

**CONTRACT: ID: U-4444AA**

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

**ROADWAY**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 36492.1.2 (U-4444AA) F.A. PROJ. STP-210(11)

COUNTY CUMBERLAND

PROJECT DESCRIPTION NC 210 (MURCHISON RD.) FROM  
FAYETTEVILLE OUTER LOOP (X-0002B) TO BUTNER RD. IN  
SPRING LAKE

SITE DESCRIPTION RETAINING WALL 1 LEFT OF -Y2- STA. 25+35  
**RETAINING WALL INVENTORY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	36492.1.2 (U-4444AA)	1	3
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36492.1.2	STP-210(11)	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 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.

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

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

NC DOT PERSONNEL

C.D. CZAJKA

J.M. EDMONDSON

R.E. SMITH

INVESTIGATED BY C.D. CZAJKA

CHECKED BY N.T. ROBERSON

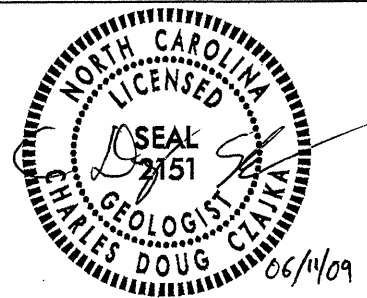
SUBMITTED BY N.T. ROBERSON

DATE DECEMBER 2008

DRAWN BY: C.D. CZAJKA & T.T. WALKER

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**

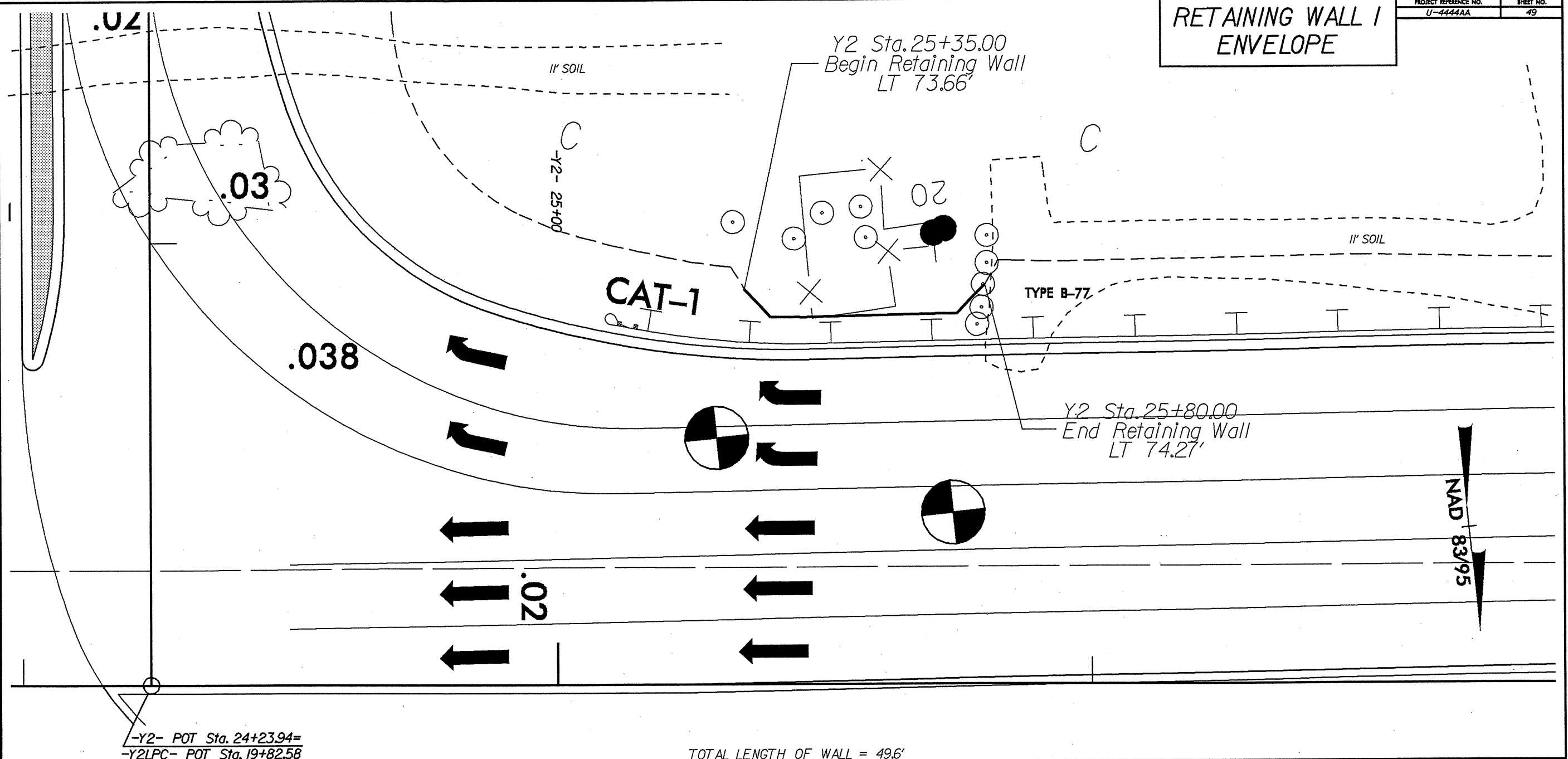
PROJECT REFERENCE NO.  
36492.1.2 (U-4444AA)      SHEET NO.  
2

**SUBSURFACE INVESTIGATION**

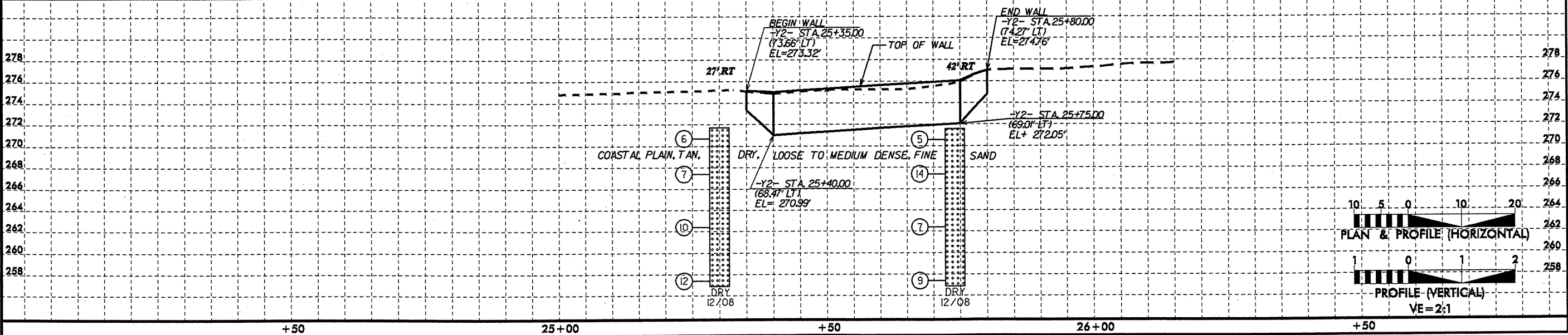
**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

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 (ASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE ASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, ASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLES:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HARD PLASTIC, A-7-6</i></p>		<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <b>UNIFORM</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) <b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p style="text-align: center;"><b>ANGULARITY OF GRAINS</b></p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR</b>, <b>SUBANGULAR</b>, <b>SUBROUNDED</b>, OR <b>ROUNDED</b>.</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><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.  <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.  <b>ARTESIAN</b> - 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.  <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.  <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.  <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.  <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.  <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL.  <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  <b>FORMATION (FM.)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.  <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.  <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.  <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  <b>ROCK QUALITY DESIGNATION (RQD)</b> - 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.  <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.  <b>SILL</b> - 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.  <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - 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.  <b>STRATA CORE RECOVERY (SREC)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  <b>STRATA ROCK QUALITY DESIGNATION (SRQD)</b> - 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.  <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																	
<p style="text-align: center;"><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (&lt; 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-2-4</th> <th>A-2-6</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th></th> <th></th> </tr> <tr> <th>SYMBOL</th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>% PASSING</th> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> </tr> <tr> <th>LIQUID LIMIT PLASTIC INDEX</th> <td>6 MX</td> <td>NP</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> <td>40 MX 18 MN 10 MN</td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td> <td>0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>10 MX</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td>STONE FRAGS, GRAVEL, AND SAND</td> <td>FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>GENERATING AS A SUBGRADE</th> <td colspan="5">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td>POOR</td> <td>POOR</td> <td>UNSATURABLE</td> <td></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-2-4	A-2-6	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7			SYMBOL																% PASSING	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	10 40 200	LIQUID LIMIT PLASTIC INDEX	6 MX	NP	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	40 MX 18 MN 10 MN	GROUP INDEX	0	0	0	4 MX	8 MX	12 MX	16 MX	10 MX	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS	CLAYEY SOILS										GENERATING AS A SUBGRADE	EXCELLENT TO GOOD					FAIR TO POOR			POOR	POOR	UNSATURABLE					<p style="text-align: center;"><b>MINERALOGICAL COMPOSITION</b></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;"><b>COMPRESSIBILITY</b></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;"><b>WEATHERED ROCK (WR)</b></p> <p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p>		<p style="text-align: center;"><b>CRYSTALLINE ROCK (CR)</b></p> <p>FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p>	
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**RETAINING WALL I ENVELOPE**



TOTAL LENGTH OF WALL = 49.6'



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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 36492.1.2 F.A. PROJ. STP-210(11)  
COUNTY CUMBERLAND  
PROJECT DESCRIPTION NC 210 (MURCHISON RD.) FROM THE  
FAYETTEVILLE OUTER LOOP (X-0002B) TO NORTH OF  
HONEYCUTT RD.  
SITE DESCRIPTION BRIDGE ON -L- (NC 210, MURCHISON RD.)  
OVER -Y2- (HONEYCUTT RD.) AT STATION 79+49.43

<u>SHEET</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-7	CROSS SECTIONS
8-12	BORE LOGS
13	SOIL TEST RESULTS

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 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 (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

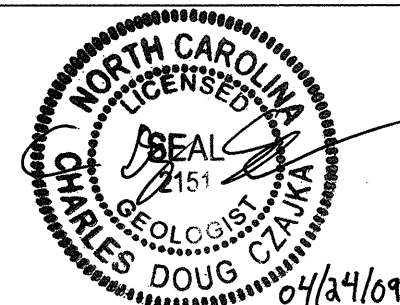
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT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

NC DOT PERSONNEL  
**C.D. CZAJKA**

SUBTEC PERSONNEL  
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INVESTIGATED BY C.D. CZAJKA  
CHECKED BY N.T. ROBERSON  
SUBMITTED BY N.T. ROBERSON  
DATE APRIL 2009



**PROJECT: 36492.1.2 ID: U-4444AA**

DRAWN BY: C.D. CZAJKA & T.T. WALKER

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.



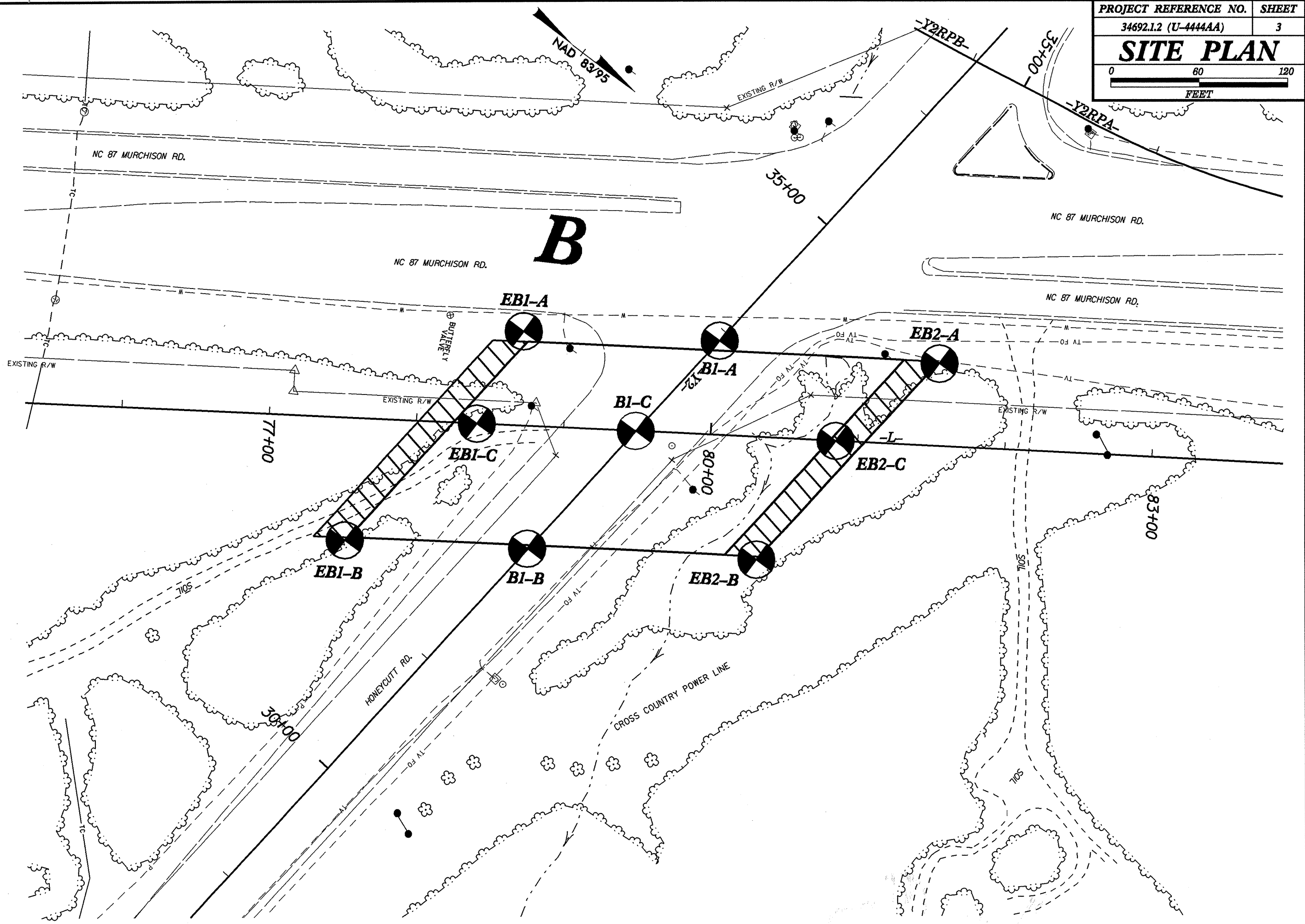
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**

PROJECT REFERENCE NO. 36492.1.2 (U-4444AA) SHEET NO. 2

**SUBSURFACE INVESTIGATION**

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS																																																																																										
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS 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: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i>		WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.		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:		<b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA. <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. <b>ARTESIAN</b> - 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. <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. <b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. <b>JOINT</b> - A FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <b>LEDGE</b> - A SHALE-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. <b>MOTTLED (MTJ)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLED IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <b>ROCK QUALITY DESIGNATION (RQD)</b> - 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. <b>SAPROLITE (SAP)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <b>SILL</b> - 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. <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - 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. <b>STRATA CORE RECOVERY (SREC)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <b>STRATA ROCK QUALITY DESIGNATION (SRQD)</b> - 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. <b>TOPSOIL (TS)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.																																																																																										
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b> <table border="1"> <tr> <th>GENERAL CLASS.</th> <th colspan="2">GRANULAR MATERIALS (&lt;= 35% PASSING #200)</th> <th colspan="4">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th colspan="2">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> </tr> <tr> <th>SYMBOL</th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>% PASSING</th> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> </tr> <tr> <th>LIQUID LIMIT</th> <td>6 MX</td> <td>NP</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> </tr> <tr> <th>PLASTIC INDEX</th> <td>6 MX</td> <td>NP</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> <td>10 MX 10 MN</td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td> <td>0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>20 MX</td> <td>24 MX</td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td>STONE FRAGS, GRAVEL, AND SAND</td> <td>FINE SAND</td> <td>SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS</td> <td>CLAYEY SOILS</td> <td colspan="2">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="2">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GEN. 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RATING AS A SUBGRADE	EXCELLENT TO GOOD			FAIR TO POOR		POOR	UNSATISFACTORY			<b>MINERALOGICAL COMPOSITION</b> MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		<b>WEATHERING</b> <b>FRESH</b> - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. <b>VERY SLIGHT (V SLI)</b> - 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. <b>SLIGHT (SLI)</b> - 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. <b>MODERATE (MOD)</b> - 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. <b>MODERATELY SEVERE (MOD. SEV.)</b> - 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> <b>SEVERE (SEV.)</b> - 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 &lt; 100 BPF</i> <b>VERY SEVERE (V SEV.)</b> - 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 &lt; 100 BPF</i> <b>COMPLETE</b> - 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.		<b>COMPRESSION</b> SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	
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<b>TEXTURE OR GRAIN SIZE</b> <table border="1"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> </table>		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	<b>ABBREVIATIONS</b> AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO 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 <sub>d</sub> - DRY UNIT WEIGHT		<b>EQUIPMENT USED ON SUBJECT PROJECT</b> DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input checked="" type="checkbox"/> D-50 ADVANCING TOOLS: <input checked="" type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input checked="" type="checkbox"/> 8" HOLLOW AUGERS <input checked="" type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG-CARBIDE INSERTS <input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input type="checkbox"/> TRICONE _____ * STEEL TEETH <input type="checkbox"/> TRICONE _____ * TUNG-CARB. <input type="checkbox"/> CORE BIT <input type="checkbox"/> HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input checked="" type="checkbox"/> MANUAL CORE SIZE: <input type="checkbox"/> -B <input type="checkbox"/> -N <input type="checkbox"/> -H HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST																																																																														
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<b>COLOR</b> 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.		<b>INDURATION</b> FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. <b>FRIABLE</b> - RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. <b>MODERATELY INDURATED</b> - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. <b>INDURATED</b> - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. <b>EXTREMELY INDURATED</b> - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		<b>BENCH MARK: BL7, -L- STA. 81+52.46, 123.06' LT</b> <b>NORTHING: 507593.187</b> <b>EASTING: 2013882.879</b> <b>ELEVATION: 275.79 FT.</b> NOTES:																																																																																												



290

280

270

260

250

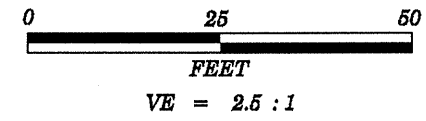
240

230

220

210

200

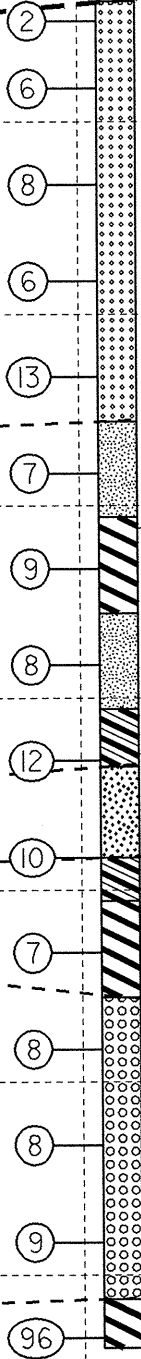


PROJECT REFERENCE NO.	SHEET
36492.1.2 (U-444AA)	4
PROFILE SURVEYED 83' RT	
OF -L- BY F&R ON 03/20/09	

EB1-B  
77+55  
83' RT

B1-B  
78+79  
83' RT

EB2-B  
80+35  
83' RT



ASPHALT

ROADWAY EMBANKMENT, TAN AND

COASTAL PLAIN, TAN, LIGHT GRAY AND RED, MOIST TO

LIGHT GRAY, WHITE AND PINK, SATURATED.

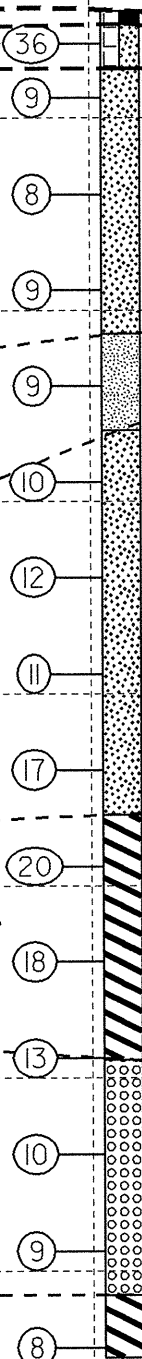
MEDIUM STIFF TO STIFF, SANDY SILT

AND SANDY TO SILTY CLAY

TAN, GRAY, WHITE AND RED, WET TO SATURATED.

TAN, GRAY, RED AND WHITE, SATURATED.

LIGHT GRAY, RED AND ORANGE, WET TO SATURATED.



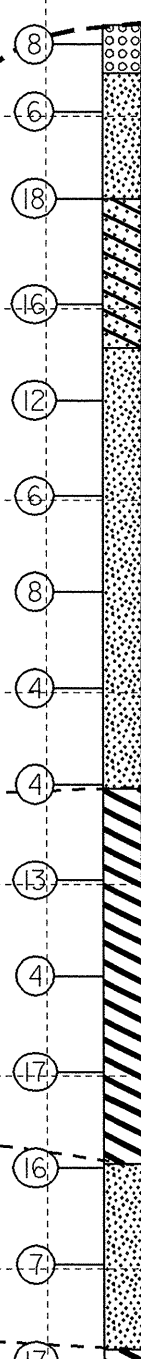
RED, MOIST, DENSE, SILTY SAND

SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY TO COARSE SAND

SOFT TO VERY STIFF, HIGHLY PLASTIC, SANDY TO SILTY CLAY

LOOSE TO MEDIUM DENSE, SILTY AND COARSE SAND

STIFF TO HARD, MEDIUM TO HIGHLY PLASTIC, SILTY CLAY



ROADWAY EMBANKMENT, TAN AND

SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY TO COARSE SAND

SOFT TO VERY STIFF, HIGHLY PLASTIC, SANDY TO SILTY CLAY

LOOSE TO MEDIUM DENSE, SILTY AND COARSE SAND

STIFF TO HARD, MEDIUM TO HIGHLY PLASTIC, SILTY CLAY

-L-

77+50

78+00

78+50

79+00

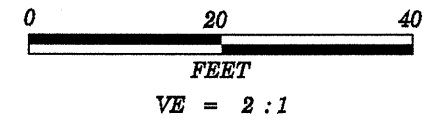
79+50

80+00

80+50

290  
280  
270  
260  
250  
240  
230  
220  
210  
200

SKEW ANGLE = 130°



PROJECT REFERENCE NO.	SHEET
36492.1.2 (U-444AA)	5
CROSS SECTION ALONG END BENT 1	

EB1-A  
78+70  
64' LT

EB1-C  
78+41  
CL

EB1-B  
77+55  
83' RT

- 7
- 10
- 6
- 12
- 16
- 22
- 11
- 4
- 4
- 14
- 9
- 4
- 6
- 9
- 100/0.2

- 7
- 10
- 13
- 23
- 13
- 25
- 2
- 12
- 26
- 23
- 26

- 21
- 6
- 8
- 6
- 13
- 7
- 9
- 8
- 12
- 10
- 7
- 8
- 8
- 9
- 96

COASTAL PLAIN, WHITE, BROWN, TAN AND LIGHT GRAY, DRY

TO SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY TO FINE SAND

TAN AND LIGHT TO DARK GRAY, MOIST TO SATURATED,

MEDIUM STIFF TO VERY STIFF, SANDY SILT AND SANDY TO SILTY CLAY

DARK GRAY, ORANGE, AND RED, SATURATED, LOOSE, SILTY SAND

TAN AND GRAY, SATURATED, LOOSE, COARSE SAND

GRAY AND ORANGE, MOIST, HARD, SILTY CLAY

LIGHT GRAY AND PINK, WET, HARD, HIGHLY PLASTIC, SILTY CLAY

RED, ORANGE, AND GRAY,

SATURATED, MEDIUM DENSE, SILTY SAND

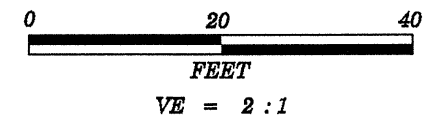
COASTAL PLAIN SEDIMENTARY ROCK

03/09

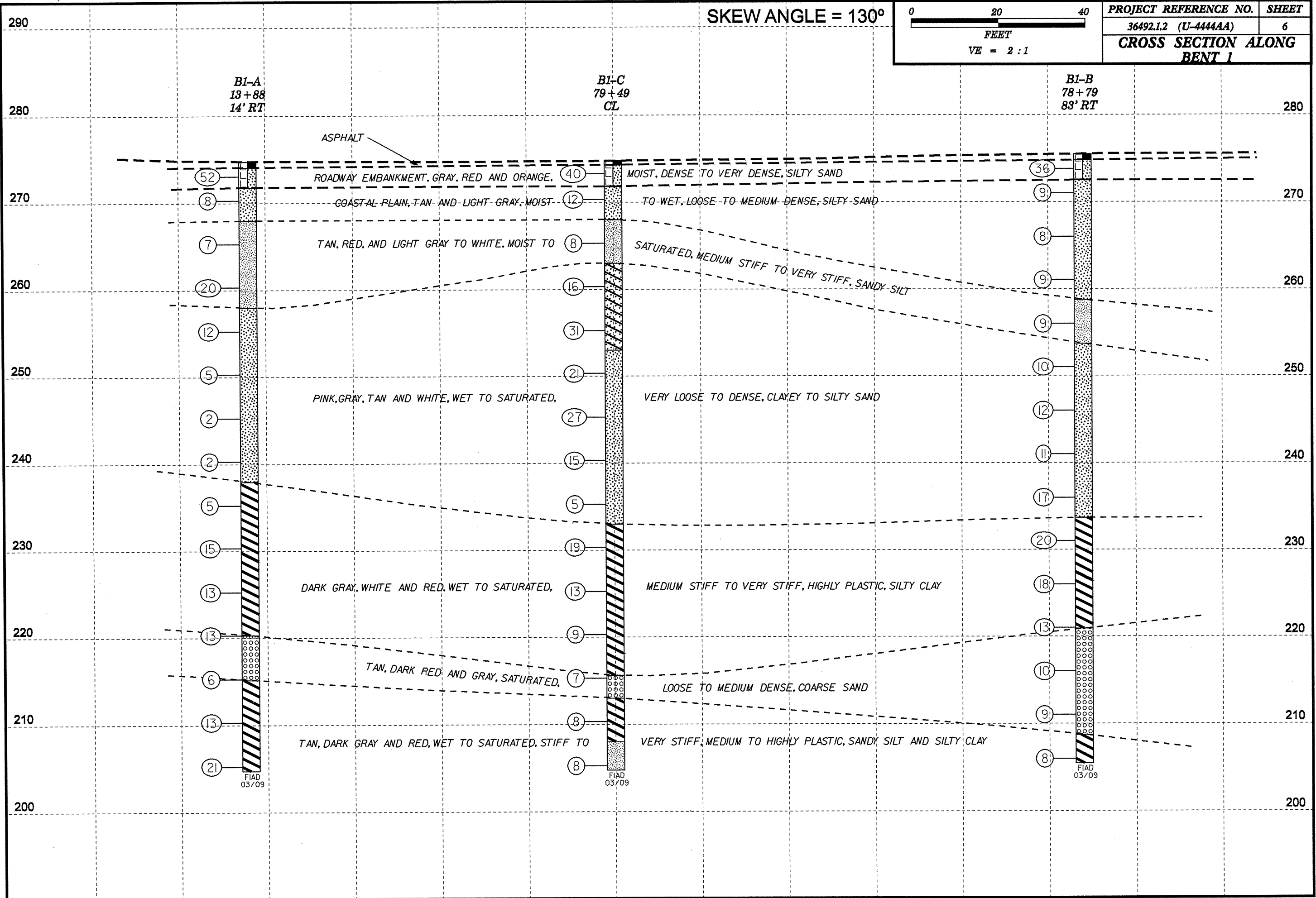
08/08

03/09

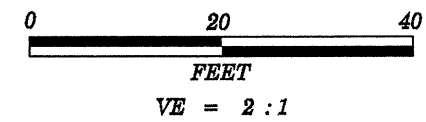
SKEW ANGLE = 130°



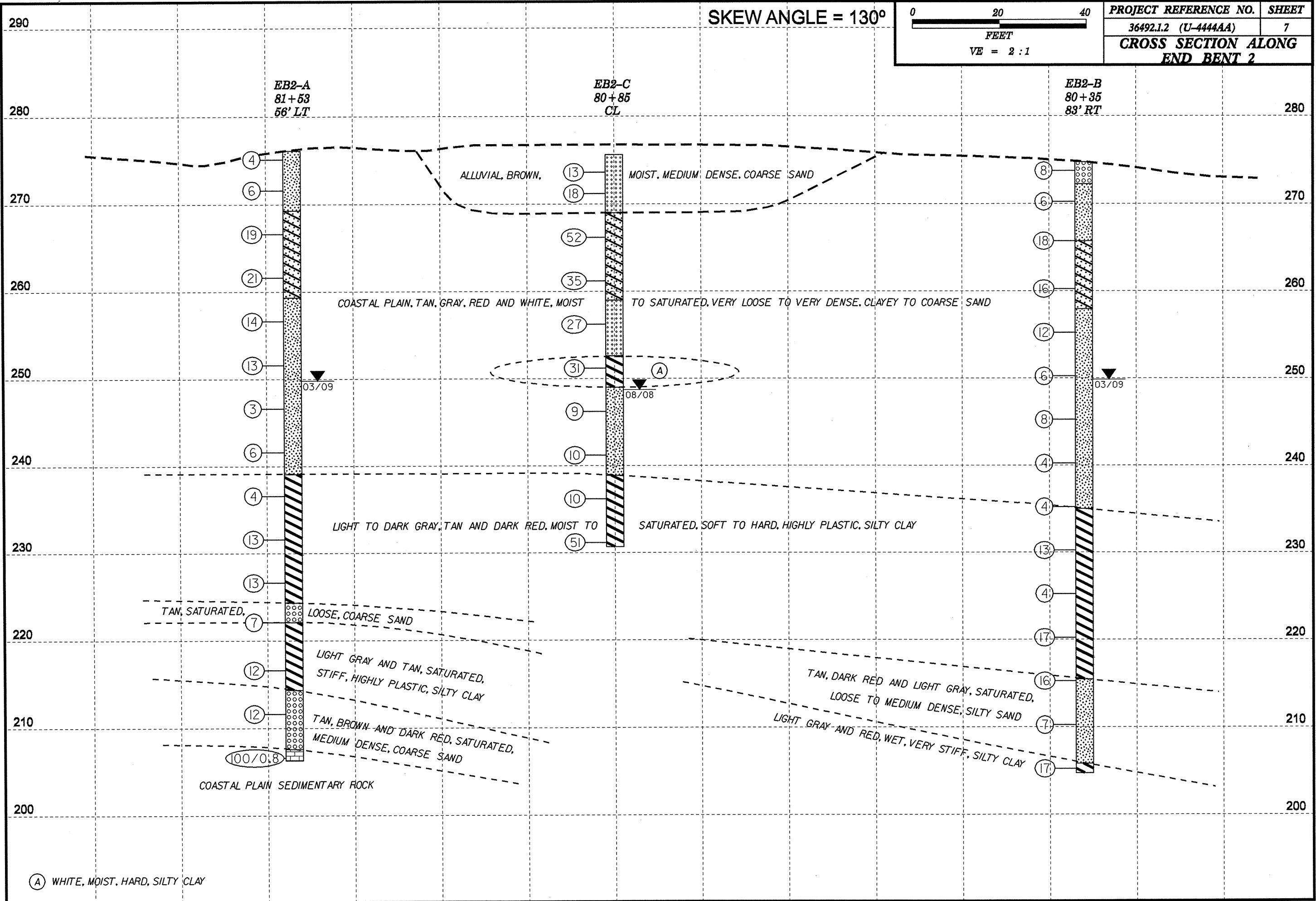
PROJECT REFERENCE NO.	SHEET
36492.1.2 (U-4444AA)	6
<b>CROSS SECTION ALONG BENT 1</b>	



