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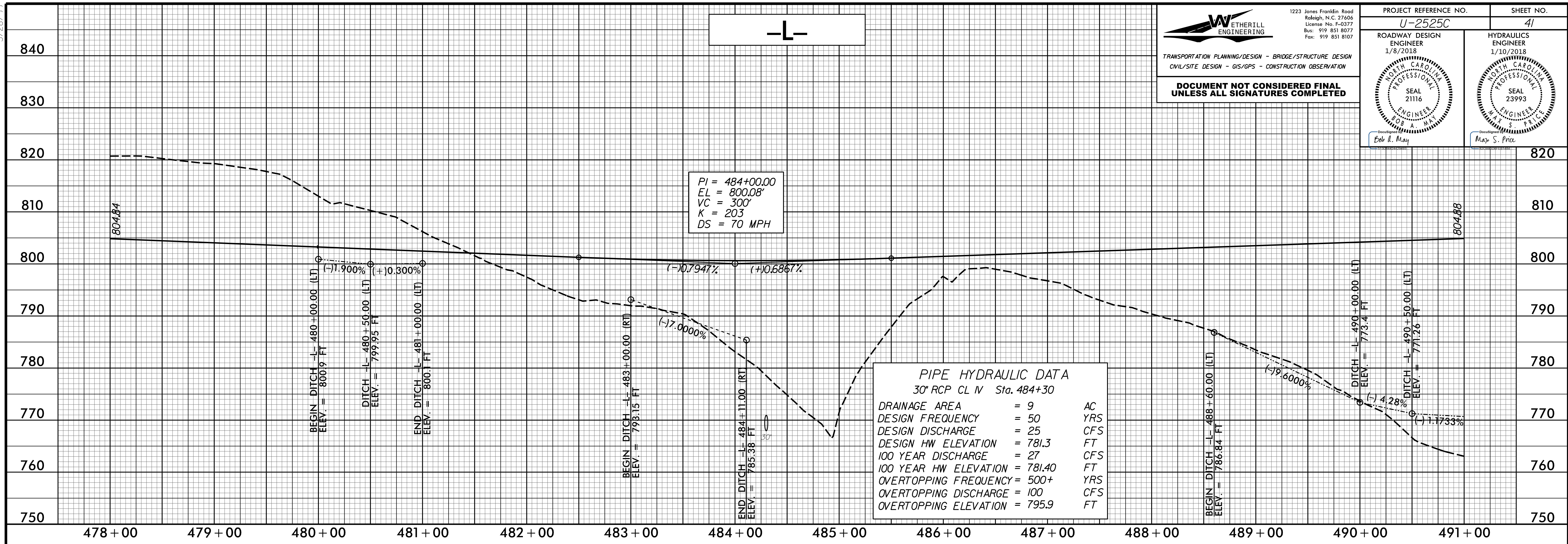
5/25/99

WETHERILL ENGINEERING
 1223 Jones Franklin Road
 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

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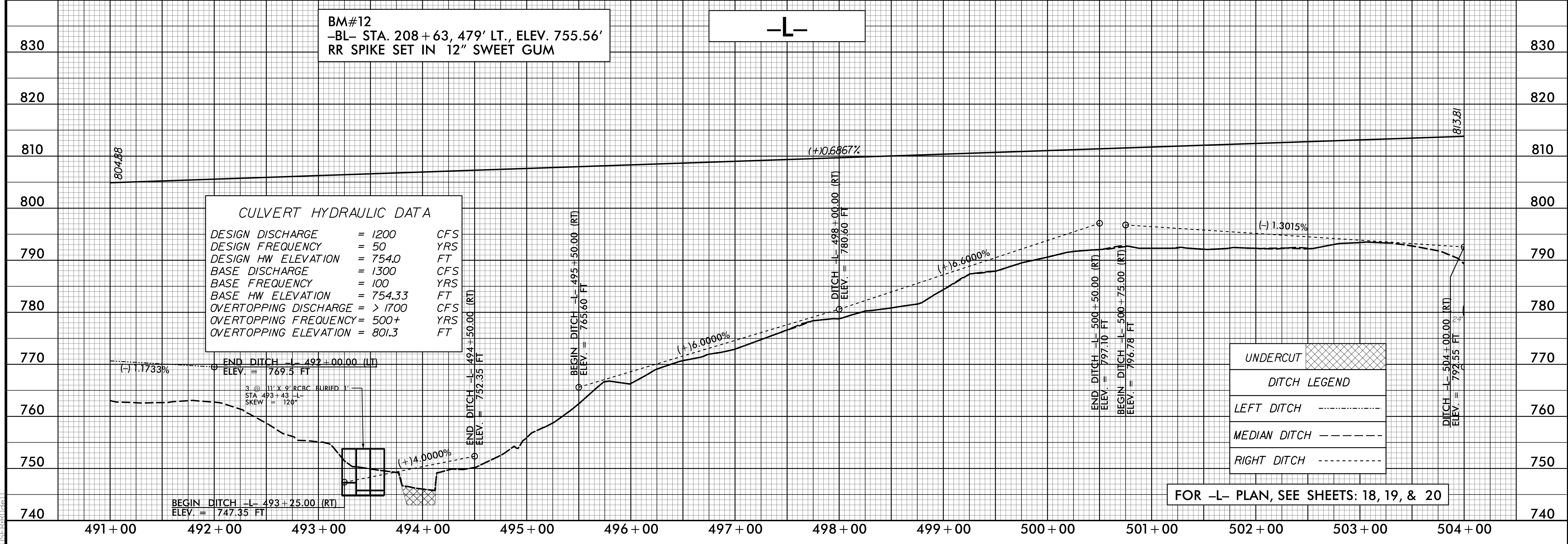
PROJECT REFERENCE NO. U-2525C	SHEET NO. 41
ROADWAY DESIGN ENGINEER 1/6/2018 SEAL 21116 Edw. A. May	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 Max S. Price



PI = 484+00.00
 EL = 800.08'
 VC = 300'
 K = 203
 DS = 70 MPH

PIPE HYDRAULIC DATA
 30" RCP CL IV Sta. 484+30

DRAINAGE AREA	= 9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 25	CFS
DESIGN HW ELEVATION	= 781.3	FT
100 YEAR DISCHARGE	= 27	CFS
100 YEAR HW ELEVATION	= 781.40	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 100	CFS
OVERTOPPING ELEVATION	= 795.9	FT



BM#12
 -BL- STA. 208+63, 479' LT., ELEV. 755.56'
 RR SPIKE SET IN 12" SWEET GUM

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 754.0	FT
BASE DISCHARGE	= 1300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 754.33	FT
OVERTOPPING DISCHARGE	= > 1700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 801.3	FT

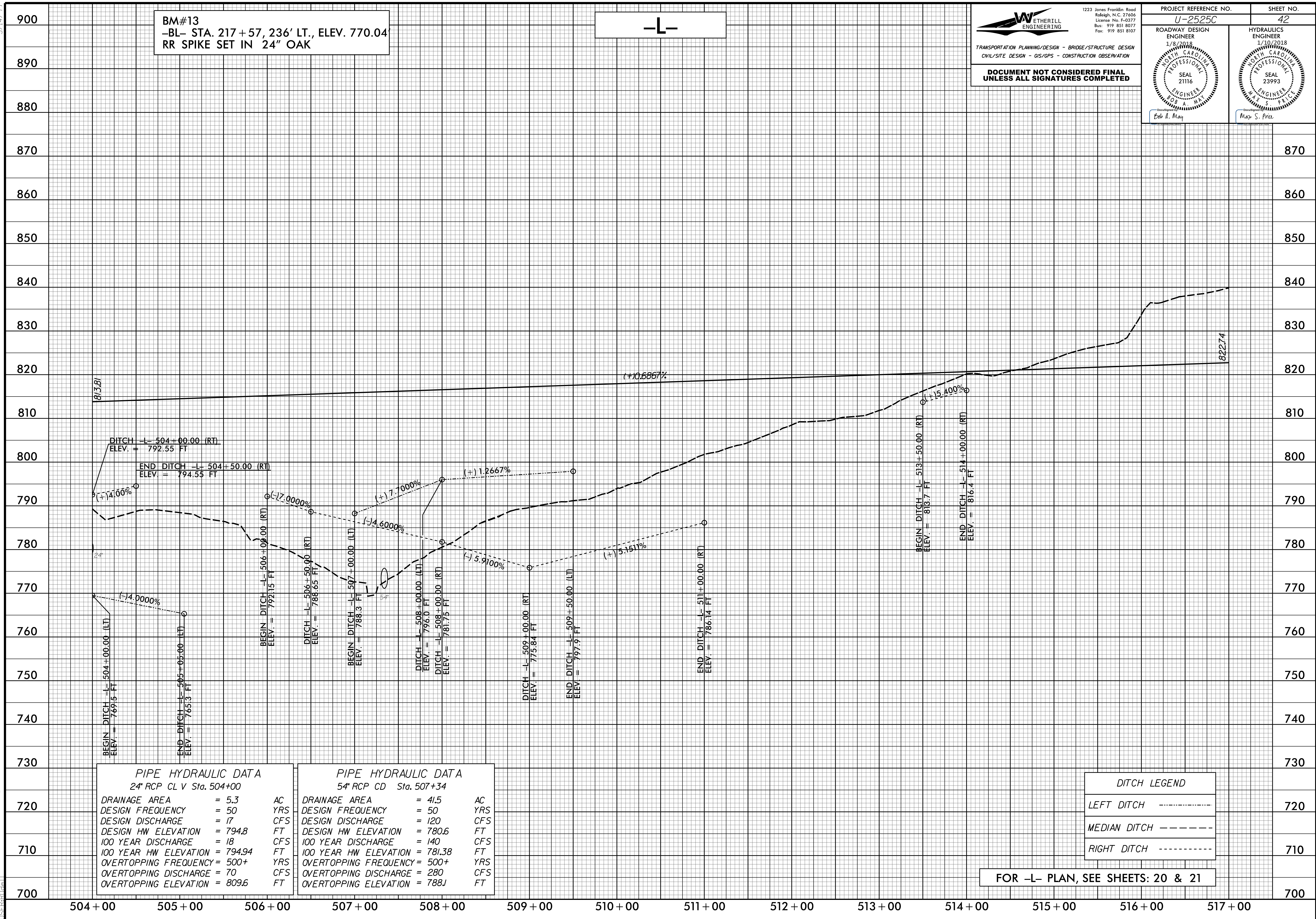
DITCH LEGEND

UNDERCUT	
LEFT DITCH	
MEDIAN DITCH	
RIGHT DITCH	

FOR -L- PLAN, SEE SHEETS: 18, 19, & 20

12/27/2017 10:25:25a...rdy...psh...41...pdf.dgn

5/14/99



BM#13
 -BL- STA. 217+57, 236' LT., ELEV. 770.04
 RR SPIKE SET IN 24" OAK

-L-

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 42
ROADWAY DESIGN ENGINEER 1/8/2018 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 E. A. MAY	HYDRAULICS ENGINEER 1/10/2018 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23993 MAY S. PRICE

PIPE HYDRAULIC DATA
24" RCP CL V Sta. 504+00

DRAINAGE AREA = 5.3	AC
DESIGN FREQUENCY = 50	YRS
DESIGN DISCHARGE = 17	CFS
DESIGN HW ELEVATION = 794.8	FT
100 YEAR DISCHARGE = 18	CFS
100 YEAR HW ELEVATION = 794.94	FT
OVERTOPPING FREQUENCY = 500+	YRS
OVERTOPPING DISCHARGE = 70	CFS
OVERTOPPING ELEVATION = 809.6	FT

PIPE HYDRAULIC DATA
54" RCP CD Sta. 507+34

DRAINAGE AREA = 41.5	AC
DESIGN FREQUENCY = 50	YRS
DESIGN DISCHARGE = 120	CFS
DESIGN HW ELEVATION = 780.6	FT
100 YEAR DISCHARGE = 140	CFS
100 YEAR HW ELEVATION = 781.38	FT
OVERTOPPING FREQUENCY = 500+	YRS
OVERTOPPING DISCHARGE = 280	CFS
OVERTOPPING ELEVATION = 788J	FT

DITCH LEGEND

LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

FOR -L- PLAN, SEE SHEETS: 20 & 21

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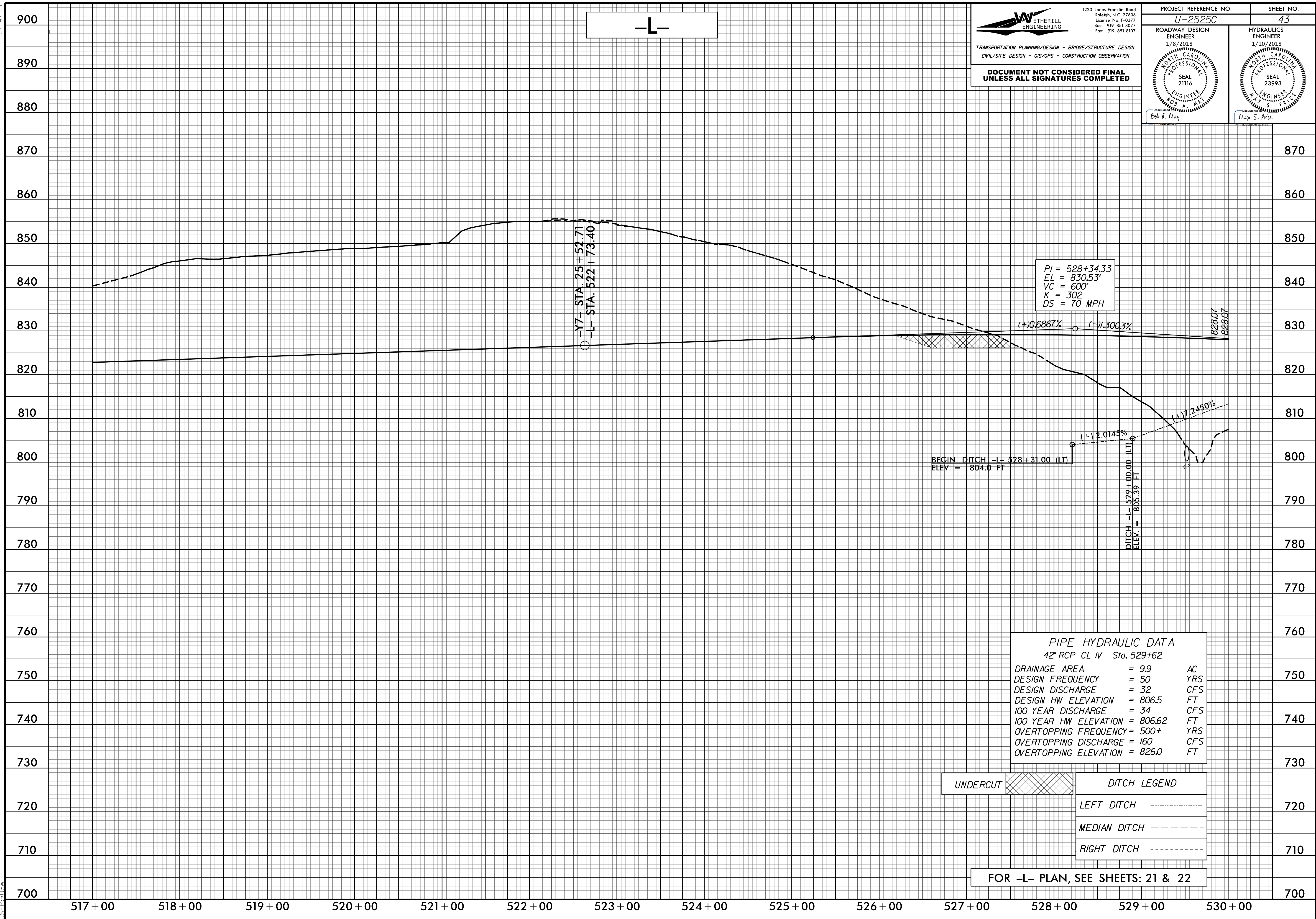
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 43
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
SEAL 21116	SEAL 23993
<i>Bob A. May</i>	<i>Max S. Price</i>



-L-

PI = 528+34.33
 EL = 830.53'
 VC = 600'
 K = 302
 DS = 70 MPH

BEGIN DITCH -L- 528+31.00 (LT)
 ELEV. = 804.0 FT

DITCH -L- 529+00.00 (LT)
 ELEV. = 805.39 FT

PIPE HYDRAULIC DATA
 42" RCP CL IV Sta. 529+62

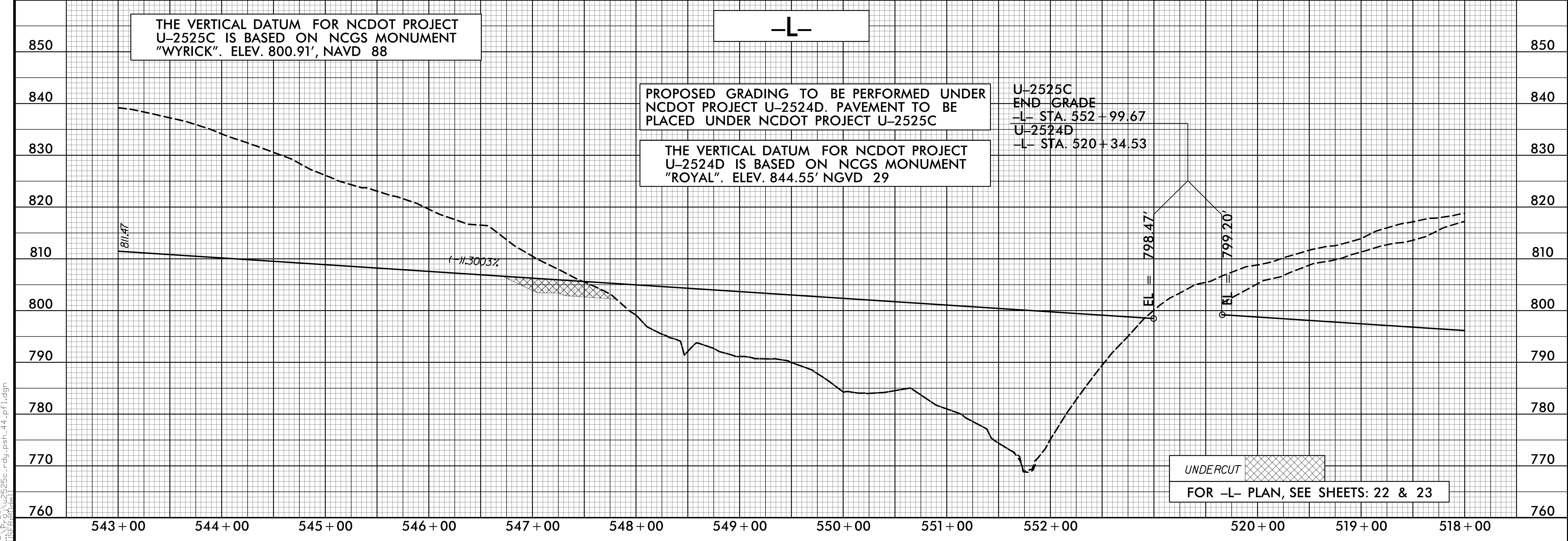
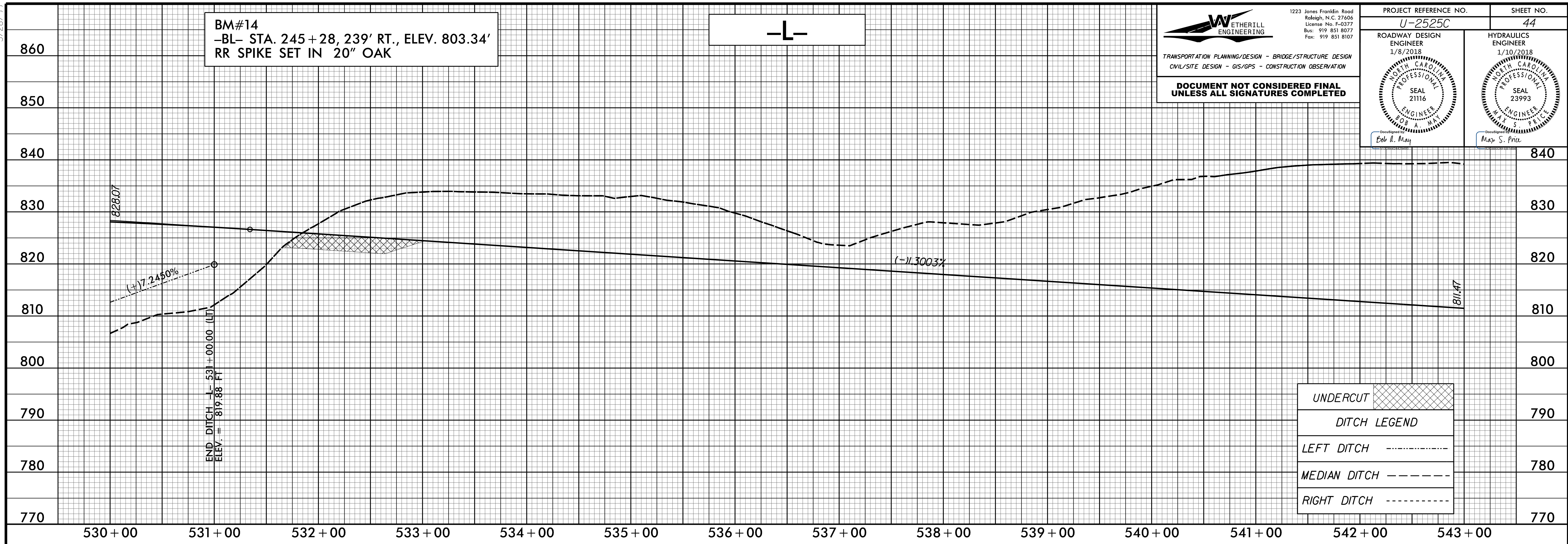
DRAINAGE AREA	= 99	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 806.5	FT
100 YEAR DISCHARGE	= 34	CFS
100 YEAR HW ELEVATION	= 806.62	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 160	CFS
OVERTOPPING ELEVATION	= 826.0	FT

