

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-2417C	1	86
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34431.1.6	STP-NHF-421(2)	P.E.	
34431.2.6	STP-NHF-421(2)	RW & UTIL.	
34431.3.8	STP-NHF-421(2)	CONST.	

CONTENTS

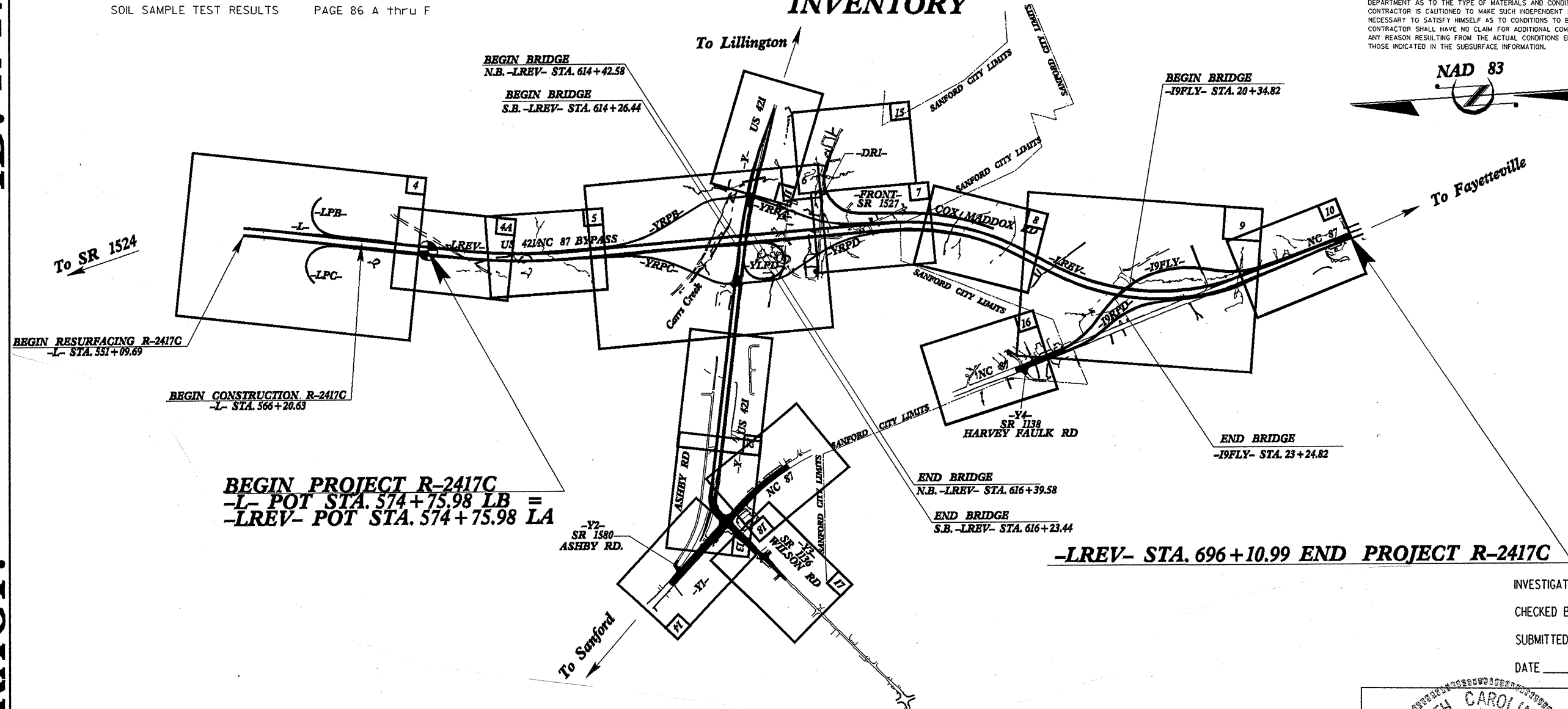
LINE	STATION	PLAN	PROFILE	XSECT
-LREV-	574+75.98 to 696+00.00	4-10	19-23	36-72
-Y-	10+00.00 to 63+86.47	11, 6, 12, 13	24-25	73-75
-Y1-	13+00.00 to 35+25.00	13, 14, 18	26	
-Y3-	10+32.02 to 26+85.13	13, 17	27	
-FRONT-	10+00.00 to 38+50.00	7, 15, 8	28-29	42-56&76-79
-YRPA-	0+00.00 to 16+26.12	6-7	29	
-YRPB-	0+00.00 to 20+72.62	6	30	30&80-81
-YRPC-	0+00.00 to 17+86.24	6	31	82-83
-YRPD-	0+00.00 to 21+98.79	6-7	32	
-YLPA-	0+00.00 to 12+19.72	6	33	39-40&84-85
-19FLY-	0+00.00 to 39+85.00	9, 10, 16	33-34	
-19RPD-	0+00.00 to 18+18.72	9	35	71-72
-Y2-	10+00.00 to 11+55.45	14	35	
-DRI-	10+20.00 to 11+36.39	15	35	

ROADWAY  
SUBSURFACE INVESTIGATION

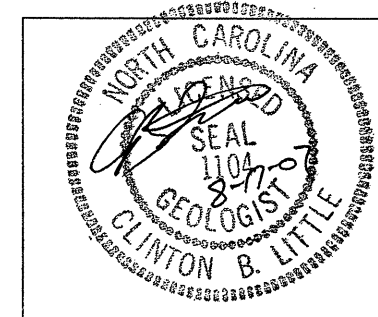
PROJ. REFERENCE NO. 34431.1.1 (R-2417C) F.A. PROJ. STP-NHF-421(2)  
COUNTY LEE  
PROJECT DESCRIPTION US 421/NC 87 (SANFORD BYPASS) FROM EAST OF NC 42 TO NC 87 NEAR SR 1138

SOIL SAMPLE TEST RESULTS PAGE 86 A thru F

INVENTORY



PERSONNEL  
C.C. MURRAY  
J.E. ESTEP  
L.N. HARPER  
INVESTIGATED BY MURRAY  
CHECKED BY C.B. LITTLE  
SUBMITTED BY C.B. LITTLE  
DATE JANUARY 2007



DRAWN BY: McCLURE, LITTLE, BURRIS

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.

CONTRACT: C202128 ID: R-2417C

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

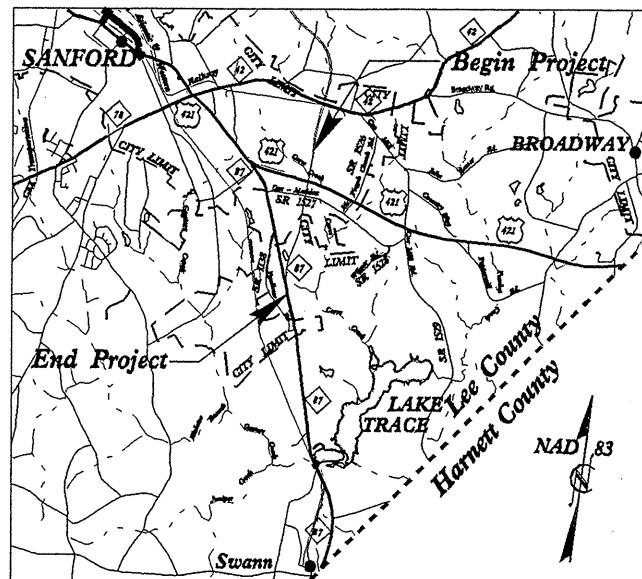
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**LEE COUNTY**

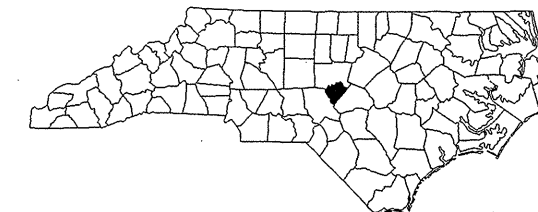
LOCATION: US 42/NC 87 (SANFORD BYPASS) FROM EAST OF NC 42 TO NC 87 NEAR SR 1138.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, SIGNALS, STRUCTURES AND CULVERTS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2417C	1A	86
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34431.1.6	STP-NHF-421(2)	P.E.	

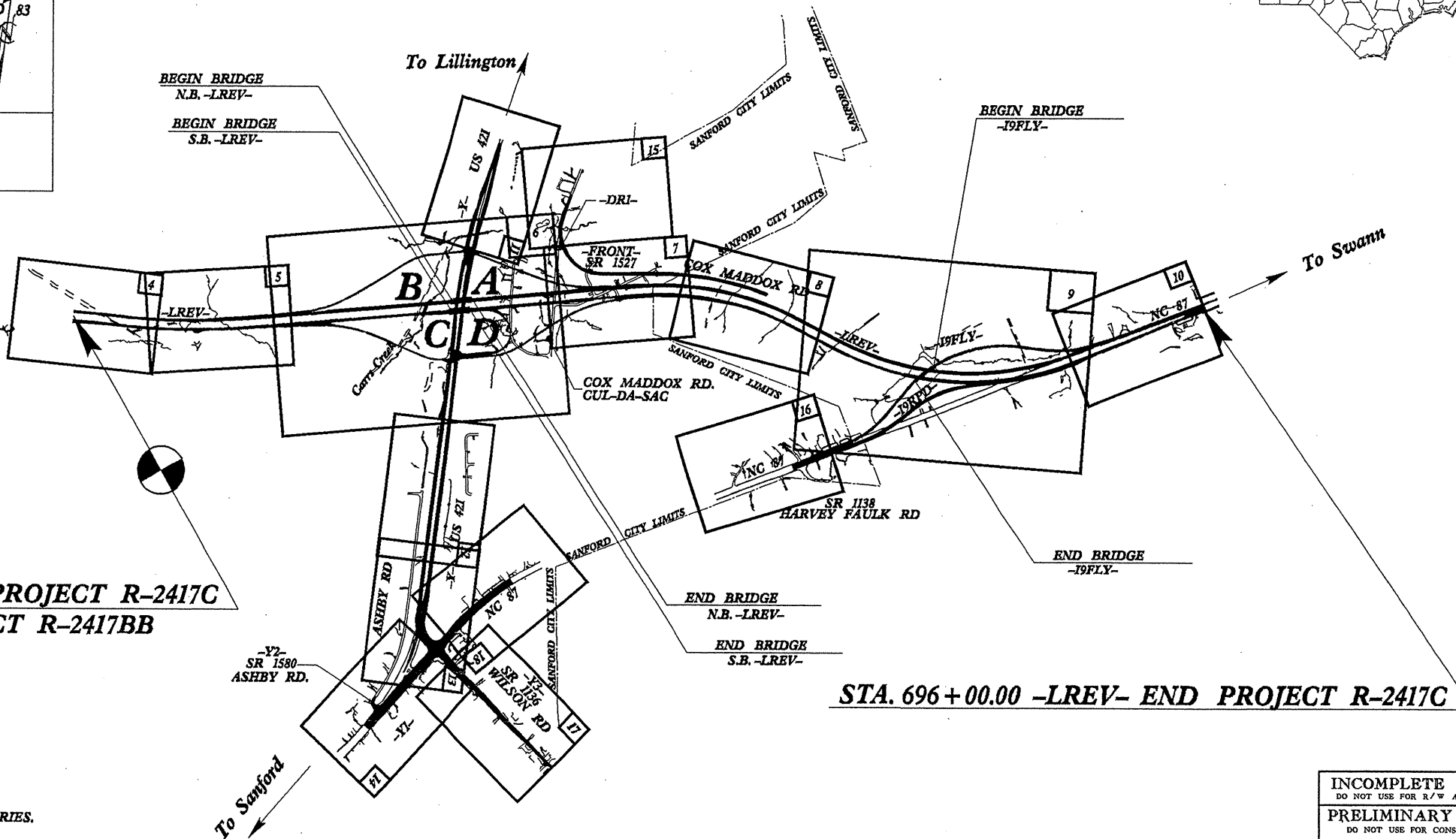


**VICINITY MAP**



**TIP PROJECT: R-2417C**

**CONTRACT:**

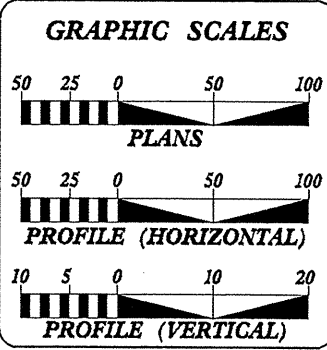


**STA. 574+75.98 -LREV- L.A. BEGIN PROJECT R-2417C**  
**STA. 574+75.98 -L- L.B. END PROJECT R-2417BB**

**STA. 696+00.00 -LREV- END PROJECT R-2417C**

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_  
PORTIONS OF THIS PROJECT ARE WITHIN MUNICIPAL BOUNDARIES.

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



**DESIGN DATA**

ADT 2006 =	15,800 VPD
ADT 2030 =	30,000 VPD
DHV =	10 %
D =	60 %
T =	8 % *
V =	70 MPH
FUNC CLASS =	PRINCIPAL ARTERIAL
	*(TTST 3% & DUAL 5%)

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-2417C =	
LENGTH STRUCTURE TIP PROJECT R-2417C =	
TOTAL LENGTH TIP PROJECT R-2417C =	2.296 mi.

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

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	<b>GLENN W. MUMFORD, PE</b> PROJECT ENGINEER
	OCTOBER 20, 2006
LETTING DATE:	<b>SUSAN C. LANCASTER, PE</b> PROJECT DESIGN ENGINEER
	JUNE 17, 2008

**HYDRAULICS ENGINEER**

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

**ROADWAY DESIGN ENGINEER**

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

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION**  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: \_\_\_\_\_ P.E.  
DIVISION ADMINISTRATOR

DATE: \_\_\_\_\_

10-JAN-2007 09:52  
\\c:\p221409\w\c\p221409\projects\r2417c-geo\rowwy\_lee\_co\cadd\geotech\planprof\r2417c-rdy.tsh.dgn  
C:\P221409 AT CER226163

DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table containing SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, ABBREVIATIONS, SOIL MOISTURE - CORRELATION OF TERMS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, and PLASTICITY.

## EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: R-2417C

COUNTY Lee

DATE: 9/12/2009

SHEET 3 OF 86

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
-LREV-	574+75.98	614+37.94	100389	0	1152	5495	94894	627353	0	627353	721456	626562	0	6647	6647
-YRPB-	7+67.28	20+72.62	46534	0	0	0	46534	40446	0	40446	46513	0	21	0	21
-YRPC-	8+39.34	17+85.80	16076	0	0	0	16076	109867	0	109867	126347	110271	0	0	0
<b>SUBTOTAL:</b>			<b>162999</b>	<b>0</b>	<b>1152</b>	<b>5495</b>	<b>157504</b>	<b>777666</b>	<b>0</b>	<b>777666</b>	<b>894316</b>	<b>736833</b>	<b>21</b>	<b>6647</b>	<b>6668</b>
-LREV-	616+36.13	646+50.00	426136	0	9313	7699	418457	205639	0	205639	236485	0	181972	17012	198984
-Y-	10+00.00	40+00.00	89601	0	0	0	89601	65169	0	65169	74945	0	14656	0	14656
-Y1-	13+00.00	35+76.08	2645	0	0	0	2645	1503	0	1503	1729	0	916	0	916
-Y2-	10+00.00	11+55.45	64	0	0	0	64	100	0	100	115	51	0	0	0
-Y3-	10+32.02	20+50.00	386	0	0	0	386	1456	0	1456	1674	1288	0	0	0
-Y4	10+48.06	11+25.00	14	0	0	0	14	0	0	0	0	0	14	0	14
-YRPA-	8+68.47	16+26.12	60318	0	0	0	60318	3372	0	3372	3878	0	56440	0	56440
-YLPD-	3+03.18	6+76.98	114367	0	0	0	114367	0	0	0	0	0	114367	0	114367
-YRPD-	8+68.19	22+00.82	247091	0	0	0	247091	23254	0	23254	26742	0	220349	0	220349
-DR1-	10+00.00	11+36.39	42	0	0	0	42	411	0	411	473	431	0	0	0
-FRONT-	10+00.00	21+69.49	58001	0	0	7600	50401	5424	0	5424	6238	0	44163	7600	51763
<b>SUBTOTAL:</b>			<b>998685</b>	<b>0</b>	<b>9313</b>	<b>15299</b>	<b>983386</b>	<b>306328</b>	<b>0</b>	<b>306328</b>	<b>352279</b>	<b>1770</b>	<b>632877</b>	<b>24612</b>	<b>657489</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."

## EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: R-2417C

COUNTY Lee

DATE: 9/12/2009

SHEET 3A OF 86

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
-LREV-	646+50.00	676+50.00	354999	0	10014	0	354999	47819	0	47819	54992	0	300007	10014	310021
-19FLY-	8+67.23	38+95.00	30555	0	2021	2021	28534	181062	0	181062	208221	179687	0	4042	4042
-19RPD-	7+72.03	13+86.35	2736	0	0	0	2736	19742	0	19742	22703	19967	0	0	0
<b>SUBTOTAL:</b>			<b>388290</b>	<b>0</b>	<b>12035</b>	<b>2021</b>	<b>386269</b>	<b>248623</b>	<b>0</b>	<b>248623</b>	<b>285916</b>	<b>199654</b>	<b>300007</b>	<b>14056</b>	<b>314063</b>
-LREV-	676+50.00	696+10.99	21741	0	0	0	21741	60452	0	60452	69320	47779	0	0	0
-Y-	40+00.00	63+86.47	17328	0	0	0	17328	41075	0	41075	47237	29909	0	0	0
<b>SUBTOTAL:</b>			<b>39069</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39069</b>	<b>101527</b>	<b>0</b>	<b>101527</b>	<b>116757</b>	<b>77688</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PROJECT SUBTOTAL:</b>			<b>1589043</b>	<b>0</b>	<b>22500</b>	<b>22815</b>	<b>1566228</b>	<b>1434144</b>	<b>0</b>	<b>1434144</b>	<b>1649268</b>	<b>1015945</b>	<b>932905</b>	<b>45315</b>	<b>978220</b>
<b>WASTE IN LIEU OF BORROW</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-932905</b>	<b>-932905</b>	<b>0</b>	<b>-932905</b>
<b>LOSS DUE TO CLEARING AND GRUBBING</b>			<b>-28000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-28000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28000</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>UNSUITABLE SOILS UNDERCUT</b>					<b>7500</b>			<b>7500</b>	<b>0</b>	<b>7500</b>	<b>8625</b>	<b>8625</b>	<b>0</b>	<b>7500</b>	<b>7500</b>
<b>SUBGRADE STABILITY UNDERCUT</b>					<b>10000</b>			<b>10000</b>	<b>0</b>	<b>10000</b>	<b>11500</b>	<b>11500</b>	<b>0</b>	<b>10000</b>	<b>10000</b>
<b>SHALLOW UNDERCUT</b>			<b>0</b>	<b>0</b>	<b>8000</b>	<b>0</b>	<b>0</b>	<b>8000</b>	<b>0</b>	<b>8000</b>	<b>9200</b>	<b>9200</b>	<b>0</b>	<b>8000</b>	<b>8000</b>
<b>EST. SHOULDER MATERIAL</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39410</b>	<b>0</b>	<b>39410</b>	<b>45322</b>	<b>45322</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>SUBTOTAL:</b>			<b>1561043</b>	<b>0</b>	<b>48000</b>	<b>22815</b>	<b>1538228</b>	<b>1499054</b>	<b>0</b>	<b>1499054</b>	<b>1723915</b>	<b>185687</b>	<b>0</b>	<b>70815</b>	<b>70815</b>
<b>EST. TO REPLACE BORROW PIT TOPSOIL</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>9284</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>GRAND TOTAL:</b>			<b>1561043</b>		<b>48000</b>							<b>194971</b>			
<b>SAY</b>			<b>1565000</b>		<b>48000</b>							<b>198000</b>			

Computed by: DK 08/04/09

Checked by: SCL 08/12/09

"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."



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

January 23, 2007

STATE PROJECT: 34431.1.1 (R-2417C)  
FEDERAL PROJECT: STP-NHF-421(2)  
COUNTY: Lee  
DESCRIPTION: US 421 – NC 87 Sanford Bypass  
From East of NC 42 to NC 87 Near SR 1138

SUBJECT: Geotechnical Report - Inventory

**PROJECT DESCRIPTION**

The project begins approximately 4000' north of existing US 421 at the tie with project R-2417BB (-LREV- Station 574+75.98). The -LREV- alignment trends nearly due south to an interchange with existing NC 87 (-LREV- Station 696+00). Included in the project are improvements to existing US 421, a frontage road in the vicinity of existing Cox Maddox Road, interchanges at existing US 421 and NC 87, and a grade intersection at existing US 421/NC 87/Wilson Road.

The following alignments were investigated:

-LREV- Station 574+75.98 to 696+00  
-Y- Station 10+00 to 63+86.47  
-Y1- Station 13+00 to 35+25  
-Y2- Station 10+00 to 11+55.45  
-Y3- Station 10+32.02 to 26+85.13  
-Front- Station 10+00 to 38+50  
-YRPA- Station 0+00 to 16+26.12  
-YRPB- Station 0+00 to 20+72.62  
-YRPC- Station 0+00 to 17+86.24  
-YRPD- Station 0+00 to 21+98.79  
-YLPD- Station 0+00 to 12+19.72  
-I9FLY- Station 0+00 to 38+95  
-I9RPD- Station 0+00 to 18+18.72  
-DR1- Station 10+20 to 11+36.39

The total length of lines investigated is 7.4 miles.

The initial field investigation was conducted during June of 2006. Borings were conducted with a CME-550 drill machine with an automatic hammer. Standard Penetration Tests were conducted at selected locations utilizing hollow stem augers and additional borings were advanced with 6" continuous flight augers. Additional borings were conducted in October 2006 using hollow stem augers plus hand augers. Numerous soil samples were submitted to the Materials and Tests Unit for laboratory analysis.

**AREAS OF SPECIAL GEOTECHNICAL INTEREST**

**Coastal Plain Overlap:** The Coastal Plain/Piedmont contact occurs throughout the project. The upper layer of the residual soil tends to be plastic. Also, the coastal plain soils are much more permeable than the residual soils, which can result in perched water and/or high moisture contents at the contact. This situation is known to occur near proposed grade in the following specific areas and is likely in other more isolated areas.

-FRONT- 15+00 to 34+00  
-LREV- 644+50 to 674+50  
-I9RPD- 1+50 to 6+00

**Alluvial Soils:** Areas with significant alluvial deposits are discussed below.

611+00 – 613+50 -LREV-  
18+00 - 20+50 -YRPB-  
12+00 – 13+00 -YRPC-

Alluvial soils occur in a floodplain associated with a stream (Carr's Creek) flowing from west to east through the "C" and "B" quadrant of the -Y- interchange. The sediments are predominantly soft sandy clays with areas of loose sand. The deposit averages four feet in thickness. A sanitary sewer line is also present through the area, roughly following the stream. The proposed embankment height over this area is 60' on the -L- alignment.

649+25 – 650+50 -LREV-

Some of this area is mapped as wetland. Our test boring found eight feet of loose clayey sand. The area is significant because the proposed grade is very near the existing ground surface. Groundwater is also at or near the ground surface.

-I9FLY- 19+00 to 27+25  
-LREV- 663+75 to 667+00

This area is in the vicinity of the flyover structure (-I9FLY- over -LREV-). A man-made pond currently occupies the site. An earthen dam is located near Station 20+00 -I9FLY-. A deposit of alluvial soils borders the stream above and below the dam. It likely extends under the pond, but was not confirmed. Thin deposits of pond silt are also likely within the pond area.

FRONT 12+00 to 14+75

Our test boring found about seven feet of soft to medium stiff, clayey sandy silt. The embankment for existing Cox Maddox Road covers a portion of this floodplain.

**Plastic Soils:** Numerous soil samples returned a Plastic Index (P.I) of 26 or greater. These soils are considered Highly Plastic. High soil plasticity is an indicator of compressibility, shrink-swell potential, and low permeability. Sample results for the highly plastic clays are summarized on page 3D-3E.

Plastic soils occur at the proposed subgrade elevation in the following intervals:

- LREV- 593 – 598
- LREV- 618 – 622
- LREV- 630 – 642
- LREV- 644+50 – 649
- LREV- 650+50 – 663
- LREV- 667 – 674
- FRONT- 24 – 34
- RAMPB- 0 – 14 (intermittently)
- YLPD- 1 – 6
- I9RPD- 1-9. The subgrade in these areas will likely require soil improvement techniques.

There are also areas in cut section where a significant portion of the unclassified excavation will involve highly plastic soils:

- LREV- 632 – 642
- LREV- 651 – 663
- FRONT- 16 – 33
- YLPD- 2 – 6.

**Cut Slopes in Coastal Plain Soils:**

Cut sections largely in coastal plain material can result in unstable cut slopes. Instability usually results from erosional undercutting created by surface runoff and/or seepage of water along the contact of soil strata with markedly different permeability. This occurs where porous sands rest on low permeability clays. Water will percolate downward through the sand and perch on the clay layer, eventually seeping out along the exposed contact. The notable areas where this situation occurs are: -LREV- 632+00 to 642+00, -LREV-650+50 to 663+00, and -FRONT-16+00 to 33+00.

**Groundwater:** Groundwater may be an issue at several locations. As mentioned previously, groundwater and/or surface water tends to collect at the base of the coastal plain sands, perching on the plastic and much less permeable residual surface soils. This situation may occur in numerous locations.

Groundwater was noted near proposed grade in the following areas:

-LREV- Station 649 – 667: The floodplain/wetland area vicinity Station 650 was discussed previously. The groundwater through this section occurs near the residual/coastal plain contact. This area also includes the flyover bridge and pond area as previously discussed.

-Y-: Groundwater was measured in several borings along line -Y-. It was commonly between 10 and 20 feet below proposed grade, but was within 6 feet in two locations:

- 33+21 -Y-
- 63+00 -Y-

-Y1-: Groundwater was measured near the surface in area with little or no proposed fill at Station 24+71. (This was the same boring as -Y- Station 63+00, at the US 421 Existing/NC 87 Existing/Wilson Road intersection).

-YRPC-: Water was noted in the boring at Station 17+50 (near the Equality at -Y- 33+14.37) four feet below proposed grade.

-YRPD-: Water was measured at Station 15+50, six feet above the proposed grade.

**PHYSIOGRAPHY AND GEOLOGY**

The project is located on the edge of the Triassic (Sanford Basin) sediments and the Raleigh Metamorphic Belt. A veneer of Cretaceous (Coastal Plain) sediments covers much of the project. The Coastal Plain sediments rise above grade near station 631+00 to 663+00 on -LRev- and 15+50 to 33+50 of -Front-. These soils are generally very sandy, but when they have high clayey component to them, they usually have a medium to high Plastic Index. No rock was encountered during the investigation. The N.C. Geologic Survey map shows the bedrock to be gneissic granite and phyllite.

The primary drainage feature is Carr's Creek, which crosses the project from right to left (west to east) near Station 611-612 -LREV-, then turns north to south to parallel the project (outside construction limits). Numerous small tributaries cross the project, flowing generally west to east.

The project begins (-LREV- 574+75.98) at a ground elevation of about 412' (Grade Elevation 449.12'). The upland elevations are fairly consistent (400-420') with stream valley elevations near 345' through Station 658 -LREV-. Ahead, elevations fall to 350' at Station 680, then rise again to 375' at the project terminus (696+00 -LREV-). Elevations on the other alignments are similar. The highest point on the project is near the intersection of -YRPD- and -Y-, at 430'. The low point is in a stream channel at Station 6+65 -I9FLY-, elevation 318'.

