

NOTE: SEE SHEET 1A 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.	R-2812	1	74
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34504.1.1	STP-211 (5)	P.E.	
34504.2.2	STP-0211(25)	R/W, UTIL.	
34504.3.2	STP-0211(26)	CONSTR.	

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	10+00.00 - 412+44.56	4 - 33	34 - 48	54 - 72
-Y2-	10+35.53 - 10+92.50	5	49	
-Y3-	10+35.50 - 13+00.00	7	49	
-Y10-	11+37.50 - 12+67.00	19	50	
-Y11-	10+35.50 - 12+10.00	23	50	
-Y12-	12+50.00 - 13+51.93	25	50	
-Y13-	13+00.00 - 15+75.00	26	51	
-Y14-	12+25.00 - 13+13.54	28	51	
-Y15-	13+59.68 - 14+25.00	30	52	
-Y17-	10+35.50 - 11+78.21	32	53	
-Y18-	12+30.00 - 13+23.50	32	53	
-WGATE-	10+35.50 - 11+15.00	25	53	
SAMPLE RESULTS		73 - 74		

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34504.1.1 F.A. PROJ. STP-211 (5)
COUNTY MOORE
PROJECT DESCRIPTION NC 211 FROM NC 73 IN WEST END TO THE TRAFFIC CIRCLE IN PINEHURST

INVENTORY

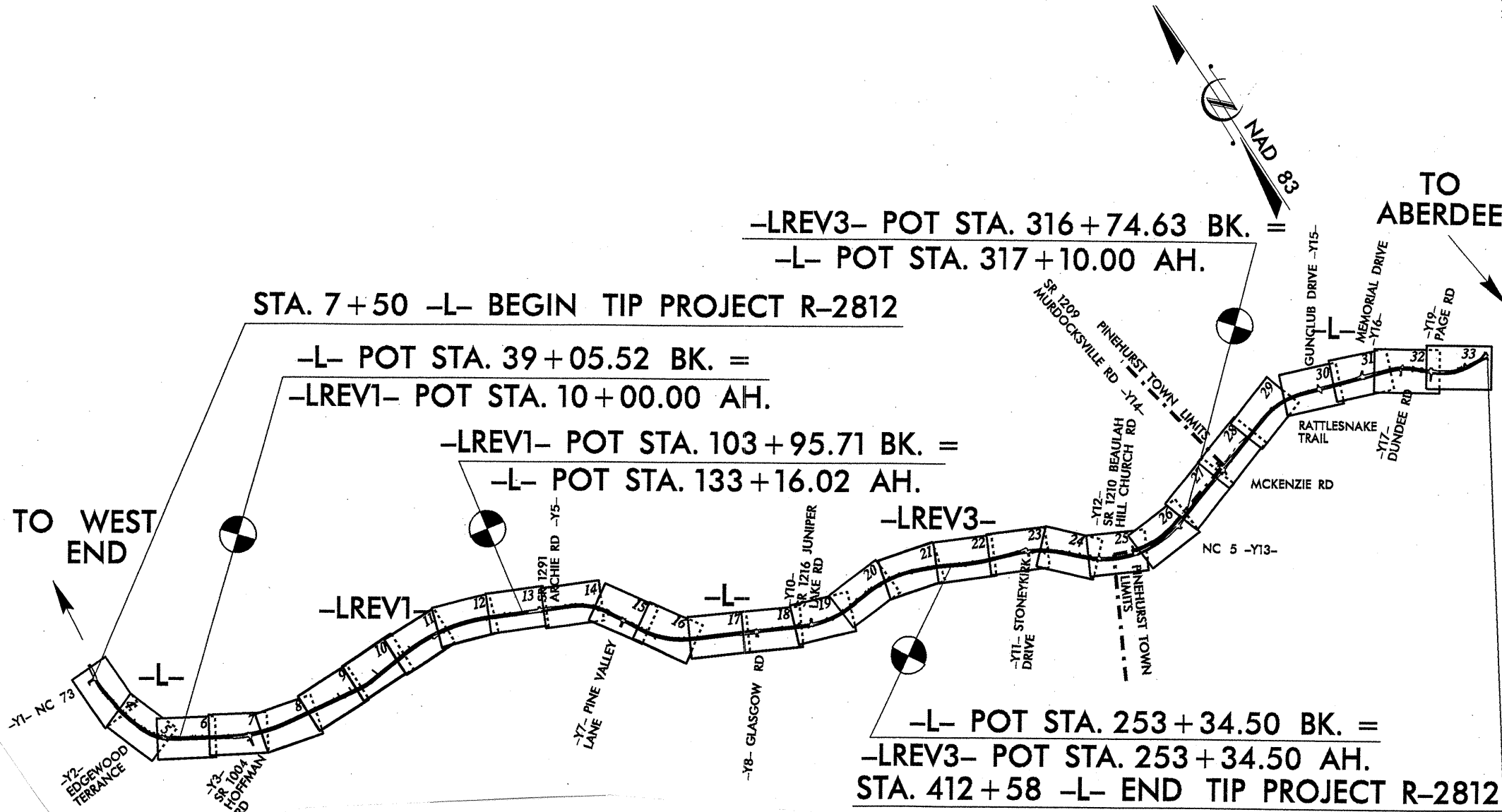
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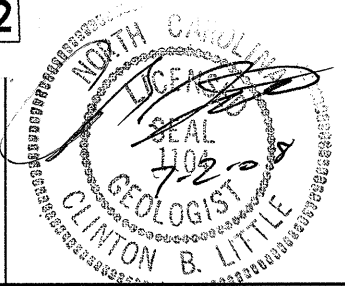
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CONTRACT: C202663 ID: R-2812



PERSONNEL
R. W. TODD
J. K. STICKNEY
C. L. SMITH

INVESTIGATED BY J. E. BEVERLY
CHECKED BY C. B. LITTLE
SUBMITTED BY C. B. LITTLE
DATE DECEMBER 2007



DRAWN BY: C. E. BURRIS & J. E. BEVERLY

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

09/08/09

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MOORE COUNTY

LOCATION: NC 211 FROM NC 73 IN WEST END
TO THE TRAFFIC CIRCLE IN PINEHURST

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CURB & GUTTER
SIGNALS, AND SIGNING

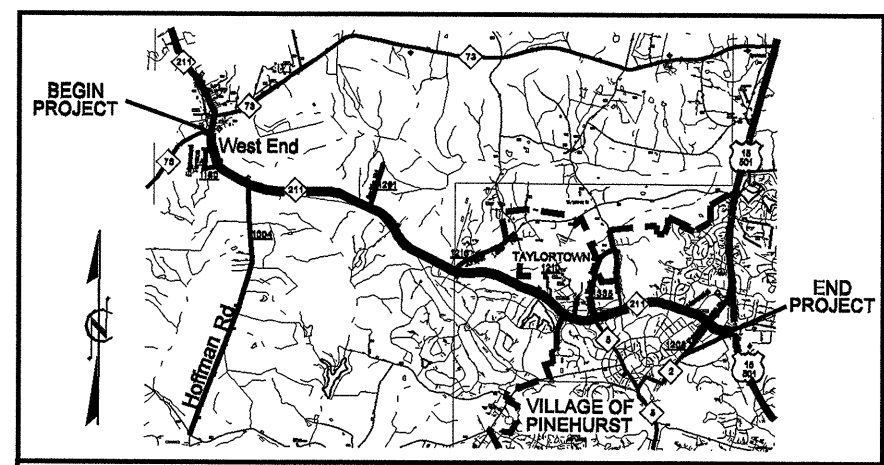
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2812	1A	55
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34504.1.1	STP-211 (5)	P.E.	

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

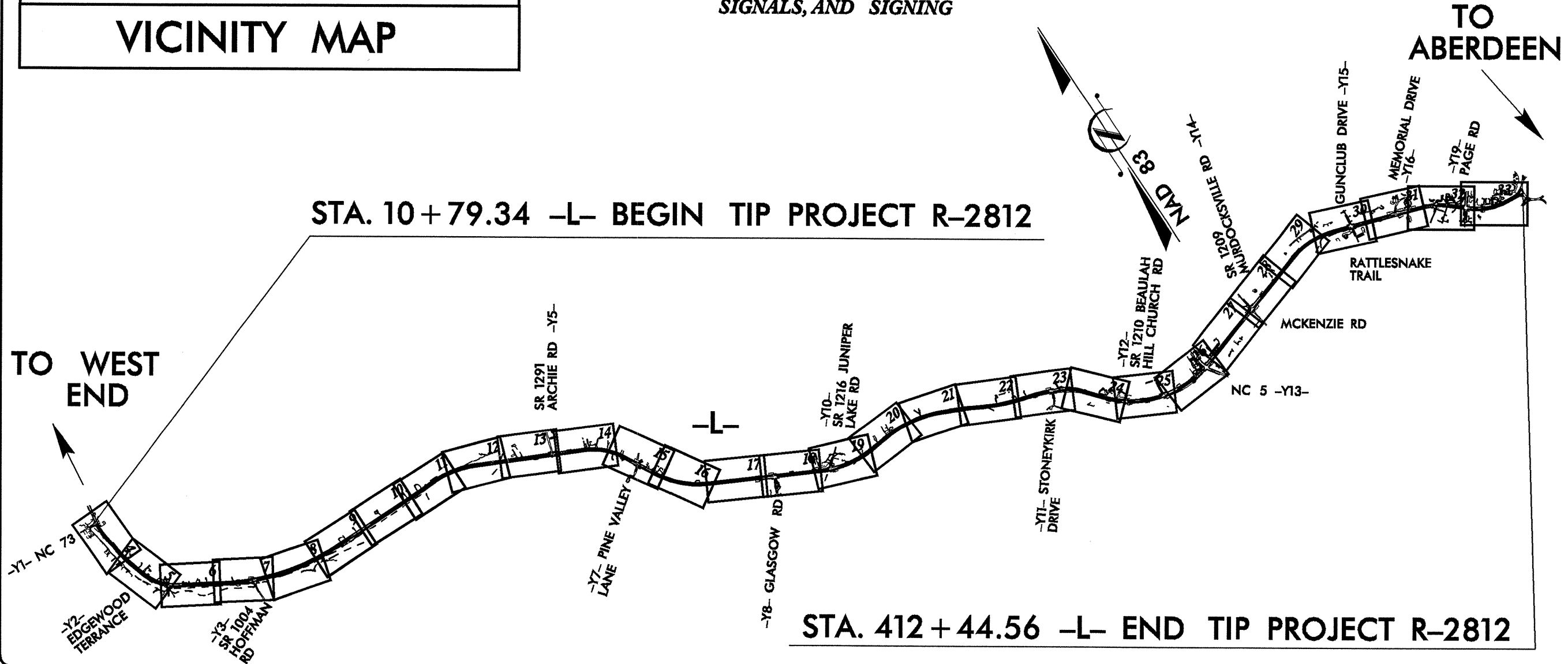
TIP PROJECT: R-2812

34504.1.1

WBS:

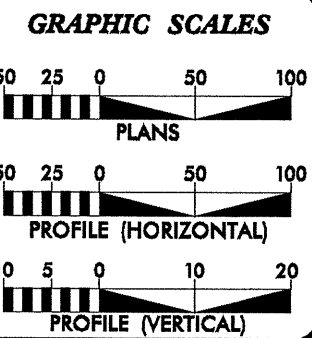


VICINITY MAP



STA. 10 + 79.34 -L- BEGIN TIP PROJECT R-2812

STA. 412 + 44.56 -L- END TIP PROJECT R-2812



DESIGN DATA

ADT 2004 =	15300
ADT 2025 =	20500
DHV =	9 %
D =	52 %
T =	5 % *
V =	50 MPH
* TTST 2	DUAL 3

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT STP-211(5) =	7.61 MI.
TOTAL LENGTH STATE PROJECT 34504.1.1 =	7.61 MI.

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

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 20, 2008	JIMMY GOODNIGHT, PE PROJECT ENGINEER
LETTING DATE: JUNE 15, 2010	TIM GOINS PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER P.E.

18-OCT-2007 15:16
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. R-2812
 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 (ASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE ASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, MOISTURE, ASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLES: <i>VERY STIFF, DARK, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HARD 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. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
COMPRESSION SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE	COMPRESSION SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC	PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
TEXTURE OR GRAIN SIZE	ABBREVIATIONS	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
SOIL MOISTURE - CORRELATION OF TERMS	EQUIPMENT USED ON SUBJECT PROJECT	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
PLASTICITY	FRACTURE SPACING	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
COLOR	BEDDING	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
	INDURATION	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE
	ROCK HARDNESS	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE	WEATHERING FRESH VERY SLIGHT (V SLI) SLIGHT (SLI) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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

LYNDO TIPPETT
SECRETARY

December 3, 2007

STATE PROJECT: 34504.1.1 (R-2812)
F.A. PROJECT: STP - 211(5)
COUNTY: Moore
DESCRIPTION: NC 211 from NC 73 in West End to The Traffic Circle in Pinehurst

SUBJECT: Geotechnical Report - Inventory

This report presents the findings of the Geotechnical Investigation for the proposed widening of NC 211. Beginning and ending station limits, which define this segment of the project, are from -L- 10+79.34 to 412+44.56. The project begins at the intersection with NC 73 and generally trends easterly until ending at the traffic circle in the heart of Pinehurst. Distance traversed from beginning to end is 7.61 miles.

The geotechnical field investigation for this project was conducted between the months of June and August of 2007. An ATV mounted CME 550X drill machine with automatic drop hammer was utilized to perform test borings along the proposed corridor. The following survey lines are addressed in this inventory report:

Line	Station
-L-	10+00 - 412+44.56
-Y2-	10+35.53 - 10+92.50
-Y3-	10+35.50 - 13+00
-Y10-	11+37.50 - 12+67
-Y11-	10+35.50 - 12+10
-Y12-	12+50 - 13+51.93
-Y13-	13+00 - 15+75
-Y14-	12+25 - 13+13.54
-Y15-	13+59.68 - 14+25
-Y17-	10+35.50 - 11+78.21
-Y18-	12+30.00 - 13+23.50
-WGATE-	10+35.50 - 11+15

Areas of Special Geotechnical Interest:

1. Groundwater:

There were very few instances in which groundwater was encountered during the course of this investigation. The majority of holes drilled were dry after 24 hours. Borings in the areas right of -L- station 234+00 to 241+00, left of 241+00 to 247+50, and left of 270+00 to 278+00 were all noted to contain groundwater. Groundwater elevations are well below proposed grade.

2. Non-Crystalline Rock:

No rock was encountered during the course of this investigation.

3. High PI Soils: (Based on PI's of 16 or greater using Coastal Plain borrow criteria)

The majority of soils along the project corridor are sands. High PI clayey sands (A-2-6, A-2-7) and sandy clays (A-7-6, A-6) were encountered sporadically. Noted occurrences of high PI clay soils within 3 feet of proposed grade are listed as follows:

Station Location	AASHTO Soil Type	High PI Value/Range (16+)
-L- 148+00 - 160+00	A-2-7	19 - 20
-L- 186+00 - 188+00	A-2-7	27
-L- 247+00 - 250+00	A-2-6	19
-L- 283+00 - 286+00	A-2-7	20
-L- 361+00 - 369+00	A-2-6, A-2-7	16 - 20
-L- 373+00 - 375+00	A-2-6	16

4. Alluvial Soils / Wet Areas:

There were few areas containing alluvial soils along the project corridor. These areas result from adjacent ponds, streams, creeks, and drainage features that are small to moderate in size. One of the larger alluvial features is a pond left of -L- station 270+00. Sediments associated with the pond are comprised of 3 feet of very loose clayey sand (A-2-7). The next alluvial feature of significant size is a creek surrounded by wetlands right and left of -L- stations 275+00 to 280+00. Alluvial soils in this area are very loose clayey sand (A-2-4). One final area of significant size is the wetlands surrounding the creek left and right of -L- station 338+50 to 341+50. Alluvium in this area is comprised of loose clayey coarse sand (A-1-b) with some organic content, and soft sandy clay (A-7-6).

Physiography/Geology:

The project area is located in southeastern Moore County between the cities of West End and Pinehurst. The topography along the project corridor is flat to gently rolling and is surrounded by residential and business structures. Approximate elevation range is 400 - 610 feet along the project.

Geologically this site lies in the Coastal Plain Physiographic Province and contains well drained sandy soils from the Middnedorf (Km) and Pinehurst (Tp) formations.

Soil Properties:**1. Coastal Plain Soils:**

Coastal Plain soils are of marine origin. They were formed by deposition of continental sediments onto a submerged shallow continental shelf that was later exposed by sea level subsidence. These soils occur in a variety of consistencies, and classifications, which can further be subdivided into sands, silts and clays.

Coastal Plain Sands are by far the dominant soil type along the project. They generally consist of very loose to medium dense sand and clayey sand in the AASHTO Classifications of A-1-b, A-2-4, A-2-6, A-2-7, and A-3. For the most part, sands are clean and coarse grained, however clayey sands (A-2-6, A-2-7) have significantly high PI's in quite a few instances.

Clay soils were encountered sporadically and mostly consist of medium stiff to hard sandy clay in the AASHTO classifications of A-7-6, and A-6. The clay soils appear well drained and have a plasticity index ranging from 13 to 37. For the most part, clay soils fall into a high PI category.

The project is largely devoid of soil in the silt classification. Only one sample out of 188 fell into the category of silt and that sample produced an AASHTO classification of A-4.

2. Alluvial Soils:

Alluvial soils originate from water transportation and deposition in a floodplain environment. Alluvial deposits associated with this project are typically shallow. They are comprised primarily of very loose to loose clayey coarse sand (A-2-4, A-2-6, A-1-b) and may contain some gravel and organic content.

3. Fill Soils:

Roadway embankment fill soils are generally present beneath existing NC 211 and its associated connectors (-Y- lines). Soil type is typically medium dense sand, and clayey sand (A-2-4, A-2-6).

Wells:

During the course of this investigation there were several wells noted, however, only 2 were discovered within the proposed construction limits. Locations of these 2 wells are left of -L- station 36+10, and left of -L- station 202+50. It is possible there are additional wells that went undetected.

Respectfully Submitted,


J.E. Beverly, Project Geo-Engineer

COMPUTED BY: NNA DATE: 6/17/2011
 CHECKED BY: TG DATE: 7/28/2011

PROJECT NO. R-2812 SHEET NO. 3-W

SUMMARY OF EARTHWORK IN CUBIC YARDS

Station	Uncl. Excav.	Embank. +%	Borrow	Waste
PHASE I				
-L- 7+50.00 TO 14+50 RT	2212	60	0	2152
-TEMPALIGN1 10+00 TO 16+54.92	856	449	0	407
-L- 25+00 TO 30+50 RT	782	833	51	0
-TEMPALIGN2- 10+00 TO 18+81.43	227	1069	842	0
-LREV1- 29+50 TO 36+00 RT	551	3378	2827	0
-TEMPALIGN3- 10+00 TO 26+02.25	3150	2666	0	484
-LREV1- 52+00 TO 82+00 RT	3498	25157	21659	0
-LREV1- 82+00 TO 103+95.97 RT	3521	15613	12092	0
-L- 133+16 TO 163+00 RT	2945	15128	14071	1888
-L- 163+00 TO 195+00 RT	2152	5772	3620	0
-Y7- 10+50 TO 11+75	359	0	0	359
-TEMPALIGN4- 10+00 TO 16+70.32	323	1602	1279	0
-L- 214+50 TO 231+50 RT	4	22787	22783	0
-TEMPALIGN5- 10+00 TO 20+58.30	660	2916	2256	0
-LREV3- 256+00 TO 286+00 RT	5018	24572	19677	123
-LREV3- 286+00 TO 296+00 RT	203	10223	10020	0
-TEMPALIGN6- 10+00 TO 17+75.81	860	532	0	328
-Y11- 11+00 TO 11+75	185	26	0	159
-TEMPALIGN7- 10+00 TO 19+19.38	3050	311	0	2739
-L- 360+00 TO 391+92 RT	3980	9366	5608	222
-Y15- 14+00 TO 14+25 RT of -L-	28	0	0	28
-L- 16+00 TO 20+00 LT	0	2173	2173	0
-L- 35+00 TO 39+05.52 LT	1472	1756	284	0
-LREV1- 10+00 TO 21+05 LT	192	10307	10115	0
-TEMPALIGN8- 10+00 TO 31+01.04	9785	9469	0	316
-LREV1- 56+00 TO 73+00 LT	4305	14894	10589	0
-LREV1- 82+00 TO 90+00 LT	0	9781	9781	0
-L- 185+00 TO 208+50 LT	1138	5934	4796	0
-L- 240+00 TO 253+34.5 LT	2414	11346	9544	612
-LREV3- 253+35 TO 253+75 LT	203	1	0	202
-LREV3- 302+38 TO 314+00 LT	1093	3042	1949	0
-LREV3- 315+68 TO 316+74.63 LT	29	40	11	0
-L- 317+10 TO 329+87 LT	5234	3306	0	1928
-L- 334+25 TO 352+50 LT	1822	33293	31471	0
-Y17- 11+00 TO 11+78	70	37	0	33
SUMMARY TOTALS PHASE I:	62321	247839	197498	11980
WASTE IN LIEU OF BORROW PHASE I			-9135	-9135
SUBTOTAL	62321	247839	188363	2845
PHASE II				
-L- 11+26 TO 16+00 LT	296	164	0	132
-L- 20+00 TO 35+00 LT	4973	3221	0	1752
-LREV1- 21+05 TO 56+00 LT	7037	9959	2922	0
-LREV1- 73+00 TO 82+00 LT	22	8665	8643	0
-LREV1- 90+00 TO 103+95.71 LT	3566	4043	477	0
-L- 133+16 TO 163+00 LT	4249	3113	0	1136
-L- 163+00 TO 186+00 LT	473	6746	6273	0
-L- 208+50 TO 240+00 LT	2807	7966	5159	0
-LREV3- 253+75 TO 283+75 LT	2230	17202	14972	0
-LREV3- 283+75 TO 302+38 LT	1241	3337	2318	222
-LREV3- 314+00 TO 315+68 LT	241	116	0	125
-L- 329+87 TO 334+25 LT	620	1601	981	0
-L- 352+50 TO 382+50 LT	1483	6072	4589	0
-L- 382+50 TO 412+40 LT	2081	5752	3671	0
-Y12- 12+00 TO 13+00	71	2	0	69
-Y14- 11+30 TO 12+00 LT of -L-	86	48	0	38
-Y15- 12+00 TO 12+50 LT of -L-	35	0	0	35
-Y10- 11+50 TO 12+50	203	24	0	179
SUMMARY SUBTOTALS PHASE II:	31714	78031	50005	3688
WASTE IN LIEU OF BORROW PHASE II			-2708	-2708
SUBTOTAL	31714	78031	47297	980

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SUMMARY OF EARTHWORK IN CUBIC YARDS (CONTINUED)**

Station	Uncl. Excav.	Embank. +%	Borrow	Waste
PHASE III				
-L- 14+50 TO 25+00 RT	1491	1511	20	0
-L- 30+50 TO 39+05.50 RT	873	803	0	70
-LREV1- 10+00 TO 29+50 RT	3333	2038	0	1295
-LREV1- 36+00 TO 52+00 RT	4705	1590	0	3115
-L- 195+00 TO 214+50 RT	2460	2113	0	347
-L- 231+50 TO 253+34.78 RT	1411	8294	7048	165
-LREV3- 253+34.5 TO 256+00 RT	518	200	0	318
-LREV3- 296+00 TO 316+74 RT	4686	2698	0	1988
-L- 317+10 TO 347+10 RT	987	9244	8257	0
-L- 347+10 TO 360+00 RT	425	3324	2899	0
-L- 391+92 TO 412+40 RT	1202	3371	2169	0
-Y1- 10+00 TO 12+16	729	0	0	729
-Y3- 11+00 TO 13+00	193	162	0	31
-Y14- 14+50 TO 15+00 RT of -L-	213	48	0	165
-Y8- 11+00 TO 11+29	187	4	0	183
-Y13- 15+00 TO 15+60	100	0	0	100
-Y19- 14+50 TO 15+30	42	113	71	0
SUMMARY SUBTOTALS PHASE III	23555	35513	20464	8506
WASTE IN LIEU OF BORROW PHASE III			-8341	-8341
SUBTOTAL	23555	35513	12123	165
PROJECT SUBTOTALS	117590	361383	247783	3990
LOSS DUE TO CLEAR & GRUB.	-23100		23100	
ADDITIONAL UNDERCUT		14000	14000	
SHOULDER CONSTRUCTION		375383	284883	3990
PROJECT TOTALS	94490	375383	299128	3990
EST. TO REPLACE TOP SOIL ON BORROW PITS	94490		14245	
GRAND TOTALS	94490	375383	299128	3990
SAY	94500		299200	
PVMT. STR. VOL. = 34817 CY				
DRAINAGE DITCH EXCAVATION :				
EST. UNDERCUT CONTINGENCY	14000	CUBIC YARDS		
EST. SHALLOW UNDERCUT BY STATIONS	5972	CUBIC YARDS		
EST. SHALLOW UNDERCUT CONTINGENCY	500	CUBIC YARDS		
TOTAL SHALLOW UNDERCUT	6472	CUBIC YARDS		
CLASS IV SUBGRADE STABILIZATION	12232	TONS		
EARTHWORK TOTALS FOR ALTERNATE PAV'T. DESIGN				
SUMMARY TOTALS	117590	361383	247783	3990
ADJ. FOR ALT. PAV'T DESIGN	-23254	20540	43794	-3990
ADDITIONAL UNDERCUT				
LOSS DUE TO CLEAR & GRUB.	-23100		23100	
SHOULDER CONSTRUCTION		9200	9200	
PROJECT TOTALS	71236	391123	323877	0
EST. TO REPLACE TOP SOIL ON BORROW PITS			16194	
TOTAL	71236		340071	
SAY	71300		340100	
PAV'T STRUCTURE VOLUME = 21160 CY				
DRAINAGE DITCH EXCAVATION :				
EST. UNDERCUT CONTINGENCY	14000	CUBIC YARDS		
EST. SHALLOW UNDERCUT BY STATIONS	5972	CUBIC YARDS		
EST. SHALLOW UNDERCUT CONTINGENCY	500	CUBIC YARDS		
TOTAL SHALLOW UNDERCUT	6472	CUBIC YARDS		
CLASS IV SUBGRADE STABILIZATION	12232	TONS		

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

-Y3- 11+00 TO 13+00	193	0	0	0	193	135	135	0	162	0	31	0	31
-Y14- 14+50 TO 15+00 RT of 'L-	213	0	0	0	213	40	40	0	48	0	165	0	165
-Y8- 11+00 TO 11+29	187	0	0	0	187	3	3	0	4	0	183	0	183
-Y13- 15+00 TO 15+60	100	0	0	0	100	0	0	0	0	0	100	0	100
-Y19- 14+50 TO 15+30	42	0	0	0	42	94	94	0	113	71	0	0	0
SUBTOTAL PHASE III	23555	0	0	165	23390	29593	29593	0	35513	20464	8341	165	8506
WASTE IN LIEU OF BORROW PHASE III	0	0	0	0	0	0	0	0	0	-8341	-8341	0	-8341
SUBTOTAL	23555	0	0	165	23390	29593	29593	0	35513	12123	0	165	165
PROJECT SUBTOTALS	117590	0	0	3990	113600	301152	301152	0	361383	247783	0	3990	3990
LOSS DUE TO CLEAR. & GRUB	-23100				-23100					23100	0		0
ADDITIONAL UNDERCUT EXCAV.			0	0	0	0	0	0	0	0	0	0	0
EST. FOR DRIVEWAYS	0				0	0	0	0	0	0	0	0	0
EST. FOR PAVT REMOVAL					0	0	0	0	0	0	0	0	0
SHOULDER CONSTRUCTION	0					11667	11667		14000	14000			
PROJECT TOTALS	94490	0	0	3990	90500	312819	312819	0	375383	284883	0	3990	3990
REPLACE TOP SOIL BOR. PITS										14245			
GRAND TOTALS	94490	0	0	3990	90500	312819	312819	0	375383	299128	0	3990	3990
SAY	94500		0							299200			

PAVEMENT STRUCTURE VOLUME :	34,817	CUBIC YARDS	
DRAINAGE DITCH EXCAVATION :	3,630	CUBIC YARDS	
EST. UNDERCUT CONTINGENCY	14000	CUBIC YARDS	(Contingency Item)
EST. SHALLOW UNDERCUT BY STATIONS	5972	CUBIC YARDS	
EST. SHALLOW UNDERCUT CONTINGENCY	500	CUBIC YARDS	(Contingency Item)
TOTAL SHALLOW UNDERCUT	6472	CUBIC YARDS	
CLASS IV SUBGRADE STABILIZATION	12232	TONS	(Backfill Material To Replace Shallow Undercut Excavation)

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.

NOTE:
 OVERLAPPING STATION RANGES ARE DUE TO PHASING.
 SOME OF PHASE I EARTHWORK QUANTITIES ARE FOR TEMPORARY ALIGNMENTS.
 EARTHWORK QUANTITIES IN PHASE III HAVE BEEN ADJUSTED AGAINST TEMPORARY ALIGNMENTS.

COMPUTED BY: <u>NN ADIMA</u>	DATE: <u>4/25/2011</u>	PROJECT NO.:	SHEET NO.:
CHECKED BY: <u>TG</u>	DATE: <u>7/11/2011</u>	TIP # R-2812	1 OF 1

ALTERNATE EARTHWORK BALANCE SHEET IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	ROCK EXCAVATION	UNDERCUT EXCAVATION	UNSUITABLE EARTH EXCAVATION	SUITABLE EARTH EXCAVATION	TOTAL EMB'T	EARTH EMBANKMENT	ROCK EMB'T	EMB'T + % 20	BORROW	SUITABLE WASTE	UNSUITABLE WASTE	TOTAL WASTE
-L- 10+00 .00 TO 39+05	9596	0	0	0	9596	10308	10308	0	12370	2774	0	0	0
-LREV1- 10+00.00 TO 103+95	37471	0	0	0	37471	103573	103573	0	124288	86817	0	0	0
-L- 133+16 TO 253+34	15136	0	0	3423	11713	83122	83122	0	99746	88033	0	3423	3423
-LREV3- 253+34 TO 317+10	14035	0	0	345	13690	55800	55800	0	66960	53270	0	345	345
-L- 317+10 TO 412+40	15690	0	0	222	15468	65214	65214	0	78257	62789	0	222	222
-Y1- 10+00 TO 12+16	729	0	0	0	729	0	0	0	0	0	729	0	729
-Y7- 10+50 TO 11+75	359	0	0	0	359	0	0	0	0	0	359	0	359
-Y8- 11+00 TO 11+29	187	0	0	0	187	3	3	0	4	0	183	0	183
-Y10- 11+50 TO 12+50	203	0	0	0	203	20	20	0	24	0	179	0	179
-Y11- 11+00 TO 11+76	185	0	0	0	185	22	22	0	26	0	159	0	159
-Y12- 12+00 TO 13+00	71	0	0	0	71	2	2	0	2	0	69	0	69
-Y13- 15+00 TO 15+60	100	0	0	0	100	0	0	0	0	0	100	0	100
-Y14- 11+30 TO 12+00	86	0	0	0	86	40	40	0	48	0	38	0	38
-Y14- 14+50 TO 15+00	213	0	0	0	213	40	40	0	48	0	165	0	165
-Y15- 14+00 TO 14+25	28	0	0	0	28	0	0	0	0	0	28	0	28
-Y15- 12+00 TO 12+50	35	0	0	0	35	0	0	0	0	0	35	0	35
-Y13- 15+00 TO 15+60	100	0	0	0	100	0	0	0	0	0	100	0	100
-Y19- 14+50 TO 15+30	42	0	0	0	42	94	94	0	113	71	0	0	0
-Y17- 11+00 TO 11+78	70	0	0	0	70	31	31	0	37	0	33	0	33
SUBTOTALS NO 1	94336	0	0	3990	90346	318269	318269	0	381923	293754	2177	3990	6167
WASTE IN LIEU OF BORROW	0	0	0	0	0	0	0	0	0	-2177	-2177	0	-2177
PROJECT SUBTOTALS	94336	0	0	3990	90346	318269	318269	0	381923	291577	0	3990	3990
LOSS DUE TO CLEAR. & GRUB	-23100				-23100					23100	0		0
ADDITIONAL UNDERCUT EXCAV.			0	0	0	0	0	0	0	0	0	0	0
EST. FOR DRIVEWAYS	0				0	0	0	0	0	0	0	0	0
EST. FOR PAVT REMOVAL					0	0	0	0	0	0	0	0	0
SHOULDER CONSTRUCTION						7667	7667		9200	9200			
PROJECT TOTALS	71236	0	0	3990	67246	325936	325936	0	391123	323877	0	3990	3990
REPLACE TOP SOIL BOR. PITS										16194			
GRAND TOTALS	71236		0	3990	67246	325936	325936		391123	340071		3990	3990
SAY	71300		0							340100			

PAVEMENT STRUCTURE VOLUME :	21,160	CUBIC YARDS	
DRAINAGE DITCH EXCAVATION :	3,630	CUBIC YARDS	
EST. UNDERCUT CONTINGENCY	14000	CUBIC YARDS	(Contingency Item)
EST. SHALLOW UNDERCUT BY STATIONS	5972	CUBIC YARDS	
EST. SHALLOW UNDERCUT CONTINGENCY	500	CUBIC YARDS	(Contingency Item)
TOTAL SHALLOW UNDERCUT	6472	CUBIC YARDS	
CLASS IV SUBGRADE STABILIZATION	12232	TONS	(Backfill Material To Replace Shallow Undercut Excavation)

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.

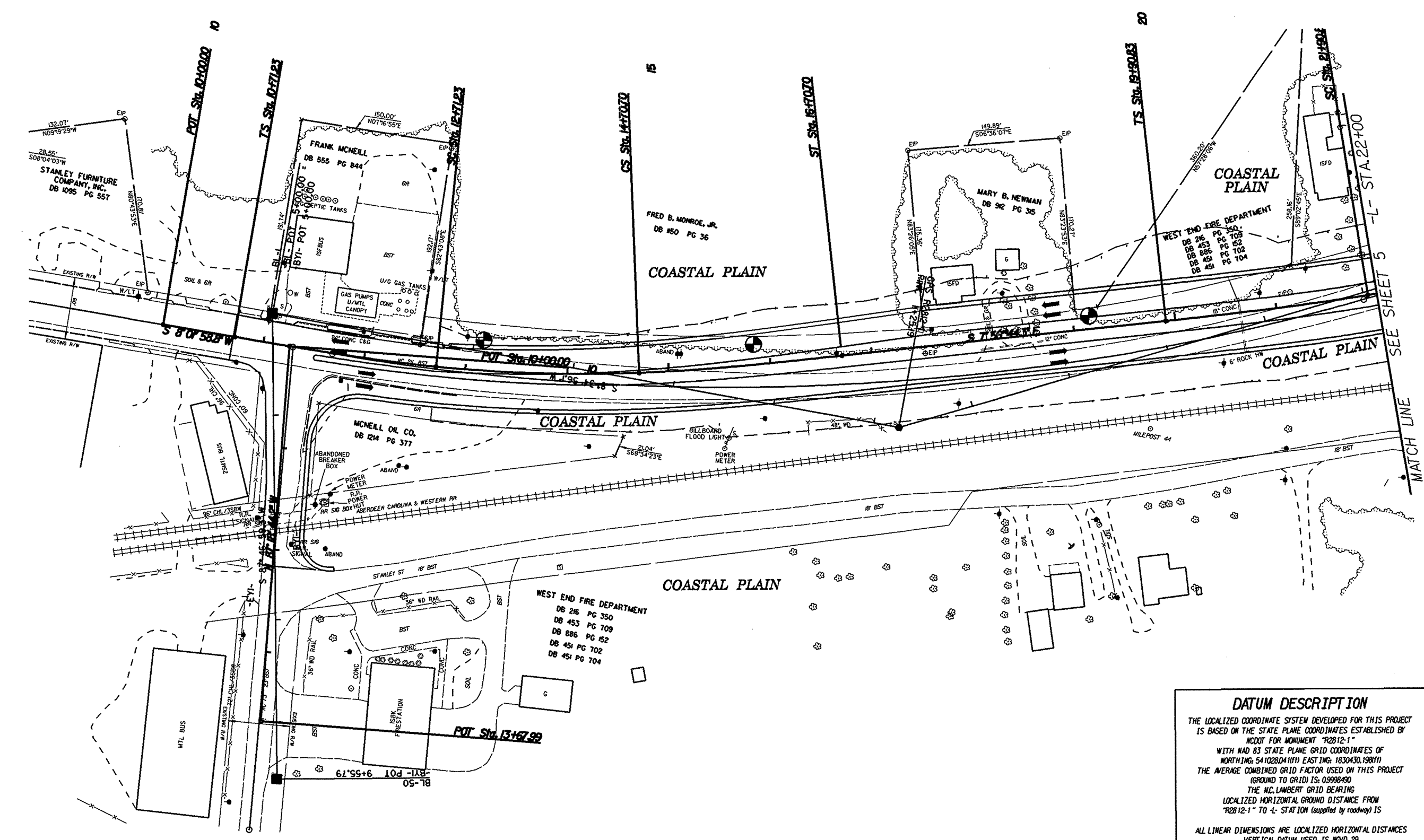
8/17/99

NAD 83

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

Plc Sta 12+04.60
 Gs = 4'00"00.0"
 Ls = 200.00'
 LT = 133.37'
 ST = 66.70'
 PI Sta 13+71.3
 Δ = 7'58"43.0" (LT)
 D = 4'00"00.0"
 L = 199.46'
 T = 99.89'
 R = 1,432.39'
 Plc Sta 15+37.40
 Gs = 4'00"00.0"
 Ls = 200.00'
 LT = 133.37'
 ST = 66.70'

Plc Sta 21+24.19
 Gs = 3'00"00.0"
 Ls = 200.00'
 LT = 133.35'
 ST = 66.68'
 PI Sta 22+49.21
 Δ = 3'30"05.9" (LT)
 D = 3'00"00.0"
 L = 116.72'
 T = 58.38'
 R = 1,909.86'

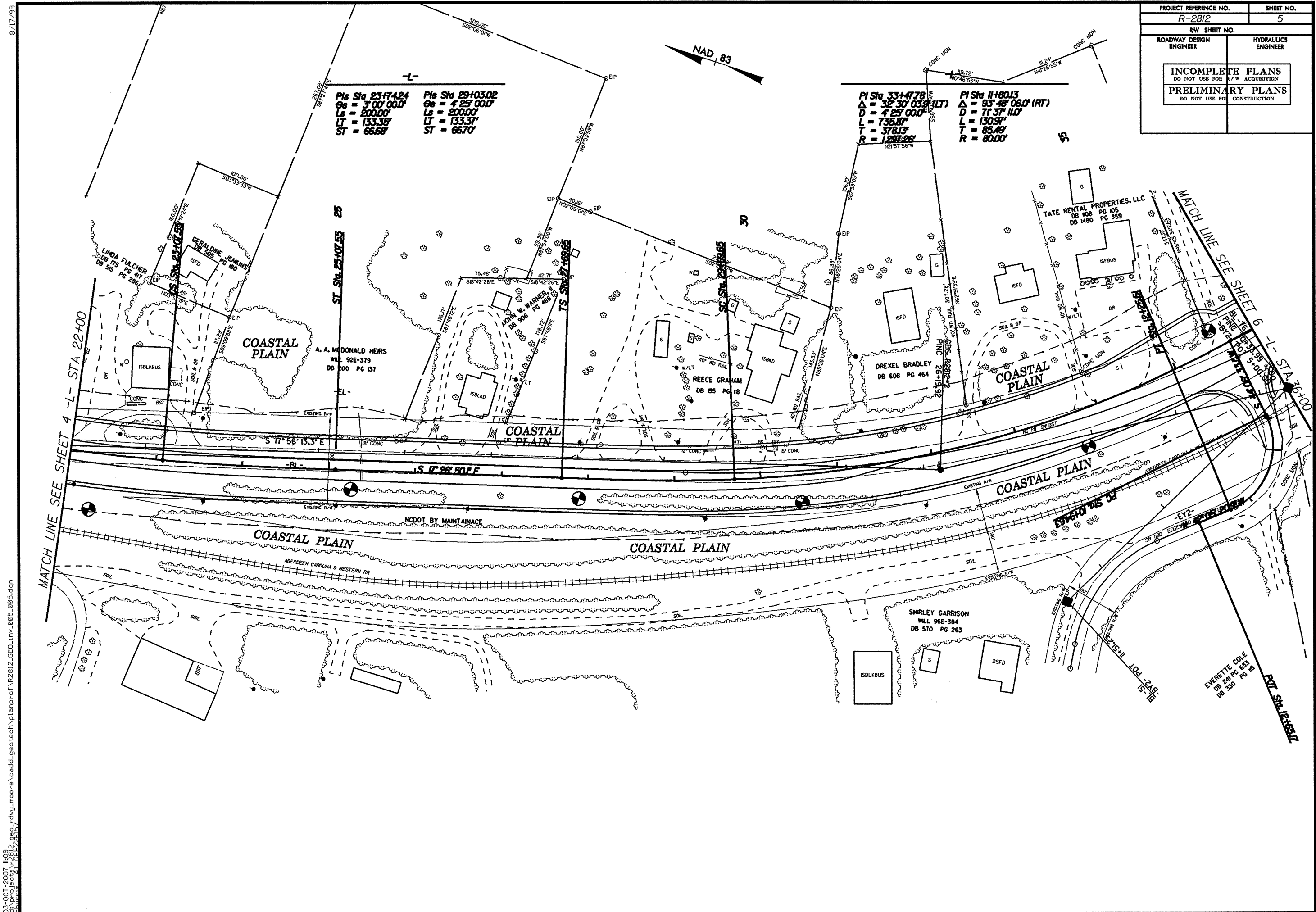


DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY MCDOT FOR MONUMENT "R2812-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 541028041111 EASTING: 1830430.198111 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998490 THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2812-1" TO -L- STATION (supplied by roadway) IS ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS MVD 29

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 04-OCT-2007 13:22 g:\proj\rdwy\moore\cadd\geotech\planproj\R2812_GEO.rvt_004.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2812	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



Pts Sta 23+74.24 Pts Sta 29+03.02
 Gs = 3'00' 00" Gs = 4'25' 00"
 Ls = 200.00' Ls = 200.00'
 LT = 133.35' LT = 133.37'
 ST = 66.68' ST = 66.70'

Pts Sta 33+47.78
 Δ = 32' 30" 03.9" (LT)
 D = 4' 25" 00.0"
 L = 735.87'
 T = 378.13'
 R = 1288.26'

