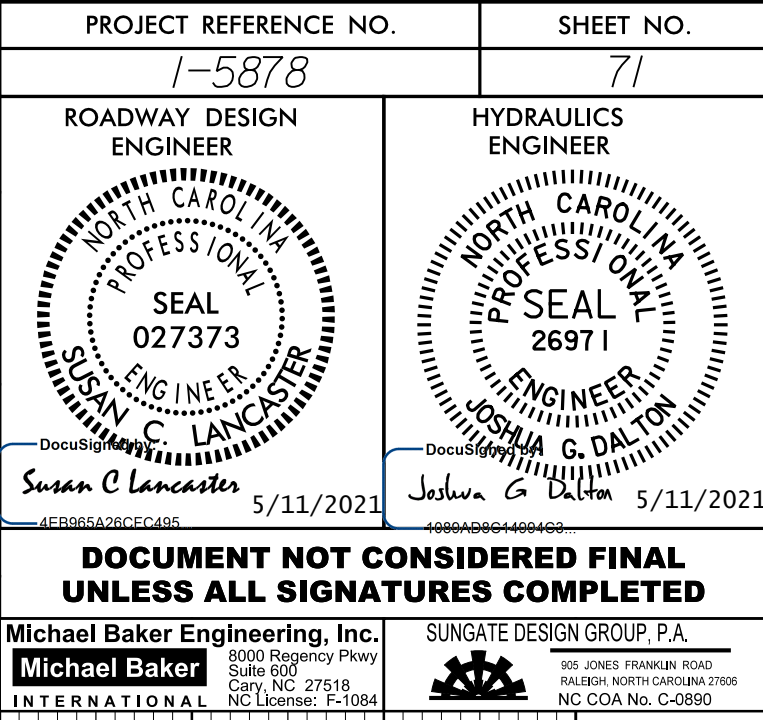
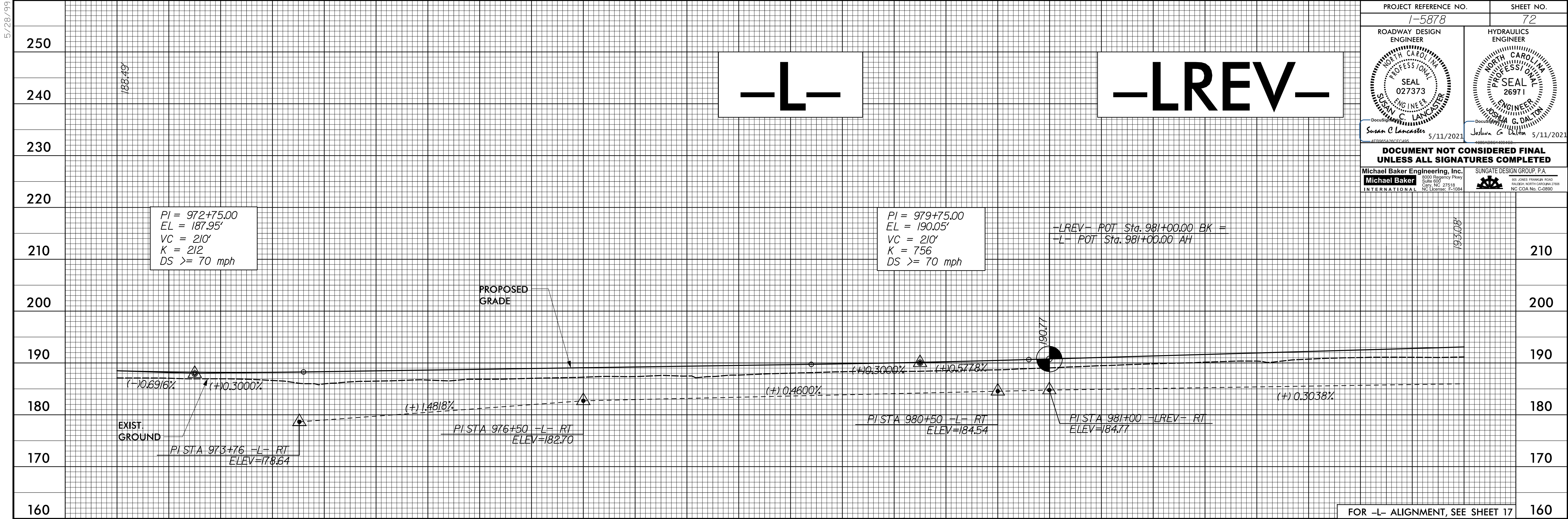




