

CONTRACT: ID: U-3440

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

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

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 39010.1.1 (U-3440) F.A. PROJ. STP-0003(6)
 COUNTY CABARRUS
 PROJECT DESCRIPTION NC 3, PROPOSED WEST SIDE BYPASS (U-2009)
TO SR 1691 (LOOP ROAD) IN KANNAPOLIS

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	U-3440	1	75
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
39010.1.1	STP-0003(6)	P.E.	
		RW & UTIL.	

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN PLACE BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1909 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

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

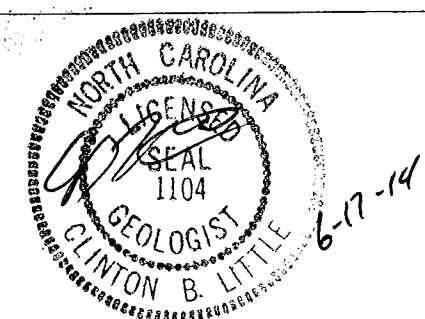
PERSONNEL
KLEINFELDER

INVESTIGATED BY J.P. ROGERS

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE MAY 2014



DRAWN BY: J.K. McCLURE

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

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

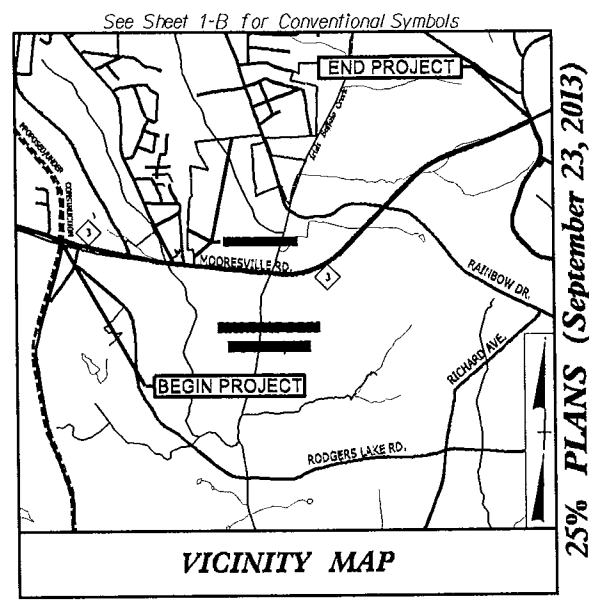
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS																																																																																							
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (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:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY/SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</i></p>	<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>	<p>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:</p> <p>WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p> <p>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.</p> <p>NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLITE, SLATE, SANDSTONE, ETC.</p> <p>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.</p>	<p>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 IN 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.</p>																																																																																							
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>GENERAL CLASS.</th> <th>GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th>SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th>ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1, A-3, A-2, A-4, A-5, A-6, A-7</td> <td>A-2, A-4, A-5, A-6, A-7</td> <td>A-1, A-2, A-3, A-4, A-5, A-6, A-7</td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> </tr> </table>	GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)	SILT-CLAY MATERIALS (> 35% PASSING #200)	ORGANIC MATERIALS	GROUP CLASS.	A-1, A-3, A-2, A-4, A-5, A-6, A-7	A-2, A-4, A-5, A-6, A-7	A-1, A-2, A-3, A-4, A-5, A-6, A-7	SYMBOL				<p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50</p> <p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th></th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY</td> </tr> </table>		GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	>10%	>20%	HIGHLY	<p style="text-align: center;">WEATHERING</p> <p>FRESH - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (V SL.) - 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.</p> <p>SLIGHT (SL.) - 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.</p> <p>MODERATE (MOD.) - SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p> <p>MODERATELY SEVERE (MOD. SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i></p> <p>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. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i></p> <p>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.</p>	<p style="text-align: center;">GROUND WATER</p> <p> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p> STATIC WATER LEVEL AFTER 24 HOURS</p> <p> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p> SPRING OR SEEP</p>																																																							
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CAN BE SCRATCHED READILY BY FINGERNAIL.</p>	<p style="text-align: center;">TERMS AND DEFINITIONS</p> <p>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 IN 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.</p>																																																											
U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270																																																																																				
	4.75	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.)																																																																																				
MM 305 IN. 12	75 3	2.0	0.25	0.05	0.005																																																																																					
<p style="text-align: center;"></p>																																																																																										

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3440	2A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
39010.1.1	STP-0003(6)	PE	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

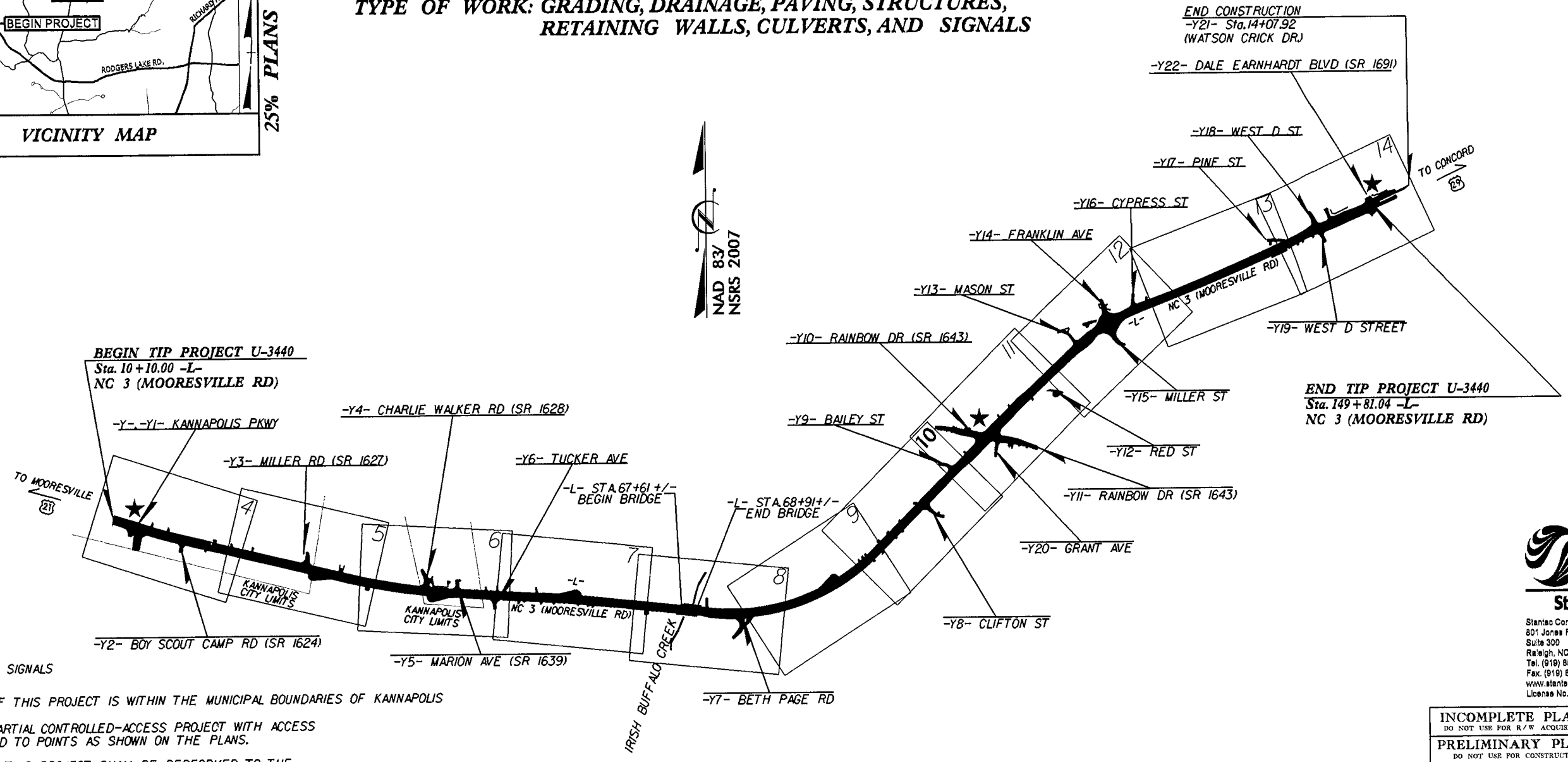
CABARRUS COUNTY

LOCATION: NC 3, PROPOSED WEST SIDE BYPASS (U-2009) TO SR 1691 (LOOP ROAD) IN KANNAPOLIS
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, RETAINING WALLS, CULVERTS, AND SIGNALS



25% PLANS (September 23, 2013)

TIP PROJECT: U-3440



BEGIN TIP PROJECT U-3440
Sta. 10+10.00 -L-
NC 3 (MOORESVILLE RD)

END TIP PROJECT U-3440
Sta. 149+81.04 -L-
NC 3 (MOORESVILLE RD)

★ REVISED SIGNALS

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF KANNAPOLIS

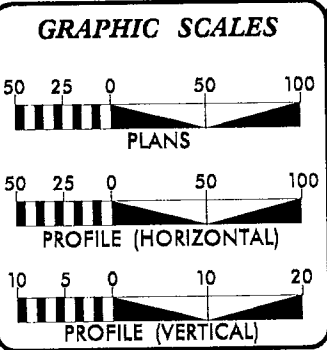
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

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



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Fax. (919) 851-7024
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2015 =	16,800
ADT 2035 =	23,900
DHV =	12 %
D =	60 %
T =	9 % *
V =	50 MPH
HIST. AREA V =	40 MPH
*(TTST 7% + DUALS 2%)	
FUNC CLASS =	MINOR ARTERIAL
REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3440	=	2.621 MILES
LENGTH STRUCTURE TIP PROJECT U-3440	=	0.025 MILE
TOTAL LENGTH TIP PROJECT U-3440	=	2.646 MILES

Prepared for the Office of,
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC, 27610

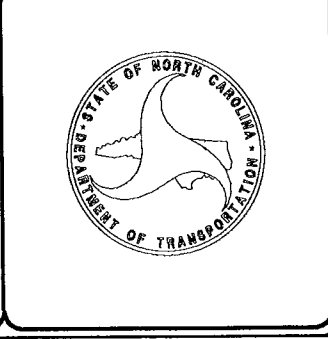
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	MICHAEL LINDGREN, P.E. PROJECT ENGINEER
MARCH 21, 2014	
LETTING DATE:	MICHAEL LITTLEFIELD, P.E. PROJECT DESIGN ENGINEER
JUNE 16, 2015	
NCDOT CONTACT:	BRENDA MOORE, PE ROADWAY DESIGN ENGINEERING COORDINATION SECTION ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



16-MAY-2014 07:35 C:\projects\U3440_GEO_RDWY_CABARRUS\CADD_GEO\TECH\PlanProj\U3440_GEO_inv_002A_(orig_rdy_tsh)_CABARRUS.dgn Module: AT_CHE257466

CONTRACT:



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Pat McCrory
GOVERNOR

Anthony Tata
SECRETARY

June 5, 2014

STATE PROJECT: 39010.1.R2 (U-3440)
FEDERAL PROJECT:
COUNTY: Cabarrus
DESCRIPTION: Kannapolis – NC 3, Proposed West Side Bypass (U-2009) to SR 1691 (Loop Road).

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project is located in northwest Cabarrus County near the City of Kannapolis. The scope of this project includes the widening of existing NC 3 to four lanes with improvements to several – Y- lines and intersection upgrades. A roundabout has been proposed for the NC 3 / Miller Street (Y15) / Franklin Street (Y14) intersection. The widening of the existing bridge over Irish Buffalo Creek is also included in the scope of this project, but it will be submitted under a different cover. Every boring that was performed for this roadway investigation can be found on the attached cross sections. The following alignments were investigated:

- L- 10+10.00 to 149+81.04 (2.65 miles)
- Y1- 10+36.64 to 12+25.00 (0.02 miles)
- Y3- 10+75.00 to 11+94.31 (0.04 miles)
- Y4- 11+00.00 to 12+81.52 (0.03 miles)
- Y7- 10+38.75 to 12+75.00 (0.04 miles)
- Y8- 10+38.78 to 12+50.00 (0.04 miles)
- Y9- 11+50.00 to 12+91.62 (0.03 miles)
- Y10- 11+50.00 to 16+31.39 (0.09 miles)
- Y11- 10+60.94 to 15+00.00 (0.08 miles)
- Y13- 11+00.00 to 13+33.56 (0.04 miles)
- Y14- 10+75.00 to 12+21.84 (0.03 miles)
- Y15- 11+00.35 to 12+80.00 (0.03 miles)
- Y16- 11+50.00 to 12+75.07 (0.02 miles)

- Y18- 10+50.00 to 12+01.50 (0.03 miles)
- Y19- 10+36.67 to 11+50.00 (0.02 miles)
- Y20- 10+22.01 to 11+80.00 (0.03 miles)
- DR2- 10+85.00 to 11+96.39 (0.02 miles)
- RABT- 0+00.00 to 3+83.27 (0.07 miles)

The total length of lines investigated is 3.31 miles. The field investigation of this project was conducted primarily in December of 2013 by Kleinfelder. They employed the use of two ATV-type drilling machines to perform the soil borings within the project corridor. Due to topographical constraints and safety considerations, some borings had to be offset of their intended locations.

Standard Penetration Tests were performed utilizing hollow stem augers with carbide insert teeth. Manual Drop Hammers were used on both rigs to advance the split spoon samplers to their intended depths. Two Hundred and Twenty-Six soil samples and a Shelby Tube were submitted to the Materials and Tests Unit for laboratory analysis.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Unregulated Landfill: An unregulated landfill was encountered within the project corridor at the following location:

<u>Line</u>	<u>Station(s)</u>	<u>Offset</u>
-L-	68+50 to 73+67	Right.

The site is currently a vacant lot. The previous property owner, Mr. Jerry Baker, reported that the property had been used as a dumpsite back in the 1980s. He stated that the dumped material consisted of tires, construction debris, abandoned UST's, and oil drums. Two site assessments have been performed on this property since 2008 to determine the extent and contents of this Landfill.

Both assessments paid special attention to identifying possible hydrocarbon contamination. The first was performed in 2008 at the request of a local Real Estate company. In June 2011, the NCDOT hired an outside contractor to perform an assessment of the property for the widening of NC 3. Both investigations excavated test pits of varying depths and locations on the property to aid in their subsurface analysis. Contaminated soil was encountered along with tires, shingles, wood debris, and concrete. Please contact Cyrus Parker, LG, PE at the Geotechnical Engineering Unit headquarters in Raleigh for detailed reports of this study.

Alluvial Soils: Several drainage features of varying sizes bisect the project corridor. Irish Buffalo Creek is the largest of these drainage features. In addition, the largest concentration of alluvial soils was encountered in the floodplain adjacent to the Irish Buffalo. It crosses NC 3 at approximately 90 degrees and flows north to south. Alluvial materials encountered in this floodplain are up to 27' thick and consist primarily of sandy and silty clays (A-7-6, A-6), sandy silts (A-4), silty sands (A-2-4), and coarse sands (A-3, A-1-b). Alluvial deposits are thicker on the eastern side of the creek. Maximum fill heights over these deposits are approximately 15'. One Shelby Tube (ST-2) was retrieved in the Irish Buffalo Creek floodplain for triaxial and consolidation analysis.

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

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

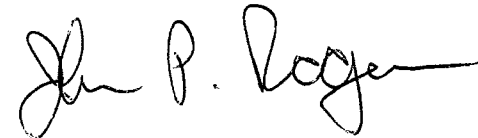
WEBSITE:
www.ncdot.gov/doh/preconstruct/highway/geotech

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

SOIL PROPERTIES*Residual Soils / Weathered Rock*

All residual soils on the project are derived from the metamorphosed, quartz diorite (PzZq) rocks that are common to the area. Severely weathered crystalline rock and crystalline rock were encountered primarily in the Irish Buffalo Creek floodplain and at the proposed retaining wall right of Station 133+00 -L-. The dominant residual soil types within the project corridor are sandy silt (A-5, A-4) and silty sand (A-2-4, A-1-b). Sandy and silty clay (A-7, A-6) are also present within the project corridor, but in lesser concentrations. Please refer to the attached cross-sections for a graphical depiction of the roadway borings performed on this project.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John P. Rogers". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

John P. Rogers
Project Geological Engineer

8/17/99
 15-MAY-2014 10:51
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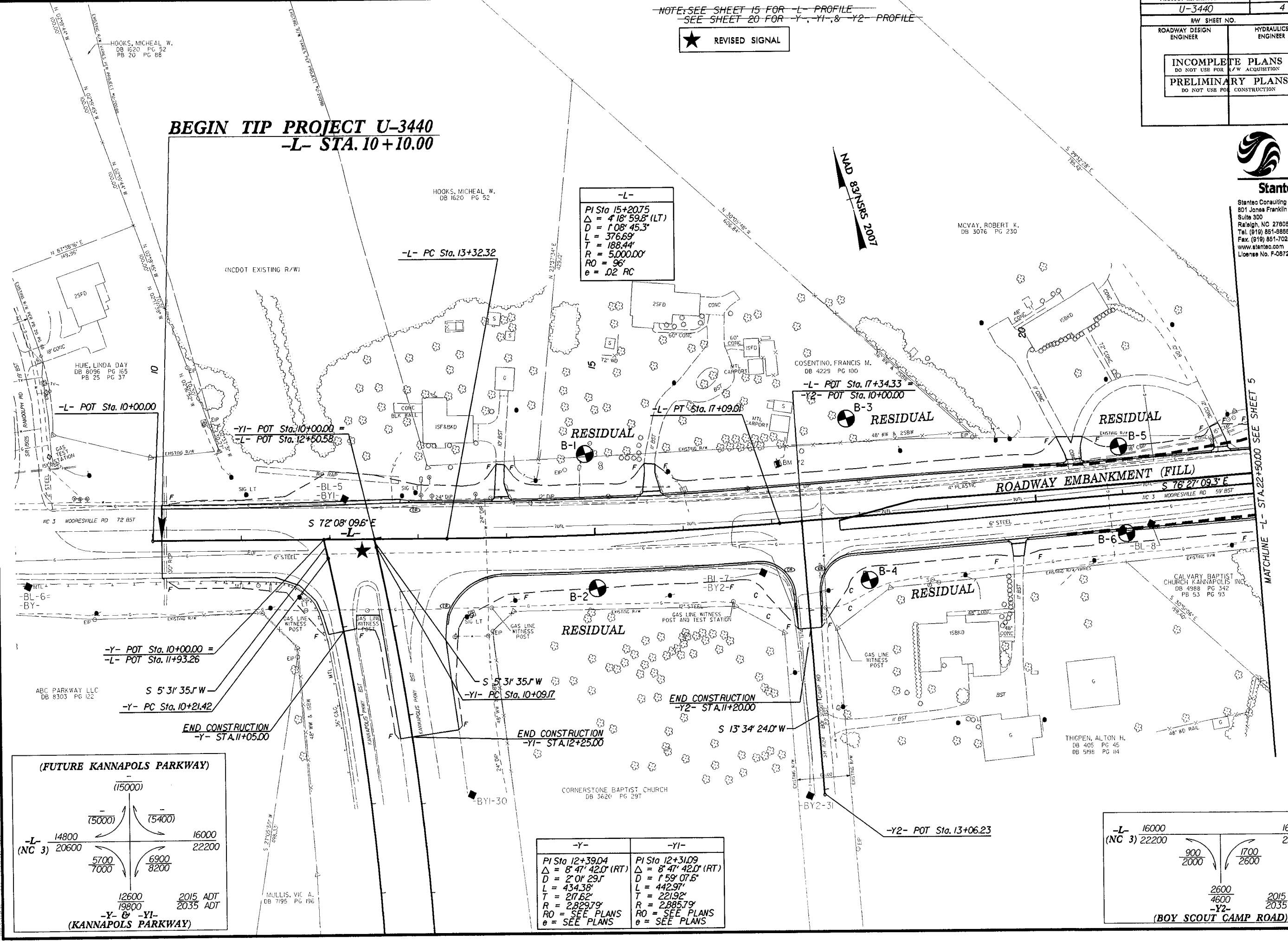
PROJECT REFERENCE NO.	SHEET NO.
U-3440	4
ROW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



NOTE: SEE SHEET 15 FOR -L- PROFILE
 SEE SHEET 20 FOR -Y-, -Y1-, & -Y2- PROFILE

★ REVISED SIGNAL

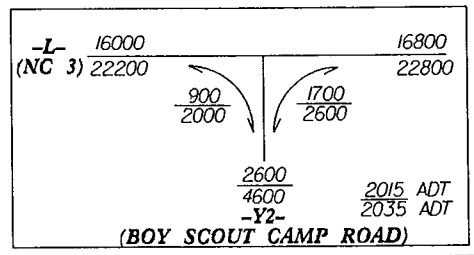
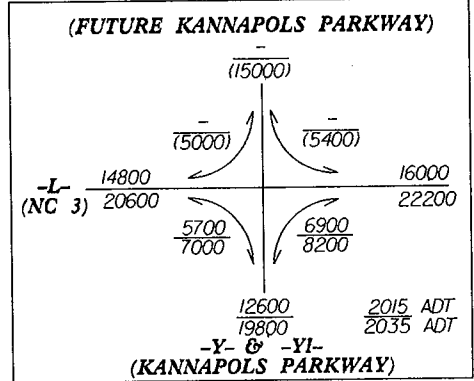
BEGIN TIP PROJECT U-3440
-L- STA. 10+10.00



-L-

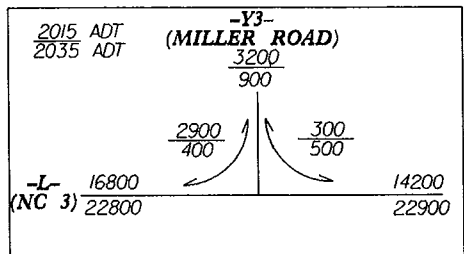
PI Sta 15+20.75
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$D = 1' 08' 45.3''$
$L = 376.69'$
$T = 188.44'$
$R = 5,000.00'$
$RO = 96'$
$e = .02$ RC

-Y-	-Y1-
PI Sta 12+39.04	PI Sta 12+31.09
$\Delta = 8' 47' 42.0''$ (RT)	$\Delta = 8' 47' 42.0''$ (RT)
$D = 2' 01' 29.7''$	$D = 1' 59' 07.6''$
$L = 434.38'$	$L = 442.97'$
$T = 217.62'$	$T = 221.92'$
$R = 2,829.79'$	$R = 2,885.79'$
RO = SEE PLANS	RO = SEE PLANS
e = SEE PLANS	e = SEE PLANS



MATCHLINE -L- STA. 22+50.00 SEE SHEET 5

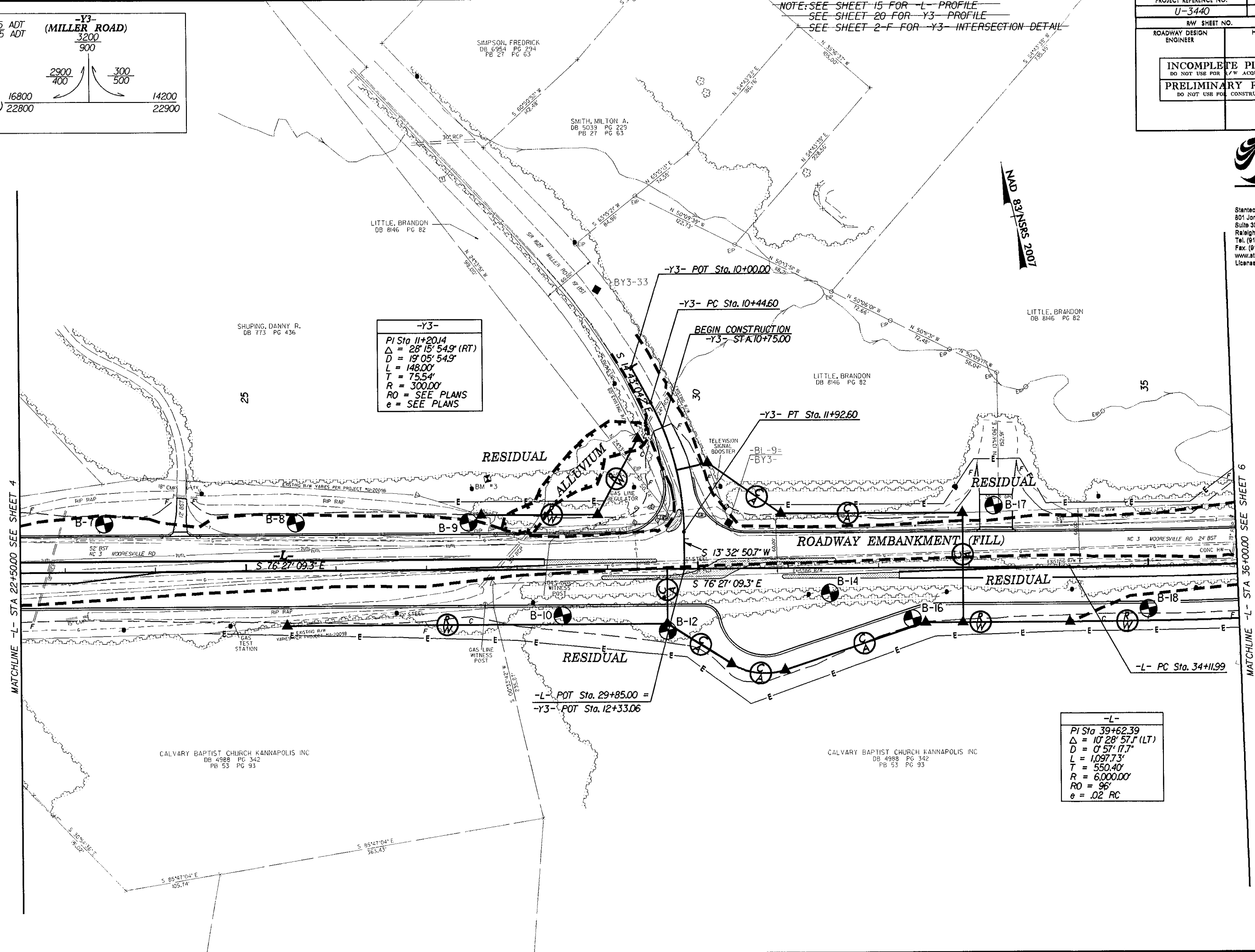
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NOTE: SEE SHEET 15 FOR -L- PROFILE
 SEE SHEET 20 FOR -Y3- PROFILE
 SEE SHEET 2-F FOR -Y3- INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
U-3440	5
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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-Y3-
 PI Sta 11+20.14
 $\Delta = 28' 15'' 54.9''$ (RT)
 $D = 19' 05'' 54.9''$
 $L = 148.00'$
 $T = 75.54'$
 $R = 300.00'$
 RO = SEE PLANS
 e = SEE PLANS

-L-
 PI Sta 39+62.39
 $\Delta = 10' 28'' 57.7''$ (LT)
 $D = 0' 57'' 17.7''$
 $L = 1,097.73'$
 $T = 550.40'$
 $R = 6,000.00'$
 RO = 96'
 e = .02 RC

MATCHLINE -L- STA 22+50.00 SEE SHEET 4

MATCHLINE -L- STA 36+00.00 SEE SHEET 6

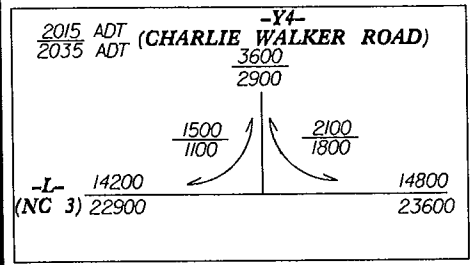
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 103440

NOTE: SEE SHEET 15 THRU 16 FOR -L- PROFILE
 SEE SHEET 21 FOR -Y4-, -Y5- & -Y6- PROFILE
 SEE SHEET 2-G FOR -Y4- INTERSECTION DETAIL



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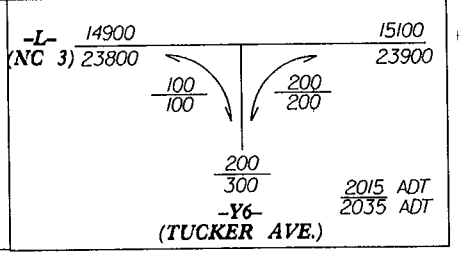
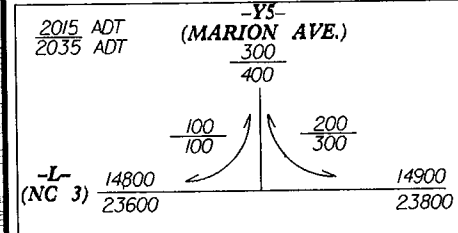
PROJECT REFERENCE NO.	6
U-3440	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



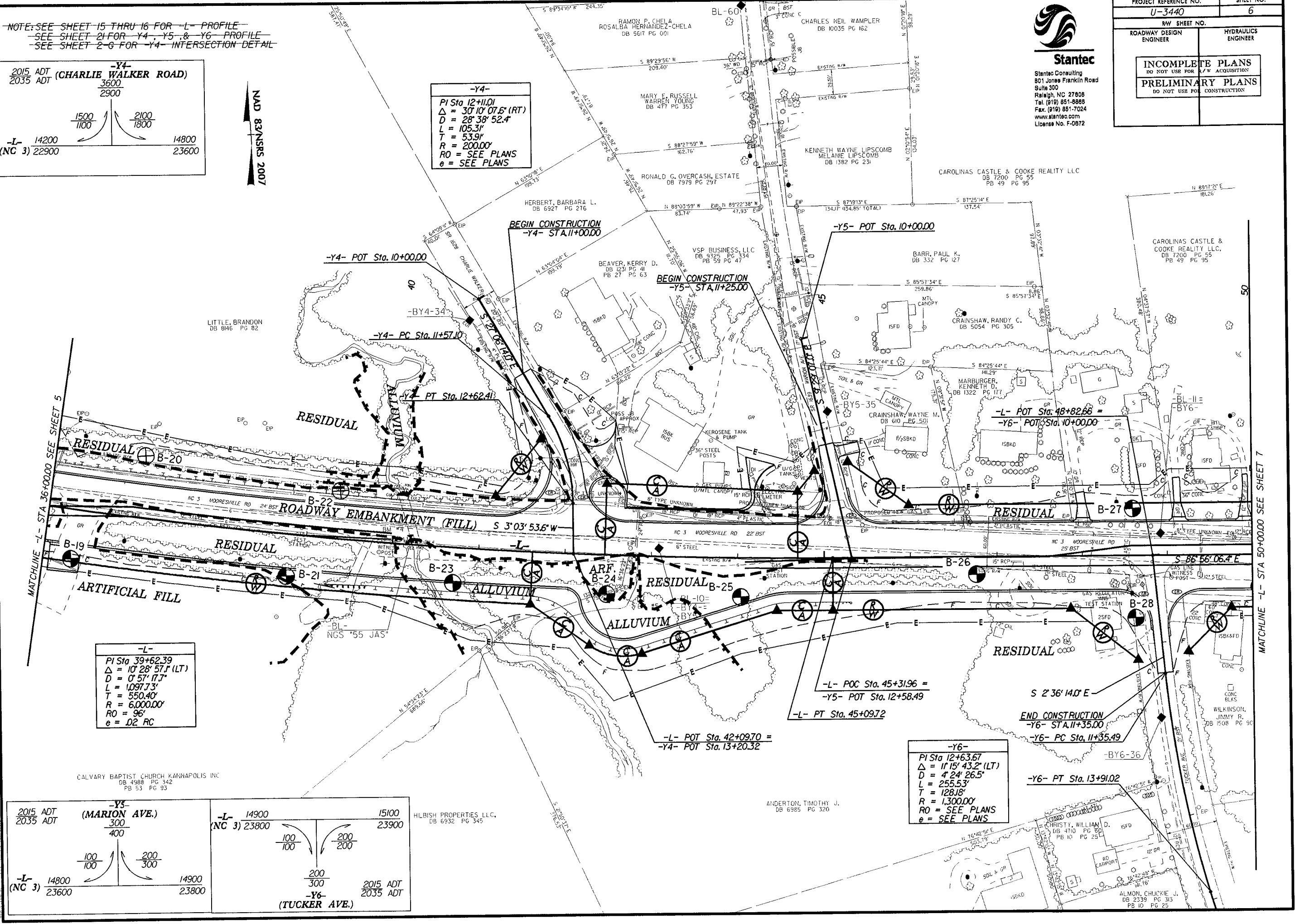
NAD 83/NSRS 2007


-Y4-
 PI Sta 12+11.01
 $\Delta = 30' 10' 07.6''$ (RT)
 $D = 28' 38' 52.4''$
 $L = 105.31'$
 $T = 53.91'$
 $R = 200.00'$
 RO = SEE PLANS
 e = SEE PLANS

-L-
 PI Sta 39+62.39
 $\Delta = 10' 28' 57.1''$ (LT)
 $D = 0' 57' 17.7''$
 $L = 1097.73'$
 $T = 550.40'$
 $R = 6,000.00'$
 RO = 96'
 e = 0.2 RC