**SOIL PROPERTIES**

*Coastal Plain Soils*

Coastal plain soils occur at the ground surface over much of the project. These soils are relatively thin. The maximum thickness encountered was about 20 feet, thicknesses of about five feet were more common. There are some areas, typically at the higher elevations, where the coastal plain formation is not present. Soil types in this group are varied from A-2-4 sands to A-7 clays. Clayey sands (A-2-7) appear to be most common. Coastal plain soils will be most impactful to the project where they occur in greater depths in cut sections.

*Residual Soils*

Residual soils on the project are predominantly silty clays (A-7) and clayey sandy silts (A-4, A-5). These soils often are moderately to highly plastic and above optimum moisture. Plasticity is usually highest near the coastal plain/residual soil contact. The source rocks for the residual soils is not fully known due to poor exposure. Inspection of soil samples along with the published geologic mapping indicates granites, gneissic granites, and phyllites.

*Artificial/Roadway Fill Soils*

Roadway fill soils are present along the exiting roadways. These were sparsely sampled. Where they were sampled or described, they consisted of reddish silty clays (A-7) with a residual soil origin. The only soil noted as an artificial fill was in the earthen dam near the -LREV-/Flyover intersection.

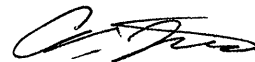
*Alluvial Soils*

Alluvial soils are not widespread. They occur on the project in bands bordering streams. Depth of alluvium was between two and eight feet. The widest floodplain was about three hundred feet. The alluvial soils included sands, silts, and clays with occasional gravel. The sandy soils appear to be most abundant.

*Rock/Weathered Rock*

No rock or weathered rock was encountered during the investigation.

Respectfully submitted,



Clint Little  
Regional Geological Engineer



SOIL SAMPLE DATA	(HIGHLY PLASTIC SOILS; PI > 26)												R-2417C		
<u>SAMPLE</u>	<u>Line</u>	<u>OFFSET</u>	<u>STATION</u>	<u>DEPTH</u>	<u>AASHTO</u>	<u>LL</u>	<u>PI</u>	<u>C. SAND</u>	<u>F. SAND</u>	<u>SILT</u>	<u>CLAY</u>	<u>10</u>	<u>40</u>	<u>200</u>	<u>MOIST</u>
SS-105	FRONT	CL	20+00	4.00-4.00	A-7-6(20)	65	40	25.8	17.1	12.5	44.7	96	81	58	-
SS-111	FRONT	50 LT	22+00	7.30-10.80	A-7-6(16)	59	36	23.9	15.9	9.3	51.0	85	71	55	25.4
SS-110	FRONT	50 LT	22+00	4.30-5.80	A-7-5(22)	83	51	43.0	6.1	4.0	46.9	100	70	52	-
SS-101	FRONT	50 RT	24+50	18.80-20.30	A-2-7(0)	61	31	80.8	6.5	0.6	12.1	95	22	13	-
SS-99	FRONT	50 RT	24+50	8.80-10.30	A-7-5(15)	68	36	39.8	8.3	9.5	42.4	96	69	51	-
SS-77	FRONT	CL	28+50	13.80-15.30	A-7-6(5)	55	28	43.6	19.8	6.3	30.3	95	63	38	26.1
SS-79	FRONT	CL	28+50	23.80-25.30	A-7-5(37)	76	29	1.2	10.1	44.2	44.4	100	99	94	46.2
SS-76	FRONT	CL	28+50	8.80-10.30	A-2-7(5)	63	38	53.0	12.6	4.0	30.3	93	58	33	-
SS-34	I9FLY	CL	27+00	8.70-10.20	A-7-6(30)	63	37	8.4	17.3	29.4	44.9	100	94	77	-
SS-36	I9RPD	25 RT	12+25	8.50-10.00	A-2-7(2)	47	26	55.3	17.8	6.5	20.4	94	54	27	-
SS-42	I9RPD	25 RT	4+00	9.10-10.60	A-7-5(29)	66	26	5.9	10.6	50.8	32.7	100	97	88	47.0
SS-41	I9RPD	25 RT	4+00	4.10-5.60	A-7-5(35)	74	27	3.1	4.7	35.1	57.1	100	98	94	-
SS-147	LREV	100 LT	577+50	8.80-10.30	A-2-7(4)	69	44	66.5	6.6	2.7	24.1	98	49	27	-
SS-149	LREV	CL	579+50	9.10-10.60	A-7-5(17)	61	28	21.9	19.1	26.8	32.2	100	82	63	-
SS-189	LREV	100 LT	594+00	9.00-10.50	A-7-6(13)	50	28	27.1	18.1	14.7	40.1	100	88	58	-
SS-188	LREV	100 LT	594+00	4.00-5.50	A-7-6(32)	69	40	2.8	27.3	21.8	48.1	100	98	76	-
S-206	LREV	200 LT	605+00	4.00-5.00	A-7-5(38)	70	36	5.2	6.4	26.2	62.2	97	94	88	-
S-210	LREV	400 RT	608+00	2.00-4.00	A-7-5(35)	71	35	9.6	6.8	13.3	70.2	100	94	85	-
SS-211	LREV	CL	609+00	0.00-4.00	A-7-5(37)	73	29	2.6	6.0	29.2	62.2	100	98	94	-
SS-70	LREV	25 LT	619+75	8.30-9.80	A-7-6(18)	54	28	15.4	20.9	21.1	42.6	98	89	68	-
SS-69	LREV	25 LT	619+75	3.30-4.80	A-7-6(26)	70	43	20.3	18.1	15.0	46.7	96	84	63	-
SS-12	LREV	110 RT	636+50	4.00-5.50	A-7-6(8)	49	28	32.9	23.4	3.1	40.6	100	82	46	-
SS-17	LREV	110 RT	636+50	29.00-30.50	A-7-6(20)	56	35	15.8	13.0	26.5	44.7	83	74	63	30.0
SS-16	LREV	110 RT	636+50	24.00-25.50	A-7-6(23)	69	45	37.2	6.7	11.5	44.7	99	70	58	35.4
SS-15	LREV	110 RT	636+50	19.00-20.50	A-2-7(5)	78	57	67.9	5.9	0.0	26.3	92	47	25	20.3
SS-80	LREV	CL	641+00	3.60-5.10	A-2-7(4)	58	31	54.3	10.3	3.0	32.3	88	49	32	-
SS-81	LREV	CL	641+00	8.60-10.10	A-2-7(5)	68	41	60.7	8.7	2.3	28.3	99	55	31	16.3
SS-95	LREV	CL	646+50	4.00-5.50	A-7-6(14)	58	35	31.9	19.4	8.3	40.4	98	77	52	-
SS-92	LREV	25 RT	648+50	4.10-5.60	A-7-6(14)	51	29	16.6	28.3	10.7	44.4	98	90	57	-
SS-87	LREV	CL	653+00	14.00-15.50	A-2-7(2)	52	28	63.4	8.3	4.0	24.2	96	48	28	28.7
SS-18	LREV	110 LT	656+25	3.80-5.30	A-2-7(2)	54	30	62.6	10.9	0.2	26.3	97	57	27	-
SS-19	LREV	110 LT	656+25	8.80-10.30	A-2-7(3)	62	37	65.9	8.7	1.2	24.2	96	50	25	-
SS-24	LREV	110 LT	656+25	33.80-35.30	A-7-5(58)	103	40	1.0	0.6	19.2	79.2	100	99	99	57.7
SS-20	LREV	110 LT	656+25	13.80-15.30	A-7-6(12)	71	44	40.0	10.4	5.0	44.7	84	56	43	-
SS-23	LREV	110 LT	656+25	28.80-30.30	A-7-5(56)	97	45	3.2	3.5	4.0	89.3	100	98	94	67.5
SS-26	LREV	25 LT	660+75	3.80-5.30	A-2-7(2)	50	27	61.0	13.1	11.6	14.3	93	56	26	-
SS-29	LREV	25 LT	660+75	18.80-20.30	A-2-7(0)	57	37	76.3	7.3	2.0	14.3	91	32	16	-
SS-30	LREV	25 LT	660+75	23.80-25.30	A-2-7(4)	55	39	33.1	33.9	12.7	20.4	85	65	29	-
SS-28	LREV	25 LT	660+75	13.80-15.30	A-7-6(44)	73	51	3.3	18.8	24.9	53.1	100	97	81	-

SOIL SAMPLE DATA	(CONT)															R-2417C
<u>SAMPLE</u>	<u>Line</u>	<u>OFFSET</u>	<u>STATION</u>	<u>DEPTH</u>	<u>AASHTO</u>	<u>LL</u>	<u>PI</u>	<u>C. SAND</u>	<u>F. SAND</u>	<u>SILT</u>	<u>CLAY</u>	<u>10</u>	<u>40</u>	<u>200</u>	<u>MOIST</u>	
SS-31	<u>LREV</u>	100 LT	663+90	8.50-10.00	A-7-6(17)	51	26	20.0	17.6	38.0	24.5	96	82	69	-	
SS-44	<u>LREV</u>	CL	672+00	4.10-5.60	A-2-7(3)	56	33	61.0	9.7	4.0	25.4	89	44	27	-	
SS-45	<u>LREV</u>	CL	672+00	9.10-10.60	A-7-5(50)	88	42	3.7	5.5	40.2	50.7	100	98	93	-	
SS-171	<u>Y</u>	75 RT	40+00	4.20-5.70	A-2-7(3)	52	27	58.0	11.6	4.3	26.1	97	61	30	-	
SS-172	<u>Y</u>	75 RT	40+00	9.20-10.70	A-2-7(4)	54	30	41.5	23.5	4.9	30.1	93	68	34	-	
SS-60	<u>Y</u>	50 LT	50+00	3.80-5.30	A-7-6(25)	64	39	22.9	12.8	11.6	52.7	100	85	66	-	
SS-61	<u>Y</u>	50 LT	50+00	8.80-10.30	A-2-7(2)	72	47	69.8	5.7	2.2	22.3	83	33	21	-	
SS-59	<u>Y</u>	80 RT	53+75	9.00-10.50	A-2-7(3)	54	31	50.7	18.5	4.5	26.4	93	58	30	-	
SS-57	<u>Y</u>	80 RT	57+00	8.20-9.70	A-2-7(5)	57	37	55.2	11.3	3.1	30.4	98	65	34	-	
SS-53	<u>Y</u>	80 LT	60+60	9.10-10.60	A-7-6(21)	50	31	16.6	15.2	25.6	42.6	100	90	72	-	
SS-55	<u>Y1</u>	75 LT	28+50	8.20-9.70	A-7-5(21)	72	37	28.2	13.2	7.9	50.7	100	83	60	-	
SS-64	<u>YLPD</u>	40 RT	4+25	14.00-15.50	A-7-5(36)	76	26	0.4	11.4	47.7	40.6	100	100	95	-	
SS-63	<u>YLPD</u>	40 RT	4+25	9.00-10.50	A-7-5(38)	80	31	4.5	7.5	27.2	60.9	100	97	91	-	
SS-62	<u>YLPD</u>	40 RT	4+25	4.00-5.50	A-7-6(17)	59	33	3.9	40.0	9.5	46.7	100	98	58	-	
SS-65	<u>YLPD</u>	40 RT	4+25	19.00-20.50	A-7-5(51)	94	40	0.4	8.7	46.2	44.6	100	100	94	37.3	
SS-134	<u>YRPC</u>	CL	17+50	3.70-5.20	A-7-5(34)	70	28	1.8	12.3	30.7	55.2	99	98	92	-	
SS-2	<u>YRPD</u>	40 LT	20+25	8.30-5.80	A-7-5(37)	72	31	2.4	8.1	40.7	48.7	99	97	93	-	
SS-103	<u>YRPD</u>	25 RT	5+25	3.80-5.30	A-7-5(44)	78	45	9.2	6.7	8.7	75.4	99	93	85	29.2	
CBR-2	<u>Y</u>	75 RT	40+00	25.70-27.00	A-7-5(27)	65	27	8.1	13.7	39.9	38.3	99	94	83	-	
CBR-1	<u>I9RPD</u>	40 LT	9+00	2.00-4.00	A-2-7(3)	52	29	61.2	9.3	3.3	26.2	99	62	30	-	

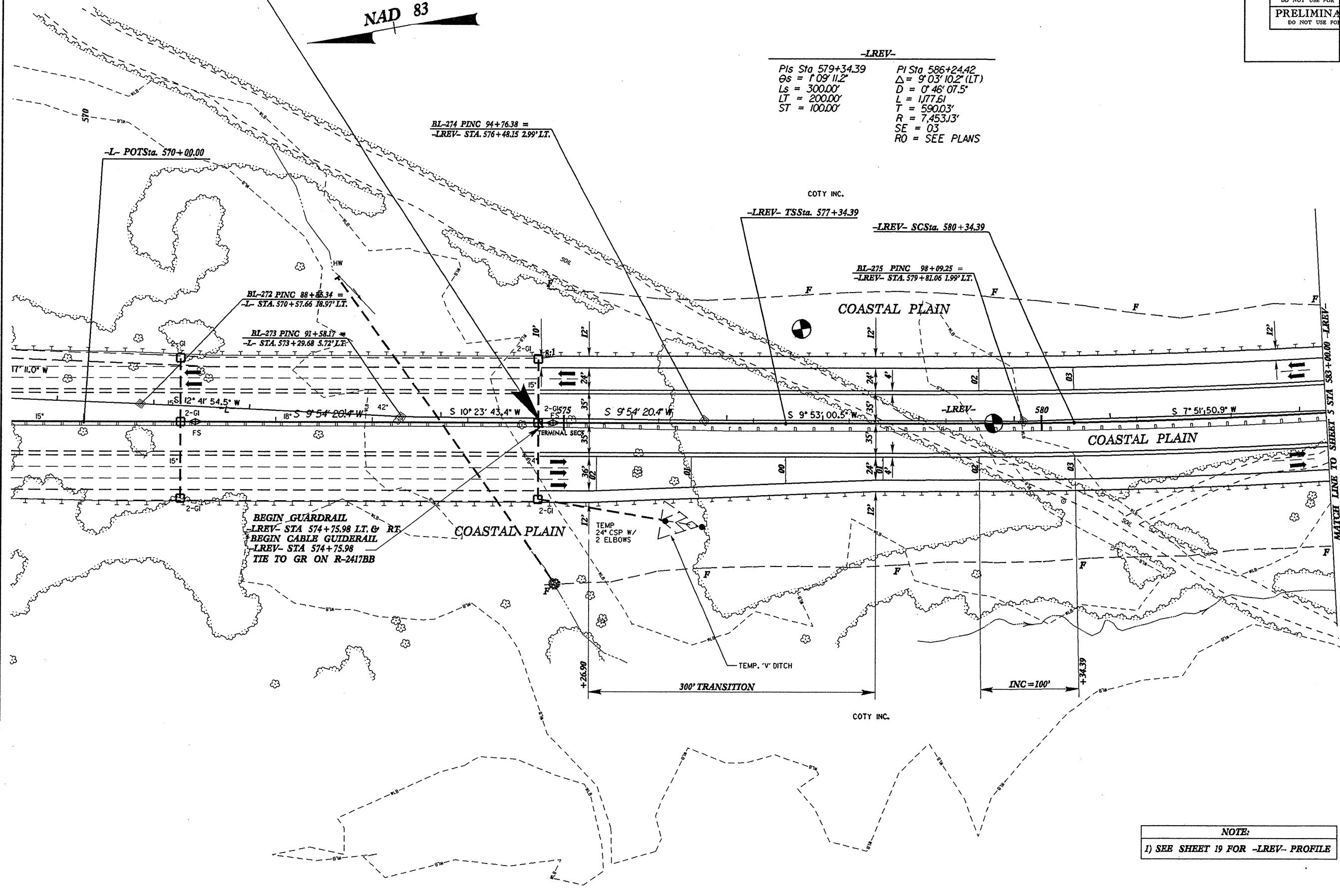
PROJECT REFERENCE NO.	SHEET NO.
R-2417C	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

END PROJECT R-2417BB -L- POT Sta. 574+75.98 LB =  
 BEGIN PROJECT R-2417C -LREV- POT Sta. 574+75.98 LA

NAD 83

-LREV-  
 PIs Sta 579+34.39    PI Sta 586+24.42  
 $\Theta_s = 1^{\circ}09'11.2''$      $\Delta = 9^{\circ}03'10.2''$  (LT)  
 Ls = 300.00'    D = 0'46'07.5"  
 LT = 200.00'    L = 1,177.61'  
 ST = 100.00'    T = 590.03'  
                   R = 7,453.13'  
                   SE = 03  
                   RO = SEE PLANS

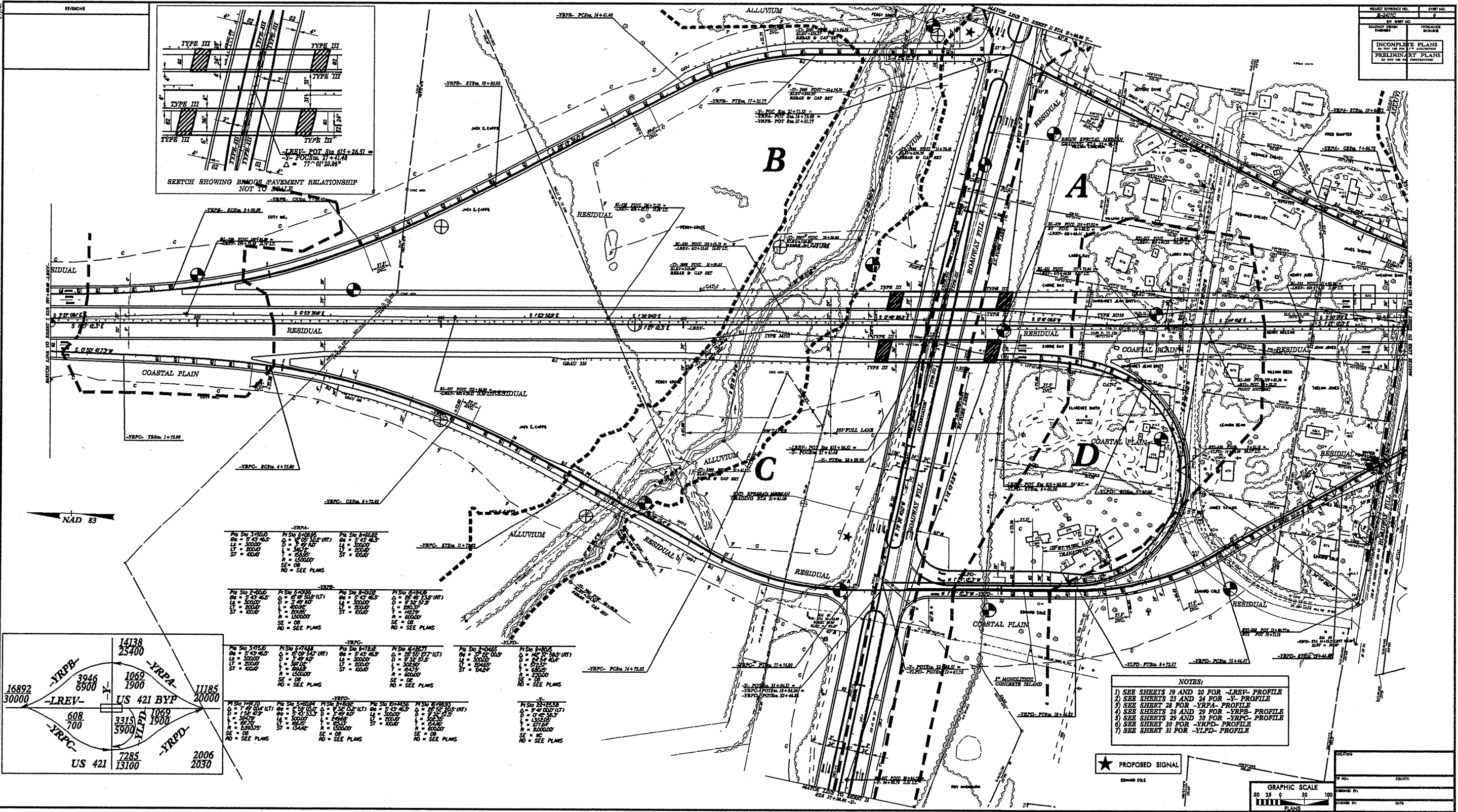
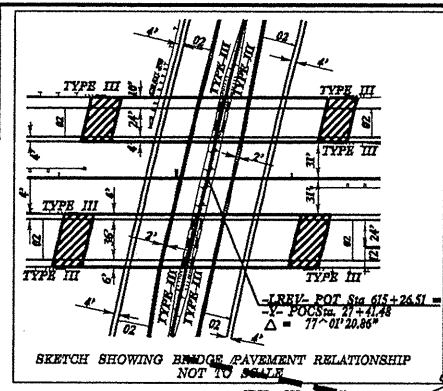
8/17/99  
 REVISIONS  
 22-JAN-2007 09:53  
 c:\eadd\geotech\p\l\p\prof\AR2417c\_GED\_inv\_004\_psh04.dgn  
 jms



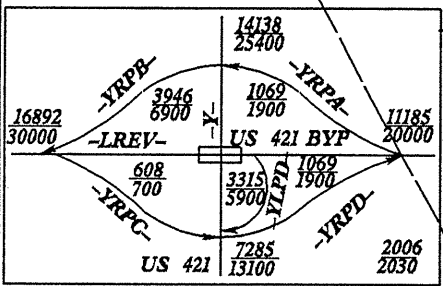
NOTE:  
 1) SEE SHEET 19 FOR -LREV- PROFILE



PROJECT REFERENCE NO. 15-0000  
 SHEET NO. 15-0000  
 INCOMPLETE PLANS  
 PRELIMINARY PLANS

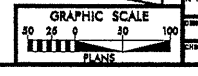


PC Sta 3+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 4+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 5+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 6+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 7+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 8+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 9+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS	PC Sta 10+000 CL = 50000 LT = 50000 ST = 50000 NO = SEE PLANS
--	--	--	--	--	--	--	---



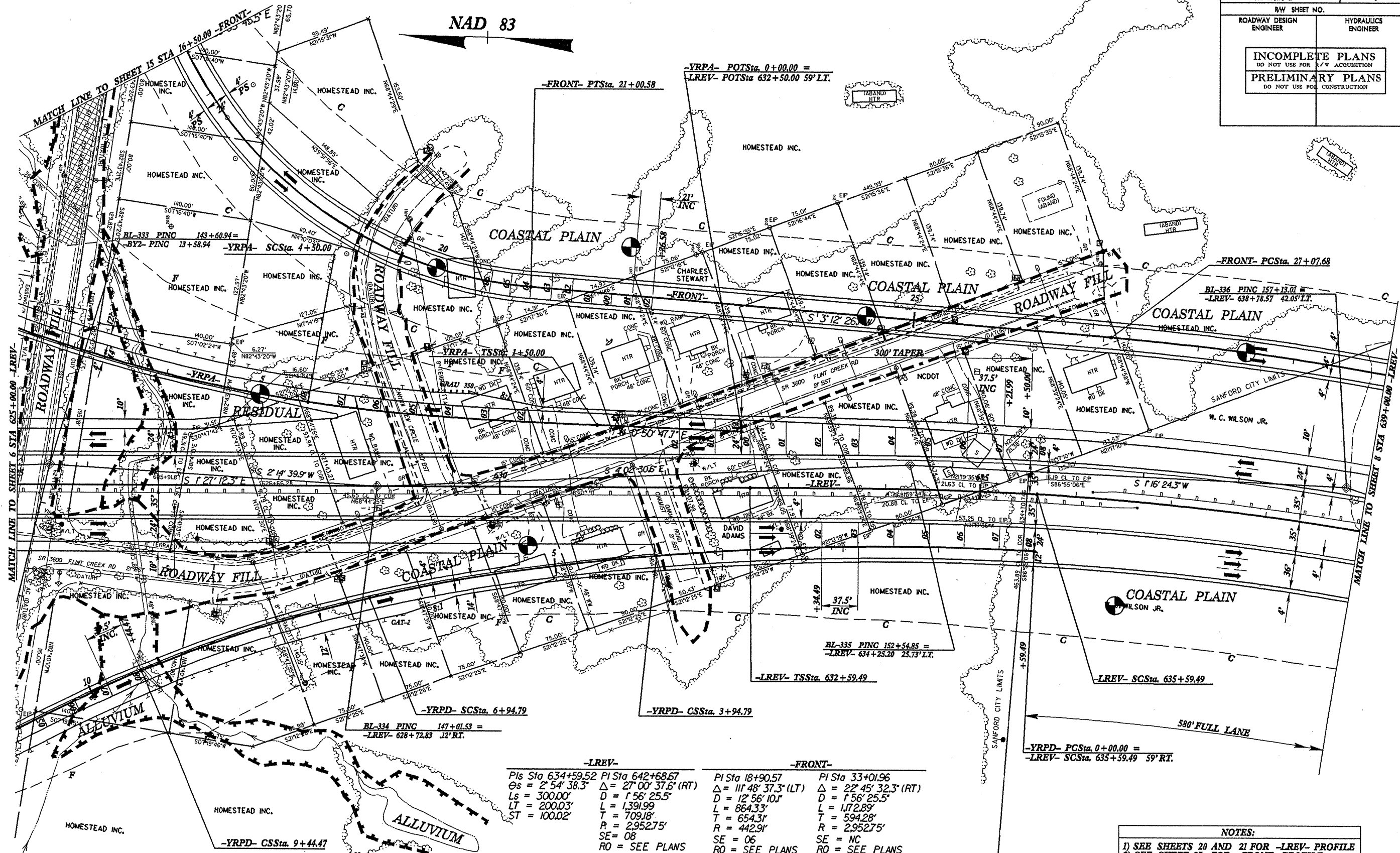
- NOTES:
- 1) SEE SHEETS 19 AND 20 FOR -LREV- PROFILE
  - 2) SEE SHEETS 23 AND 24 FOR -V- PROFILE
  - 3) SEE SHEET 28 FOR -YRPA- PROFILE
  - 4) SEE SHEETS 28 AND 29 FOR -YRPB- PROFILE
  - 5) SEE SHEETS 28 AND 30 FOR -YRPC- PROFILE
  - 6) SEE SHEET 30 FOR -YRPD- PROFILE
  - 7) SEE SHEET 31 FOR -YLPD- PROFILE

★ PROPOSED SIGNAL



PROJECT REFERENCE NO.		SHEET NO.	
R-2417C		7	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			

NAD 83



REVISIONS

22-JAN-2007 09:20  
 dk\projects\2417c\geo\_rdwj\_lee co\cedd.geot\ch\planprof\R2417c\_GEO.rnw.007.pst07.dgn  
 include AT\_GED2110

-YRPD-			
PI Sta 1+97.70 Δ = 7° 49' 00.4" (LT) D = 158' 47.9' L = 394.79' T = 197.70' R = 2,893.75' SE = 08 RO = SEE PLANS	PI Sta 5+60.94 Δ = 5° 43' 53.3" Ls = 300.00' LT = 166.15' ST = 134.42'	PI Sta 8+19.92 Δ = 9° 32' 13.2" (LT) D = 3' 49' 11.0" L = 249.68' T = 125.13' R = 1,500.00' SE = 08 RO = SEE PLANS	PI Sta 10+44.56 Δ = 5° 43' 46.5" Ls = 300.00' LT = 200.10' ST = 100.10'