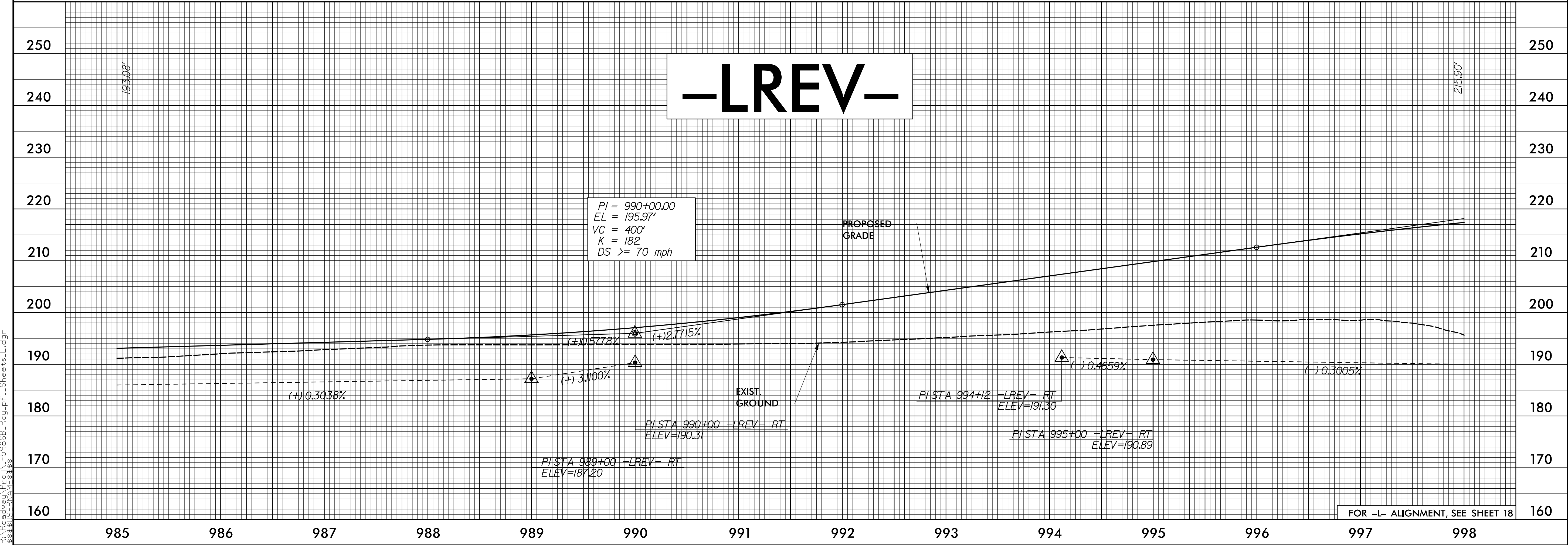
5/28/19



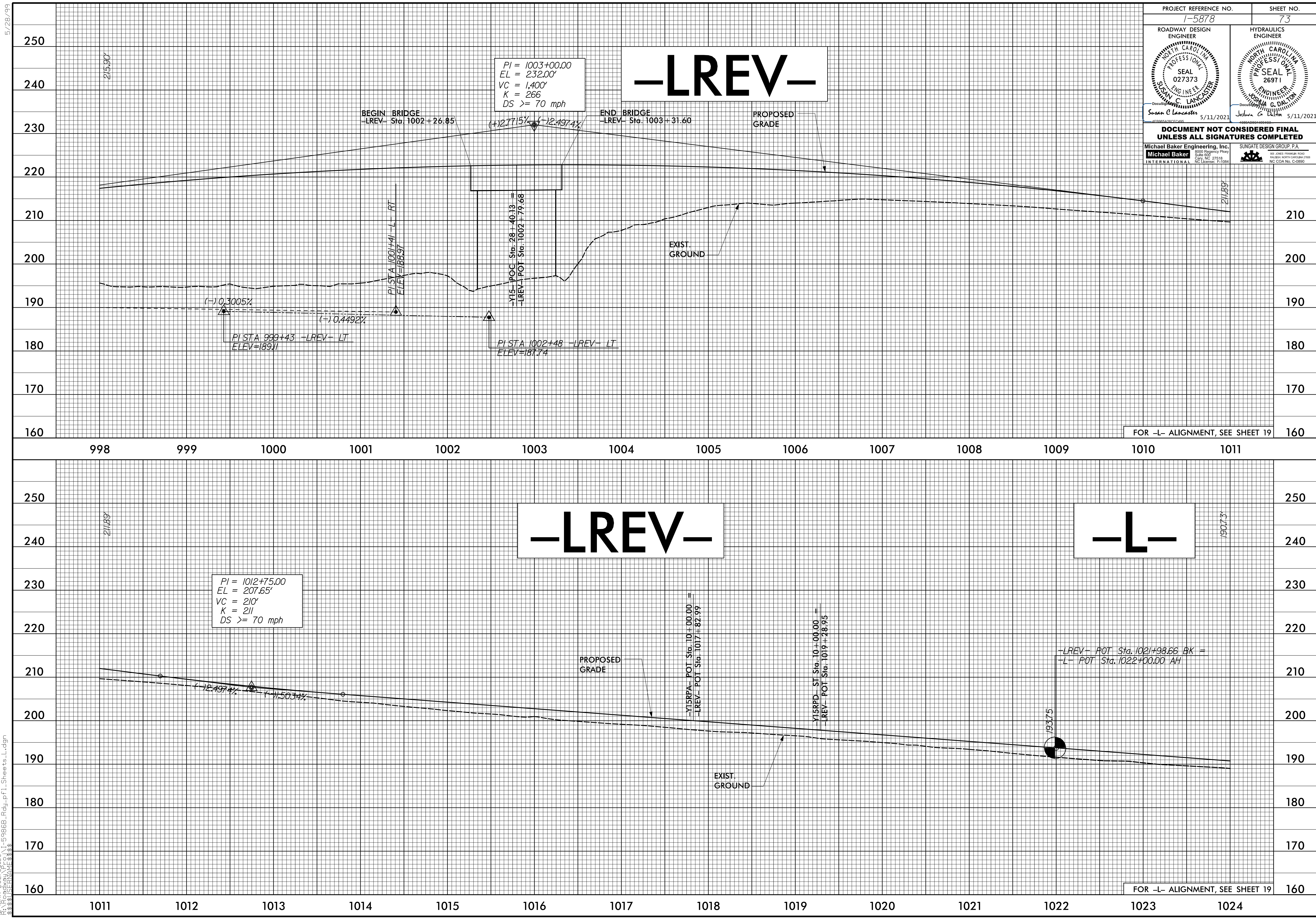
PROJECT REFERENCE NO. 1-5878		SHEET NO. 72	
ROADWAY DESIGN ENGINEER SEAL 027373 ENGINEER Susan C. Lancaster 5/11/2021		HYDRAULICS ENGINEER PROFESSIONAL SEAL 26971 ENGINEER Joshua G. Dalton 5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Cary, NC 27519 NC License: F-1084		SUNGATE DESIGN GROUP P.A. 105 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 NC License: No. C-28900	

FOR -L- ALIGNMENT, SEE SHEET 17

12-MAR-2020 08:59 \\f-5986B-Rdy-pfl-Sheets.L.dgn
\$\$\$\$\$ (PLOTNAME)\$\$\$\$\$



FOR -L- ALIGNMENT, SEE SHEET 18



PROJECT REFERENCE NO. 1-5878		SHEET NO. 73	
ROADWAY DESIGN ENGINEER SEAL 027373 JOSHUA G. LANCASTER 5/11/2021		HYDRAULICS ENGINEER PROFESSIONAL SEAL 26971 JOSHUA G. DALTON 5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27519 NC License: E-1084		SUNGATE DESIGN GROUP P.A. 105 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 NC License: No. C-26900	

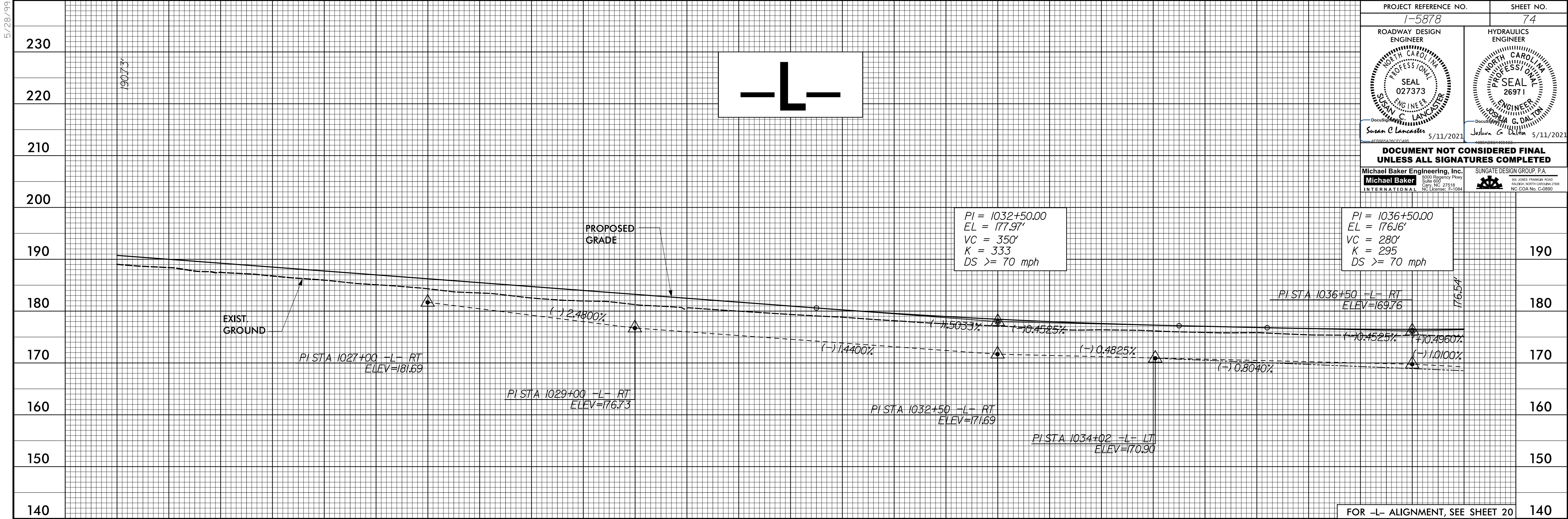
FOR -L- ALIGNMENT, SEE SHEET 19

FOR -L- ALIGNMENT, SEE SHEET 19

5/28/19

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\$\$\$\$\$DSCN0001.MXD\$\$\$\$\$