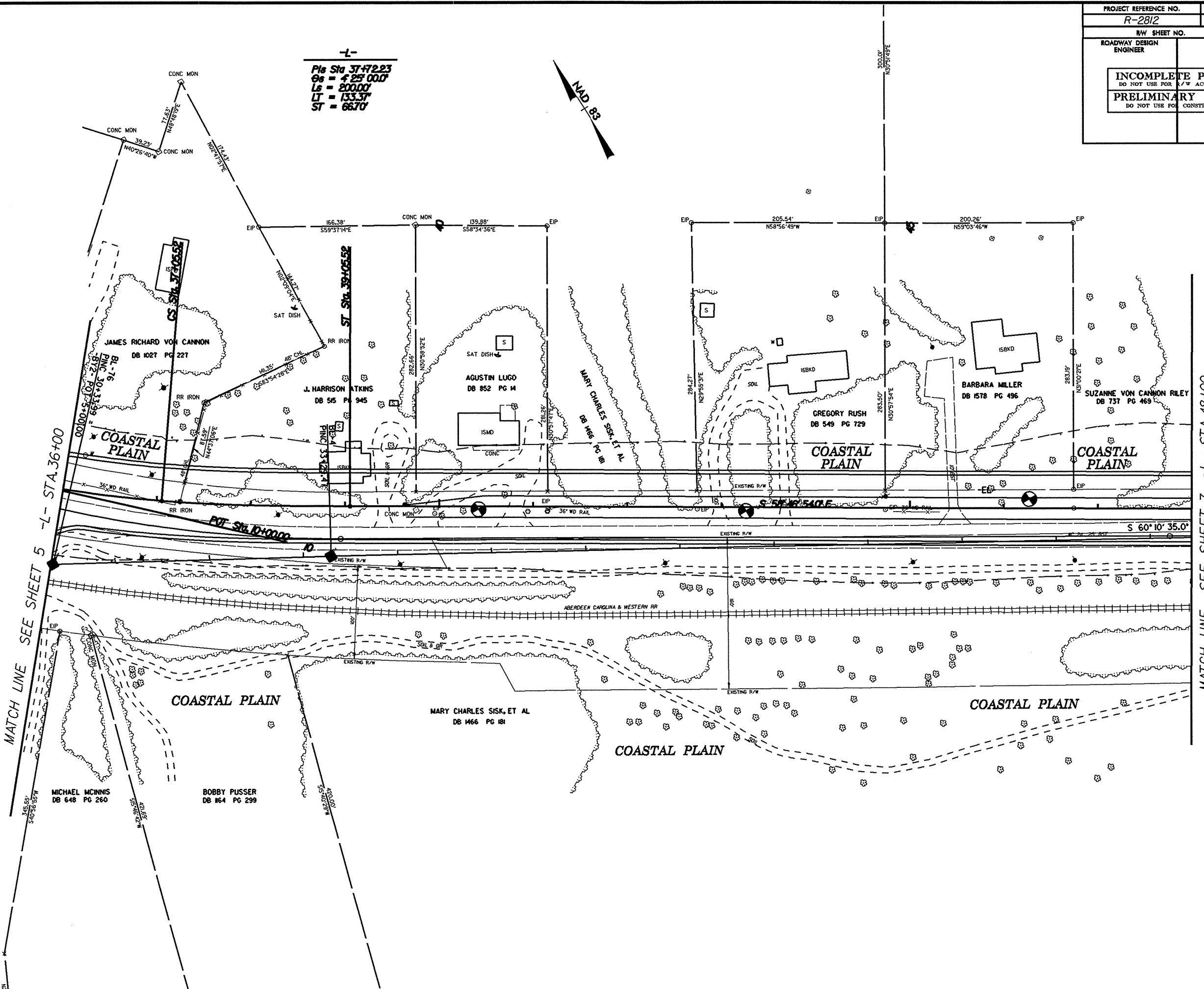
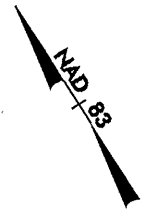
Pts Sta 11+80.13
 Δ = 95' 48" 06.0" (RT)
 D = 71' 37" 11.0"
 L = 130.97'
 T = 85.48'
 R = 80.00'



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PROJECT REFERENCE NO.		SHEET NO.	
R-2812		6	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
 Pts Sta 37+72.23
 Es = 4' 25" 00.0'
 Ls = 200.00'
 LT = 133.37'
 ST = 66.70'



MATCH LINE SEE SHEET 5 -L- STA. 36+00

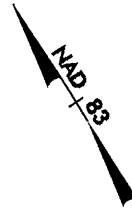
MATCH LINE SEE SHEET 7 -L- STA. 48+00

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 8/17/99

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		7	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

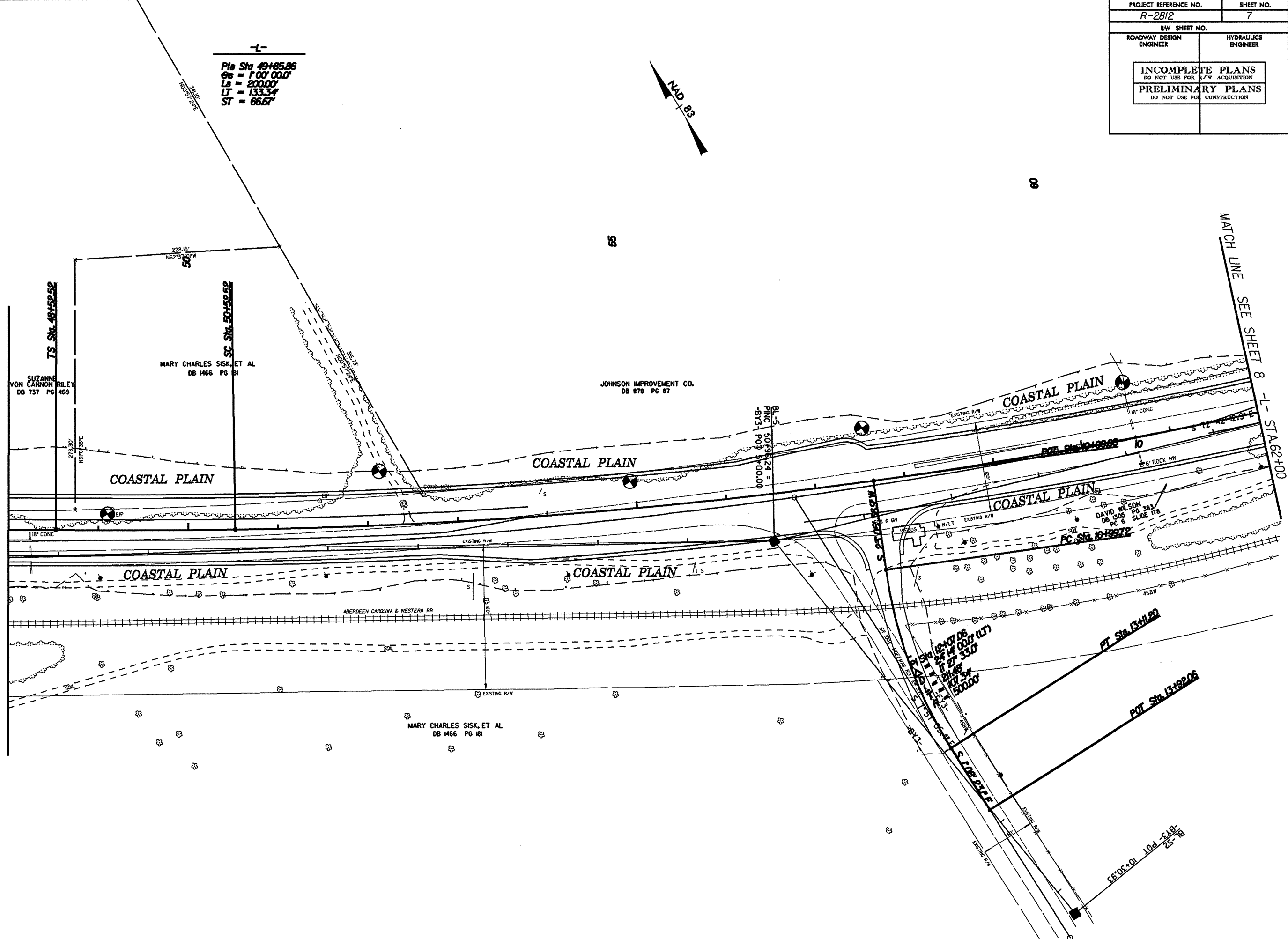
-L-

Pts Sta 49+85.86
 Os = 1'00' 00.0"
 Ls = 200.00'
 LT = 133.34'
 ST = 66.67'



MATCH LINE SEE SHEET 6 -L- STA. 48+00

MATCH LINE SEE SHEET 8 -L- STA. 62+00

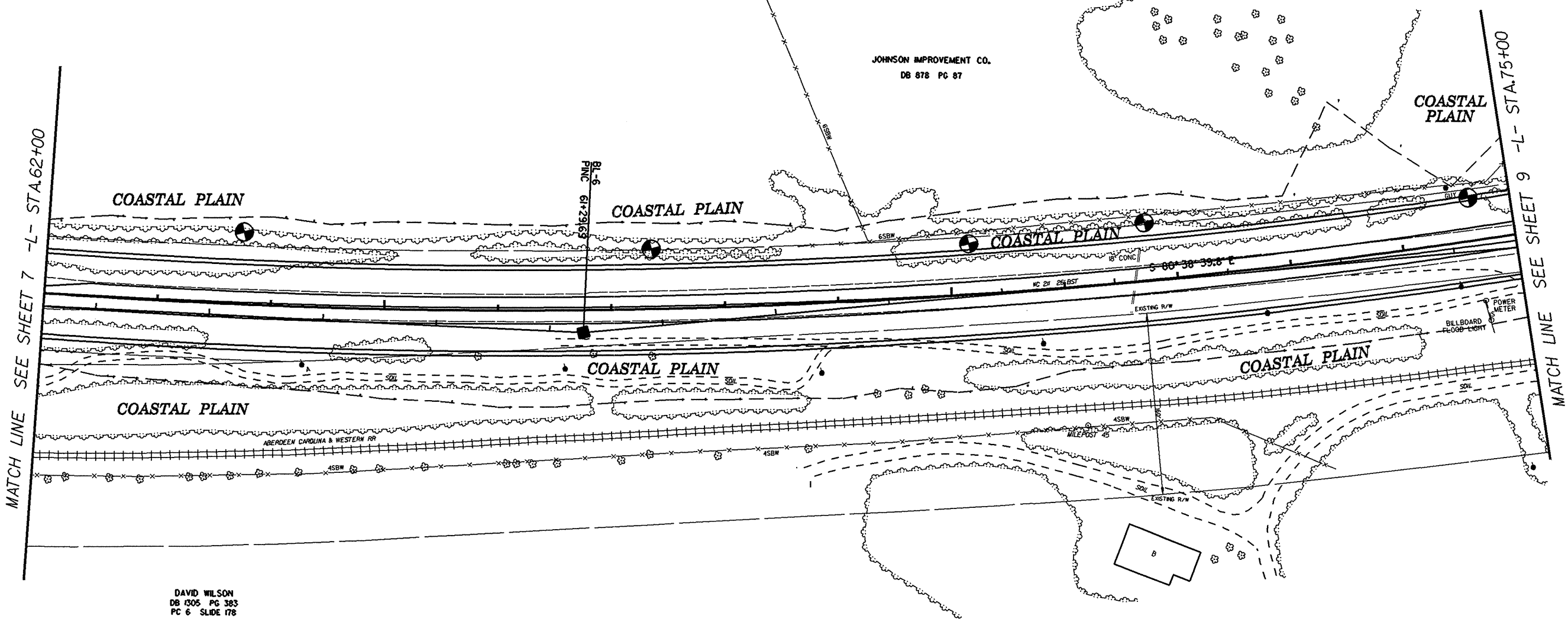


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PROJECT REFERENCE NO. R-2812		SHEET NO. 8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-

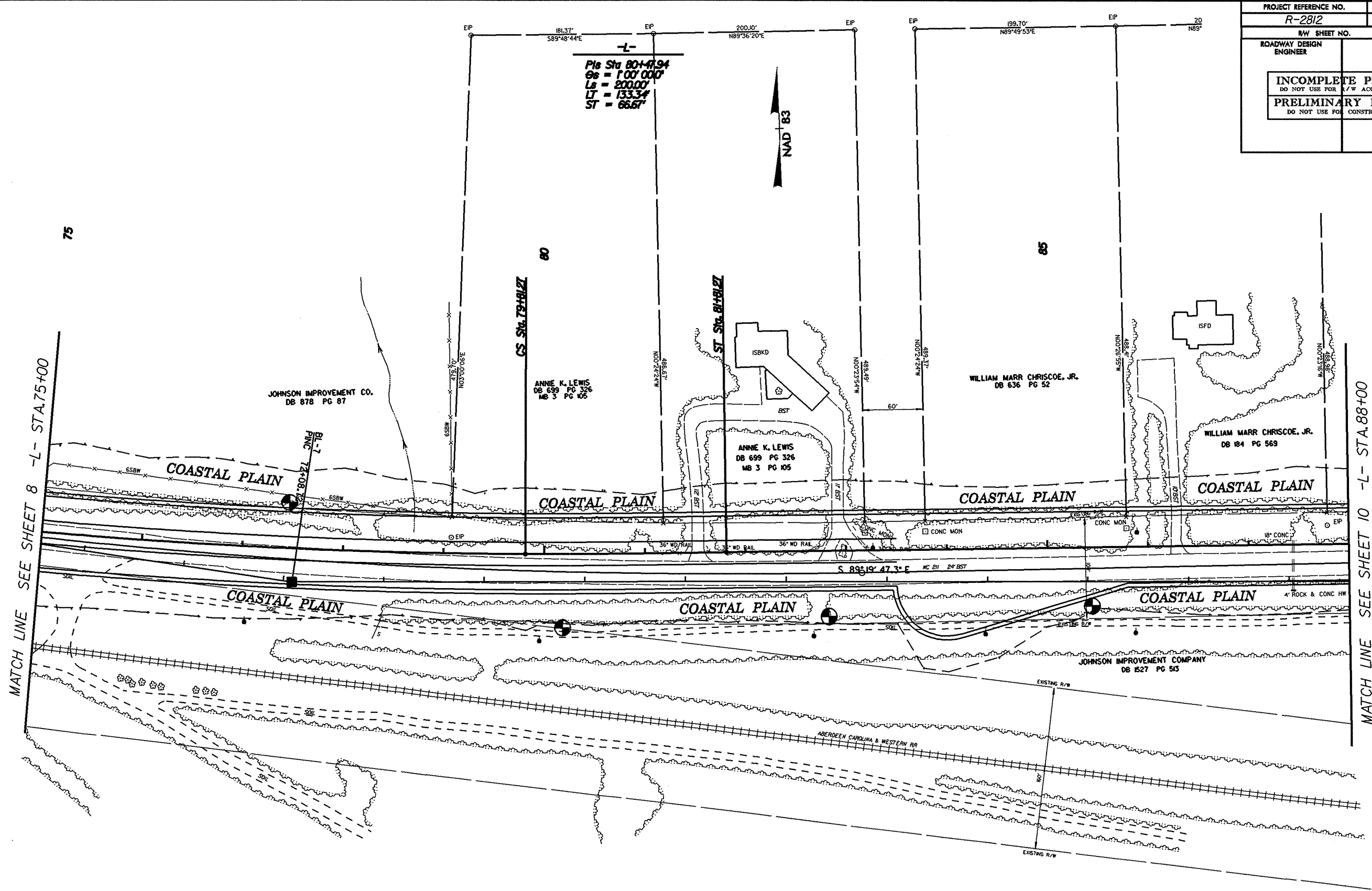
PI Sta 65+49.64
 $\Delta = 29^{\circ} 17' 15.0''$ (LT)
D = 100' 00.0"
L = 2928.75'
T = 1464.12'
R = 5729.58'



8/17/99
08-OCT-2007 10:39
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Sheet: AT REF 2812

8/17/99

PROJECT REFERENCE NO. R-2812		SHEET NO. 9	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



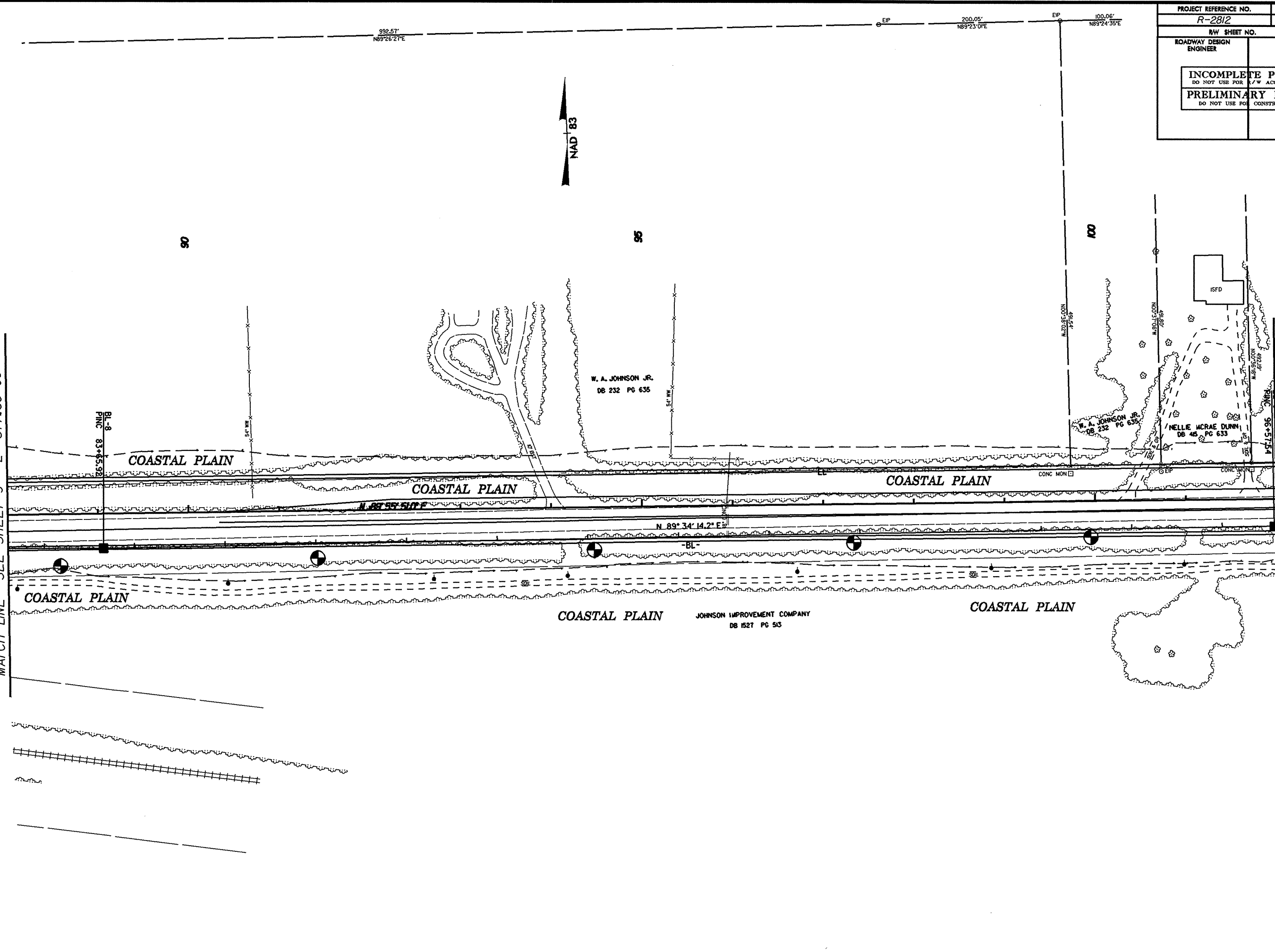
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8/17/99

PROJECT REFERENCE NO. <i>R-2812</i>		SHEET NO. <i>10</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION		INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

MATCH LINE SEE SHEET 9 -L- STA.88+00

MATCH LINE SEE SHEET 11 -L- STA.102+00



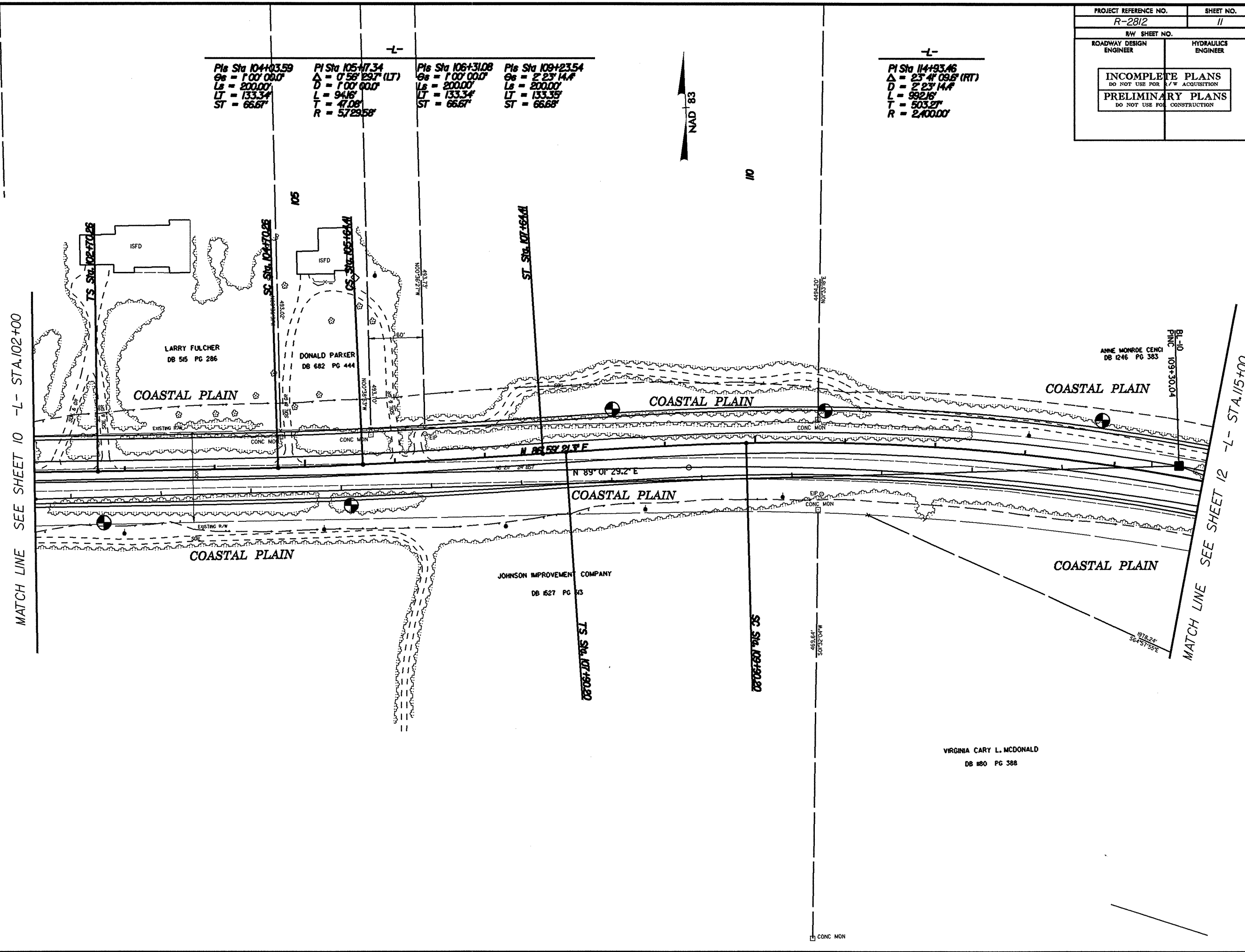
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dwj AT 8/17/99

JOHNSON IMPROVEMENT COMPANY
DB 1527 PG 513

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		11	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

Pls Sta 104+03.59 $\theta_s = 1'00''00.0''$ $L_s = 200.00'$ $LT = 133.34'$ $ST = 66.67'$	Pls Sta 105+17.34 $\Delta = 0'56''29.7''$ (LT) $D = 1'00''00.0''$ $L = 94.16'$ $T = 47.08'$ $R = 5729.58'$	Pls Sta 106+31.08 $\theta_s = 1'00''00.0''$ $L_s = 200.00'$ $LT = 133.34'$ $ST = 66.67'$	Pls Sta 109+23.54 $\theta_s = 2'23''14.4''$ $L_s = 200.00'$ $LT = 133.35'$ $ST = 66.68'$
--	---	--	--

Pls Sta 114+93.46 $\Delta = 2'23''09.6''$ (RT) $D = 2'23''14.4''$ $L = 992.16'$ $T = 503.27'$ $R = 2400.00'$



MATCH LINE SEE SHEET 10 -L- STA. 102+00

MATCH LINE SEE SHEET 12 -L- STA. 115+00

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03_OCT_2007 11:00
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VIRGINIA CARY L. MCDONALD
DB #80 PG 388

PROJECT REFERENCE NO. <i>R-2812</i>		SHEET NO. <i>12</i>
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

115

120

125

-L-
 Pts Sta 120+49.03
 Os = 2' 23" 14.4
 Ls = 200.00'
 LT = 133.35'
 ST = 66.68'

MATCH LINE SEE SHEET 11 -L- STA. 115+00

MATCH LINE SEE SHEET 8 -L- STA. 127+85.00

COASTAL PLAIN

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COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

ANNE MONROE CENCI
DB 1246 PG 383

ANNE MONROE CENCI
DB 1246 PG 383

S 68° 41' 20.8" E

NC 24 26' BST

EXISTING R/W

EXISTING R/W

CS STA. 124+2.75

ST STA. 124+2.75

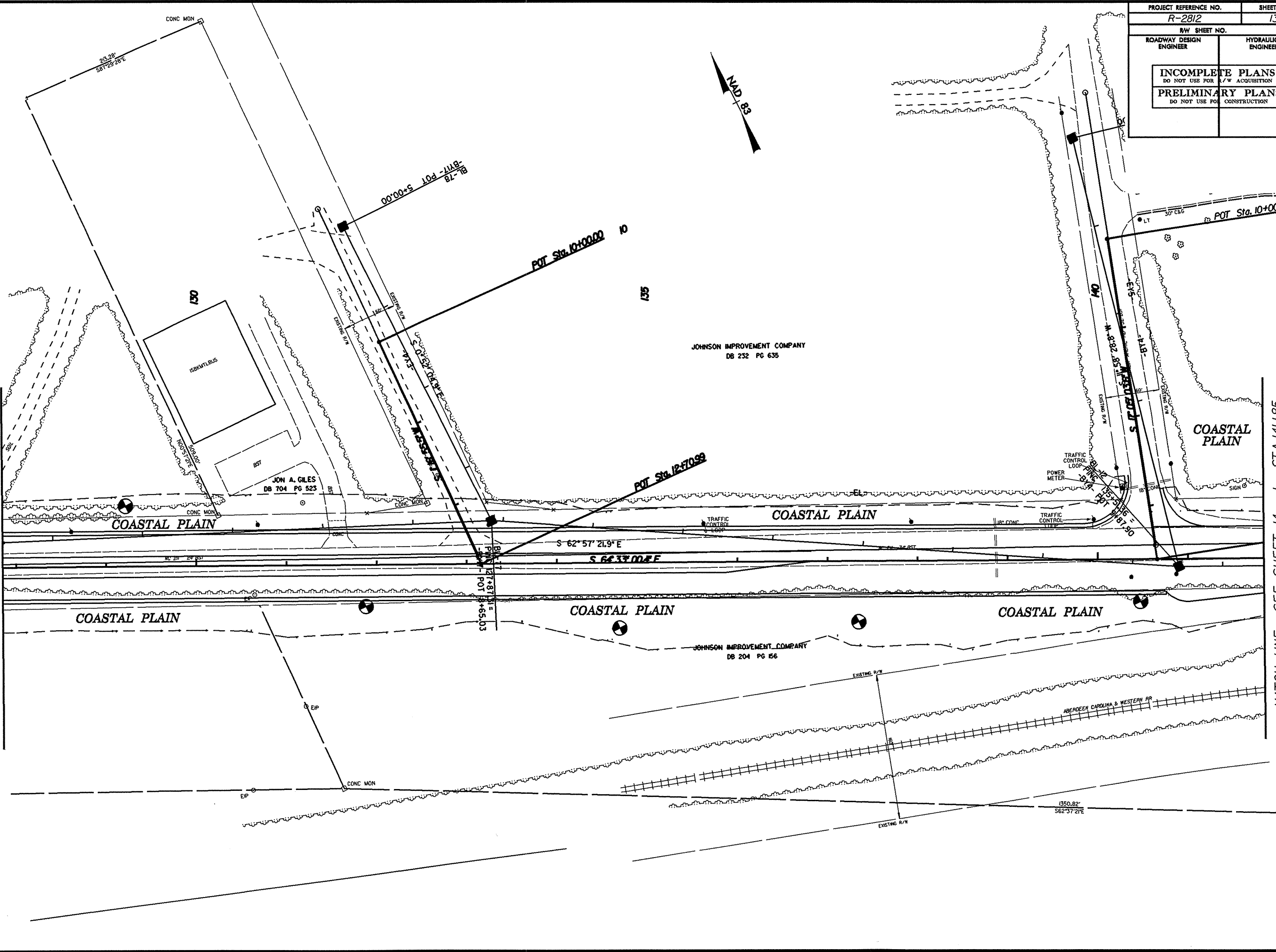
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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 013.dgn
 013.dgn

MATCH LINE SEE SHEET 12 -L- STA.127+85

MATCH LINE SEE SHEET 14 -L- STA.141+85



CONC MON
 23.29°
 S87°29'28\"/>

BL-78
 POT Sta. 10+00.00

130

135

JOHNSON IMPROVEMENT COMPANY
 DB 232 PG 635

POT Sta. 10+00.00

130

135

JOHNSON IMPROVEMENT COMPANY
 DB 204 PG 156

POT Sta. 12+70.99

S 62° 57' 21.9\"/>
 S 62° 37' 00\"/>

COASTAL PLAIN

TRAFFIC CONTROL LOOP

POWER METER

TRAFFIC CONTROL LOOP

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

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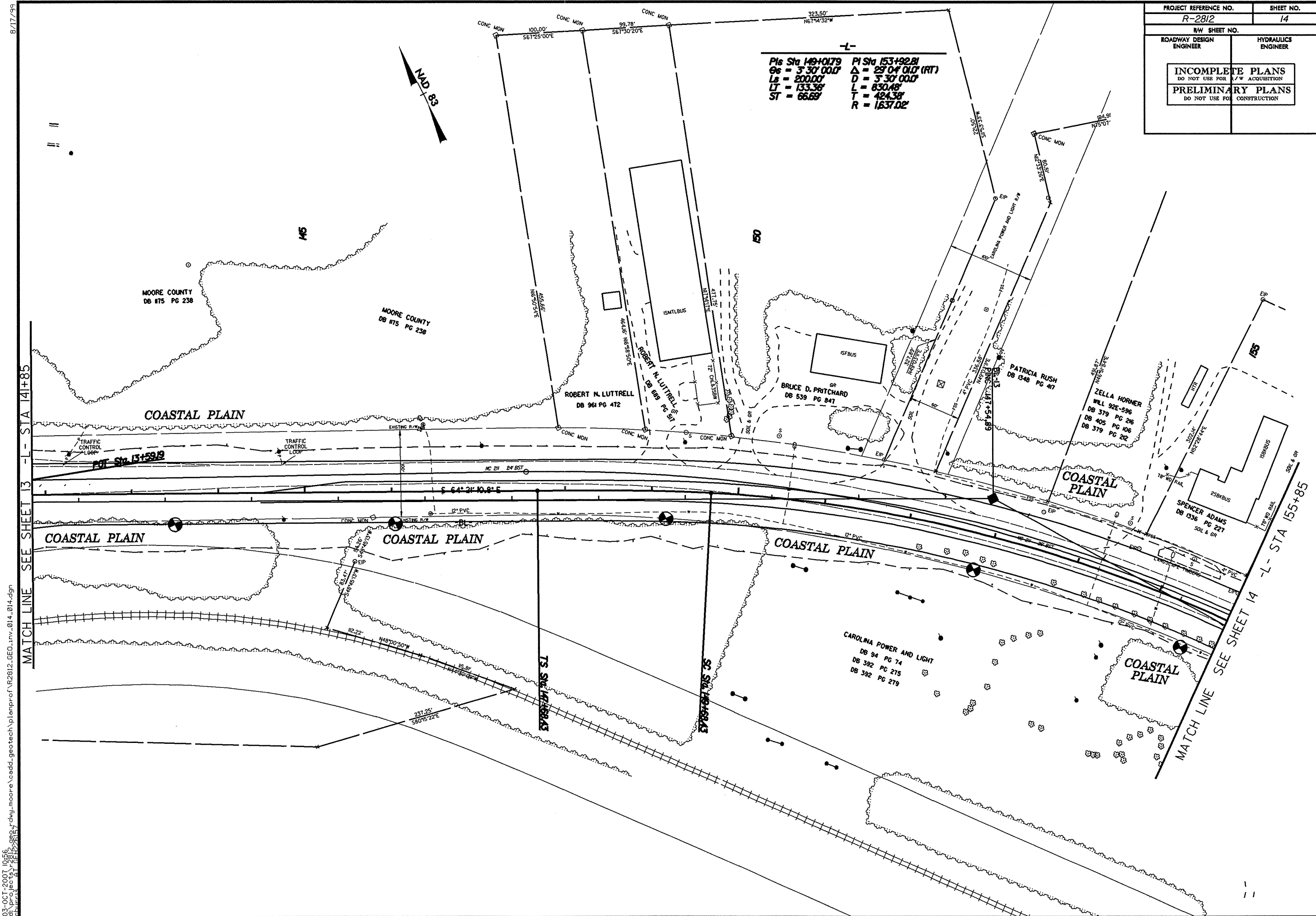
COASTAL PLAIN

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COASTAL PLAIN

PROJECT REFERENCE NO.	SHEET NO.
R-2812	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-L-

PI Sta 149+01.79	PI Sta 153+92.81
Ps = 5' 30" 00"	Δ = 29° 04' 00" (RT)
Ls = 200.00'	D = 5' 30" 00"
LT = 133.36'	L = 830.48'
ST = 66.69'	T = 424.38'
	R = 1637.02'

MATCH LINE SEE SHEET 13 - L - STA 141+85

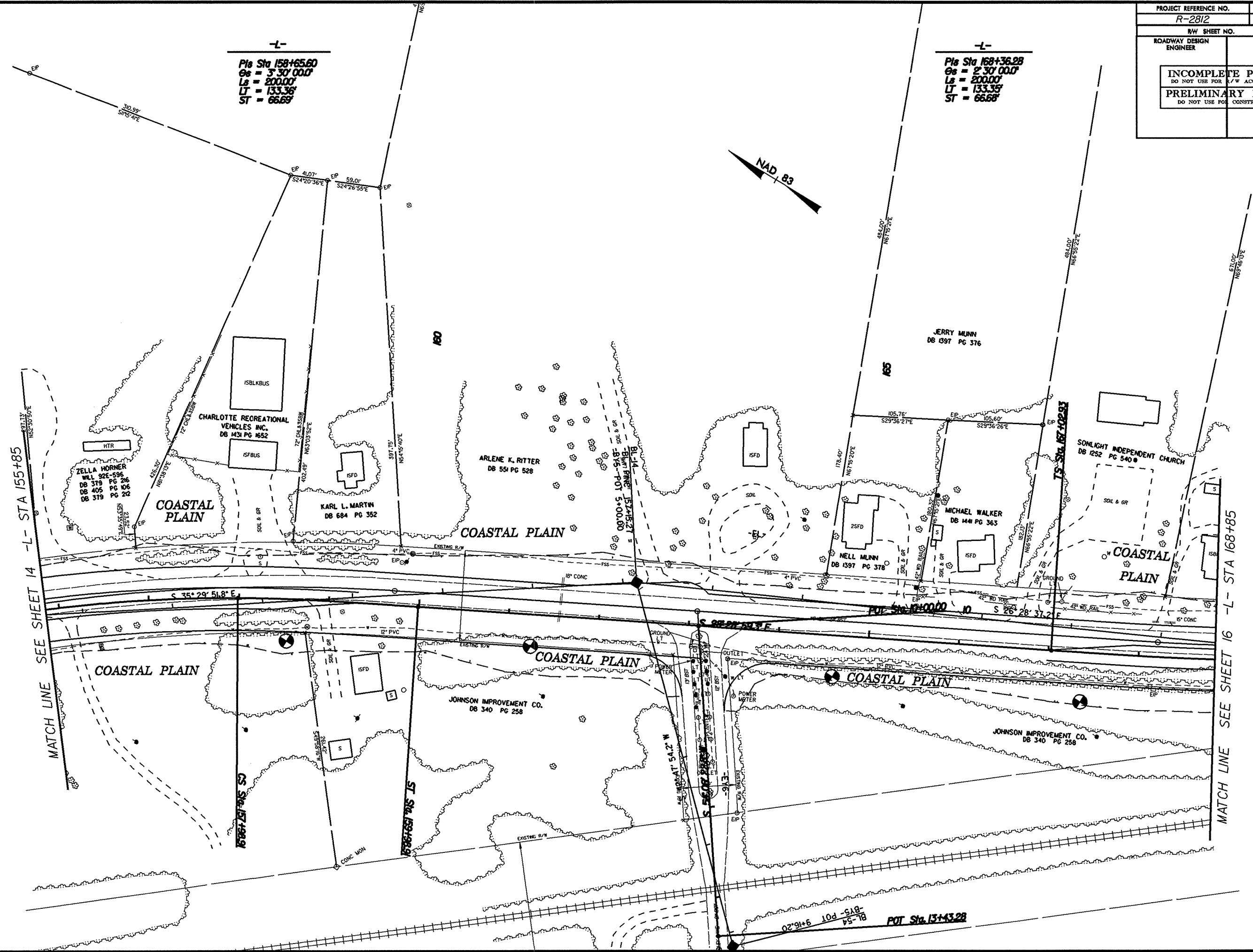
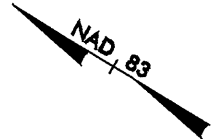
MATCH LINE SEE SHEET 14 - L - STA 155+85

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moore\cadd\geotech\plan\proj\2812\14.dwg
14.dwg

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		15	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
 Pts Sta 158+65.60
 Gs = 3' 30" 00.0"
 Ls = 200.00'
 LT = 133.36'
 ST = 66.68'

-L-
 Pts Sta 168+36.28
 Gs = 2' 30" 00.0"
 Ls = 200.00'
 LT = 133.36'
 ST = 66.68'

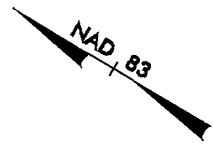


MATCH LINE SEE SHEET 14 -L- STA 155+85

MATCH LINE SEE SHEET 16 -L- STA 168+85

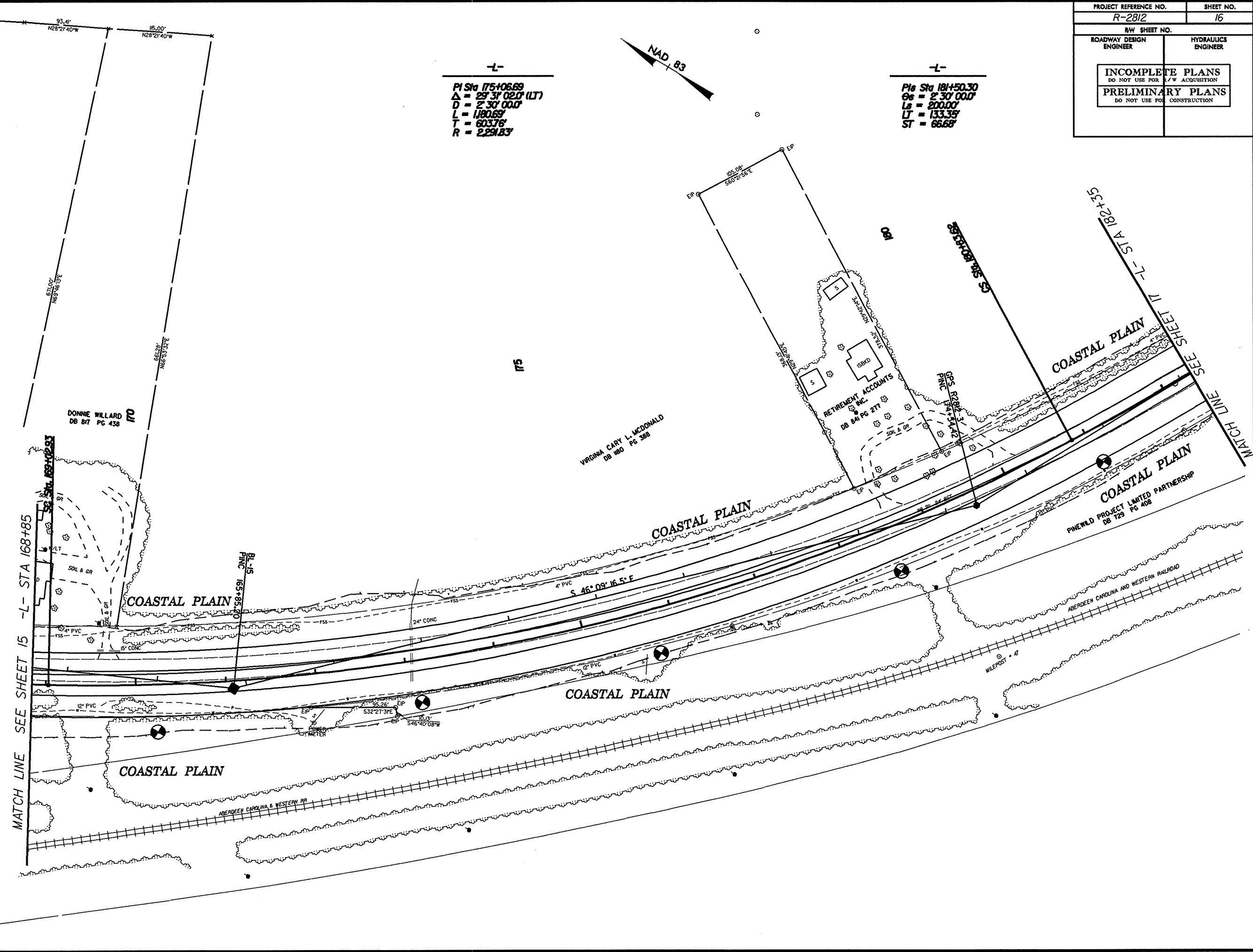
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PROJECT REFERENCE NO.		SHEET NO.	
R-2812		16	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



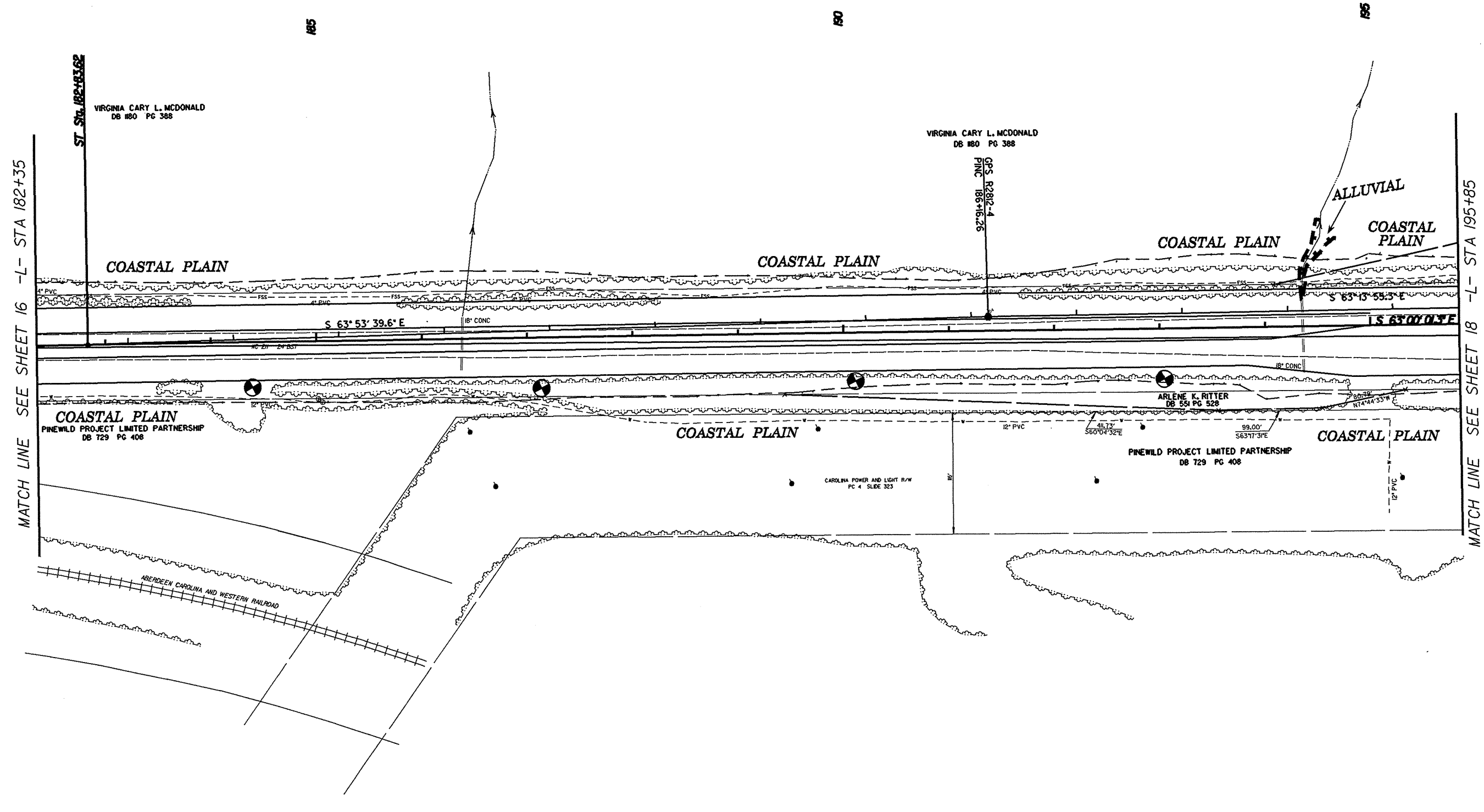
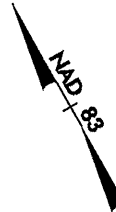
-L-
 PI Sta 175+06.69
 $\Delta = 29^{\circ} 31' 02.0''$ (LT)
 $D = 2' 30' 00.0''$
 $L = 1180.69'$
 $T = 603.76'$
 $R = 2291.83'$