-LREV-		-FRONT-	
PI Sta 634+59.52 Δs = 2° 54' 38.3" Ls = 300.00' LT = 200.03' ST = 100.02'	PI Sta 642+68.67 Δ = 27° 00' 37.6" (RT) D = 156' 25.5' L = 1,391.99' T = 709.18' R = 2,952.75' SE = 08 RO = SEE PLANS	PI Sta 18+90.57 Δ = 11° 48' 37.3" (LT) D = 12' 56' 10.1" L = 864.33' T = 654.31' R = 442.91' SE = 06 RO = SEE PLANS	PI Sta 33+01.96 Δ = 22° 45' 32.3" (RT) D = 156' 25.5' L = 1,172.89' T = 594.28' R = 2,952.75' SE = NC RO = SEE PLANS

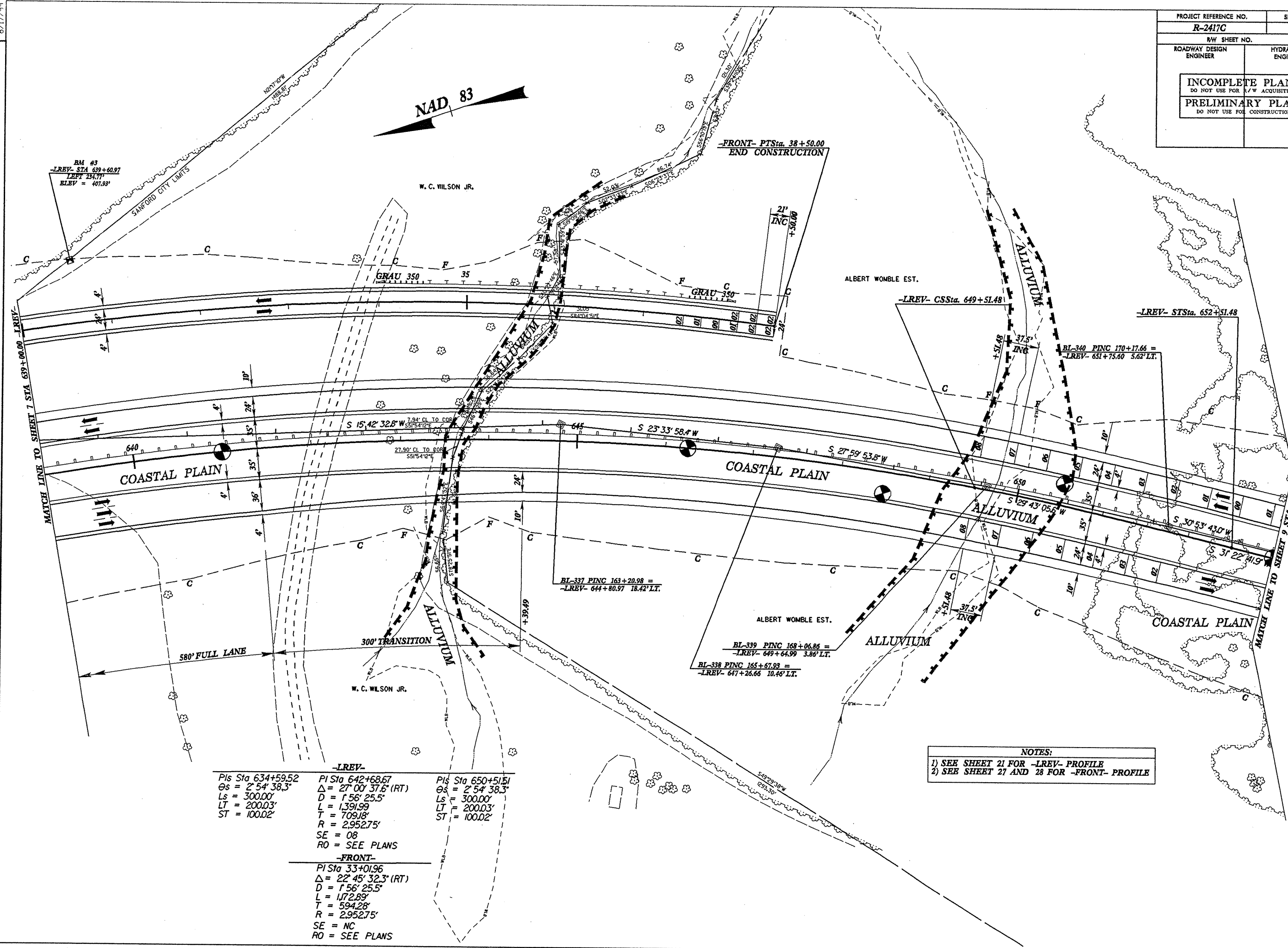
-YRPA-		
PI Sta 3+50.10 Δs = 5° 43' 46.5" Ls = 300.00' LT = 200.10' ST = 100.10'	PI Sta 6+08.95 Δ = 12° 05' 52.2" (RT) D = 3' 49' 11.0" L = 316.72' T = 158.95' R = 1,500.00' SE = 08 RO = SEE PLANS	PI Sta 8+66.82 Δs = 5° 43' 46.5" Ls = 300.00' LT = 200.10' ST = 100.10'

- NOTES:**
- 1) SEE SHEETS 20 AND 21 FOR -LREV- PROFILE
  - 2) SEE SHEET 27 FOR -FRONT- PROFILE
  - 3) SEE SHEET 28 FOR -YRPA- PROFILE
  - 4) SEE SHEET 30 FOR -YRPD- PROFILE

SANFORD CITY LIMITS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2417C	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



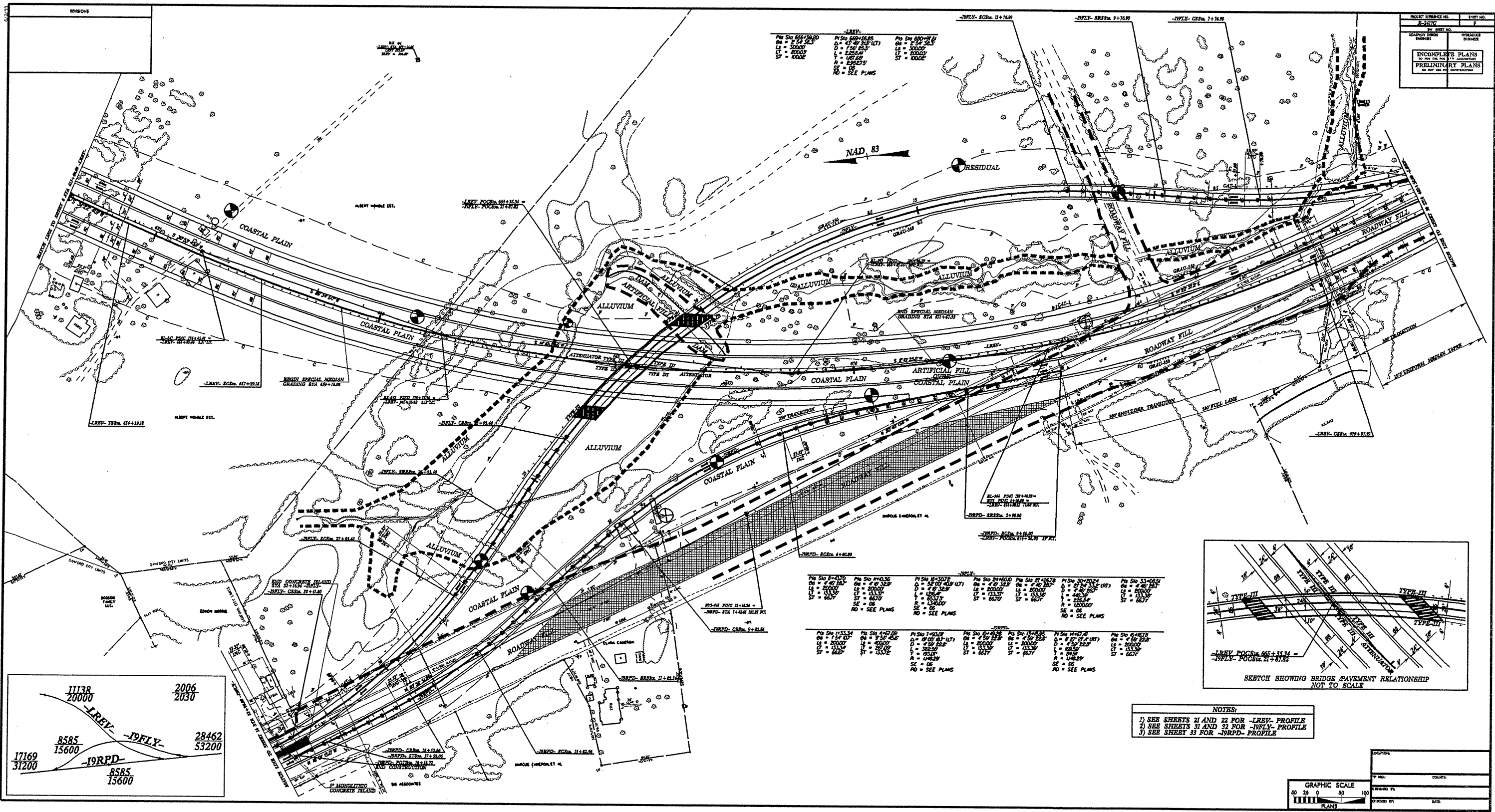
REVISIONS

22-JAN-2007 09:21  
 C:\projects\2417c\geo\rdw\lee co\oad\ch\plm\prcf\R2417c\_GEO.rvt\_008.psh08.dgn  
 imcclure

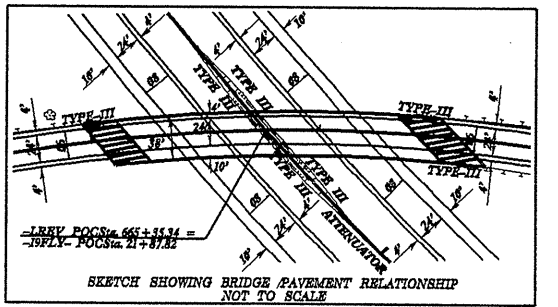
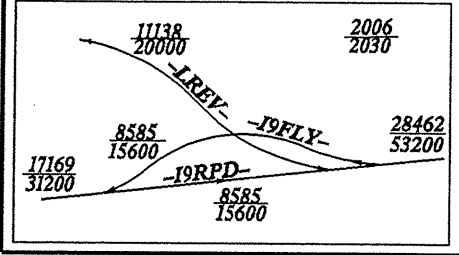
-LREV-		
PI Sta 634+59.52	PI Sta 642+68.67	PI Sta 650+51.51
θs = 2° 54' 38.3"	Δ = 27° 00' 37.6" (RT)	θs = 2° 54' 38.3"
Ls = 300.00'	D = 1° 56' 25.5"	Ls = 300.00'
LT = 200.03'	L = 1,391.99'	LT = 200.03'
ST = 100.02'	T = 709.18'	ST = 100.02'
	R = 2,952.75'	
	SE = 08	
	RO = SEE PLANS	
-FRONT-		
	PI Sta 33+01.96	
	Δ = 22° 45' 32.3" (RT)	
	D = 1° 56' 25.5"	
	L = 1,172.89'	
	T = 594.28'	
	R = 2,952.75'	
	SE = NC	
	RO = SEE PLANS	

NOTES:

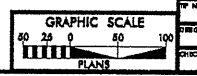
- 1) SEE SHEET 21 FOR -LREV- PROFILE
- 2) SEE SHEET 27 AND 28 FOR -FRONT- PROFILE



PROJECT NUMBER: 8-2576  
 SHEET NO: 7  
 INCOMPLETE PLANS  
 PRELIMINARY PLANS  
 TO BE USED FOR CONSTRUCTION



NOTES:  
 1) SEE SHEETS 21 AND 22 FOR -LREY- PROFILE  
 2) SEE SHEETS 31 AND 32 FOR -LREY- PROFILE  
 3) SEE SHEET 33 FOR -LRPD- PROFILE

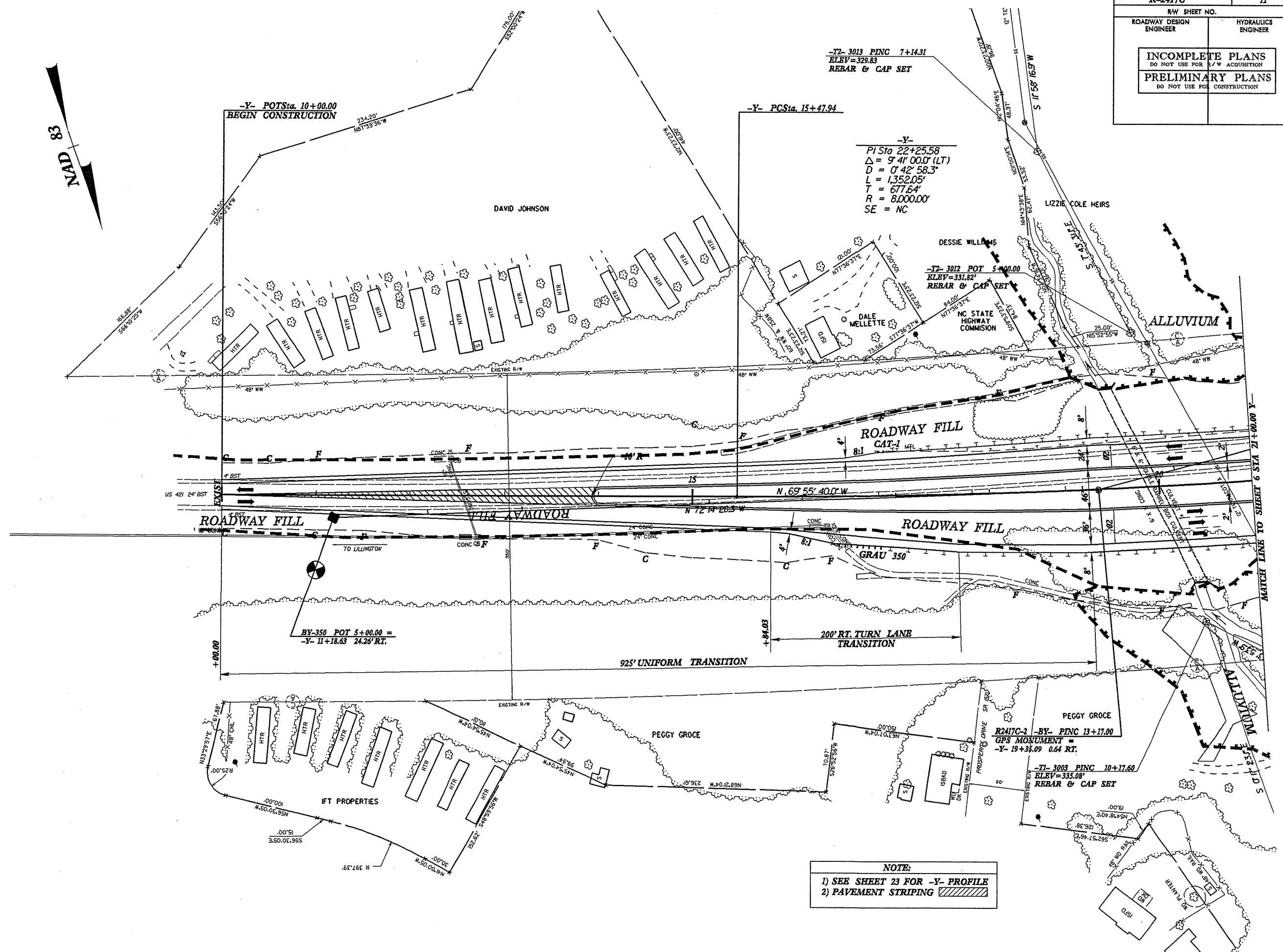
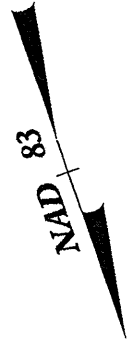


DATE	
BY	
CHECKED BY	
DATE	





PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>11</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



**NOTE:**  
 1) SEE SHEET 23 FOR -Y- PROFILE  
 2) PAVEMENT STRIPING

REVISIONS

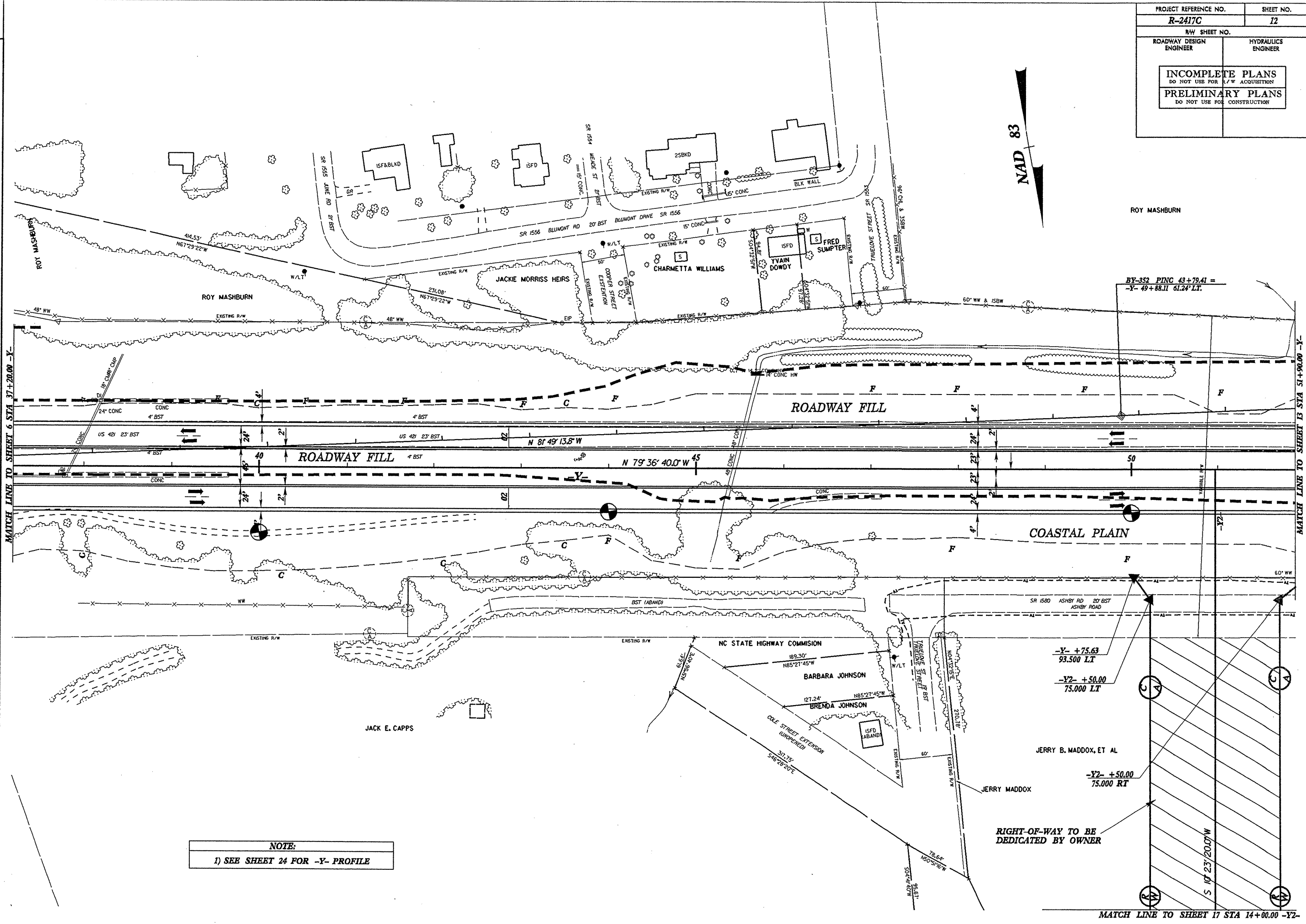
22-JAN-2007 09:25  
 c:\projects\2417c\geo\rdwy-lee\cadd\geot\ch\planprof\VR2417c\_GEO.rnw.01L.psh11.dgn  
 AT 08:42:14

8/17/99

MATCH LINE TO SHEET 6 STA 21+00.00 Y-

8/17/99

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>12</b>
RWY SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



REVISIONS

MATCH LINE TO SHEET 6 STA 37+20.00 -Y-

MATCH LINE TO SHEET 13 STA 51+90.00 -Y-

20-JAN-2007 09:36  
 c:\p\rdwy\_lee\co\oaddd\geotech\planproj\VR2417c\_GEO Inv\_012.psh12.dgn  
 imaclor

**NOTE:**  
 1) SEE SHEET 24 FOR -Y- PROFILE

-Y- +75.63  
 93.500 LT  
 -Y2- +50.00  
 75.000 LT  
 -Y2- +50.00  
 75.000 RT

RIGHT-OF-WAY TO BE DEDICATED BY OWNER

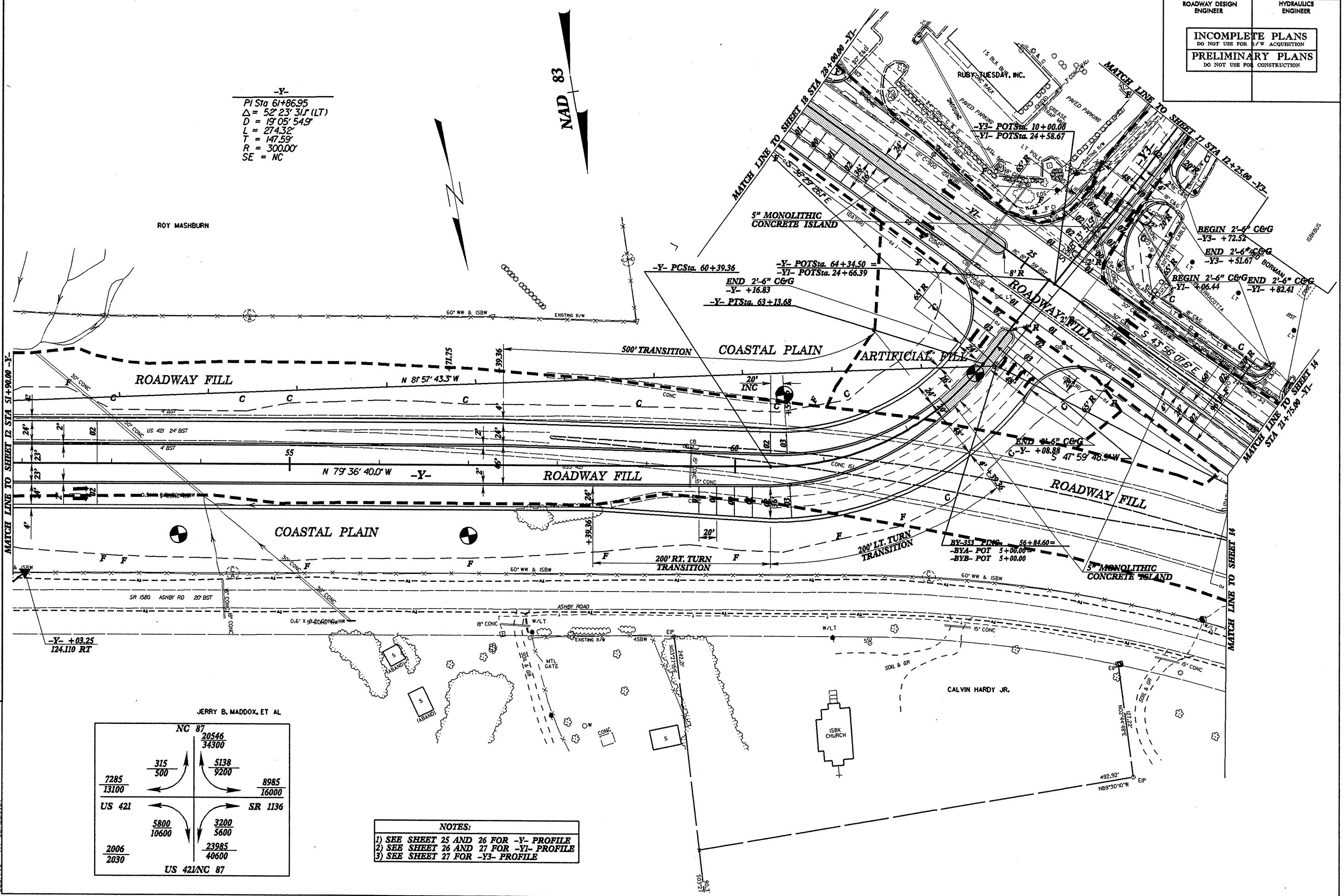
MATCH LINE TO SHEET 17 STA 14+00.00 -Y2-

8/17/99

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>13</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

**-Y-**  
 PI Sta 61+86.95  
 $\Delta = 52^\circ 23' 31''$  (LT)  
 $D = 19^\circ 05' 54.9''$   
 $L = 274.32'$   
 $T = 147.58'$   
 $R = 300.00'$   
 SE = NC

**NAD 83**



REVISIONS

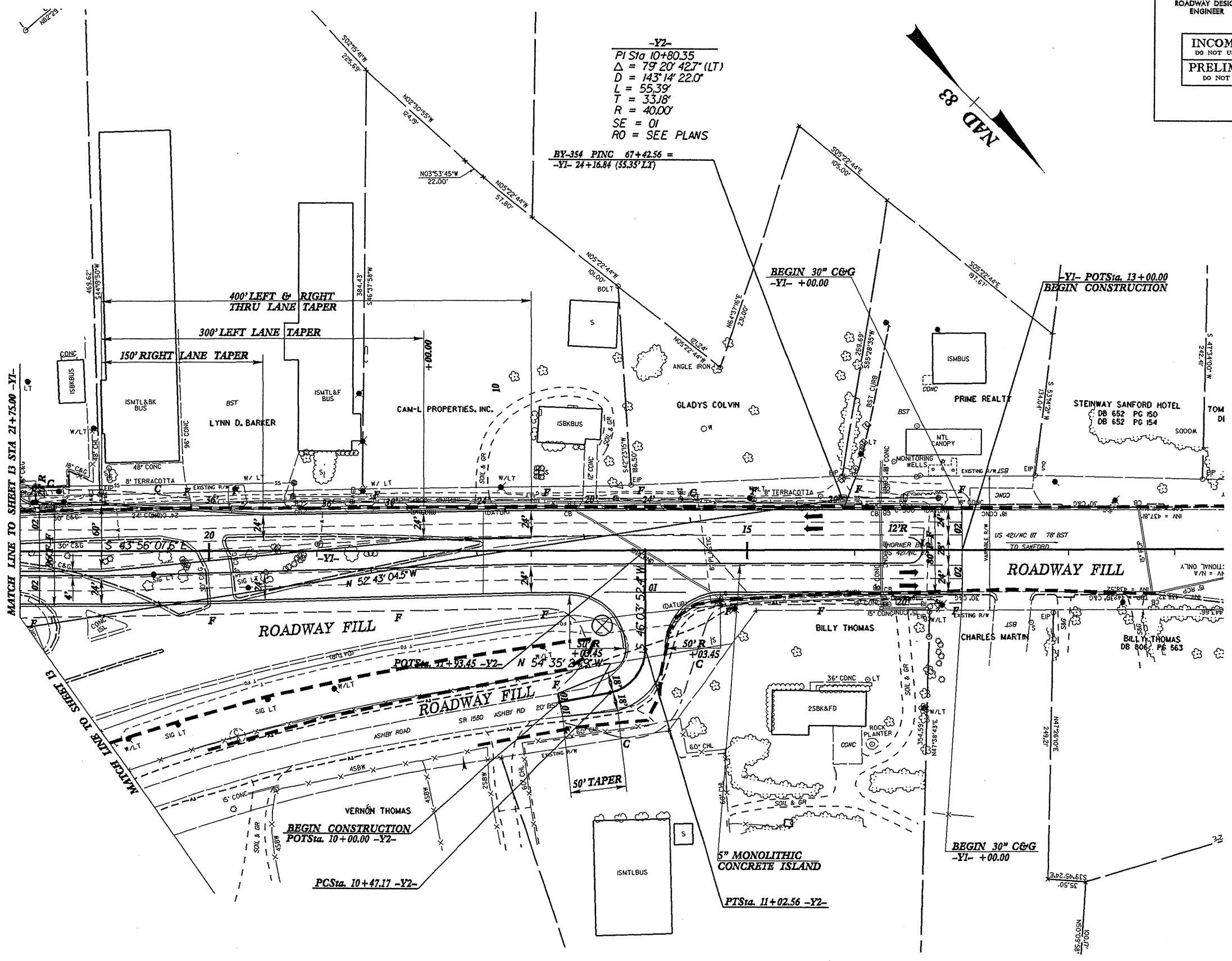
24-MAY-2007 14:03  
 d:\projects\2417c\geo-rdwj-lee\cadd\geo\ch\planprof\copy of r-2417c-geo.rwy.013.psh13.dgn  
 burris AL 06/22/07

