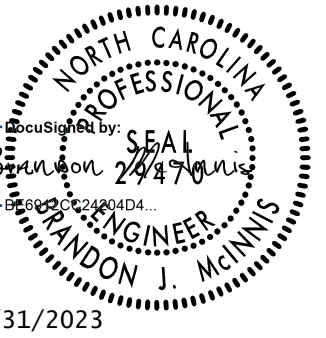
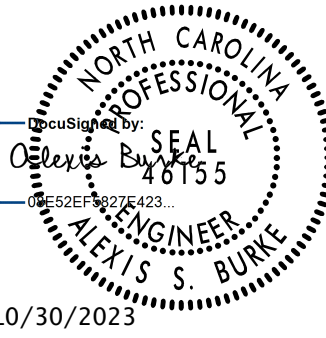
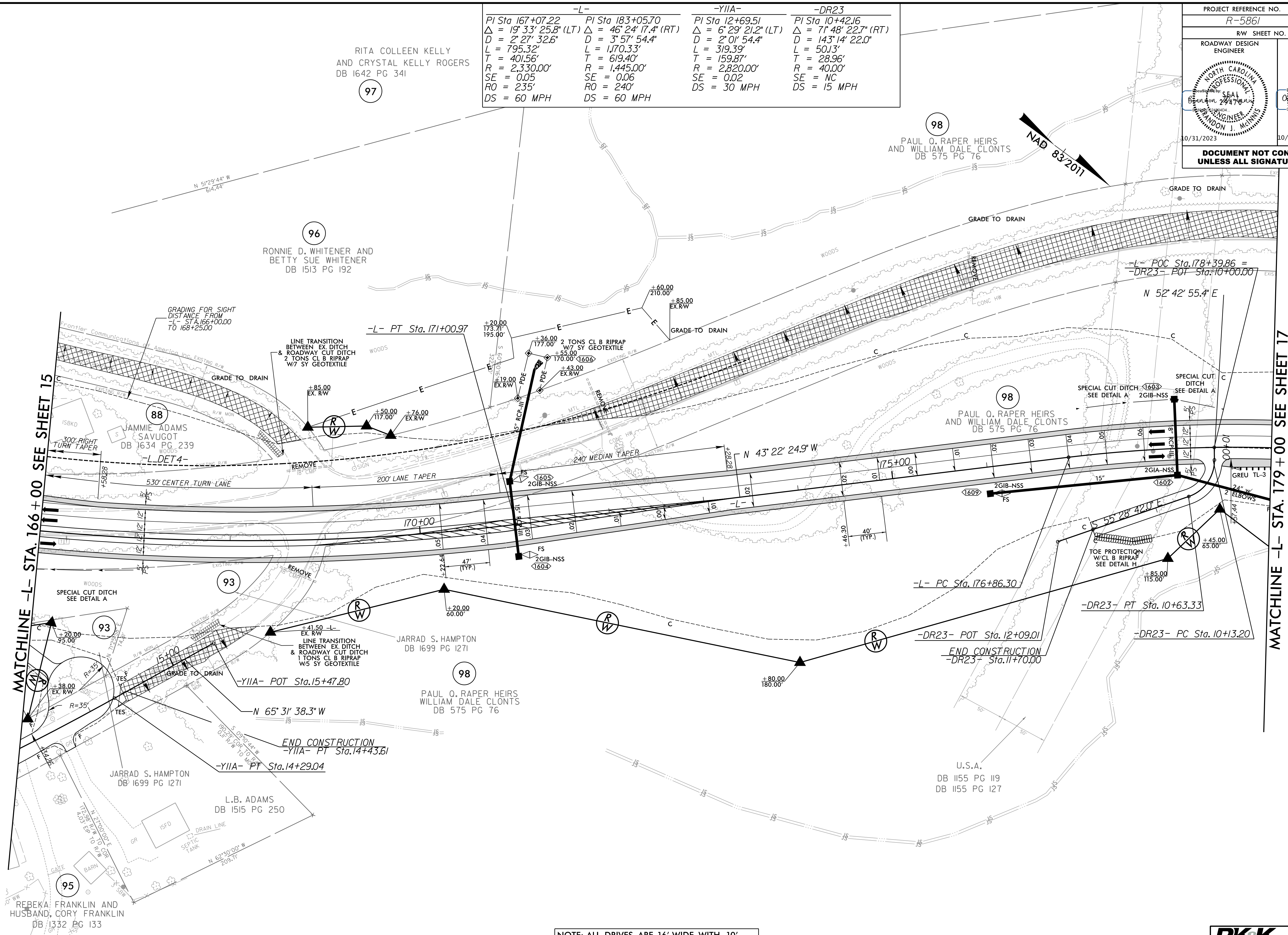


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PROJECT REFERENCE NO. R-5861		SHEET NO. 16	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-L-	-Y11A-	-DR23
PI Sta 167+07.22	PI Sta 183+05.70	PI Sta 12+69.51
$\Delta = 19' 33" 25.8" (LT)$	$\Delta = 46' 24" 17.4" (RT)$	$\Delta = 6' 29" 21.2" (LT)$
D = 2' 27' 32.6"	D = 3' 57' 54.4"	D = 2' 01' 54.4"
L = 795.32'	L = 1,170.33'	L = 319.39'
T = 401.56'	T = 619.40'	T = 159.87'
R = 2,330.00'	R = 1,445.00'	R = 2,820.00'
SE = 0.05	SE = 0.06	SE = 0.02
RO = 235'	RO = 240'	DS = 30 MPH
DS = 60 MPH	DS = 60 MPH	DS = 15 MPH



MATCHLINE -L- STA. 166+00 SEE SHEET 15

MATCHLINE -L- STA. 179+00 SEE SHEET 17

NOTE: ALL DRIVES ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

FOR -L- PROFILE SEE SHTS. 27 & 28
 FOR -Y11A- PROFILE SEE SHT. 33
 FOR -DR23- PROFILE SEE SHT. 37
 FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

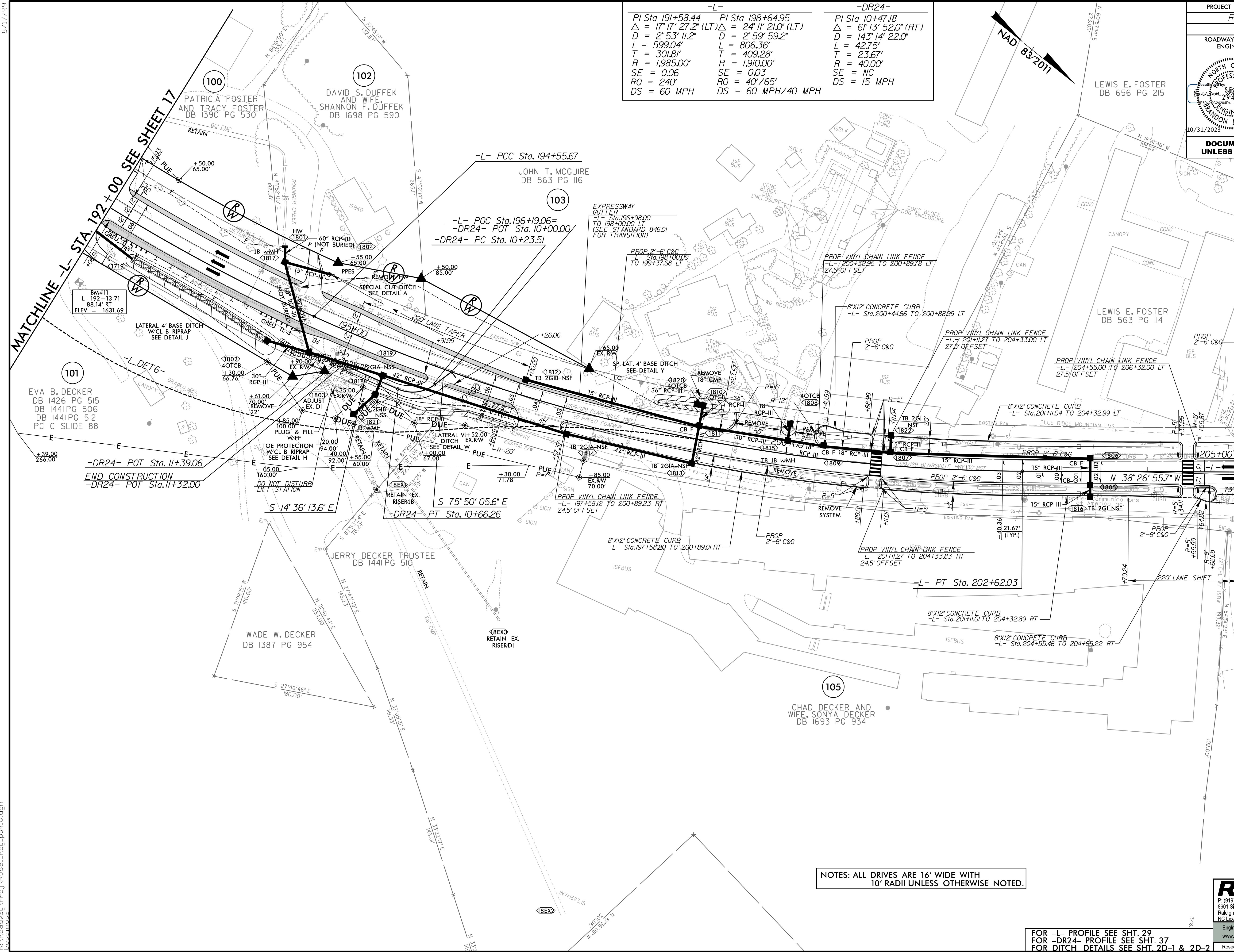
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PROJECT REFERENCE NO. R-5861		SHEET NO. 18	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-L-		-DR24-	
PI Sta 191+58.44	PI Sta 198+64.95	PI Sta 10+47.18	
$\Delta = 17' 17" 27.2" (LT)$	$\Delta = 24' 11" 21.0" (LT)$	$\Delta = 6' 13' 52.0" (RT)$	
D = 2' 53' 11.2"	D = 2' 59' 59.2"	D = 143' 14' 22.0"	
L = 599.04'	L = 806.36'	L = 42.75'	
T = 301.81'	T = 409.28'	T = 23.67'	
R = 1,985.00'	R = 1,910.00'	R = 40.00'	
SE = 0.06	SE = 0.03	SE = NC	
RO = 240'	RO = 40' / 65'	DS = 15 MPH	
DS = 60 MPH	DS = 60 MPH / 40 MPH		



MATCHLINE -L- STA. 192+00 SEE SHEET 17

MATCHLINE -L- STA. 205+00 SEE SHEET 19

NOTES: ALL DRIVES ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

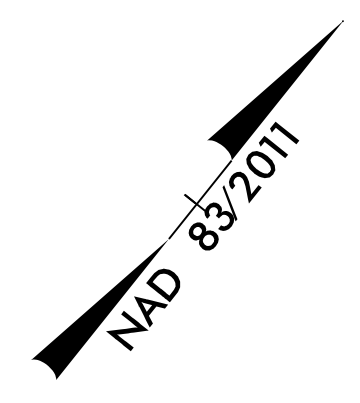
FOR -L- PROFILE SEE SHT. 29
FOR -DR24- PROFILE SEE SHT. 37
FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

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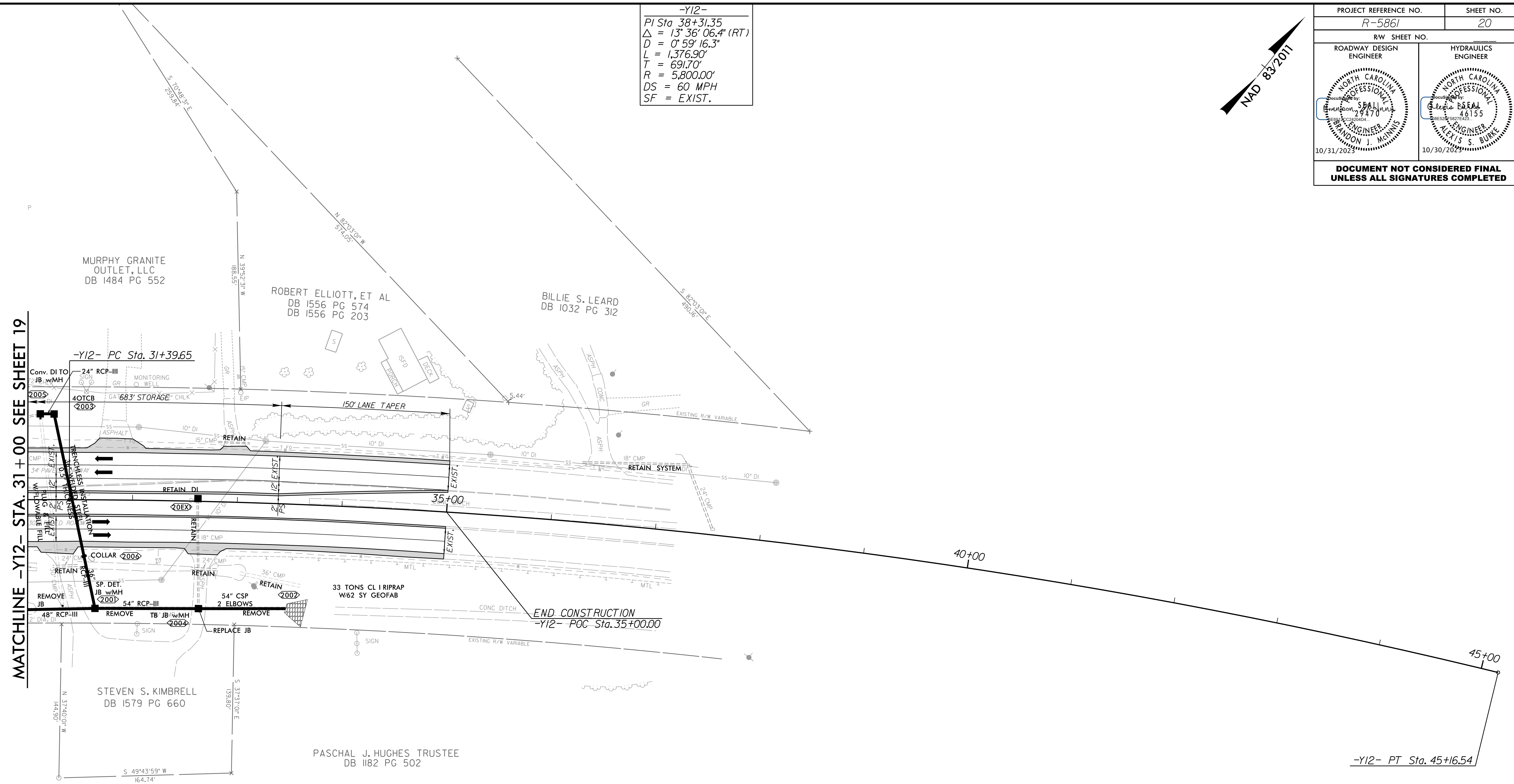
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8/17/99
10/23/2023
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-Y12-
 PI Sta 38+31.35
 $\Delta = 13^{\circ}36'06.4" (RT)$
 $D = 0^{\circ}59'16.3"$
 $L = 1,376.90'$
 $T = 691.70'$
 $R = 5,800.00'$
 $DS = 60 \text{ MPH}$
 $SF = \text{EXIST.}$



PROJECT REFERENCE NO. R-5861	SHEET NO. 20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



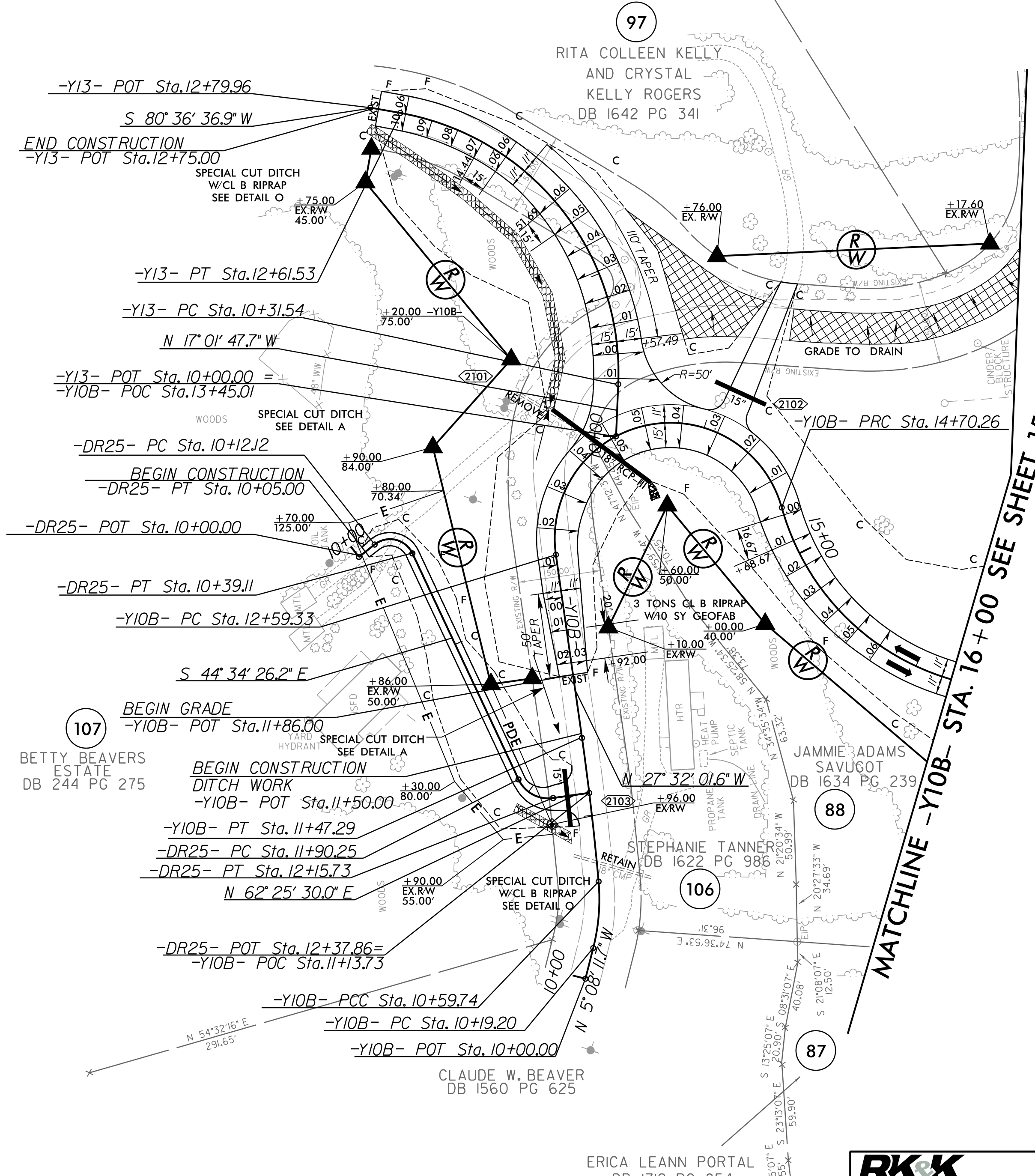
NOTES: ALL DRIVES ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.
 NOTES: OVERLAY PAVED SHOULDERS -Y12- STA. 31+00.00 TO 35+00.00

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FOR -Y12- PROFILE SEE SHT. 33
 FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

PROJECT REFERENCE NO. R-5861	SHEET NO. 21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y10B-		-Y13-		-DR25-	
PI Sta 10+39.67	PI Sta 11+03.53	PI Sta 23+48.57	PI Sta 18+53.23	PI Sta 10+31.01	PI Sta 12+05.05
$\Delta = 19^\circ 21' 25.9" (LT)$	$\Delta = 3^\circ 02' 24.0" (LT)$	$\Delta = 17^\circ 38' 45.0" (RT)$	$\Delta = 137^\circ 13' 19.0" (LT)$	$\Delta = 82^\circ 21' 35.4" (LT)$	$\Delta = 73^\circ 00' 03.8" (LT)$
D = 47' 44" 47.3"	D = 3' 28" 20.9"	D = 81' 51" 04.0"	D = 38' 11" 49.9"	D = 35' 48" 35.5"	D = 286' 28" 44.0"
L = 40.54'	L = 87.55'	L = 210.93'	L = 359.25'	L = 229.99'	L = 25.48'
T = 20.47'	T = 43.78'	T = 1,089.23'	T = 382.97'	T = 139.97'	T = 14.80'
R = 120.00'	R = 1,650.00'	R = 70.00'	R = 150.00'	R = 160.00'	R = 20.00'
		SE = 0.06	SE = 0.06	SE = 0.06	
		RO = 120'	RO = 100'	RO = 90'	
		DS = 15 MPH	DS = 25 MPH	DS = 20 MPH	



NOTES: ALL DRIVES ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

FOR -Y10B- PROFILE SEE SHT. 32
 FOR -Y13- PROFILE SEE SHT. 34
 FOR -DR25- PROFILE SEE SHT. 37
 FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