SKEW ANGLE = 130°



PROJECT REFERENCE NO.	SHEET
36492.1.2 (U-4444AA)	7
<b>CROSS SECTION ALONG END BENT 2</b>	







# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Racey, D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft)
BORING NO. EB1-A	STATION 78+70	OFFSET 64ft LT	ALIGNMENT -L-
COLLAR ELEV. 273.6 ft	TOTAL DEPTH 69.2 ft	NORTHING 507,392	EASTING 2,014,090
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/18/09	COMP. DATE 03/18/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 68.5 ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
275	273.6	0.0												GROUND SURFACE	0.0
270	270.1	3.5	1	3	4						SS-76	M		COASTAL PLAIN White, Brown and Tan, Fine Sand	
265	265.1	8.5	4	4	6						SS-77	M			
260	260.1	13.5	2	2	4							M			
255	255.1	18.5	5	5	7						SS-79	Sat.			
250	250.1	23.5	7	8	8							Sat.			
245	244.8	28.8	8	9	13						SS-81	Sat.			
240	240.1	33.5	5	6	5							Sat.			
235	235.1	38.5	1	2	2						SS-83	Sat.		Tan and Light Gray, Sandy Silt	31.8
230	230.1	43.5	3	2	2							Sat.		Dark Gray and Brown, Sandy Clay	36.8
225	225.1	48.5	5	5	9						SS-84 SS-84A	Sat.		Gray, Sandy Silt	39.3
220	220.1	53.5	3	2	2							Sat.		Dark Gray, Highly Plastic, Silty Clay	41.8
215	214.8	58.8	5	5	9						SS-85	W			
210	210.1	63.5	3	4	5							Sat.			
205	205.1	68.5	2	2	2						SS-87	Sat.		Dark Gray, Orange and Red, Silty Sand	54.2
200	205.1	68.5	11	22	39						SS-88	M		Gray and Orange, Silty Clay	57.5
195	205.1	68.5	20	33	58							M			
			54	100/0.2							SS-90			COASTAL PLAIN SEDIMENTARY ROCK Boring Terminated at Elevation 204.4 ft In Coastal Plain Sedimentary Rock	68.5 69.2

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Racey, D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft)
BORING NO. EB1-B	STATION 77+55	OFFSET 83ft RT	ALIGNMENT -L-
COLLAR ELEV. 276.2 ft	TOTAL DEPTH 70.0 ft	NORTHING 507,379	EASTING 2,014,276
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/17/09	COMP. DATE 03/17/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
280															
275	276.2	0.0												GROUND SURFACE	0.0
270	272.7	3.5	WOH	1	1						SS-46	M		COASTAL PLAIN Tan and Light Gray, Fine Sand	
265	267.7	8.5	2	3	3							M			
260	262.7	13.5	2	4	4						SS-48	W			
255	257.7	18.5	2	3	3							W			
250	252.7	23.5	5	5	8							W			
245	247.7	28.5	3	4	3						SS-51	Sat.		Light Gray to Tan, Sandy Silt	21.8
240	242.7	33.5	3	4	5							Sat.		Light Gray to White, Highly Plastic, Silty Clay	26.8
235	237.7	38.5	3	4	5						SS-52	Sat.		Light Gray to White, Sandy Silt	31.8
230	232.7	43.5	5	3	5							Sat.		Light Gray and Pink, Sandy Clay	36.8
225	227.7	48.5	3	3	9						SS-54	Sat.		Red, Orange and Gray, Silty Sand	39.8
220	222.7	53.5	6	6	4							Sat.		Light Gray and Orange, Sandy Clay	44.5
215	217.7	58.5	2	3	4						SS-55	Sat.		Brown, Highly Plastic, Silty Clay	46.8
210	212.7	63.5	2	3	5							W		Tan and Gray, Coarse Sand	51.8
205	207.7	68.5	4	4	4						SS-56	W			
200	202.7	73.5	4	4	5							Sat.			
			17	38	58						SS-57	Sat.			
												Sat.			
												Sat.			
											SS-60	W		Light Gray and Pink, Highly Plastic, Silty Clay	67.5
												W		Boring Terminated at Elevation 206.2 ft In Silty Clay	70.0

NCDOT BORE DOUBLE U4444AA GEO BRDG.GPJ NC\_DOT.GDT 04/29/09

**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Czajka, C. D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft) 0 HR. N/A
BORING NO. EB1-C	STATION 78+41	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 277.0 ft	TOTAL DEPTH 55.3 ft	NORTHING 507,404	EASTING 2,014,159
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 08/28/08	COMP. DATE 08/28/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
280														GROUND SURFACE	0.0
275														COASTAL PLAIN Orange and Tan, Sand	
270	273.2	3.8	4	3	4										
265	268.2	8.8	5	4	6										
260	263.2	13.8	5	6	7										
255	258.2	18.8	9	11	12										
250	253.2	23.8	12	7	6										
245	248.2	28.8	8	12	13										
240	243.2	33.8	2	0	2										
235	238.2	38.8	5	5	7										
230	233.2	43.8	6	10	16										
225	228.2	48.8	8	11	12										
220	223.2	53.8	7	12	14										
215															
210															
205															
200															

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Racey, D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft) 0 HR. N/A
BORING NO. B1-A	STATION 80+03	OFFSET 64ft LT	ALIGNMENT -L-
COLLAR ELEV. 274.8 ft	TOTAL DEPTH 70.0 ft	NORTHING 507,502	EASTING 2,014,015
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/17/09	COMP. DATE 03/17/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
275														GROUND SURFACE	0.0
270	274.1	0.7	7	27	25									Asphalt	0.7
265	271.3	3.5	7	5	3									ROADWAY EMBANKMENT Red and Orange, Silty Sand	3.0
260	266.3	8.5	3	3	4									COASTAL PLAIN Tan, Silty Sand	6.8
255	261.3	13.5	6	9	11									Tan and Red, Sandy Silt	
250	256.3	18.5	6	5	7										
245	251.3	23.5	3	2	3										
240	246.3	28.5	1	0	2										
235	241.3	33.5	1	1	1										
230	236.3	38.5	1	1	1										
225	231.3	43.5	5	6	9										
220	226.3	48.5	4	6	7										
215	221.3	53.5	3	5	8										
210	216.3	58.5	4	2	4										
205	211.3	63.5	4	6	7										
200	206.3	68.5	6	9	12										
195															

NCDOT BORE DOUBLE U4444AA\_GEO\_BRDG.GPJ\_NC\_DOT.GDT 04/29/09

PROJECT NO. 36492.1.2		ID. U-4444AA		COUNTY Cumberland		GEOLOGIST Racey, D.									
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)							GROUND WTR (ft)								
BORING NO. B1-B		STATION 78+79		OFFSET 83ft RT		ALIGNMENT -L-									
COLLAR ELEV. 275.5 ft		TOTAL DEPTH 70.0 ft		NORTHING 507,482		EASTING 2,014,207									
DRILL MACHINE CME-550		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
START DATE 03/18/09		COMP. DATE 03/18/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
280															
275	274.8	0.7	5	19	17										
270	272.0	3.5	5	4	5										
265	267.0	8.5	3	4	4										
260	262.0	13.5	3	5	4										
255	257.0	18.5	4	5	4										
250	252.0	23.5	6	5	5										
245	247.0	28.5	8	6	6										
240	242.0	33.5	3	5	6										
235	237.0	38.5	5	8	9										
230	232.0	43.5	5	8	12										
225	227.0	48.5	5	8	10										
220	222.0	53.5	3	4	9										
215	217.0	58.5	5	5	5										
210	212.0	63.5	3	4	5										
205	207.0	68.5	3	4	4										
200															

PROJECT NO. 36492.1.2		ID. U-4444AA		COUNTY Cumberland		GEOLOGIST Racey, D.									
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)							GROUND WTR (ft)								
BORING NO. B1-C		STATION 79+49		OFFSET CL		ALIGNMENT -L-									
COLLAR ELEV. 274.8 ft		TOTAL DEPTH 70.0 ft		NORTHING 507,493		EASTING 2,014,099									
DRILL MACHINE CME-550		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
START DATE 03/16/09		COMP. DATE 03/16/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
275	274.3	0.5	8	17	23										
270	271.3	3.5	5	6	6										
265	266.3	8.5	5	4	4										
260	261.3	13.5	6	7	9										
255	256.3	18.5	8	11	20										
250	251.3	23.5	5	8	13										
245	246.3	28.5	10	12	15										
240	241.3	33.5	4	7	8										
235	236.3	38.5	3	2	3										
230	231.3	43.5	8	9	10										
225	226.3	48.5	4	6	7										
220	221.3	53.5	4	4	5										
215	216.3	58.5	2	4	3										
210	211.3	63.5	1	4	4										
205	206.3	68.5	4	3	5										
200															
195															

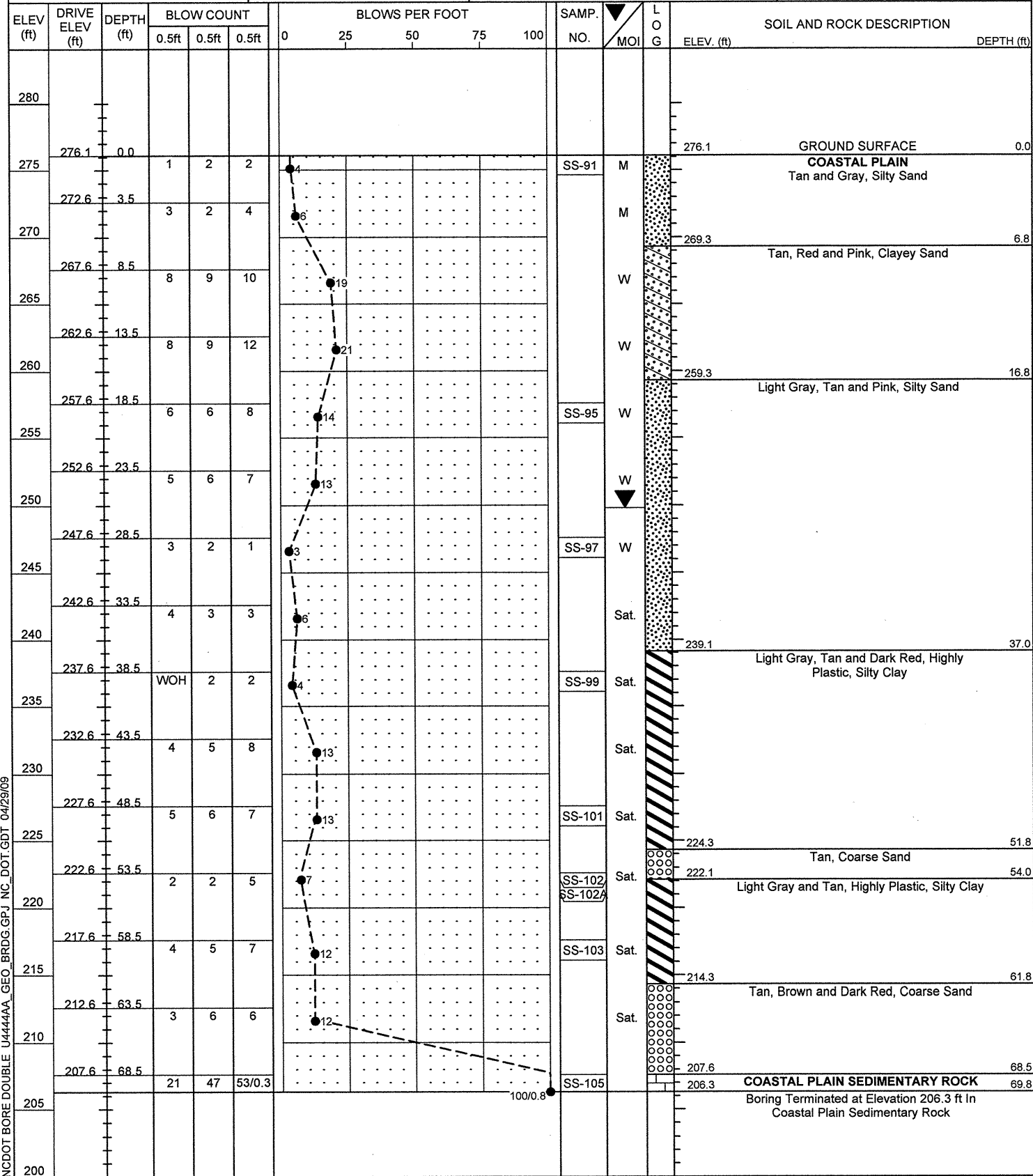
NCDOT BORE DOUBLE U4444AA GEO\_BRDG.GPJ NC\_DOT\_GDT 04/22/09



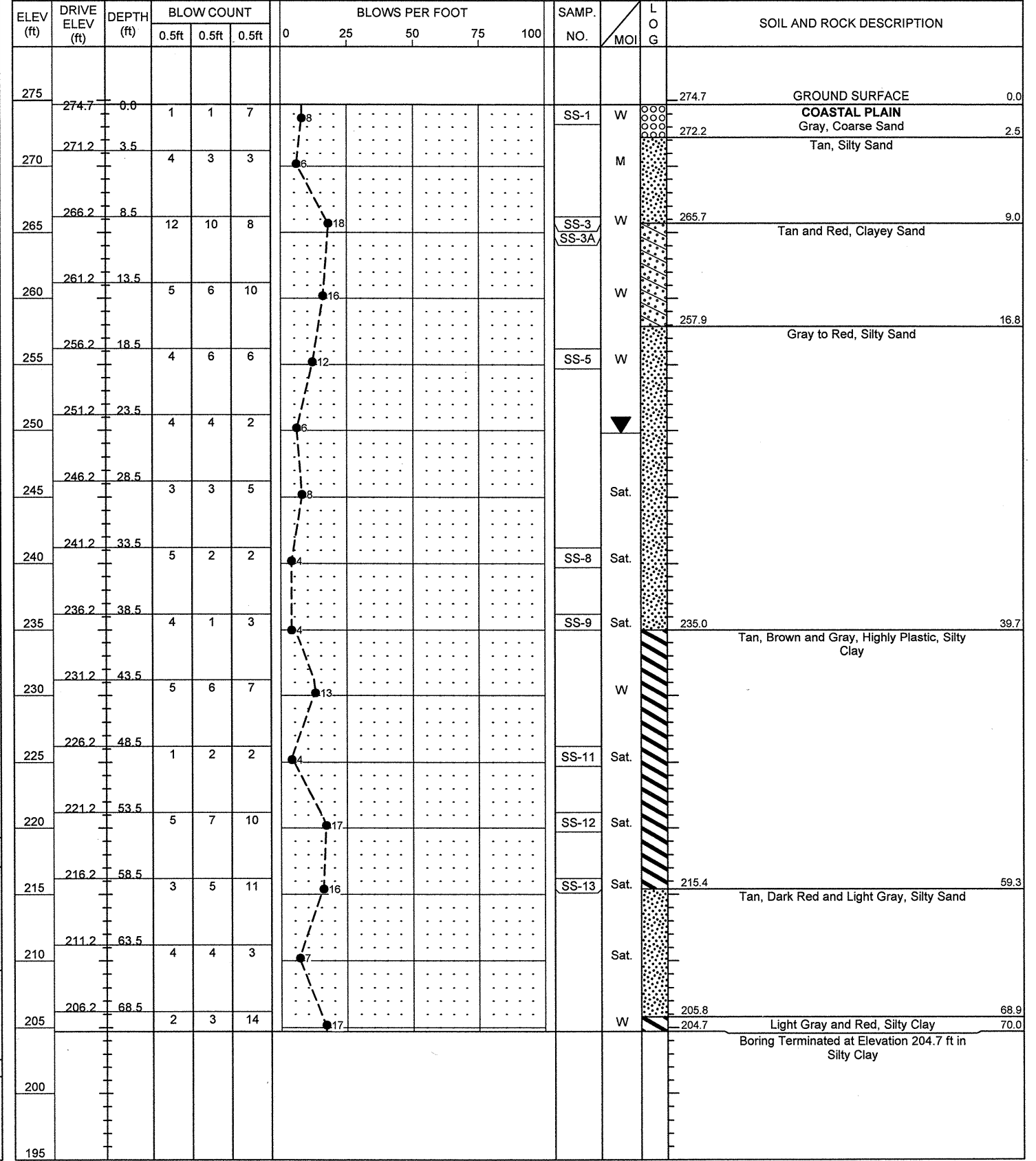
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Racey, D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft)
BORING NO. EB2-A	STATION 81+53	OFFSET 56ft LT	ALIGNMENT -L-
COLLAR ELEV. 276.1 ft	TOTAL DEPTH 69.8 ft	NORTHING 507,631	EASTING 2,013,938
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/19/09	COMP. DATE 03/19/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 68.5 ft



PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Racey, D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft)
BORING NO. EB2-B	STATION 80+35	OFFSET 83ft RT	ALIGNMENT -L-
COLLAR ELEV. 274.7 ft	TOTAL DEPTH 70.0 ft	NORTHING 507,611	EASTING 2,014,119
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/12/09	COMP. DATE 03/16/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U4444AA\_GEO\_BRDG.GPJ\_NC\_DOT.GDT\_04/29/09



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

PROJECT NO. 36492.1.2	ID. U-4444AA	COUNTY Cumberland	GEOLOGIST Czajka, C. D.
SITE DESCRIPTION Bridge on -L- (NC 210, Murchison Rd.) over -Y2- (Honeycutt Rd.)			GROUND WTR (ft)
BORING NO. EB2-C	STATION 80+85	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 275.6 ft	TOTAL DEPTH 44.9 ft	NORTHING 507,606	EASTING 2,014,023
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 08/29/08	COMP. DATE 08/29/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280																
275	274.6	1.0	3	5	8									GROUND SURFACE	0.0	
270	272.2	3.4	4	10	8									ALLUVIAL Brown, Sand		
265	267.2	8.4	17	27	25									COASTAL PLAIN Orange and Pink, Clayey Sand	6.6	
260	262.2	13.4	15	15	20									White, Sand	16.6	
255	257.2	18.4	9	12	15									White, Silty Clay	23.0	
250	252.2	23.4	9	15	16									White and Pink, Silty Sand	26.6	
245	247.2	28.4	3	5	4									Brown to Dark Gray, Silty Clay	36.7	
240	242.2	33.4	6	5	5									Boring Terminated at Elevation 230.7 ft In Silty Clay	44.9	
235	237.2	38.4	3	4	6											
230	232.2	43.4	13	24	27											
225																
220																
215																
210																
205																
200																

NCDOT BORE DOUBLE U4444AA GEO BRDG.GPJ NC\_DOT.GDT 04/29/09



**EBI-A**

<b>SOIL TEST RESULTS</b>															
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-76	64' LT	78+70	0.0-1.5	A-3(0)	20	NP	67.3	24.6	4.1	4.0	87	57	8	-	-
SS-77	64' LT	78+70	3.5-5.0	A-3(0)	24	NP	69.1	28.4	2.5	0.0	100	75	3	-	-
SS-79	64' LT	78+70	13.5-15.0	A-3(0)	24	NP	61.2	35.6	3.1	0.0	100	66	5	-	-
SS-81	64' LT	78+70	23.5-25.0	A-2-4(0)	23	3	49.9	31.8	4.1	14.1	100	71	19	-	-
SS-83	64' LT	78+70	33.5-35.0	A-4(5)	28	6	0.4	36.9	34.5	28.2	100	100	93	-	-
SS-84	64' LT	78+70	38.5-39.3	A-6(18)	40	17	1.2	9.3	43.2	46.3	100	100	97	-	-
SS-84A	64' LT	78+70	39.3-40.0	A-4(1)	25	9	39.7	15.3	22.9	22.2	100	80	49	-	-
SS-85	64' LT	78+70	43.5-45.0	A-7-5(39)	66	33	2.8	2.2	26.4	68.5	100	98	96	-	-
SS-87	64' LT	78+70	53.5-54.2	A-2-4(0)	21	NP	67.9	15.5	4.4	12.1	100	69	17	-	-
SS-88	64' LT	78+70	58.5-60.0	A-7-6(19)	44	22	9.1	11.3	21.2	58.5	100	95	83	-	-
SS-90	64' LT	78+70	68.5-70.0	A-4(4)	25	9	4.6	41.1	26.0	28.2	100	97	68	-	-

**EBI-B**

<b>SOIL TEST RESULTS</b>															
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-46	83' RT	77+55	0.0-1.5	A-3(0)	24	NP	54.4	41.3	2.3	2.0	100	85	5	-	-
SS-48	83' RT	77+55	8.5-10.0	A-3(0)	25	NP	75.9	22.4	1.7	0.0	100	60	2	-	-
SS-51	83' RT	77+55	23.5-25.0	A-4(0)	26	6	9.7	61.2	9.0	20.1	100	98	39	-	-
SS-52	83' RT	77+55	28.5-30.0	A-7-6(26)	55	29	7.0	15.9	20.6	56.4	100	95	83	-	-
SS-54	83' RT	77+55	38.5-39.8	A-6(6)	33	15	20.3	29.6	21.9	28.2	100	90	58	-	-
SS-55	83' RT	77+55	43.5-44.5	A-2-4(0)	21	NP	53.4	36.9	5.7	4.0	90	61	12	-	-
SS-56	83' RT	77+55	48.5-50.0	A-7-6(42)	63	36	0.4	1.6	23.5	74.5	100	100	99	-	-
SS-57	83' RT	77+55	53.5-55.0	A-1-b(0)	23	NP	92.0	3.4	2.5	2.0	100	23	5	-	-
SS-60	83' RT	77+55	68.5-70.0	A-7-6(27)	51	28	6.2	9.9	21.5	62.4	100	96	88	-	-

**EBI-C**

<b>SOIL TEST RESULTS</b>															
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-15	CL	78+41	3.8-5.3	A-3(0)	23	NP	61.1	34.7	2.2	2.0	100	78	4	-	-
SS-16	CL	78+41	18.8-20.3	A-2-4(0)	24	5	56.5	25.1	14.3	4.1	100	70	20	-	-
SS-17	CL	78+41	33.8-35.3	A-2-6(1)	38	14	37.9	28.4	11.4	22.3	98	69	35	-	-
SS-18	CL	78+41	43.8-45.3	A-7-6(29)	48	27	3.0	3.8	42.8	50.4	100	98	97	-	-

**BI-A**

<b>SOIL TEST RESULTS</b>															
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-31	64' LT	80+03	0.7-2.3	A-2-4(0)	17	NP	48.1	38.5	5.3	8.1	96	71	17	-	-
SS-32	64' LT	80+03	3.5-5.0	A-2-4(0)	16	NP	49.7	35.9	10.4	4.0	100	75	19	-	-
SS-33	64' LT	80+03	8.5-10.0	A-4(0)	29	10	34.8	34.6	8.4	22.2	99	80	37	-	-
SS-37	64' LT	80+03	28.5-30.0	A-2-4(0)	28	NP	19.7	60.4	7.8	12.1	100	98	22	-	-
SS-39	64' LT	80+03	38.5-40.0	A-7-6(36)	59	30	0.8	3.0	37.8	58.4	100	100	99	-	-
SS-42	64' LT	80+03	53.5-54.5	A-1-b(0)	22	NP	81.6	10.3	4.1	4.0	100	50	9	-	-
SS-43	64' LT	80+03	58.5-59.6	A-7-6(29)	52	29	2.6	13.3	29.7	54.4	100	98	92	-	-
SS-44	64' LT	80+03	63.5-65.0	A-7-6(18)	43	16	1.0	10.5	46.2	42.3	100	100	96	-	-

**BI-B**

<b>SOIL TEST RESULTS</b>															
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-66	83' RT	78+79	23.5-25.0	A-2-4(0)	27	8	40.5	34.0	3.3	22.2	100	80	28	-	-

**BI-C**

<b>SOIL TEST RESULTS</b>															
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-19	CL	79+49	13.5-15.0	A-2-7(3)	45	25	54.0	14.7	3.1	28.2	100	74	32	-	-
SS-30	CL	79+49	68.5-70.0	A-4(11)	40	10	4.4	21.8	45.6	28.2	100	96	91	-	-

**EB2-A**

<b>SOIL TEST RESULTS</b>															
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-91	56' LT	81+55	0.0-1.5	A-2-4(0)	17	NP	54.6	35.5	3.8	6.0	100	76	13	-	-
SS-95	56' LT	81+55	18.5-20.0	A-2-4(0)	20	NP	72.2	15.7	2.0	10.1	100	55	13	-	-
SS-97	56' LT	81+55	28.5-30.0	A-2-4(0)	26	NP	45.8	37.9	2.2	14.1	100	76	18	-	-
SS-99	56' LT	81+53	38.5-40.0	A-7-6(38)	61	33	1.4	2.8	29.2	66.5	100	99	97	-	-
SS-101	56' LT	81+53	48.5-50.0	A-7-6(24)	45	22	0.8	6.3	44.6	48.4	100	99	98	-	-
SS-102	56' LT	81+53	53.5-54.0	A-1-b(0)	20	NP	86.1	6.5	1.4	6.0	100	44	8	-	-
SS-102A	56' LT	81+53	54.0-54.5	A-7-6(24)	55	32	17.9	7.7	22.0	52.4	100	92	75	-	-
SS-103	56' LT	81+53	58.5-60.0	A-7-6(32)	52	29	1.0	7.1	29.4	62.5	100	100	97	-	-
SS-105	56' LT	81+53	68.5-69.8	A-7-6(25)	48	24	2.4	7.7	25.4	64.5	100	99	93	-	-

**EB2-B**

<b>SOIL TEST RESULTS</b>															
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-1	83' RT	80+35	0.0-1.5	A-1-b(0)	20	2	59.0	23.5	5.4	12.0	81	50	16	-	-
SS-3	83' RT	80+35	8.5-9.0	A-2-4(0)	23	6	58.4	23.1	4.4	14.1	97	63	20	-	-
SS-3A	83' RT	80+35	9.0-10.0	A-2-7(2)	41	20	52.6	13.9	3.3	30.2	99	66	34	-	-
SS-5	83' RT	80+35	18.5-20.0	A-2-4(0)	23	1	73.1	14.1	2.7	10.1	100	52	14	-	-
SS-8	83' RT	80+35	33.5-35.0	A-2-4(0)	23	NP	44.3	43.5	4.1	8.1	100	78	14	-	-
SS-9	83' RT	80+35	38.5-39.7	A-2-4(0)	23	NP	42.9	40.7	6.3	10.1	100	69	20	-	-
SS-11	83' RT	80+35	48.5-50.0	A-7-6(30)	49	28	2.0	6.0	31.5	60.4	100	99	96	-	-
SS-12	83' RT	80+35	53.5-55.0	A-7-6(33)	58	30	2.8	5.6	33.1	58.4	100	99	94	-	-
SS-13	83' RT	80+35	58.5-59.3	A-2-4(0)	22	4	38.5	36.1	5.3	20.1	99	89	27	-	-

**EB2-C**

<b>SOIL TEST RESULTS</b>															
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-20	CL	80+85	1.0-2.5	A-1-b(0)	17	NP	61.4	22.6	8.0	8.1	82	48	15	-	-
SS-21	CL	80+85	8.4-9.9	A-2-6(1)	35	16	57.0	12.6	5.2	25.2	97	57	31	-	-
SS-22	CL	80+85	23.4-24.9	A-7-6(20)	49	23	10.5	12.3	22.9	54.4	100	94	82	-	-
SS-23	CL	80+85	28.4-28.9	A-2-4(0)	22	NP	20.3	66.7	3.9	9.1	100	99	14	-	-
SS-24	CL	80+85	33.4-34.9	A-2-4(0)	22	NP	50.3	36.0	4.7	9.1	100	74	16	-	-
SS-25	CL	80+85	38.4-39.9	A-7-6(30)	49	27	0.8	6.6	40.2	52.4	100	100	98	-	-



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

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4444AA*	1	49
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36492.1.2	STP-210(11)	PE	
36492.2.1	STP-210(11)	RW & UTL	
36492.3.3	STP-210(22)	CONSTRUCTION	

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 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 (ON-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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

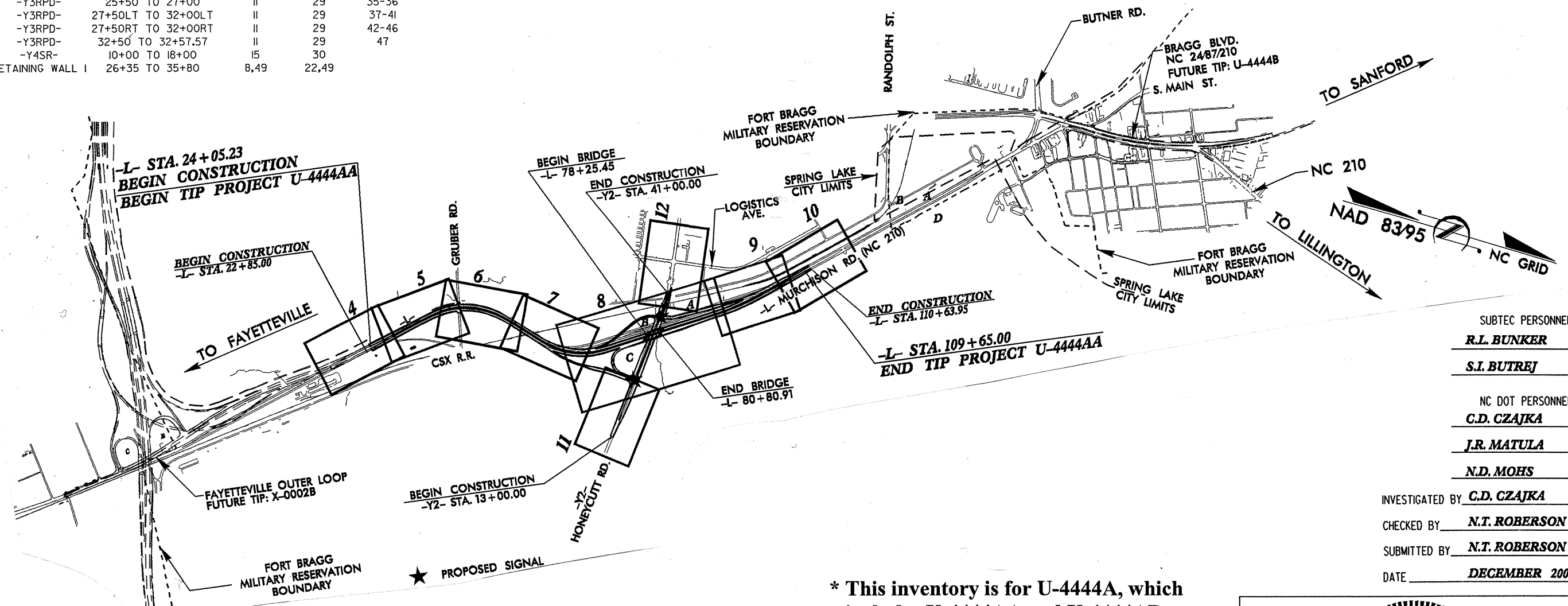
CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	24+06.77 TO 124+50	4-11	16-19	
-L-	124+50 TO 127+50	11	19-20	31-32
-L-	127+50 TO 158+00	11-12	20-21	
-L-	158+00 TO 160+00	12	21	33-34
-Y2-	13+00 TO 39+00	8,13	22-23	
-Y2RPA-	10+00 TO 35+36.45	8-10	24	
-Y2RPB-	10+00 TO 27+25.91	7-8	25	
-Y2LPC-	10+00 TO 19+82.58	8	23	
-Y2RPC-	10+00 TO 27+73.95	7-8	26	
-Y3-	10+00 TO 10+50	11	27	48
-Y3-	10+50 TO 33+00	11,14	27	
-Y3RPA-	10+00 TO 31+33.85	11-12	28	
-Y3RPAA-	10+00 TO 15+04.24	11		
-Y3RPB-	10+00 TO 14+30.6	11		
-Y3RPB-	14+30.6 TO 17+34.87	11		31-32
-Y3RPB-	17+34.87 TO 22+75.14	11		
-Y3LPD-	10+00 TO 18+55.15	11	30	
-Y3LPD-	18+55.15	11	30	36
-Y3LPD-	18+96.57 TO 23+59.88	11	30	41-47
-Y3RPD-	10+00 TO 25+50	11	29	
-Y3RPD-	25+50 TO 27+00	11	29	35-36
-Y3RPD-	27+50LT TO 32+00LT	11	29	37-41
-Y3RPD-	27+50RT TO 32+00RT	11	29	42-46
-Y3RPD-	32+50 TO 32+57.57	11	29	47
-Y4SR-	10+00 TO 18+00	15	30	
RETAINING WALL I	26+35 TO 35+80	8,49	22,49	

ROADWAY  
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 36492.1.2 (U-4444AA&AB) F.A. PROJ. STP-210(11)  
COUNTY CUMBERLAND  
PROJECT DESCRIPTION NC 210 (MURCHISON RD.) FROM FAYETTEVILLE OUTER LOOP (X-0002B) TO BUTNER RD. IN SPRING LAKE

INVENTORY



CONTRACT: C202178 ID: U-4444AA\*

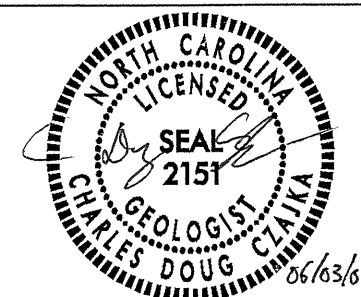
DRAWN BY: C.D. CZAJKA & T.T. WALKER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS 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.