JERRY B. MADDOX, ET AL

NC 87		20546	
7285		315	
13100		500	
US 421		5138	
5800		9200	
10600		3200	
2006		5600	
2030		23985	
US 421/NC 87		40600	
		SR 1136	
		8985	
		16000	

**NOTES:**  
 1) SEE SHEET 25 AND 26 FOR -Y- PROFILE  
 2) SEE SHEET 26 AND 27 FOR -Y1- PROFILE  
 3) SEE SHEET 27 FOR -Y3- PROFILE

PROJECT REFERENCE NO. <b>R-2417C</b>		SHEET NO. <b>14</b>					
RW SHEET NO.							
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER					
<table border="1"> <tr> <td colspan="2">INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION</td> </tr> <tr> <td colspan="2">PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td> </tr> </table>				INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION							
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION							



**NOTES:**

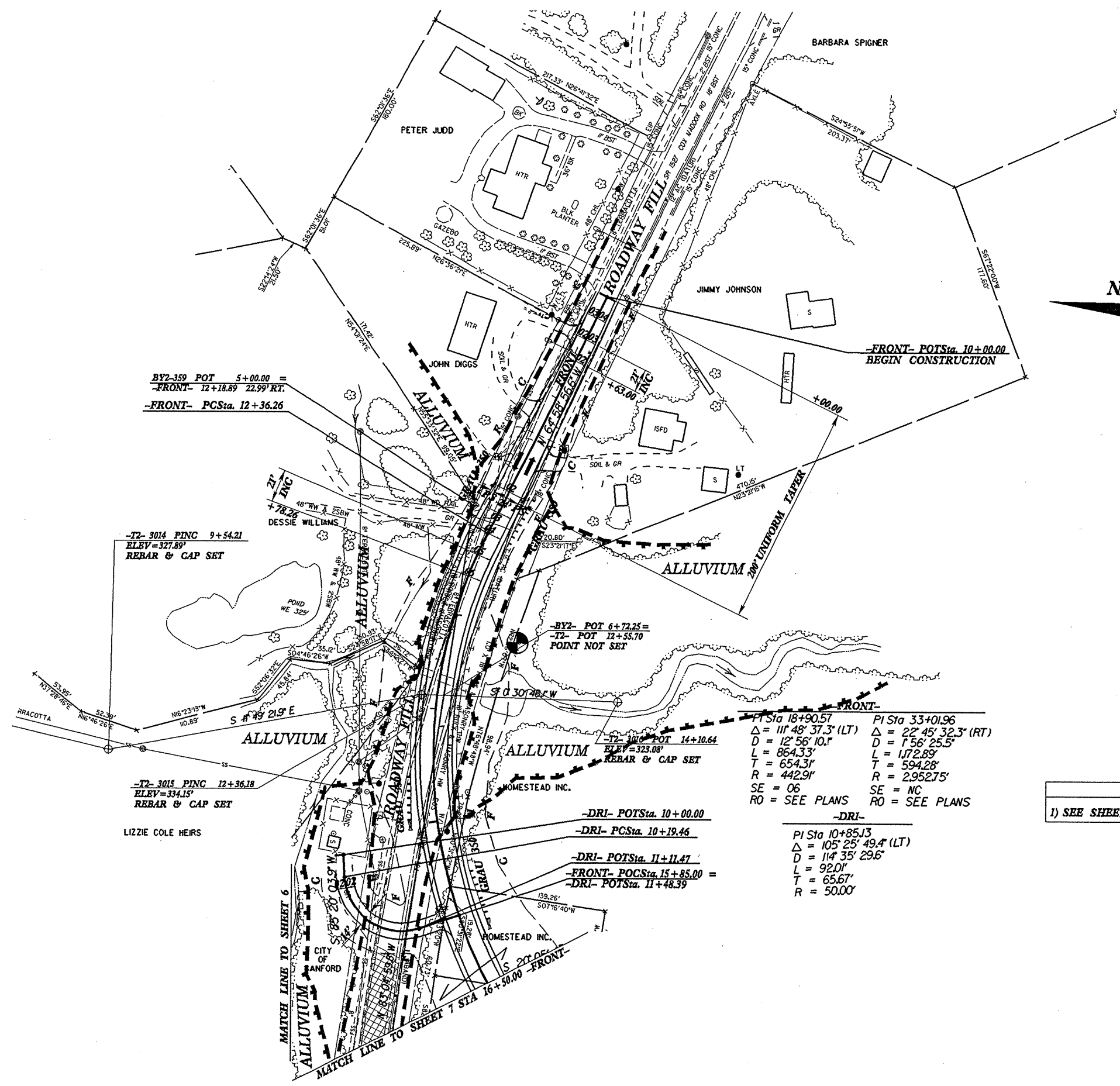
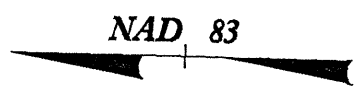
- 1) SEE SHEET 25 FOR -Y1- PROFILE
- 2) SEE SHEET 33 FOR -Y2- PROFILE

REVISIONS

22 JAN-2007 09:38  
 C:\cadd\geotech\planproj\R2417c\_GEO.lnw\_014\_psh14.dgn  
 lee co\cadd\geotech\planproj\R2417c\_GEO.lnw\_014\_psh14.dgn  
 lee co\cadd\geotech\planproj\R2417c\_GEO.lnw\_014\_psh14.dgn

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>15</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

REVISIONS



BY2-359 POT 5+00.00 =  
 -FRONT- 12+18.89 22.99 RT.  
 -FRONT- PCSta. 12+36.26

-T2- 3014 PING 9+54.21  
 ELEV=327.89'  
 REBAR & CAP SET

-BY2- POT 6+72.25 =  
 -T2- POT 12+55.70  
 POINT NOT SET

-T2- 3015 PING 12+36.18  
 ELEV=334.15'  
 REBAR & CAP SET

PI Sta 18+90.57      PI Sta 33+01.96  
 $\Delta = 111^{\circ} 48' 37.3''$  (LT)       $\Delta = 22^{\circ} 45' 32.3''$  (RT)  
 D = 12' 56' 10.1"      D = 1' 56' 25.5"  
 L = 864.33'      L = 1,172.89'  
 T = 654.31'      T = 594.28'  
 R = 442.91'      R = 2,952.75'  
 SE = 06      SE = NC  
 RO = SEE PLANS      RO = SEE PLANS

-DRI-  
 PI Sta 10+85.13  
 $\Delta = 105^{\circ} 25' 49.4''$  (LT)  
 D = 11' 35' 29.6"  
 L = 92.01'  
 T = 65.67'  
 R = 50.00'

**NOTE:**  
 1) SEE SHEET 27 FOR -FRONT- PROFILE

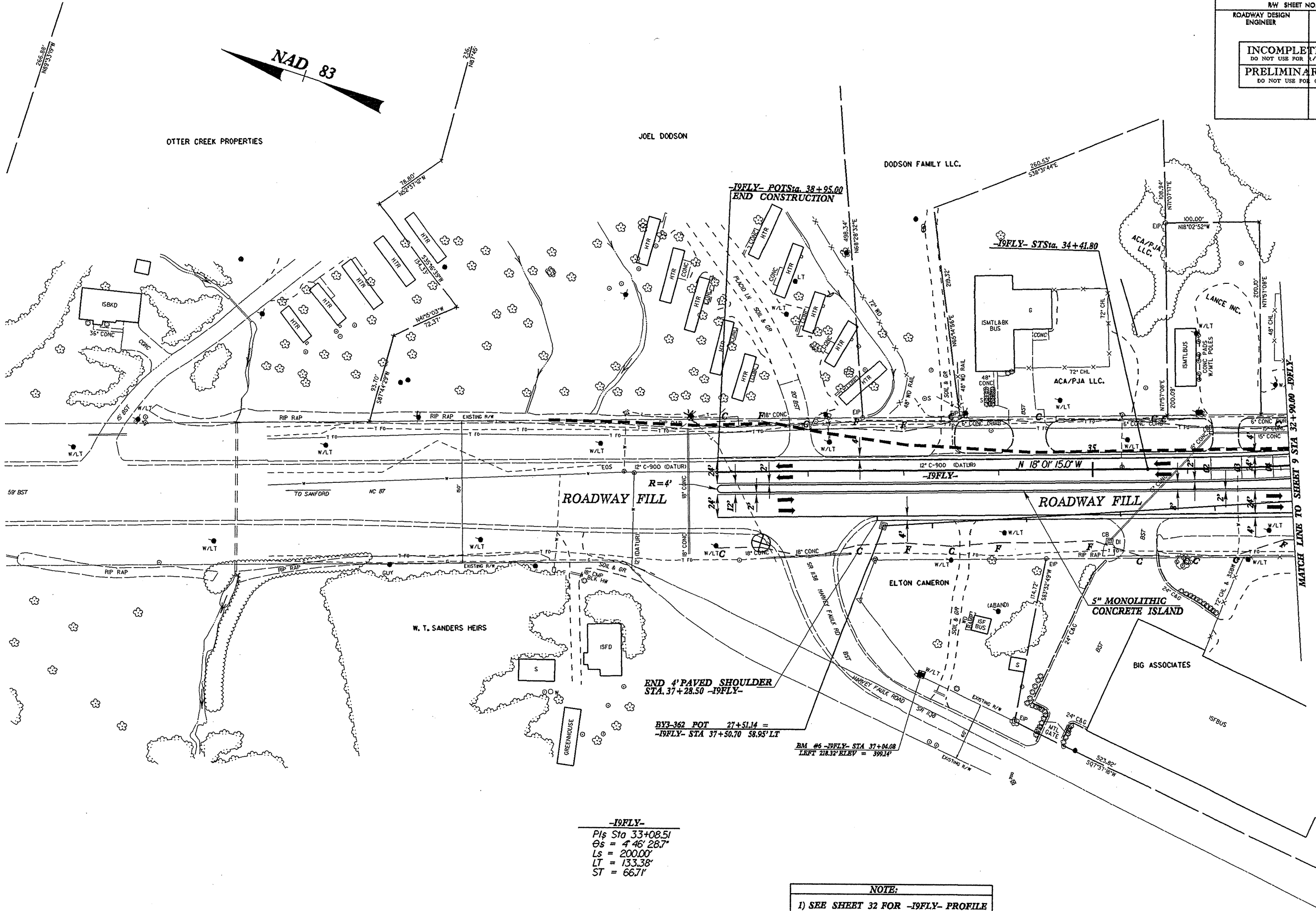
22-JAN-2007 09:29  
 C:\projects\NR2417c\cadd\dwg\lee co\cadd\geot\ch\plan\pr\NR2417c\_06D\_rnv\_015\_psh15.dgn  
 502'04'00"W

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>16</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99

REVISIONS

22-JAN-2007 09:36  
 dk\_projects\2417c\geo\_rdwj\_lee\c\codd-geotech\p\m\prcf\NR2417c\_GEO\_rnv\_016\_psh16.dgn  
 At 11:21:10



**-19FLY-**  
 PIs Sta 33+08.51  
 Os = 4' 46" 28.7"  
 Ls = 200.00'  
 LT = 133.38'  
 ST = 66.71'

**END 4' PAVED SHOULDER**  
 STA. 37+28.50 -19FLY-

**BY3-362 POT** 27+51.14 =  
 -19FLY- STA 37+50.70 58.95° LT

**BM #6 -19FLY- STA 37+04.08**  
 LEFT 218.32' ELEV = 399.14'

**NOTE:**  
 1) SEE SHEET 32 FOR -19FLY- PROFILE

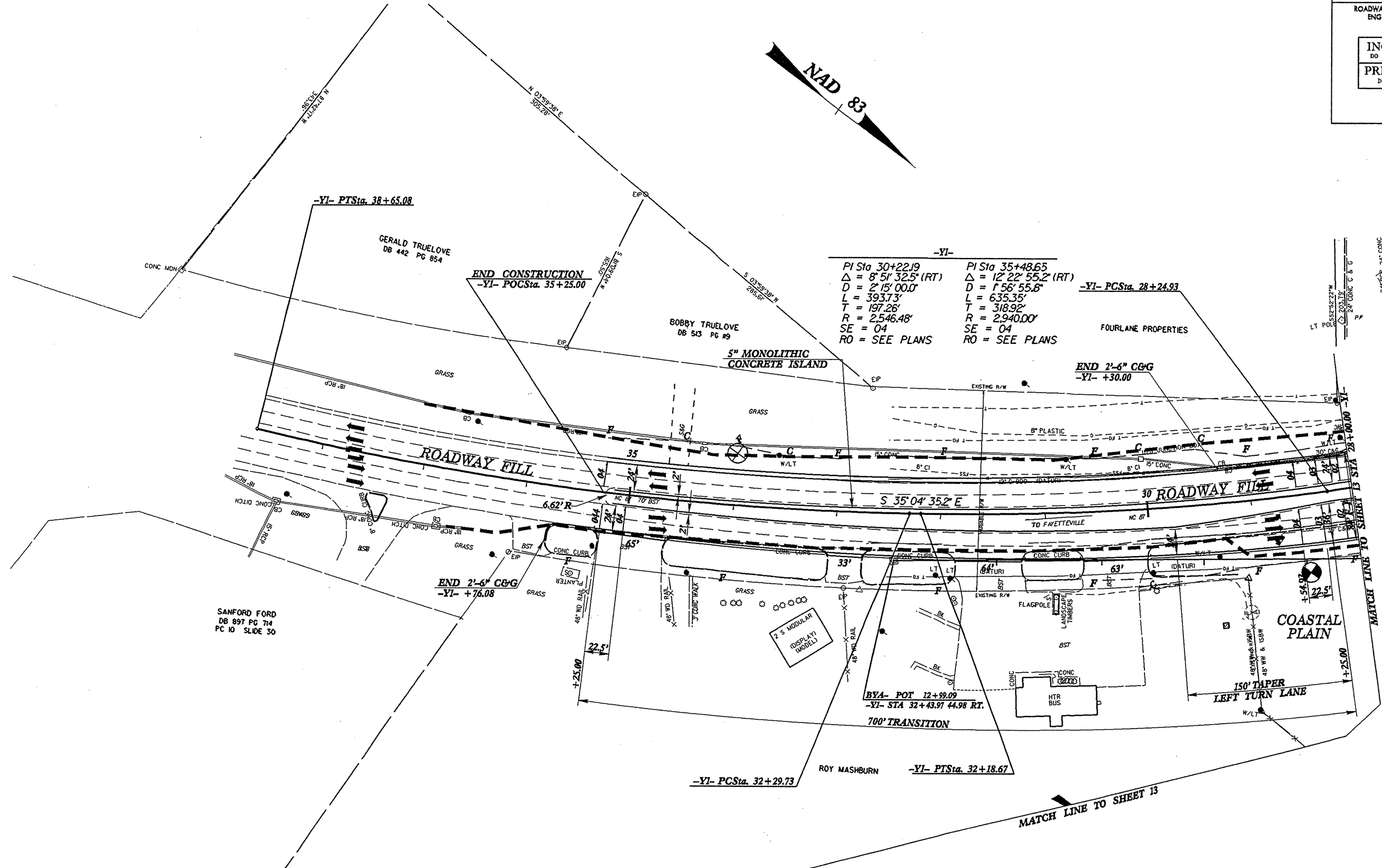
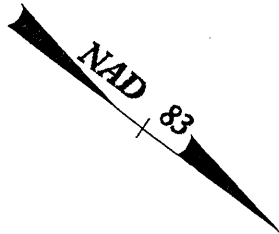
MATCH LINE TO SHEET 9 STA 32+90.00 -19FLY-





8/17/99

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>18</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



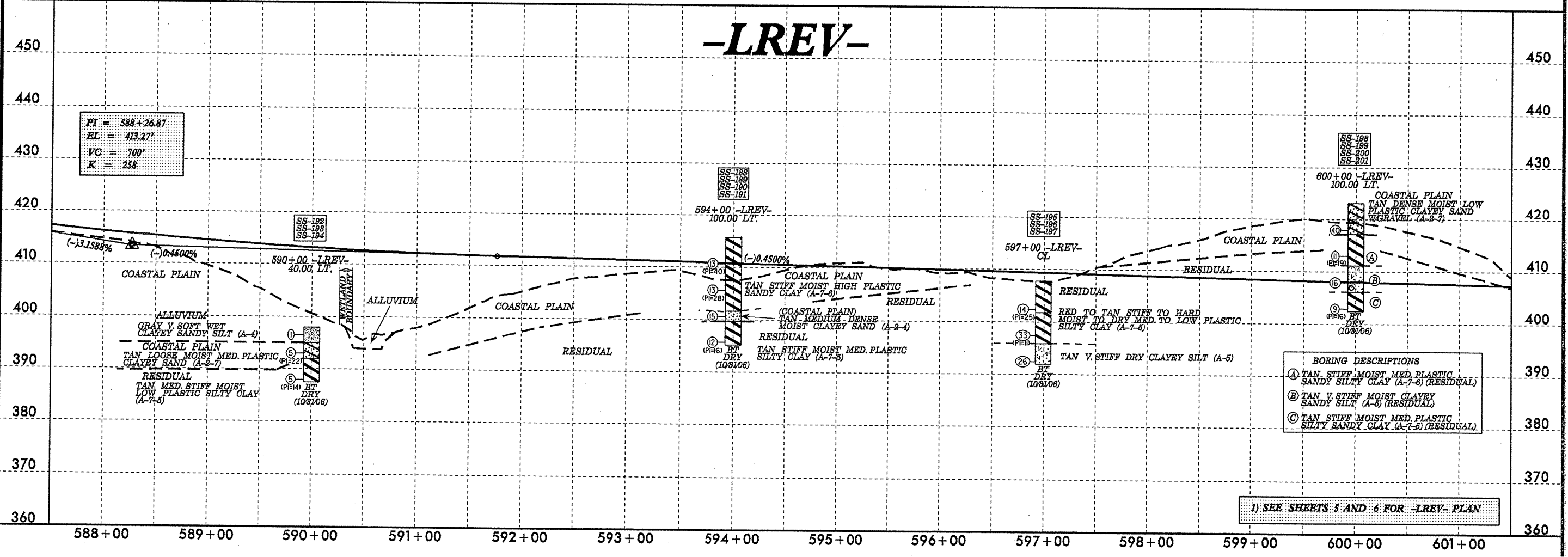
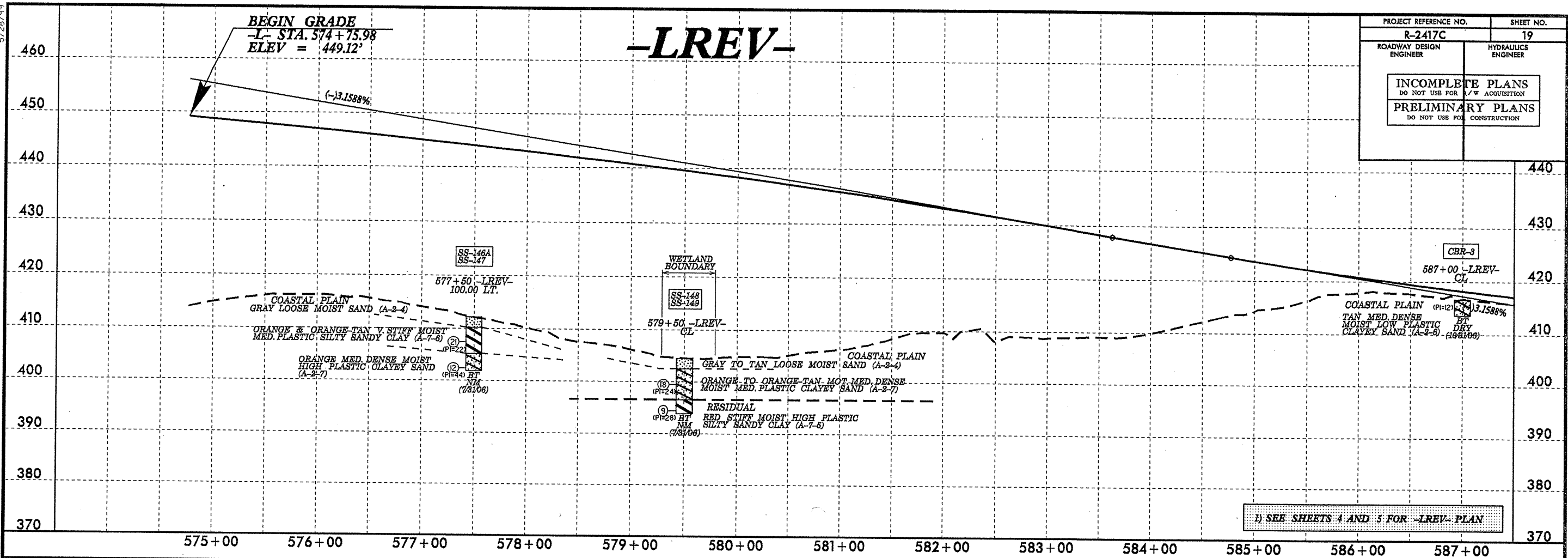
REVISIONS

22-JAN-2007 09:34  
 c:\projects\2417\c\geo\_rdwj\_lee\c\add-geot\ch\planprof\NR2417.c\_GEO\_mv\_018\_psh18.dgn  
 include AT GEN221410

**NOTES:**  
 1) SEE SHEET 26 FOR -YI- PROFILE

5/28/99

PROJECT REFERENCE NO.		SHEET NO.
R-2417C		19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION		

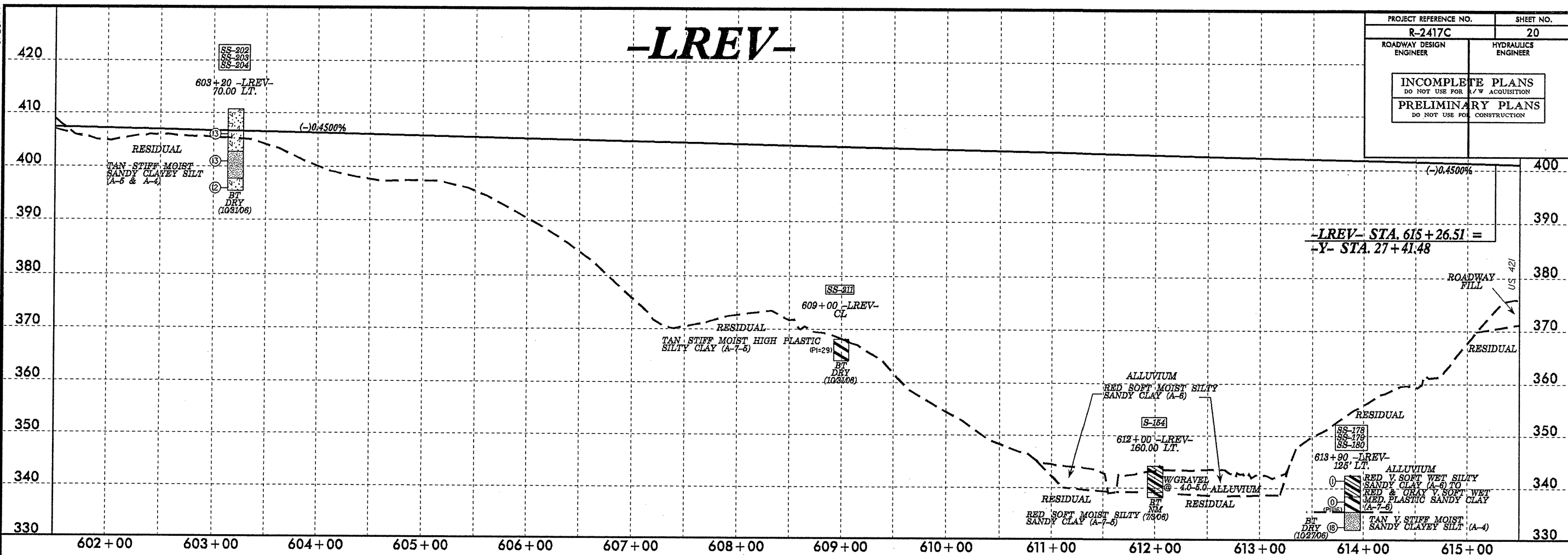


22-JAN-2007 07:38  
26:\projects\2417c\geo\rdwy\lee co\cadd\geotech\plan\prof\2417c-geo-pf1-e11-pshe35.dgn

5/28/99

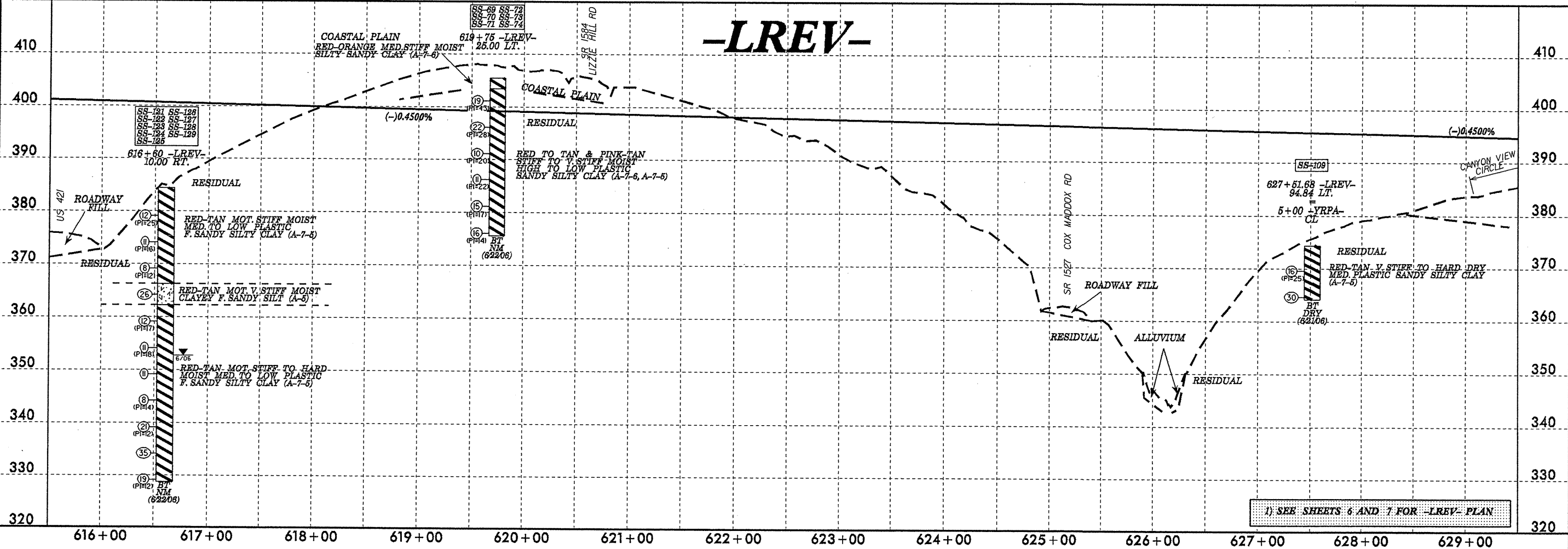
PROJECT REFERENCE NO.		SHEET NO.	
R-2417C		20	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