5/28/19



PROJECT REFERENCE NO.
1-5878

SHEET NO.
74

ROADWAY DESIGN ENGINEER

Susan C. Lancaster
5/11/2021

HYDRAULICS ENGINEER

Joshua G. Dalton
5/11/2021

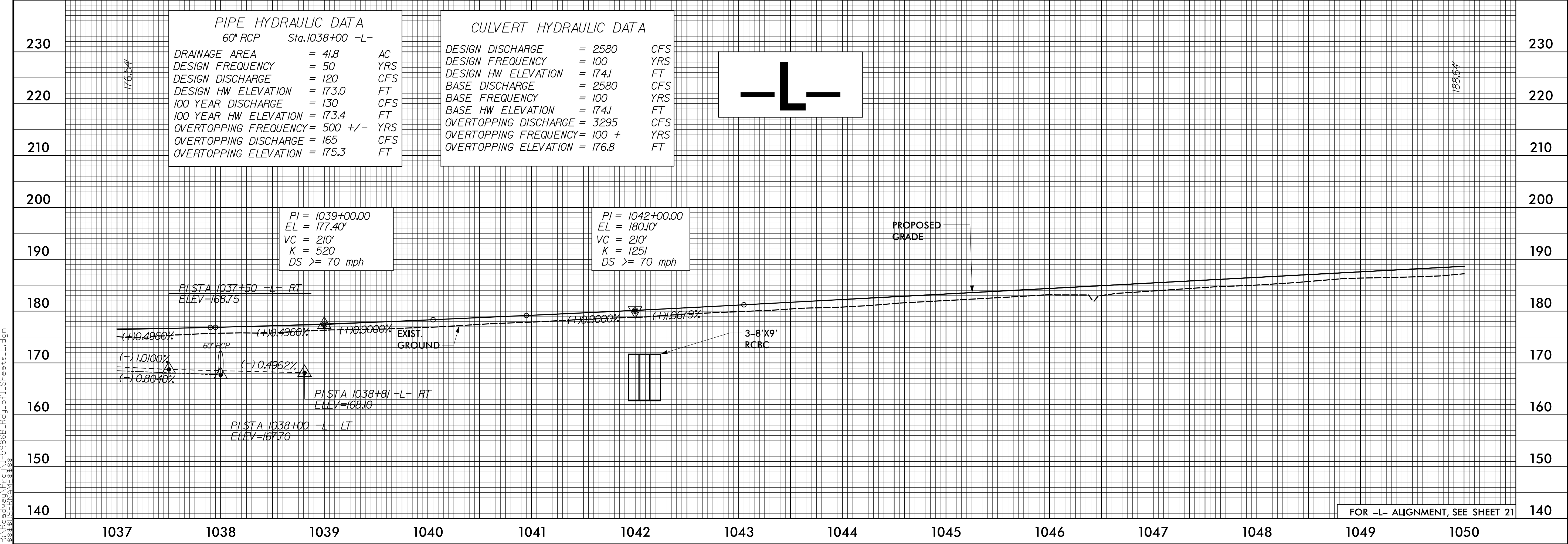
**DOCUMENT NOT CONSIDERED FINAL
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Michael Baker Engineering, Inc.

INTERNATIONAL

SUNGATE DESIGN GROUP P.A.
8000 Regency Place
Suite 600
Cary, NC 27519
NC License: F-1084

PS: MAR-2021 08:14 \\1-5986B_Rdy.pfl_Sheets.L.dgn
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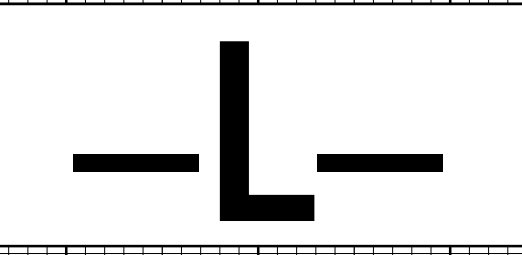


PIPE HYDRAULIC DATA
60" RCP Sta. 1038+00 -L-

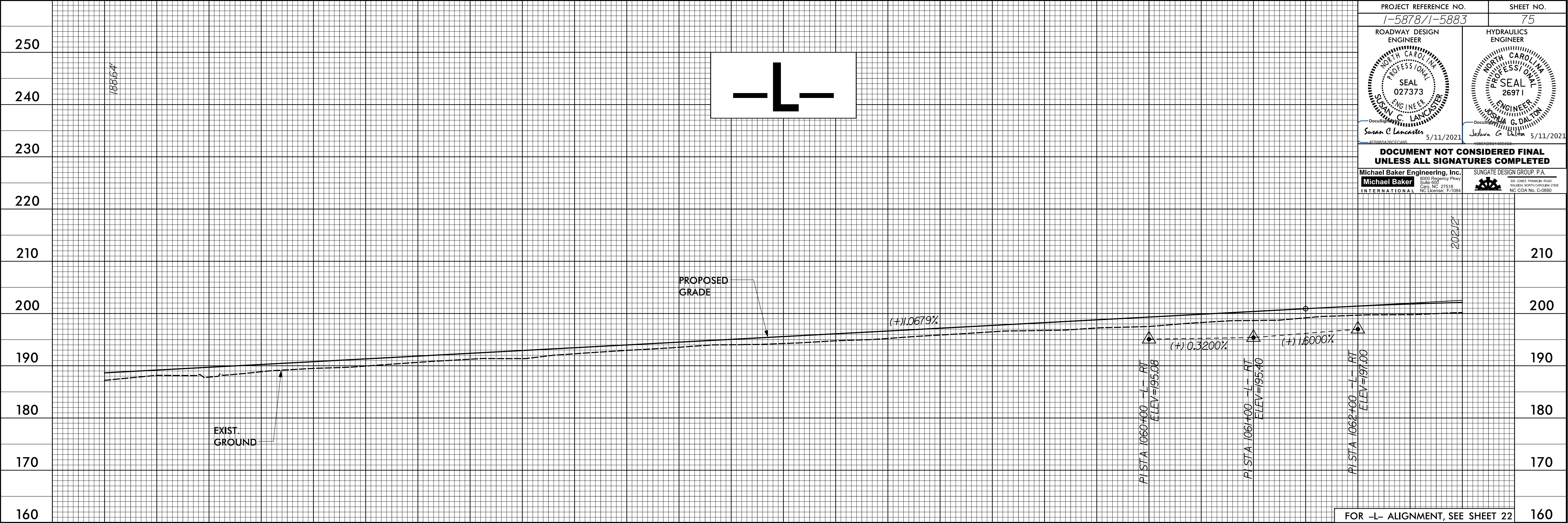
DRAINAGE AREA	= 41.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 173.0	FT
100 YEAR DISCHARGE	= 130	CFS
100 YEAR HW ELEVATION	= 173.4	FT
OVERTOPPING FREQUENCY	= 500 +/-	YRS
OVERTOPPING DISCHARGE	= 165	CFS
OVERTOPPING ELEVATION	= 175.3	FT

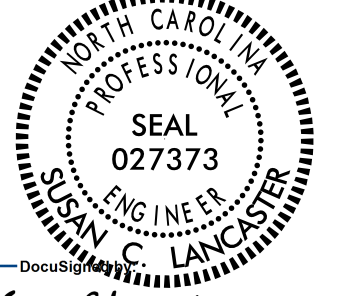
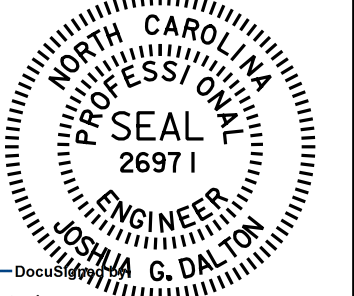
CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 2580	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 174.1	FT
BASE DISCHARGE	= 2580	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 174.1	FT
OVERTOPPING DISCHARGE	= 3295	CFS
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING ELEVATION	= 176.8	FT