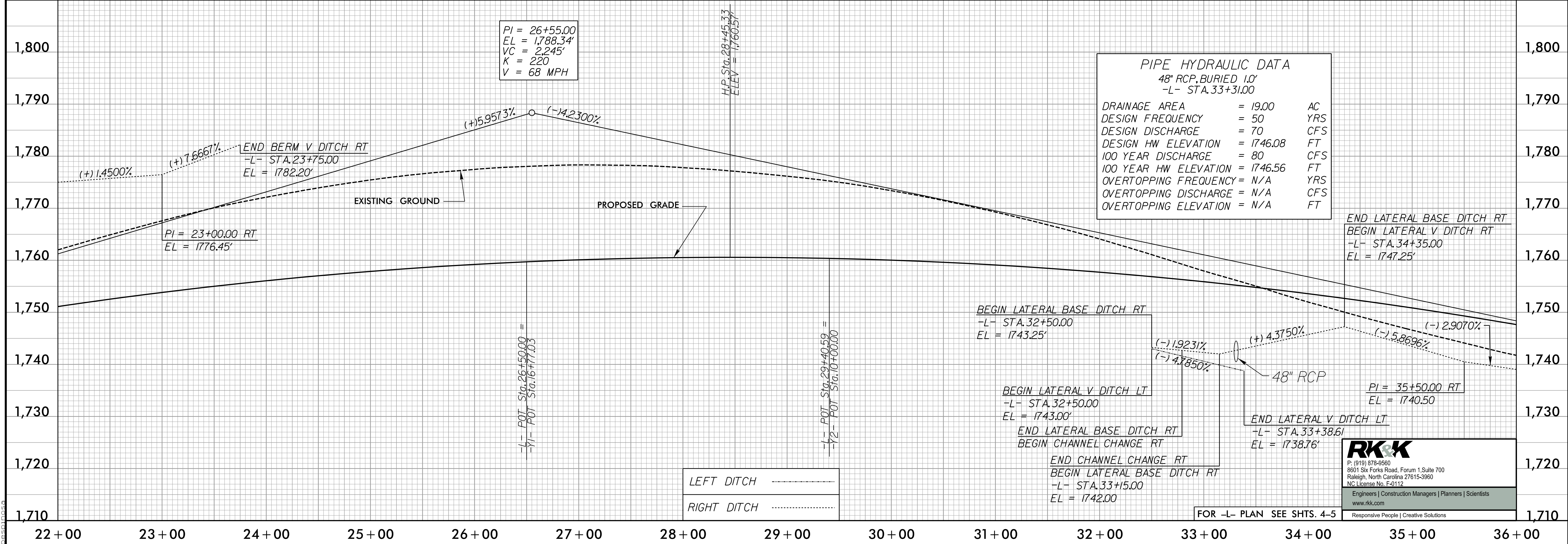
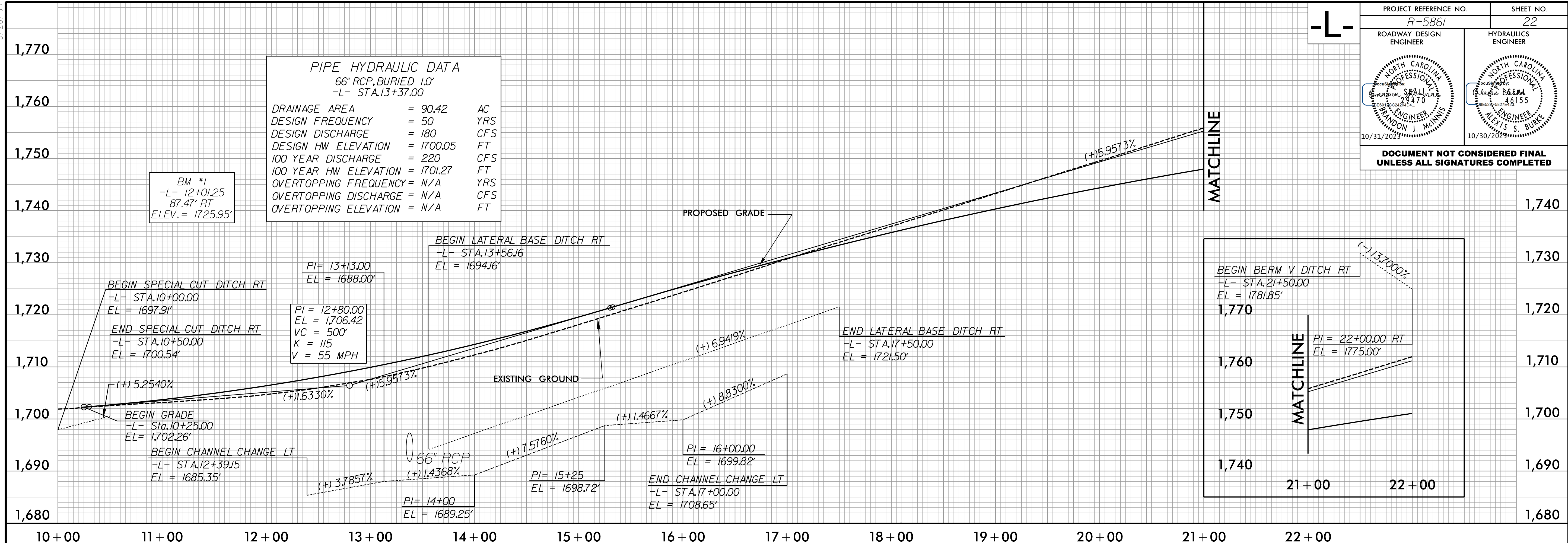
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PROJECT REFERENCE NO. R-5861	SHEET NO. 22
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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FOR -L- PLAN SEE SHTS. 4-5

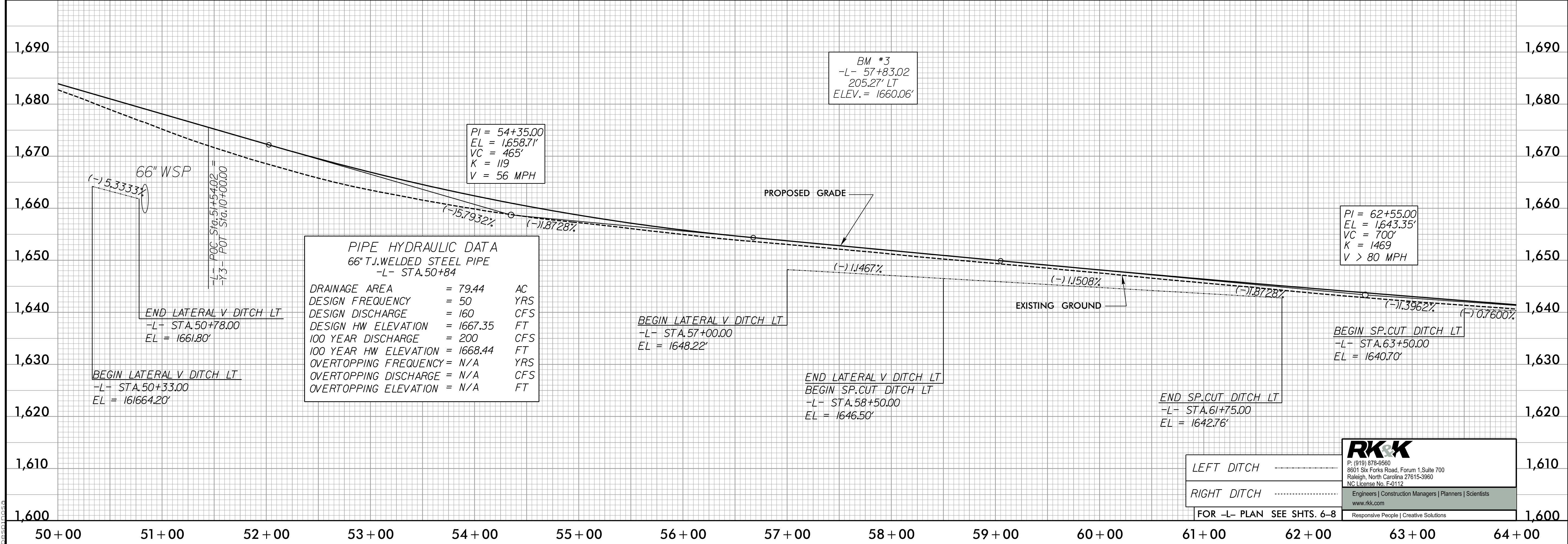
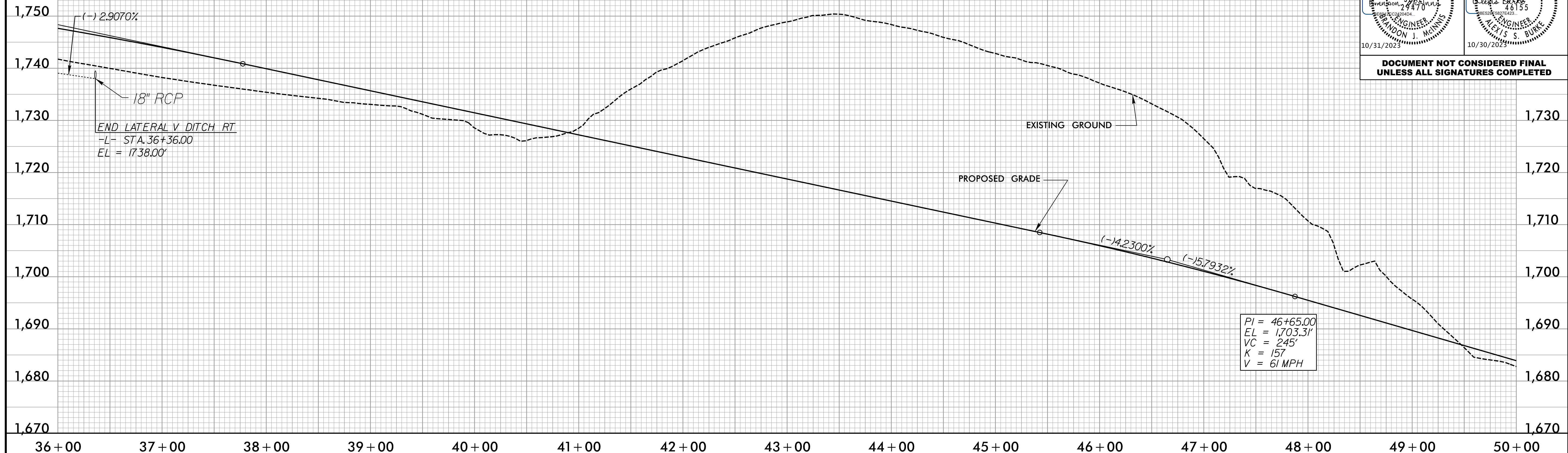
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BM #2
-L- 38+80.35
109.2' RT
ELEV. = 1745.61'

PROJECT REFERENCE NO. R-5861		SHEET NO. 23
ROADWAY DESIGN ENGINEER ALEXIS S. BURKE 10/31/2023	HYDRAULICS ENGINEER ALEXIS S. BURKE 10/30/2023	

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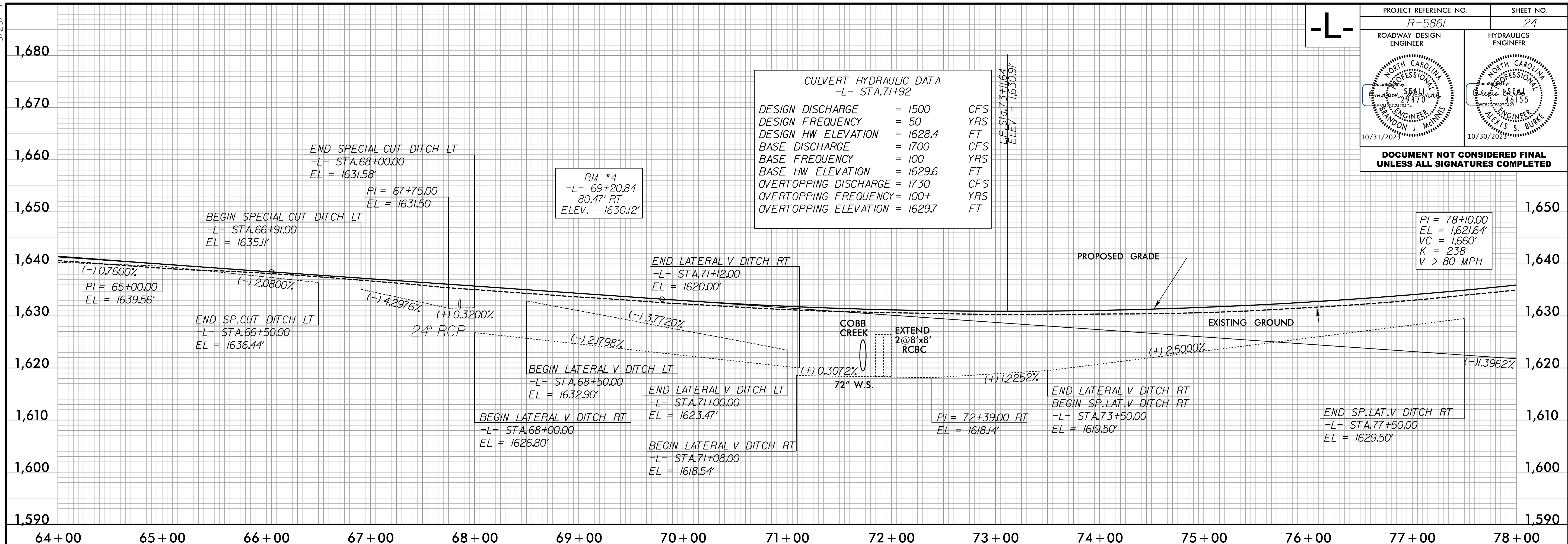
LEFT DITCH
RIGHT DITCH
FOR -L- PLAN SEE SHTS. 6-8

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PROJECT REFERENCE NO. R-5861	SHEET NO. 24
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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CULVERT HYDRAULIC DATA
-L- STA.71+92

DESIGN DISCHARGE	= 1500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 1628.4	FT
BASE DISCHARGE	= 1700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1629.6	FT
OVERTOPPING DISCHARGE	= 1730	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 1629.7	FT

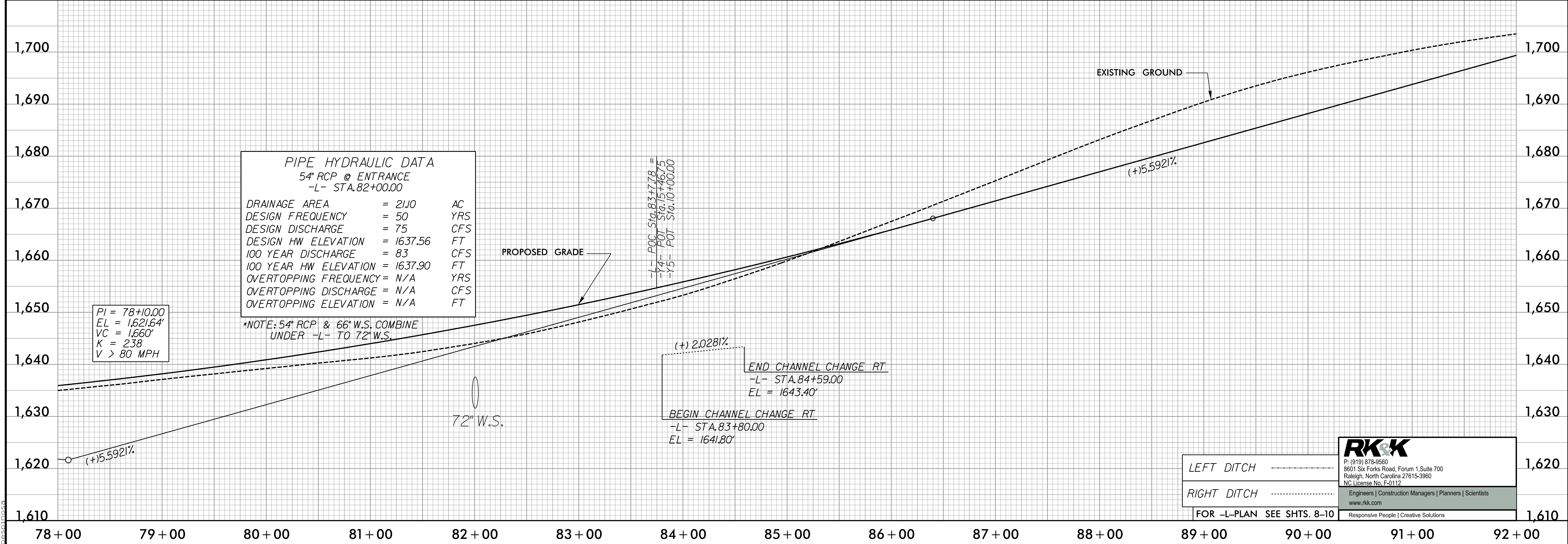
BM #4
-L- 69+20.84
80.47' RT
ELEV. = 1630.12'

PI = 78+10.00
EL = 1621.64'
VC = 1660'
K = 238
V > 80 MPH

PIPE HYDRAULIC DATA
54" RCP @ ENTRANCE
-L- STA.82+00.00

DRAINAGE AREA	= 2110	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 75	CFS
DESIGN HW ELEVATION	= 1637.56	FT
100 YEAR DISCHARGE	= 83	CFS
100 YEAR HW ELEVATION	= 1637.90	FT
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= N/A	FT

*NOTE: 54" RCP & 66" W.S. COMBINE UNDER -L- TO 72" W.S.



LEFT DITCH
RIGHT DITCH
FOR -L-PLAN SEE SHTS. 8-10

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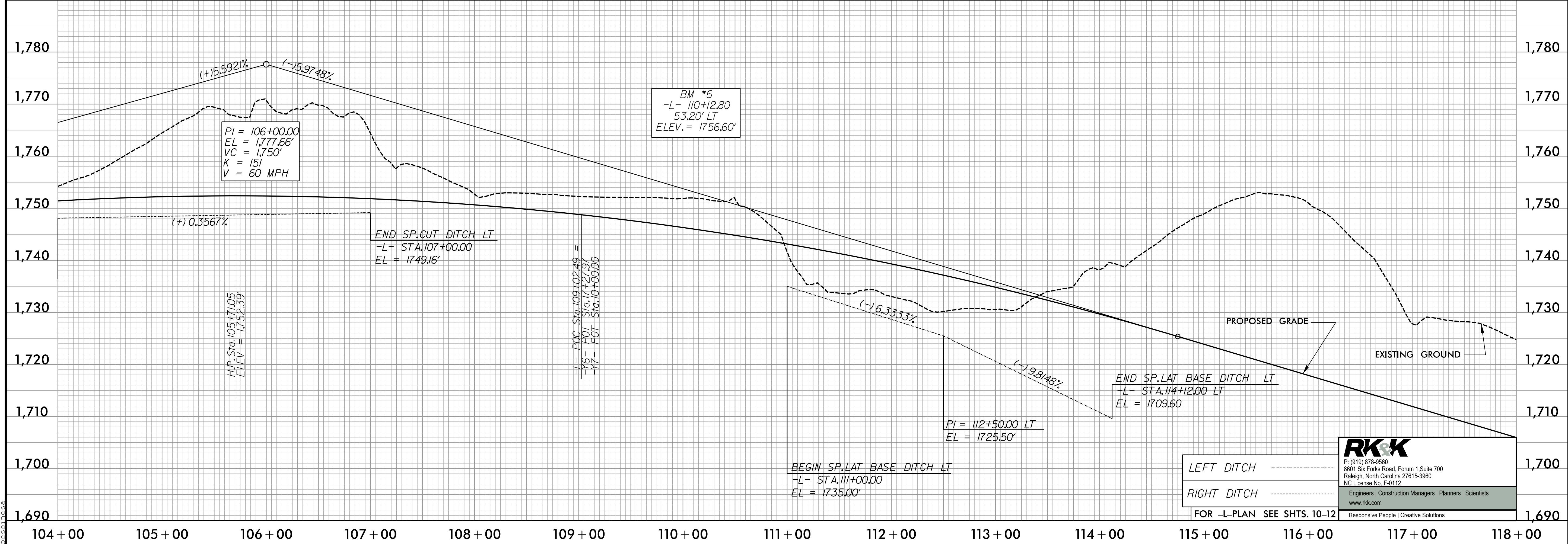
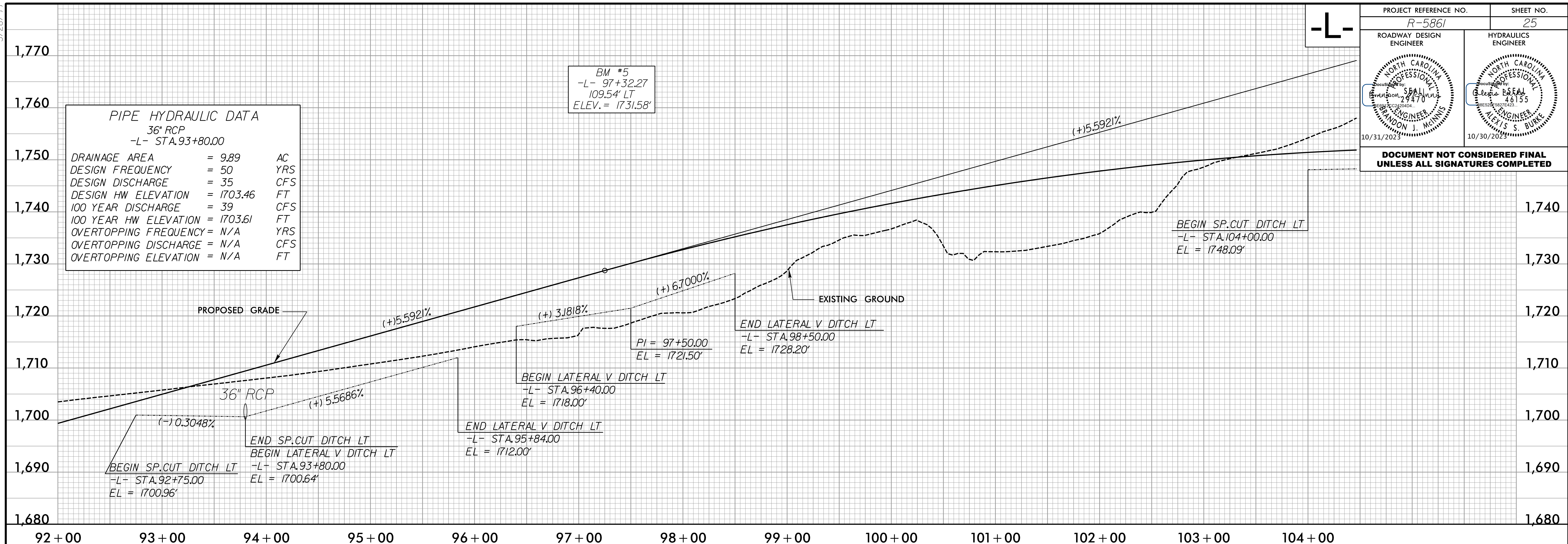
PROJECT REFERENCE NO. R-5861	SHEET NO. 25
ROADWAY DESIGN ENGINEER SPALDING 10/31/2023	HYDRAULICS ENGINEER ALEXIS S. BURKE 10/30/2023

