A	CL	624+00	0.00-4.00	A-7-5(27)	69	38	19.5	12.2	9.3	58.9	100	88	70	-	-	L
SS-7	70 RT	356+50	4.50-6.00	A-2-4(0)	37	NP	52.1	28.7	13.2	6.0	93	57	24	-	-	L
S-7A	CL	626+00	0.00-4.00	A-7-6(16)	55	29	23.2	17.5	8.5	50.8	99	86	62	-	-	L
S-8	100 LT	361+00	0.00-19.00	A-4(2)	32	8	26.1	30.8	27.0	16.1	96	79	50	-	-	L
S-8A	CL	628+00	0.00-4.00	A-7-5(45)	78	43	5.1	7.9	13.8	73.2	100	97	89	-	-	L
S-9	CL	3+00	0.00-5.00	A-4(1)	33	5	13.3	43.8	24.8	18.1	95	89	53	-	-	LOOP A-1
S-9A	CL	628+00	4.00-29.00	A-7-5(4)	44	13	19.9	32.5	25.2	22.4	89	72	47	-	-	L
SS-10	CL	4+00	14.00-30.00	A-2-4(0)	29	2	42.2	30.4	13.4	14.1	89	62	30	-	-	LOOP A-1
S-10A	80 RT	630+00	0.00-4.00	A-7-5(35)	74	37	12.4	8.9	17.7	61.0	100	91	81	-	-	L
SS-11	60 LT	5+50	0.00-3.50	A-7-6(20)	57	29	15.7	19.7	16.4	48.2	99	89	69	-	-	LOOP A-1
S-11A	80 RT	630+00	4.00-25.00	A-2-4(0)	26	NP	43.3	30.7	15.9	10.2	96	71	30	-	-	L
SS-12	60 LT	5+50	4.50-6.00	A-6(5)	37	11	16.5	30.8	24.6	28.1	96	86	59	-	-	LOOP A-1
S-12A	80 RT	632+50	0.00-4.00	A-7-6(14)	51	23	21.5	15.2	10.4	52.8	98	86	64	-	-	L
SS-13	60 LT	5+50	9.50-10.80	A-4(0)	28	NP	28.5	41.6	21.8	8.0	99	83	40	-	-	LOOP A-1
S-13A	CL	9+50	0.00-2.00	A-4(0)	33	7	31.9	34.1	17.7	16.3	99	68	37	-	-	RP-A
MS-14	60' LT	5+50	29.50-30.60				0.0	0.0	0.0	0.0		0	0	14	-	LOOP A-1
SS-14	60 LT	5+50	29.50-30.60	A-4(0)	33	NP	32.4	41.4	18.2	8.0	100	80	36	-	-	LOOP A-1
SS-14A	CL	11+50	0.00-1.50	A-2-4(0)	14	NP	46.3	29.9	13.6	10.2	90	62	25	-	-	RP-A
SS-15-B	CL	11+50	3.50-5.00	A-2-4(0)	35	7	39.8	29.4	16.5	14.2	100	76	35	-	-	RP-A
S-15	80 LT	14+50	0.00-28.00	A-4(0)	27	NP	21.8	45.3	22.8	10.1	92	82	47	-	-	RP-A1
SS-15A	CL	17+00	0.00-1.50	A-7-6(27)	60	33	12.4	13.0	9.6	65.0	100	93	77	-	-	RP-A
SS-16	CL	11+00	0.00-1.50	A-7-6(8)	44	17	14.7	31.7	15.2	38.4	95	88	57	-	-	RP-D1
SS-16A	CL	17+00	3.50-5.00	A-7-6(16)	46	19	2.0	23.6	31.7	42.7	100	98	80	-	-	RP-A
SS-17	CL	11+00	4.50-6.00	A-5(2)	41	7	12.7	44.8	20.2	22.2	99	94	51	-	-	RP-D1
S-17A	CL	18+00	0.00-18.00	A-6(5)	37	16	29.9	24.4	15.2	30.5	100	87	49	-	-	Y16-REV
SS-18	CL	13+50	0.00-1.50	A-4(0)	29	9	28.3	33.9	15.6	22.2	87	72	38	-	-	RP-D1
SS-18A	CL	14+60	0.00-1.50	A-2-4(0)	34	NP	37.2	38.0	12.6	12.2	94	76	27	-	-	Y16-REV
SS-19	CL	13+50	4.70-6.20	A-2-4(0)	34	NP	32.3	42.6	14.9	10.1	90	74	29	-	-	RP-D1
SS-19B	CL	14+60	3.70-5.20	A-2-6(1)	29	17	39.6	29.7	14.4	16.3	78	59	27	-	-	Y16-REV
SS-19A	CL	21+00	0.00-1.50	A-4(1)	35	10	25.7	36.4	15.8	22.2	92	79	41	-	-	Y-17
SS-20B	CL	14+60	8.70-10.20	A-5(3)	48	4	1.0	51.4	31.3	16.3	100	99	58	-	-	Y16-REV
SS-20A	CL	15+00	0.00-1.50	A-2-4(0)	23	3	33.5	36.0	14.3	16.2	86	68	32	-	-	RP-D1
SS-20	CL	25+00	0.00-1.50	A-6(5)	38	19	26.1	27.3	10.3	36.4	96	81	48	-	-	Y-17
SS-21	CL	11+50	0.00-1.50	A-4(0)	30	7	30.3	33.5	13.9	22.2	92	77	36	-	-	RP-A1
SS-21A	CL	18+00	0.00-1.50	A-6(1)	31	13	33.5	26.5	13.7	26.3	88	68	39	-	-	RP-D1
SS-22A	CL	7+00	0.00-1.50	A-7-6(6)	43	19	33.1	16.6	9.9	40.4	92	78	50	-	-	LP-D1
SS-22	CL	11+50	6.00-7.50	A-7-5(2)	47	11	26.7	33.9	21.2	18.2	93	78	42	-	-	RP-A1
SS-23	CL	11+50	11.00-12.50	A-2-5(0)	53	NP	21.2	58.2	14.5	6.1	98	89	30	-	-	RP-A1
S-24	CL	364+00	0.00-16.00	A-4(1)	38	9	37.6	23.8	18.4	20.2	98	72	43	-	-	L
SS-25	100 LT	366+50	0.00-1.50	A-1-b(0)	22	NP	60.2	24.6	5.1	10.1	78	46	14	-	-	L
SS-26	100 LT	366+50	9.00-10.50	A-2-4(0)	36	NP	32.3	42.0	17.6	8.1	90	73	29	-	-	L
SS-27	CL	366+25	0.00-1.50	A-4(0)	25	6	27.9	38.6	11.3	22.2	98	83	39	-	-	L
SS-28	CL	366+25	4.00-5.50	A-4(1)	29	7	18.6	37.8	17.4	26.3	100	95	48	-	-	L
SS-29	CL	366+25	9.00-10.50	A-4(0)	31	NP	21.6	45.1	21.2	12.1	86	76	36	-	-	L
S-30	60 RT	8+00	0.00-4.00	A-7-5(8)	61	26	17.6	40.8	15.4	26.3	98	92	45	-	-	RP-A1
SS-31	60 RT	8+00	29.00-30.50	A-2-5(0)	41	NP	20.0	59.8	14.1	6.1	97	92	26	-	-	RP-A1
SS-32	60 RT	8+00	4.00-5.50	A-2-5(0)	50	NP	32.3	48.7	12.9	6.1	99	91	26	-	-	RP-A1