UNDERCUT		DITCH LEGEND
		LEFT DITCH -----
		MEDIAN DITCH -----
		RIGHT DITCH -----

FOR -L- PLAN, SEE SHEETS: 21 & 22

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5/28/2017



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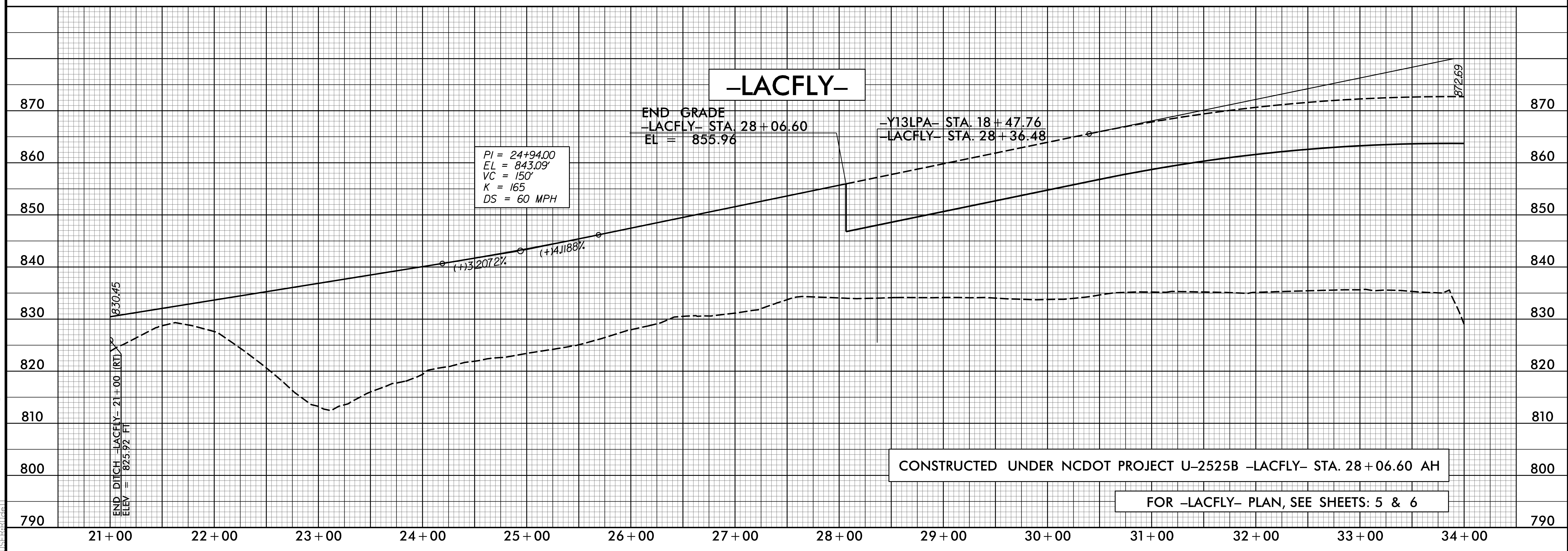
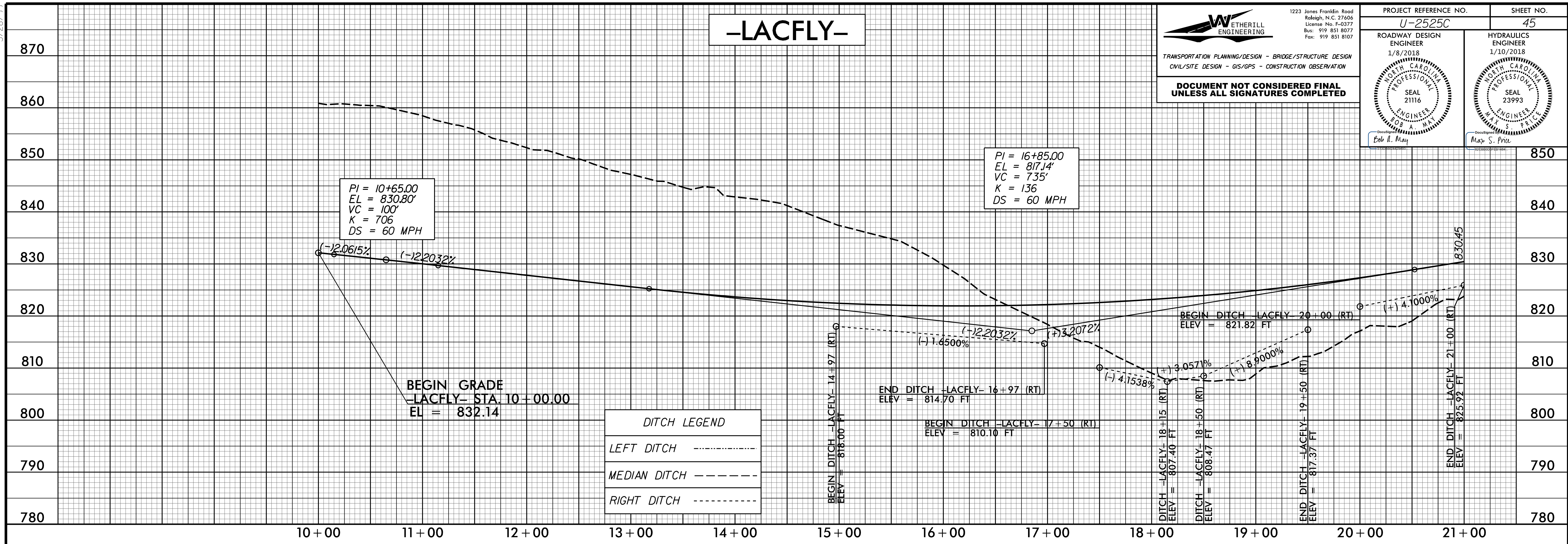
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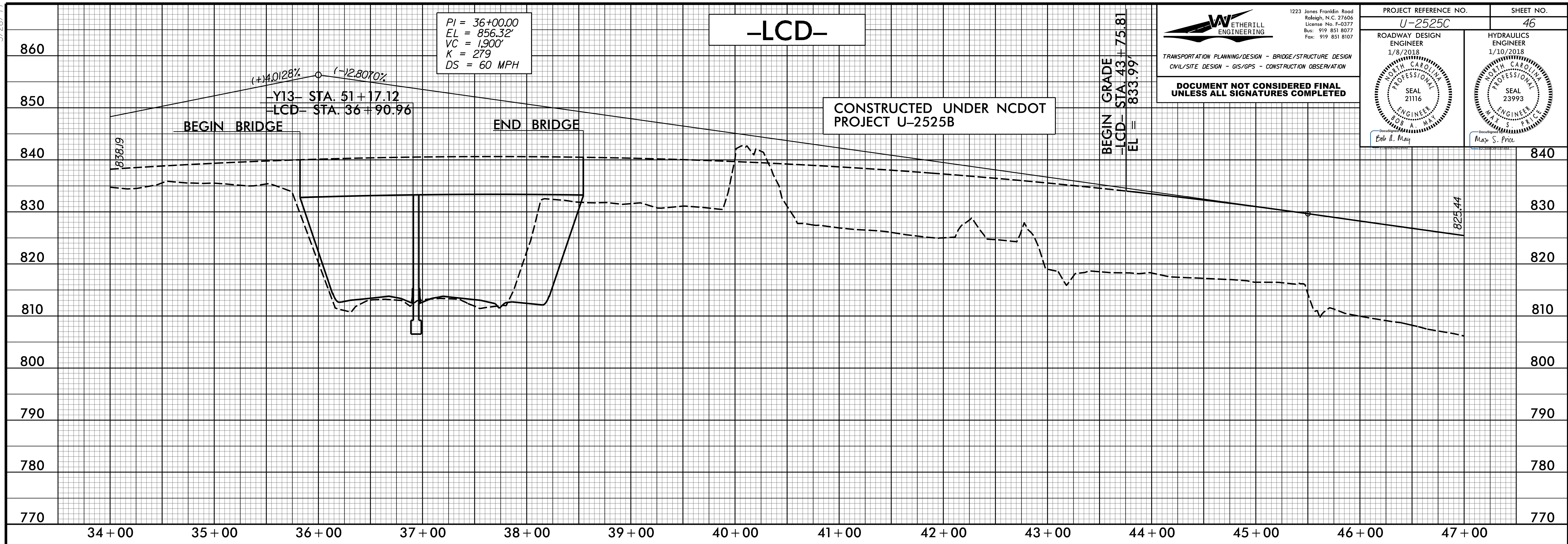
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 45
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
<i>E. A. May</i>	<i>M. S. Price</i>



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5/25/19

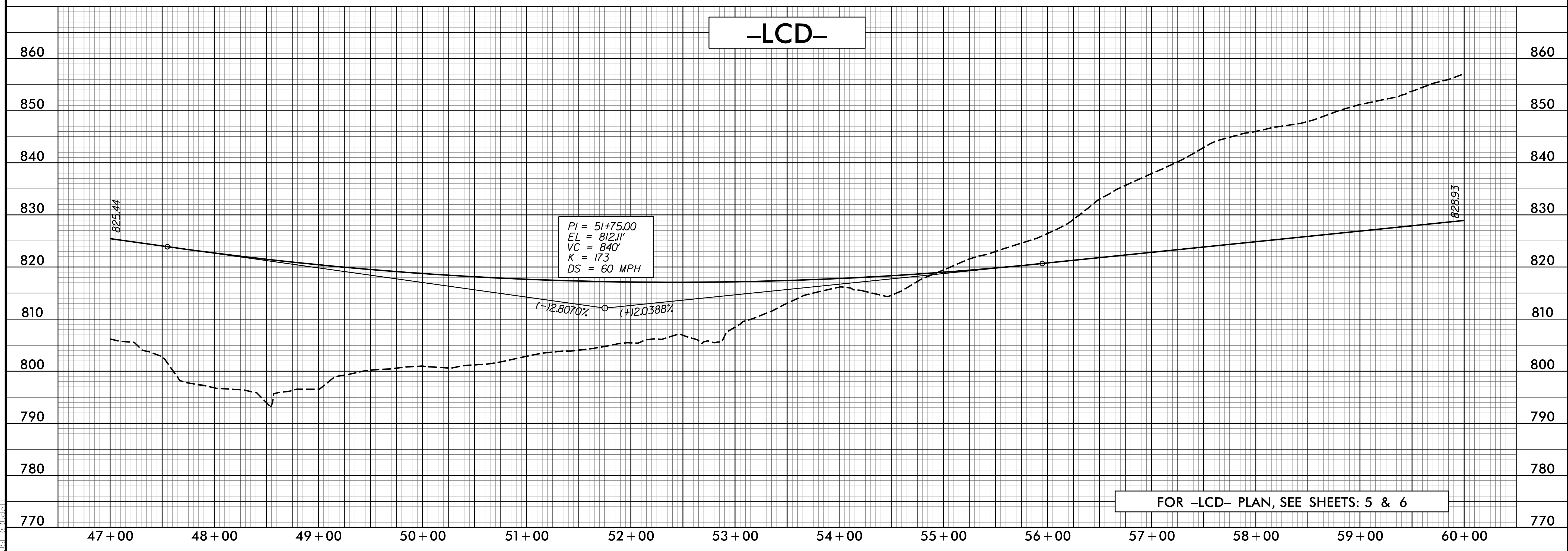


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PROJECT REFERENCE NO. U-2525C	SHEET NO. 46
ROADWAY DESIGN ENGINEER 1/8/2018 NORTH CAROLINA PROFESSIONAL SEAL 21116 E. R. MAY	HYDRAULICS ENGINEER 1/10/2018 NORTH CAROLINA PROFESSIONAL SEAL 23993 MAY S. PRIZL



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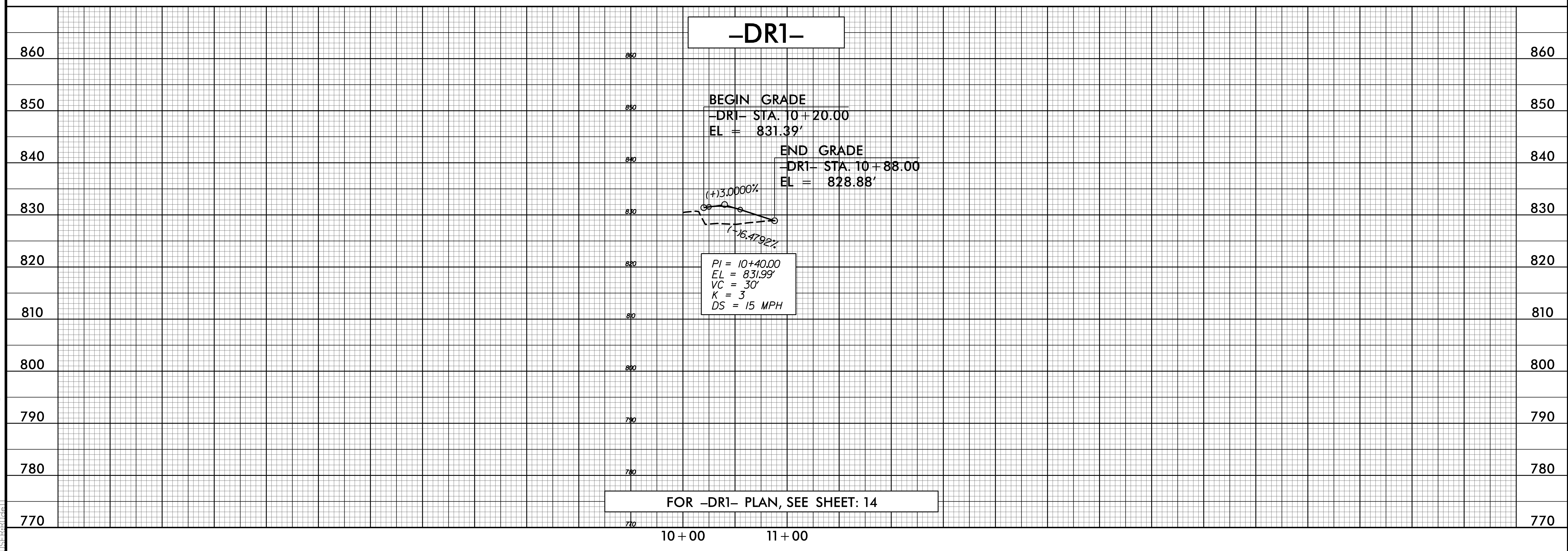
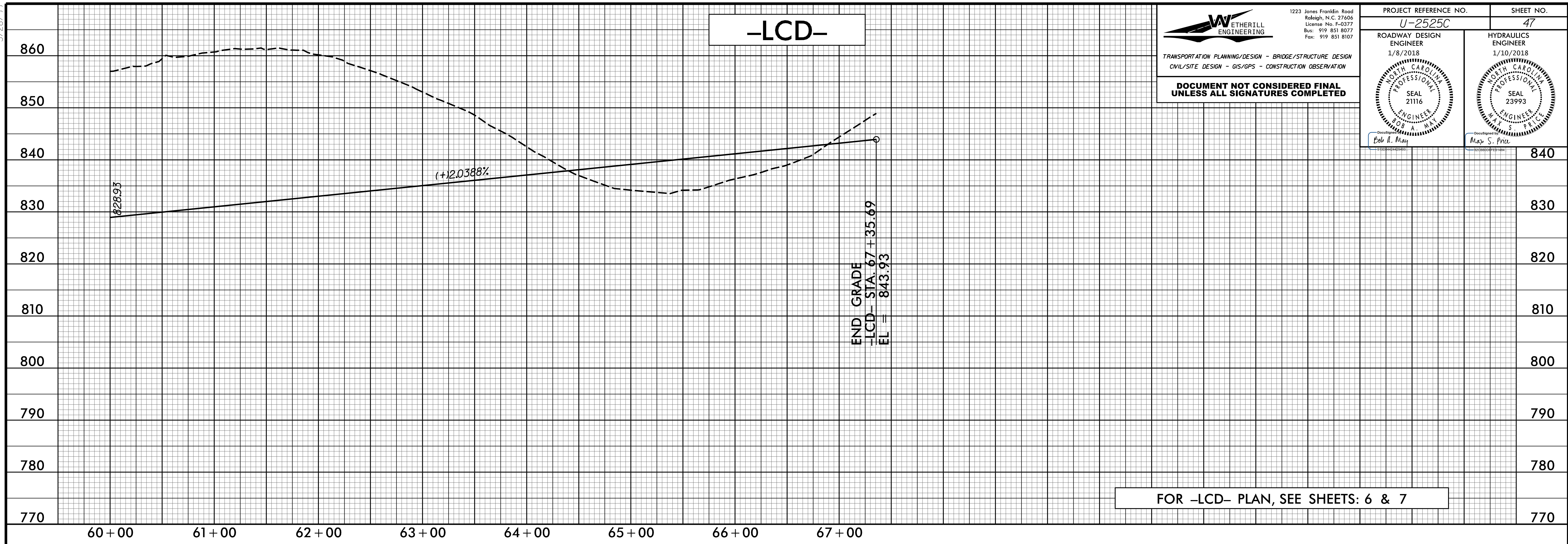
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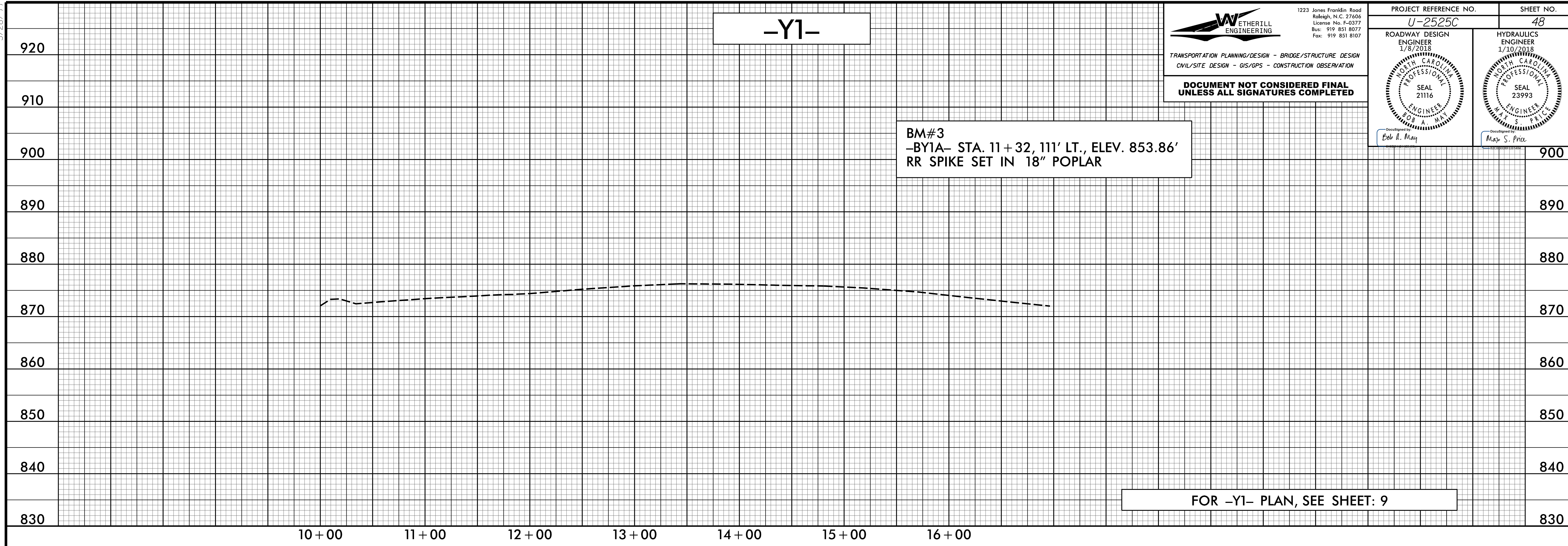
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 47
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
Edw. A. May	Max S. Price