PIPE HYDRAULIC DATA

36" RCP
-L- STA.93+80.00

DRAINAGE AREA	= 9.89	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35	CFS
DESIGN HW ELEVATION	= 1703.46	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 1703.61	FT
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= N/A	FT

BM #5
-L- 97+32.27
109.54' LT
ELEV. = 1731.58'



LEFT DITCH
RIGHT DITCH
FOR -L-PLAN SEE SHTS. 10-12

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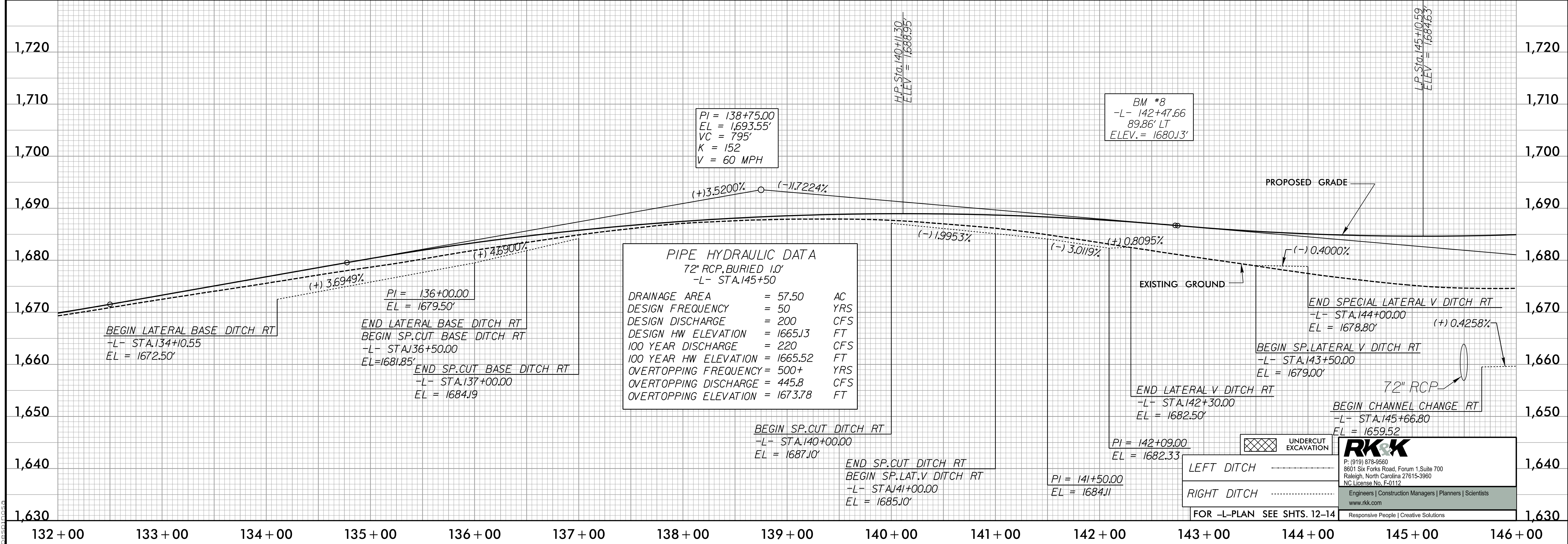
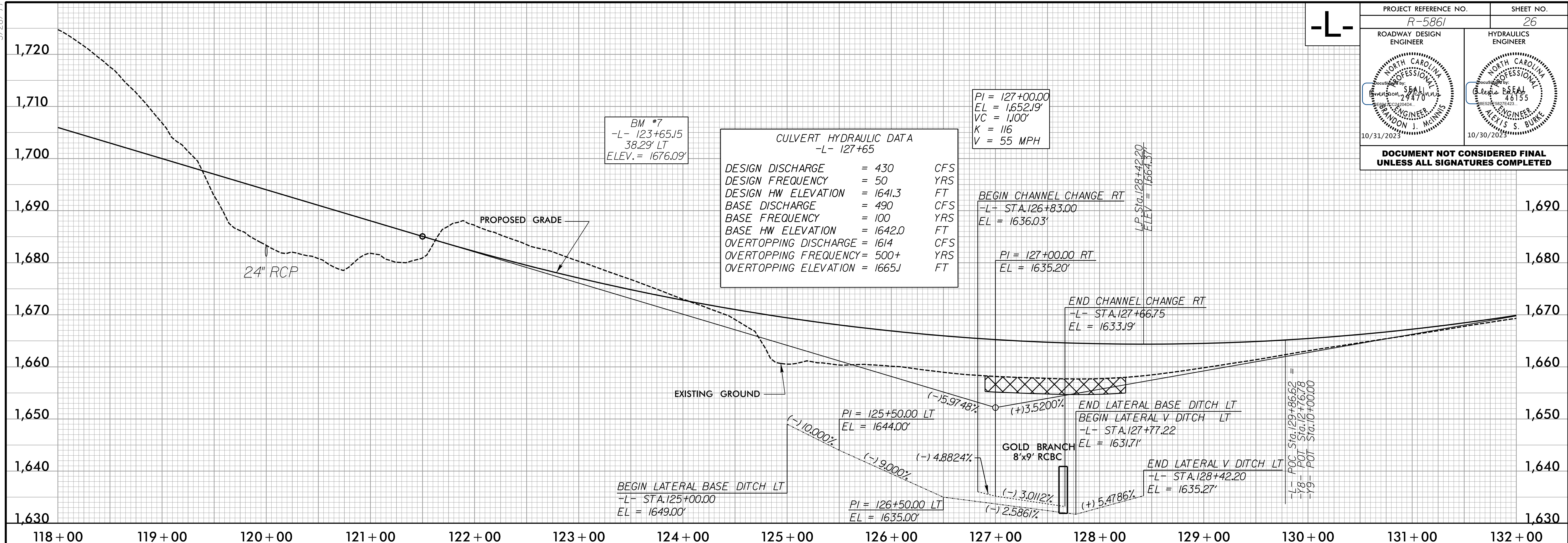
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PROJECT REFERENCE NO. R-5861		SHEET NO. 26
ROADWAY DESIGN ENGINEER SPAIN J. WILSON 10/31/2023	HYDRAULICS ENGINEER ALEX S. BURKE 10/30/2023	
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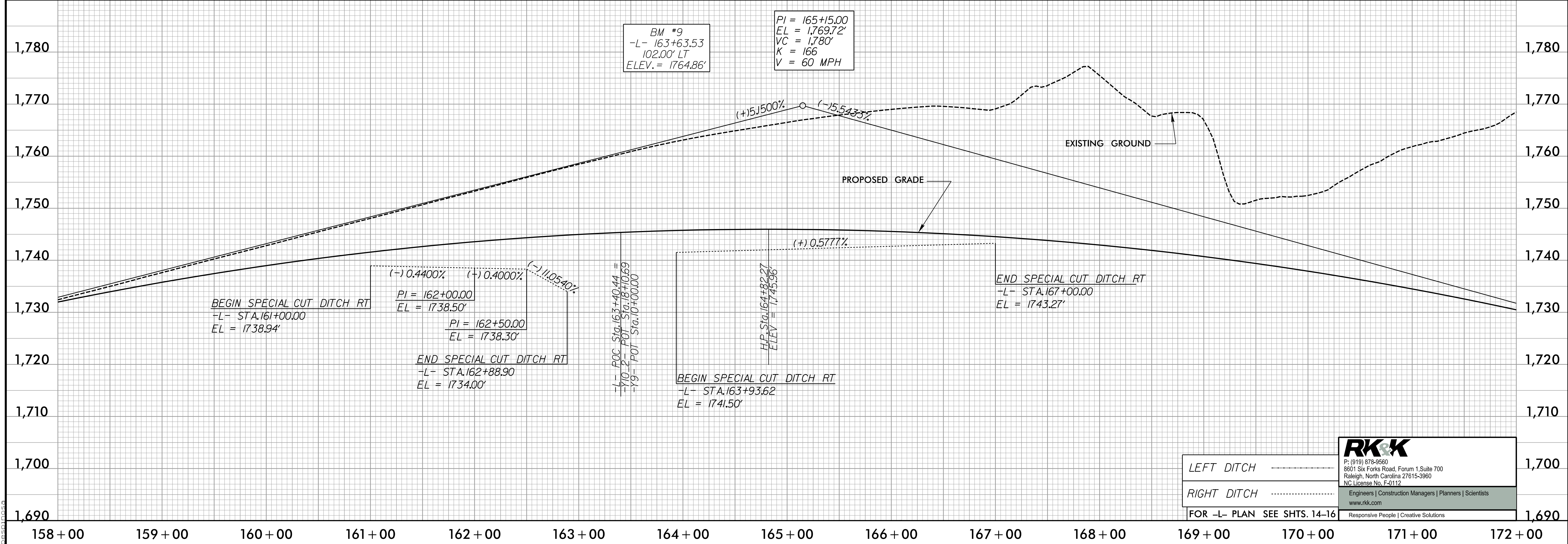
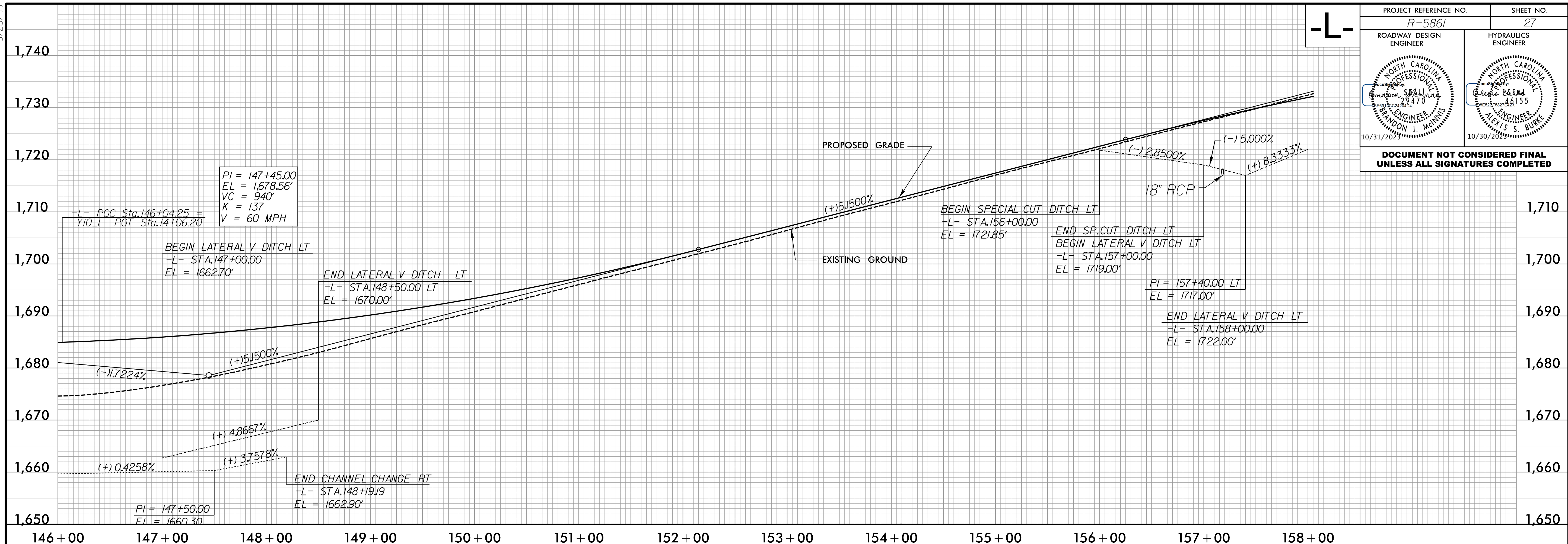
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-L-

PROJECT REFERENCE NO. R-5861	SHEET NO. 27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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LEFT DITCH
 RIGHT DITCH
 FOR -L- PLAN SEE SHTS. 14-16

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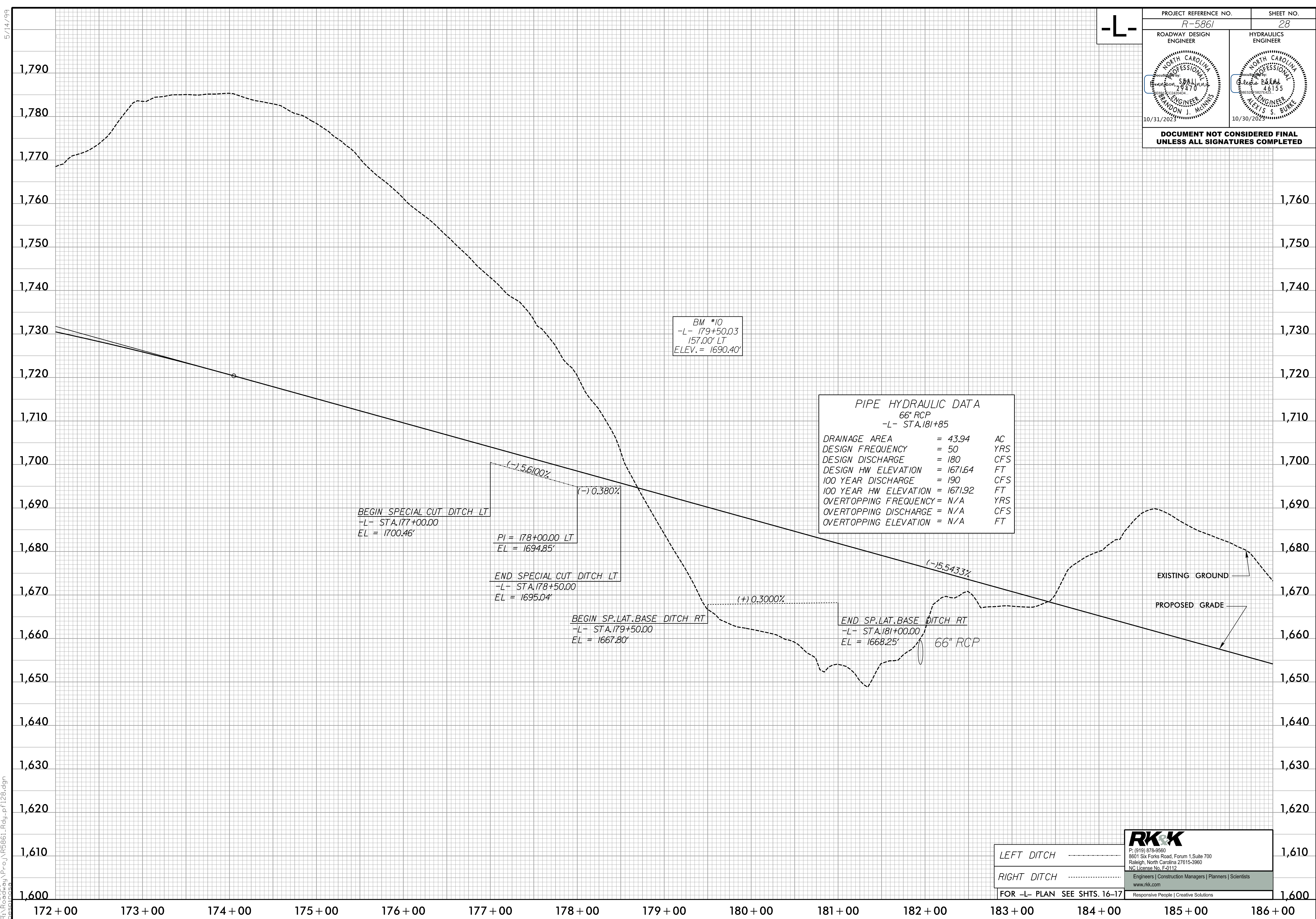
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PROJECT REFERENCE NO. <i>R-5861</i>	SHEET NO. <i>28</i>
ROADWAY DESIGN ENGINEER <i>SPALDING</i> 10/31/2023	HYDRAULICS ENGINEER <i>ALEXIS S. BURKE</i> 10/30/2023

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BM *10
-L- 179+50.03
157.00' LT
ELEV. = 1690.40'

PIPE HYDRAULIC DATA		
66" RCP		
-L- STA.181+85		
DRAINAGE AREA	= 43.94	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 180	CFS
DESIGN HW ELEVATION	= 1671.64	FT
100 YEAR DISCHARGE	= 190	CFS
100 YEAR HW ELEVATION	= 1671.92	FT
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= N/A	FT

BEGIN SPECIAL CUT DITCH LT
-L- STA.177+00.00
EL = 1700.46'

PI = 178+00.00 LT
EL = 1694.85'

END SPECIAL CUT DITCH LT
-L- STA.178+50.00
EL = 1695.04'

BEGIN SP. LAT. BASE DITCH RT
-L- STA.179+50.00
EL = 1667.80'

END SP. LAT. BASE DITCH RT
-L- STA.181+00.00
EL = 1668.25'

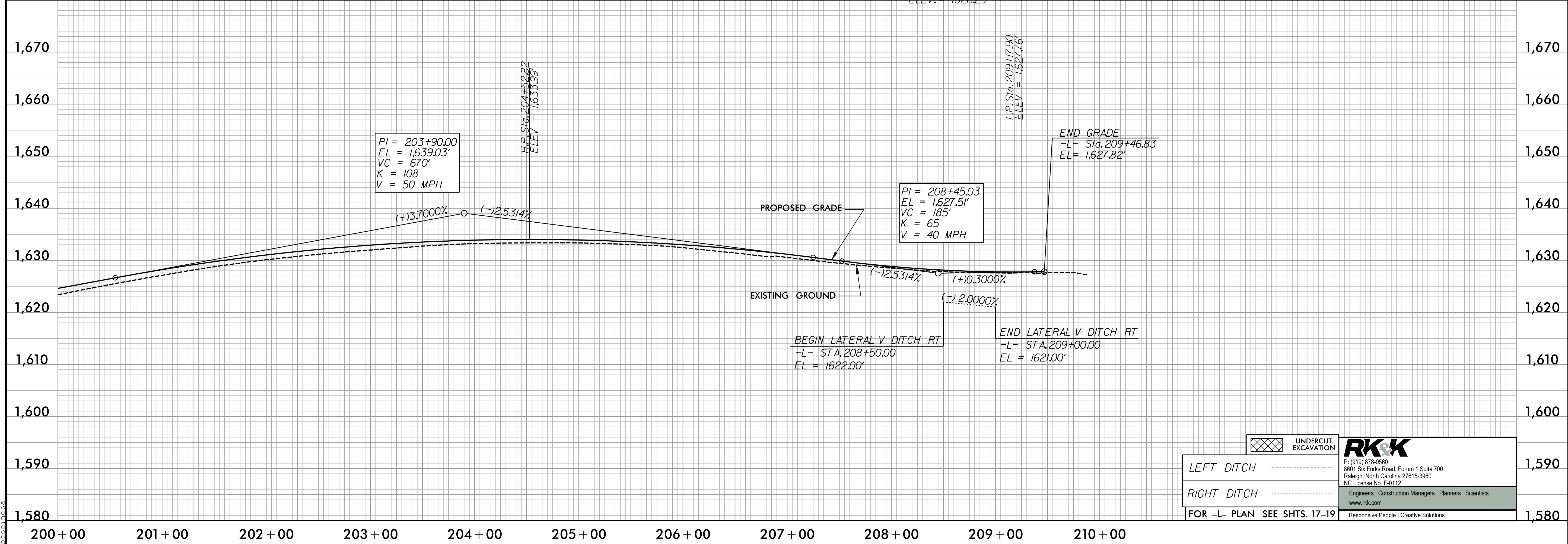
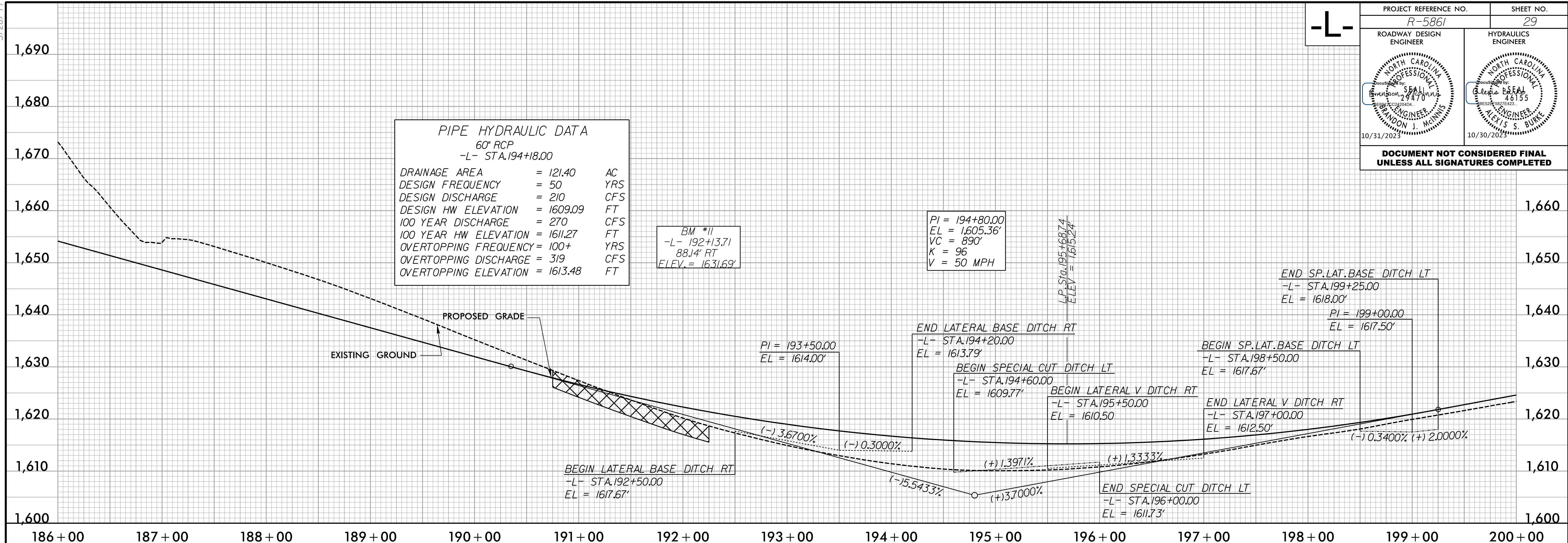
LEFT DITCH
RIGHT DITCH
FOR -L- PLAN SEE SHTS. 16-17