SS-33	80 LT	377+00	4.00-5.50	A-2-5(0)	47	NP	29.9	41.0	12.9	16.2	98	89	32	-	-	L
MS-34	80LT	377+00	24.00-25.50				0.0	0.0	0.0	0.0		0	0	21.6	-	L
SS-34	80 LT	377+00	24.00-25.50	A-2-5(0)	49	NP	29.7	54.1	10.1	6.1	98	90	20	-	-	L
SS-35	CL	37+00	0.00-1.50	A-5(1)	42	9	19.4	42.8	11.5	26.3	97	92	42	-	-	Y-17
SS-36	50 RT	33+00	0.00-1.50	A-7-5(16)	64	31	20.4	24.4	12.7	42.4	98	88	58	-	-	Y-17
SS-37	50 RT	33+00	4.00-5.50	A-2-5(0)	46	NP	21.6	56.4	7.9	14.1	100	95	29	-	-	Y-17
SS-38	CL	28+25	0.00-1.50	A-2-4(0)	32	4	34.3	36.8	14.7	14.1	90	72	29	-	-	Y-17
SS-38A	CL	30+00	0.00-1.50	A-6(6)	39	19	23.7	27.1	11.0	38.2	95	83	50	-	-	Y-17
SS-39	CL	28+25	4.00-4.50	A-2-4(0)	32	NP	51.3	36.0	6.7	6.0	79	52	14	-	-	Y-17
SS-40	CL	28+25	8.00-9.50	A-2-5(0)	48	NP	27.1	59.3	9.5	4.0	76	69	16	-	-	Y-17
SS-41	25 RT	380+75	0.00-1.50	A-6(3)	36	12	20.3	33.0	18.6	28.1	95	84	48	-	-	L
SS-42A	25 RT	15+00	0.00-1.50	A-7-6(17)	60	33	19.0	23.3	11.1	46.6	93	81	59	-	-	Y-17
SS-42	25 RT	380+75	3.00-4.50	A-6(3)	35	13	24.9	29.1	9.7	36.2	99	89	49	-	-	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-43A	25 RT	15+00	3.50-5.00	A-7-5(4)	48	15	23.7	39.1	13.0	24.3	98	84	44	-	-	Y-17
SS-43	25 RT	380+75	8.00-9.50	A-2-7(1)	42	16	39.4	25.7	8.7	26.1	90	67	34	-	-	L
SS-45	80 RT	393+00	4.00-5.50	A-2-5(0)	52	NP	20.0	65.8	8.1	6.1	100	95	23	-	-	L
SS-46	80 RT	393+00	29.50-31.00	A-2-5(0)	49	NP	16.2	68.8	8.9	6.1	97	92	25	-	-	L
MS-46	80 RT	393+00	29.50-31.00				0.0	0.0	0.0	0.0		0	0	20.2	-	L
S-47	100 LT	392+50	0.00-5.00	A-7-5(3)	47	15	23.9	40.7	9.1	26.3	100	92	42	-	-	L
S-48	CL	390+00	0.00-5.00	A-2-5(0)	43	NP	17.6	58.9	11.3	12.1	97	90	30	-	-	L
S-49	75 LT	389+50	0.00-2.00	A-5(0)	52	NP	20.6	47.6	9.5	22.3	97	89	38	-	-	L
SS-50	CL	395+00	0.00-1.50	A-6(6)	40	17	13.7	38.4	7.6	40.2	99	90	52	-	-	L
S-51	CL	396+50	0.00-2.00	A-7-6(11)	58	29	21.7	21.3	6.5	50.6	83	72	50	-	-	L
S-52	CL	396+50	2.00-22.00	A-5(0)	45	NP	27.9	41.9	14.0	16.2	98	83	37	-	-	L
SS-53	90 LT	397+50	3.70-5.20	A-2-5(0)	51	NP	21.3	51.0	7.5	20.2	98	89	33	-	-	L
SS-54	90 LT	397+50	13.70-15.20	A-2-4(0)	40	NP	39.3	46.0	6.7	8.1	89	68	19	-	-	L
SS-55	90 LT	397+50	18.70-20.20	A-2-4(0)	38	NP	30.8	53.2	9.9	6.1	68	59	16	-	-	L
SS-56	130 RT	400+50	3.70-5.20	A-5(0)	45	NP	11.5	56.5	9.9	22.1	100	98	39	-	-	L
SS-57	130 RT	400+50	20.70-22.20	A-2-5(0)	45	NP	26.6	58.8	4.6	10.1	96	87	17	-	-	L
SS-60	100 LT	403+50	0.00-1.50	A-2-4(0)	24	NP	47.9	35.6	2.4	14.1	90	66	17	-	-	L
SS-61	100 LT	403+50	9.50-11.00	A-1-b(0)	36	NP	57.4	32.4	4.1	6.0	84	50	12	-	-	L
SS-62	120 LT	402+50	0.00-1.50	A-7-5(1)	48	11	26.4	37.6	7.8	28.2	92	77	38	-	-	L
SS-63	120 LT	402+50	9.00-10.50	A-2-5(0)	43	NP	40.6	44.5	6.8	8.0	88	65	17	-	-	L
SS-64	110 RT	406+50	0.00-1.5	A-4(0)	31	10	25.2	41.2	5.4	28.2	97	86	37	-	-	L
SS-65	110 RT	406+50	4.00-5.50	A-1-b(0)	30	NP	29.2	51.9	2.8	16.1	49	36	11	-	-	L
SS-66	110 RT	406+50	9.00-10.50	A-2-4(0)	39	NP	32.8	43.3	7.8	16.1	95	84	29	-	-	L
S-67	80 RT	411+50	0.00-5.00	A-7-5(11)	54	20	17.9	27.0	2.8	52.3	98	91	58	-	-	L
S-68	80 RT	411+50	5.00-40.00	A-2-5(0)	41	NP	18.9	51.9	7.0	22.1	86	80	29	-	-	L
S-69	120 RT	413+00	0.00-4.00	A-7-5(8)	61	18	11.7	41.0	9.1	38.2	100	97	52	-	-	L
SS-70	120 RT	413+00	4.30-5.80	A-2-5(0)	46	NP	15.7	59.2	11.1	14.1	99	96	29	-	-	L
MS-70	120 RT	413+00	29.30-30.80				0.0	0.0	0.0	0.0		0	0	12.5	-	L
SS-71	55RT	415+00	0.00-1.50	A-6(2)	34	13	21.7	36.8	7.2	34.2	91	84	41	-	-	L
SS-72	55RT	415+00	3.50-5.00	A-4(1)	39	10	20.9	41.4	7.4	30.2	95	87	40	-	-	L
S-73	90 RT	419+00	0.00-3.00	A-7-5(25)	75	39	21.0	14.5	10.0	54.5	97	85	64	-	-	L
SS-74	90 RT	419+00	4.50-6.00	A-2-5(0)	57	NP	27.6	51.1	13.2	8.1	99	90	26	-	-	L
SS-75	90 RT	419+00	39.50-41.00	A-2-5(0)	42	NP	30.7	51.5	13.8	4.0	97	85	22	-	-	L
MS-75	90 RT	419+00	39.50-41.00				0.0	0.0	0.0	0.0		0	0	23	-	L
S-75A	CL	519+50	0.00-4.00	A-7-5(7)	50	17	22.6	29.6	19.6	28.2	95	80	52	-	-	L