\* This inventory is for U-4444A, which includes U-4444AA and U-4444AB. Please refer to the respective portions for you needs.

- SUBTEC PERSONNEL  
R.L. BUNKER  
S.I. BUTREJ
- NC DOT PERSONNEL  
C.D. CZAJKA  
J.R. MATULA  
N.D. MOHS
- INVESTIGATED BY C.D. CZAJKA  
CHECKED BY N.T. ROBERSON  
SUBMITTED BY N.T. ROBERSON  
DATE DECEMBER 2008





09/08/99

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

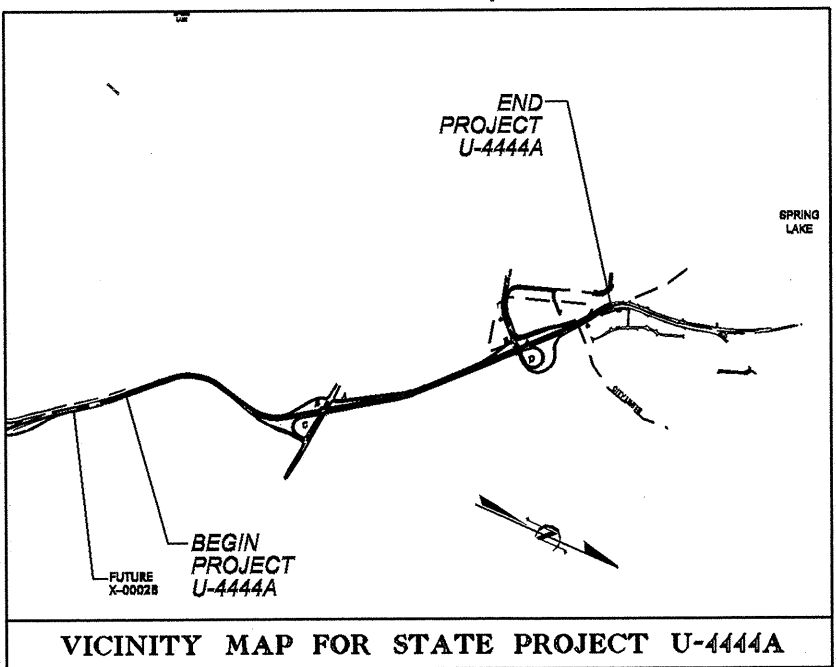
**CUMBERLAND COUNTY**

LOCATION: NC 210 (MURCHISON ROAD) FROM FAYETTEVILLE OUTER LOOP TO BUTNER RD.

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

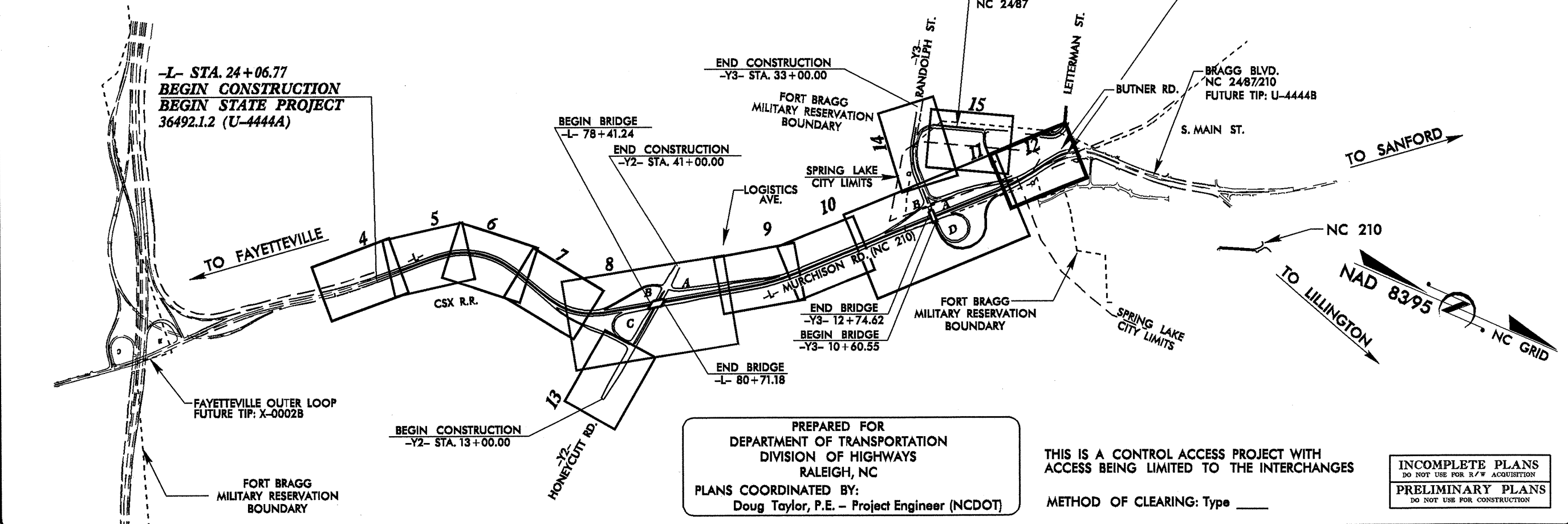
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4444A	2A	49
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36492.1.2	STP-210(11)	PE	

TIP PROJECT: U-4444A



VICINITY MAP FOR STATE PROJECT U-4444A

25% PLANS



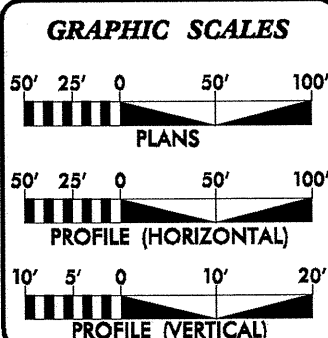
PREPARED FOR  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, NC  
PLANS COORDINATED BY:  
Doug Taylor, P.E. - Project Engineer (NCDOT)

THIS IS A CONTROL ACCESS PROJECT WITH  
ACCESS BEING LIMITED TO THE INTERCHANGES

METHOD OF CLEARING: Type \_\_\_\_\_

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

CONTRACT:



**DESIGN DATA**

ADT 2005 =	45,400
ADT 2035 =	77,000
DHV =	11 %
D =	55 %
T =	6 % *
V =	60 MPH
* TTST 2% DUAL 4% FUNC. CLASS. =	URBAN FREEWAY

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-4444A =	2.530 Miles
LENGTH STRUCTURES TIP PROJECT U-4444A =	0.044 Miles
TOTAL LENGTH STATE TIP PROJECT U-4444A =	2.574 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: March 20, 2009	<b>BRIAN K. EASON, PE</b> PROJECT ENGINEER
LETTING DATE: September 15, 2009	<b>JEFFREY R. HEXT</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

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cdczajka AT 6/22/07



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

Michael F. Easley  
GOVERNOR

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

Lyndo Tippett  
SECRETARY

December 10, 2008

STATE PROJECT: 36492.1.2 (U-4444A)  
FEDERAL PROJECT: STP-210(11)  
COUNTY: Cumberland  
DESCRIPTION: NC 210 (Murchison Rd.) from the Fayetteville Outer Loop (X-0002B) to Butner Rd. in Spring Lake  
SUBJECT: Geotechnical Report – Inventory

**Project Description**

This project consists of widening NC 210 (-L- Sta. 24+06.77 to Sta. 160+00.00) from four lanes with medians and turn lanes to six lanes with medians, turn lanes and grade separated interchanges. The project includes a realignment of Randolph St. to a new grade-separated interchange with Murchison Rd.

The geotechnical field investigation was conducted from August to October of 2008. The majority of the borings were advanced using a Dietrich D-50 Track Mounted Drill Rig with manual hammer provided by Subtec Engineering. Standard Penetration Tests were performed in selected borings and additional borings were advanced using continuous flight augers. Hand augers and sounding rods were also conducted along the project to supplement the drill rig borings. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

The following alignments, totaling 6.45 miles, were investigated.

Line	Station
-L-	24+06.77 to 160+00
-Y2-	13+00 to 41+00
-Y2RPA-	10+00 to 35+36.45
-Y2RPB-	10+00 to 27+25.91
-Y2LPC-	10+00 to 19+82.58
-Y2RPC-	10+00 to 27+73.95
-Y3-	10+00 to 33+00
-Y3RPA-	10+00 to 31+33.85
-Y3RPAA-	10+00 to 15+04.24
-Y3RPB-	10+00 to 22+75.14

-Y3LPD-	10+00 to 23+59.88
-Y3RPD-	10+00 to 32+57.57
-Y4SR	10+00 to 18+00

**Areas of Special Geotechnical Interest**

- 1) Highly Plastic Clay Soils: Occurrences of highly plastic clay soil (Plasticity Index 26 or greater) are noted below:

Alignment	Station	Offset
-L-	60+00	90 RT
-L-	63+50	140 RT
-L-	78+41	CL
-L-	80+71	CL
-L-	85+50	60 RT
-L-	126+00	130 LT
-Y2RPB-	20+50	CL
-Y3-	12+75	CL
-Y3RPD-	17+00	20 LT
-Y3RPD-	31+50	35 LT
-Y3RPA-	28+00	70 LT

- 2) Highly Organic Soils: Occurrences of highly organic soil (greater than 20% organic material in silt and clay) are noted below:

Line	Station
-Y3-	10+00 to 10+25
-Y3LPD-	18+59 to 23+59.88
-Y3RPD-	26+65 to 32+57.57

- 3) Artificial Fill Soils: Artificial fill was encountered at the following location:

Alignment	Station	Offset
-L-	159+46	18 LT

**Physiography and Geology**

The project is located in the Coastal Plain of North Carolina on the Fort Bragg Military Reservation. The project corridor consists almost entirely of wooded areas with a few businesses at the end of the project. The terrain is relatively flat. Geologically, the project is located within the Middendorf Formation of the Coastal Plain.

**Soil Properties**

Soils encountered at the project site include roadway embankment, artificial fill, alluvial sediments, and coastal plain soils.

Roadway embankment soils occur beneath the existing -L- and -Y2- alignments on the project. The existing embankments generally range from one to ten feet. Roadway embankment soils are composed of

tan to orange, dry to moist, medium dense to dense, coarse and silty sand (AASHTO classification of A-1-b and A-2-4) as well as gray to orange, moist, medium stiff to very stiff, sandy clay (A-6).

Artificial fill soil was encountered at the end of the project. The area of artificial fill is located at the intersection of NC 210 (Murchison Rd.) and NC 87 (Bragg Blvd.). The fill consists of red-brown, medium dense, dry, coarse sand (A-1-b), gravel, and construction debris including concrete.

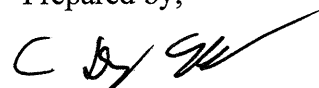
The alluvial soils consist primarily of gray and brown, moist to saturated, loose to medium dense, fine to clayey sand (A-3, A-2-4, A-2-6). Alluvial soils encountered in the swamp along -Y3LPD- and -Y3RPD- include gray to black, wet to saturated, very soft to soft, medium plastic, muck (A-7-6, A-5) as well as gray, moist to wet, very soft to medium stiff, highly plastic, silty clay (A-7-6).

Coastal plain soils underlie the majority of the project area. The coastal plain soils are primarily granular soils with good engineering properties. These soils are orange, gray and white, dry to wet, loose to dense, coarse to clayey sands (A-1-b, A-3, A-2-4, and A-2-5). Gray, moist, medium stiff to hard, sandy and silty clay (A-7-6, A-6) was also encountered at depths of 7' to 42' from the existing ground surface.

#### Groundwater

Groundwater on the project was encountered primarily in borings that contained alluvial soils. Groundwater in these areas was generally shallow, ranging from surface water to 4.9' below the ground surface.

Prepared by,



C. Doug Czajka  
Engineering Geologist



# EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT TIP # U-4444AA

COUNTY Cumberland

DATE 4/25/2009

SHEET 38 OF 49 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. 25%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
Summary # 1																
-L- LT.	24+05.23	54+00.00	1,754				1,754	7,578			7,578	9,473	7,719			
-L- MED.	24+05.23	54+00.00	123				123	3,761			3,761	4,701	4,578			
-L- RT.	24+05.23	54+00.00	2,417				2,417	1,228			1,228	1,535		882		882
SUBTOTAL Summary # 1			4,294				4,294	12,567			12,567	15,709	12,297	882		882
Summary # 2																
-L- LT.	54+00.00	78+25.45	1,907				1,907	2,846			2,846	3,558	1,651			
-L- MED.	54+00.00	78+25.45	1,743				1,743	4,122			4,122	5,153	3,410			
-L- RT.	54+00.00	78+25.45	13,063				13,063	149,144			149,144	186,430	173,367			
-Y2RPB-	19+92.16	27+41.03	6,629				6,629	5,205			5,205	6,506		123		123
-Y2RPC-	17+23.09	27+07.41	5,407				5,407	9,060			9,060	11,325	5,918			
-Y2LPC-	12+59.69	15+74.33	1,507				1,507	386			386	483		1,024		1,024
-Y2-	13+00.00	41+00.00	8,943				8,943	5,088			5,088	6,360		2,583		2,583
SUBTOTAL Summary # 2			39,199				39,199	175,851			175,851	219,815	184,346	3,730		3,730
Summary # 3																
-L- LT.	80+80.91	87+00.00	2,121				2,121	199			199	249		1,872		1,872
-L- MED.	80+80.91	87+00.00	140				140	736			736	920	780			
-L- RT.	80+80.91	87+00.00	316				316	112,859			112,859	141,074	140,758			
SUBTOTAL Summary # 3			2,577				2,577	113,794			113,794	142,243	141,538	1,872		1,872
Summary # 4																
-L1SB- LT.	87+00.00	109+48.54	2,458				2,458	38,620			38,620	48,275	45,817			
-L1SB- MED.	87+00.00	109+48.54	1,109				1,109	22,314			22,314	27,893	26,784			
-L1SB- RT.	87+00.00	109+48.54	388				388	49,496			49,496	61,870	61,482			
SUBTOTAL Summary # 4			3,955				3,955	110,430			110,430	138,038	134,083			
Summary # 5																
-Y2RPBTEMP-	10+00.00	21+00.00	5,314				5,314	6,122			6,122	7,653	2,339			
-Y2LPB- on L	10+00.00	11+33.08	0				0	891			891	1,114	1,114			
-Y2LPB-	12+00.00	13+50.00	0				0	7,664			7,664	9,580	9,580			
-Y2LPB- on Y2RPB	13+72.83	17+51.80	4,999				4,999	315			315	394		4,605		4,605
SUBTOTAL Summary # 5			10,313				10,313	14,992			14,992	18,741	13,033	4,605		4,605
Summary # 6																
Removal of -Y2RPBTEMP-			7,653				7,653							7,653		7,653
Removal of -Y2LPB- on L			1,114				1,114							1,114		1,114
Removal of -Y2LPB-			9,580				9,580							9,580		9,580
Removal of -Y2LPB- on Y2RPB			394				394							394		394
SUBTOTAL Summary # 6			18,741				18,741							18,741		18,741
<b>PROJECT SUBTOTAL</b>			<b>79,079</b>				<b>79,079</b>	<b>427,634</b>			<b>427,634</b>	<b>534,546</b>	<b>485,297</b>	<b>29,830</b>		<b>29,830</b>
LOSS DUE TO CLEARING & GRUBBING			-5,250				-5,250						5,250			
WASTE IN LIEU OF BORROW													-22,177			-22,177
SHOULDER MATERIAL								11,800			11,800	14,750	14,750			
<b>PROJECT TOTAL</b>			<b>73,829</b>				<b>73,829</b>	<b>439,434</b>			<b>439,434</b>	<b>549,296</b>	<b>483,120</b>	<b>7,653</b>		<b>7653</b>
EST 5% TO REPLACE TOP SOIL ON BORROW PIT													24,156			
<b>GRAND TOTAL</b>			<b>73,829</b>										<b>507,276</b>			
SAY			<b>73,850</b>										<b>507,300</b>			

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

EST. UNDERCUT = 200 CY

SUBGRADE UNDERCUT = 750 CY

-L- PAVEMENT STRUCTURE VOLUME = 15,200 CY

GRADE POINT UNDERCUT = 950 CY

EST. SELECT MATERIAL, CLASS III = 950 CY

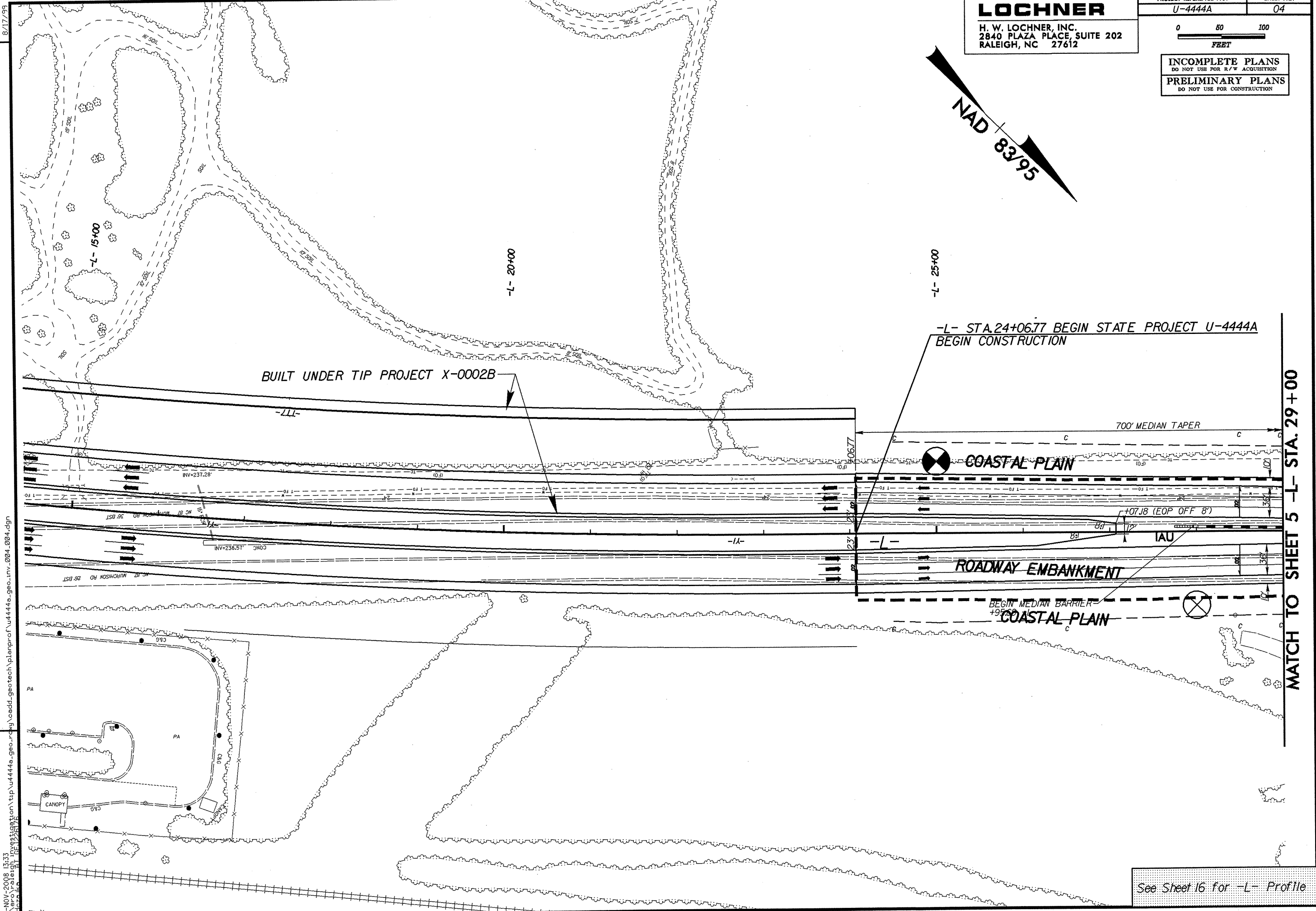
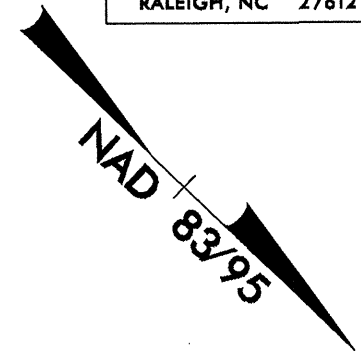


**LOCHNER**  
 H. W. LOCHNER, INC.  
 2840 PLAZA PLACE, SUITE 202  
 RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
U-4444A	04



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



REVISIONS

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MATCH TO SHEET 5 -L- STA. 29+00

See Sheet 16 for -L- Profile

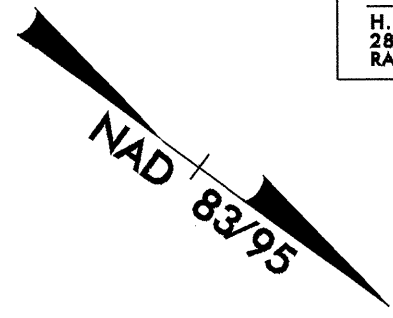
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**LOCHNER**  
H. W. LOCHNER, INC.  
2840 PLAZA PLACE, SUITE 202  
RALEIGH, NC 27612

PROJECT REFERENCE NO. U-4444A SHEET NO. 05



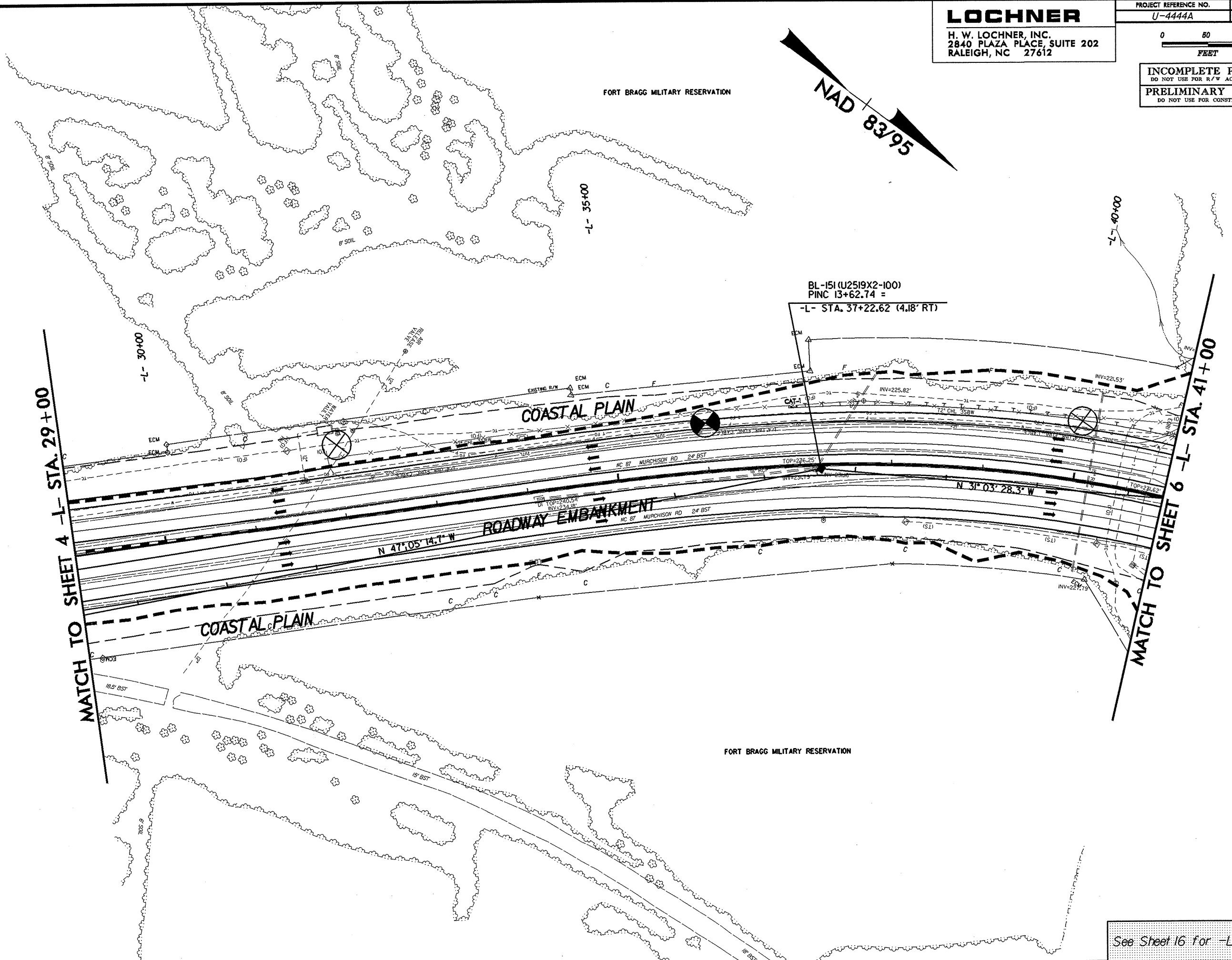
**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



FORT BRAGG MILITARY RESERVATION

MATCH TO SHEET 4 -L- STA. 29+00

MATCH TO SHEET 6 -L- STA. 41+00



BL-151 (U2519X2-100)  
PINC 13+62.74 =  
-L- STA. 37+22.62 (4.18' RT)

FORT BRAGG MILITARY RESERVATION

See Sheet 16 for -L- Profile

REVISIONS

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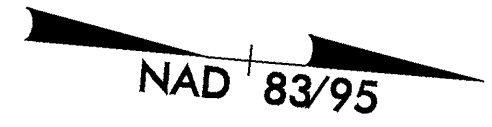
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**LOCHNER**  
 H. W. LOCHNER, INC.  
 2840 PLAZA PLACE, SUITE 202  
 RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
U-4444A	06



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

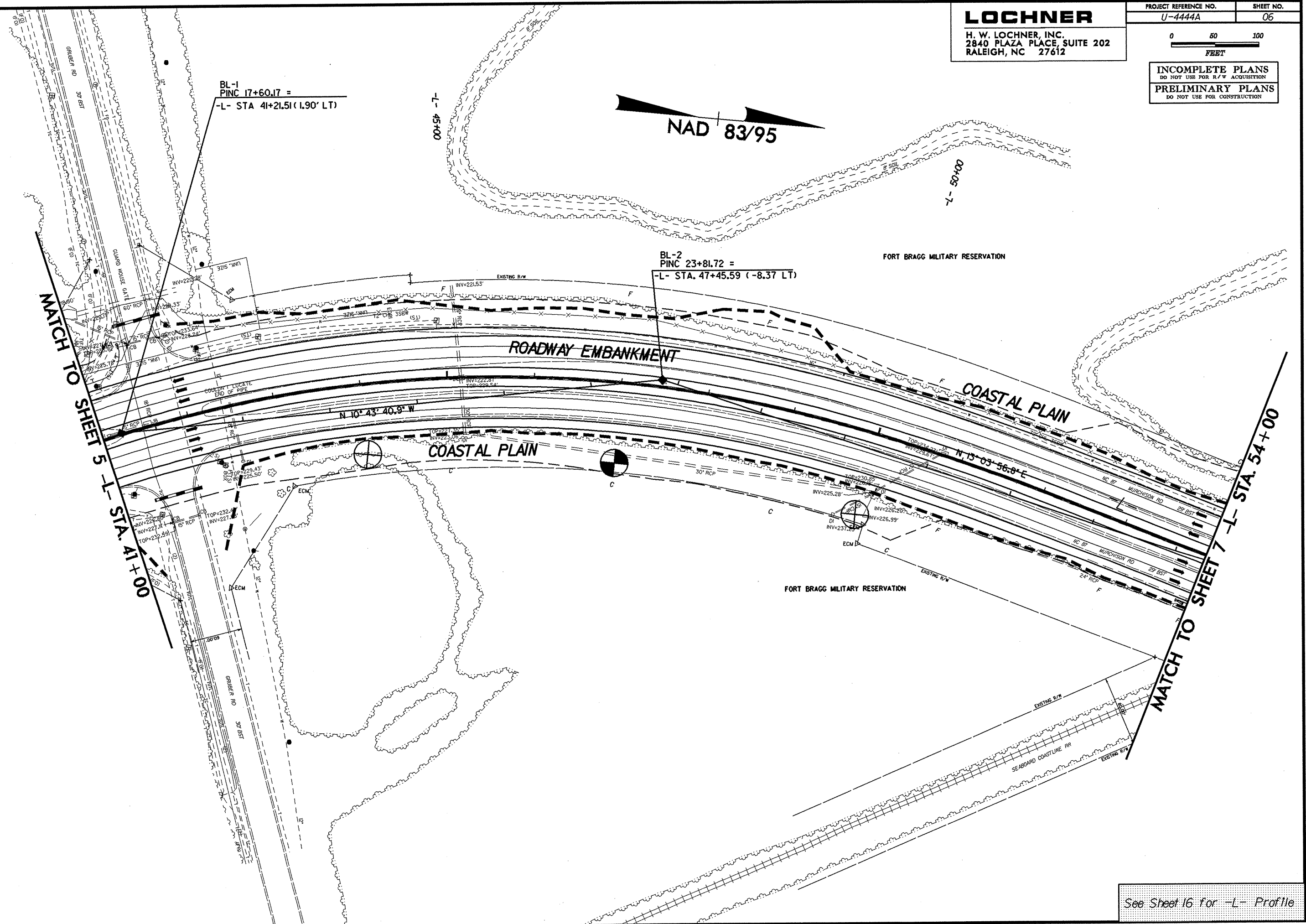


BL-1  
 PINC 17+60.17 =  
 -L- STA 41+21.51 (1.90' LT)