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PROJECT REFERENCE NO. R-5861		SHEET NO. 29	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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LEFT DITCH	-----
RIGHT DITCH	-----
FOR -L- PLAN SEE SHTS. 17-19	

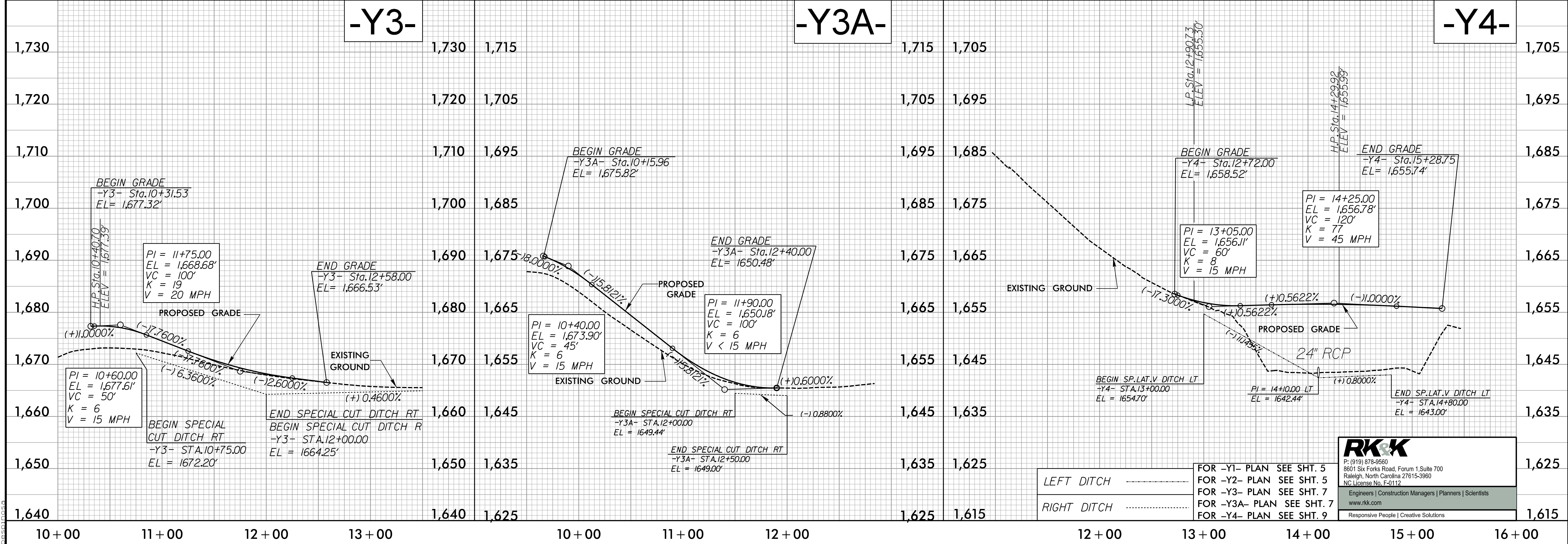
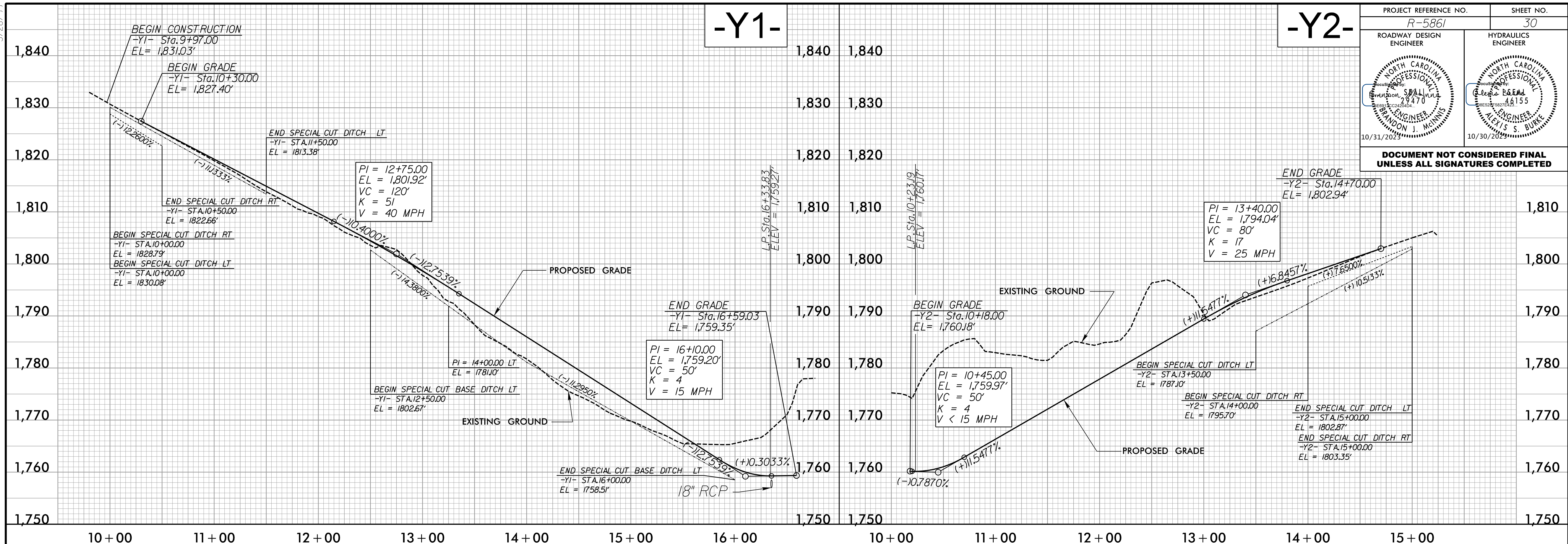
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PROJECT REFERENCE NO. R-5861	SHEET NO. 30
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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LEFT DITCH	FOR -Y1- PLAN SEE SHT. 5
RIGHT DITCH	FOR -Y2- PLAN SEE SHT. 5
	FOR -Y3- PLAN SEE SHT. 7
	FOR -Y3A- PLAN SEE SHT. 7
	FOR -Y4- PLAN SEE SHT. 9

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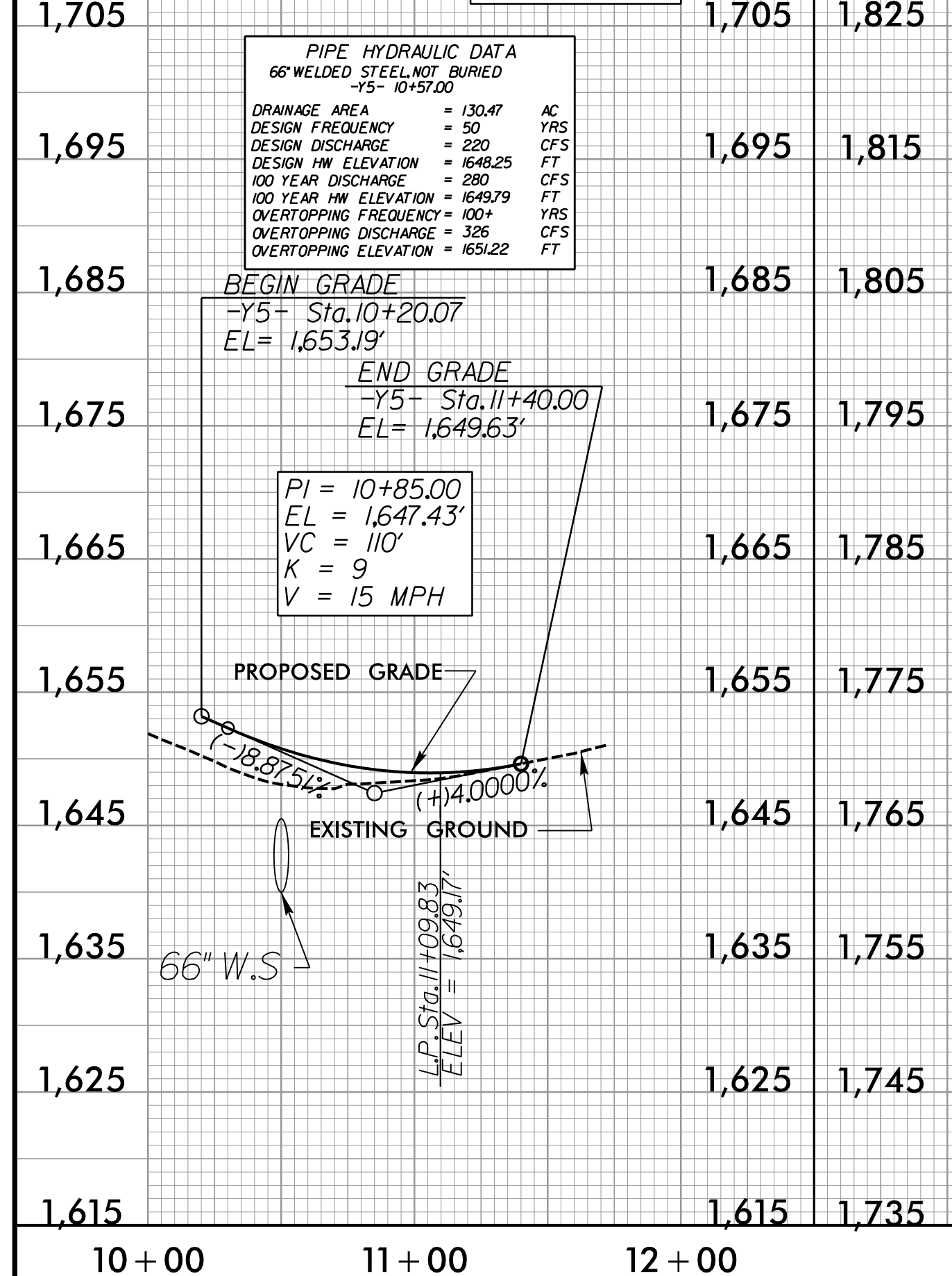
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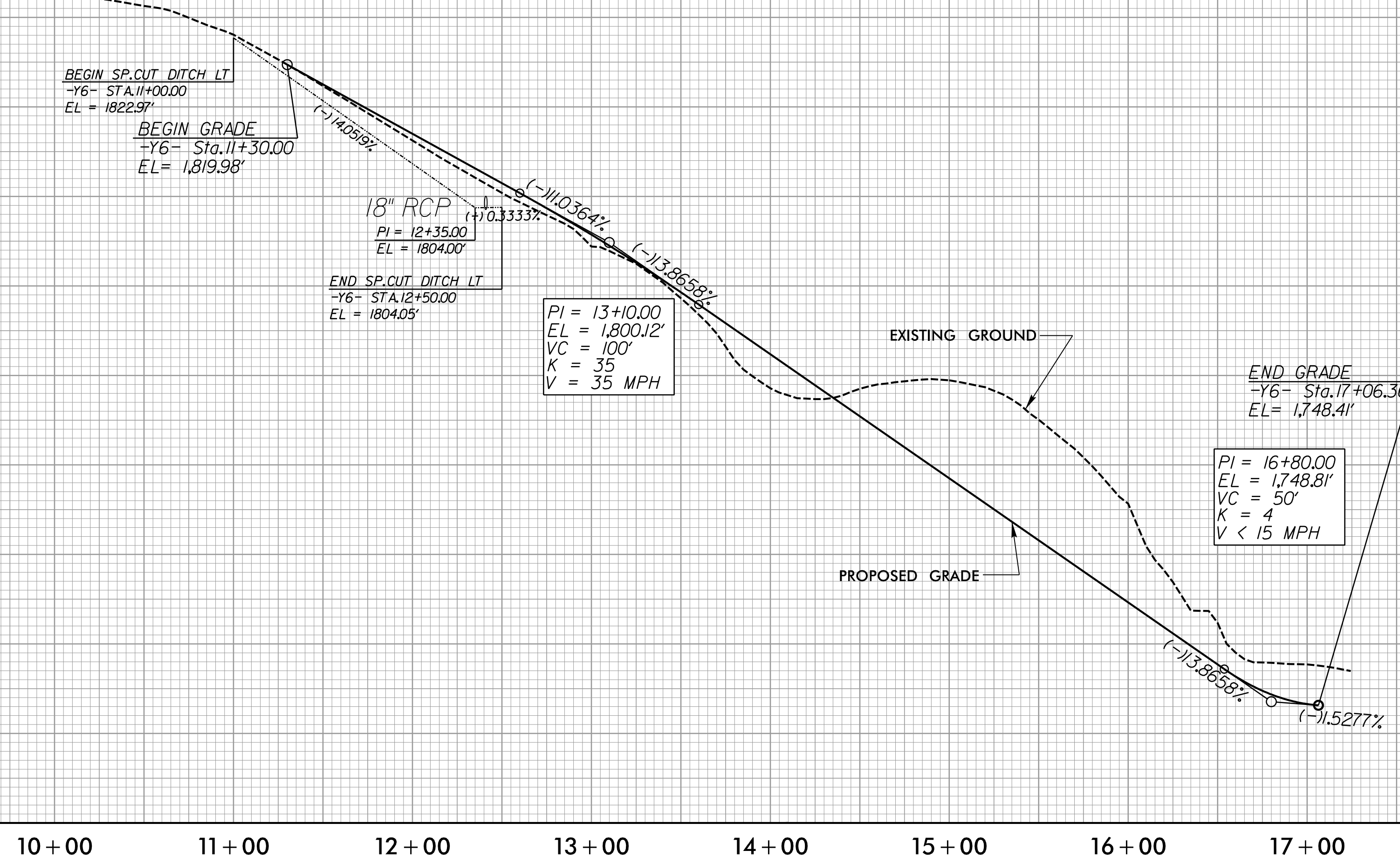
-Y5-



PIPE HYDRAULIC DATA
66" WELDED STEEL NOT BURIED
-Y5- STA.10+57.00

DRAINAGE AREA	= 130.47	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 1648.25	FT
100 YEAR DISCHARGE	= 286.79	CFS
100 YEAR HW ELEVATION	= 1649.79	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 326	CFS
OVERTOPPING ELEVATION	= 1651.22	FT

-Y6-



BEGIN SP. CUT DITCH LT
-Y6- STA.11+00.00
EL = 1,822.97'

BEGIN GRADE
-Y6- Sta.11+30.00
EL = 1,819.98'

18" RCP
PI = 12+35.00
EL = 1,804.00'

END SP. CUT DITCH LT
-Y6- STA.12+50.00
EL = 1,804.05'

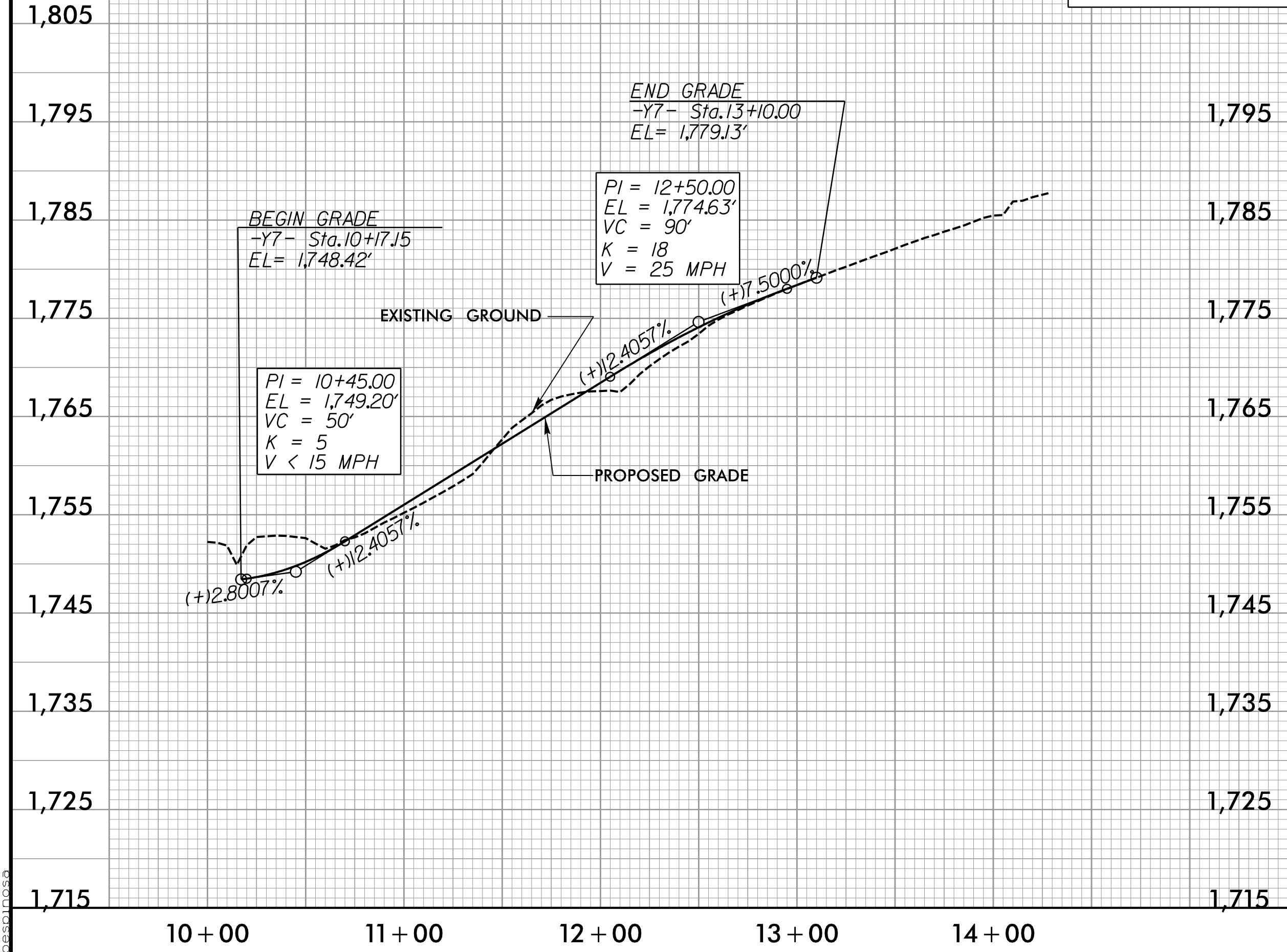
PI = 13+10.00
EL = 1,800.12'
VC = 100'
K = 35
V = 35 MPH

END GRADE
-Y6- Sta.17+06.36
EL = 1,748.41'

PI = 16+80.00
EL = 1,748.81'
VC = 50'
K = 4
V < 15 MPH

PROJECT REFERENCE NO. R-5861	SHEET NO. 31
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
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-Y7-

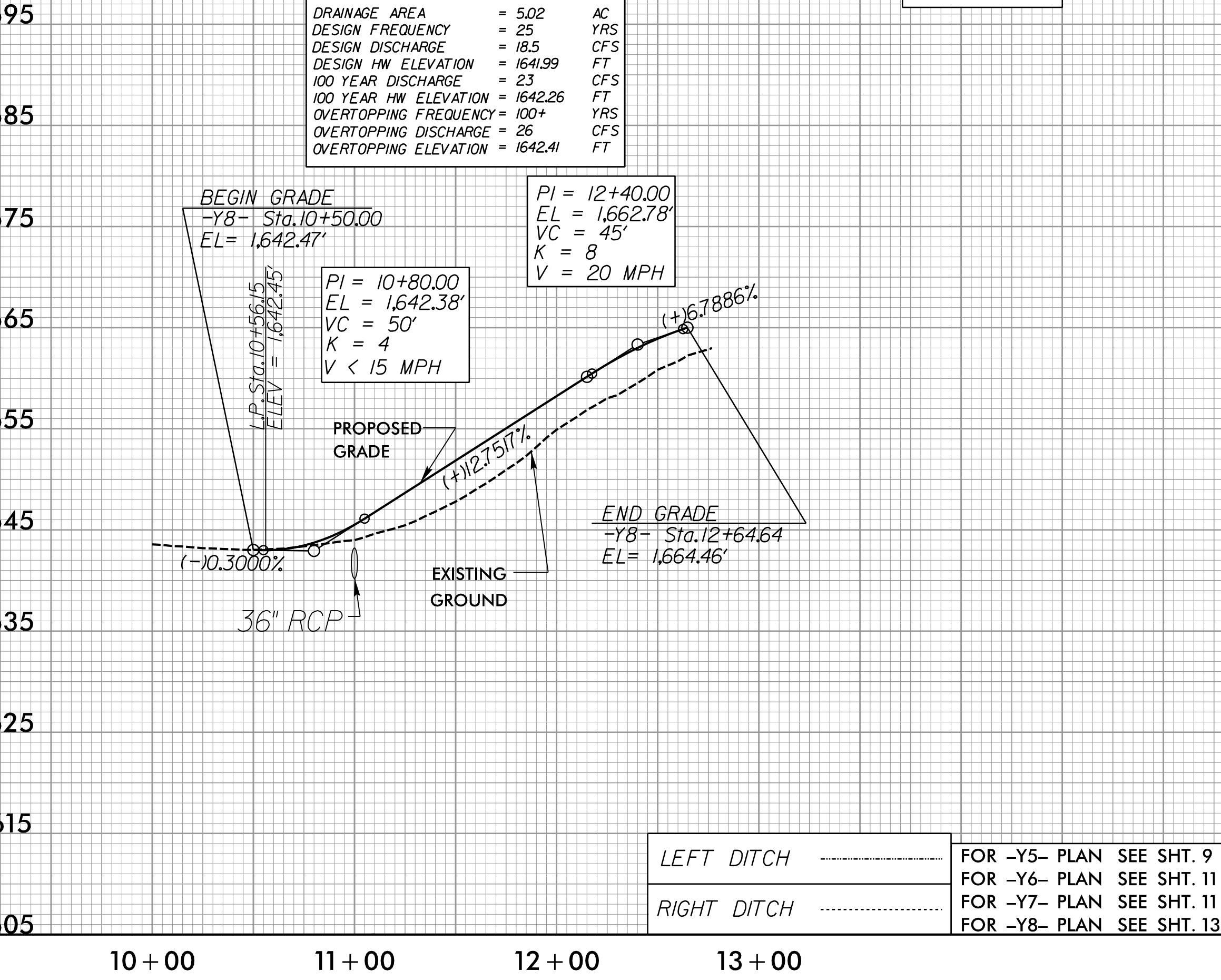


PI = 10+45.00
EL = 1,749.20'
VC = 50'
K = 5
V < 15 MPH

PI = 12+50.00
EL = 1,774.63'
VC = 90'
K = 18
V = 25 MPH

END GRADE
-Y7- Sta.13+10.00
EL = 1,779.13'