S-76	CL	6+00	4.00-18.00	A-4(0)	35	3	21.8	44.9	21.2	12.1	96	84	40	-	-	RP-B2
S-77	CL	7+00	0.00-20.00	A-7-5(16)	60	24	6.4	36.5	28.9	28.2	99	97	64	-	-	RP-C2
S-78	30 RT	13+00	0.00-3.00	A-4(0)	20	6	21.6	38.7	17.6	22.2	97	86	44	-	-	RP-C2
S-79	50 RT	530+00	2.00-7.00	A-7-5(25)	66	35	10.3	23.6	15.8	50.4	100	96	69	-	-	L
S-80	50 RT	530+00	7.00-30.00	A-7-5(16)	62	25	9.1	31.6	35.1	24.2	100	97	64	-	-	L
S-80A	CL	580+00	0.00-18.00	A-7-5(20)	63	24	6.6	25.3	35.9	32.2	100	98	73	-	-	L
SS-81	CL	574+00	0.00-1.50	A-7-6(8)	46	22	17.3	33.2	9.2	40.3	96	88	51	-	-	L
SS-82	CL	574+00	3.80-5.30	A-7-5(10)	61	19	16.7	30.8	14.2	38.3	95	87	55	-	-	L
SS-83	CL	572+00	0.00-1.50	A-7-5(30)	71	36	5.8	22.8	13.0	58.4	100	98	75	-	-	L
SS-85	CL	570+00	0.00-1.50	A-7-5(30)	71	36	7.9	19.5	12.2	60.4	100	96	76	-	-	L
SS-86	CL	563+00	0.00-1.50	A-7-5(18)	63	29	18.9	20.7	16.0	44.3	100	90	64	-	-	L
SS-87	CL	563+00	3.90-5.40	A-7-5(3)	54	14	21.9	42.2	15.8	20.1	100	91	43	-	-	L
SS-88	CL	561+00	0.00-1.50	A-7-5(35)	72	38	7.2	14.5	14.0	64.3	100	97	81	-	-	L
SS-89	CL	561+00	4.00-5.50	A-7-5(12)	56	23	16.3	30.8	20.8	32.2	99	91	58	-	-	L
SS-90	CL	558+00	0.00-1.50	A-7-6(9)	44	22	16.7	32.2	15.0	36.2	99	91	54	-	-	L
SS-91	CL	554+50	0.00-1.50	A-6(5)	40	13	9.6	41.8	18.4	30.2	99	96	55	-	-	L
SS-92	CL	554+50	4.50-6.00	A-6(1)	34	11	20.1	44.6	13.2	22.1	94	85	39	-	-	L
SS-93	CL	554+50	9.50-11.00	A-5(3)	50	10	12.9	51.9	25.2	10.1	100	96	47	-	-	L
SS-94	140LT	554+50	4.00-5.50	A-5(2)	48	10	17.9	40.8	33.3	8.0	83	74	45	-	-	L
SS-95	140LT	554+50	9.00-10.50	A-5(3)	41	9	14.7	44.4	30.9	10.1	99	94	52	-	-	L
SS-96	140 RT	554+50	3.90-5.40	A-7-6(8)	46	24	17.7	34.4	13.8	34.2	95	87	49	-	-	L
S-97	CL	429+00	0.00-4.00	A-7-6(8)	44	20	11.9	39.0	10.8	38.3	99	94	55	-	-	L
S-98	CL	429+00	6.00-25.00	A-2-4(0)	30	NP	25.7	56.3	10.9	7.1	99	94	25	-	-	L
S-99	CL	432+00	0.00-3.00	A-7-6(7)	41	17	14.3	35.1	12.2	38.3	99	94	55	-	-	L
S-100	CL	432+00	3.00-13.00	A-7-6(2)	41	13	21.0	40.2	12.6	26.2	97	89	43	-	-	L
S-101	CL	432+00	16.00-25.00	A-1-b(0)	28	NP	50.4	31.8	10.8	7.1	68	43	16	-	-	L
S-102	120 LT	434+00	0.00-4.00	A-7-5(35)	76	39	10.1	14.5	10.8	64.6	100	96	78	-	-	L
SS-103	120 LT	434+00	4.00-5.50	A-2-5(0)	42	NP	31.1	51.3	11.6	6.1	97	87	23	-	-	L
SS-104	120 LT	434+00	29.00-30.50	A-2-4(0)	32	NP	34.6	52.5	8.9	4.0	98	88	19	-	-	L
S-105	120 LT	436+00	0.00-3.80	A-7-5(19)	64	34	21.4	17.0	9.2	52.5	95	84	61	-	-	L
SS-106	120 RT	436+00	4.70-6.20	A-2-5(0)	57	NP	30.3	54.3	11.4	4.0	99	87	22	-	-	L
SS-107A	120 RT	436+00	29.70-31.20	A-2-4(0)	34	NP	31.4	55.6	7.0	6.1	98	89	19	-	-	L
S-107	CL	440+00	0.00-6.00	A-1-b(0)	27	NP	48.8	28.9	12.2	10.1	67	44	18	-	-	L
S-108	CL	441+00	0.00-3.00	A-7-5(12)	64	25	18.0	31.9	11.8	38.3	96	89	54	-	-	L
S-109	CL	441+00	3.00-16.00	A-2-4(0)	39	NP	26.2	48.2	13.4	12.1	97	91	33	-	-	L
S-110	110 LT	446+00	0.00-4.00	A-7-5(12)	62	23	19.0	27.6	13.0	40.4	100	93	57	-	-	L
S-111	110 LT	446+00	4.00-45.00	A-7-5(1)	52	15	28.5	41.4	16.0	14.1	97	86	36	-	-	L
S-112	120 RT	446+00	0.00-4.00	A-7-5(19)	66	32	18.2	22.6	10.8	48.4	97	90	62	-	-	L
SS-113	120 RT	446+00	4.50-6.00	A-2-5(0)	52	10	20.4	52.1	11.4	16.1	98	95	34	-	-	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-114	120 RT	446+00	14.50-16.00	A-2-5(0)	49	NP	39.0	49.6	9.4	2.0	98	85	16	-	-	L
SS-115	120 RT	446+00	29.50-31.00	A-2-4(0)	27	NP	29.1	53.6	10.3	7.1	87	77	21	-	-	L
S-116	110 LT	448+00	0.00-4.20	A-6(2)	37	14	30.7	28.3	12.8	28.3	92	79	41	-	-	L
SS-117	110 LT	448+00	4.20-5.70	A-2-4(0)	37	NP	22.4	58.1	9.4	10.1	100	96	25	-	-	L
SS-118	110 LT	448+00	29.20-30.70	A-2-4(0)	36	NP	42.3	41.2	11.5	5.0	69	52	16	-	-	L
SS-119	110 LT	448+00	34.20-35.70	A-2-5(0)	42	NP	31.7	54.3	10.0	4.0	100	91	21	-	-	L
S-120	46 RT	22+00	0.00-4.00	A-7-5(11)	58	24	23.8	26.4	11.4	38.3	98	89	53	-	-	Y3
