

6/2/99

COMPUTED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO. SHEET NO.
 W-5600 36-1

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

SUMMARY OF SUBSURFACE DRAINAGE						
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF	
-SR1-	51+50	52+50	LT & RT	UD	500	
-SR2-	81+50	85+50	RT	UD	600	
-SR2-	92+00	93+50	LT & RT	UD	500	
-Y7LPC-	12+00	19+00	LT & RT	UD	2100	
-Y7RPC-	10+00	31+77.21	LT & RT	UD	6600	
-Y9-	22+50	23+50	LT	UD	300	
-Y9RPC-	23+50	24+50	LT & RT	UD	400	
				CONTINGENCY	SD	1000
				CONTINGENCY	UD	1000
				TOTAL LF:	13000	

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION									
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-SR2-	84+50	85+75	ASU (1)	12	150	300	450		
CONTINGENCY			ASU (1)	12	1000	2000	3000		
TOTAL CY/TONS/SY:					1150	2300**	3450**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING								
LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	1.5:1	158+50	1.5:1	167+50	RT	2		1800
-Y7-	1.5:1	25+00	1.5:1	29+00	RT	2		1600
-Y7-	1.5:1	28+00	1.5:1	29+50	LT	2		1000
TOTAL SY:								4400

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF BRIDGE WAITING PERIODS		
Bridge Description	End Bent/ Bent No.	MONTHS
Bridge on -Y7- Swift Creek Road (SR1501) over US 70	EB1 and EB 2	2
Dual Bridges on US 70 over Wilson's Mill Road (SR 1913)	EB1 and EB 2	2

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-L-

Pls Sta 21+49.86
 $\theta_s = 3'00''00.0''$
 $L_s = 300.00'$
 $LT = 200.03'$
 $ST = 100.03'$

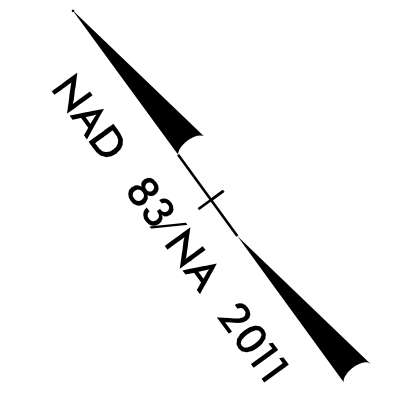
WETHERILL ENGINEERING

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 4
Roadway Design ENGINEER 18:25 PST 12/15/2020	Hydraulics ENGINEER 18:46:23 PST 12/15/2020



1

EDNA ROSE LANCASTER TYNDALL,
 & HUSBAND, CURTIS L. TYNDALL
 DB 3387 PG 815
 PB 70 PG 120

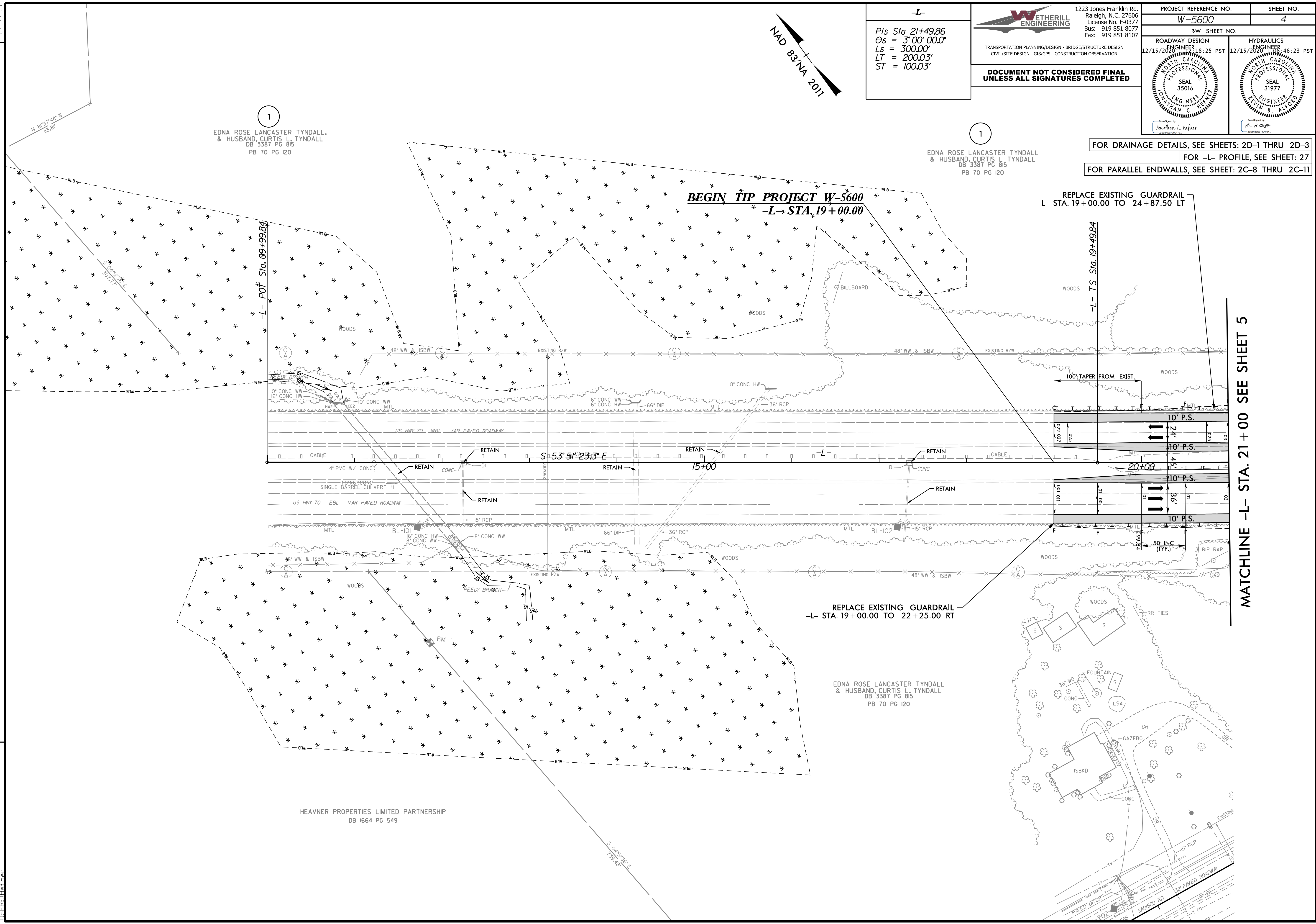
1

EDNA ROSE LANCASTER TYNDALL
 & HUSBAND, CURTIS L. TYNDALL
 DB 3387 PG 815
 PB 70 PG 120

FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR -L- PROFILE, SEE SHEET: 27
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

MATCHLINE -L- STA. 21+00 SEE SHEET 5



EDNA ROSE LANCASTER TYNDALL
 & HUSBAND, CURTIS L. TYNDALL
 DB 3387 PG 815
 PB 70 PG 120

HEAVNER PROPERTIES LIMITED PARTNERSHIP
 DB 1664 PG 549

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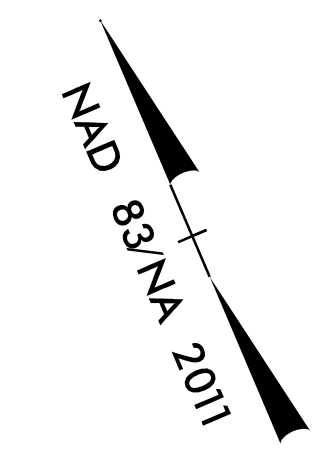
-L-		-SRI-	
PIs Sta 21+49.86	PI Sta 28+01.71	PIs Sta 34+04.33	PI Sta 13+59.92
$\Delta s = 3^{\circ}00'00.0''$	$\Delta = 2^{\circ}48'28.7''$ (LT)	$\Delta s = 0^{\circ}35'19.0''$	$\Delta = 15^{\circ}11'14.3''$ (LT)
$Ls = 300.00'$	$D = 2^{\circ}00'00.0''$	$\Delta s = 1^{\circ}30'00.1''$	$D = 2^{\circ}07'20.0''$
$LT = 200.03'$	$L = 1090.40'$	$Ls = 150.00'$	$L = 715.63'$
$ST = 100.03'$	$T = 551.88'$	$LT = 85.92'$	$T = 359.92'$
	$R = 2,864.79'$	$ST = 64.10'$	$R = 2,699.79'$
	$SE = 0.06$ FT/FT		$SE = 0.04$ FT/FT

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PROJECT REFERENCE NO.	SHEET NO.
W-5600	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 18:46:23 PST 12/15/2020



3

SALLIE JANE LANCASTER BOYD
 DB 3387 PG 815
 PB 70 PG 120

1

EDNA ROSE LANCASTER TYNDALL
 & HUSBAND, CURTIS L. TYNDALL
 DB 3387 PG 815
 PB 70 PG 120

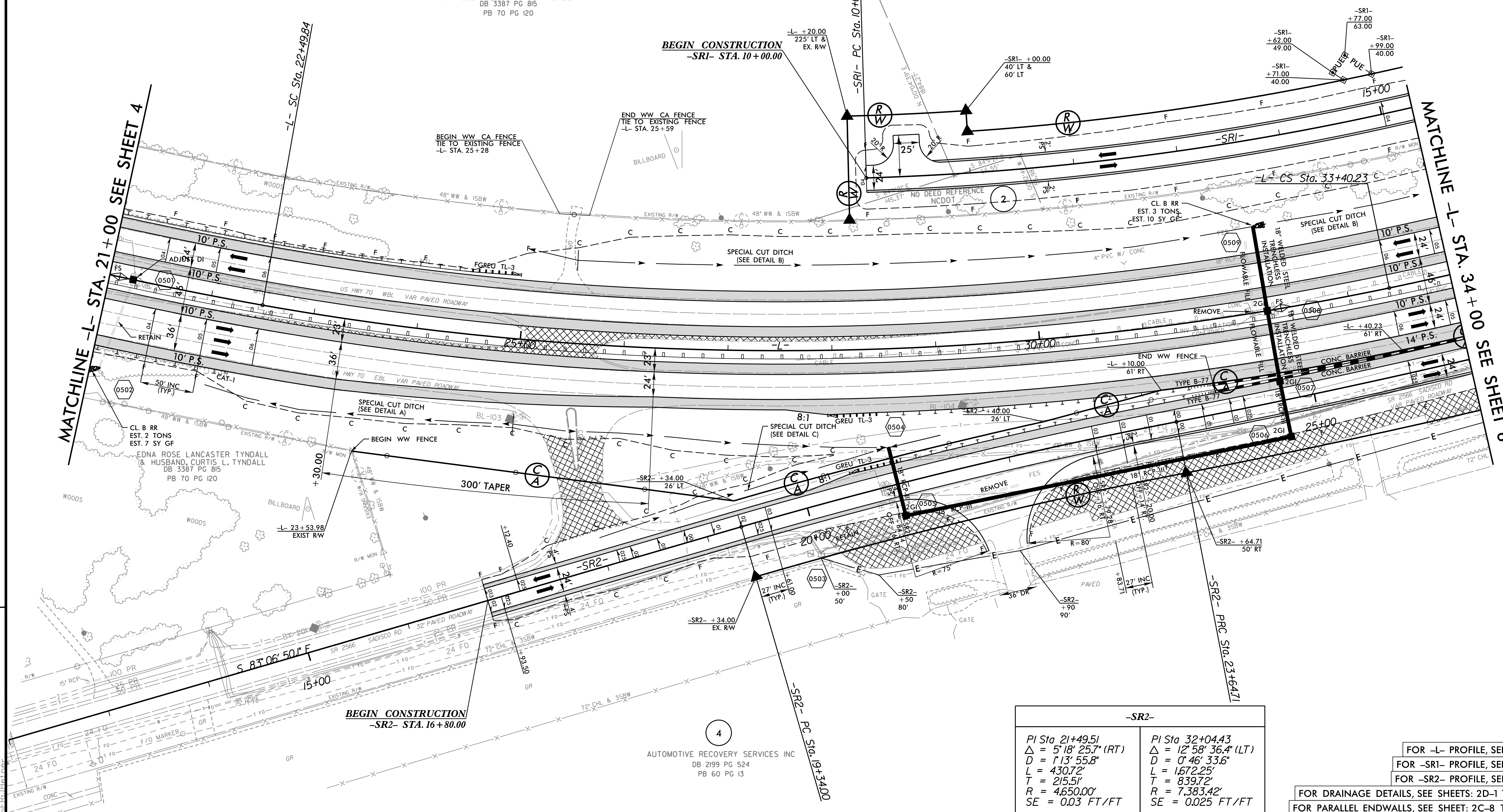
BEGIN CONSTRUCTION
 -SRI- STA. 10+00.00

END WW CA FENCE
 TIE TO EXISTING FENCE
 -L- STA. 25+59

BEGIN WW CA FENCE
 TIE TO EXISTING FENCE
 -L- STA. 25+28

MATCHLINE -L- STA. 21+00 SEE SHEET 4

MATCHLINE -L- STA. 34+00 SEE SHEET 6



4

AUTOMOTIVE RECOVERY SERVICES INC
 DB 2199 PG 524
 PB 60 PG 13

-SR2-	
PI Sta 21+49.51	PI Sta 32+04.43
$\Delta = 5^{\circ}18'25.7''$ (RT)	$\Delta = 12^{\circ}58'36.4''$ (LT)
$D = 1^{\circ}13'55.8''$	$D = 0^{\circ}46'33.6''$
$L = 430.72'$	$L = 1,672.25'$
$T = 215.51'$	$T = 839.72'$
$R = 4,650.00'$	$R = 7,383.42'$
$SE = 0.03$ FT/FT	$SE = 0.025$ FT/FT

FOR -L- PROFILE, SEE SHEET: 27
 FOR -SRI- PROFILE, SEE SHEET: 47
 FOR -SR2- PROFILE, SEE SHEET: 49

FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

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-L-		-SRI-			
$PIs Sta 34+04.33$	$PI Sta 41+91.81$	$PI Sta 13+59.92$	$PI Sta 20+21.04$	$PI Sta 24+55.57$	$PI Sta 28+64.98$
$\Delta = 0' 35' 19.0"$	$\Delta = 10' 58' 45.2" (LT)$	$\Delta = 15' 11' 14.3" (LT)$	$\Delta = 10' 15' 56.9" (RT)$	$\Delta = 14' 53' 57.6" (LT)$	$\Delta = 4' 26' 45.0" (LT)$
$\Theta s = 1' 30' 00.1"$	$D = 0' 47' 05.5"$	$D = 2' 07' 20.0"$	$D = 1' 41' 06.6"$	$D = 5' 43' 46.5"$	$D = 0' 47' 38.2"$
$Ls = 150.00'$	$L = 1,398.85'$	$L = 715.63'$	$L = 609.19'$	$L = 260.04'$	$L = 559.97'$
$LT = 85.92'$	$T = 701.57'$	$T = 359.92'$	$T = 305.41'$	$T = 130.76'$	$T = 280.12'$
$ST = 64.10'$	$R = 7,300.00'$	$R = 2,699.79'$	$R = 3,400.00'$	$R = 1,000.00'$	$R = 7,216.58'$
$SE = 0.04 FT/FT$	$SE = 0.03 FT/FT$	$SE = 0.04 FT/FT$	$SE = 0.03 FT/FT$	$SE = 0.04 FT/FT$	$SE = 0.025 FT/FT$

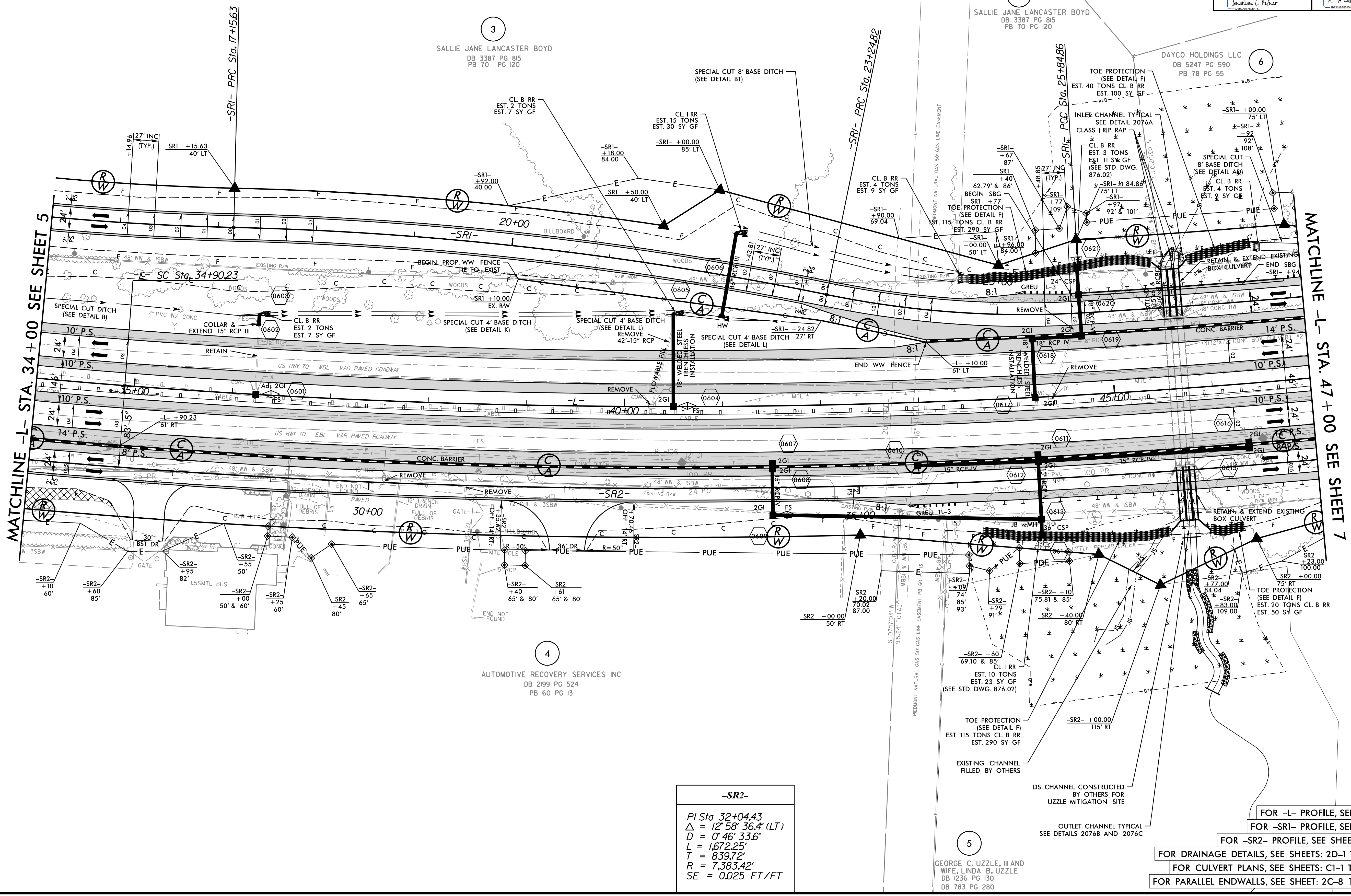
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PROJECT REFERENCE NO. W-5600	SHEET NO. 6
Roadway Design ENGINEER: 12/15/2020 1:25 PST	Hydraulics ENGINEER: 12/15/2020 1:46:23 PST
Professional Engineer Seal SEAL 35016 JACOB L. REIFER	Professional Engineer Seal SEAL 31977 KEVIN B. ALFORD

NAD 83/NA 2011



MATCHLINE -L- STA. 34+00 SEE SHEET 5

MATCHLINE -L- STA. 47+00 SEE SHEET 7

-SR2-
$PI Sta 32+04.43$
$\Delta = 12' 58' 36.4" (LT)$
$D = 0' 46' 33.6"$
$L = 1,672.25'$
$T = 839.72'$
$R = 7,383.42'$
$SE = 0.025 FT/FT$

FOR -L- PROFILE, SEE SHEET: 28
 FOR -SRI- PROFILE, SEE SHEET: 47
 FOR -SR2- PROFILE, SEE SHEET: 49 & 50
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR CULVERT PLANS, SEE SHEETS: C1-1 THRU C1-10
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

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-L-	-SRI-
PI Sta 79+15.92	PI Sta 40+05.45
$\Delta = 38^{\circ} 50' 00.0''$ (RT)	$\Delta = 12^{\circ} 28' 50.9''$ (RT)
$D = 1^{\circ} 00' 00.0''$	$D = 0^{\circ} 58' 52.2''$
$L = 3,883.33'$	$L = 1,272.04'$
$T = 2,019.58'$	$T = 638.55'$
$R = 5,729.58'$	$R = 5,839.58'$
$SE = 0.040$ FT/FT	$SE = EXIST$

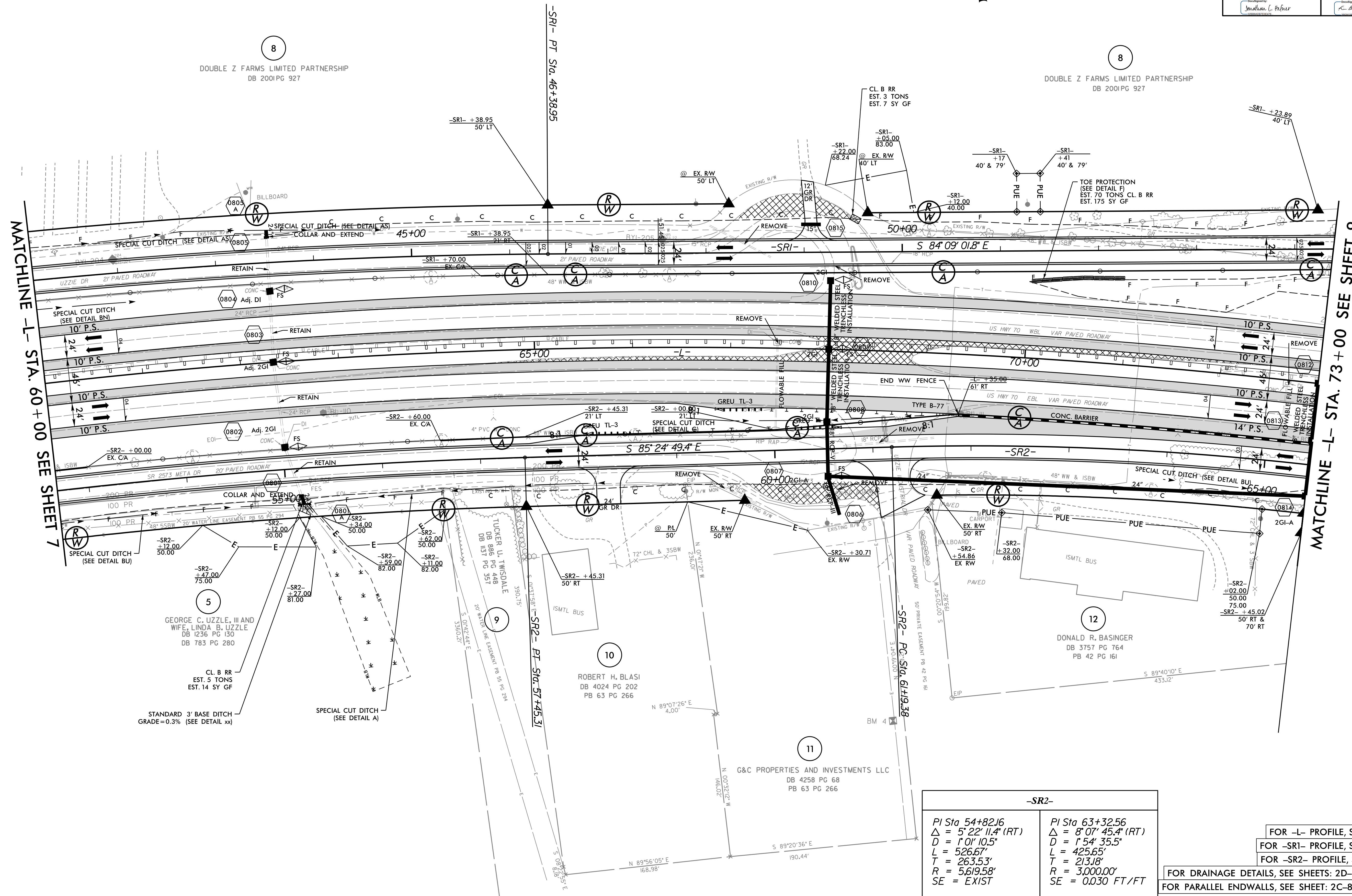
NAD 83/NA 2011

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PROJECT REFERENCE NO.	SHEET NO.
W-5600	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 16:23 PST 12/15/2020



MATCHLINE -L- STA. 60+00 SEE SHEET 7

MATCHLINE -L- STA. 73+00 SEE SHEET 9

-SR2-	-SR2-
PI Sta 54+82.16	PI Sta 63+32.56
$\Delta = 5^{\circ} 22' 11.4''$ (RT)	$\Delta = 8^{\circ} 07' 45.4''$ (RT)
$D = 1^{\circ} 01' 10.5''$	$D = 1^{\circ} 54' 35.5''$
$L = 526.67'$	$L = 425.65'$
$T = 263.53'$	$T = 213.8'$
$R = 5,619.58'$	$R = 3,000.00'$
$SE = EXIST$	$SE = 0.030$ FT/FT

FOR -L- PROFILE, SEE SHEET: 29
 FOR -SRI- PROFILE, SEE SHEET: 48
 FOR -SR2- PROFILE, SEE SHEET: 51
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