-Y8-



PIPE HYDRAULIC DATA
36" RCP, BURED 06'
-Y8- STA.11+00

DRAINAGE AREA	= 5.02	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 18.5	CFS
DESIGN HW ELEVATION	= 1641.99	FT
100 YEAR DISCHARGE	= 23	CFS
100 YEAR HW ELEVATION	= 1642.26	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 26	CFS
OVERTOPPING ELEVATION	= 1642.41	FT

BEGIN GRADE
-Y8- Sta.10+50.00
EL = 1,642.47'

PI = 12+40.00
EL = 1,662.78'
VC = 45'
K = 8
V = 20 MPH

PI = 10+80.00
EL = 1,642.38'
VC = 50'
K = 4
V < 15 MPH

END GRADE
-Y8- Sta.12+64.64
EL = 1,664.46'

LEFT DITCH	FOR -Y5- PLAN SEE SHT. 9
RIGHT DITCH	FOR -Y6- PLAN SEE SHT. 11
	FOR -Y7- PLAN SEE SHT. 11
	FOR -Y8- PLAN SEE SHT. 13

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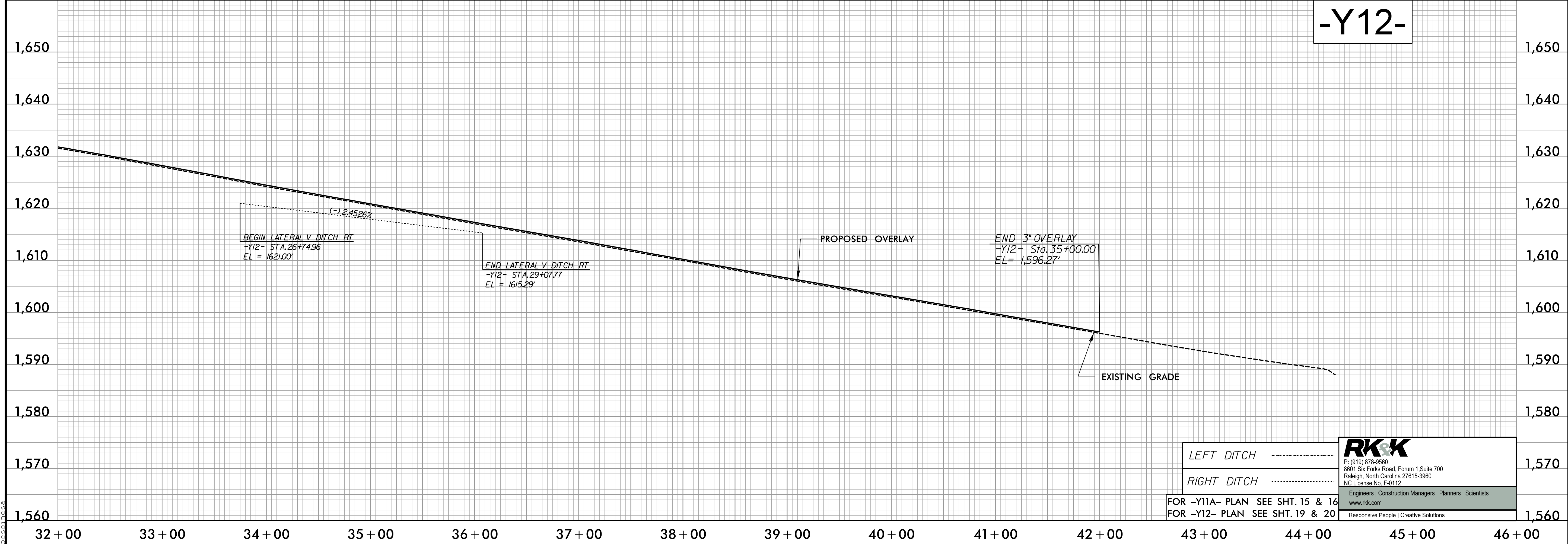
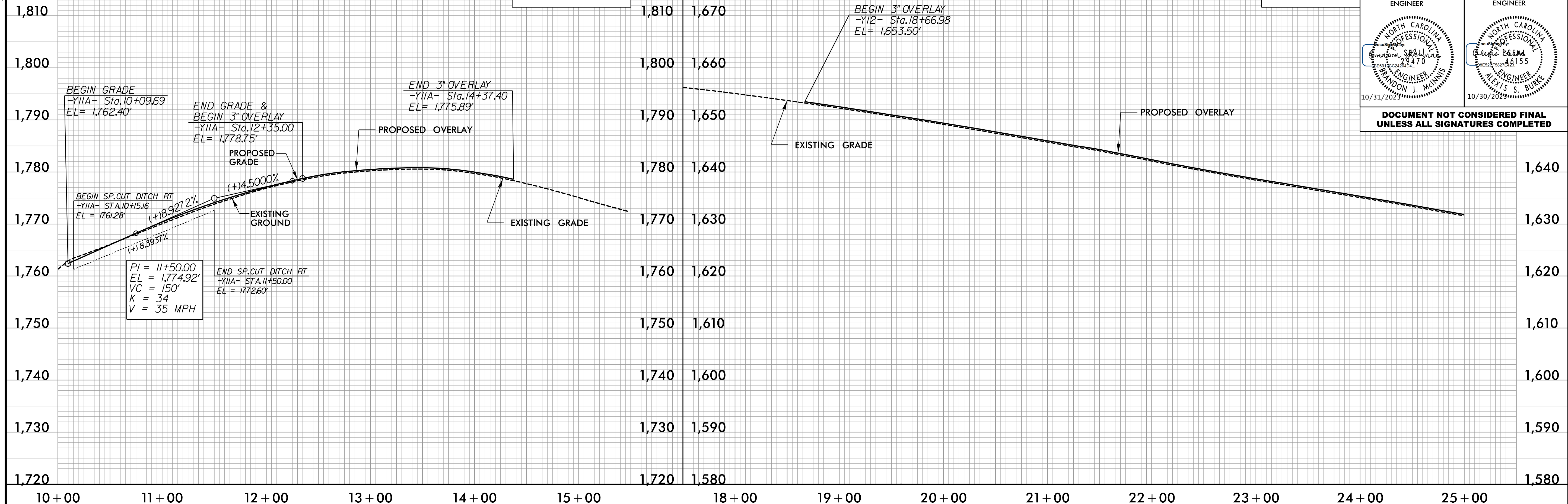
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-Y11A-

-Y12-

PROJECT REFERENCE NO. R-5861	SHEET NO. 33
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
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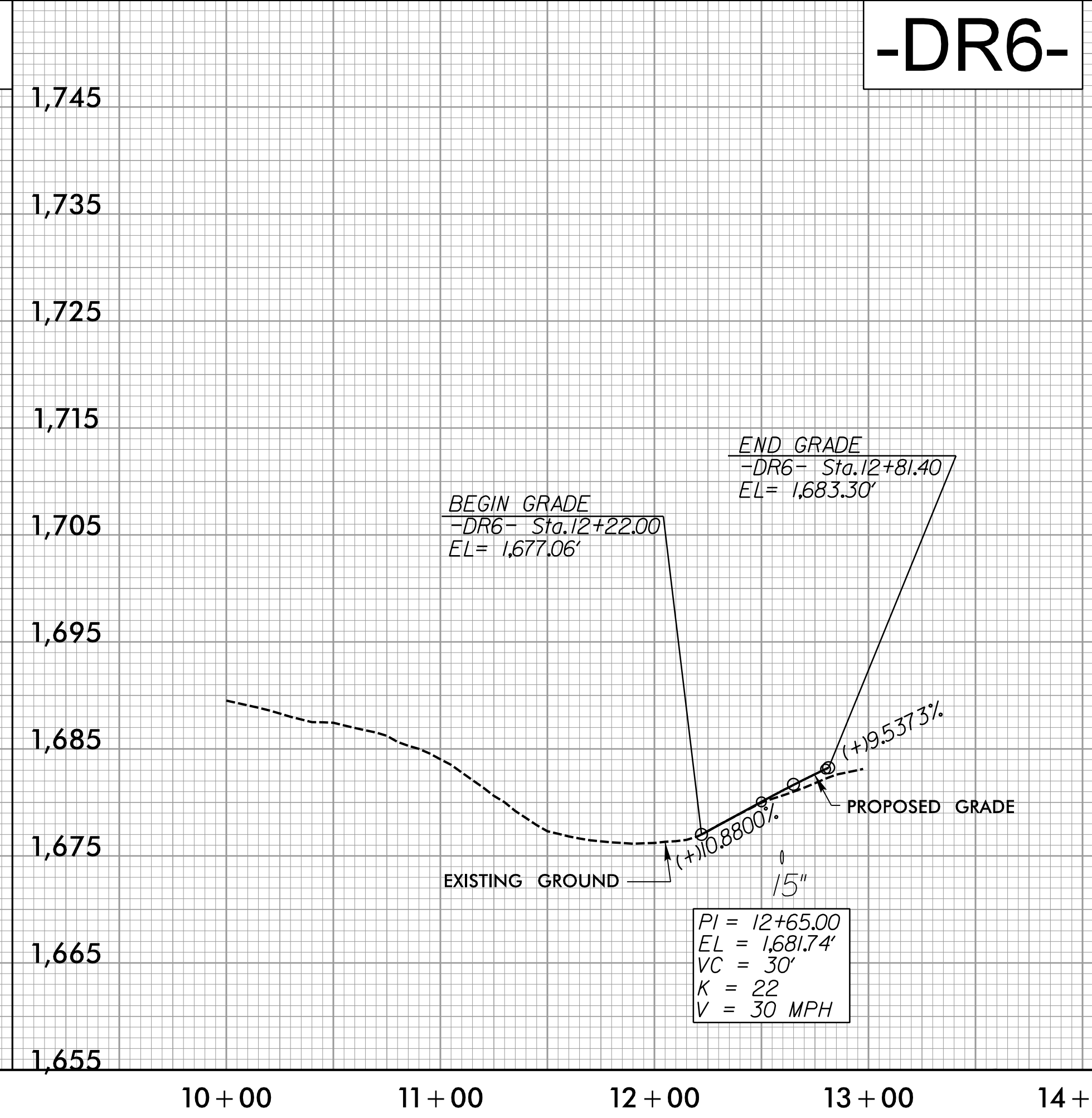
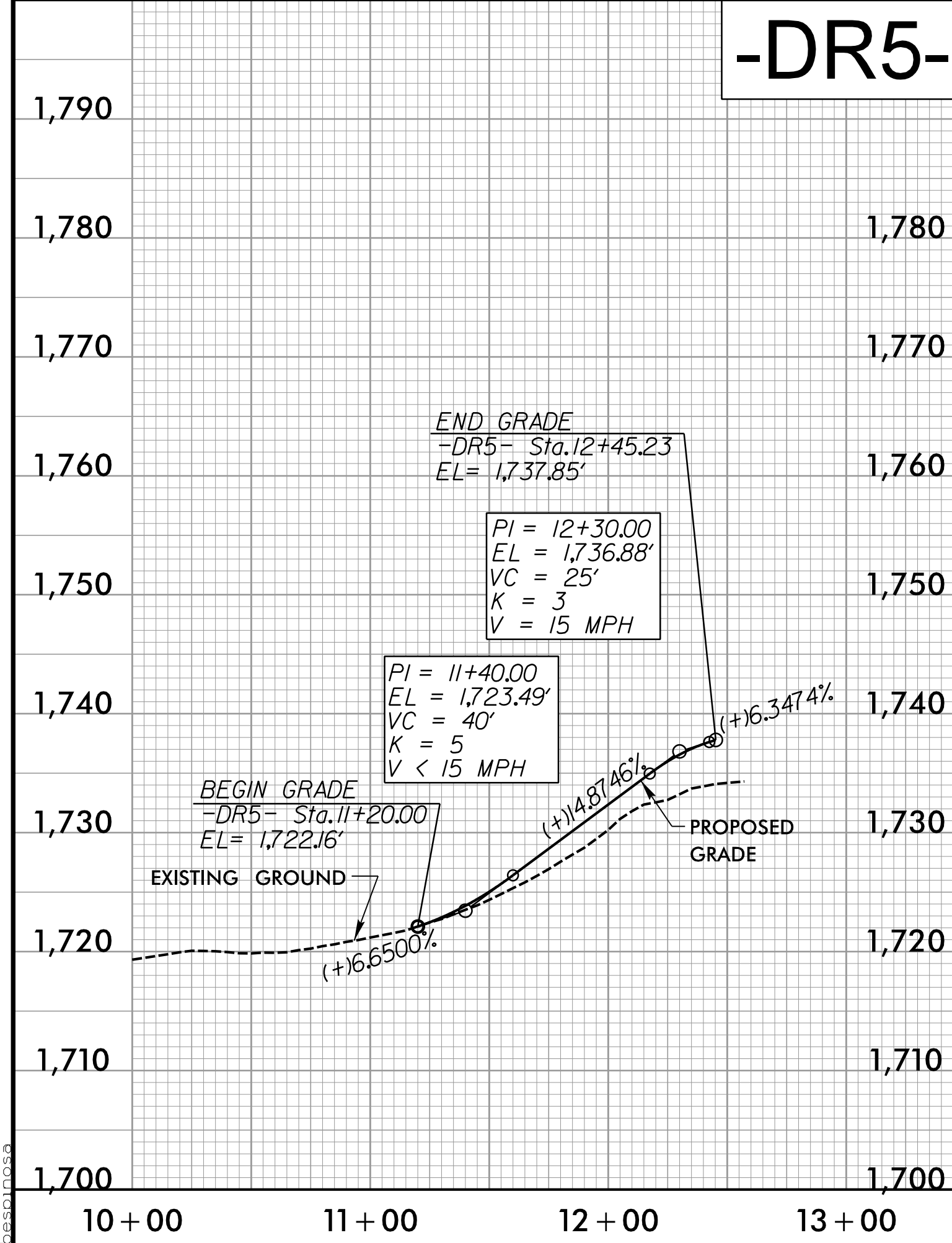
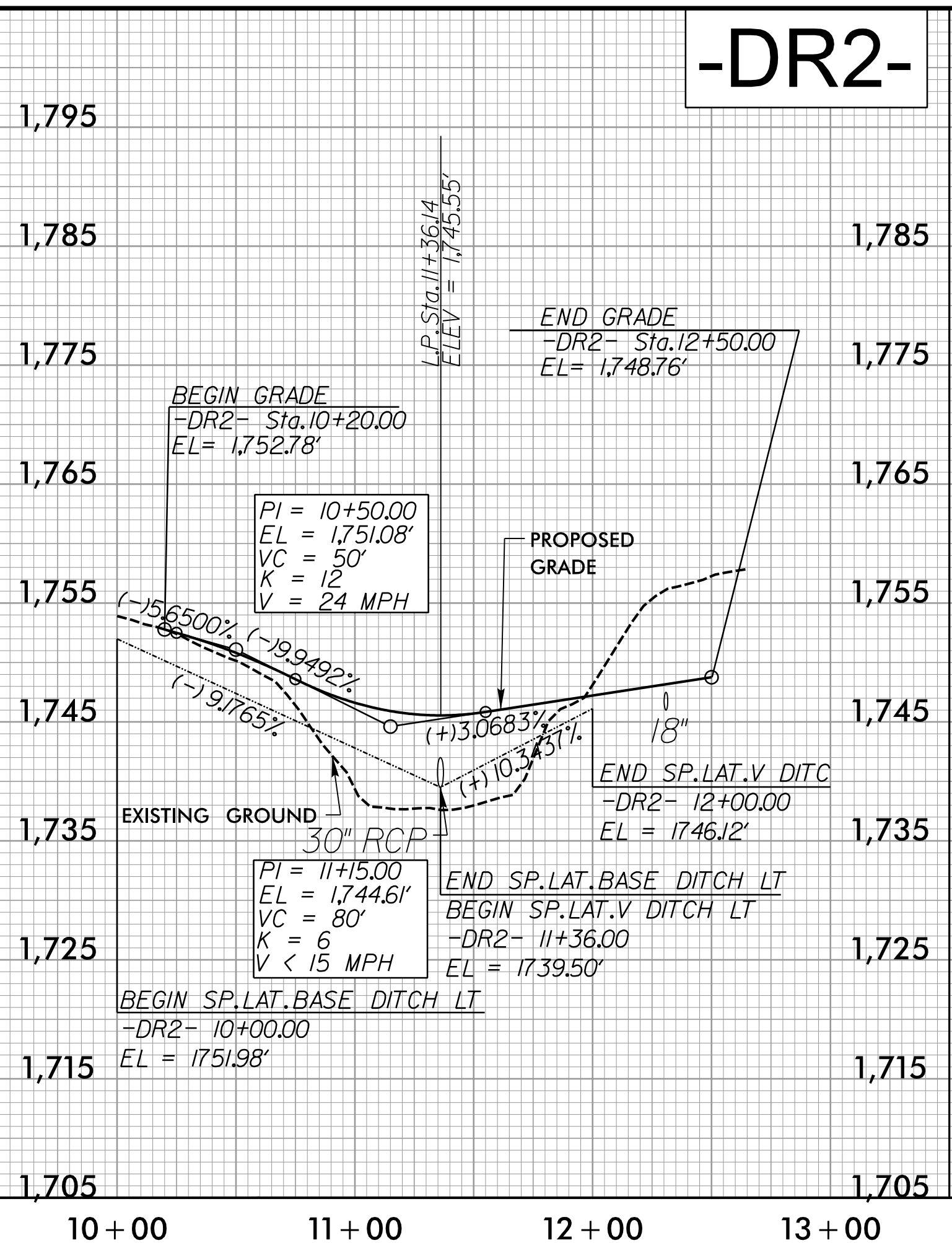
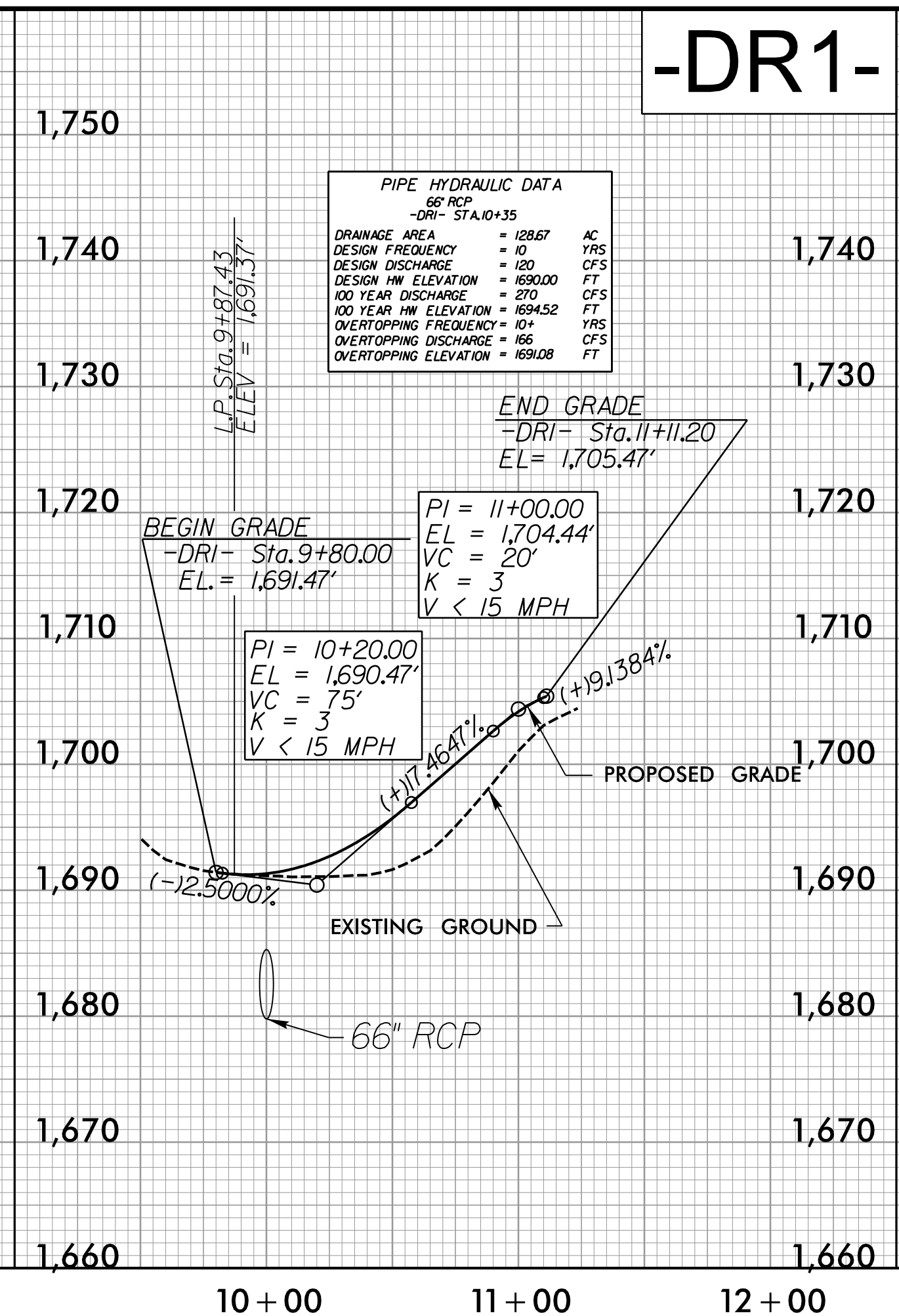
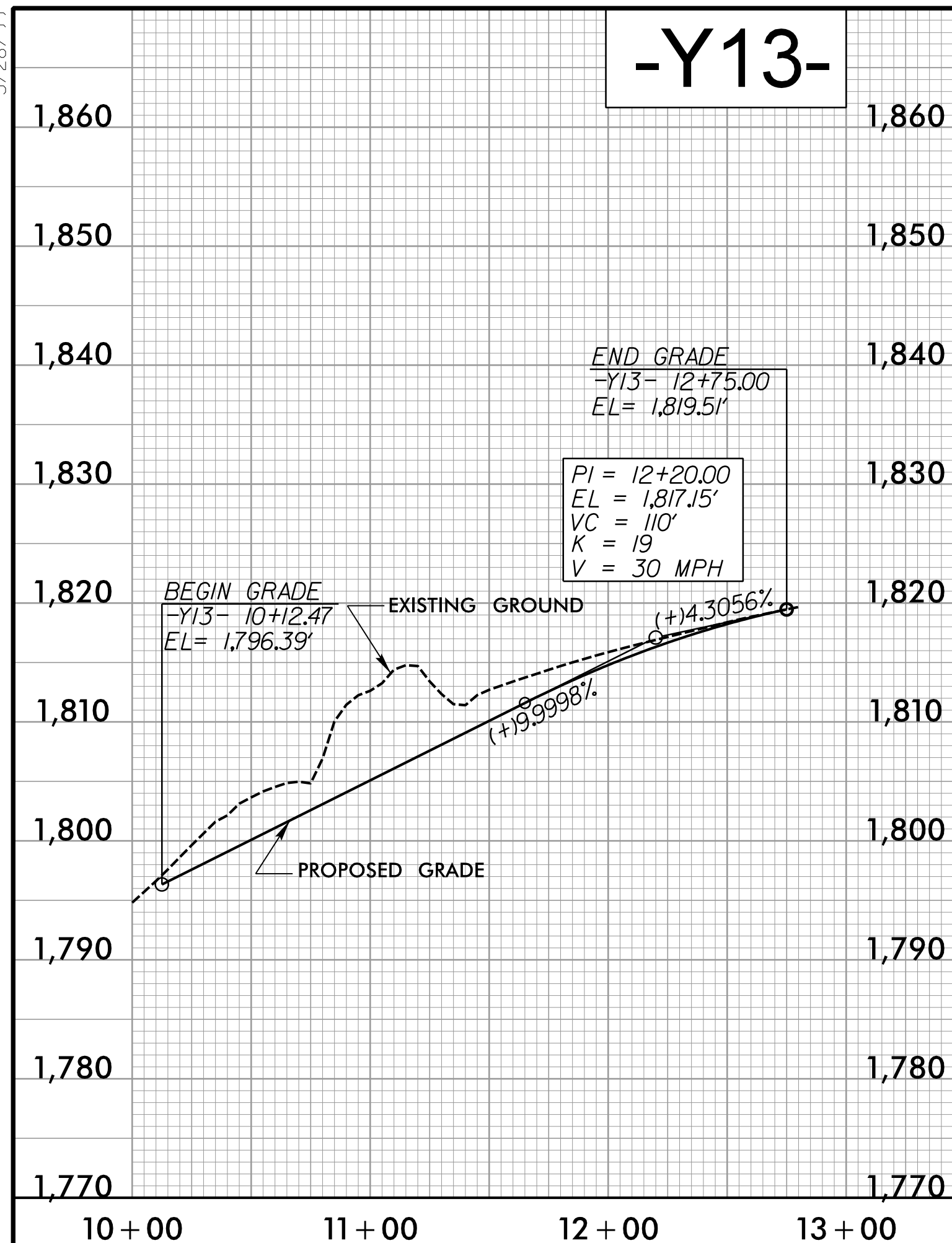
LEFT DITCH
RIGHT DITCH
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FOR -Y11A- PLAN SEE SHT. 15 & 16 FOR -Y12- PLAN SEE SHT. 19 & 20	