S-121	46 RT	22+00	4.00-60.00	A-2-5(0)	52	NP	25.8	56.7	9.4	8.1	97	90	23	-	-	Y3
S-122	150 RT	454+30	0.00-4.70	A-2-7(2)	42	20	41.4	22.8	7.5	28.3	89	67	34	-	-	L
SS-123	150 RT	454+30	9.70-11.20	A-2-5(0)	44	NP	22.4	61.6	11.9	4.0	100	96	23	-	-	L
S-124	100 LT	454+00	0.00-7.00	A-2-4(0)	23	NP	39.0	40.4	8.5	12.1	78	63	19	-	-	L
SS-125	CL	453+35	13.70-15.20	A-2-5(0)	47	NP	42.4	43.0	12.5	2.0	91	69	17	-	-	L
SS-126	80 LT	452+95	9.60-10.80	A-2-4(0)	30	NP	22.4	63.4	12.1	2.0	89	83	21	-	-	L
SS-127	CL	455+00	0.00-1.50	A-7-5(21)	62	32	12.7	23.6	13.1	50.5	100	95	67	-	-	L
SS-128	CL	455+00	4.00-5.50	A-2-5(0)	49	NP	32.7	39.2	11.9	16.2	91	73	30	-	-	L
SS-129	CL	457+50	0.00-1.50	A-7-5(26)	73	39	15.8	18.6	11.1	54.5	97	90	66	-	-	L
SS-130	CL	460+50	0.00-1.50	A-4(1)	25	10	20.4	40.8	10.5	28.3	98	90	43	-	-	L
MS-130	CL	460+50	0.00-1.50				0.0	0.0	0.0	0.0		0	0	28.2	-	L
SS-131	CL	460+50	4.30-5.80	A-7-5(14)	62	31	19.8	26.5	7.3	46.5	95	87	54	-	-	L
MS-131	CL	460+50	4.30-5.80				0.0	0.0	0.0	0.0		0	0	27.8	-	L
S-132	80 LT	465+00	0.00-6.00	A-6(3)	35	17	23.6	37.6	10.5	28.3	99	91	42	-	-	L
S-133	80 LT	465+00	6.00-25.00	A-4(1)	38	5	11.7	50.3	17.8	20.2	100	96	47	-	-	L
SS-134	30 RT	464+50	0.00-1.50	A-2-4(0)	21	4	33.3	36.4	8.1	22.2	91	75	31	-	-	L
SS-135	30 RT	464+50	4.00-5.50	A-7-6(12)	56	31	24.4	27.3	5.9	42.4	97	84	50	-	-	L
SS-136	50 RT	463+50	0.00-1.50	A-4(0)	25	7	28.9	37.4	11.5	22.2	94	81	36	-	-	L
SS-137	50 RT	463+50	4.00-5.50	A-6(4)	39	16	24.0	33.5	12.1	30.3	100	88	46	-	-	L
SS-138	50 RT	463+50	9.00-10.50	A-7-6(7)	47	20	23.4	29.9	10.3	36.4	99	88	49	-	-	L
S-139	80LT	469+00	0.00-7.00	A-7-6(14)	57	28	19.4	24.2	9.9	46.5	97	87	58	-	-	L
S-140A	80 LT	469+00	7.00-40.00	A-7-5(6)	57	16	10.9	49.5	19.4	20.2	100	96	50	-	-	L
SS-140	100 LT	470+00	9.30-10.80	A-5(0)	49	NP	20.8	52.9	16.2	10.1	97	89	36	-	-	L
SS-141	100 LT	470+00	34.30-35.80	A-5(1)	58	NP	5.5	59.4	27.1	8.1	100	99	49	-	-	L
MS-141	100 LT	470+00	34.30-35.80				0.0	0.0	0.0	0.0		0	0	29.5	-	L
S-142	CL	23+00	0.00-5.00	A-7-6(14)	53	27	15.8	28.3	9.5	46.5	99	92	60	-	-	Y4
S-143	CL	23+00	5.00-35.00	A-7-5(9)	57	16	4.0	53.7	24.0	18.2	100	99	59	-	-	Y4
S-144	CL	480+00	0.00-5.00	A-7-5(13)	71	26	20.2	27.9	13.5	38.4	97	87	54	-	-	L
S-145	CL	480+00	5.00-38.00	A-7-5(2)	56	17	26.3	42.2	13.3	18.2	100	90	37	-	-	L
S-146	110 LT	484+50	0.00-4.50	A-7-5(32)	77	40	9.7	20.9	11.0	58.4	100	96	73	-	-	L
SS-147	110 LT	484+50	9.50-11.00	A-5(0)	48	6	18.9	54.0	19.0	8.1	98	91	36	-	-	L
SS-148	110 LT	484+50	44.50-46.00	A-2-5(0)	49	NP	13.7	61.4	16.8	8.1	99	95	35	-	-	L
MS-148	110 LT	484+50	44.50-46.00				0.0	0.0	0.0	0.0		0	0	18.6	-	L
SS-149	CL	489+80	0.00-1.50	A-2-4(0)	33	7	42.1	37.9	12.0	8.1	85	64	20	-	-	L
SS-150	CL	489+80	4.00-5.50	A-2-5(0)	50	NP	13.3	65.3	15.4	6.0	100	97	30	-	-	L
SS-151	CL	490+85	0.00-1.50	A-2-5(0)	43	9	46.9	37.9	9.2	6.0	74	52	13	-	-	L
SS-152	CL	490+85	4.00-5.50	A-2-7(0)	52	13	21.3	54.8	19.8	4.0	90	80	29	-	-	L
SS-153	CL	491+50	0.00-1.50	A-2-6(1)	30	15	36.3	33.2	8.4	22.2	92	74	30	-	-	L
SS-154	CL	491+50	4.00-5.50	A-2-4(0)	34	7	41.8	36.6	10.6	11.1	90	70	23	-	-	L
SS-155	CL	494+50	0.00-1.50	A-4(1)	26	10	22.0	38.9	15.0	24.2	97	85	43	-	-	L
SS-156A	CL	494+50	4.00-5.50	A-7-5(14)	67	22	9.7	37.7	20.4	32.2	98	93	60	-	-	L
SS-157	80 RT	503+81	4.00-5.50	A-2-4(0)	32	9	51.8	25.8	6.3	16.1	88	58	22	-	-	L
SS-158	80 RT	503+81	9.00-10.50	A-2-5(0)	45	NP	36.9	43.3	15.8	4.0	92	72	23	-	-	L
SS-160	35 LT	503+50	0.00-1.50	A-2-4(0)	28	6	35.2	40.9	9.8	14.1	92	71	27	-	-	L
SS-161	35 LT	503+50	9.50-11.00	A-2-5(0)	47	NP	29.0	52.4	14.6	4.0	96	83	26	-	-	L
SS-162	80 LT	505+00	0.00-1.50	A-2-4(0)	25	NP	30.6	49.9	11.4	8.1	85	71	21	-	-	L
S-163	CL	16+00	0.00-5.00	A-7-5(25)	70	34	10.3	23.0	18.4	48.3	100	96	70	-	-	RPB2
S-164	CL	16+00	5.00-28.00	A-7-5(11)	55	20	9.5	41.3	25.1	24.2	100	98	58	-	-	RPB2