HILBISH PROPERTIES, LLC.
 DB 6932 PG 345



CALVARY BAPTIST CHURCH KANNAHOLIS INC
 DB 4988 PG 342
 PB 53 PG 93

ANDERTON, TIMOTHY J.
 DB 6985 PG 320

CHRISTY, WILLIAM D.
 DB 4710 PG 60
 PB 10 PG 25

ALMON, CHUCKIE J.
 DB 2339 PG 313
 PB 10 PG 25

MATCHLINE -L- STA 50+00.00 SEE SHEET 7

MATCHLINE -L- STA 36+00.00 SEE SHEET 5

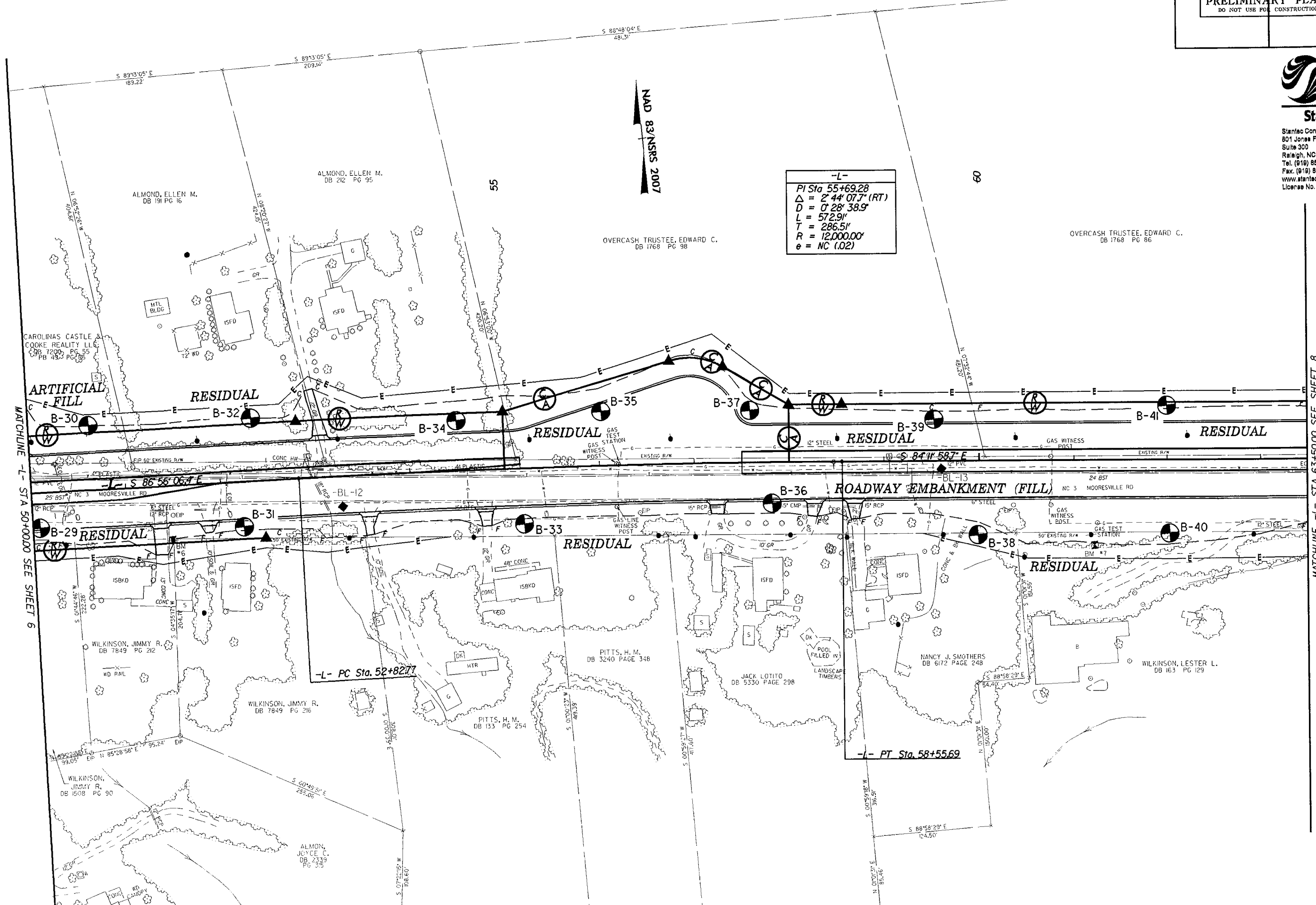
8/17/99

NOTE: SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 2-H FOR -L- BULBOUT DETAIL

PROJECT REFERENCE NO. U-3440		SHEET NO. 7	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



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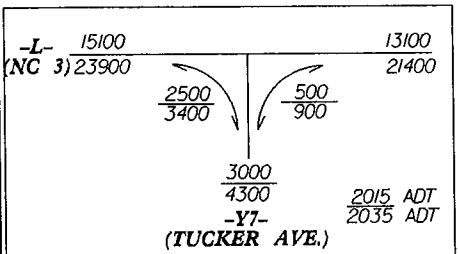
-L-
 PI Sta 55+69.28
 $\Delta = 2^\circ 44' 07.7''$ (RT)
 $D = 0^\circ 28' 38.9''$
 $L = 572.9'$
 $T = 286.5'$
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 $e = NC (0.2)$

MATCHLINE -L- STA 50+000 SEE SHEET 6

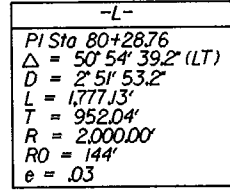
MATCHLINE -L- STA 63+500 SEE SHEET 8

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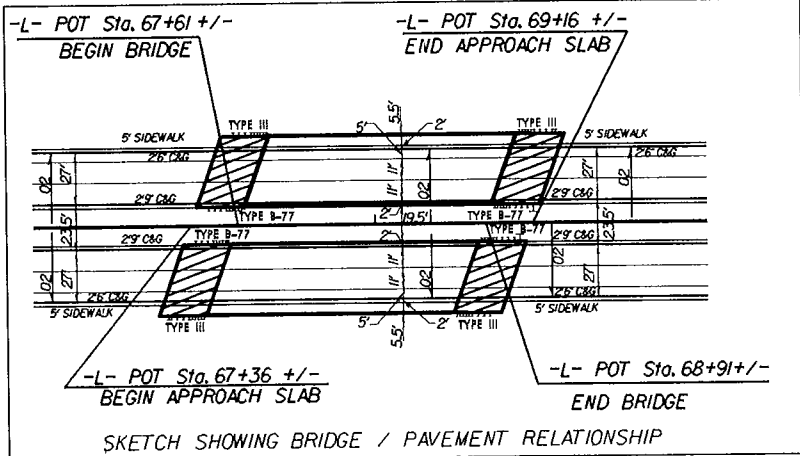
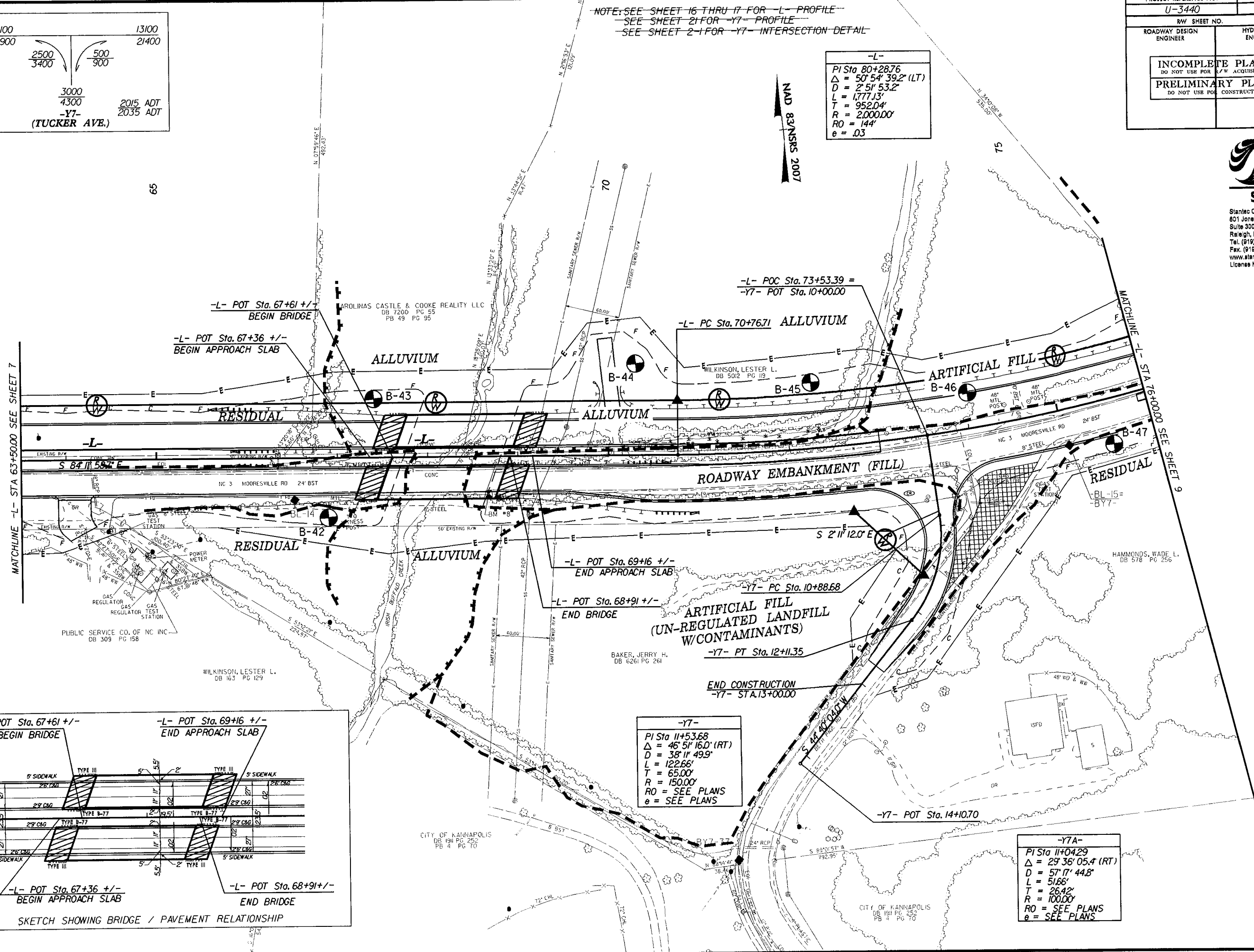
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NOTE: SEE SHEET 16 THRU 17 FOR -L- PROFILE
 SEE SHEET 21 FOR -Y7- PROFILE
 SEE SHEET 21 FOR -Y7- INTERSECTION DETAIL



PROJECT REFERENCE NO.	SHEET NO.
U-3440	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR S/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



8/17/99

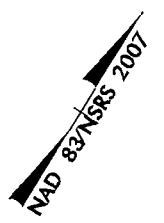
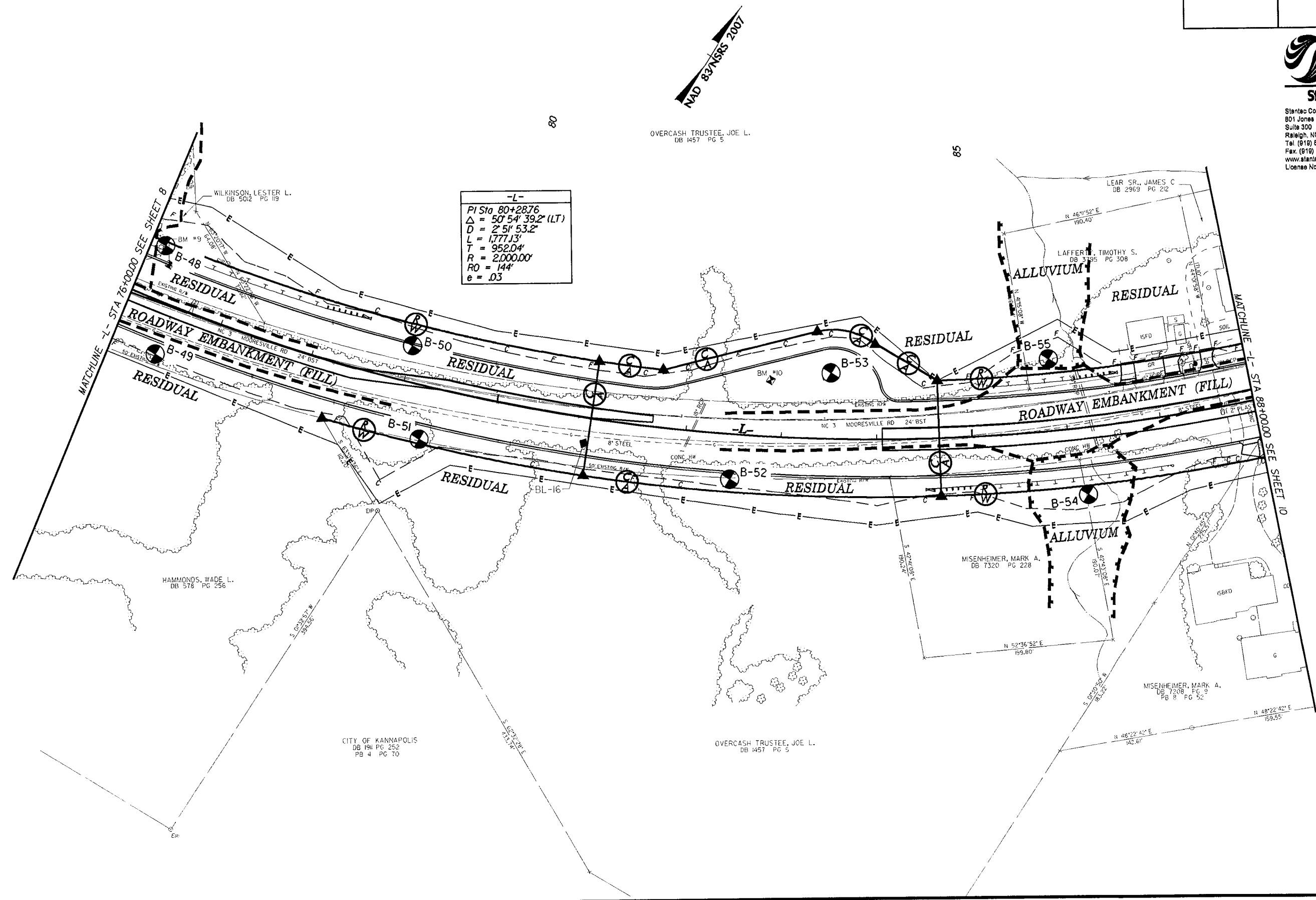
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NOTE: SEE SHEET 17 FOR L PROFILE
SEE SHEET 2 J FOR L BULBOUT DETAIL

PROJECT REFERENCE NO. U-3440		SHEET NO. 9	
RW SHEET NO.			
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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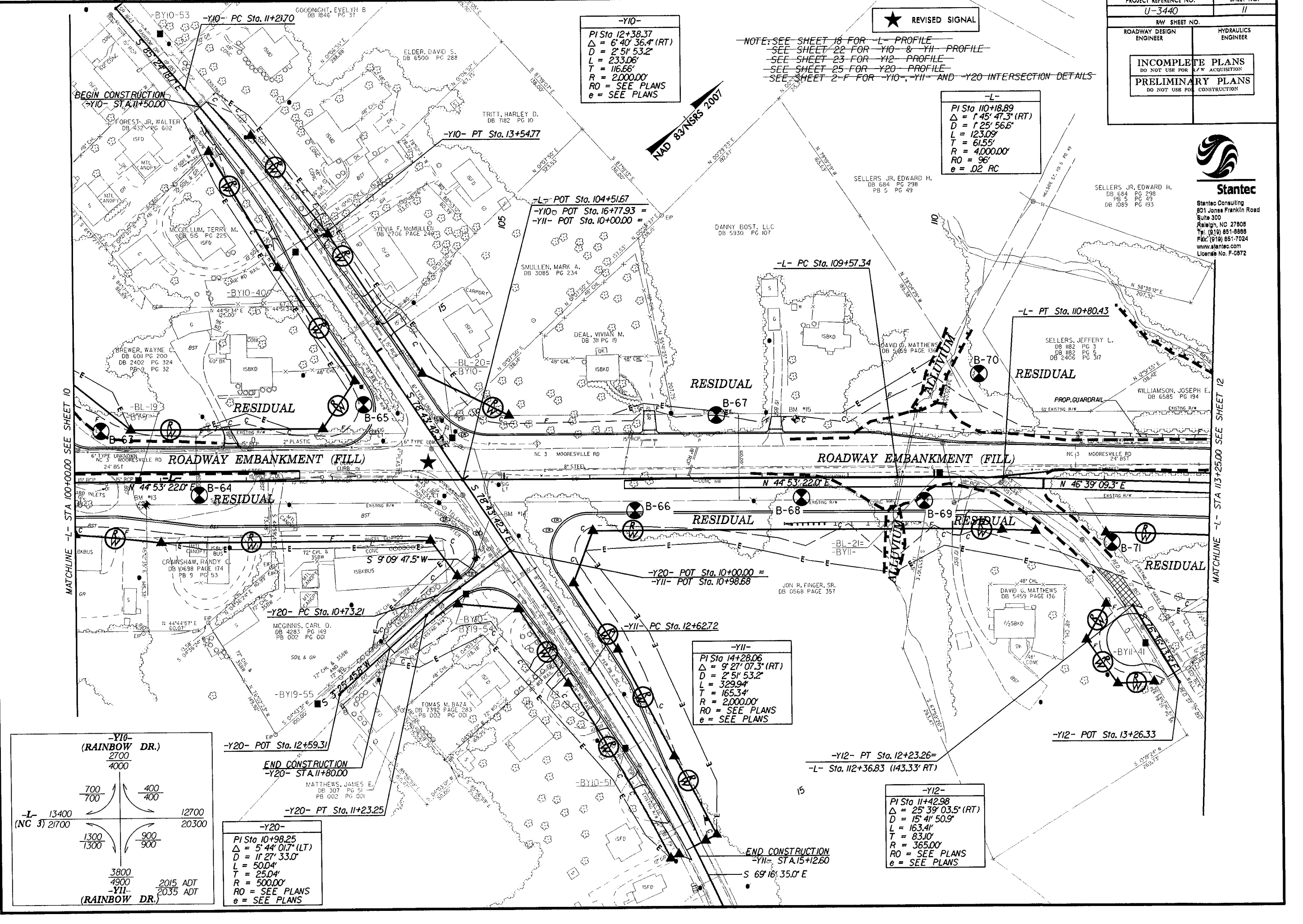


PROJECT REFERENCE NO. U-3440	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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-Y10-
 PI Sta 12+38.37
 $\Delta = 6' 40' 36.4''$ (RT)
 $D = 2' 51' 53.2''$
 $L = 233.06'$
 $T = 116.66'$
 $R = 2,000.00'$
 $RO = \text{SEE PLANS}$
 $e = \text{SEE PLANS}$

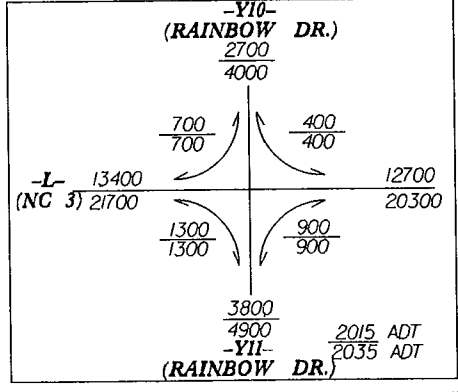
-L-
 PI Sta 110+18.89
 $\Delta = 1' 45' 47.3''$ (RT)
 $D = 1' 25' 56.6''$
 $L = 123.09'$
 $T = 61.55'$
 $R = 4,000.00'$
 $RO = 96'$
 $e = .02$ RC

★ **REVISED SIGNAL**

NOTE: SEE SHEET 18 FOR -L- PROFILE
 SEE SHEET 22 FOR -Y10- & -Y11- PROFILE
 SEE SHEET 23 FOR -Y12- PROFILE
 SEE SHEET 25 FOR -Y20- PROFILE
 SEE SHEET 2-F FOR -Y10-, -Y11- AND -Y20- INTERSECTION DETAILS

-Y11-
 PI Sta 14+28.06
 $\Delta = 9' 27' 07.3''$ (RT)
 $D = 2' 51' 53.2''$
 $L = 329.94'$
 $T = 165.34'$
 $R = 2,000.00'$
 $RO = \text{SEE PLANS}$
 $e = \text{SEE PLANS}$

-Y12-
 PI Sta 11+42.98
 $\Delta = 25' 39' 03.5''$ (RT)
 $D = 15' 41' 50.9''$
 $L = 163.41'$
 $T = 83.10'$
 $R = 365.00'$
 $RO = \text{SEE PLANS}$
 $e = \text{SEE PLANS}$



-Y20-
 PI Sta 10+98.25
 $\Delta = 5' 44' 01.7''$ (LT)
 $D = 11' 27' 33.0''$
 $L = 500.4'$
 $T = 25.04'$
 $R = 500.00'$
 $RO = \text{SEE PLANS}$
 $e = \text{SEE PLANS}$

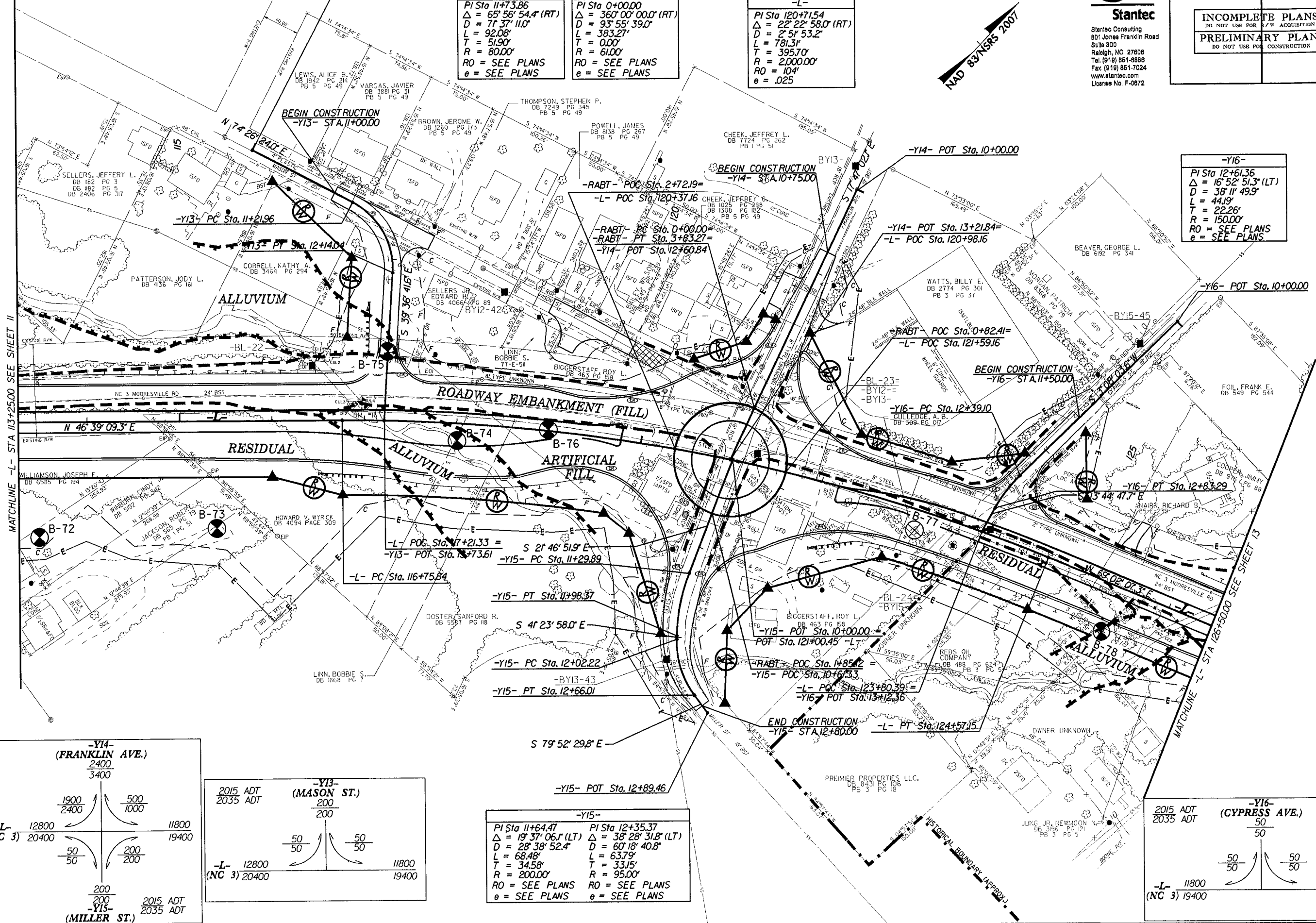
MATCHLINE -L- STA 100+00.00 SEE SHEET 10

MATCHLINE -L- STA 113+25.00 SEE SHEET 12

8/17/99

5-MAY-2014 14:35 C:\Projects\U-3440\DWG\U-3440-CADD\GEOTECH\PLAN\U-3440_GEO_INV_012_CABARRUS.dgn

SELLERS, JEFFERY L.
DB 2406 PG 317
PB 5 PG 49



NOTE: SEE SHEETS 18 THRU 19 FOR -L- PROFILE
 SEE SHEET 23 FOR -Y13-, -Y14- & -Y15- PROFILE
 SEE SHEET 24 FOR -Y16- PROFILE
 SEE SHEET 2-K FOR -L-, -Y14- & -Y15- ROUNDABOUT DETAIL

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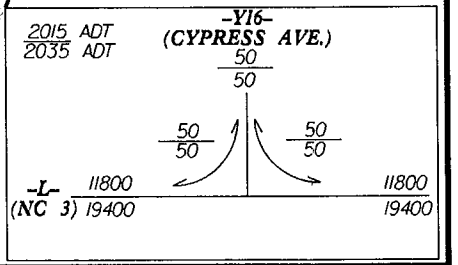
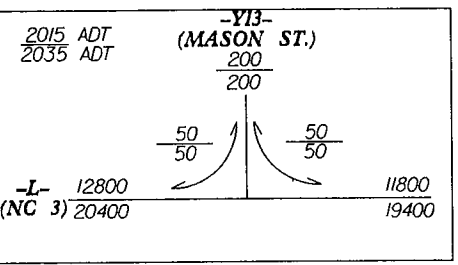
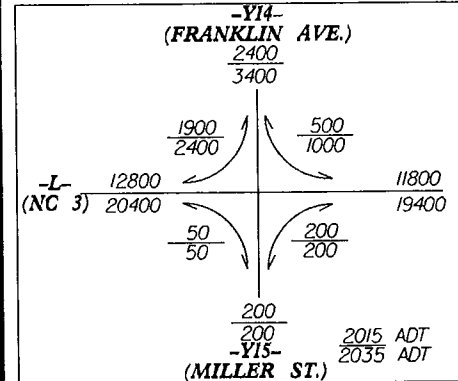
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RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y13-	-RABT- (CIRCLE)
PI Sta 11+73.86 Δ = 65' 56" 54.4" (RT) D = 71' 37" 11.0" L = 92.08' T = 51.90' R = 80.00' RO = SEE PLANS e = SEE PLANS	PI Sta 0+00.00 Δ = 360' 00" 00.0" (RT) D = 93' 55" 39.0" L = 383.27' T = 0.00' R = 61.00' RO = SEE PLANS e = SEE PLANS

-L-
PI Sta 120+71.54 Δ = 22' 22" 58.0" (RT) D = 2' 51" 53.2" L = 781.31' T = 395.70' R = 2,000.00' RO = 104' e = .025

-Y16-
PI Sta 12+61.36 Δ = 16' 52" 51.3" (LT) D = 38' 11" 49.9" L = 44.19' T = 22.26' R = 150.00' RO = SEE PLANS e = SEE PLANS

-Y15-	-Y15-
PI Sta 11+64.47 Δ = 19' 37" 06.1" (LT) D = 28' 38" 52.4" L = 68.48' T = 34.58' R = 200.00' RO = SEE PLANS e = SEE PLANS	PI Sta 12+35.37 Δ = 38' 28" 31.8" (LT) D = 60' 18" 40.8" L = 63.79' T = 33.15' R = 95.00' RO = SEE PLANS e = SEE PLANS



MATCHLINE -L- STA 113+25.00 SEE SHEET 11

MATCHLINE -L- STA 126+50.00 SEE SHEET 13

8/17/99

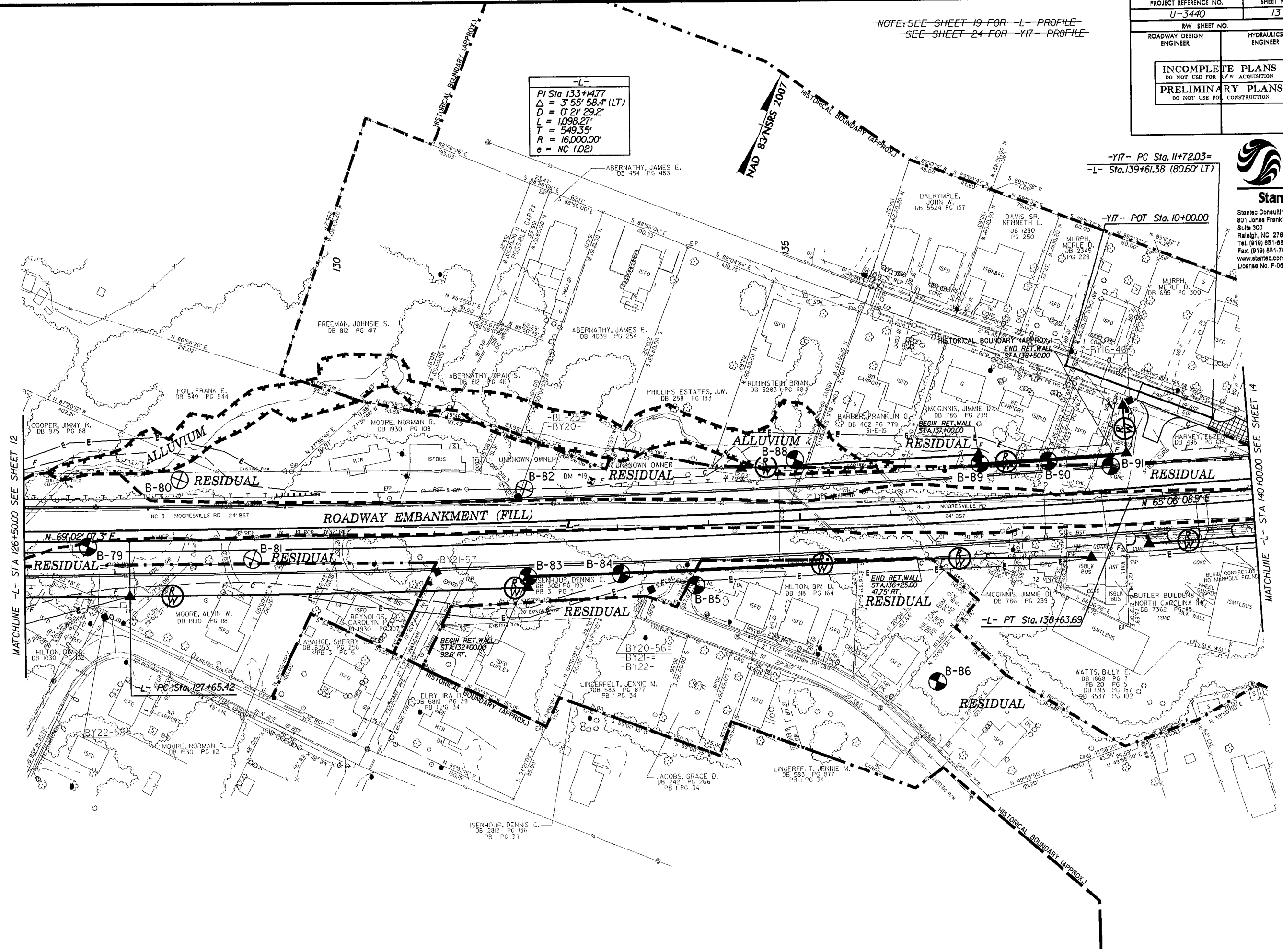
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NOTE: SEE SHEET 19 FOR L- PROFILE
SEE SHEET 24 FOR Y17- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3440	13
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR S/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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MATCHLINE -L- STA 126+50.00 SEE SHEET 12

MATCHLINE -L- STA 140+00.00 SEE SHEET 14

-Y17- PC Sta. 11+72.03=
-L- Sta. 139+61.38 (80.60' LT)

-Y17- POT Sta. 10+00.00

-L- PT Sta. 138+63.69

-L- PC Sta. 127+65.42

-L-

PI Sta. 133+1477
 $\Delta = 3^{\circ}55'58.4" (LT)$
 $D = 0^{\circ}21'29.2"$
 $L = 1,098.27'$
 $T = 549.35'$
 $R = 16,000.00'$
 $e = NC (D2)$

8/17/2014

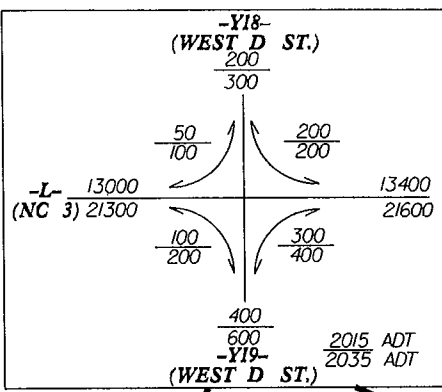
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PROJECT REFERENCE NO. U-3440		SHEET NO. 14	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