-L-
 PI Sta 181+50.30
 $G_s = 2' 30' 00.0''$
 $L_s = 200.00'$
 $LT = 133.35'$
 $ST = 66.68'$



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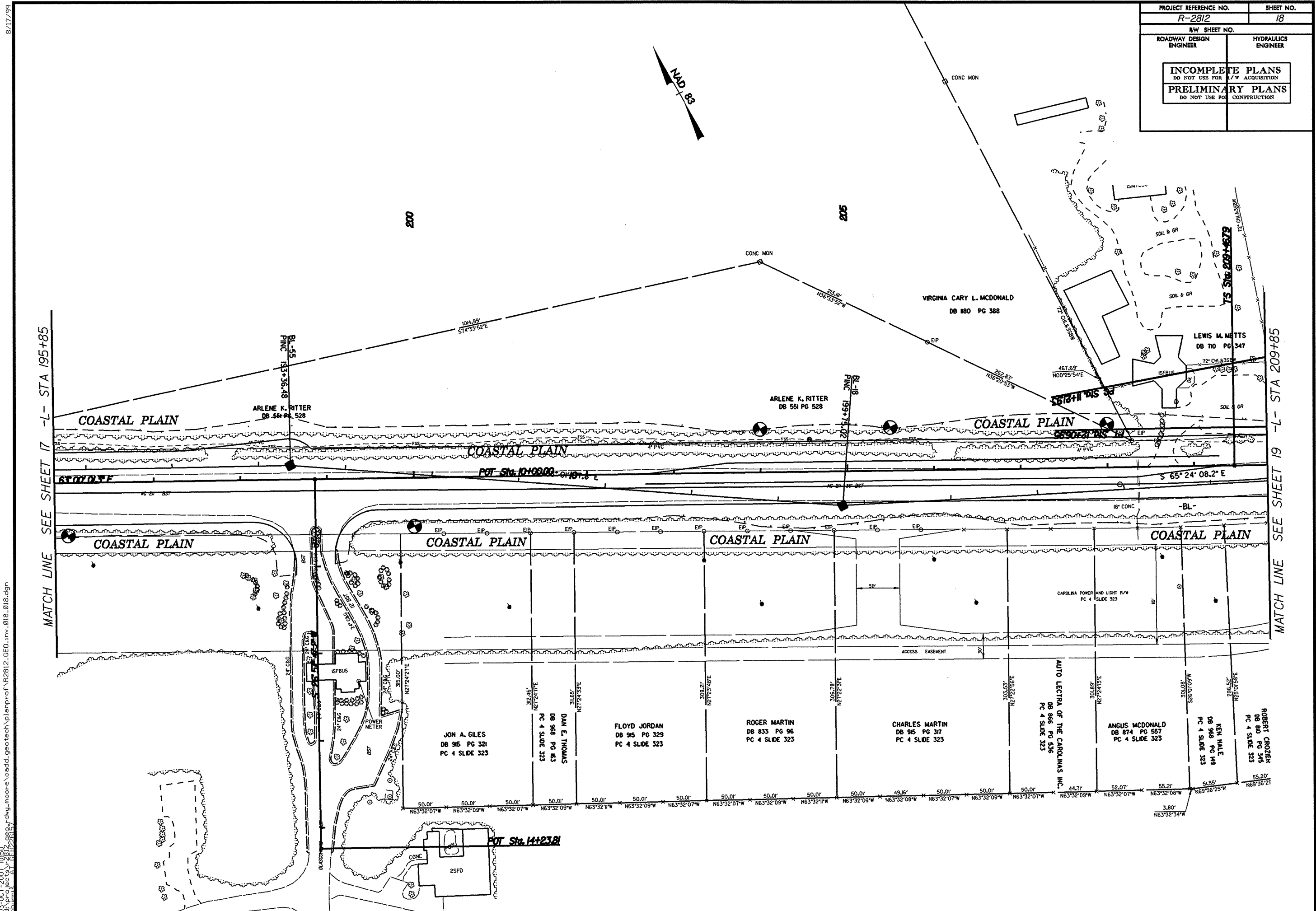
PROJECT REFERENCE NO.		SHEET NO.	
R-2812		17	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



MATCH LINE SEE SHEET 18 -L- STA 195+85

8/17/99
03-OCT-2007 10:52
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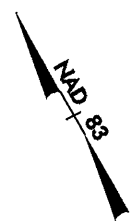
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



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MATCH LINE SEE SHEET 17 -L- STA 195+85

MATCH LINE SEE SHEET 19 -L- STA 209+85



200

502

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

JON A. GILES
DB 96 PG 321
PC 4 SLIDE 323

DAN E. THOMAS
DB 968 PG 63
PC 4 SLIDE 323

FLOYD JORDAN
DB 96 PG 329
PC 4 SLIDE 323

ROGER MARTIN
DB 833 PG 96
PC 4 SLIDE 323

CHARLES MARTIN
DB 915 PG 317
PC 4 SLIDE 323

ANGUS McDONALD
DB 874 PG 557
PC 4 SLIDE 323

KEN HALE
DB 968 PG 49
PC 4 SLIDE 323

ROBERT CROZIER
DB 80 PG 345
PC 4 SLIDE 323

ARLENE K. RITTER
DB 564 PG 528

ARLENE K. RITTER
DB 551 PG 528

VIRGINIA CARY L. McDONALD
DB 860 PG 388

LEWIS M. METTS
DB 710 PG 347

POT Sta. 10+00.00

POT Sta. 14+23.81

67007.3

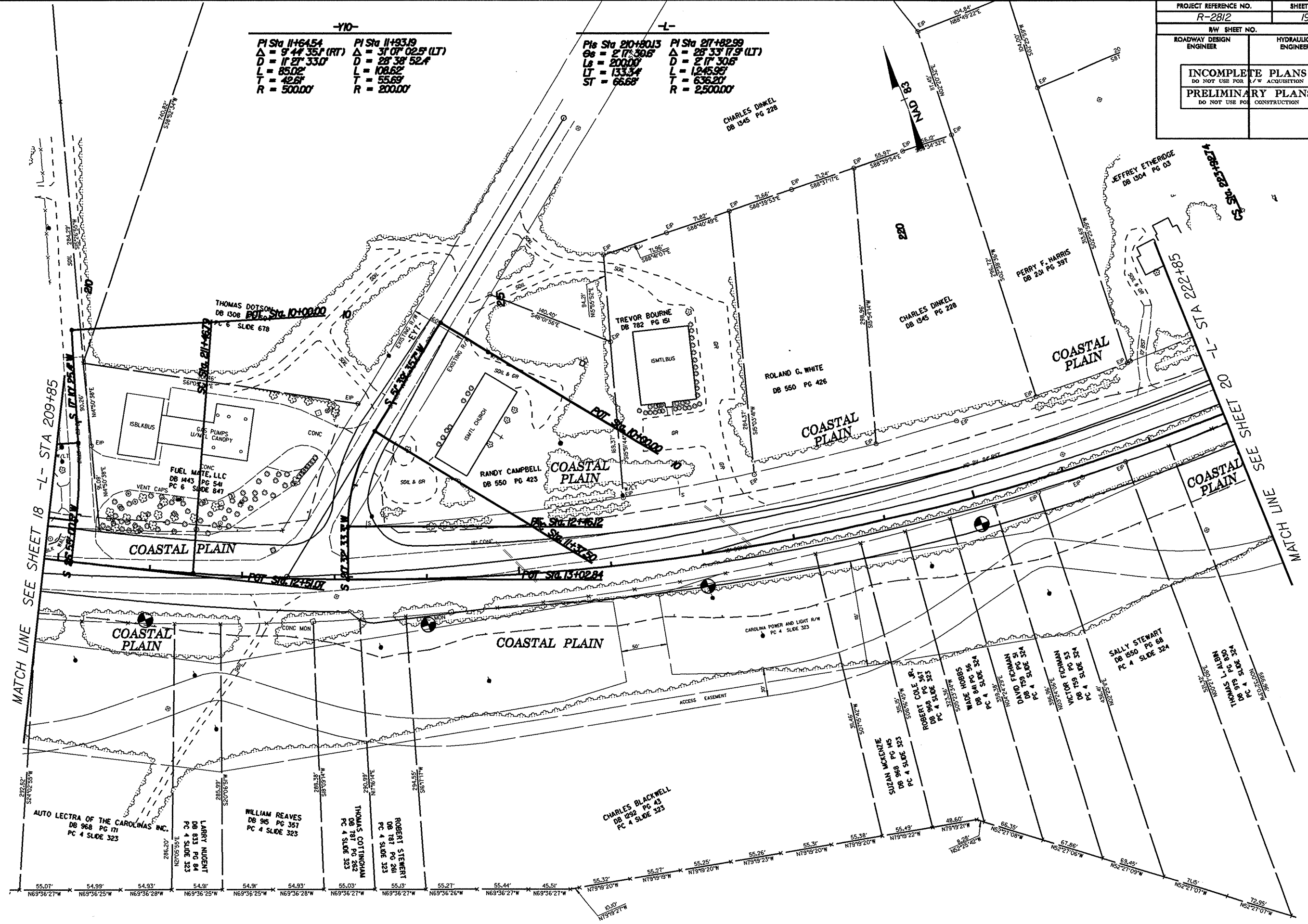
S 65° 24' 08.2" E

MATCH LINE SEE SHEET 17 -L- STA 195+85

MATCH LINE SEE SHEET 19 -L- STA 209+85

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		19	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-YIO-		-L-	
PI Sta 11+64.54	PI Sta 11+93.19	PI Sta 210+80.13	PI Sta 217+82.99
$\Delta = 94^{\circ} 35' 17''$ (RT)	$\Delta = 31^{\circ} 02' 52''$ (LT)	$\Delta = 217^{\circ} 39' 6''$	$\Delta = 28^{\circ} 33' 17''$ (LT)
D = 1127.330'	D = 2838.524'	Ls = 200.00'	D = 217.306'
L = 85.02'	L = 106.62'	LT = 133.34'	L = 1245.95'
T = 42.61'	T = 55.69'	ST = 66.68'	T = 636.20'
R = 5000.00'	R = 2000.00'		R = 2500.00'



PROJECT REFERENCE NO.	SHEET NO.
R-2812	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

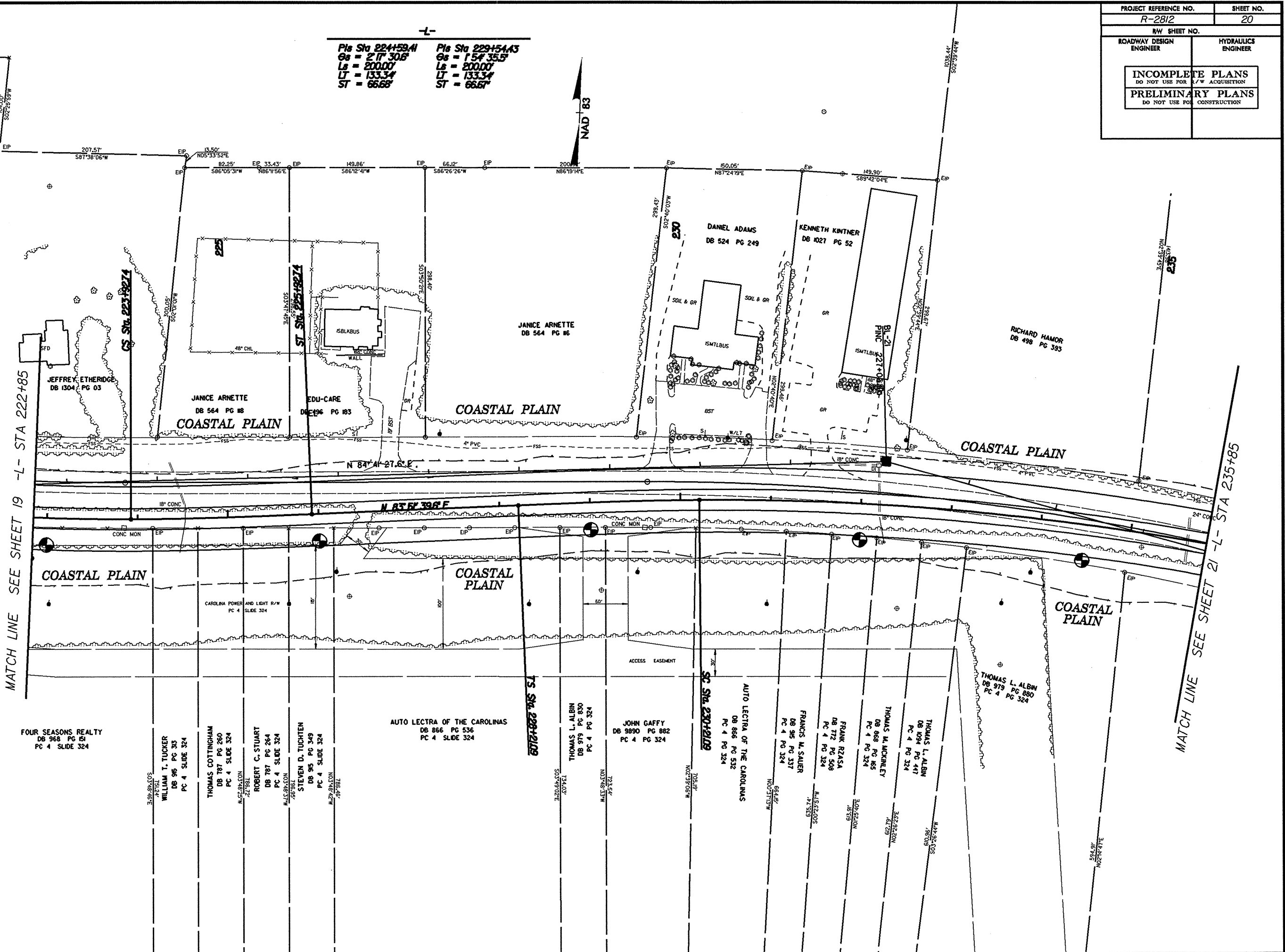
-L-

Pls Sta 224+59.41	Pls Sta 229+54.43
Gs = 2' 11" 30.8"	Gs = 1' 5" 35.5"
Ls = 200.00'	Ls = 200.00'
LT = 133.34'	LT = 133.34'
ST = 66.66'	ST = 66.66'

NAD 83

MATCH LINE SEE SHEET 19 -L- STA 222+85

MATCH LINE SEE SHEET 21 -L- STA 235+85



8/17/99
 03-OCT-2007 10:47
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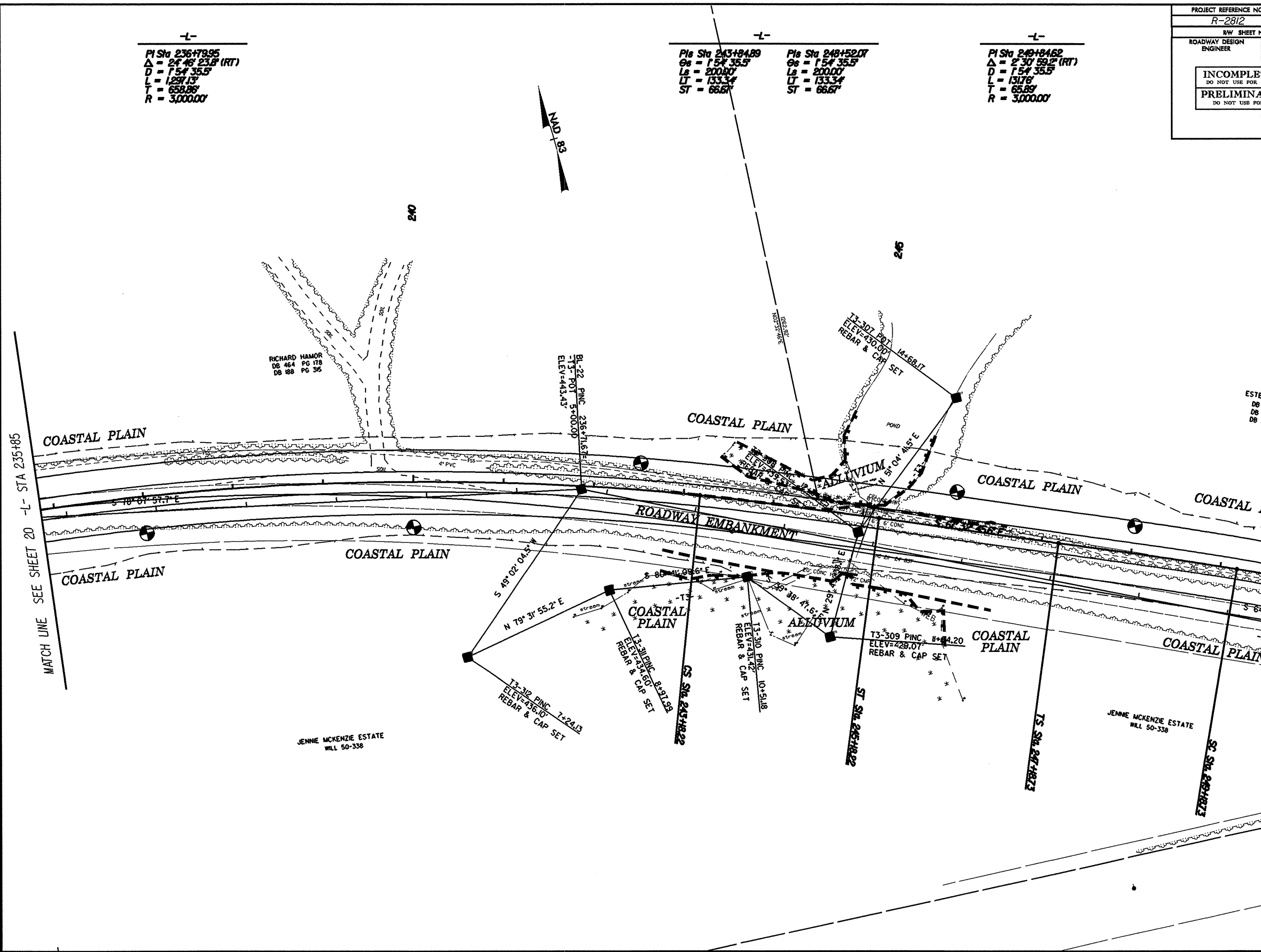
PROJECT REFERENCE NO.	SHEET NO.
R-2812	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
 PI Sta 236+79.95
 $\Delta = 24^{\circ} 46' 23.8''$ (RT)
 $D = 154' 35.5''$
 $L = 1297.13'$
 $T = 658.86'$
 $R = 3,000.00'$

-L-
 PI Sta 243+84.89
 $\Theta_s = 154^{\circ} 35.5'$
 $L_s = 200.00'$
 $LT = 133.34'$
 $ST = 66.67'$

PI Sta 248+52.07
 $\Theta_s = 154^{\circ} 35.5'$
 $L_s = 200.00'$
 $LT = 133.34'$
 $ST = 66.67'$

-L-
 PI Sta 249+84.62
 $\Delta = 2^{\circ} 30' 59.2''$ (RT)
 $D = 154' 35.5''$
 $L = 1317.8'$
 $T = 65.89'$
 $R = 3,000.00'$



RICHARD HAMOR
 DB 464 PG 178
 DB 188 PG 36

ESTELLE BRADSHAW
 DB 126 PG 597
 DB 126 PG 598
 DB 188 PG 36

JENNE MCKENZIE ESTATE
 WILL 50-338

8/17/99
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6/17/99

07-OCT-2007 10:41
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AT GEOTECH

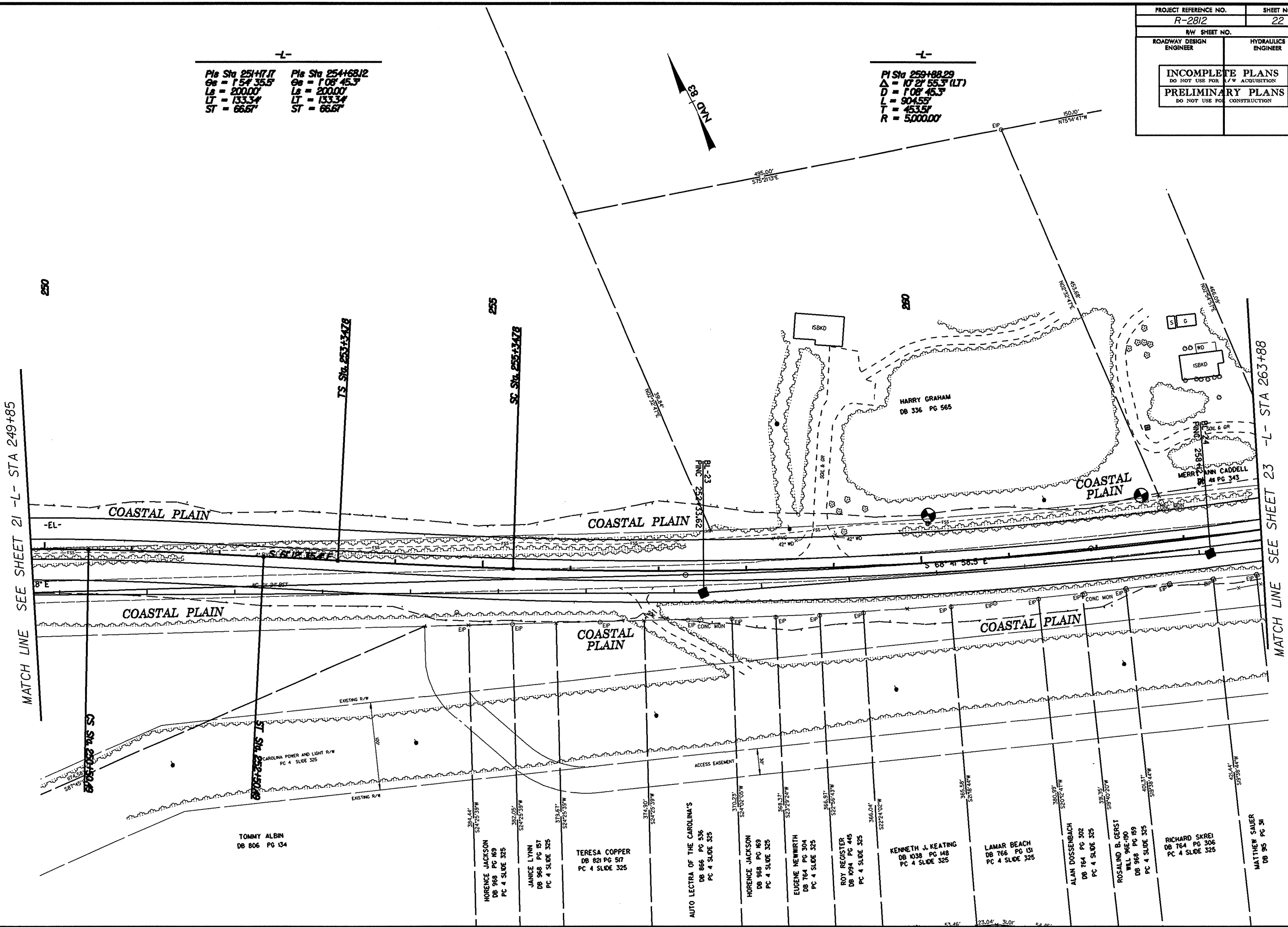
PROJECT REFERENCE NO. R-2812		SHEET NO. 22	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-

PIc Sta 251+77.7	PIc Sta 254+68.12
Es = 1°54'35.5"	Es = 1°08'45.3"
Ls = 200.00'	Ls = 200.00'
LT = 133.34'	LT = 133.34'
ST = 66.67'	ST = 66.67'

-L-

PIc Sta 259+88.29
Δ = 10°21'55.3" (LT)
D = 1°08'45.3"
L = 904.55'
T = 453.57'
R = 5,000.00'



MATCH LINE SEE SHEET 21 -L- STA 249+85

MATCH LINE SEE SHEET 23 -L- STA 263+88

250

255

260

-EL-

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

COASTAL PLAIN

TOMMY ALBIN
DB 806 PG 134

HORENCE JACKSON
DB 968 PG 169
PC 4 SLIDE 325

JANICE LYNN
DB 968 PG 157
PC 4 SLIDE 325

TERESA COPPER
DB 821 PG 517
PC 4 SLIDE 325

AUTO LECTRA OF THE CAROLINA'S
DB 866 PG 536
PC 4 SLIDE 325

HORENCE JACKSON
DB 968 PG 169
PC 4 SLIDE 325

EUGENE NEWIRTH
DB 764 PG 304
PC 4 SLIDE 325

ROY REGISTER
DB 1094 PG 445
PC 4 SLIDE 325

KENNETH J. KEATING
DB 1038 PG 148
PC 4 SLIDE 325

LAMAR BEACH
DB 766 PG 131
PC 4 SLIDE 325

ALAN DOSSENBACH
DB 764 PG 302
PC 4 SLIDE 325

ROSALIND B. GERST
WILL 96E-190
DB 968 PG 159
PC 4 SLIDE 325

RICHARD SKREI
DB 764 PG 306
PC 4 SLIDE 325

MATTHEW SAUER
DB 96 PG 31

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13-DEC-2007 14:30
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PROJECT REFERENCE NO.	SHEET NO.
R-2812	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Pls Sta 265+106.00
G_s = 1°08'45.3"
L_s = 200.00'
LT = 133.34'
ST = 66.67'

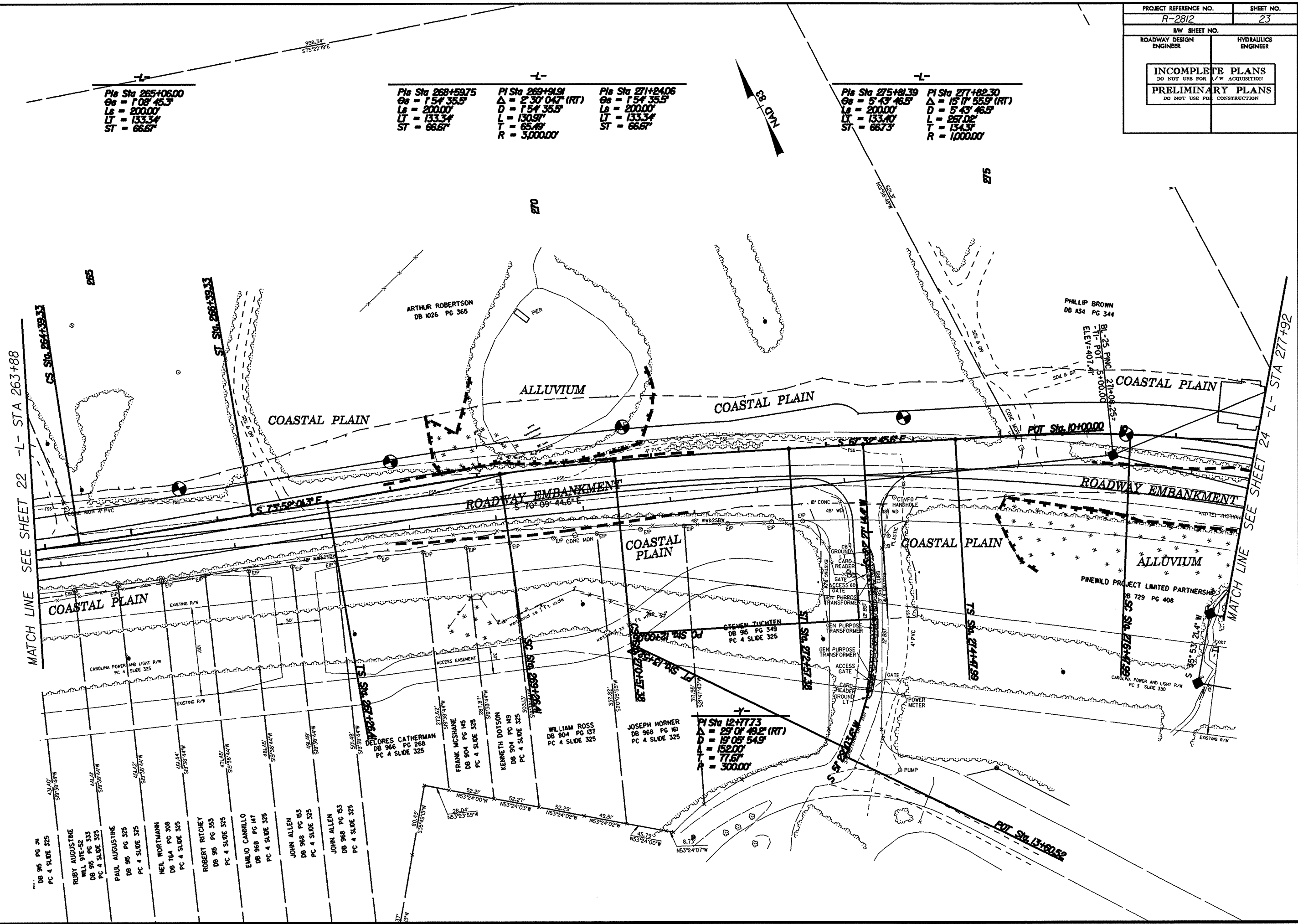
Pls Sta 268+59.75
G_s = 1°54'35.5"
L_s = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 269+91.91
Δ = 2°30'04.7" (RT)
D = 154'35.5"
L = 130.97'
T = 65.49'
R = 3,000.00'

Pls Sta 271+24.06
G_s = 1°54'35.5"
L_s = 200.00'
LT = 133.34'
ST = 66.67'

Pls Sta 275+81.39
G_s = 5°43'46.5"
L_s = 200.00'
LT = 133.40'
ST = 66.73'

PI Sta 277+82.30
Δ = 15°17'55.9" (RT)
D = 543'46.5"
L = 267.02'
T = 134.37'
R = 1,000.00'



MATCH LINE SEE SHEET 22 -L- STA 263+88

MATCH LINE SEE SHEET 24 -L- STA 277+92

- DB 96 PG 34
PC 4 SLIDE 325
- RUBY AUGUSTINE
DB 97 PG 33
PC 4 SLIDE 325
- PAUL AUGUSTINE
DB 98 PG 325
PC 4 SLIDE 325
- NEIL WORTMANN
DB 99 PG 308
PC 4 SLIDE 325
- ROBERT RITCHEY
DB 95 PG 353
PC 4 SLIDE 325
- EMILIO CANNILLO
DB 968 PG 147
PC 4 SLIDE 325
- JOHN ALLEN
DB 968 PG 153
PC 4 SLIDE 325
- JOHN ALLEN
DB 968 PG 153
PC 4 SLIDE 325

PI Sta 12+77.73
Δ = 29°01'49.2" (RT)
D = 19'05'54.9"
L = 152.00'
T = 77.67'
R = 3000.00'

STEVEN TUCHTEN
DB 95 PG 349
PC 4 SLIDE 325

WILLIAM ROSS
DB 904 PG 137
PC 4 SLIDE 325

JOSEPH HORNER
DB 968 PG 151
PC 4 SLIDE 325

DELORES CATHERMAN
DB 966 PG 258
PC 4 SLIDE 325

FRANK MC SHANE
DB 904 PG 145
PC 4 SLIDE 325

KENNETH DOTSON
DB 904 PG 149
PC 4 SLIDE 325

PNEWILD PROJECT LIMITED PARTNERS
DB 729 PG 408

CAROLINA POWER AND LIGHT R/W
PC 3 SLIDE 330

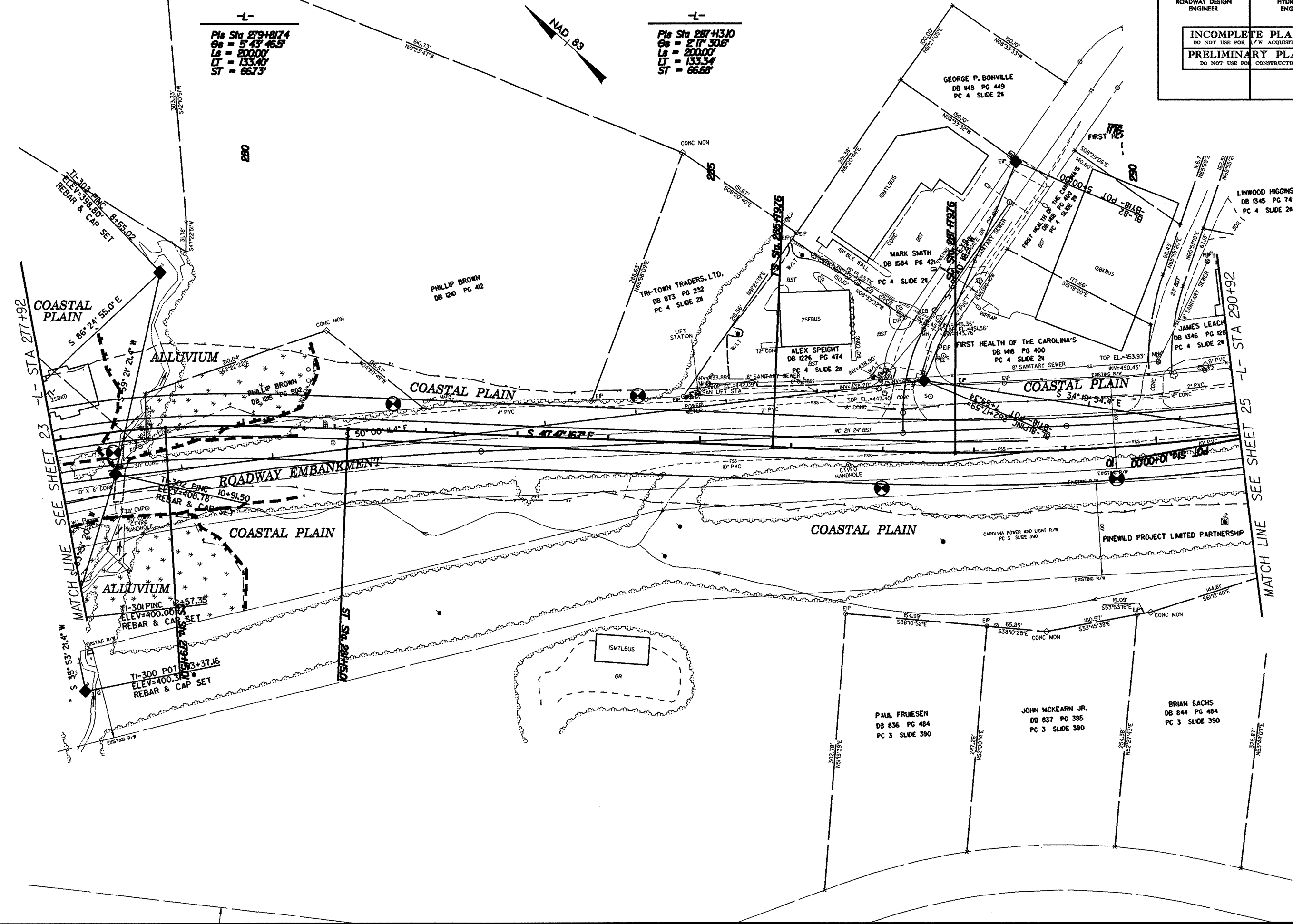
CAROLINA POWER AND LIGHT R/W
PC 4 SLIDE 325

ARTHUR ROBERTSON
DB 1026 PG 365

PHILIP BROWN
DB 134 PG 344

8/17/99

PROJECT REFERENCE NO. R-2812		SHEET NO. 24	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

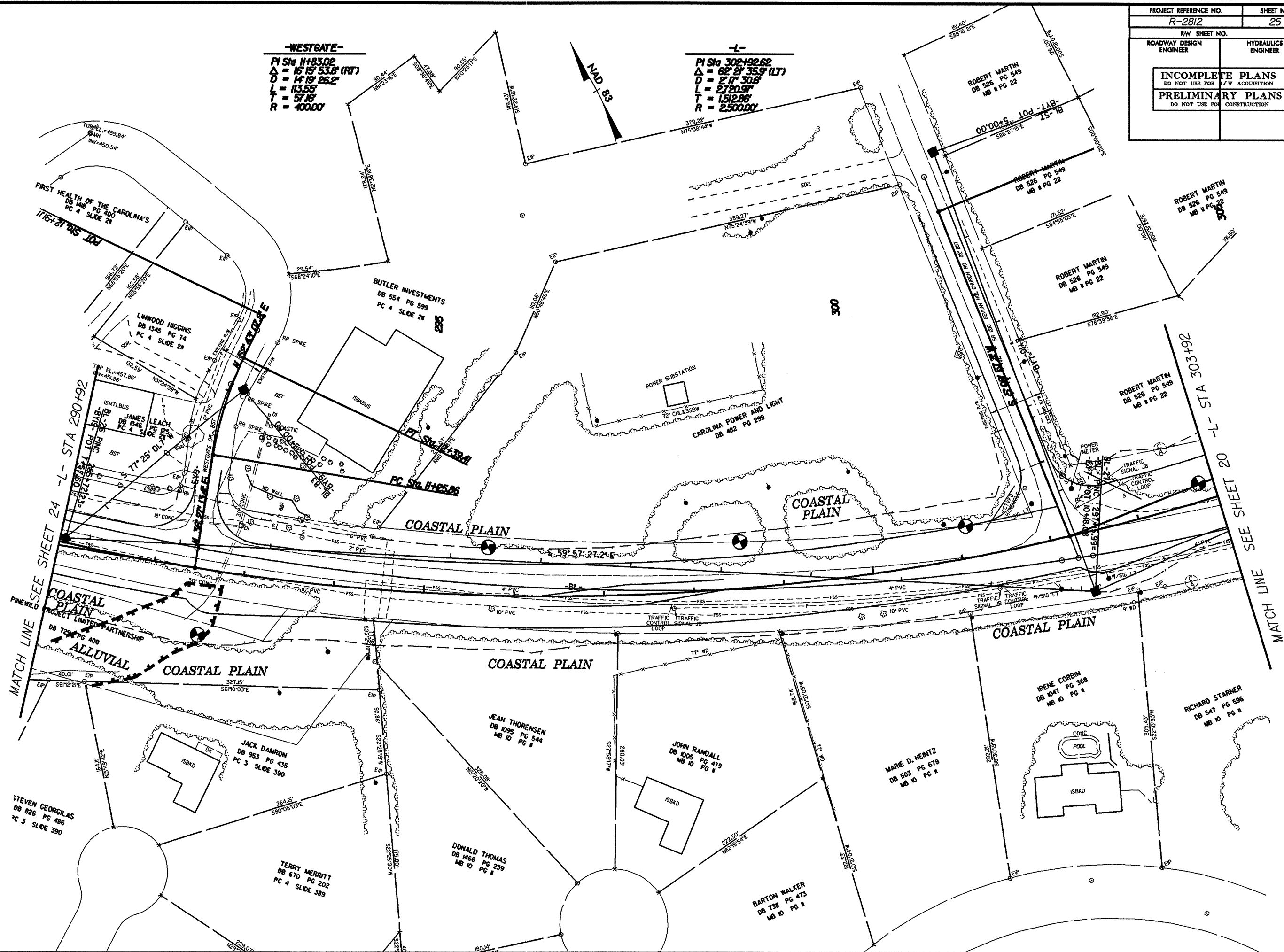


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 created by: DJM
 checked by:

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		25	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS			
DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS			
DO NOT USE FOR CONSTRUCTION			

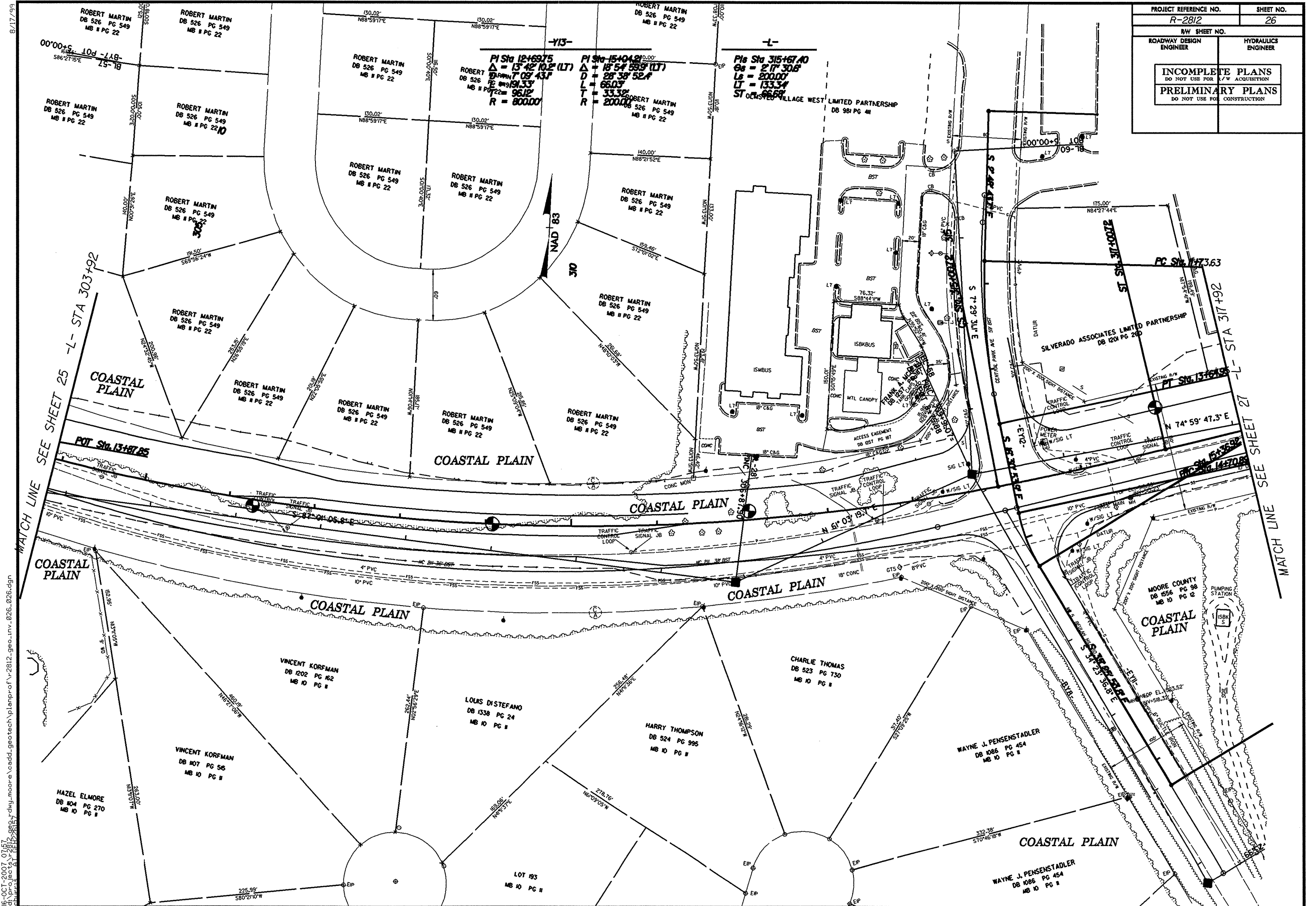
-WESTGATE-
 PI Sta 11+83.02
 $\Delta = 15' 15" 53.8" (RT)$
 $D = 14' 19" 26.2"$
 $L = 113.55'$
 $T = 57.16'$
 $R = 400.00'$