BL-2  
 PINC 23+81.72 =  
 -L- STA. 47+45.59 (-8.37' LT)

MATCH TO SHEET 5 -L- STA. 41+00

MATCH TO SHEET 7 -L- STA. 54+00



REVISIONS

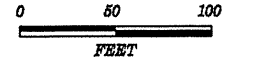
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See Sheet 16 for -L- Profile

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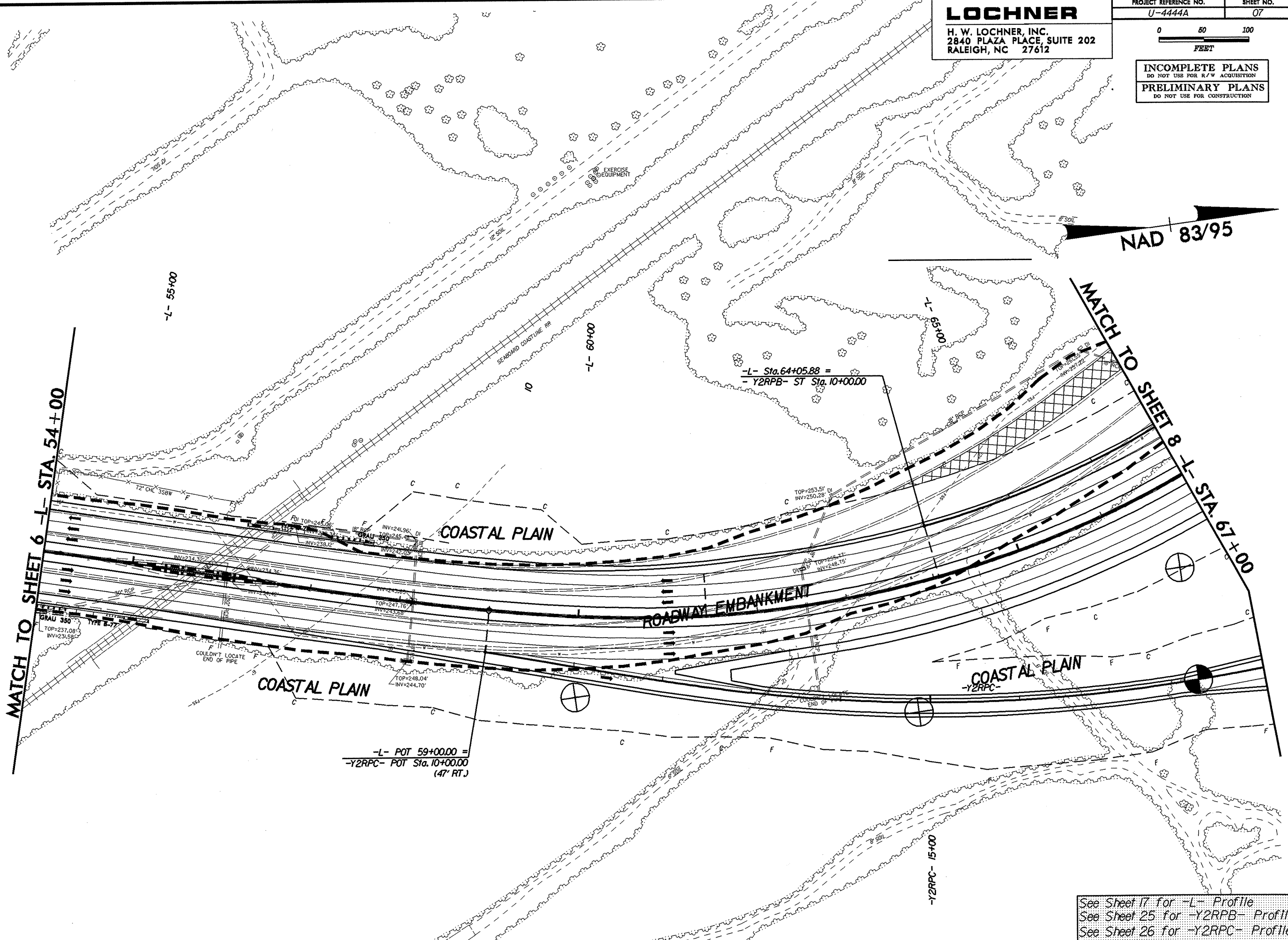
**LOCHNER**  
H. W. LOCHNER, INC.  
2840 PLAZA PLACE, SUITE 202  
RALEIGH, NC 27612

PROJECT REFERENCE NO. U-4444A SHEET NO. 07



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

NAD 83/95



MATCH TO SHEET 6 -L- STA. 54+00

MATCH TO SHEET 8 -L- STA. 67+00

-L- POT 59+00.00 =  
-Y2RPC- POT Sta. 10+00.00  
(47' RT.J)

-L- Sta. 64+05.88 =  
-Y2RPB- ST Sta. 10+00.00

See Sheet 17 for -L- Profile  
See Sheet 25 for -Y2RPB- Profile  
See Sheet 26 for -Y2RPC- Profile

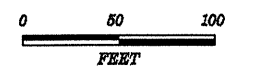




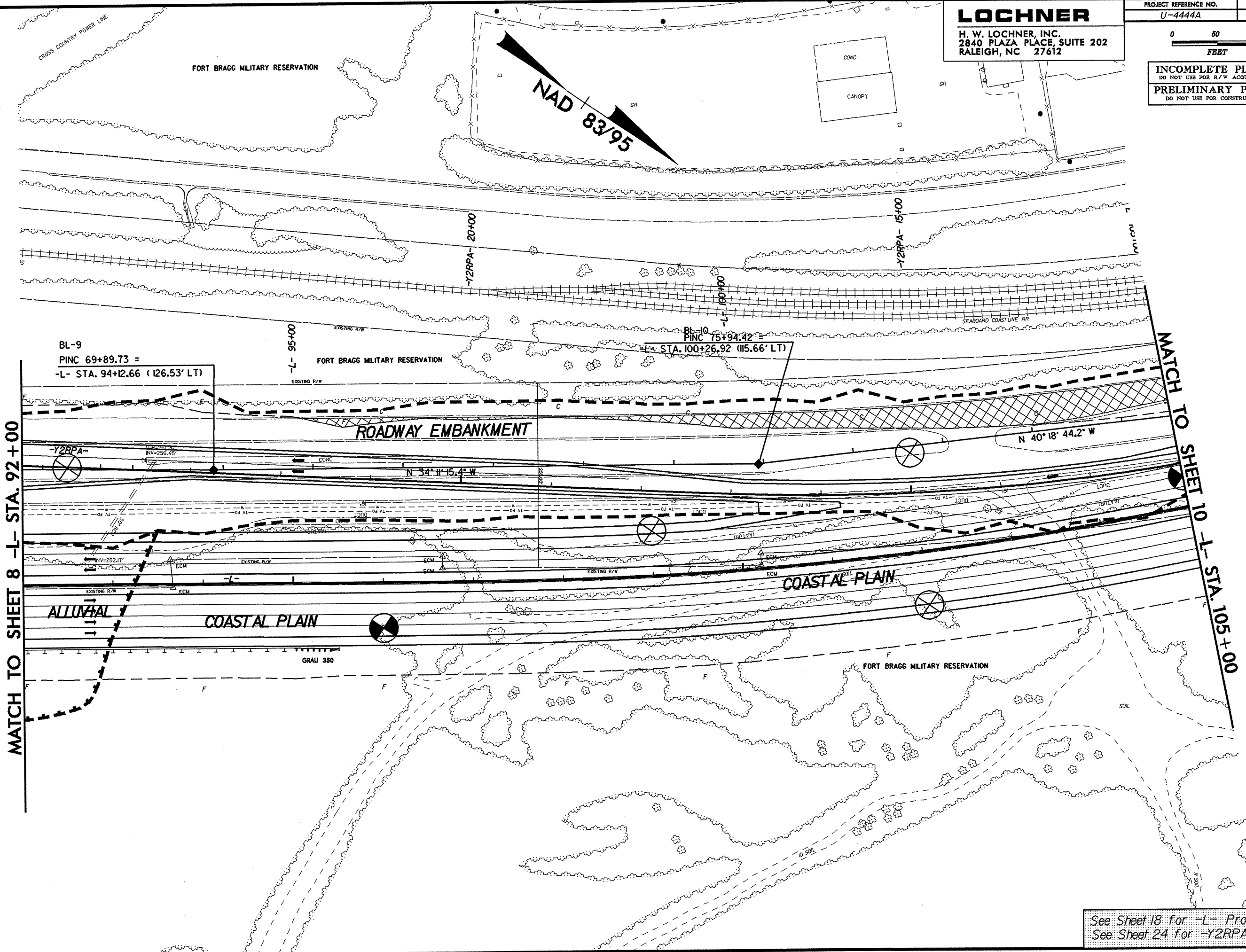
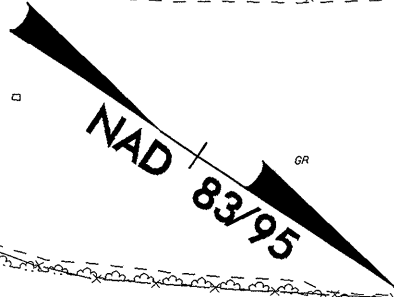
8/17/99

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

PROJECT REFERENCE NO. U-4444A  
SHEET NO. 09



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



REVISIONS

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See Sheet 18 for -L- Profile  
See Sheet 24 for -Y2RPA- Profile



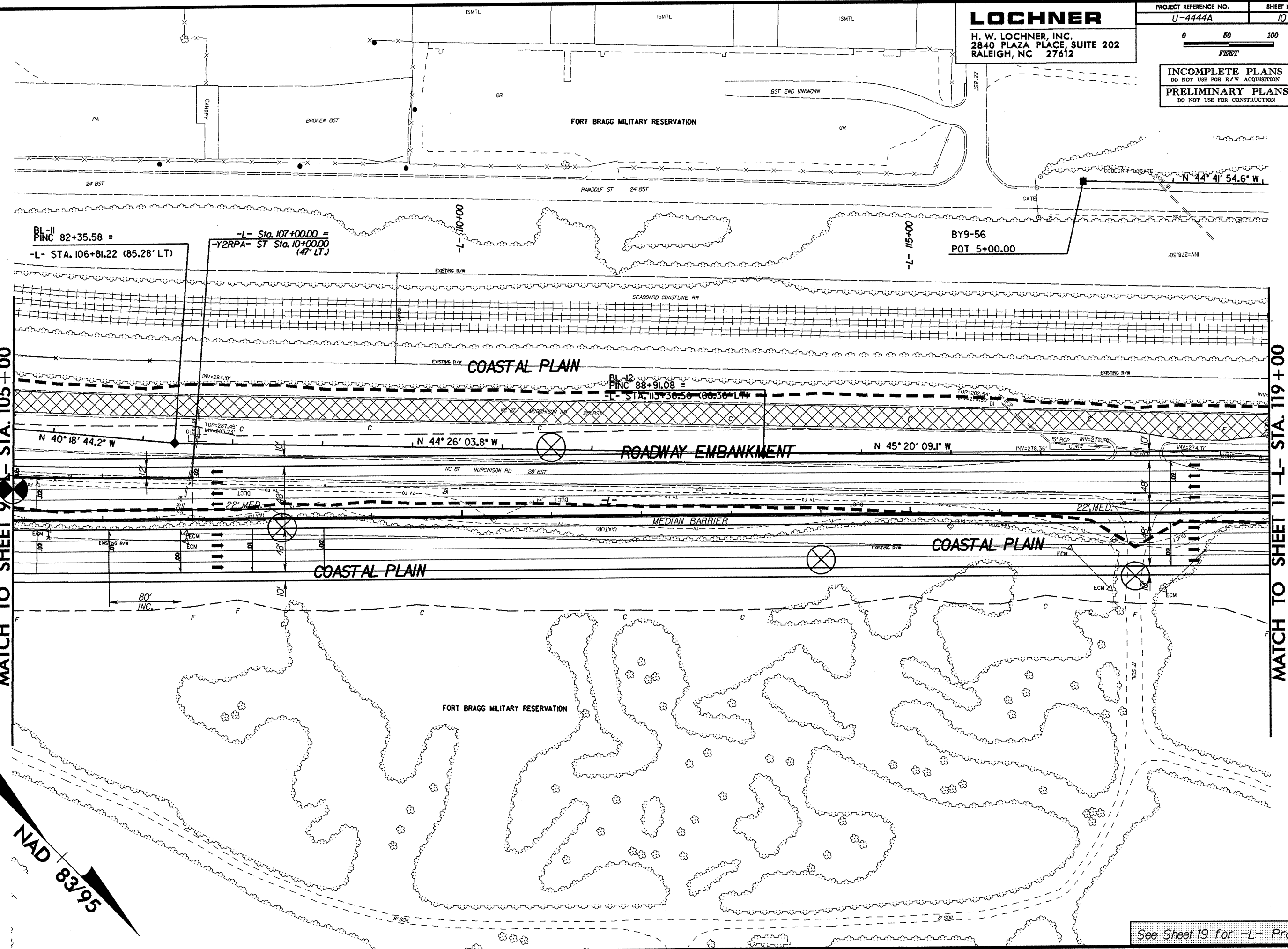
8/17/95

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

PROJECT REFERENCE NO. U-4444A SHEET NO. 10



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



BL-11  
PINC 82+35.58 =  
-L- STA. 106+81.22 (85.28' LT)

-L- Sta. 107+00.00 =  
-Y2RPA- ST Sta. 10+00.00  
(47' LT.)

BY9-56  
POT 5+00.00

MATCH TO SHEET 9 -L- STA. 105+00

MATCH TO SHEET 11 -L- STA. 119+00

NAD 83/95

See Sheet 19 for -L- Profile

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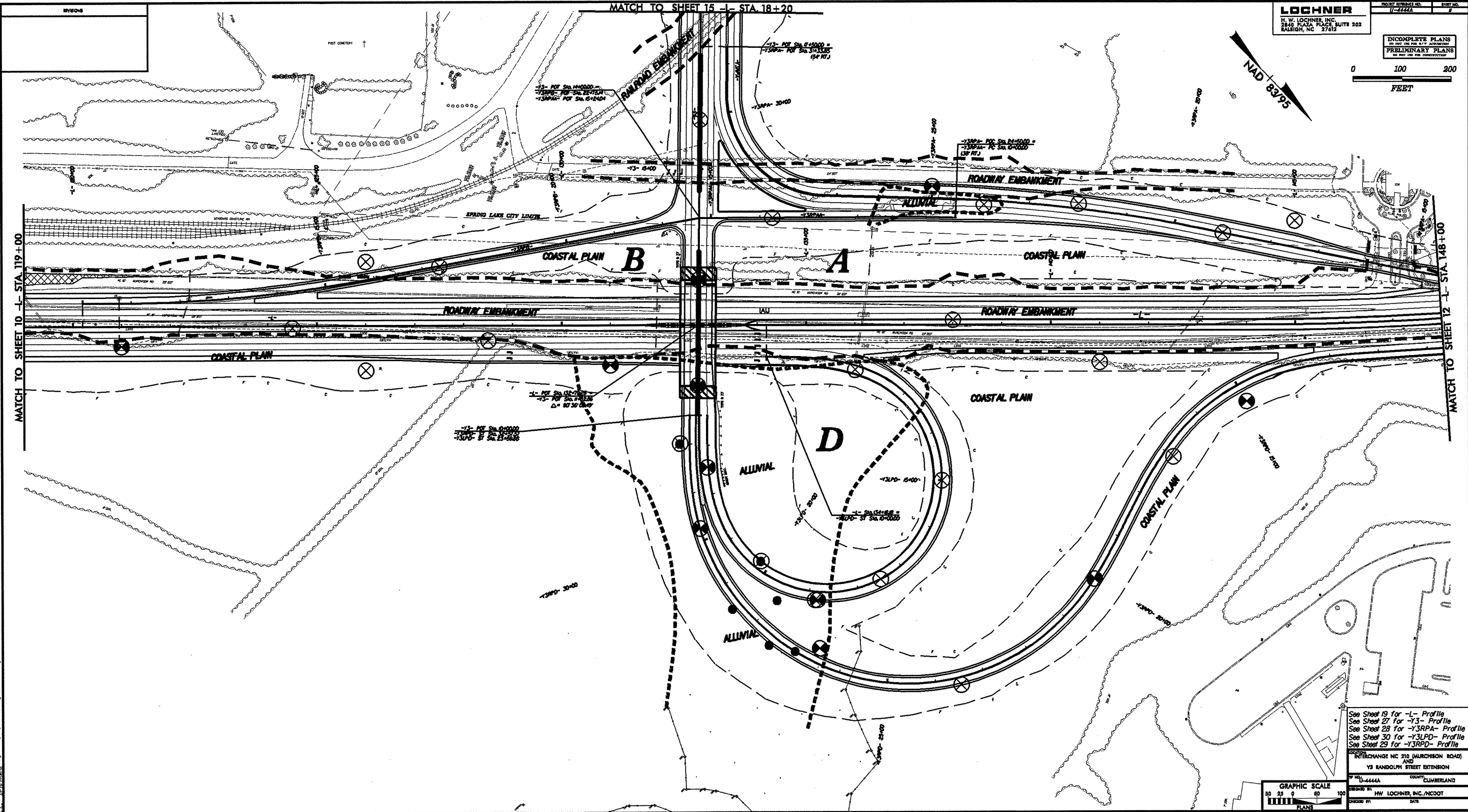
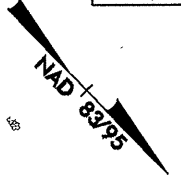
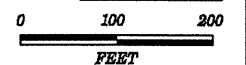
REVISIONS

REVISIONS

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

PROJECT NUMBER: 11-4444  
 SHEET NO. 2

INCOMPLETE PLANS  
 PRELIMINARY PLANS  
 DO NOT USE FOR CONSTRUCTION



See Sheet 19 for -L- Profile  
 See Sheet 27 for -Y3- Profile  
 See Sheet 28 for -Y3RPA- Profile  
 See Sheet 30 for -Y3LPD- Profile  
 See Sheet 29 for -Y3RPD- Profile

INTERCHANGE NC 210 (AURICHSON ROAD)  
 AND  
 Y3 RANDOLPH STREET EXTENSION

PROJECT NUMBER: 11-4444  
 COUNTY: CLIMBERLAND  
 DRAWN BY: HW LOCHNER, INC./NC DOT  
 CHECKED BY: DWS



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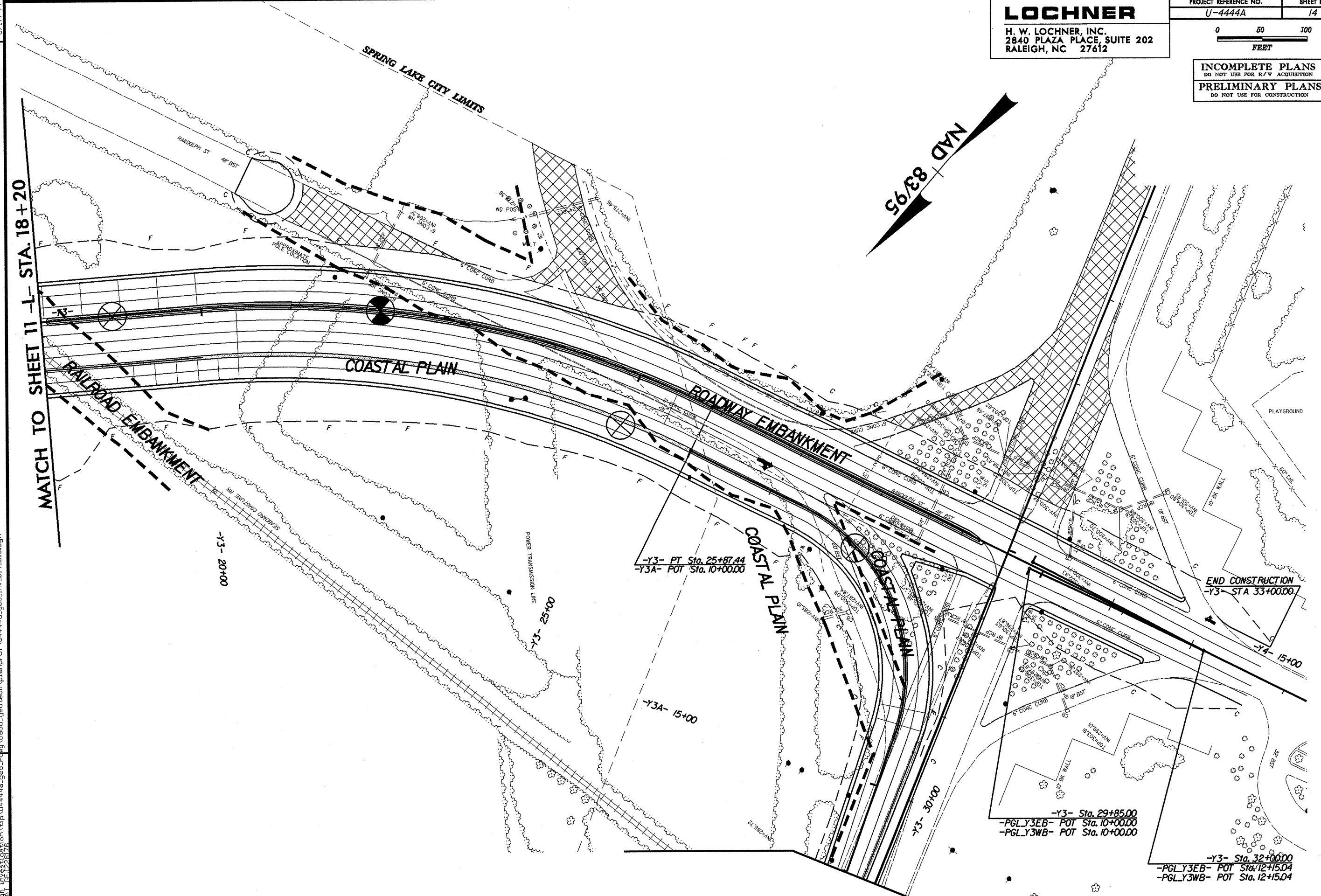
8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-4444A	14



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



MATCH TO SHEET 11 - L- STA. 18+20

REVISIONS

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 deza

-Y3- PT Sta. 25+87.44  
 -Y3A- POT Sta. 10+00.00

-Y3- Sta. 29+85.00  
 -PGLY3EB- POT Sta. 10+00.00  
 -PGLY3WB- POT Sta. 10+00.00

-Y3- Sta. 32+00.00  
 -PGLY3EB- POT Sta. 12+15.04  
 -PGLY3WB- POT Sta. 12+15.04

END CONSTRUCTION  
 -Y3- STA 33+00.00

See Sheet 27 for -Y3- Profile

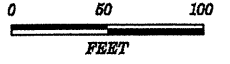


8/17/99

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

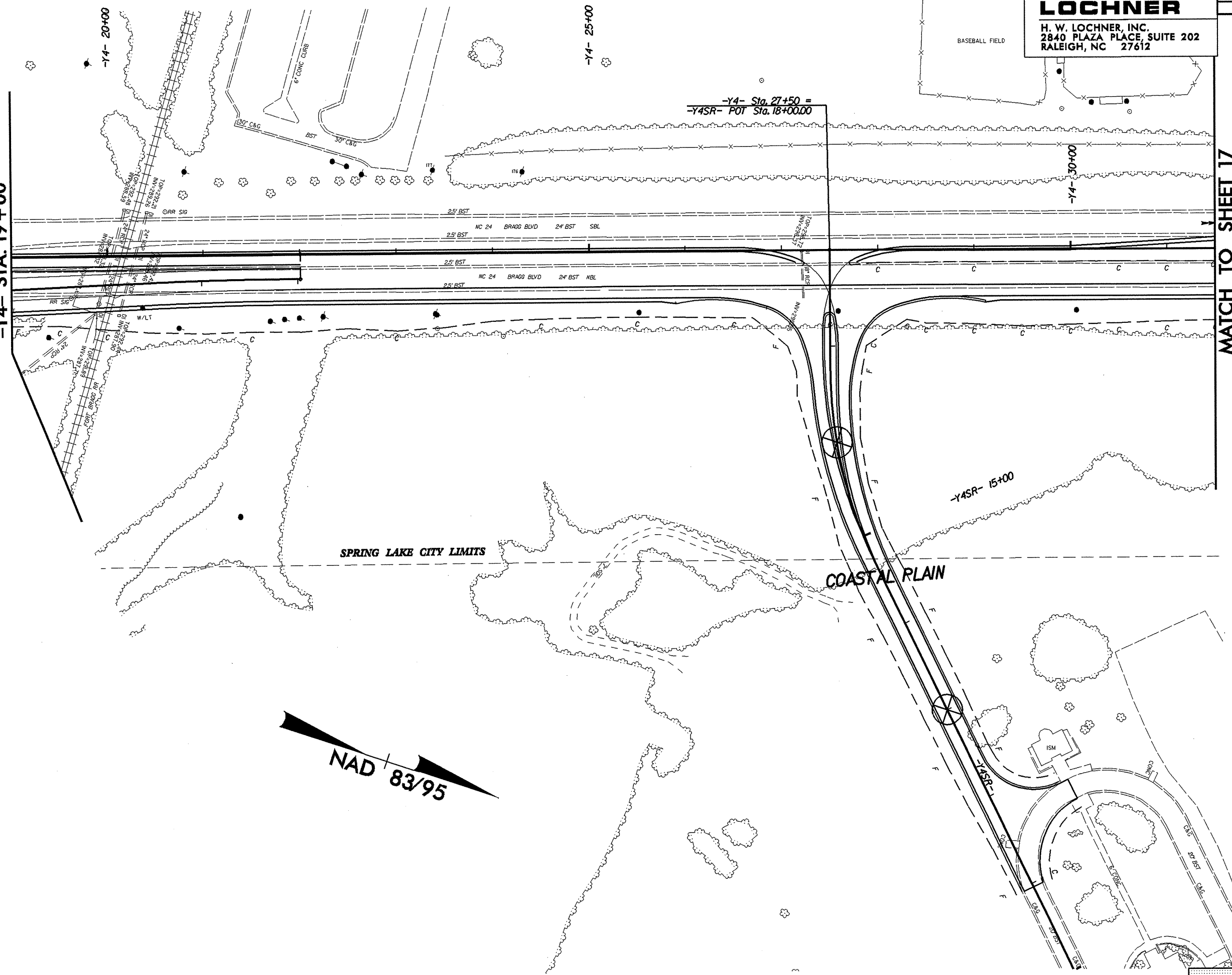
PROJECT REFERENCE NO. U-4444A SHEET NO. 15



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

MATCH TO SHEET 15  
-Y4- STA. 19+00

MATCH TO SHEET 17  
-Y4- STA. 31+50



-Y4- Sta. 27+50 =  
-Y4SR- POT Sta. 18+00.00

-Y4SR- 15+00

COASTAL PLAIN

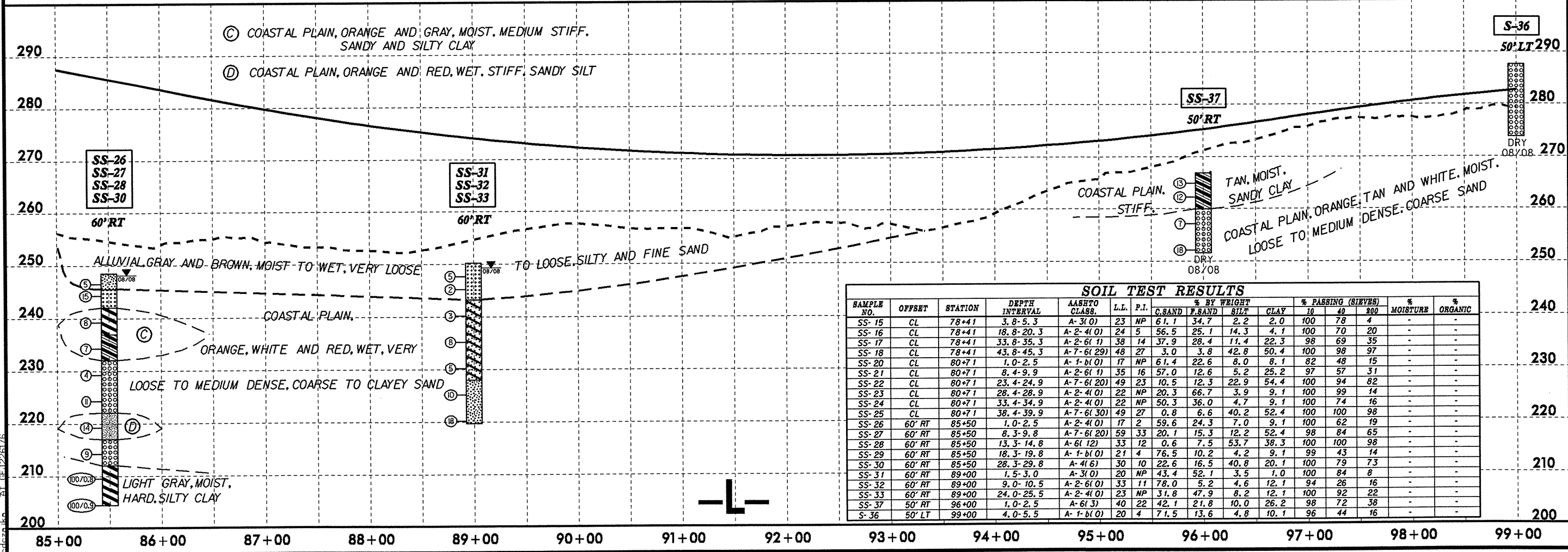
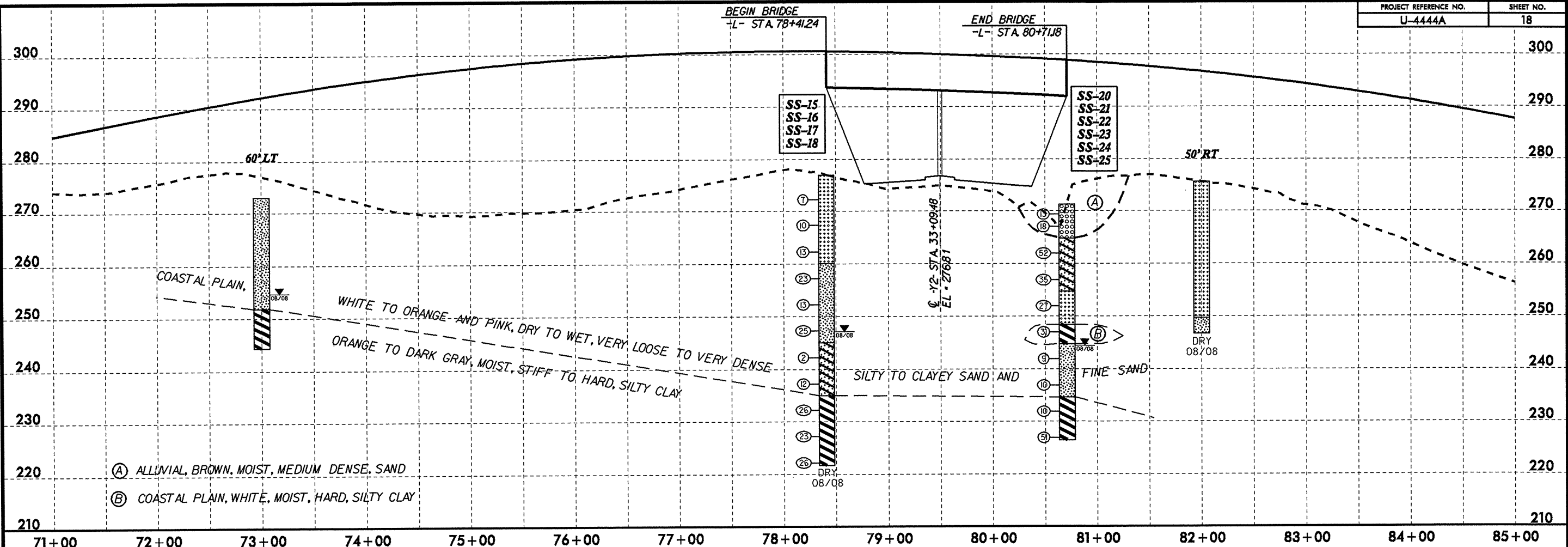
NAD 83/95