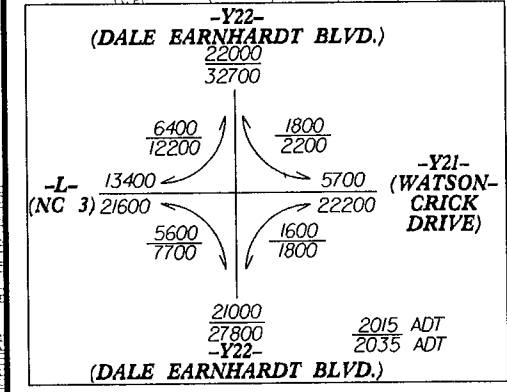
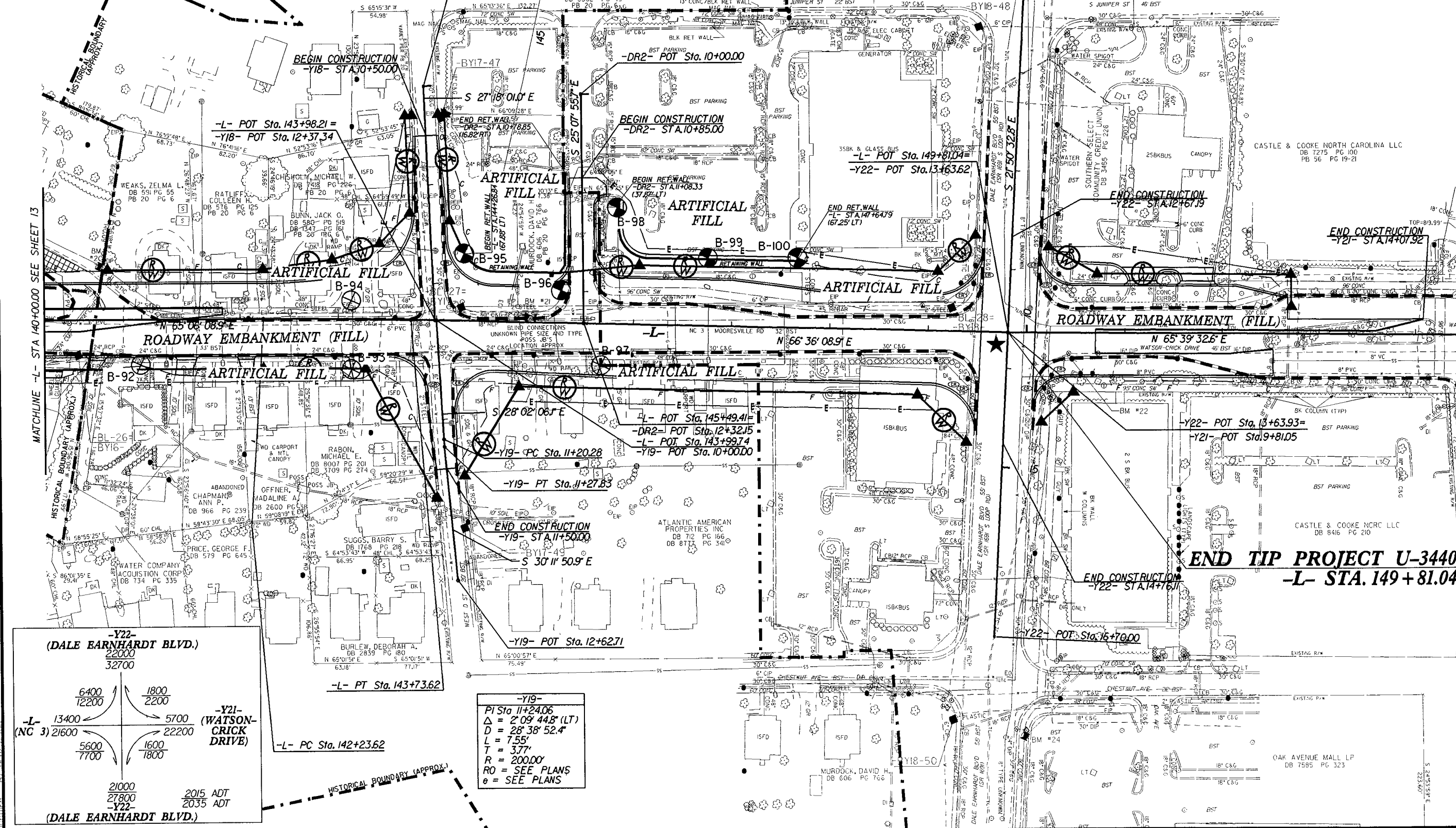
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NOTE: SEE SHEET 19 FOR L PROFILE
 SEE SHEET 24 FOR Y17, Y18 & Y19 PROFILE
 SEE SHEET 25 FOR Y21 & DR2 PROFILE
 SEE SHEET 2-L FOR L, Y18, Y19, & DR2 INTERSECTION DETAIL



-L-
 PI Sta 142+98.62
 $\Delta = 1' 30'' 00.0''$ (RT)
 $D = 1' 00'' 00.0''$
 $L = 150.00'$
 $T = 75.00'$
 $R = 5729.58'$
 $e = NC (0.2)$

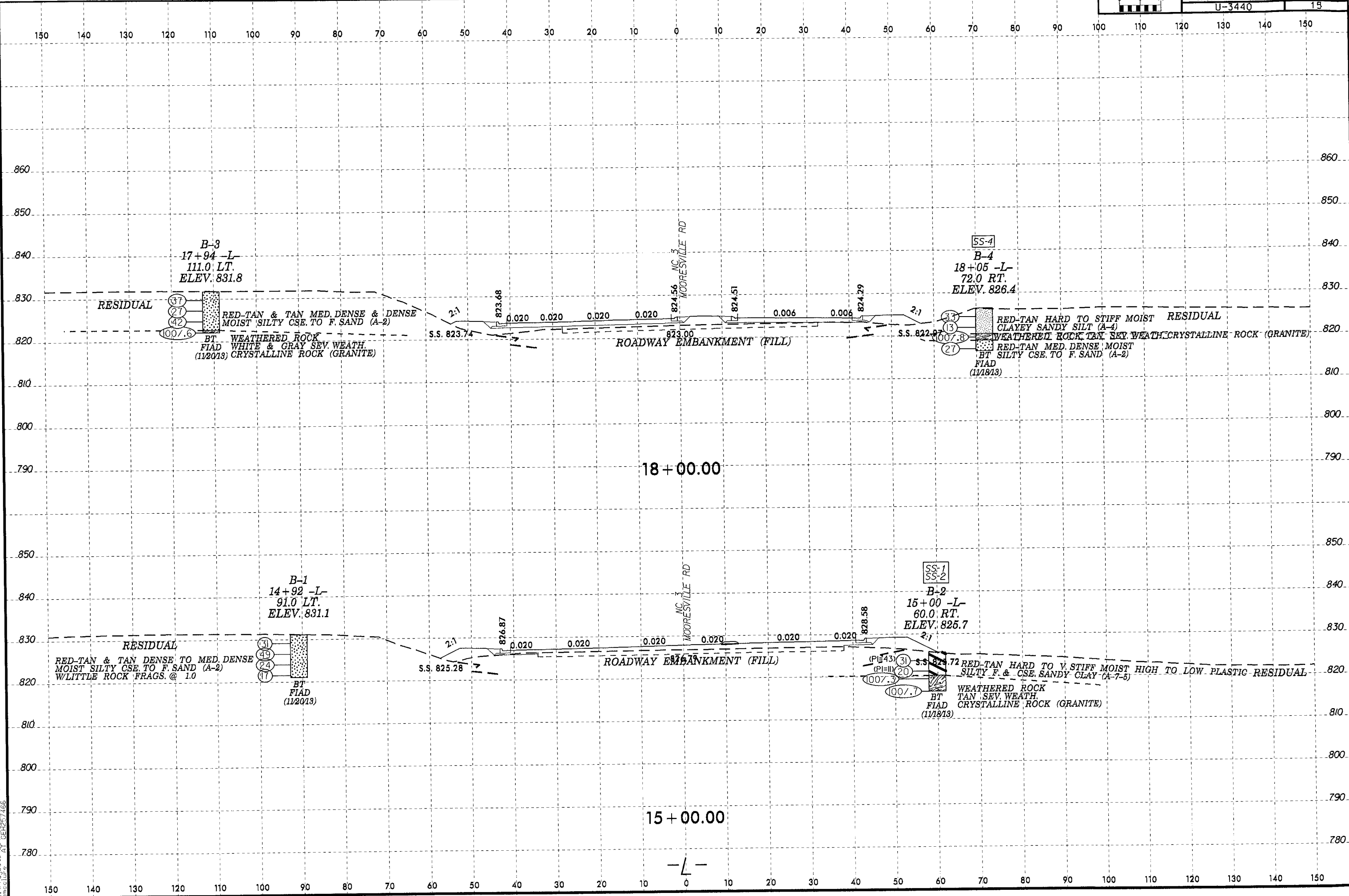
★ REVISED SIGNAL



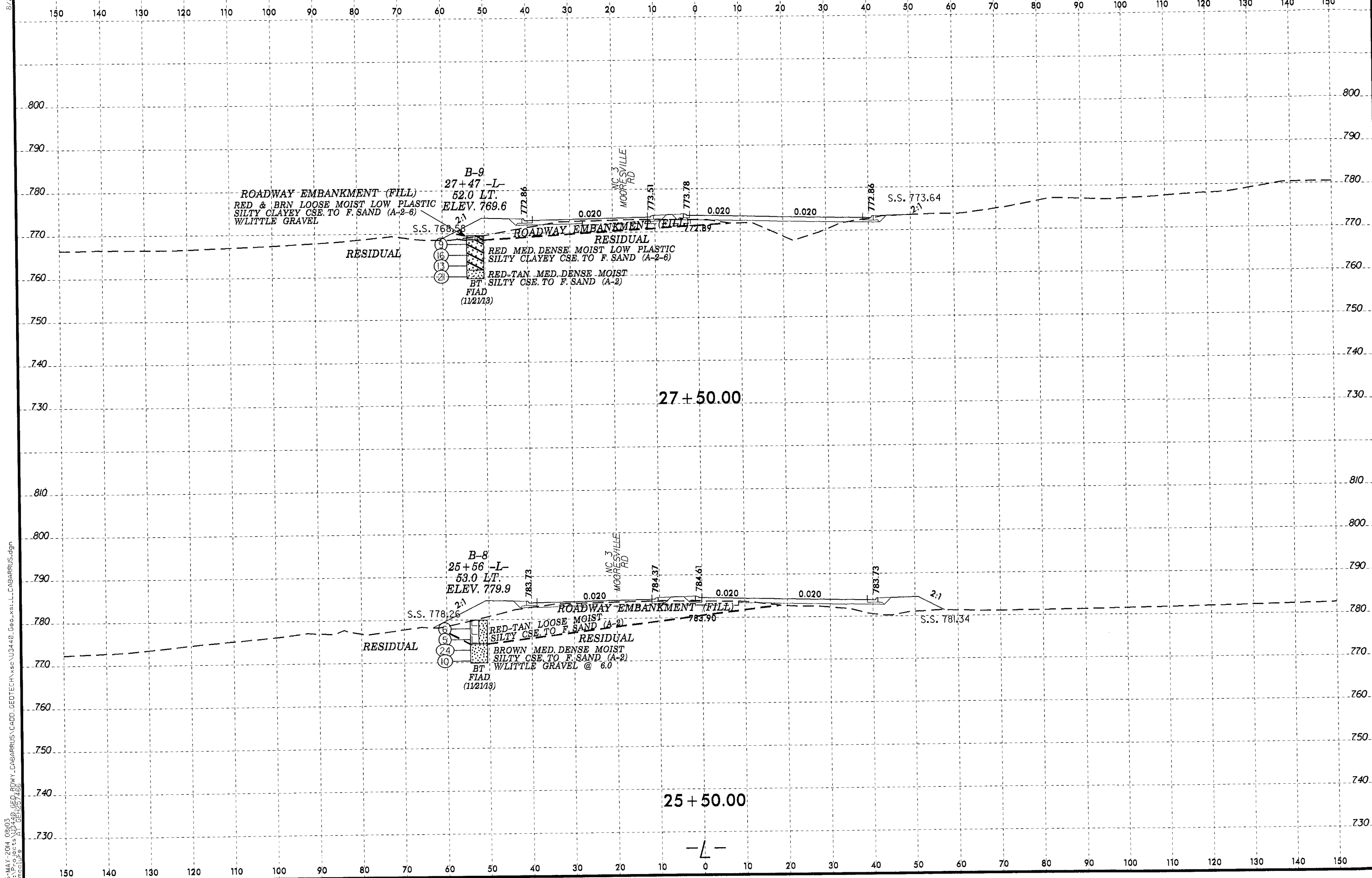
-Y19-
 PI Sta 11+24.06
 $\Delta = 2' 09'' 44.8''$ (LT)
 $D = 28' 38'' 52.4''$
 $L = 7.55'$
 $T = 3.77'$
 $R = 200.00'$
 RO = SEE PLANS
 e = SEE PLANS

HISTORICAL BOUNDARY (APPROX.)

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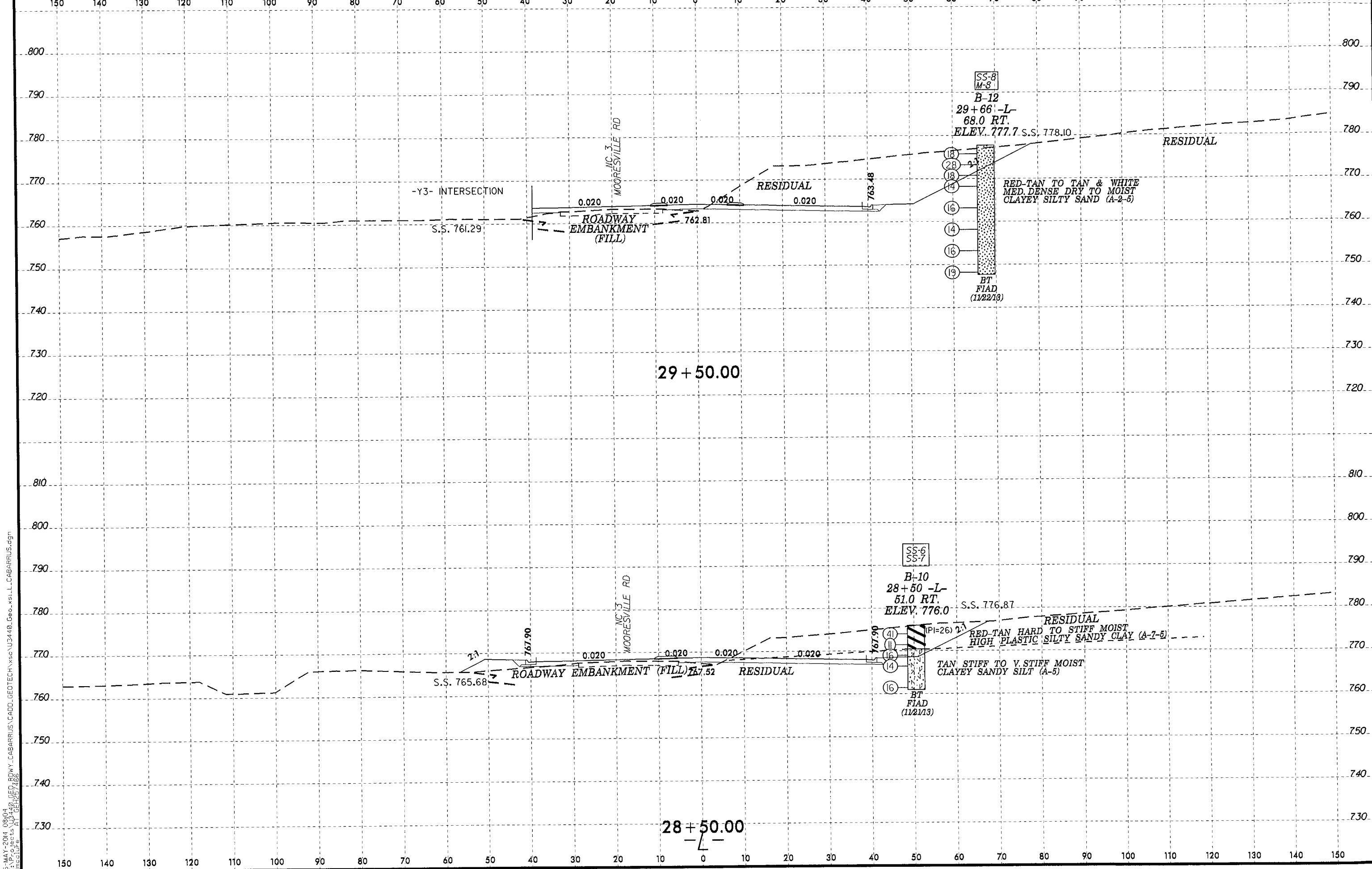


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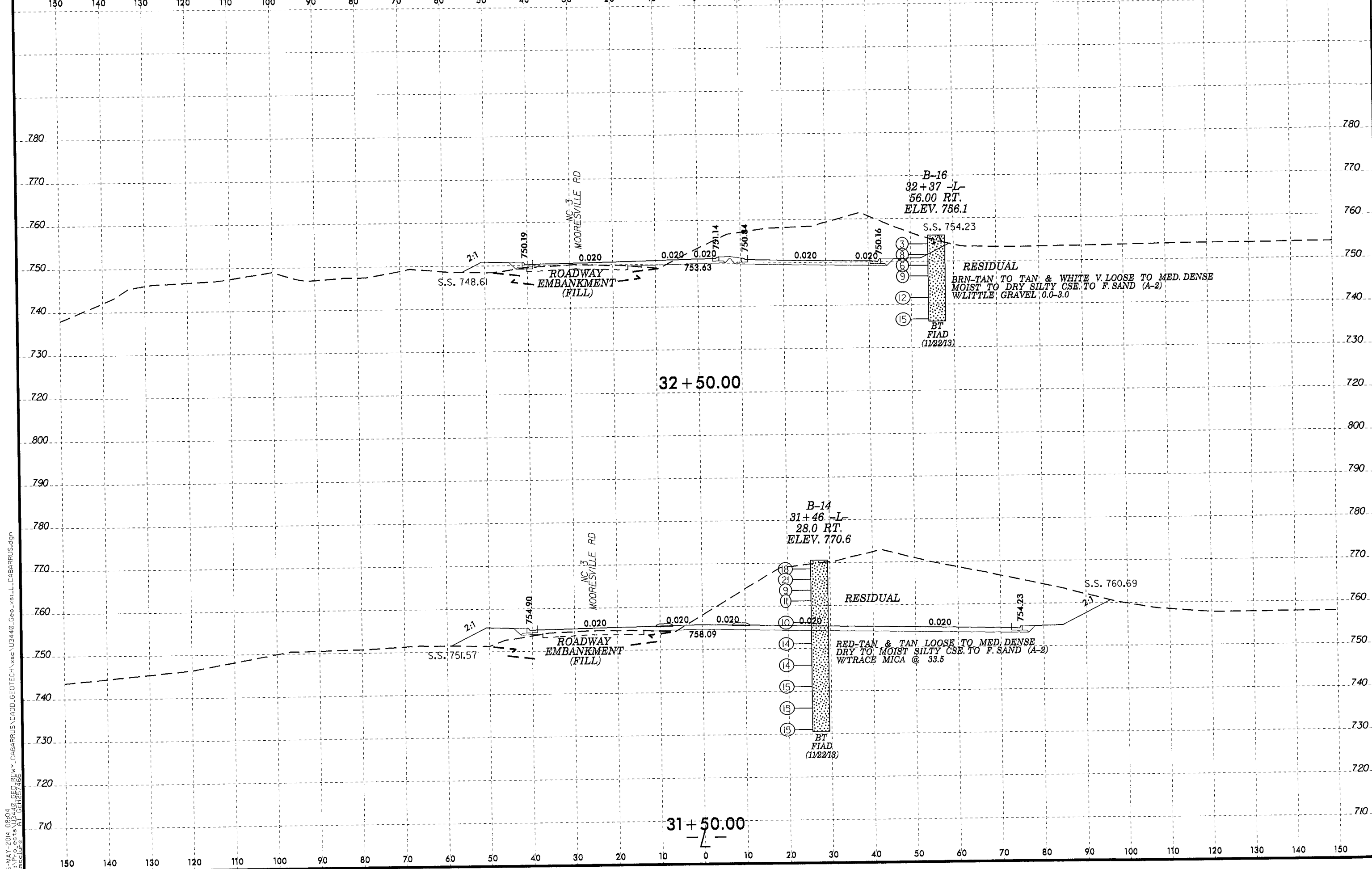
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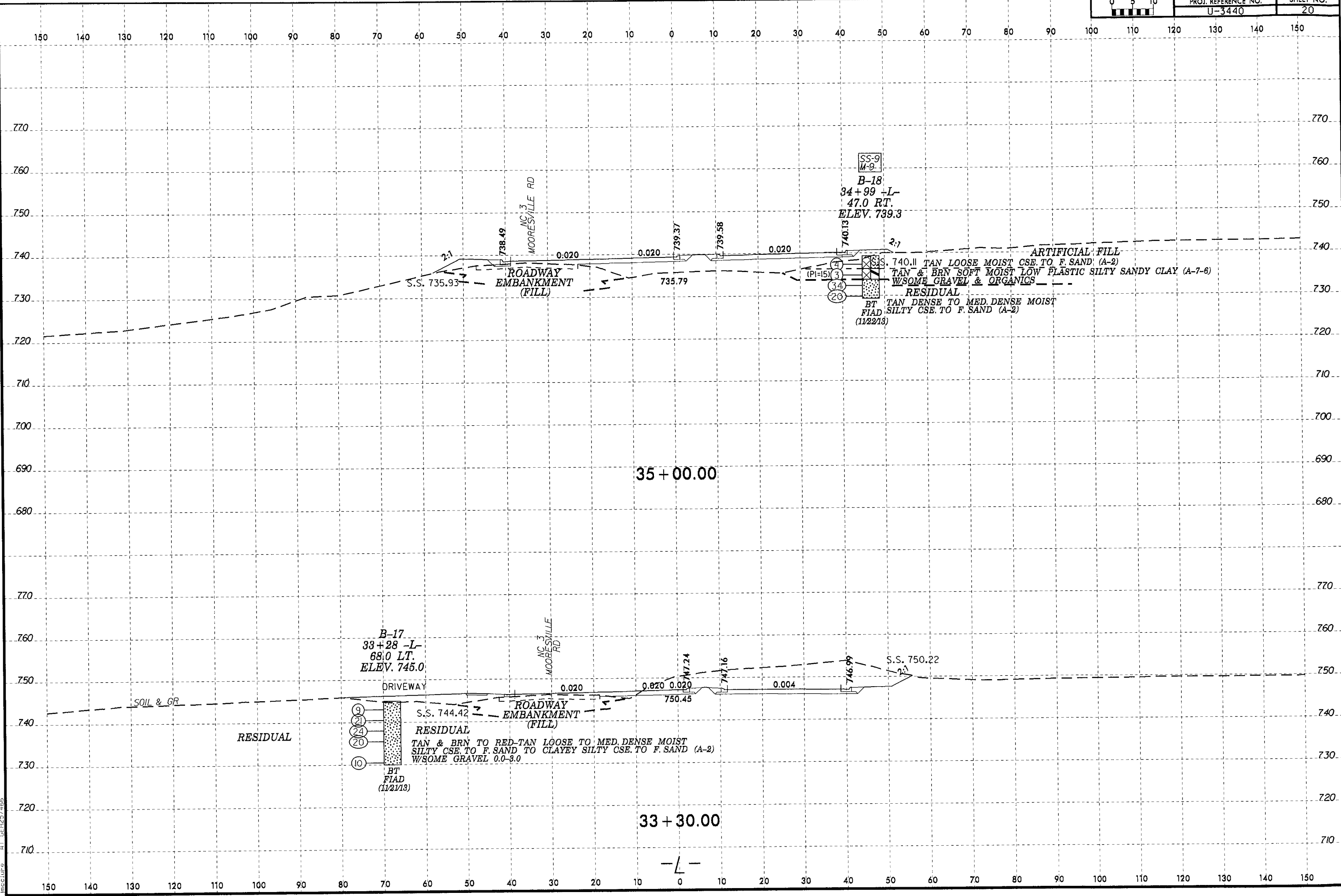
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MOOREVILLE



35 + 00.00

33 + 30.00

-L-

RESIDUAL

ARTIFICIAL FILL

- 9
- 21
- 24
- 20
- 10

- 21
- 3
- 34
- 20

RESIDUAL
TAN & BRN TO RED-TAN LOOSE TO MED. DENSE MOIST
SILTY CSE. TO F. SAND TO CLAYEY SILTY CSE. TO F. SAND (A-2)
W/SOME GRAVEL 0.0-3.0

RESIDUAL
BT
FIAD
TAN DENSE TO MED. DENSE MOIST
SILTY CSE. TO F. SAND (A-2)
(112213)

ARTIFICIAL FILL
SS-9
M-9
740.11 TAN LOOSE MOIST CSE. TO F. SAND (A-2)
TAN & BRN SOFT MOIST LOW PLASTIC SILTY SANDY CLAY (A-7-6)
W/SOME GRAVEL & ORGANICS

B-17
33+28 -L-
68.0 LT.
ELEV. 745.0

B-18
34+99 -L-
47.0 RT.
ELEV. 739.3

S.S. 744.42

S.S. 740.13

S.S. 735.93

750.45

747.24

747.16

746.99

S.S. 750.22

738.49

735.79

739.37

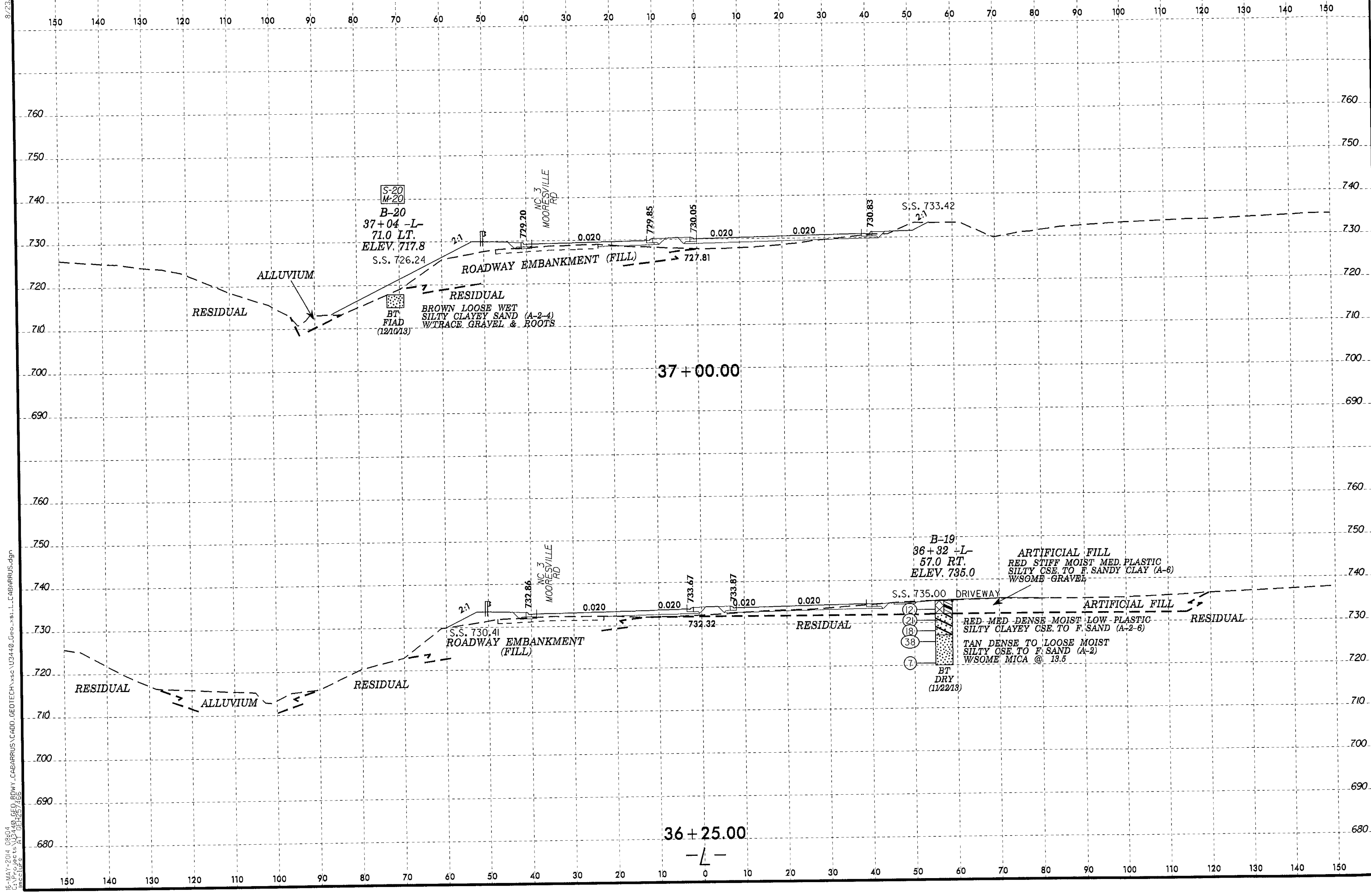
739.58

SOIL & GR

MOOREVILLE RD
NC 3

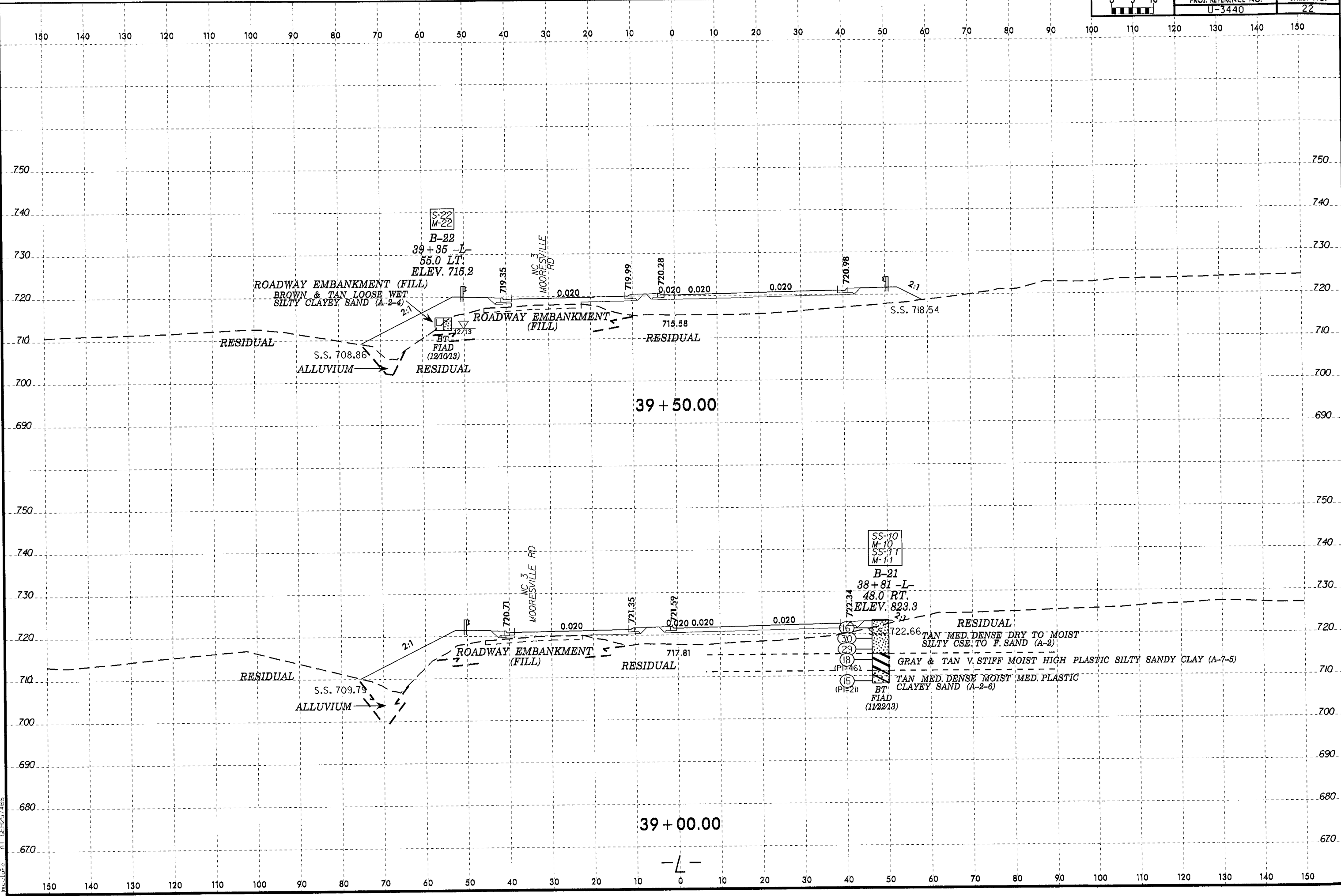
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NC 3