# -LREV-



$$\begin{aligned} \text{-LREV- STA. 615 + 26.51 =} \\ \text{-Y- STA. 27 + 41.48} \end{aligned}$$

# -LREV-



1) SEE SHEETS 6 AND 7 FOR -LREV- PLAN

22-JAN-2007 07:39  
C:\projects\2417c\geo\rdwy-lee\co\ceadd\geotech\plan\prof\2417c-geo-pf1-all-esta35.dgn  
Inch:ft  
Scale: 1"=10'

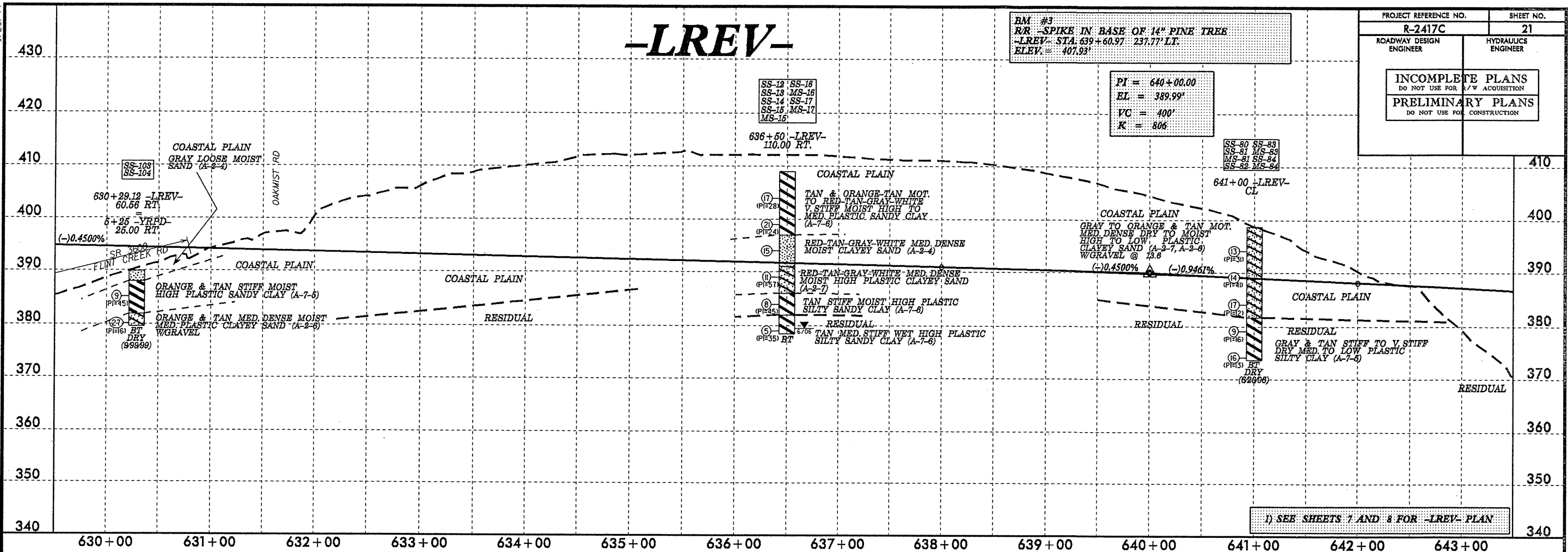
5/28/99

# -LREV-

BM #3  
 R/R - SPIKE IN BASE OF 14" PINE TREE  
 -LREV- STA: 639+60.97 237.77' LT.  
 ELEV. = 407.93'

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>21</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

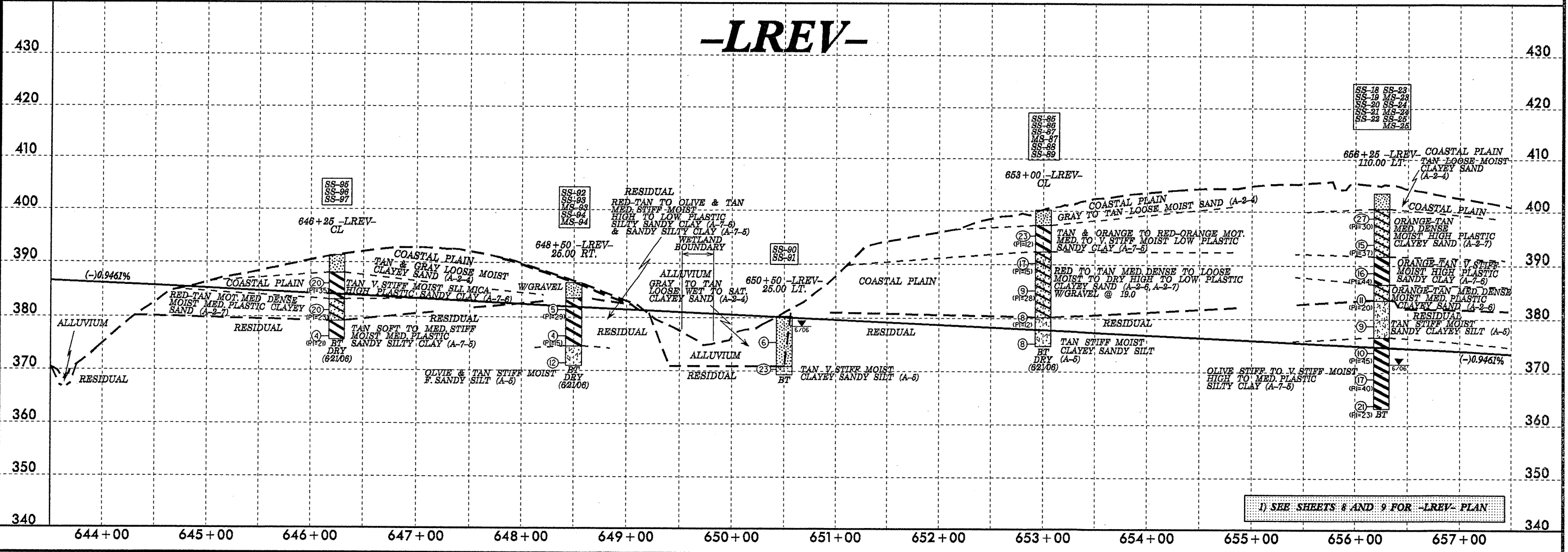
PI = 640+00.00  
 EL = 389.99'  
 VC = 400'  
 K = 806



# -LREV-

SS-85  
 SS-86  
 SS-87  
 MS-88  
 MS-89

SS-18 SS-23  
 SS-19 MS-28  
 SS-20 SS-24  
 SS-21 MS-28  
 SS-22 SS-25  
 MS-26



1) SEE SHEETS 8 AND 9 FOR -LREV- PLAN

22-JAN-2007 09:10  
 c:\pdd\geotech\planprof\2417c-geo-pf1.all-plot35.dgn  
 11/11/07

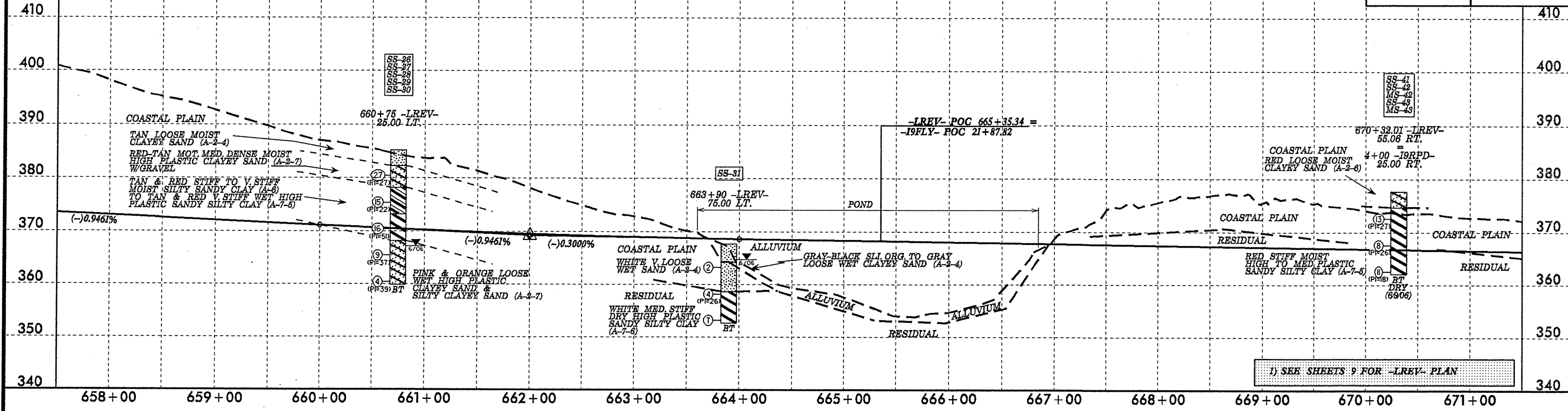
5/28/99

PROJECT REFERENCE NO.		SHEET NO.	
R-2417C		22	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

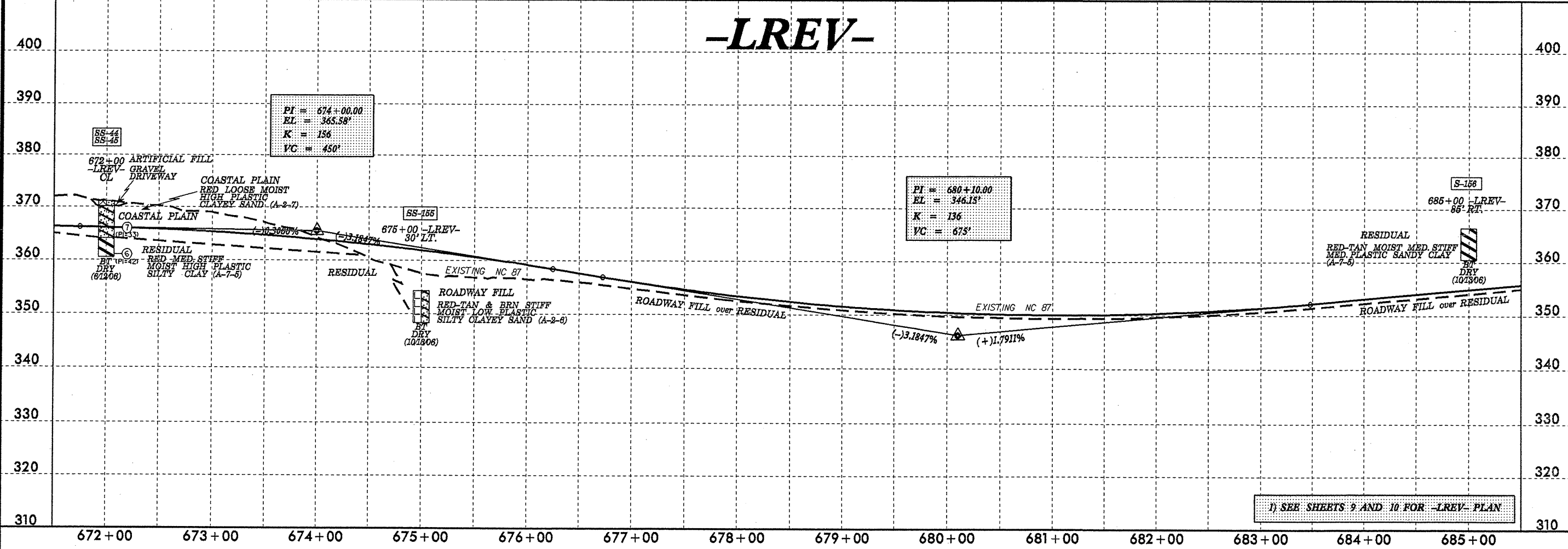
BM# 4  
R/R SPIKE IN BASE OF 24" GUM TREE  
-LREV- STA. 659+14.05 533.83' LT  
ELEV. = 396.42'

PI = 662+00.00  
EL = 369.18'  
K = 619  
VC = 400'

# -LREV-



# -LREV-

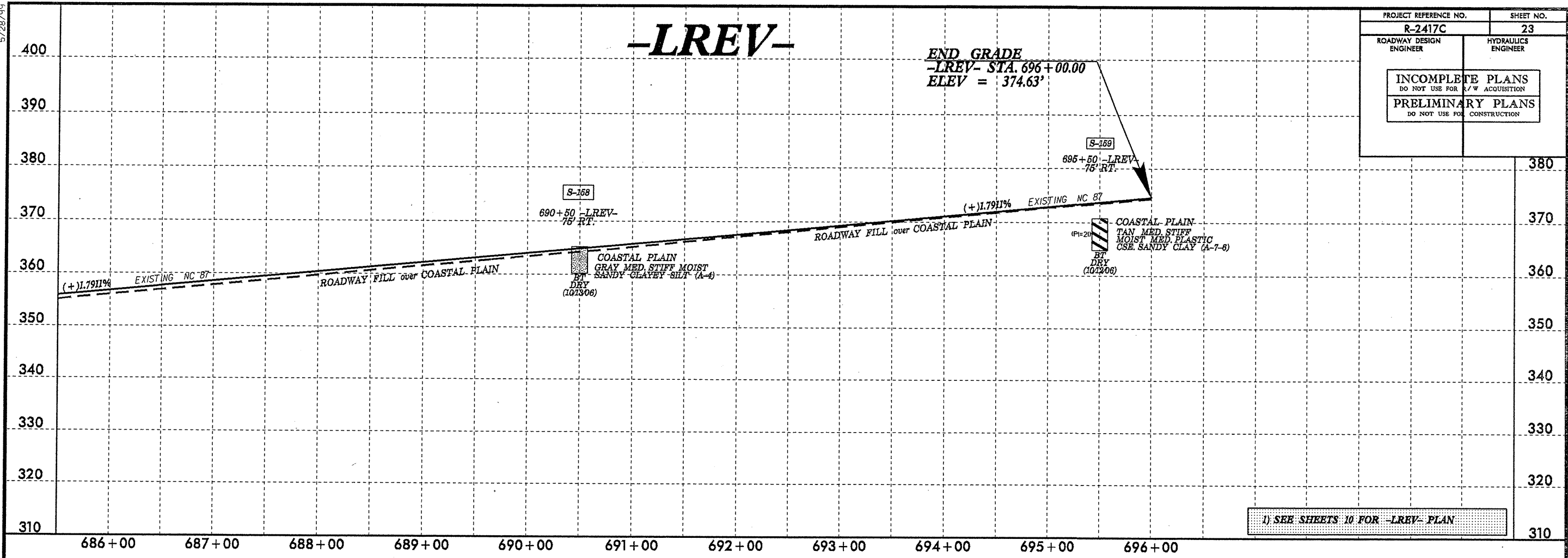


22-JAN-2007 07:41  
C:\projects\p\planprof\2417c-geo-pf1-ell-psiho35.dgn  
Lee co\cadd\geotech\planprof\2417c-geo-pf1-ell-psiho35.dgn

5/28/99

# -LREV-

PROJECT REFERENCE NO. R-2417C	SHEET NO. 23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

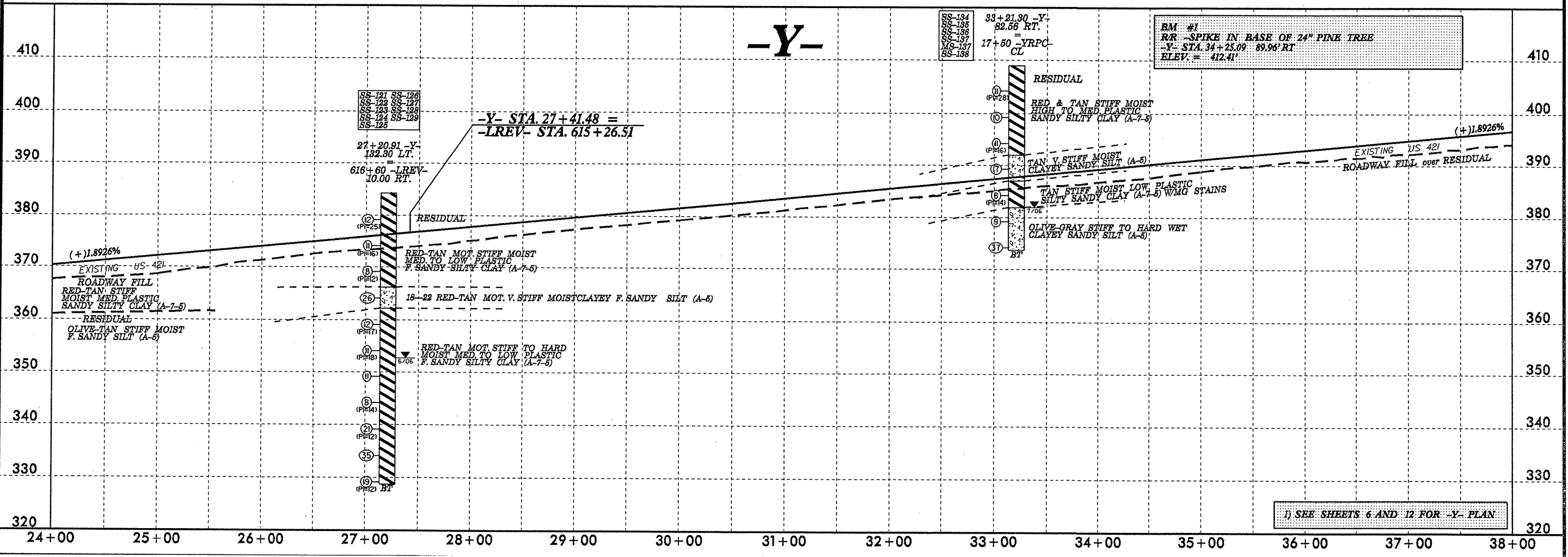
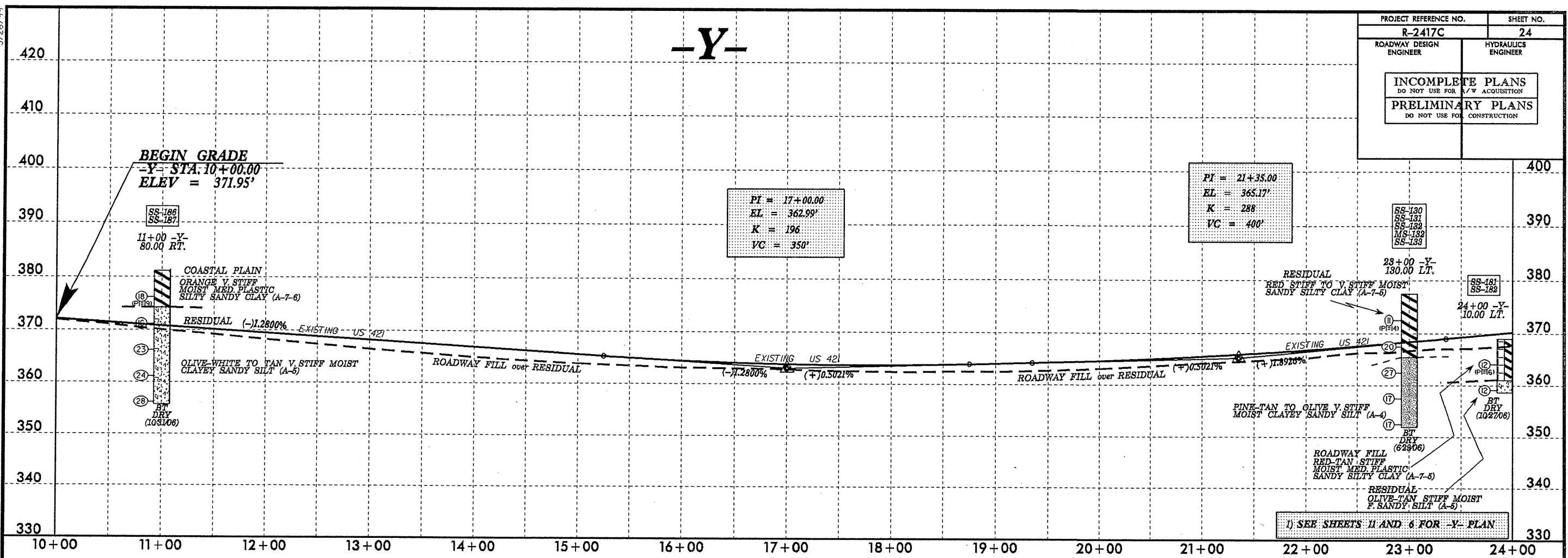


1) SEE SHEETS 10 FOR -LREV- PLAN

23-JAN-2007 07:42  
C:\projects\2417c\dwg\lee co\cadd-geotech\planprof\2417c-geo-pf1-all-psh35.dgn

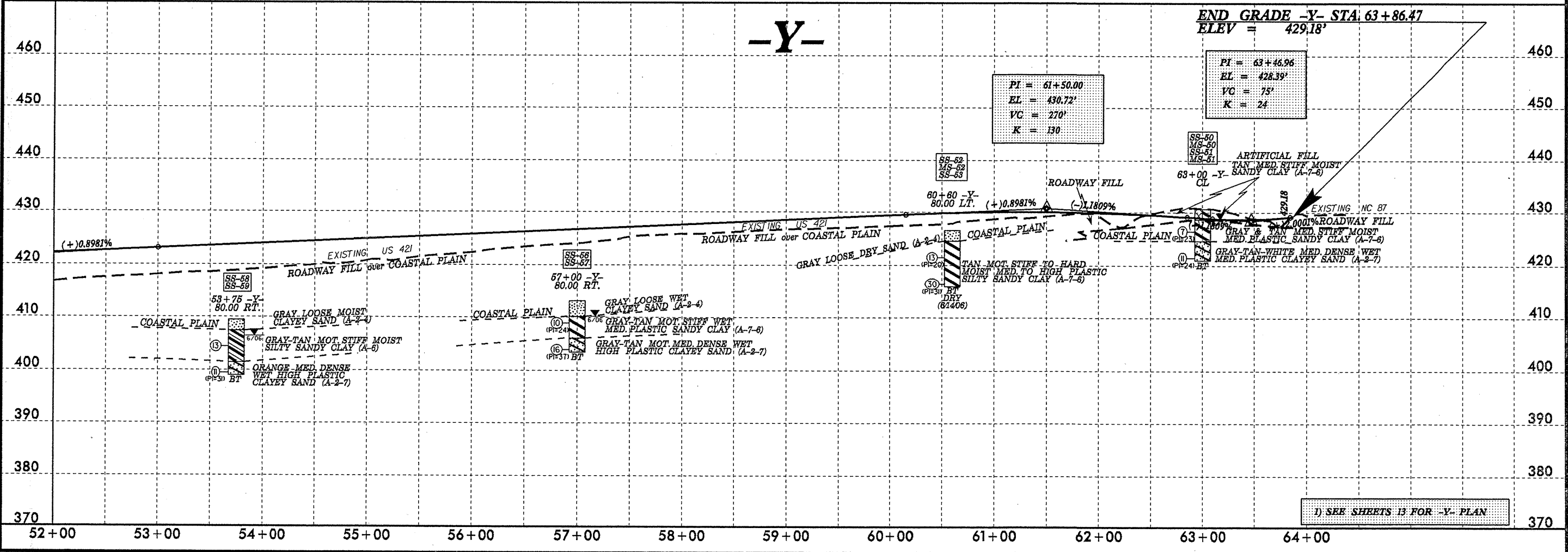
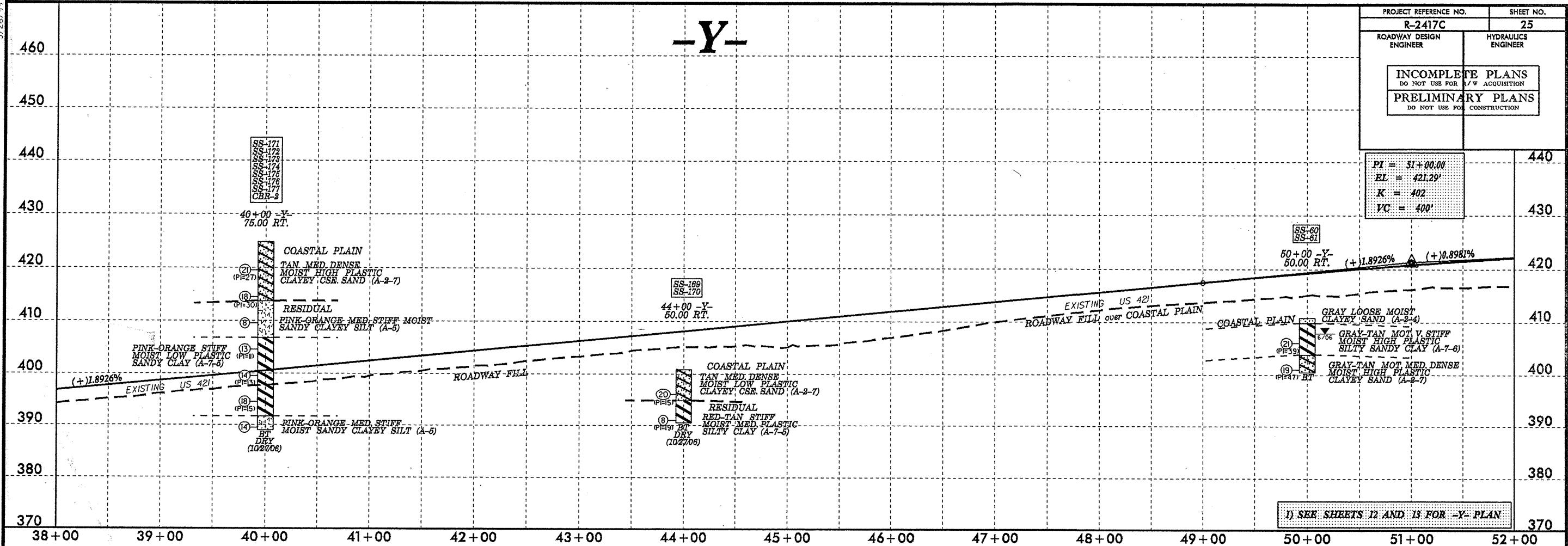
5/28/99  
25 JUN 2007 07:13  
C:\cadd\geotech\p\mproj\r-2417c-geo-pfi-ell.pshs35.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2417C	24
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-2417C		SHEET NO. 25	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