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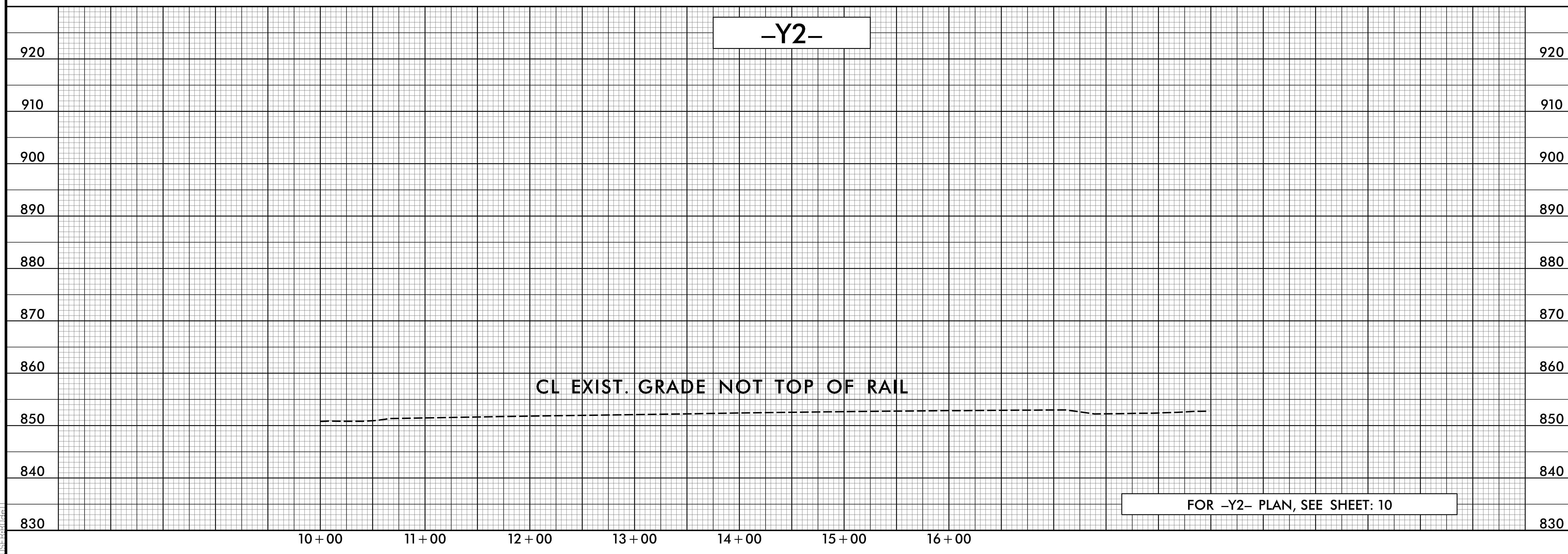


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PROJECT REFERENCE NO. U-2525C	SHEET NO. 48
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PRICE



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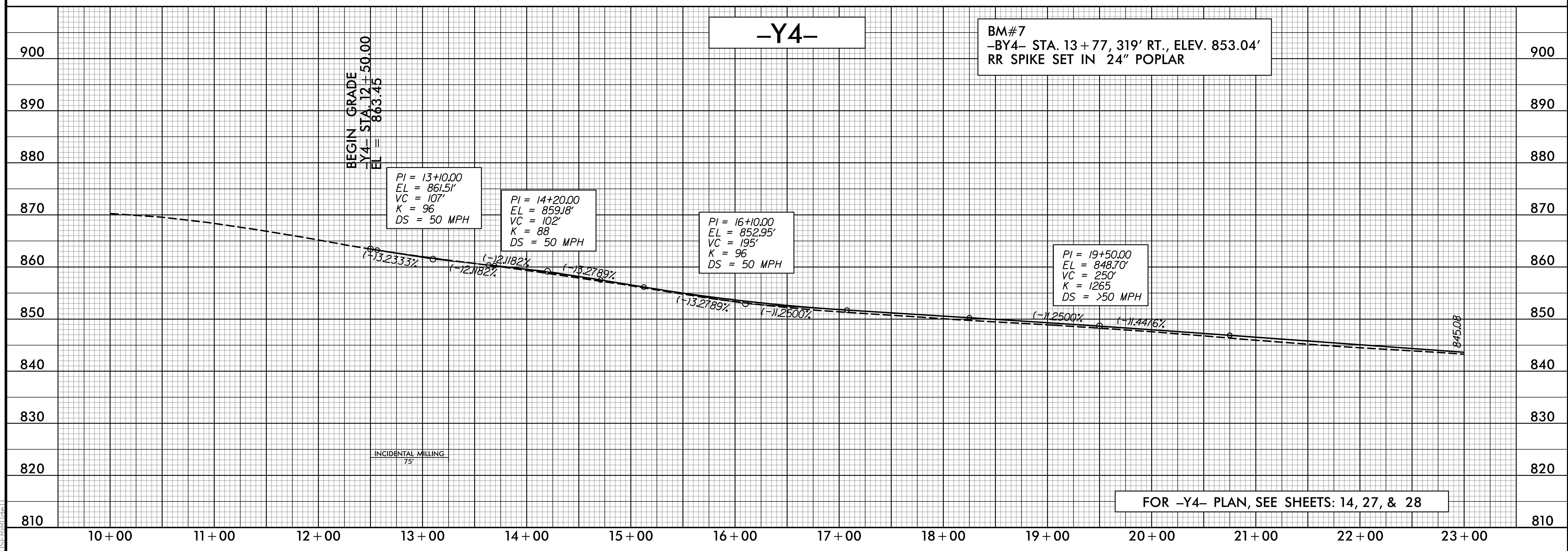
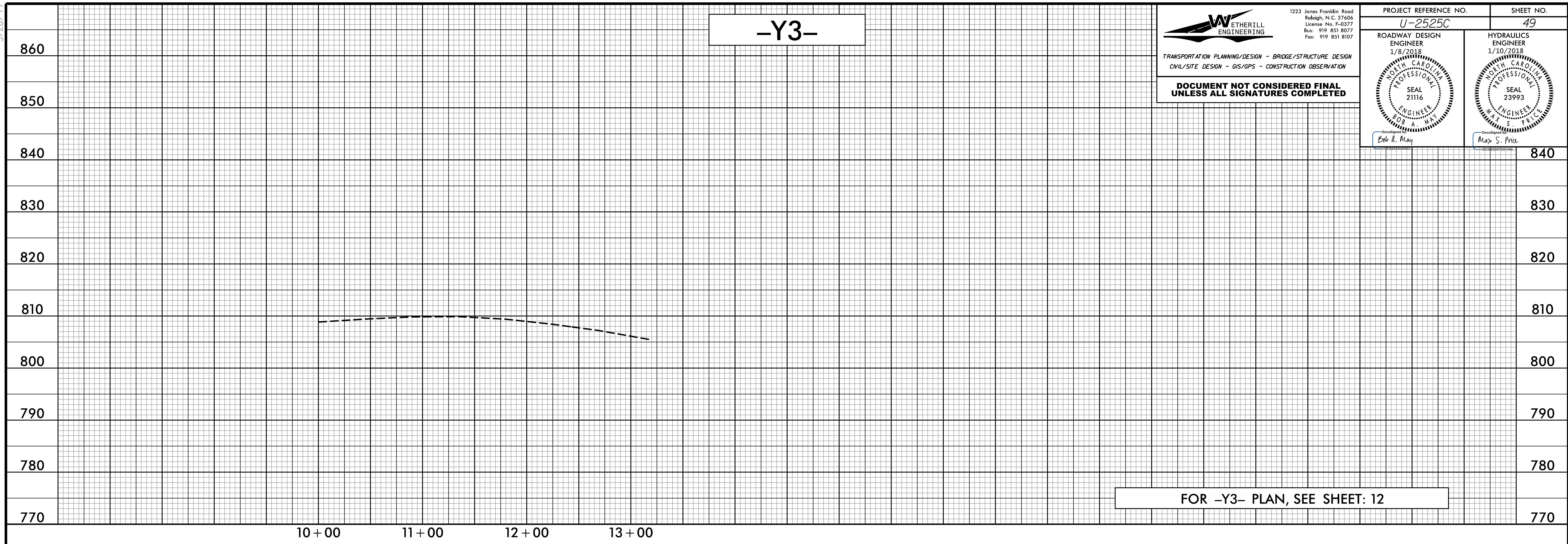
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 49
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB H. MAY P.E.	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PRICE P.E.



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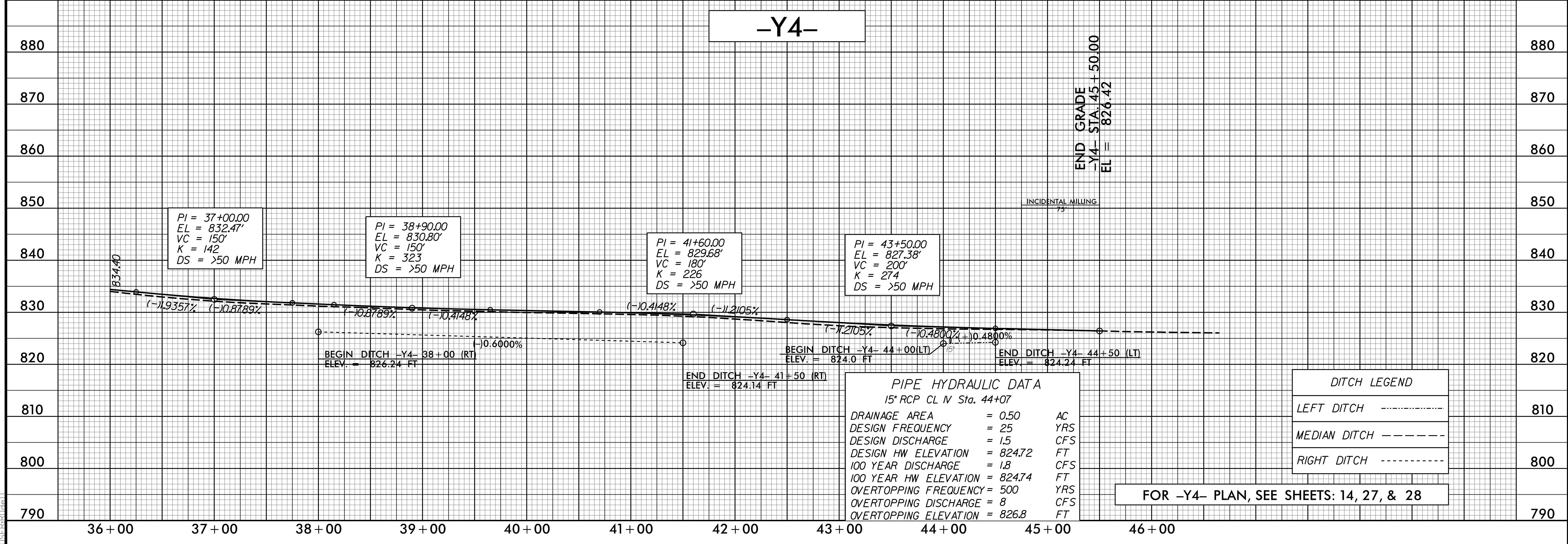
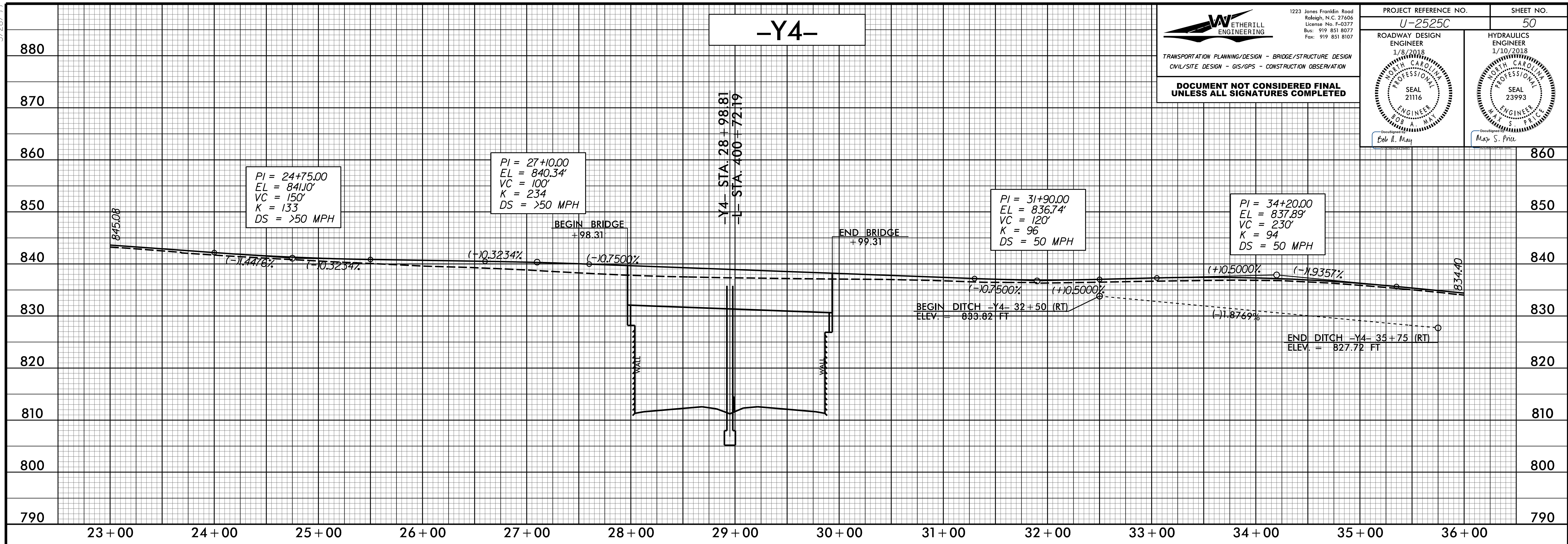
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 50
ROADWAY DESIGN ENGINEER 1/8/78 SEAL 21116 BOB L. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAX S. PRICE



PIPE HYDRAULIC DATA
 15" RCP CL IV Sta. 44+07

DRAINAGE AREA	= 0.50	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 824.72	FT
100 YEAR DISCHARGE	= 18	CFS
100 YEAR HW ELEVATION	= 824.74	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 8	CFS
OVERTOPPING ELEVATION	= 826.8	FT