8/23/99

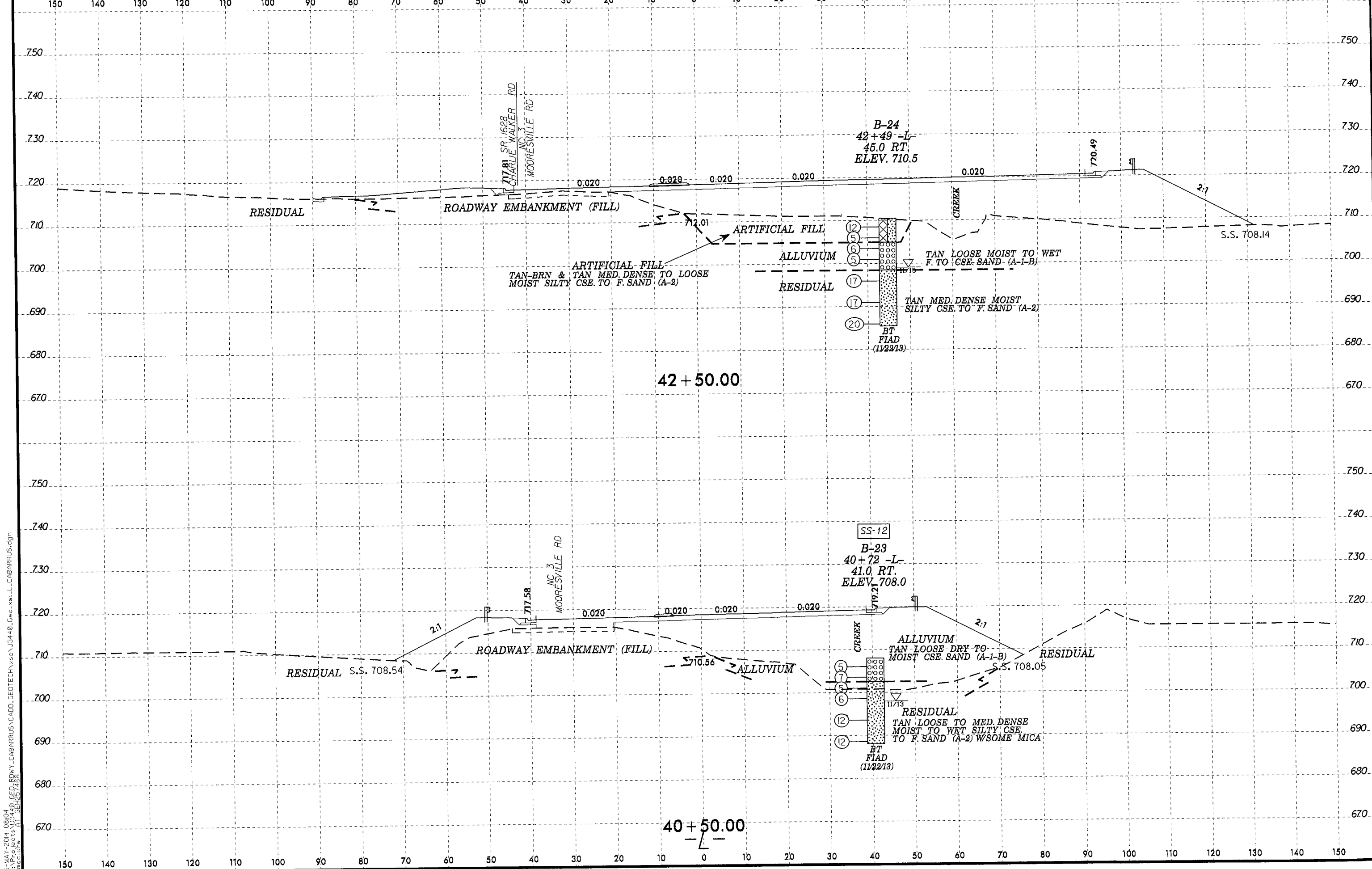


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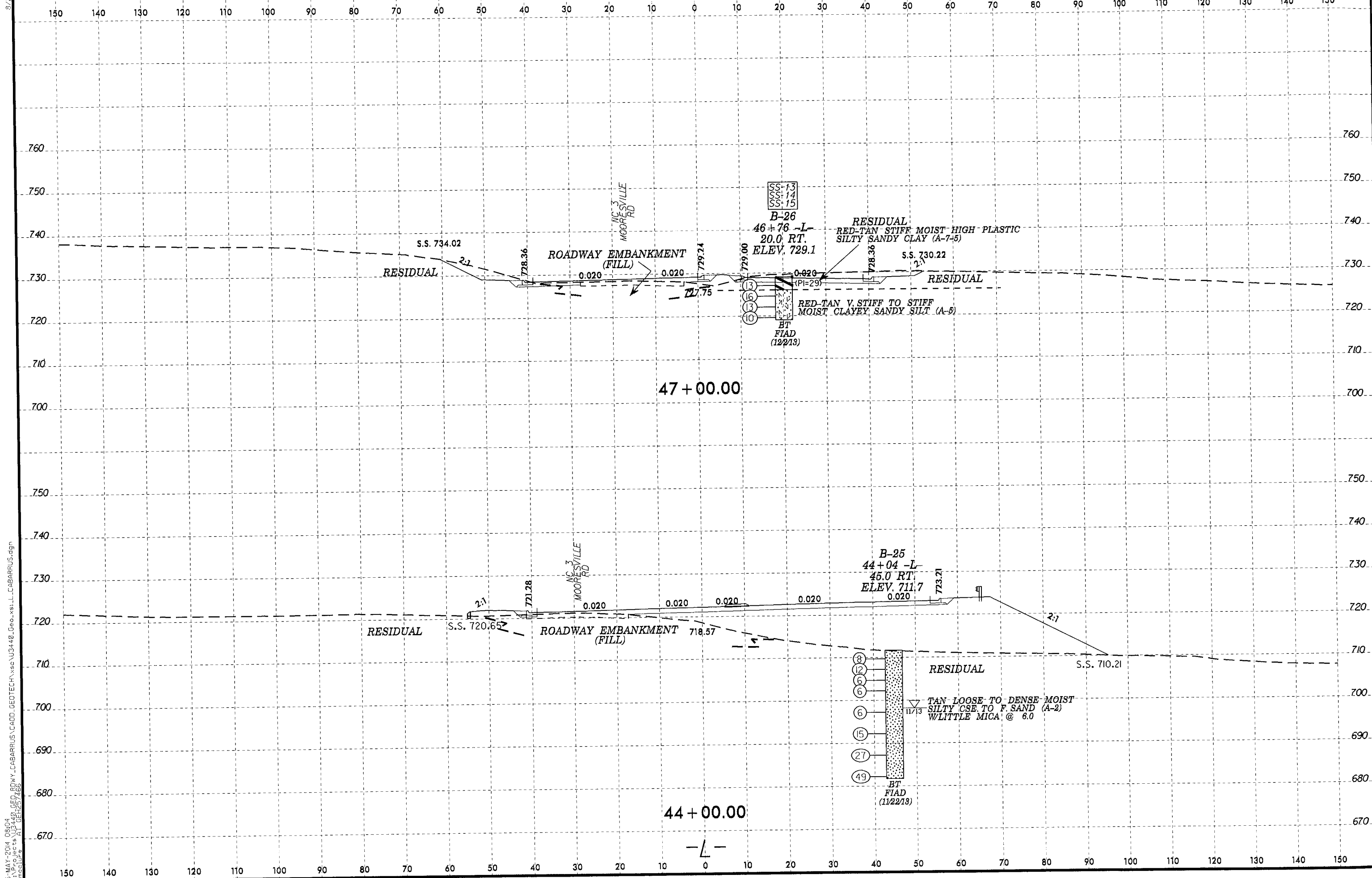


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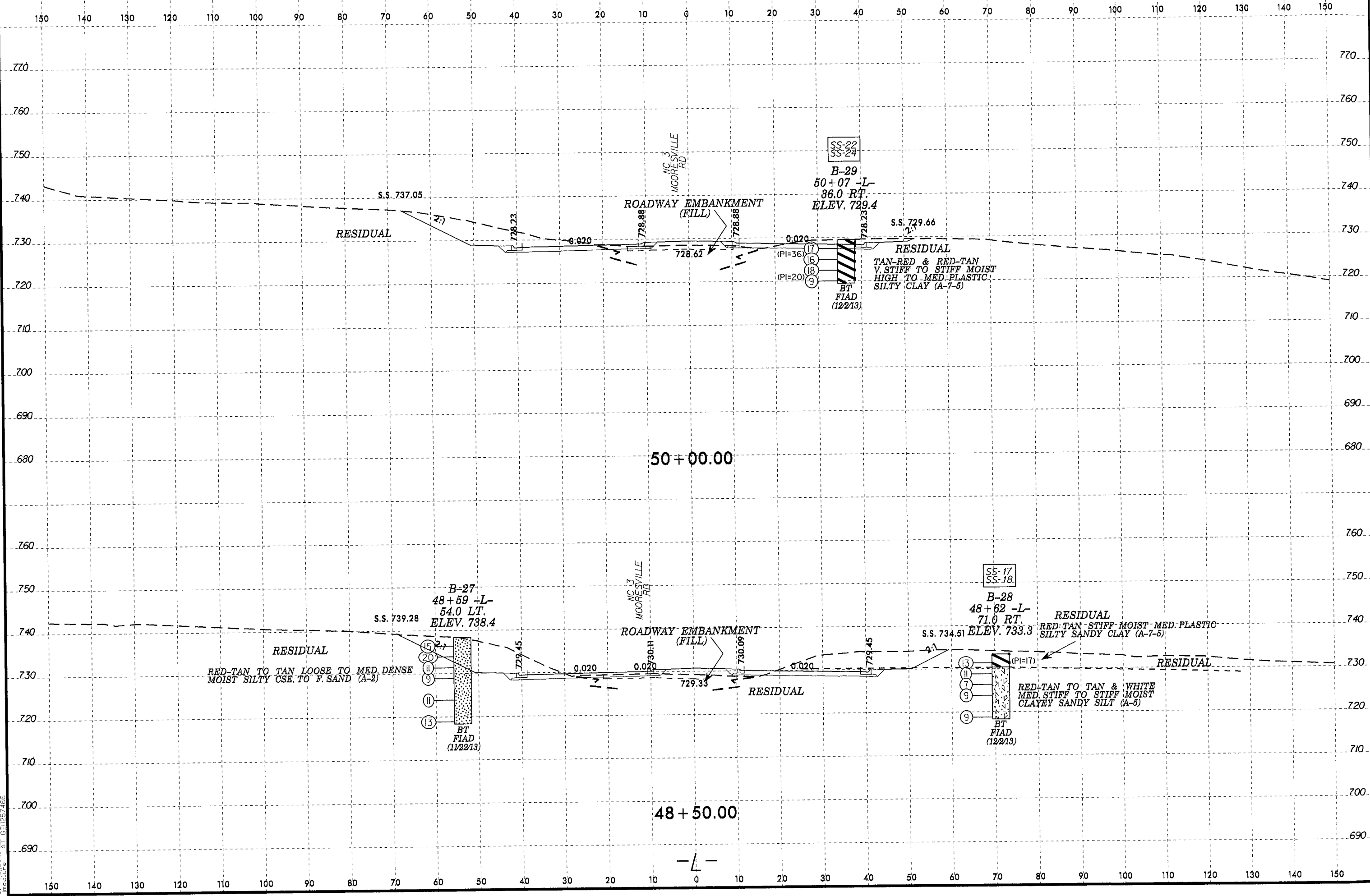
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 imc@pwr.com

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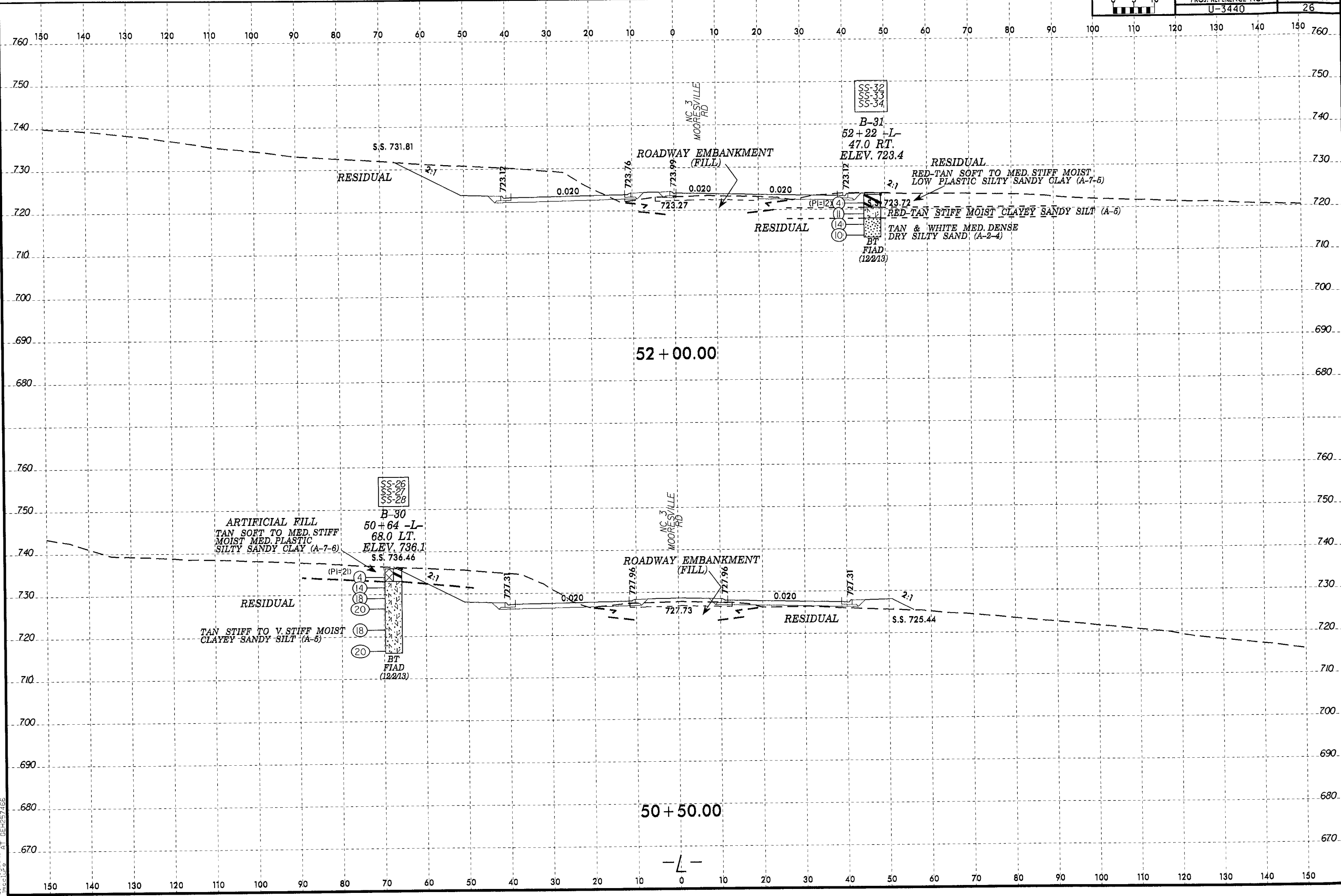


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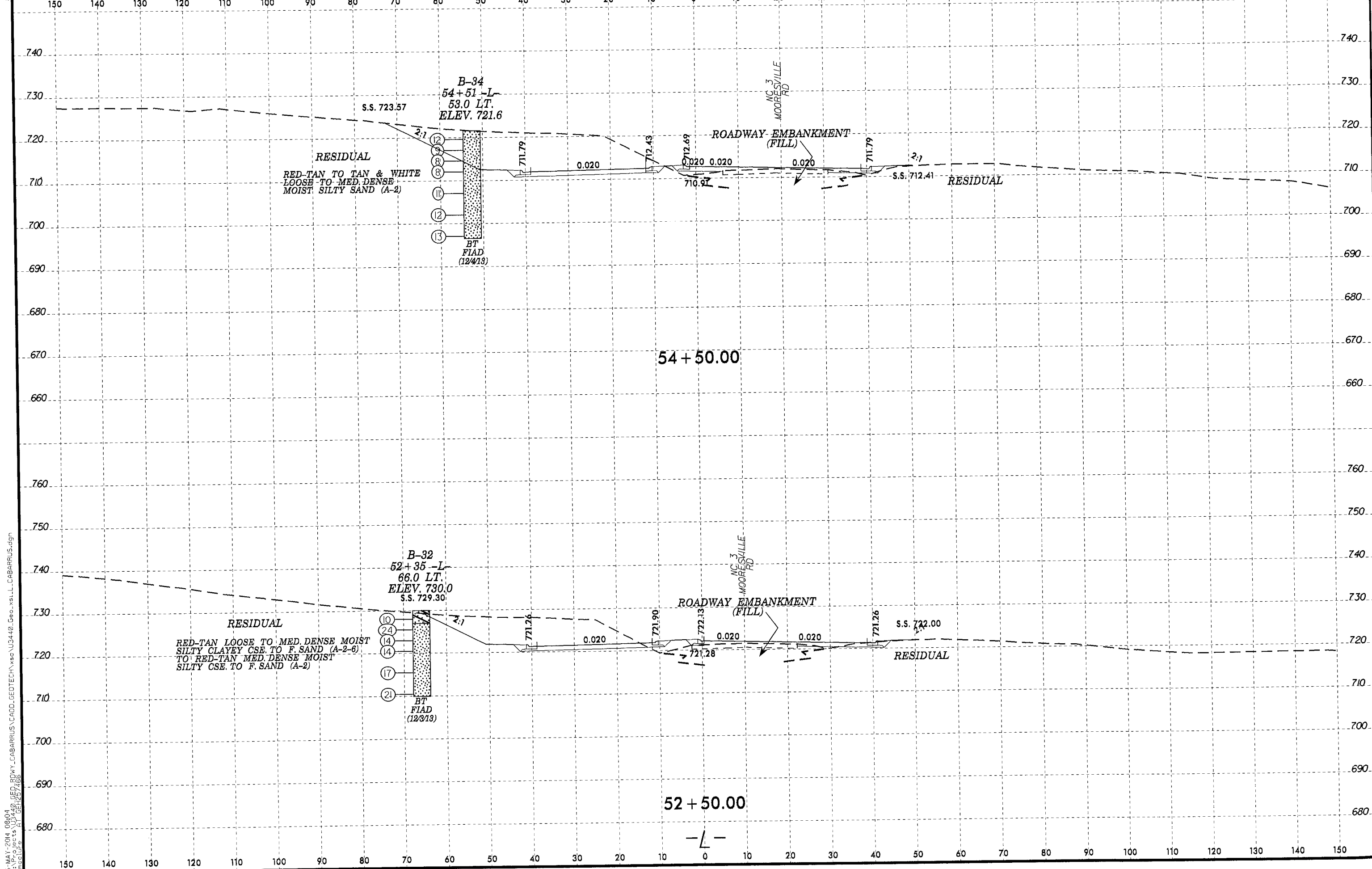
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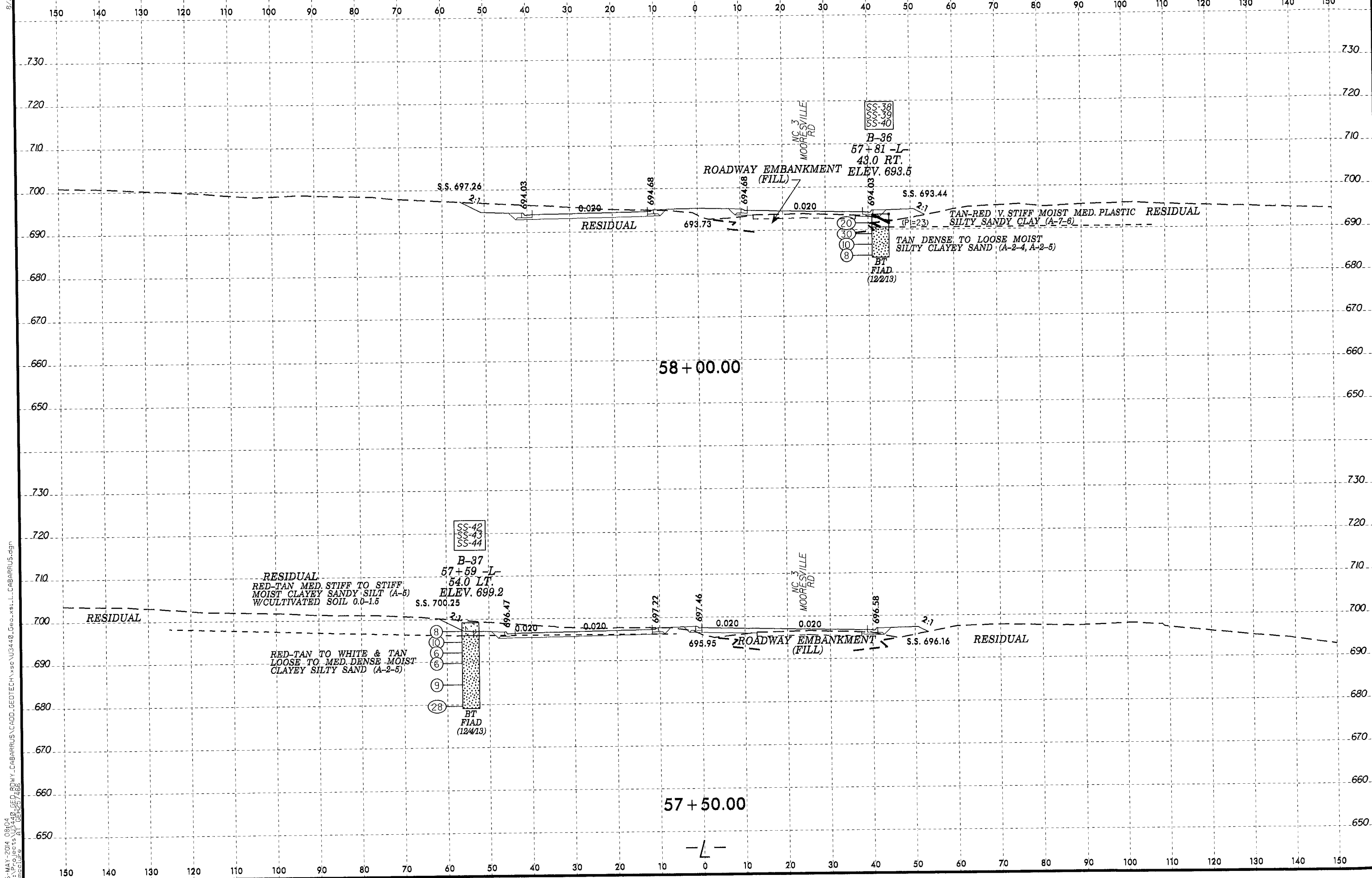


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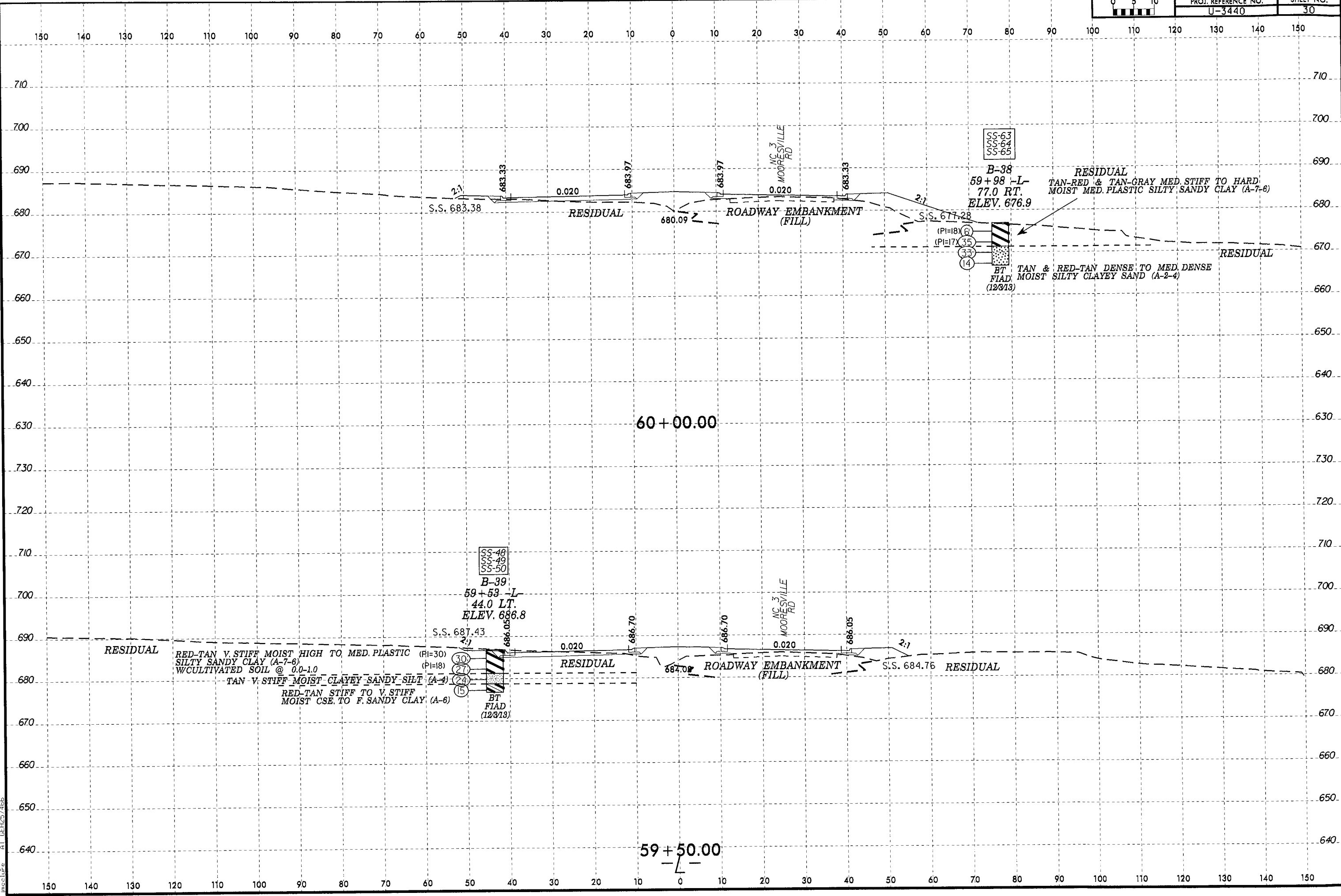
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8/23/99

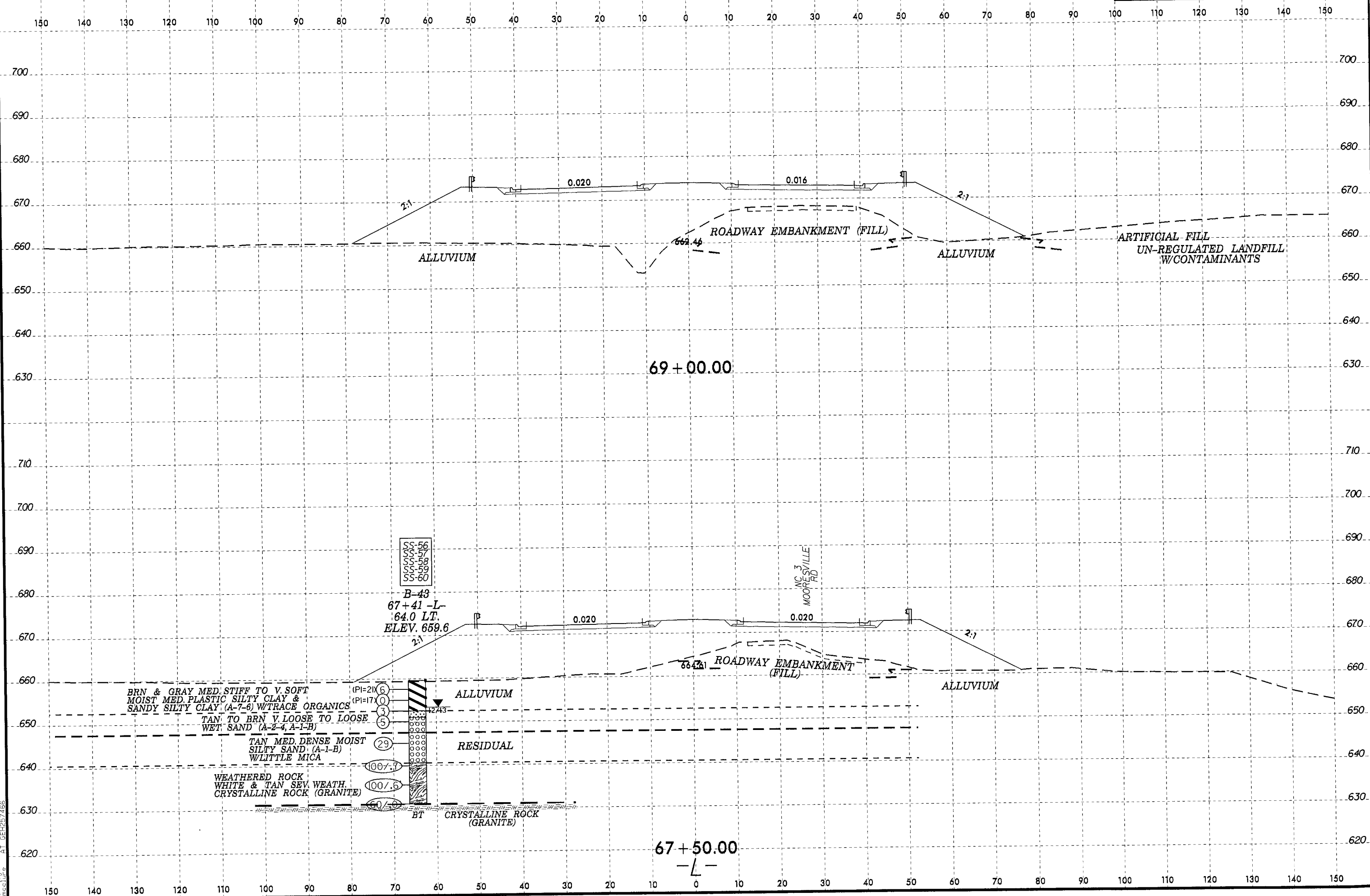


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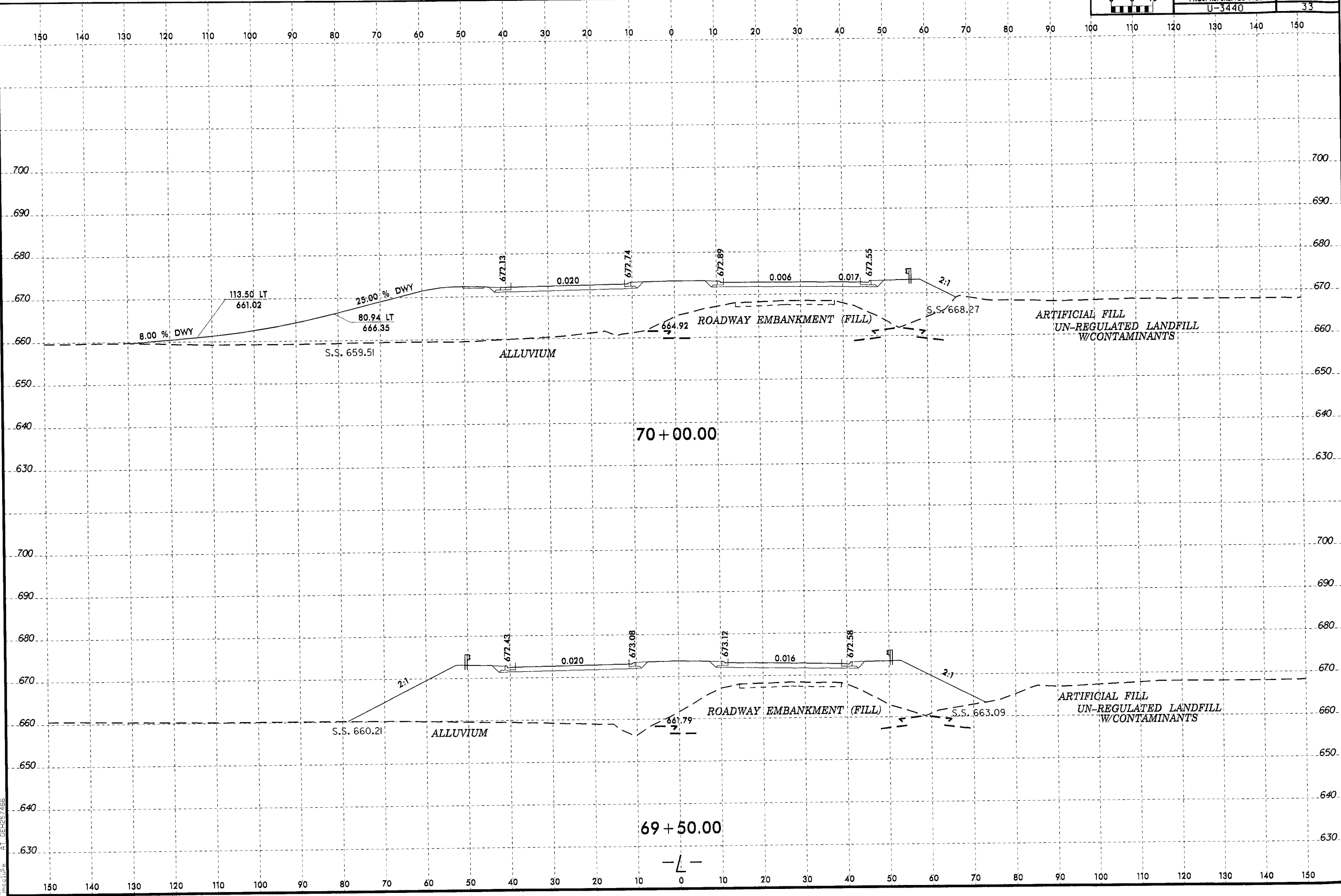