-L-
 PI Sta 302+92.62
 $\Delta = 62' 21" 35.9" (LT)$
 $D = 2' 17" 30.6"$
 $L = 2720.97'$
 $T = 1512.86'$
 $R = 2500.00'$



8/17/99
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PROJECT REFERENCE NO.	SHEET NO.
R-2812	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



8/17/99
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MATCH LINE SEE SHEET 25 -L- STA 303+92

MATCH LINE SEE SHEET 27 -L- STA 317+92

-Y13-
 PI Sta 12+69.75
 $\Delta = 13^{\circ} 42' 10.2" (LT)$
 $D = 1854.599' (LT)$
 $L = 66.03'$
 $T = 33.32'$
 $R = 200.00'$

-L-
 PI Sta 315+67.10
 $\Delta = 2^{\circ} 17' 30.8"$
 $L = 200.00'$
 $T = 133.34'$
 $R = 66.68'$

PC Sta 173.63

PT Sta 137+61.9

PC Sta 147.08

PT Sta 147.08

PC Sta 147.08

PT Sta 147.08

PC Sta 147.08

PT Sta 147.08

PC Sta 147.08

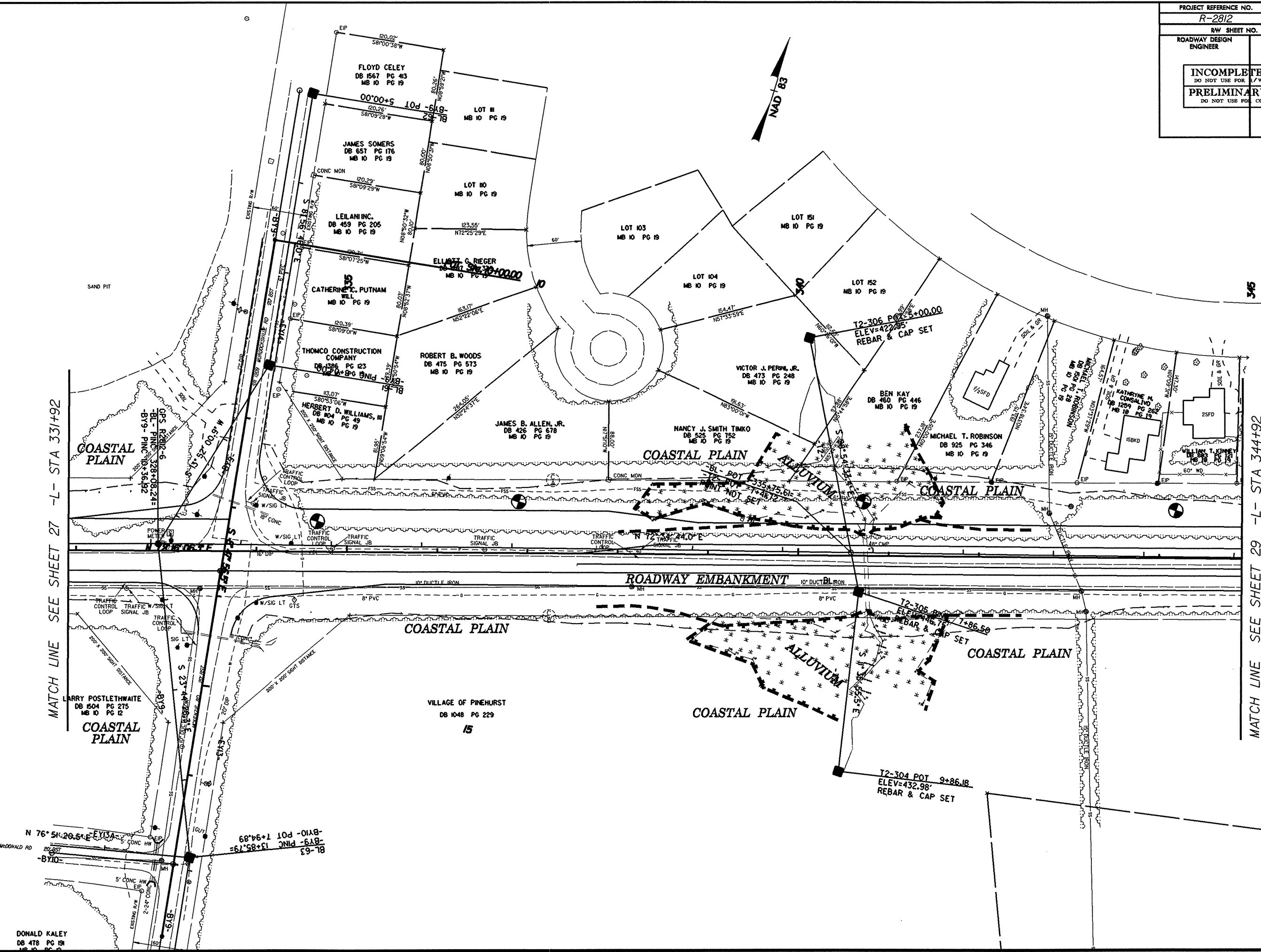
PT Sta 147.08

PC Sta 147.08

PT Sta 147.08

8/17/99
 12 DEC 2007 11:38
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PROJECT REFERENCE NO. R-2812	SHEET NO. 28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE SEE SHEET 27 -L- STA 331+92

MATCH LINE SEE SHEET 29 -L- STA 344+92

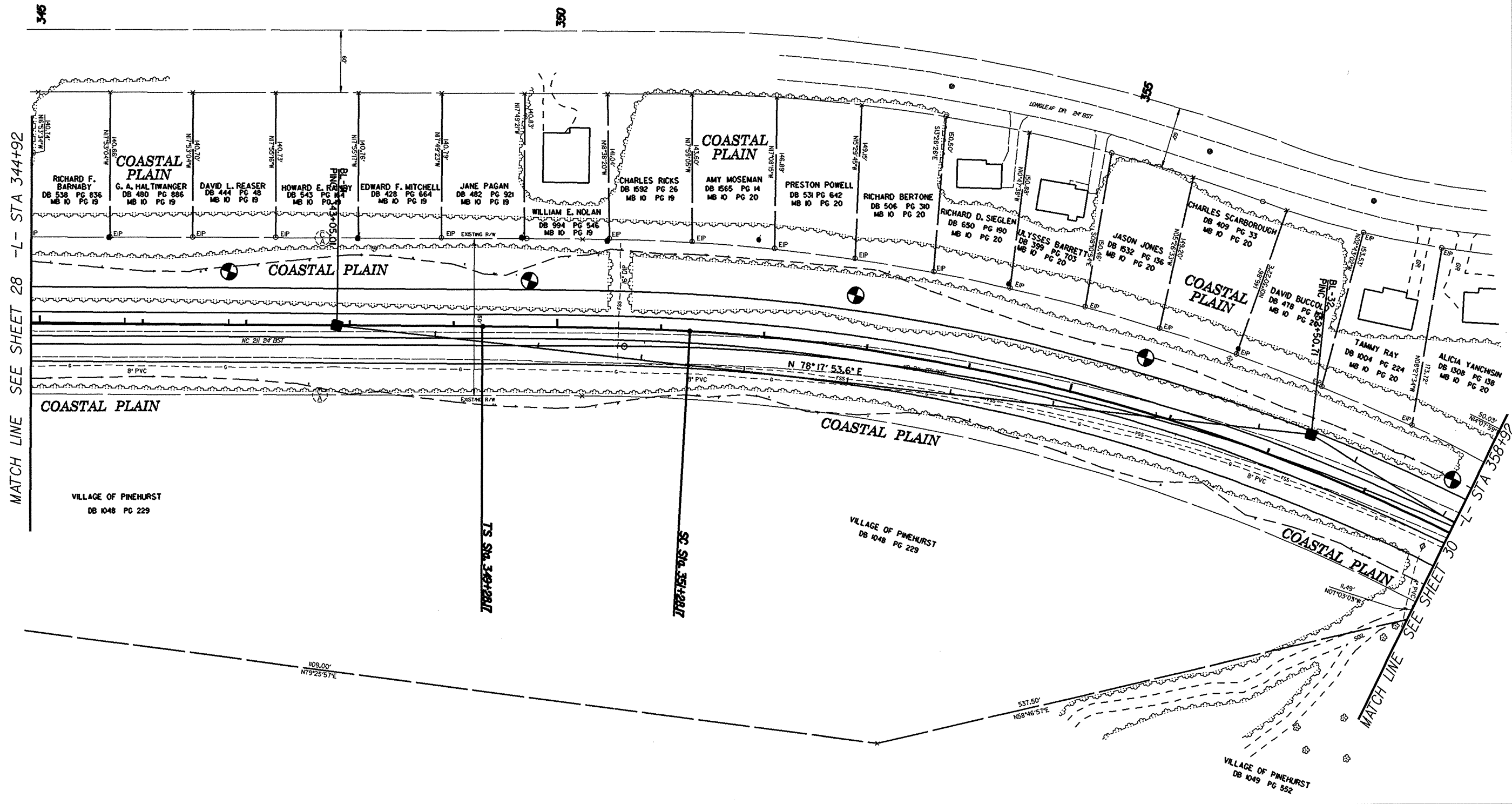
DONALD KALEY
 DB 478 PG 19
 MB 10 PG 19

8/17/99

PROJECT REFERENCE NO.		SHEET NO.	
R-2812		29	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-

PI Sta 350+61.52	PI Sta 356+41.93
Es = 5'00'00"	Δ = 30'08'46.9" (RT)
Ls = 200.00'	D = 5'00'00"
LT = 133.35'	L = 1,003.77'
ST = 66.68'	T = 513.76'
	R = 1,909.86'



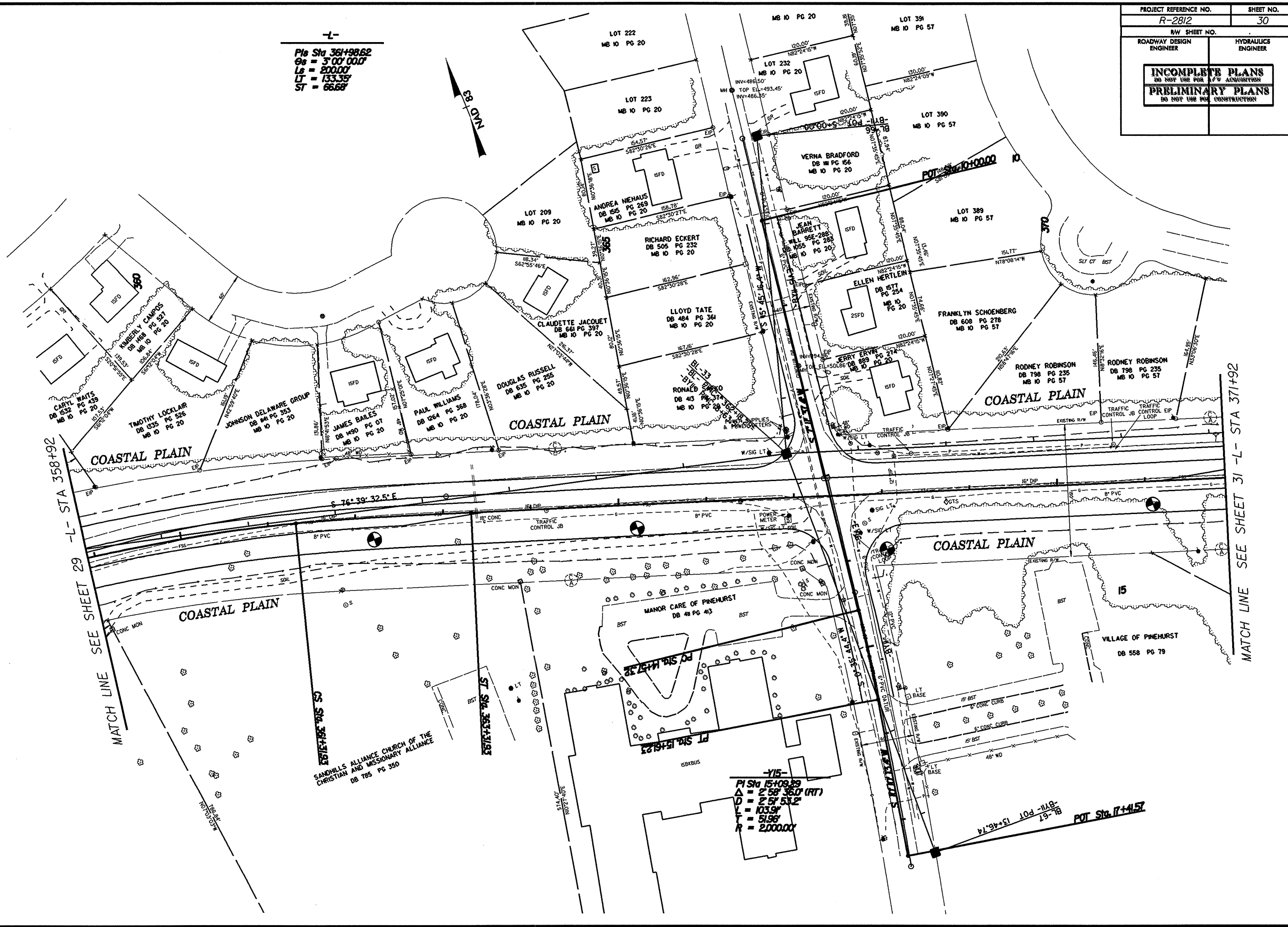
MATCH LINE SEE SHEET 28 -L- STA 344+92

MATCH LINE SEE SHEET 30 -L- STA 358+92

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PROJECT REFERENCE NO.		SHEET NO.	
R-2812		30	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR P/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
 Pts Sta 361+98.62
 $\Delta s = 3' 00'' 00.0'$
 $L s = 200.00'$
 $LT = 133.33'$
 $ST = 66.68'$



MATCH LINE SEE SHEET 29 -L- STA 358+92

MATCH LINE SEE SHEET 31 -L- STA 371+92

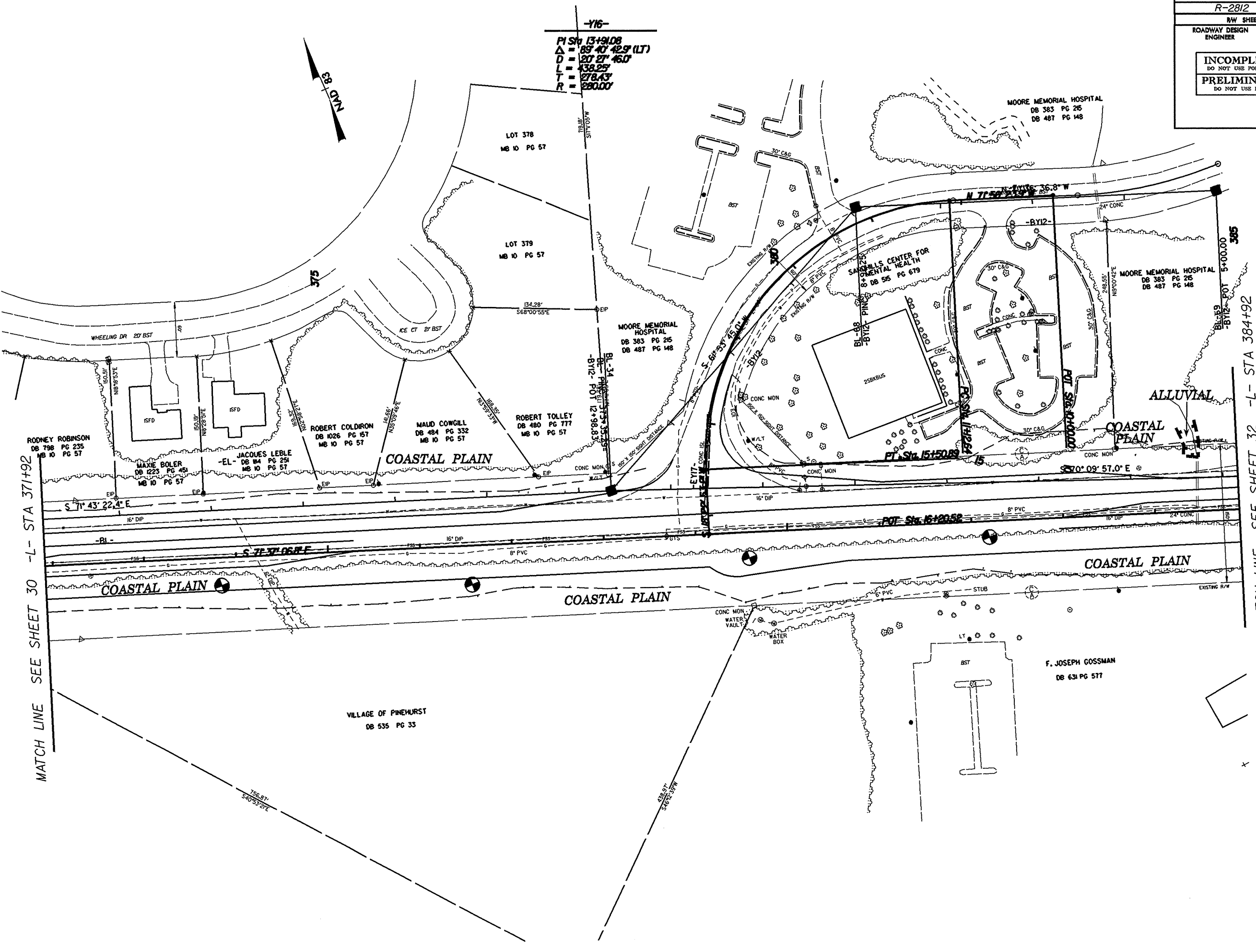
-Y15-
 Pts Sta 151+09.83
 $\Delta = 2' 58'' 36.0'$ (RT)
 $D = 2' 57'' 53.2'$
 $L = 103.9'$
 $T = 51.96'$
 $R = 2000.00'$

POT STA 17+44.57
 B1-67 19-18 POT 13+46.14

6/17/95
 C:\COURT\2007\1123200...
 S:\COURT\2007\1123200...
 S:\COURT\2007\1123200...
 S:\COURT\2007\1123200...

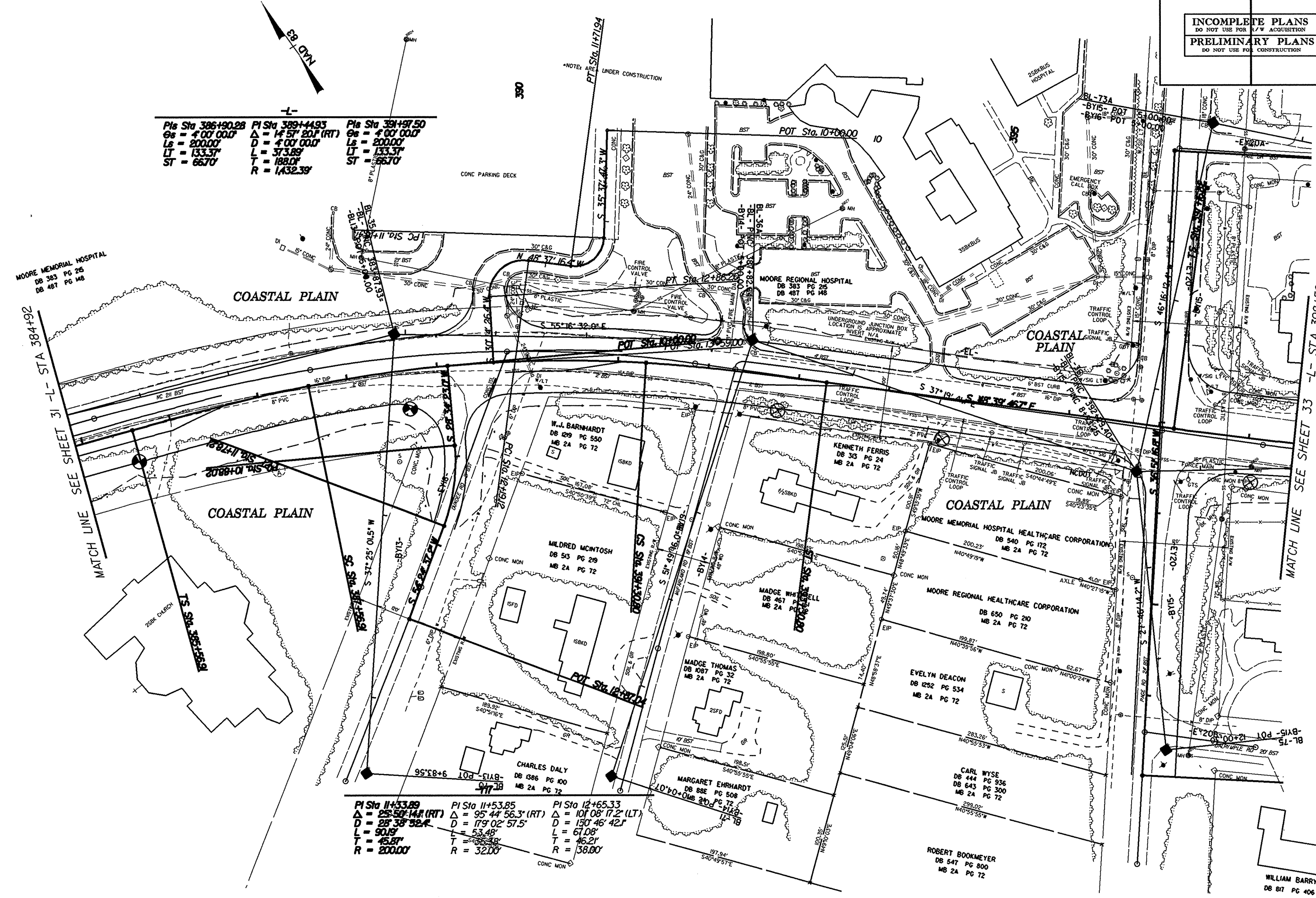
PROJECT REFERENCE NO.	SHEET NO.
R-2812	31
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y16-
 PI Sta 13+91.08
 $\Delta = 89^{\circ} 40' 42.9" (LT)$
 $D = 120' 27" 46.0"$
 $L = 438.25'$
 $T = 278.43'$
 $R = 280.00'$



5/14/99
 04-OCT-2007 14:01
 \\p01\mod\eggs\tech\planpr\of\p2812_6E0_rvw_031_031.dgn

04-OCT-2007 14:55 r:\proj\mod\tech\pl\ampr\of\R2812_GEO Inv_032.dgn 5/14/99



PIs Sta 386+90.28	PI Sta 389+44.93	PIs Sta 391+97.50
Es = 4'00'00"	Δ = 14'57'20" (RT)	Es = 4'00'00"
Ls = 200.00'	D = 4'00'00"	Ls = 200.00'
LT = 133.37'	L = 373.89'	LT = 133.37'
ST = 66.70'	T = 188.01'	ST = 66.70'
	R = 1432.39'	

PI Sta 11+33.89	PI Sta 11+53.85	PI Sta 12+65.33
Δ = 28°38'52" (RT)	Δ = 95°44'56.3" (RT)	Δ = 101°08'17.2" (LT)
D = 28'38'52"	D = 179'02'57.5"	D = 130'46'42"
L = 90.19'	L = 53.48'	L = 67.08'
T = 45.87'	T = 26.24'	T = 46.21'
R = 200.00'	R = 32.00'	R = 38.00'

MOORE MEMORIAL HOSPITAL
DB 383 PG 25
DB 487 PG 148

MOORE REGIONAL HOSPITAL
DB 383 PG 25
DB 487 PG 148

W.J. BARNHARDT
DB 229 PG 550
MB 2A PG 72

KENNETH FERRIS
DB 313 PG 24
MB 2A PG 72

MILDRED MCINTOSH
DB 513 PG 219
MB 2A PG 72

MADGE WHITE BELL
DB 467 PG 24
MB 2A PG 72

MOORE REGIONAL HEALTHCARE CORPORATION
DB 650 PG 210
MB 2A PG 72

MADGE THOMAS
DB 1087 PG 32
MB 2A PG 72

EVELYN DEACON
DB 1252 PG 534
MB 2A PG 72

CHARLES DALY
DB 1386 PG 100
MB 2A PG 72

MARGARET EHRHARDT
DB 886 PG 508
MB 2A PG 72

CARL WYSE
DB 444 PG 936
DB 643 PG 300
MB 2A PG 72

ROBERT BOOKMEYER
DB 547 PG 800
MB 2A PG 72

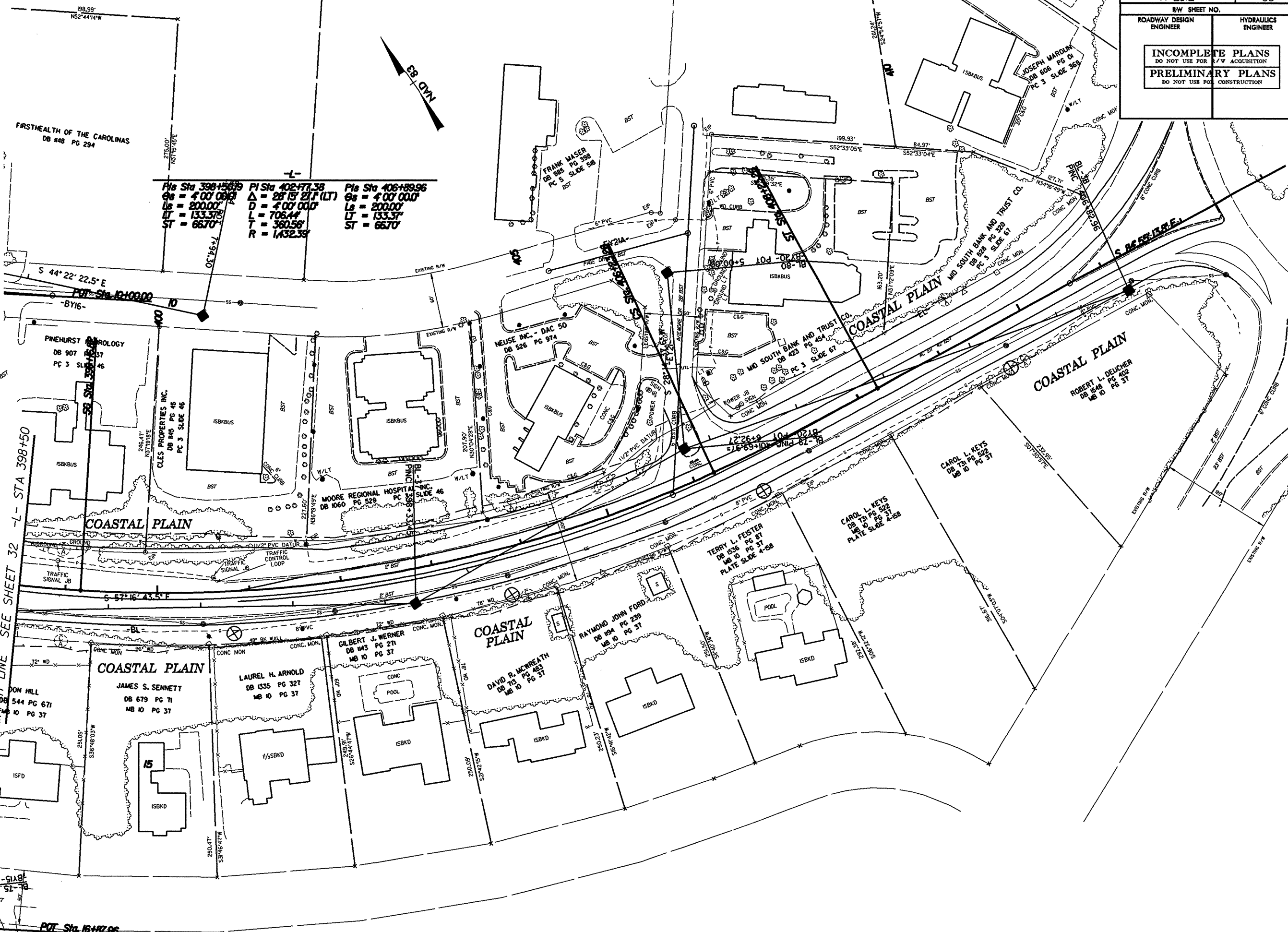
WILLIAM BARRY
DB 817 PG 406

MATCH LINE SEE SHEET 31 -L- STA 384+92

MATCH LINE SEE SHEET 33 -L- STA 398+50

8/17/98

PROJECT REFERENCE NO. R-2812		SHEET NO. 33	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



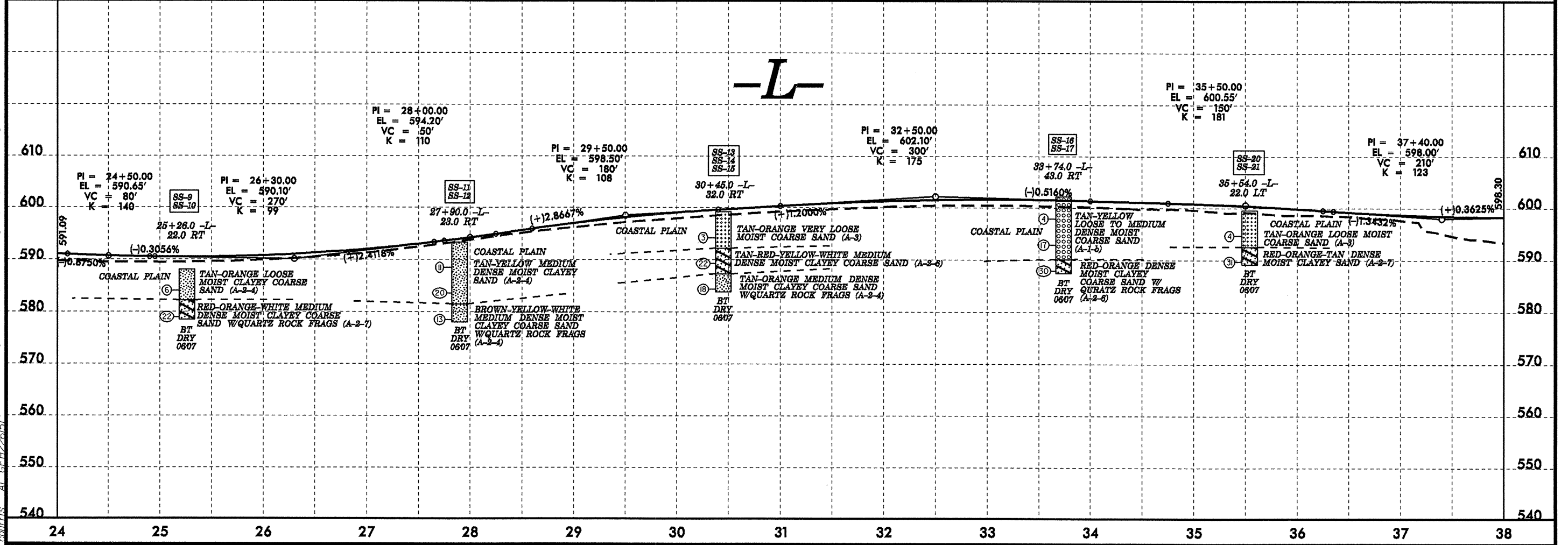
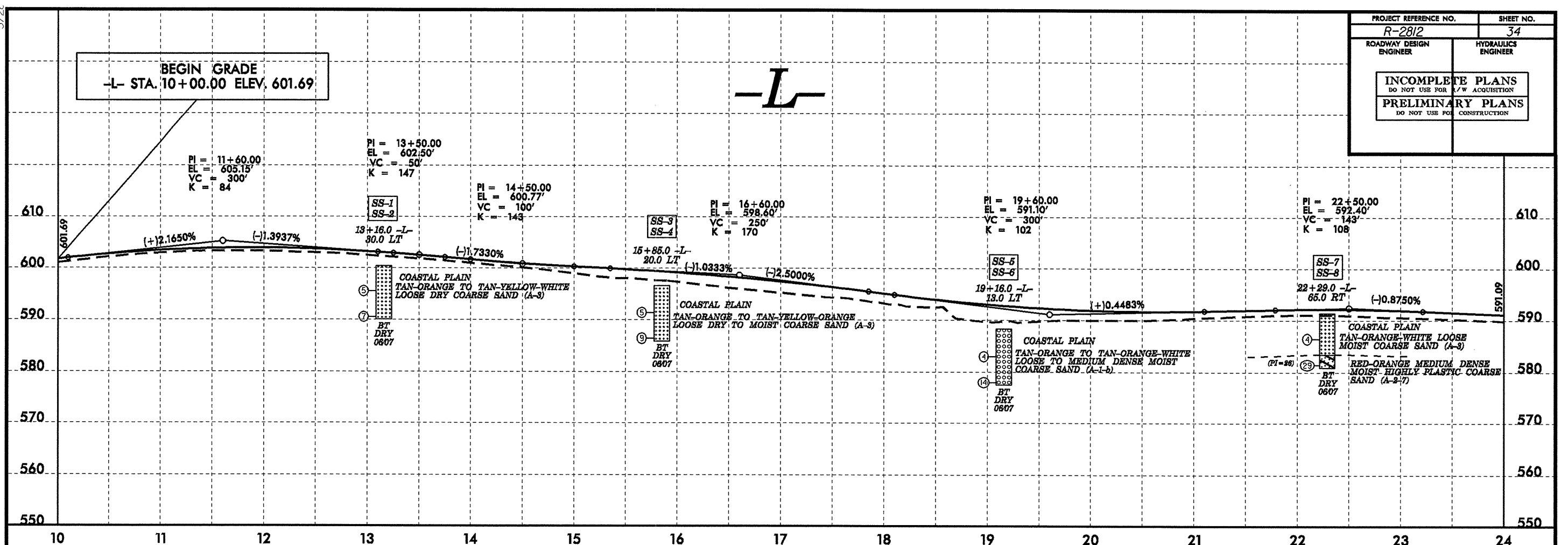
File Sta 398+50.00	PI Sta 402+77.38	File Sta 406+89.96
Gs = 4'00'00"	Δ = 28'15" 21' (LT)	Gs = 4'00'00"
Ls = 200.00'	D = 4'00'00"	Ls = 200.00'
LT = 133.37'	L = 706.44'	LT = 133.37'
ST = 66.70'	T = 360.58'	ST = 66.70'
	R = 1,432.38'	

MATCH LINE SEE SHEET 32 - L- STA 398+50

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POT Sta 16+87.66

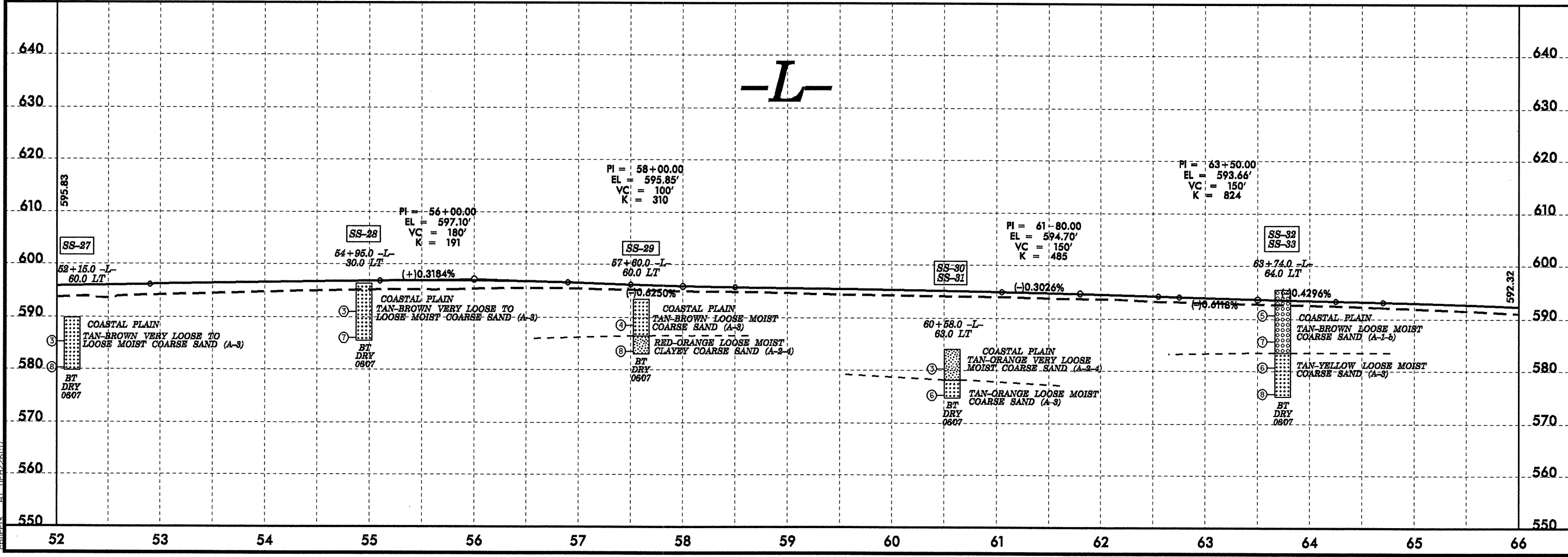
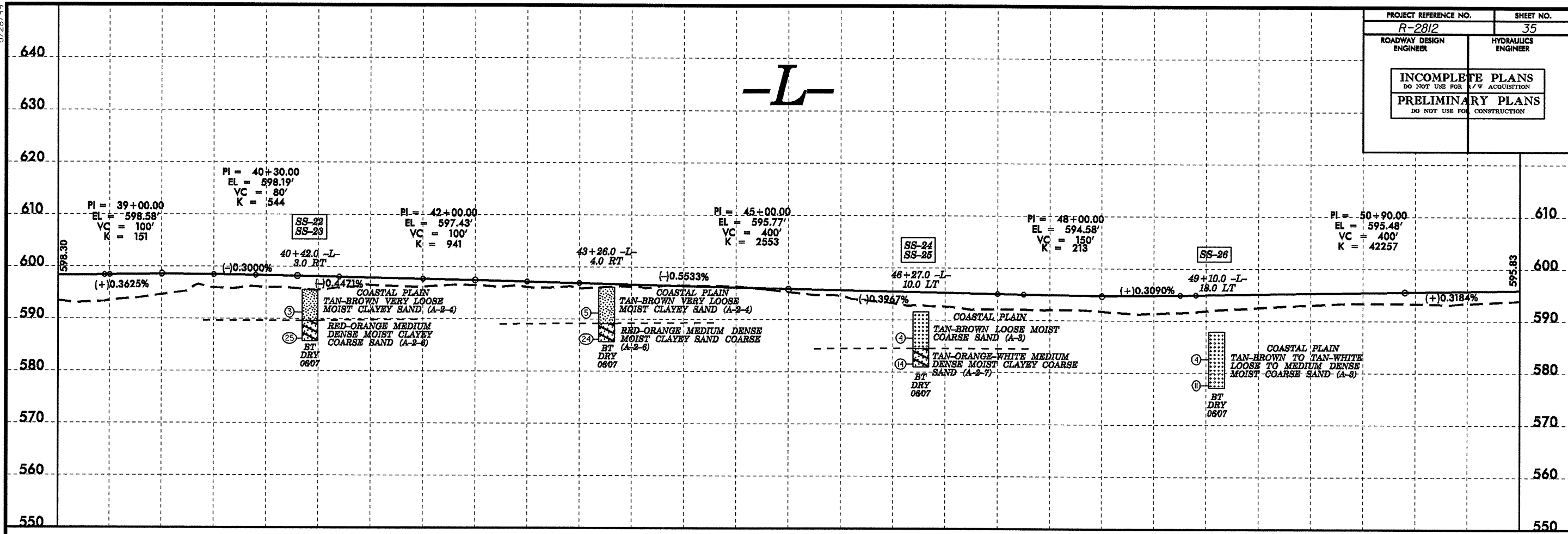
PROJECT REFERENCE NO. R-2812	SHEET NO. 34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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5/28/99

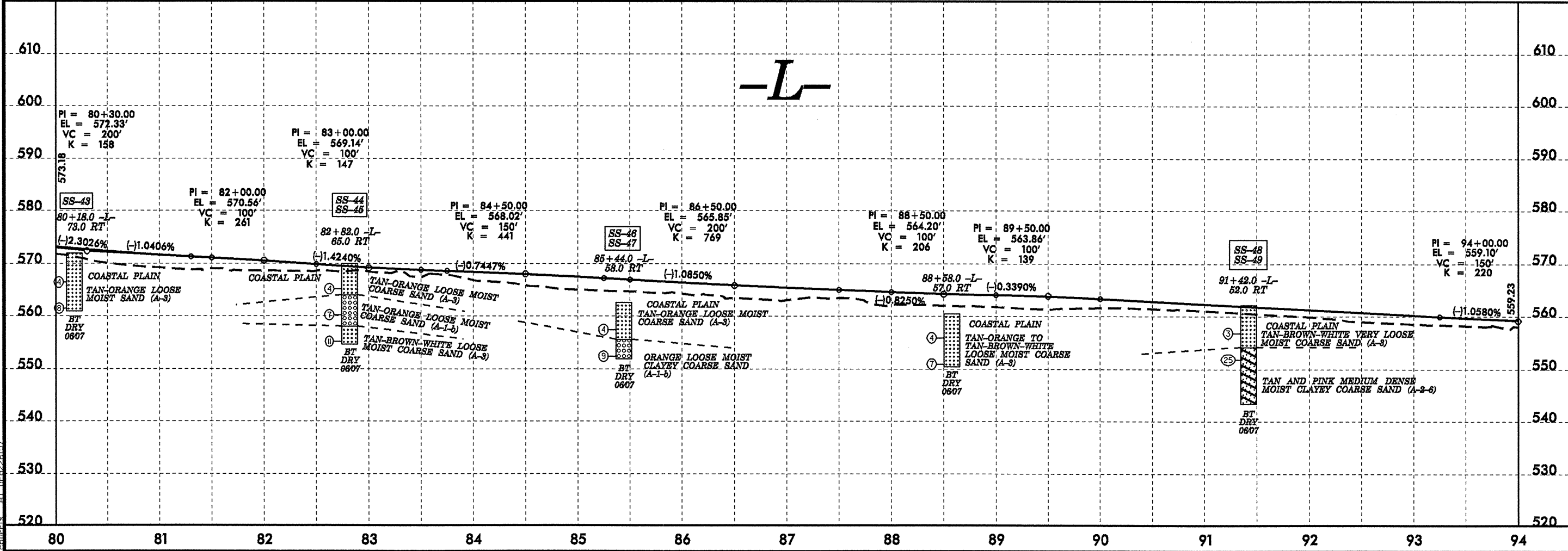
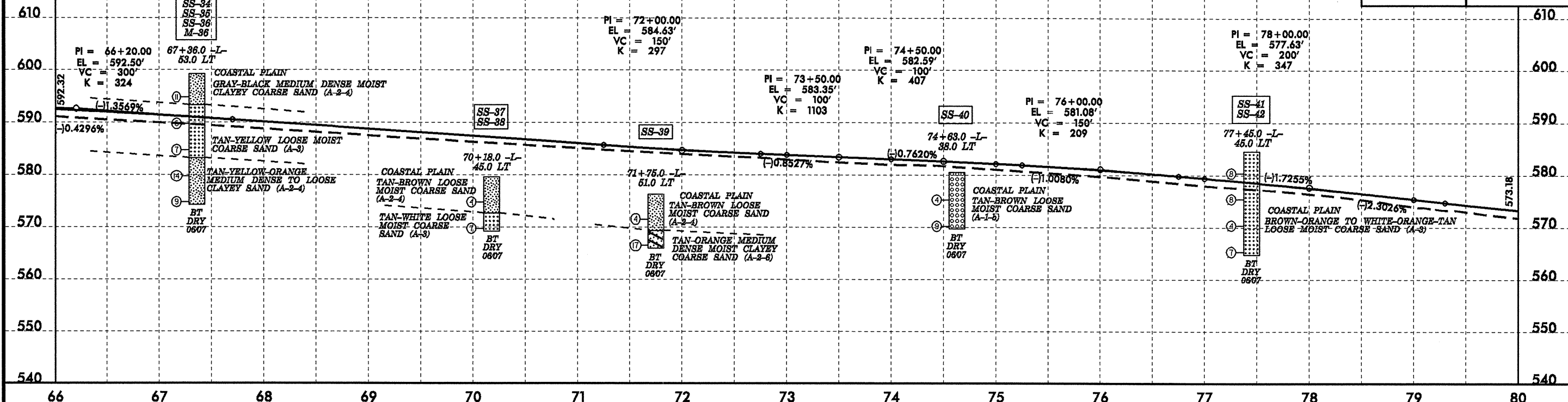
PROJECT REFERENCE NO. R-2812		SHEET NO. 35
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INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