S-165	CL	12+00	0.00-5.00	A-7-5(22)	61	31	12.1	22.2	11.4	54.4	100	94	69	-	-	Y8REV
S-166	CL	12+00	5.00-13.00	A-2-6(2)	31	19	25.8	44.1	10.0	20.1	97	85	35	-	-	Y8REV
S-167A	CL	20+00	0.00-13.00	A-7-5(37)	81	43	8.3	17.9	13.4	60.4	100	98	76	-	-	Y8REV
SS-167	CL	538+50	0.00-1.50	A-4(1)	31	10	20.5	41.7	17.6	20.1	98	89	42	-	-	L
S-168A	CL	25+00	0.00-13.00	A-7-5(23)	71	26	9.3	22.0	20.4	48.3	100	96	73	-	-	Y8REV
SS-168	CL	538+50	4.00-5.50	A-2-4(0)	18	NP	30.8	49.7	11.4	8.1	96	81	23	-	-	L
SS-169A	50 LT	6+70	0.00-1.50	A-4(0)	22	2	21.3	48.1	16.4	14.1	98	89	36	-	-	RPD2
SS-169	140 LT	544+00	0.00-1.50	A-4(0)	27	9	21.6	45.1	13.2	20.1	96	87	36	-	-	L
SS-170A	50 LT	6+70	4.00-5.50	A-6(3)	31	17	22.4	41.3	14.2	22.2	97	86	40	-	-	RP D2
SS-170	140 LT	544+00	4.00-5.50	A-7-5(16)	63	27	14.3	26.6	14.8	44.3	100	94	62	-	-	L
SS-171A	50 LT	6+70	9.00-10.50	A-5(0)	46	NP	8.3	65.5	24.3	2.0	100	99	42	-	-	RP D2
SS-171	100 RT	545+00	0.00-1.50	A-4(0)	21	5	18.7	46.5	16.6	18.1	98	90	39	-	-	L
SS-172A	70 LT	16+30	0.00-1.50	A-4(1)	37	8	22.6	42.5	22.9	12.1	98	86	41	-	-	RP A2
SS-172B	70 LT	16+30	4.00-5.00	A-7-5(10)	68	17	5.8	48.3	31.7	14.1	100	99	57	-	-	RP A2
SS-172	100 RT	545+00	4.00-5.50	A-7-6(9)	50	24	18.7	32.8	10.2	38.3	100	92	52	-	-	L
SS-173A	50 RT	16+70	0.00-1.50	A-4(0)	25	5	14.9	44.1	26.9	14.1	99	93	47	-	-	RP A2
SS-173	100 RT	545+00	9.00-10.50	A-7-5(4)	49	16	16.5	44.7	18.6	20.1	96	88	45	-	-	L
SS-174A	50 RT	16+70	4.00-5.50	A-2-4(0)	23	NP	32.8	51.8	13.4	2.0	97	82	20	-	-	RP A2
SS-174	80 LT	546+80	0.00-1.50	A-7-6(30)	66	37	8.7	17.7	15.2	58.4	100	97	76	-	-	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-175A	50 RT	16+70	9.00-10.50	A-5(1)	53	7	20.1	46.5	27.3	6.0	98	86	42	-	-	RP A2
SS-175	80 LT	546+80	4.00-5.50	A-5(1)	43	9	24.4	39.3	26.3	10.1	97	85	42	-	-	L
SS-176A	CL	14+50	0.00-1.50	A-7-5(16)	57	27	13.1	27.2	13.4	46.3	100	94	63	-	-	RP A2
SS-176	CL	550+00	0.00-1.50	A-6(2)	32	14	18.9	43.9	13.0	24.2	95	87	40	-	-	L
SS-177A	CL	14+50	4.00-5.50	A-7-5(7)	64	25	30.4	24.8	18.6	26.2	87	66	43	-	-	RP A2
SS-177	CL	550+00	4.00-5.50	A-7-5(25)	67	37	13.1	21.8	12.8	52.4	100	94	67	-	-	L
SS-178	150 LT	552+60	4.60-6.10	A-2-5(0)	45	NP	20.5	54.8	22.7	2.0	98	91	33	-	-	L
SS-179	150 LT	552+60	0.00-1.50	A-4(2)	32	8	15.3	40.1	26.5	18.1	96	89	49	-	-	L
SS-180	145 RT	553+95	9.70-11.20	A-2-5(0)	43	4	13.5	64.0	20.4	2.0	100	99	34	-	-	L
SS-181	CL	553+29	9.00-10.50	A-4(0)	36	5	18.3	54.0	25.7	2.0	100	97	36	-	-	L
SS-182	CL	30+85	0.00-1.50	A-2-4(0)	24	2	35.0	41.3	15.6	8.1	95	77	28	-	-	Y8 REV
SS-183	CL	32+50	0.00-1.50	A-2-6(1)	28	13	28.2	36.7	17.0	18.1	81	66	32	-	-	Y8 REV
SS-184A	CL	32+50	4.00-5.50	A-6(5)	39	19	19.9	36.3	15.6	28.2	96	87	46	-	-	Y8 REV
S-184	CL	583+00	0.00-4.00	A-7-5(53)	92	44	1.6	7.0	24.9	66.5	100	100	93	-	-	L
MS-184	CL	583+00	0.00-4.00				0.0	0.0	0.0	0.0		0	0	31.4	-	L
S-185	CL	583+00	4.00-16.00	A-7-5(30)	74	33	6.6	18.7	20.3	54.3	99	95	77	-	-	L
MS-185	CL	583+00	4.00-16.00				0.0	0.0	0.0	0.0		0	0	27	-	L
SS-186	CL	600+00	4.00-5.50	A-7-5(28)	65	33	6.8	20.1	14.7	58.4	100	96	77	-	-	L
SS-187	CL	602+50	0.00-1.50	A-6(4)	31	12	16.3	36.6	14.9	32.2	100	92	54	-	-	L
SS-188	CL	602+50	4.00-5.50	A-7-5(11)	58	13	19.5	20.5	31.8	28.2	100	96	69	-	-	L
SS-189	CL	605+00	0.00-1.50	A-2-4(0)	17	2	29.6	41.2	15.1	14.1	99	85	34	-	-	L
SS-190	CL	605+00	4.00-5.50	A-7-5(13)	56	21	17.9	24.5	29.4	28.2	100	92	63	-	-	L
SS-191	CL	7+00	0.00-1.50	A-7-5(37)	77	41	8.7	12.5	18.5	60.4	100	97	80	-	-	RP B3
SS-192	CL	7+00	4.00-5.50	A-7-5(23)	65	27	10.9	18.3	32.6	38.2	100	96	75	-	-	RP B3
S-195	60 LT	612+20	0.00-4.50	A-7-5(19)	58	21	12.3	10.9	14.5	62.4	98	90	77	-	-	L
SS-196	60 LT	612+20	4.50-6.00	A-7-5(15)	70	29	32.6	16.3	22.9	28.2	100	76	55	-	-	L
SS-197	60 LT	612+20	29.50-31.00	A-4(3)	34	6	11.9	38.4	35.6	14.1	99	94	63	-	-	L