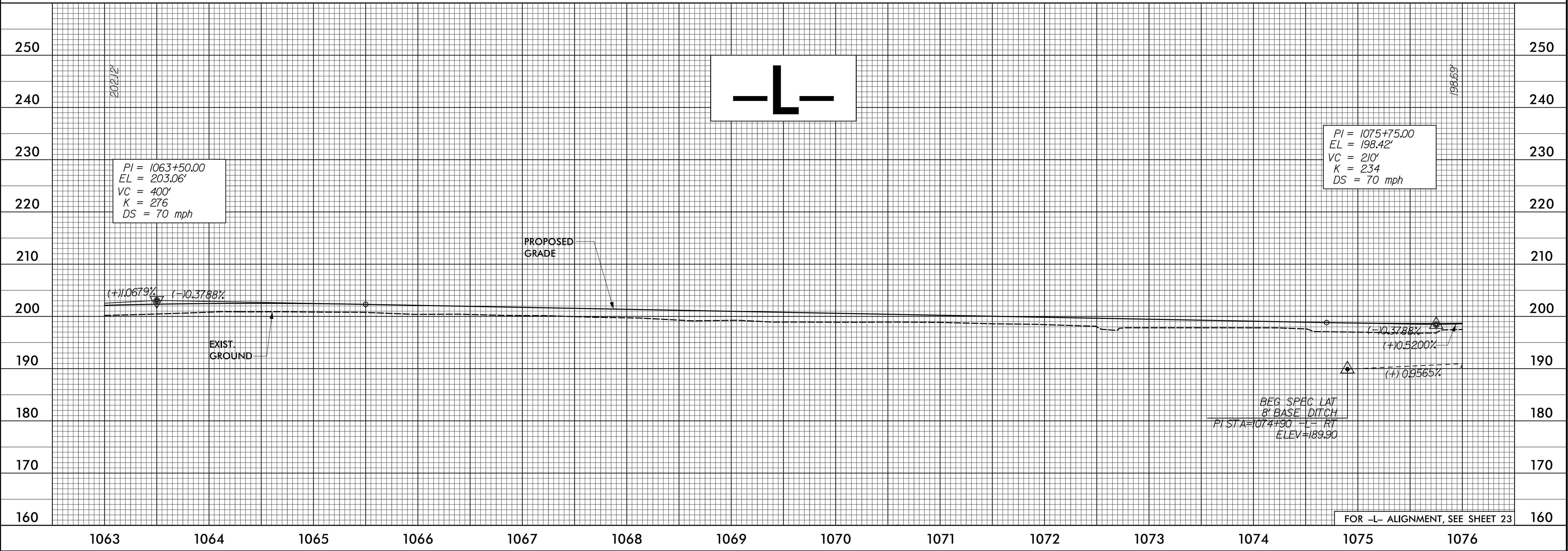


5/28/21



PROJECT REFERENCE NO. 1-5878/1-5883		SHEET NO. 75	
ROADWAY DESIGN ENGINEER  Susan C. Lancaster 5/11/2021		HYDRAULICS ENGINEER  Joshua G. Dalton 5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 500 Cary, NC 27518 NC License: E-1084		SUNGATE DESIGN GROUP, P.A. 800 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 NC CDA No. C-0580	

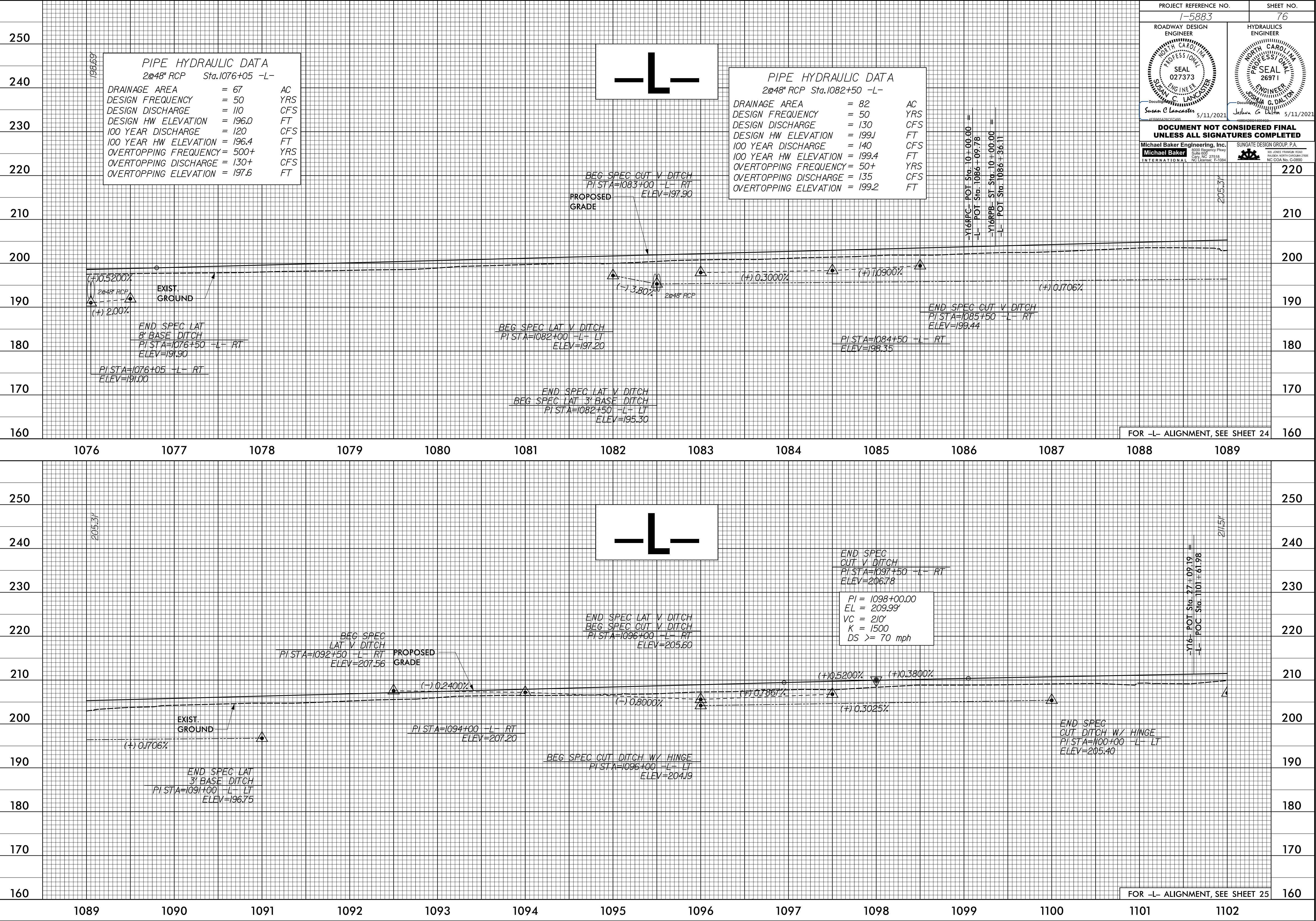
12-MAR-2021 09:08
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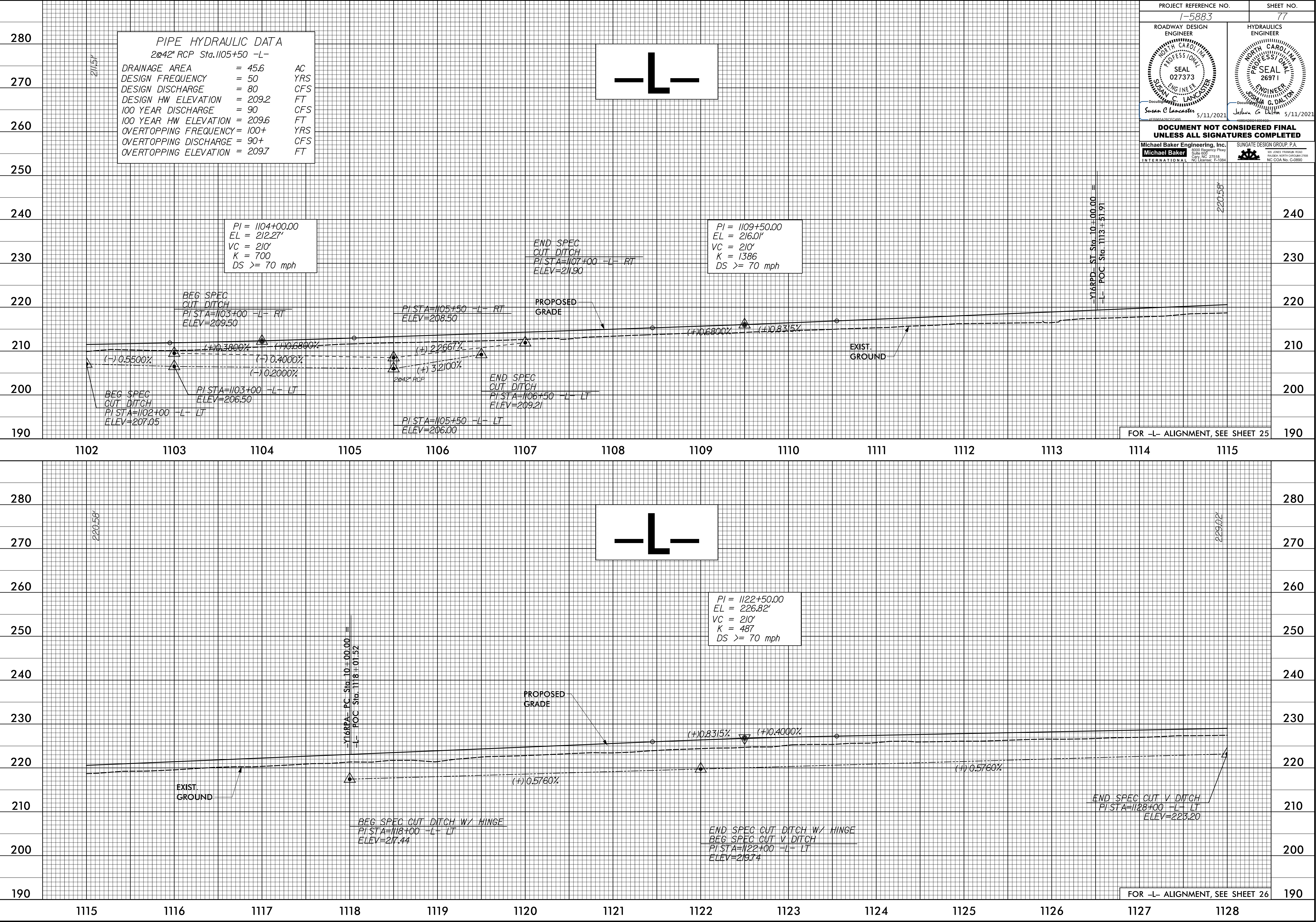
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EL = 198.42'
VC = 210'
K = 234
DS = 70 mph