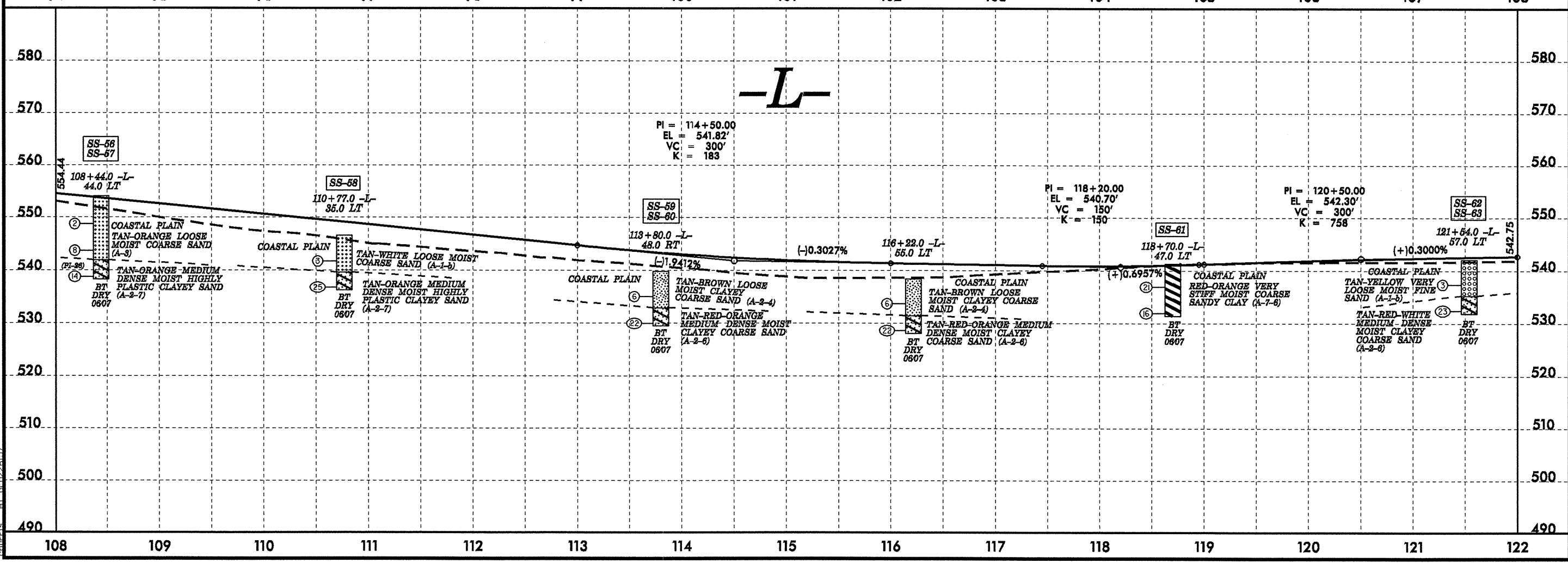
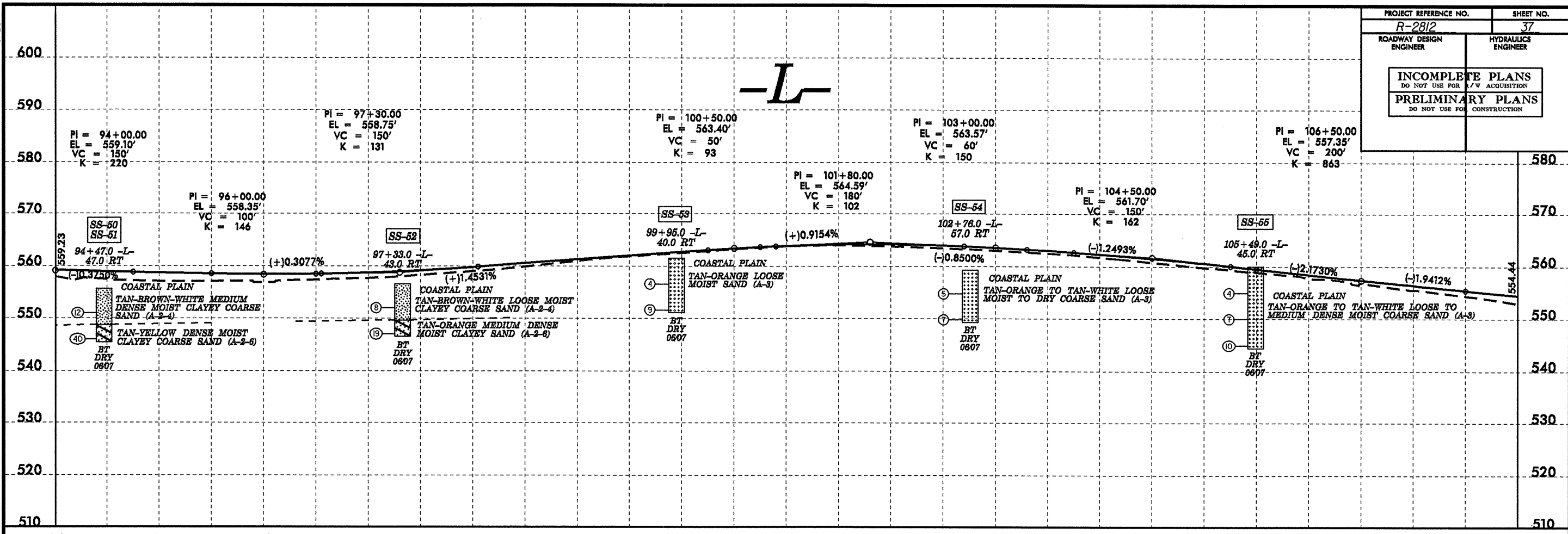
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PROJECT REFERENCE NO. R-2812	SHEET NO. 36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



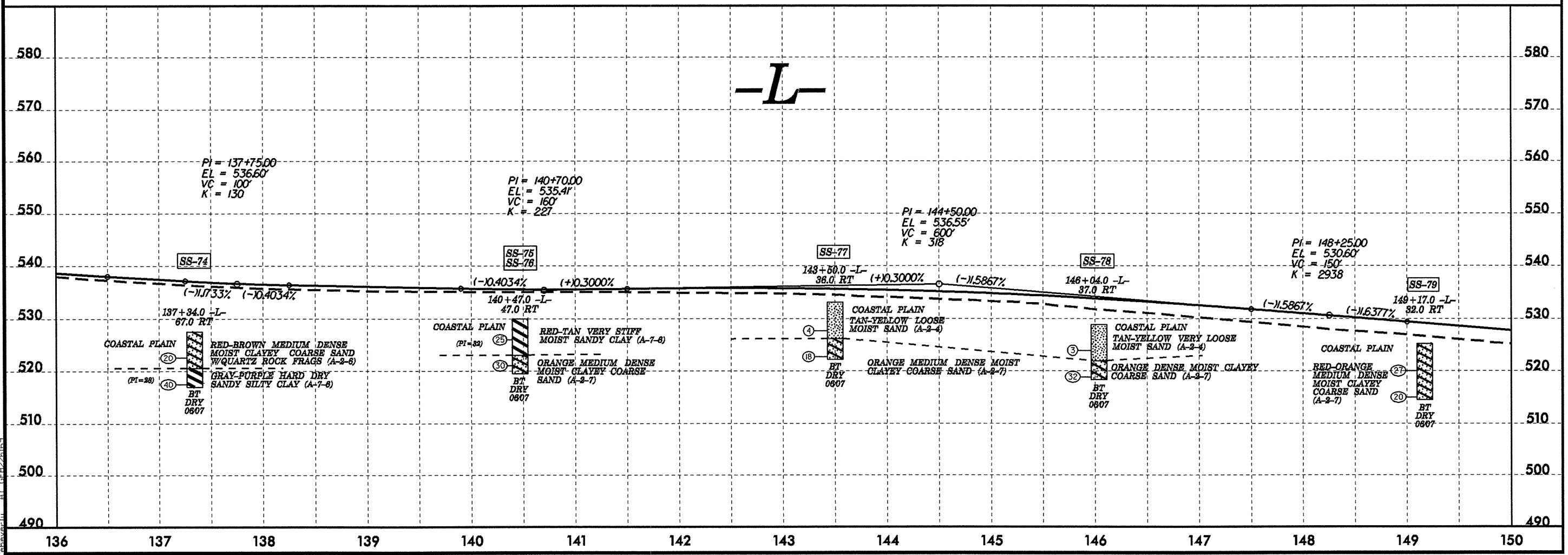
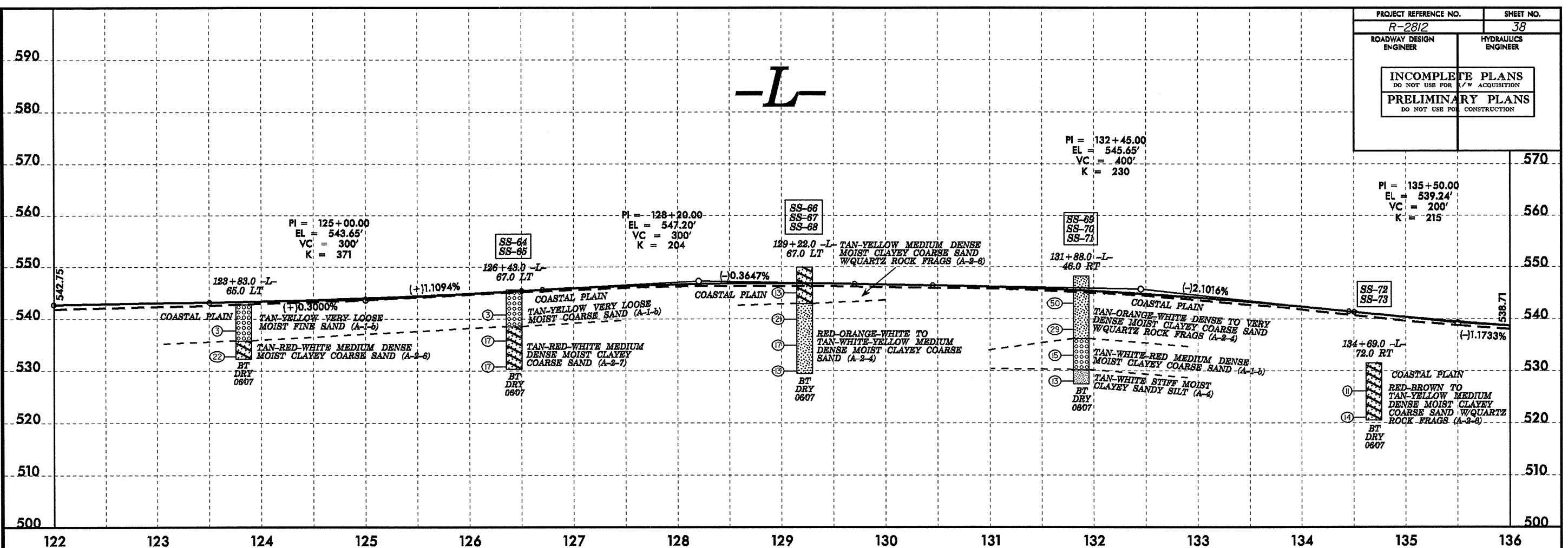
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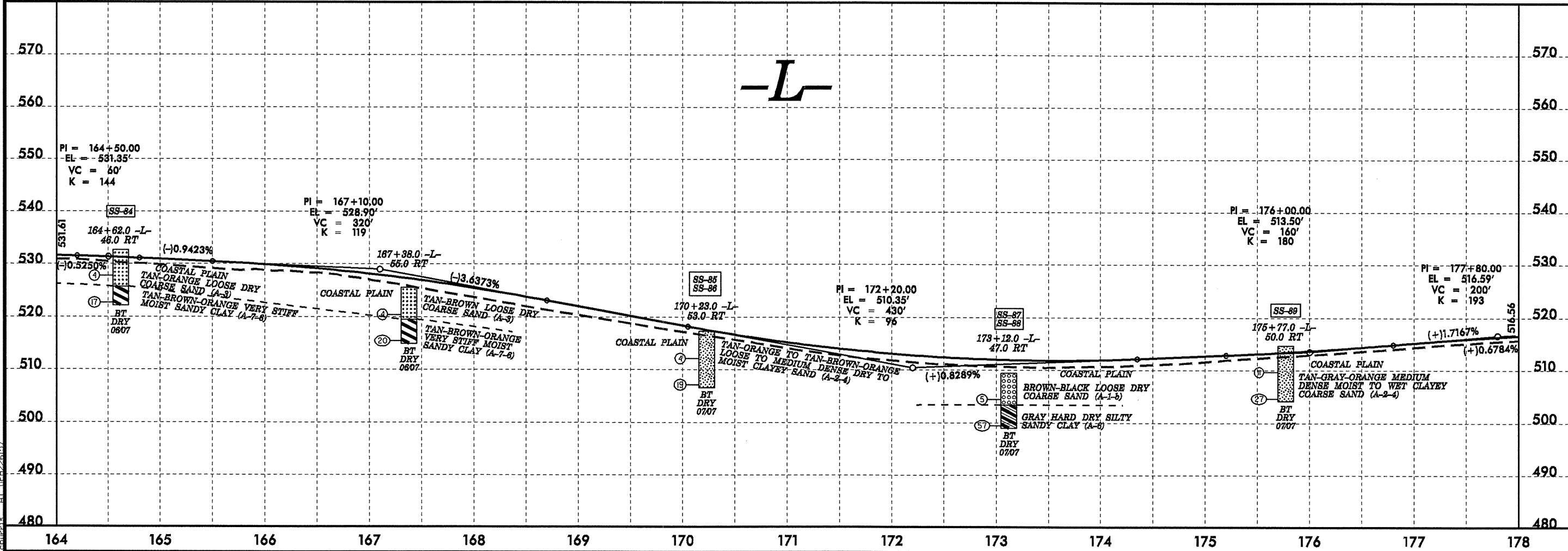
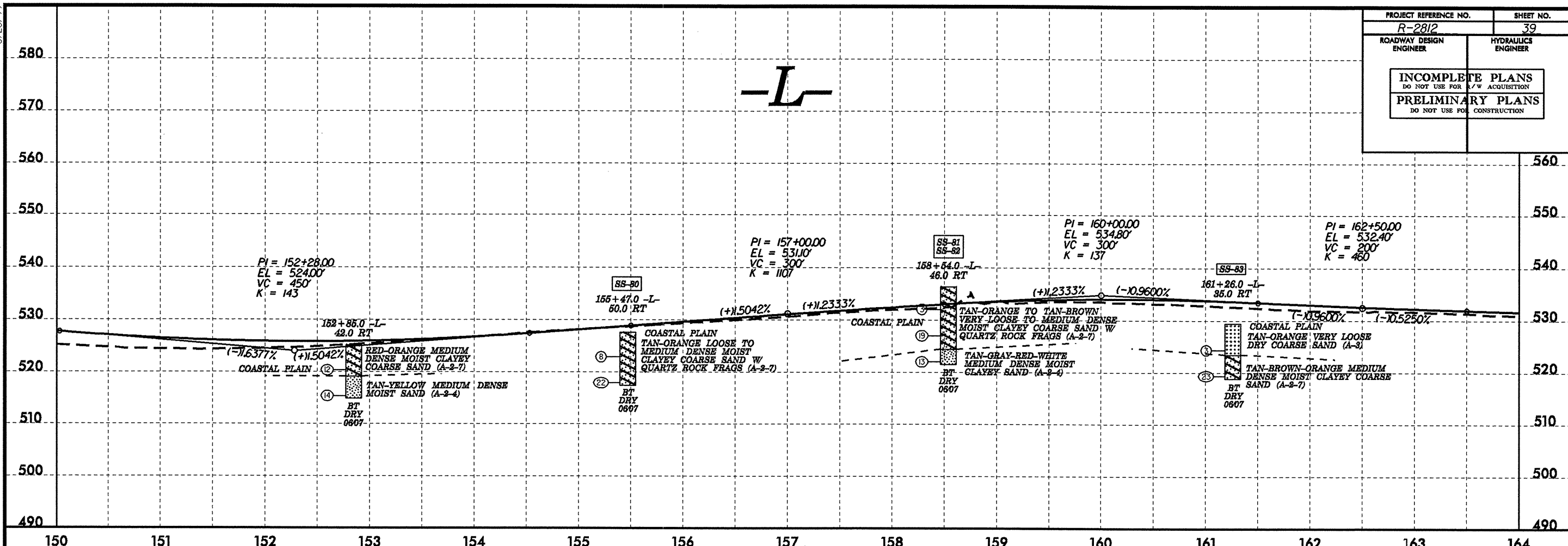
5/28/99

PROJECT REFERENCE NO. R-2812	SHEET NO. 38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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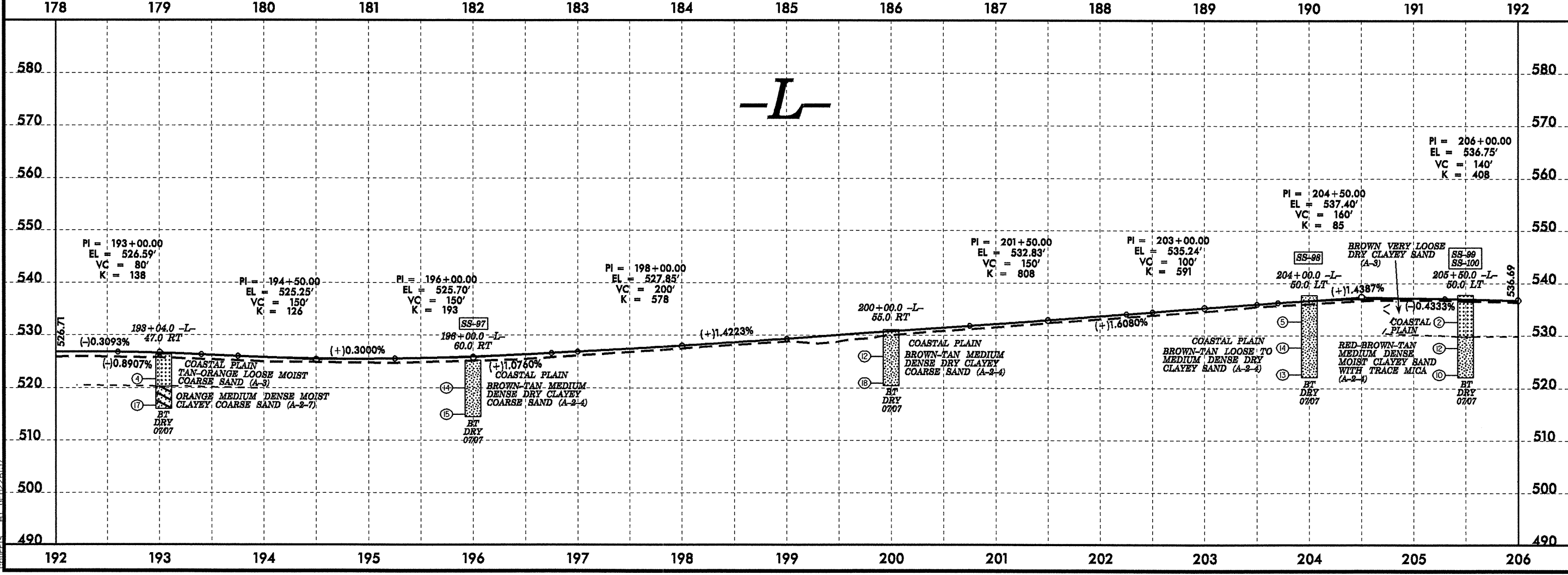
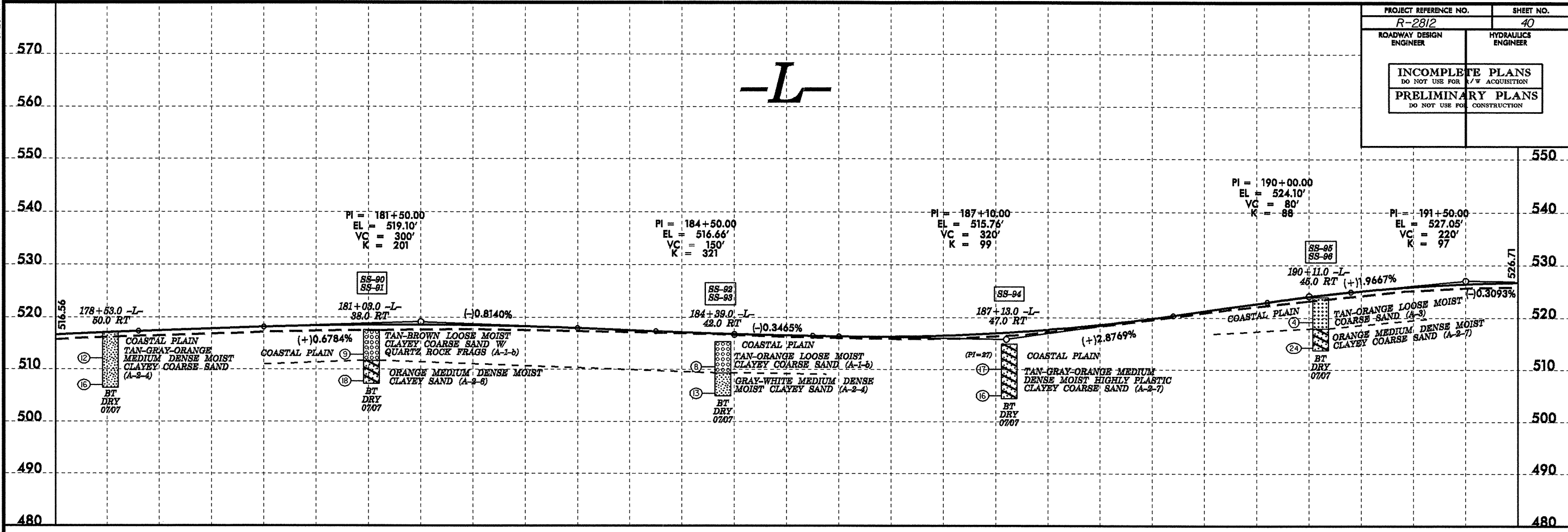
5/28/99



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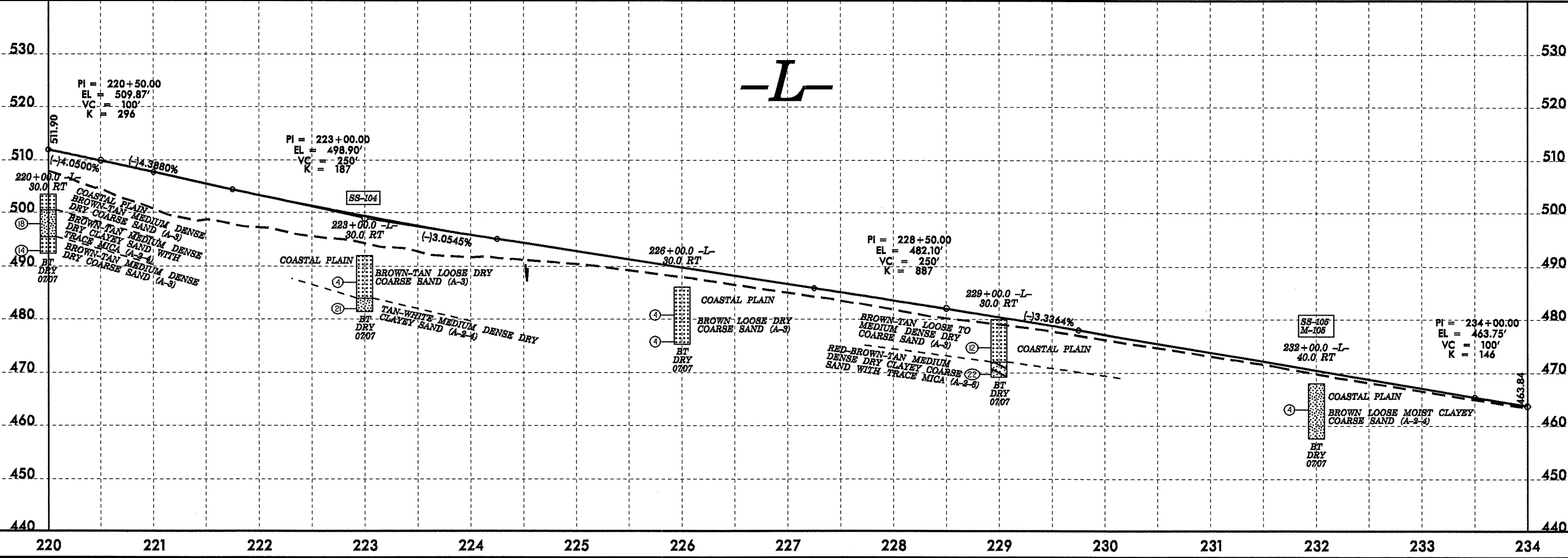
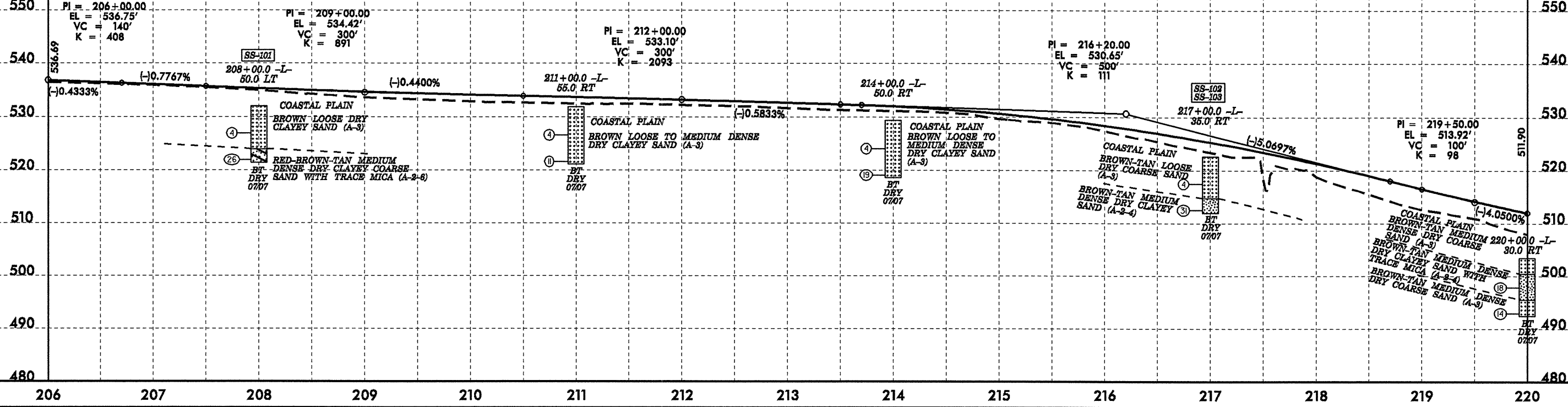
PROJECT REFERENCE NO. R-2812		SHEET NO. 40	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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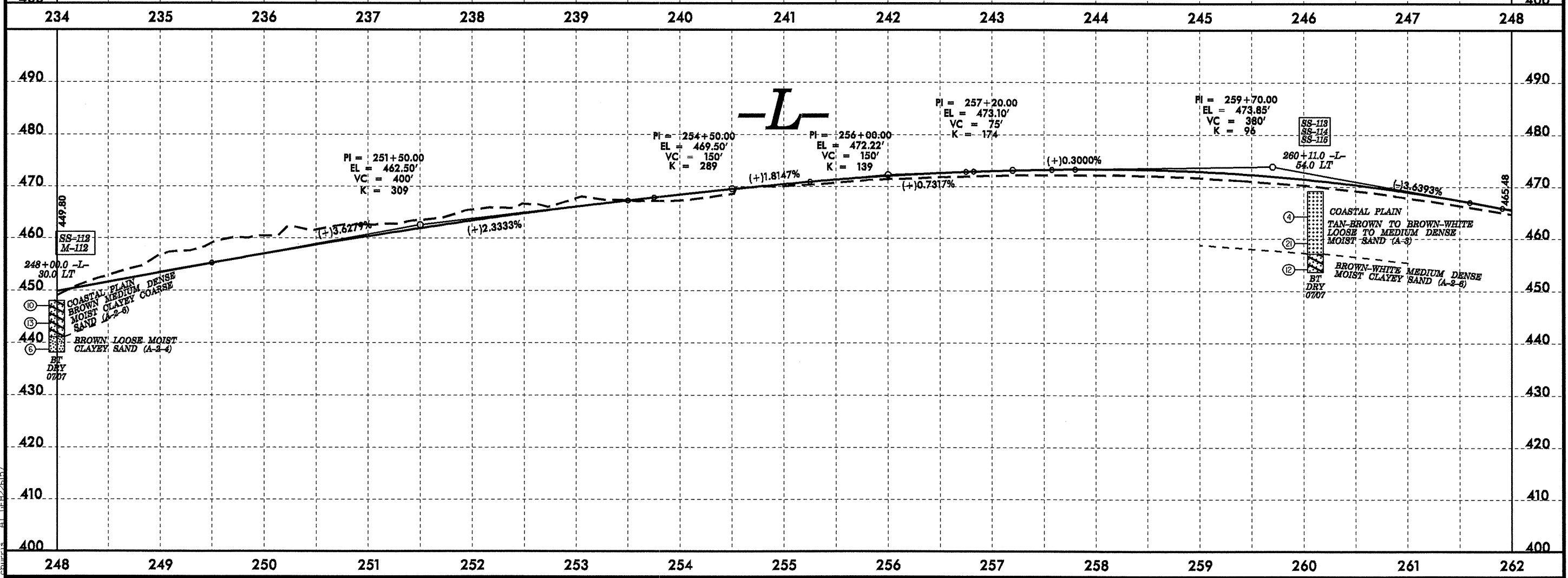
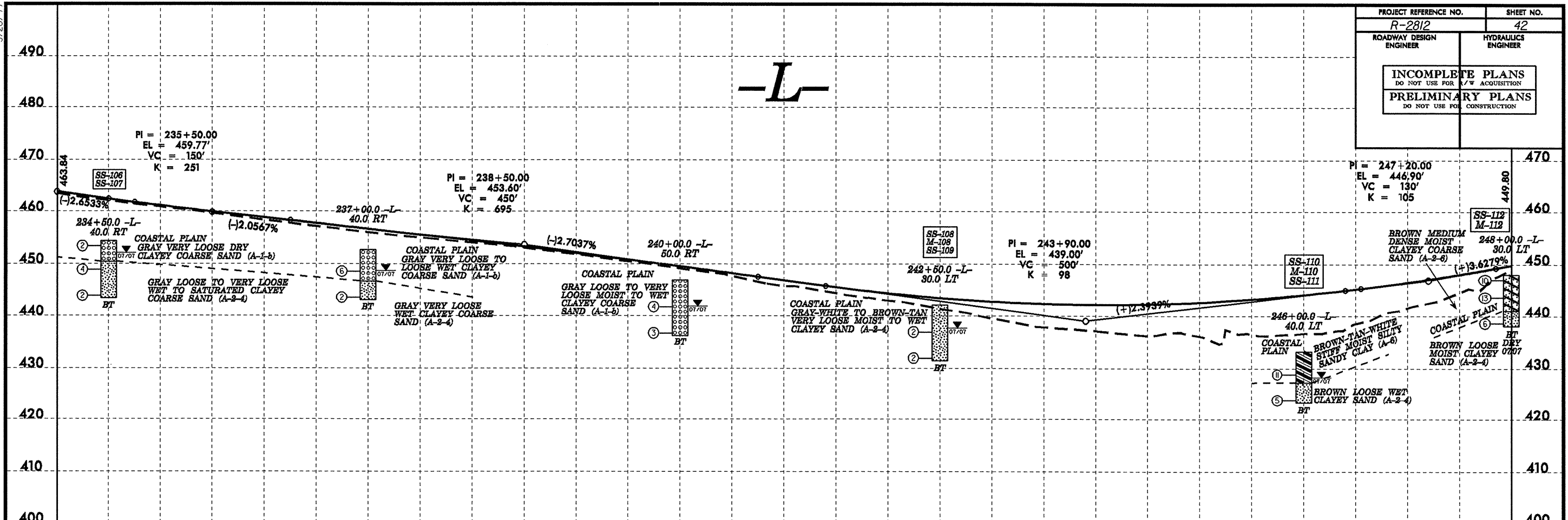
5/28/99

PROJECT REFERENCE NO.		SHEET NO.
R-2812		41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



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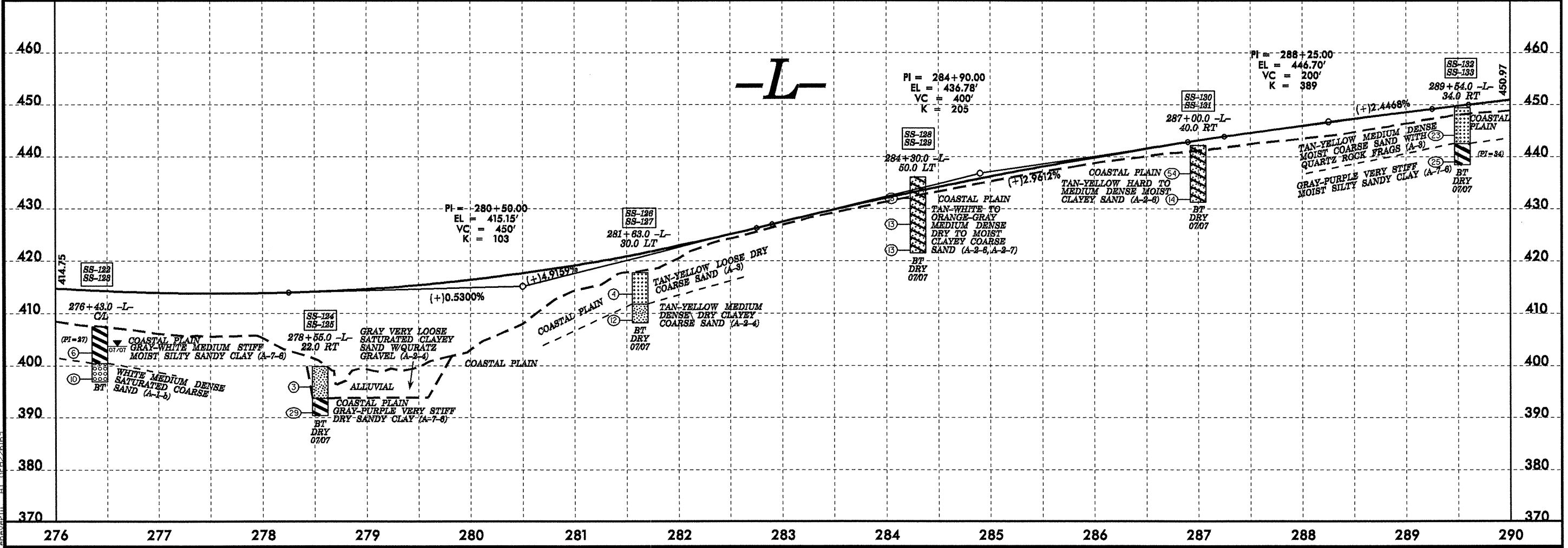
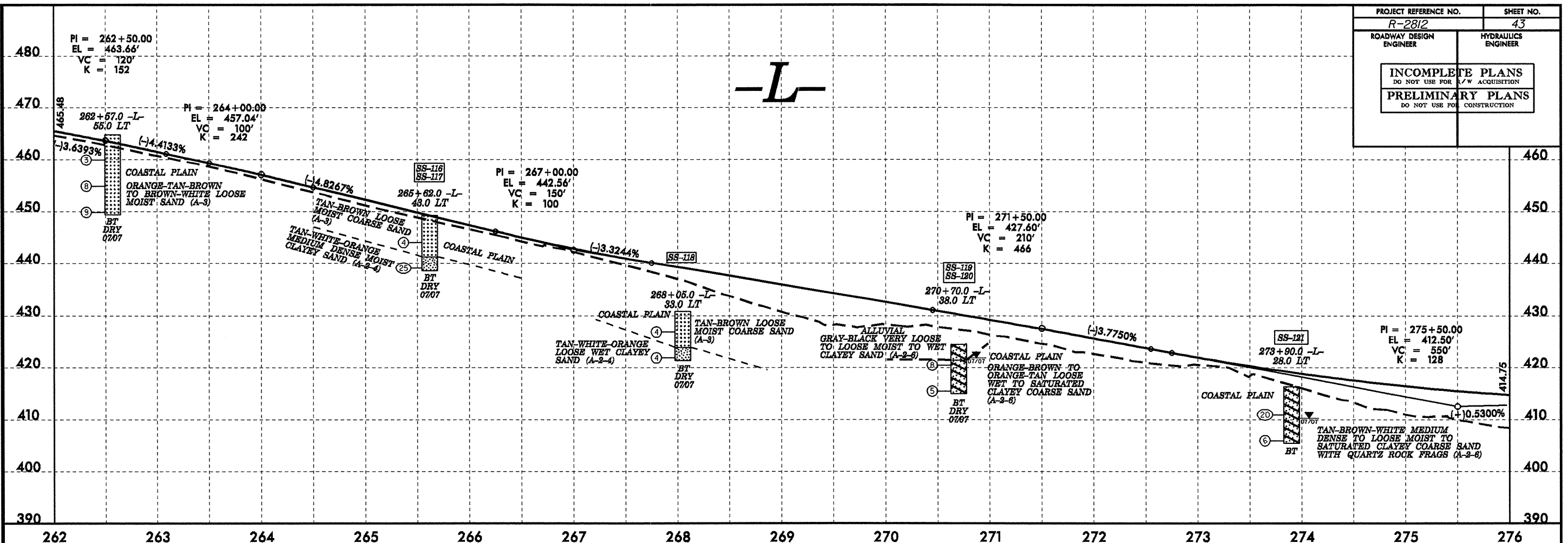
PROJECT REFERENCE NO. R-2812	SHEET NO. 42
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INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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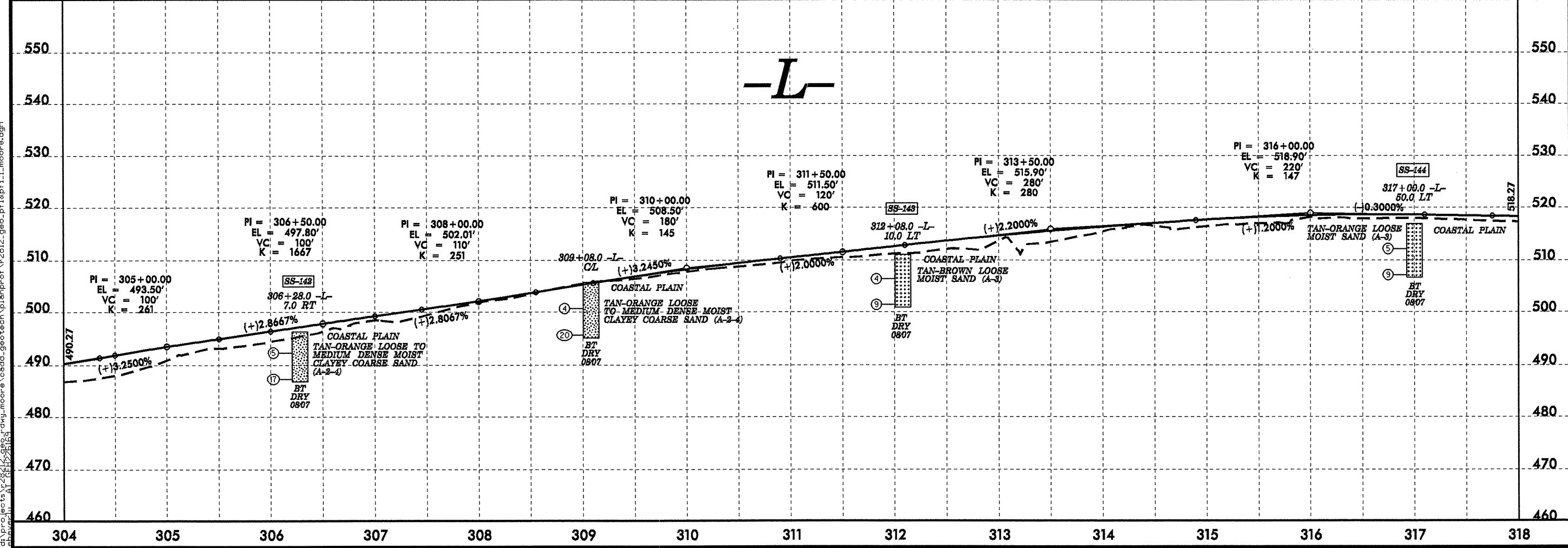
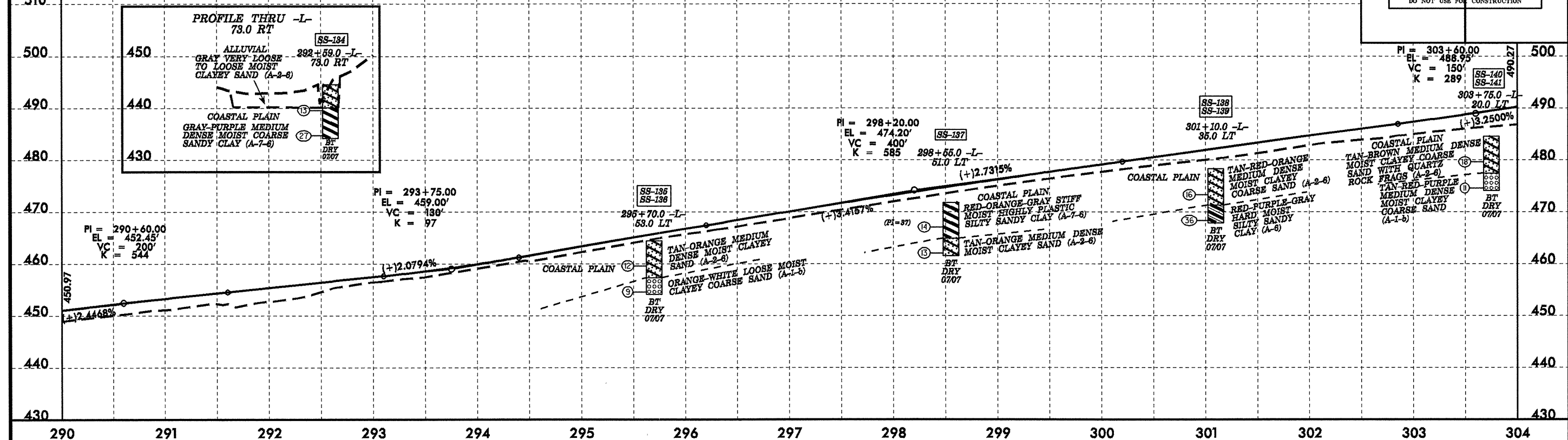
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PROJECT REFERENCE NO. R-2812	SHEET NO. 43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