SS-198	60 LT	612+20	39.50-41.00	A-4(0)	33	5	33.0	32.6	24.3	10.1	99	76	42	-	-	L
S-199	CL	622+00	0.00-12.00	A-7-5(5)	42	12	28.6	22.9	24.3	24.1	100	82	53	-	-	L
SS-200	145 LT	620+00	0.00-1.50	A-6(7)	40	20	28.6	19.1	14.1	38.2	97	81	53	-	-	L
SS-201	CL	8+00	0.00-1.50	A-7-6(20)	55	30	19.9	14.3	15.5	50.3	100	88	68	-	-	RP A3
MS-201	CL	8+00	1.00-1.50				0.0	0.0	0.0	0.0		0	0	21.3	-	RPA3
SS-202	80 RT	616+00	9.00-10.50	A-7-6(2)	41	13	38.3	26.4	23.3	12.1	100	72	40	-	-	L
SS-202A	80 RT	616+00	4.00-5.50	A-7-6(15)	55	31	23.7	19.3	14.7	42.3	96	82	57	-	-	L
SS-202B	CL	616+00	0.00-1.50	A-7-6(9)	42	20	26.0	20.7	17.0	36.3	98	82	56	-	-	L
SS-203	CL	616+50	4.00-5.50	A-7-6(8)	42	21	27.8	21.5	14.5	36.2	97	81	52	-	-	L
SS-204	75 LT	615+50	9.00-10.50	A-7-5(40)	80	48	15.9	10.9	18.8	54.4	100	89	76	-	-	L
SS-205	75 RT	615+00	0.00-1.50	A-7-6(15)	50	24	17.3	17.7	16.7	48.3	96	86	66	-	-	L
SS-206	75 RT	615+00	4.00-5.50	A-6(3)	40	12	31.2	31.4	23.3	14.1	100	81	45	-	-	L
SS-207	CL	613+50	0.00-1.50	A-6(6)	35	20	25.4	29.4	13.0	32.2	99	86	49	-	-	L
SS-208	CL	613+50	4.00-5.50	A-7-5(18)	53	23	13.3	15.3	31.1	40.3	100	92	75	-	-	L
SS-210	CL	12+00	0.00-1.50	A-7-6(17)	60	32	23.8	17.9	14.0	44.3	100	88	60	-	-	RP A3
SS-211	CL	12+00	4.00-5.50	A-7-5(8)	51	21	28.0	25.4	20.4	26.2	100	82	52	-	-	RP A3
SS-212	CL	9+50	0.00-1.50	A-7-6(8)	46	22	29.8	22.2	13.8	34.2	99	81	51	-	-	RP A3
SS-213	CL	9+50	4.00-5.50	A-7-5(5)	52	18	36.4	17.9	23.5	22.1	94	69	46	-	-	RP A3
SS-216	CL	50+00	0.00-1.50	A-7-6(18)	56	30	16.7	21.5	9.6	52.2	100	91	65	-	-	Y11 REV
SS-217	CL	51+00	0.00-1.50	A-7-6(4)	42	18	36.1	24.5	11.2	28.1	96	72	43	-	-	Y11 REV
SS-218	CL	51+00	4.00-5.50	A-6(6)	37	19	23.3	32.7	7.8	36.1	100	87	49	-	-	Y11 REV
SS-219	CL	51+00	9.00-10.50	A-6(2)	27	14	31.7	34.5	9.6	24.1	100	82	39	-	-	Y11 REV
SS-220	CL	52+00	0.00-1.50	A-4(2)	24	8	16.7	29.1	22.1	32.1	98	88	61	-	-	Y11 REV
SS-221	CL	52+00	4.00-5.50	A-6(4)	37	22	31.3	31.5	5.0	32.1	99	80	41	-	-	Y11 REV
SS-222	CL	52+00	9.00-10.50	A-6(2)	29	15	32.3	31.7	9.8	26.1	99	80	40	-	-	Y11 REV
SS-223	CL	55+00	0.00-1.50	A-7-5(22)	60	26	7.8	20.9	17.1	54.2	100	96	76	-	-	Y11 REV
SS-224	40 LT	57+40	0.00-1.50	A-4(0)	24	8	25.5	39.2	15.3	20.1	100	86	41	-	-	Y11 REV
SS-225	40 LT	57+40	4.50-6.00	A-6(5)	35	18	26.9	26.5	12.4	34.1	99	83	50	-	-	Y11 REV
SS-226	40 LT	57+40	9.50-11.00	A-7-5(3)	44	14	33.9	32.1	19.9	14.1	100	77	43	-	-	Y11 REV
SS-227	50 RT	58+50	0.00-1.50	A-6(11)	38	17	13.5	17.5	24.9	44.2	99	91	73	-	-	Y11 REV
SS-228	30 RT	60+50	0.00-1.50	A-4(0)	15	2	39.6	30.5	13.9	16.1	100	75	36	-	-	Y11 REV
SS-229	30 RT	60+50	4.20-5.70	A-7-6(9)	43	26	33.3	18.7	9.8	38.2	100	78	51	-	-	Y11 REV
SS-230	CL	62+00	0.00-1.50	A-2-4(0)	18	NP	58.8	28.3	2.8	10.0	98	57	17	-	-	Y11 REV
SS-231	CL	62+00	4.00-5.50	A-6(4)	38	19	39.0	19.3	9.6	32.1	99	73	44	-	-	Y11 REV
SS-232	CL	62+00	9.00-11.50	A-4(0)	35	2	27.3	37.3	25.3	10.0	88	74	41	-	-	Y11 REV
S-233	CL	629+00	0.00-7.00	A-7-5(17)	56	19	12.7	15.1	24.1	48.2	99	90	76	-	-	L
S-234	CL	629+00	7.00-21.00	A-4(0)	40	4	39.0	20.9	22.1	18.1	93	63	42	-	-	L
S-235	CL	41+50	0.00-3.00	A-4(2)	28	9	12.7	41.8	15.5	30.1	97	91	52	-	-	Y11 REV
S-236	CL	45+00	0.00-3.00	A-7-6(12)	44	22	16.1	26.1	11.6	46.2	100	92	62	-	-	Y11 REV
S-237	CL	476+30	0.00-4.00	A-3(0)	22	NP	56.4	33.7	3.8	6.0	82	56	10	-	-	L
S-238	80 RT	476+55	0.00-4.00	A-1-a(0)	22	NP	72.9	17.7	3.4	6.0	43	19	5	-	-	L
S-239	80 RT	476+55	4.00-5.00	A-2-4(0)	27	NP	42.6	44.2	5.2	8.0	89	68	15	-	-	L
S-240A	90 RT	27+00	0.00-5.00	A-2-4(0)	28	NP	20.0	64.6	9.4	6.0	100	97	21	-	-	Y2
SS-240	80 LT	476+00	0.00-1.50	A-3(0)	21	NP	64.3	29.7	2.0	4.0	92	78	6	-	-	L
S-241	80 LT	476+00	1.50-4.00	A-1-b(0)	21	NP	58.8	31.1	6.0	4.0	51	31	6	-	-	L
S-241A	CL	592+00	0.00-5.00	A-4(1)	26	9	16.9	42.1	18.8	22.2	98	89	48	-	-	L
SS-242	80 LT	476+00	4.00-5.00	A-2-4(0)	27	NP	42.4	42.4	7.2	8.0	82	61	16	-	-	L