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5/28/23

PROJECT REFERENCE NO. R-5861	SHEET NO. 34
ROADWAY DESIGN ENGINEER BRANDON J. MOYNIHAN	HYDRAULICS ENGINEER ALEXIS S. BURKE

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LEFT DITCH	FOR -Y13- PLAN SEE SHT. 21
RIGHT DITCH	FOR -DR1- & -DR2- PLAN SEE SHT. 4
	FOR -DR5- PLAN SEE SHT. 6
	FOR -DR6- PLAN SEE SHT. 7

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

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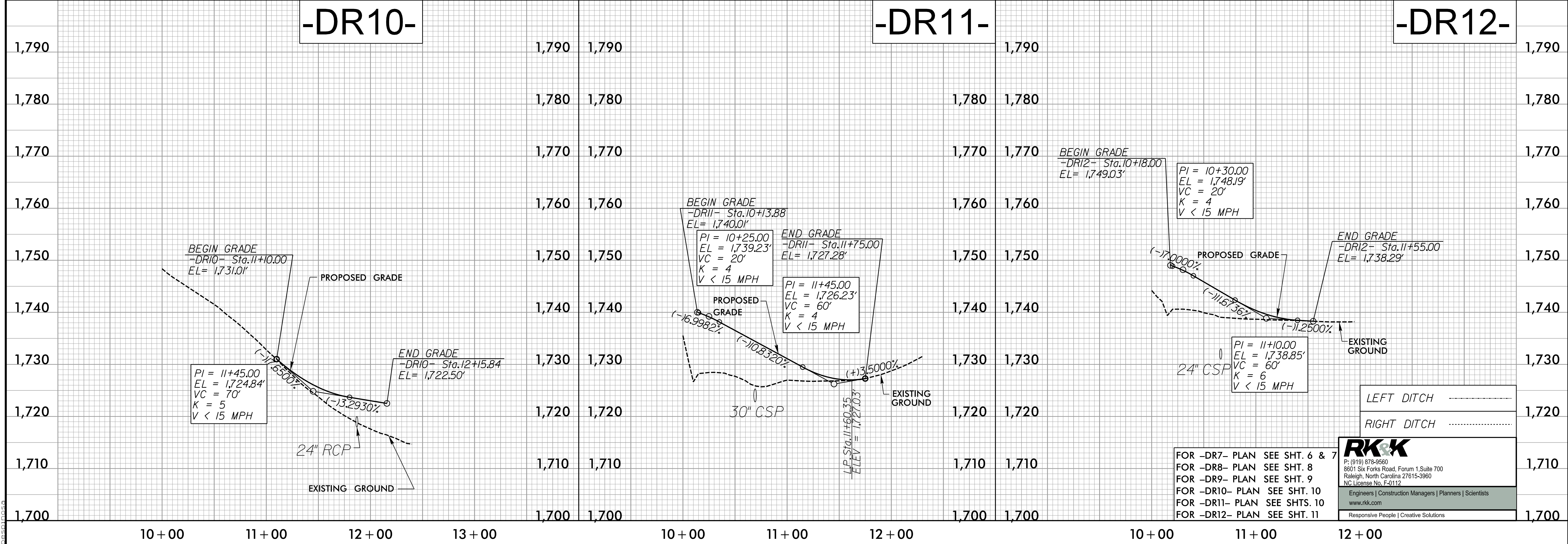
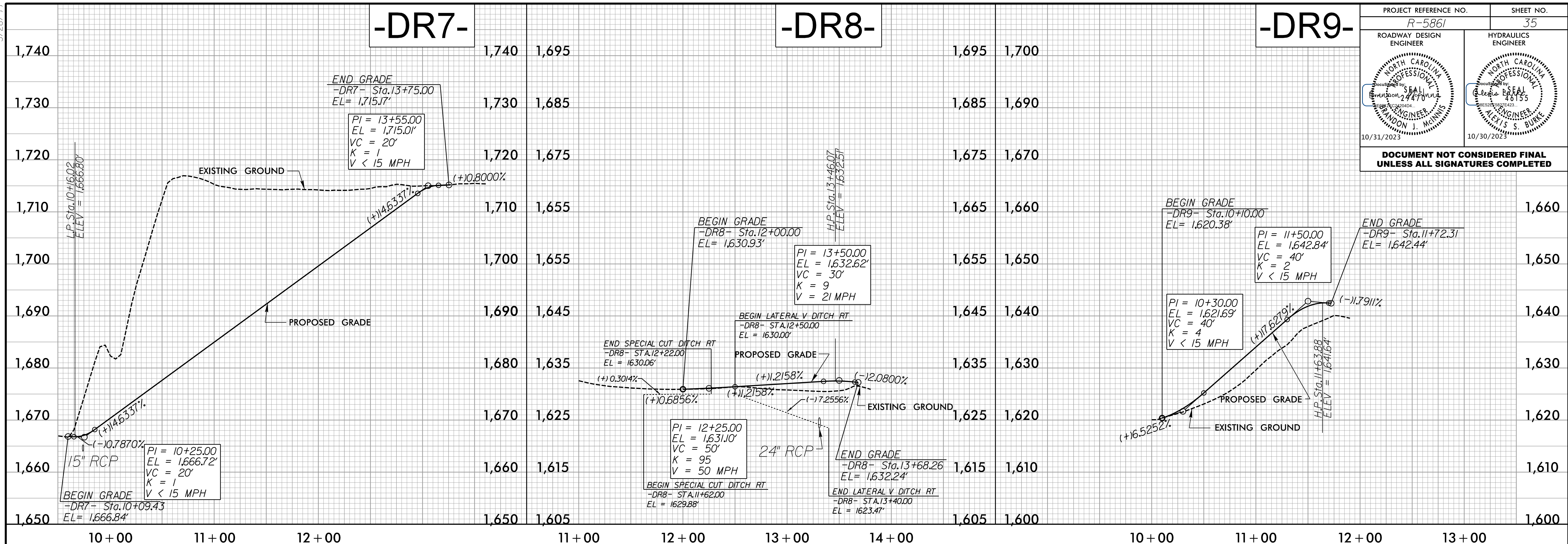
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R5861

PROJECT REFERENCE NO. R-5861	SHEET NO. 35
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER ALEXANDER J. MAINIS 10/31/2023	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER ALEXIS S. BURKE 10/30/2023

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FOR -DR7- PLAN SEE SHT. 6 & 7
 FOR -DR8- PLAN SEE SHT. 8
 FOR -DR9- PLAN SEE SHT. 9
 FOR -DR10- PLAN SEE SHT. 10
 FOR -DR11- PLAN SEE SHTS. 10
 FOR -DR12- PLAN SEE SHT. 11

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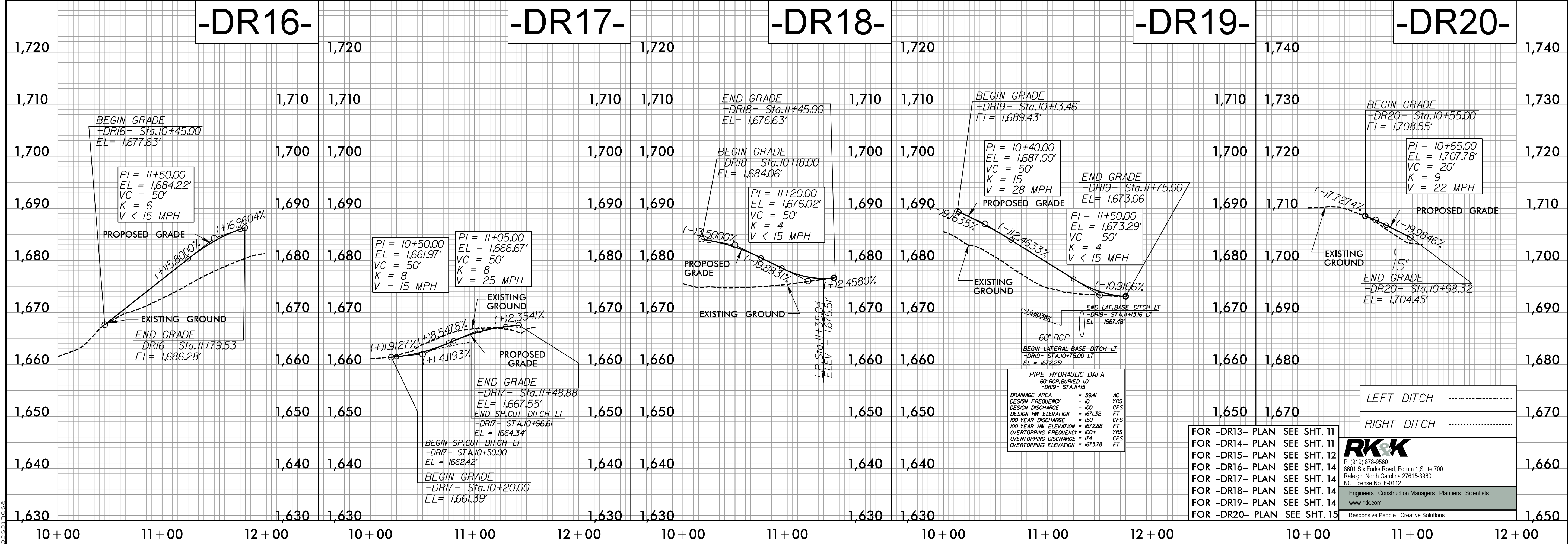
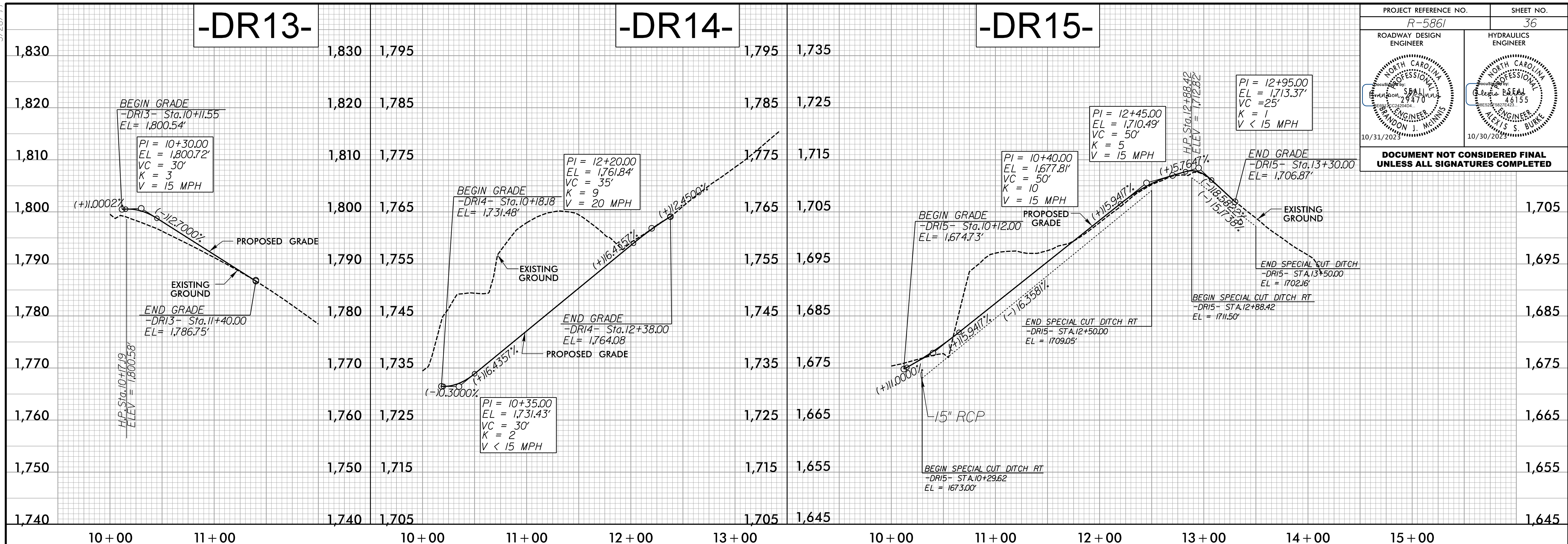
LEFT DITCH
 RIGHT DITCH

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10/6/2023
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PROJECT REFERENCE NO. R-5861	SHEET NO. 36
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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FOR -DR13- PLAN SEE SHT. 11
 FOR -DR14- PLAN SEE SHT. 11
 FOR -DR15- PLAN SEE SHT. 12
 FOR -DR16- PLAN SEE SHT. 14
 FOR -DR17- PLAN SEE SHT. 14
 FOR -DR18- PLAN SEE SHT. 14
 FOR -DR19- PLAN SEE SHT. 14
 FOR -DR20- PLAN SEE SHT. 15