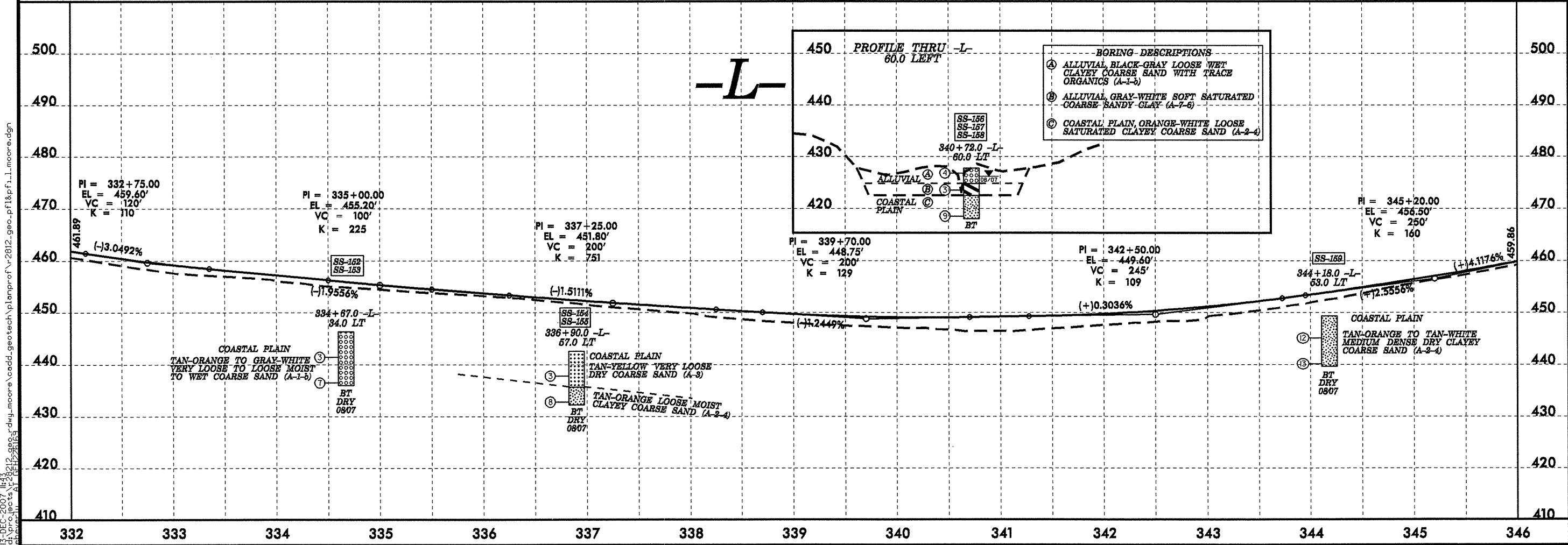
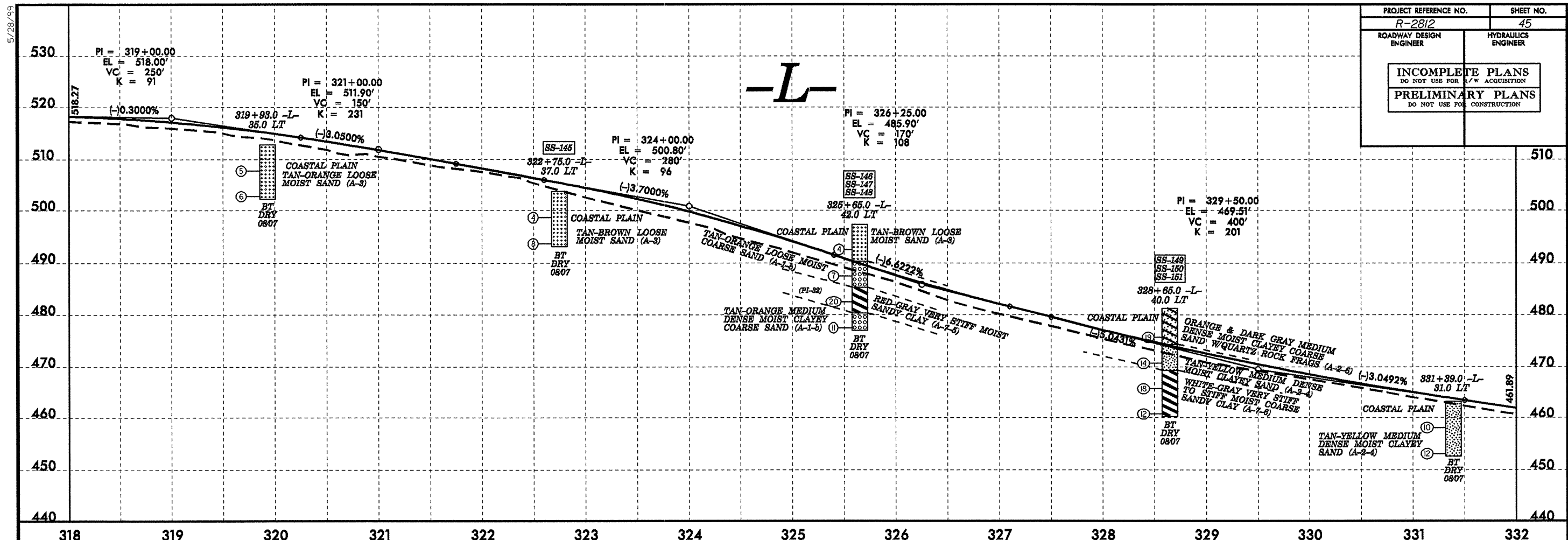
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5/28/99



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PROJECT REFERENCE NO. R-2812	SHEET NO. 45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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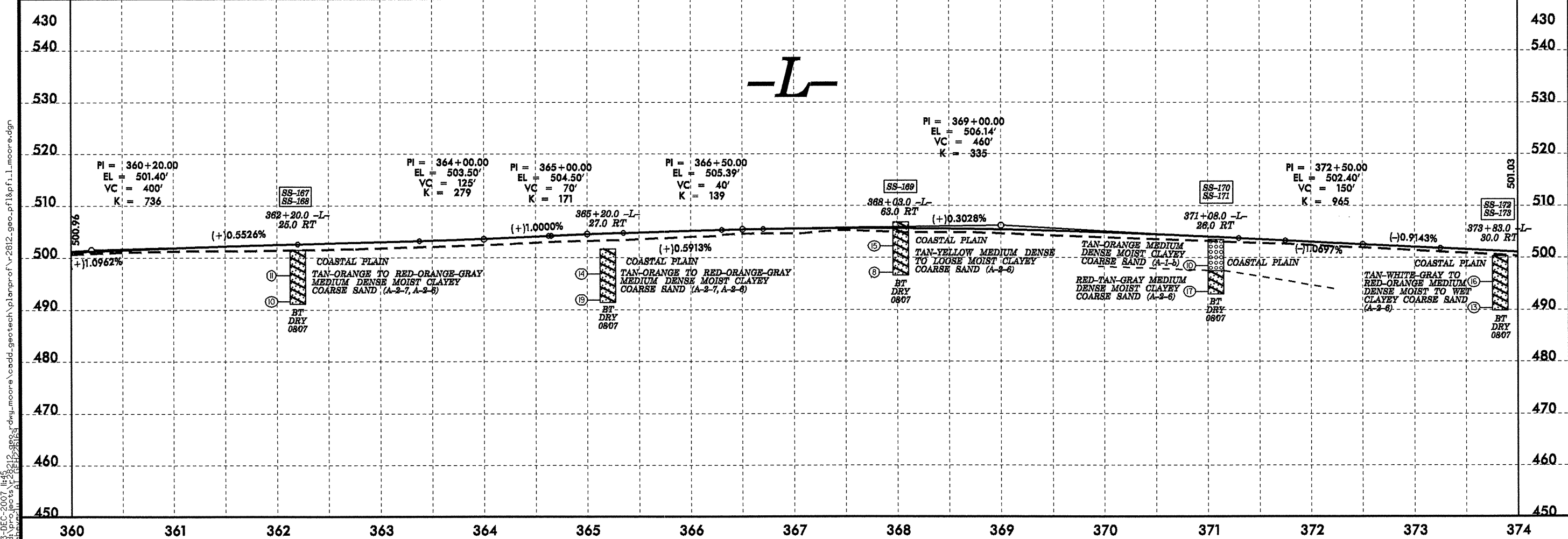
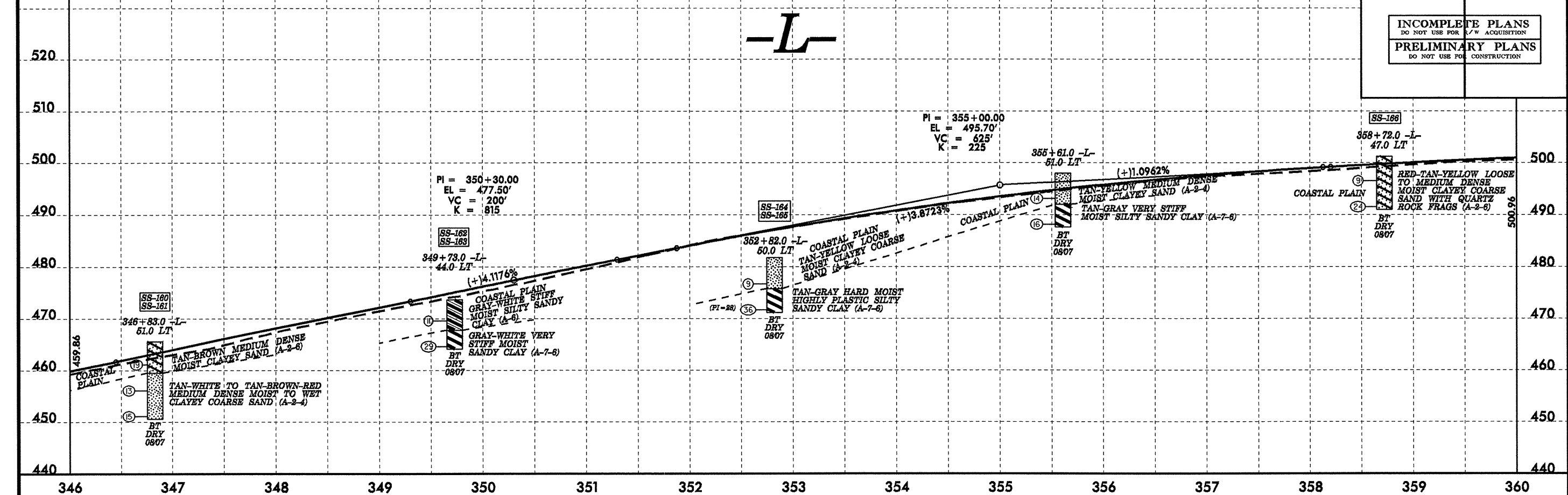
BORING DESCRIPTIONS

- Ⓐ ALLUVIAL, BLACK-GRAY LOOSE WET CLAYEY COARSE SAND WITH TRACE ORGANICS (A-1-b)
- Ⓑ ALLUVIAL, GRAY-WHITE SOFT SATURATED COARSE SANDY CLAY (A-7-6)
- Ⓒ COASTAL PLAIN, ORANGE-WHITE LOOSE SATURATED CLAYEY COARSE SAND (A-2-4)

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 13-DEC-2007 11:43
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PROJECT REFERENCE NO. R-2812	SHEET NO. 46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

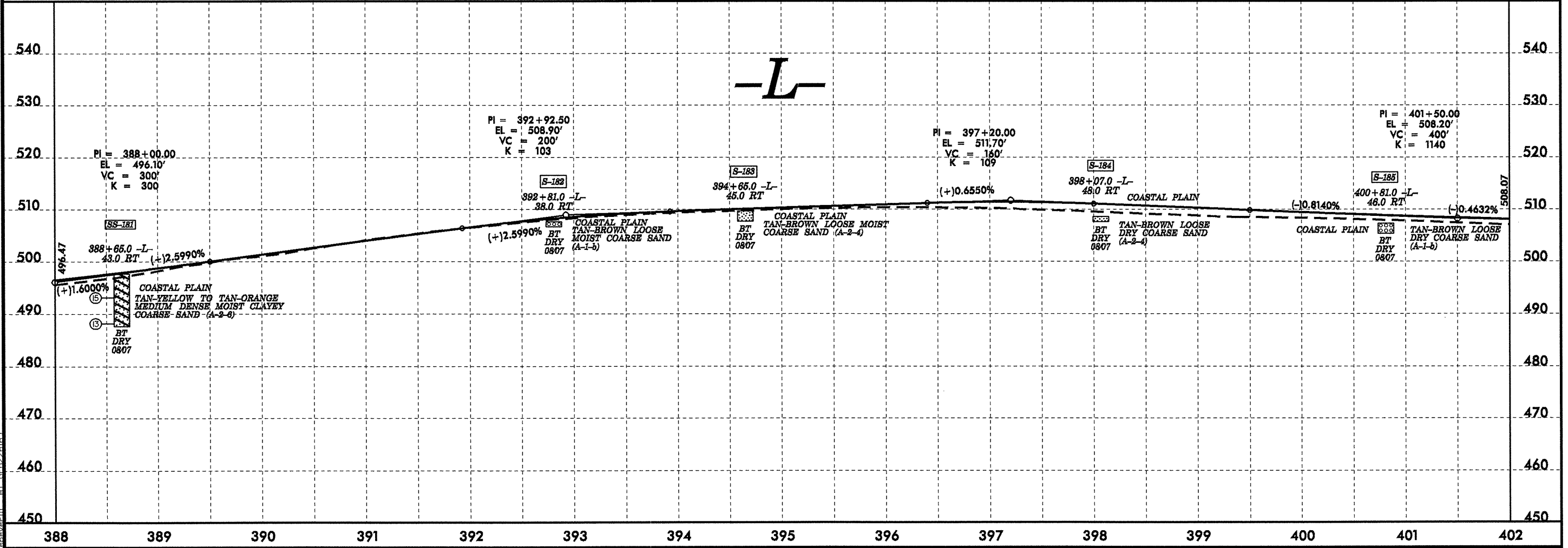
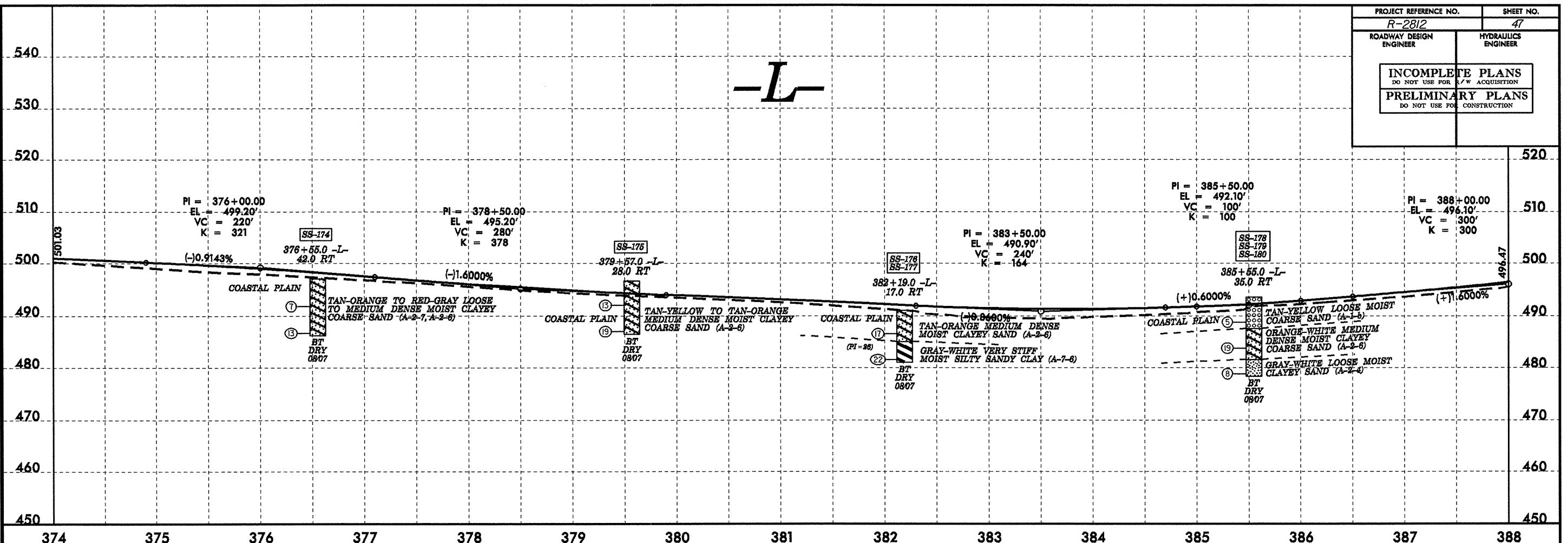
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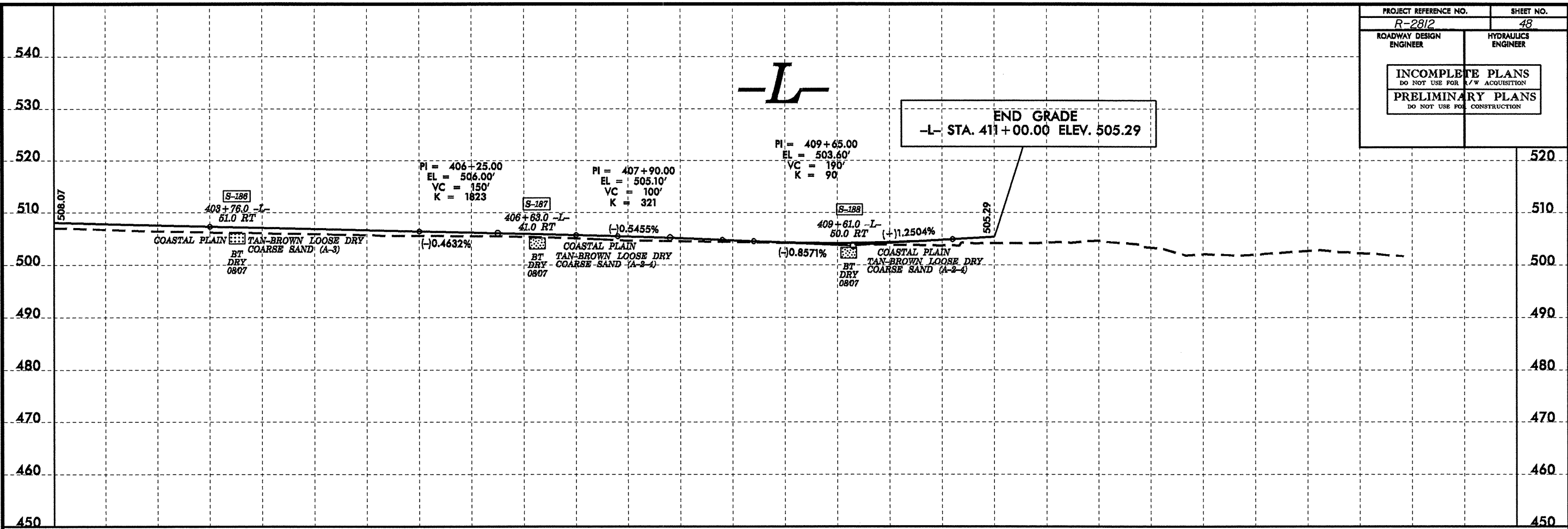
5/28/99
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PROJECT REFERENCE NO. R-2812	SHEET NO. 47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



5/28/99

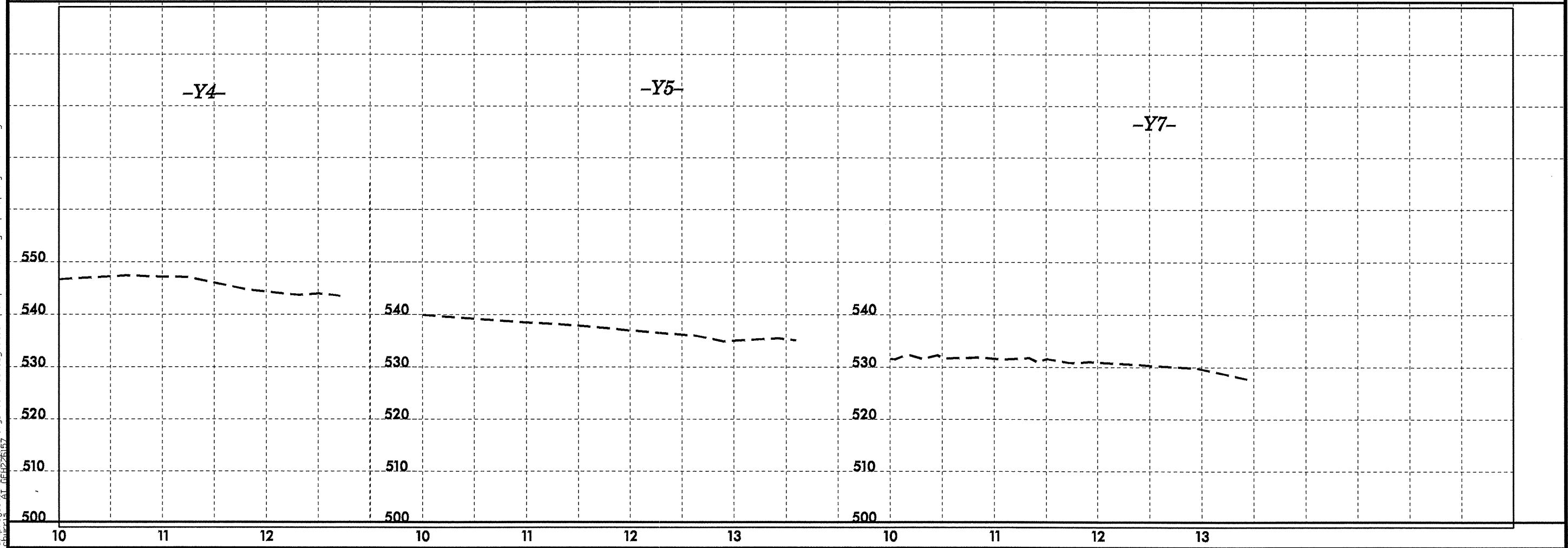
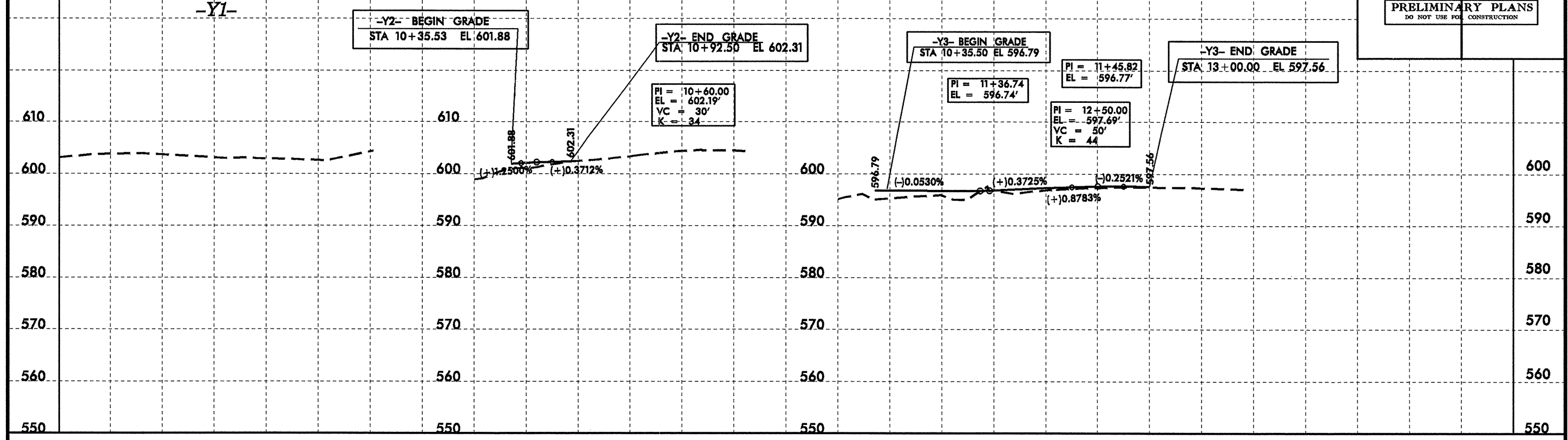
PROJECT REFERENCE NO. R-2812	SHEET NO. 48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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5/28/99

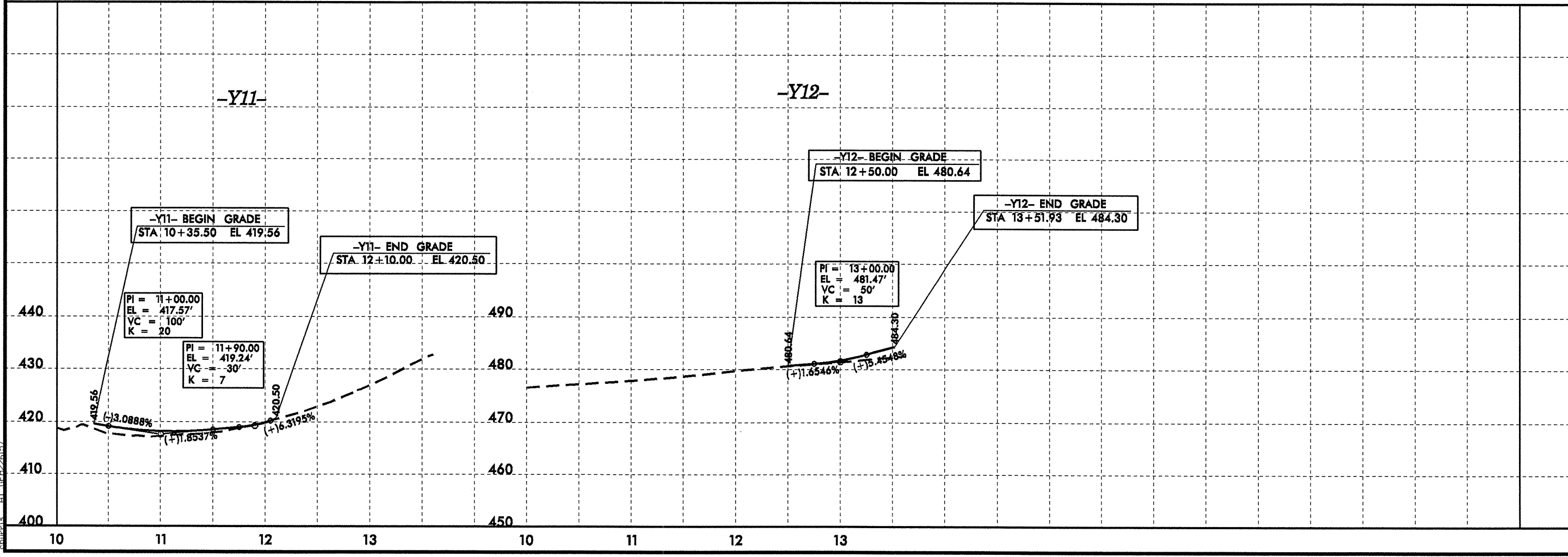
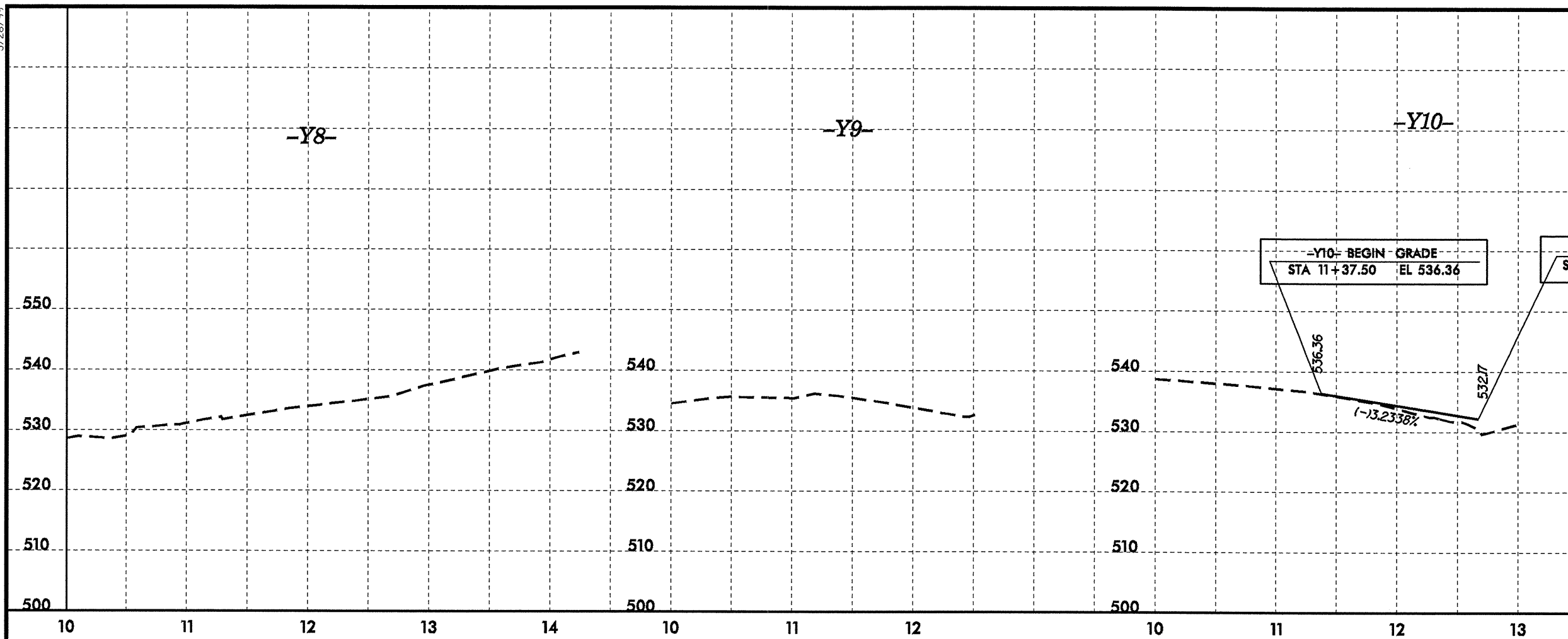
PROJECT REFERENCE NO. R-2812	SHEET NO. 49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



22-OCT-2001 13:32 c:\projeec\2812\2812.dwg moore\cadd\geotech\plmproj\vr2812-geo-pf1&pf1.dwg s.moore.dgn

5/28/99

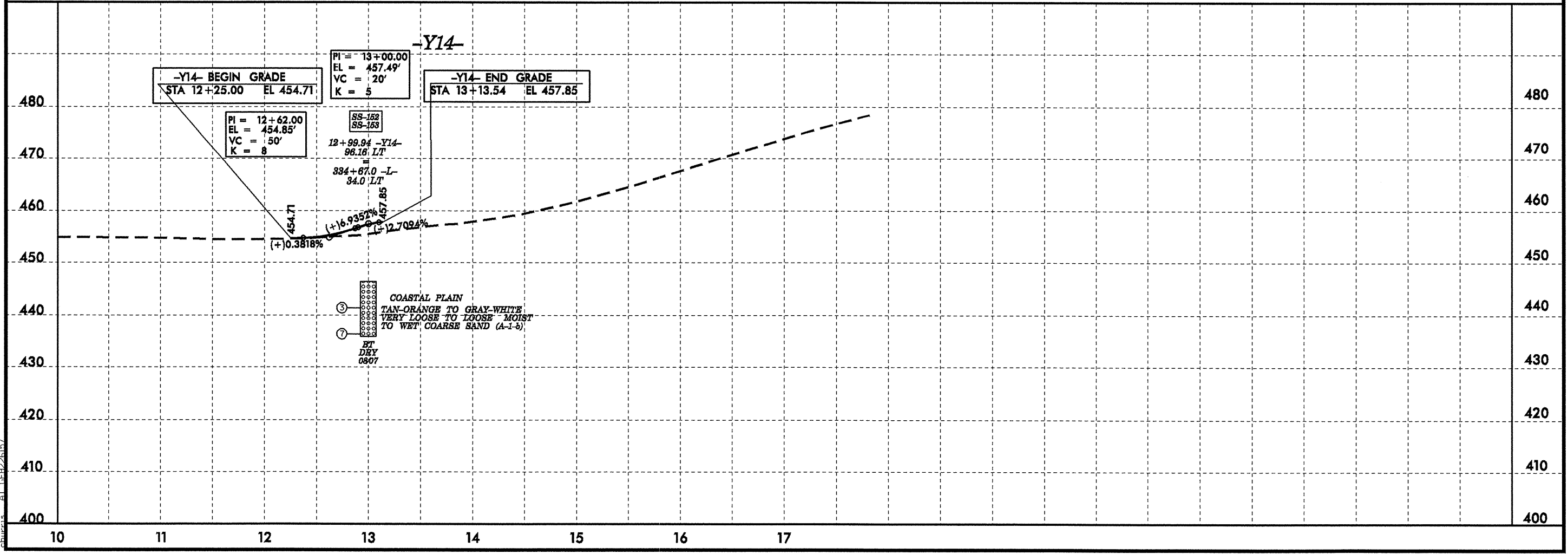
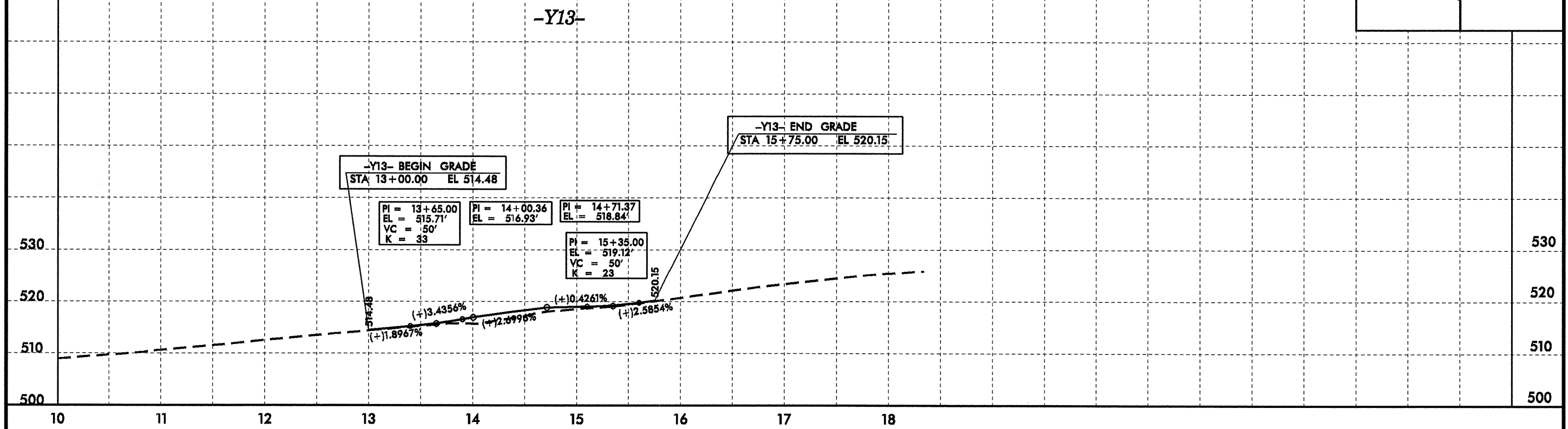
PROJECT REFERENCE NO. R-2812	SHEET NO. 50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



22-OCT-2007 11:37
C:\pcc\projects\2812\geotech\plan\prcf\Yr2812_geo.pfl&pfl.u'f's.moore.dgn

PROJECT REFERENCE NO. R-2812	SHEET NO. 51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

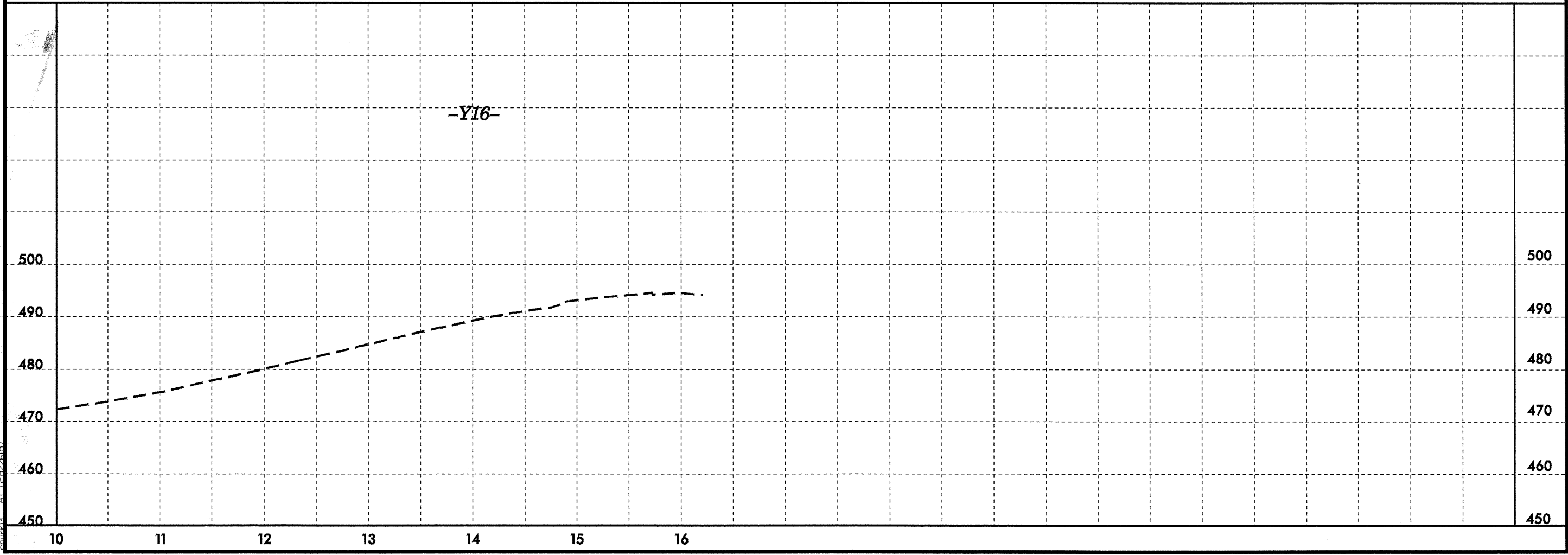
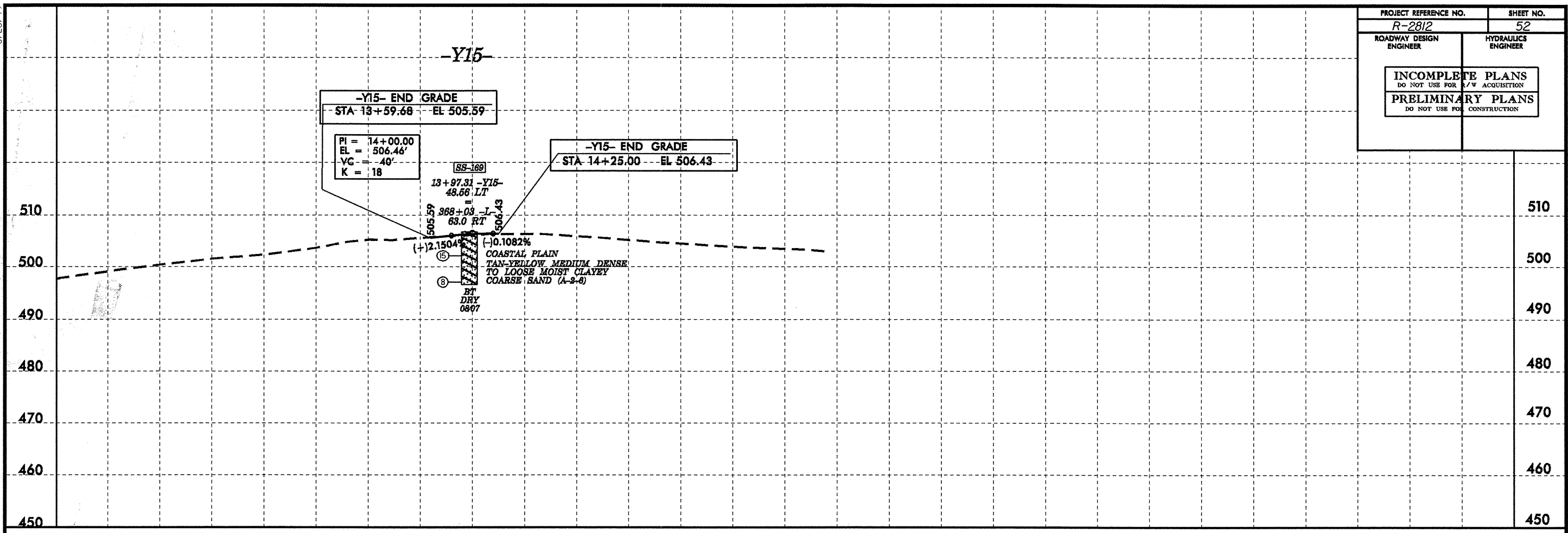
5/28/99