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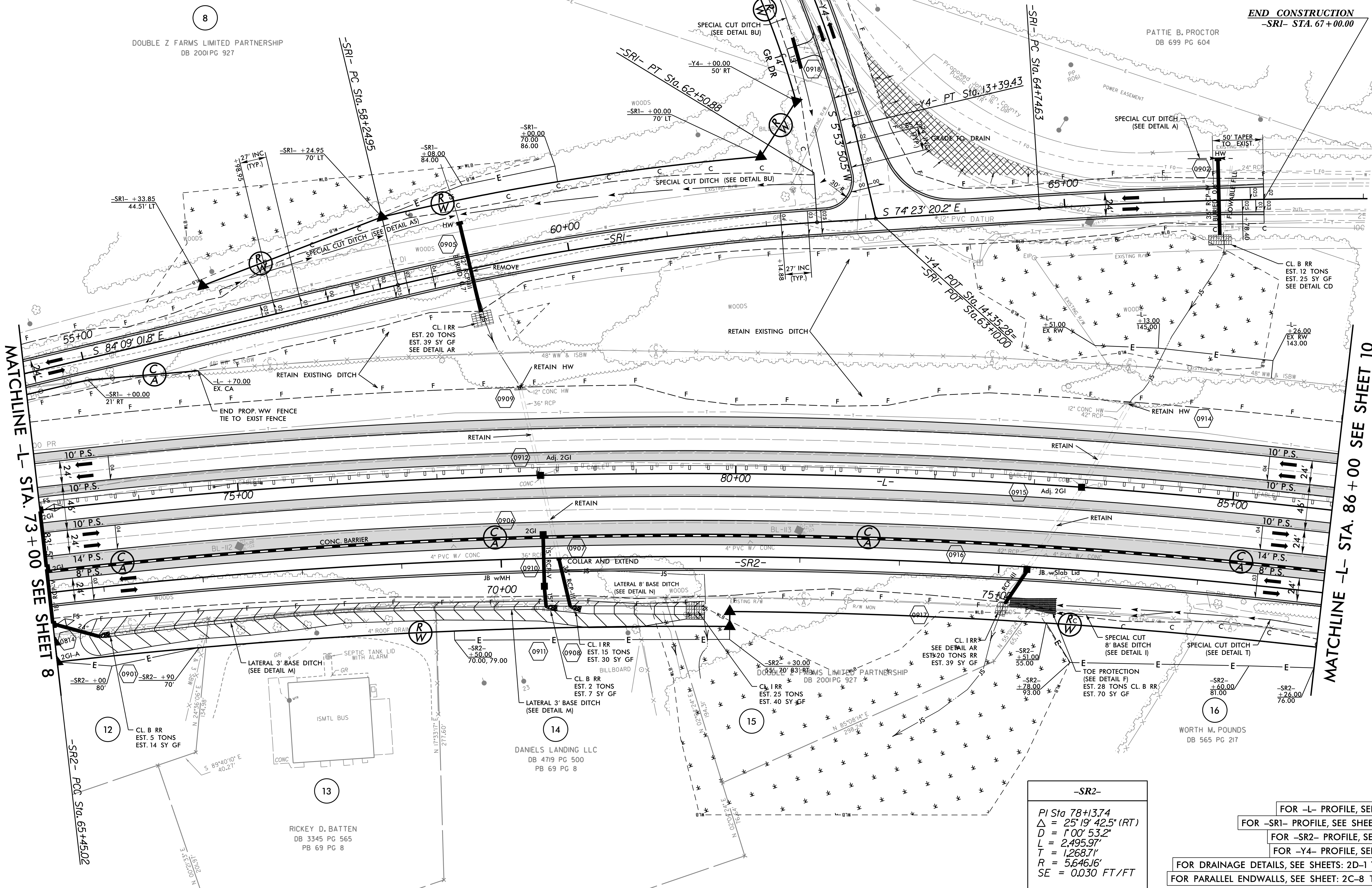
-L-	-Y4-	-SRI-	-SRI-
PI Sta 79+15.92	PI Sta 11+71.53	PI Sta 60+38.43	PI Sta 67+89.92
$\Delta = 38' 50'' 00.0''$ (RT)	$\Delta = 20' 21'' 57.8''$ (RT)	$\Delta = 9' 45'' 41.6''$ (RT)	$\Delta = 7' 20'' 47.4''$ (RT)
$D = 1' 00'' 00.0''$	$D = 6' 00'' 00.0''$	$D = 2' 17'' 30.6''$	$D = 1' 10'' 00.0''$
$L = 3,883.33'$	$L = 339.43'$	$L = 425.93'$	$L = 629.70'$
$T = 2,019.58'$	$T = 171.53'$	$T = 213.48'$	$T = 315.28'$
$R = 5,729.58'$	$R = 954.93'$	$R = 2,500.00'$	$R = 4,911.07'$
$SE = 0.040$ FT/FT	$SE = 0.040$ FT/FT	$SE = 0.040$ FT/FT	$SE = 0.025$ FT/FT

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PROJECT REFERENCE NO. W-5600	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER: 12/15/2020 18:25 PST	HYDRAULICS ENGINEER: 12/15/2020 16:23 PST
SEAL 35016	SEAL 31977



MATCHLINE -L- STA. 73+00 SEE SHEET 8

MATCHLINE -L- STA. 86+00 SEE SHEET 10

-SR2-
PI Sta 78+13.74
$\Delta = 25' 19'' 42.5''$ (RT)
$D = 1' 00'' 53.2''$
$L = 2,495.97'$
$T = 1,268.71'$
$R = 5,646.16'$
$SE = 0.030$ FT/FT

- FOR -L- PROFILE, SEE SHEET: 29
- FOR -SRI- PROFILE, SEE SHEET: 48 & 49
- FOR -SR2- PROFILE, SEE SHEET: 51
- FOR -Y4- PROFILE, SEE SHEET: 38
- FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
- FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

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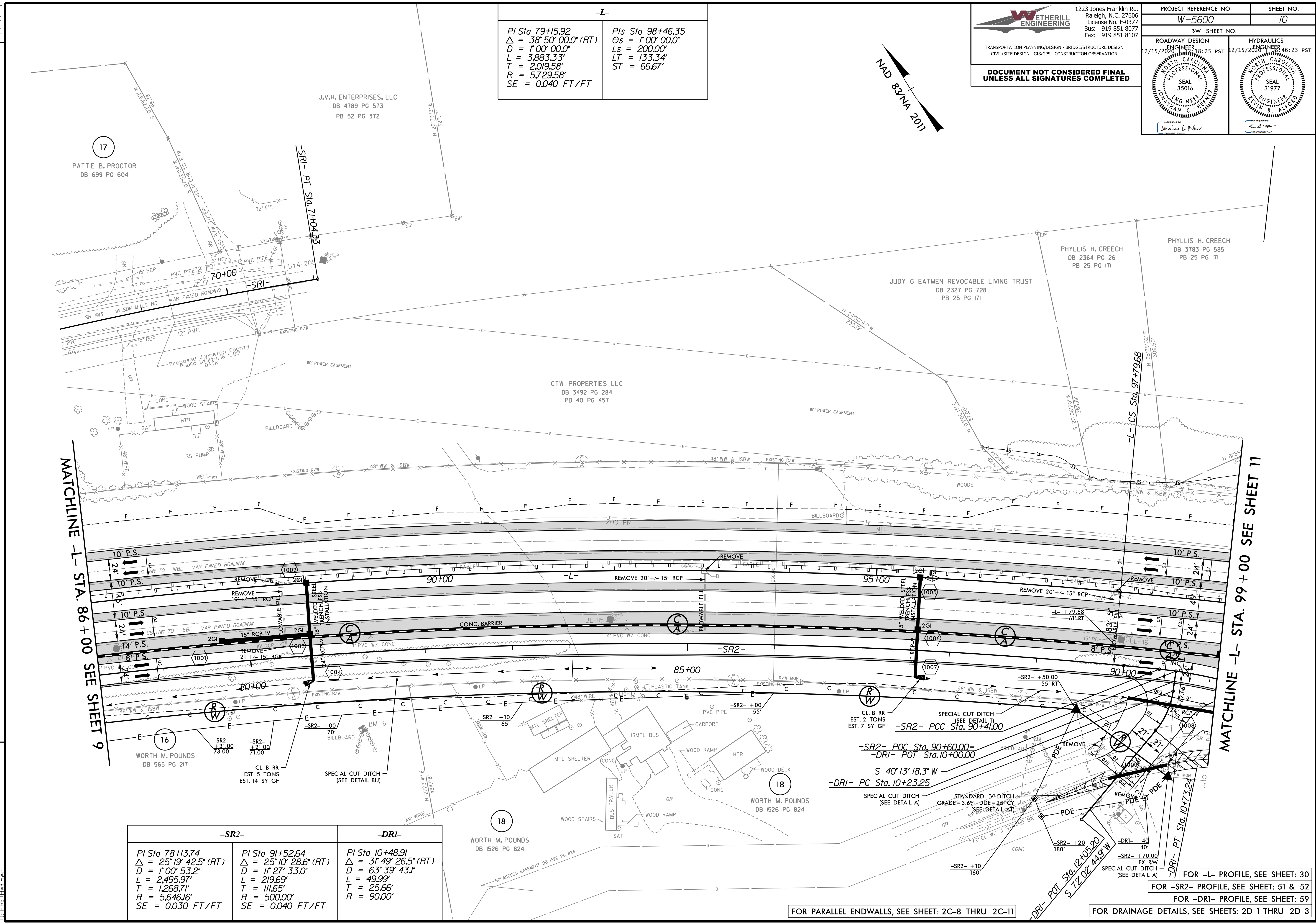
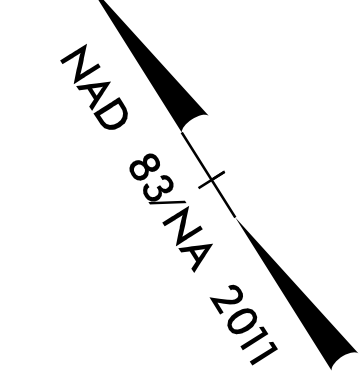
-L-	
PI Sta 79+15.92	PIs Sta 98+46.35
$\Delta = 38' 50'' 00.0''$ (RT)	$\Theta s = 1' 00'' 00.0''$
$D = 1' 00'' 00.0''$	$Ls = 200.00'$
$L = 3,883.33'$	$LT = 133.34'$
$T = 2,019.58'$	$ST = 66.67'$
$R = 5,729.58'$	
$SE = 0.040$ FT/FT	

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PROJECT REFERENCE NO.	SHEET NO.
W-5600	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 12/15/2020 18:25 PST	HYDRAULICS ENGINEER 12/15/2020 08:46:23 PST



-SR2-		-DRI-
PI Sta 78+13.74	PI Sta 91+52.64	PI Sta 10+48.91
$\Delta = 25' 19'' 42.5''$ (RT)	$\Delta = 25' 10'' 28.6''$ (RT)	$\Delta = 31' 49'' 26.5''$ (RT)
$D = 1' 00'' 53.2''$	$D = 11' 27'' 33.0''$	$D = 63' 39'' 43.1''$
$L = 2,495.97'$	$L = 219.69'$	$L = 49.99'$
$T = 1,268.71'$	$T = 111.65'$	$T = 25.66'$
$R = 5,646.16'$	$R = 500.00'$	$R = 90.00'$
$SE = 0.030$ FT/FT	$SE = 0.040$ FT/FT	

REVISIONS

MATCHLINE -L- STA. 86+00 SEE SHEET 9

MATCHLINE -L- STA. 99+00 SEE SHEET 11

FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3

FOR -L- PROFILE, SEE SHEET: 30
FOR -SR2- PROFILE, SEE SHEET: 51 & 52
FOR -DRI- PROFILE, SEE SHEET: 59

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-L-

PIs Sta 98+46.35
 Es = 1'00'00.0"
 Ls = 200.00'
 LT = 133.34'
 ST = 66.67'

MICHAEL P. WEIDNER
 DB 1692 PG 549
 PB 25 PG 171

PHYLLIS H. CREECH
 DB 3783 PG 585
 PB 25 PG 171

EDWARD S. TURLINGTON
 DB 1173 PG 64

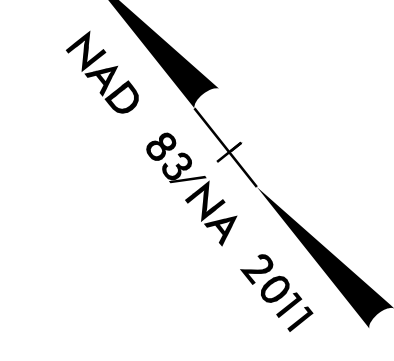
EDWARD S. TURLINGTON
 DB 1173 PG 64

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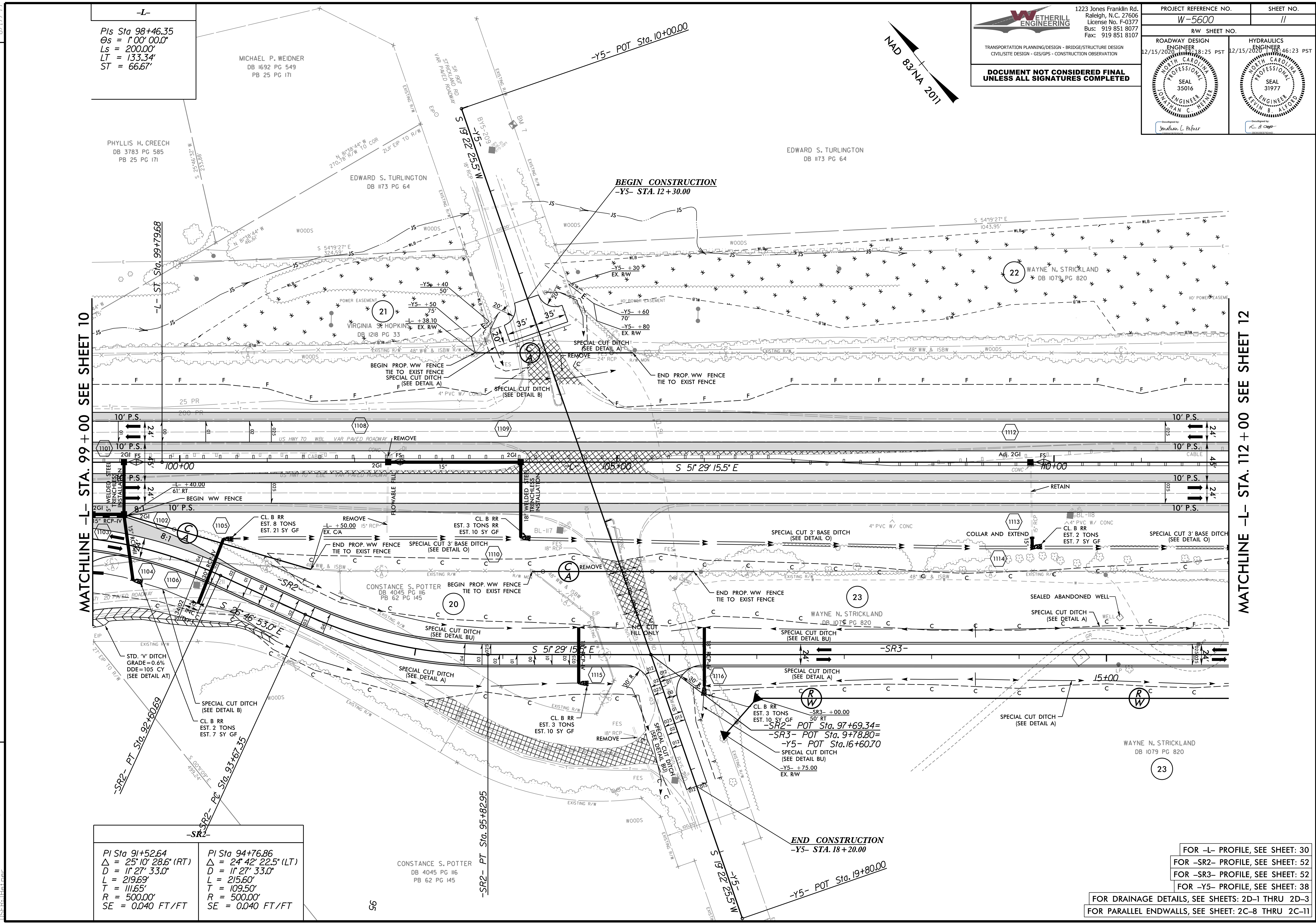
PROJECT REFERENCE NO. W-5600	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 12/15/2020 10:25 PST	HYDRAULICS ENGINEER 12/15/2020 10:46:23 PST

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MATCHLINE -L- STA. 99 + 00 SEE SHEET 10

MATCHLINE -L- STA. 112 + 00 SEE SHEET 12



REVISIONS

PI Sta 91+52.64 $\Delta = 25^{\circ}10'28.6"$ (RT) $D = 11^{\circ}27'33.0"$ $L = 219.69'$ $T = 111.65'$ $R = 500.00'$ $SE = 0.040$ FT/FT	PI Sta 94+76.86 $\Delta = 24^{\circ}42'22.5"$ (LT) $D = 11^{\circ}27'33.0"$ $L = 215.60'$ $T = 109.50'$ $R = 500.00'$ $SE = 0.040$ FT/FT
--	--

CONSTANCE S. POTTER
 DB 4045 PG 116
 PB 62 PG 145

FOR -L- PROFILE, SEE SHEET: 30
FOR -SR2- PROFILE, SEE SHEET: 52
FOR -SR3- PROFILE, SEE SHEET: 52
FOR -Y5- PROFILE, SEE SHEET: 38
FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

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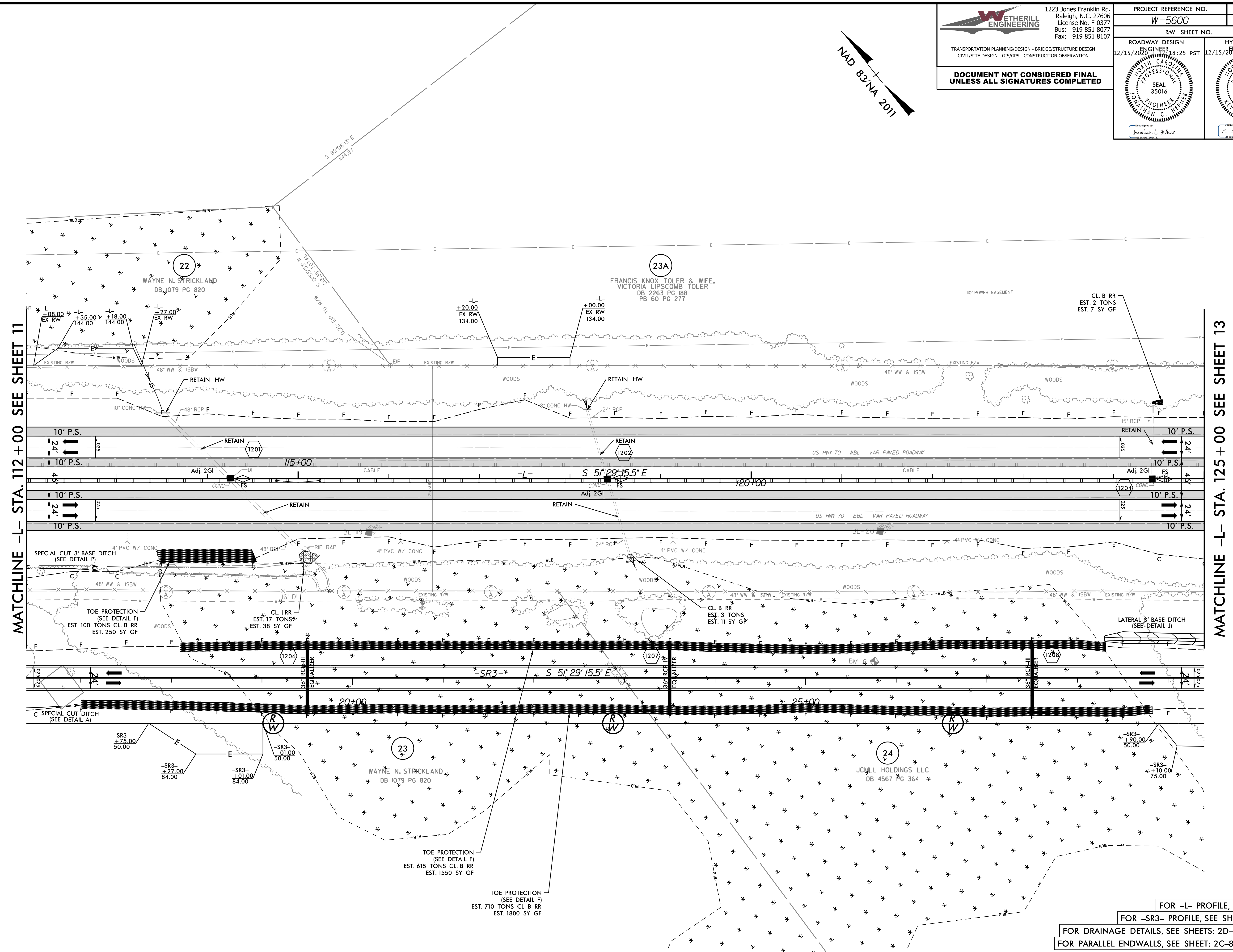
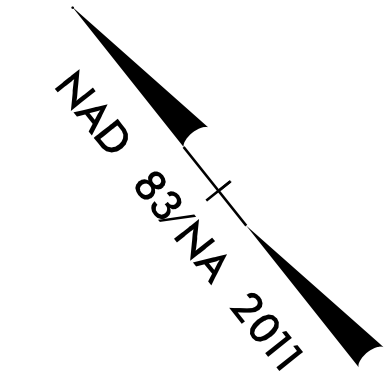
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PROJECT REFERENCE NO. W-5600	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 18:46:23 PST 12/15/2020
 Jonathan L. Peifer PROFESSIONAL ENGINEER	 Kevin S. Alford PROFESSIONAL ENGINEER



REVISIONS

12/14/2020
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FOR -L- PROFILE, SEE SHEET: 31
 FOR -SR3- PROFILE, SEE SHEET: 52 & 53
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

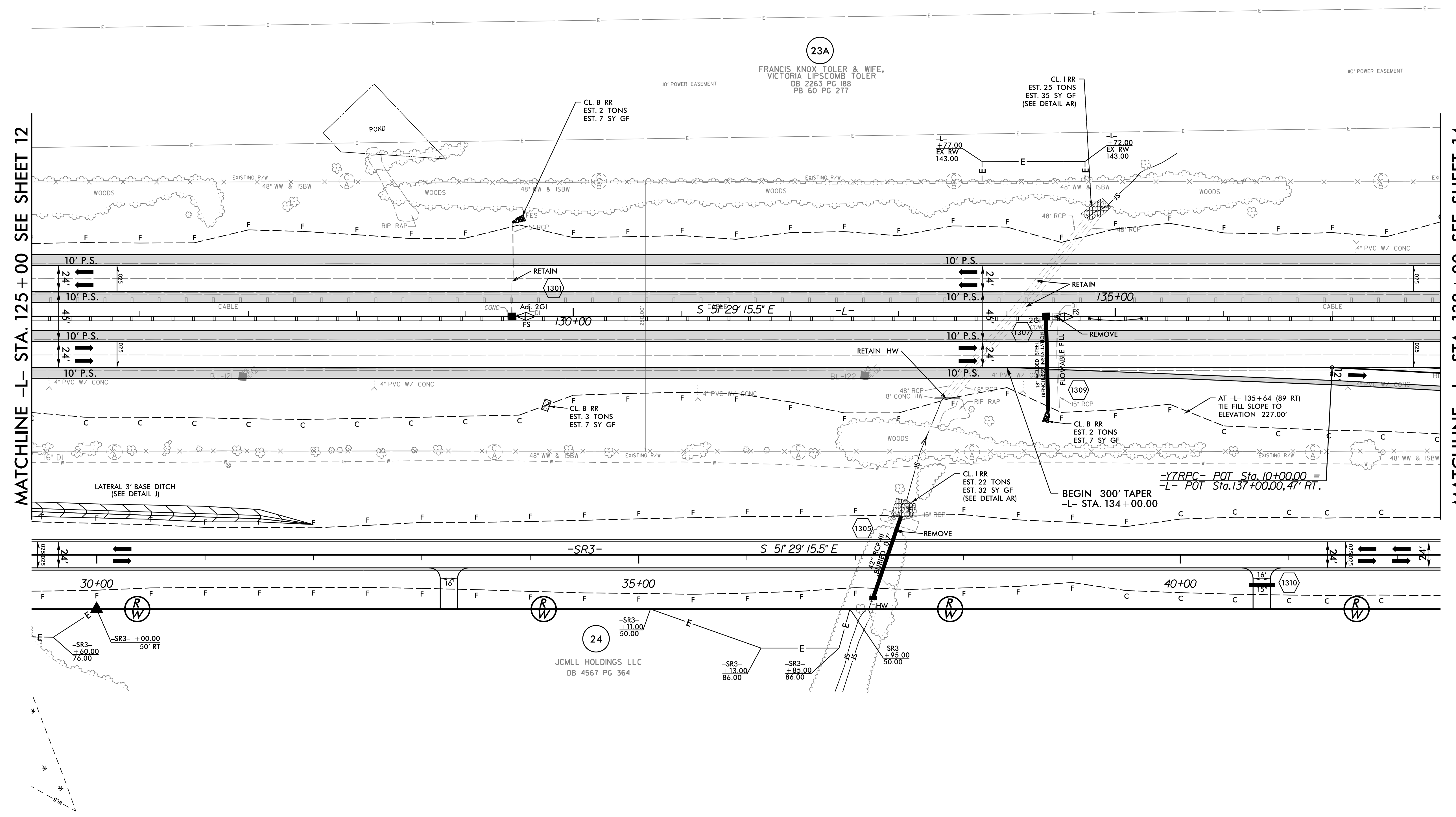
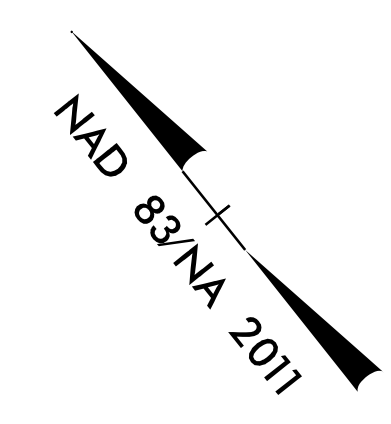
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 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. W-5600	SHEET NO. 13
ROADWAY DESIGN ENGINEER 12/15/2020 18:25 PST	HYDRAULICS ENGINEER 12/15/2020 08:46:23 PST
Designed by Matthew C. Hepler	Designed by Kevin B. Alford