See Sheet 30 for -Y4SR- Profile





5/28/99



**SOIL TEST RESULTS**

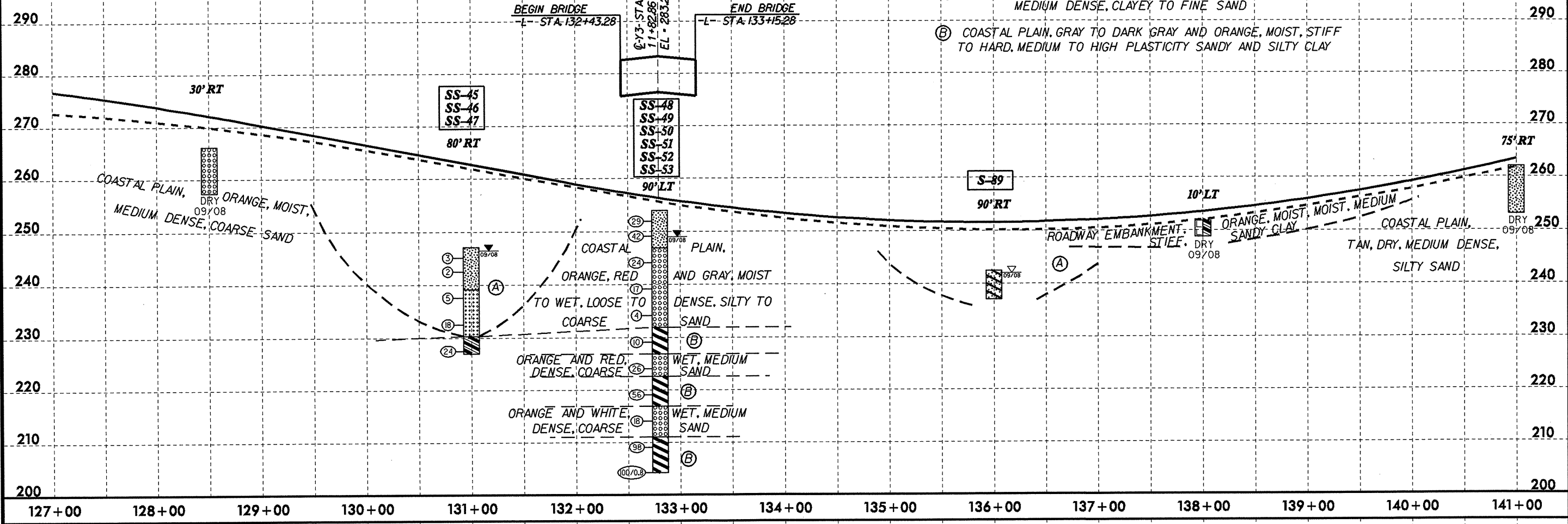
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-15	CL	78+41	3.8-5.3	A-3(0)	23	NP	61.1	34.7	2.2	2.0	100	78	4	-	-
SS-16	CL	78+41	18.8-20.3	A-2-4(0)	24	5	56.5	25.1	14.3	4.1	100	70	20	-	-
SS-17	CL	78+41	33.8-35.3	A-2-6(1)	38	14	37.9	28.4	11.4	22.3	98	69	35	-	-
SS-18	CL	78+41	43.8-45.3	A-7-6(29)	48	27	3.0	3.8	42.8	50.4	100	98	97	-	-
SS-20	CL	80+71	1.0-2.5	A-1-b(0)	17	NP	61.4	22.6	8.0	8.1	82	48	15	-	-
SS-21	CL	80+71	8.4-9.9	A-2-6(1)	35	16	57.0	12.6	5.2	25.2	97	57	31	-	-
SS-22	CL	80+71	23.4-24.9	A-7-6(20)	49	23	10.5	12.3	22.9	54.4	100	94	82	-	-
SS-23	CL	80+71	28.4-28.9	A-2-4(0)	22	NP	20.3	66.7	3.9	9.1	100	99	14	-	-
SS-24	CL	80+71	33.4-34.9	A-2-4(0)	22	NP	50.3	36.0	4.7	9.1	100	74	16	-	-
SS-25	CL	80+71	38.4-39.9	A-7-6(30)	49	27	0.8	6.6	40.2	52.4	100	100	98	-	-
SS-26	60' RT	85+50	1.0-2.5	A-2-4(0)	17	2	59.6	24.3	7.0	9.1	100	62	19	-	-
SS-27	60' RT	85+50	8.3-9.8	A-7-6(20)	59	33	20.1	15.3	12.2	52.4	98	84	65	-	-
SS-28	60' RT	85+50	13.3-14.8	A-6(12)	33	12	0.6	7.5	53.7	38.3	100	100	98	-	-
SS-29	60' RT	85+50	18.3-19.8	A-1-b(0)	21	4	76.5	10.2	4.2	9.1	99	43	14	-	-
SS-30	60' RT	85+50	28.3-29.8	A-4(6)	30	10	22.6	16.5	40.8	20.1	100	79	73	-	-
SS-31	60' RT	89+00	1.5-3.0	A-3(0)	20	NP	43.4	52.1	3.5	1.0	100	84	8	-	-
SS-32	60' RT	89+00	9.0-10.5	A-2-6(0)	33	11	78.0	5.2	4.6	12.1	94	26	16	-	-
SS-33	60' RT	89+00	24.0-25.5	A-2-4(0)	23	NP	31.8	47.9	8.2	12.1	100	92	22	-	-
SS-37	50' RT	96+00	1.0-2.5	A-6(3)	40	22	42.1	21.8	10.0	26.2	98	72	38	-	-
S-36	50' LT	99+00	4.0-5.5	A-1-b(0)	20	4	71.5	13.6	4.8	10.1	96	44	16	-	-

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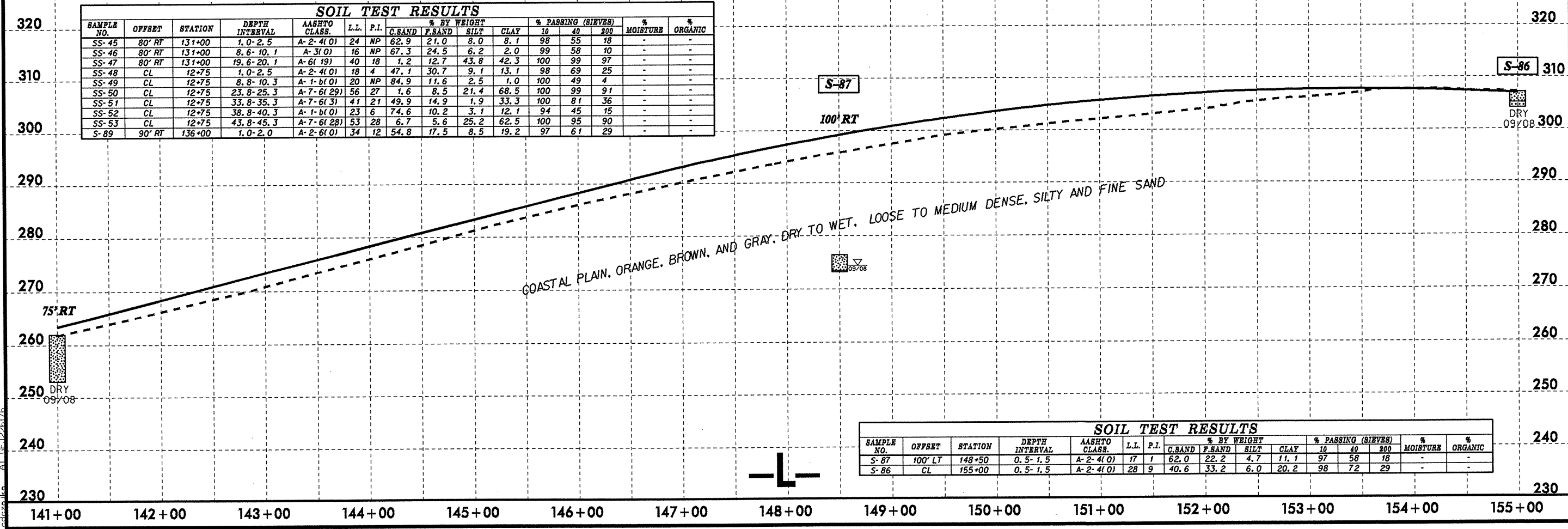




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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-45	80' RT	131+00	1.0-2.5	A-2-4(0)	24	NP	62.9	21.0	8.0	8.1	98	55	18	-	-
SS-46	80' RT	131+00	8.6-10.1	A-3(0)	16	NP	67.3	24.5	6.2	2.0	99	58	10	-	-
SS-47	80' RT	131+00	19.6-20.1	A-6(19)	40	18	1.2	12.7	43.8	42.3	100	99	97	-	-
SS-48	CL	12+75	1.0-2.5	A-2-4(0)	18	4	47.1	30.7	9.1	13.1	98	69	25	-	-
SS-49	CL	12+75	8.8-10.3	A-1-b(0)	20	NP	84.9	11.6	2.5	1.0	100	49	4	-	-
SS-50	CL	12+75	23.8-25.3	A-7-6(29)	56	27	1.6	8.5	21.4	68.5	100	99	91	-	-
SS-51	CL	12+75	33.8-35.3	A-7-6(3)	41	21	49.9	14.9	1.9	33.3	100	81	36	-	-
SS-52	CL	12+75	38.8-40.3	A-1-b(0)	23	6	74.6	10.2	3.1	12.1	94	45	15	-	-
SS-53	CL	12+75	43.8-45.3	A-7-6(28)	53	28	6.7	5.6	25.2	62.5	100	95	90	-	-
S-89	90' RT	136+00	1.0-2.0	A-2-6(0)	34	12	54.8	17.5	8.5	19.2	97	61	29	-	-



SOIL TEST RESULTS															
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		
S-87	100' LT	148+50	0.5-1.5	A-2-4(0)	17	1	62.0	22.2	4.7	11.1	97	58	18	-	-
S-86	CL	155+00	0.5-1.5	A-2-4(0)	28	9	40.6	33.2	6.0	20.2	98	72	29	-	-

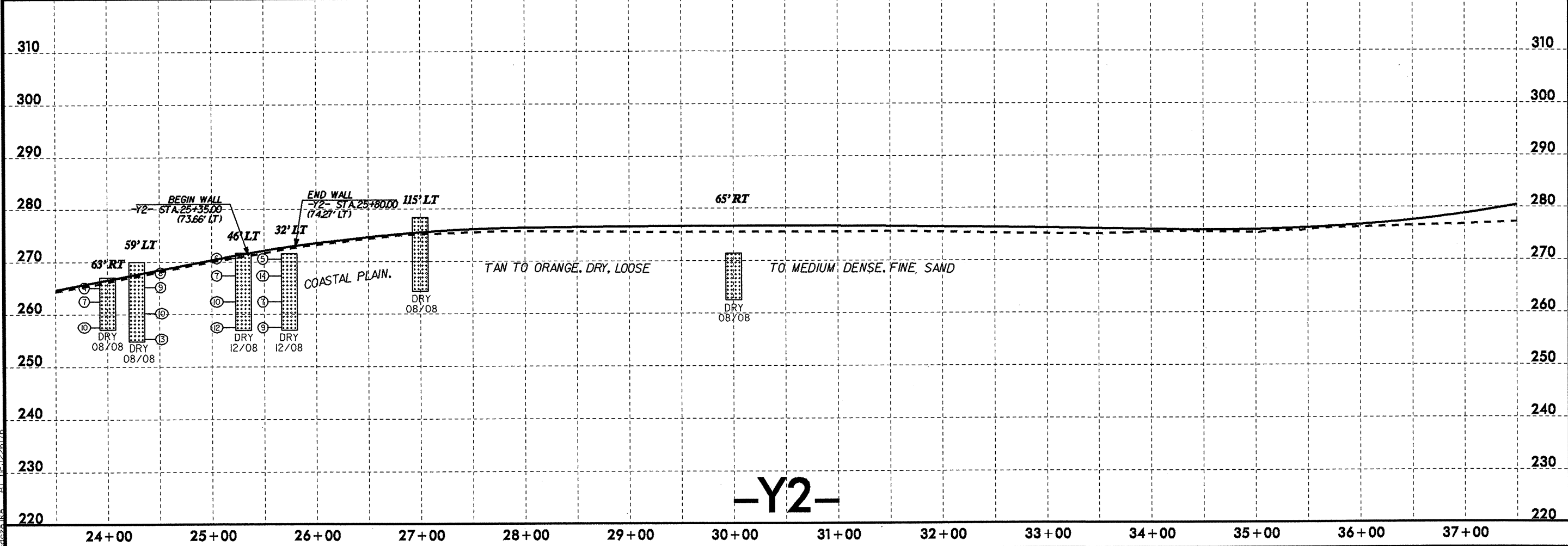
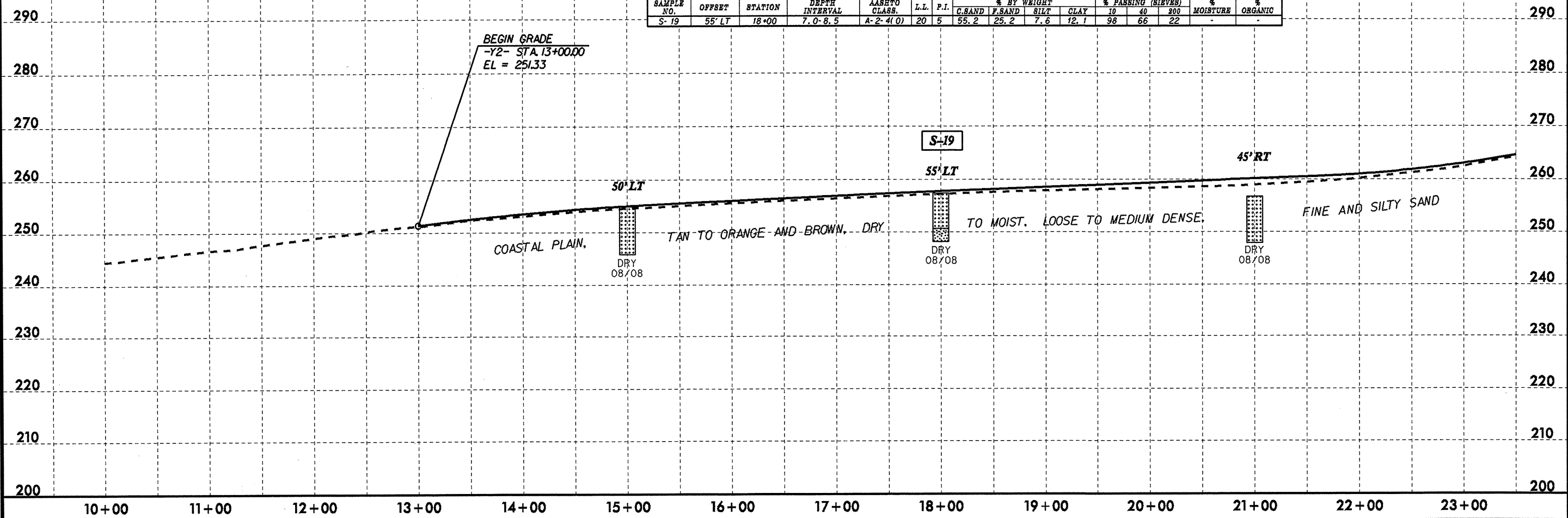


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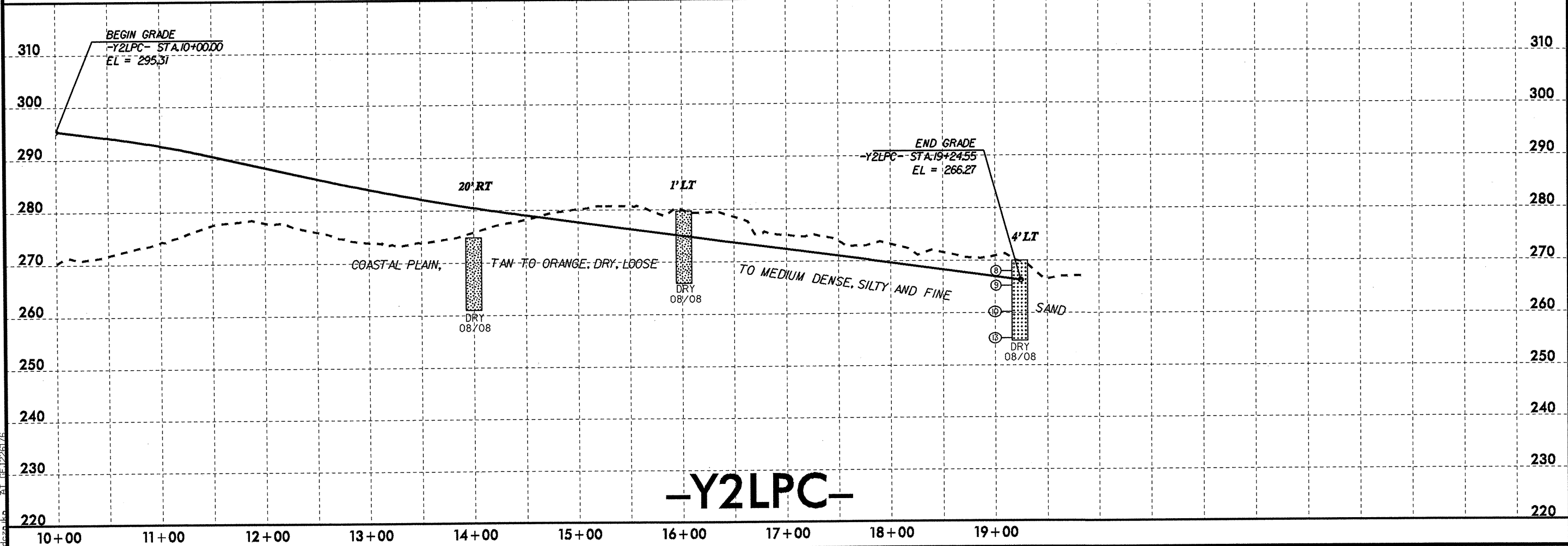
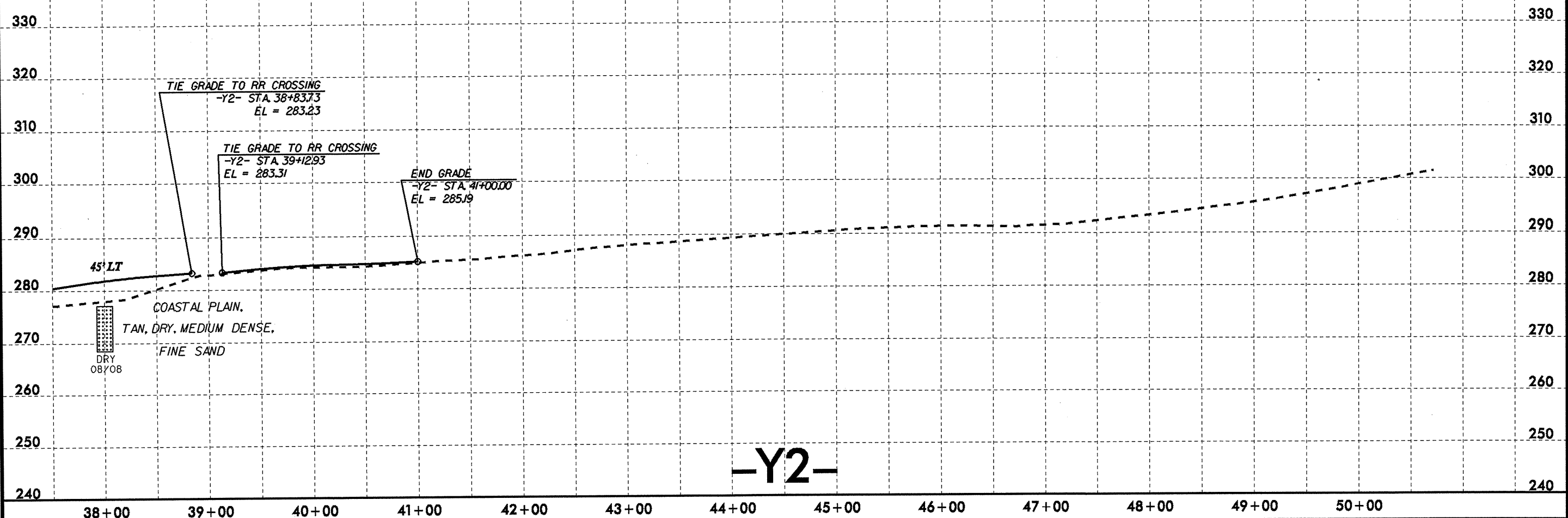
PROJECT REFERENCE NO.	SHEET NO.
U-4444A	22

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-19	55' LT	18+00	7.0-8.5	A-2-4(0)	20	5	55.2	25.2	7.6	12.1	98	66	22	-	-



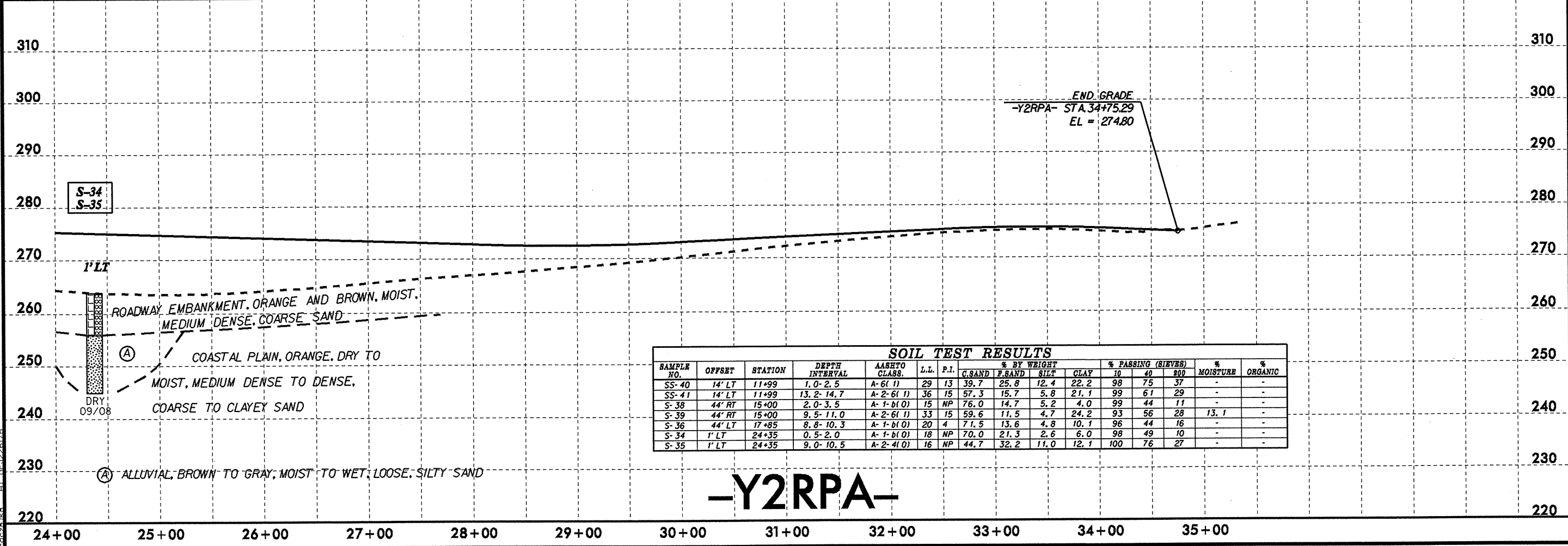
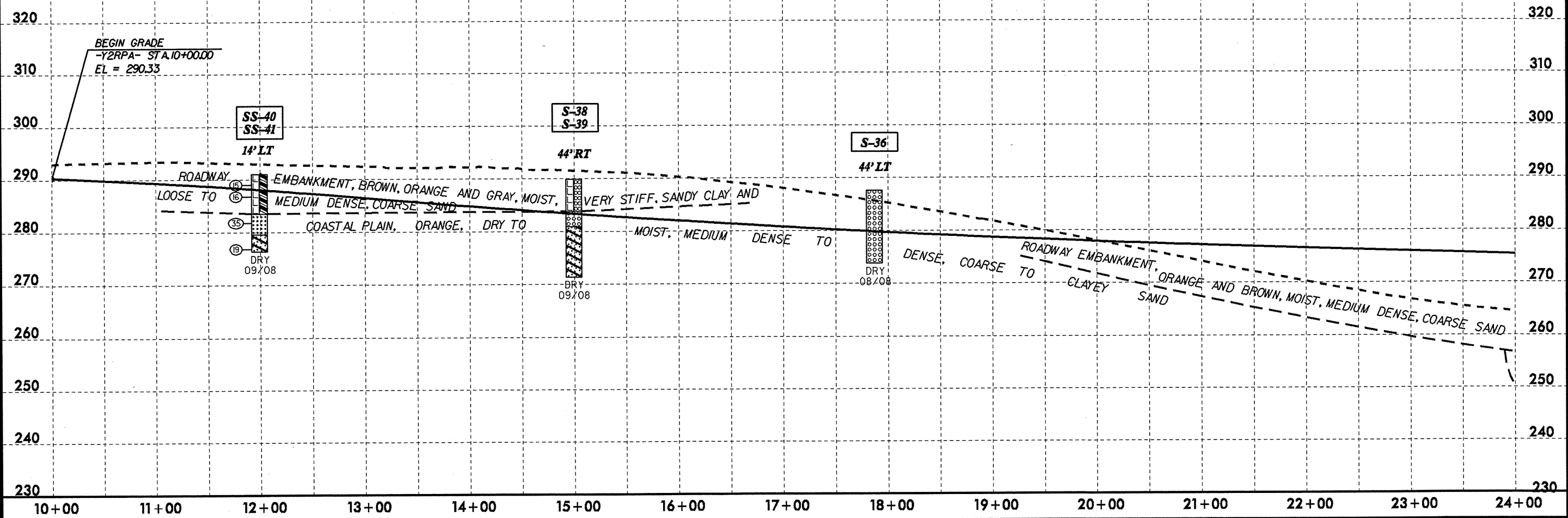
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5/28/99



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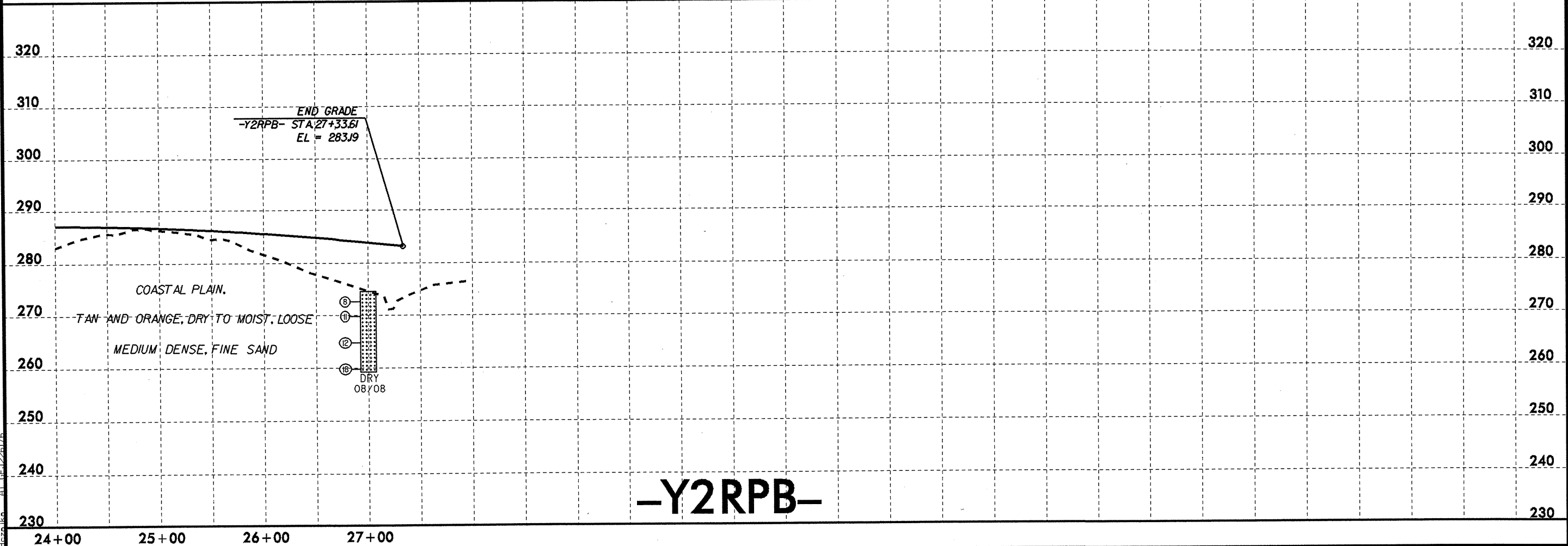
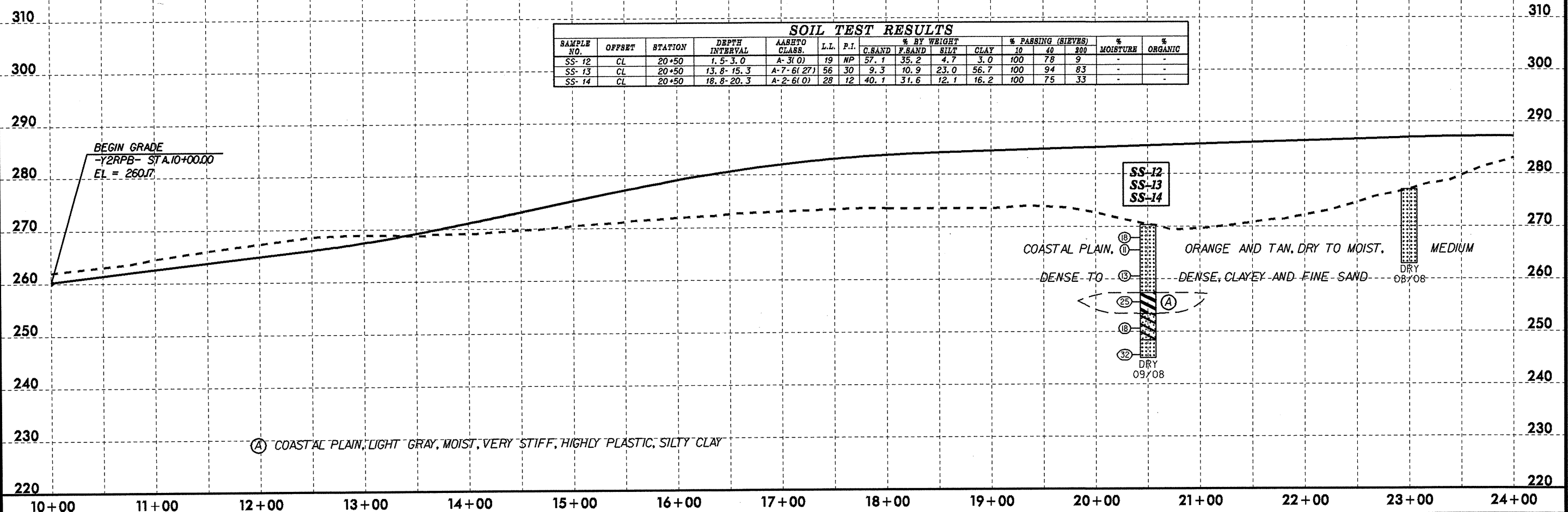
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-40	14' LT	11+99	1.0-2.5	A-6(1)	29	13	39.7	25.8	12.4	22.2	98	75	37	-	-
SS-41	14' LT	11+99	13.2-14.7	A-2-6(1)	36	15	57.3	15.7	5.8	21.1	99	61	29	-	-
S-38	44' RT	15+00	2.0-3.5	A-1-b(0)	15	NP	76.0	14.7	5.2	4.0	99	44	11	-	-
S-39	44' RT	15+00	9.5-11.0	A-2-6(1)	33	15	59.6	11.5	4.7	24.2	93	56	28	13.1	-
S-36	44' LT	17+85	8.8-10.3	A-1-b(0)	20	4	71.5	13.6	4.8	10.1	96	44	16	-	-
S-34	1' LT	24+35	0.5-2.0	A-1-b(0)	18	NP	70.0	21.3	2.6	6.0	98	49	10	-	-
S-35	1' LT	24+35	9.0-10.5	A-2-4(0)	16	NP	44.7	32.2	11.0	12.1	100	76	27	-	-