DITCH LEGEND

LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

FOR -Y4- PLAN, SEE SHEETS: 14, 27, & 28

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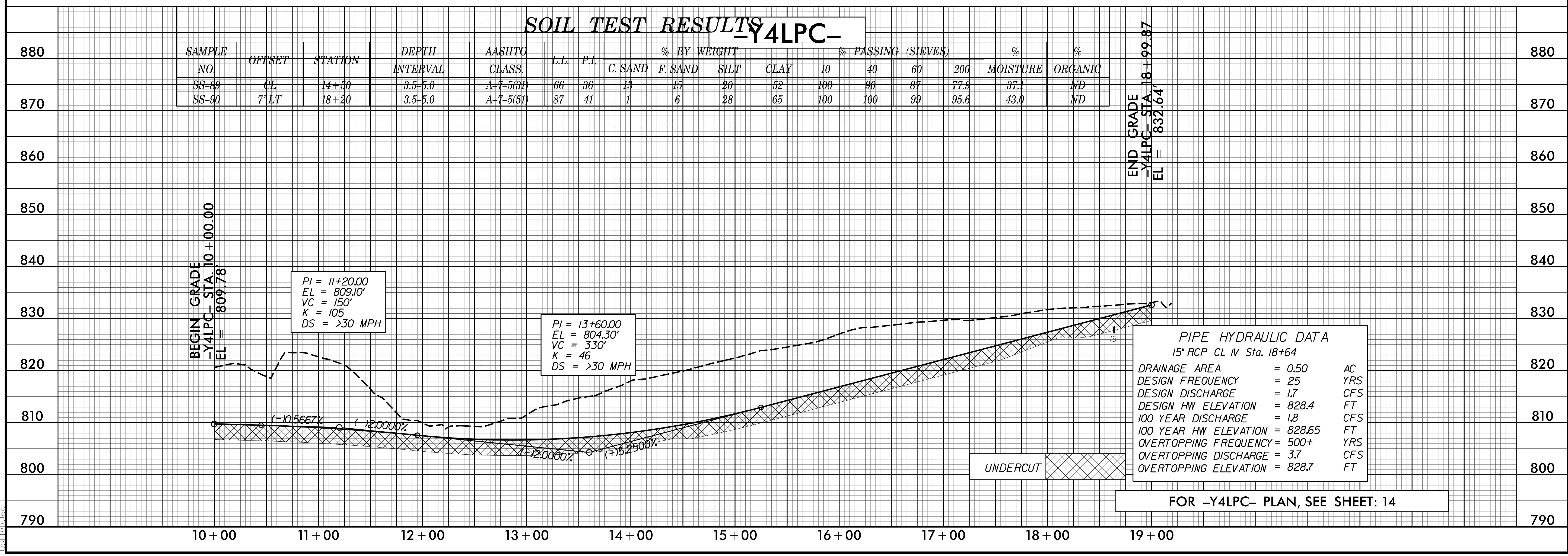
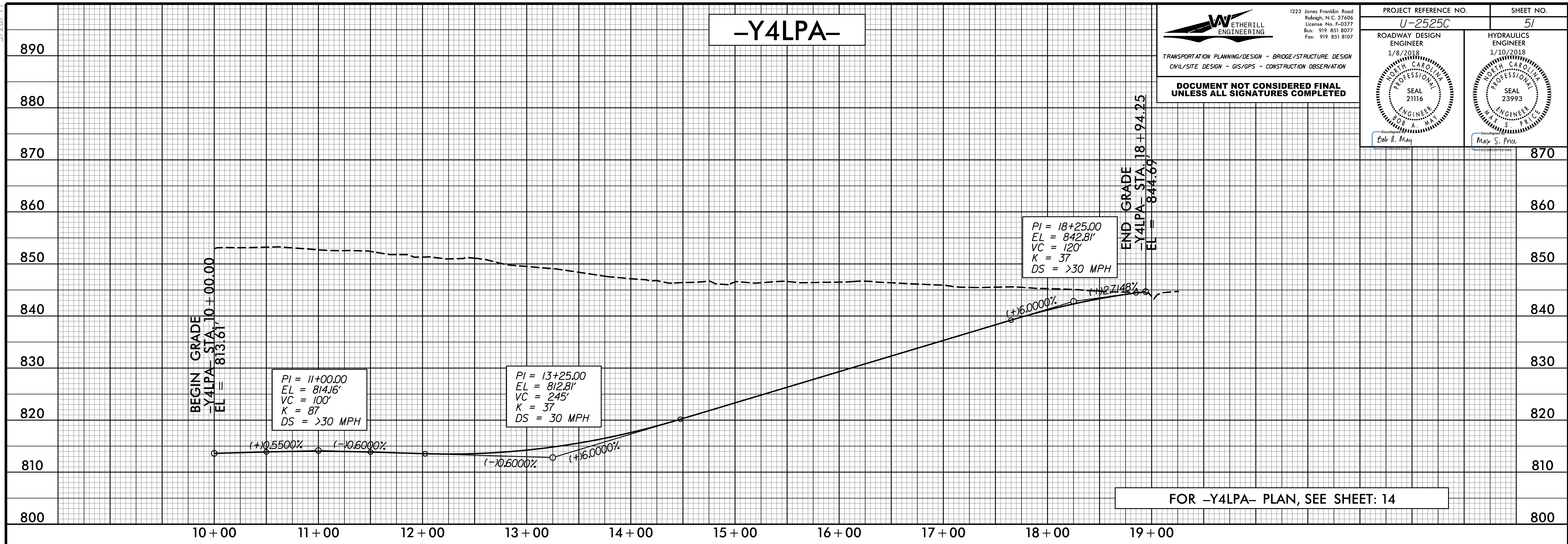
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 51
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 Bob A. May	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 Mary S. Price



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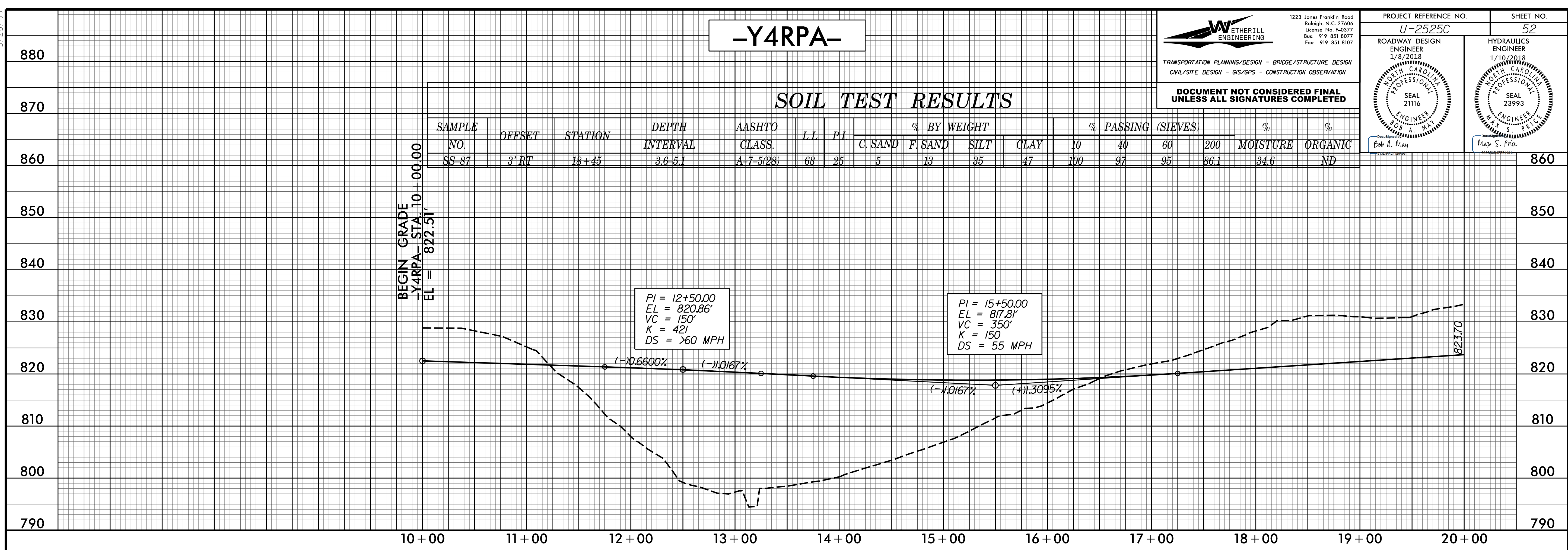
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 52
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PRICE

-Y4RPA-

SOIL TEST RESULTS

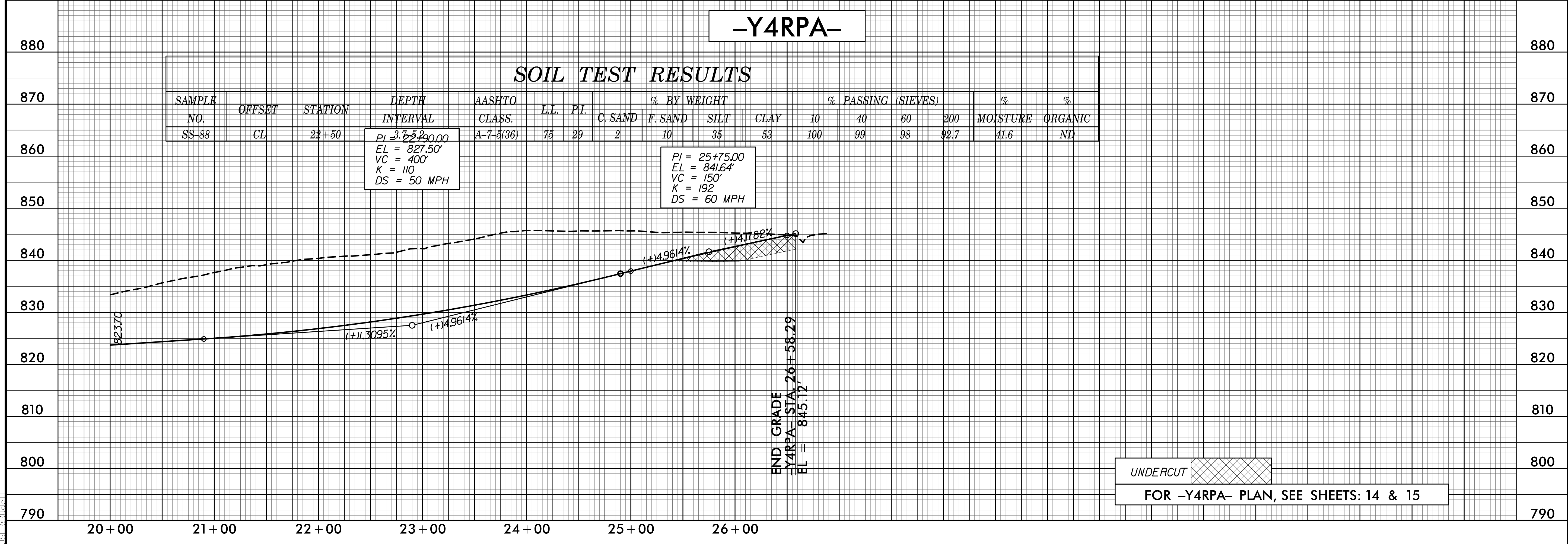
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT				% PASSING (SIEVES)				% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	60	200		
SS-87	3' RT	18+45	3.6-5.1	A-7-5(28)	68	25	5	13	35	47	100	97	95	86.1	34.6	ND



-Y4RPA-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT				% PASSING (SIEVES)				% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	60	200		
SS-88	CL	22+50	3.7-5.2	A-7-5(36)	75	29	2	10	35	53	100	99	98	92.7	41.6	ND



UNDERCUT
 FOR -Y4RPA- PLAN, SEE SHEETS: 14 & 15

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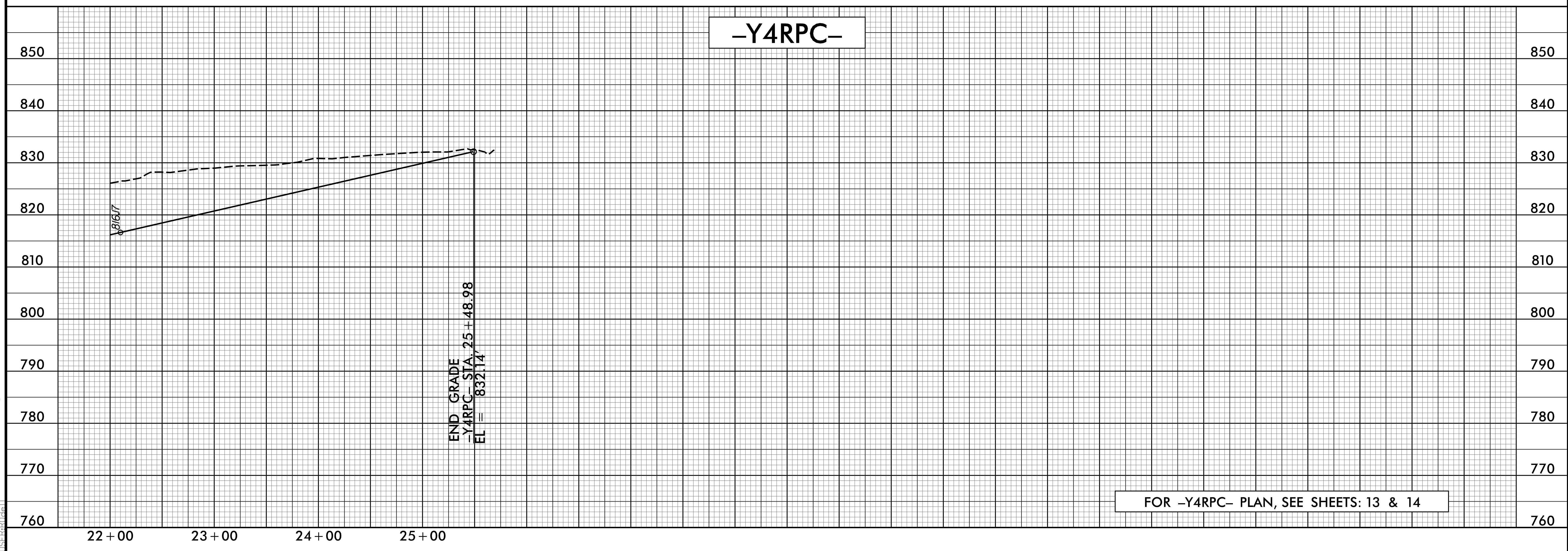
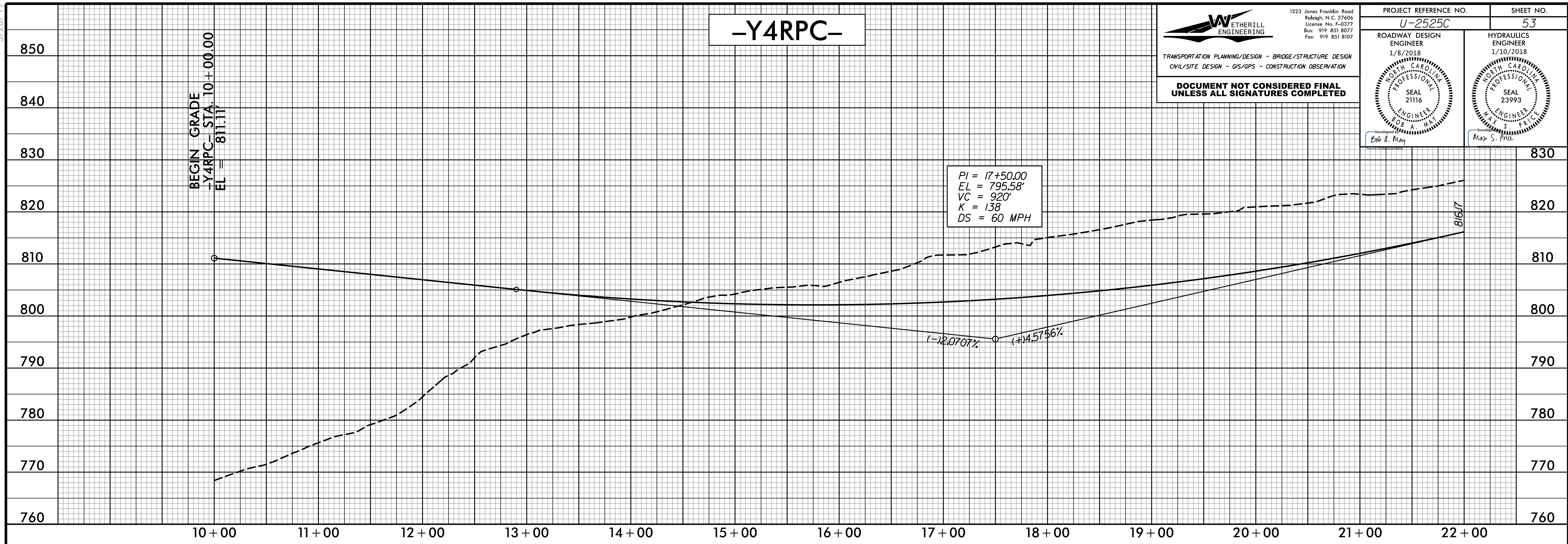
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 53
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PAUL

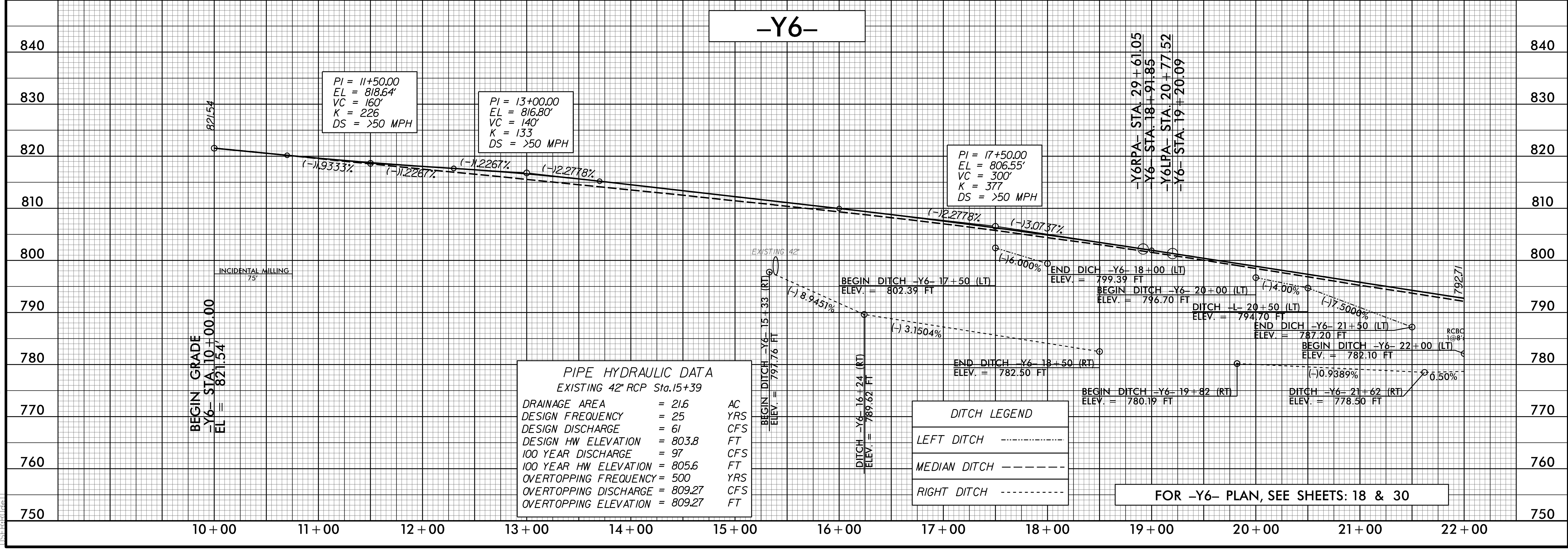
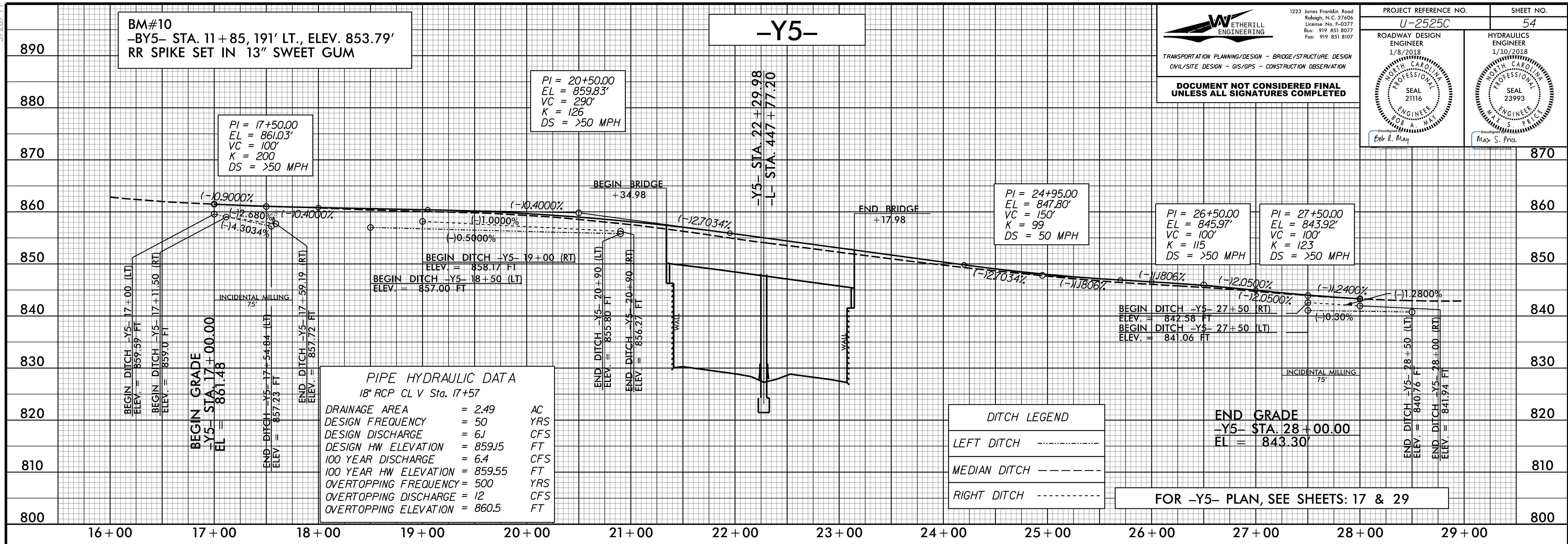