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REVISIONS

MATCHLINE -L- STA. 125 + 00 SEE SHEET 12

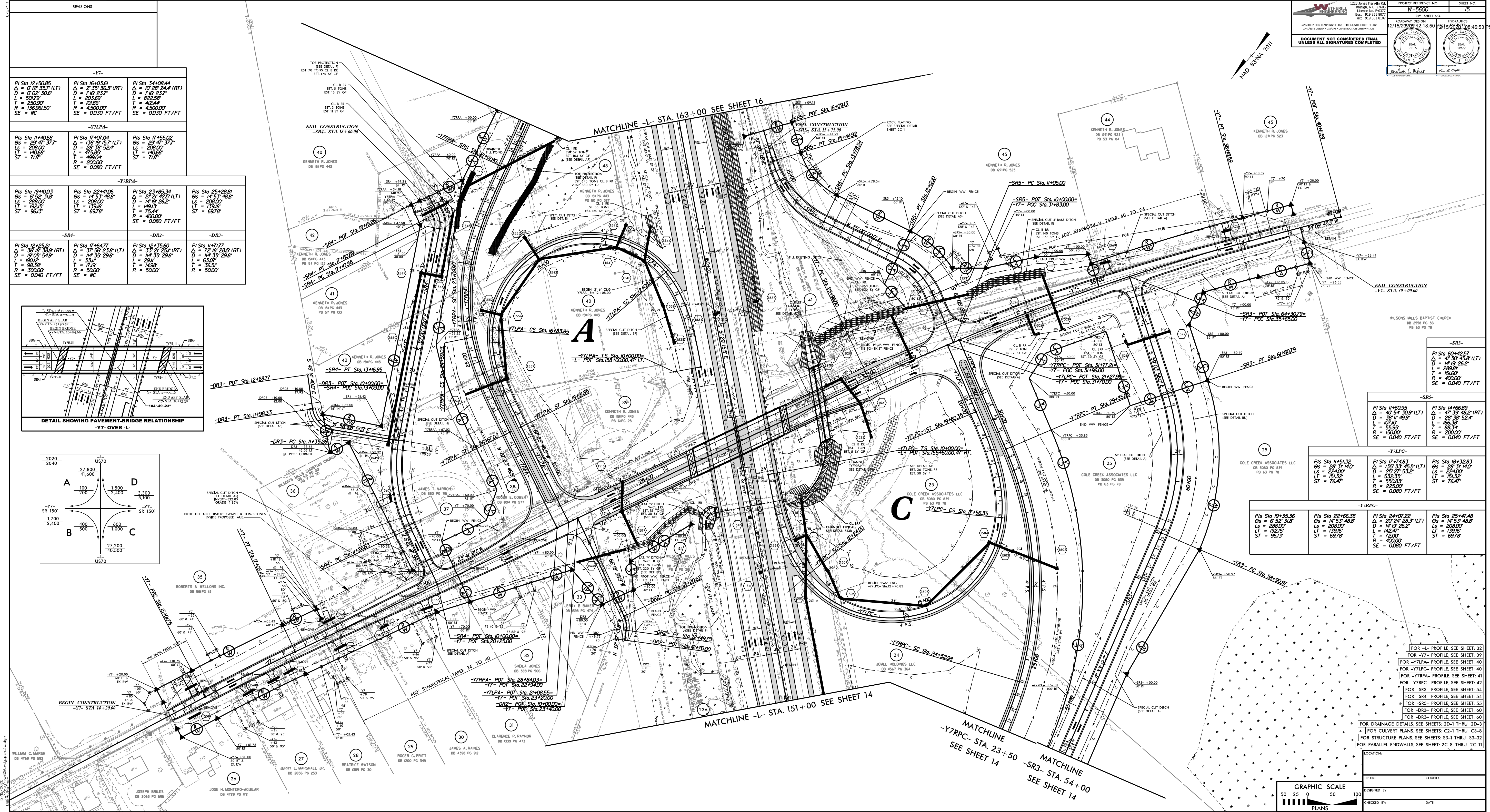
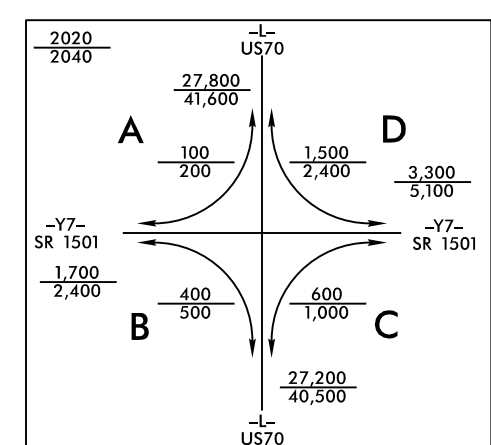
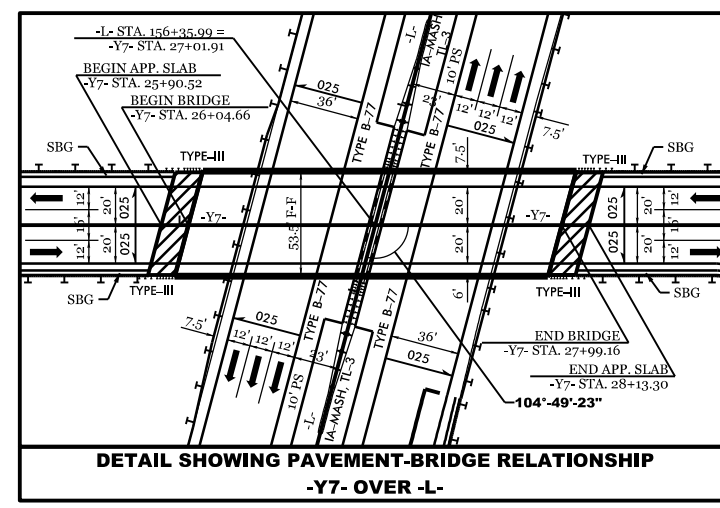
MATCHLINE -L- STA. 138 + 00 SEE SHEET 14

12/14/2020
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11:58:11 AM

FOR -L- PROFILE, SEE SHEET: 31
 FOR -SR3- PROFILE, SEE SHEET: 53
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS		

-Y7-		
Pts Sta 12+50.85 $\Delta = 0'12" 35.7'$ (LT) $D = 0'02" 30.6'$ $L = 200.76'$ $T = 230.97'$ $R = 136,961.50'$ $SE = NC$	Pts Sta 16+03.61 $\Delta = 2'30" 36.3'$ (RT) $D = 1'16" 23.7'$ $L = 200.76'$ $T = 492.44'$ $R = 450,000'$ $SE = 0.030$ FT/FT	Pts Sta 34+08.44 $\Delta = 17'58" 24.4'$ (RT) $D = 1'16" 23.7'$ $L = 200.76'$ $T = 492.44'$ $R = 450,000'$ $SE = 0.030$ FT/FT
-Y7LPA-		
Pts Sta 11+40.68 $\Delta = 29'47" 37.7'$ $L = 288.00'$ $LT = 140.68'$ $ST = 71.17'$	Pts Sta 17+07.04 $\Delta = 136'19" 15.7'$ (LT) $D = 288.00'$ $L = 475.85'$ $T = 200.00'$ $R = 200.00'$ $SE = 0.080$ FT/FT	Pts Sta 17+55.02 $\Delta = 29'47" 37.7'$ $L = 288.00'$ $LT = 140.68'$ $ST = 71.17'$
-Y7RPA-		
Pts Sta 19+00.03 $\Delta = 6'52" 31.8'$ $L = 288.00'$ $ST = 96.13'$	Pts Sta 22+41.06 $\Delta = 14'53" 48.8'$ $L = 200.00'$ $ST = 69.78'$	Pts Sta 23+85.34 $\Delta = 21'21" 42.5'$ (LT) $D = 14'53" 48.8'$ $L = 200.00'$ $T = 75.44'$ $R = 400.00'$ $SE = 0.080$ FT/FT
-SR4-		
Pts Sta 12+25.24 $\Delta = 30'18" 31.9'$ (RT) $D = 19'05" 24.6'$ $L = 90.38'$ $R = 300.00'$ $SE = 0.040$ FT/FT	Pts Sta 17+64.77 $\Delta = 30'18" 31.9'$ (LT) $D = 14'35" 29.6'$ $L = 17.19'$ $R = 500.00'$ $SE = NC$	Pts Sta 18+35.60 $\Delta = 14'35" 29.6'$ (RT) $D = 14'35" 29.6'$ $L = 17.19'$ $R = 500.00'$
-DR3-		
Pts Sta 12+25.24 $\Delta = 30'18" 31.9'$ (RT) $D = 19'05" 24.6'$ $L = 90.38'$ $R = 300.00'$ $SE = 0.040$ FT/FT	Pts Sta 17+64.77 $\Delta = 30'18" 31.9'$ (LT) $D = 14'35" 29.6'$ $L = 17.19'$ $R = 500.00'$	Pts Sta 18+35.60 $\Delta = 14'35" 29.6'$ (RT) $D = 14'35" 29.6'$ $L = 17.19'$ $R = 500.00'$



PROJECT REFERENCE NO. W-5600
 SHEET NO. 75
 ROADWAY DESIGN
 12/15/2010 PROJECT 2:10:50 STA. 16+00 THRU 46+53
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1233 SOUTH SHORE RD.
 RICHMOND, VA 23260
 (804) 748-1100
 FAX: (804) 748-1101

TRANSPORTATION PLANNING DIVISION - INFRASTRUCTURE DESIGN
 CIVIL ENGINEER - LICENSED PROFESSIONAL ENGINEER

PROJECT ENGINEER: KENNETH R. JONES
 DESIGNER: JERRY L. MARSHALL, JR.
 CHECKER: JOSE H. MONTERO-AGUILAR

GRAPHIC SCALE
 0 25 50 100
 PLANS

TP NO. COUNTY: _____
 DESIGNED BY: _____
 CHECKED BY: _____
 DATE: _____

- FOR -L- PROFILE SEE SHEET 32
- FOR -Y7- PROFILE SEE SHEET 39
- FOR -Y7LPA- PROFILE SEE SHEET 40
- FOR -Y7LPC- PROFILE SEE SHEET 40
- FOR -Y7RPA- PROFILE SEE SHEET 41
- FOR -Y7RPC- PROFILE SEE SHEET 42
- FOR -SR3- PROFILE SEE SHEET 54
- FOR -SR4- PROFILE SEE SHEET 54
- FOR -SR5- PROFILE SEE SHEET 55
- FOR -DR3- PROFILE SEE SHEET 60
- FOR DRAINAGE DETAILS SEE SHEETS 20-1 THRU 20-3
- FOR CULVERT PLANS SEE SHEETS C2-1 THRU C3-8
- FOR STRUCTURE PLANS SEE SHEETS S3-1 THRU S3-32
- FOR PARALLEL ENDWALLS SEE SHEET 2C-8 THRU 2C-11

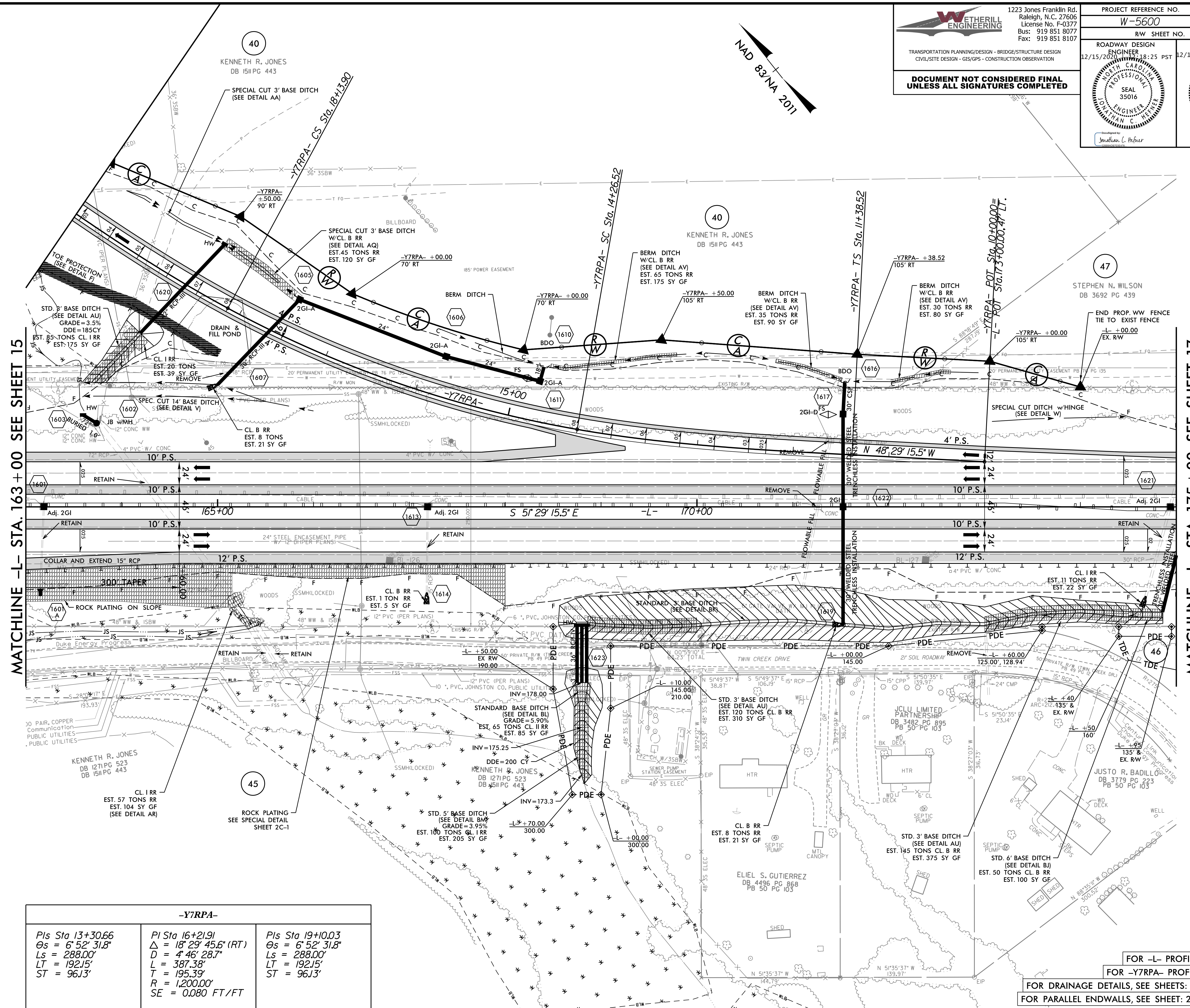
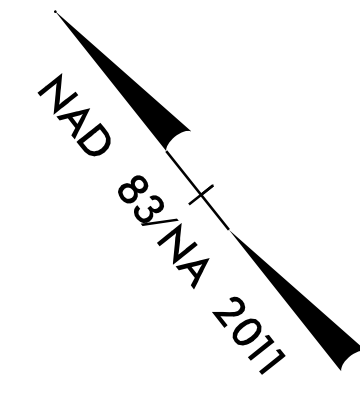
8/17/99

WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 12/15/2018 8:25 PST	HYDRAULICS ENGINEER 12/15/2018 16:23 PST



MATCHLINE -L- STA. 163+00 SEE SHEET 15

MATCHLINE -L- STA. 175+00 SEE SHEET 17

REVISIONS

-Y7RPA-		
Pls Sta 13+30.66 $\Theta_s = 6^\circ 52' 31.8''$ $L_s = 288.00'$ $LT = 192.15'$ $ST = 96.13'$	PI Sta 16+21.91 $\Delta = 18^\circ 29' 45.6''$ (RT) $D = 4^\circ 46' 28.7''$ $L = 387.38'$ $T = 195.39'$ $R = 1,200.00'$ $SE = 0.080$ FT/FT	Pls Sta 19+10.03 $\Theta_s = 6^\circ 52' 31.8''$ $L_s = 288.00'$ $LT = 192.15'$ $ST = 96.13'$

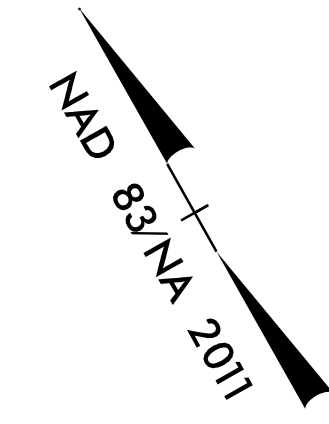
FOR -L- PROFILE, SEE SHEET: 33
 FOR -Y7RPA- PROFILE, SEE SHEET: 41
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

12/14/2020 06:00_rdu_psh_16.dgn

8/17/99

ROBERTS & WELLS INC.
DB 561 PG 113

-L-	
PIs Sta 177+70.08	PI Sta 185+23.96
$\Delta s = 3^{\circ}00'00.0"$	$\Delta = 25^{\circ}42'56.8" (LT)$
$Ls = 300.00'$	$D = 2^{\circ}00'00.0"$
$LT = 200.03'$	$L = 1,285.79'$
$ST = 100.03'$	$T = 653.9'$
	$R = 2,864.79'$
	$SE = 0.060 FT/FT$

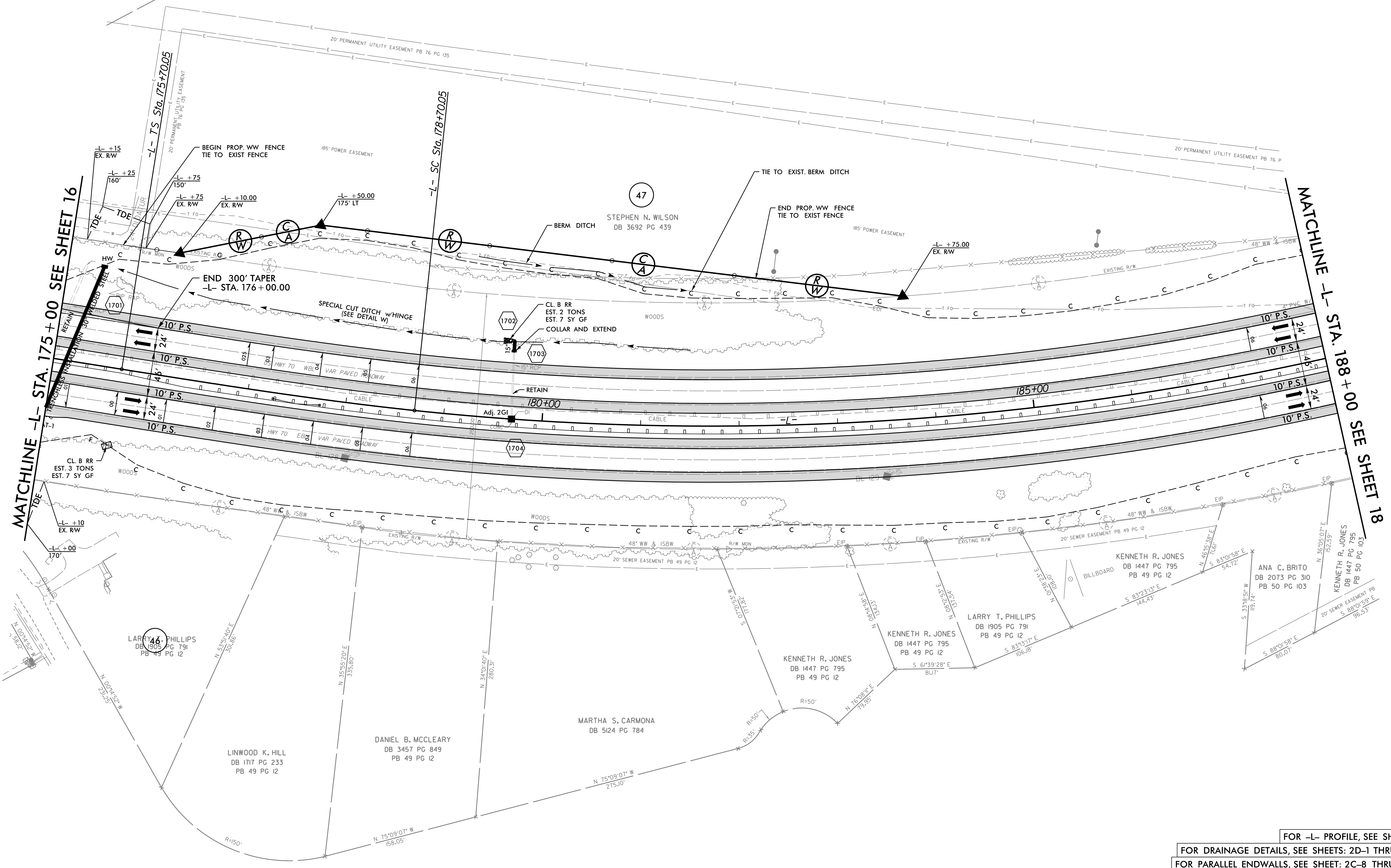


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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO.	SHEET NO.
W-5600	17
RW SHEET NO.	
ROADWAY DESIGN 12/15/2020 ENGINEER 18:25 PST	HYDRAULICS 12/15/2020 ENGINEER 18:26:23 PST



REVISIONS

12/14/2020
12/15/2020
11:58:16 AM

FOR -L- PROFILE, SEE SHEET: 33
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

8/17/99

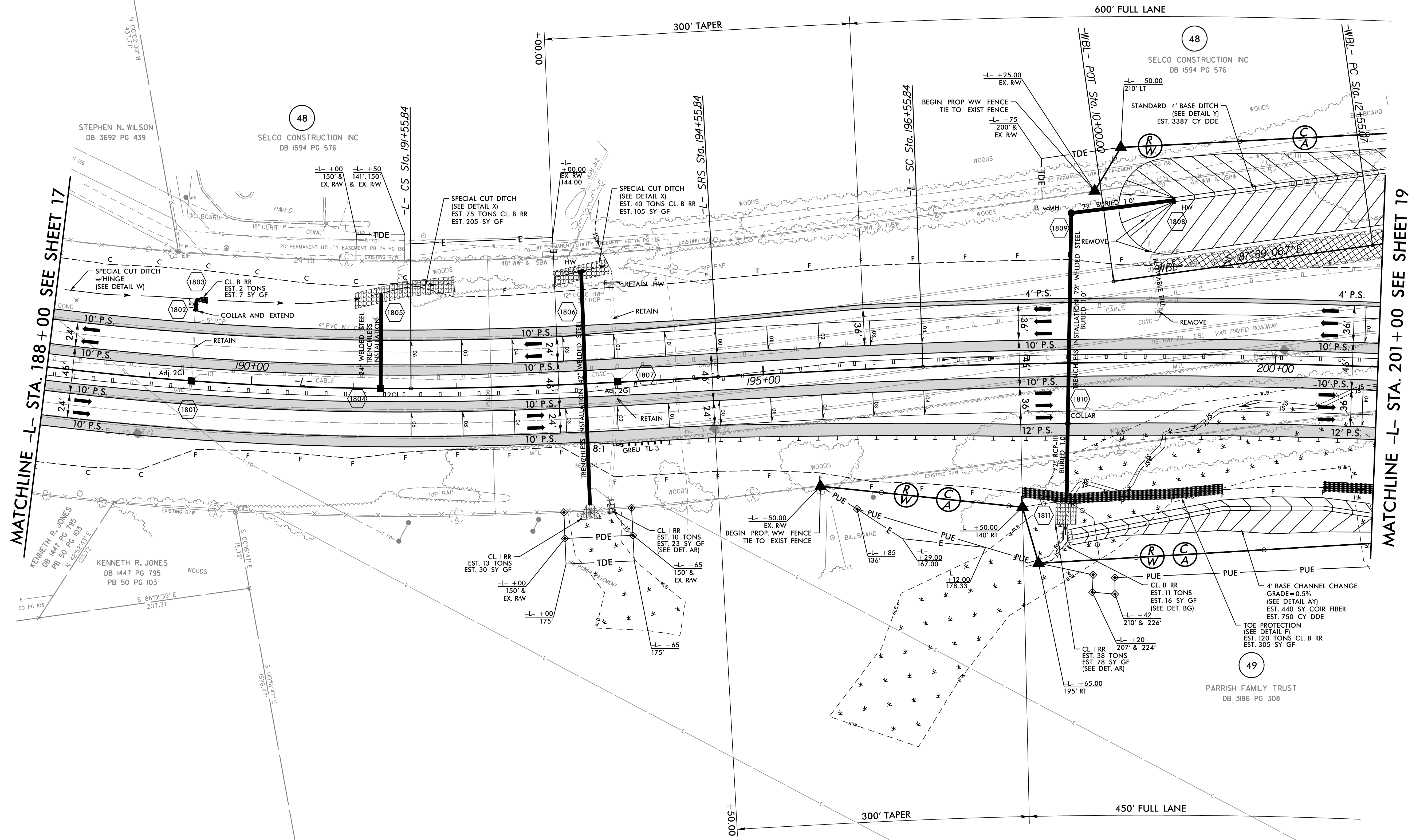
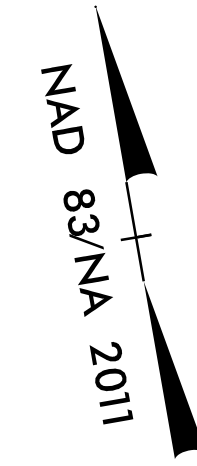
-L-			
PI Sta 185+23.96 $\Delta = 25^\circ 42' 56.8" (LT)$ $D = 2' 00' 00.0"$ $L = 285.79'$ $T = 653.91'$ $R = 2,864.79'$ $SE = 0.060 FT/FT$	PIs Sta 192+55.86 $\Theta_s = 3^\circ 00' 00.0"$ $L_s = 300.00'$ $LT = 200.03'$ $ST = 100.03'$	PIs Sta 195+89.17 $\Theta_s = 0^\circ 59' 16.3"$ $L_s = 200.00'$ $LT = 133.34'$ $ST = 66.67'$	PI Sta 213+20.68 $\Delta = 32^\circ 01' 53.3" (RT)$ $D = 0^\circ 59' 16.3"$ $L = 3,242.52'$ $T = 1,664.85'$ $R = 5,800.00'$ $SE = 0.040 FT/FT$

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PROJECT REFERENCE NO. W-5600	SHEET NO. 18
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 18:25 PST 12/15/2020



REVISIONS

MATCHLINE -L- STA. 188+00 SEE SHEET 17

MATCHLINE -L- STA. 201+00 SEE SHEET 19

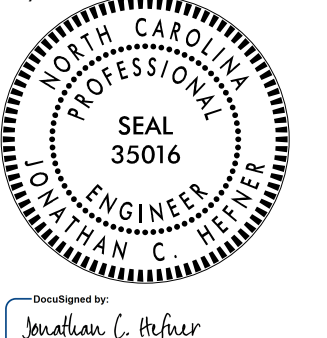

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JLH

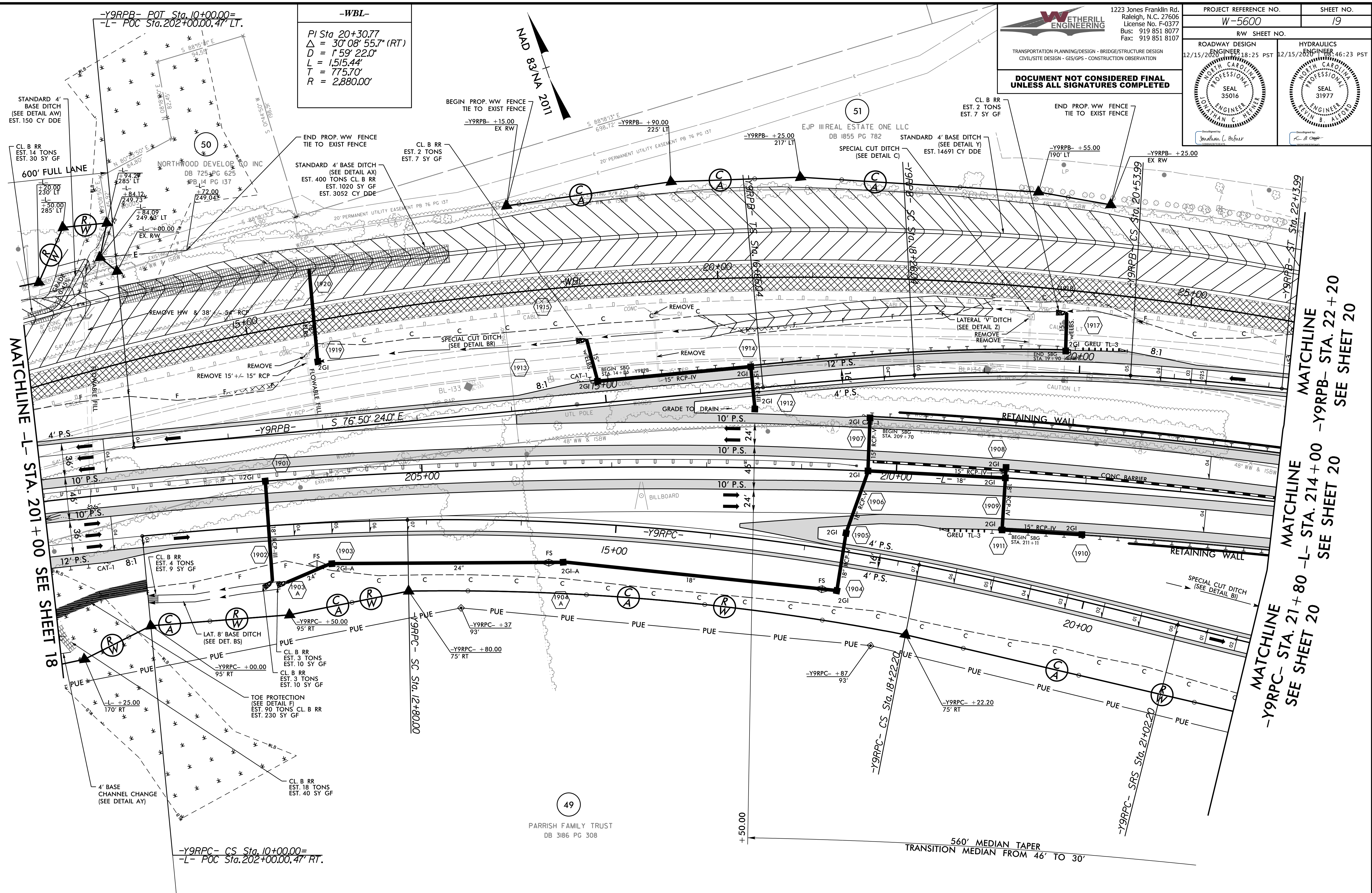
FOR -L- PROFILE, SEE SHEET: 34
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

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PROJECT REFERENCE NO. W-5600	SHEET NO. 19
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 16:23 PST 12/15/2020
 SEAL 35016 WETHERILL ENGINEERING NORTH CAROLINA PROFESSIONAL ENGINEER	 SEAL 31977 WETHERILL ENGINEERING NORTH CAROLINA PROFESSIONAL ENGINEER



MATCHLINE -L- STA. 201+00 SEE SHEET 18

MATCHLINE -Y9RPC- STA. 21+80 -L- STA. 214+00 -Y9RPB- STA. 22+20 SEE SHEET 20

-WBL-
 PI Sta 20+30.77
 $\Delta = 30^{\circ} 08' 55.7''$ (RT)
 $D = 1^{\circ} 59' 22.0''$
 $L = 1515.44'$
 $T = 775.70'$
 $R = 2880.00'$

-Y9RPC- CS Sta. 10+00.00=
-L- POC Sta. 202+00.00, 47' RT.