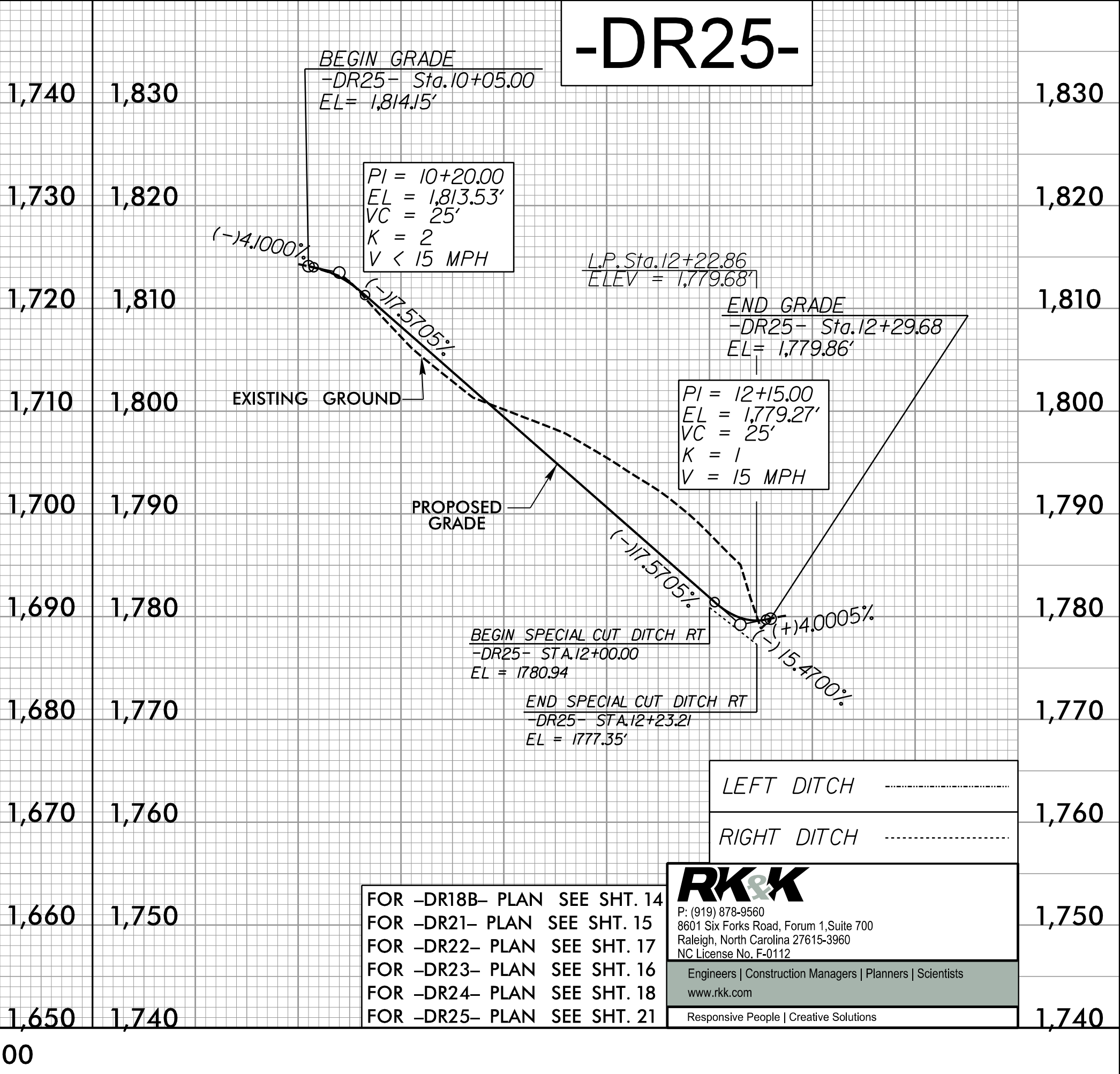
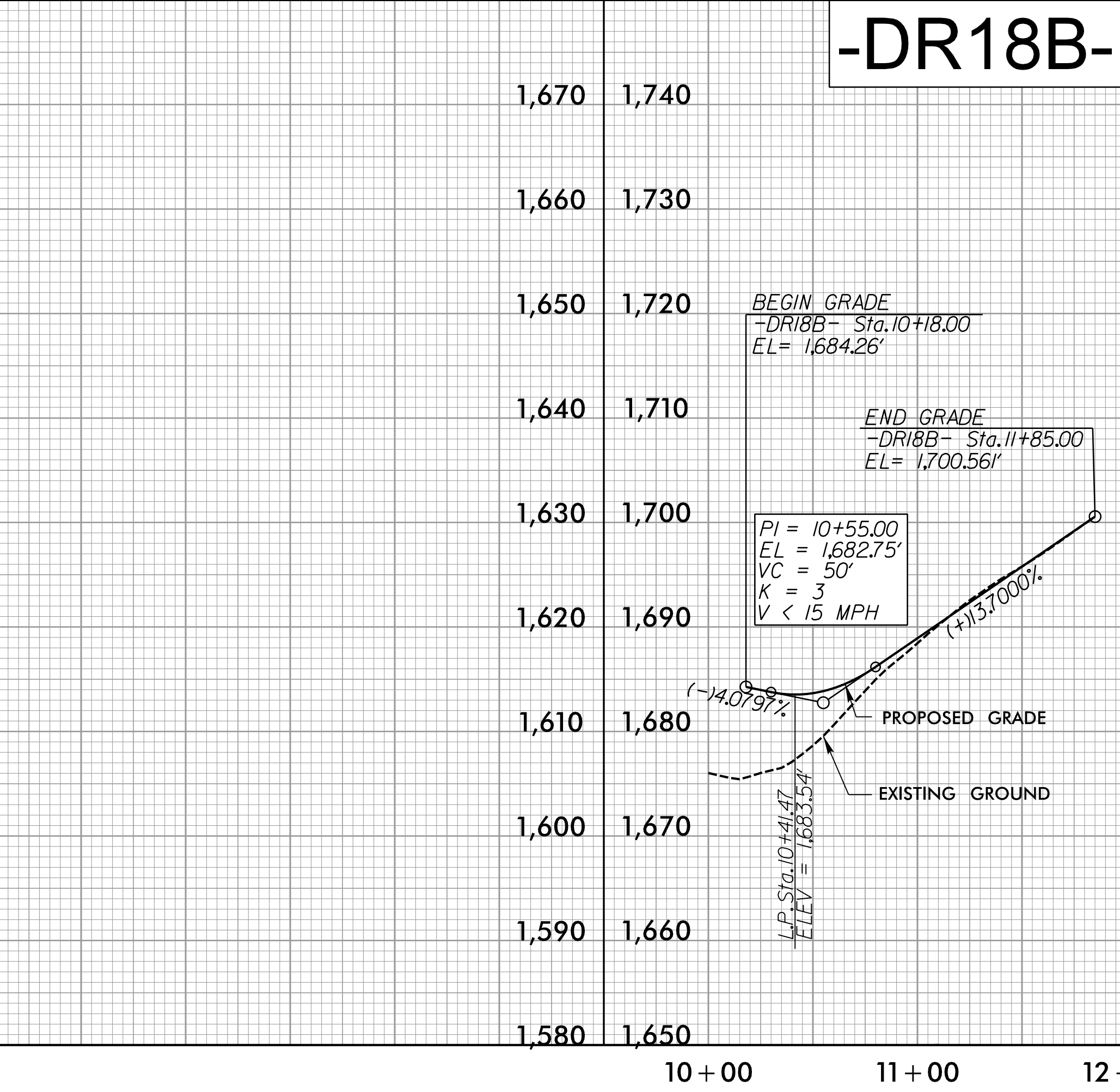
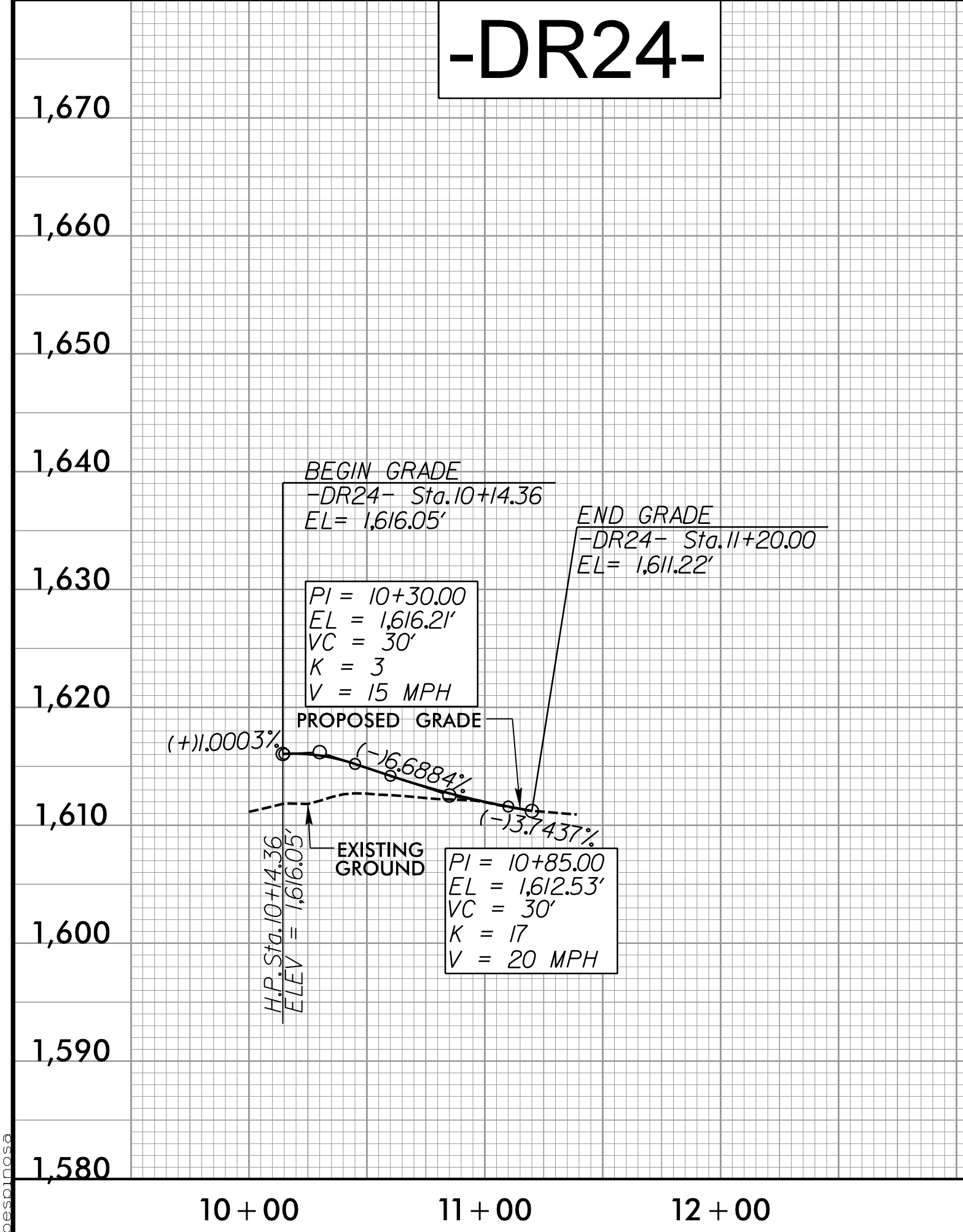
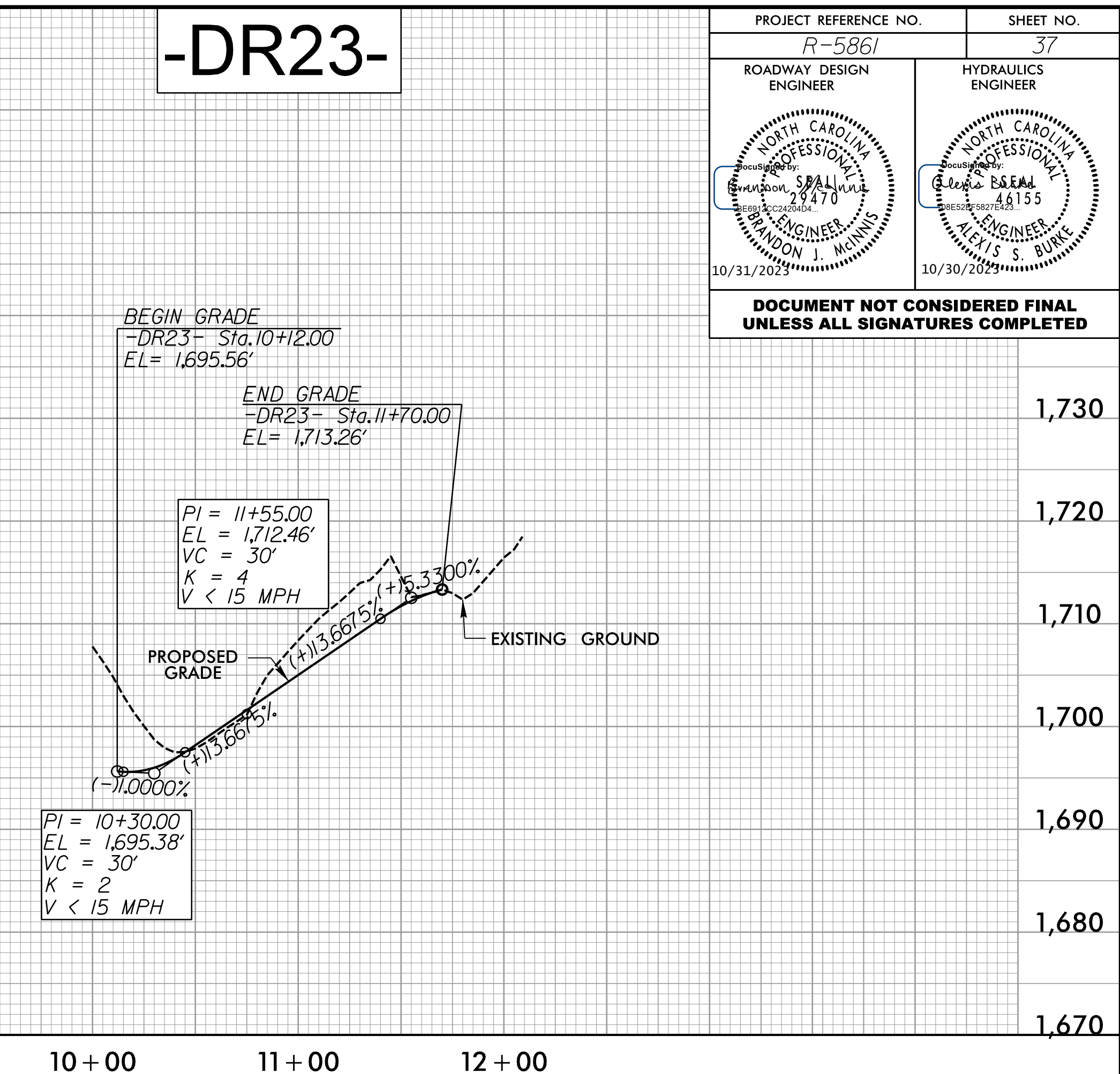
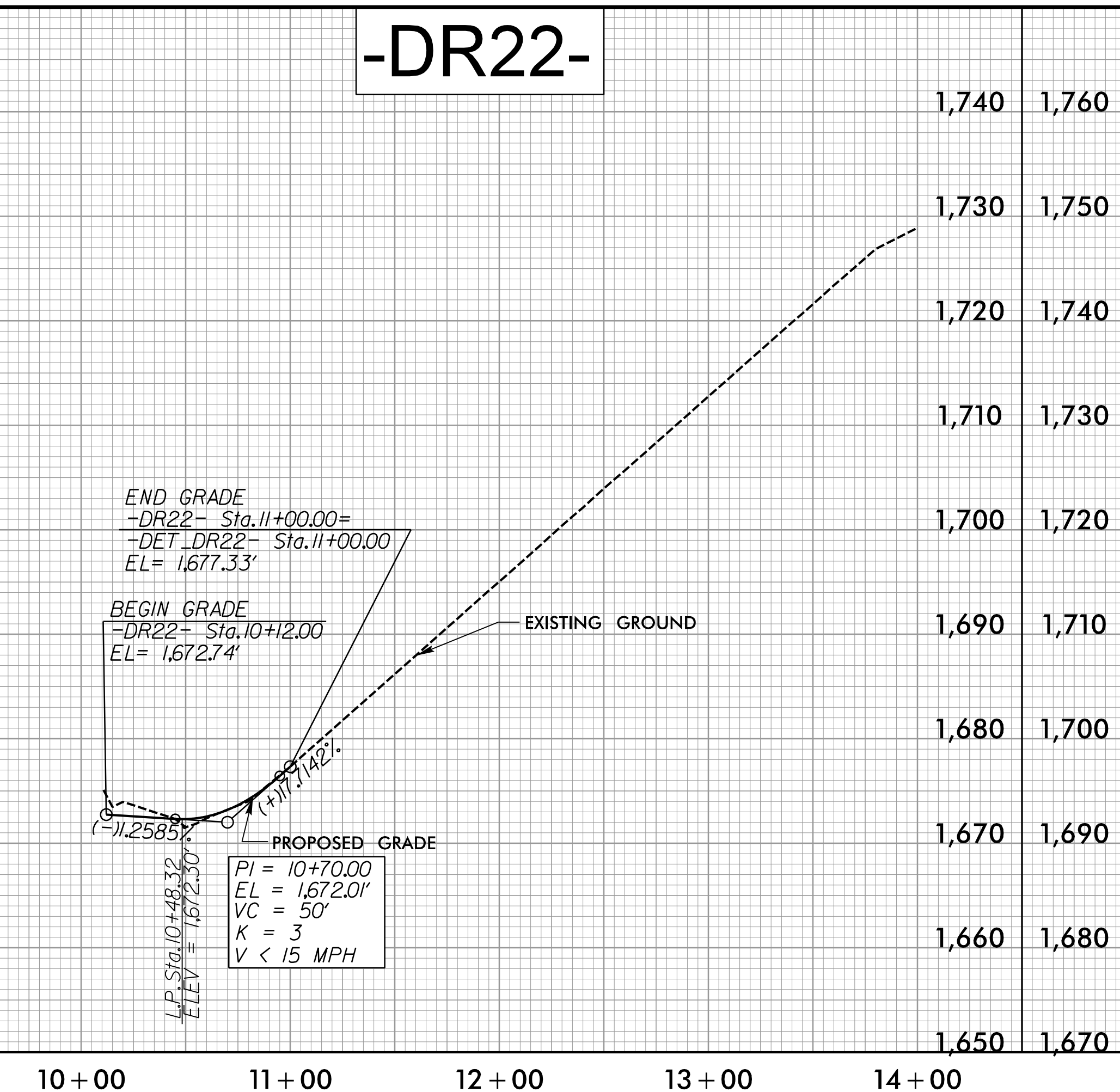
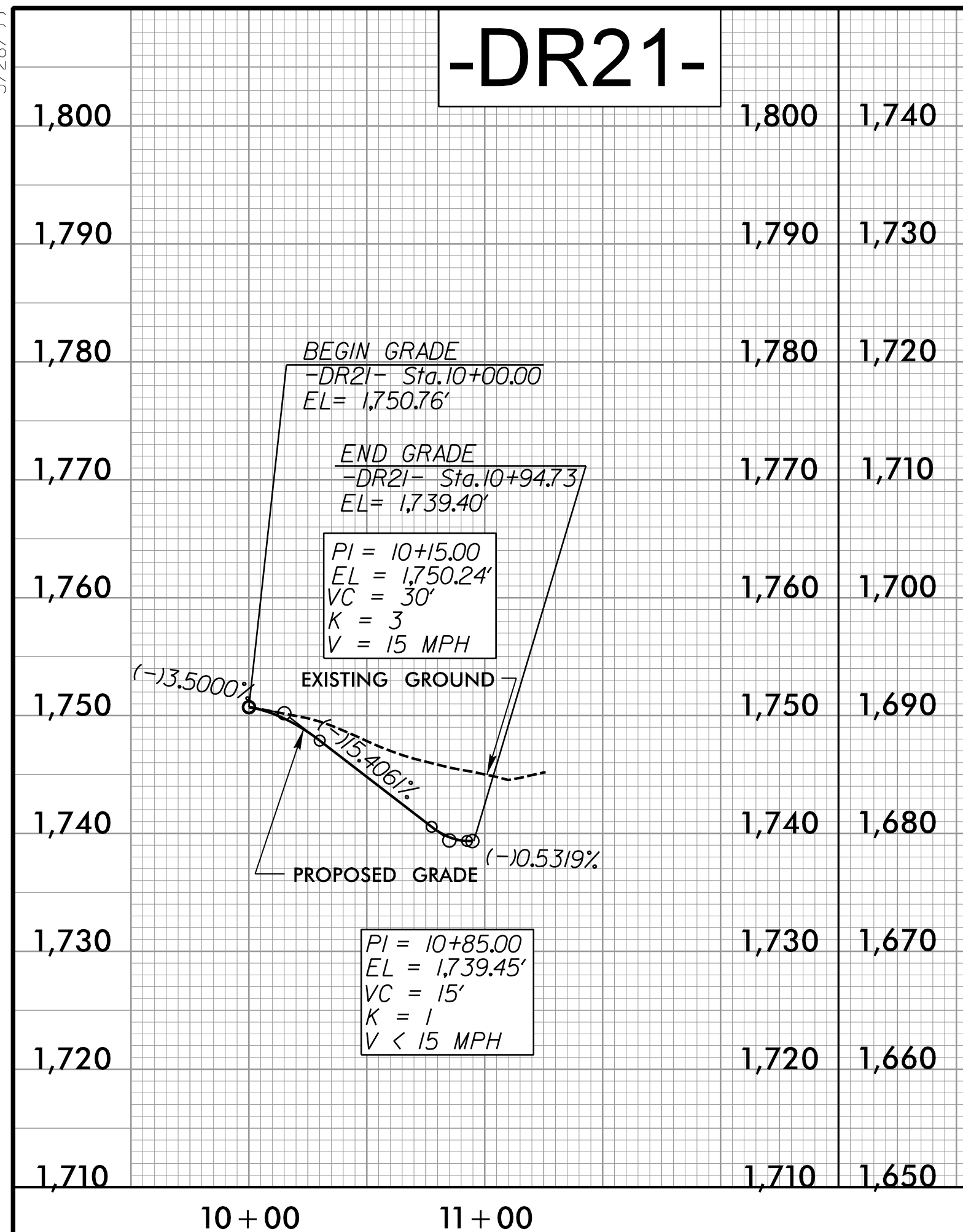
LEFT DITCH
 RIGHT DITCH

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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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LEFT DITCH
RIGHT DITCH

FOR -DR18B- PLAN SEE SHT. 14
FOR -DR21- PLAN SEE SHT. 15
FOR -DR22- PLAN SEE SHT. 17
FOR -DR23- PLAN SEE SHT. 16
FOR -DR24- PLAN SEE SHT. 18
FOR -DR25- PLAN SEE SHT. 21

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-L_DET1-

PIPE HYDRAULIC DATA 60" RCP -L_DET1- STA.11+05

DRAINAGE AREA	= 92.52	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 250	CFS
DESIGN HW ELEVATION	= 1701.88	FT
100 YEAR DISCHARGE	= 360	CFS
100 YEAR HW ELEVATION	= 1706.96	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 399	CFS
OVERTOPPING ELEVATION	= 1709.21	FT

BEGIN GRADE
-L_DET1- Sta.12+19.45=
-L- Sta.12+09.43 0.34' RT
EL = 1,713.22'

PI = 13+15.00
EL = 1,719.43'
VC = 180'
K = 506
V > 80 MPH

60" RCP
(+) 2.9555%

BEGIN LATERAL BASE DITCH LT
-L_DET1- STA.10+64.32
EL = 1686.85'

PI = 11+03.23 LT
EL = 1688.00'

(+) 4.1320%

PI = 12+89.58 LT
EL = 1695.70'

(+) 7.7286%

18" CSP

(+) 4.5515%

PI = 14+42.26 LT
EL = 1707.50'

END LATERAL BASE DITCH LT
-L_DET1- STA.15+92.76
EL = 1714.35'

PROPOSED GRADE

EXISTING GROUND

BEGIN LATERAL V DITCH RT
-L_DET1- STA.18+92.76
EL = 1753.76'