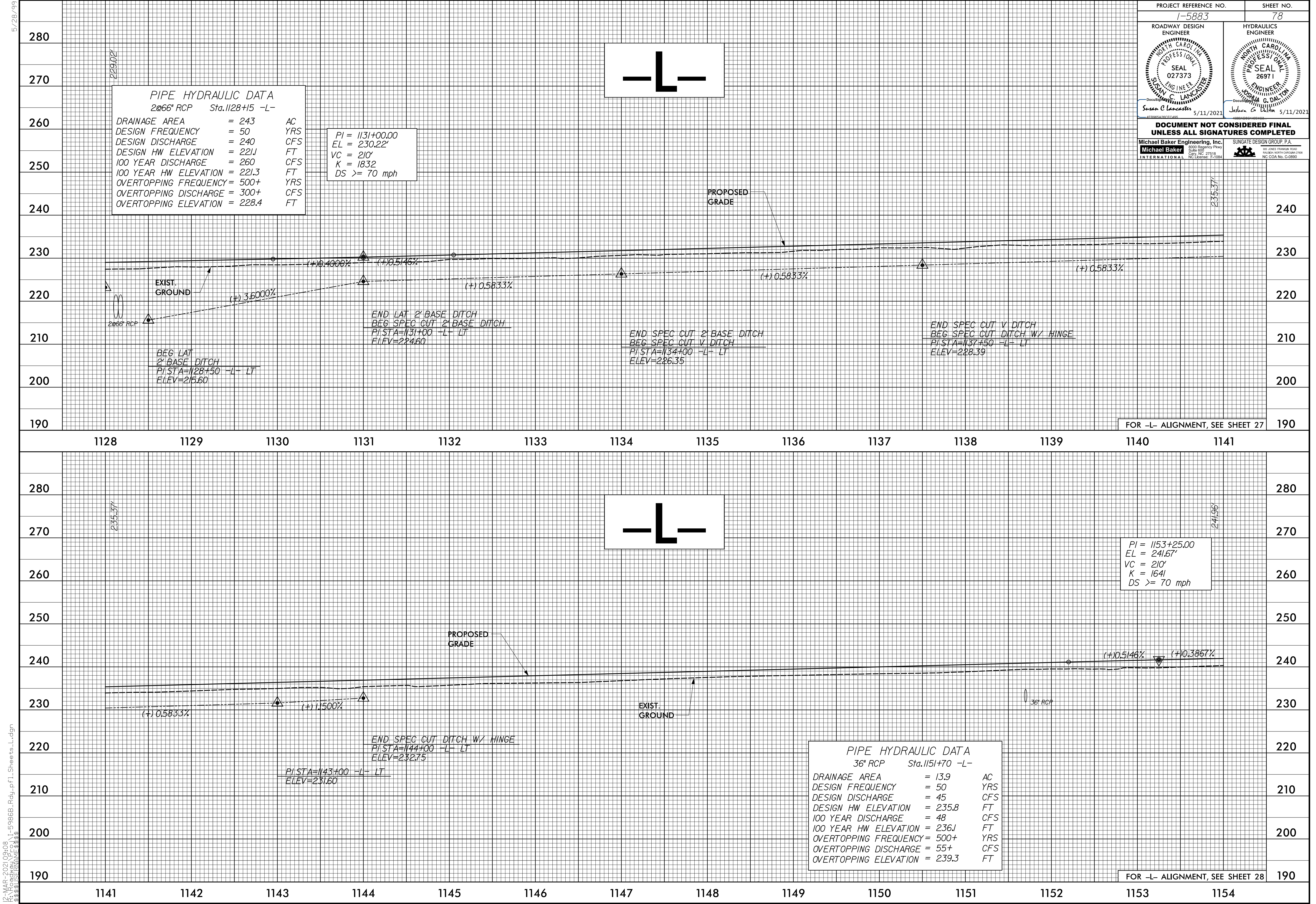
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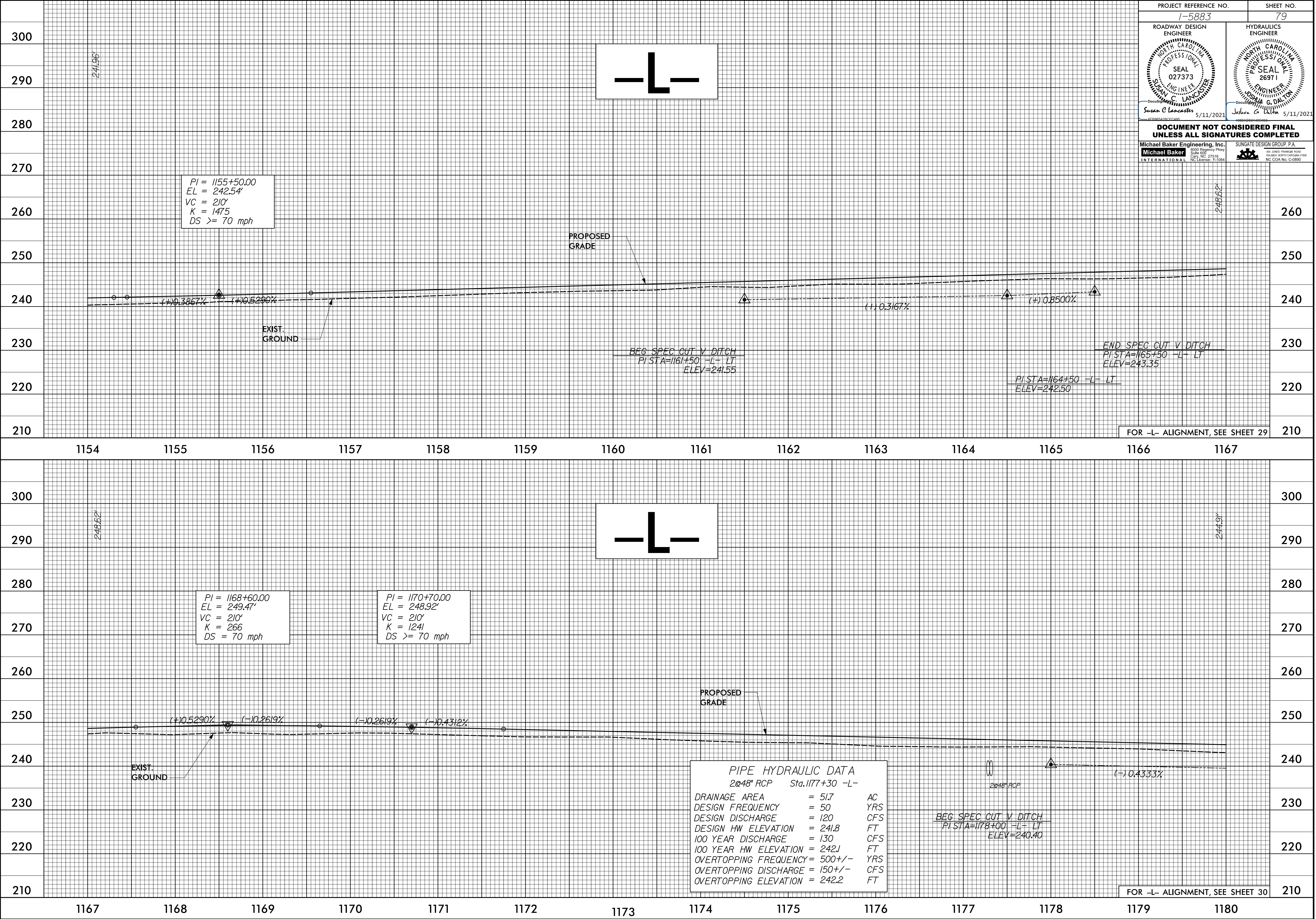