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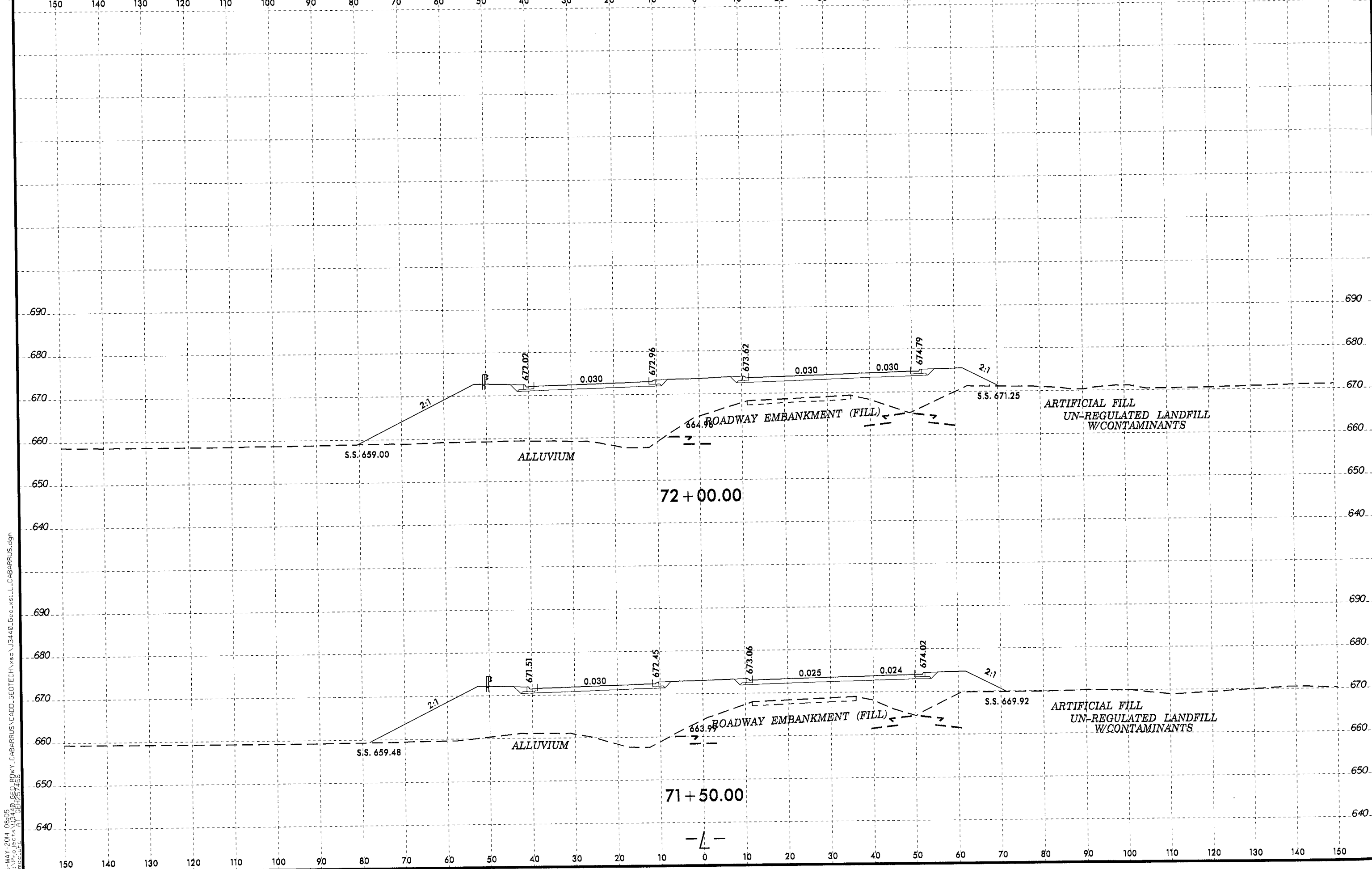
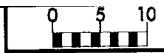


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8/23/99
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8/23/99



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690
680
670
660
650
640
690
680
670
660
650
640

S.S. 659.00

ALLUVIUM

72 + 00.00

ROADWAY EMBANKMENT (FILL)

ARTIFICIAL FILL
UN-REGULATED LANDFILL
W/CONTAMINANTS

S.S. 659.48

ALLUVIUM

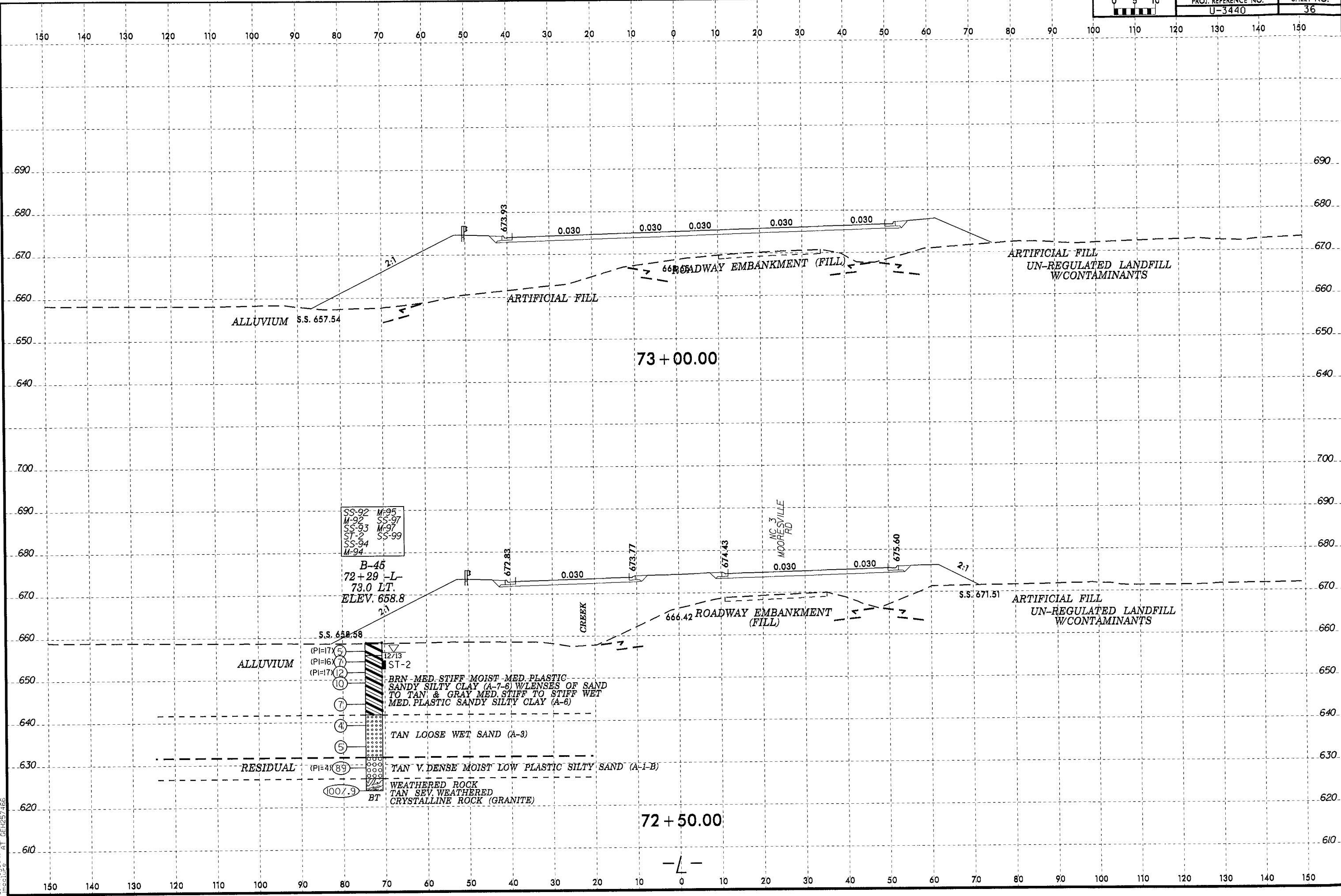
71 + 50.00

ROADWAY EMBANKMENT (FILL)

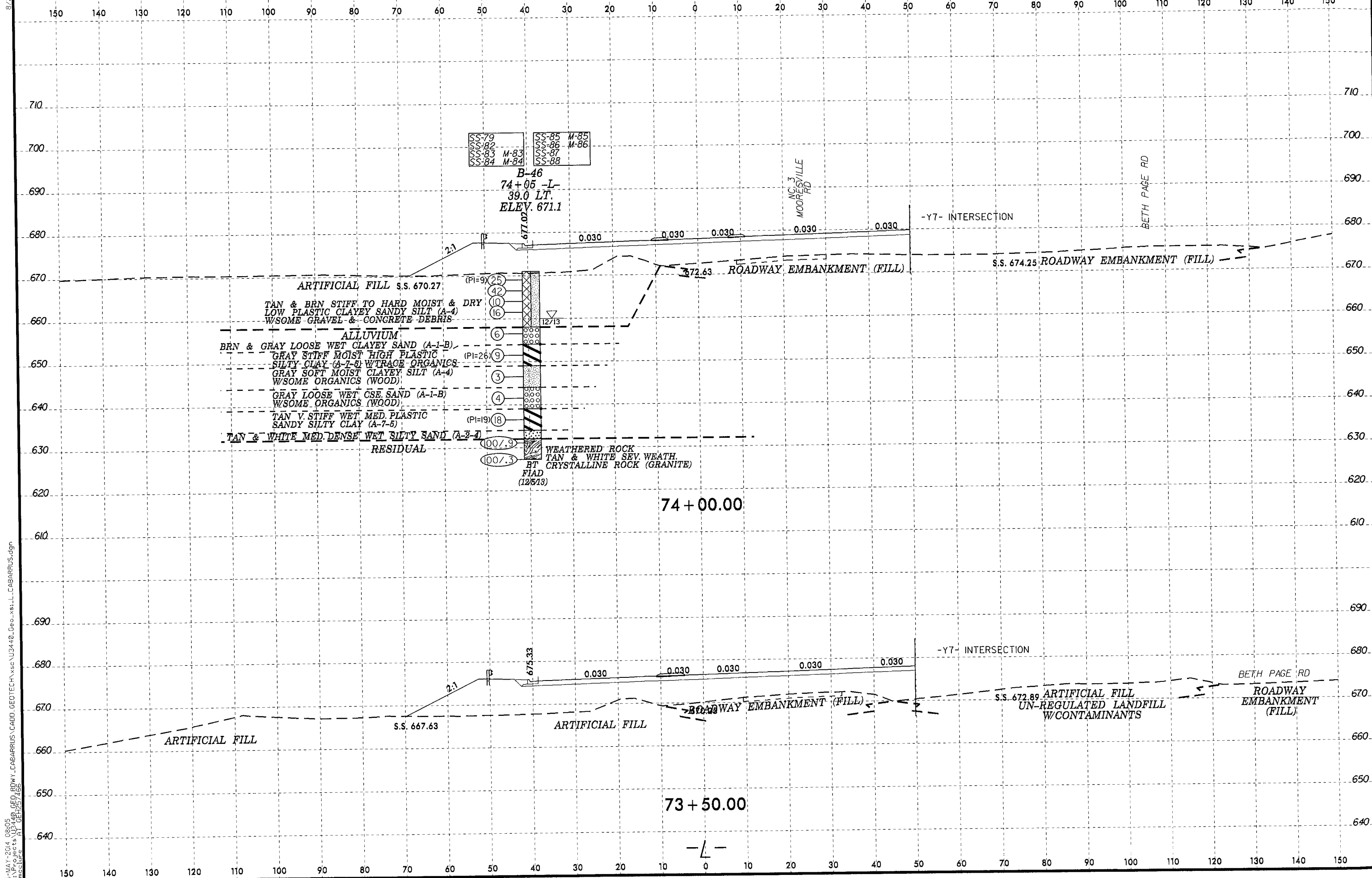
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UN-REGULATED LANDFILL
W/CONTAMINANTS

— L —

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 imc@lupr.com



8/23/99



SS-79	SS-85 M-85
SS-82	SS-86 M-86
SS-83 M-83	SS-87
SS-84 M-84	SS-88

B-46
 74+05 -L-
 39.0 LT.
 ELEV. 671.1

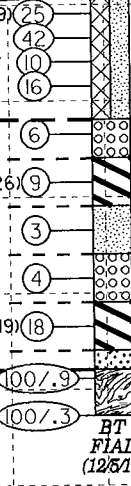
ARTIFICIAL FILL S.S. 670.27
 TAN & BRN STIFF TO HARD MOIST & DRY
 LOW PLASTIC CLAYEY SANDY SILT (A-4)
 W/SOME GRAVEL & CONCRETE DEBRIS

ALLUVIUM
 BRN & GRAY LOOSE WET CLAYEY SAND (A-1-B)
 GRAY STIFF MOIST HIGH PLASTIC
 SILTY CLAY (A-7-6) W/TRACE ORGANICS
 GRAY SOFT MOIST CLAYEY SILT (A-4)
 W/SOME ORGANICS (WOOD)

GRAY LOOSE WET CSE SAND (A-1-B)
 W/SOME ORGANICS (WOOD)

TAN V STIFF WET MED PLASTIC
 SANDY SILTY CLAY (A-7-5)

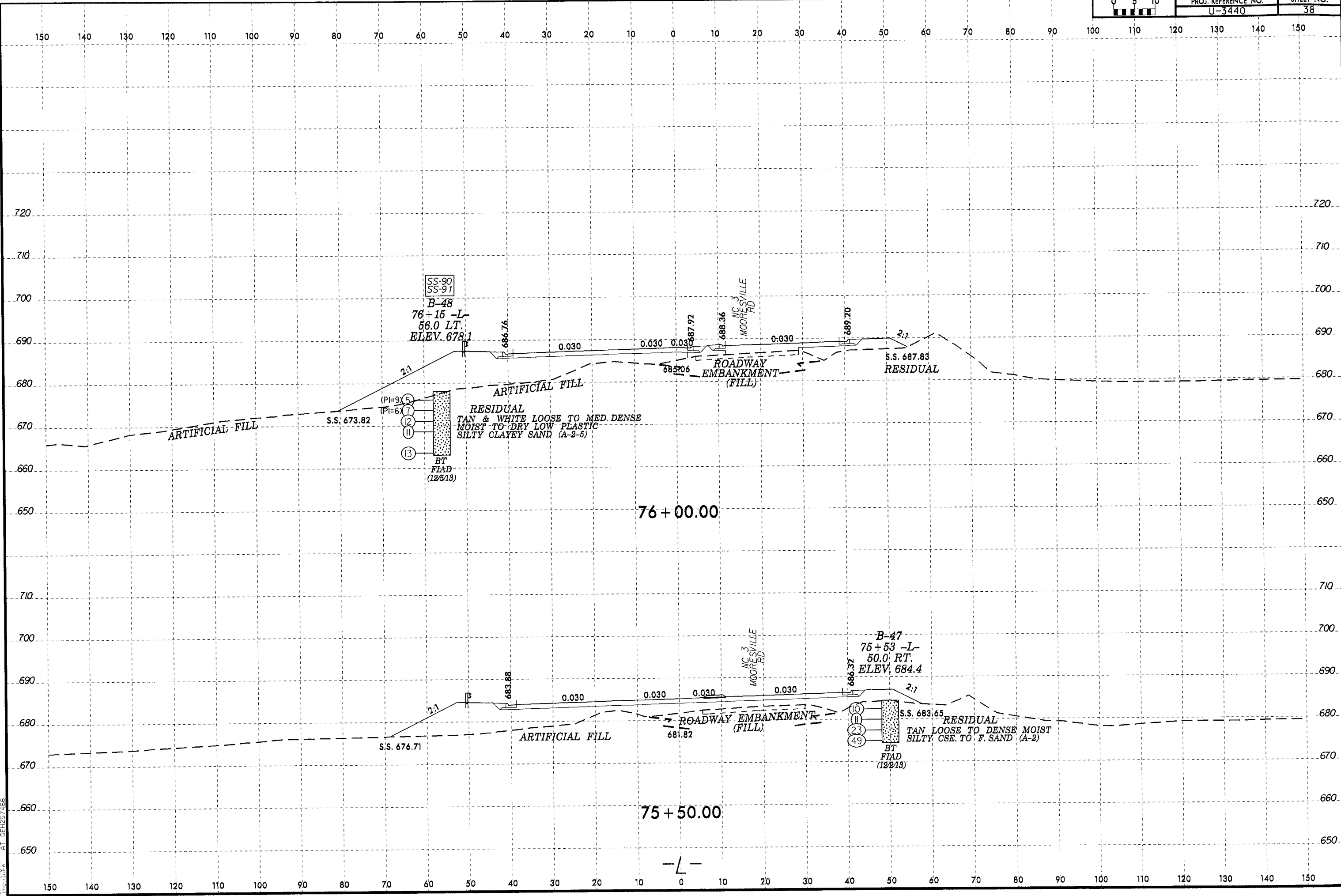
TAN & WHITE MED DENSE WET SILTY SAND (A-2-3)
 RESIDUAL



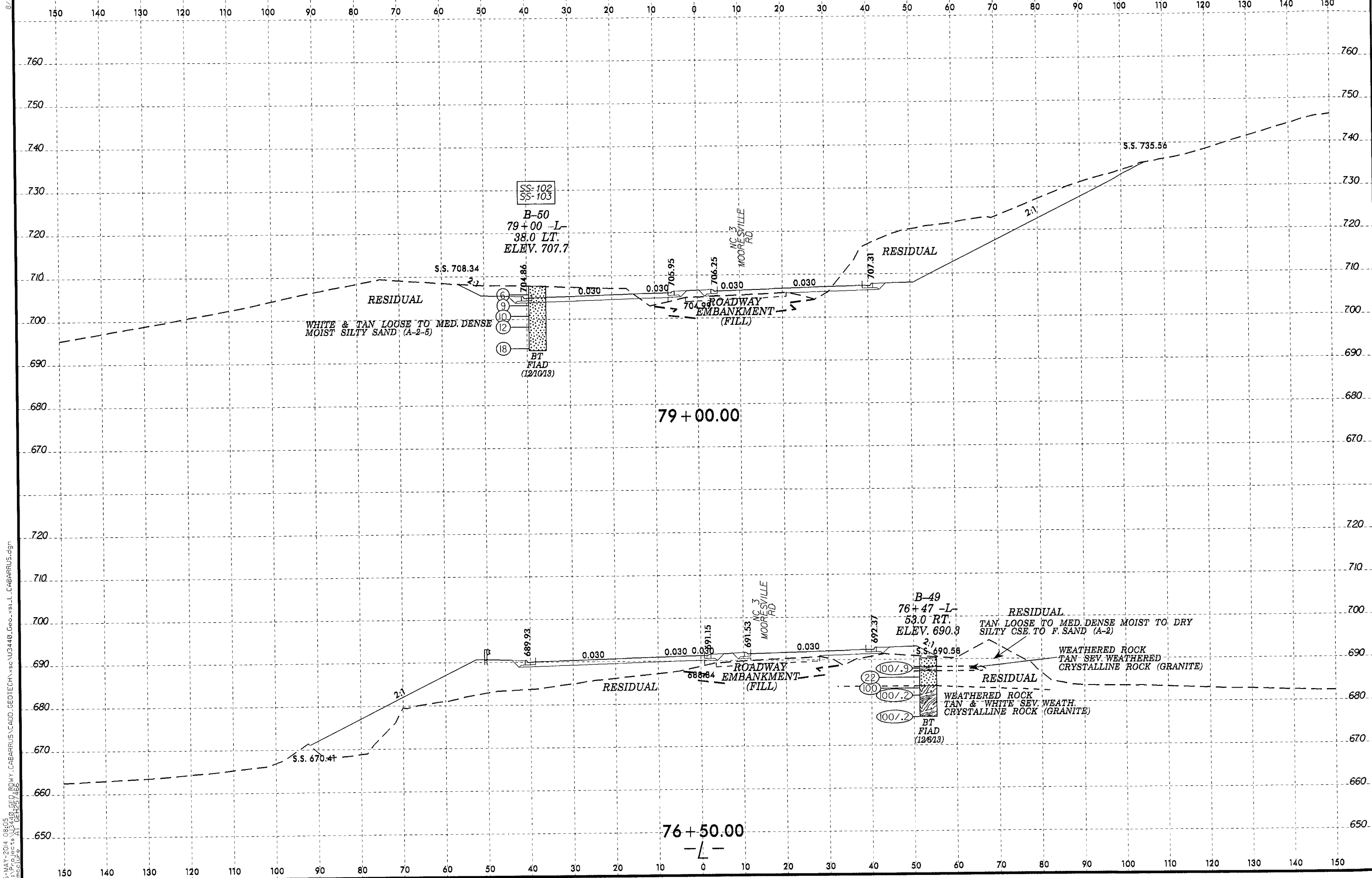
WEATHERED ROCK
 TAN & WHITE SEV. WEATH.
 BT CRYSTALLINE ROCK (GRANITE)
 FIAD
 (12/513)

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 include ALL DETAILS

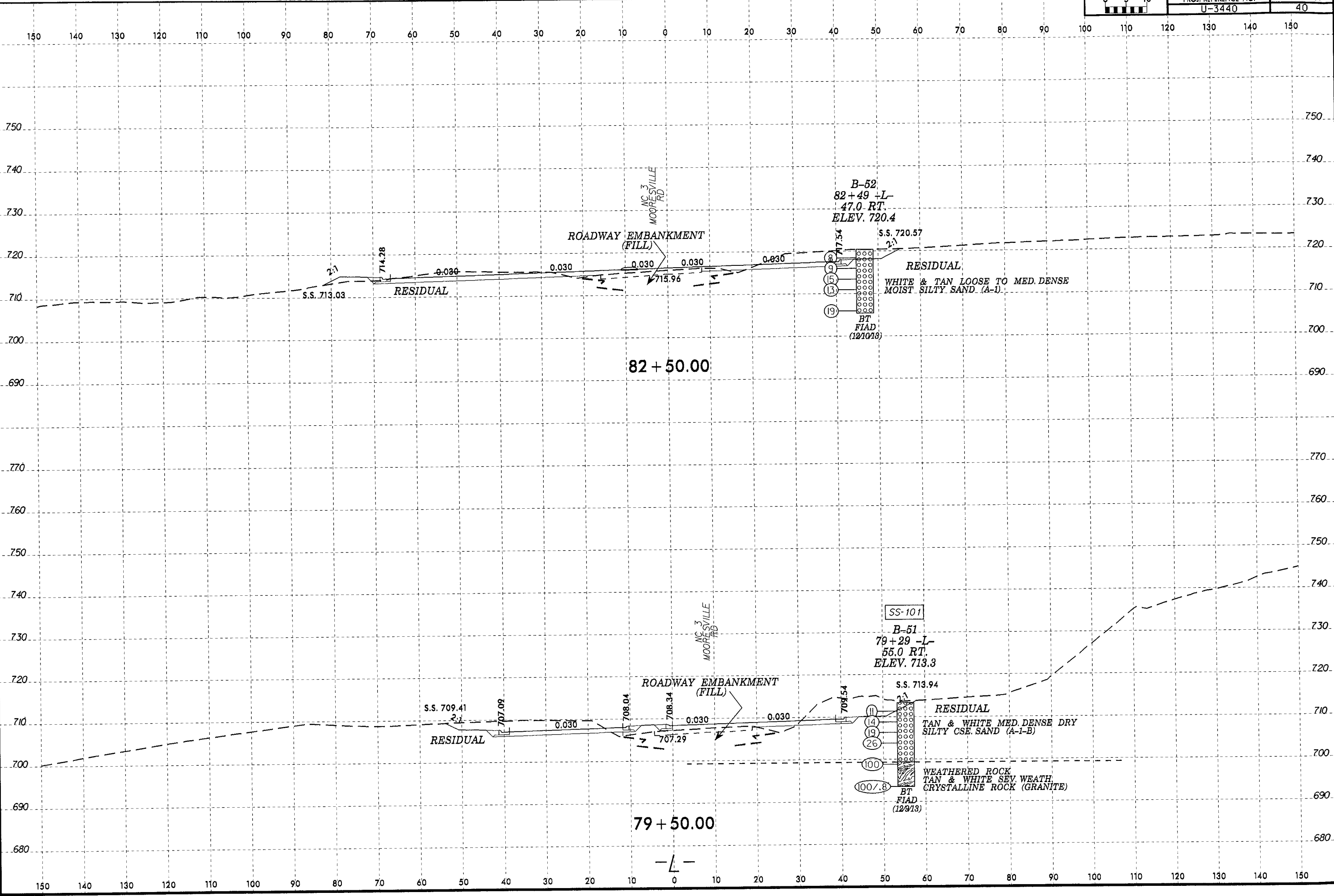


8/23/99

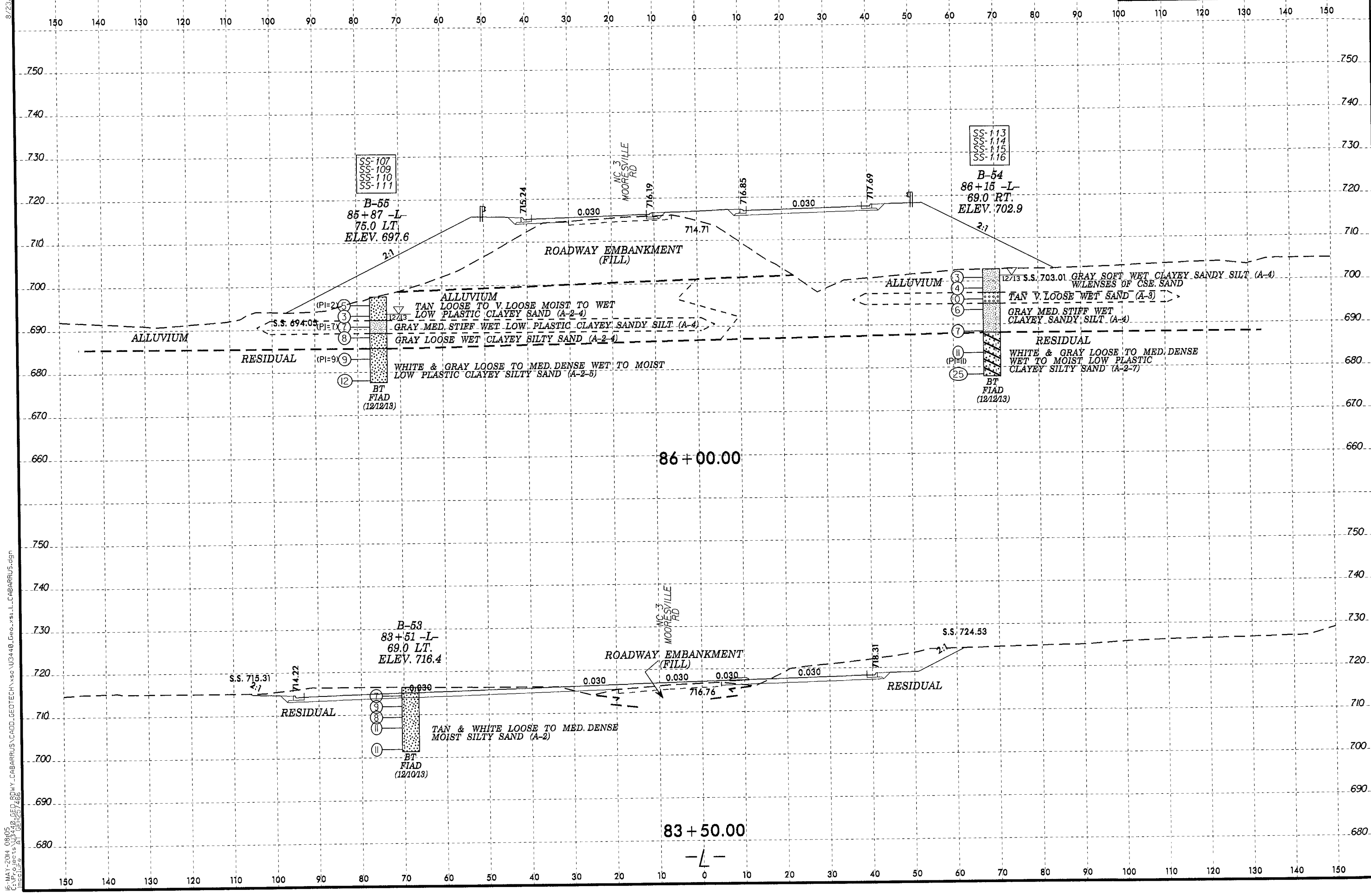


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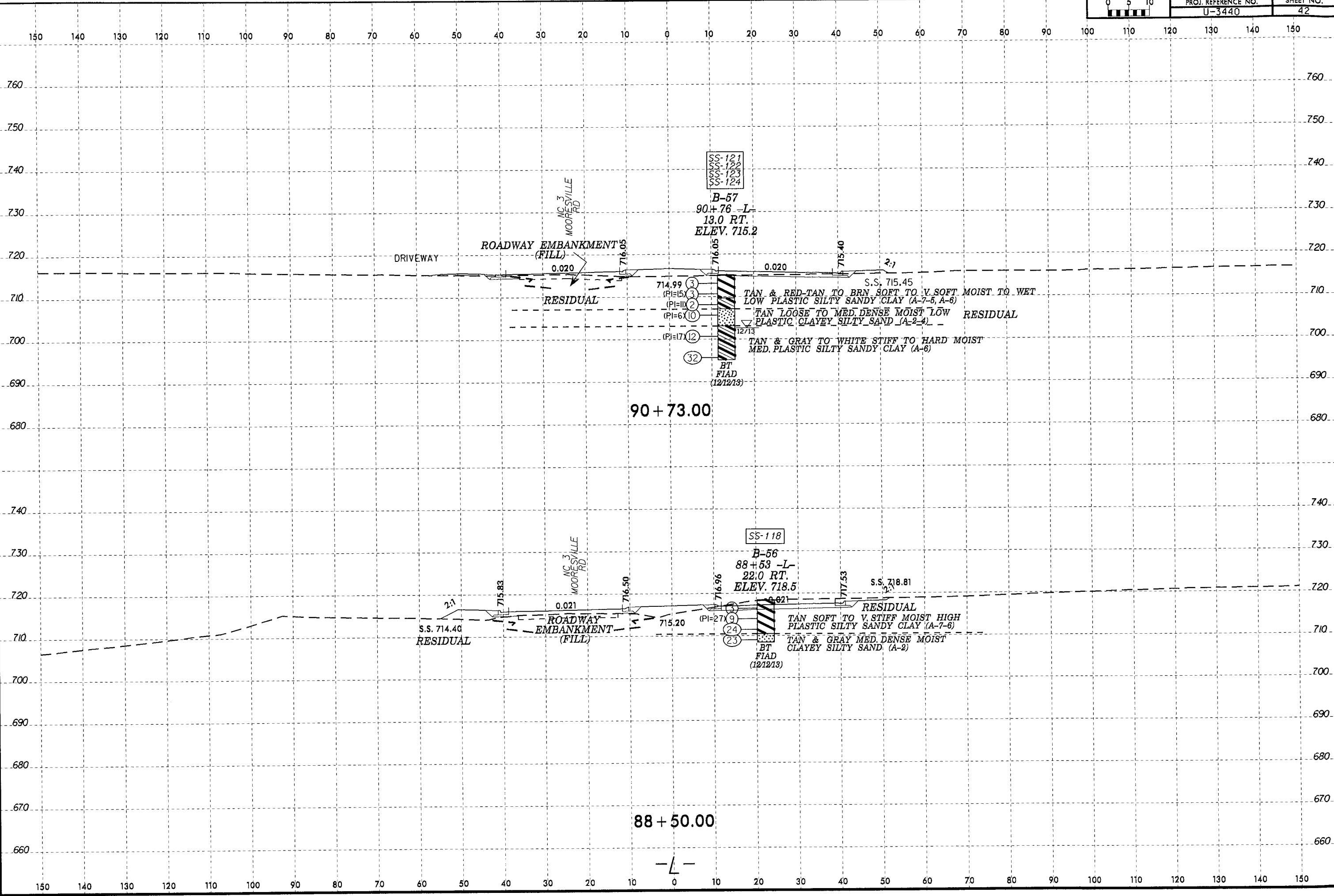


8/23/99



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16-MAY-2014 08:05
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SS-121
SS-122
SS-123
SS-124

B-57
90+76 -L-
13.0 RT.
ELEV. 715.2

714.99 (3)
(PI=15)
714.99 (3)
(PI=11)
714.99 (2)
(PI=6)
714.99 (10)
(PI=17)
714.99 (12)

S.S. 715.45
TAN & RED-TAN TO BRN SOFT TO V. SOFT MOIST TO WET
LOW PLASTIC SILTY SANDY CLAY (A-7-6, A-6)
TAN LOOSE TO MED. DENSE MOIST LOW
PLASTIC CLAYEY SILTY SAND (A-2-4)
RESIDUAL

BT
FIAD
(12/12/13)

90+73.00

SS-118

B-56
88+53 -L-
22.0 RT.
ELEV. 718.5

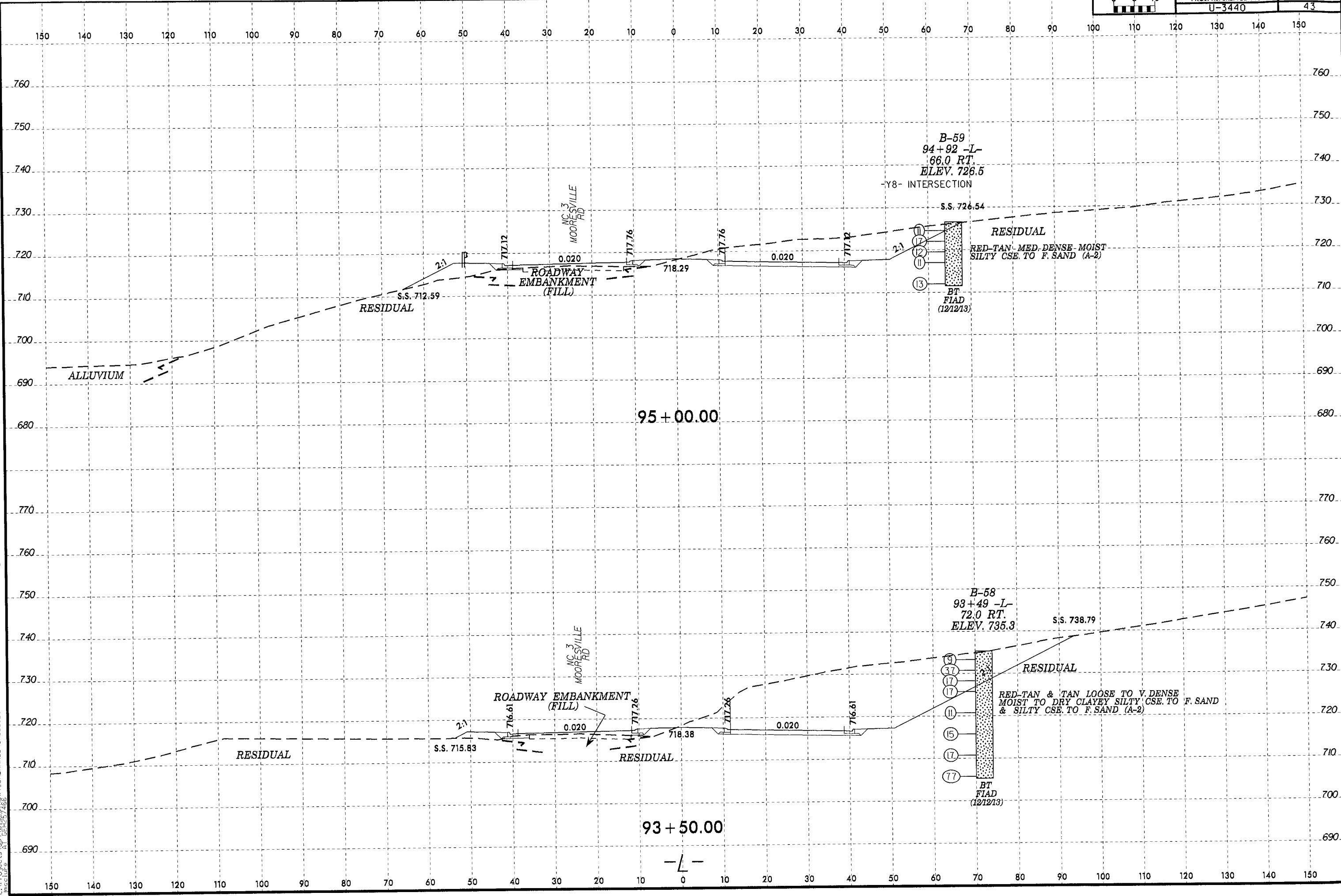
716.96 (9)
(PI=27)
716.96 (24)
716.96 (23)