-L-	-Y9RPB-	-Y9RPC-	-Y9RPC-	-Y9RPC-	-Y9RPC-	-Y9RPC-	-Y9RPC-
PI Sta 213+20.68 $\Delta = 32^{\circ} 01' 53.3''$ (RT) $D = 0^{\circ} 59' 16.3''$ $L = 3,242.52'$ $T = 1,664.85'$ $R = 5,800.00'$ $SE = 0.040$ FT/FT	PIs Sta 17+72.71 $\Theta_s = 2^{\circ} 17' 30.6''$ $L_s = 160.00'$ $LT = 106.68'$ $ST = 53.34'$	PI Sta 19+40.14 $\Delta = 6^{\circ} 31' 49.8''$ (RT) $D = 2^{\circ} 51' 53.2''$ $L = 227.96'$ $T = 114.10'$ $R = 2,000.00'$ $SE = 0.050$ FT/FT	PIs Sta 21+07.34 $\Theta_s = 2^{\circ} 17' 30.6''$ $L_s = 160.00'$ $LT = 106.68'$ $ST = 53.34'$	PIs Sta 11+57.69 $\Theta_s = 1^{\circ} 23' 38.2''$ $\Theta_s = 3^{\circ} 05' 07.9''$ $D = 2^{\circ} 12' 13.3''$ $L = 542.20'$ $L_s = 280.00'$ $LT = 157.69'$ $R = 2,600.00'$ $ST = 122.45'$	PI Sta 15+52.09 $\Delta = 11^{\circ} 56' 54.3''$ (RT) $D = 2^{\circ} 12' 13.3''$ $L = 542.20'$ $L_s = 280.00'$ $T = 272.09'$ $R = 2,600.00'$ $SE = 0.070$ FT/FT	PIs Sta 19+15.56 $\Theta_s = 3^{\circ} 05' 06.6''$ $L_s = 280.00'$ $LT = 186.70'$ $ST = 93.36'$	PIs Sta 22+08.88 $\Theta_s = 2^{\circ} 17' 30.6''$ $L_s = 160.00'$ $LT = 106.68'$ $ST = 53.34'$

FOR -L- PROFILE, SEE SHEET: 34
 FOR -Y9RPB- PROFILE, SEE SHEET: 44 & 45
 FOR -Y9RPC- PROFILE, SEE SHEET: 45
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

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 Raleigh, N.C. 27606
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 Fax: 919 851 8107

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PROJECT REFERENCE NO. W-5600	SHEET NO. 21
ROADWAY DESIGN ENGINEER: 18:25 PST 12/15/2020	HYDRAULICS ENGINEER: 16:23 PST 12/15/2020

SEAL 35016
 SEAL 31977

-Y9RPA-

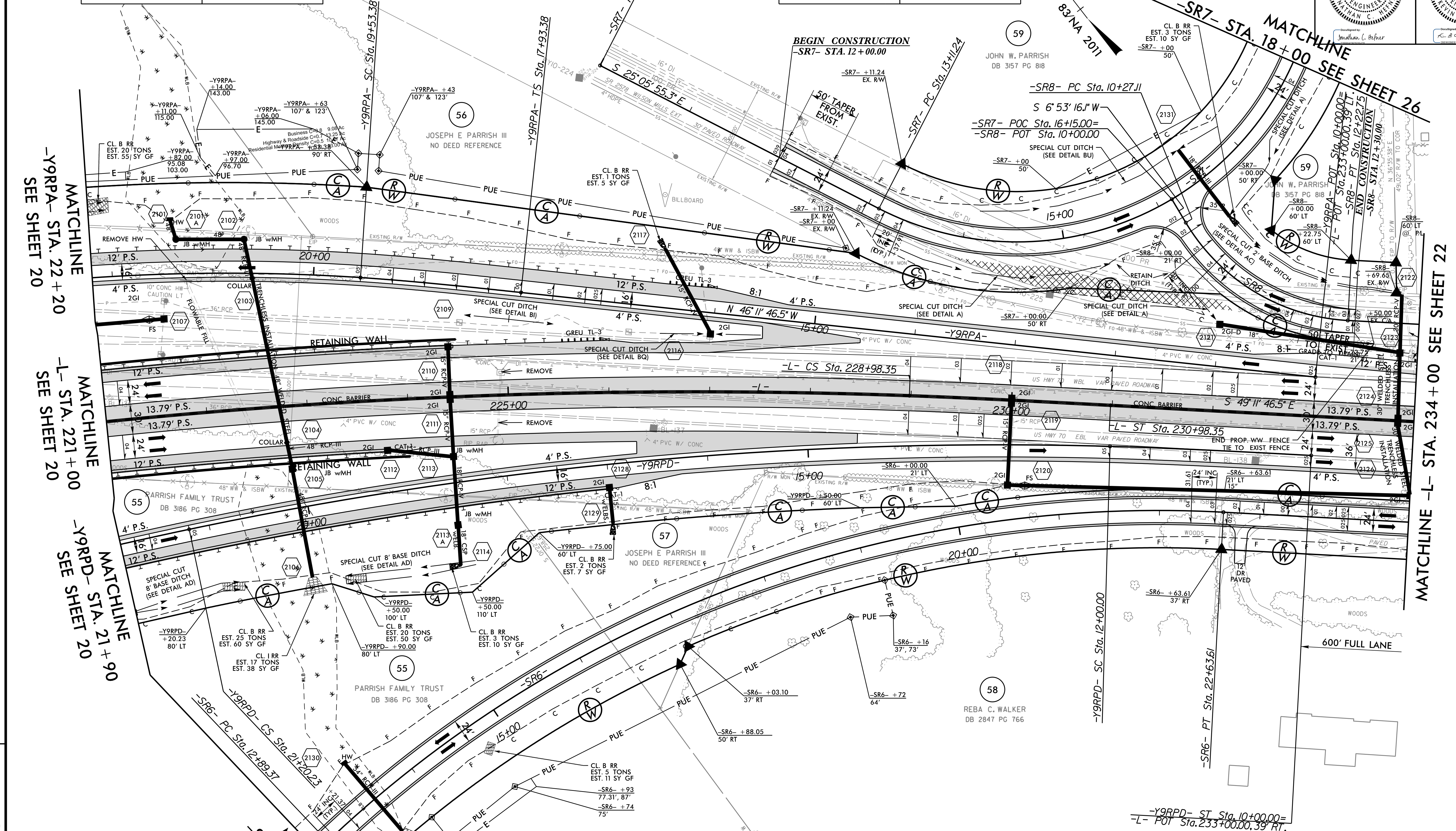
PIs Sta 19+00.06 Δs = 2° 17' 30.6" Ls = 160.00' LT = 106.68' ST = 53.34'	PI Sta 22+56.53 Δ = 17° 14' 15.9" (LT) D = 2° 51' 53.2" L = 601.71' T = 303.15' R = 2,000.00' SE = 0.050 FT/FT
--	--

-SR7-

PI Sta 18+13.57 Δ = 118° 18' 26.5" (LT) D = 19° 05' 54.9" L = 619.46' T = 502.33' R = 300.00' SE = 0.040 FT/FT	-SR8-
--	--------------

-SR8-

PI Sta 11+33.56 Δ = 56° 02' 52.1" (LT) D = 28° 38' 52.4" L = 195.64' T = 106.45' R = 200.00' SE = 0.040 FT/FT



MATCHLINE -Y9RPA- STA. 22+20 SEE SHEET 20

MATCHLINE -L- STA. 221+00 SEE SHEET 20

MATCHLINE -Y9RPD- STA. 21+90 SEE SHEET 20

MATCHLINE -L- STA. 234+00 SEE SHEET 22

-L-	-Y9RPD-	-SR6-
PIs Sta 213+20.68 Δ = 32° 01' 53.3" (RT) D = 0° 59' 16.3" Ls = 200.00' LT = 3,242.52' T = 1,664.85' R = 5,800.00' SE = 0.040 FT/FT	PIs Sta 229+65.02 Δs = 0° 59' 16.3" Ls = 200.00' LT = 133.34' ST = 66.67'	PIs Sta 11+33.34 Δs = 1° 28' 08.8" Ls = 200.00' LT = 133.34' ST = 66.67'
PIs Sta 16+62.26 Δ = 13° 31' 09.6" (LT) D = 1° 28' 08.8" Ls = 200.00' LT = 920.23' T = 462.26' R = 3,900.00' SE = 0.050 FT/FT	PIs Sta 21+86.90 Δs = 1° 28' 08.8" Ls = 200.00' LT = 133.34' ST = 66.67'	PIs Sta 18+05.14 Δ = 46° 31' 00.0" (RT) D = 4° 46' 28.7" Ls = 974.24' T = 515.77' R = 1,200.00' SE = 0.040 FT/FT

FOR -L- PROFILE, SEE SHEET: 35
 FOR -Y9RPA- PROFILE, SEE SHEET: 44
 FOR -Y9RPD- PROFILE, SEE SHEET: 46
 FOR -SR6- PROFILE, SEE SHEET: 55
 FOR -SR7- PROFILE, SEE SHEET: 56
 FOR -SR8- PROFILE, SEE SHEET: 59
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHT.: 2C-8 THRU 2C-11

REVISIONS

12/14/2020
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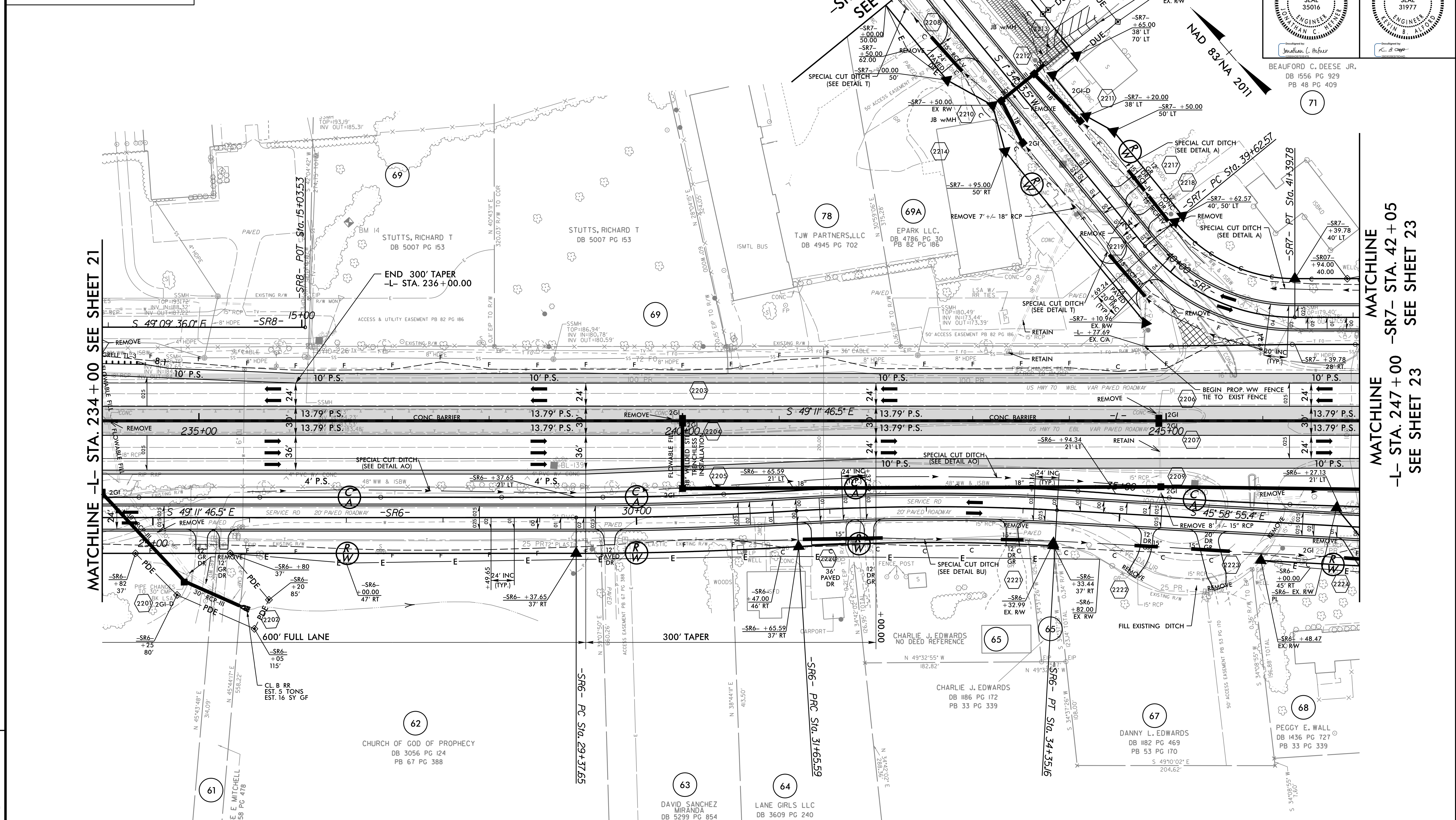
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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PROJECT REFERENCE NO. W-5600	SHEET NO. 22
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020 SEAL 35016	HYDRAULICS ENGINEER 16:23 PST 12/15/2020 SEAL 31977

BEAUFORD C. DEESE JR.
 DB 1556 PG 929
 PB 48 PG 409



REVISIONS

-SR6-	-SR7-
PI Sta 30+51.65 Δ = 3° 30' 04.8" (LT) D = 1° 32' 09.9" L = 227.94' T = 114.01' R = 3,730.00' SE = RC	PI Sta 33+00.53 Δ = 6° 42' 55.8" (RT) D = 2° 29' 28.0" L = 269.58' T = 134.94' R = 2,300.00' SE = 0.030 FT/FT
PI Sta 40+57.47 Δ = 50° 46' 00.0" (LT) D = 28° 38' 52.4" L = 177.21' T = 94.90' R = 200.00' SE = 0.040 FT/FT	

FOR -L- PROFILE, SEE SHEET: 36
 FOR -SR6- PROFILE, SEE SHEET: 55 & 56
 FOR -SR7- PROFILE, SEE SHEET: 57
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

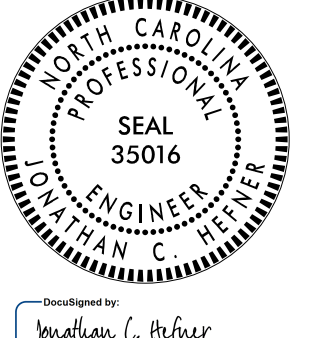
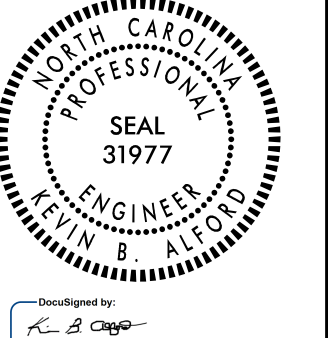
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8/17/99

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 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

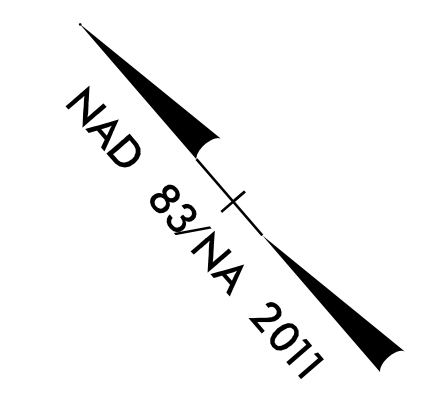
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 23
Roadway Design ENGINEER: 18:25 PST 12/15/2020	Hydraulics ENGINEER: 18:46:23 PST 12/15/2020
 Matthew L. Pfeifer Professional Engineer No. 35016 State of North Carolina	 Kevin B. Alford Professional Engineer No. 31977 State of North Carolina

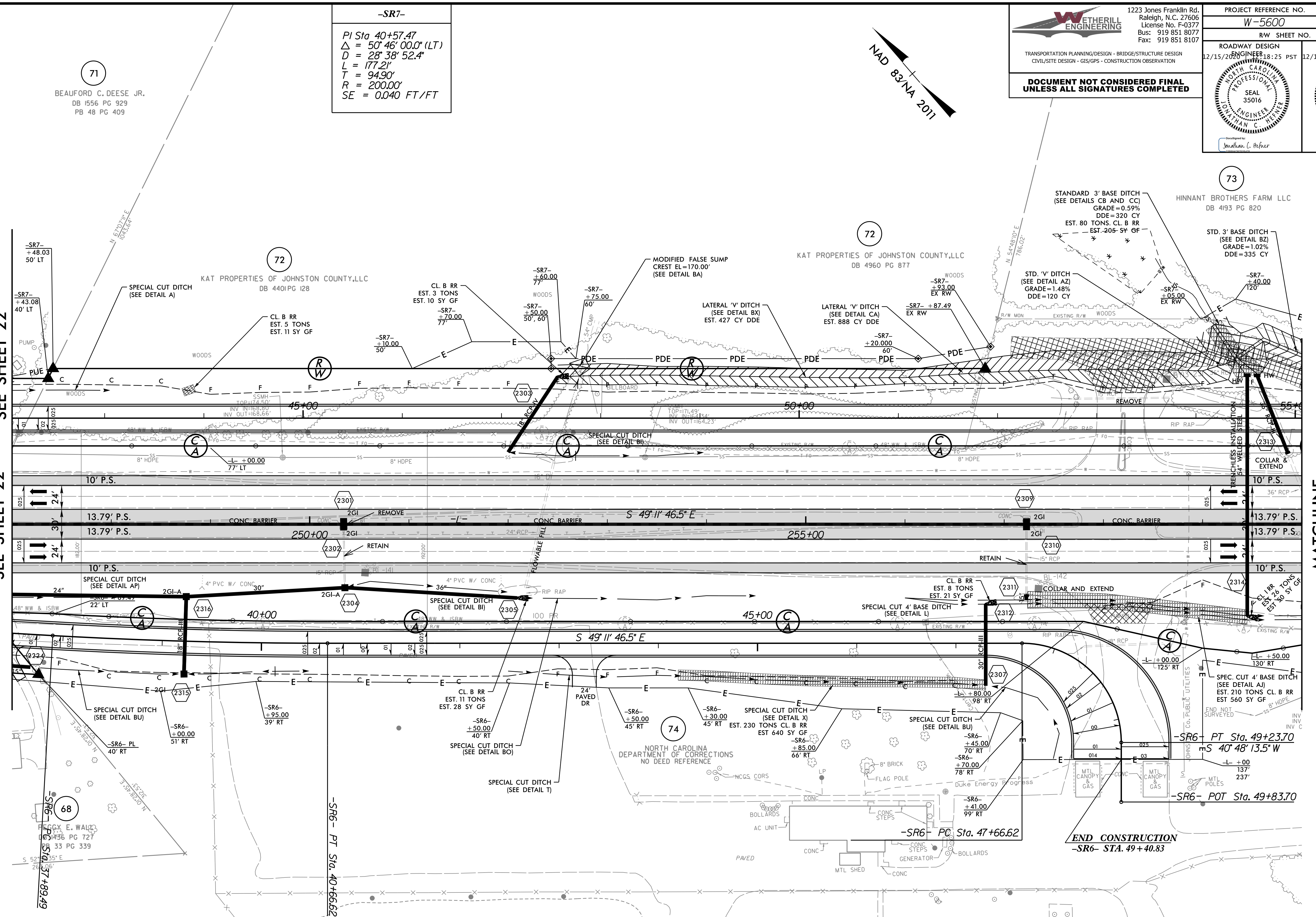
-SR7-

PI Sta 40+57.47
 $\Delta = 50' 46'' 00.0''$ (LT)
 $D = 28' 38'' 52.4''$
 $L = 177.21'$
 $T = 94.90'$
 $R = 200.00'$
 $SE = 0.040$ FT/FT



MATCHLINE
 -L- STA. 247+00
 SEE SHEET 22

MATCHLINE
 -L- STA. 260+00
 SEE SHEET 24



-SR6-

PI Sta 39+28.09 $\Delta = 3' 12'' 51.0''$ (LT) $D = 1' 09'' 35.4''$ $L = 277.12'$ $T = 138.60'$ $R = 4,940.00'$ $SE = RC$	PI Sta 48+66.62 $\Delta = 90' 00'' 00.0''$ (RT) $D = 57' 17'' 44.8''$ $L = 157.08'$ $T = 100.00'$ $R = 100.00'$ $SE = 0.040$ FT/FT
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FOR -L- PROFILE, SEE SHEET: 36
 FOR -SR6- PROFILE, SEE SHEET: 55 & 56
 FOR -SR7- PROFILE, SEE SHEET: 57 & 58
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

REVISIONS

12/14/2020 05:00_rdu_psh_23.dgn

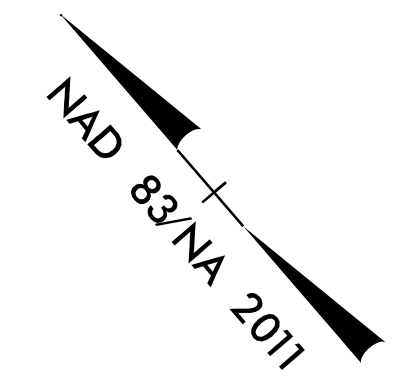
B.17/99

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 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

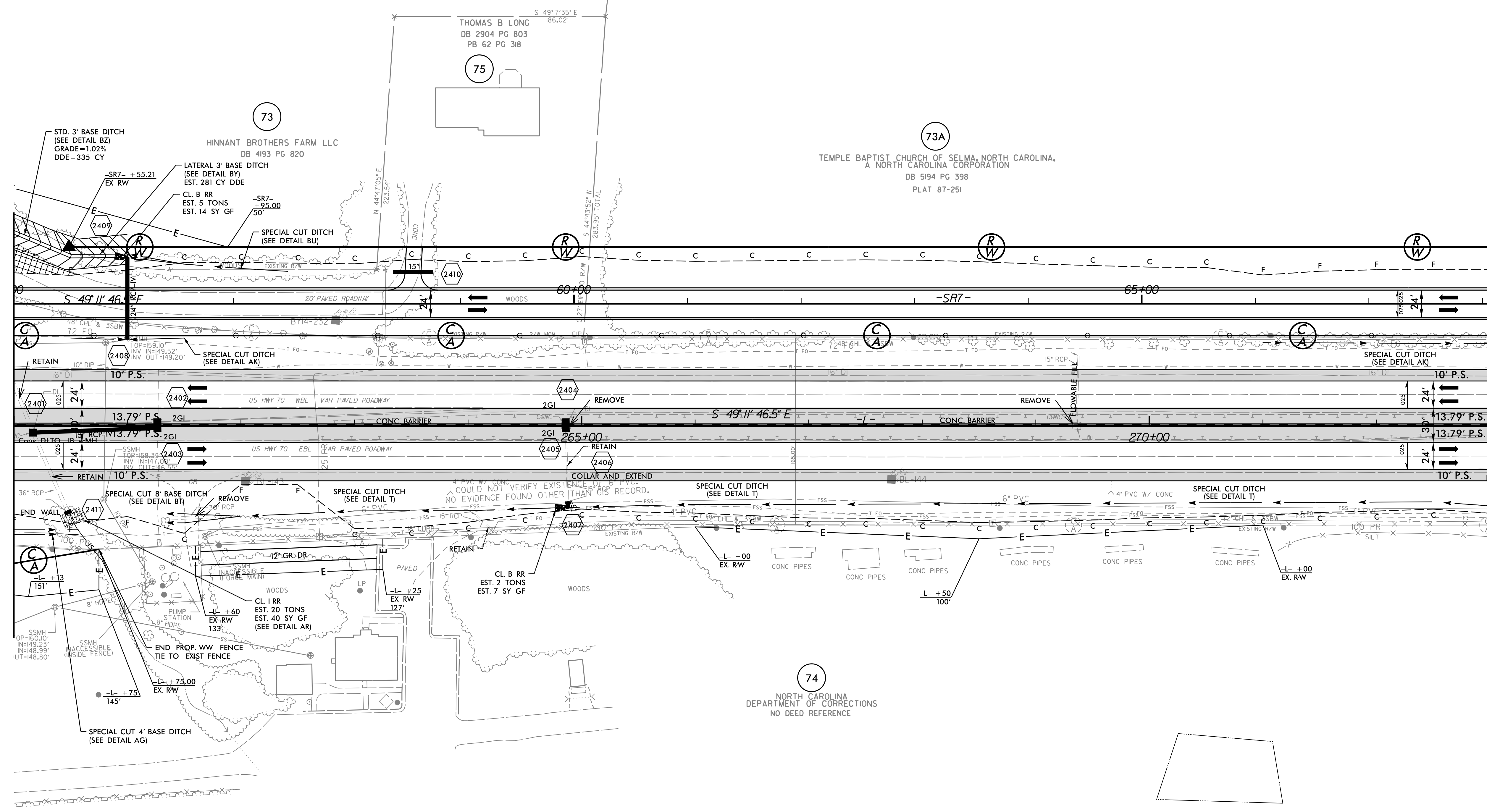
**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 24
ROADWAY DESIGN ENGINEER 12/15/2020 18:25 PST	HYDRAULICS ENGINEER 12/15/2020 14:23 PST