5/28/24
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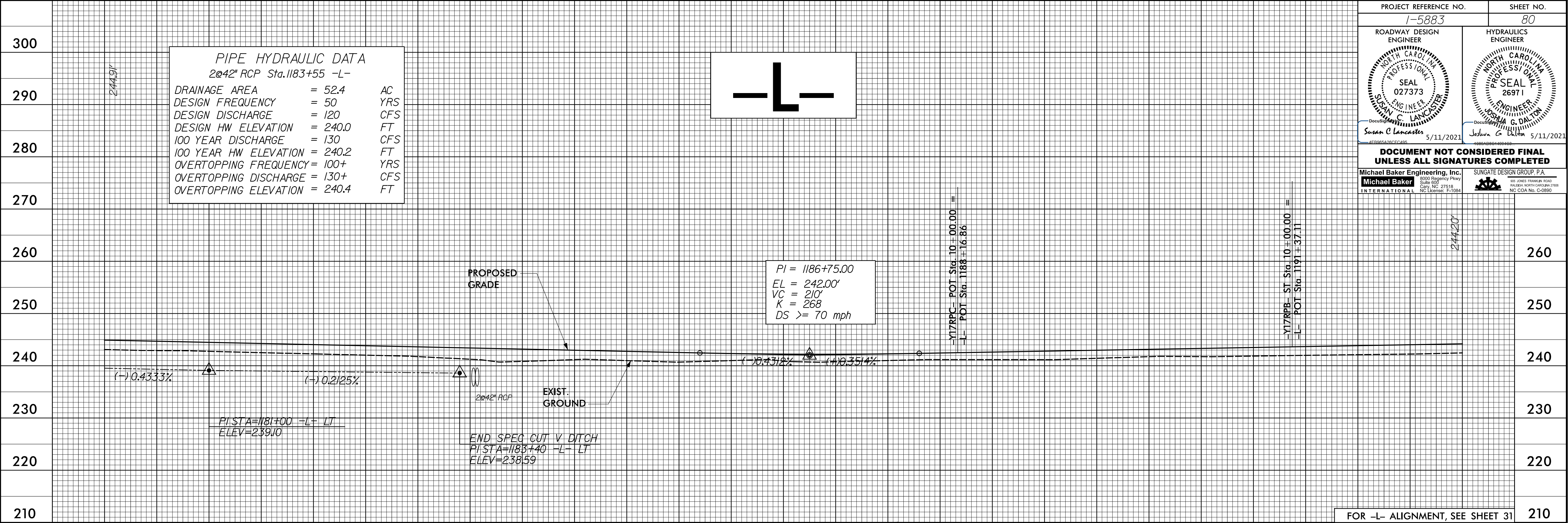




5/28/2019
12-MAR-2021 09:08
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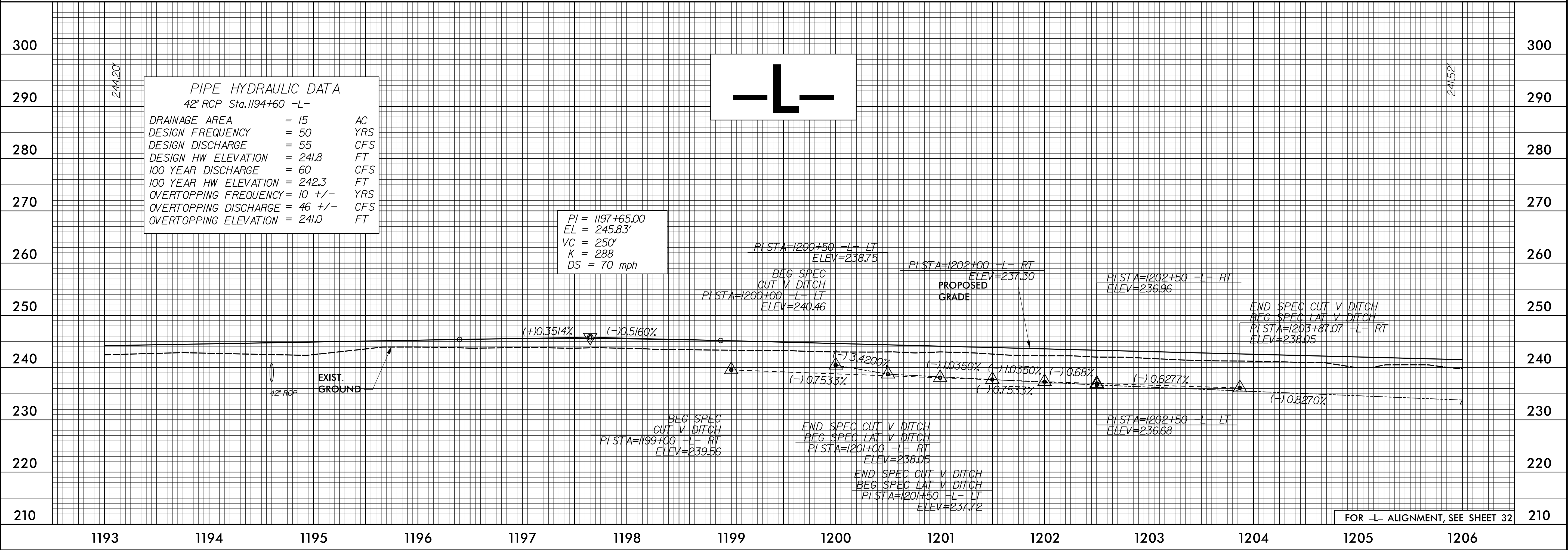