S.S. 718.81
TAN SOFT TO V. STIFF MOIST HIGH
PLASTIC SILTY SANDY CLAY (A-7-6)
TAN & GRAY MED. DENSE MOIST
CLAYEY SILTY SAND (A-2)
RESIDUAL

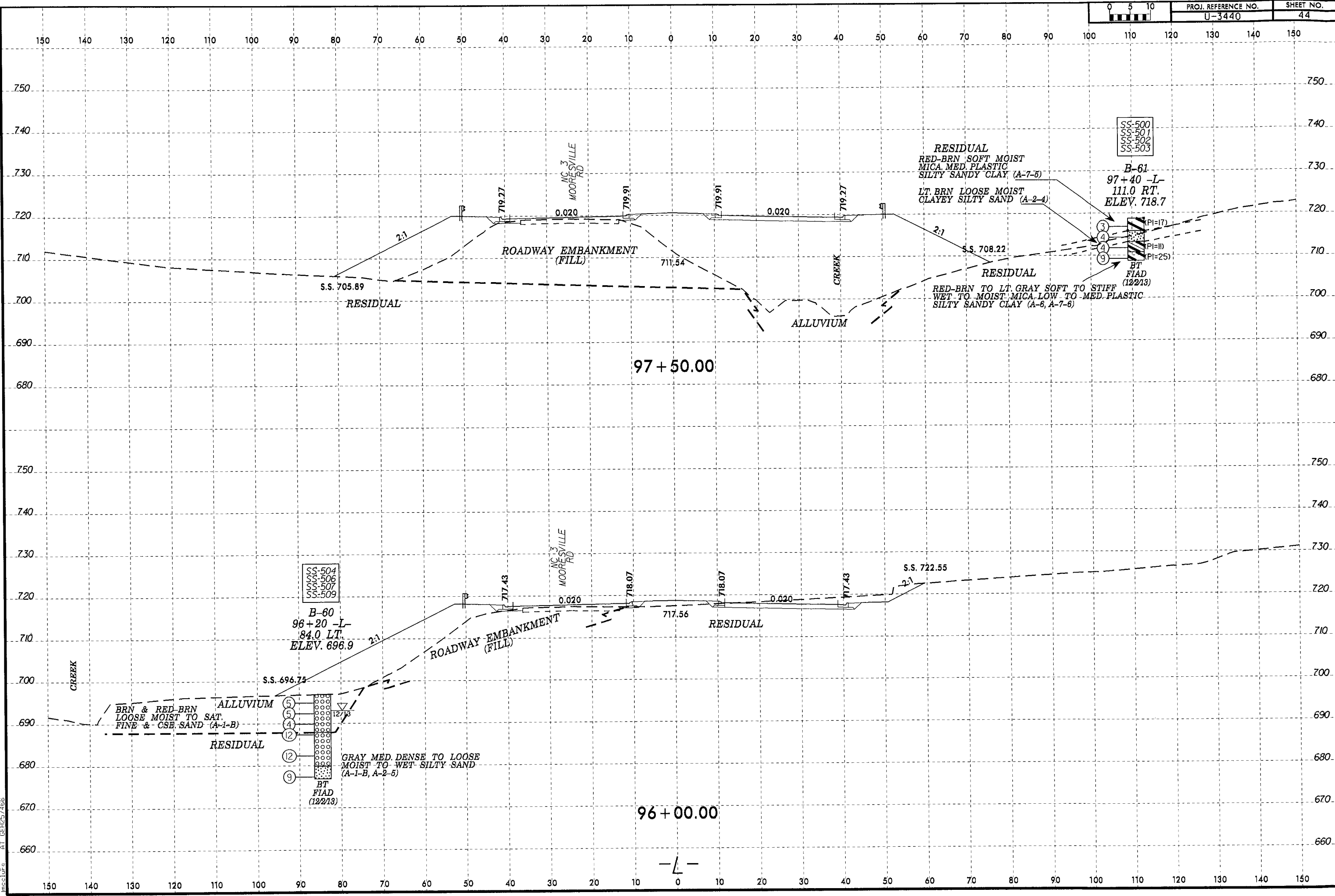
BT
FIAD
(12/12/13)

88+50.00

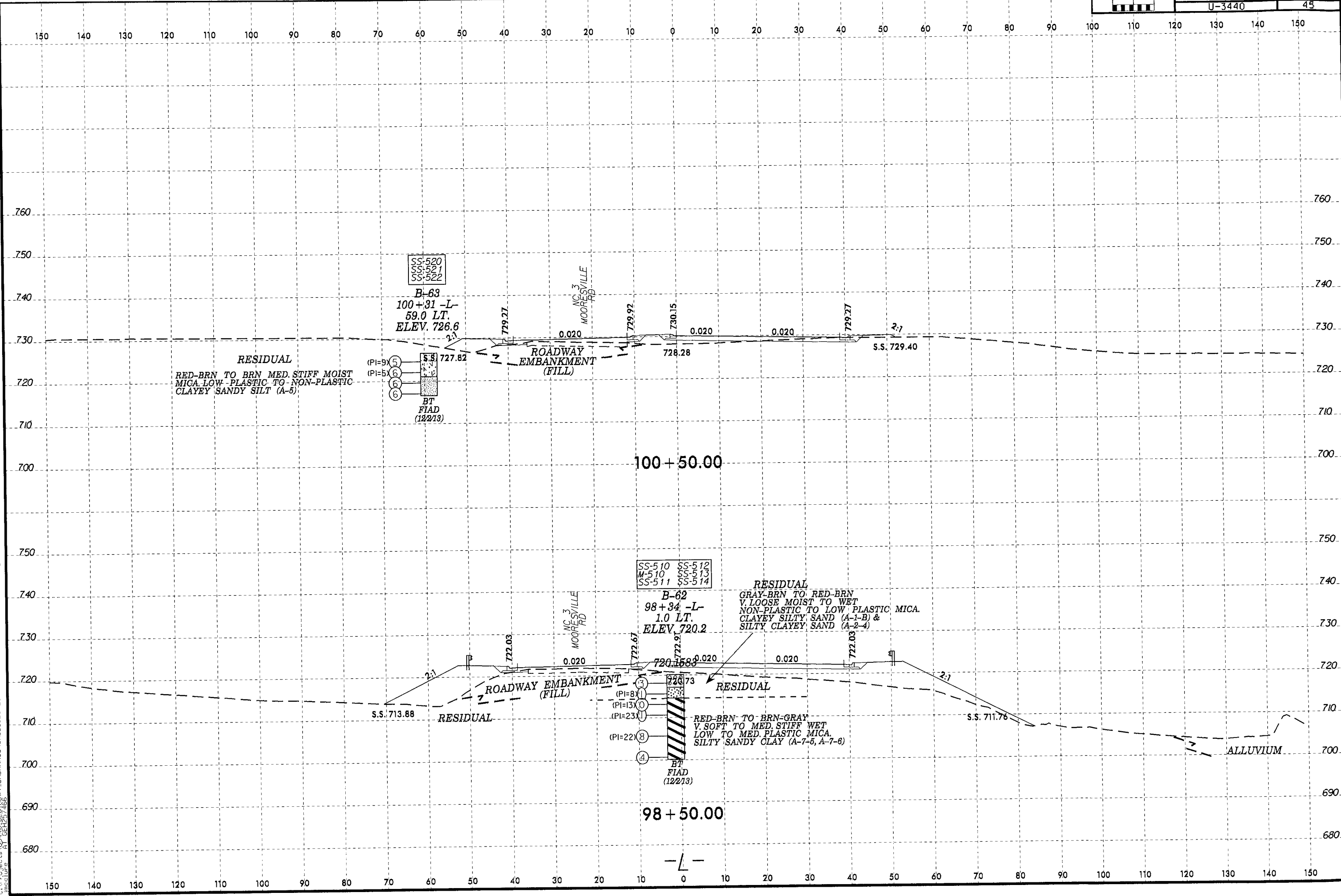
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 in: 12/12/13



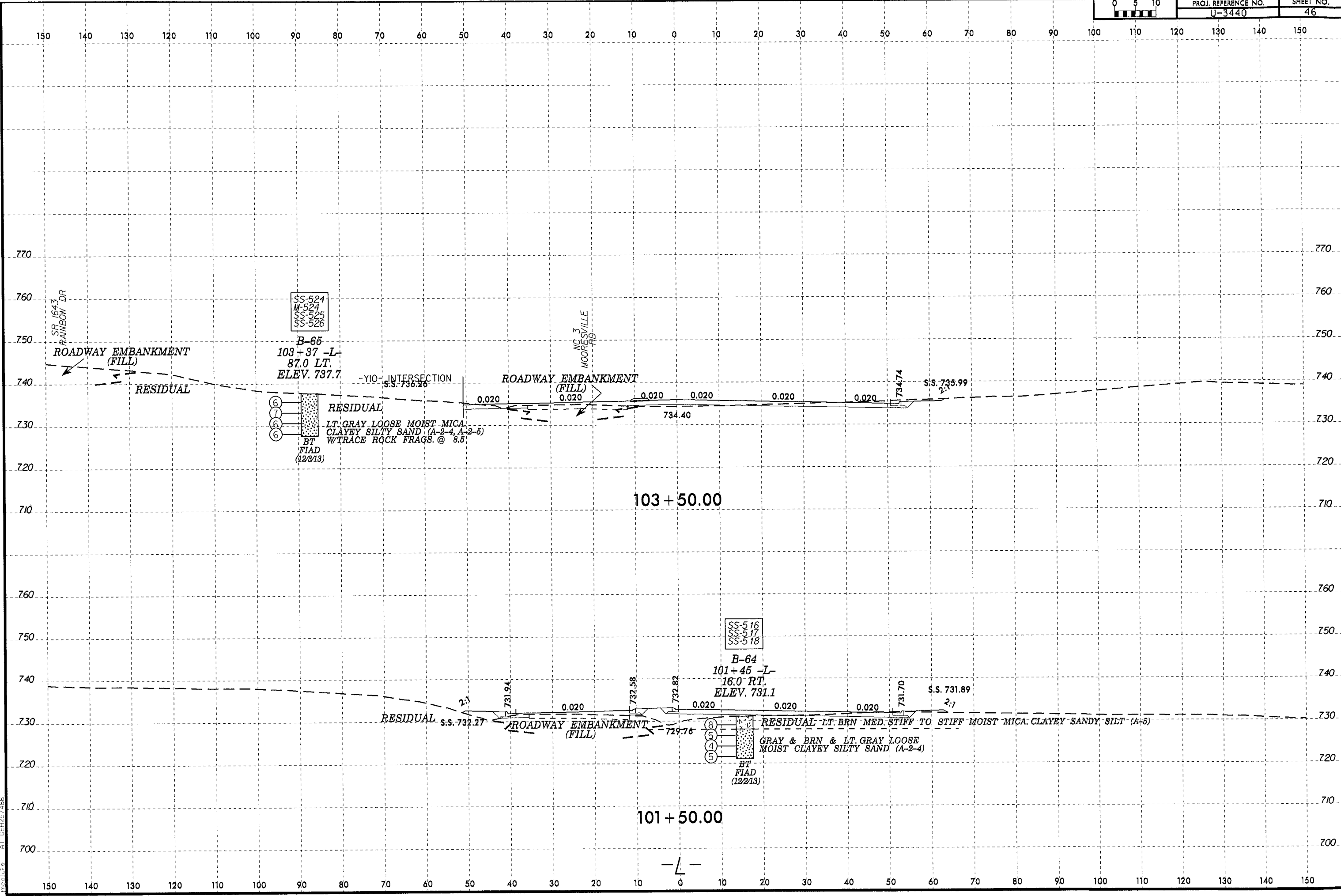
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 12/2/13



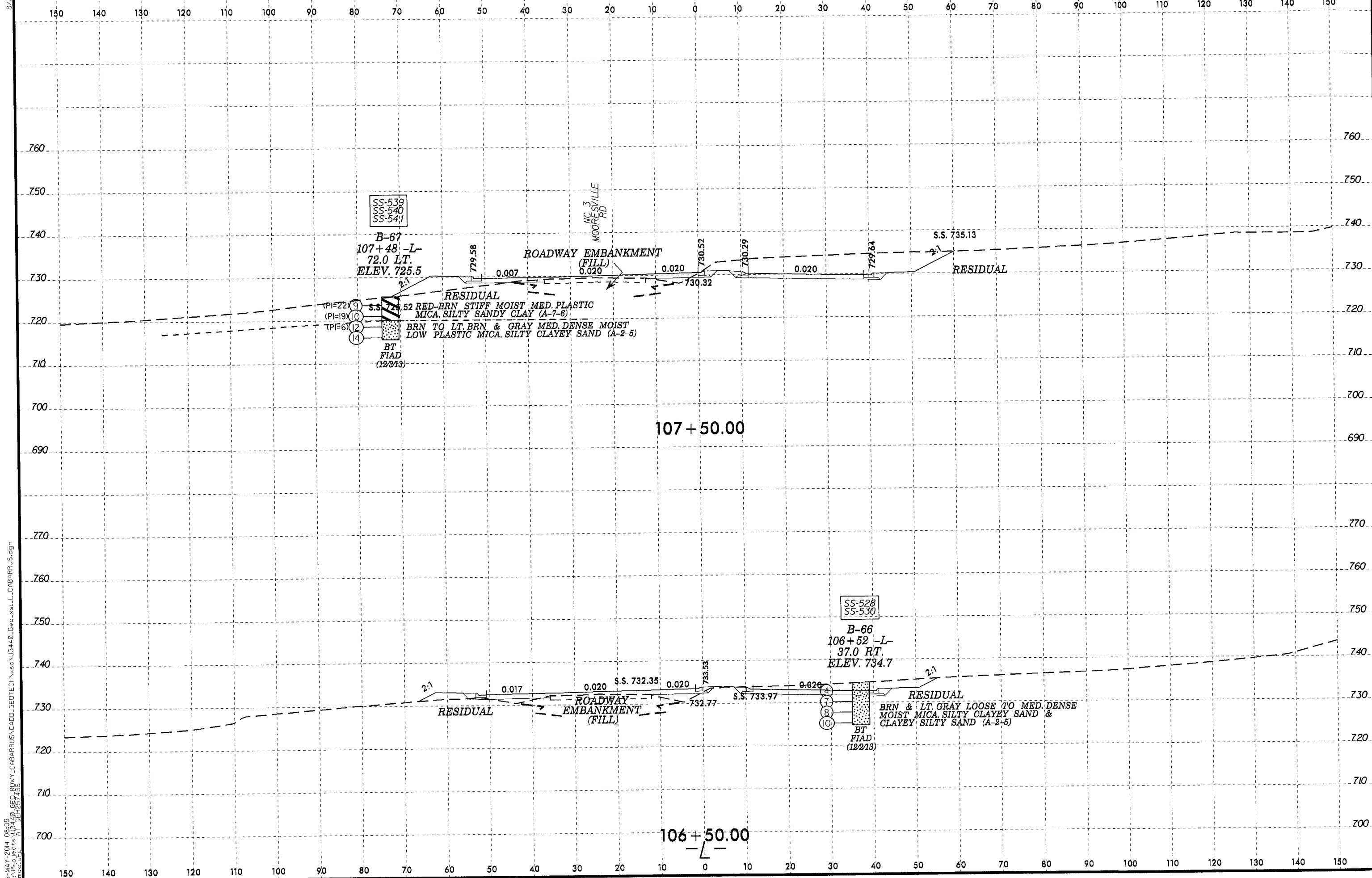
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16-MAY-2014 09:05
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 160516.dwg
 16-MAY-2014 09:05
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 160516.dwg



8/23/99



SS-539
SS-540
SS-541

B-67
107+48'-L-
72.0 LT.
ELEV. 725.5

NC 3
MOORESVILLE
RD

ROADWAY EMBANKMENT
(FILL)
0.020

S.S. 735.13

RESIDUAL

RESIDUAL
S.S. 729.52 RED-BRN STIFF MOIST MED. PLASTIC
MICA SILTY SANDY CLAY (A-7-6)
BRN TO LT. BRN & GRAY MED. DENSE MOIST
LOW PLASTIC MICA SILTY CLAYEY SAND (A-2-5)
BT
FIAD
(12/213)

107+50.00

SS-528
SS-530

B-66
106+52'-L-
37.0 RT.
ELEV. 734.7

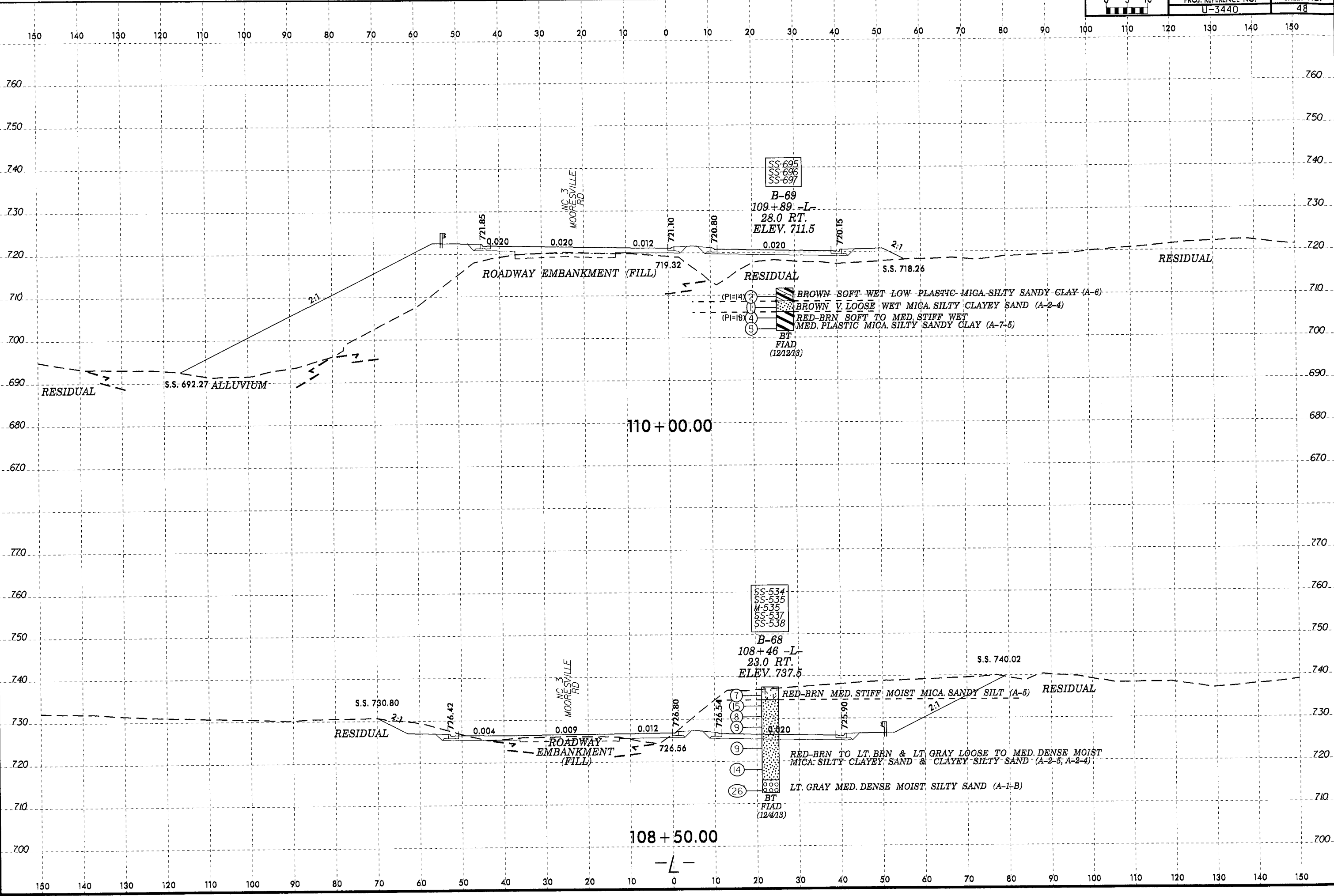
ROADWAY EMBANKMENT
(FILL)
0.020

RESIDUAL
BRN & LT. GRAY LOOSE TO MED. DENSE
MOIST MICA SILTY CLAYEY SAND &
CLAYEY SILTY SAND (A-2-5)
BT
FIAD
(12/213)

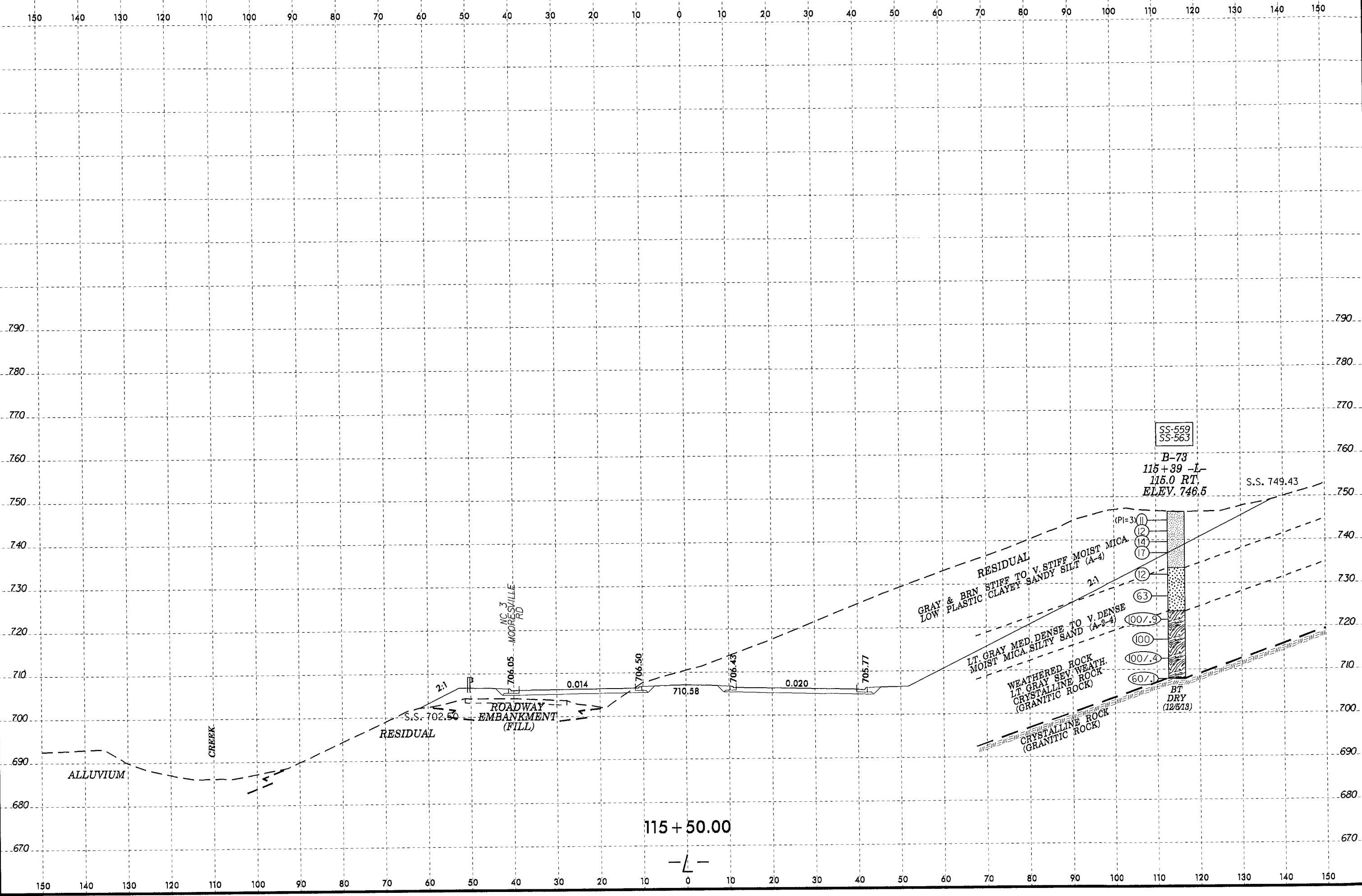
106+50.00

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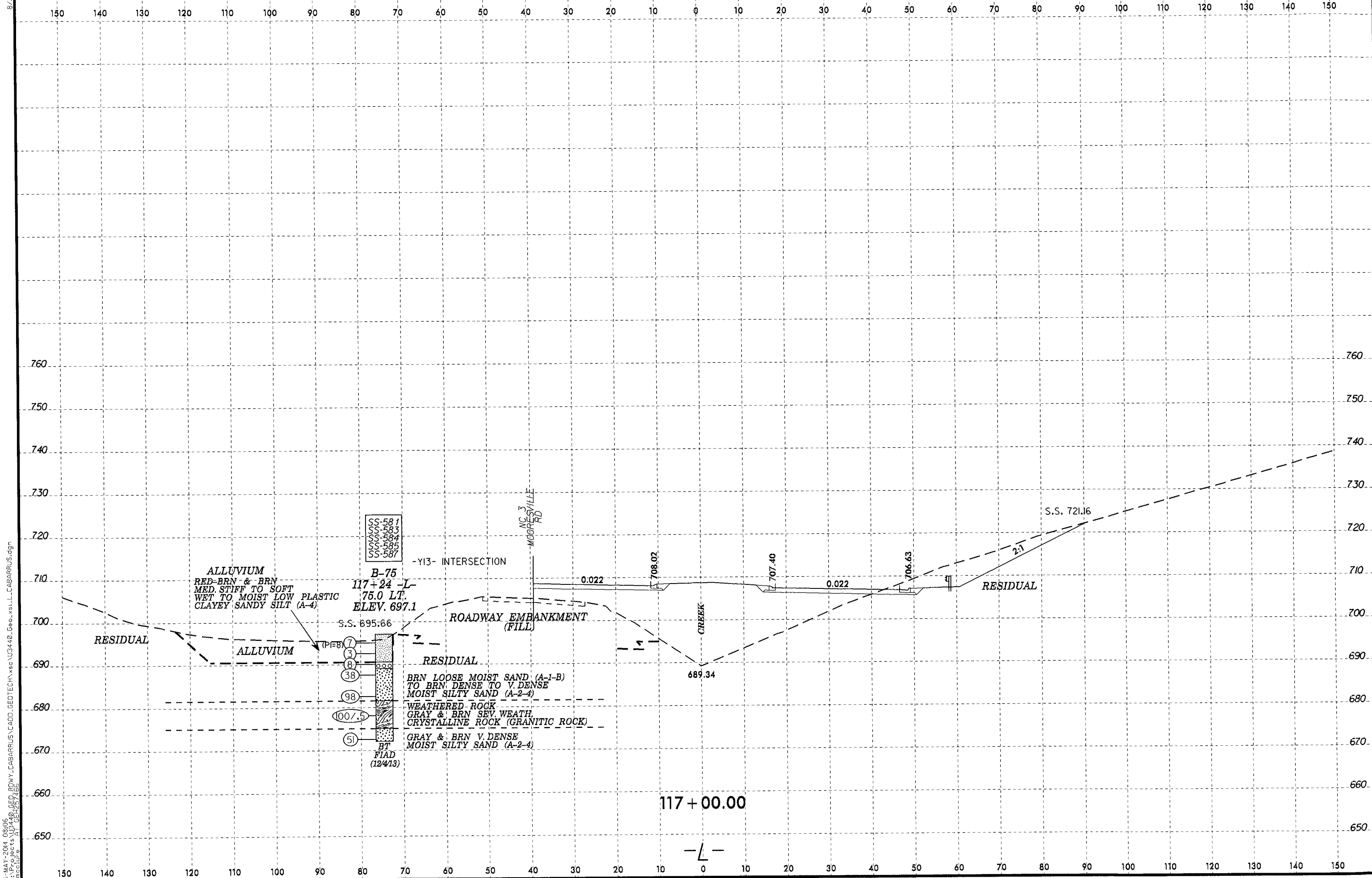
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16-MAY-2014 08:06
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INTEGRITY ALL 08/13/14

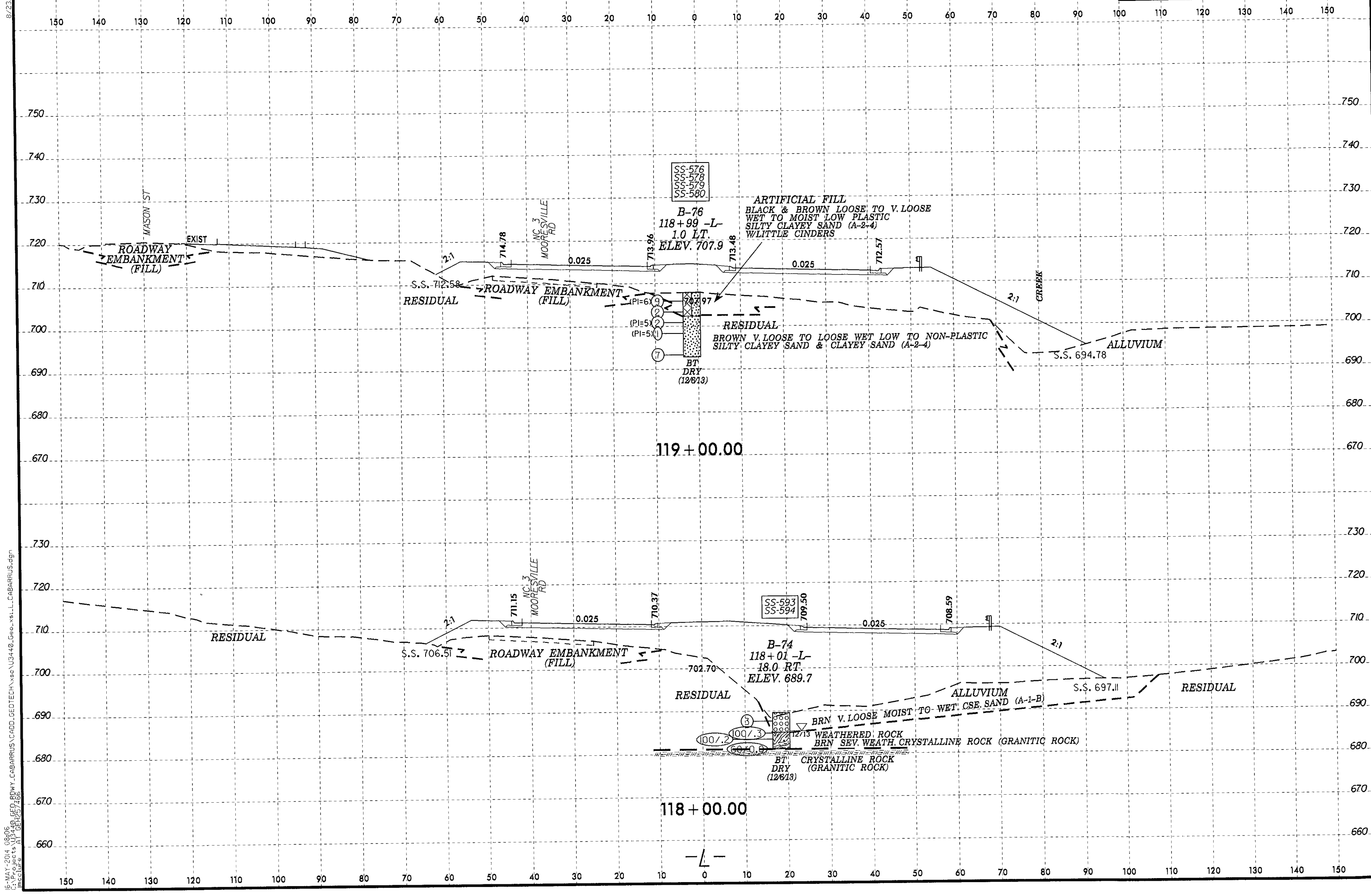


8/23/99



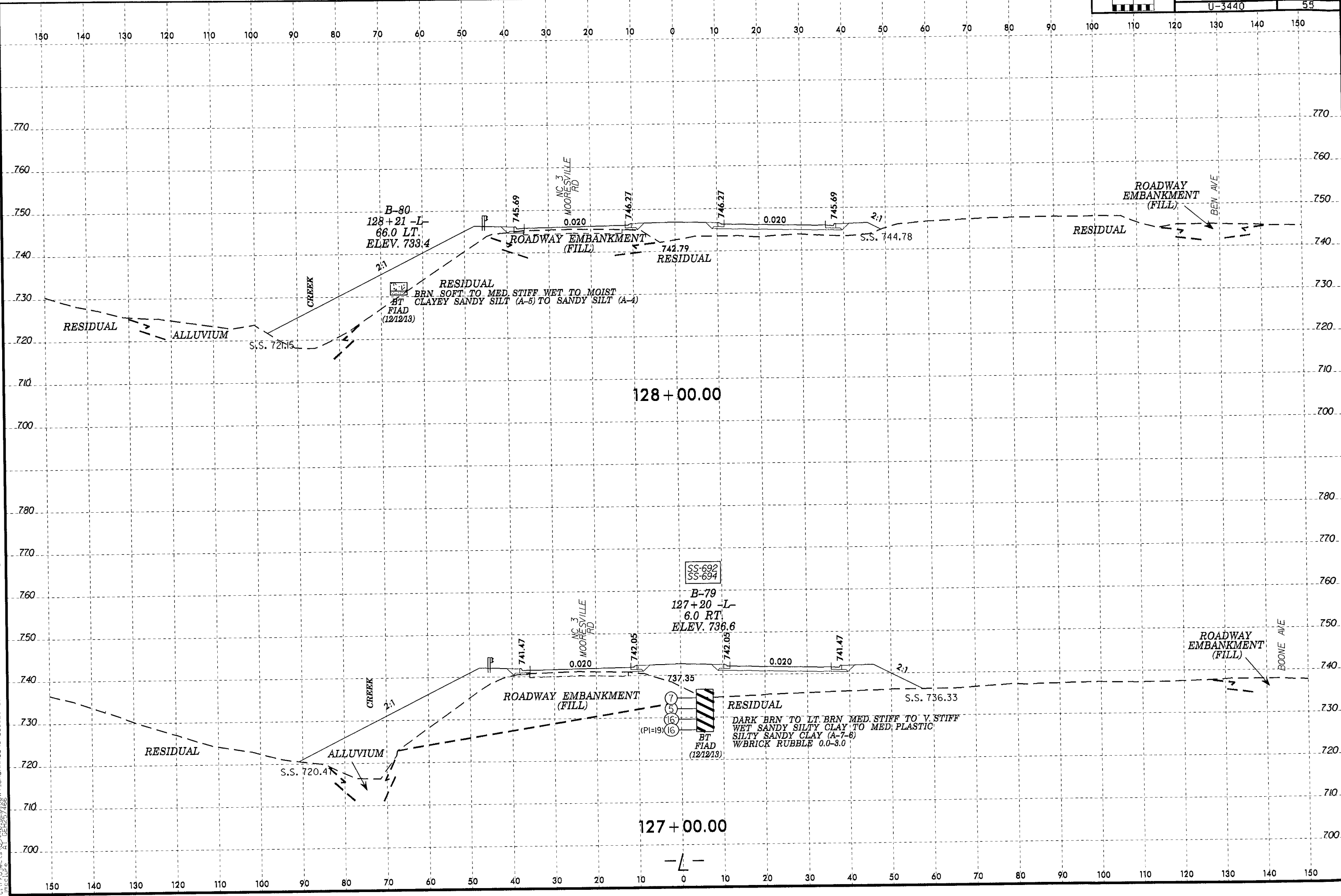
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8/23/99