MATCHLINE
 -L- STA. 260+00
 SEE SHEET 23

MATCHLINE
 -L- STA. 273+00 -SR7- STA. 68+20
 SEE SHEET 25



REVISIONS

12/14/2020 05:00_r.dj.psh_24.dgn

FOR -L- PROFILE, SEE SHEET: 37
 FOR -SR7- PROFILE, SEE SHEET: 58
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

8/17/99

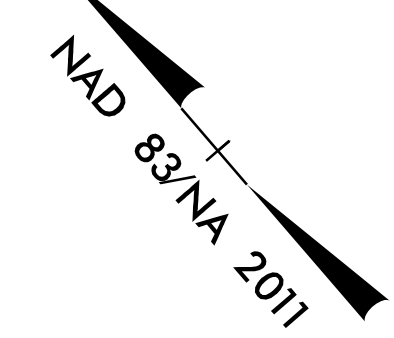
-SR7-
$PI\ Sta\ 72+32.83$ $\Delta = 90^{\circ}14'32.7" (LT)$ $D = 28^{\circ}38'52.4"$ $L = 315.0'$ $T = 200.85'$ $R = 200.00'$ $SE = 0.040\ FT/FT$
-Y16-
$PI\ STA.12+11.5$ $\Delta = 6^{\circ}10'19.2" (RT)$ $D = 4^{\circ}48'32.5"$ $L = 128.34'$ $T = 64.23'$ $R = 1,191.42'$

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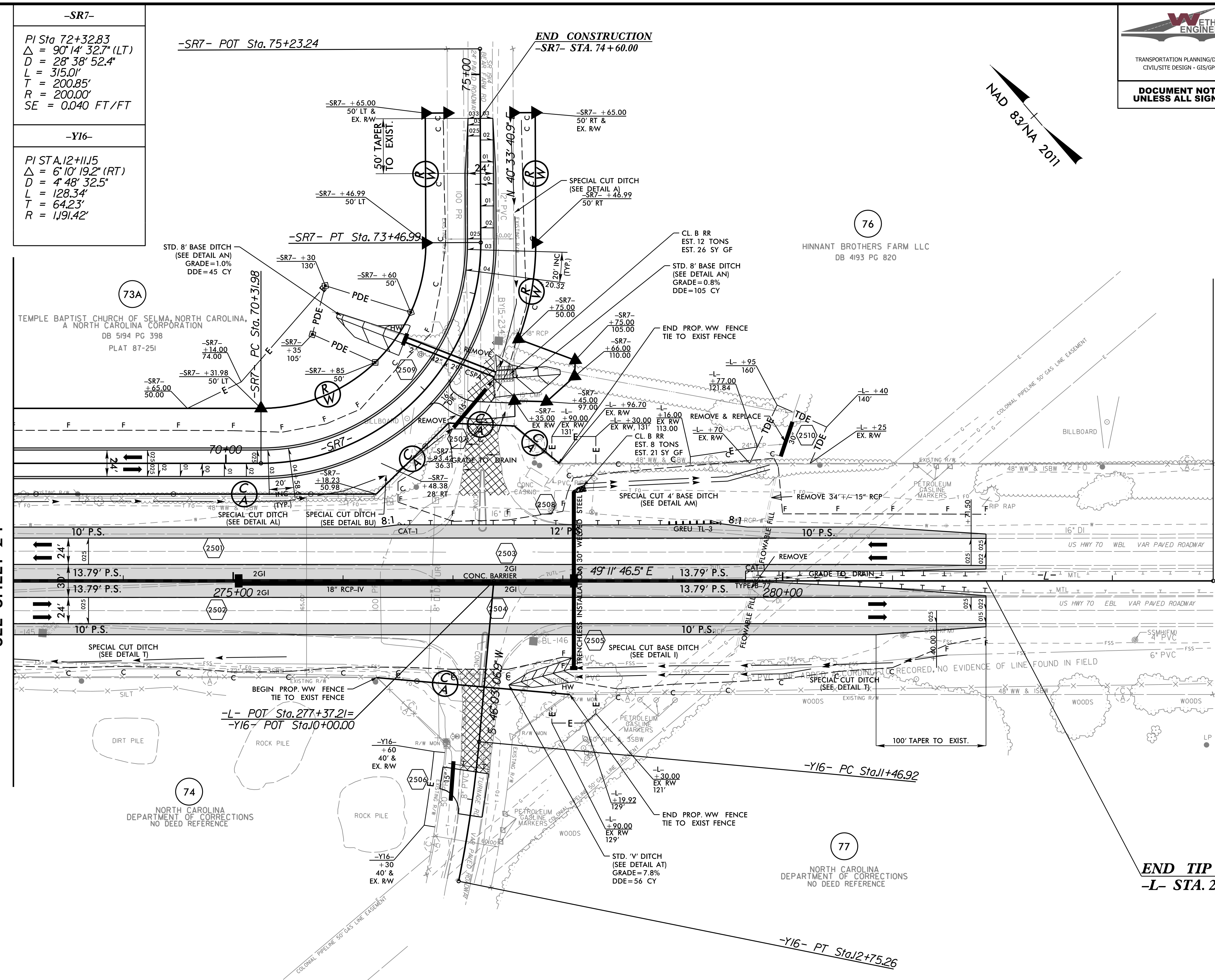
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 25
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 18:46:23 PST 12/15/2020



MATCHLINE -SR7- STA. 68 + 20
 SEE SHEET 24
 MATCHLINE -L- STA. 273 + 00
 SEE SHEET 24



END TIP PROJECT W-5600
-L- STA. 281 + 85.00

REVISIONS

12/14/2020
 C:\p6600_rdu_psh_25.dgn
 JCS:JCS

FOR -L- PROFILE, SEE SHEET: 37
 FOR -SR7- PROFILE, SEE SHEET: 58
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

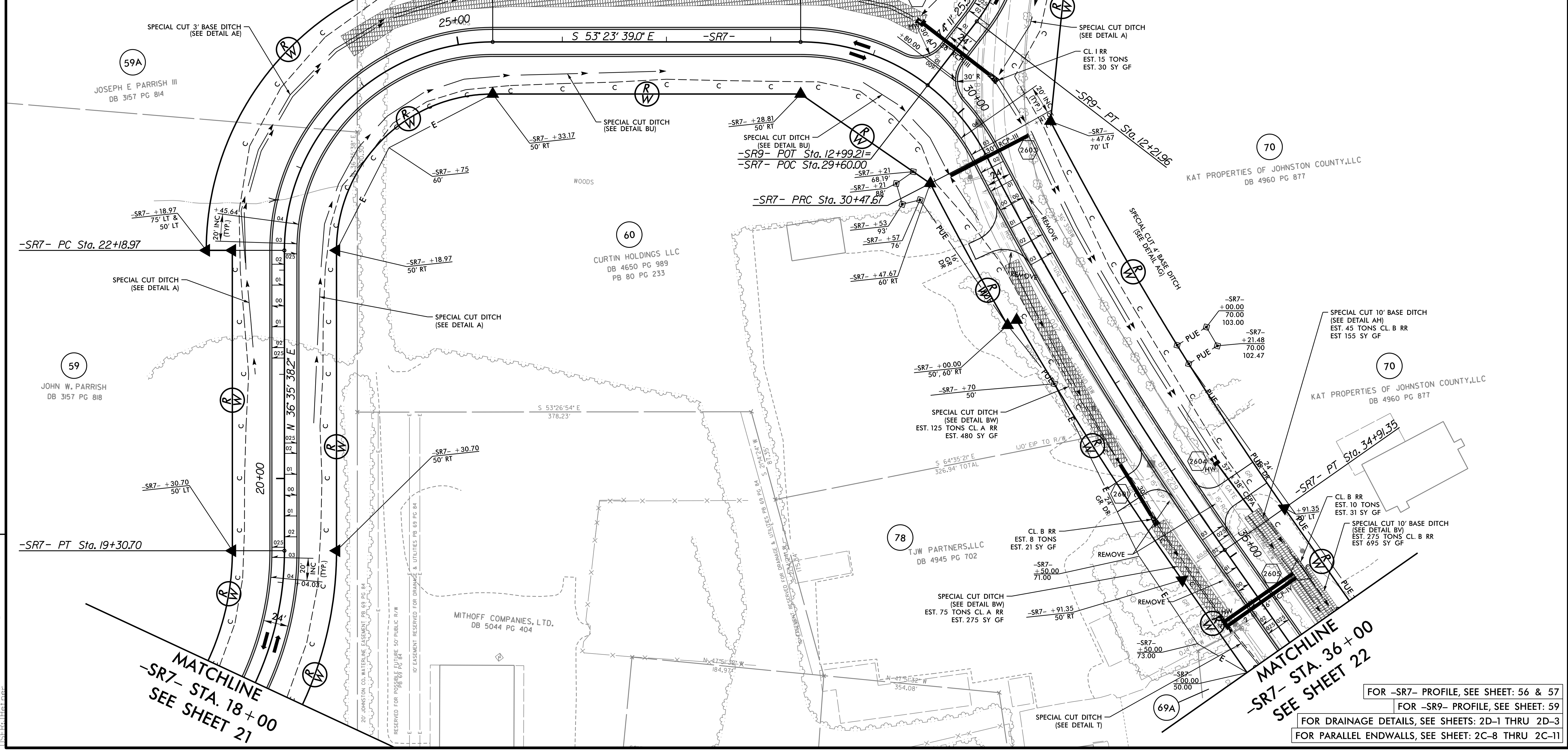
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 18:25 PST 12/15/2020	HYDRAULICS ENGINEER 16:23 PST 12/15/2020

-SR7-	
PI Sta 18+13.57 $\Delta = 118^\circ 18' 26.5" (LT)$ $D = 19^\circ 05' 54.9"$ $L = 619.46'$ $T = 502.33'$ $R = 300.00'$ $SE = 0.040 FT/FT$	PI Sta 24+19.01 $\Delta = 90^\circ 00' 42.8" (RT)$ $D = 28^\circ 38' 52.4"$ $L = 314.20'$ $T = 200.04'$ $R = 200.00'$ $SE = 0.040 FT/FT$
-SR7-	
PI Sta 29+50.65 $\Delta = 62^\circ 42' 04.7" (RT)$ $D = 28^\circ 38' 52.4"$ $L = 218.87'$ $T = 121.84'$ $R = 200.00'$ $SE = 0.040 FT/FT$	PI Sta 32+69.85 $\Delta = 7^\circ 44' 12.2" (LT)$ $D = 1^\circ 44' 37.6"$ $L = 443.68'$ $T = 222.18'$ $R = 3,285.75'$ $SE = EXIST.$
-SR9-	
PI Sta 11+87.56 $\Delta = 26^\circ 46' 38.0" (RT)$ $D = 38^\circ 11' 49.9"$ $L = 70.10'$ $T = 35.70'$ $R = 150.00'$ $SE = 0.020 FT/FT$	



REVISIONS

MATCHLINE
-SR7- STA. 18+00
SEE SHEET 21

MATCHLINE
-SR7- STA. 36+00
SEE SHEET 22

FOR -SR7- PROFILE, SEE SHEET: 56 & 57
 FOR -SR9- PROFILE, SEE SHEET: 59
 FOR DRAINAGE DETAILS, SEE SHEETS: 2D-1 THRU 2D-3
 FOR PARALLEL ENDWALLS, SEE SHEET: 2C-8 THRU 2C-11

12/14/2020
 12:45:00
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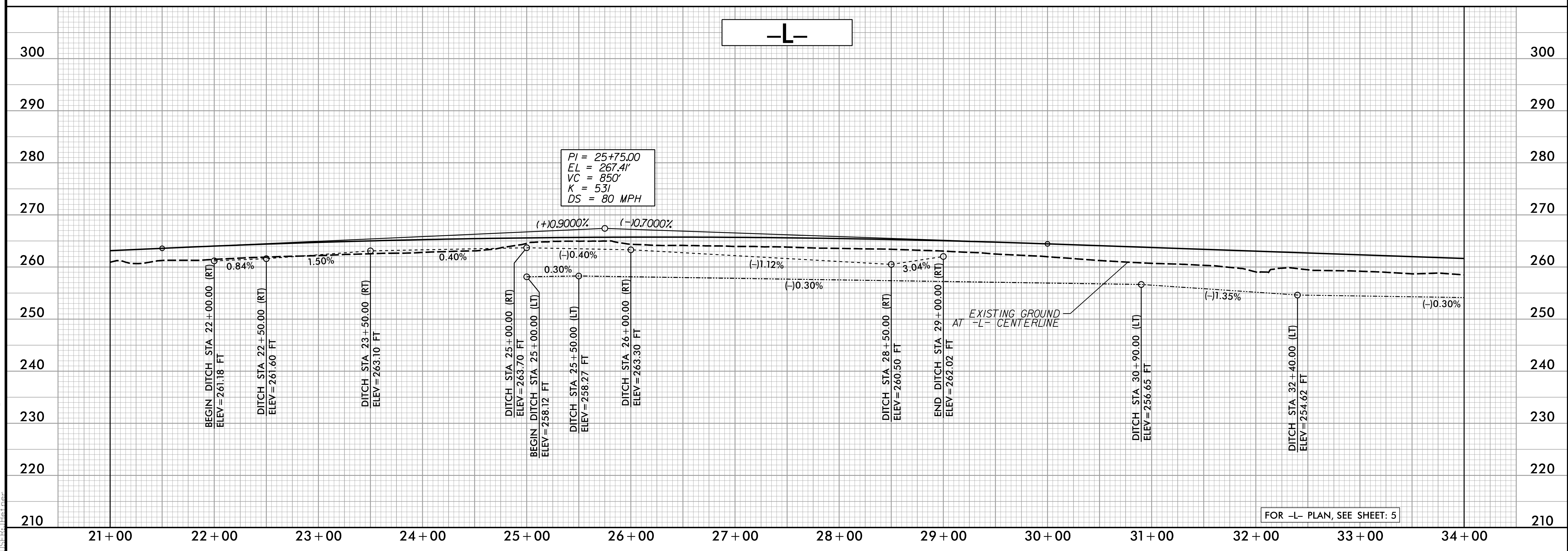
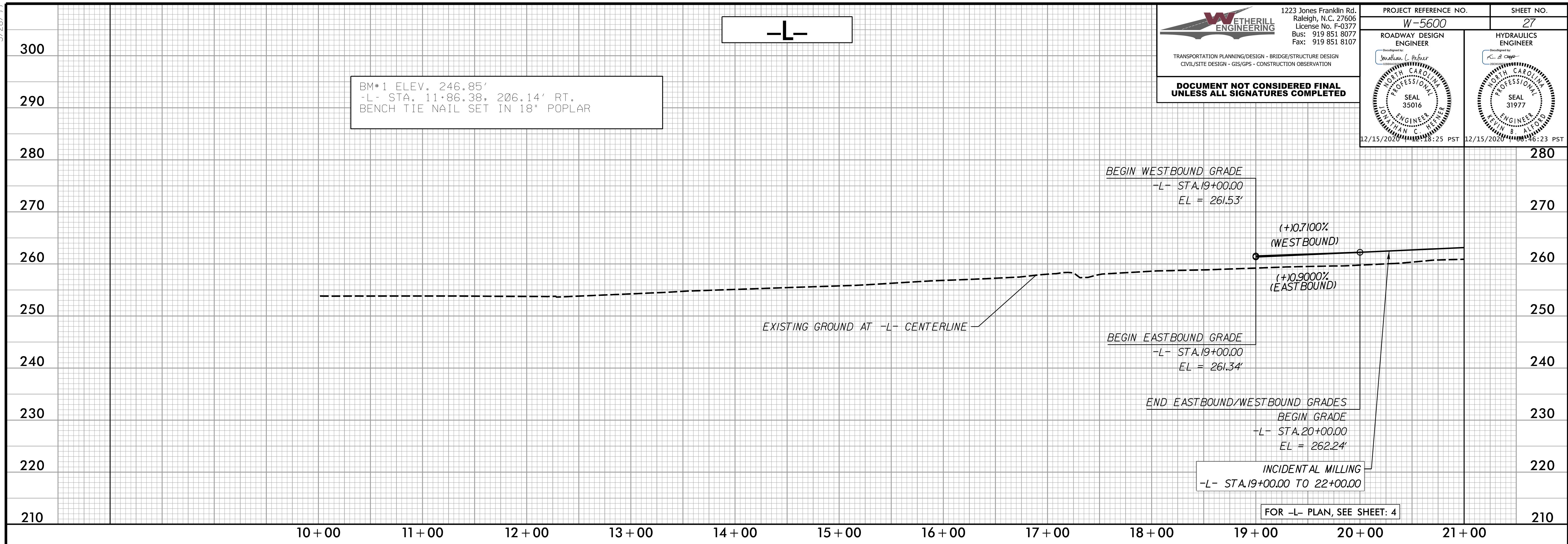
5/28/99

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 27
ROADWAY DESIGN ENGINEER <i>Jonathan L. Peffer</i> SEAL 35016 12/15/2020 10:16:25 PST	HYDRAULICS ENGINEER <i>K. B. O'Connell</i> SEAL 31977 12/15/2020 10:16:23 PST



12/14/2020 10:16:25 PST
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5/28/20

-L-

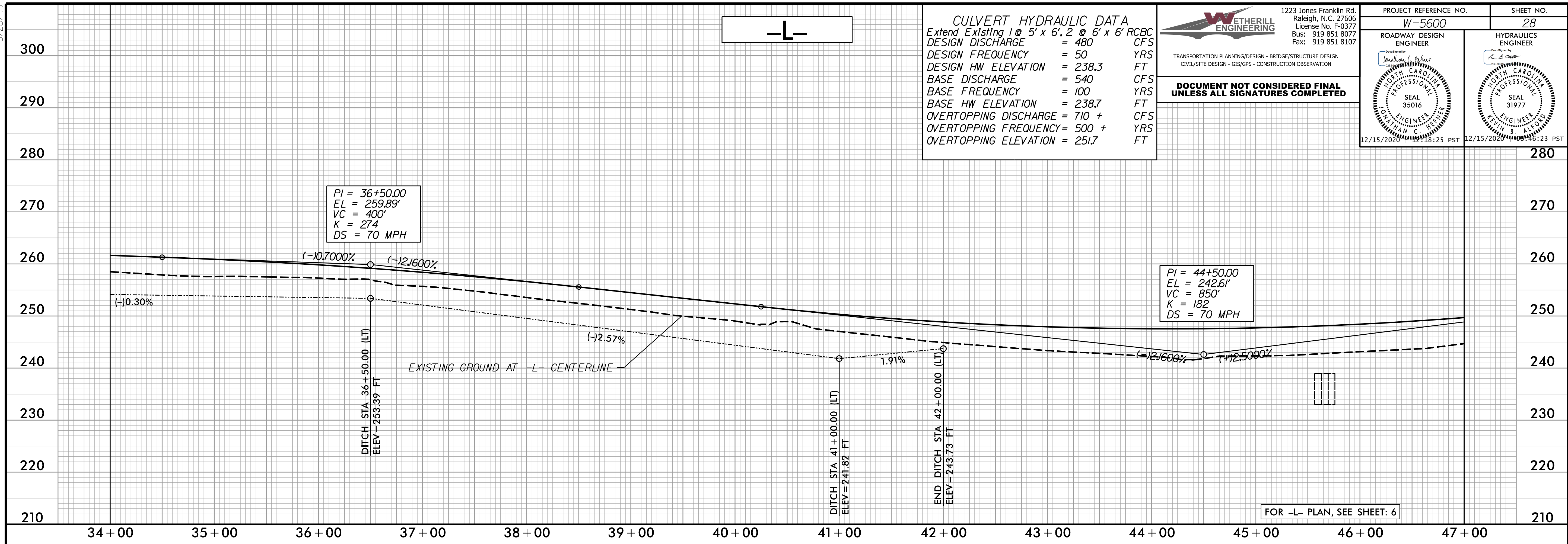
CULVERT HYDRAULIC DATA
 Extend Existing 1 @ 5' x 6', 2 @ 6' x 6' RCBC
 DESIGN DISCHARGE = 480 CFS
 DESIGN FREQUENCY = 50 YRS
 DESIGN HW ELEVATION = 238.3 FT
 BASE DISCHARGE = 540 CFS
 BASE FREQUENCY = 100 YRS
 BASE HW ELEVATION = 238.7 FT
 OVERTOPPING DISCHARGE = 710 + CFS
 OVERTOPPING FREQUENCY = 500 + YRS
 OVERTOPPING ELEVATION = 251.7 FT

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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

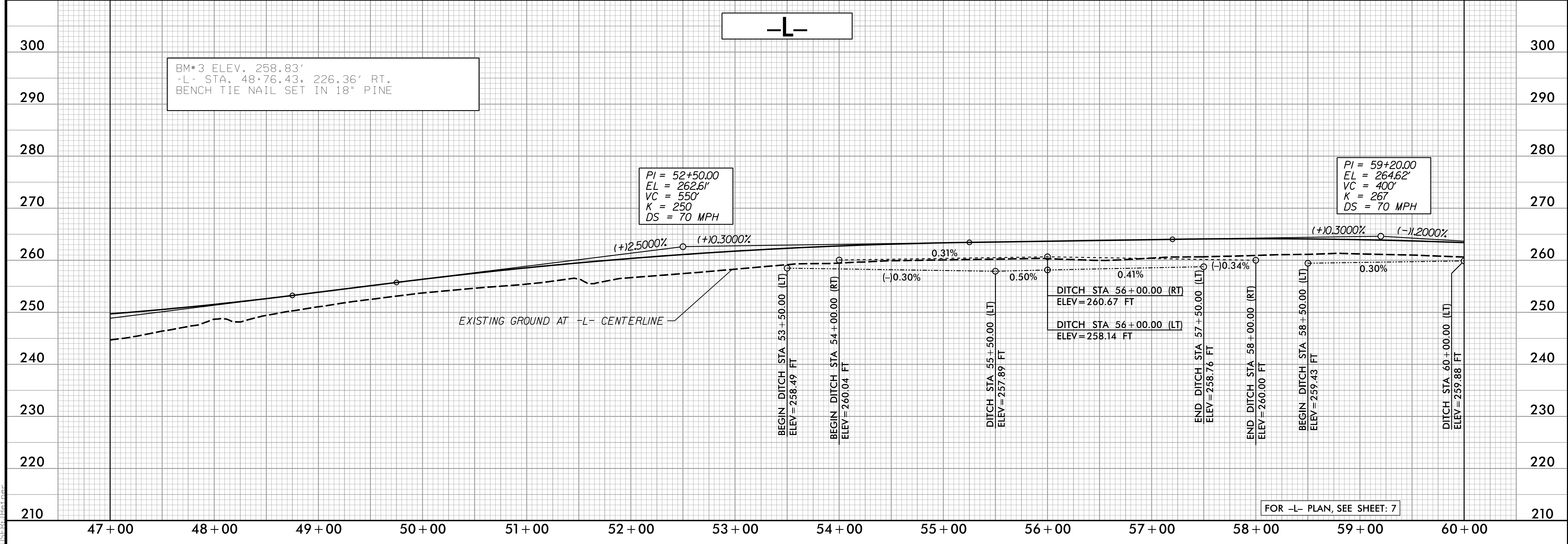
**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 28
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>
SEAL 35016 12/15/2020 12:18:25 PST	SEAL 31977 12/15/2020 12:16:23 PST



-L-

BM#3 ELEV. 258.83'
 -L- STA. 48+76.43, 226.36' RT.
 BENCH TIE NAIL SET IN 18" PINE



12/14/2020 11:58:13 AM W-5600_rdy_psh_28_p1.dgn

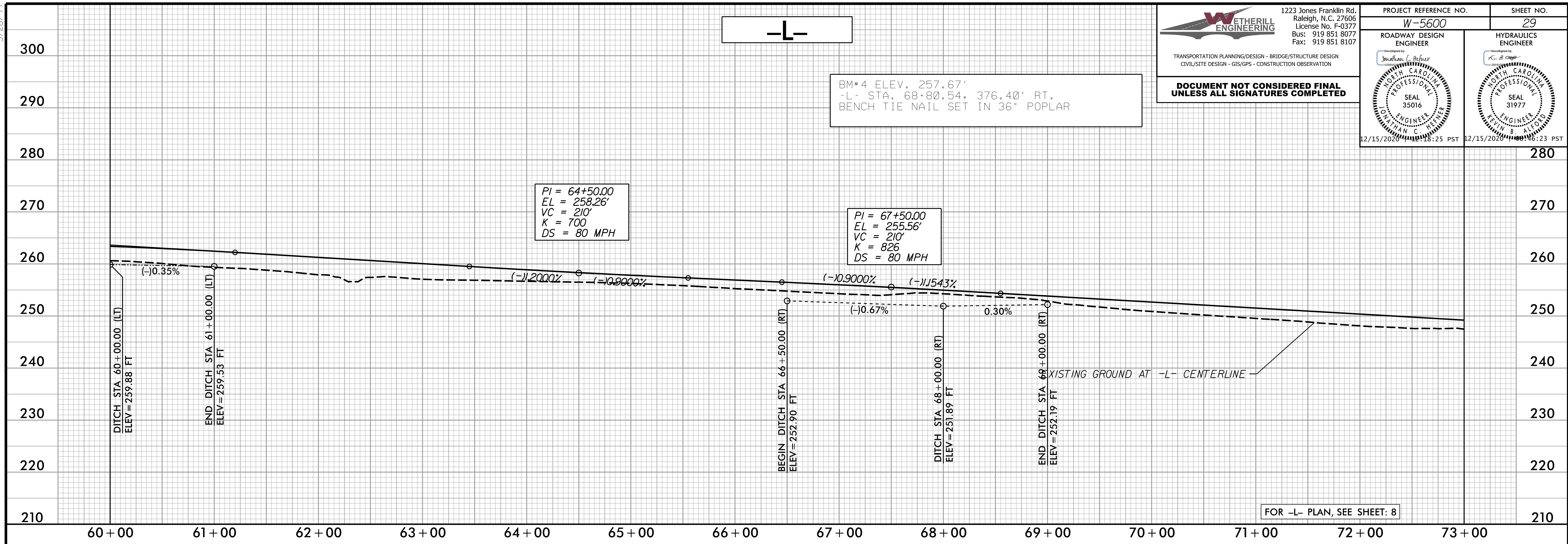
5/28/20

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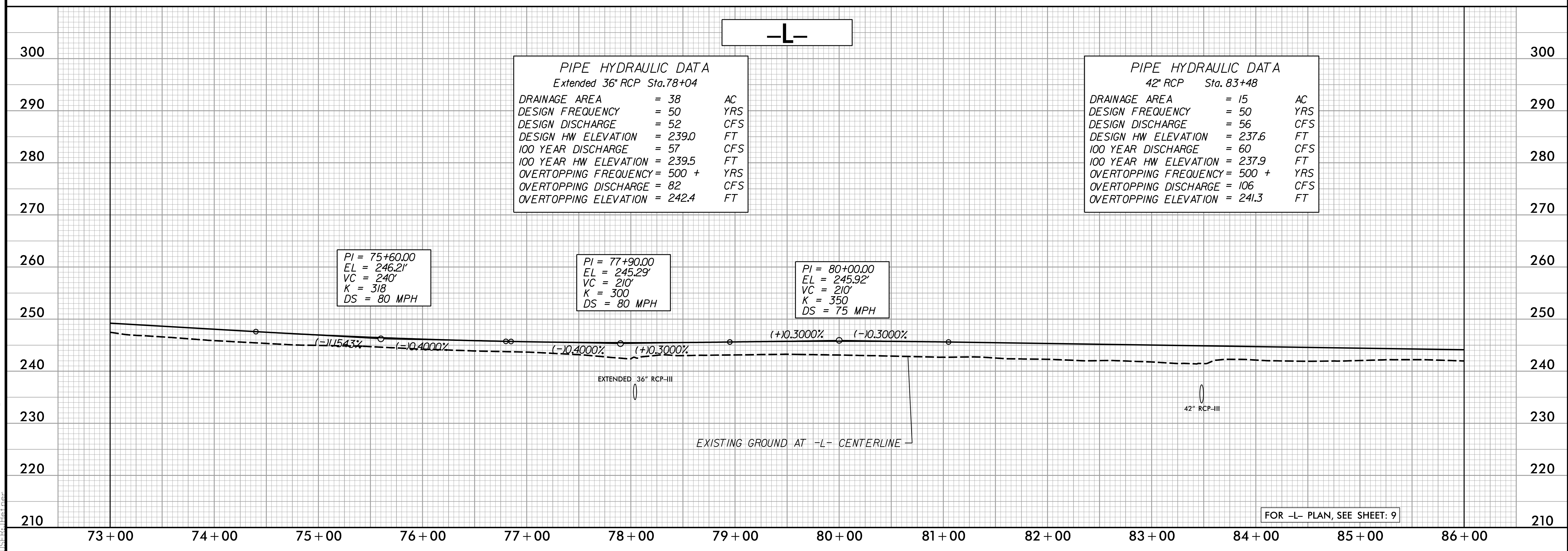
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO. W-5600	SHEET NO. 29
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heiser</i>	HYDRAULICS ENGINEER <i>K. S. Cap...</i>
SEAL 35016 JONATHAN C. HEISER NORTH CAROLINA PROFESSIONAL ENGINEER	SEAL 31977 K. S. CAP... NORTH CAROLINA PROFESSIONAL ENGINEER
12/15/2020 10:25:25 PST	12/15/2020 10:25:23 PST