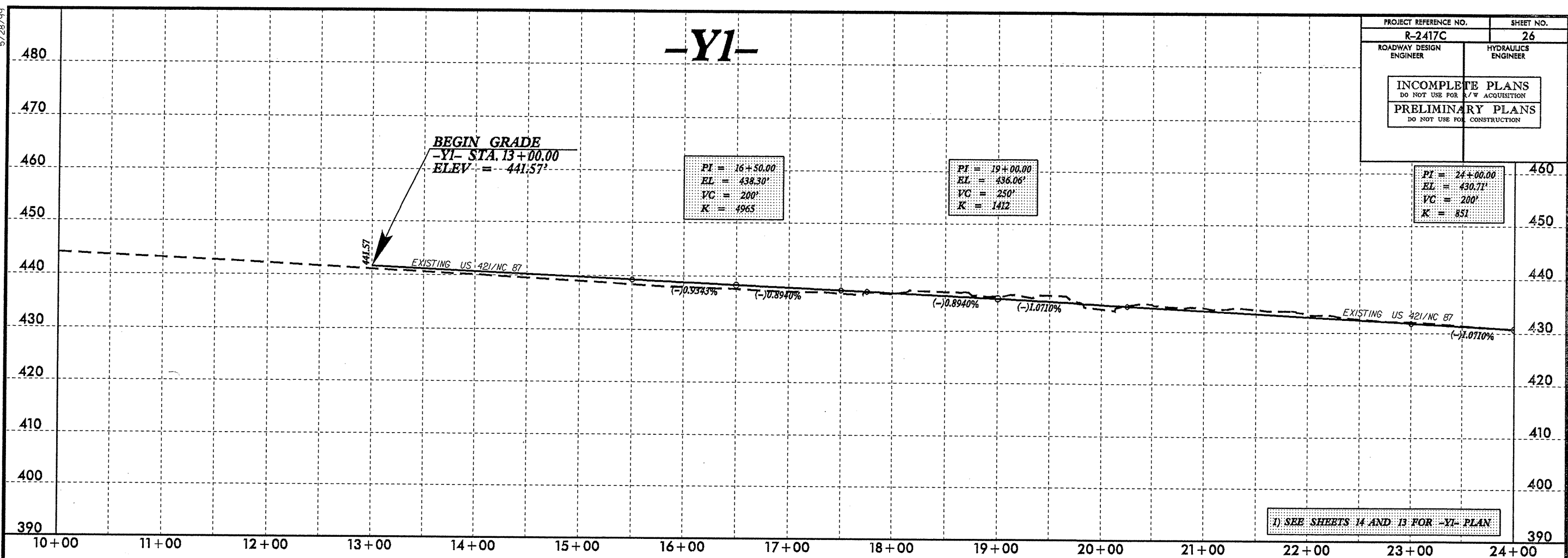


22-JAN-2007 07:43  
d:\projects\2417c\planprof\2417c-geo-pf-ell-psho35.dgn  
dwj-lee co\cadd\geotech\planprof\2417c-geo-pf-ell-psho35.dgn

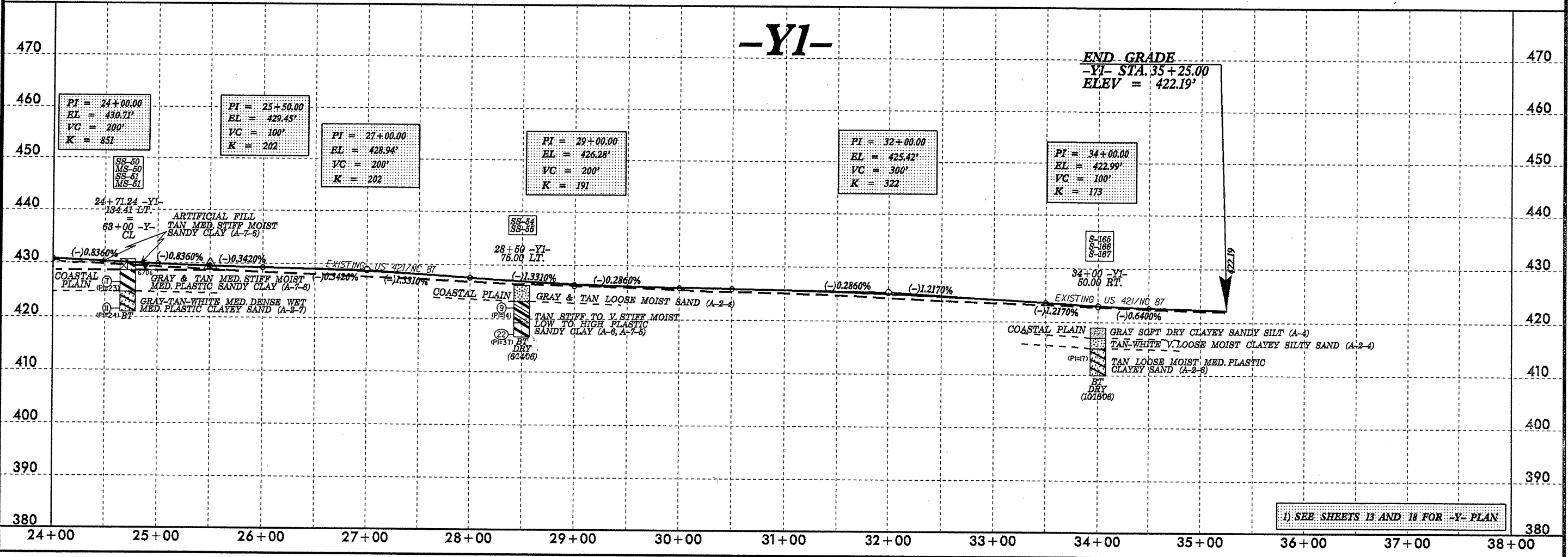


5/28/99

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>26</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



1) SEE SHEETS 14 AND 15 FOR -YI- PLAN



1) SEE SHEETS 13 AND 18 FOR -Y- PLAN

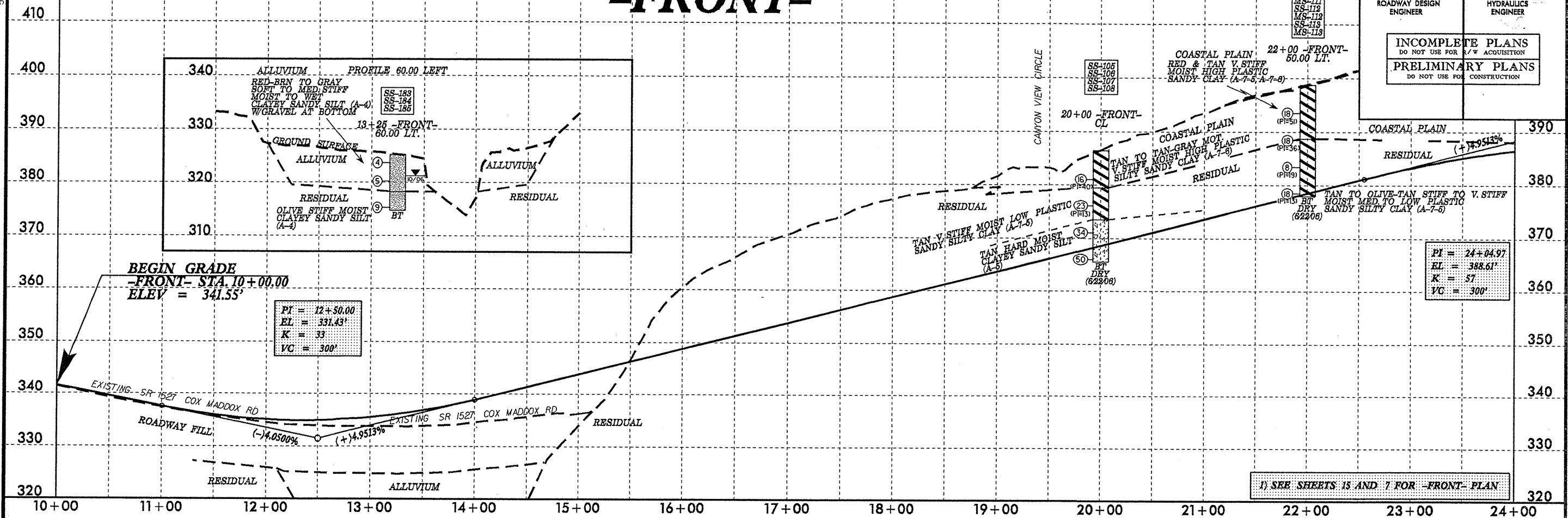
23-JAN-2007 07:14  
C:\cadd\geotech\p\amprof\R-2417c-geo-pf...ell\_psho35.dgn



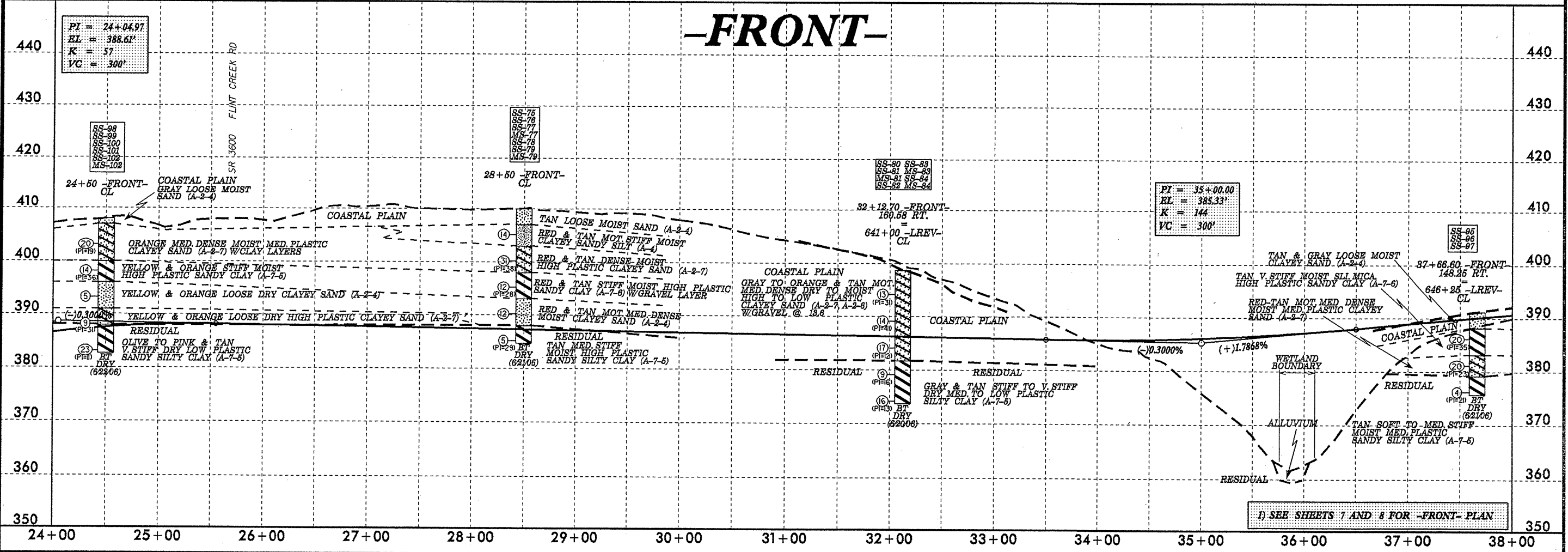
5/28/99

# -FRONT-

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>28</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



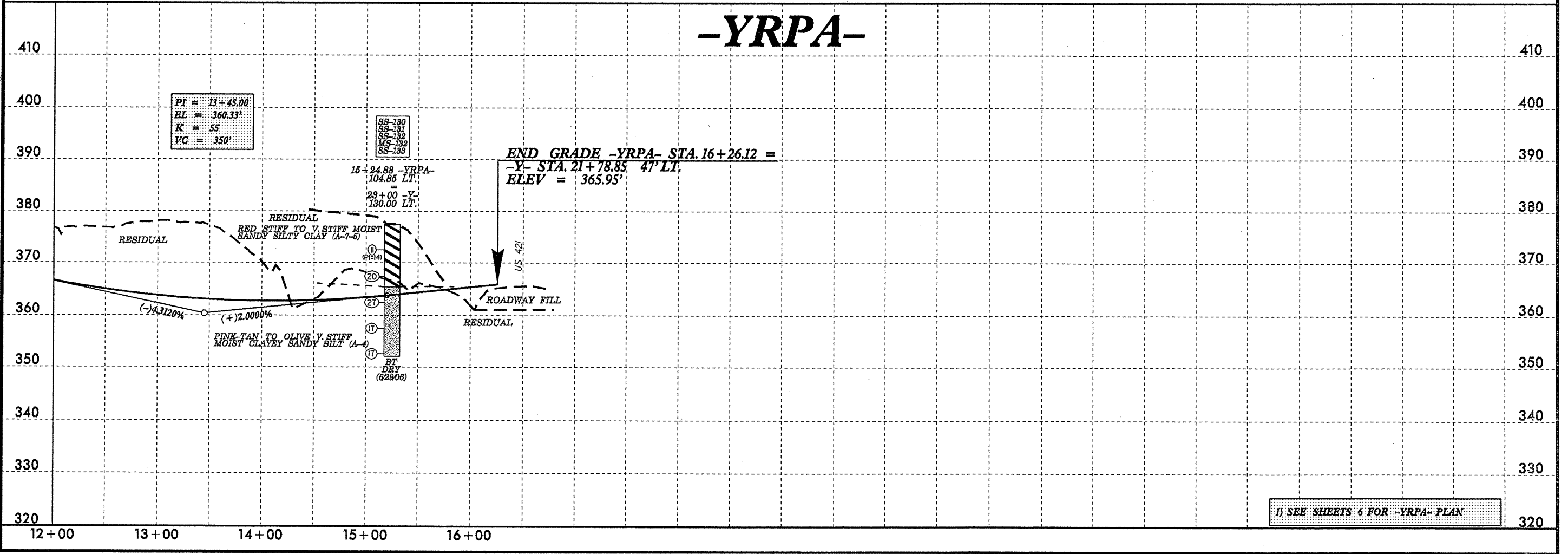
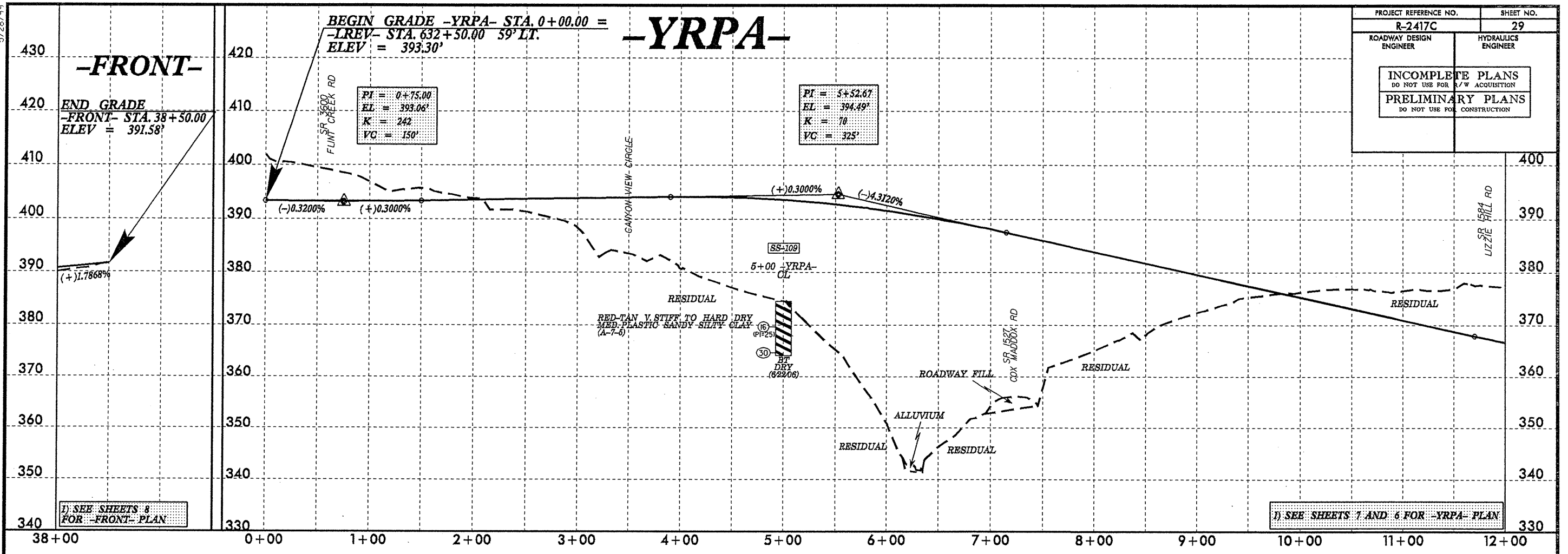
# -FRONT-



25-JAN-2007 07:45  
C:\cadd\geotech\p\mprof\vr2417c\_geo.pfi.all.psha35.dgn  
improvements at station 10+00

5/28/99

PROJECT REFERENCE NO. R-2417C	SHEET NO. 29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

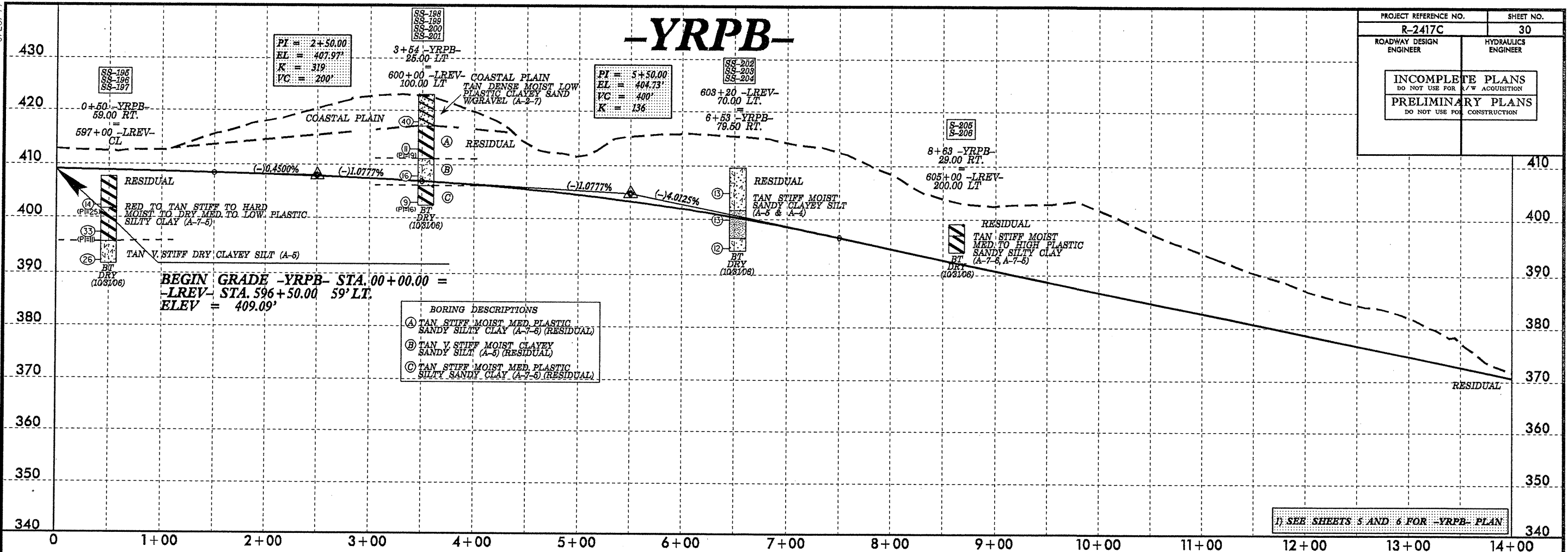


22-JAN-2007 07:16  
 d:\projects\2417c\2417c.dwg  
 ce\cadd\geotech\planprof\2417c\_geo\_pf1...all\_psho35.dgn

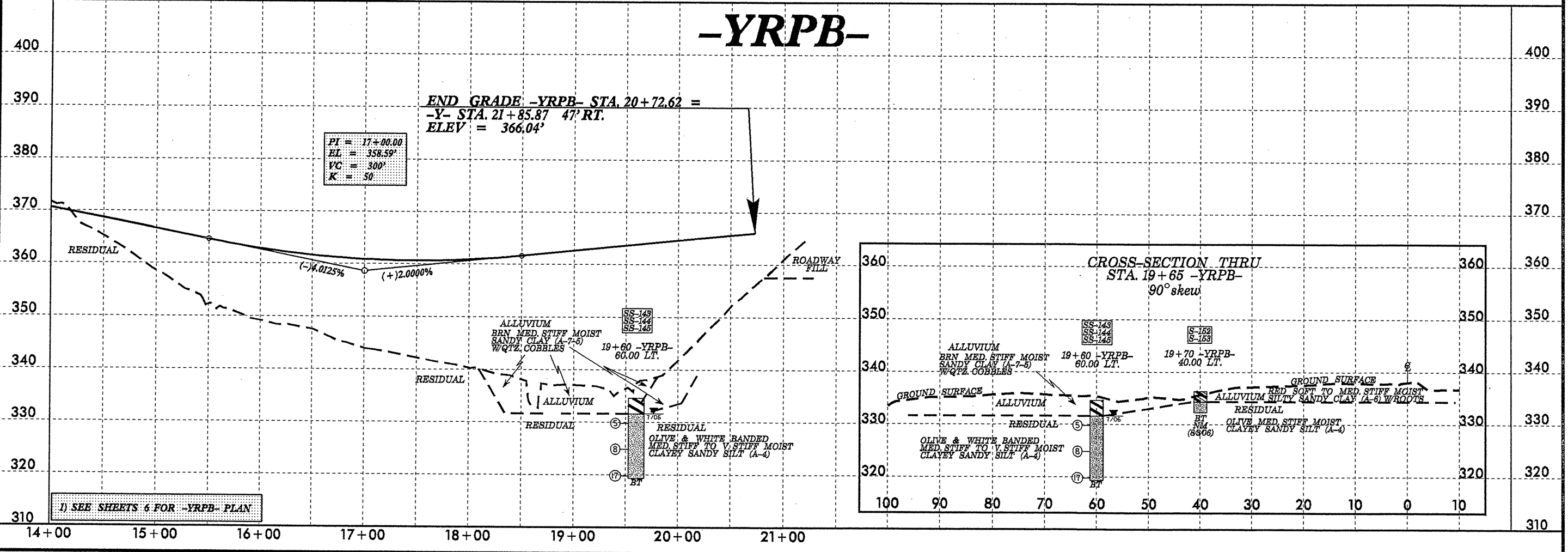
5/28/95

# -YRPB-

PROJECT REFERENCE NO. <b>R-2417C</b>	SHEET NO. <b>30</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



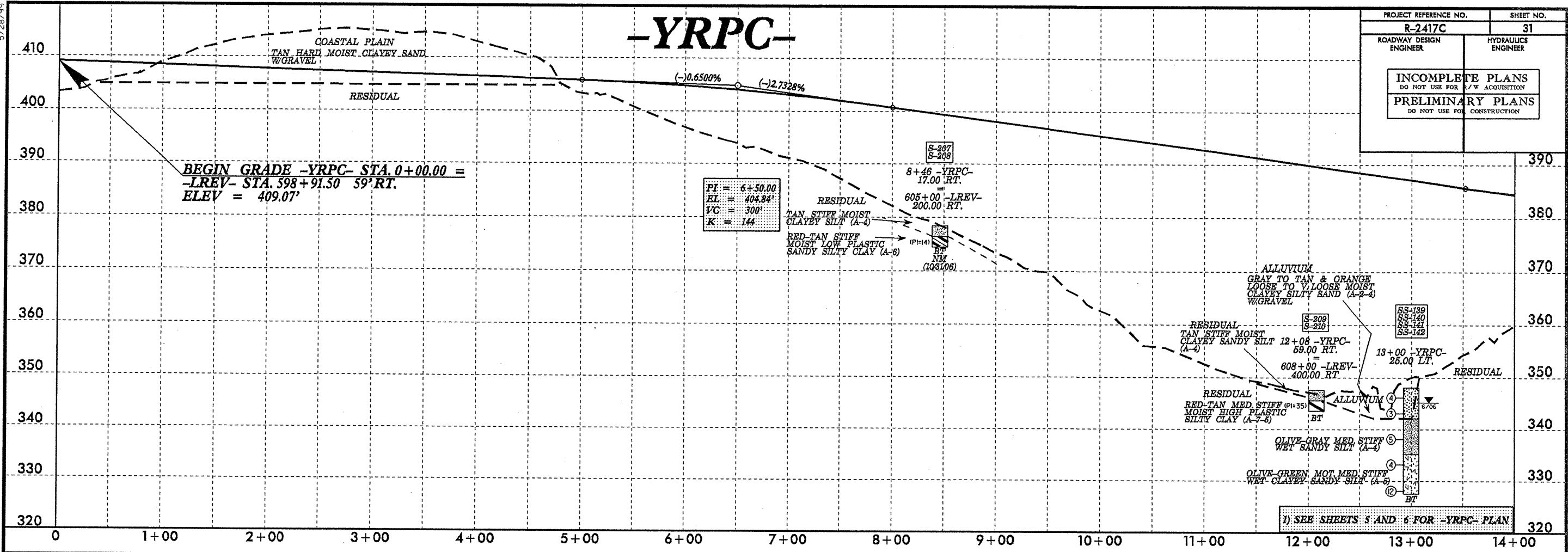
# -YRPB-



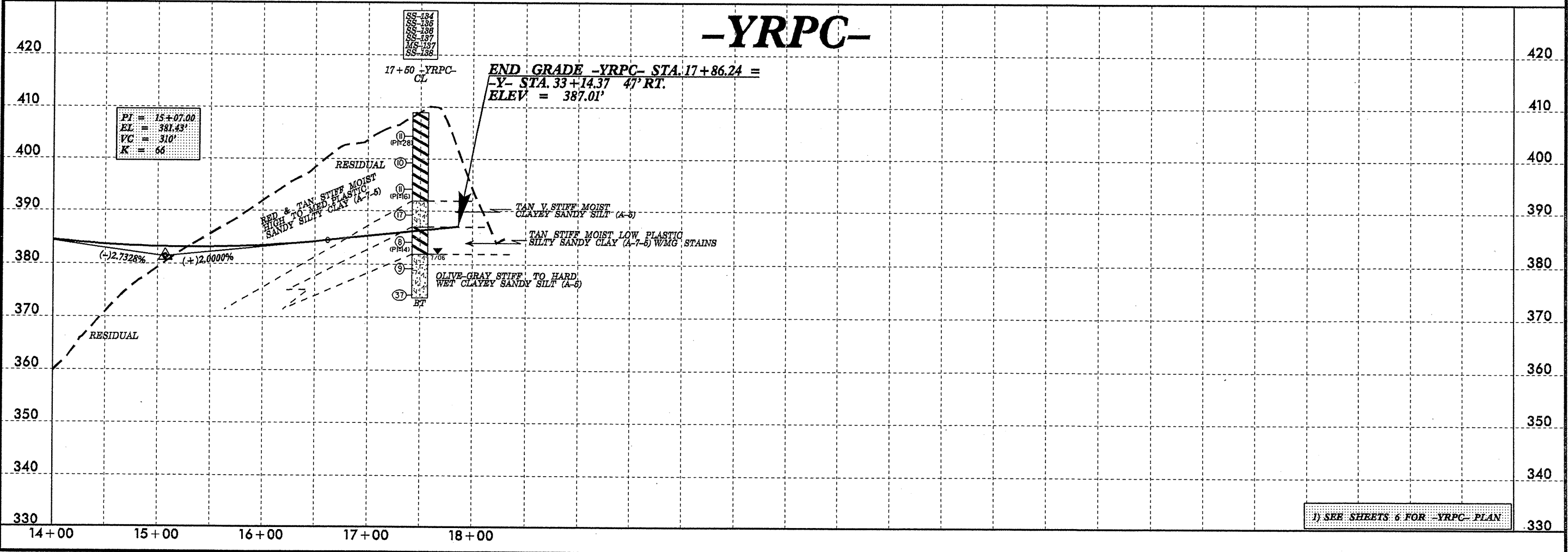
22-JAN-2007 07:45  
c:\cadd\geotech\planprof\2417c-geo-pf-1-11-1.pstha35.dgn