SOIL TEST RESULTS

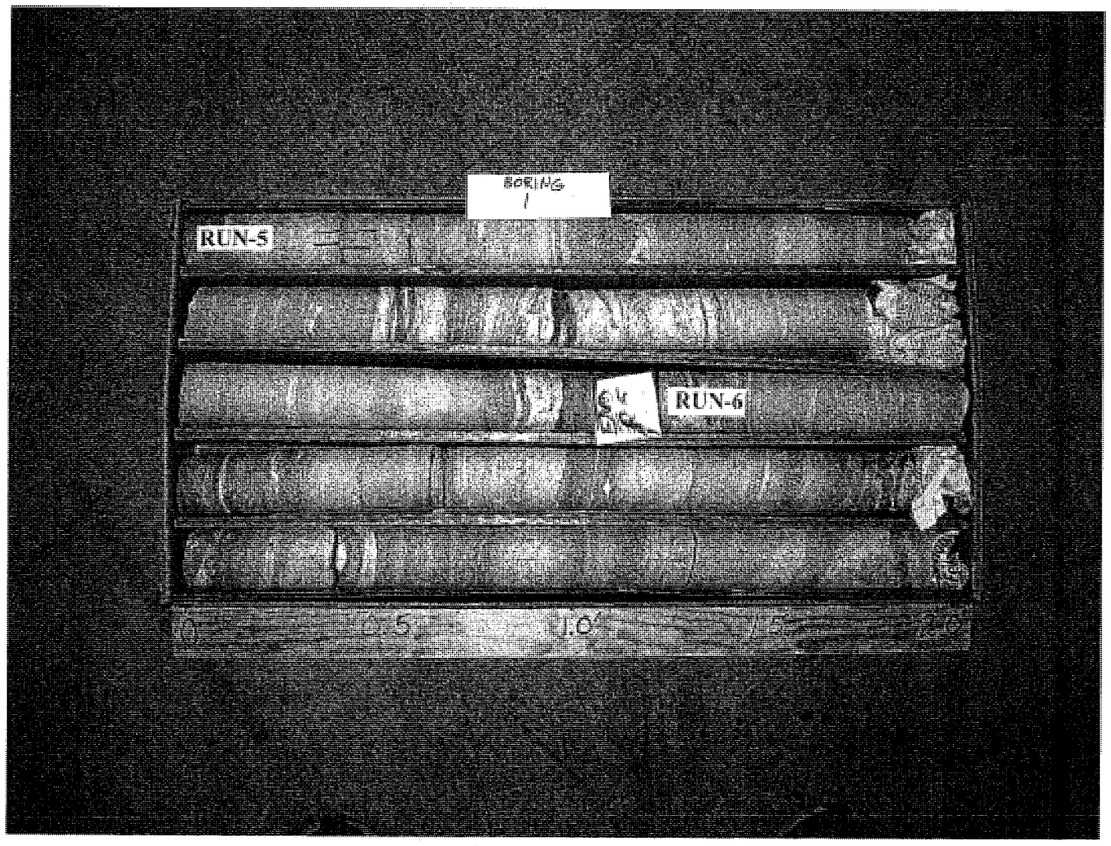
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Line or Boring ID
S-242A	CL	586+00	0.00-3.00	A-7-6(14)	48	22	10.1	25.8	15.8	48.3	100	95	68	-	-	L
S-243	CL	584+00	0.00-3.00	A-6(6)	38	15	15.1	31.5	13.1	40.3	97	90	56	-	-	L
S-244	CL	588+50	0.00-3.00	A-4(0)	21	6	22.8	44.4	10.7	22.2	99	86	39	-	-	L
S-245	CL	608+00	0.00-3.00	A-7-6(20)	59	32	16.1	22.6	4.8	56.5	100	91	65	-	-	L
S-246	CL	582+00	0.00-3.00	A-6(4)	31	14	15.5	39.3	8.9	36.3	100	93	50	-	-	L
S-247	CL	12+50	0.00-3.00	A-6(6)	35	16	21.0	25.2	13.5	40.3	97	85	56	-	-	RP B3
S-248	CL	10+00	0.00-3.00	A-7-6(10)	48	26	23.4	29.8	4.4	42.3	100	88	51	-	-	RP B3
SS-251	CL	3+00	0.00-1.50	A-2-4(0)	17	NP	29.8	47.4	10.7	12.1	100	86	30	-	-	LOOP C3
SS-252	CL	3+00	1.50-3.00	A-6(7)	39	18	14.7	35.3	7.7	42.3	99	92	54	-	-	LOOP C3
S-253	30 LT	29+00	0.00-3.00	A-2-4(0)	24	5	29.6	38.5	7.7	24.2	98	83	35	-	-	Y-4REV
S-254	30 LT	32+00	0.00-3.00	A-6(4)	40	14	18.1	39.9	9.7	32.3	100	92	47	-	-	Y-4REV
S-255	C L	14+00	0.00-3.00	A-6(5)	33	15	19.8	27.4	12.5	40.3	95	84	53	-	-	Y18
S-256	C L	15+50	0.00-3.00	A-6(1)	27	11	23.6	36.9	11.3	28.2	98	86	43	-	-	Y18
S-257	30 RT	28+00	0.00-3.00	A-6(2)	32	13	32.7	28.8	10.3	28.2	95	75	40	-	-	Y14
S-258	50 LT	27+50	0.00-5.00	A-2-4(0)	25	7	36.9	31.9	13.1	18.1	97	74	35	-	-	Y14
S-270	120 RT	503+50	0.00-3.00	A-7-5(33)	84	29	4.2	19.0	36.5	40.3	100	97	83	-	-	L
S-271	120 RT	503+50	3.00-4.00	A-4(0)	36	NP	13.7	49.2	14.9	22.2	97	89	51	-	-	L
S-272	CL	497+00	0.00-3.00	A-7-5(23)	64	29	7.5	24.6	11.5	56.5	100	97	73	-	-	L
S-273	CL	498+00	0.00-3.00	A-7-6(18)	58	32	15.3	24.2	8.1	52.4	97	88	61	-	-	L
MS-273	CL	498+00	0.00-3.00				0.0	0.0	0.0	0.0		0	0	31	-	L
S-274	CL	499+00	0.00-4.00	A-7-5(28)	66	35	7.9	21.4	6.3	64.5	100	97	74	-	-	L
S-275	CL	501+00	0.00-4.00	A-7-5(27)	67	34	8.1	20.8	6.7	64.5	100	97	73	-	-	L
S-276	CL	502+00	0.00-4.00	A-6(6)	39	17	7.7	41.9	12.1	38.3	98	95	54	-	-	L
S-277	CL	11+00	0.00-4.00	A-2-4(0)	23	NP	37.2	46.6	7.2	9.1	89	70	18	-	-	RP B2
S-278	CL	11+00	4.00-5.00	A-2-5(0)	45	NP	15.1	62.5	14.3	8.1	98	91	34	-	-	RP B2
S-279	CL	18+50	0.00-2.00	A-2-4(0)	22	3	44.6	31.3	10.1	14.1	87	60	25	-	-	Y 17
S-280	CL	18+50	2.00-4.00	A-7-6(6)	42	20	30.2	24.4	9.1	36.3	96	78	47	-	-	Y 17
S-281	100 RT	18+50	0.00-2.00	A-2-4(0)	33	5	35.3	32.1	16.5	16.1	97	78	35	-	-	Y 17
CBR-1	90 RT	419+00	35.0-40.0	A-7-5(1)	49	12	22.0	50.2	13.7	14.1	99	91	36	-	-	L
ST-1(1,2)	130 RT	400+50	18.7-20.7	A-2-5	50	1	24.4	52.8	20.8	2.0	100	93	27		-	L
ST-1(3)	130 RT	400+50	18.7-20.7	A-2-5	53	2	27.2	51.6	19.2	2.0	90	76	24	19.5	-	L
ST-2	120 RT	413+00	31.5-33.4	A-2-5	44	NP	21.7	64.6	9.8	4.0	100	98	20	-	-	

33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150.