23-OCT-2007 13:37
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5/28/99

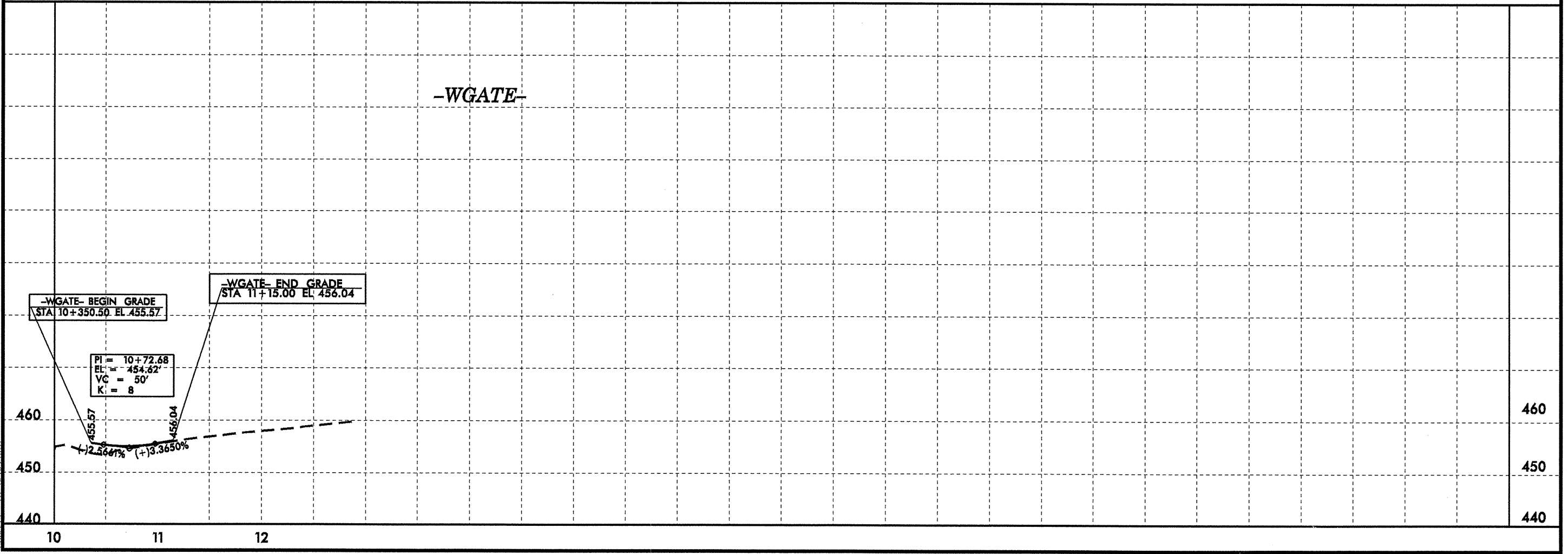
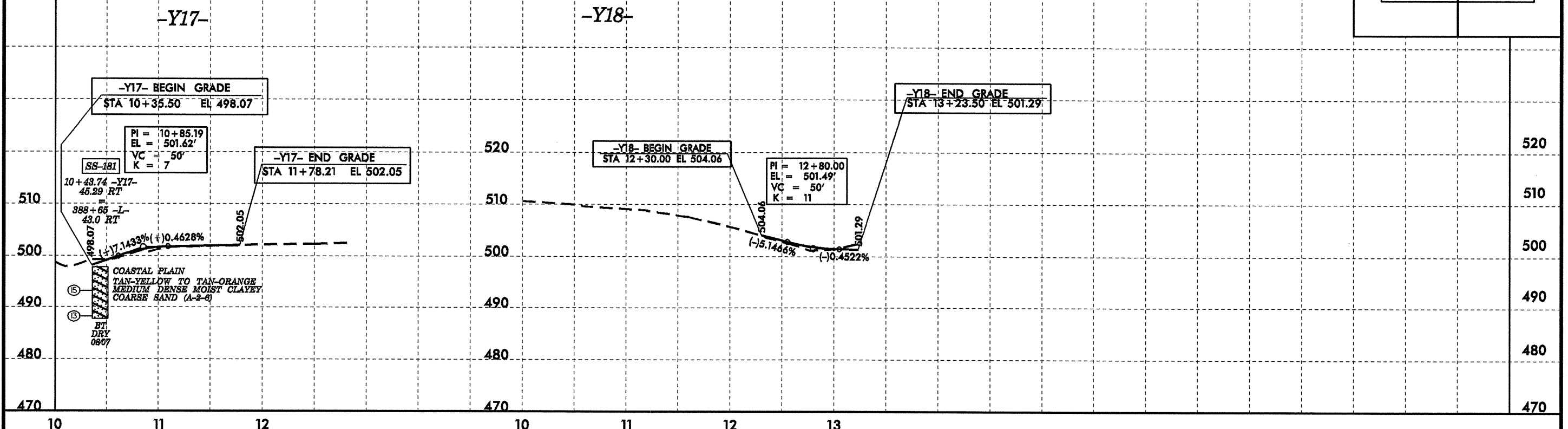
PROJECT REFERENCE NO. R-2812	SHEET NO. 52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



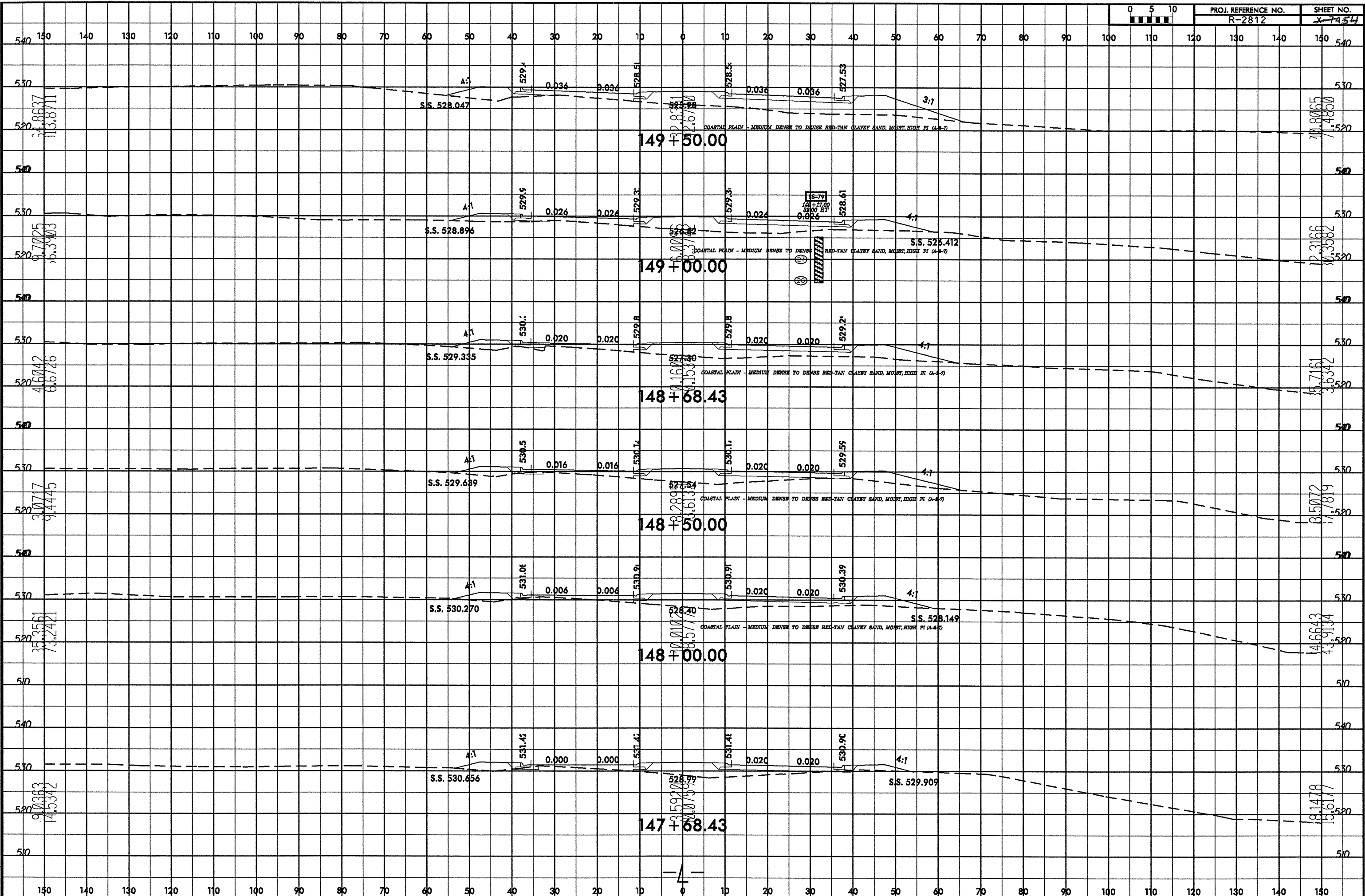
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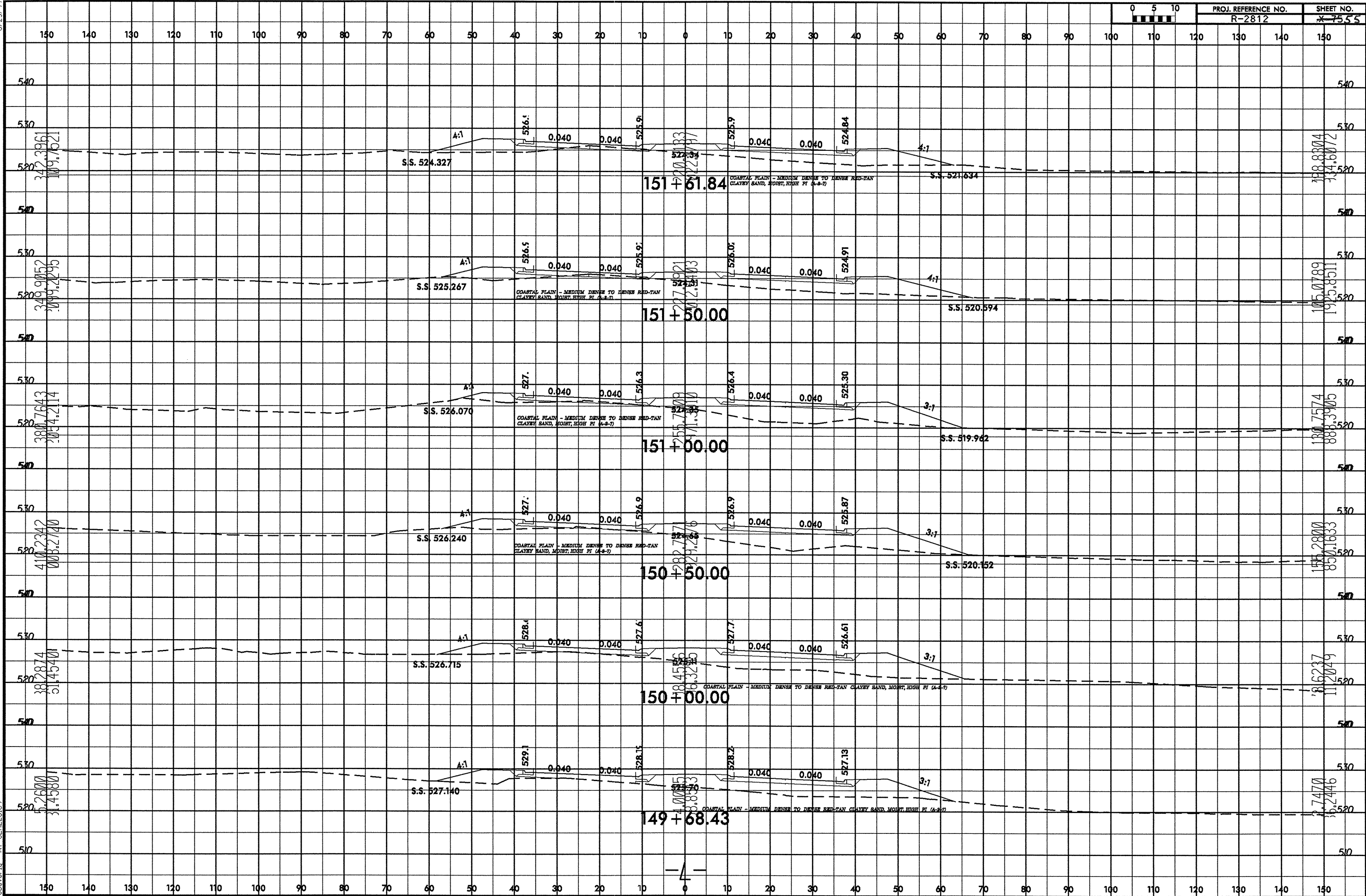
5/28/99

PROJECT REFERENCE NO. R-2812	SHEET NO. 53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

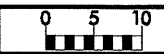


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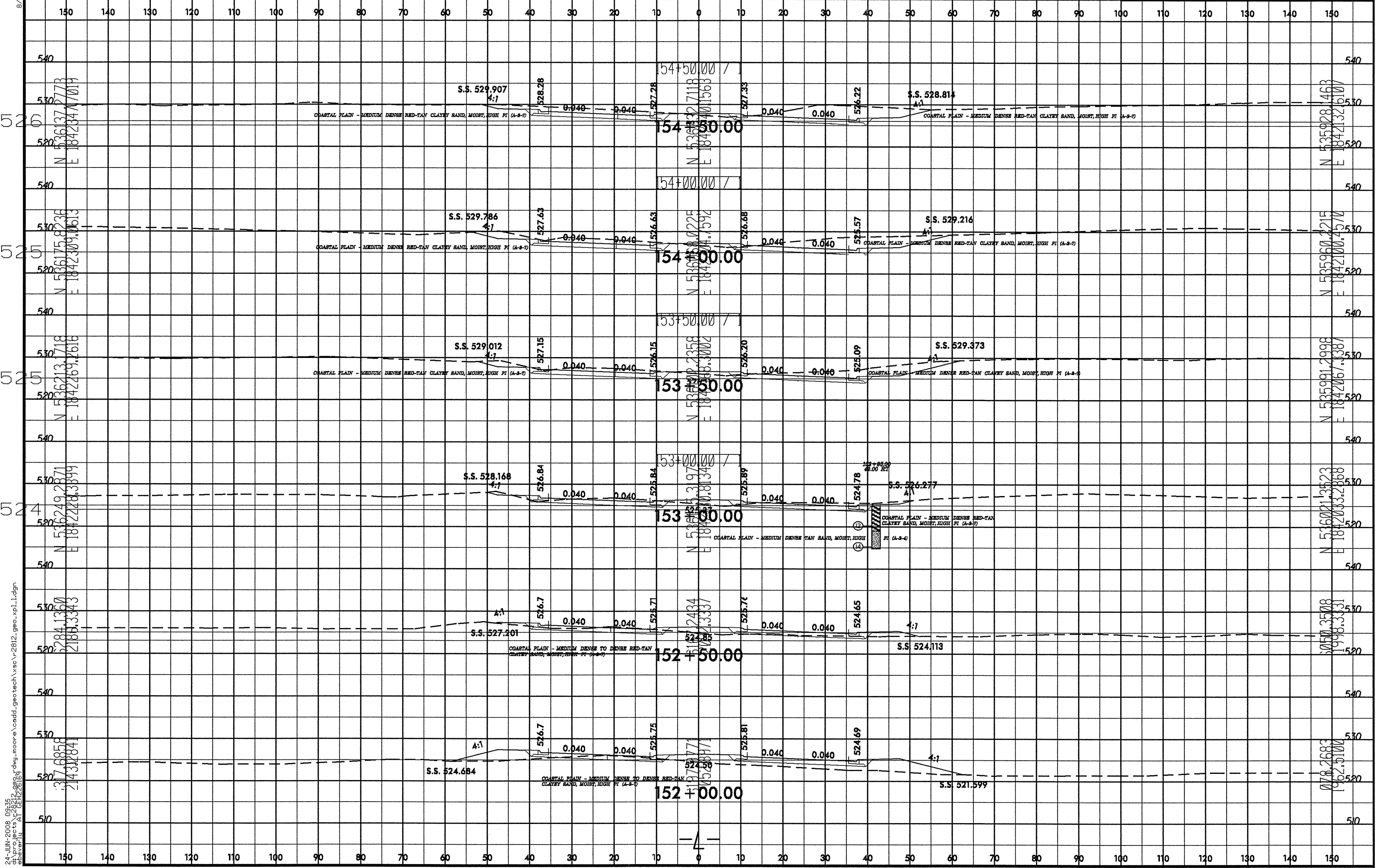




8/23/99

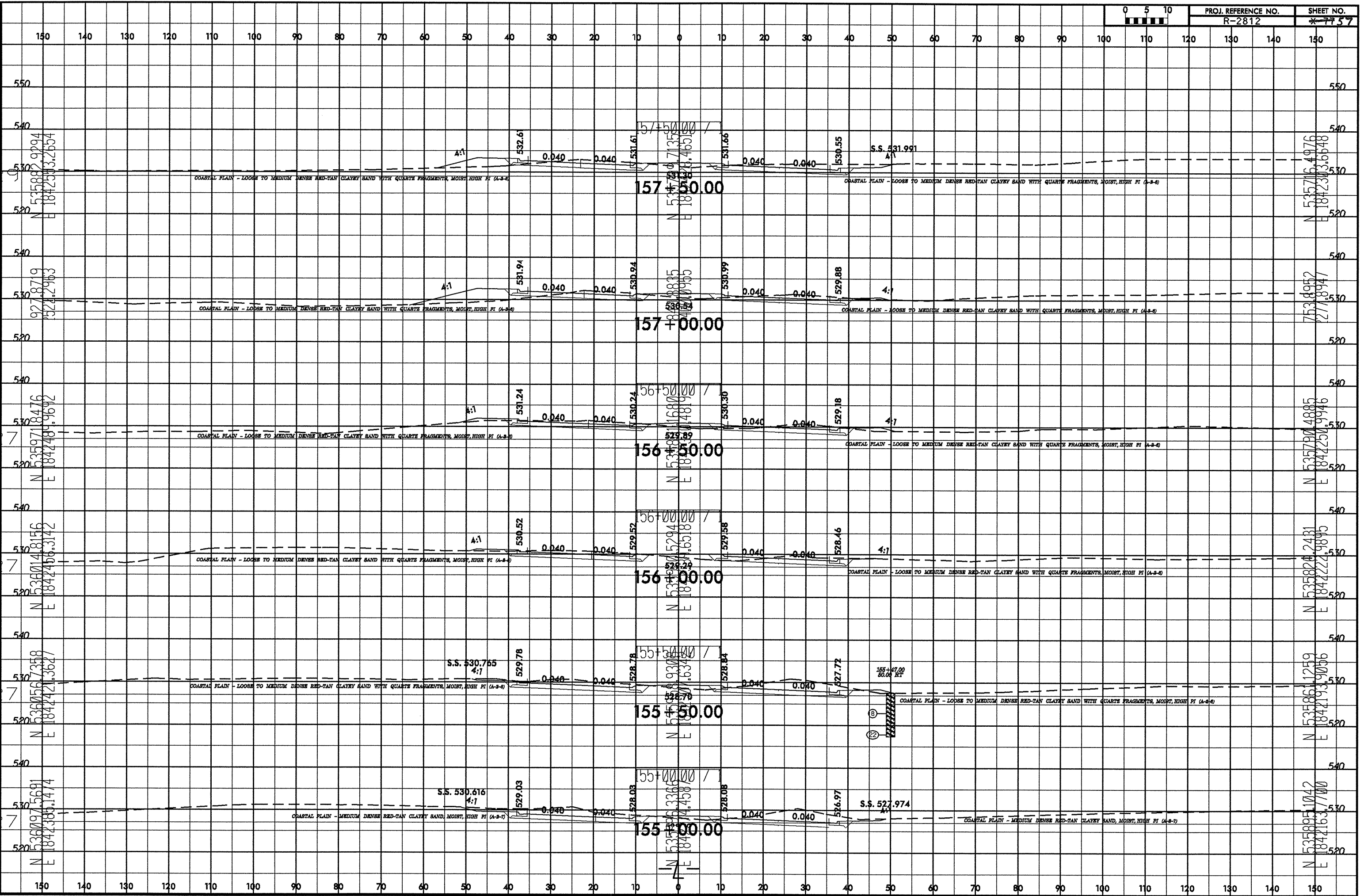


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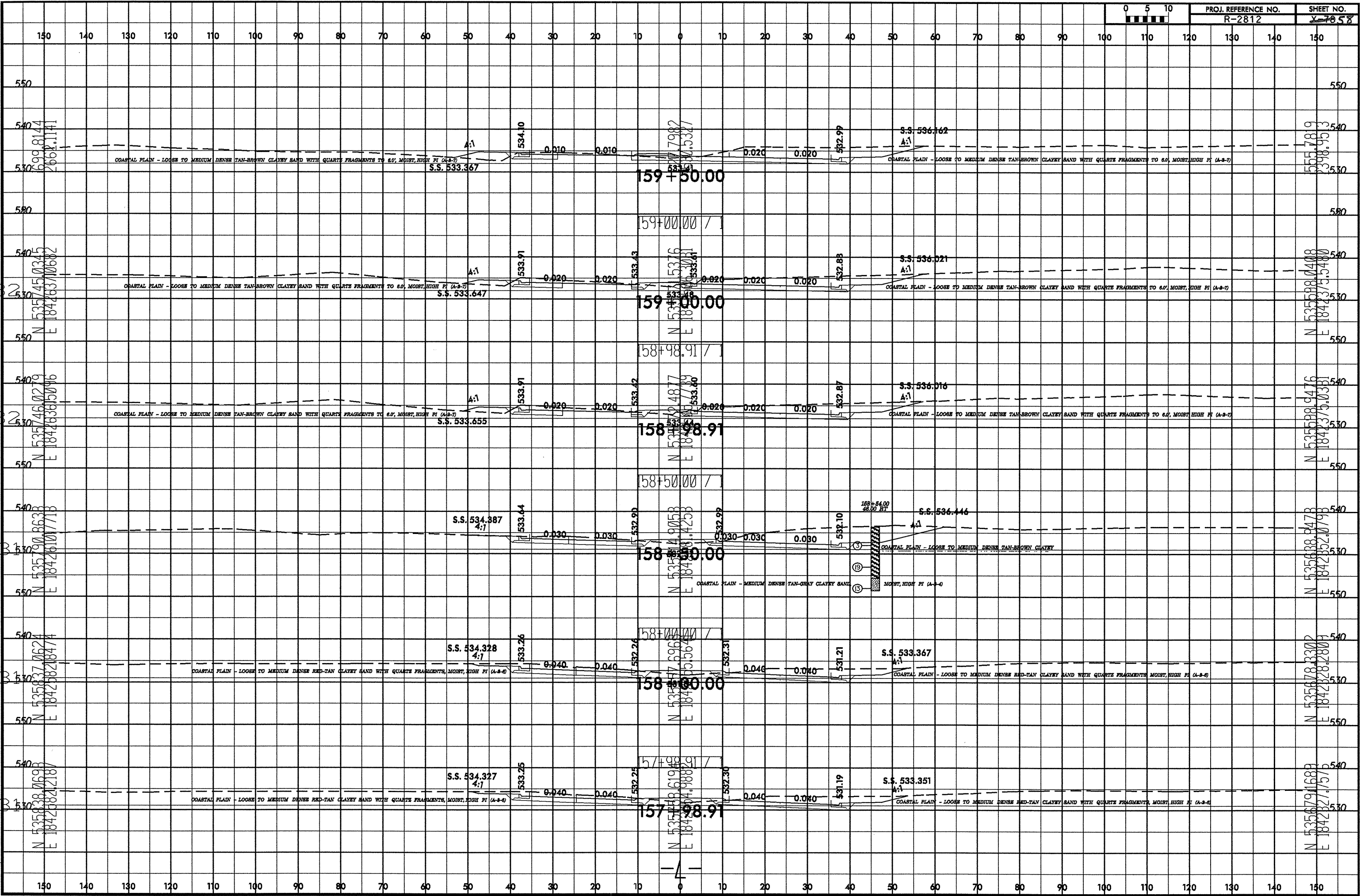


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24-JUN-2008 09:15
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8/23/99
24-JUN-2008 14:58
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abeverly AT GEI2663



COASTAL FLAIN - LOOSE TO MEDIUM DENSE TAN-BROWN CLAYEY SAND WITH QUARTZ FRAGMENTS TO 6.0' MOIST, HIGH PI (A-3-7)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE TAN-BROWN CLAYEY SAND WITH QUARTZ FRAGMENTS TO 6.0' MOIST, HIGH PI (A-3-7)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE TAN-BROWN CLAYEY SAND WITH QUARTZ FRAGMENTS TO 6.0' MOIST, HIGH PI (A-3-7)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE TAN-BROWN CLAYEY

COASTAL FLAIN - MEDIUM DENSE TAN-GRAY CLAYEY SAND
MOIST, HIGH PI (A-3-6)

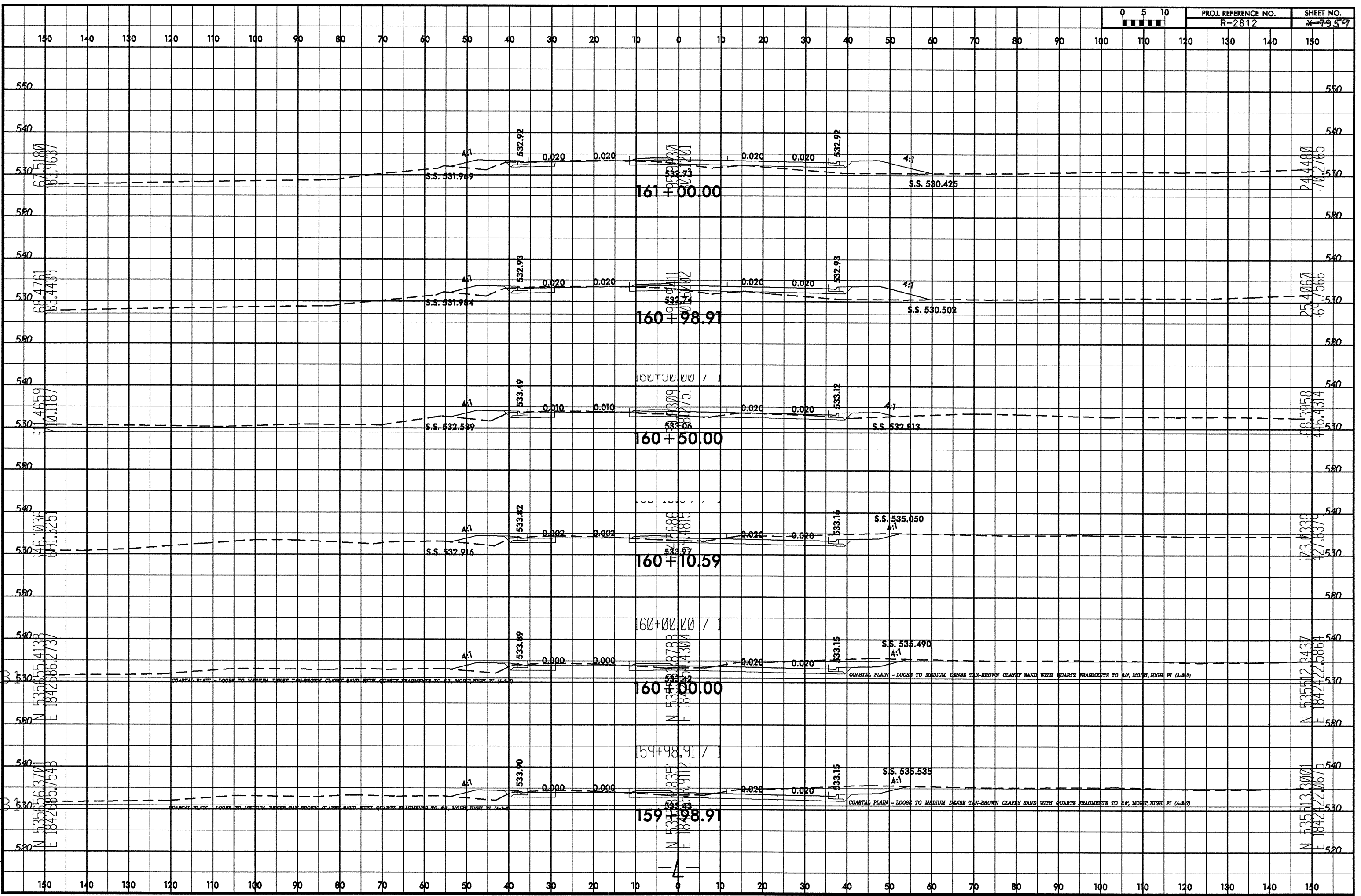
COASTAL FLAIN - LOOSE TO MEDIUM DENSE RED-TAN CLAYEY SAND WITH QUARTZ FRAGMENTS, MOIST, HIGH PI (A-3-6)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE RED-TAN CLAYEY SAND WITH QUARTZ FRAGMENTS, MOIST, HIGH PI (A-3-6)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE RED-TAN CLAYEY SAND WITH QUARTZ FRAGMENTS, MOIST, HIGH PI (A-3-6)

COASTAL FLAIN - LOOSE TO MEDIUM DENSE RED-TAN CLAYEY SAND WITH QUARTZ FRAGMENTS, MOIST, HIGH PI (A-3-6)

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24-JUN-2008 15:13
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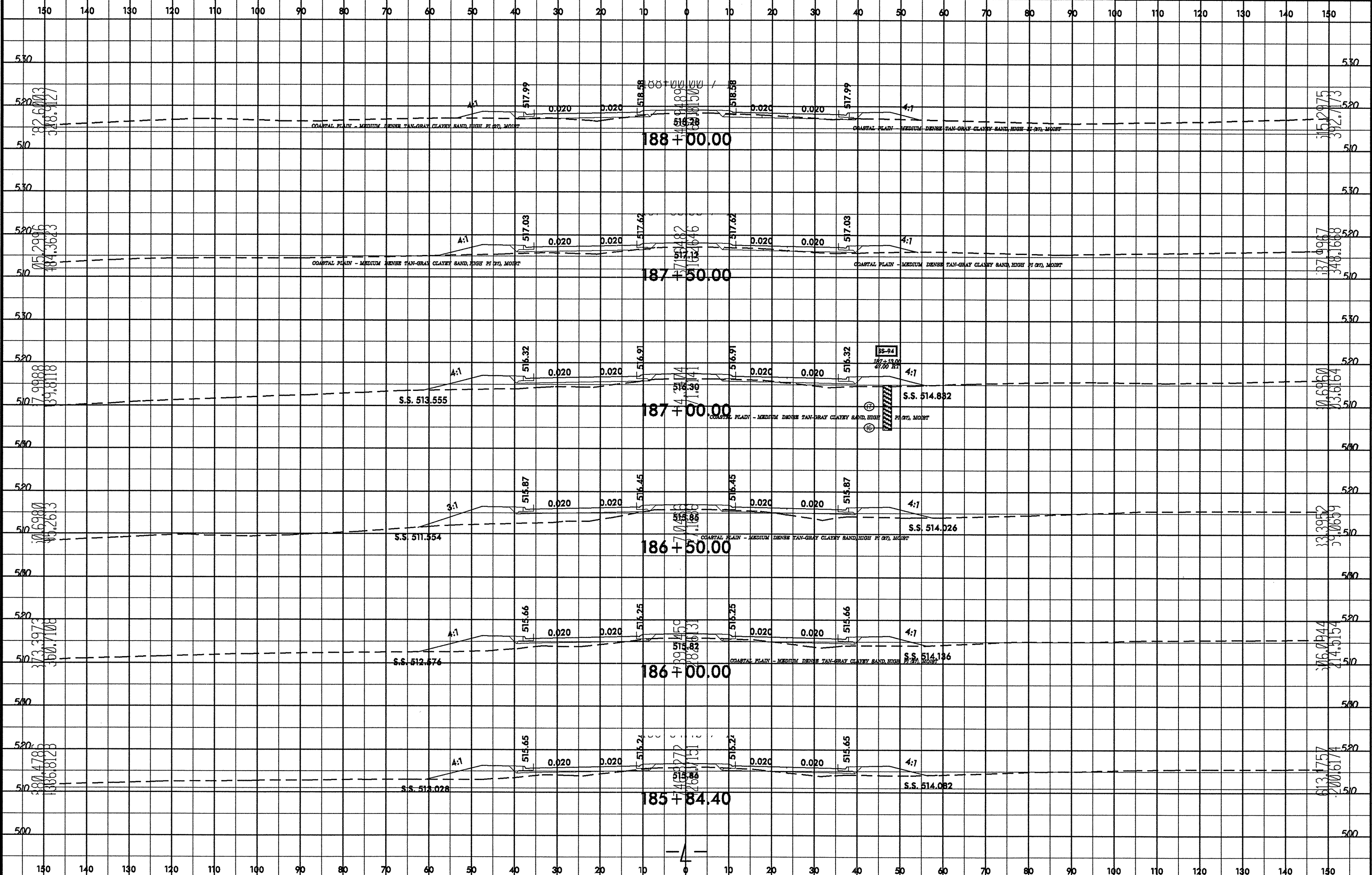


0 5 10	PROJ. REFERENCE NO. R-2812	SHEET NO. 7959
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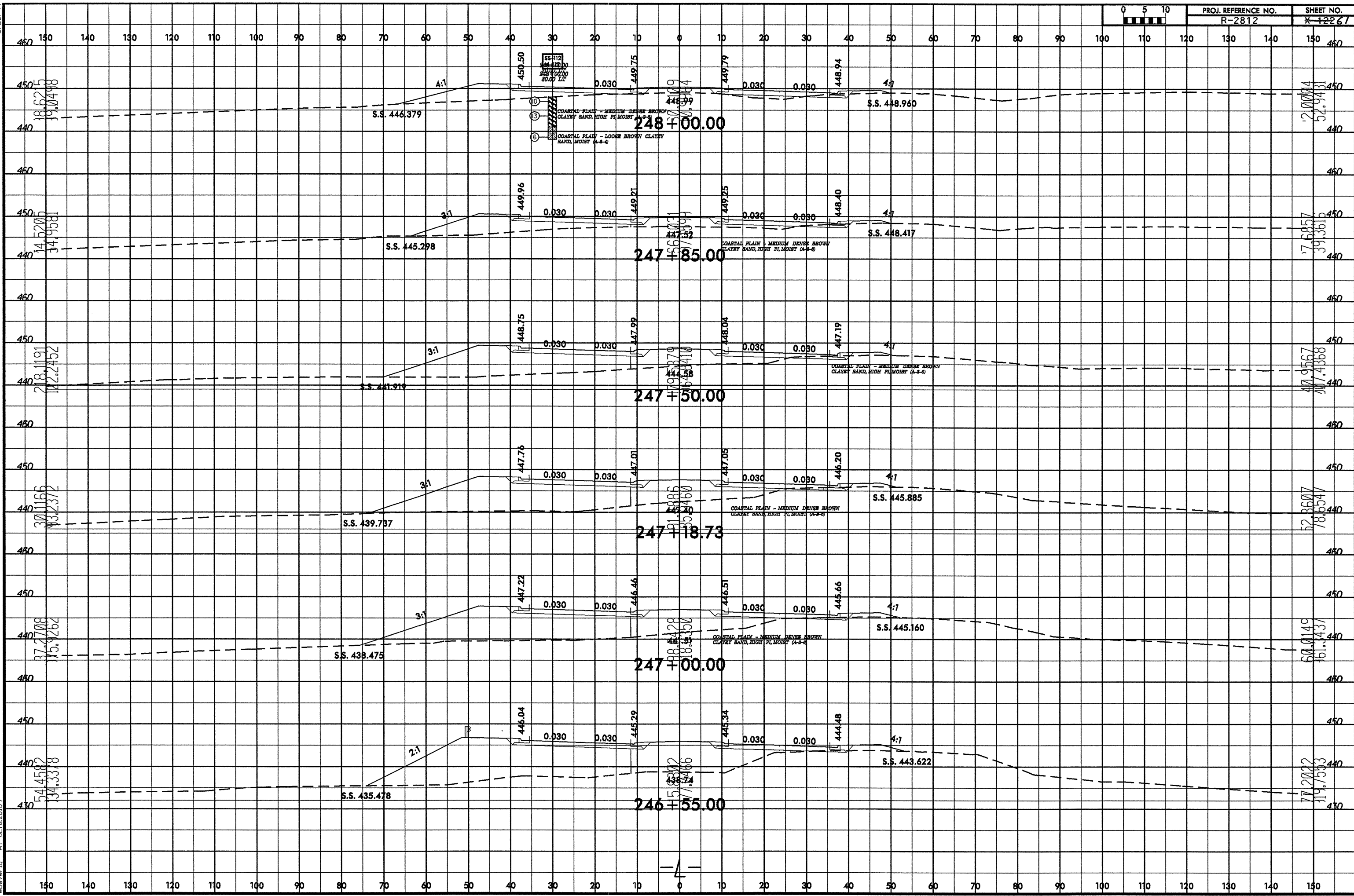
8/23/99



PROJ. REFERENCE NO. R-2812 SHEET NO. X-9260

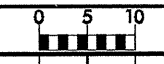


25-JUN-2008 09:23
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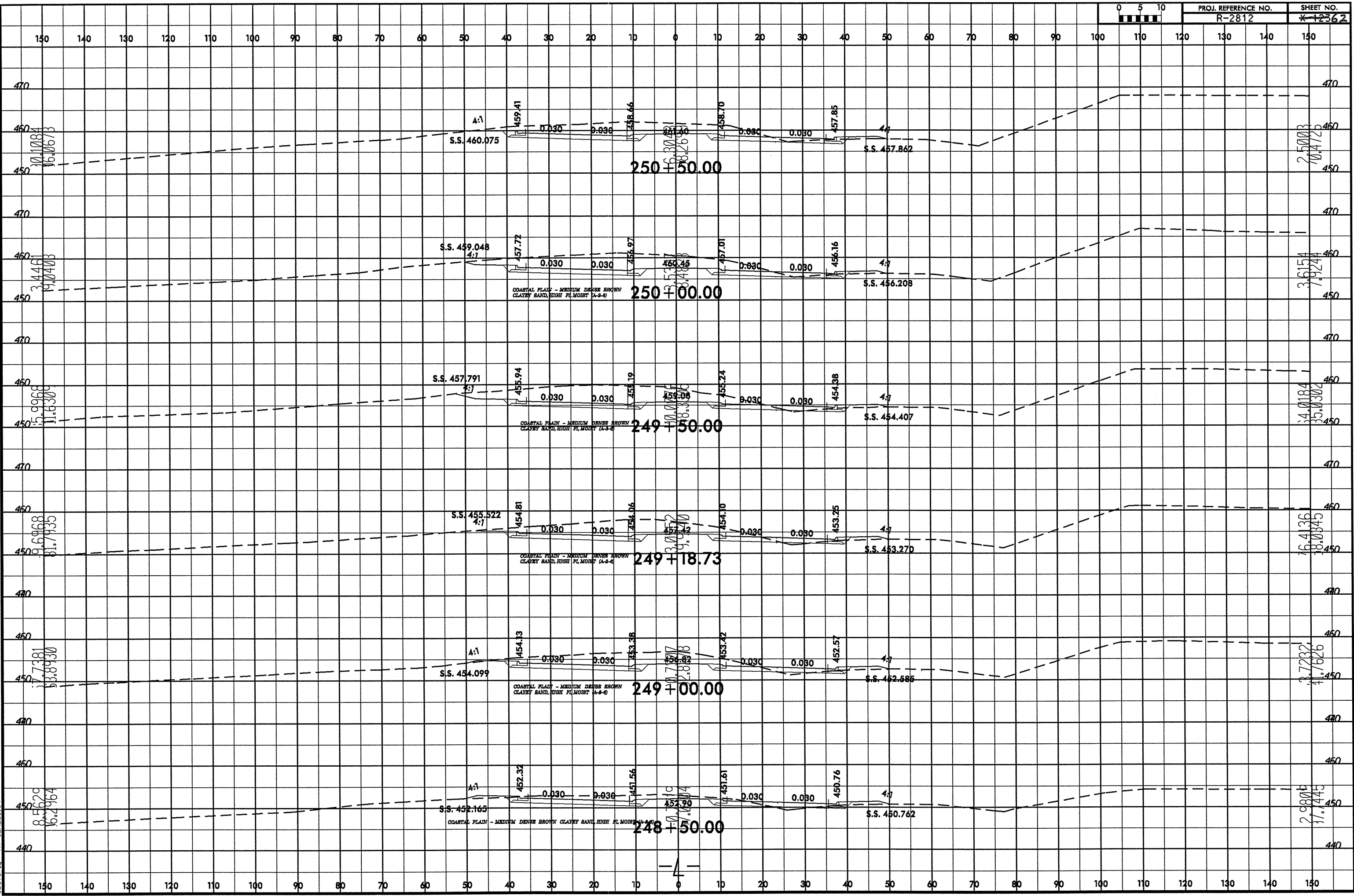


25-JUN-2008 09:37
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PROJ. REFERENCE NO. R-2812 SHEET NO. X-12362



250 ± 50.00

250 ± 00.00

249 ± 50.00

249 ± 18.73

249 ± 00.00

248 ± 50.00

S.S. 460.075

S.S. 459.048

S.S. 457.791

S.S. 455.522

S.S. 454.099

S.S. 452.165

S.S. 457.862

S.S. 456.208

S.S. 454.407

S.S. 453.270

S.S. 452.585

S.S. 450.762

A:1

A:1

A:1

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457.72

455.94

454.81

454.13

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453.25

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7.824

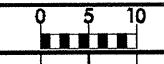
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16.4136
18.0345

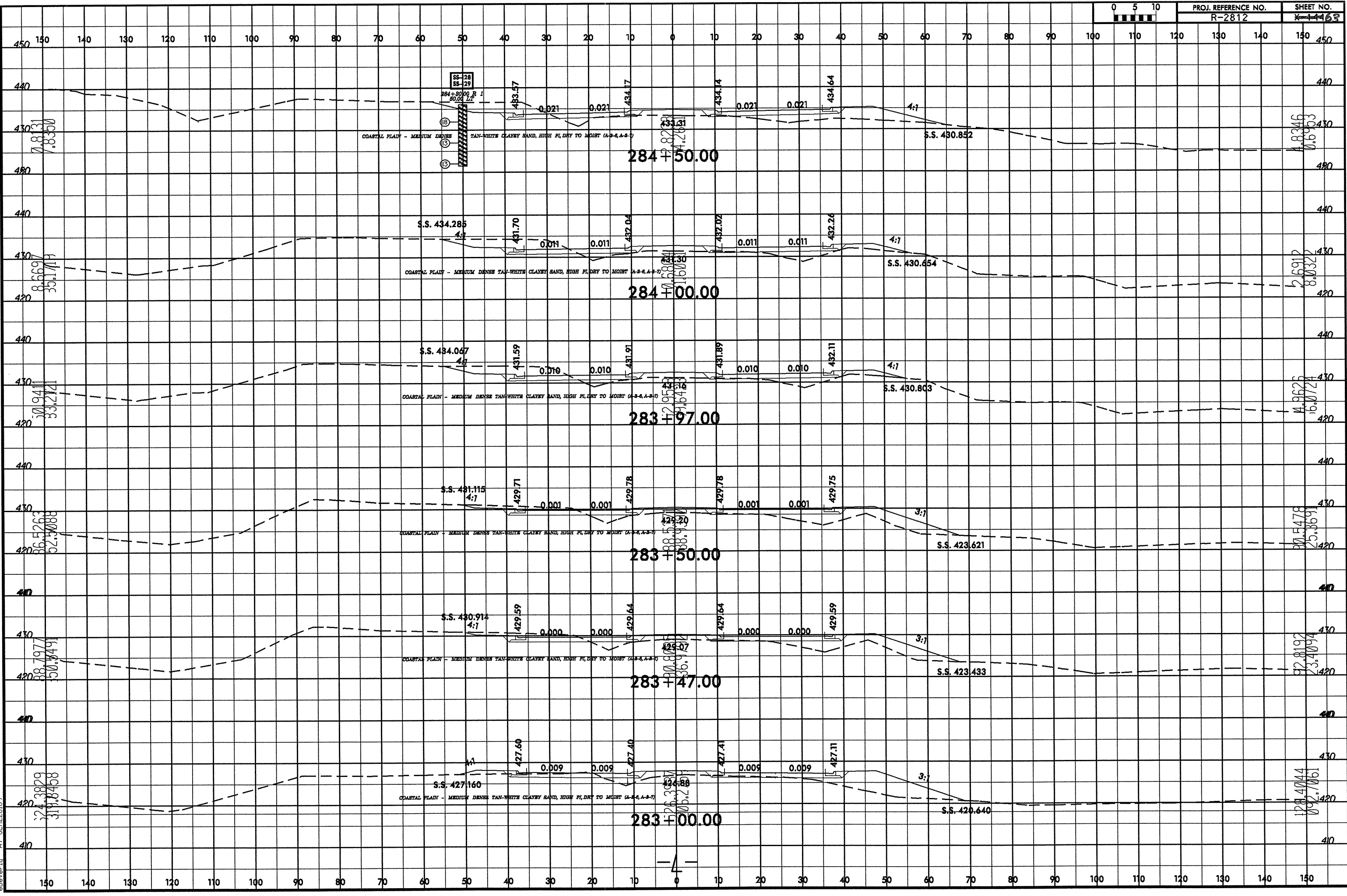
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8/23/99