16-MAY-2014 08:06
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16-MAY-2014 08:06
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 in: C:\p\projects\U3440\GEOTECH\CABARRUS\CADD_GEO\XSL\CABARRUS.dgn



B-80
128+21 -L-
66.0 LT.
ELEV. 733.4

RESIDUAL
BRN. SOFT TO MED. STIFF WET TO MOIST
CLAYEY SANDY SILT (A-6) TO SANDY SILT (A-4)
BT
FIAD
(12/12/13)

128 + 00.00

SS-692
SS-694

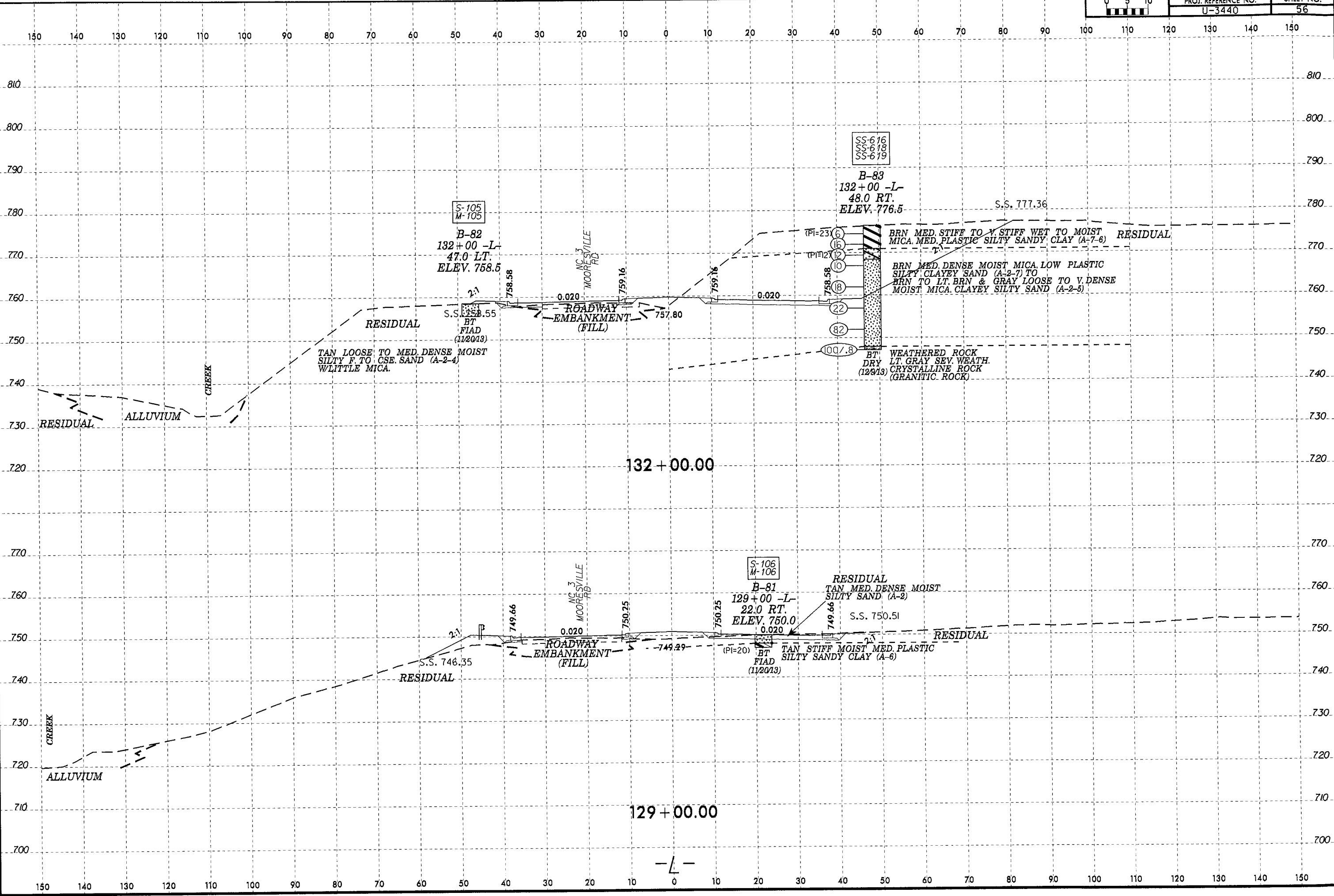
B-79
127+20 -L-
6.0 RT.
ELEV. 736.6

RESIDUAL
DARK BRN TO LT. BRN. MED. STIFF TO V. STIFF
WET SANDY SILTY CLAY TO MED. PLASTIC
SILTY SANDY CLAY (A-7-8)
W/BRICK RUBBLE 0.0-3.0
BT
FIAD
(12/12/13)

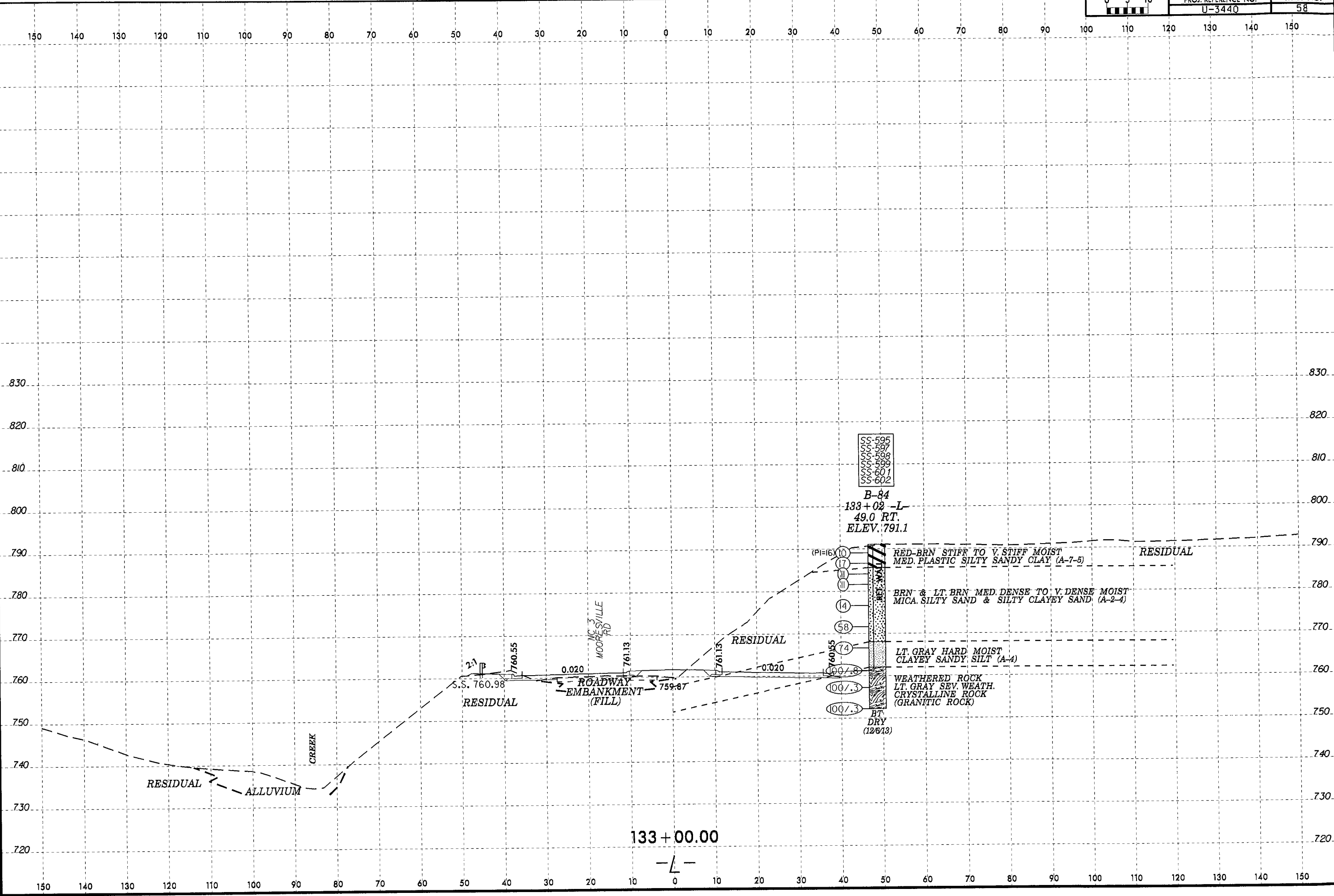
127 + 00.00

-L-

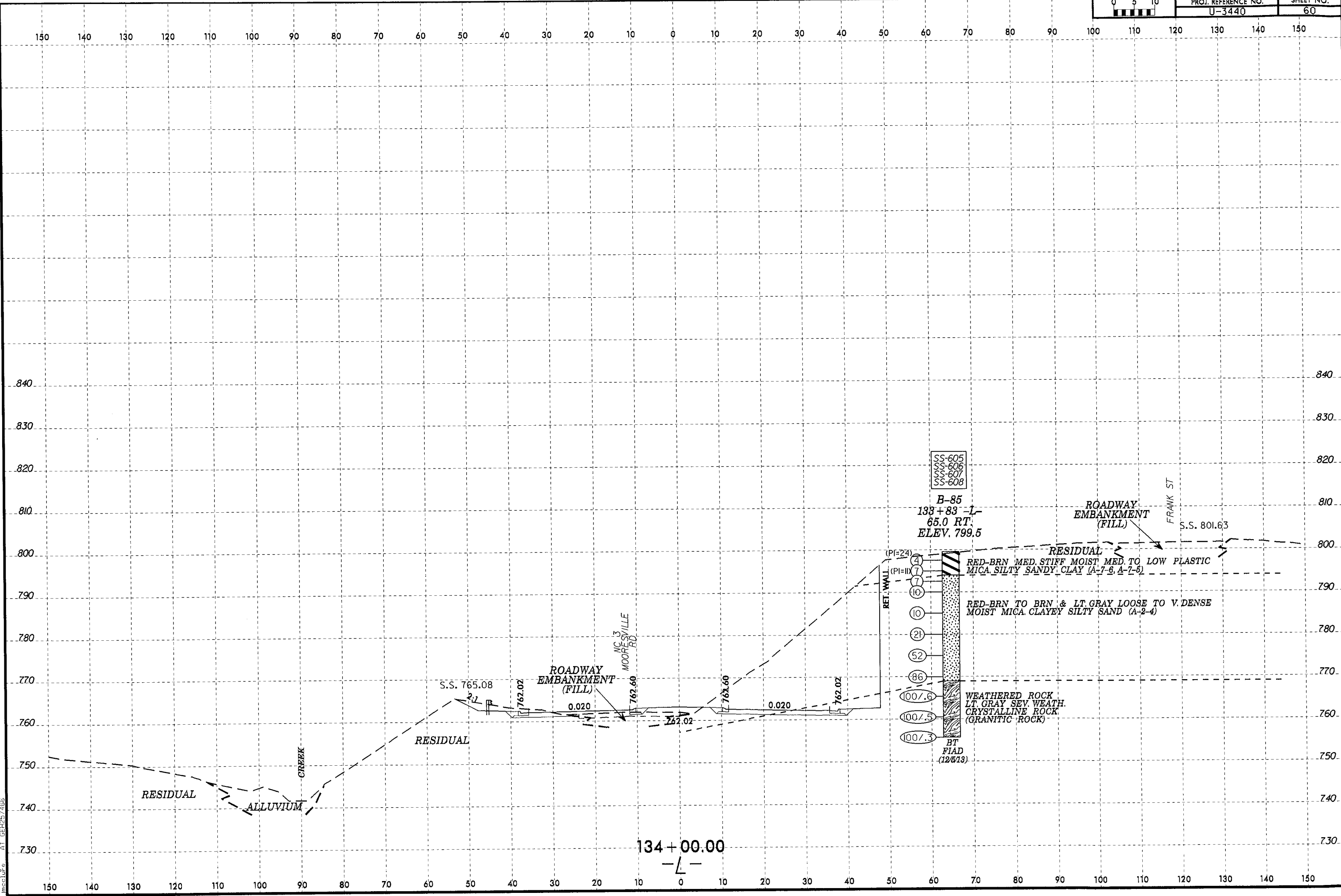
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 mce@pwr.com



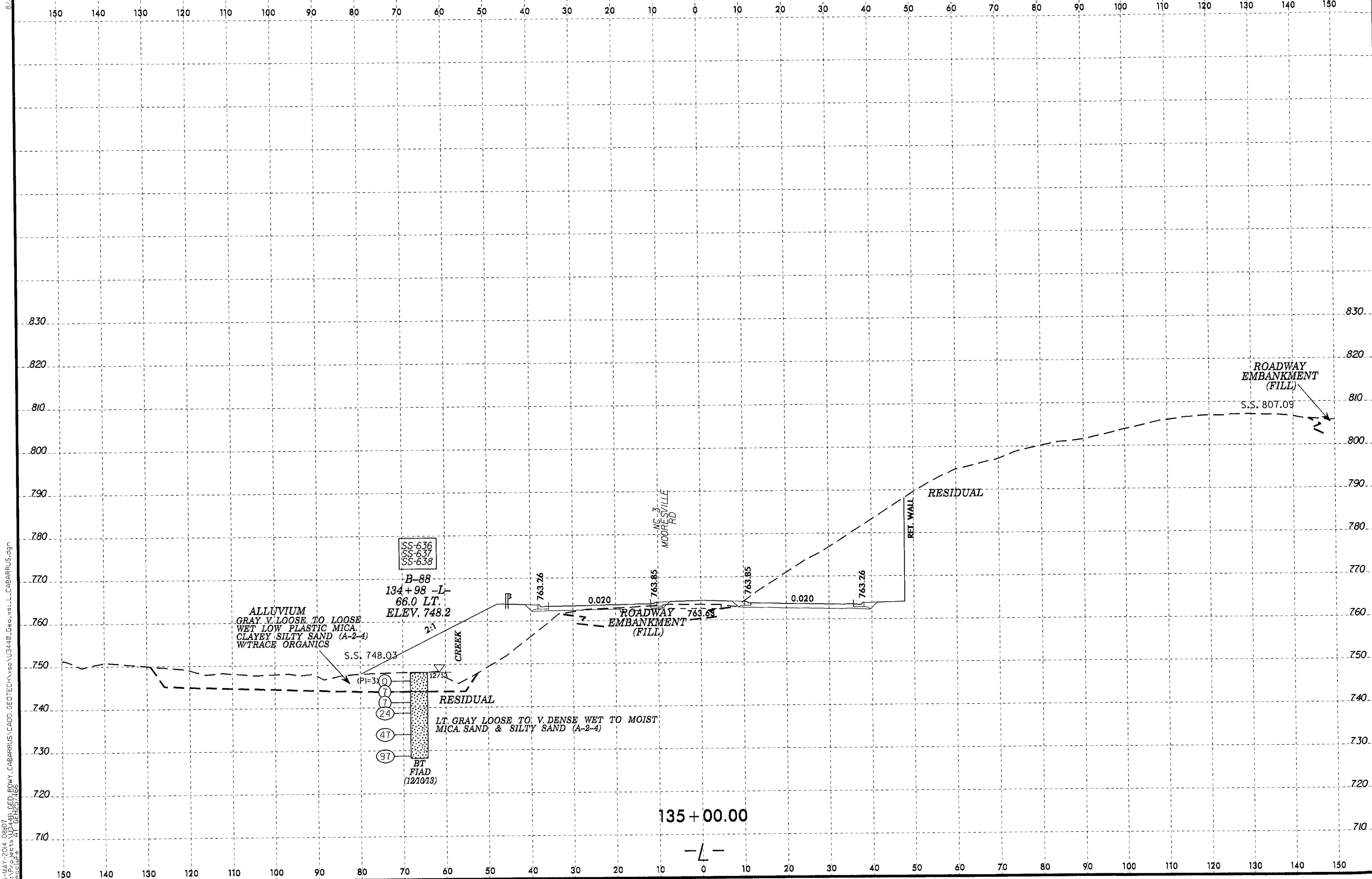
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16-MAY-2014 08:06
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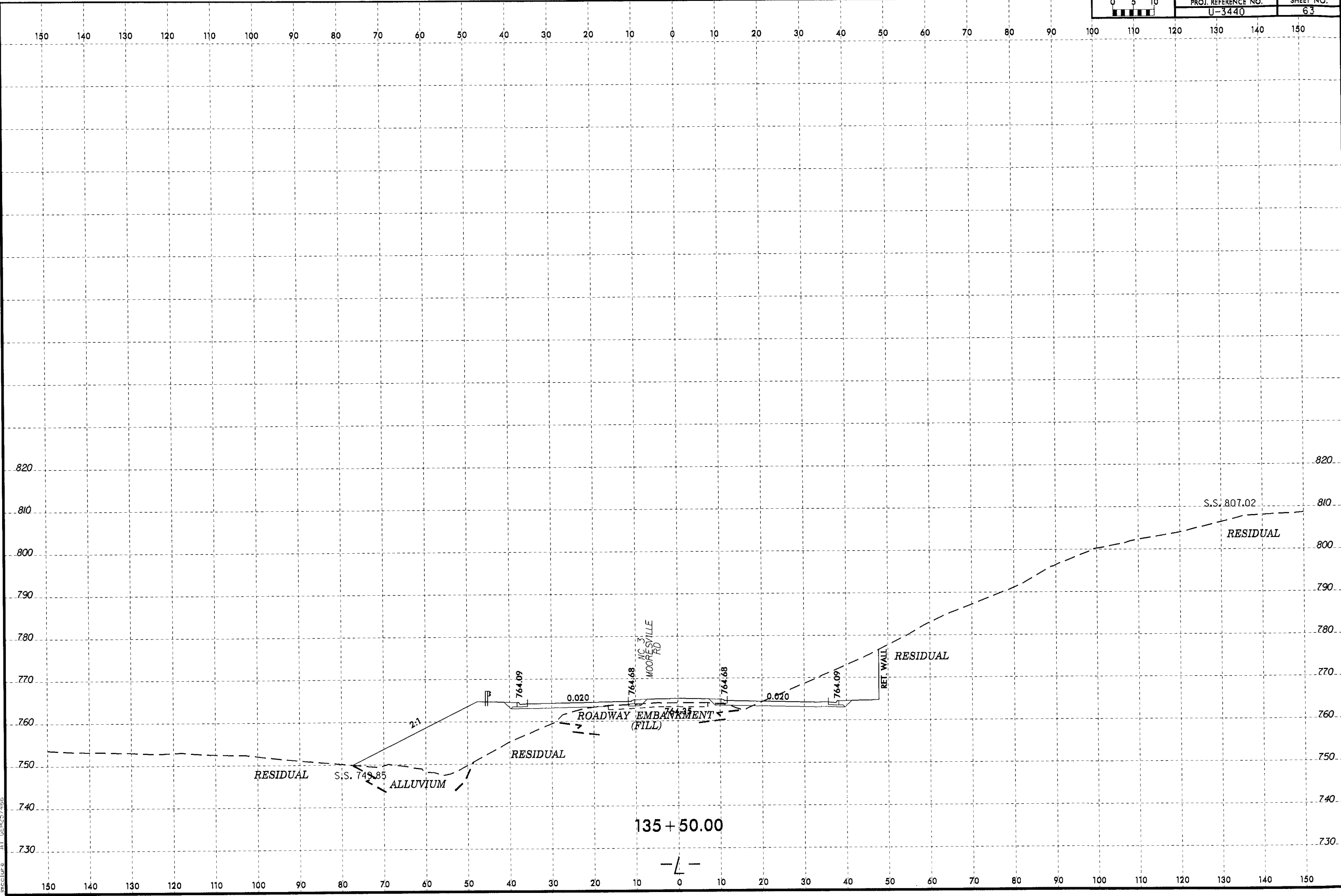


8/23/98



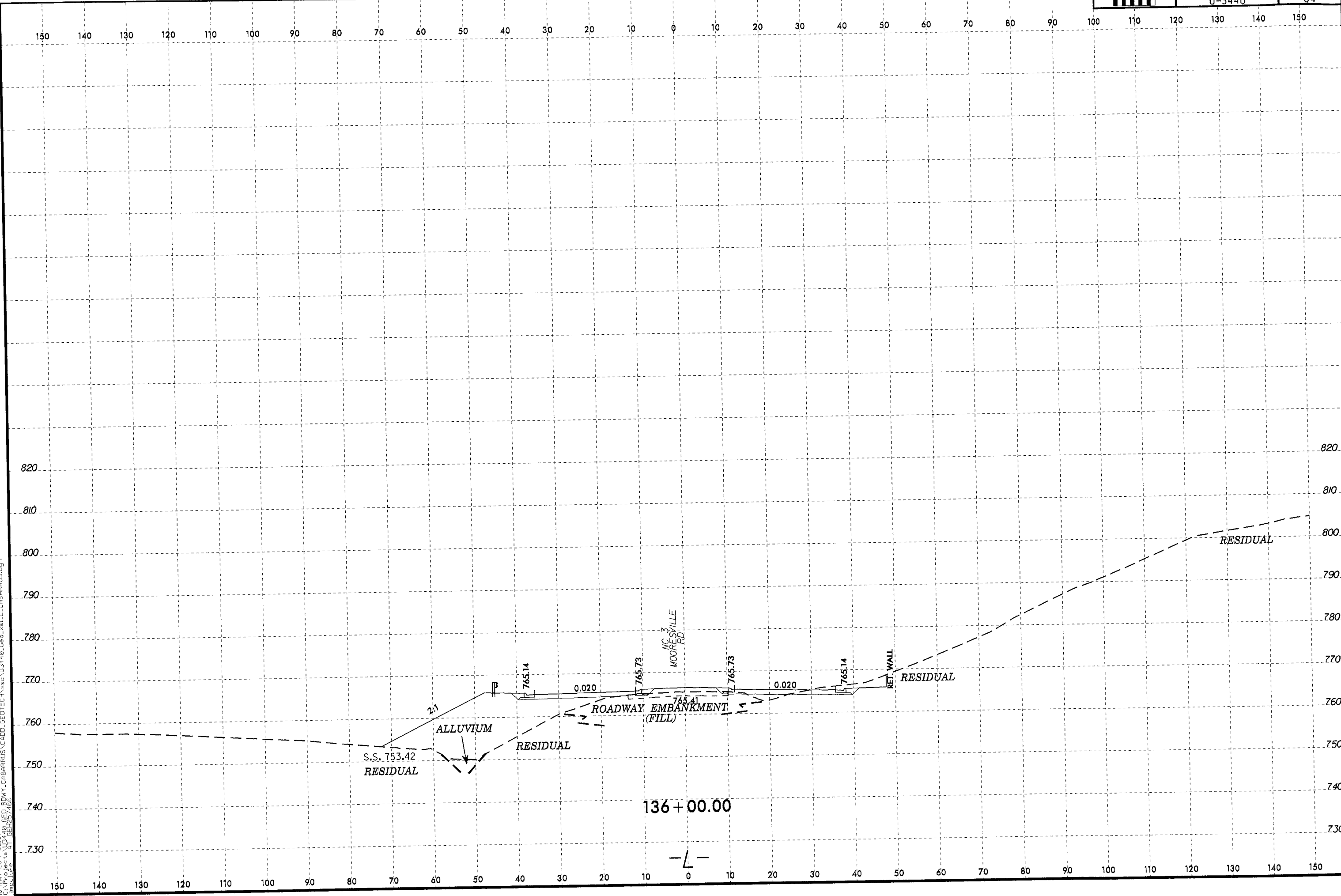
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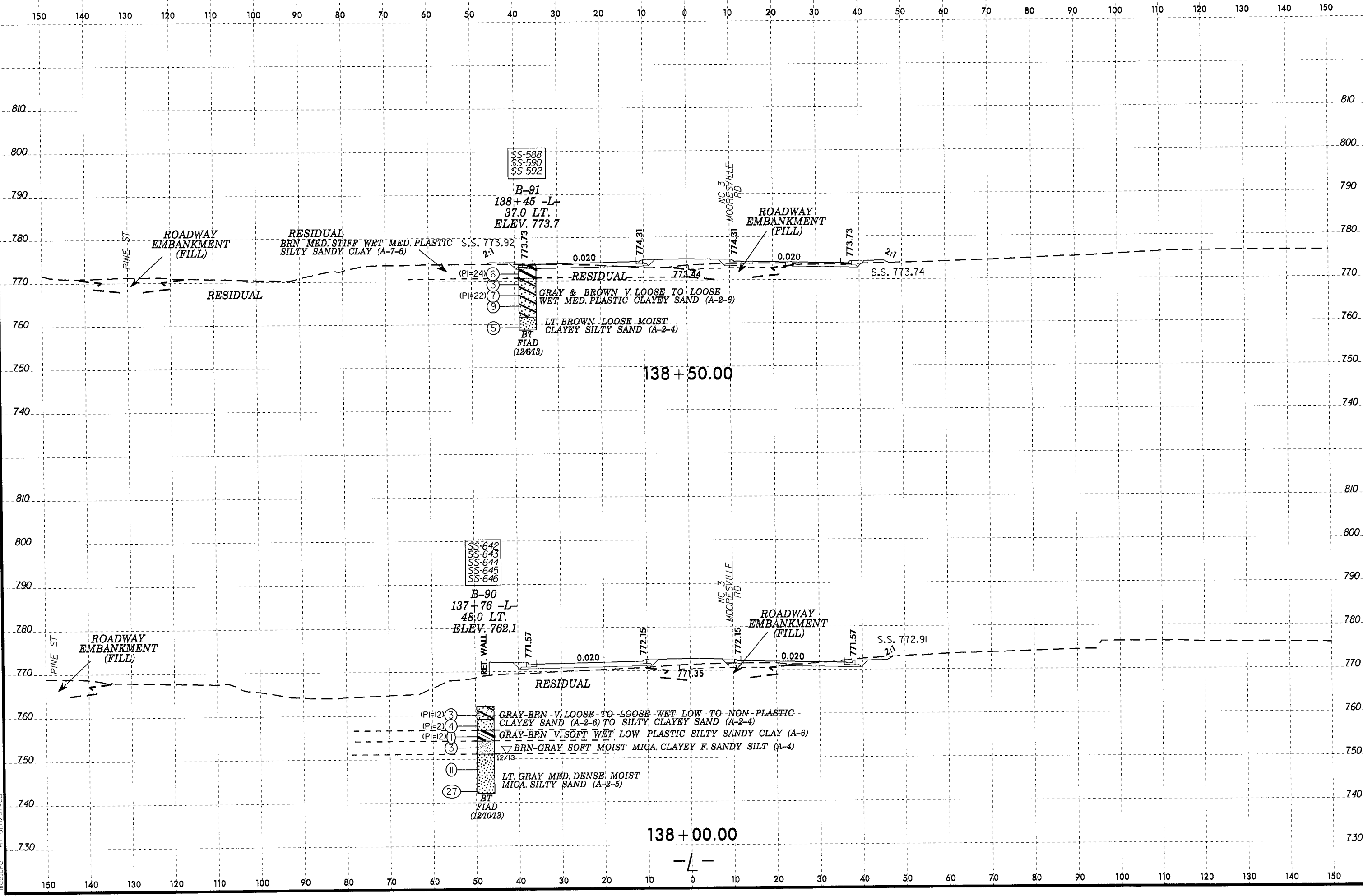


8/23/98

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8/23/99
16-MAY-2014 08:36
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SS-588
SS-590
SS-592

B-91
138+45 -L-
37.0 LT.
ELEV. 773.7

PINE ST

ROADWAY EMBANKMENT (FILL)

RESIDUAL
BRN MED. STIFF WET MED. PLASTIC
SILTY SANDY CLAY (A-7-6)

S.S. 773.92
2:1
773.73

RESIDUAL

GRAY & BROWN V. LOOSE TO LOOSE
WET MED. PLASTIC CLAYEY SAND (A-2-6)

LT. BROWN LOOSE MOIST
CLAYEY SILTY SAND (A-2-4)

(PI=24) 6
(PI=22) 7
9
5

BT
FIAD
(12/6/13)

NC 3
MOORESVILLE RD

ROADWAY EMBANKMENT (FILL)

0.020

0.020

2:1

S.S. 773.74

138+50.00

SS-642
SS-643
SS-644
SS-645
SS-646

B-90
137+76 -L-
48.0 LT.
ELEV. 762.1

PINE ST

ROADWAY EMBANKMENT (FILL)

RET. WALL

771.57

RESIDUAL

(PI=12) 3
(PI=2) 4
(PI=12) 1

GRAY-BRN V. LOOSE TO LOOSE WET LOW TO NON-PLASTIC
CLAYEY SAND (A-2-6) TO SILTY CLAYEY SAND (A-2-4)

GRAY-BRN V. SOFT WET LOW PLASTIC SILTY SANDY CLAY (A-6)

BRN-GRAY SOFT MOIST MICA CLAYEY F. SANDY SILT (A-4)

LT. GRAY MED. DENSE MOIST
MICA SILTY SAND (A-2-5)

11
27

BT
FIAD
(12/10/13)

NC 3
MOORESVILLE RD

ROADWAY EMBANKMENT (FILL)

0.020

0.020

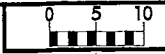
2:1

S.S. 772.91

138+00.00

-L-

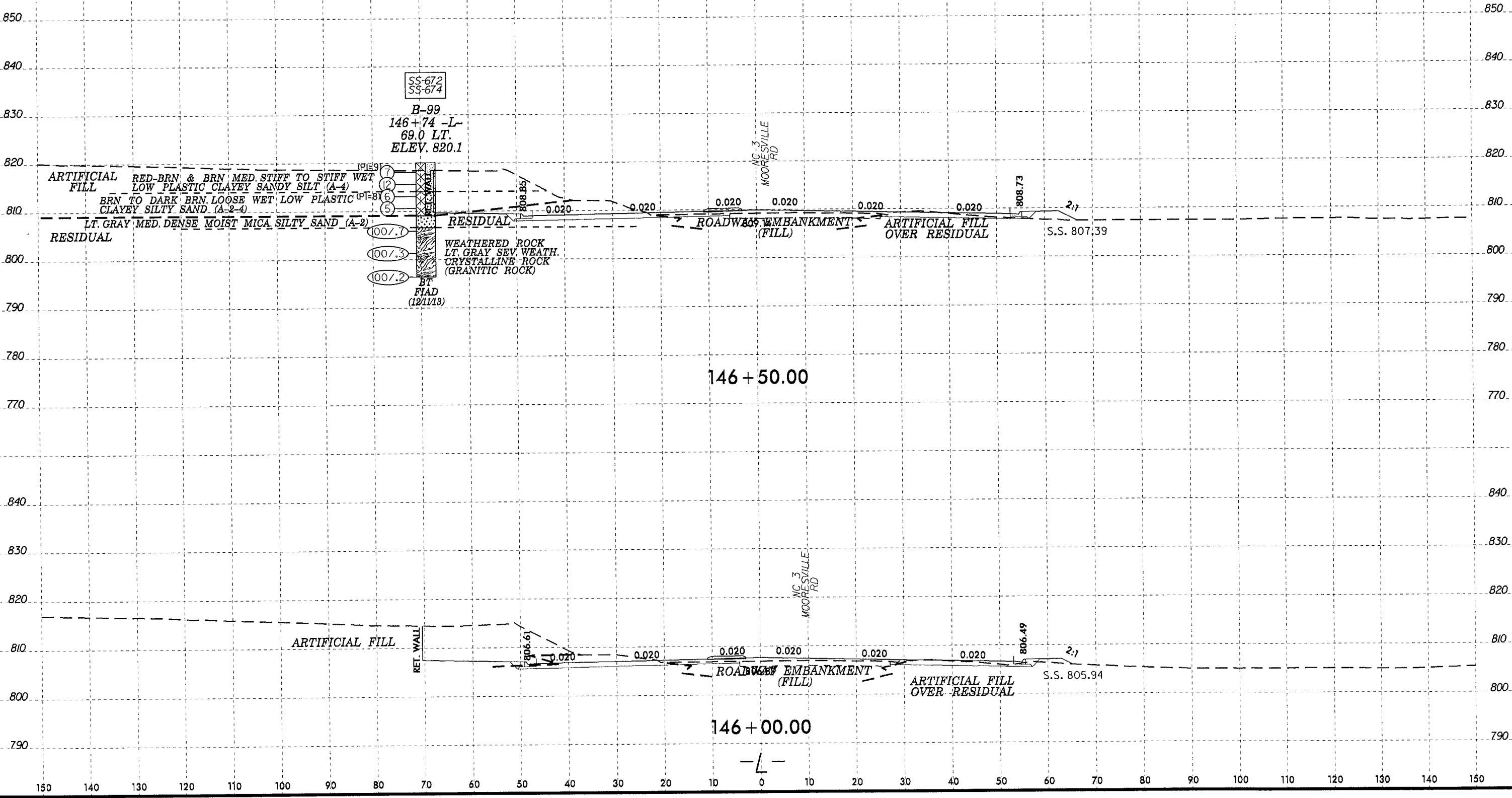
8/23/99



PROJ. REFERENCE NO.
U-3440

SHEET NO.
71

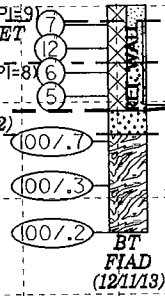
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SS-672
SS-674