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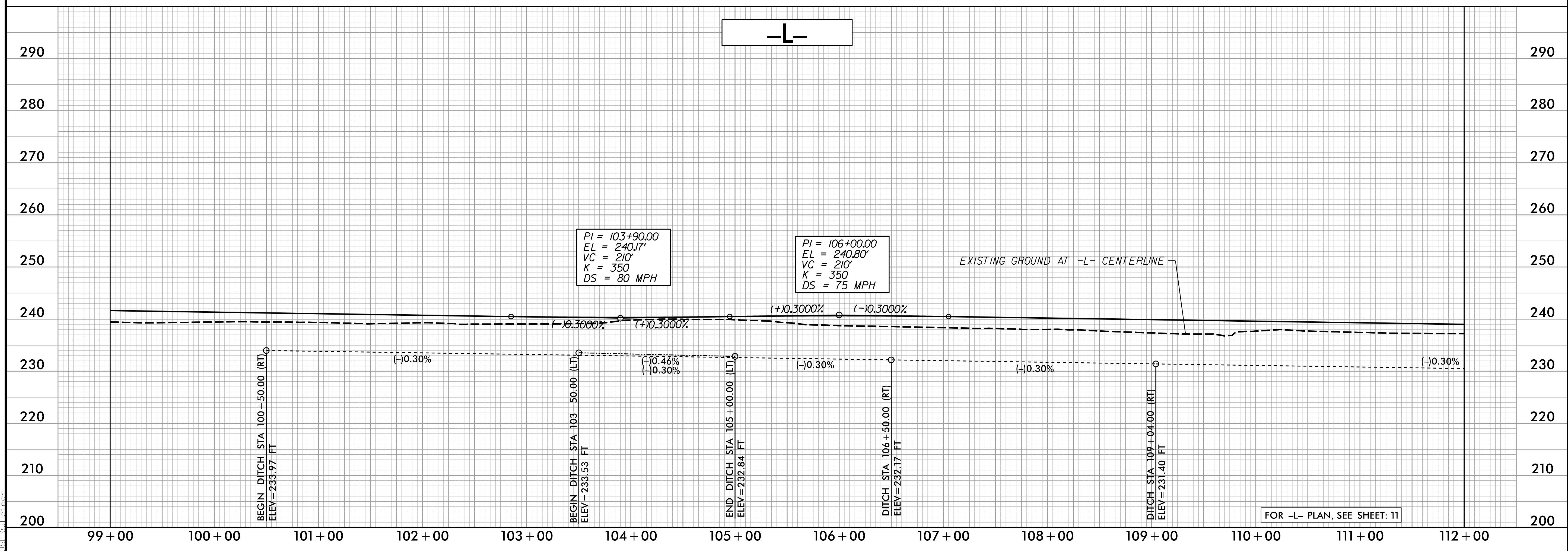
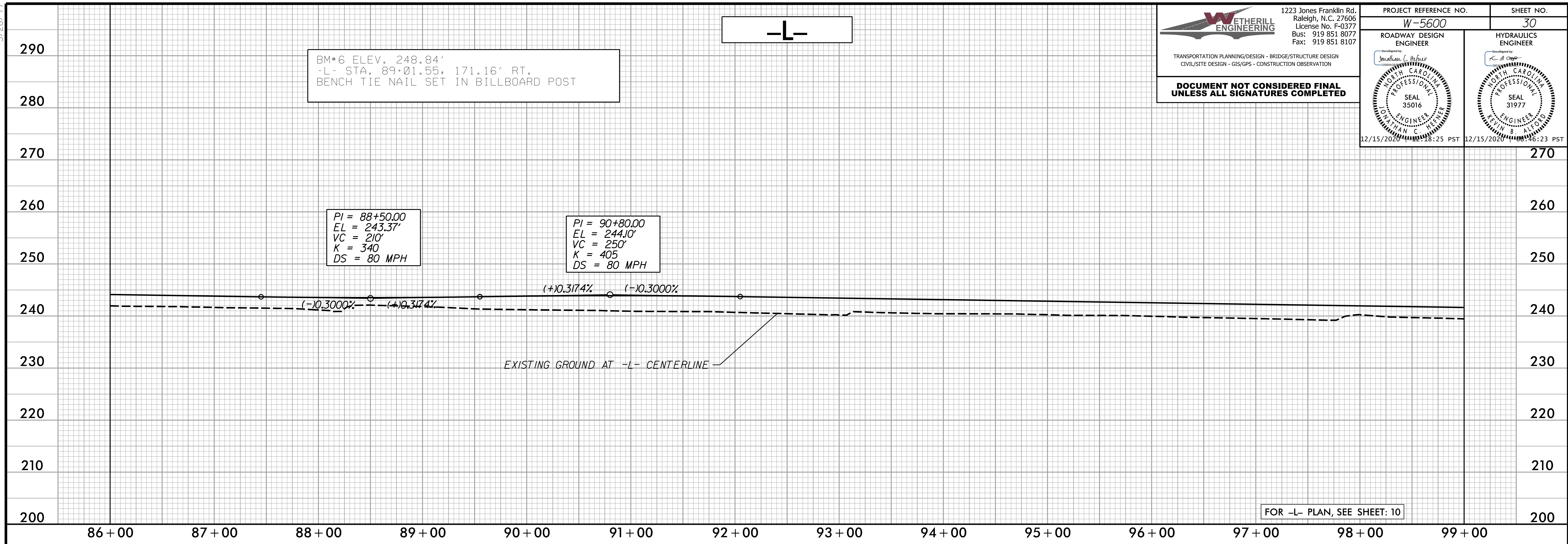
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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PROJECT REFERENCE NO. W-5600	SHEET NO. 30
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heiser</i> SEAL 35016 12/15/2020 10:28:25 PST	HYDRAULICS ENGINEER <i>R. S. ...</i> SEAL 31977 12/15/2020 10:26:23 PST



12/14/2020 10:56:00_rdu_psh_30_e1.dgn

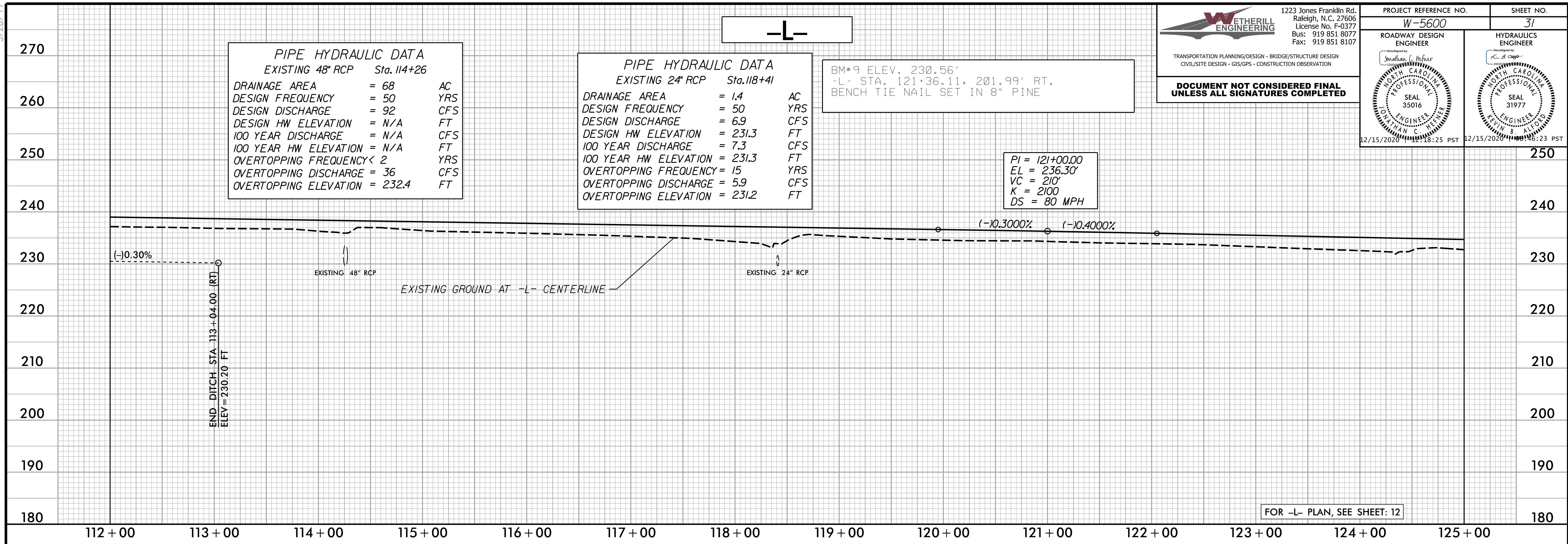
5/28/19

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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PROJECT REFERENCE NO. W-5600	SHEET NO. 31
ROADWAY DESIGN ENGINEER <i>Jonathan L. Peifer</i>	HYDRAULICS ENGINEER <i>A. J. Case</i>
SEAL 35016 12/15/2020 12:18:25 PST	SEAL 31977 12/15/2020 12:18:23 PST



PIPE HYDRAULIC DATA
 EXISTING 48" RCP Sta. 114+26

DRAINAGE AREA	= 68	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 92	CFS
DESIGN HW ELEVATION	= N/A	FT
100 YEAR DISCHARGE	= N/A	CFS
100 YEAR HW ELEVATION	= N/A	FT
OVERTOPPING FREQUENCY	< 2	YRS
OVERTOPPING DISCHARGE	= 36	CFS
OVERTOPPING ELEVATION	= 232.4	FT

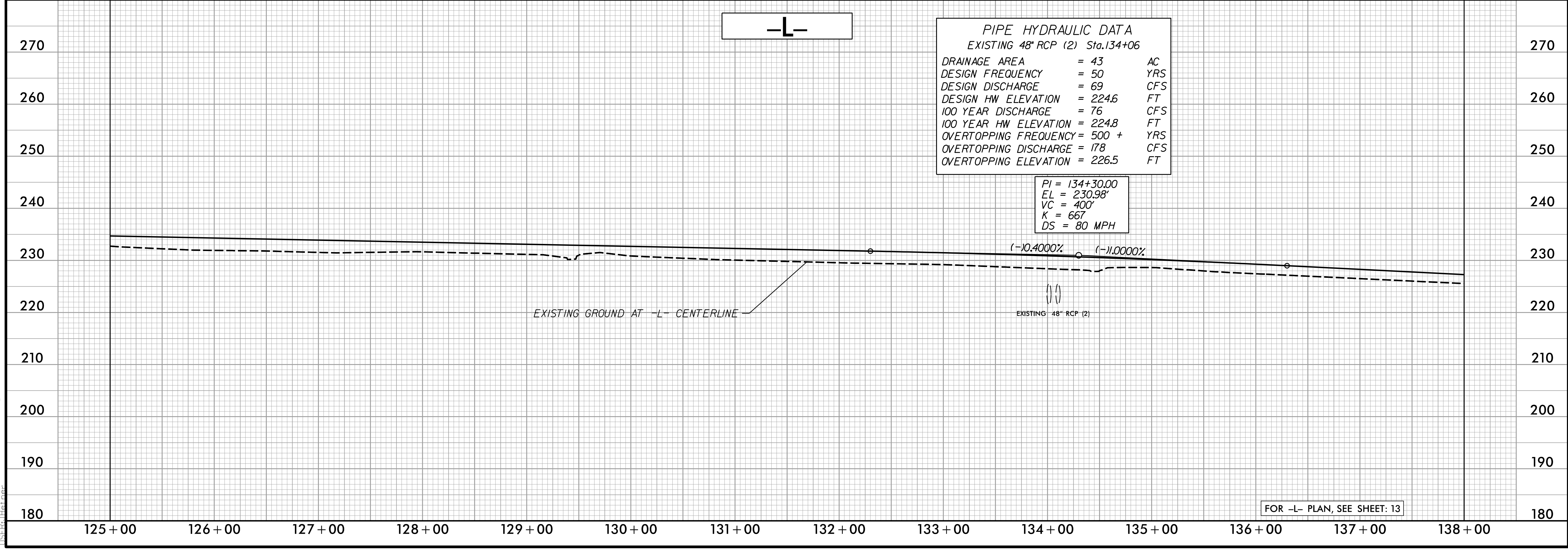
PIPE HYDRAULIC DATA
 EXISTING 24" RCP Sta. 118+41

DRAINAGE AREA	= 1.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6.9	CFS
DESIGN HW ELEVATION	= 231.3	FT
100 YEAR DISCHARGE	= 7.3	CFS
100 YEAR HW ELEVATION	= 231.3	FT
OVERTOPPING FREQUENCY	= 15	YRS
OVERTOPPING DISCHARGE	= 5.9	CFS
OVERTOPPING ELEVATION	= 231.2	FT

BM#9 ELEV. 230.56'
 -L- STA. 121+36.11, 201.99' RT.
 BENCH TIE NAIL SET IN 8" PINE

PI = 121+00.00
 EL = 236.30'
 VC = 210'
 K = 2100
 DS = 80 MPH

12/14/2020 11:55:13 AM W-5600_rdy_psh_31_p1.dgn



PIPE HYDRAULIC DATA
 EXISTING 48" RCP (2) Sta. 134+06

DRAINAGE AREA	= 43	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 69	CFS
DESIGN HW ELEVATION	= 224.6	FT
100 YEAR DISCHARGE	= 76	CFS
100 YEAR HW ELEVATION	= 224.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 178	CFS
OVERTOPPING ELEVATION	= 226.5	FT

PI = 134+30.00
 EL = 230.98'
 VC = 400'
 K = 667
 DS = 80 MPH

FOR -L- PLAN, SEE SHEET: 13

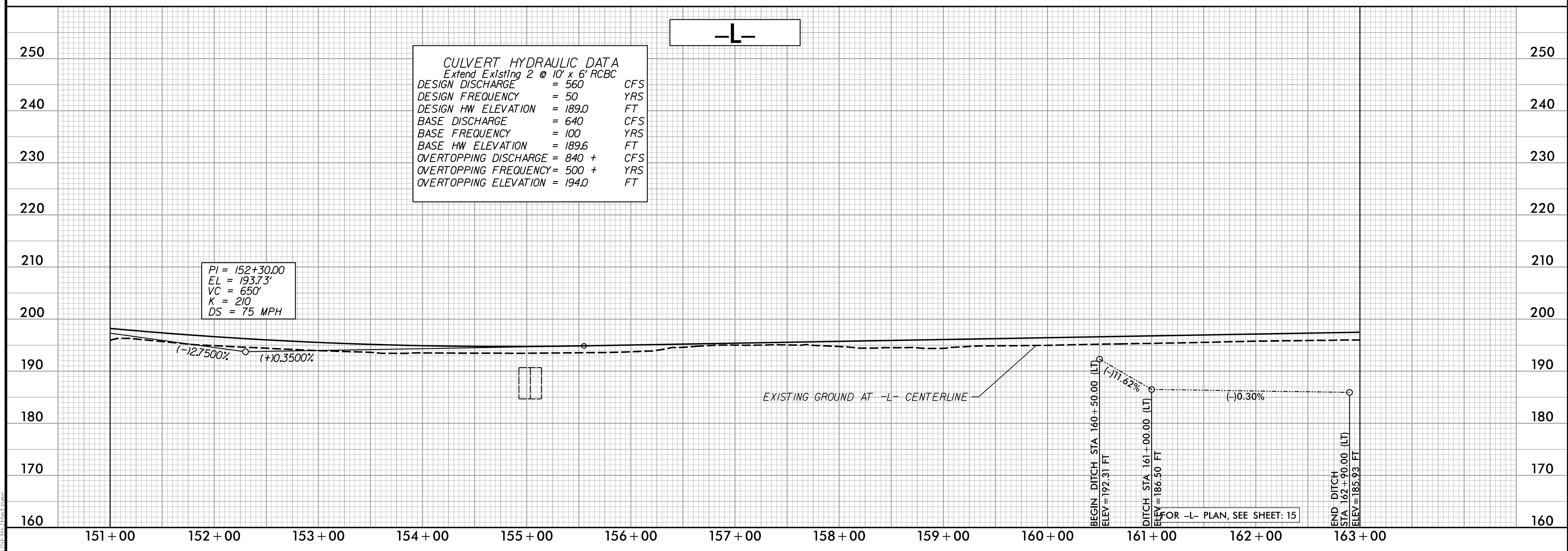
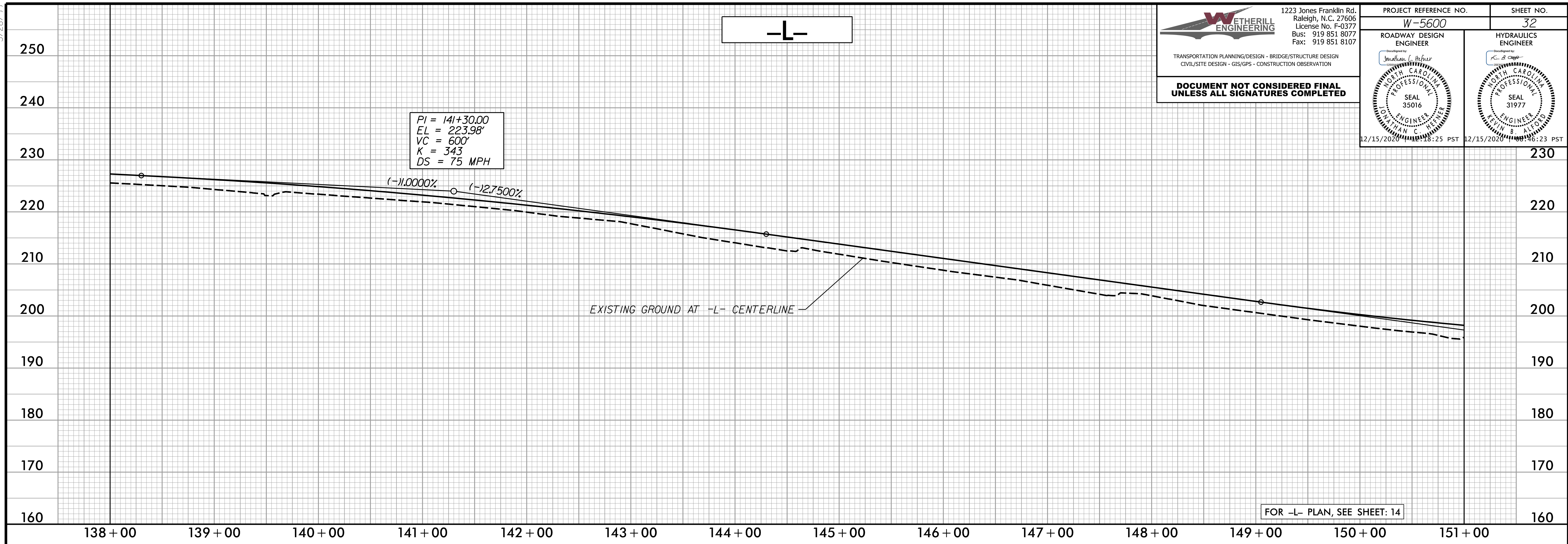
5/28/99

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 32
ROADWAY DESIGN ENGINEER <i>Jonathan C. Pfeiffer</i> SEAL 35016 12/15/2020 10:25 PST	HYDRAULICS ENGINEER <i>K. S. Cape</i> SEAL 31977 12/15/2020 10:23 PST



12/14/2020 10:25:00 AM 5600_rdy_psh_32_epl.dgn

5/28/99

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PROJECT REFERENCE NO. **W-5600**
SHEET NO. **33**

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

ROADWAY DESIGN ENGINEER
Jonathan C. Heiser
SEAL 35016
12/15/2020 10:48:25 PST

HYDRAULICS ENGINEER
K. S. Orop
SEAL 31977
12/15/2020 10:46:23 PST

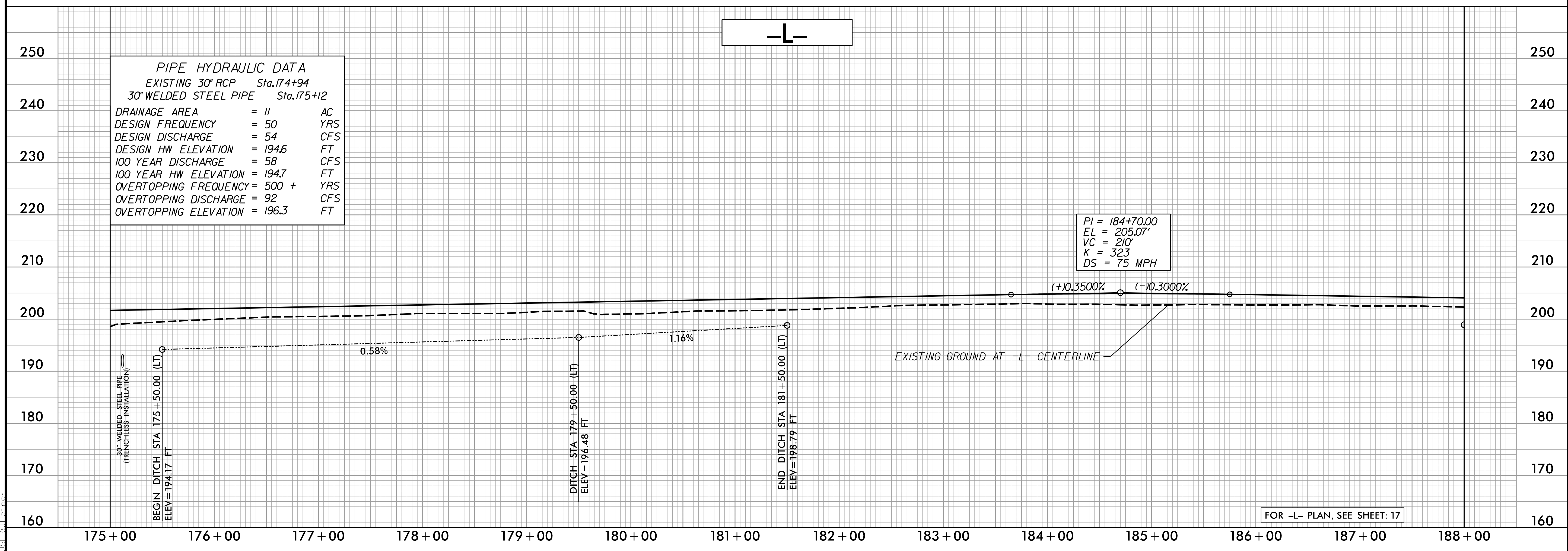
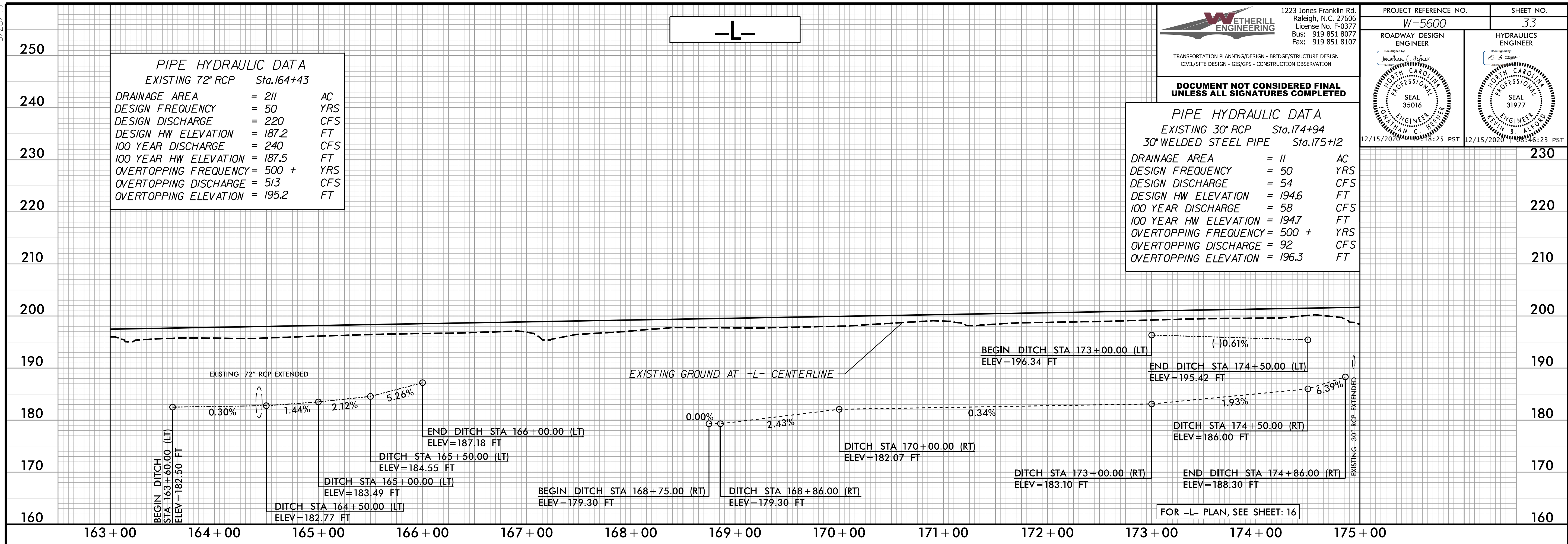
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
EXISTING 30" RCP Sta.174+94
30" WELDED STEEL PIPE Sta.175+12