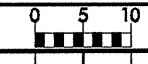


PROJ. REFERENCE NO.	SHEET NO.
R-2812	1463

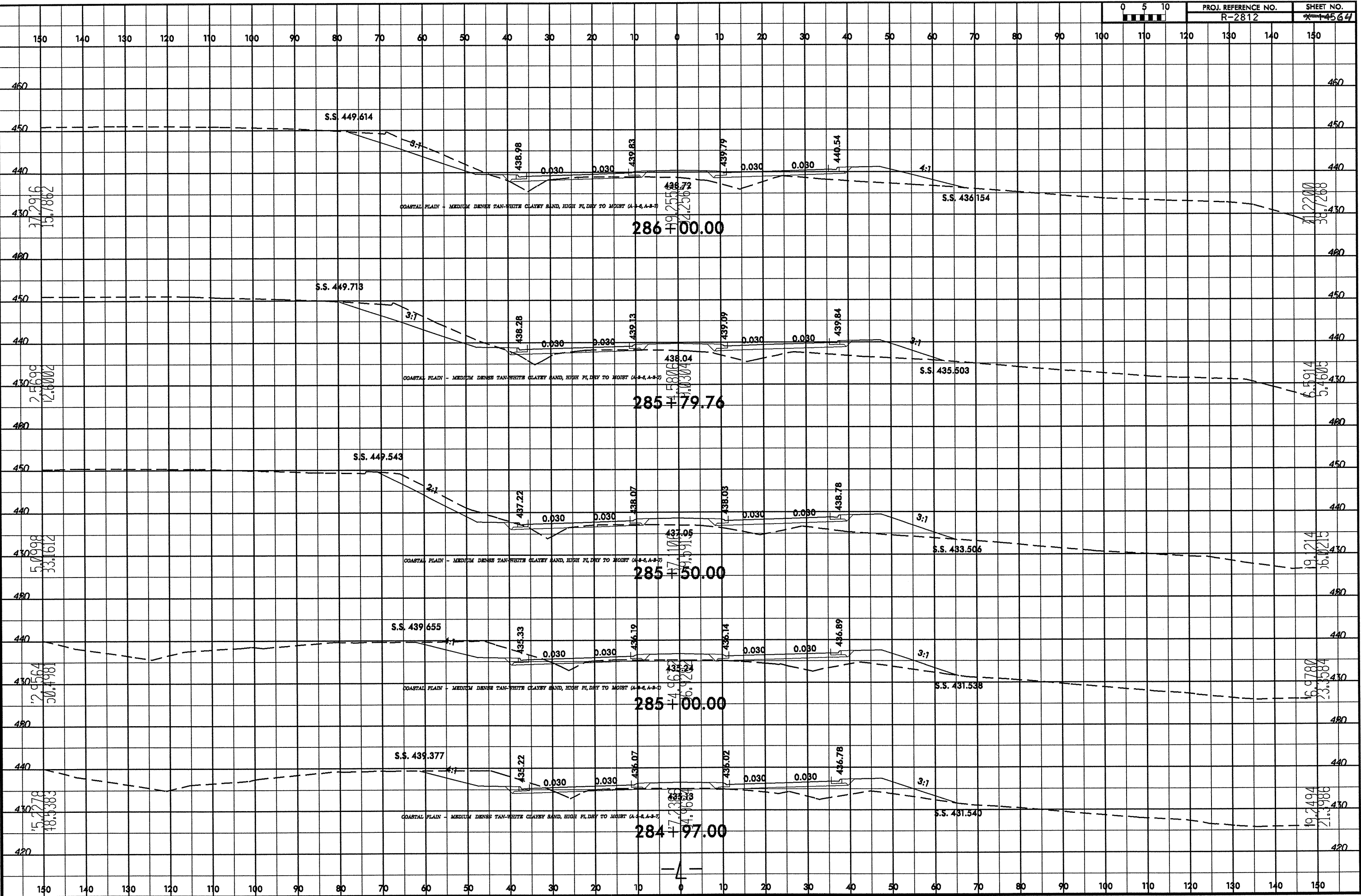


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8/23/99

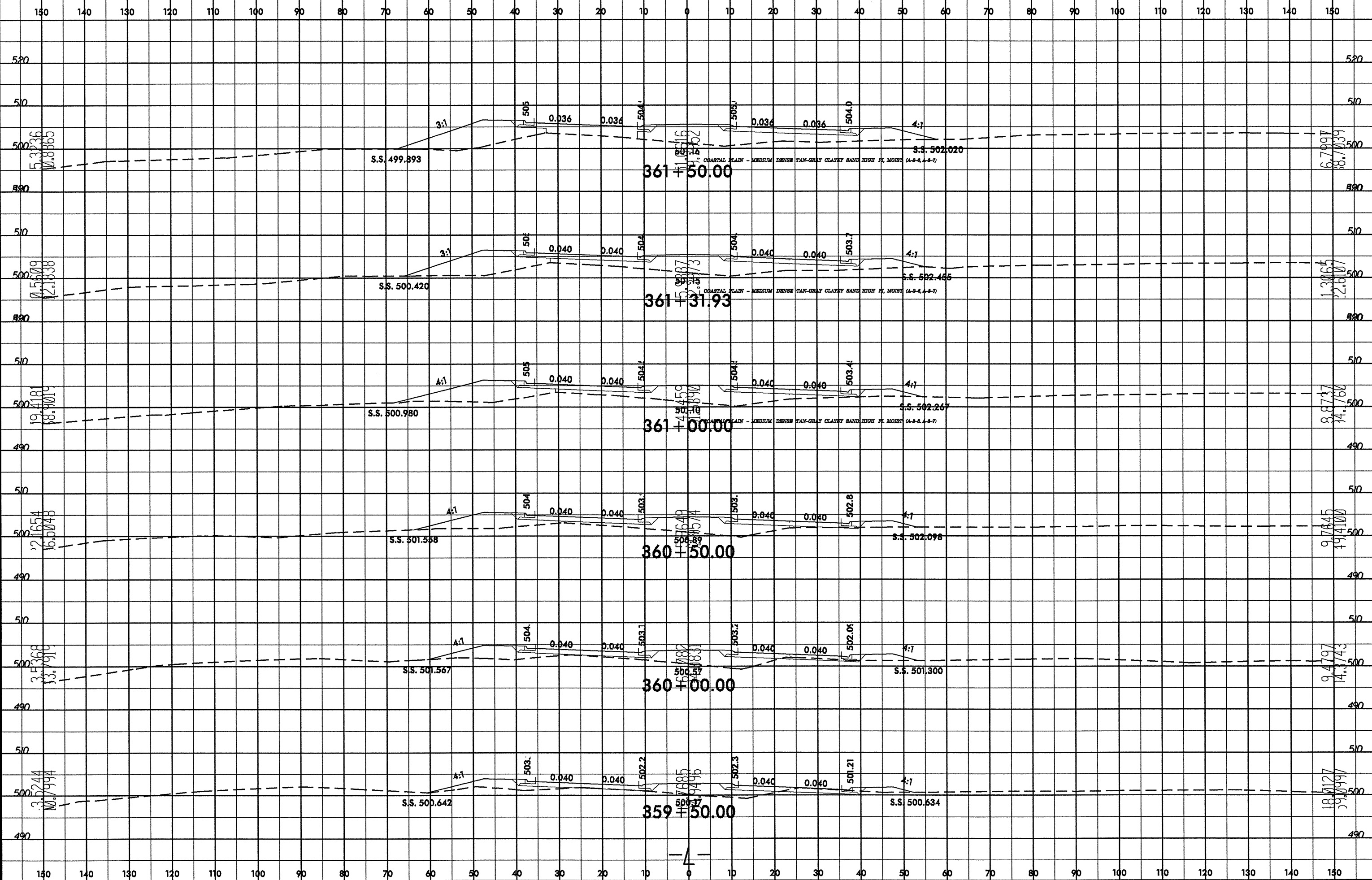


PROJ. REFERENCE NO.	SHEET NO.
R-2812	*4564



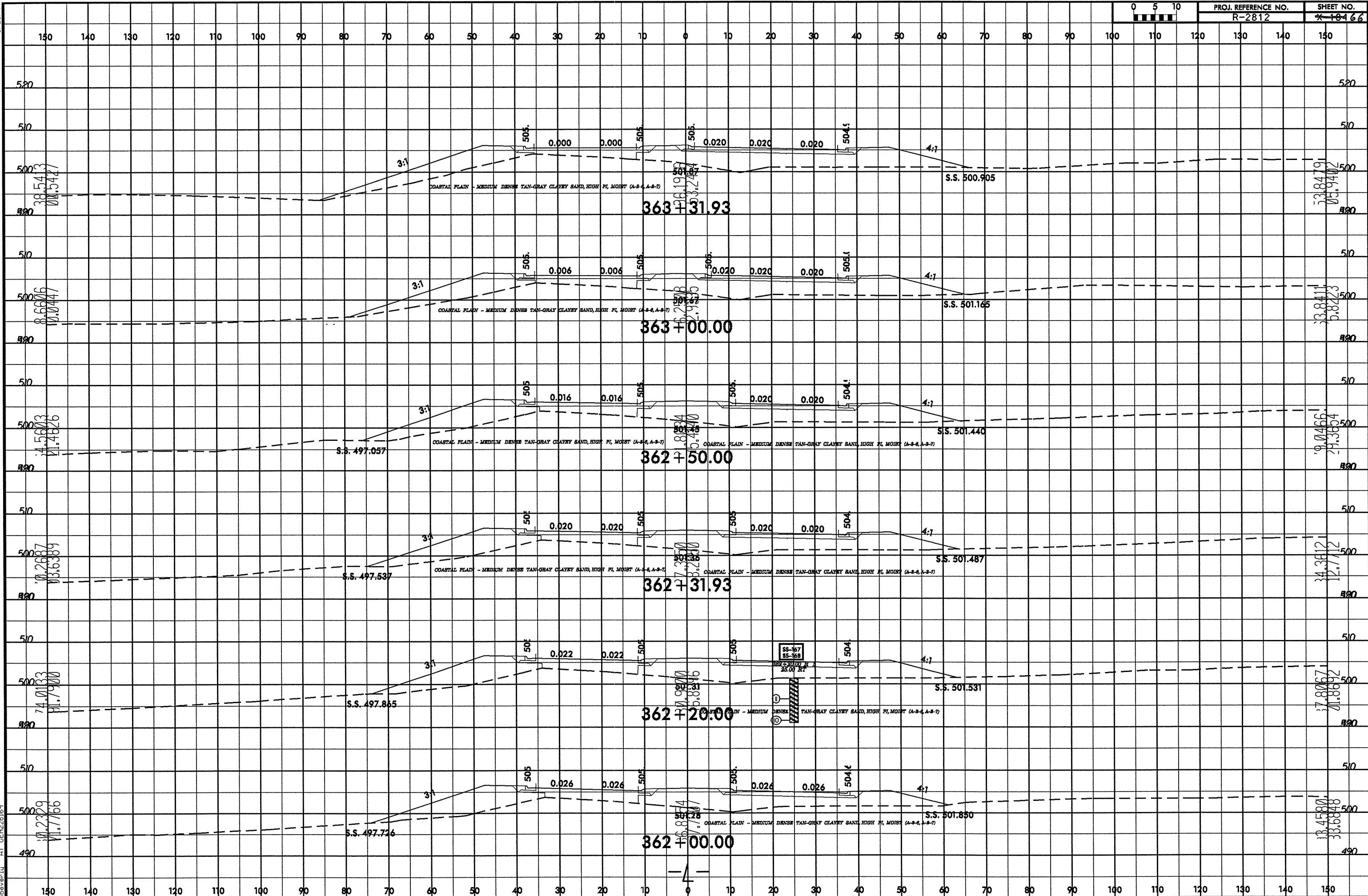
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 ebeverly AT GEI22618

8/23/99



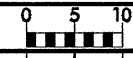
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8/23/99

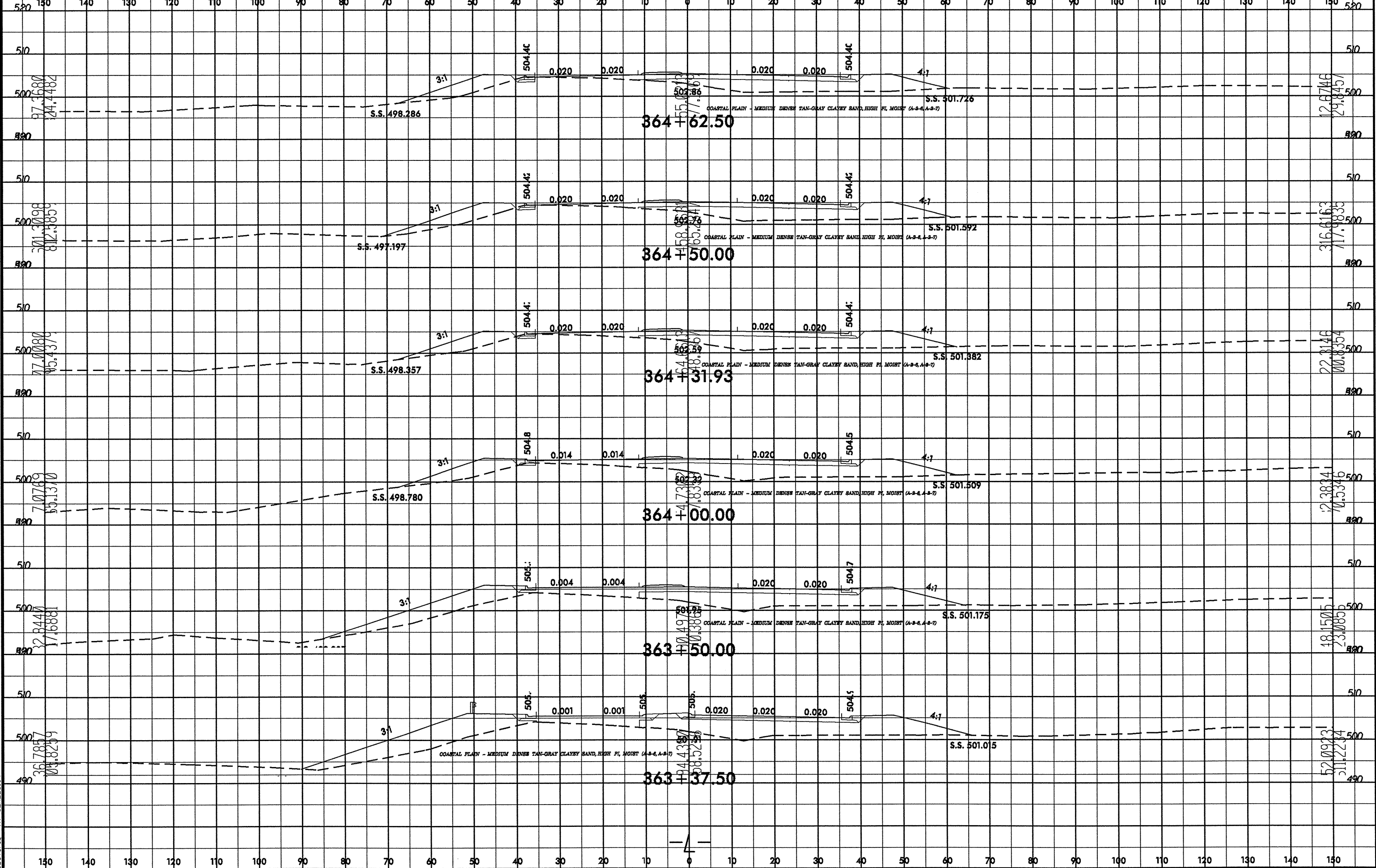


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8/23/99

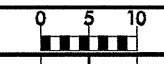


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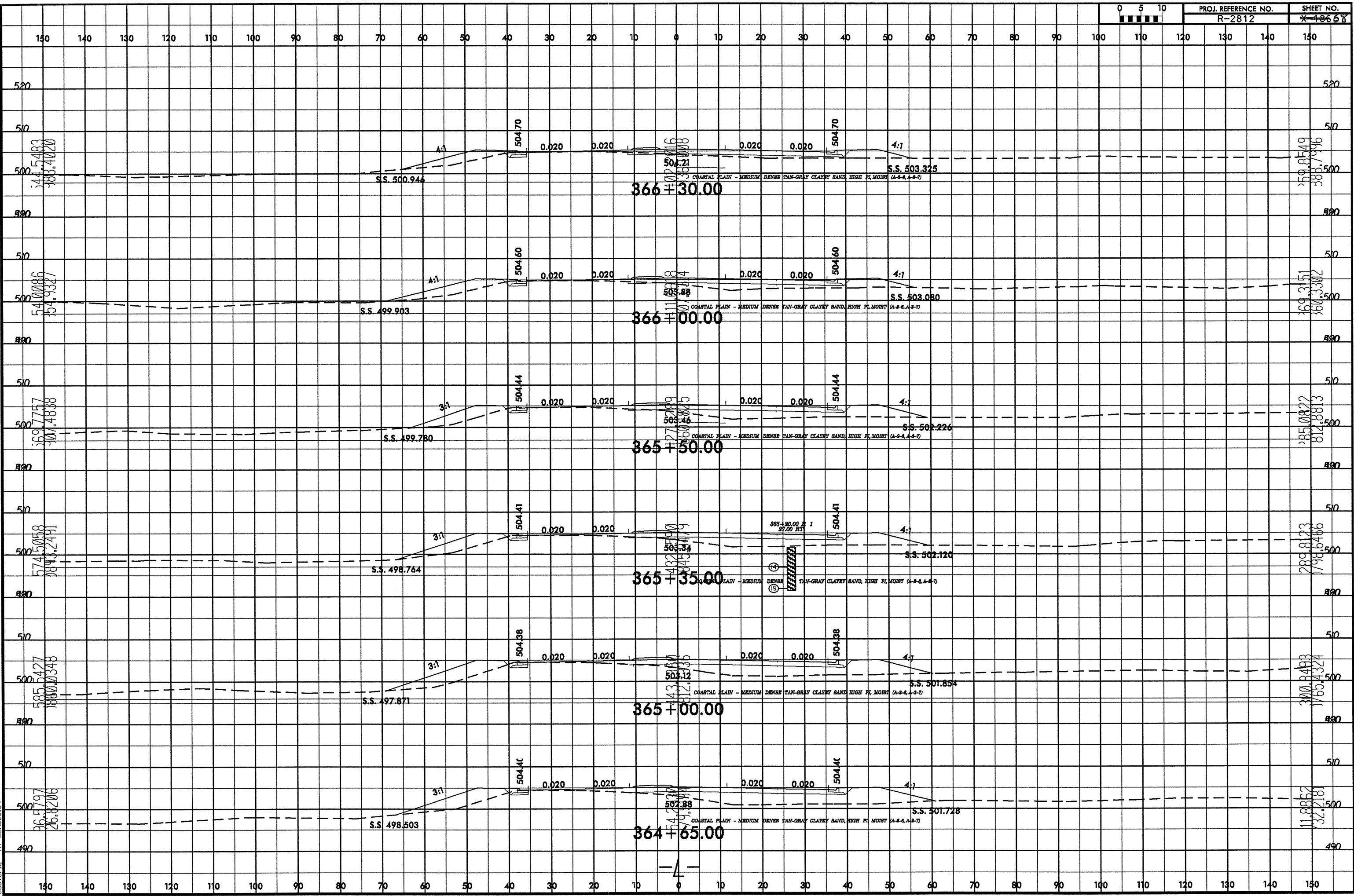


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8/23/99

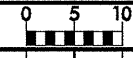


PROJ. REFERENCE NO. R-2812 SHEET NO. *4866*

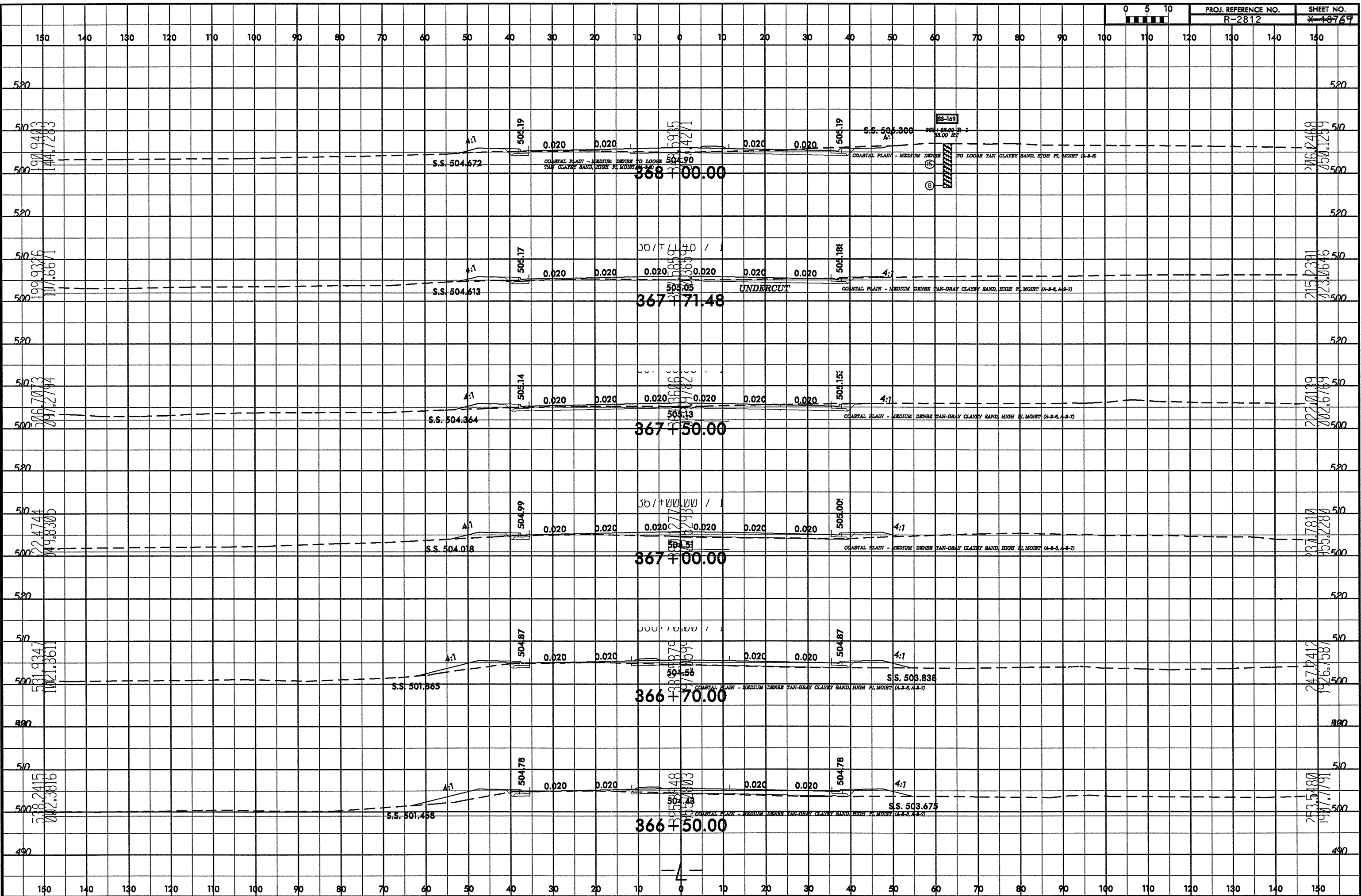


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AT-GEI26165
beaverlu

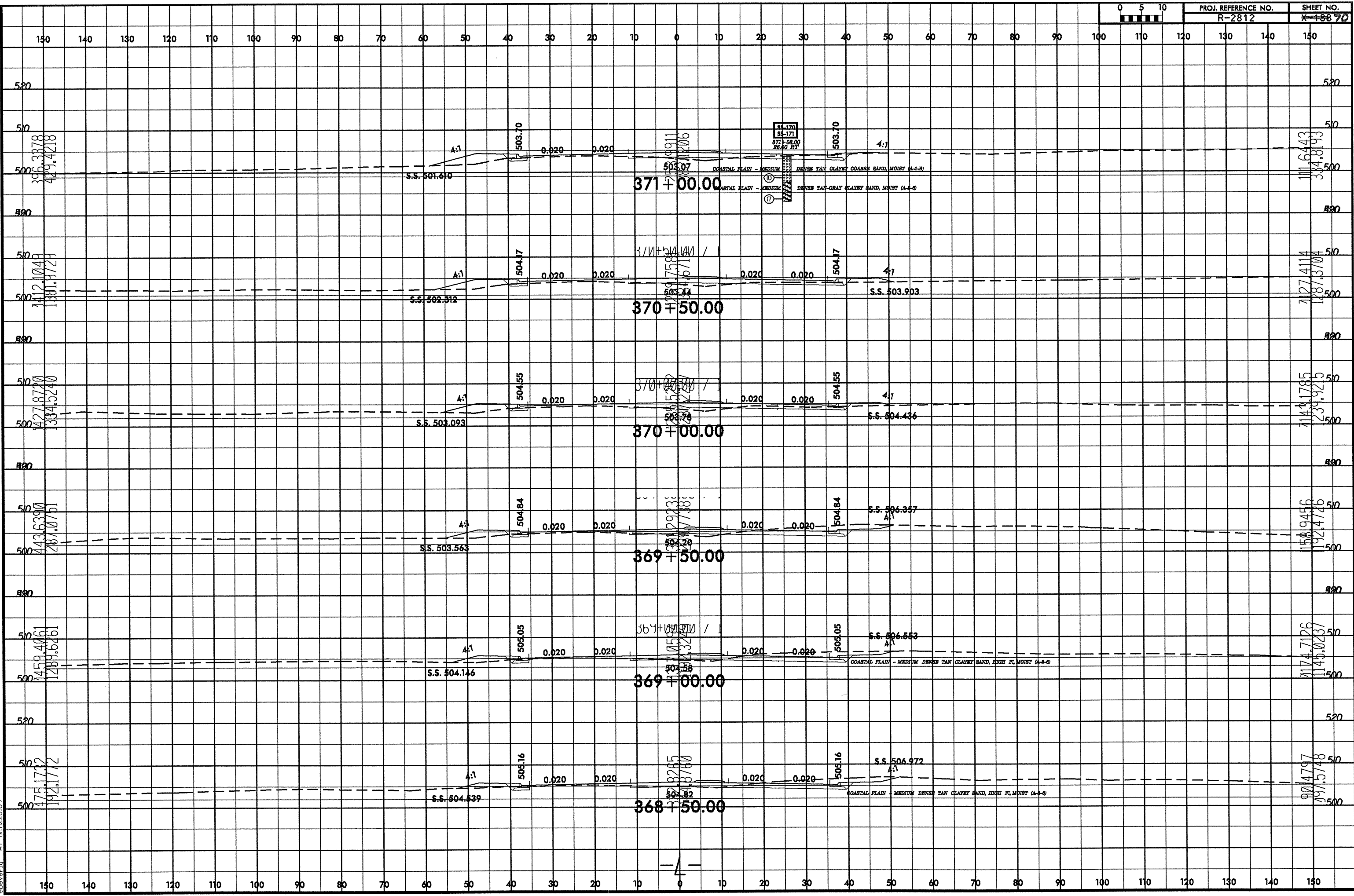
8/23/99



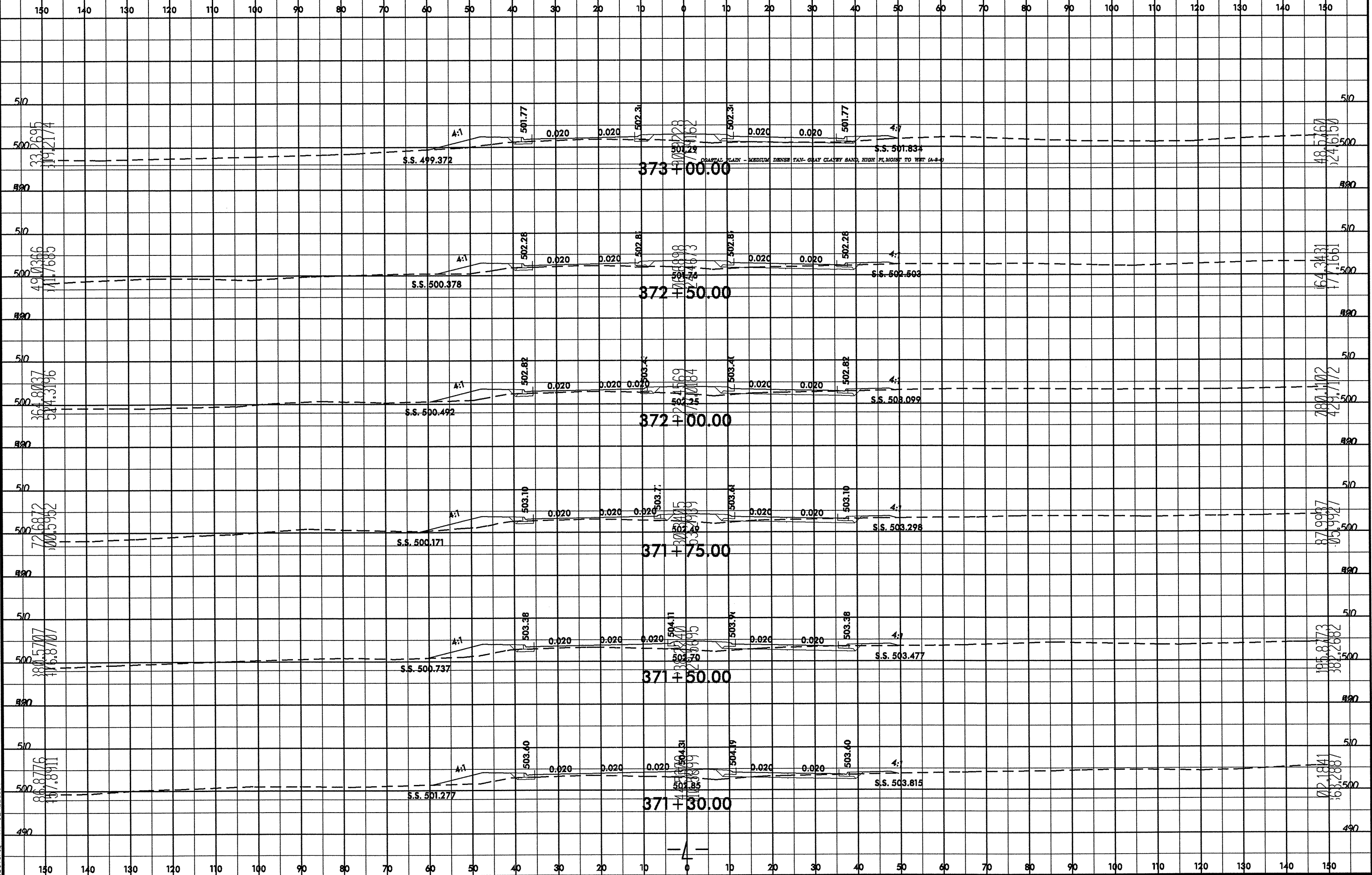
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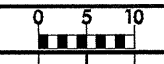
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elevation AT GE226163



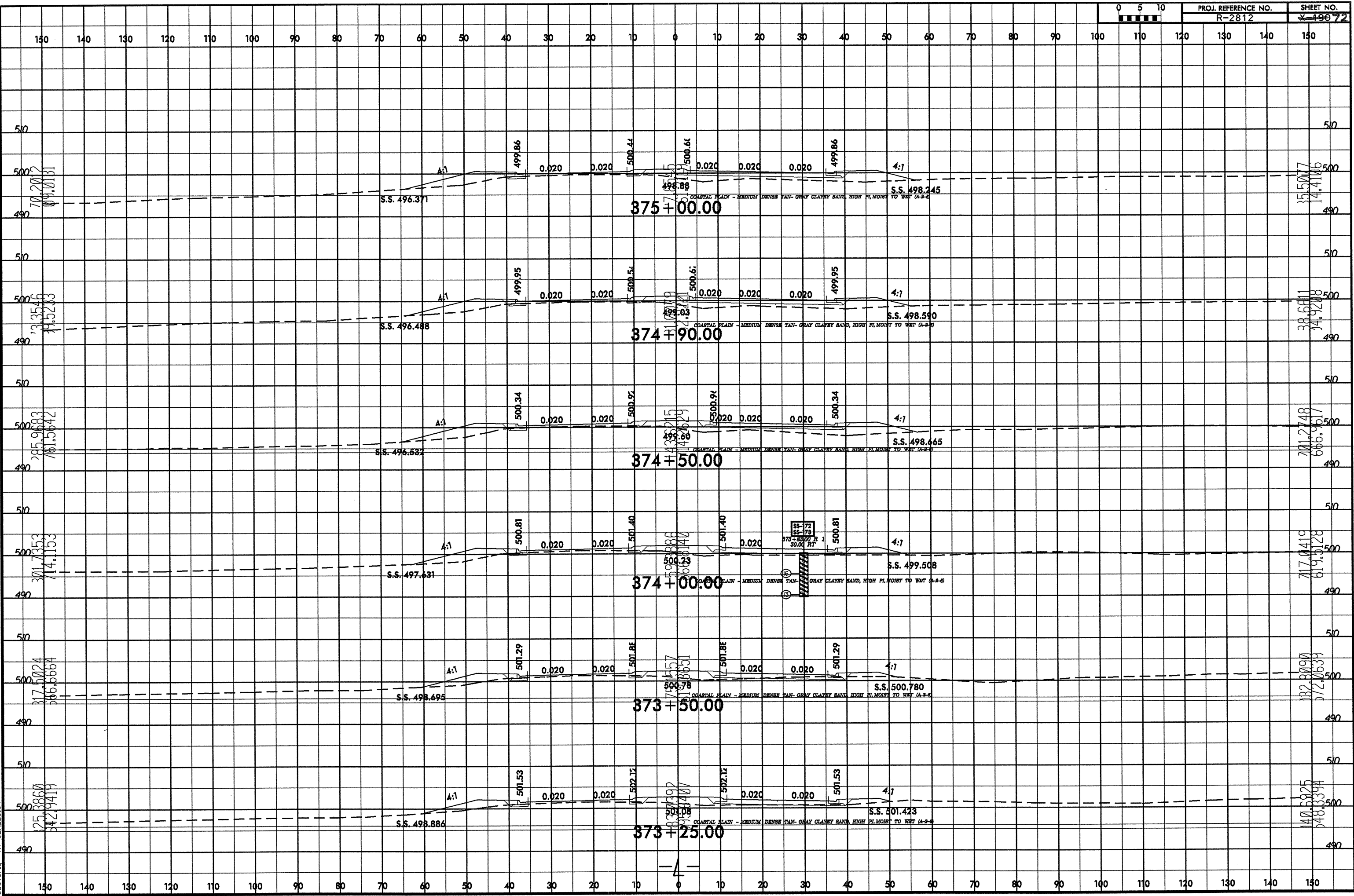
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PROJ. REFERENCE NO. R-2812 SHEET NO. 49672



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

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-130	40 RT	287+00	4.80-5.80	A-2-6(0)	32	13	59.4	18.9	1.6	20.1	96	56	23	-	-
SS-131	40 RT	287+00	9.80-10.80	A-2-6(0)	36	14	54.6	24.9	0.4	20.1	97	47	21	-	-
SS-132	34 RT	289+54	4.90-5.90	A-3(0)	20	NP	70.5	20.3	1.2	8.0	87	52	9	-	-
SS-133	34 RT	289+54	9.90-10.90	A-7-6(25)	57	34	15.7	13.7	10.4	60.2	99	89	73	-	-
SS-134	73 RT	292+59	4.50-5.50	A-7-6(5)	45	21	46.4	12.7	2.8	38.2	98	65	42	-	-
SS-135	53 LT	295+70	4.20-5.20	A-2-6(0)	32	11	51.4	21.9	0.6	26.1	97	70	27	-	-
SS-136	53 LT	295+70	9.20-10.20	A-1-b(0)	28	6	74.9	11.4	1.6	12.0	97	47	14	-	-
SS-137	51 LT	298+55	4.30-5.30	A-7-6(36)	66	37	3.4	15.9	16.5	64.3	100	98	86	-	-
SS-138	35 LT	301+10	4.50-5.50	A-2-6(0)	30	12	69.1	10.2	0.6	20.1	98	55	21	-	-
SS-139	35 LT	301+10	9.50-10.50	A-6(12)	40	20	14.7	23.5	11.6	50.2	100	91	67	-	-
SS-140	20 LT	303+75	4.40-5.40	A-2-6(1)	38	17	66.3	7.2	0.4	26.1	93	47	25	-	-
SS-141	20 LT	303+75	9.40-10.40	A-1-b(0)	23	3	69.9	15.3	0.8	14.1	93	49	14	-	-
SS-142	7 RT	306+28	3.50-4.50	A-2-4(0)	24	5	62.4	21.5	0.0	16.1	100	64	17	-	-
SS-143	10 LT	312+08	4.20-5.20	A-3(0)	17	NP	64.5	27.3	2.2	6.0	100	67	9	-	-
SS-144	50 LT	317+00	4.30-5.30	A-3(0)	20	NP	69.3	25.3	1.4	4.0	100	60	6	-	-
SS-145	37 LT	322+75	4.60-5.60	A-3(0)	15	NP	63.5	31.1	1.4	4.0	100	68	7	-	-
SS-146	42 LT	325+65	9.30-10.30	A-1-b(0)	19	NP	79.9	16.5	1.6	2.0	100	46	4	-	-
SS-147	42 LT	325+65	14.30-15.30	A-7-5(20)	62	32	30.1	8.0	7.6	54.2	100	76	64	-	-
SS-148	42 LT	325+65	19.30-20.30	A-1-b(0)	26	6	68.1	11.6	0.2	20.1	95	49	20	-	-
SS-149	40 LT	328+65	5.10-6.00	A-2-6(0)	34	15	58.4	15.5	4.0	22.1	84	47	23	-	-
SS-150	40 LT	328+65	10.10-11.10	A-2-4(0)	24	NP	51.6	32.9	1.4	14.1	100	92	16	-	-
SS-151	40 LT	328+65	15.10-16.10	A-7-6(3)	41	20	48.8	14.9	0.2	36.1	100	74	37	-	-
SS-152	34 LT	334+67	4.50-5.50	A-1-b(0)	18	NP	70.7	21.3	0.0	8.0	96	50	9	-	-
SS-153	34 LT	334+67	9.50-10.50	A-1-b(0)	18	NP	64.1	22.5	3.4	10.0	86	46	13	-	-
SS-154	57 LT	336+90	4.30-5.30	A-3(0)	15	NP	66.1	27.9	0.0	6.0	100	57	8	-	-
SS-155	57 LT	336+90	9.30-10.30	A-2-4(0)	29	8	62.0	16.1	1.8	20.1	97	61	22	-	-
SS-156	60 LT	340+72	0.50-1.50	A-1-b(0)	31	NP	70.5	13.3	4.2	12.0	98	45	18	-	-
SS-157	60 LT	340+72	3.70-4.70	A-7-6(4)	49	23	47.4	12.2	6.2	34.1	95	59	40	-	-
SS-158	60 LT	340+72	8.70-9.70	A-2-4(0)	26	9	66.9	16.1	1.0	16.1	93	45	18	-	-
SS-159	53 LT	344+18	3.70-4.70	A-2-4(0)	32	9	77.3	6.8	1.8	14.1	95	29	16	-	-
SS-160	51 LT	346+83	3.90-4.90	A-2-6(0)	28	12	42.6	29.9	3.4	24.1	93	72	29	-	-
SS-161	51 LT	346+83	8.90-9.90	A-2-4(0)	25	7	76.9	8.2	0.8	14.1	80	28	12	-	-
SS-162	44 LT	349+73	3.60-4.60	A-6(10)	35	16	12.4	21.1	18.3	48.2	100	93	71	-	-
SS-163	44 LT	349+73	8.60-9.60	A-7-6(12)	48	25	21.5	25.7	8.6	44.2	100	89	57	-	-
SS-164	50 LT	352+82	4.60-5.60	A-2-4(0)	30	10	72.7	7.6	1.6	18.1	93	41	19	-	-
SS-165	50 LT	352+82	9.60-10.60	A-7-6(19)	44	28	10.8	20.3	16.7	52.2	100	94	74	-	-
SS-166	47 LT	358+72	4.20-5.20	A-2-6(0)	33	12	62.9	9.9	0.9	26.3	95	52	26	-	-
SS-167	25 RT	362+20	4.30-5.30	A-2-7(2)	47	20	57.0	9.1	3.5	30.3	93	51	32	-	-
SS-168	25 RT	362+20	9.30-10.00	A-2-6(1)	39	20	57.4	12.9	1.3	28.3	94	60	29	-	-
SS-169	63 RT	368+03	4.20-5.20	A-2-6(1)	37	16	55.0	14.6	2.1	28.3	88	53	28	-	-
SS-170	26 RT	371+08	4.50-5.50	A-1-b(0)	21	4	74.0	12.5	1.3	12.1	86	37	12	-	-
SS-171	26 RT	371+08	9.50-10.50	A-2-6(1)	37	16	57.4	13.5	2.7	26.3	92	57	28	-	-
SS-172	30 RT	373+83	4.40-5.40	A-2-6(1)	39	16	65.8	8.3	3.6	22.3	88	44	24	-	-
SS-173	30 RT	373+83	9.40-10.40	A-2-6(0)	40	17	72.0	6.7	1.1	20.2	98	36	22	-	-
SS-174	42 RT	376+55	9.90-10.90	A-2-6(0)	32	13	48.5	22.0	5.2	24.3	93	66	29	-	-
SS-175	28 RT	379+57	4.20-5.20	A-2-6(0)	33	13	59.9	13.1	4.8	22.2	89	47	25	-	-
SS-176	17 RT	382+19	4.00-5.00	A-2-6(0)	32	11	48.5	25.1	2.1	24.3	98	79	26	-	-
SS-177	17 LT	382+19	9.00-10.00	A-7-6(12)	42	26	21.2	22.9	17.5	38.4	98	85	59	-	-
SS-178	35 RT	385+55	4.30-5.30	A-1-b(0)	19	NP	77.7	15.4	5.0	2.0	88	33	6	-	-
SS-179	35 RT	385+55	9.30-10.30	A-2-6(1)	37	16	58.0	13.5	4.1	24.3	92	52	27	-	-
SS-180	35 RT	385+55	14.30-15.30	A-2-4(0)	24	NP	37.4	46.3	4.1	12.1	100	95	17	-	-
SS-181	43 RT	388+65	4.10-5.10	A-2-6(0)	35	13	63.5	9.3	5.0	22.2	87	43	24	-	-
S-182	38 RT	392+81	0.00-1.00	A-1-b(0)	19	NP	76.1	12.9	6.9	4.0	100	44	12	-	-
S-183	45 RT	394+65	1.00-2.00	A-2-4(0)	17	NP	69.4	21.3	4.2	5.0	100	63	11	-	-
S-184	48 RT	398+07	0.00-1.00	A-2-4(0)	16	NP	70.0	20.0	4.9	5.0	100	53	12	-	-
S-185	46 RT	400+81	1.00-2.00	A-1-b(0)	15	NP	73.5	17.5	4.9	4.0	100	50	10	-	-
S-186	51 RT	403+76	1.00-2.00	A-3(0)	15	NP	70.4	20.8	4.7	4.0	100	57	10	-	-
S-187	41 RT	406+63	1.00-2.00	A-2-4(0)	16	NP	69.6	18.2	4.1	8.1	100	53	14	-	-
S-188	50 RT	409+61	1.00-2.00	A-2-4(0)	14	NP	65.3	23.4	5.3	6.0	100	56	13	-	-