B-99
146+74 -L-
69.0 LT.
ELEV. 820.1

ARTIFICIAL FILL
RED-BRN. & BRN. MED. STIFF TO STIFF WET
LOW PLASTIC CLAYEY SANDY SILT (A-4)
BRN TO DARK BRN. LOOSE WET LOW PLASTIC
CLAYEY SILTY SAND (A-2-4)
RESIDUAL
LT. GRAY MED. DENSE MOIST MICA SILTY SAND (A-2)



WEATHERED ROCK
LT. GRAY SEV. WEATH.
CRYSTALLINE ROCK
(GRANITIC ROCK)

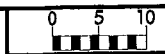
146 + 50.00

146 + 00.00

-L-

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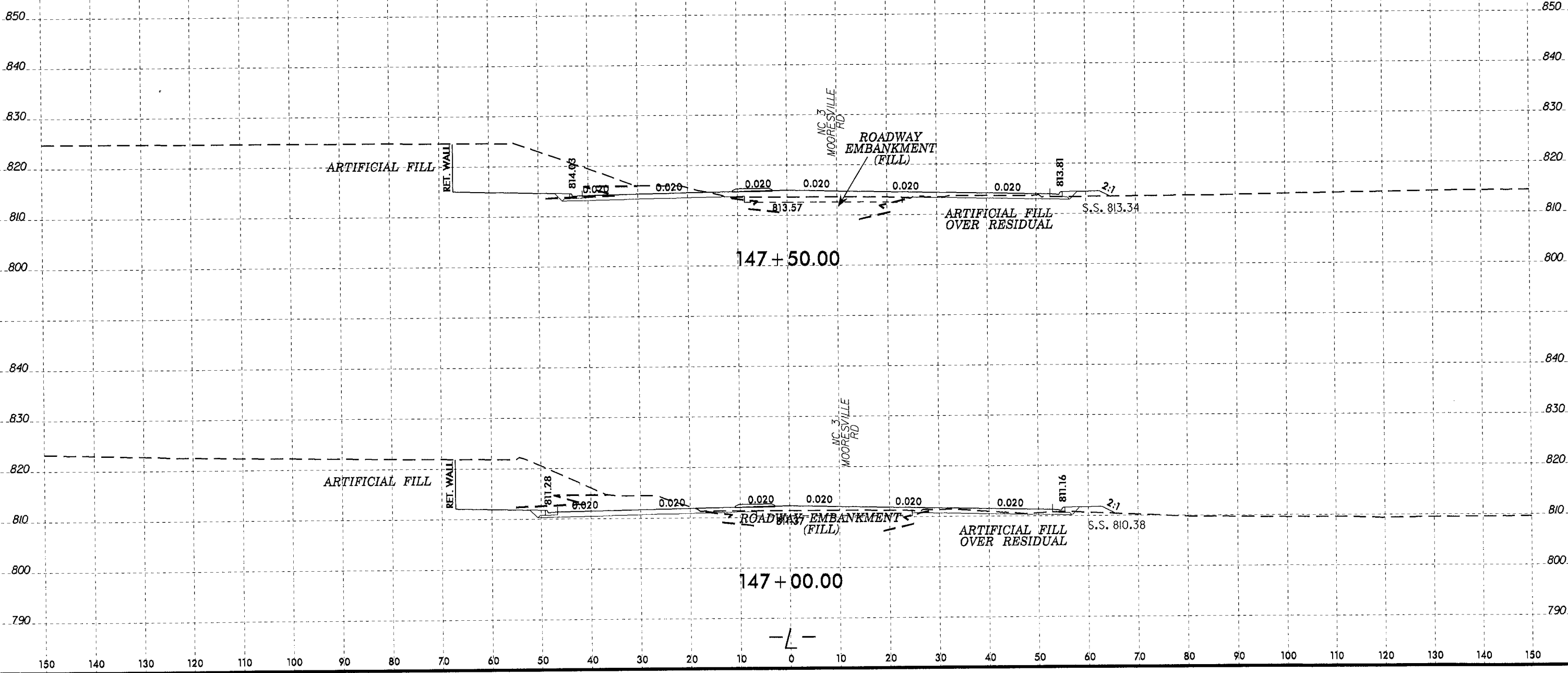
8/23/99



PROJ. REFERENCE NO.
U-3440

SHEET NO.
72

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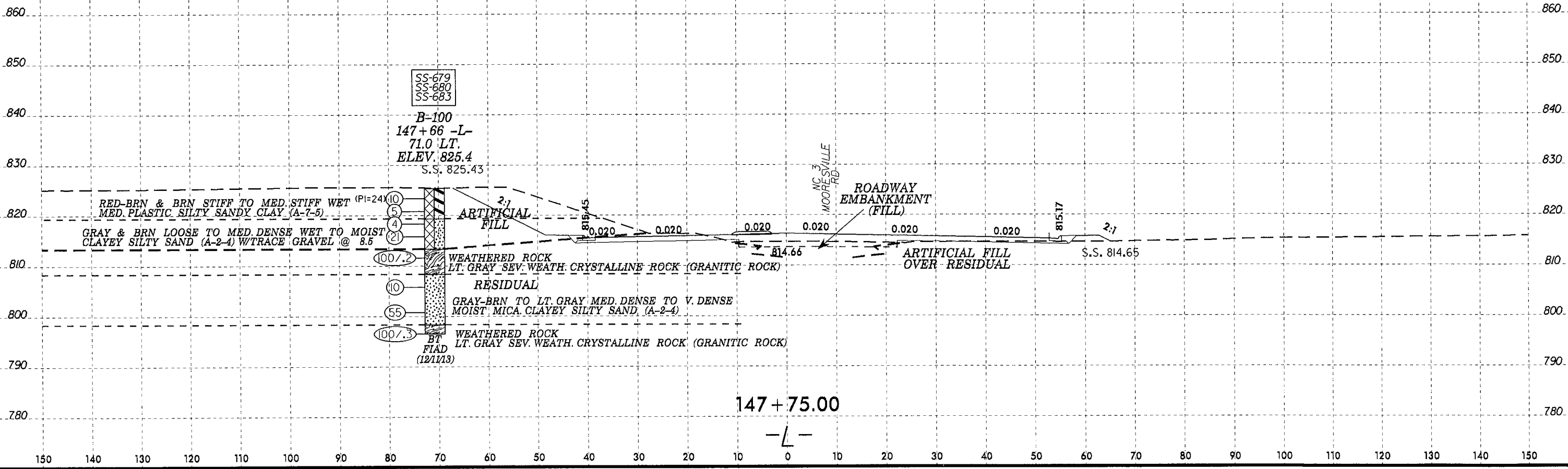
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
U-3440	73

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16-MAY-2014 09:48
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 incellure AT BEH257466

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Line or Boring ID
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1	60 RT	15+00	1.0-2.5	A-7-5(28)	78	43	23.4	9.8	8.7	58.1	95	78	65	-	-	L
SS-2	60 RT	15+00	3.5-5.0	A-7-5(5)	53	11	29.6	19.8	18.5	32.0	94	73	51	-	-	L
SS-3	60 RT	15+00	6.0-6.3	A-2-4(0)	29	NP	50.1	26.0	17.9	6.0	82	51	24	-	-	L
SS-4	72 RT	18+05	1.0-2.5	A-4(0)	29	NP	42.8	24.6	18.5	14.0	97	66	36	-	-	L
SS-5	53 LT	23+44	1.0-2.5	A-7-6(17)	59	30	24.6	11.6	15.7	48.0	93	75	62	-	-	L
SS-6	50 RT	28+50	1.0-2.5	A-7-5(14)	58	26	26.6	15.4	17.9	40.0	96	76	59	-	-	L
SS-7	50 RT	28+50	6.0-7.5	A-5(1)	44	9	39.2	21.6	21.1	18.0	90	63	39	-	-	L
M-8	68 RT	29+66	6.0-7.5				0.0	0.0	0.0	0.0	0	0	15	-	-	L
SS-8	68 RT	29+66	6.0-7.5	A-2-5(0)	53	10	42.6	23.8	19.5	14.0	92	63	34	-	-	L
M-9	47 RT	34+99	3.5-5.0				0.0	0.0	0.0	0.0	0	0	23	-	-	L
SS-9	47 RT	34+99	3.5-5.0	A-7-6(3)	42	15	37.6	18.4	17.9	26.0	91	65	43	-	-	L
M-10	48 RT	38+81	8.5-10.0				0.0	0.0	0.0	0.0	0	0	22.3	-	-	L
SS-10	48 RT	38+81	8.5-10.0	A-7-5(37)	79	46	16.4	10.2	17.3	56.1	98	86	75	-	-	L
M-11	48 RT	38+81	13.5-15.0				0.0	0.0	0.0	0.0	0	0	17.8	-	-	L
SS-11	48 RT	38+81	13.5-15.0	A-2-6(2)	38	21	46.0	18.0	9.9	26.0	87	55	34	-	-	L
SS-12	41 RT	40+72	1.0-2.5	A-1-b(0)	20	NP	81.3	12.6	4.1	2.0	71	23	5	-	-	L
SS-13	20 RT	46+76	1.0-2.5	A-7-5(13)	72	29	23.2	23.8	14.5	38.4	90	76	52	-	-	L
SS-14	20 RT	46+76	3.5-5.0	A-5(0)	55	NP	29.9	28.1	17.8	24.2	87	71	41	-	-	L
SS-15	20 RT	46+76	6.0-7.5	A-5(0)	52	NP	31.9	28.1	19.8	20.2	88	70	39	-	-	L
SS-17	71 RT	48+62	1.0-2.5	A-7-5(5)	54	17	28.3	23.6	17.8	30.3	90	72	47	-	-	L
SS-18	71 RT	48+62	3.5-5.0	A-5(2)	53	9	30.3	26.9	22.6	20.2	91	72	44	-	-	L
M-20	71 LT	37+04	2.5-3.0				0.0	0.0	0.0	0.0	0	0	18.2	-	-	L
S-20	71 LT	37+04	2.5-3.0	A-2-4(0)	29	10	45.3	22.2	12.3	20.2	86	57	32	-	-	L
M-22	70 LT	39+35	2.0-3.0				0.0	0.0	0.0	0.0	0	0	20.6	-	-	L
S-22	70 LT	39+35	2.0-3.0	A-2-4(0)	30	9	45.9	24.4	13.5	16.2	88	58	30	-	-	L
SS-22	36 RT	50+07	1.0-2.5	A-7-5(39)	75	36	5.5	7.7	18.1	68.8	100	97	89	-	-	L
SS-24	36 RT	50+07	6.0-7.5	A-7-5(26)	63	20	1.4	7.9	28.0	62.7	100	99	94	-	-	L
SS-26	68 LT	50+64	1.0-2.5	A-7-6(3)	49	21	29.7	17.0	14.9	38.4	66	52	38	-	-	L
SS-27	68 LT	50+64	3.5-5.0	A-5(2)	51	9	25.1	24.2	22.4	28.3	82	68	46	-	-	L
SS-28	68 LT	50+64	6.0-7.5	A-5(2)	51	8	21.4	28.5	25.9	24.2	85	74	47	-	-	L
SS-32	47 RT	52+22	1.0-2.5	A-7-5(4)	50	12	22.6	31.8	17.6	28.0	88	76	47	-	-	L
SS-33	47 RT	52+22	3.5-5.0	A-5(0)	42	6	35.6	29.8	22.6	12.0	88	67	36	-	-	L
SS-34	47 RT	52+22	6.0-7.5	A-2-4(0)	27	NP	53.6	29.4	11.0	6.0	99	67	20	-	-	L
SS-36	58 RT	55+19	1.0-2.5	A-2-5(0)	64	NP	36.4	36.6	17.0	10.0	91	71	32	-	-	L
SS-37	58 RT	55+19	8.5-10.0	A-2-5(0)	42	NP	41.6	31.4	17.0	10.0	90	65	30	-	-	L
SS-38	43 RT	57+81	1.0-2.5	A-7-6(5)	43	23	39.0	19.0	9.7	32.3	90	63	41	-	-	L
SS-39	43 RT	57+81	3.5-5.0	A-2-4(0)	28	8	41.8	23.2	12.7	22.2	90	63	35	-	-	L
SS-40	43 RT	57+81	6.0-7.5	A-2-5(0)	48	5	42.6	22.2	14.9	20.2	85	60	33	-	-	L
SS-42	54 LT	57+59	1.0-2.5	A-5(2)	52	9	30.5	25.5	13.7	30.3	91	73	43	-	-	L
SS-43	54 LT	57+59	3.5-5.0	A-2-5(0)	48	NP	37.0	29.7	15.2	18.2	89	68	34	-	-	L
SS-44	54 LT	57+59	1.0-2.5	A-2-5(0)	45	NP	40.8	28.5	16.6	14.1	86	63	30	-	-	L
SS-48	44 LT	59+53	1.0-2.5	A-7-6(15)	56	30	29.0	13.8	15.1	42.0	95	73	57	-	-	L
SS-49	44 LT	59+53	3.5-5.0	A-7-6(5)	45	18	36.8	17.8	13.3	32.0	91	64	45	-	-	L
SS-50	44 LT	59+53	6.0-7.5	A-4(0)	30	10	42.8	21.2	15.9	20.0	90	60	36	-	-	L
M-52	57 LT	62+00	1.0-2.5				0.0	0.0	0.0	0.0	0	0	19.5	-	-	L
SS-52	57 LT	62+00	1.0-2.5	A-7-6(9)	41	21	28.5	14.9	14.1	42.4	94	74	56	-	-	L
SS-53	57 LT	62+00	3.5-5.0	A-7-6(16)	65	36	30.7	14.5	8.3	46.5	94	73	54	-	-	L
M-54	57 LT	62+00	6.0-7.5				0.0	0.0	0.0	0.0	0	0	14.1	-	-	L
SS-54	57 LT	62+00	6.0-7.5	A-2-7(2)	49	27	51.7	12.3	3.6	32.3	66	39	25	-	-	L
SS-56	64 LT	67+41	1.0-2.5	A-7-6(21)	50	21	6.3	6.3	18.7	68.8	100	97	88	-	-	L
SS-57	64 LT	67+41	3.5-5.0	A-7-6(14)	42	17	4.2	20.4	26.8	48.5	100	99	79	-	-	L
SS-58	64 LT	67+41	6.0-7.5	A-2-4(0)	26	NP	63.1	27.7	3.1	6.1	95	60	11	-	-	L
SS-59	64 LT	67+41	8.5-10.0	A-1-b(0)	23	NP	76.4	15.8	5.8	2.0	58	21	6	-	-	L
SS-60	64 LT	67+41	3.5-5.0	A-1-b(0)	31	NP	48.5	30.1	17.3	4.0	74	49	19	-	-	L
SS-63	77 RT	59+98	1.0-2.5	A-7-6(7)	43	18	30.2	15.1	16.3	38.3	93	71	54	-	-	L
SS-64	77 RT	59+98	3.5-5.0	A-7-6(6)	41	17	30.6	17.7	17.3	34.3	95	73	52	-	-	L
SS-65	77 RT	59+98	6.0-7.5	A-2-4(0)	28	8	57.7	15.9	12.3	14.1	84	44	25	-	-	L
SS-67	65 RT	66+90	1.0-2.5	A-6(3)	40	18	34.5	20.2	12.9	32.3	85	63	41	-	-	L
SS-68	65 RT	66+90	3.5-5.0	A-2-5(0)	42	10	43.8	24.6	11.3	20.2	79	54	28	-	-	L
SS-69	65 RT	66+90	6.0-7.5	A-1-b(0)	38	NP	46.5	29.3	14.1	10.1	71	48	20	-	-	L
SS-70	101 LT	70+30	1.0-2.5	A-6(4)	37	13	32.3	15.6	17.8	34.3	87	66	49	-	-	L
SS-71	101 LT	70+30	3.5-5.0	A-4(0)	26	5	13.7	41.2	18.8	26.3	97	90	52	-	-	L
SS-72	101 LT	70+30	6.0-7.5	A-1-b(0)	26	NP	76.8	10.7	6.5	6.1	59	20	8	-	-	L
SS-73	101 LT	70+30	8.5-10.0	A-7-6(15)	54	25	15.4	24.2	16.0	44.4	98	90	63	-	-	L
SS-74	101 LT	70+30	13.5-15.0	A-4(1)	27	8	16.6	38.8	16.4	28.3	100	96	50	-	-	L
SS-75	101 LT	70+30	18.5-20.0	A-6(5)	33	11	13.3	25.3	21.0	40.4	91	83	62	-	-	L
SS-76	101 LT	70+30	23.5-25.0	A-1-b(0)	29	NP	54.5	28.7	12.7	4.0	80	48	19	-	-	L
SS-79	39 LT	74+05	1.0-2.5	A-4(0)	37	9	37.8	24.2	13.9	24.0	84	62	36	-	-	L
SS-82	39 LT	74+05	8.5-10.0	***	-	-	51.7	22.8	11.5	14.0	38	24	11	-	-	L
M-83	39 LT	74+05	13.5-15.0				0.0	0.0	0.0	0.0	0	0	23	-	-	L
SS-83	39 LT	74+05	13.5-15.0	A-1-b(0)	28	NP	53.1	25.6	7.3	14.0	74	44	19	-	-	L
M-84	39 LT	74+05	13.5-15.0				0.0	0.0	0.0	0.0	0	0	38.7	-	-	L
SS-84	39 LT	74+05	18.5-20.0	A-7-5(30)	56	26	1.4	4.4	28.1	66.1	100	99	97	-	-	L

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Line or Boring ID
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
M-85	39 LT	74+05	23.5-25.0				0.0	0.0	0.0	0.0	0	0	79.5	-	-	L
SS-85	39 LT	74+05	23.5-25.0	A-4(0)	21	NP	3.0	7.2	31.7	58.1	100	98	92	-	-	L
M-86	39 LT	74+05	28.5-30.0				0.0	0.0	0.0	0.0	0	0	72	-	-	L
SS-86	39 LT	74+05	28.5-30.0	A-1-b(0)	26	NP	65.1	23.8	7.1	4.0	98	46	14	-	-	L
SS-87	39 LT	74+05	33.5-35.0	A-7-5(3)	53	19	14.6	11.4	27.9	46.0	52	47	39	-	-	L
SS-88	39 LT	74+05	38.5-40.0	A-2-4(0)	28	NP	29.2	45.4	17.3	8.0	87	71	30	-	-	L
SS-90	56 LT	76+15	1.0-2.5	A-2-5(0)	46	9	44.8	20.8	12.1	22.2	80	53	30	-	-	L
SS-91	56 LT	76+15	3.5-5.0	A-2-5(0)	45	6	39.8	25.7	12.3	22.2	85	60	32	-	-	L
M-92	73 LT	72+29	1.0-2.5				0.0	0.0	0.0	0.0	0	0	32.7	-	-	L
SS-92	73 LT	72+29	1.0-2.5	A-7-6(15)	46	17	11.9	8.9	29.0	50.3	98	90	80	-	-	L
SS-93	73 LT	72+29	3.5-5.0	A-6(14)	37	16	3.2	14.7	31.8	50.3	100	98	87	-	-	L
M-94	73 LT	72+29	6.0-7.5				0.0	0.0	0.0	0.0	0	0	26.6	-	-	L
SS-94	73 LT	72+29	6.0-7.5	A-6(15)	38	17	6.2	12.								

SOIL TEST RESULTS																	Line or Boring ID
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC		
							C.SAND	F.SAND	SILT	CLAY	10	40	200				
SS-535	23 LT	108+46	8.5-10.0	A-2-5(0)	42	NP	44.0	32.2	13.7	10.0	73	51	22	-	-	L	
SS-537	23 LT	108+46	18.5-20.0	A-2-4(0)	32	NP	44.5	29.3	14.1	12.0	83	57	26	-	-	L	
SS-538	23 LT	108+46	23.5-25.0	A-1-b(0)	34	NP	47.3	32.5	14.1	6.0	71	47	18	-	-	L	
SS-539	72 LT	107+48	1.0-2.5	A-7-6(6)	48	22	33.5	17.5	12.9	36.1	84	63	44	-	-	L	
SS-540	72 LT	107+48	3.5-5.0	A-7-6(3)	46	19	35.7	20.3	9.9	34.1	80	58	38	-	-	L	
SS-541	72 LT	107+48	6.0-7.5	A-2-5(0)	44	6	41.3	26.9	15.7	16.0	79	54	30	-	-	L	
M-543	120 LT	110+50	1.0-2.5				0.0	0.0	0.0	0.0	0	0	15	-	-	L	
SS-543	120 LT	110+50	1.0-2.5	A-2-6(0)	38	11	44.1	23.9	9.9	22.1	74	50	27	-	-	L	
SS-544	120 LT	110+50	3.5-5.0	A-1-b(0)	35	NP	45.1	31.3	11.5	12.0	68	47	20	-	-	L	
SS-546	120 LT	110+50	8.5-10.0	A-1-b(0)	25	NP	53.0	29.1	9.9	8.0	70	44	16	-	-	L	
SS-549	123 RT	113+47	1.0-2.5	A-2-4(0)	31	8	40.9	25.8	15.1	18.1	76	54	28	-	-	L	
SS-550	123 RT	113+47	3.5-5.0	A-7-6(12)	52	25	20.2	25.8	19.8	34.3	97	87	56	-	-	L	
SS-551	123 RT	113+47	6.0-7.5	A-4(0)	31	9	37.9	27.8	18.1	16.1	94	72	37	-	-	L	
SS-553	123 RT	113+47	13.5-15.0	A-2-4(0)	28	NP	31.5	41.1	19.4	8.1	87	73	29	-	-	L	
SS-559	115 RT	115+39	1.0-2.5	A-4(0)	26	3	30.4	32.9	20.6	16.1	90	75	38	-	-	L	
SS-563	115 RT	115+39	13.5-15.0	A-2-4(0)	37	NP	35.1	39.7	17.1	8.1	100	84	29	-	-	L	
SS-569	71 RT	112+11	1.0-2.5	A-2-4(0)	34	7	44.7	25.1	12.1	18.1	62	42	22	-	-	L	
SS-570	71 RT	112+11	3.5-5.0	A-1-b(0)	28	NP	43.3	30.5	14.1	12.0	70	49	22	-	-	L	
M-570	71 RT	112+11	6.0-7.5				0.0	0.0	0.0	0.0	0	0	7.9	-	-	L	
SS-571	71 RT	112+11	6.0-7.5	A-1-b(0)	30	NP	48.3	30.9	10.7	10.0	70	48	18	-	-	L	
SS-572	71 RT	112+11	8.5-10.0	A-1-b(0)	30	NP	46.5	31.7	13.7	8.0	71	48	20	-	-	L	
SS-576	1 LT	118+99	1.0-2.5	A-2-4(0)	36	6	53.4	15.8	12.7	18.1	91	54	30	-	-	L	
SS-578	1 LT	118+99	6.0-7.5	A-2-4(0)	23	5	45.3	25.7	10.9	18.1	81	55	27	-	-	L	
SS-579	1 LT	118+99	8.5-10.0	A-2-4(0)	24	5	44.9	26.1	12.9	16.0	81	57	27	-	-	L	
SS-580	1 LT	118+99	13.5-15.0	A-2-4(0)	24	NP	51.2	31.1	7.7	10.0	82	62	18	-	-	L	
SS-581	75 LT	117+24	1.0-2.5	A-4(1)	29	8	28.6	23.0	26.2	22.2	87	69	47	-	-	L	
SS-583	75 LT	117+24	6.0-7.5	A-1-b(0)	24	NP	79.2	14.3	2.4	4.0	60	22	5	-	-	L	
SS-584	75 LT	117+24	8.5-10.0	A-2-4(0)	28	NP	36.1	45.0	14.9	4.0	92	76	23	-	-	L	
SS-585	75 LT	117+24	13.5-15.0	A-2-4(0)	25	NP	33.5	46.4	16.1	4.0	94	78	24	-	-	L	
SS-587	75 LT	117+24	23.5-25.0	A-2-4(0)	27	NP	44.6	37.7	13.7	4.0	86	63	20	-	-	L	
SS-588	49 LT	138+50	13.5-15.0	A-7-6(9)	45	24	29.1	19.5	13.3	38.1	92	74	51	-	-	L	
SS-590	49 LT	138+50	6.0-7.5	A-2-6(2)	37	22	38.7	24.5	6.7	30.1	86	64	34	-	-	L	
SS-592	49 LT	138+50	13.5-15.0	A-2-4(0)	39	NP	33.1	38.7	14.1	14.0	91	75	31	-	-	L	
SS-593	18 RT	118+01	1.0-2.5	A-1-b(0)	25	NP	67.1	20.6	6.2	6.0	76	37	11	-	-	L	
SS-594	18 RT	118+01	3.5-4.8	A-1-b(0)	21	NP	81.0	12.7	4.2	2.0	77	27	6	-	-	L	
SS-595	49 RT	133+02	1.0-2.5	A-7-5(4)	48	16	27.4	31.9	14.5	26.2	98	88	44	-	-	L	
SS-597	49 RT	133+02	6.0-7.5	A-2-4(0)	28	NP	29.6	46.7	15.6	8.1	97	87	29	-	-	L	
SS-598	49 RT	133+02	8.5-10.0	A-2-4(0)	38	NP	34.3	40.5	11.1	14.1	97	85	28	-	-	L	
SS-599	49 RT	133+02	13.5-15.0	A-2-4(0)	36	NP	50.9	27.9	12.1	9.1	93	60	24	-	-	L	
SS-601	49 RT	133+02	23.5-25.0	A-4(0)	35	NP	30.6	36.9	12.3	20.2	98	87	36	-	-	L	
SS-602	49 RT	133+02	28.5-30.0	A-2-4(0)	29	NP	29.3	47.2	15.4	8.1	98	87	29	-	-	L	
SS-605	65 RT	133+83	1.0-2.5	A-7-6(12)	51	24	15.3	28.4	12.1	44.3	98	93	58	-	-	L	
SS-606	65 RT	133+83	3.5-5.0	A-7-5(3)	42	11	18.3	39.0	14.5	28.2	98	93	46	-	-	L	
SS-607	65 RT	133+83	6.0-7.5	A-2-4(0)	36	NP	22.5	48.1	15.3	14.1	97	92	35	-	-	L	
SS-608	65 RT	133+83	8.5-10.0	A-2-4(0)	32	NP	25.6	49.1	15.3	10.1	96	89	30	-	-	L	
SS-616	48 RT	132+00	1.0-2.5	A-7-6(5)	49	23	35.0	19.3	13.5	32.2	85	63	41	-	-	L	
SS-618	48 RT	132+00	6.0-7.5	A-2-7(0)	44	12	41.9	18.1	19.9	20.1	81	55	35	-	-	L	
SS-619	48 RT	132+00	8.5-10.0	A-2-5(0)	43	8	40.8	22.3	22.7	14.1	79	53	33	-	-	L	
SS-626	183' RT	136+39	6.0-7.5	A-2-4(0)	38	NP	36.8	30.2	12.9	20.1	73	56	27	-	-	L	
SS-634	183' RT	136+39	43.5-45.0	A-2-4(0)	32	NP	31.8	38.6	17.5	12.1	83	70	30	-	-	L	
SS-636	66 LT	134+98	1.0-2.5	A-2-4(0)	27	3	39.0	36.0	14.9	10.1	91	68	28	-	-	L	
SS-637	66 LT	134+98	3.5-5.0	A-2-4(0)	28	NP	45.7	39.4	8.9	6.0	94	73	18	-	-	L	
SS-638	66 LT	134+98	6.0-7.5	A-2-4(0)	29	NP	41.6	42.7	11.7	4.0	92	75	19	-	-	L	
SS-642	48' LT	137+76	1.0-2.5	A-2-6(0)	32	12	45.9	22.9	7.0	24.1	76	52	25	-	-	L	
SS-643	48' LT	137+76	3.5-5.0	A-2-4(0)	28	2	31.0	38.2	12.7	18.1	80	66	28	-	-	L	
SS-644	48' LT	137+76	6.0-7.5	A-6(1)	32	12	31.6	27.0	11.3	30.2	90	74	41	-	-	L	
SS-645	48 LT	137+76	8.5-10.0	A-4(0)	38	NP	3.0	65.0	21.9	10.1	100	99	44	-	-	L	
SS-646	48 LT	137+76	13.5-15.0	A-2-5(0)	41	NP	24.3	50.9	16.7	8.0	90	81	28	-	-	L	
SS-648	50 LT	137+00	1.0-2.5	A-2-4(0)	28	5	44.8	26.3	16.8	12.1	85	58	28	-	-	L	
SS-649	50 LT	137+00	3.5-5.0	A-2-4(0)	31	4	40.6	30.7	14.5	14.1	86	63	29	-	-	L	
SS-650	50 LT	137+00	6.0-7.5	A-2-4(0)	26	NP	45.1	33.7	9.1	12.1	88	62	22	-	-	L	
SS-654	68 LT	144+27	1.0-2.5	A-6(2)	35	14	33.8	21.1	16.9	28.2	84	63	41	-	-	L	
SS-655	68 LT	144+27	3.5-5.0	A-7-6(10)	46	22	27.2	16.7	13.9	42.3	94	76	56	-	-	L	
SS-658	68 LT	144+27	13.5-15.0	A-4(0)	37	NP	23.9	39.0	22.9	14.1	97	88	40	-	-	L	
SS-659	33 LT	145+26	1.0-2.5	A-4(0)	25	7	40.0	19.3	16.5	24.1	91	66	40	-	-	L	
SS-661	33 LT	145+26	6.0-7.5	A-7-5(5)	44	11	20.1	31.4	20.3	28.2	100	92	54	-	-	L	
SS-665	118 LT	145+81	1.0-2.5	A-7-6(3)	42	14	34.4	21.1	20.3	24.1	89	67	44	-	-	L	
SS-667	118 LT	145+81	6.0-7.5	A-6(5)	37	17	31.0	21.3	17.5	30.2	96	78	49	-	-	L	
SS-668	118 LT	145+81	8.5-10.0	A-2-4(0)	31	NP	50.7	25.2	12.1	12.1	83	52	24	-	-	L	
SS-672	69 LT	146+74	1.0-2.5	A-4(2)	40	9	33.4	20.3	22.1	24.1	87	65	44	-	-	L	
SS-674	69 LT	146+74	6.0-7.5	A-2-5(0)	46	8	45.5	21.3	21.1	12.1	85	56	31	-	-	L	
SS-679	71 LT	147+66	1.0-2.5	A-7-5(15)	57	24	17.7	23.7	22.3	36.2	98	86	63	-	-	L	
SS-680	71 LT	147+66	6.0-7.5	A-2-4(0)	38	NP	41.9	24.1	23.9	10.1	80	55	31	-	-	L	

SOIL TEST RESULTS																	Line or Boring ID
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC		
							C.SAND	F.SAND	SILT	CLAY	10	40	200				
SS-683	71 LT	147+66	18.5-20.0	A-2-4(0)	40	NP	44.5	23.9	17.5	14.1	86	60	31	-	-	L	
SS-686	52 RT	125+40	1.0-2.5	A-2-4(0)	25	6	35.2	32.6	10.1	22.1	86	68	32	-	-	L	
SS-687	52 RT	125+40	3.5-5.0	A-2-4(0)	29	5	34.6	38.2	17.1	10.1	94	75	31	-	-	L	
SS-692	6 RT	127+20	3.5-5.0	***	-	-	58.1	19.1	10.7	12.1	65	36	16	-	-	L	
SS-694	6 RT	127+20	8.5-10.0	A-7-6(7)	46	19	27.4	21.1	17.3	34.2	92	77	51	-	-	L	
SS-695	28 RT	109+89	1.0-2.5	A-6(2)	40	14	37.4	23.0	15.4	24.2	85	62	38	-	-	L	
SS-696	28 RT	109+89	3.5-5.0	A-2-4(0)	34	NP	41.4	32.1	12.3	14.1	84	62	27	-	-	L	
SS-697	28 RT	109+89	6.0-7.5	A-7-5(5)	51	19	32.5	22.2	12.9	32.3	87	68	43	-	-	L	

*** = INSUFFICIENT MATERIAL TO TEST SAMPLE