FOR -Y4RPC- PLAN, SEE SHEETS: 13 & 14

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 54
ROADWAY DESIGN ENGINEER 1/8/2018 1/10/2018 SEAL 21116 E. R. May	HYDRAULICS ENGINEER 1/10/2018 1/10/2018 SEAL 23993 M. S. Price

5/28/2017

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CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 250	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 782.3	FT
BASE DISCHARGE	= 270	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 782.52	FT
OVERTOPPING DISCHARGE	= 610	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 789.8	FT

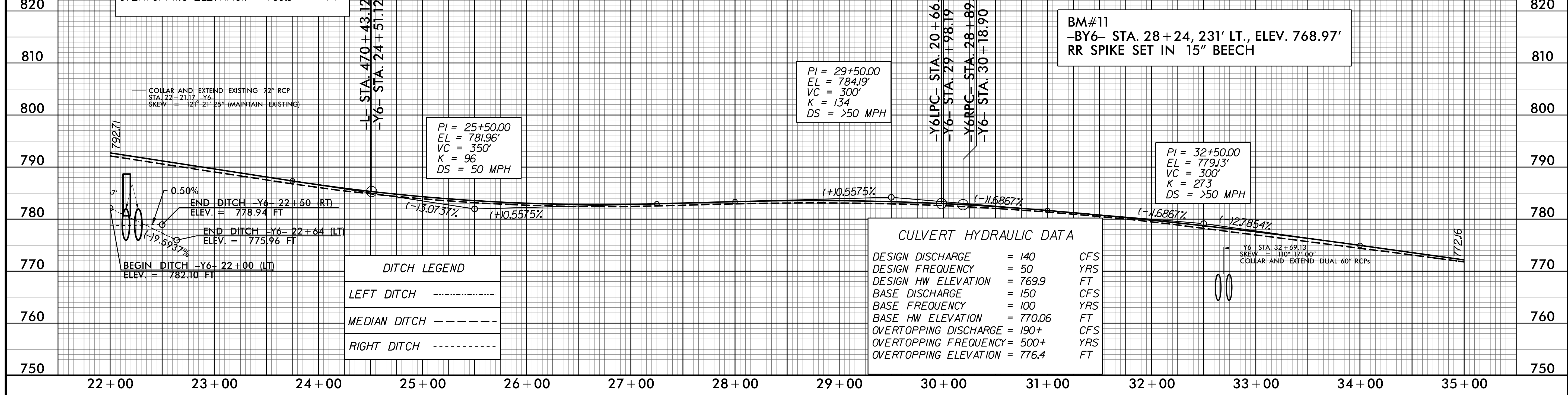
-Y6-

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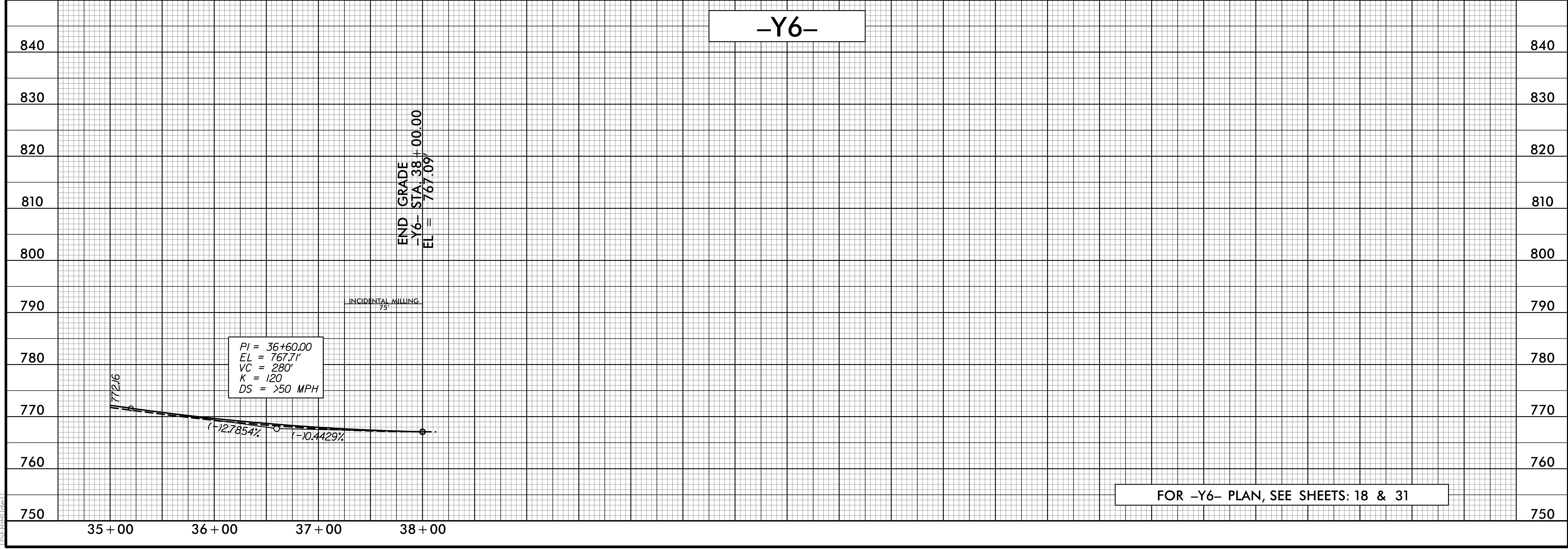
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 55
ROADWAY DESIGN ENGINEER 1/8/2016 SEAL 21116 E. A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 M. S. PRICE



CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 140	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 769.9	FT
BASE DISCHARGE	= 150	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 770.06	FT
OVERTOPPING DISCHARGE	= 190+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 776.4	FT

-Y6-



5/25/2017

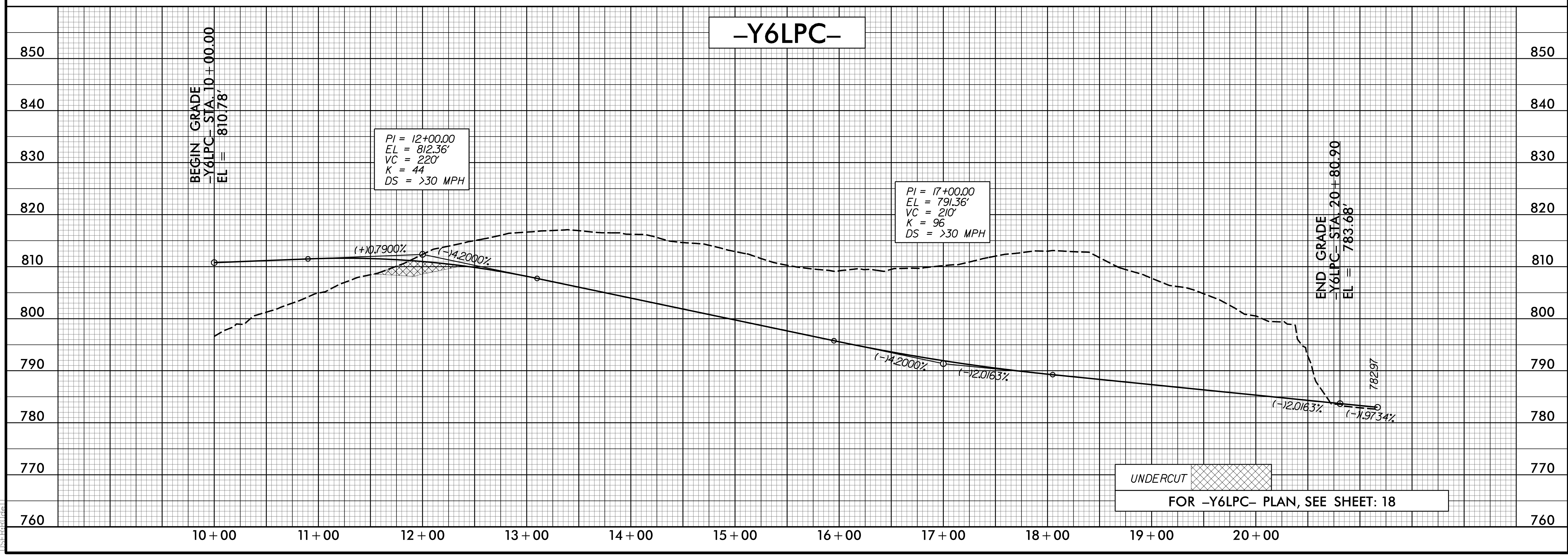
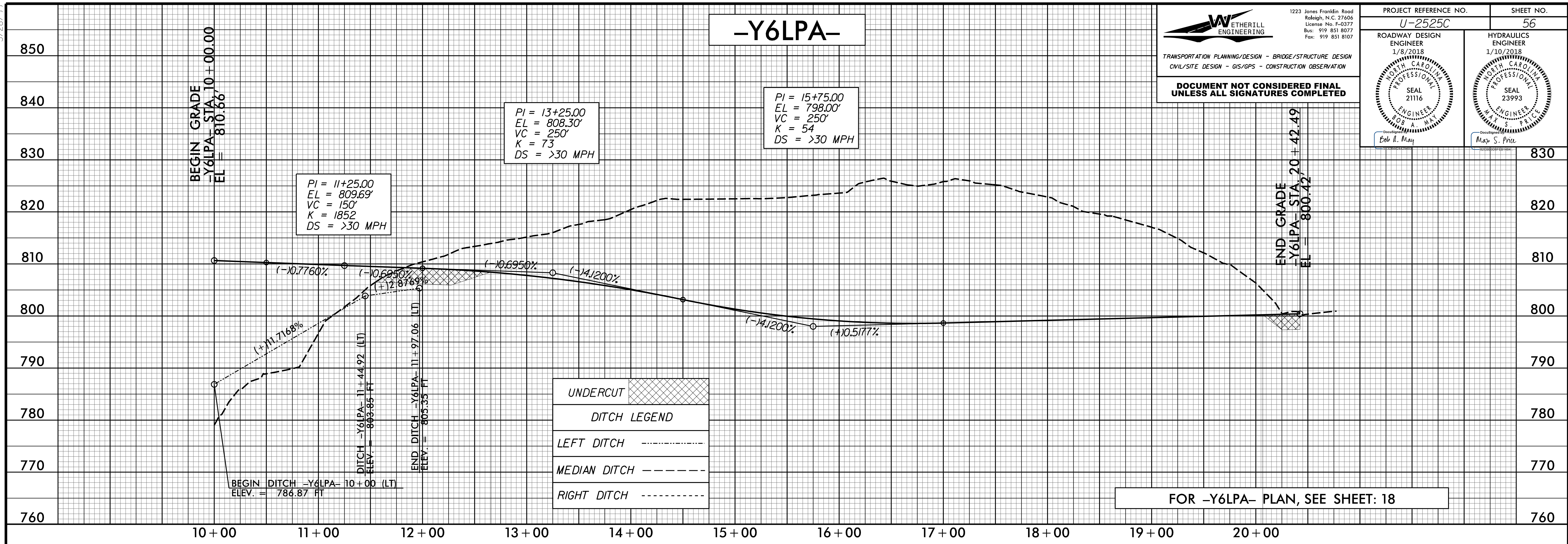
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 56
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB L. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PRICE



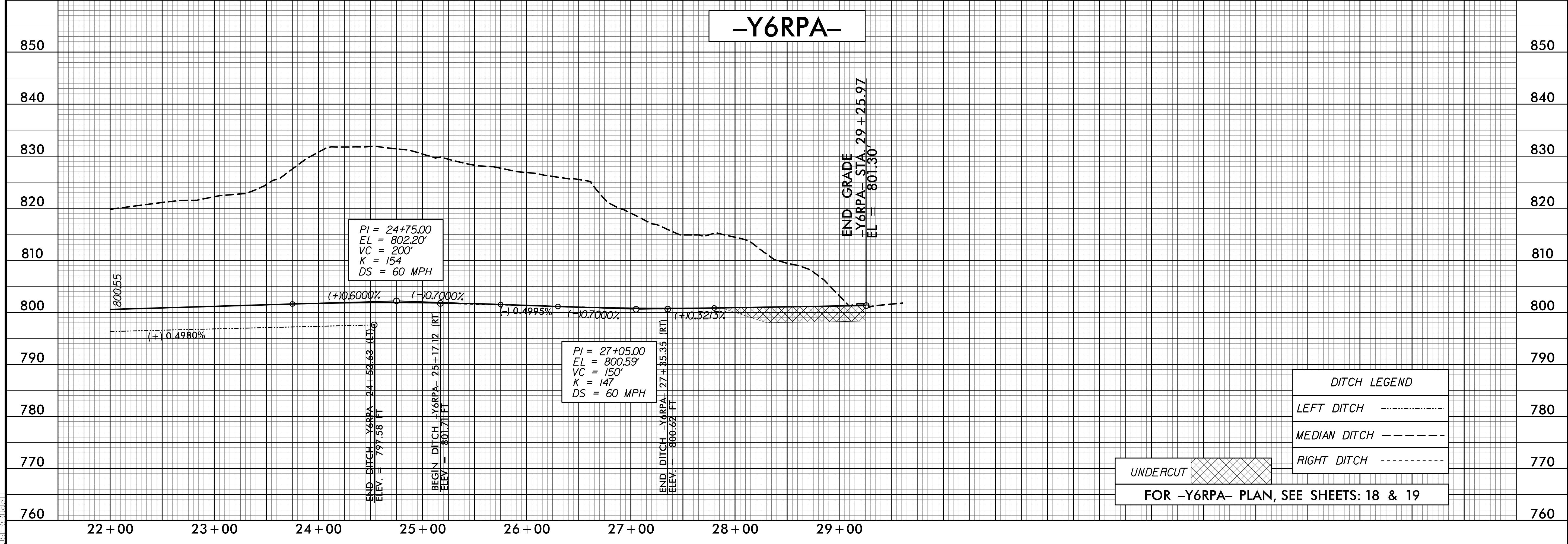
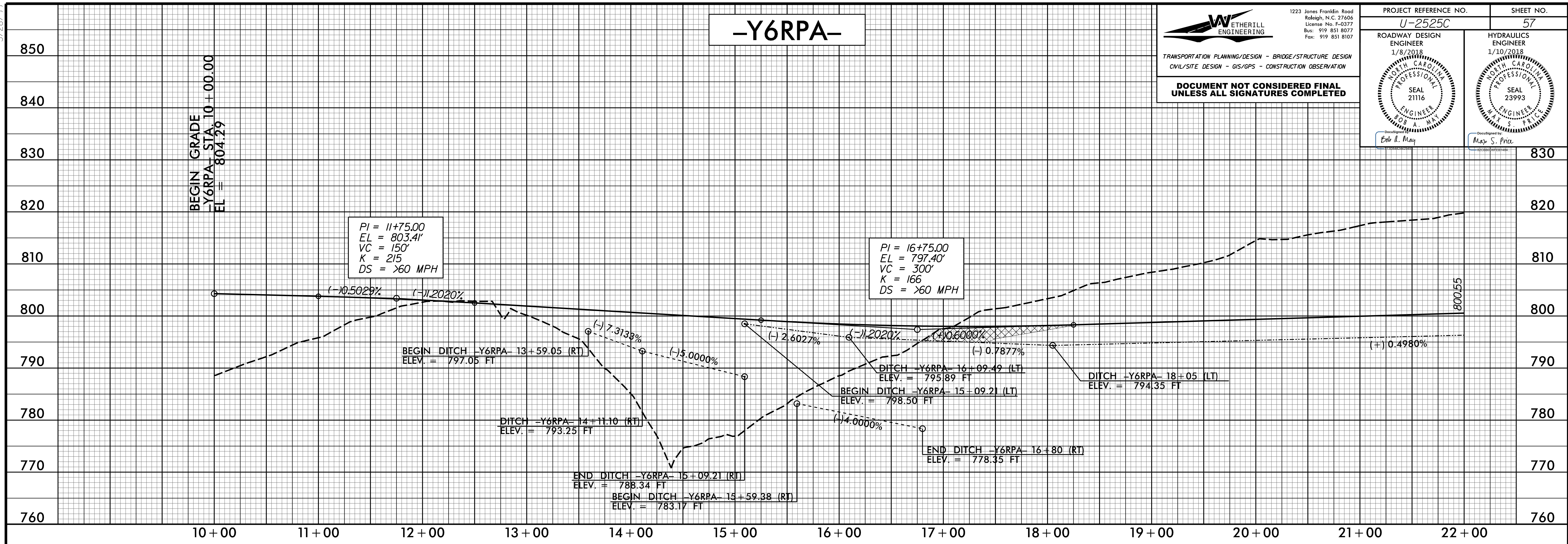
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 57
ROADWAY DESIGN ENGINEER 1/8/2018 NORTH CAROLINA PROFESSIONAL SEAL 21116 E. H. May	HYDRAULICS ENGINEER 1/10/2018 NORTH CAROLINA PROFESSIONAL SEAL 23993 M. S. Price