5/28/99

PROJECT REFERENCE NO. R-2417C	SHEET NO. 31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



1) SEE SHEETS 5 AND 6 FOR -YRPC- PLAN



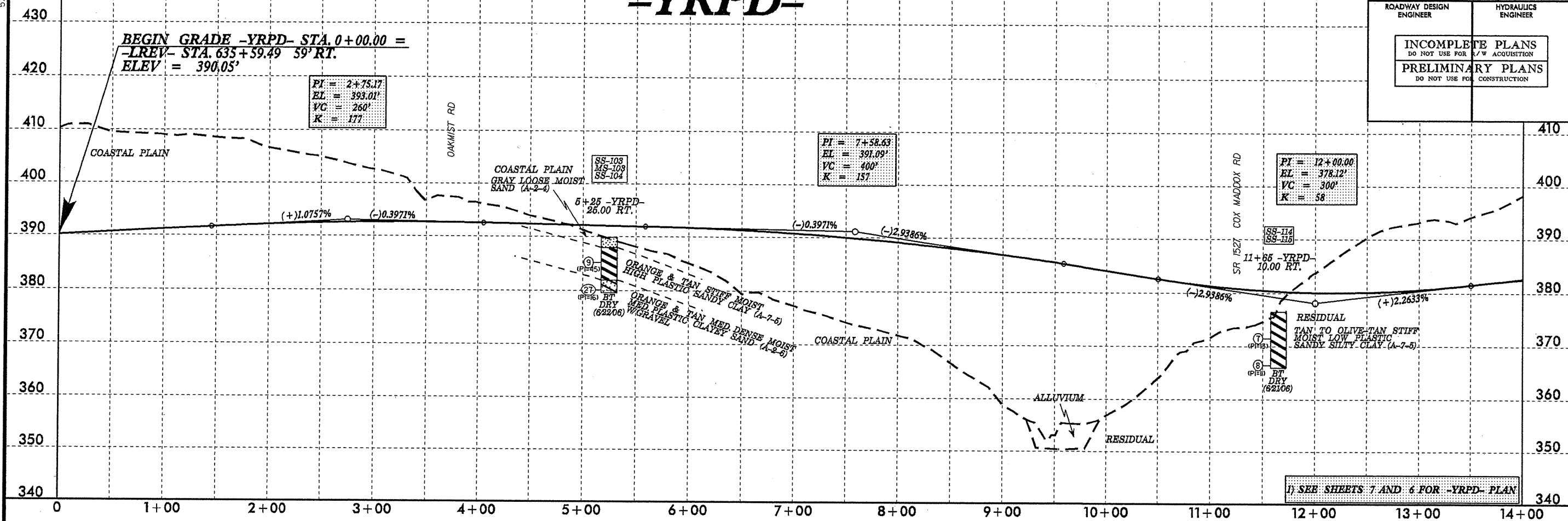
1) SEE SHEETS 6 FOR -YRPC- PLAN

22-JAN-2007 07:47  
C:\projects\2417c\dwg\lee co\cadd\geotech\planprof\2417c-geo-pf-eil-psho35.dgn

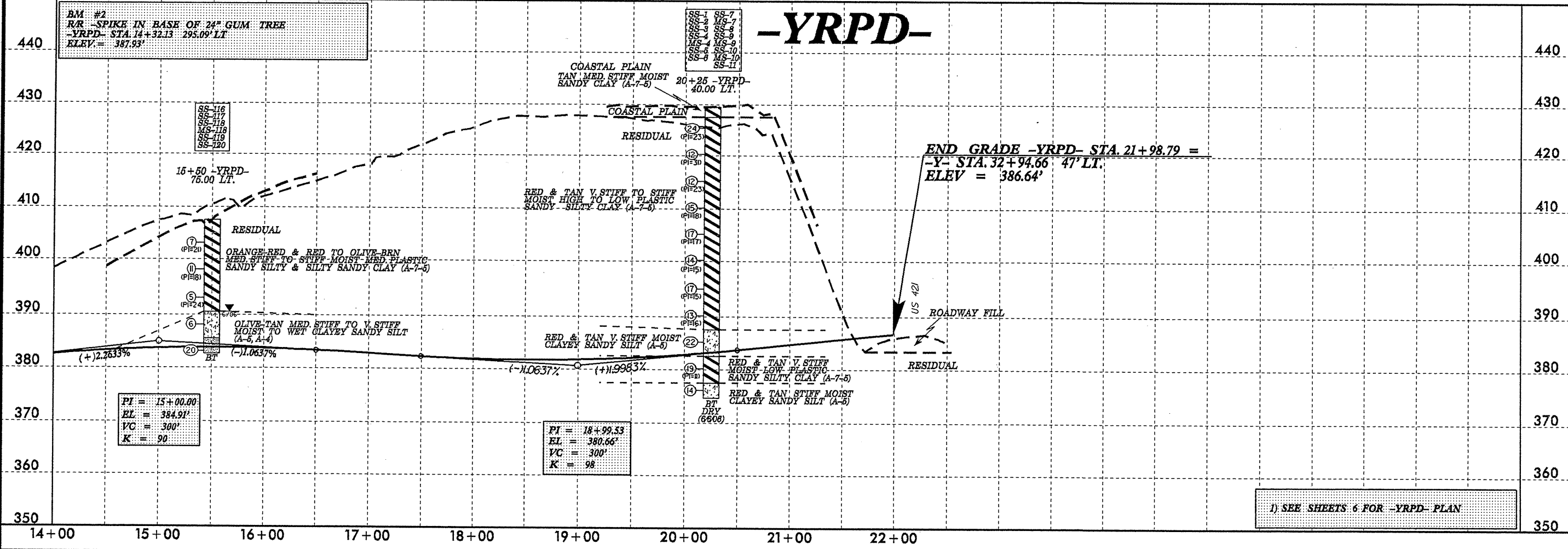
5/28/99

# -YRPD-

PROJECT REFERENCE NO. <b>R-2417C</b>		SHEET NO. <b>32</b>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION			
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			



# -YRPD-



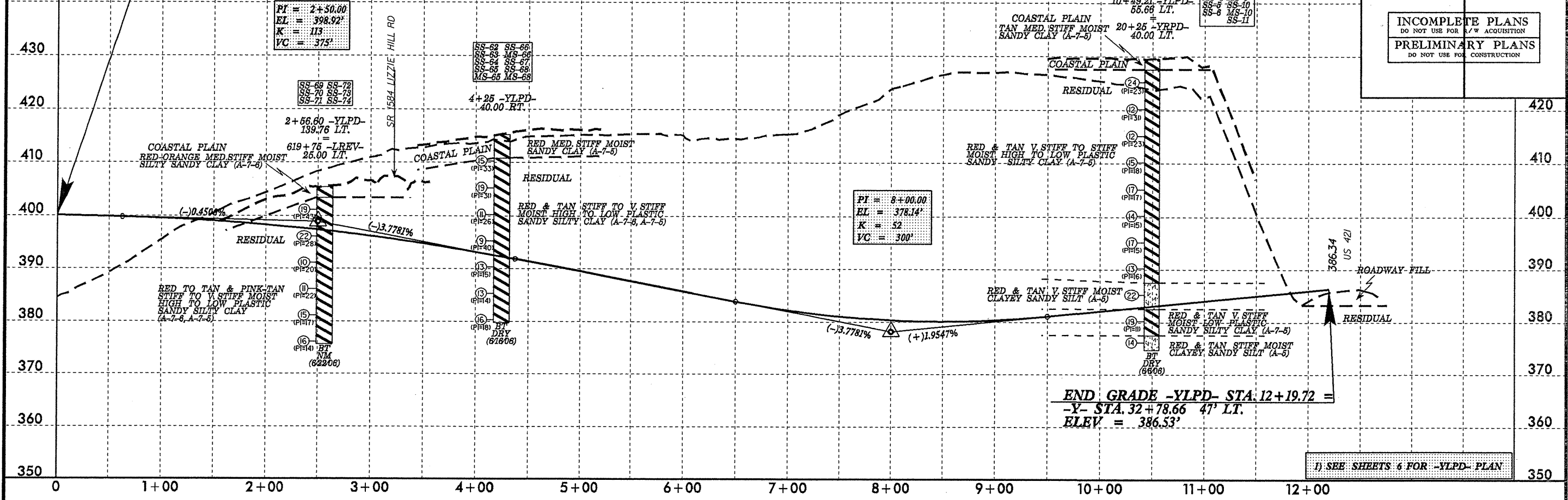
22-JAN-2007 01:17  
S:\Projects\2417C\2417C.dwg...lee co\caadd\geotech\planprcf\2417c-geo-pf-ell-pshe35.dgn

5/28/99

BEGIN GRADE -YLPD- STA. 0+00.00 =  
-LREV- STA. 616+60.00 59' RT.  
ELEV = 400.04'

# -YLPD-

PROJECT REFERENCE NO.	SHEET NO.
R-2417C	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

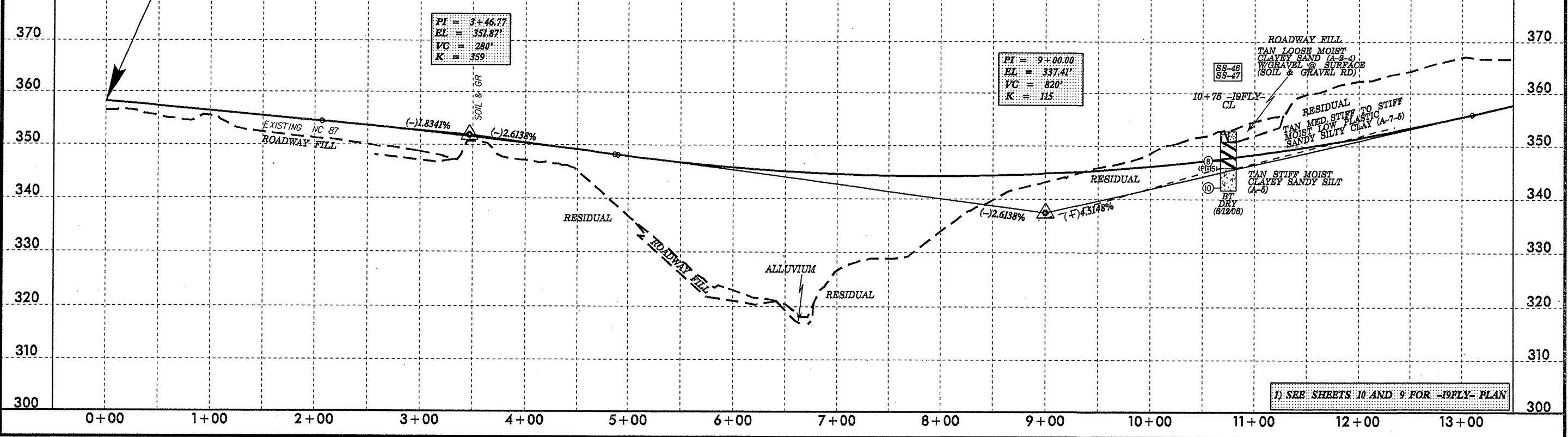


END GRADE -YLPD- STA. 12+19.72 =  
-Y- STA. 32+78.66 47' LT.  
ELEV = 386.53'

1) SEE SHEETS 6 FOR -YLPD- PLAN

# -I9FLY-

BEGIN GRADE -I9FLY- STA. 0+00.00 =  
-LREV- 687+10.99 47' LT.  
ELEV = 358.23'



1) SEE SHEETS 10 AND 9 FOR -I9FLY- PLAN

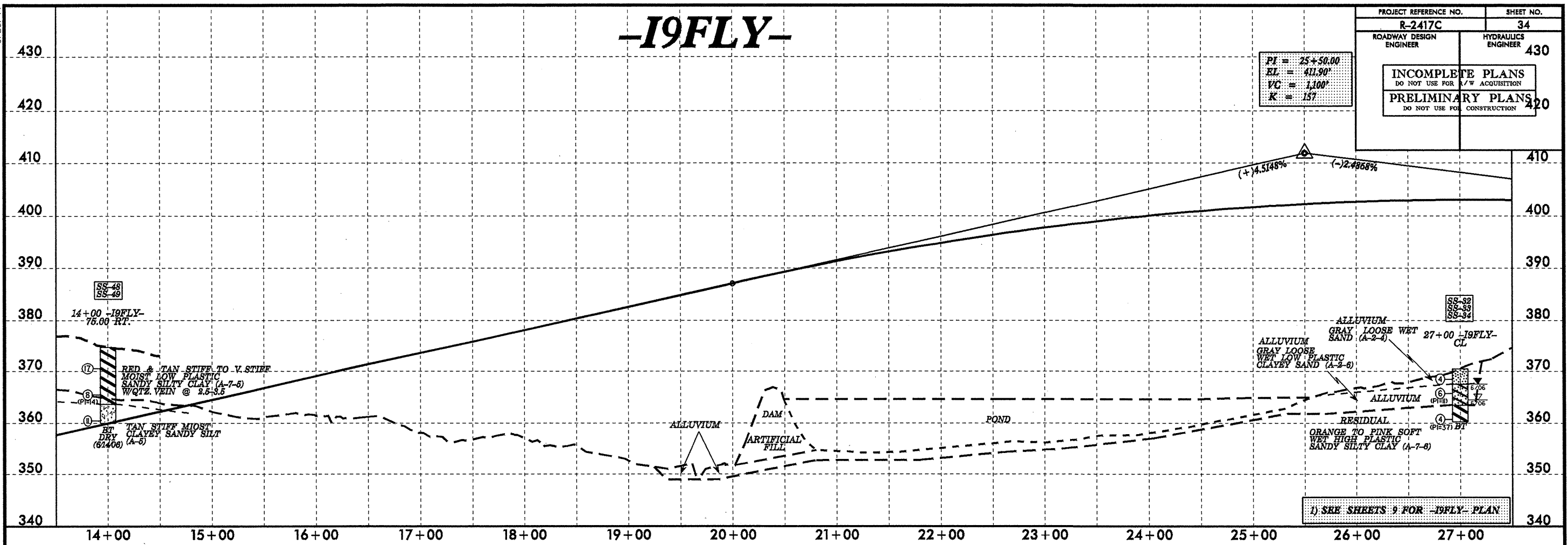
22-JAN-2007 07:48  
C:\projects\2417c\road\geotech\planpref\2417c\_geo\_pf\_all\_psh35.dgn



PROJECT REFERENCE NO.	SHEET NO.
R-2417C	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

# -I9FLY-

PI = 25+50.00  
 EL = 411.90'  
 VC = 1,100'  
 K = 157



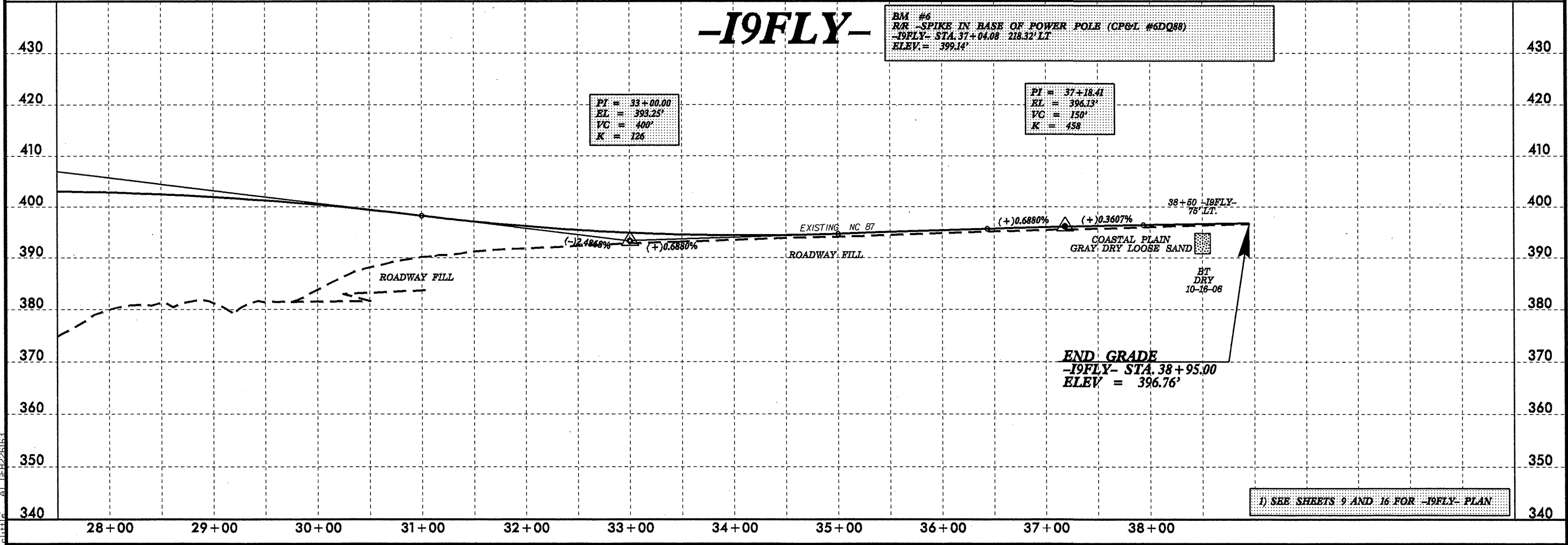
1) SEE SHEETS 9 FOR -I9FLY- PLAN

# -I9FLY-

BM #6  
 RR - SPIKE IN BASE OF POWER POLE (CP&L #6DQ88)  
 -I9FLY- STA. 37+04.08 218.32' LT  
 ELEV. = 399.14'

PI = 33+00.00  
 EL = 393.25'  
 VC = 400'  
 K = 126

PI = 37+18.41  
 EL = 396.13'  
 VC = 150'  
 K = 458



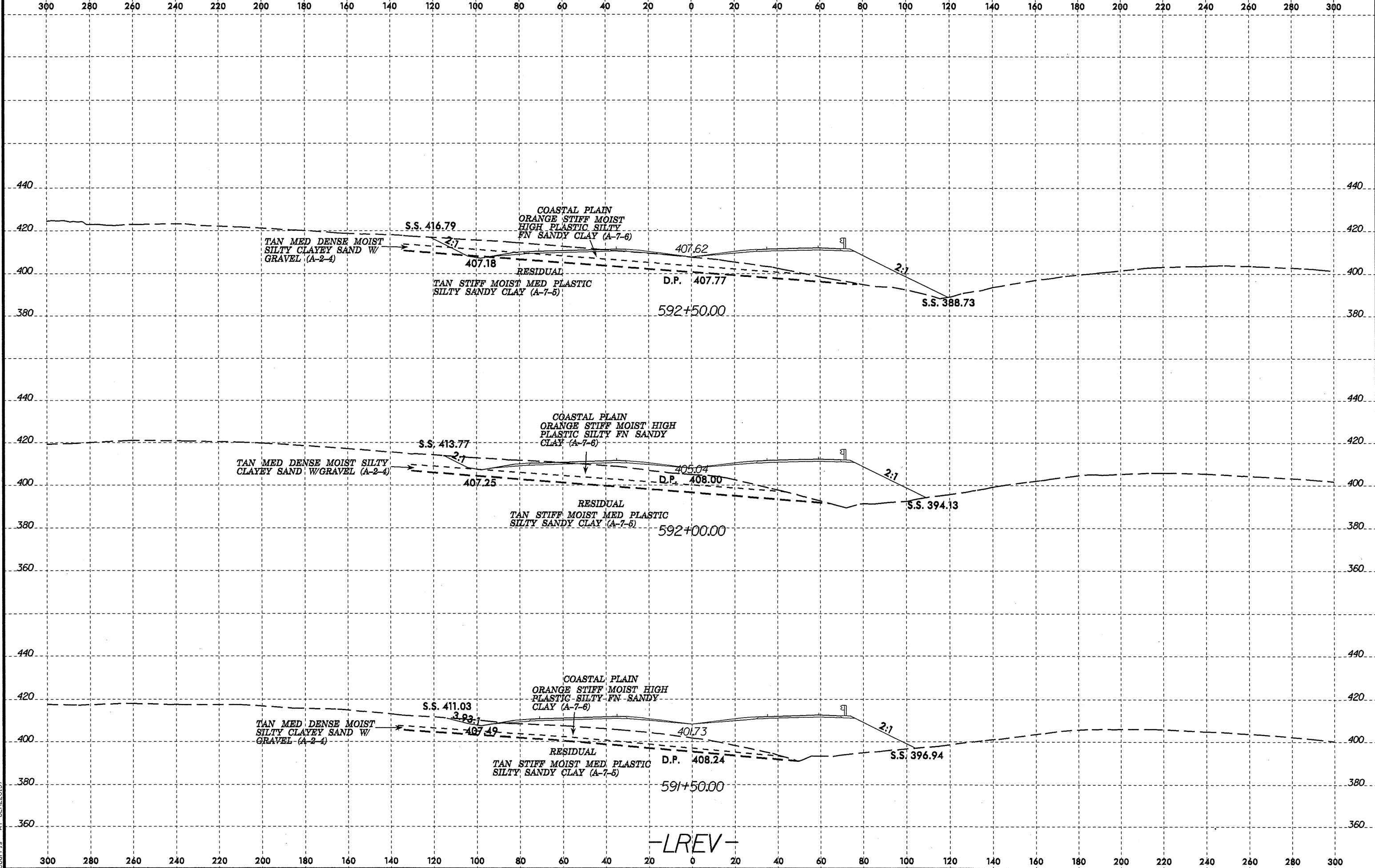
**END GRADE**  
 -I9FLY- STA. 38+95.00  
 ELEV. = 396.76'

1) SEE SHEETS 9 AND 16 FOR -I9FLY- PLAN

5/28/99  
 22-MAR-2007 11:00  
 C:\projects\2417c-geo-rdwy\_lee\cadd\geotech\planprof\2417c-geo-pfi-all.psh35.dgn

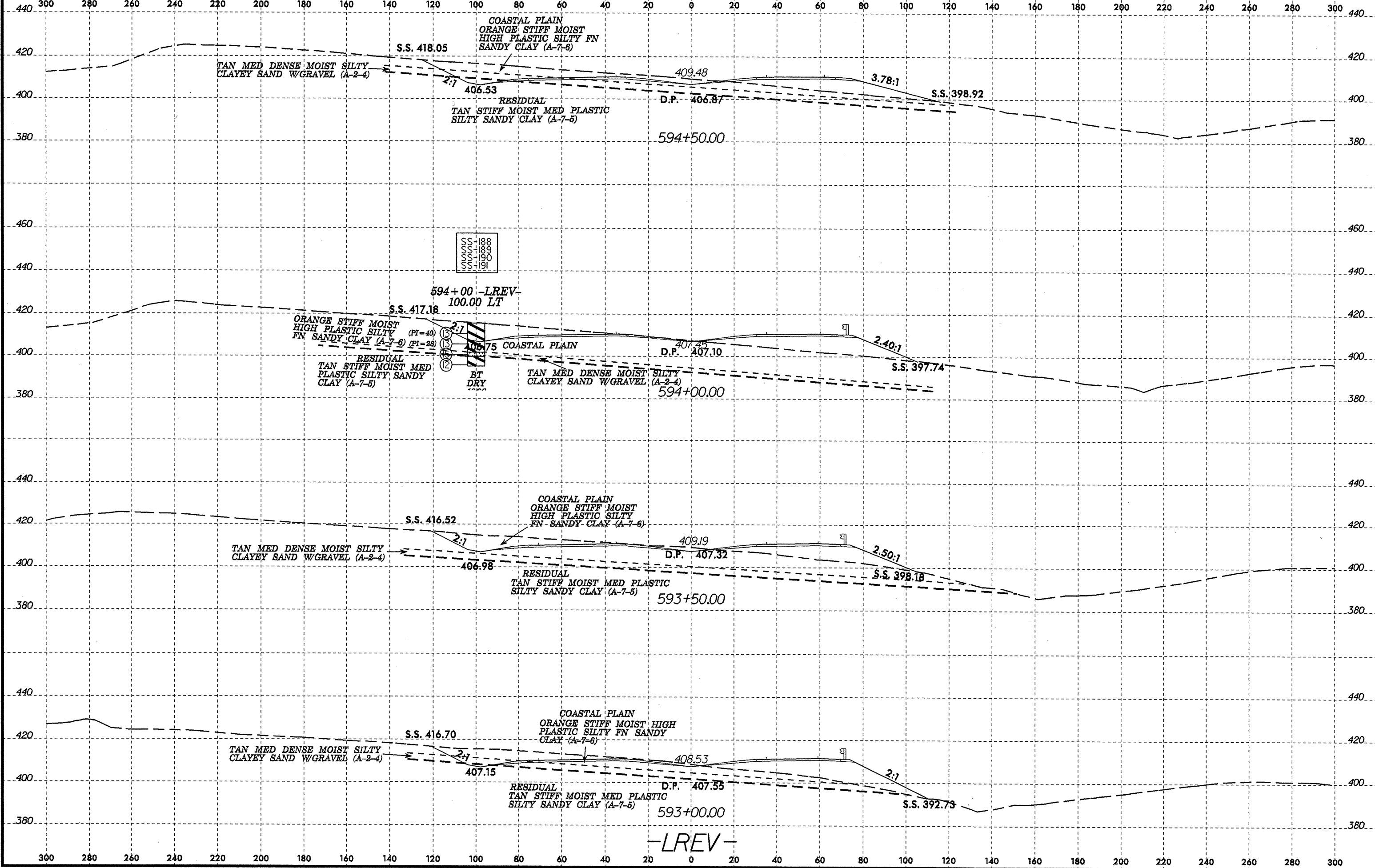


8/23/99  
21-JUN-2007 08:45  
C:\work\projects\2417c\geo\rdwy\lee\co\cadd\geotech\ssc\vr2417c-geo-ssi2\_1rev.dgn  
C:\work\projects\2417c\geo\rdwy\lee\co\cadd\geotech\ssc\vr2417c-geo-ssi2\_1rev.dgn