5/28/99

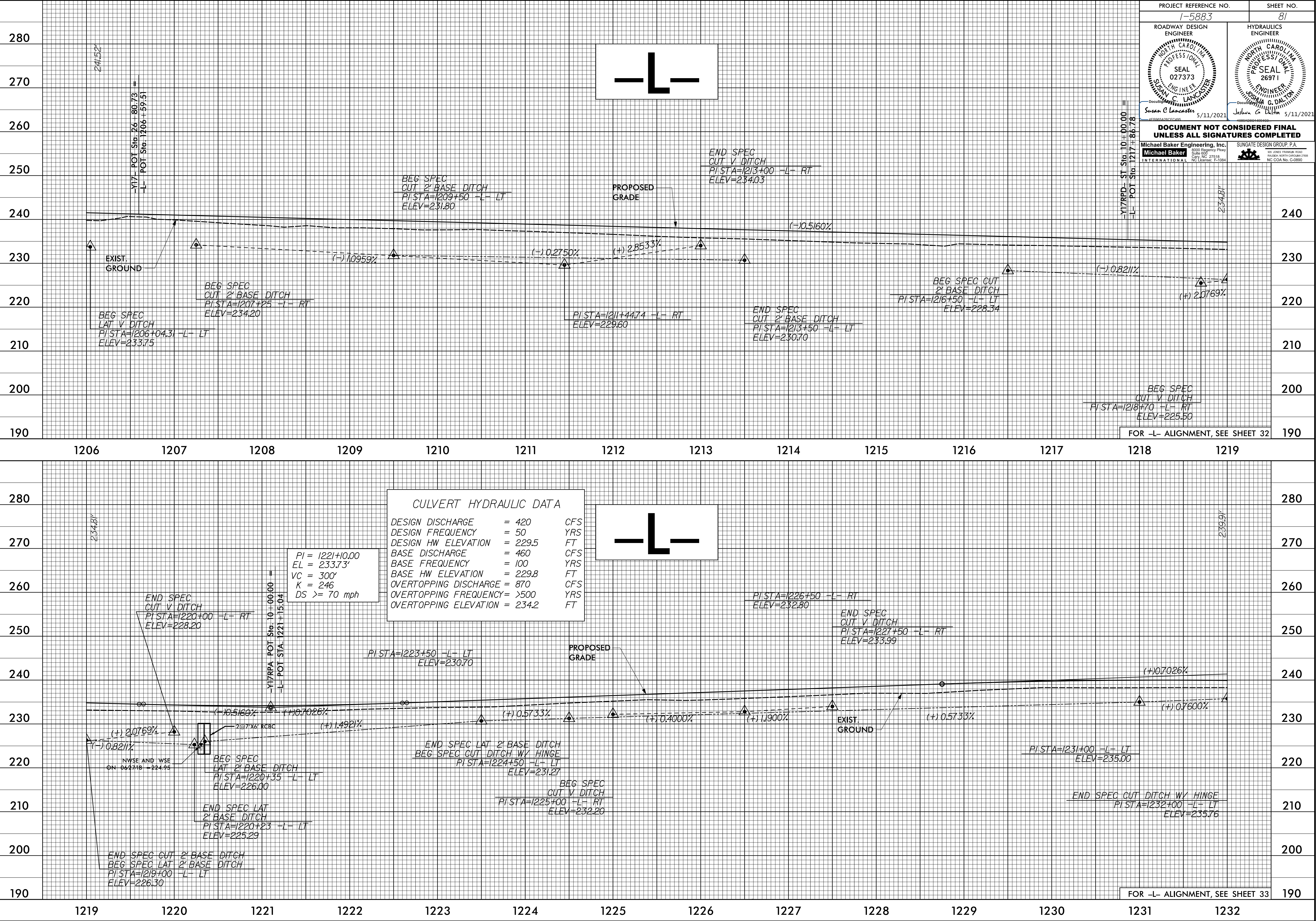


PROJECT REFERENCE NO. 1-5883		SHEET NO. 80	
ROADWAY DESIGN ENGINEER SUSAN C. LANCASTER SEAL 027373 NORTH CAROLINA PROFESSIONAL ENGINEER 5/11/2021		HYDRAULICS ENGINEER JOSHUA G. DIXON SEAL 26971 NORTH CAROLINA PROFESSIONAL ENGINEER 5/11/2021	
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Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: E-1084		SUNGATE DESIGN GROUP, P.A. 800 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 NC CDA No. C-2890	

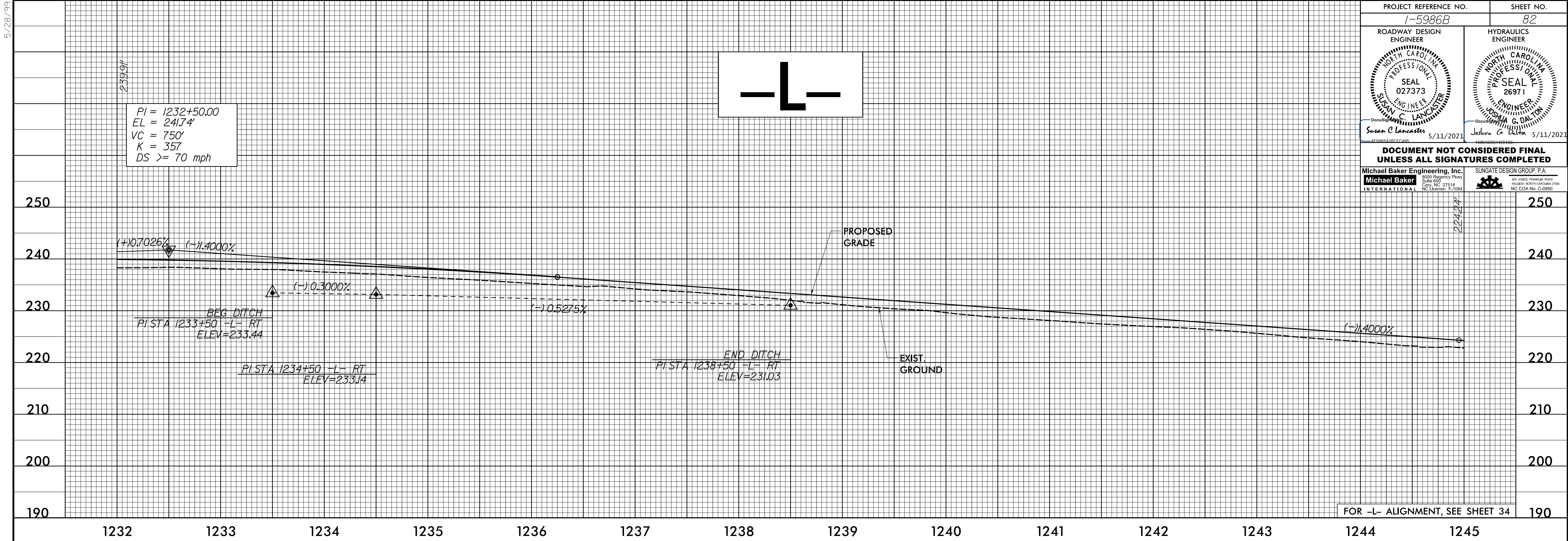
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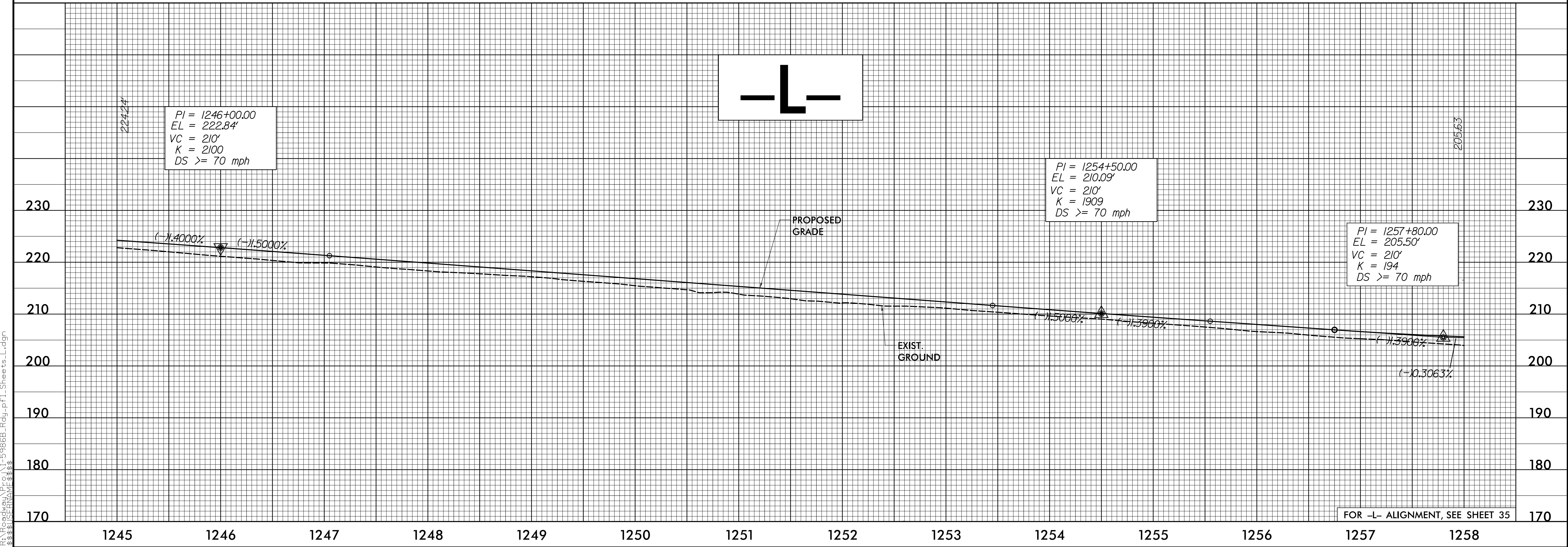
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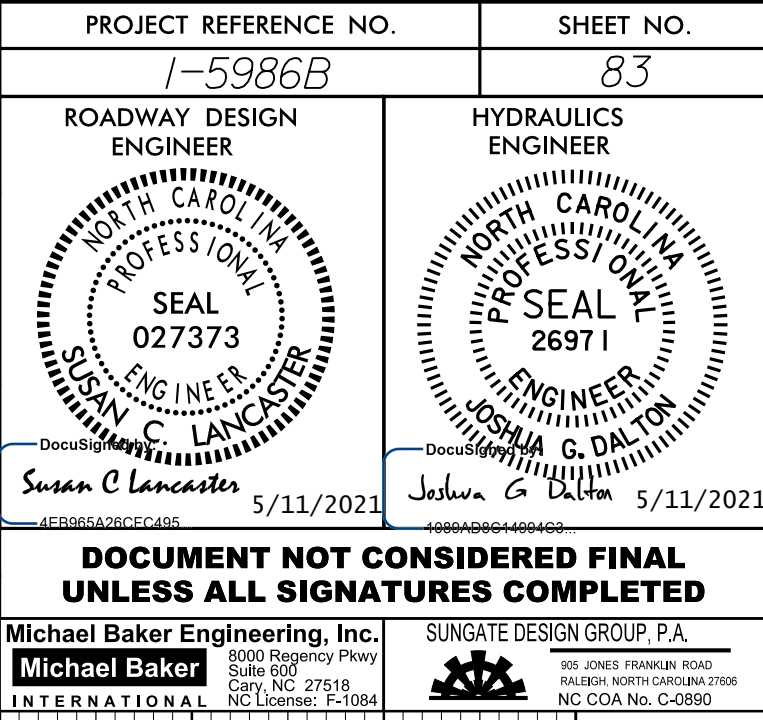