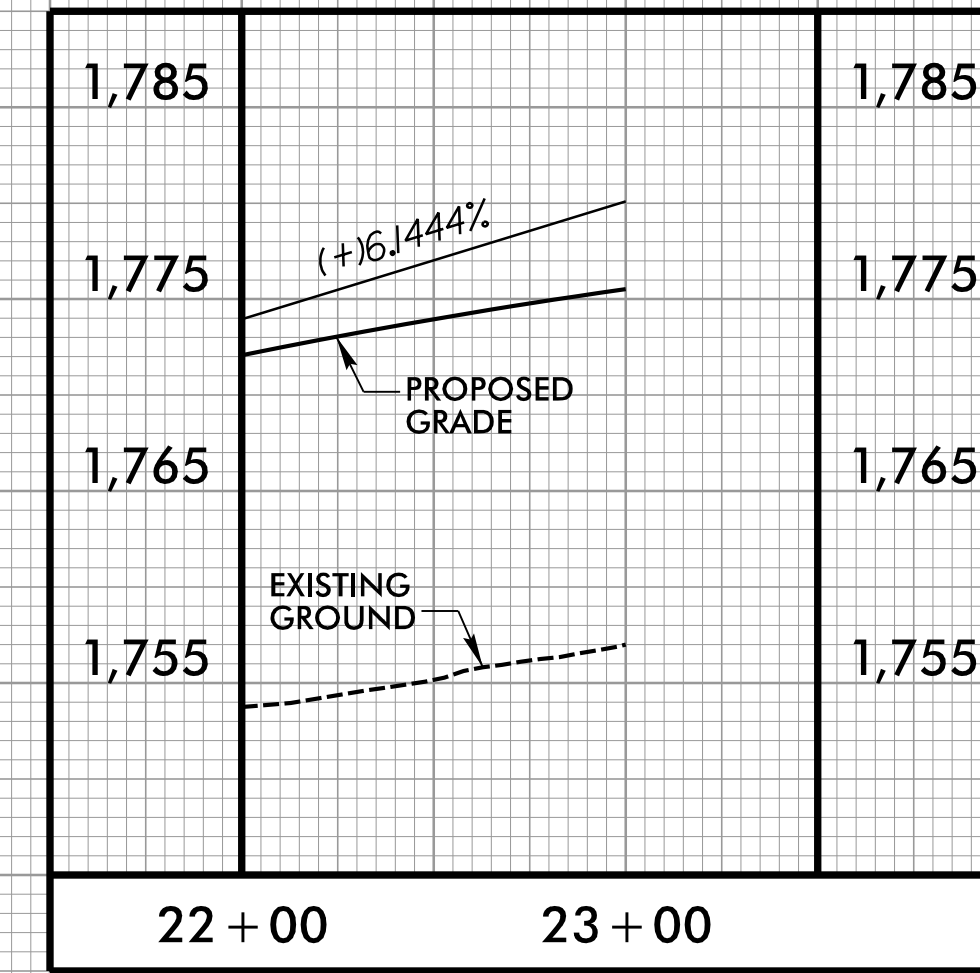
(+) 1.3140%

END LATERAL V DITCH RT
-L_DET1- STA.19+92.76
EL = 1755.07'

(+) 6.1444%

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ROADWAY DESIGN ENGINEER SPAJIUNIS	HYDRAULICS ENGINEER ALEXIS S. BURKE
10/31/2023	10/30/2023

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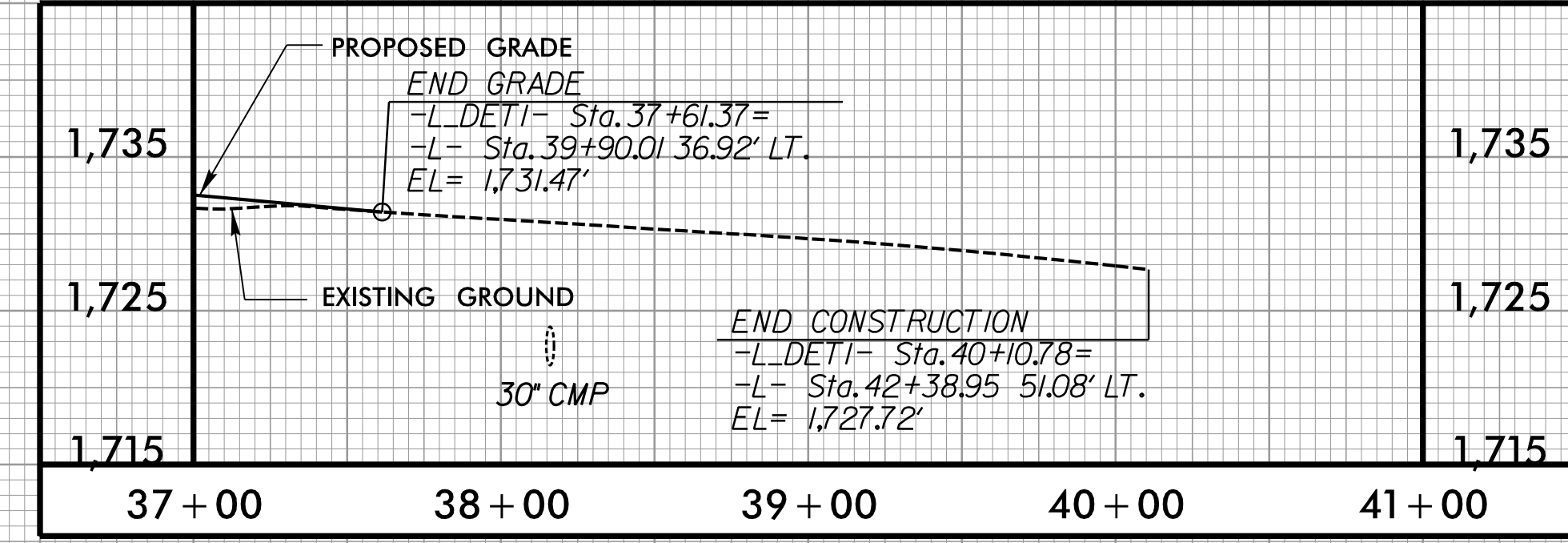
-L_DET1-

PI = 25+75.00
EL = 1,796.85'
VC = 1,100'
K = 84
V = 50 MPH

(+) 6.1444%

(-) 16.9191%

H.P. Sta. 25+42.38
ELEV = 1778.95'



END CONSTRUCTION
-L_DET1- Sta.40+10.78=
-L- Sta.42+38.95 51.08' LT.
EL = 1,727.72'

PI = 34+35.00
EL = 1,737.34'
VC = 495'
K = 97
V = 50 MPH

(-) 16.9191%

(-) 1.8004%

EXISTING GROUND

PROPOSED GRADE

LEFT DITCH
RIGHT DITCH

FOR -L_DET1- PLAN SEE SHTS. 2B-1 & 2B-2

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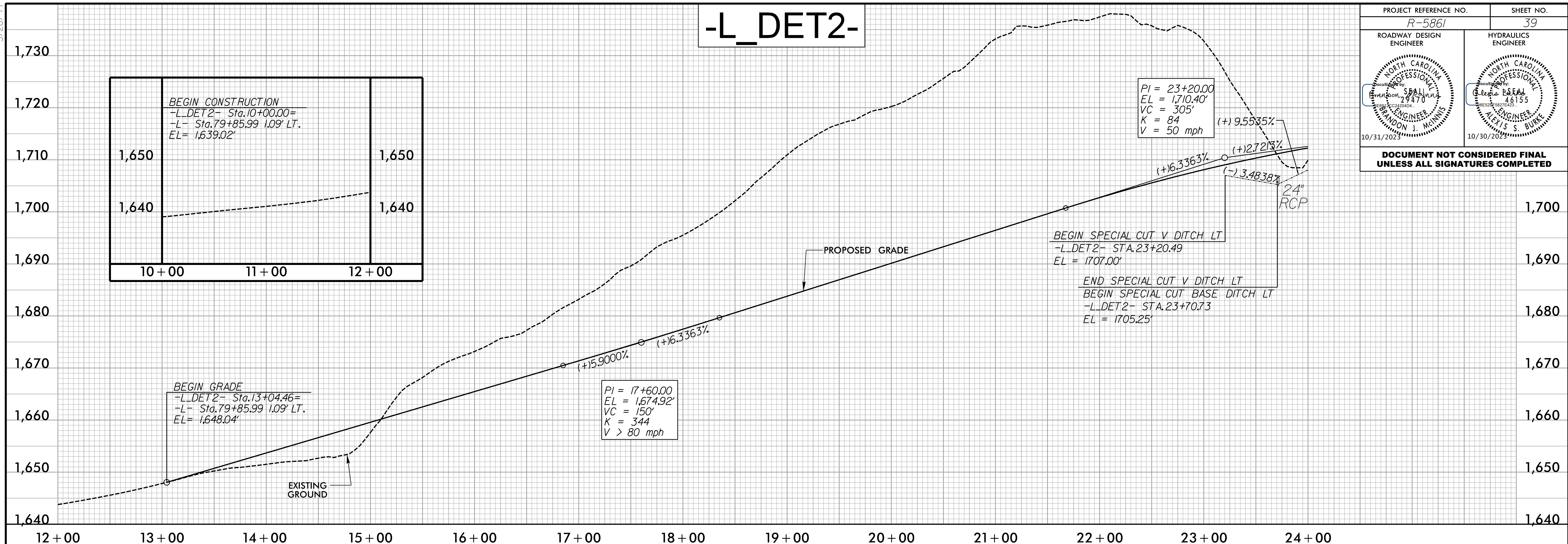
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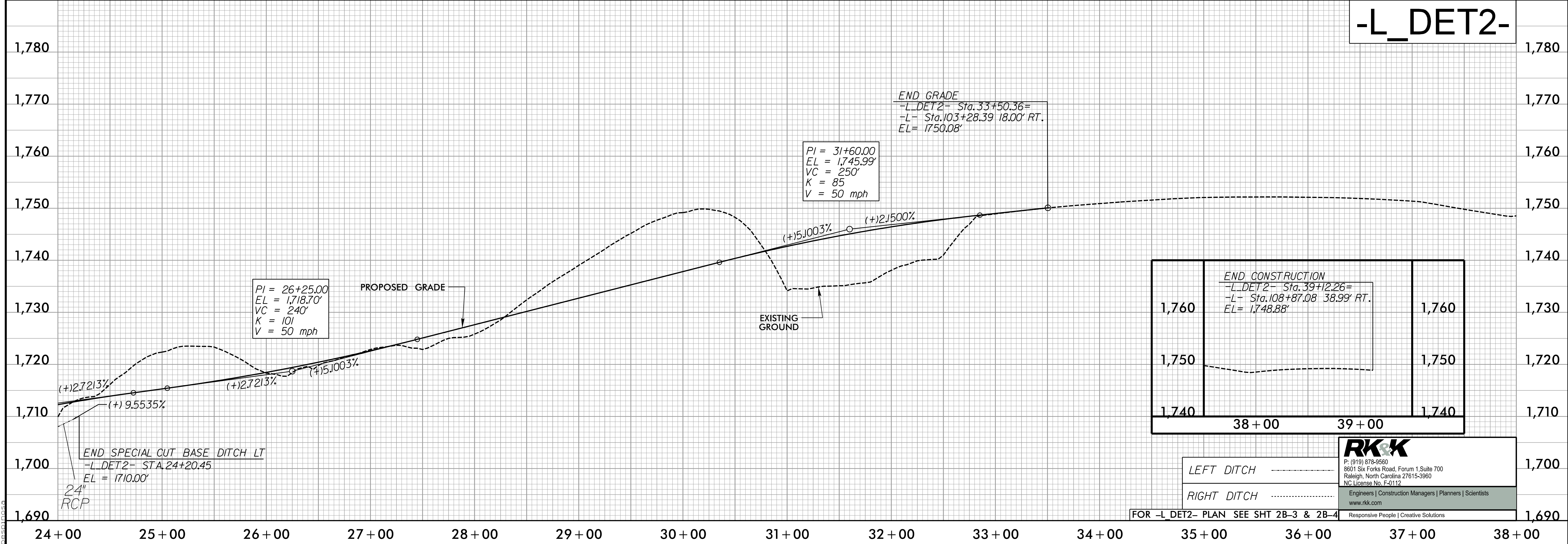
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ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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-L_DET2-



FOR -L_DET2- PLAN SEE SHT 2B-3 & 2B-4

LEFT DITCH
RIGHT DITCH

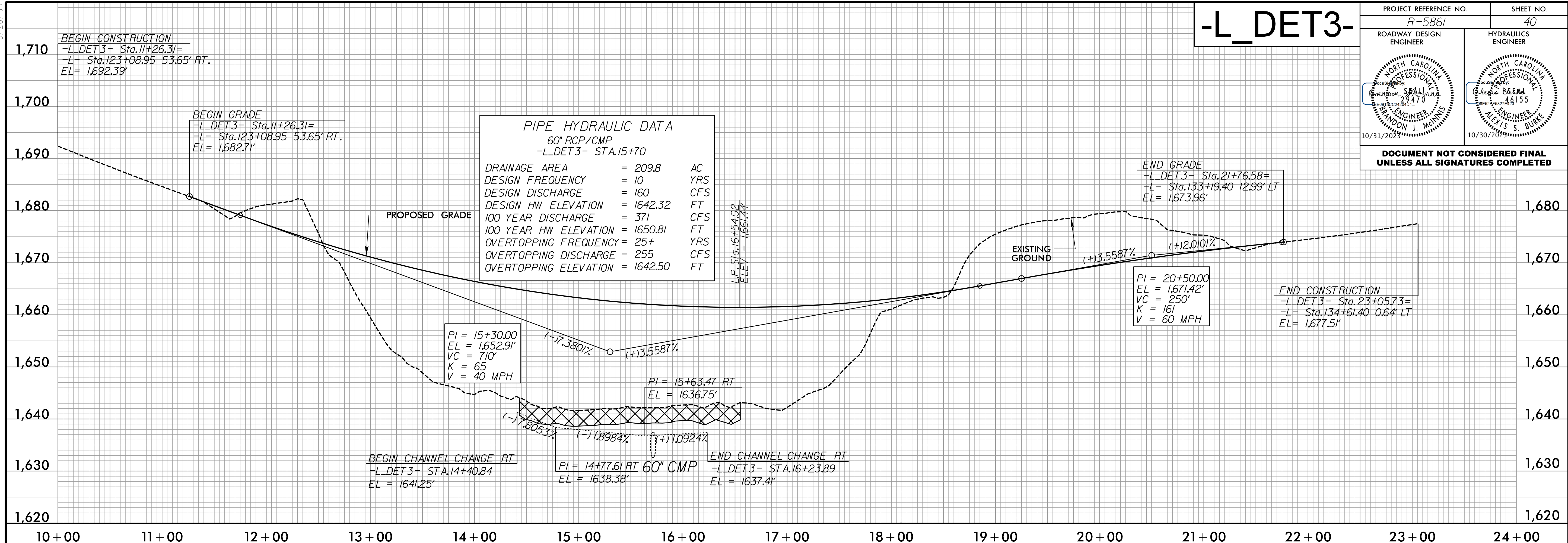
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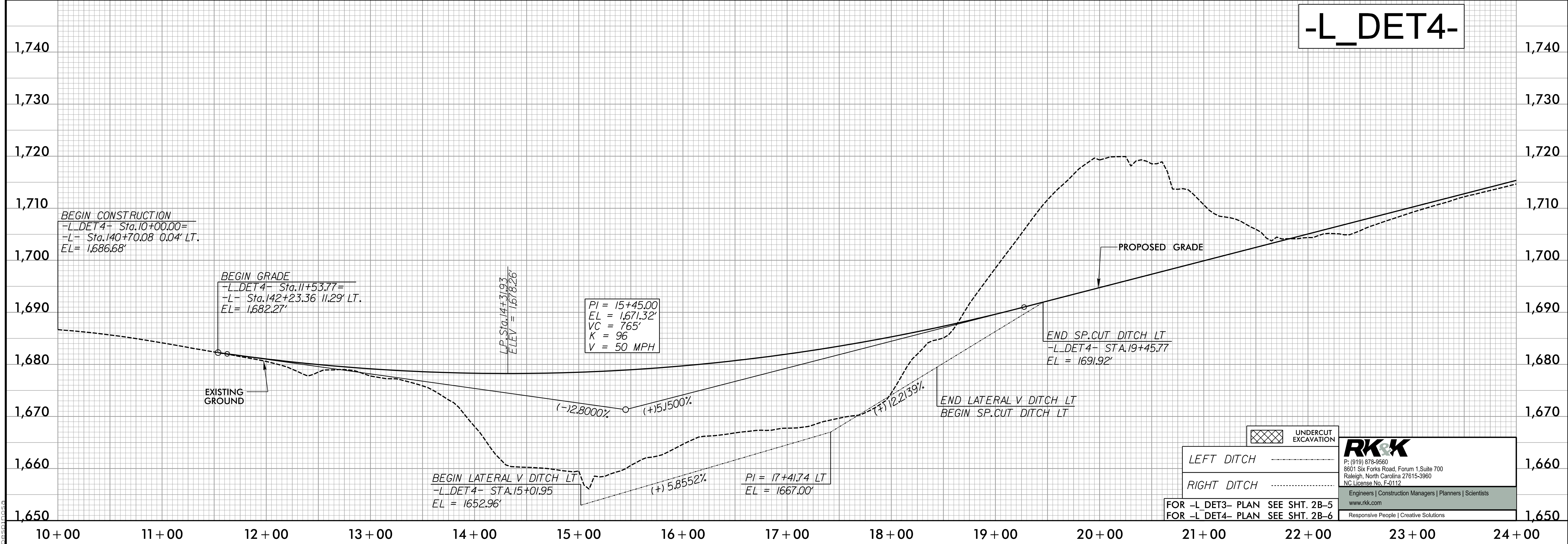
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-L_DET3-

PROJECT REFERENCE NO. R-5861	SHEET NO. 40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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-L_DET4-



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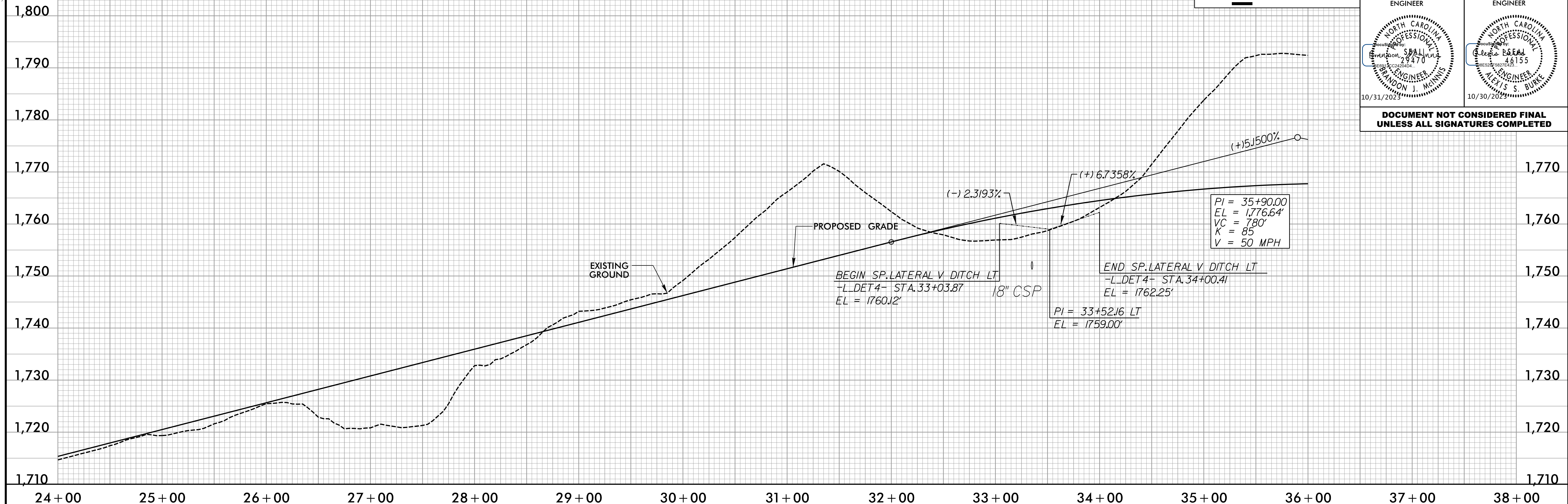
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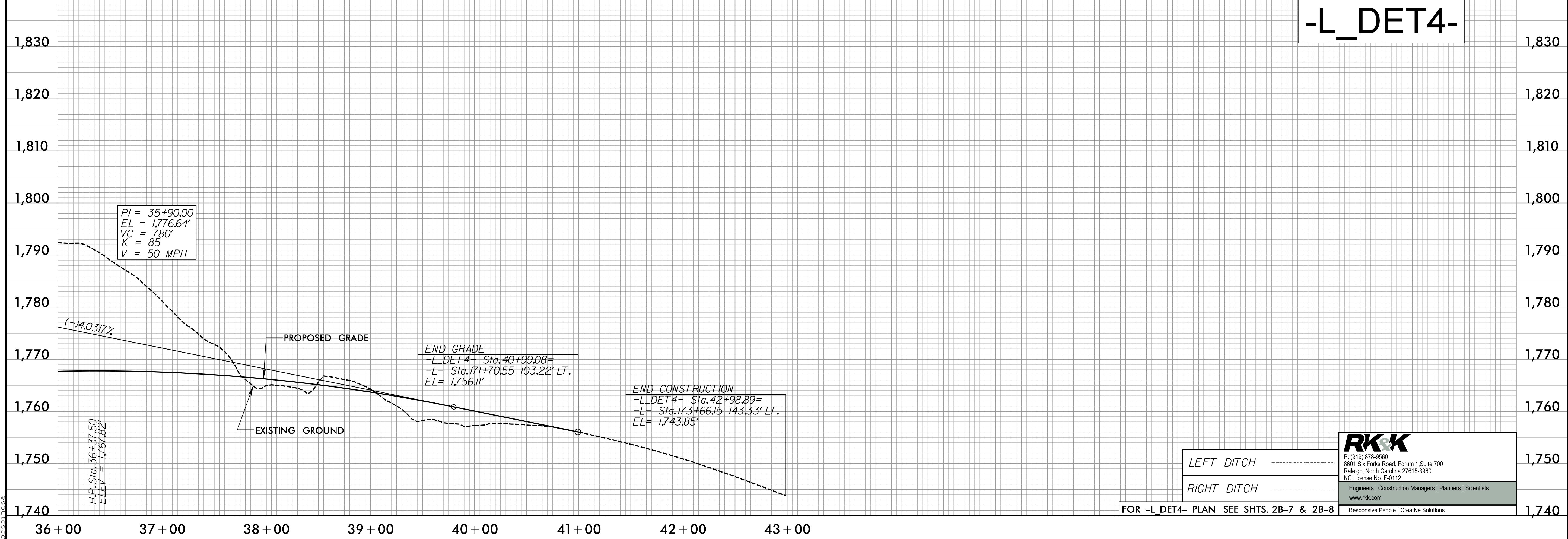
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PROJECT REFERENCE NO. <i>R-5861</i>	SHEET NO. <i>41</i>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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-L_DET4-



LEFT DITCH
 RIGHT DITCH

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FOR -L_DET4- PLAN SEE SHTS. 2B-7 & 2B-8

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