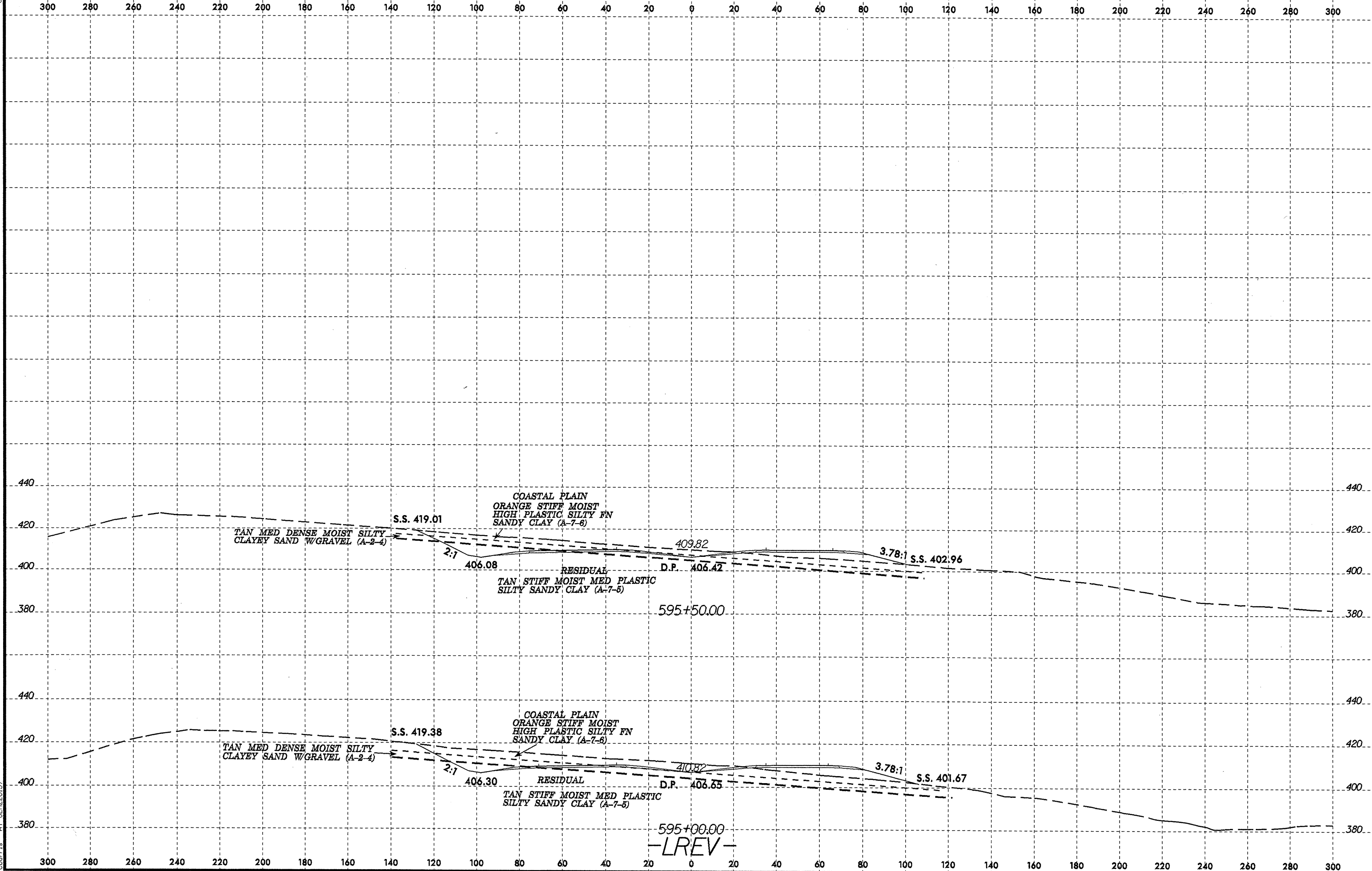
-LREV-

8/23/99



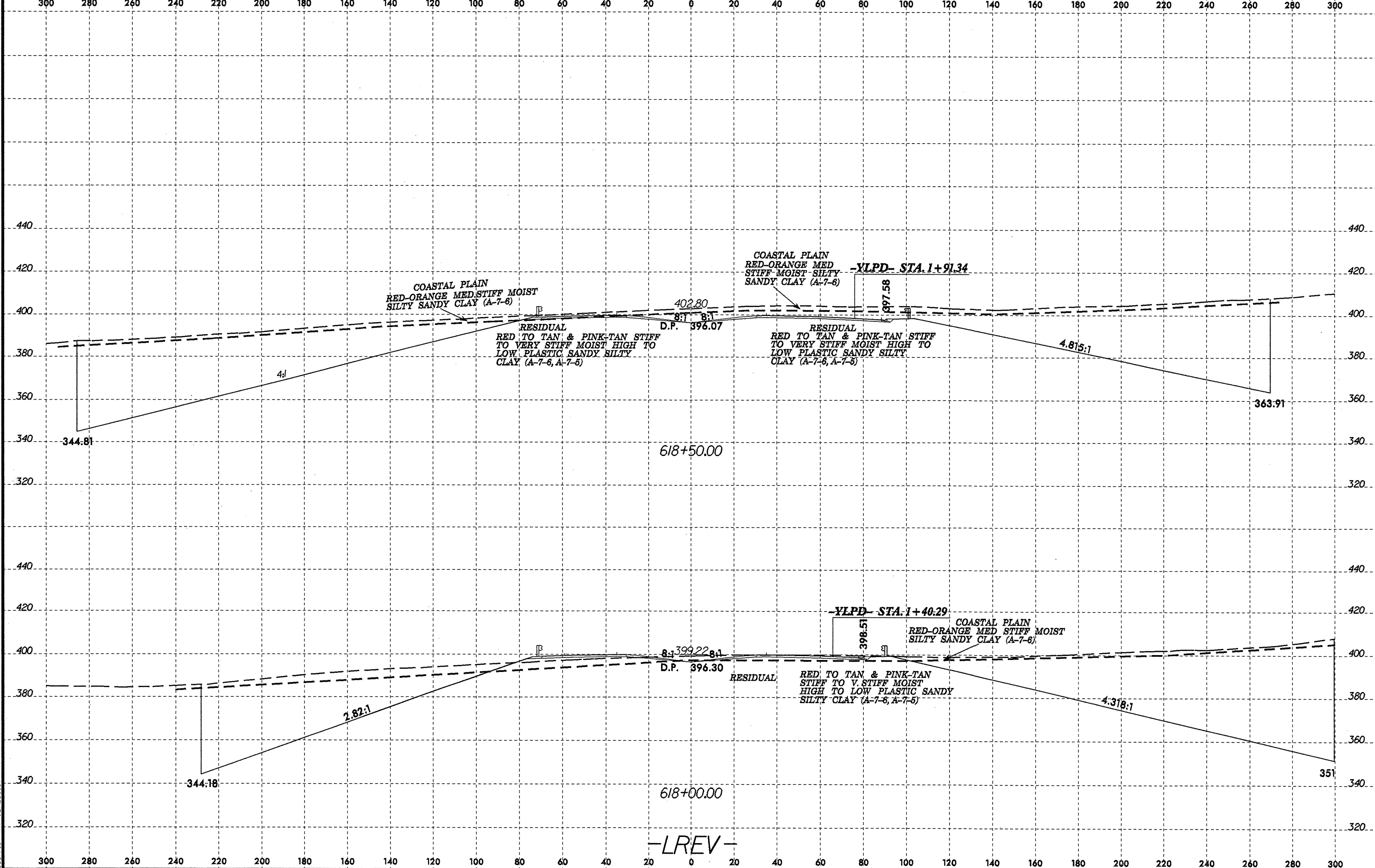
21-JUN-2007 07:53  
 d:\projects\2417\9989-rdwj-lee co\cadd\geotech\2417c-geo.xst2\_1rev.dgn  
 cburns AT 06/22/07

8/23/99

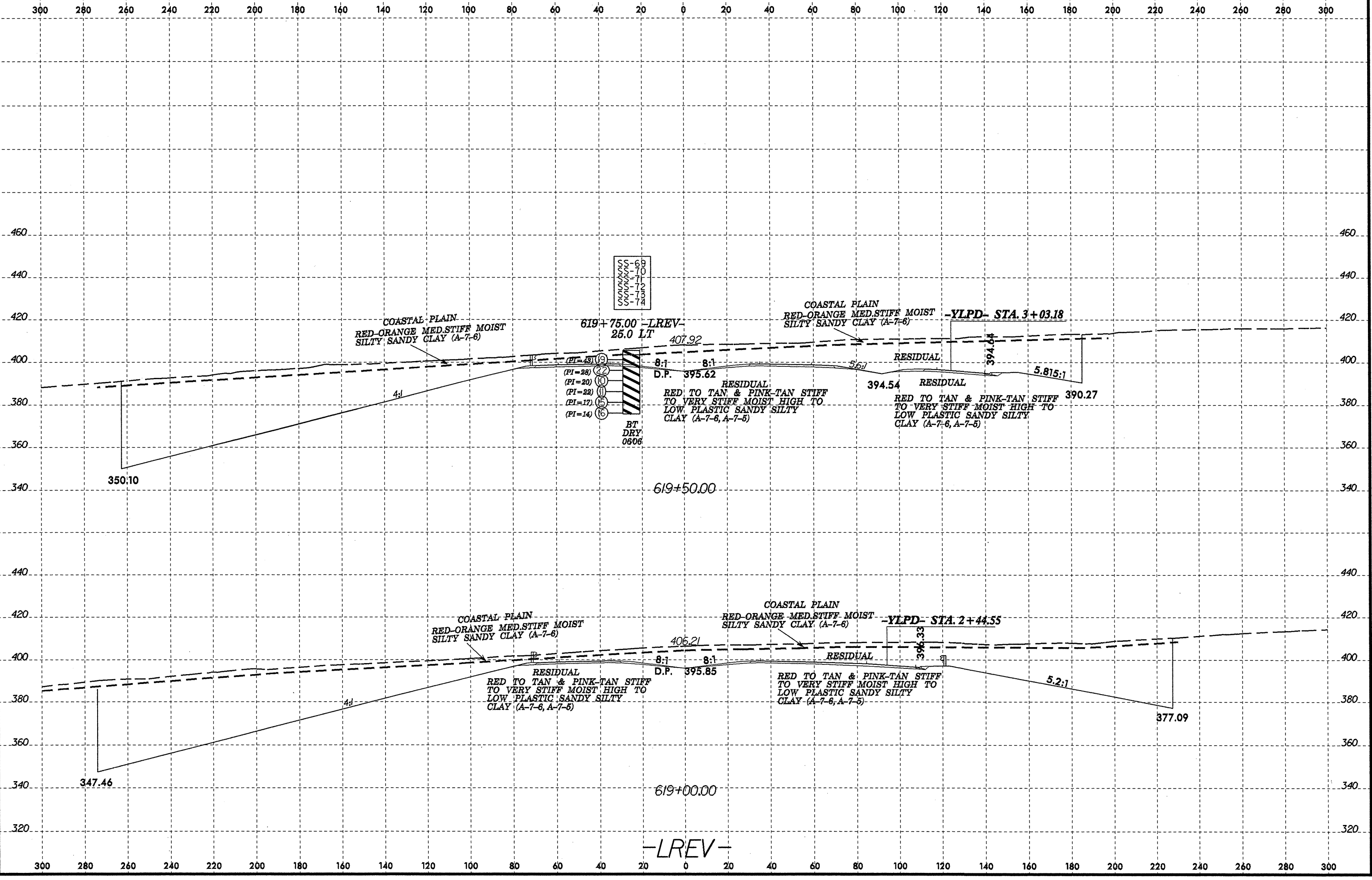


21 JUN 2007 07:54  
 C:\cadd\geotech\ssc\2417c\geo\ss12.lrev.dgn  
 2417c  
 2417c  
 2417c  
 2417c

8/23/99  
22-JUN-2007 11:03  
d:\projects\2417c\ggg-rdwj.lee\cadd\geotech\asc\2417c\_geo\_xst2\_1.rev.dgn  
oburns AT GEH26157

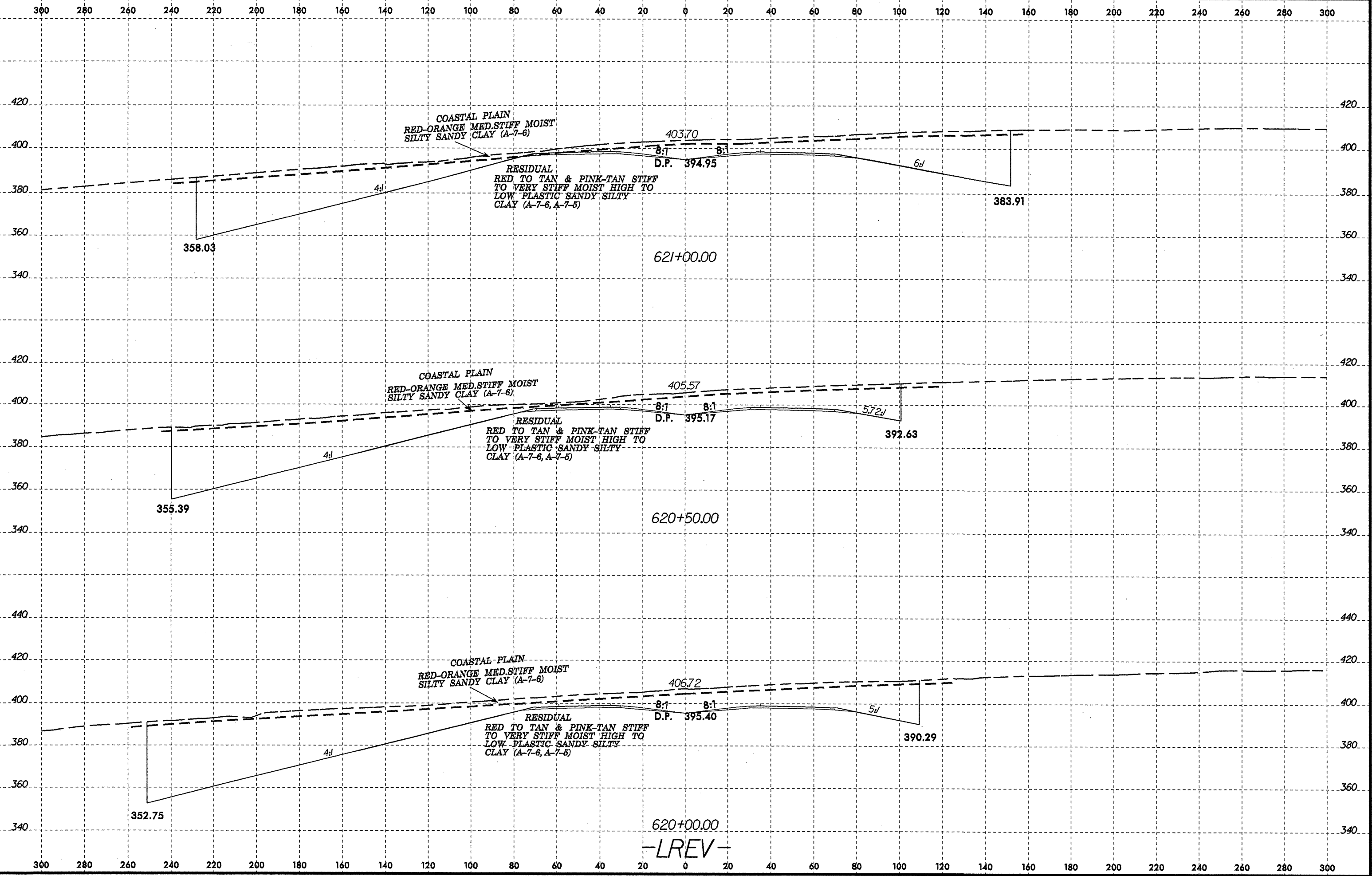


8/23/99



22-JUN-2007 10:55  
 c:\projects\2417c\dwg\2417c-geo-ssi2-1-rev.dgn  
 Lee  
 2417c-geo-ssi2-1-rev.dwg  
 2417c-geo-ssi2-1-rev.dwg

8/23/99



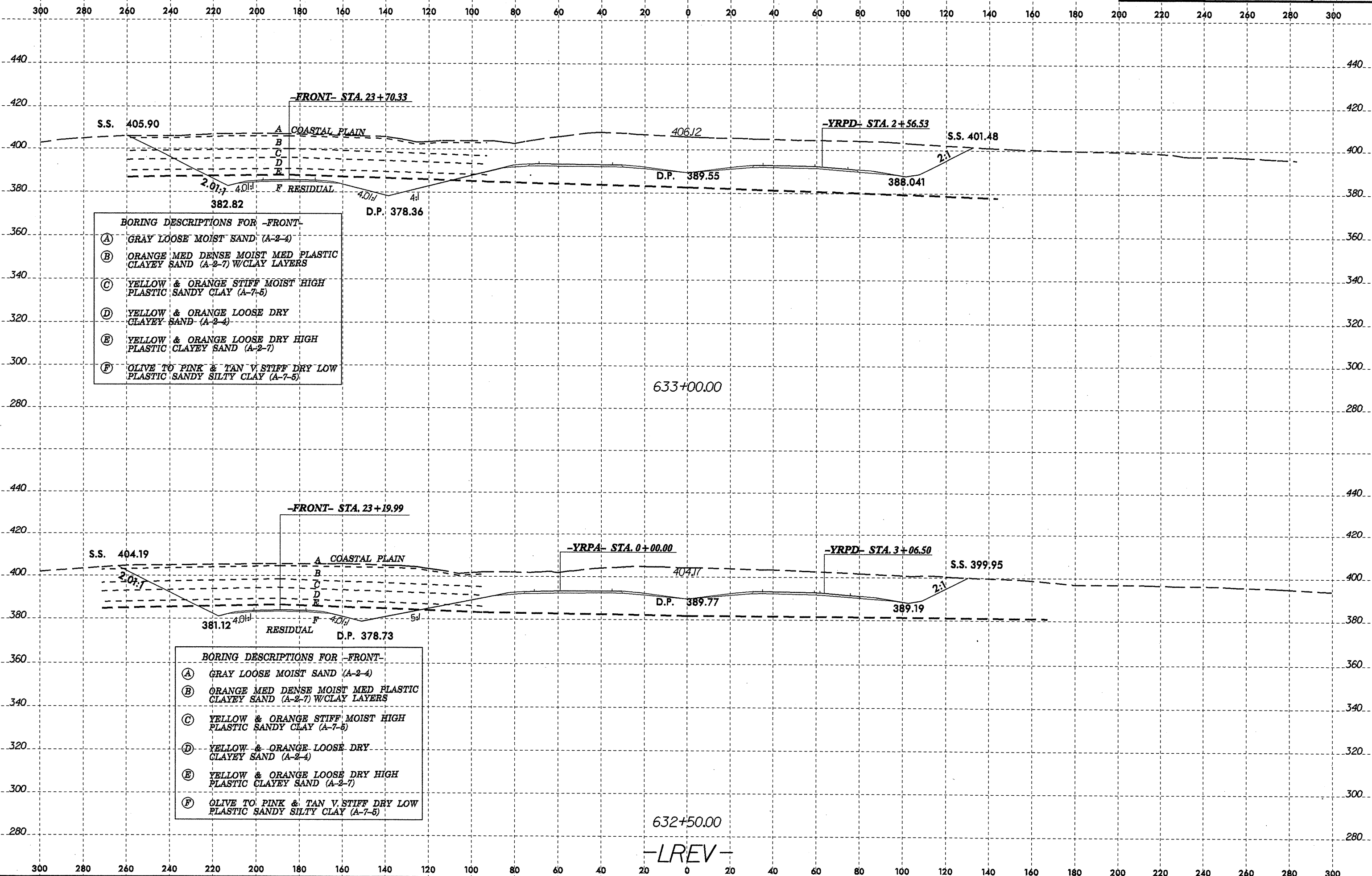
22-JUN-2007 10:57  
C:\projects\A1\REV\20070622\20070622.dwg  
co\cadd\geotech\lsc\2417c-geo-ns12.lrev.dgn

-LREV-





8/23/99  
01-AUG-2007 13:28  
\\c:\p221\49\proj\2417c\geo\rdwy\_lee\co\cadd\geotech\se\2417c-geo\ssi2\_1rev.dgn

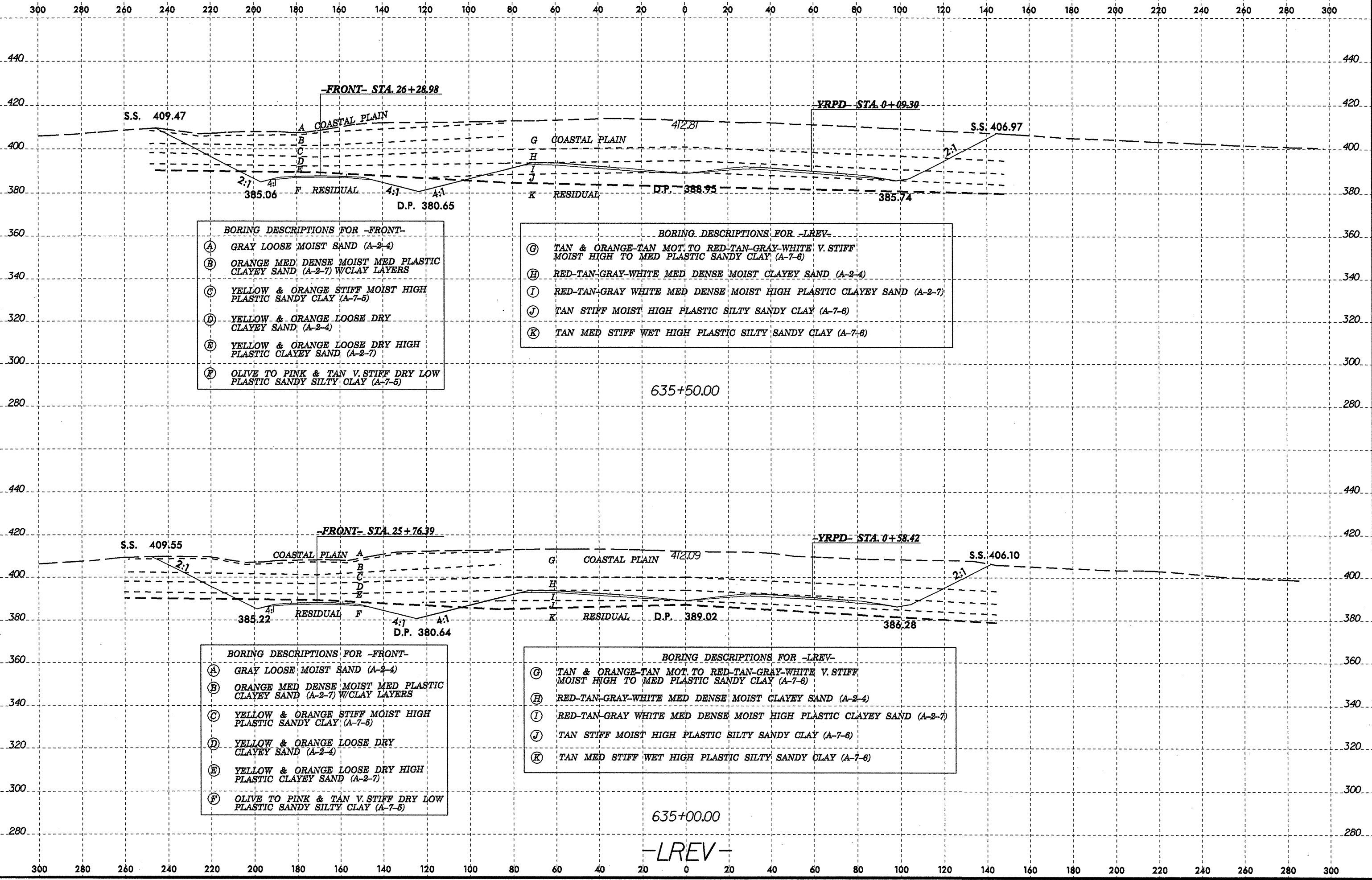
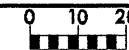


- BORING DESCRIPTIONS FOR -FRONT-**
- (A) GRAY LOOSE MOIST SAND (A-2-4)
  - (B) ORANGE MED DENSE MOIST MED PLASTIC CLAYEY SAND (A-2-7) W/CLAY LAYERS
  - (C) YELLOW & ORANGE STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
  - (D) YELLOW & ORANGE LOOSE DRY CLAYEY SAND (A-2-4)
  - (E) YELLOW & ORANGE LOOSE DRY HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (F) OLIVE TO PINK & TAN V. STIFF DRY LOW PLASTIC SANDY SILTY CLAY (A-7-5)

- BORING DESCRIPTIONS FOR -FRONT-**
- (A) GRAY LOOSE MOIST SAND (A-2-4)
  - (B) ORANGE MED DENSE MOIST MED PLASTIC CLAYEY SAND (A-2-7) W/CLAY LAYERS
  - (C) YELLOW & ORANGE STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
  - (D) YELLOW & ORANGE LOOSE DRY CLAYEY SAND (A-2-4)
  - (E) YELLOW & ORANGE LOOSE DRY HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (F) OLIVE TO PINK & TAN V. STIFF DRY LOW PLASTIC SANDY SILTY CLAY (A-7-5)







- BORING DESCRIPTIONS FOR -FRONT-**
- (A) GRAY LOOSE MOIST SAND (A-2-4)
  - (B) ORANGE MED DENSE MOIST MED PLASTIC CLAYEY SAND (A-2-7) W/CLAY LAYERS
  - (C) YELLOW & ORANGE STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
  - (D) YELLOW & ORANGE LOOSE DRY CLAYEY SAND (A-2-4)
  - (E) YELLOW & ORANGE LOOSE DRY HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (F) OLIVE TO PINK & TAN V. STIFF DRY LOW PLASTIC SANDY SILTY CLAY (A-7-5)

- BORING DESCRIPTIONS FOR -LREV-**
- (G) TAN & ORANGE-TAN MOT. TO RED-TAN-GRAY-WHITE V. STIFF MOIST HIGH TO MED PLASTIC SANDY CLAY (A-7-6)
  - (H) RED-TAN-GRAY-WHITE MED DENSE MOIST CLAYEY SAND (A-2-4)
  - (I) RED-TAN-GRAY WHITE MED DENSE MOIST HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (J) TAN STIFF MOIST HIGH PLASTIC SILTY SANDY CLAY (A-7-6)
  - (K) TAN MED STIFF WET HIGH PLASTIC SILTY SANDY CLAY (A-7-6)

- BORING DESCRIPTIONS FOR -FRONT-**
- (A) GRAY LOOSE MOIST SAND (A-2-4)
  - (B) ORANGE MED DENSE MOIST MED PLASTIC CLAYEY SAND (A-2-7) W/CLAY LAYERS
  - (C) YELLOW & ORANGE STIFF MOIST HIGH PLASTIC SANDY CLAY (A-7-5)
  - (D) YELLOW & ORANGE LOOSE DRY CLAYEY SAND (A-2-4)
  - (E) YELLOW & ORANGE LOOSE DRY HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (F) OLIVE TO PINK & TAN V. STIFF DRY LOW PLASTIC SANDY SILTY CLAY (A-7-5)

- BORING DESCRIPTIONS FOR -LREV-**
- (G) TAN & ORANGE-TAN MOT. TO RED-TAN-GRAY-WHITE V. STIFF MOIST HIGH TO MED PLASTIC SANDY CLAY (A-7-6)
  - (H) RED-TAN-GRAY-WHITE MED DENSE MOIST CLAYEY SAND (A-2-4)
  - (I) RED-TAN-GRAY WHITE MED DENSE MOIST HIGH PLASTIC CLAYEY SAND (A-2-7)
  - (J) TAN STIFF MOIST HIGH PLASTIC SILTY SANDY CLAY (A-7-6)
  - (K) TAN MED STIFF WET HIGH PLASTIC SILTY SANDY CLAY (A-7-6)

8/23/99  
 01-AUG-2007 13:30  
 \\geh221409\yrcp\p01\pts\2417c\_geo\_rdwj\_lee\_co\cadd\geotech\src\2417c\_geo\_xst2\_1\_rev.dgn  
 title AT GEH226163