-Y2RPA-



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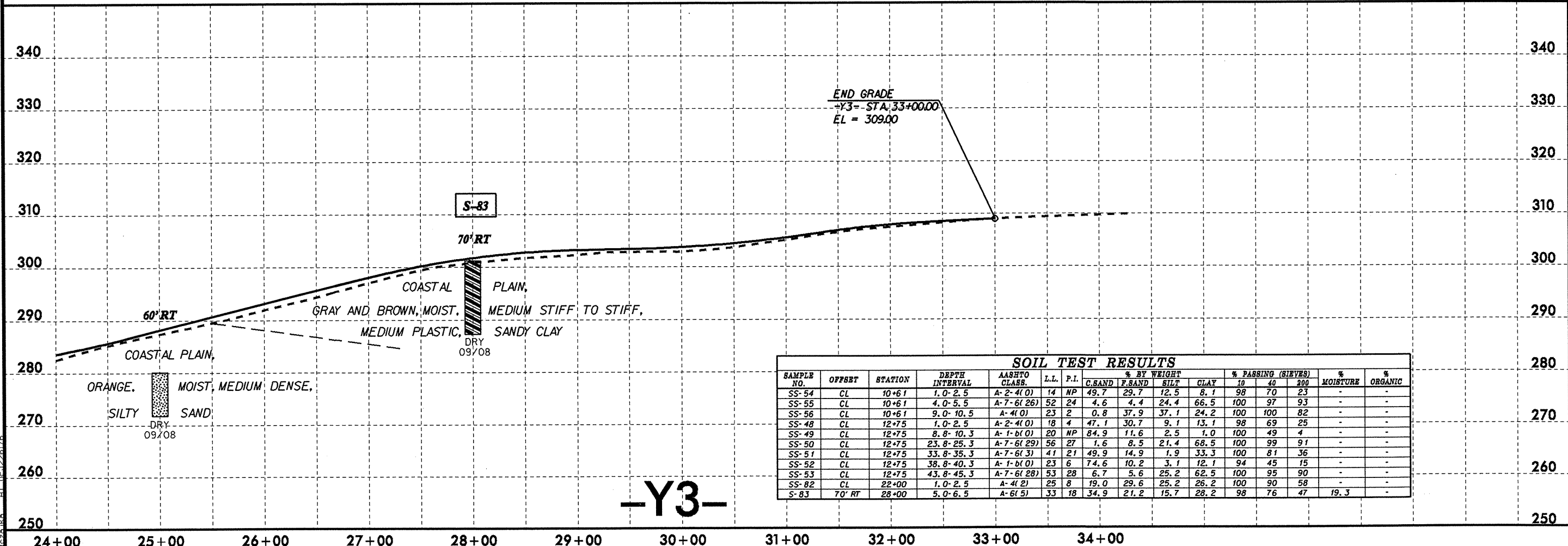
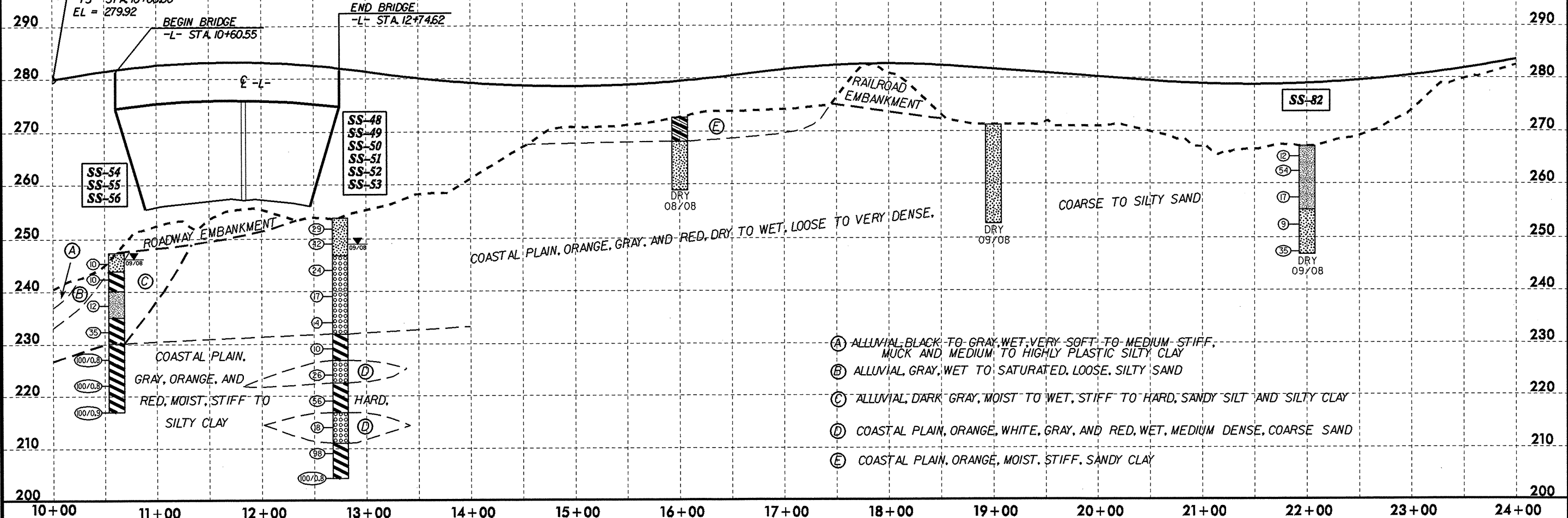
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-12	CL	20+50	1.5-3.0	A-3(0)	19	NP	57.1	35.2	4.7	3.0	100	78	9	-	-
SS-13	CL	20+50	13.8-15.3	A-7-6(27)	56	30	9.3	10.9	23.0	56.7	100	94	83	-	-
SS-14	CL	20+50	18.8-20.3	A-2-6(0)	28	12	40.1	31.6	12.1	16.2	100	75	33	-	-



**-Y2RPB-**



5/28/99



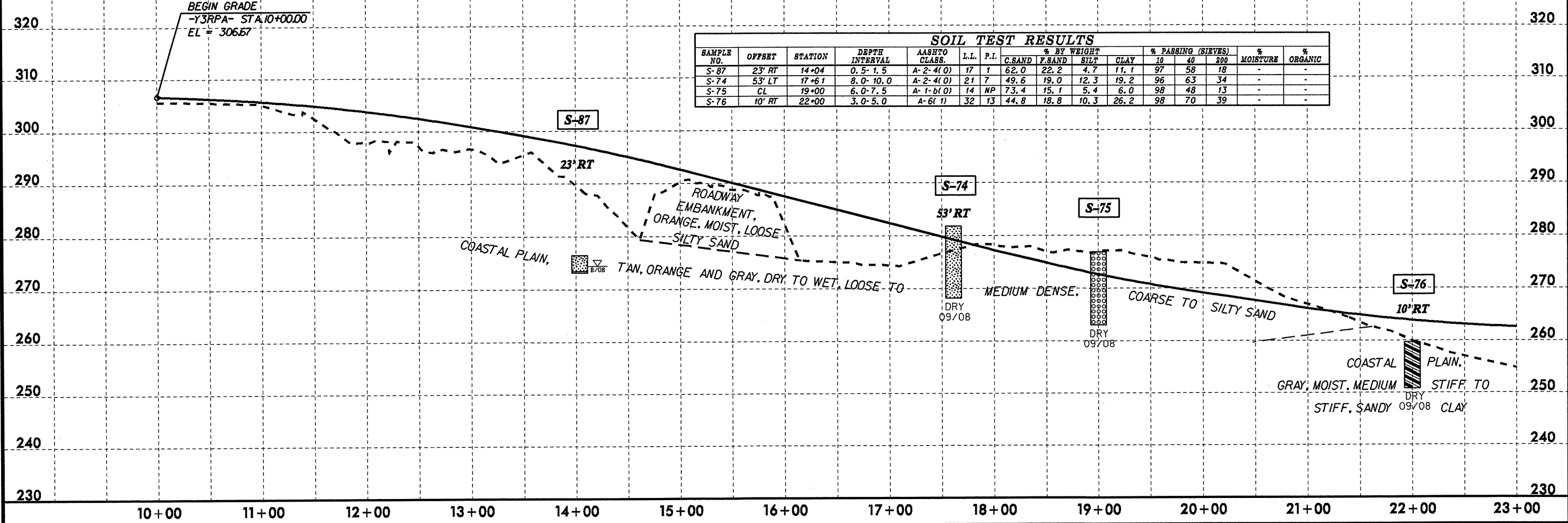
**SOIL TEST RESULTS**

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-54	CL	10+61	1.0-2.5	A-2-4(0)	14	NP	49.7	29.7	12.5	8.1	98	70	23	-	-
SS-55	CL	10+61	4.0-5.5	A-7-6(26)	52	24	4.6	4.4	24.4	66.5	100	97	93	-	-
SS-56	CL	10+61	9.0-10.5	A-4(0)	23	2	0.8	37.9	37.1	24.2	100	100	82	-	-
SS-48	CL	12+75	1.0-2.5	A-2-4(0)	18	4	47.1	30.7	9.1	13.1	98	69	25	-	-
SS-49	CL	12+75	8.8-10.3	A-1-6(0)	20	NP	84.9	11.6	2.5	1.0	100	49	4	-	-
SS-50	CL	12+75	23.8-25.3	A-7-6(29)	56	27	1.6	8.5	21.4	68.5	100	99	91	-	-
SS-51	CL	12+75	33.8-35.3	A-7-6(31)	41	21	49.9	14.9	1.9	33.3	100	81	36	-	-
SS-52	CL	12+75	38.8-40.3	A-1-6(0)	23	6	74.6	10.2	3.1	12.1	94	45	15	-	-
SS-53	CL	12+75	43.8-45.3	A-7-6(28)	53	28	6.7	5.6	25.2	62.5	100	95	90	-	-
SS-82	CL	22+00	1.0-2.5	A-4(2)	25	8	19.0	29.6	25.2	26.2	100	90	58	-	-
S-83	70' RT	28+00	5.0-6.5	A-6(5)	33	18	34.9	21.2	15.7	28.2	98	76	47	19.3	-

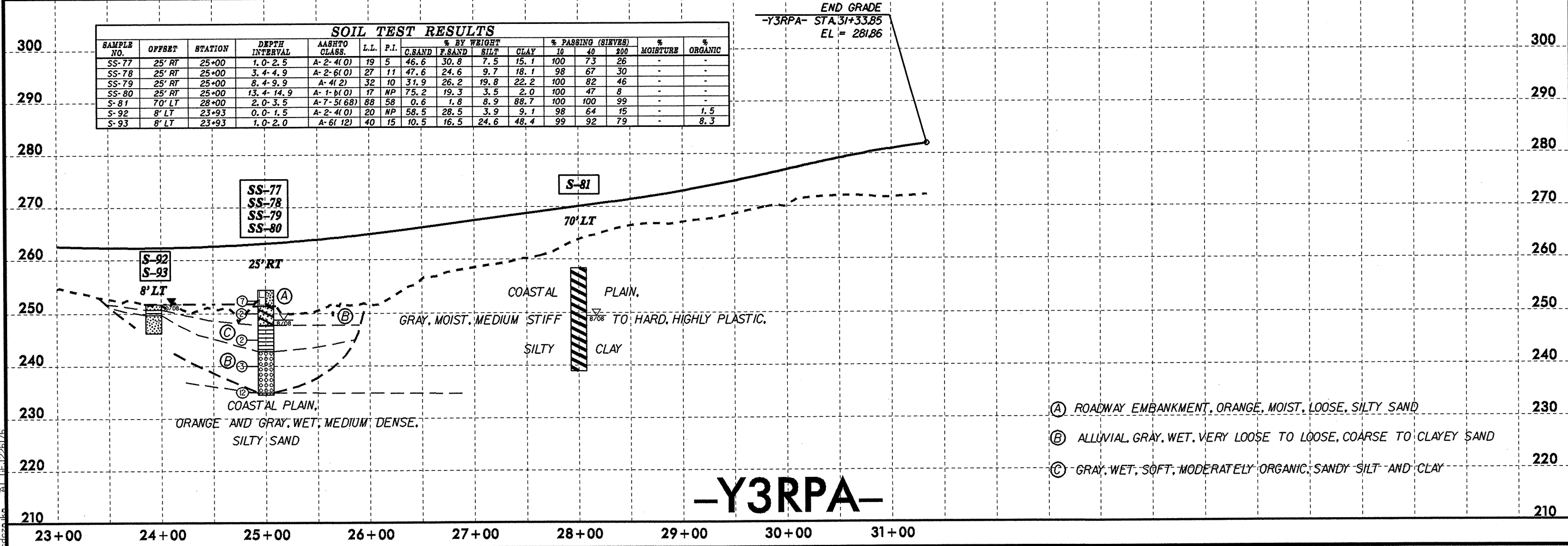
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 12/28/08



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		
S-87	23' RT	14+04	0.5-1.5	A-2-4(0)	17	1	62.0	22.2	4.7	11.1	97	58	18	-	-
S-74	53' LT	17+61	8.0-10.0	A-2-4(0)	21	7	49.6	19.0	12.3	19.2	96	63	34	-	-
S-75	CL	19+00	6.0-7.5	A-1-b(0)	14	NP	73.4	15.1	5.4	6.0	98	48	13	-	-
S-76	10' RT	22+00	3.0-5.0	A-6(1)	32	13	44.8	18.8	10.3	26.2	98	70	39	-	-



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-77	25' RT	25+00	1.0-2.5	A-2-4(0)	19	5	46.6	30.8	7.5	15.1	100	73	26	-	-
SS-78	25' RT	25+00	3.4-4.9	A-2-6(0)	27	11	47.6	24.6	9.7	18.1	98	67	30	-	-
SS-79	25' RT	25+00	8.4-9.9	A-4(2)	32	10	31.9	26.2	19.8	22.2	100	82	46	-	-
SS-80	25' RT	25+00	13.4-14.9	A-1-b(0)	17	NP	75.2	19.3	3.5	2.0	100	47	8	-	-
S-81	70' LT	28+00	2.0-3.5	A-7-5(68)	88	58	0.6	1.8	8.9	88.7	100	99	-	-	
S-92	8' LT	23+93	0.0-1.5	A-2-4(0)	20	NP	58.5	28.5	3.9	9.1	98	64	15	-	1.5
S-93	8' LT	23+93	1.0-2.0	A-6(12)	40	15	10.5	16.5	24.6	48.4	99	92	79	-	8.3

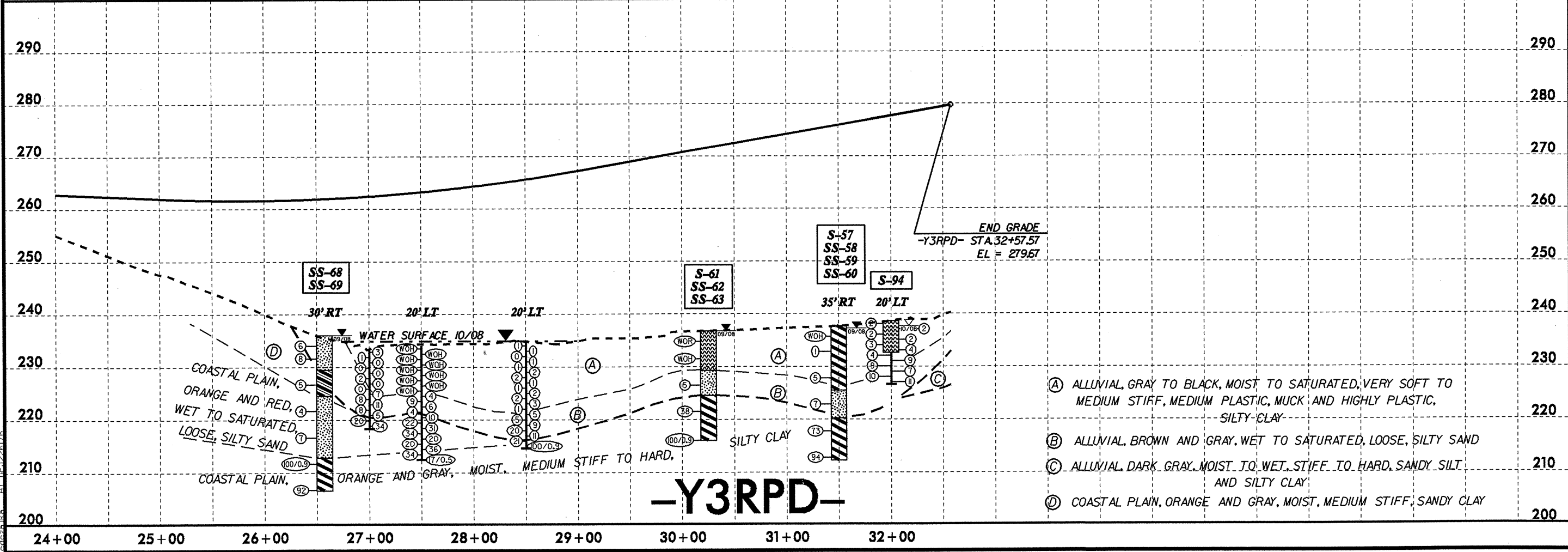
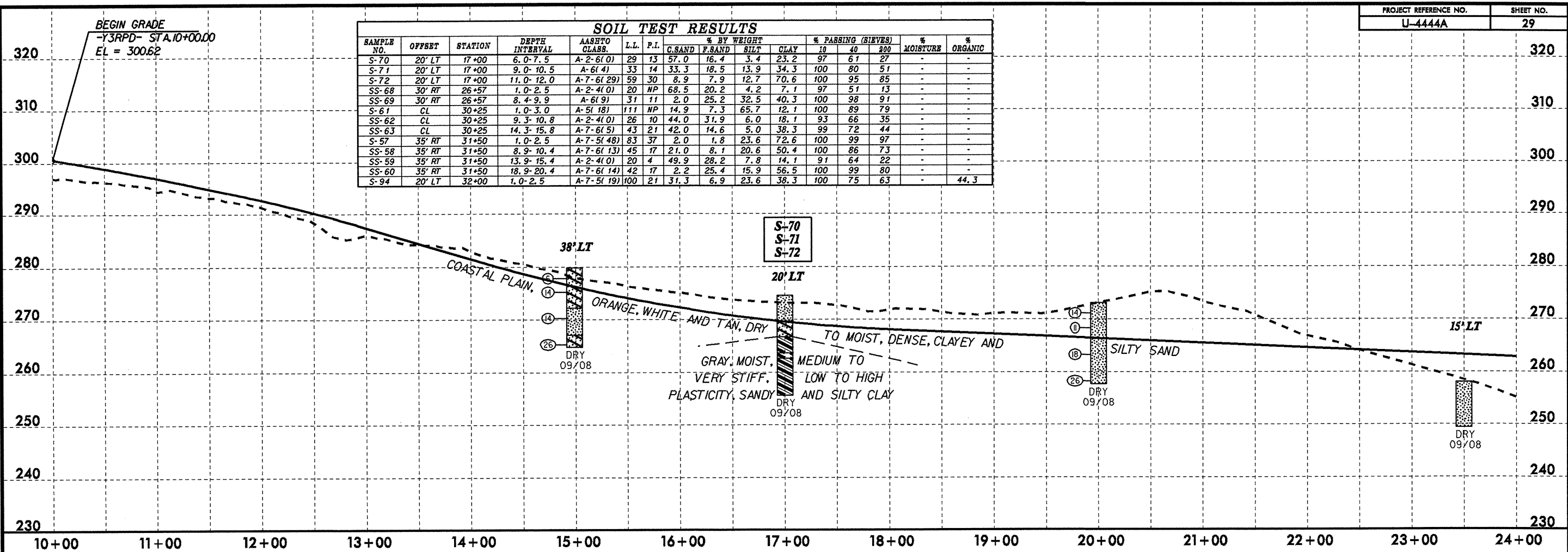
- (A) ROADWAY EMBANKMENT, ORANGE, MOIST, LOOSE, SILTY SAND
- (B) ALLUVIAL GRAY, WET, VERY LOOSE TO LOOSE, COARSE TO CLAYEY SAND
- (C) GRAY, WET, SOFT, MODERATELY ORGANIC, SANDY SILT AND CLAY

**-Y3RPA-**

5/28/99

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 12/25/06

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
							C.SAND	F.SAND	SILT	10	40	200			
S-70	20' LT	17+00	6.0-7.5	A-2-6(0)	29	13	57.0	16.4	3.4	23.2	97	61	27	-	-
S-71	20' LT	17+00	9.0-10.5	A-6(4)	33	14	33.3	18.5	13.9	34.3	100	80	51	-	-
S-72	20' LT	17+00	11.0-12.0	A-7-6(29)	59	30	8.9	7.9	12.7	70.6	100	95	85	-	-
SS-68	30' RT	26+57	1.0-2.5	A-2-4(0)	20	NP	68.5	20.2	4.2	7.1	97	51	13	-	-
SS-69	30' RT	26+57	8.4-9.9	A-6(9)	31	11	2.0	25.2	32.5	40.3	100	98	91	-	-
S-61	CL	30+25	1.0-3.0	A-5(18)	111	NP	14.9	7.3	65.7	12.1	100	89	79	-	-
SS-62	CL	30+25	9.3-10.8	A-2-4(0)	26	10	44.0	31.9	6.0	18.1	93	66	35	-	-
SS-63	CL	30+25	14.3-15.8	A-7-6(5)	43	21	42.0	14.6	5.0	38.3	99	72	44	-	-
S-57	35' RT	31+50	1.0-2.5	A-7-5(48)	83	37	2.0	1.8	23.6	72.6	100	99	97	-	-
SS-58	35' RT	31+50	8.9-10.4	A-7-6(13)	45	17	21.0	8.1	20.6	50.4	100	86	73	-	-
SS-59	35' RT	31+50	13.9-15.4	A-2-4(0)	20	4	49.9	28.2	7.8	14.1	91	64	22	-	-
SS-60	35' RT	31+50	18.9-20.4	A-7-6(14)	42	17	2.2	25.4	15.9	56.5	100	99	80	-	-
S-94	20' LT	32+00	1.0-2.5	A-7-5(19)	100	21	31.3	6.9	23.6	38.3	100	75	63	-	44.3



- (A) ALLUVIAL, GRAY TO BLACK, MOIST TO SATURATED, VERY SOFT TO MEDIUM STIFF, MEDIUM PLASTIC, MUCK AND HIGHLY PLASTIC, SILTY CLAY
- (B) ALLUVIAL, BROWN AND GRAY, WET TO SATURATED, LOOSE, SILTY SAND
- (C) ALLUVIAL, DARK GRAY, MOIST TO WET, STIFF TO HARD, SANDY SILT AND SILTY CLAY
- (D) COASTAL PLAIN, ORANGE AND GRAY, MOIST, MEDIUM STIFF, SANDY CLAY

**-Y3RPD-**

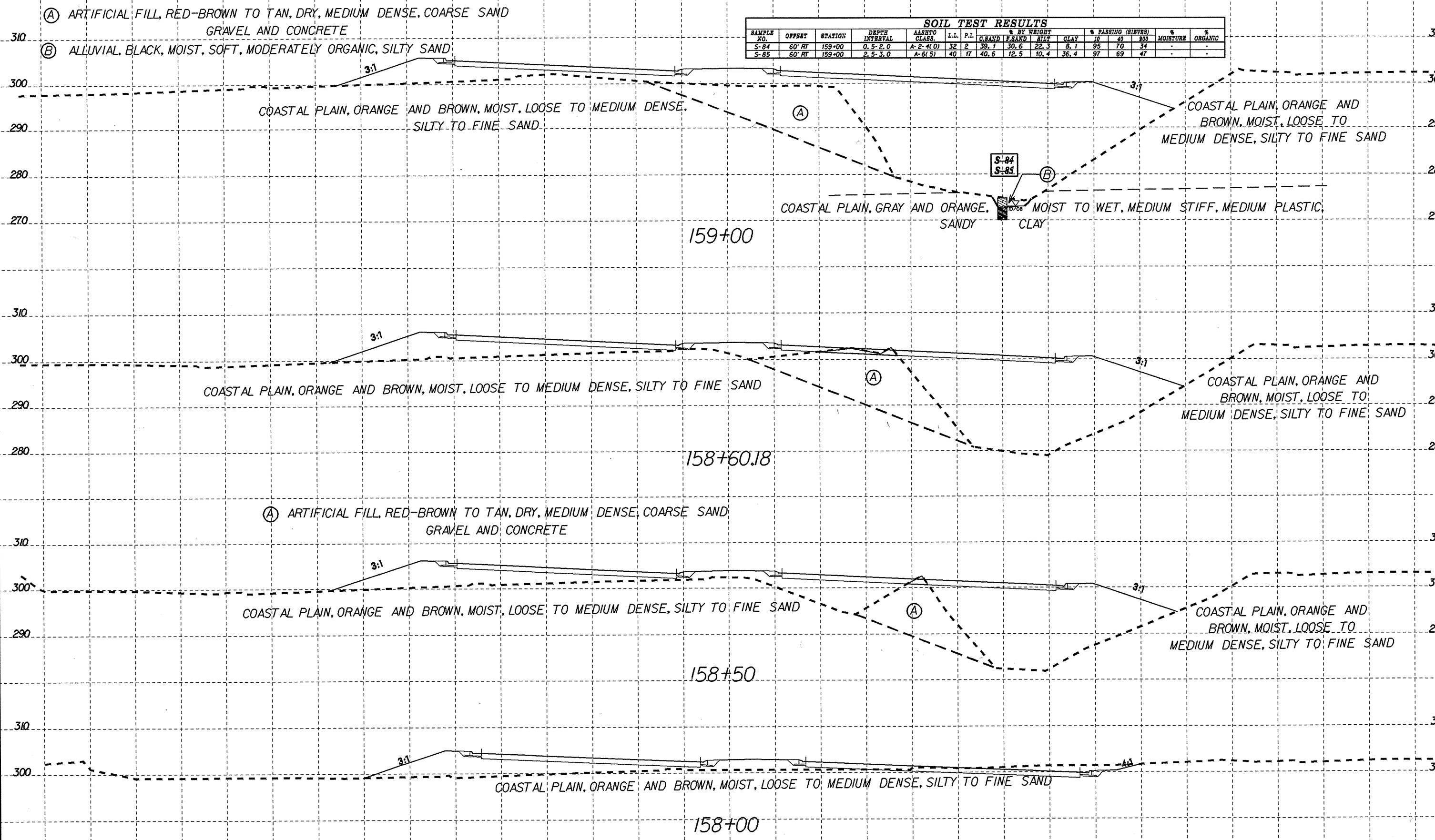
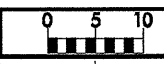








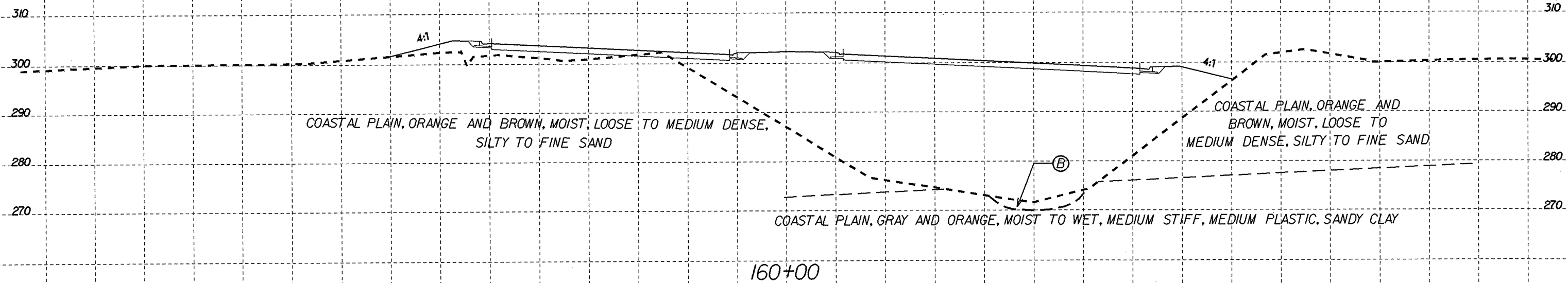
8/23/99



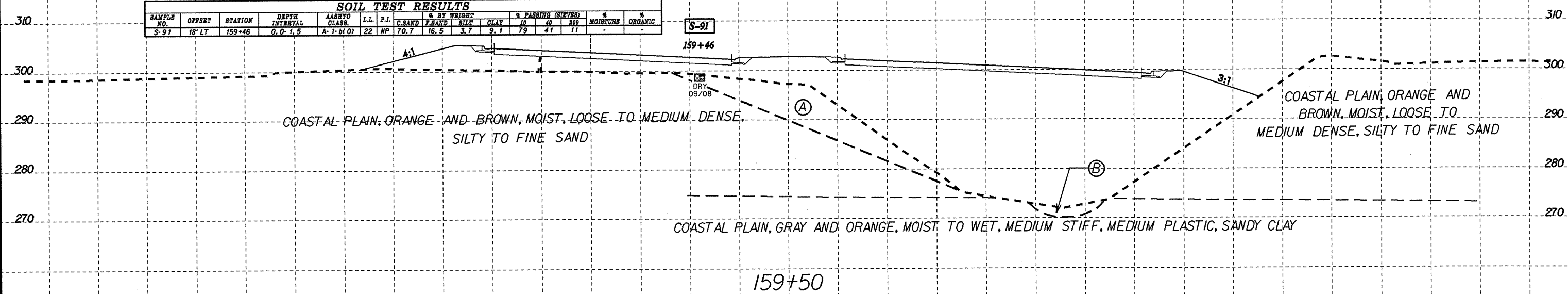
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC	
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
S-84	60' RT	159+00	0.5-2.0	A-2-4(0)	32	2	39.1	30.6	22.3	6.1	95	70	34	-	-
S-85	60' RT	159+00	2.5-3.0	A-6(5)	40	17	40.6	12.5	10.4	36.4	97	69	47	-	-