DITCH LEGEND	
LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

UNDERCUT FOR -Y6RPA- PLAN, SEE SHEETS: 18 & 19

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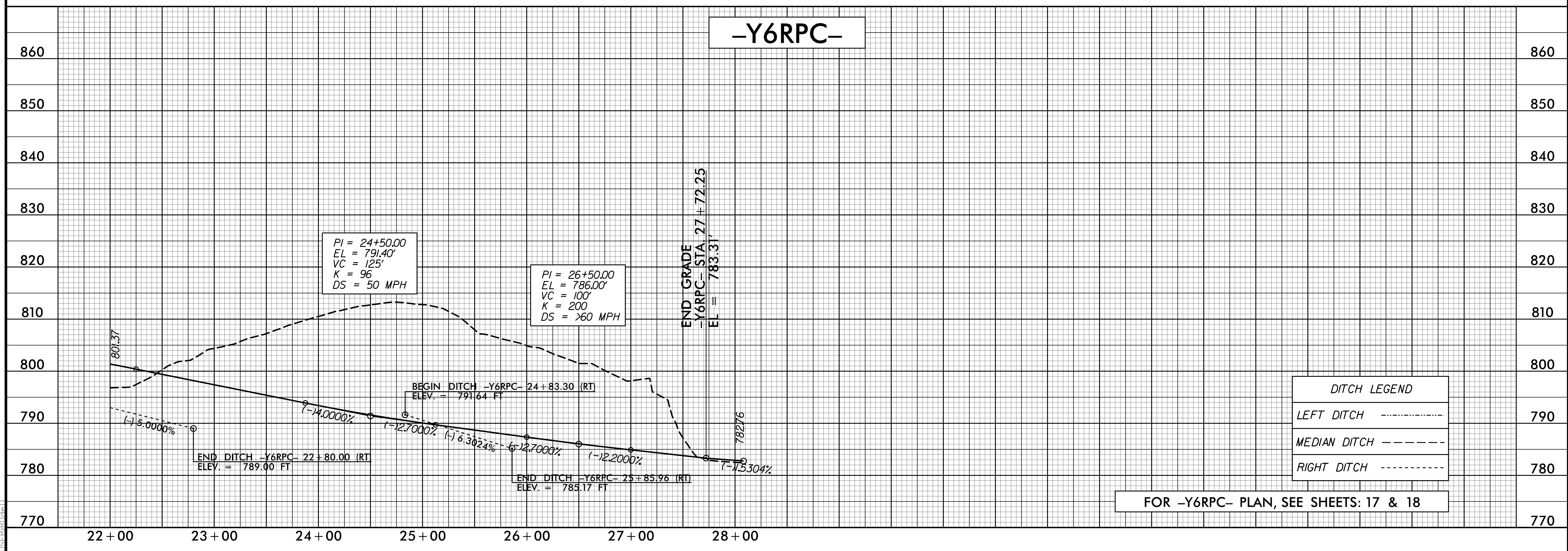
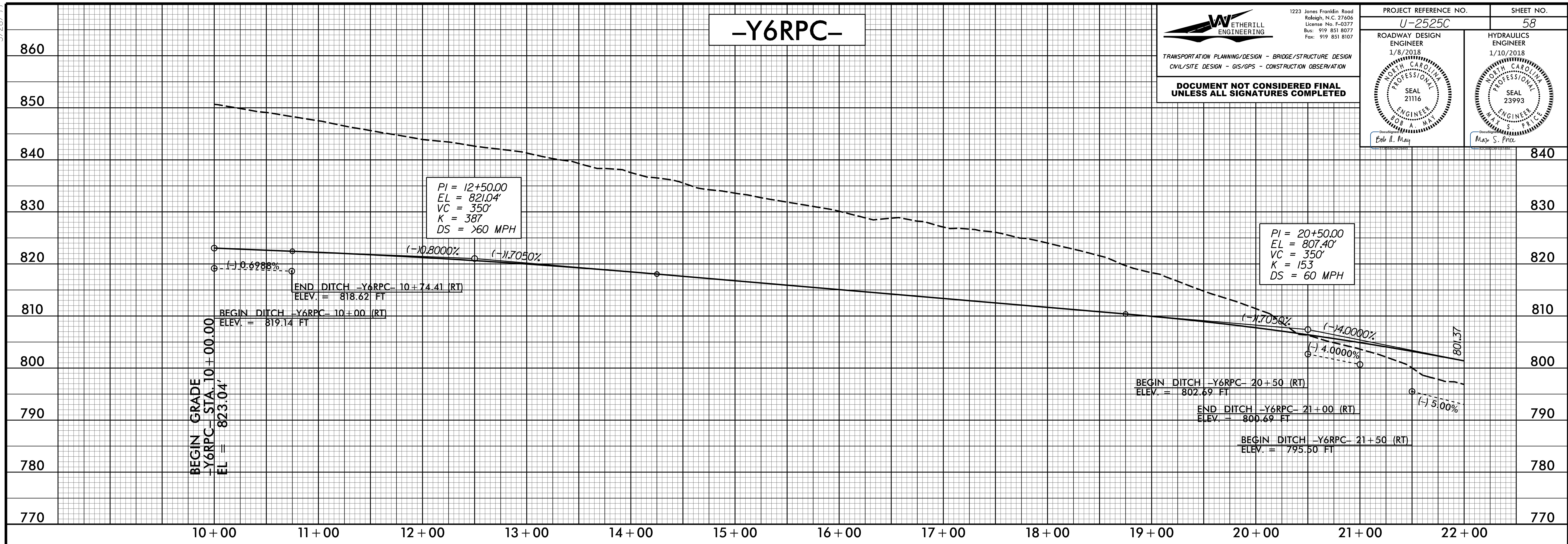
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 58
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 E. H. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAY S. PRIC



DITCH LEGEND

LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

FOR -Y6RPC- PLAN, SEE SHEETS: 17 & 18

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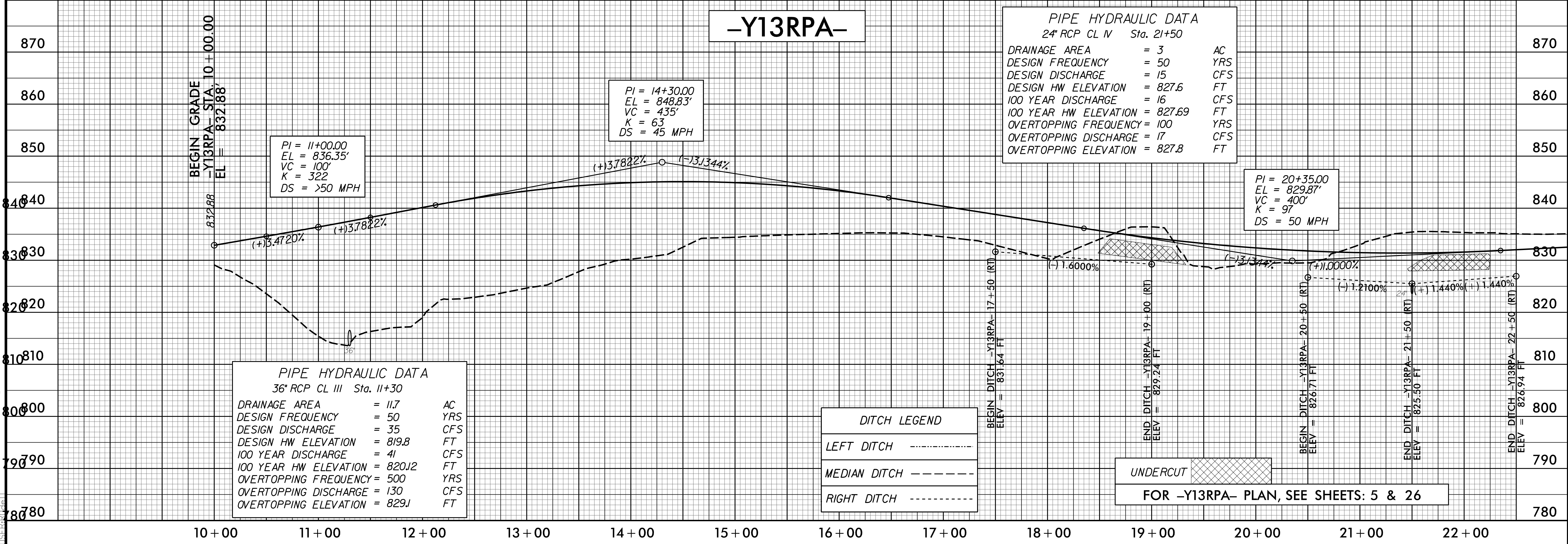
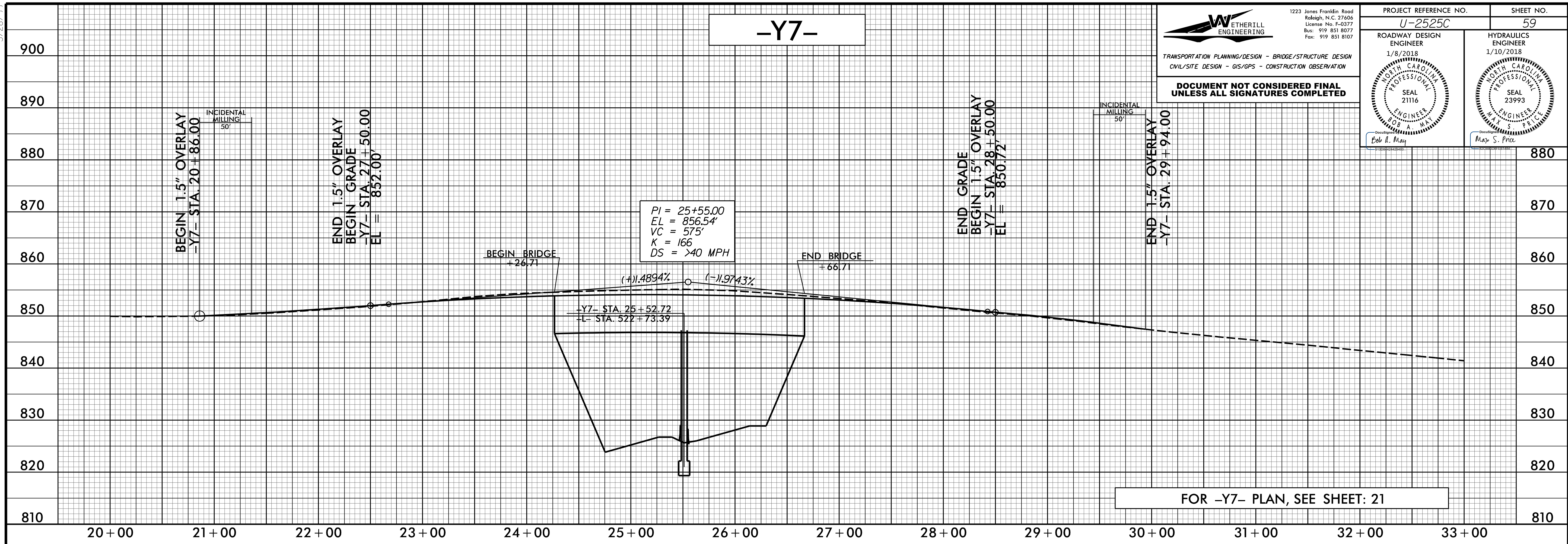
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 59
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 E. J. May	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 M. S. Price



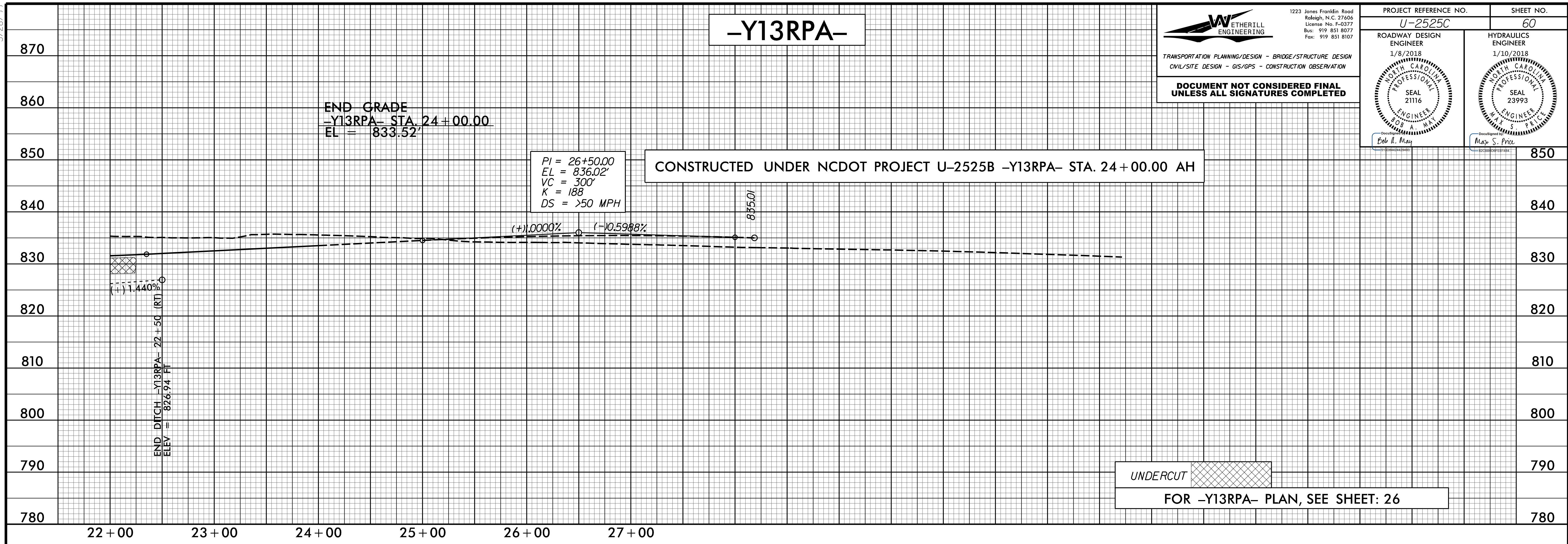
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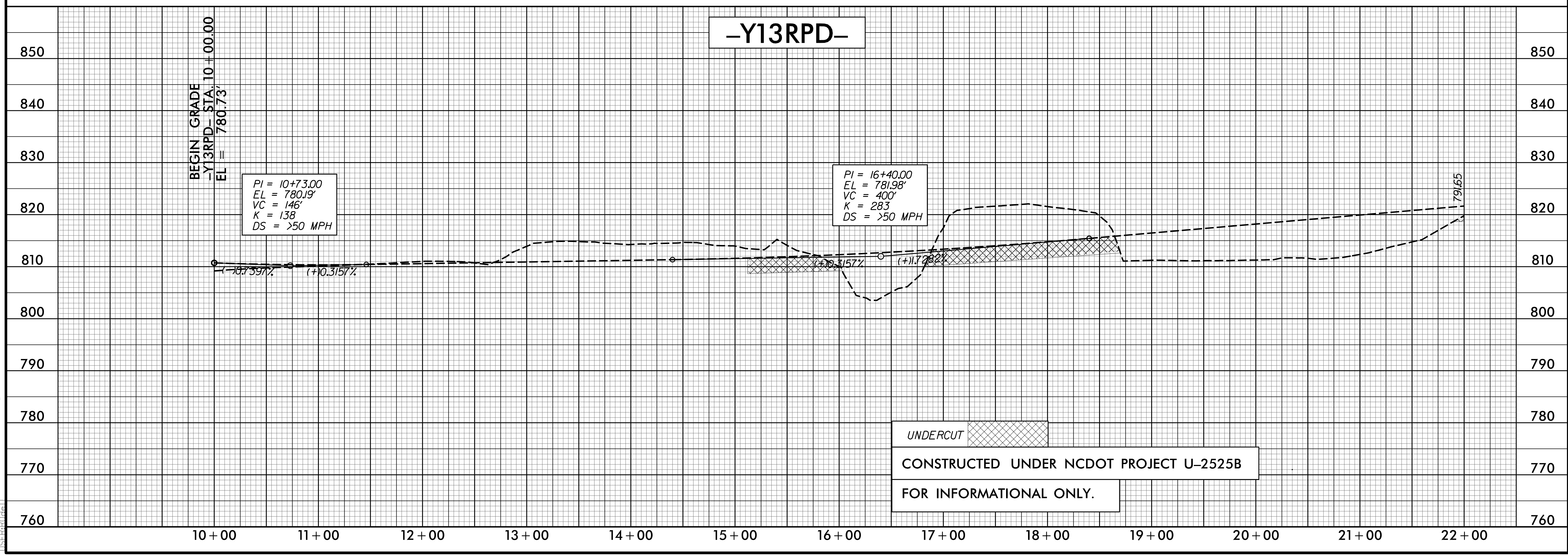
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 60
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MARK S. PRICE



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5/25/2017

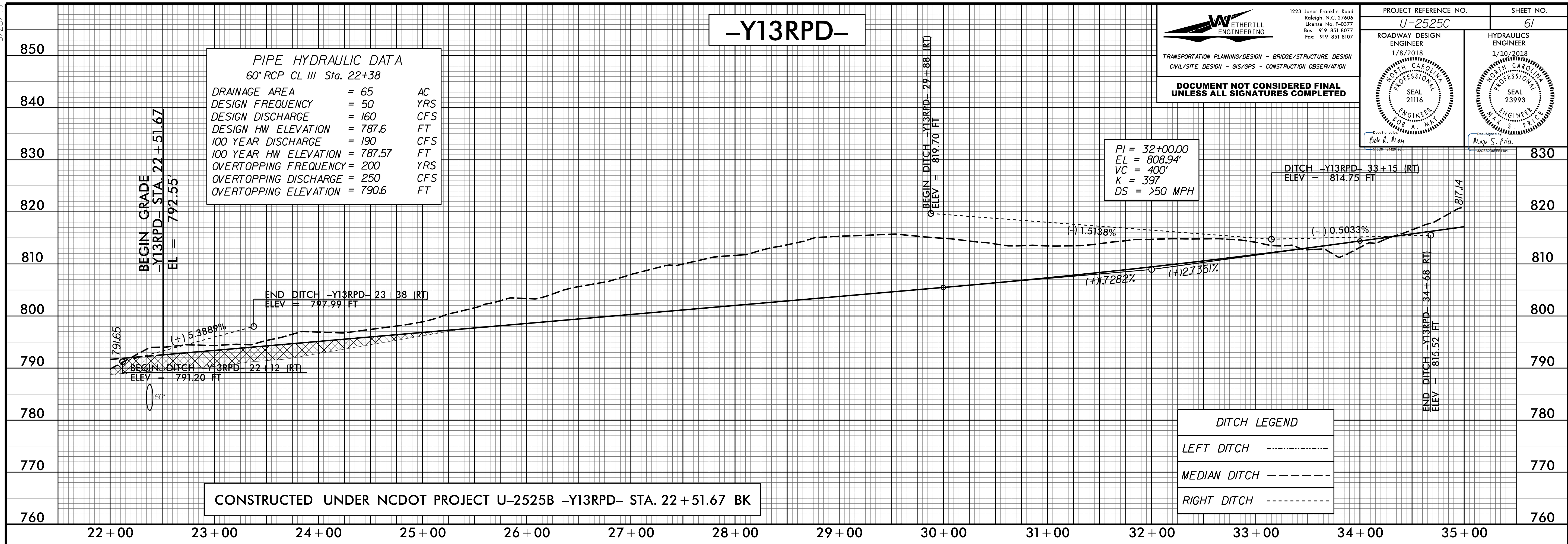
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 61
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB L. MAY NORTH CAROLINA PROFESSIONAL ENGINEER	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAX S. PRUE NORTH CAROLINA PROFESSIONAL ENGINEER