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 54	CFS
DESIGN HW ELEVATION	= 194.6	FT
100 YEAR DISCHARGE	= 58	CFS
100 YEAR HW ELEVATION	= 194.7	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 92	CFS
OVERTOPPING ELEVATION	= 196.3	FT

PIPE HYDRAULIC DATA
EXISTING 72" RCP Sta.164+43

DRAINAGE AREA	= 211	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 187.2	FT
100 YEAR DISCHARGE	= 240	CFS
100 YEAR HW ELEVATION	= 187.5	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 513	CFS
OVERTOPPING ELEVATION	= 195.2	FT



PIPE HYDRAULIC DATA
EXISTING 30" RCP Sta.174+94
30" WELDED STEEL PIPE Sta.175+12

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 54	CFS
DESIGN HW ELEVATION	= 194.6	FT
100 YEAR DISCHARGE	= 58	CFS
100 YEAR HW ELEVATION	= 194.7	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 92	CFS
OVERTOPPING ELEVATION	= 196.3	FT

12/14/2020 10:56:00_rdy_psh_33_p1.dgn

5/28/99



PROJECT REFERENCE NO. W-5600	SHEET NO. 34
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heiser</i> SEAL 35016 12/15/2020 10:28:25 PST	HYDRAULICS ENGINEER <i>K. B. Carr</i> SEAL 31977 12/15/2020 10:26:23 PST

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

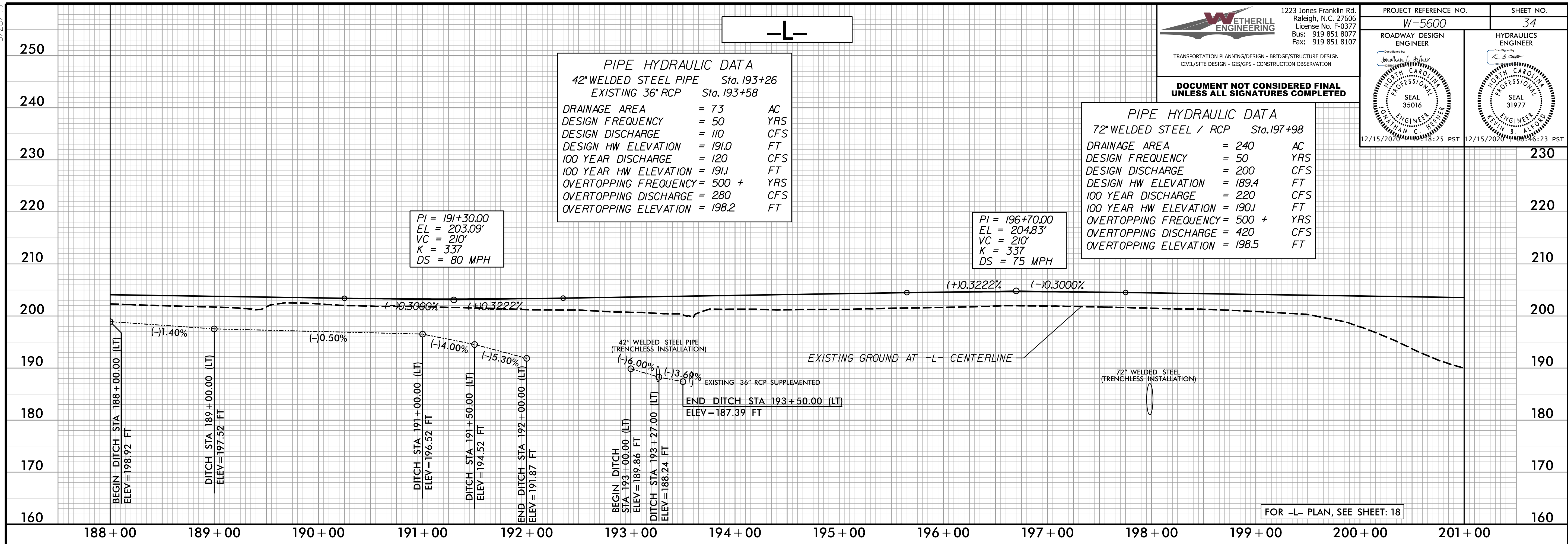
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
 42" WELDED STEEL PIPE Sta. 193+26
 EXISTING 36" RCP Sta. 193+58

DRAINAGE AREA = 73 AC
 DESIGN FREQUENCY = 50 YRS
 DESIGN DISCHARGE = 110 CFS
 DESIGN HW ELEVATION = 191.0 FT
 100 YEAR DISCHARGE = 120 CFS
 100 YEAR HW ELEVATION = 191.1 FT
 OVERTOPPING FREQUENCY = 500 + YRS
 OVERTOPPING DISCHARGE = 280 CFS
 OVERTOPPING ELEVATION = 198.2 FT

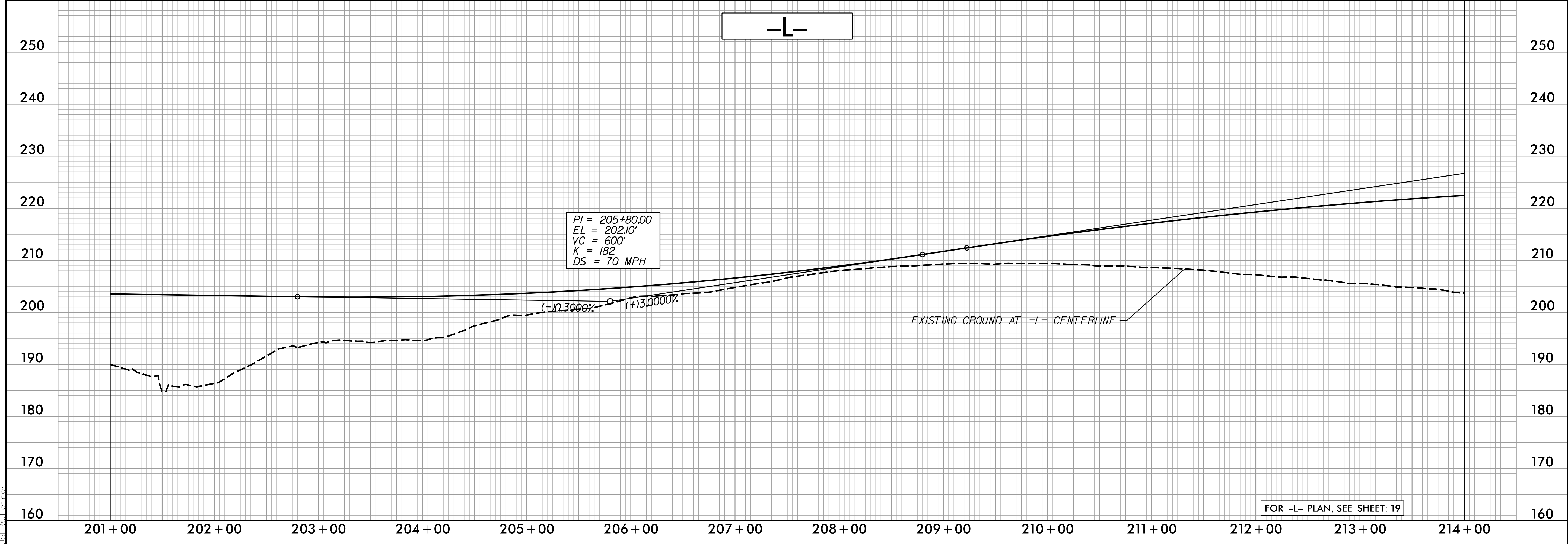
PIPE HYDRAULIC DATA
 72" WELDED STEEL / RCP Sta. 197+98

DRAINAGE AREA = 240 AC
 DESIGN FREQUENCY = 50 YRS
 DESIGN DISCHARGE = 200 CFS
 DESIGN HW ELEVATION = 189.4 FT
 100 YEAR DISCHARGE = 220 CFS
 100 YEAR HW ELEVATION = 190.1 FT
 OVERTOPPING FREQUENCY = 500 + YRS
 OVERTOPPING DISCHARGE = 420 CFS
 OVERTOPPING ELEVATION = 198.5 FT



FOR -L- PLAN, SEE SHEET: 18

-L-



FOR -L- PLAN, SEE SHEET: 19

12/14/2020 10:56:00_rdu_psh_34_p1.dgn

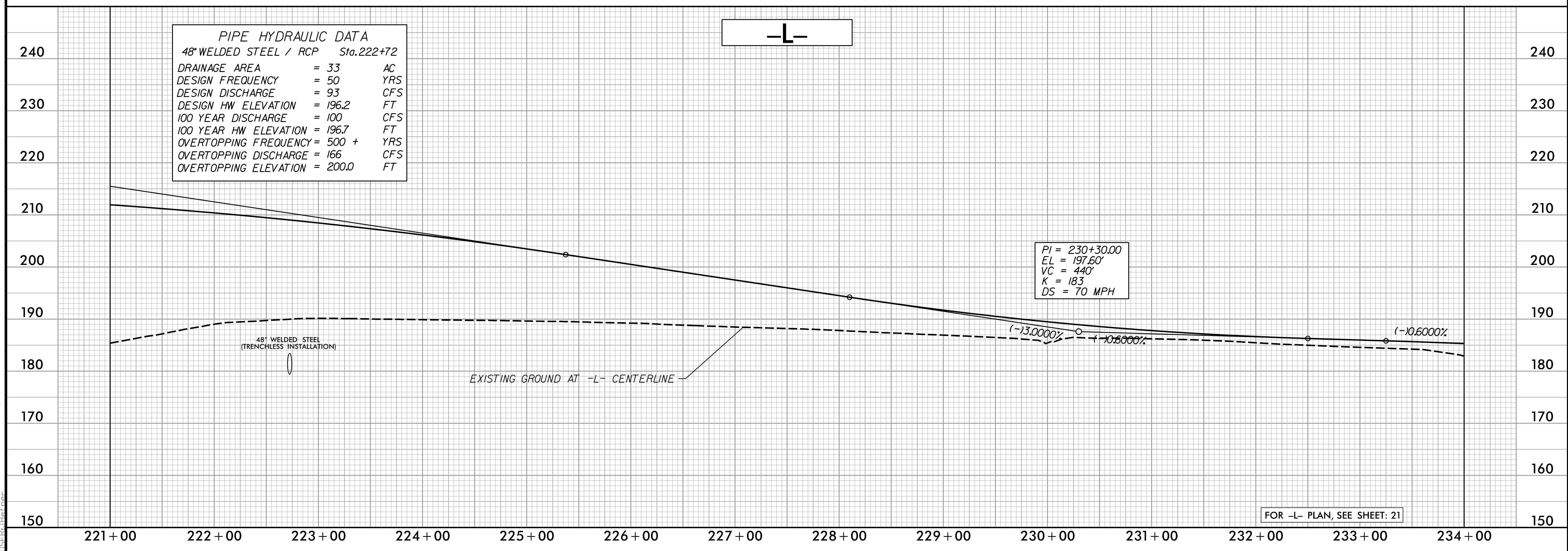
5/28/99

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 35
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heister</i>	HYDRAULICS ENGINEER <i>K. S. Capp</i>
SEAL 35016 12/15/2020 10:46:23 PST	SEAL 31977 12/15/2020 10:46:23 PST



12/14/2020 10:46:23 PST
 W-5600_rdy_psh_35_p1.dgn

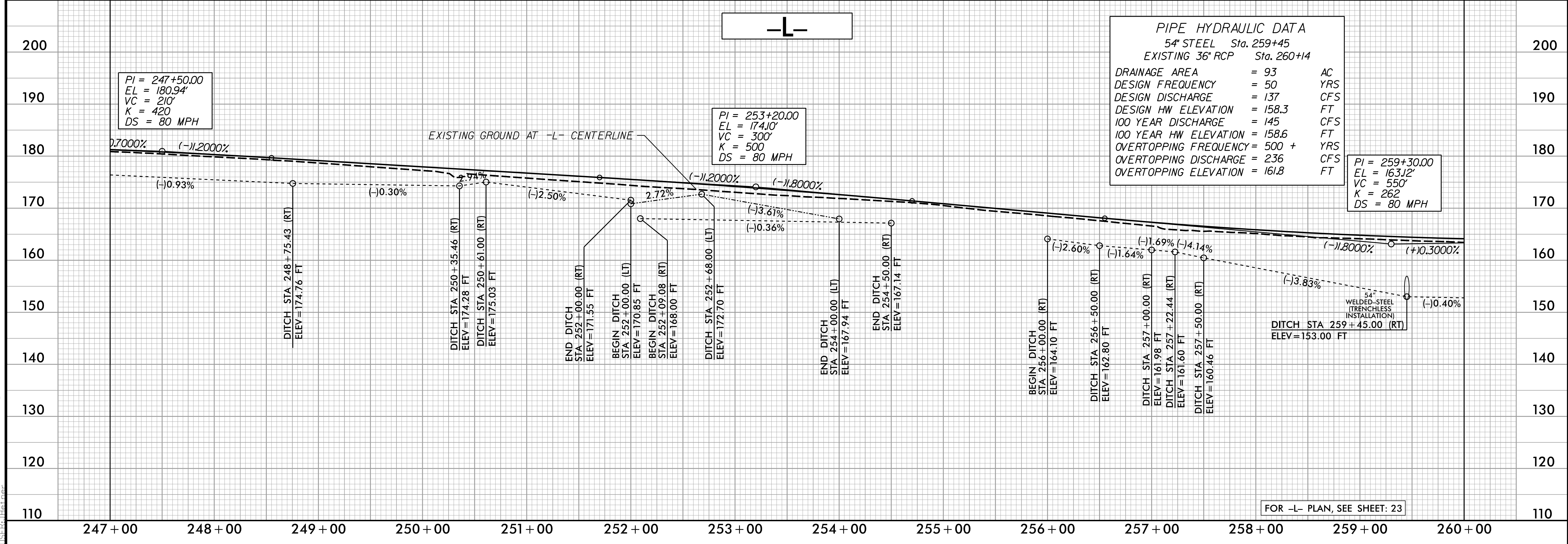
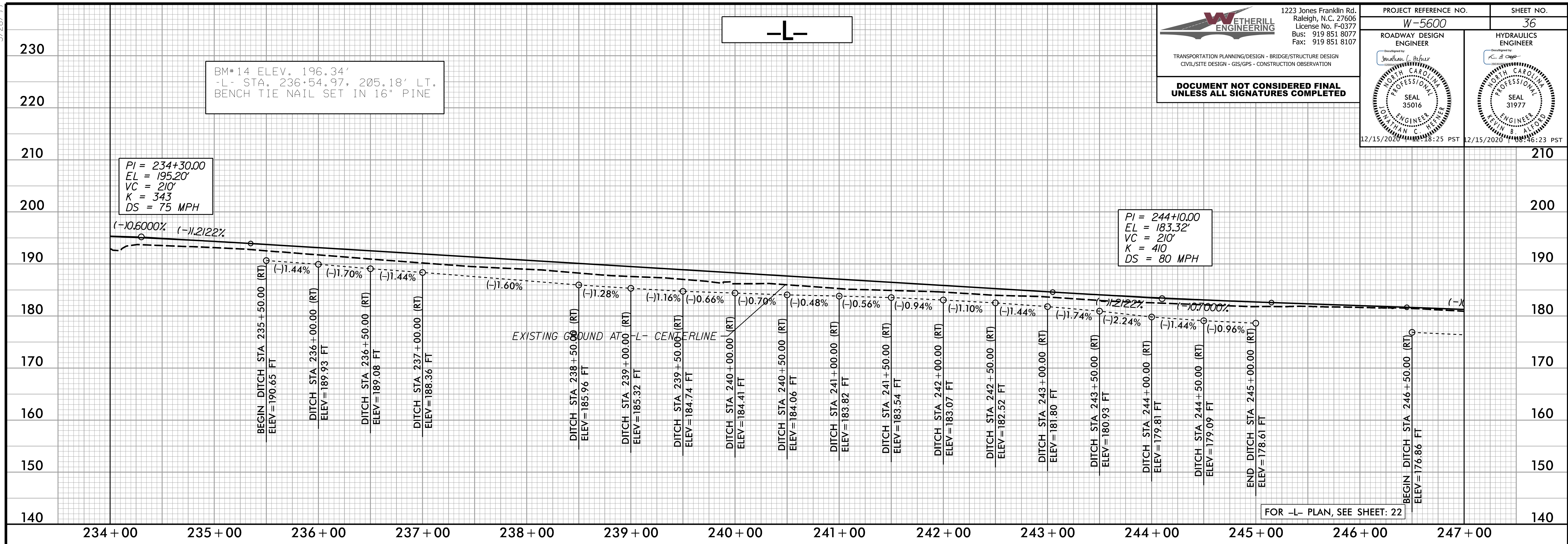
5/28/99

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 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 36
ROADWAY DESIGN ENGINEER <i>Matthew C. Heiser</i>	HYDRAULICS ENGINEER <i>K. S. ...</i>
SEAL 35016 MAY 15 2020	SEAL 31977 MAY 15 2020
12/15/2020 10:18:25 PST	12/15/2020 10:46:23 PST



PIPE HYDRAULIC DATA
 54" STEEL Sta. 259+45
 EXISTING 36" RCP Sta. 260+14

DRAINAGE AREA	= 93	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 137	CFS
DESIGN HW ELEVATION	= 158.3	FT
100 YEAR DISCHARGE	= 145	CFS
100 YEAR HW ELEVATION	= 158.6	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 236	CFS
OVERTOPPING ELEVATION	= 161.8	FT

12/14/2020 10:56:00_rdu_psh_36_p1.dgn

5/28/20

PIPE HYDRAULIC DATA
 54" STEEL Sta. 259+45
 EXISTING 36" RCP Sta. 260+14

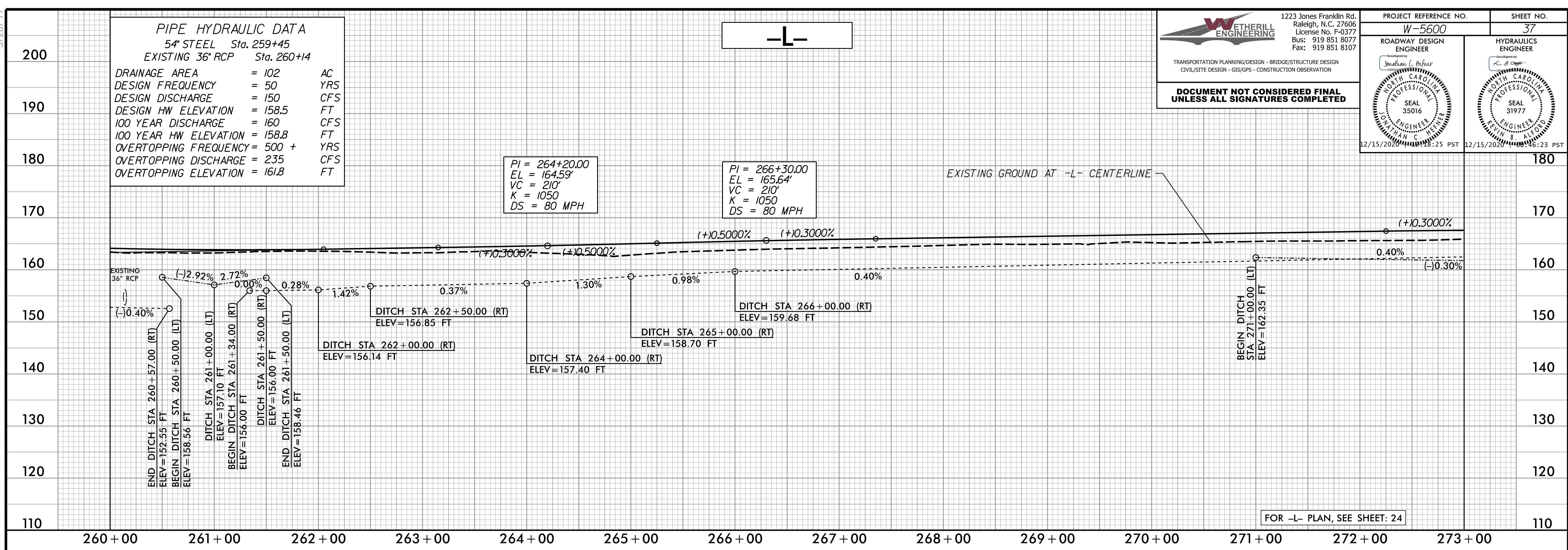
DRAINAGE AREA	= 102	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 150	CFS
DESIGN HW ELEVATION	= 158.5	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 158.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 235	CFS
OVERTOPPING ELEVATION	= 161.8	FT

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 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

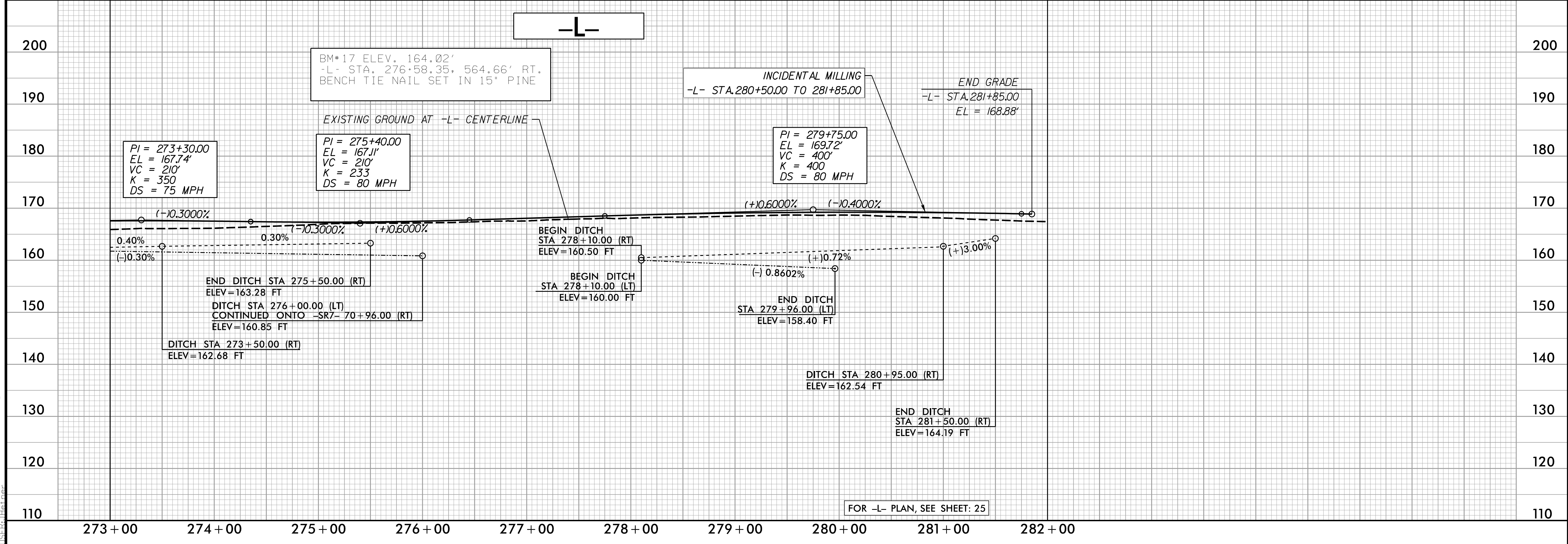
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO.	W-5600
SHEET NO.	37
ROADWAY DESIGN ENGINEER	Jonathan L. Peifer
HYDRAULICS ENGINEER	K. B. Capps
SEAL	35016
SEAL	31977
DATE	12/15/2020