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- (A) ARTIFICIAL FILL, RED-BROWN TO TAN, DRY, MEDIUM DENSE, COARSE SAND GRAVEL AND CONCRETE
- (B) ALLUVIAL, BLACK, MOIST, SOFT, MODERATELY ORGANIC, SILTY SAND



SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	LAB/TO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-91	18' LT	159+46	0.0-1.5	A-1-B(0)	22	NP	70.7	16.5	3.7	9.1	79	41	11		



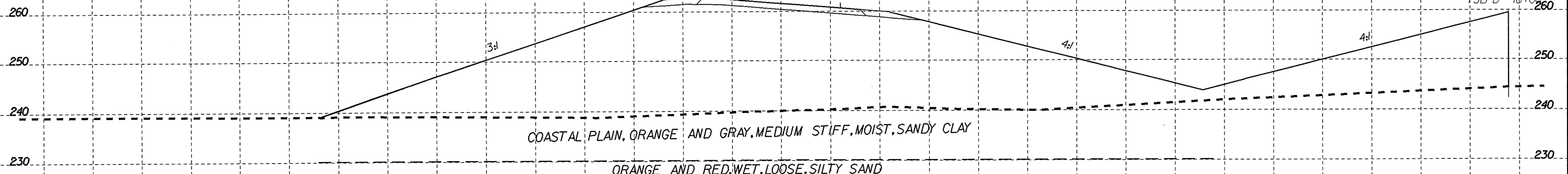
8/23/99



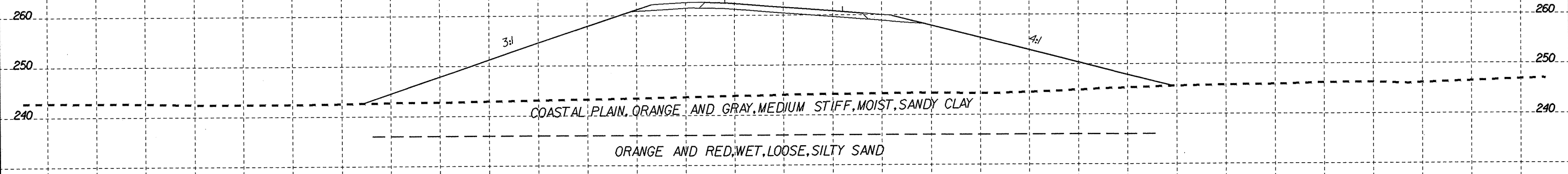
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U-4444A

SHEET NO.  
35

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26+00



25+50

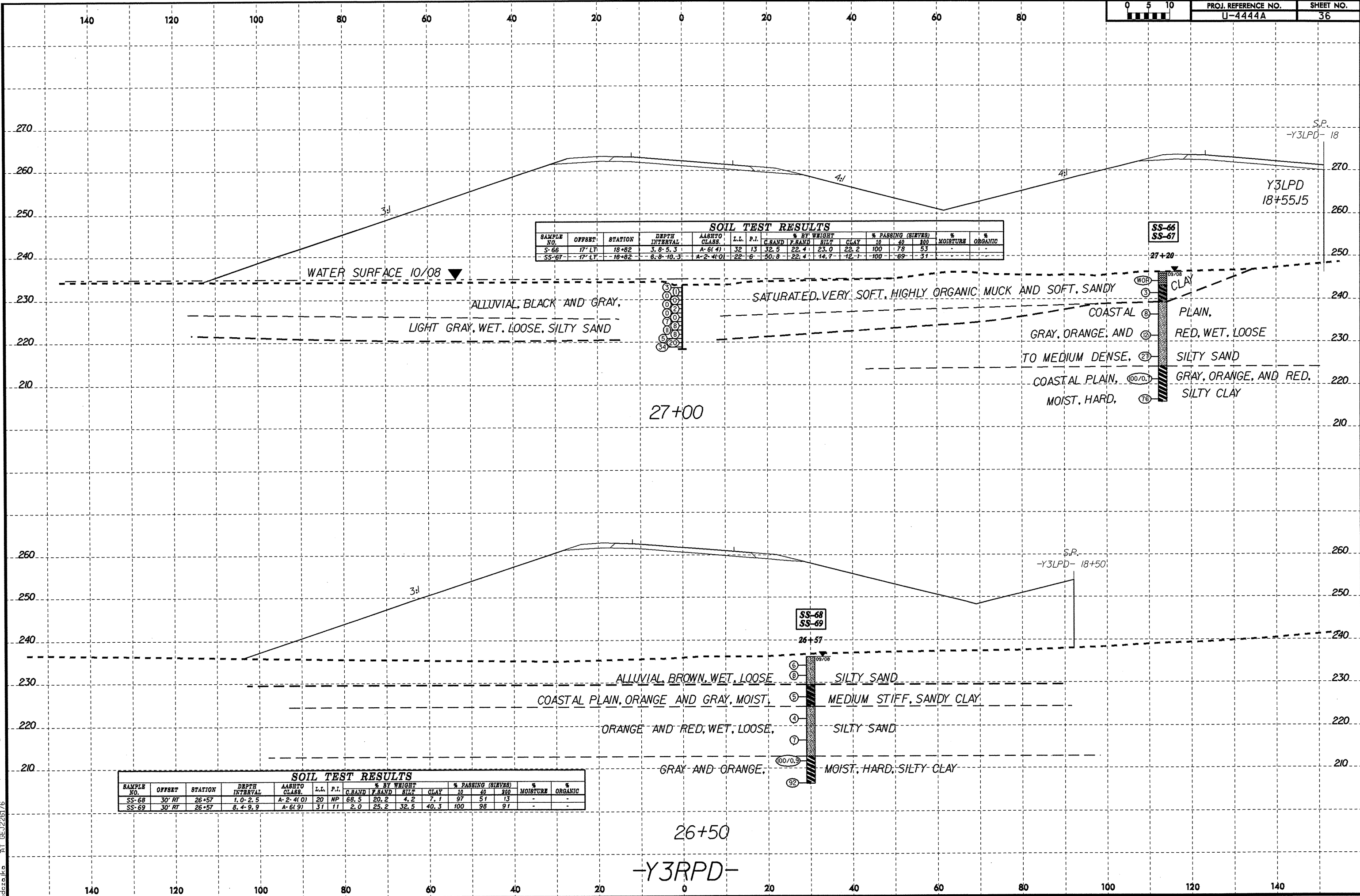
-Y3RPD-

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**SOIL TEST RESULTS**

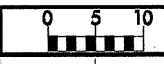
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.BAND	F.BAND	SILT	CLAY	10	40	200		
S-66	17' LT	18+82	3.8-5.3	A-6(4)	32	13	32.5	22.4	23.0	22.2	100	78	53	-	-
SS-67	17' LT	18+82	8.8-10.3	A-2-4(0)	22	6	50.8	22.4	14.7	12.1	100	69	31	-	-

**SOIL TEST RESULTS**

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.BAND	F.BAND	SILT	CLAY	10	40	200		
SS-68	30' RT	26+57	1.0-2.5	A-2-4(0)	20	NP	68.5	20.2	4.2	7.1	97	51	13	-	-
SS-69	30' RT	26+57	8.4-9.9	A-6(9)	31	11	2.0	25.2	32.5	40.3	100	98	91	-	-

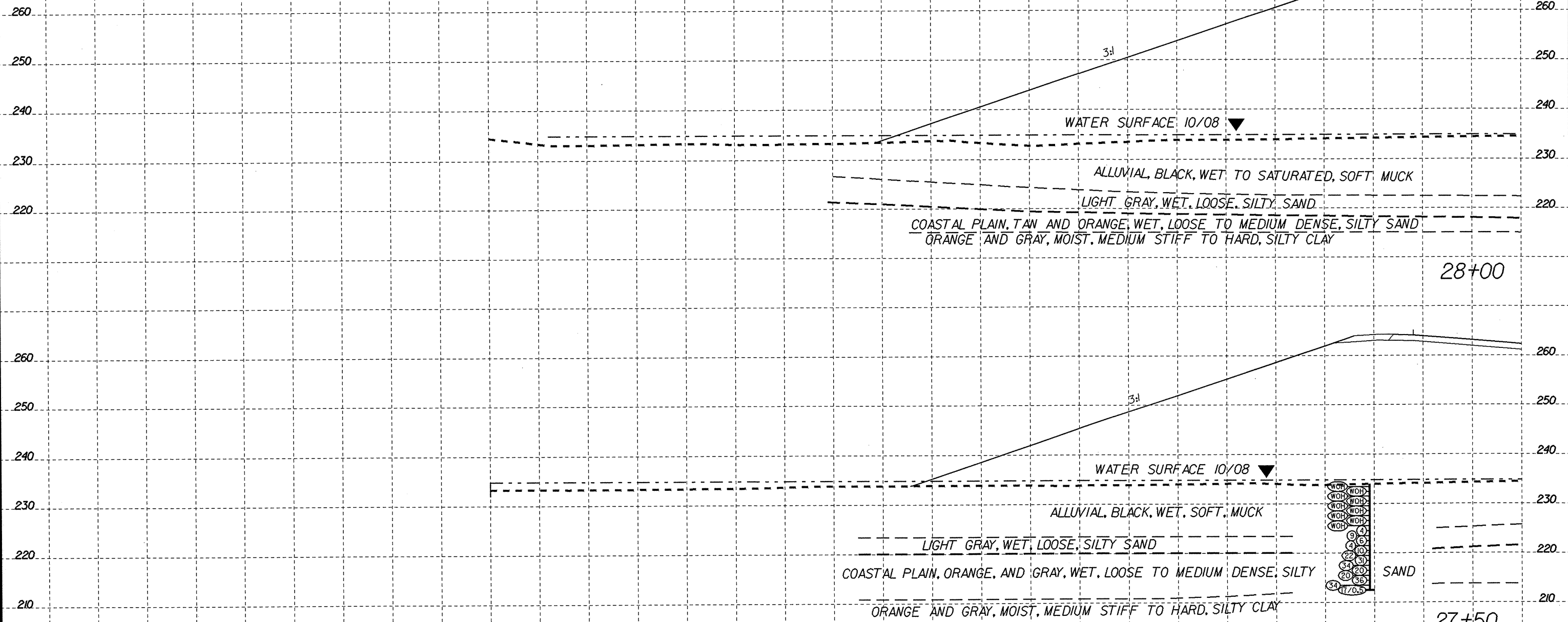
27+00  
 -Y3LPD-  
 26+50  
 -Y3RPD-

8/23/99



PROJ. REFERENCE NO. U-4444A SHEET NO. 37

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28+00

27+50

-Y3RPD-

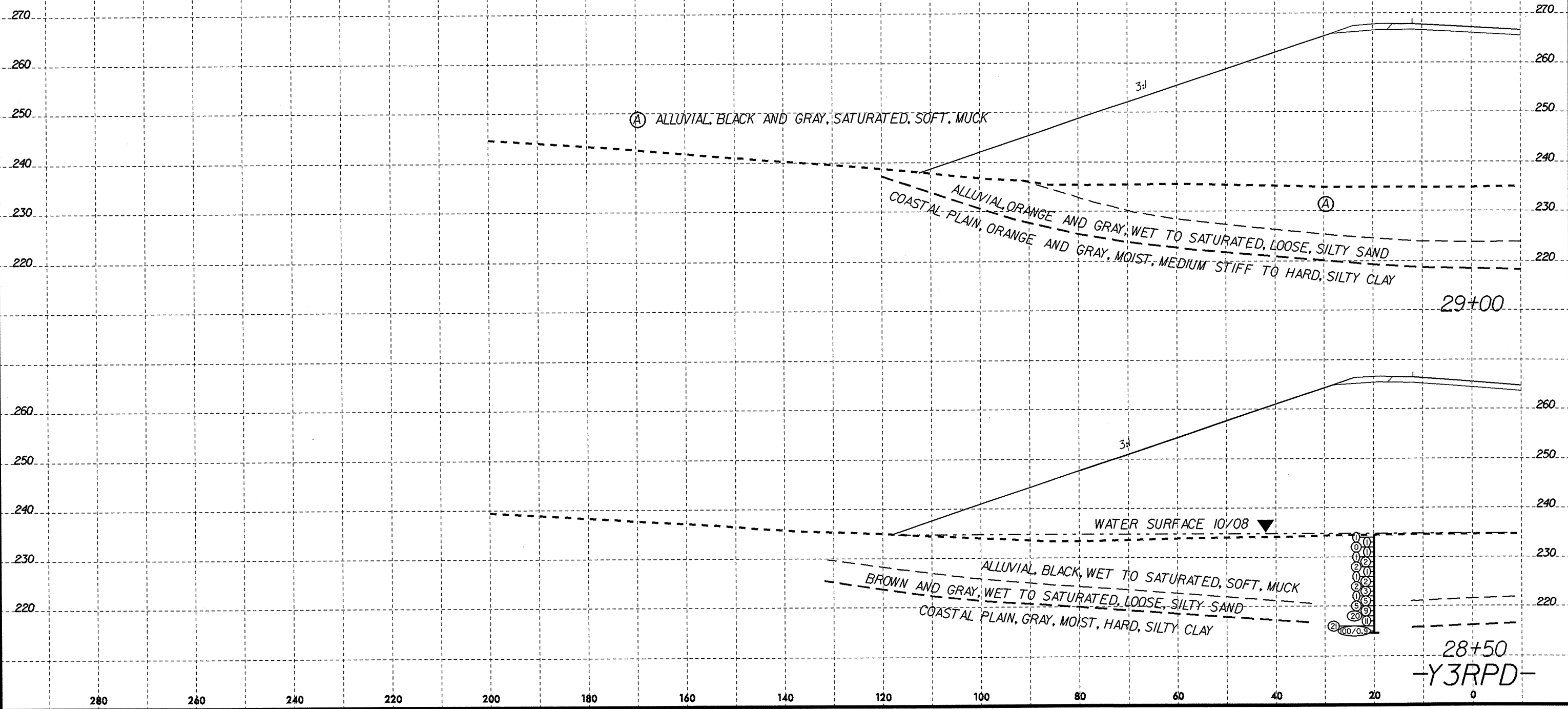
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8/23/99



PROJ. REFERENCE NO. U-4444A SHEET NO. 38

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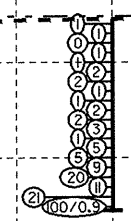
Ⓐ ALLUVIAL, BLACK AND GRAY, SATURATED, SOFT, MUCK

ALLUVIAL, ORANGE AND GRAY, WET TO SATURATED, LOOSE, SILTY SAND  
COASTAL PLAIN, ORANGE AND GRAY, MOIST, MEDIUM STIFF TO HARD, SILTY CLAY

29+00

WATER SURFACE 10/08 ▼

ALLUVIAL, BLACK, WET TO SATURATED, SOFT, MUCK  
BROWN AND GRAY, WET TO SATURATED, LOOSE, SILTY SAND  
COASTAL PLAIN, GRAY, MOIST, HARD, SILTY CLAY



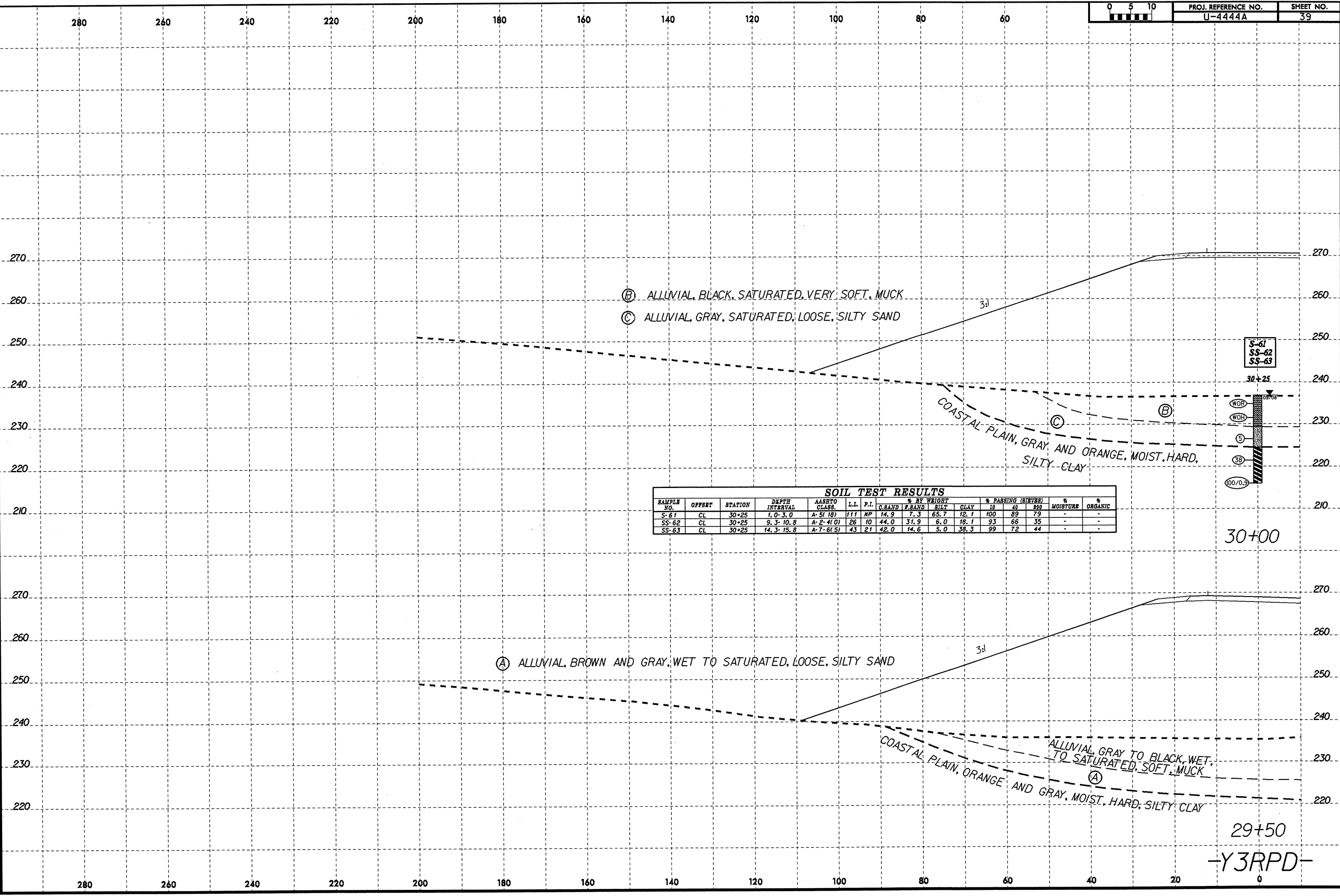
② 00/0.9

28+50  
-Y3RPD-

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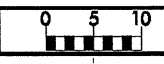
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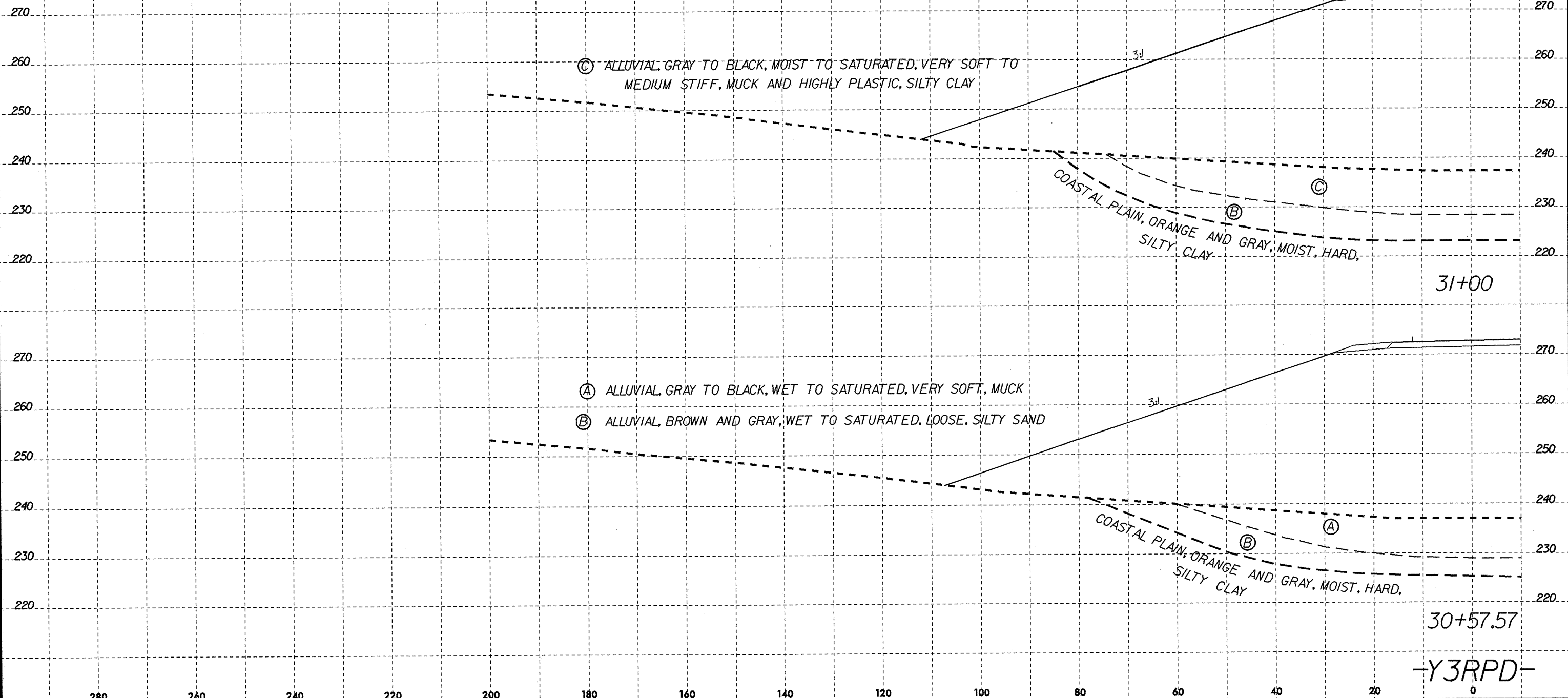
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
S-61	CL	30+25	1.0-3.0	A-5(18)	111	NP	14.9	7.3	65.7	12.1	100	89	79	-	-
SS-62	CL	30+25	9.3-10.8	A-2-4(0)	26	10	44.0	31.9	6.0	18.1	93	66	35	-	-
SS-63	CL	30+25	14.3-15.8	A-7-6(5)	43	21	42.0	14.6	5.0	38.3	99	72	44	-	-

8/23/99



PROJ. REFERENCE NO. U-4444A SHEET NO. 40

280 260 240 220 200 180 160 140 120 100 80 60



Ⓒ ALLUVIAL, GRAY TO BLACK, MOIST TO SATURATED, VERY SOFT TO MEDIUM STIFF, MUCK AND HIGHLY PLASTIC, SILTY CLAY

COASTAL PLAIN, ORANGE AND GRAY, MOIST, HARD, SILTY CLAY

31+00

Ⓐ ALLUVIAL, GRAY TO BLACK, WET TO SATURATED, VERY SOFT, MUCK

Ⓑ ALLUVIAL, BROWN AND GRAY, WET TO SATURATED, LOOSE, SILTY SAND

COASTAL PLAIN, ORANGE AND GRAY, MOIST, HARD, SILTY CLAY

30+57.57

-Y3RPD-

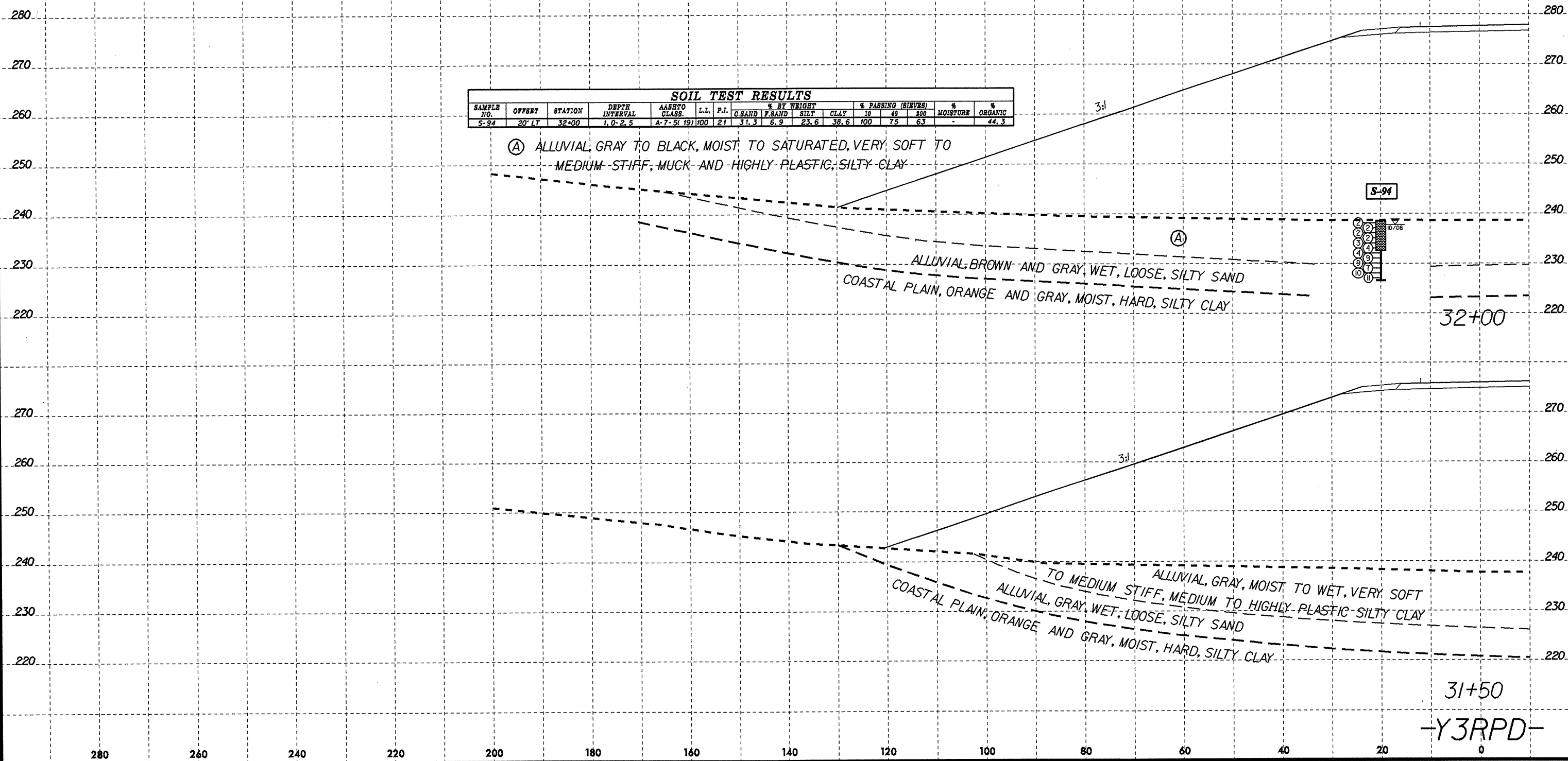
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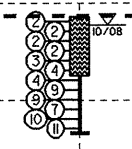
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-94	20' LT	32+00	1.0-2.5	A-7-5(19)	100	21	31.3	6.9	23.6	38.6	100	75	63	-	44.3

(A) ALLUVIAL, GRAY TO BLACK, MOIST TO SATURATED, VERY SOFT TO MEDIUM STIFF, MUCK AND HIGHLY PLASTIC, SILTY CLAY

ALLUVIAL, BROWN AND GRAY, WET, LOOSE, SILTY SAND  
COASTAL PLAIN, ORANGE AND GRAY, MOIST, HARD, SILTY CLAY

TO MEDIUM STIFF, MEDIUM TO HIGHLY PLASTIC SILTY CLAY  
ALLUVIAL, GRAY, MOIST TO WET, VERY SOFT  
ALLUVIAL, GRAY, WET, LOOSE, SILTY SAND  
COASTAL PLAIN, ORANGE AND GRAY, MOIST, HARD, SILTY CLAY

S-94



32+00

31+50

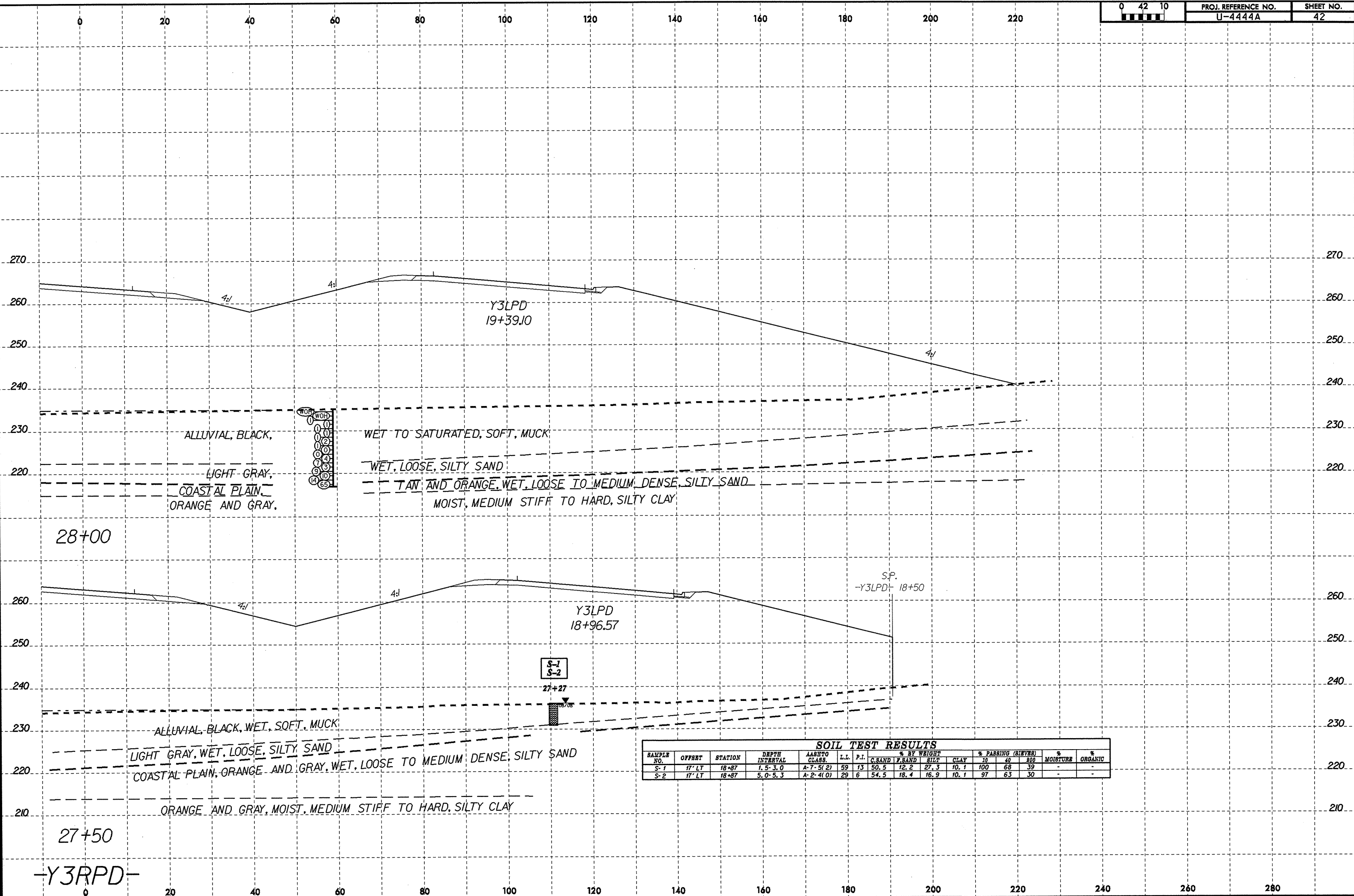
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28+00