PIPE HYDRAULIC DATA
 60" RCP CL III Sta. 22+38

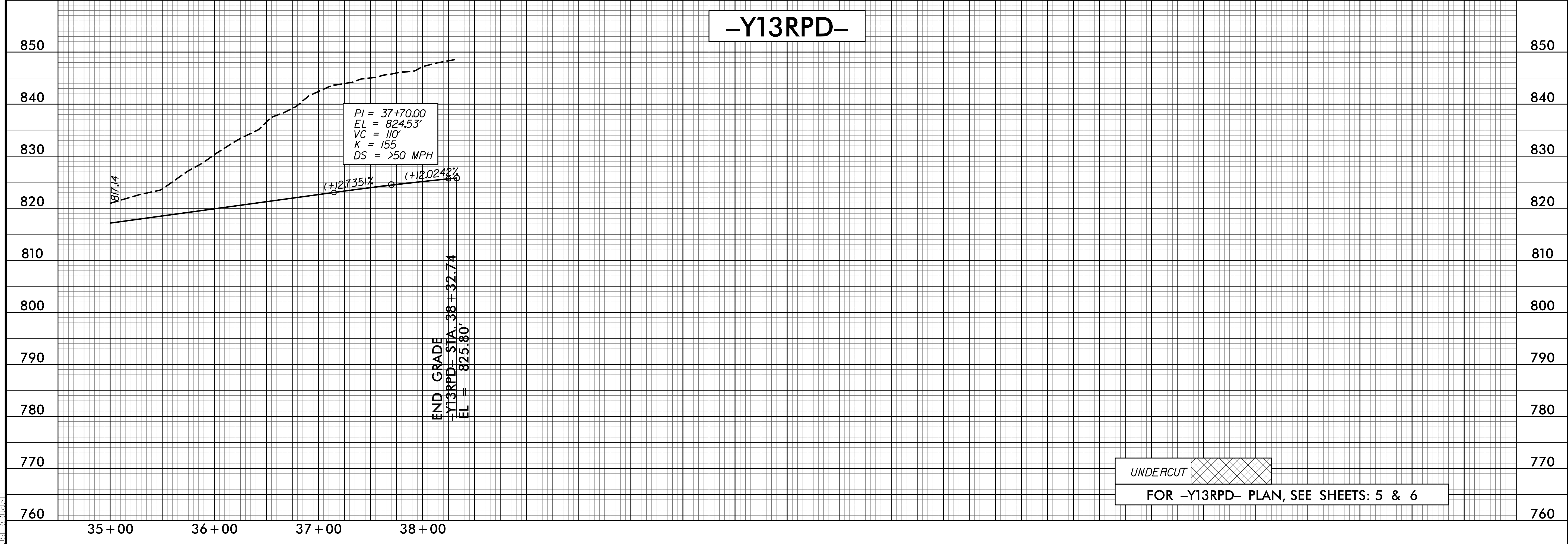
DRAINAGE AREA	= 65	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 160	CFS
DESIGN HW ELEVATION	= 787.6	FT
100 YEAR DISCHARGE	= 190	CFS
100 YEAR HW ELEVATION	= 787.57	FT
OVERTOPPING FREQUENCY	= 200	YRS
OVERTOPPING DISCHARGE	= 250	CFS
OVERTOPPING ELEVATION	= 790.6	FT

PI = 32+00.00
 EL = 808.94'
 VC = 400'
 K = 397
 DS = >50 MPH

DITCH LEGEND

LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

CONSTRUCTED UNDER NCDOT PROJECT U-2525B -Y13RPD- STA. 22 + 51.67 BK



UNDERCUT
 FOR -Y13RPD- PLAN, SEE SHEETS: 5 & 6

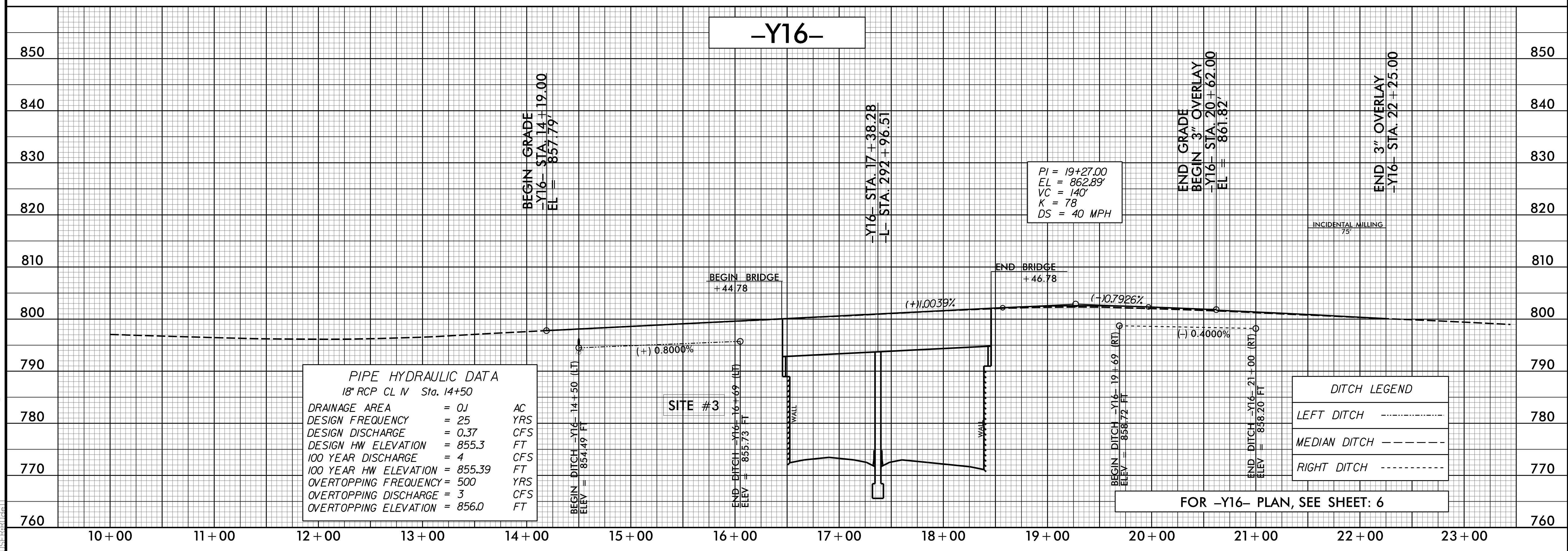
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**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO. U-2525C	SHEET NO. 62
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 E. A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 M. S. PRICE



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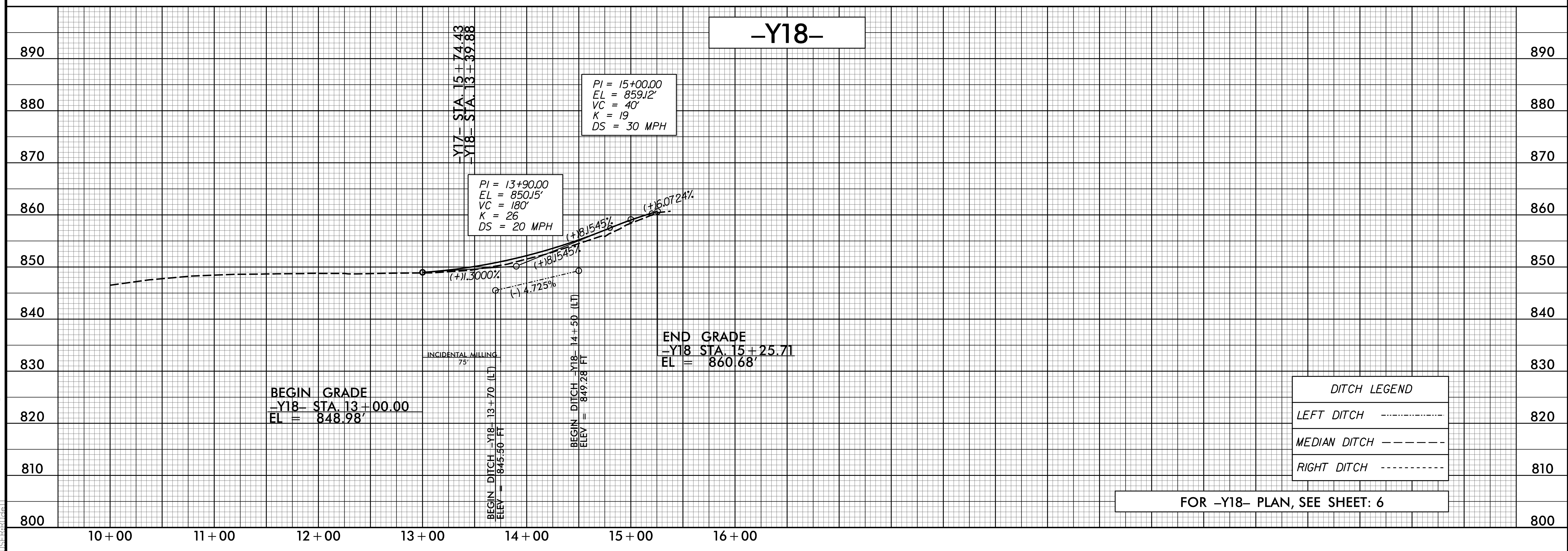
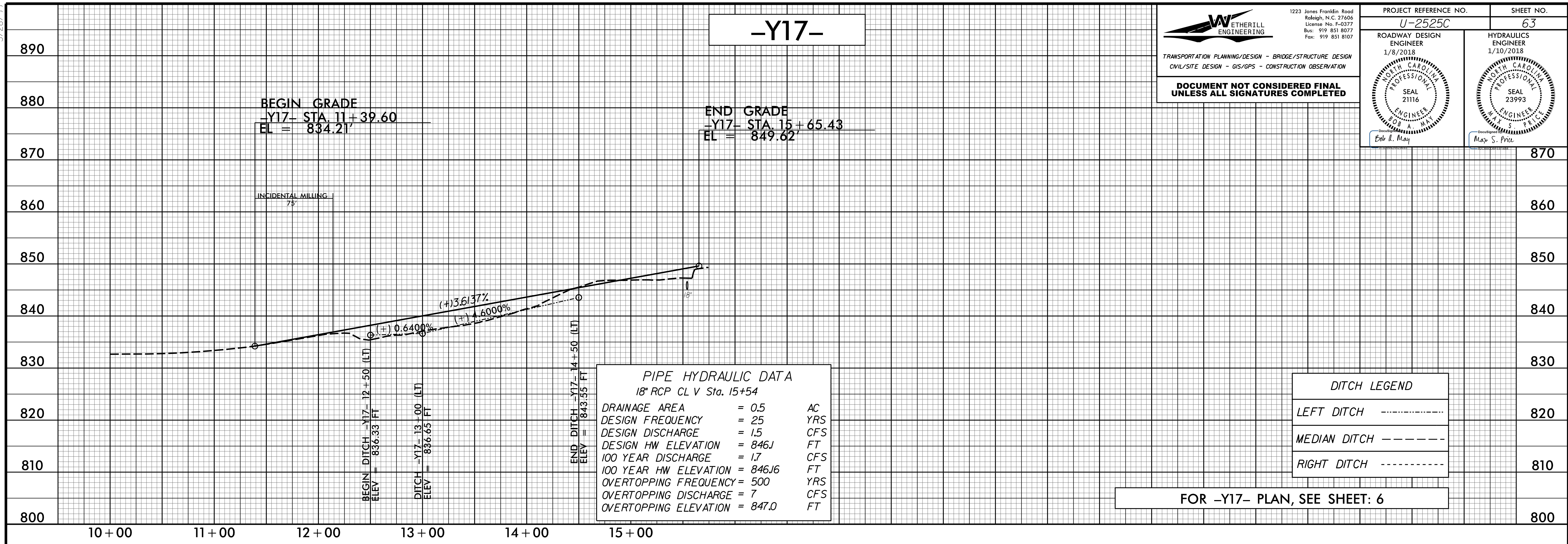
5/25/2017

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 63
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
Bob A. May	Mary S. Price



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5/28/2017

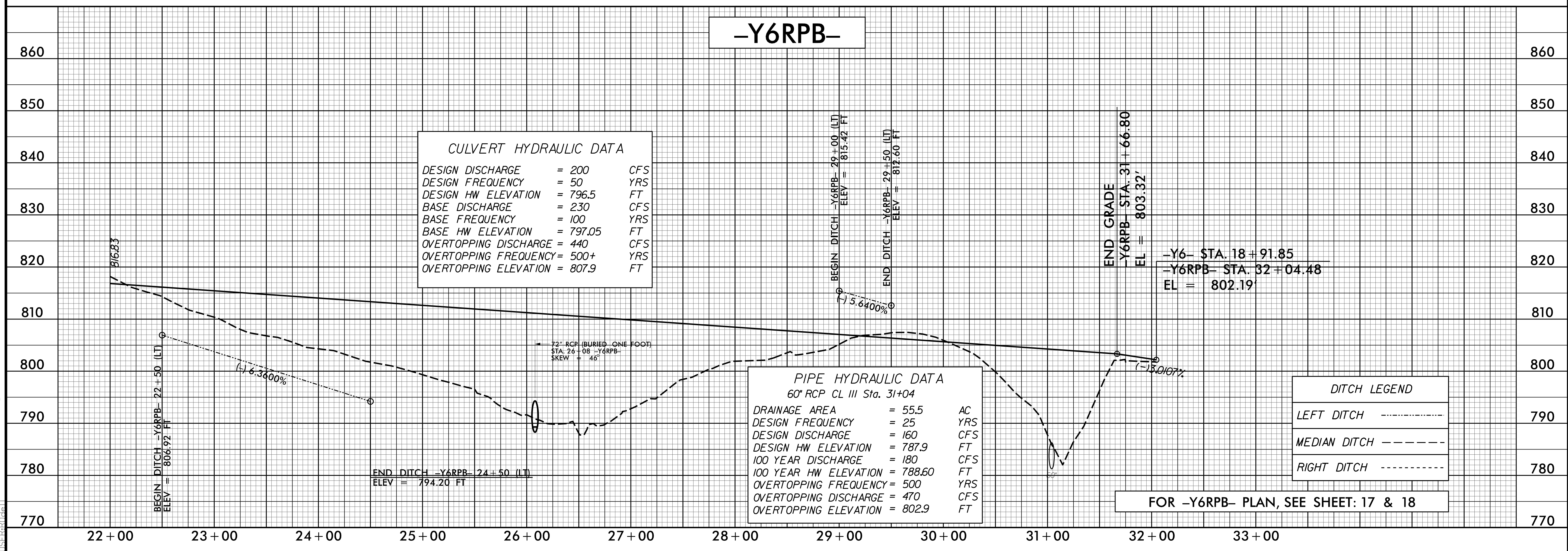
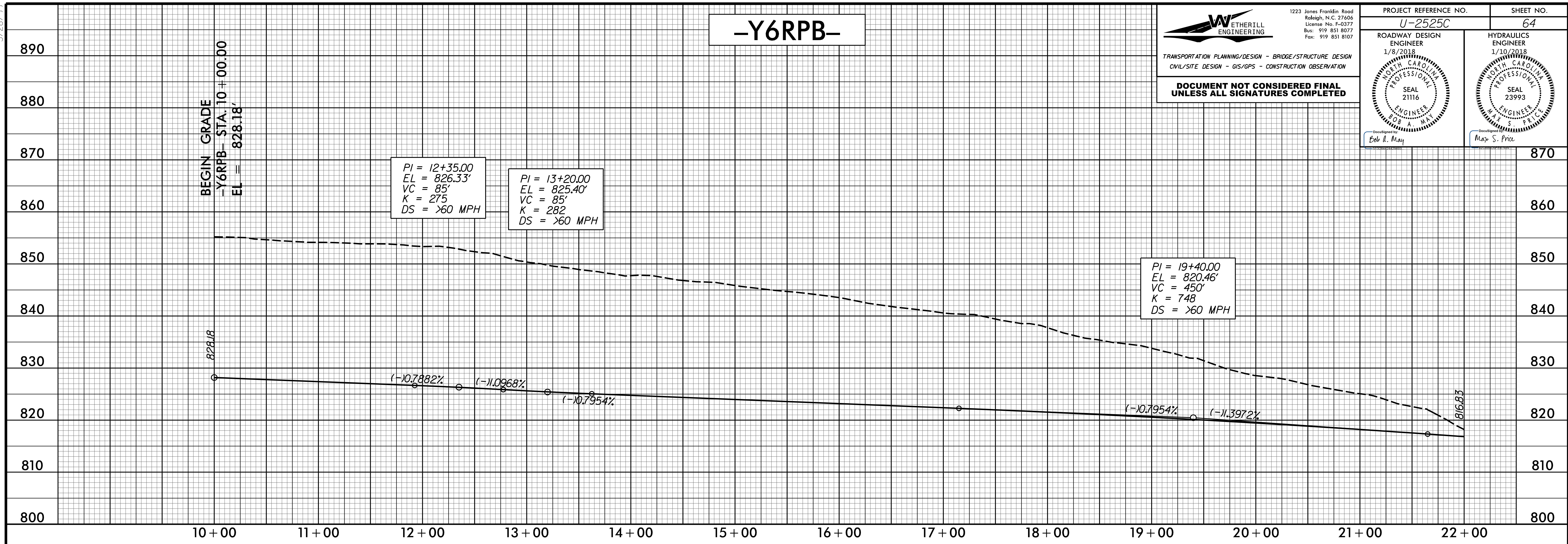
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 64
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAX S. PRIC



FOR -Y6RPB- PLAN, SEE SHEET: 17 & 18

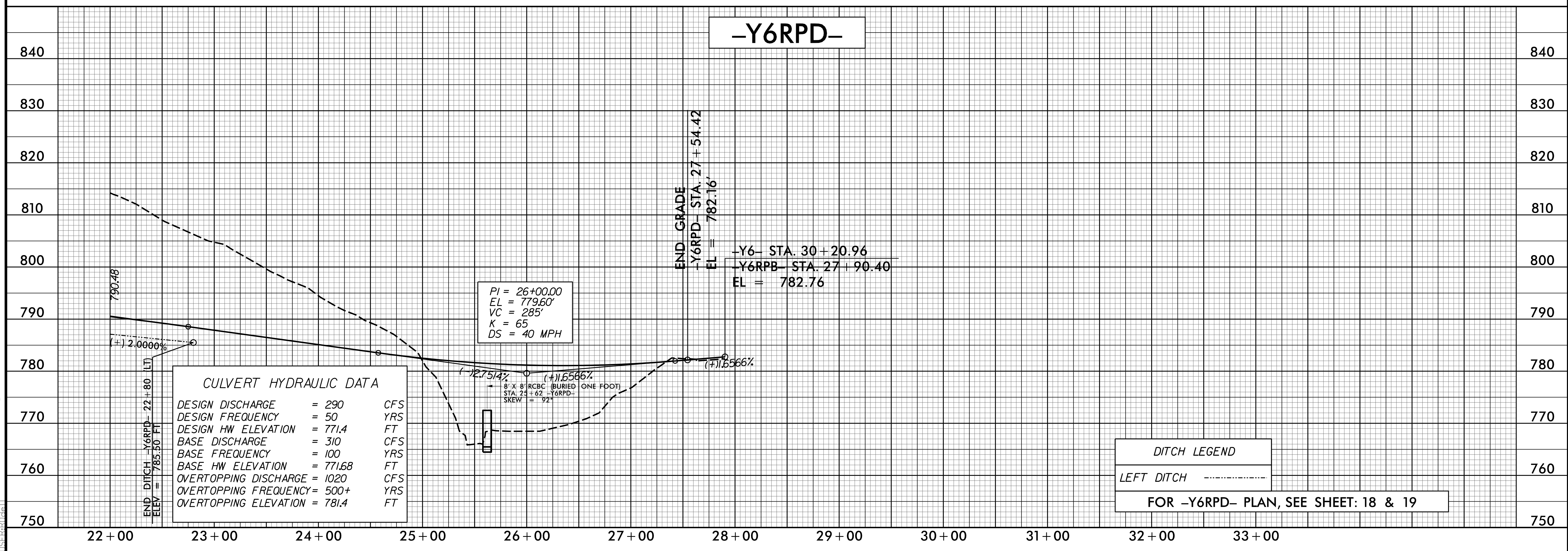
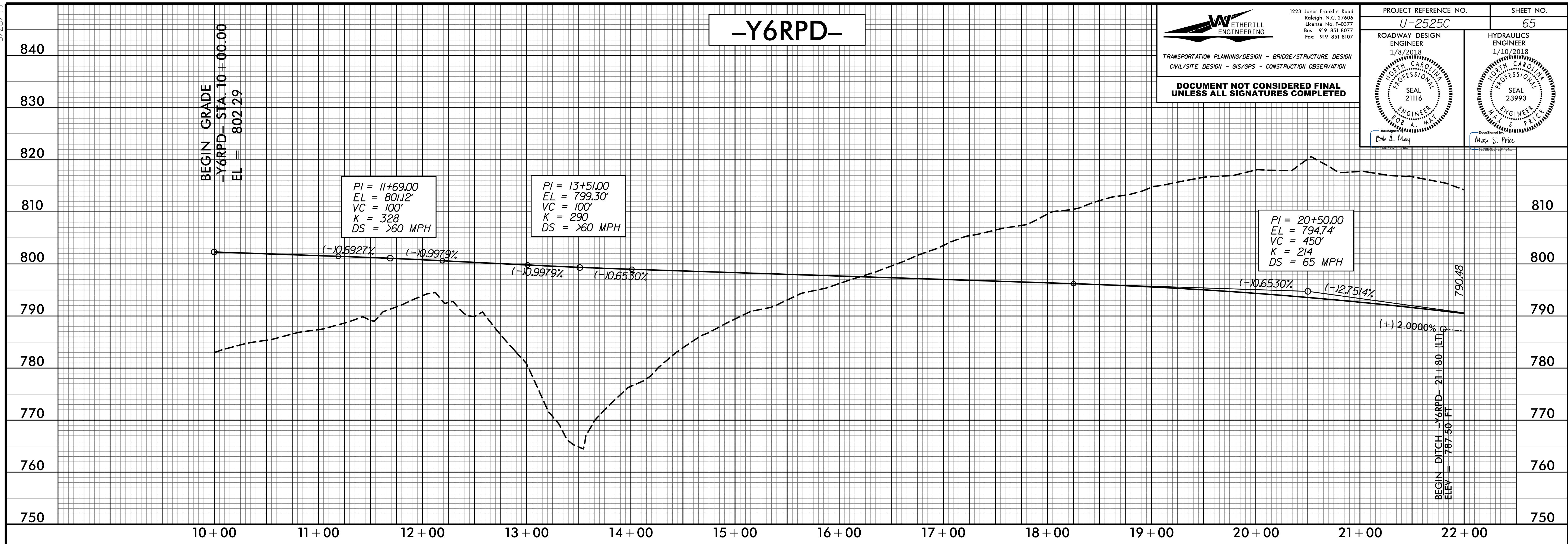
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 65
ROADWAY DESIGN ENGINEER 1/8/2018 NORTH CAROLINA PROFESSIONAL SEAL 21116 Erik R. May	HYDRAULICS ENGINEER 1/10/2018 NORTH CAROLINA PROFESSIONAL SEAL 23993 Mark S. Fritz