BORING 1 – 390+50 –L-, 75' LT.

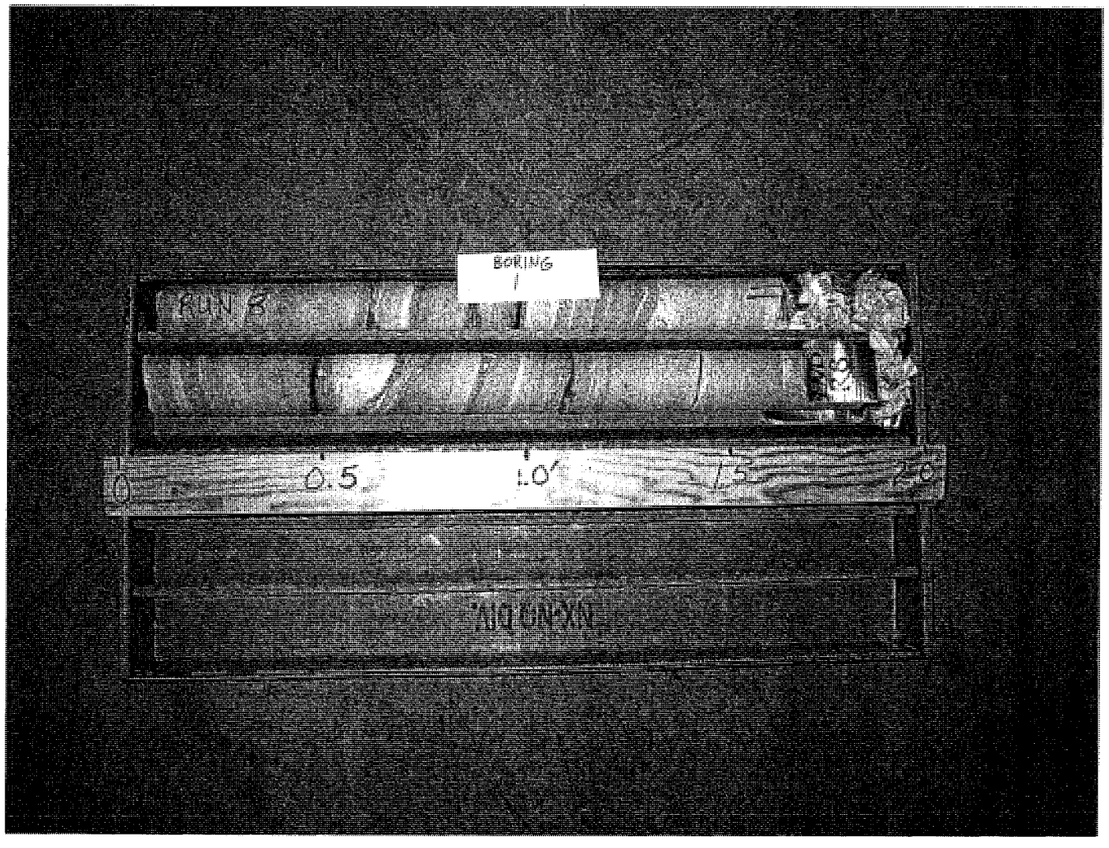
33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150.

BORING 1 – 390+50 –L-, 75' LT.



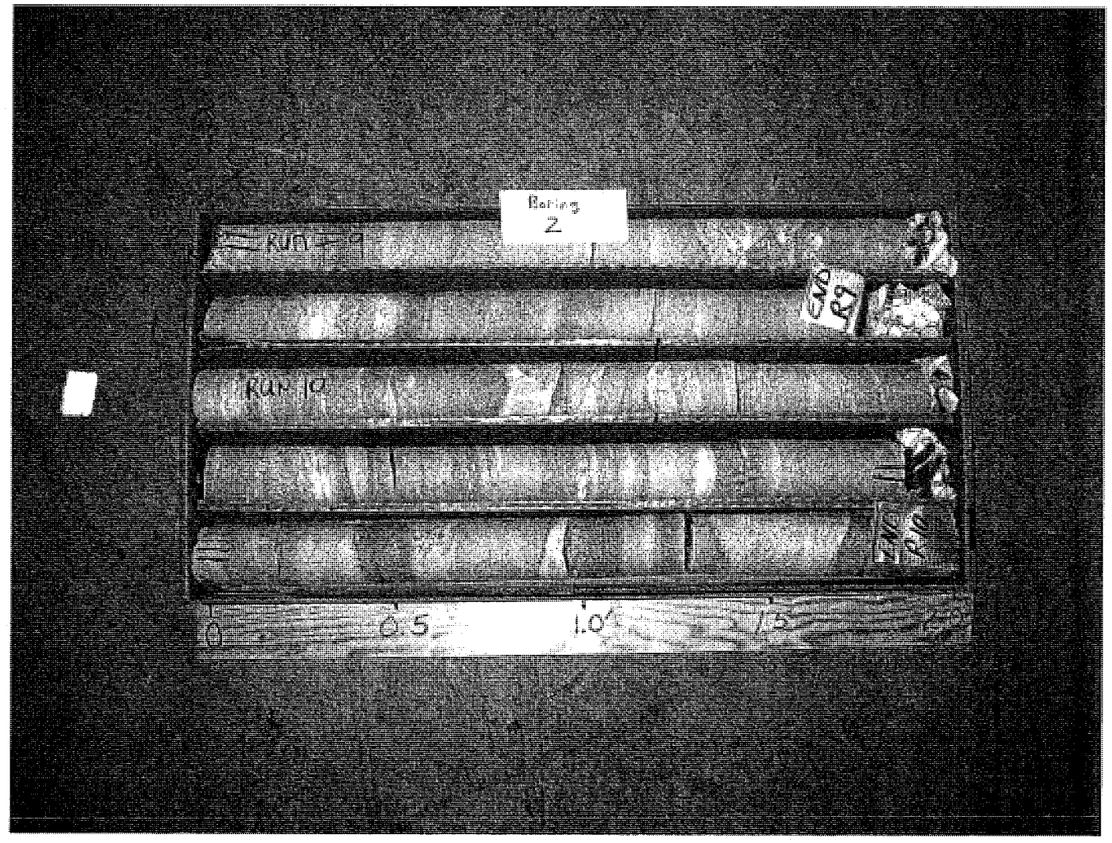
33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150.

BORING 1 – 390+50 –L-, 75' LT.



33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150

BORING 2 – 393+50 -L-, CENTERLINE



33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150

BORING 4 – 393+00 -L-, 100' LT.

33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150

BORING 5 – 390+50 -L-, 75' RT.

33497.1.4 R-2707C
US 74 SHELBY BYPASS FROM WEST OF NC 226 TO EAST OF NC 150

BORING 5 – 390+50 -L-, 75' RT.