27+50

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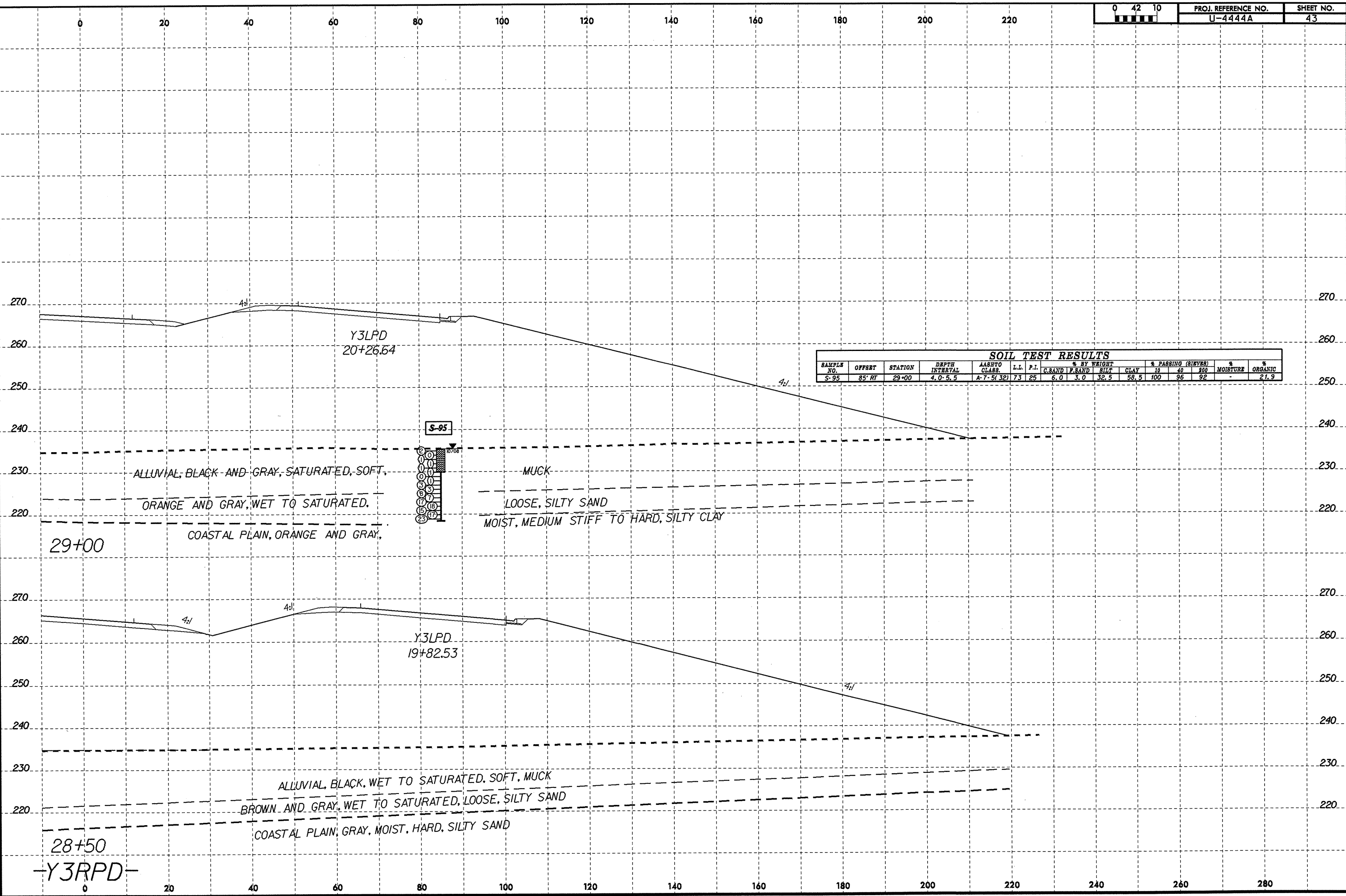
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S-2

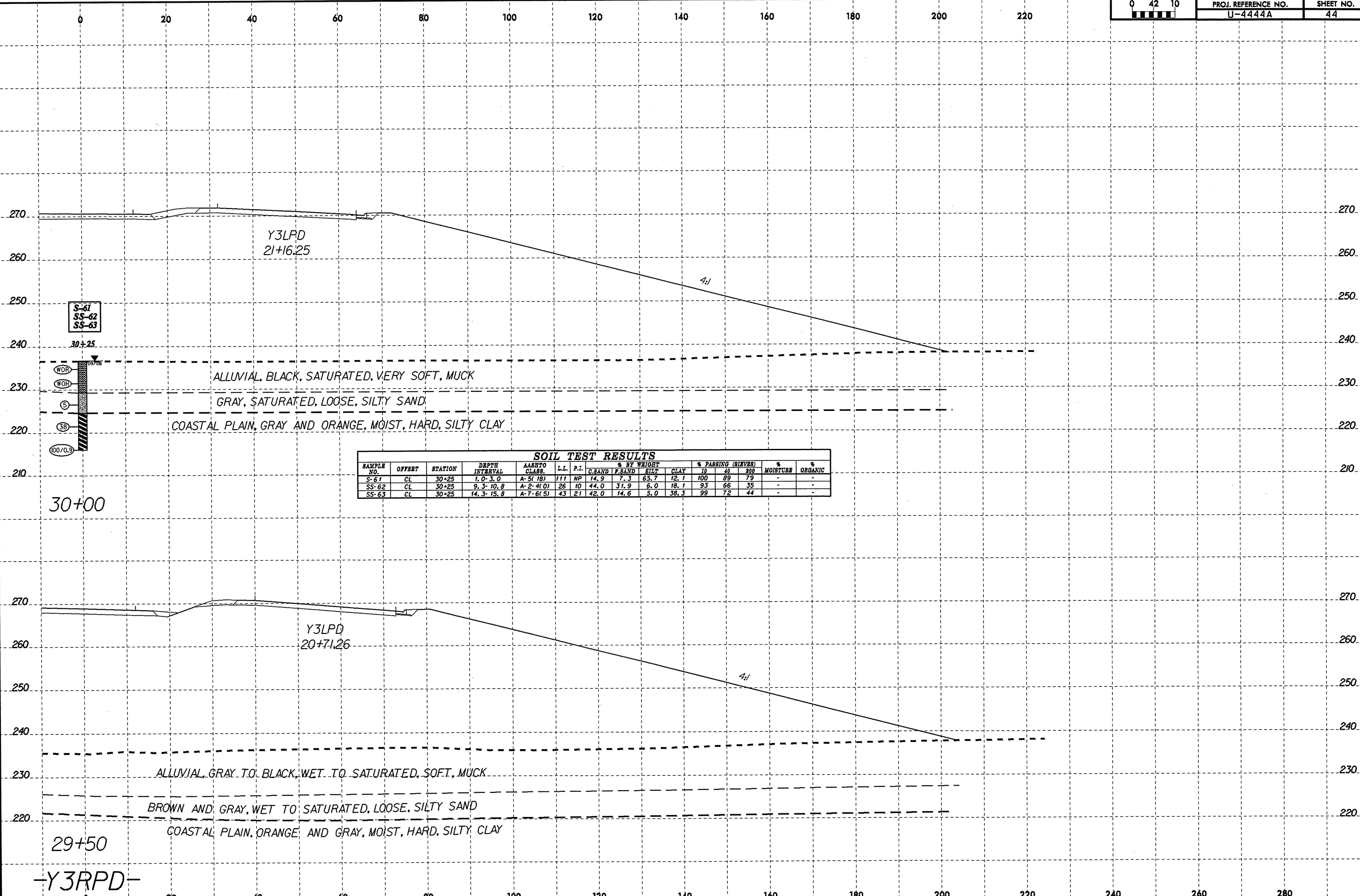
27+27

SOIL TEST RESULTS															
SAMPLE NO.	OFFBET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
							G. SAND	F. SAND	SILT	CLAY	10	40			200
S-1	17' LT	18+87	1.5-3.0	A-7-5(2)	59	13	50.5	12.2	27.3	10.1	100	68	39	-	-
S-2	17' LT	18+87	5.0-5.3	A-2-4(0)	29	6	54.5	18.4	16.9	10.1	97	63	30	-	-

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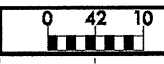


**SOIL TEST RESULTS**

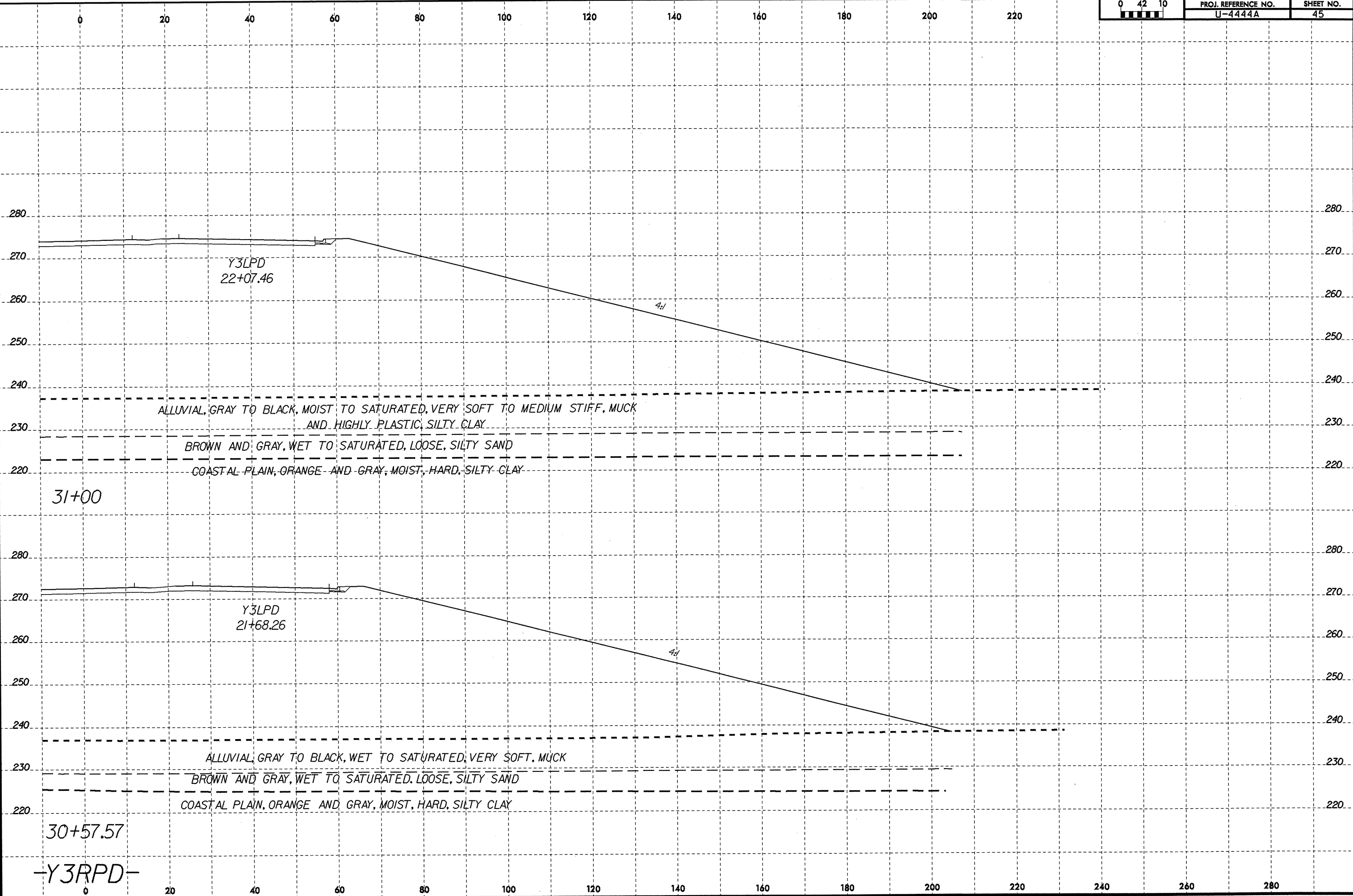
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-61	CL	30+25	1.0-3.0	A-5(18)	111	NP	14.9	7.3	65.7	12.1	100	89	79	-	-
SS-62	CL	30+25	9.3-10.8	A-2(10)	26	10	44.0	31.9	6.0	18.1	93	66	35	-	-
SS-63	CL	30+25	14.3-15.8	A-7(61.5)	43	21	42.0	14.6	5.0	38.3	99	72	44	-	-

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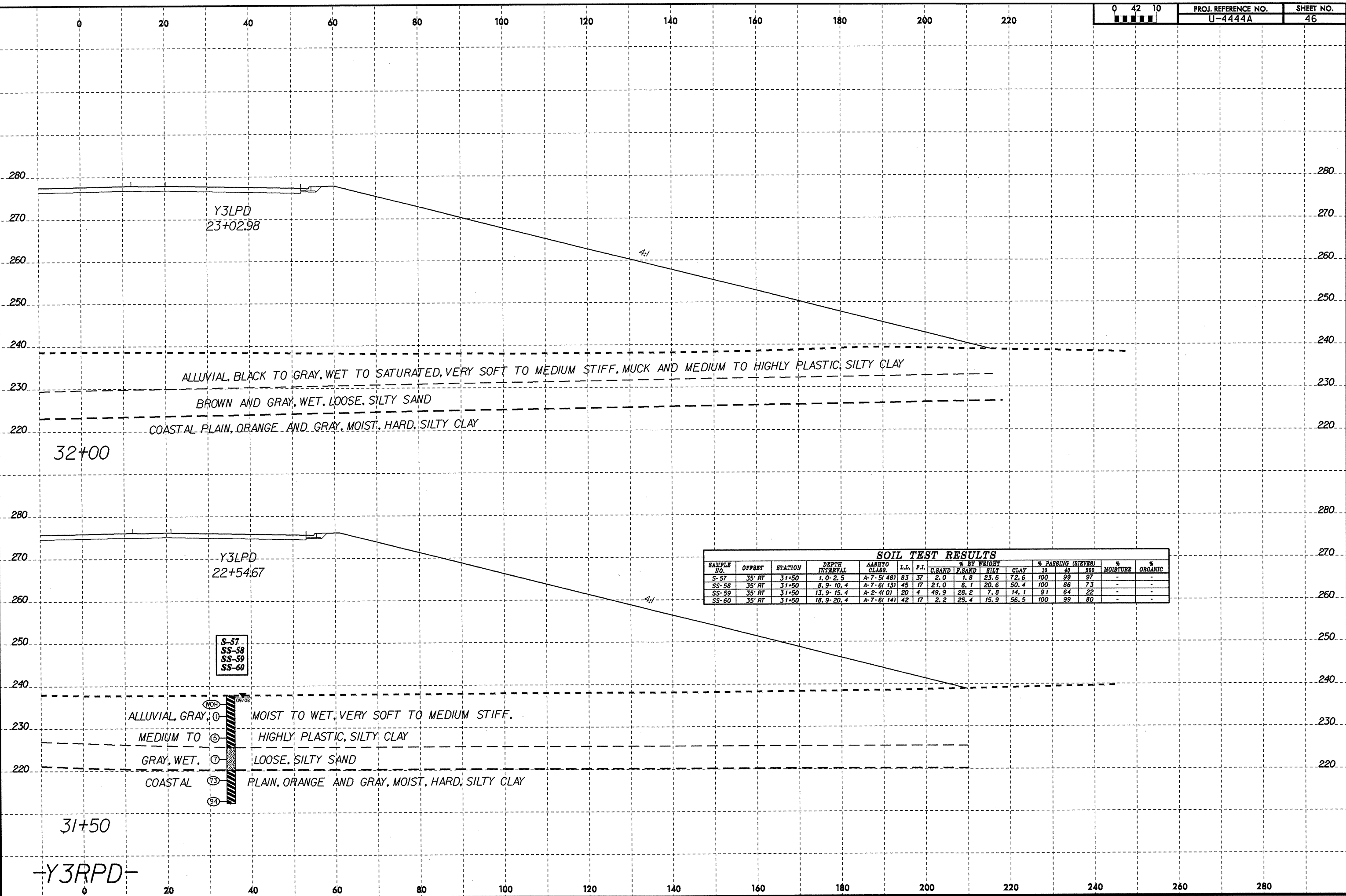
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SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AAHRTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-57	35' RT	31+50	1.0-2.5	A-7-5(48)	83	37	2.0	1.8	23.6	72.6	100	99	97	-	-
SS-58	35' RT	31+50	8.9-10.4	A-7-6(13)	45	17	21.0	8.1	20.6	50.4	100	86	73	-	-
SS-59	35' RT	31+50	13.9-15.4	A-2-4(0)	20	4	49.9	28.2	7.8	14.1	91	64	22	-	-
SS-60	35' RT	31+50	18.9-20.4	A-7-6(14)	42	17	2.2	25.4	15.9	56.5	100	99	80	-	-

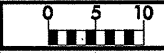
S-57  
 SS-58  
 SS-59  
 SS-60

(W)H  
 (0)H  
 (5)H  
 (7)H  
 (13)H  
 (24)H

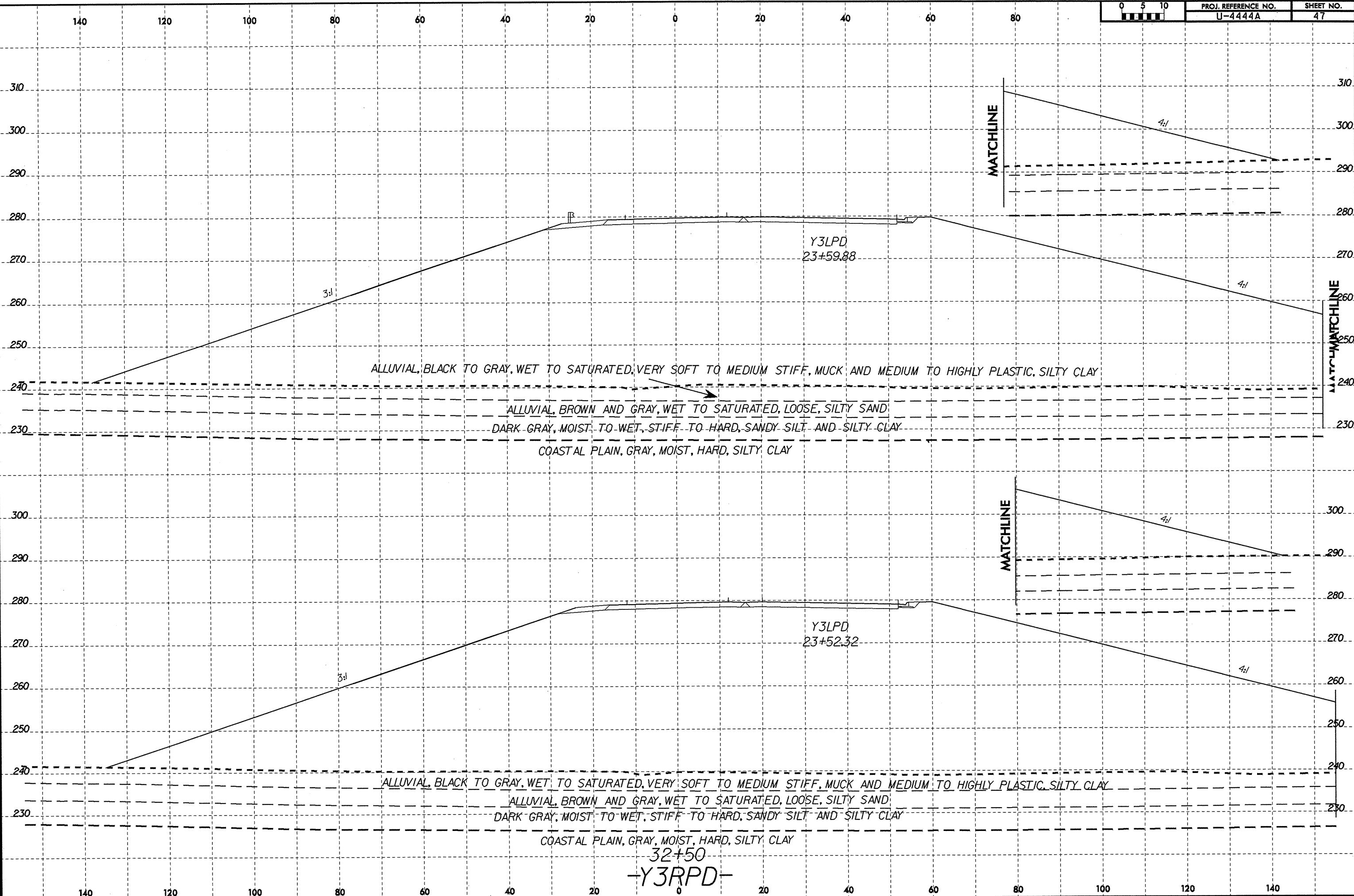
ALLUVIAL, GRAY, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, MEDIUM TO HIGHLY PLASTIC, SILTY CLAY  
 GRAY, WET, LOOSE, SILTY SAND  
 COASTAL PLAIN, ORANGE AND GRAY, MOIST, HARD, SILTY CLAY

-Y3RPD-

8/23/99



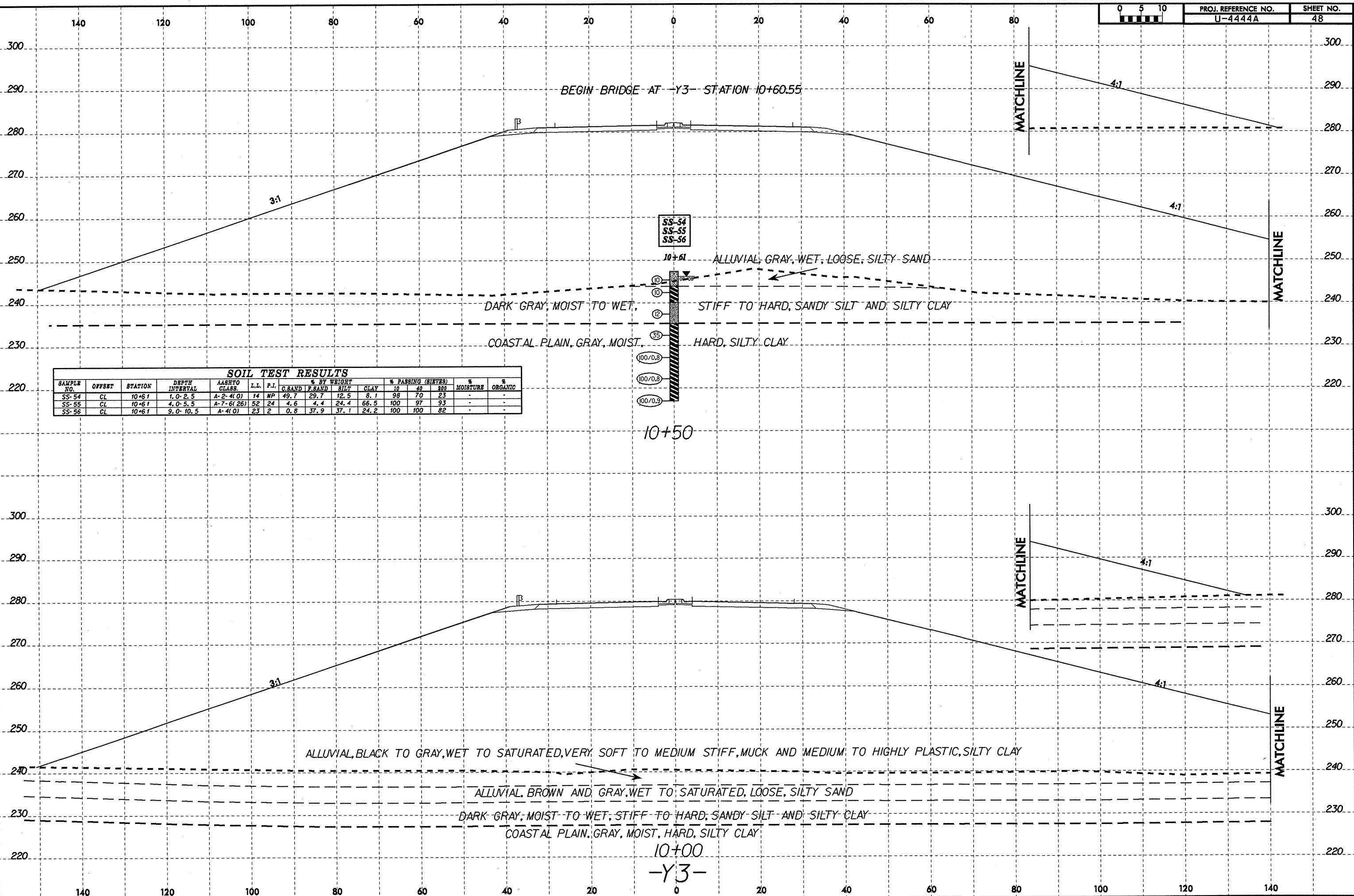
PROJ. REFERENCE NO. U-4444A	SHEET NO. 47
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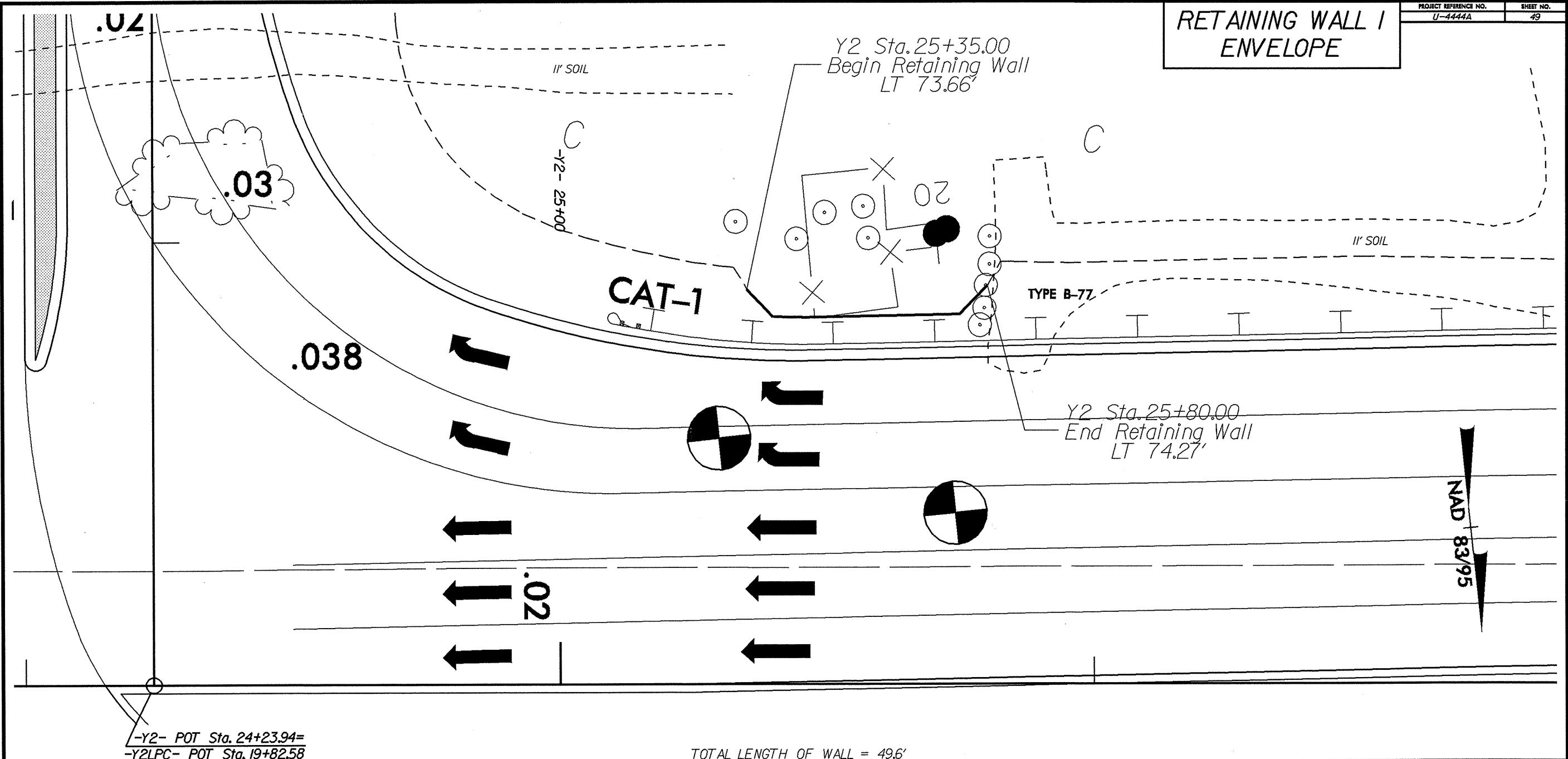


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 03/23/09  
 03/23/09



SOIL TEST RESULTS															
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-54	CL	10+6.1	1.0-2.5	A-2-4(0)	14	NP	49.7	29.7	12.5	8.1	98	70	23	-	-
SS-55	CL	10+6.1	4.0-5.5	A-7-6(26)	52	24	4.6	4.4	24.4	66.5	100	97	93	-	-
SS-56	CL	10+6.1	9.0-10.5	A-4(0)	23	2	0.8	37.9	37.1	24.2	100	100	82	-	-

**RETAINING WALL I ENVELOPE**



NAD 83/95

-Y2- POT Sta. 24+23.94=  
-Y2LPC- POT Sta. 19+82.58

TOTAL LENGTH OF WALL = 49.6'