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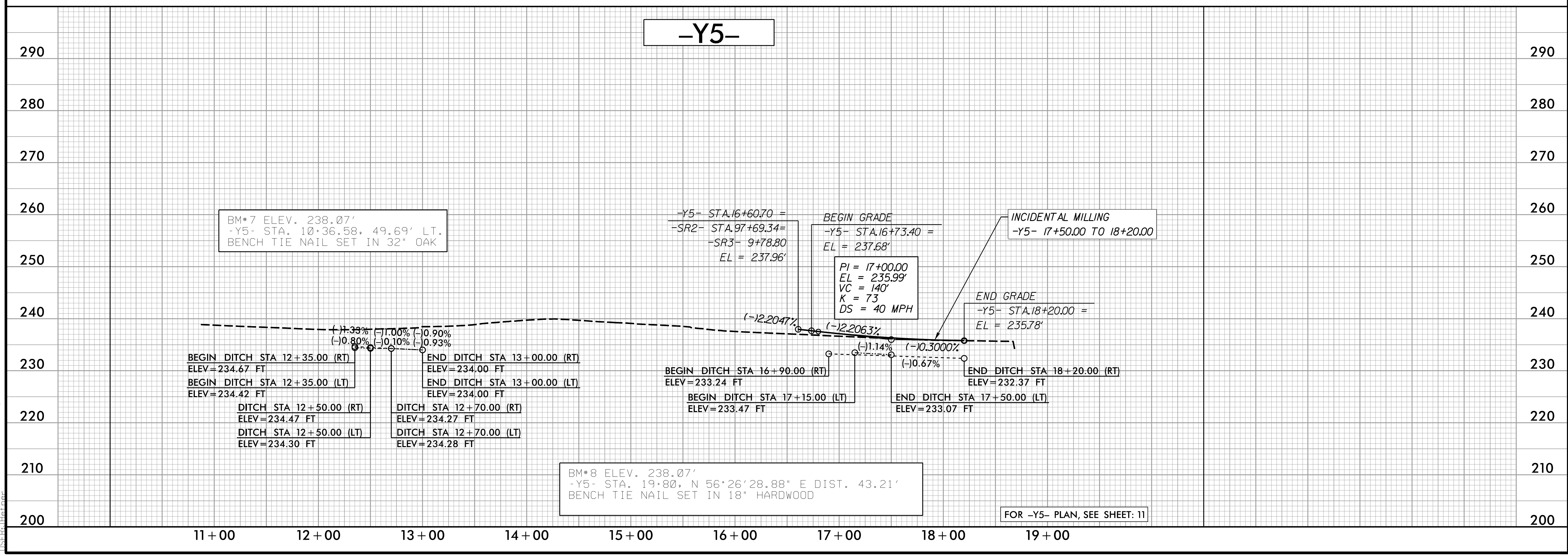
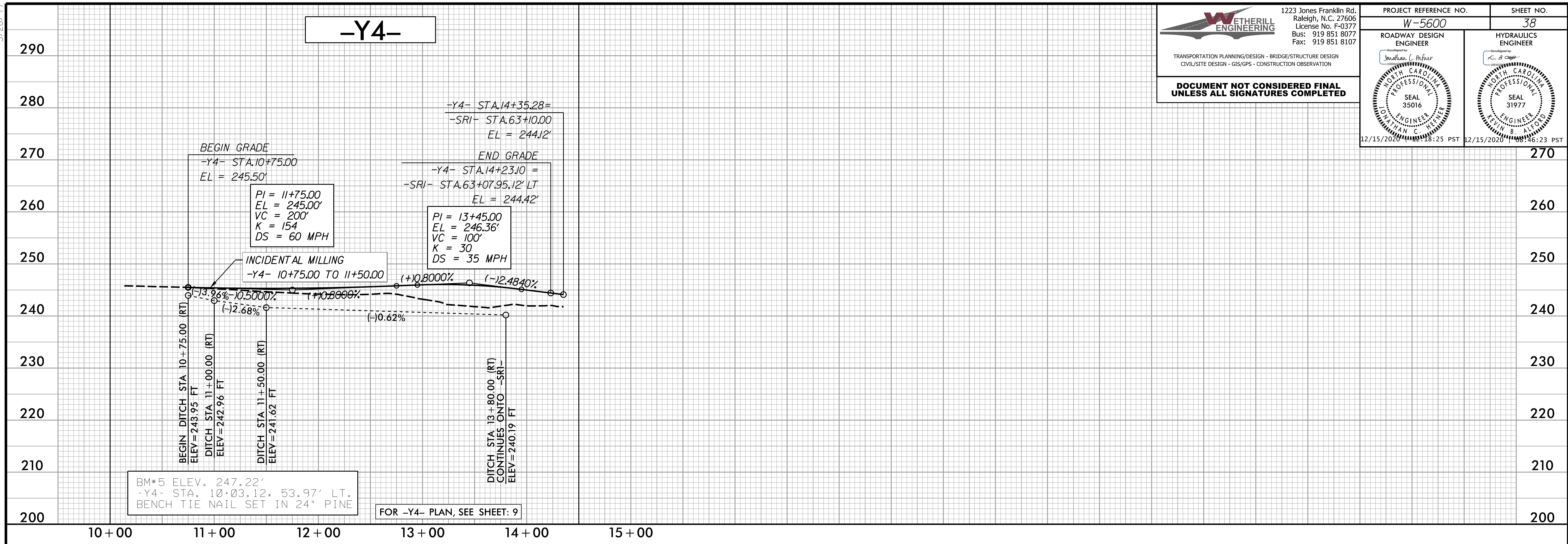
5/28/20

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PROJECT REFERENCE NO. W-5600	SHEET NO. 38
ROADWAY DESIGN ENGINEER <i>Jonathan L. Peffer</i> SEAL 35016 12/15/2020 10:18:25 PST	HYDRAULICS ENGINEER <i>K. S. Gray</i> SEAL 31977 12/15/2020 08:46:23 PST



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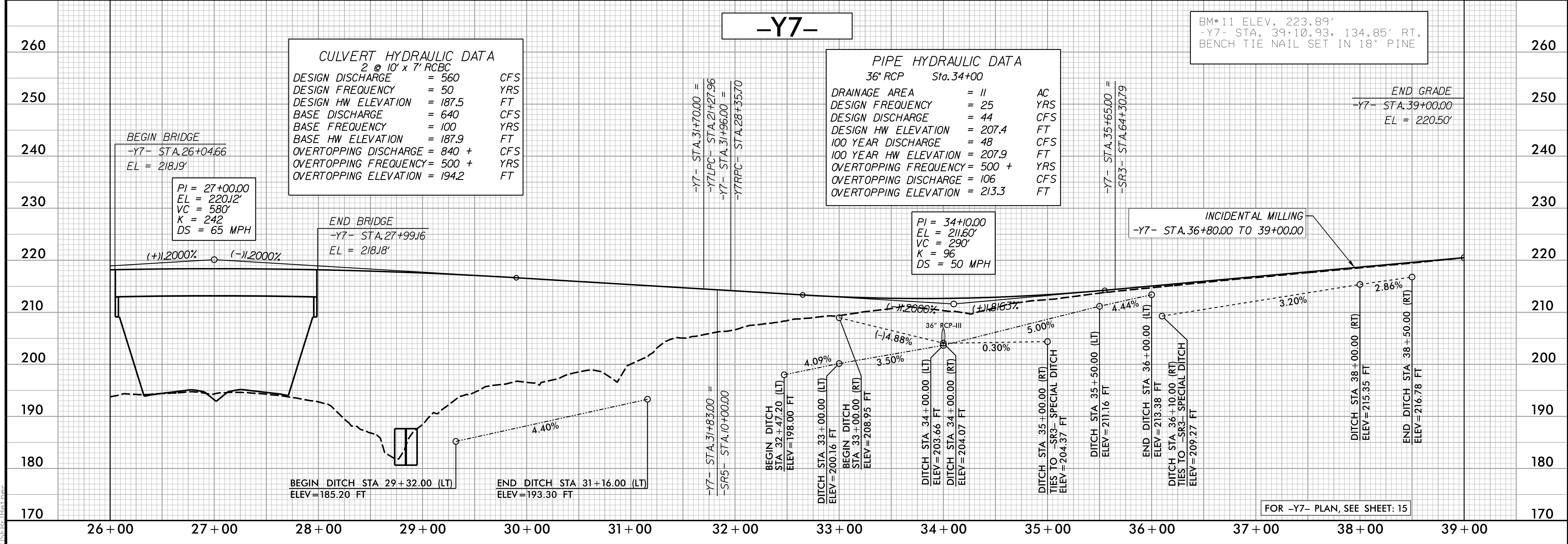
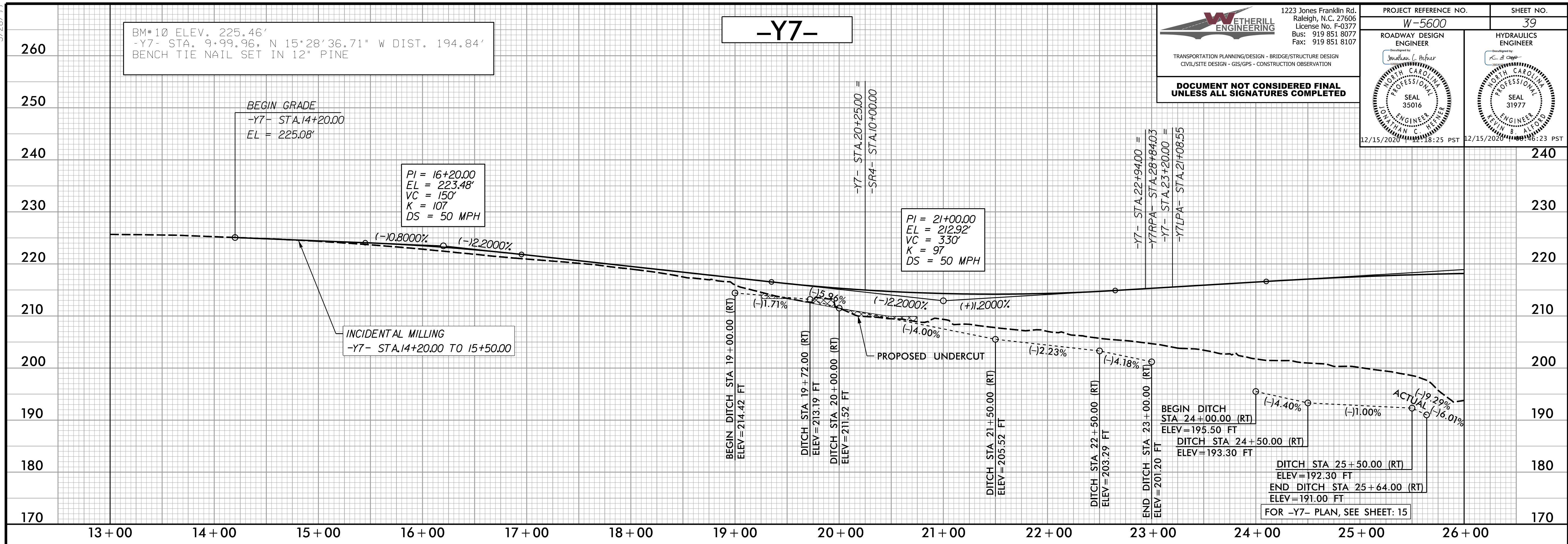
5/28/19

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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 39
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heifer</i>	HYDRAULICS ENGINEER <i>K. S. ...</i>
SEAL 35016 12/15/2020 12:18:25 PST	SEAL 31977 12/15/2020 10:08:23 PST



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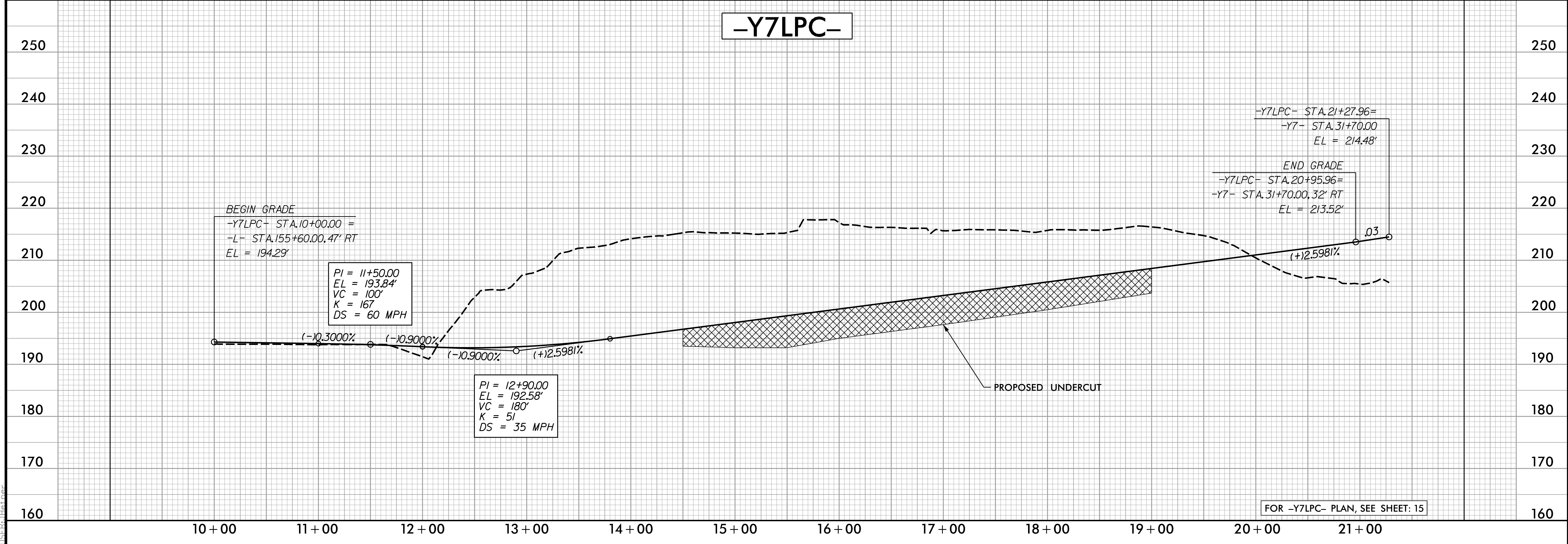
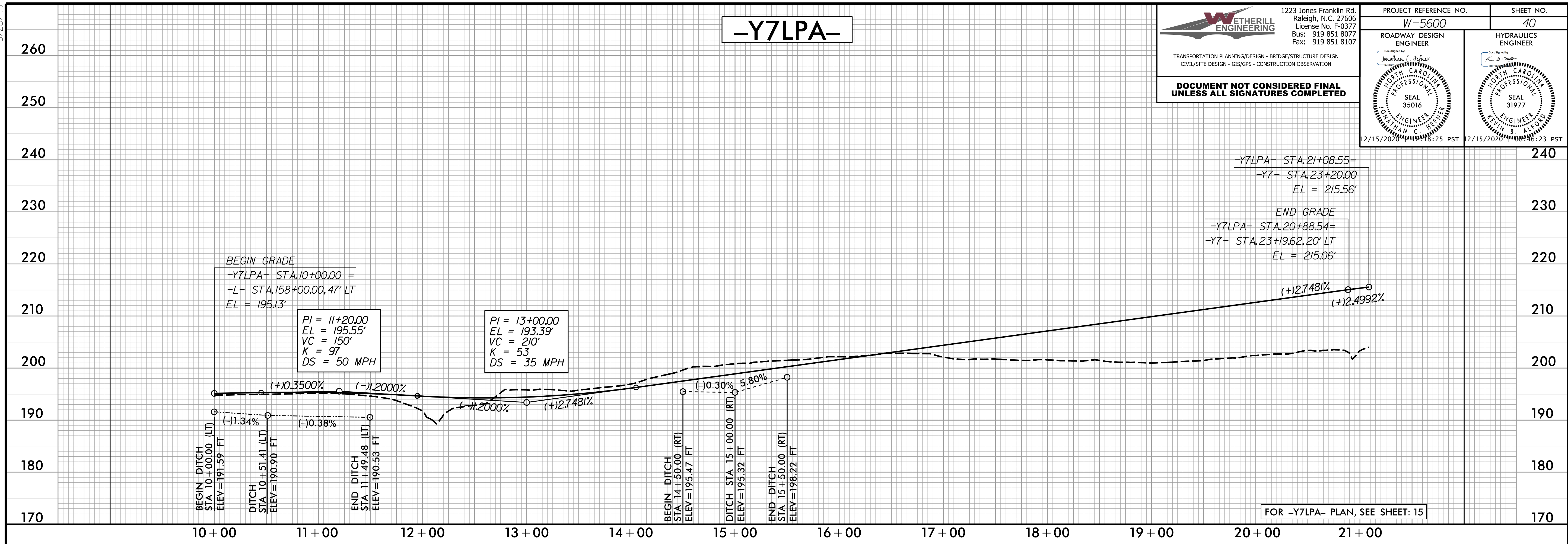
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. W-5600	SHEET NO. 40
ROADWAY DESIGN ENGINEER <i>Jonathan C. Heiser</i> SEAL 35016 12/15/2020 10:25 PST	HYDRAULICS ENGINEER <i>Kevin S. Alford</i> SEAL 31977 12/15/2020 10:23 PST



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5/28/2020

-Y7RPA-

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PROJECT REFERENCE NO. **W-5600** SHEET NO. **41**

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

ROADWAY DESIGN ENGINEER
Jonathan C. Heiser
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 35016
 12/15/2020 16:25 PST

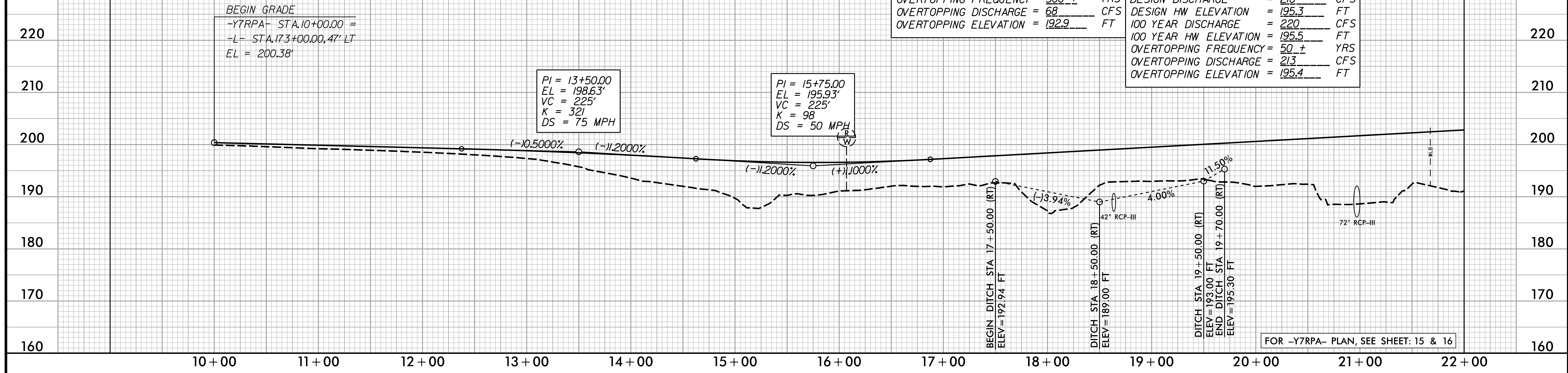
HYDRAULICS ENGINEER
K. S. Cap...
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 31977
 12/15/2020 16:23 PST

PIPE HYDRAULIC DATA
42" RCP Sta. 18+64

DRAINAGE AREA	= 10.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 54	CFS
DESIGN HW ELEVATION	= 192.3	FT
100 YEAR DISCHARGE	= 58	CFS
100 YEAR HW ELEVATION	= 192.5	FT
OVERTOPPING FREQUENCY	= 500 ±	YRS
OVERTOPPING DISCHARGE	= 68	CFS
OVERTOPPING ELEVATION	= 192.9	FT

PIPE HYDRAULIC DATA
72" RCP Sta. 20+97

DRAINAGE AREA	= 194	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 210	CFS
DESIGN HW ELEVATION	= 195.3	FT
100 YEAR DISCHARGE	= 220	CFS
100 YEAR HW ELEVATION	= 195.5	FT
OVERTOPPING FREQUENCY	= 50 ±	YRS
OVERTOPPING DISCHARGE	= 213	CFS
OVERTOPPING ELEVATION	= 195.4	FT



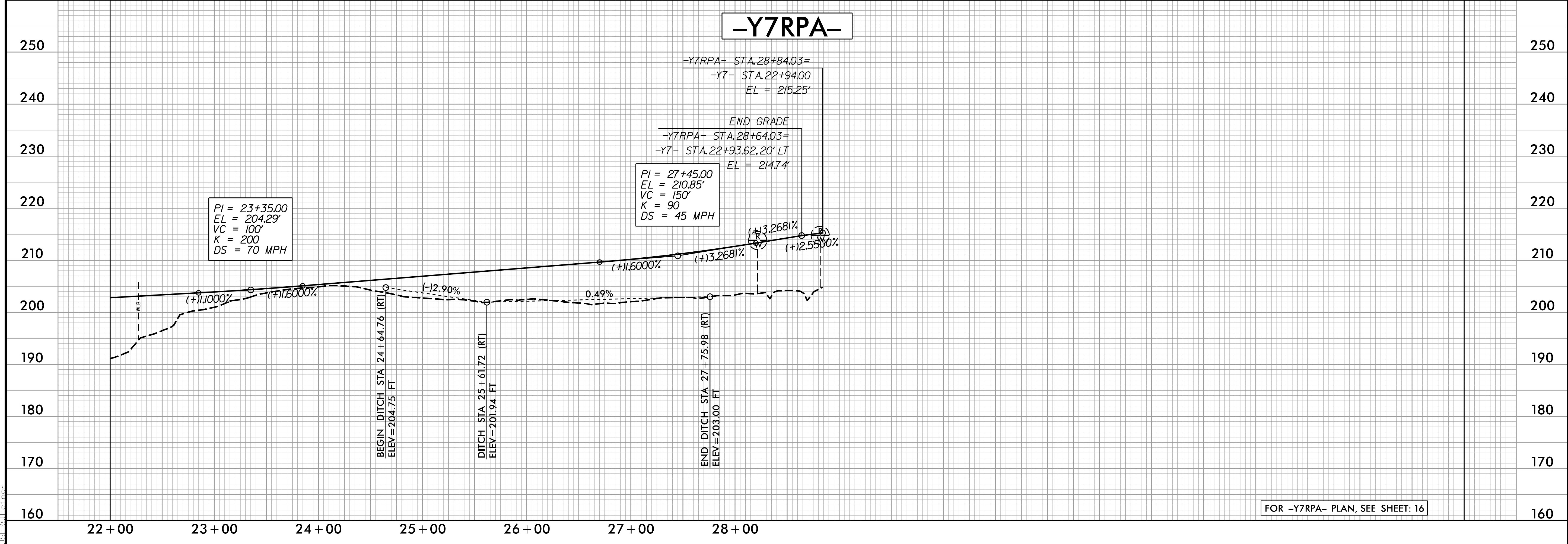
-Y7RPA-

END GRADE
 -Y7RPA- STA.28+84.03=
 -Y7- STA.22+94.00
 EL = 215.25'

END GRADE
 -Y7RPA- STA.28+64.03=
 -Y7- STA.22+93.62, 20' LT
 EL = 214.74'

PI = 27+45.00
 EL = 210.85'
 VC = 150'
 K = 90
 DS = 45 MPH

PI = 23+35.00
 EL = 204.29'
 VC = 100'
 K = 200
 DS = 70 MPH



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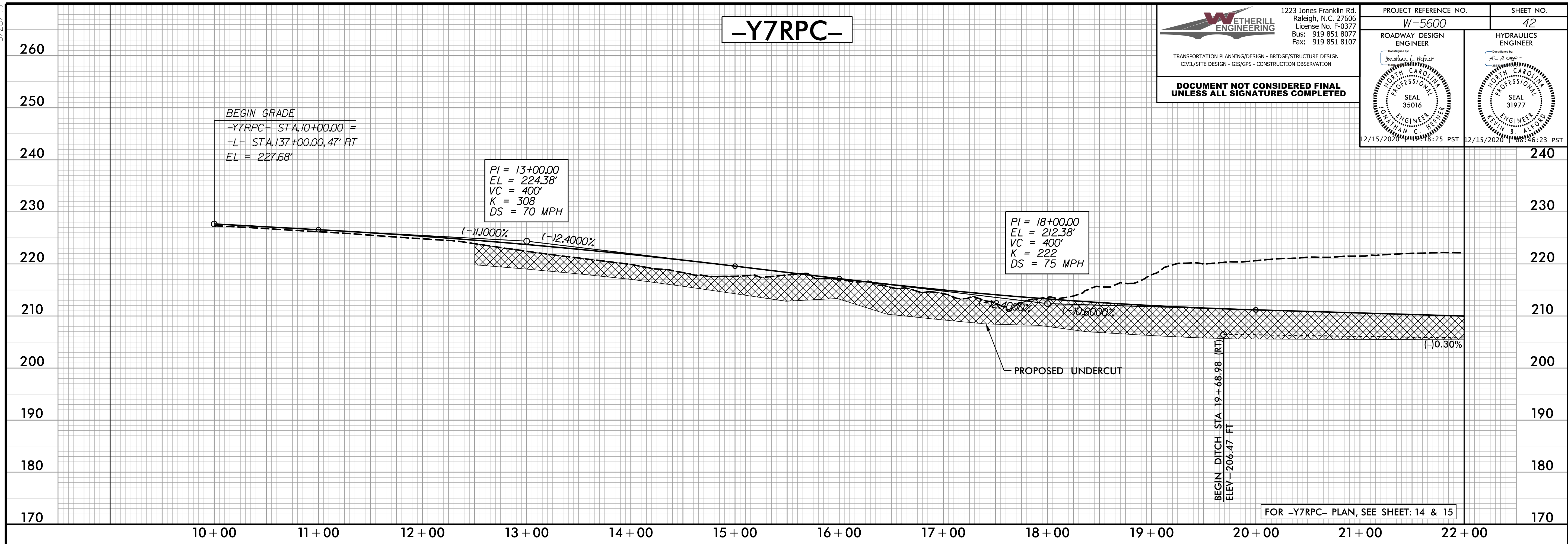
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

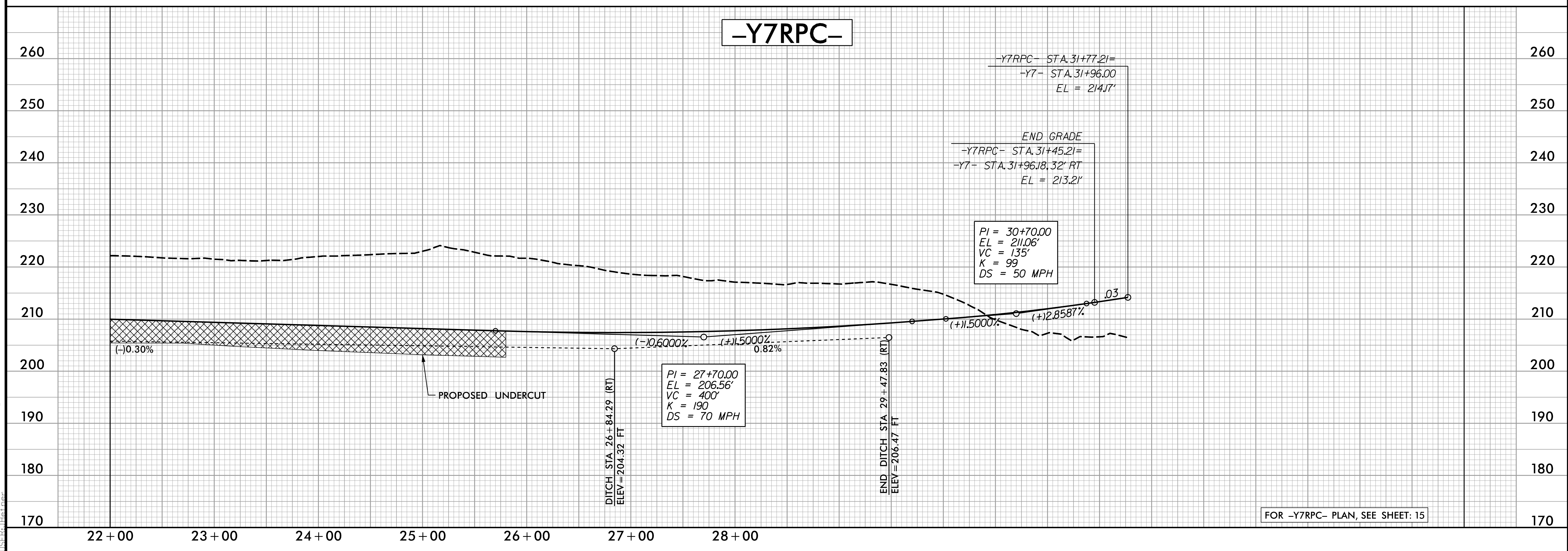
**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. W-5600	SHEET NO. 42
ROADWAY DESIGN ENGINEER <i>Jonathan C. Proff</i>	HYDRAULICS ENGINEER <i>R. S. ...</i>
SEAL 35016 JONATHAN C. PROFF NORTH CAROLINA PROFESSIONAL ENGINEER	SEAL 31977 R. S. ... NORTH CAROLINA PROFESSIONAL ENGINEER
12/15/2020 10:16:25 PST	12/15/2020 08:46:23 PST



FOR -Y7RPC- PLAN, SEE SHEET: 14 & 15

12/14/2020 10:56:00 r.dj.psh_42.p1.dgn



FOR -Y7RPC- PLAN, SEE SHEET: 15