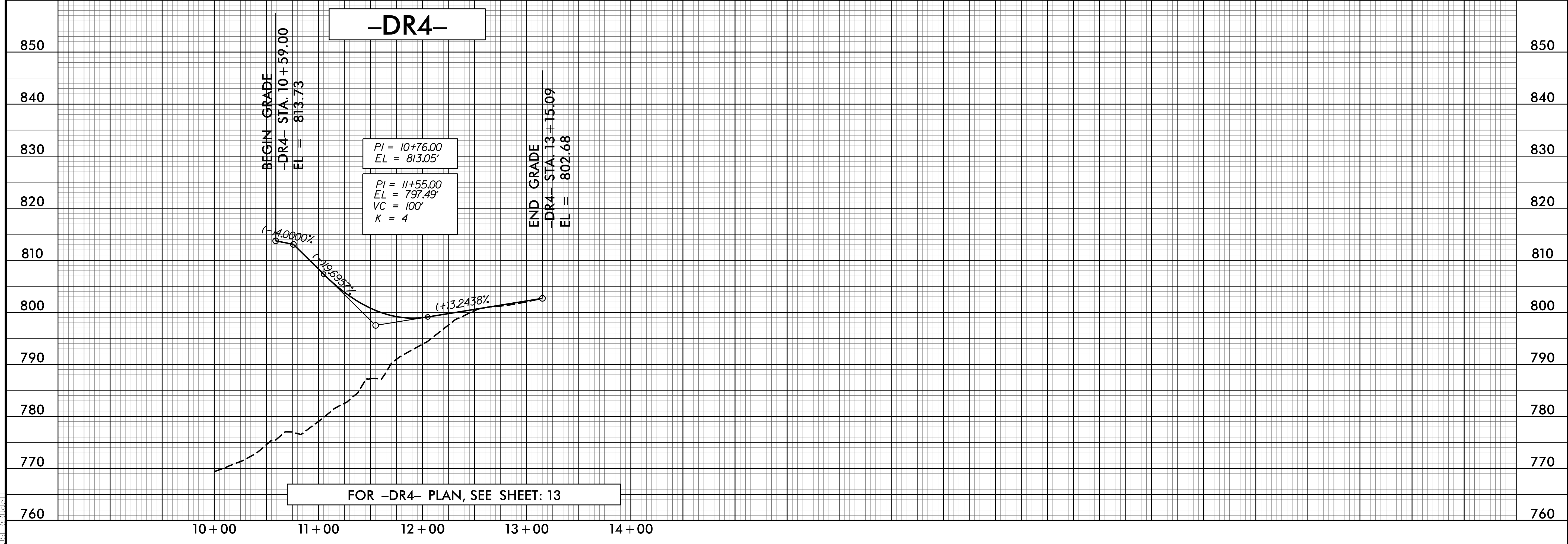
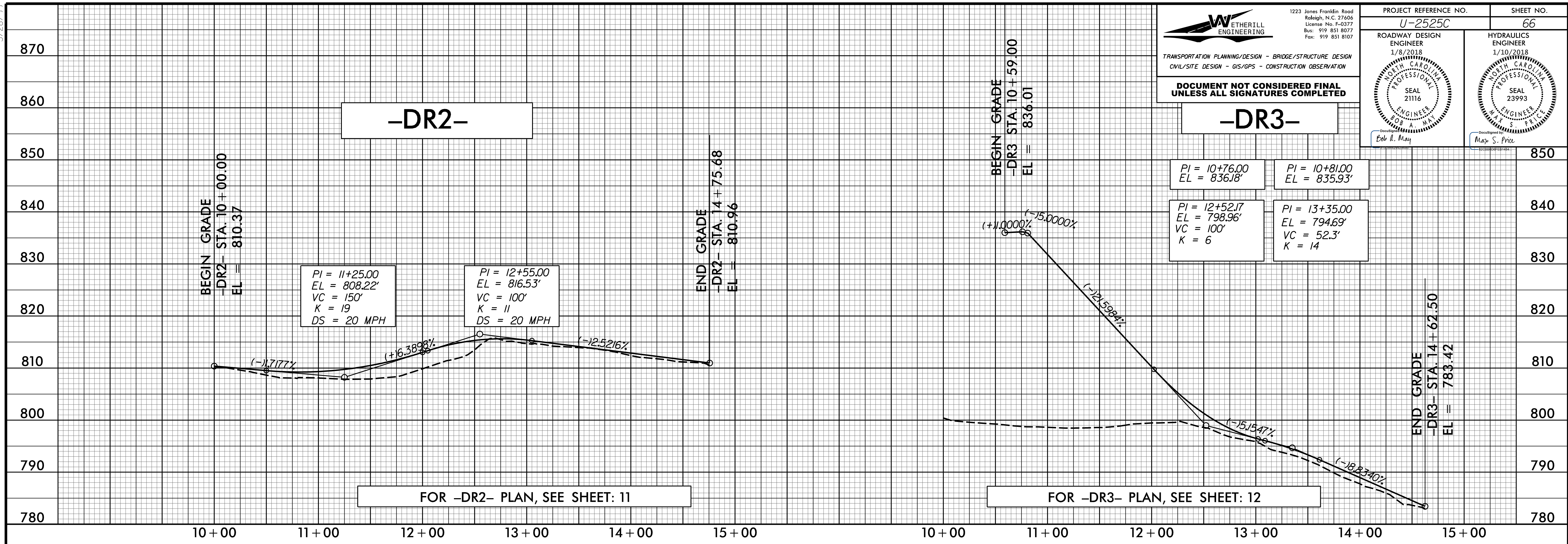
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 66
ROADWAY DESIGN ENGINEER 1/8/2018 NORTH CAROLINA PROFESSIONAL SEAL 21116 Erik A. May	HYDRAULICS ENGINEER 1/10/2018 NORTH CAROLINA PROFESSIONAL SEAL 23993 Alaco S. Fritz



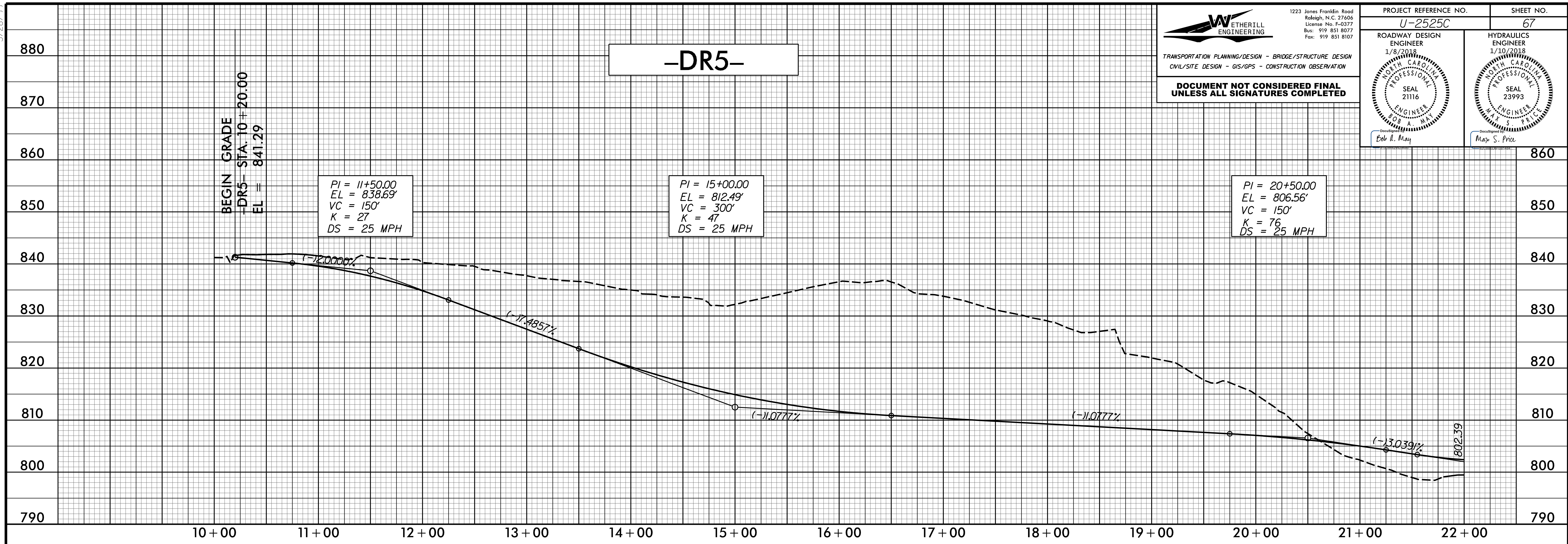
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 67
ROADWAY DESIGN ENGINEER 1/8/2018 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 1/10/2018 SEAL 23993 MAX S. PRIE



FOR -DR5- PLAN, SEE SHEET: 14

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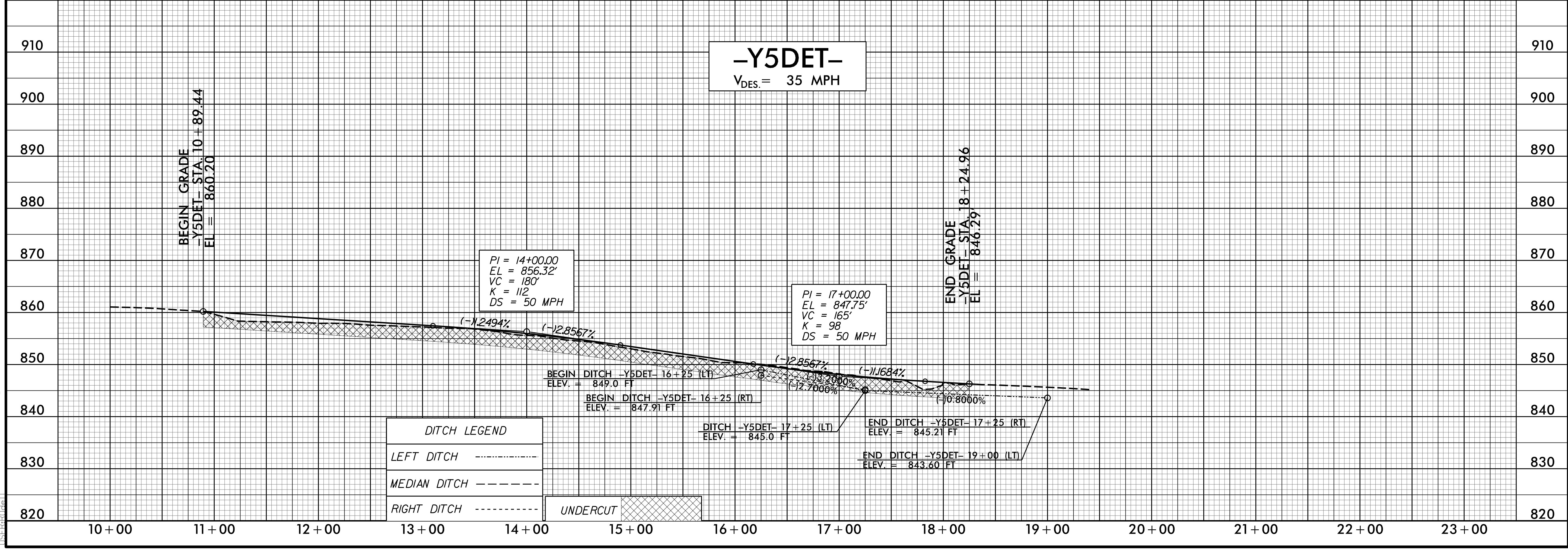
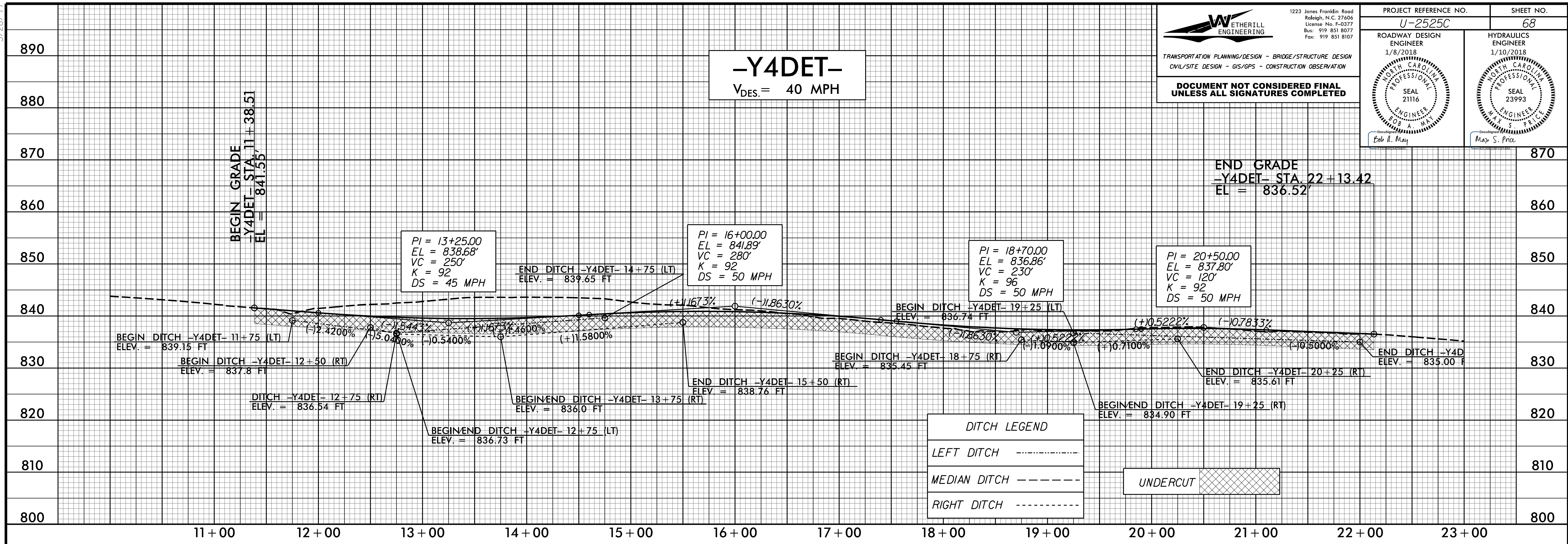
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. U-2525C	SHEET NO. 68
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
<i>E. A. May</i>	<i>Max S. Price</i>



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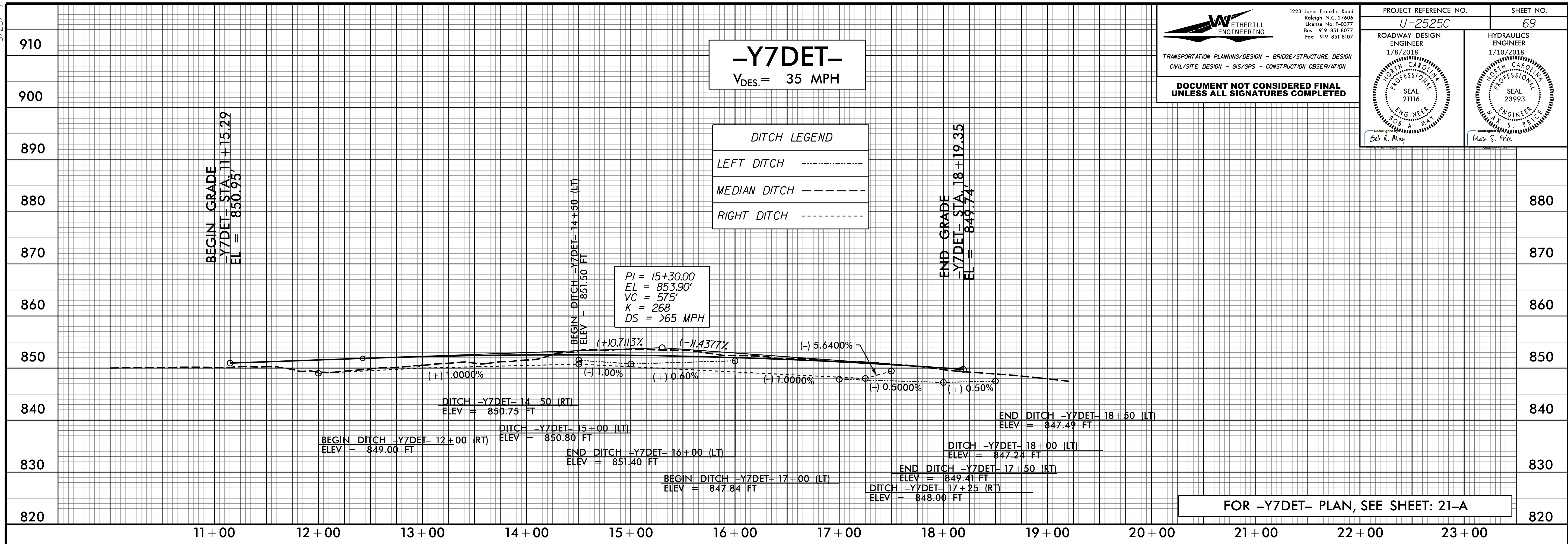
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PROJECT REFERENCE NO. U-2525C	SHEET NO. 69
ROADWAY DESIGN ENGINEER 1/8/2018	HYDRAULICS ENGINEER 1/10/2018
SEAL 21116 BOB A. MAY	SEAL 23993 MAX S. PHELPS



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