5/28/19

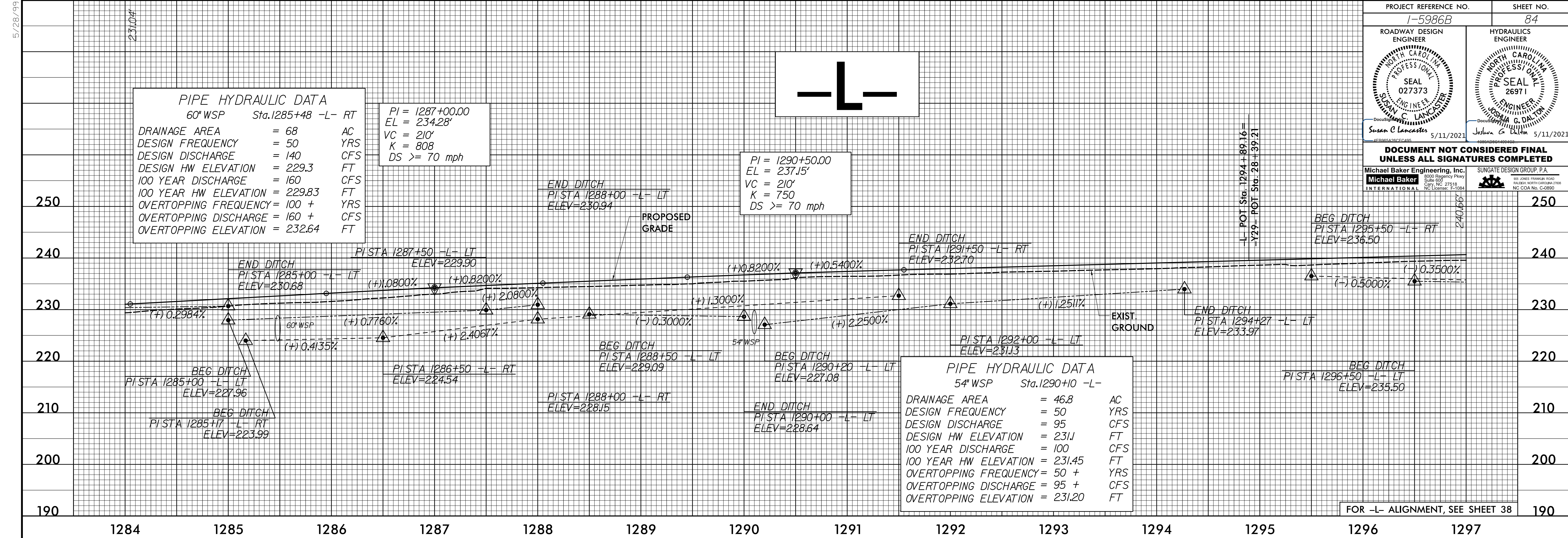


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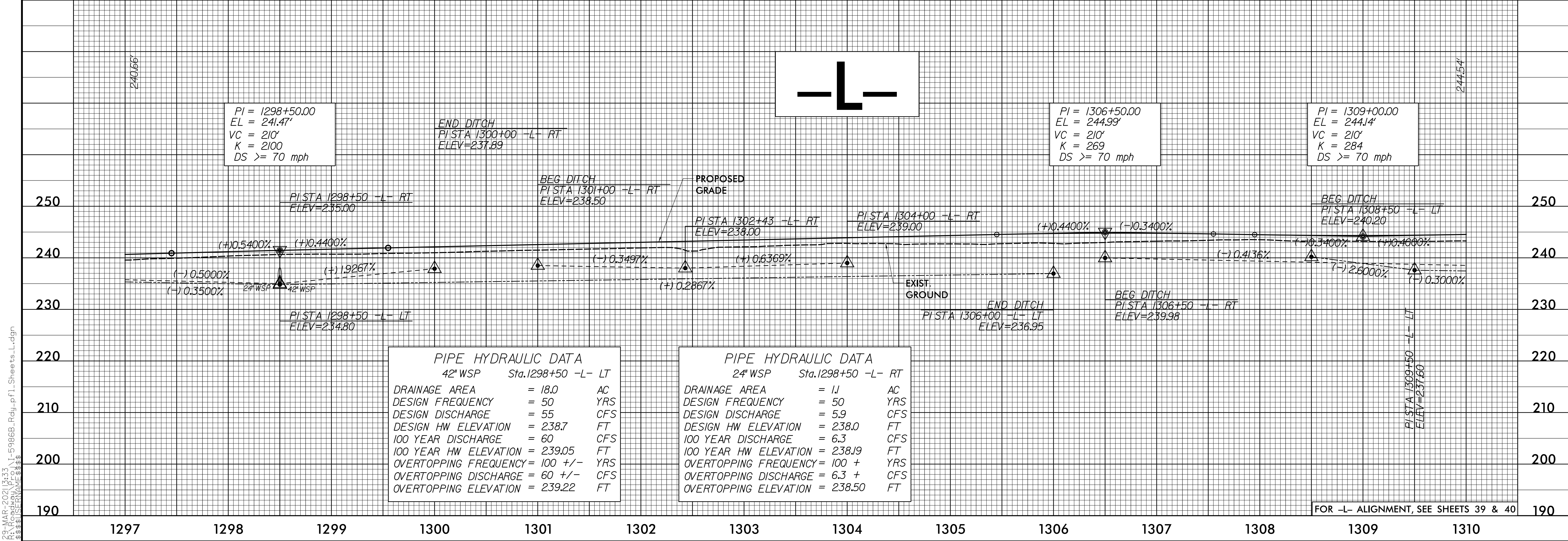


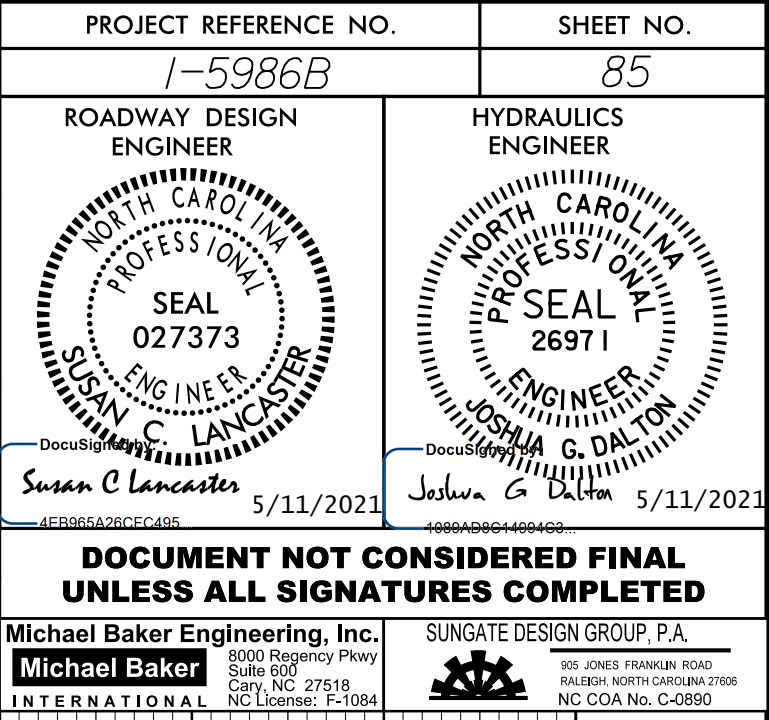


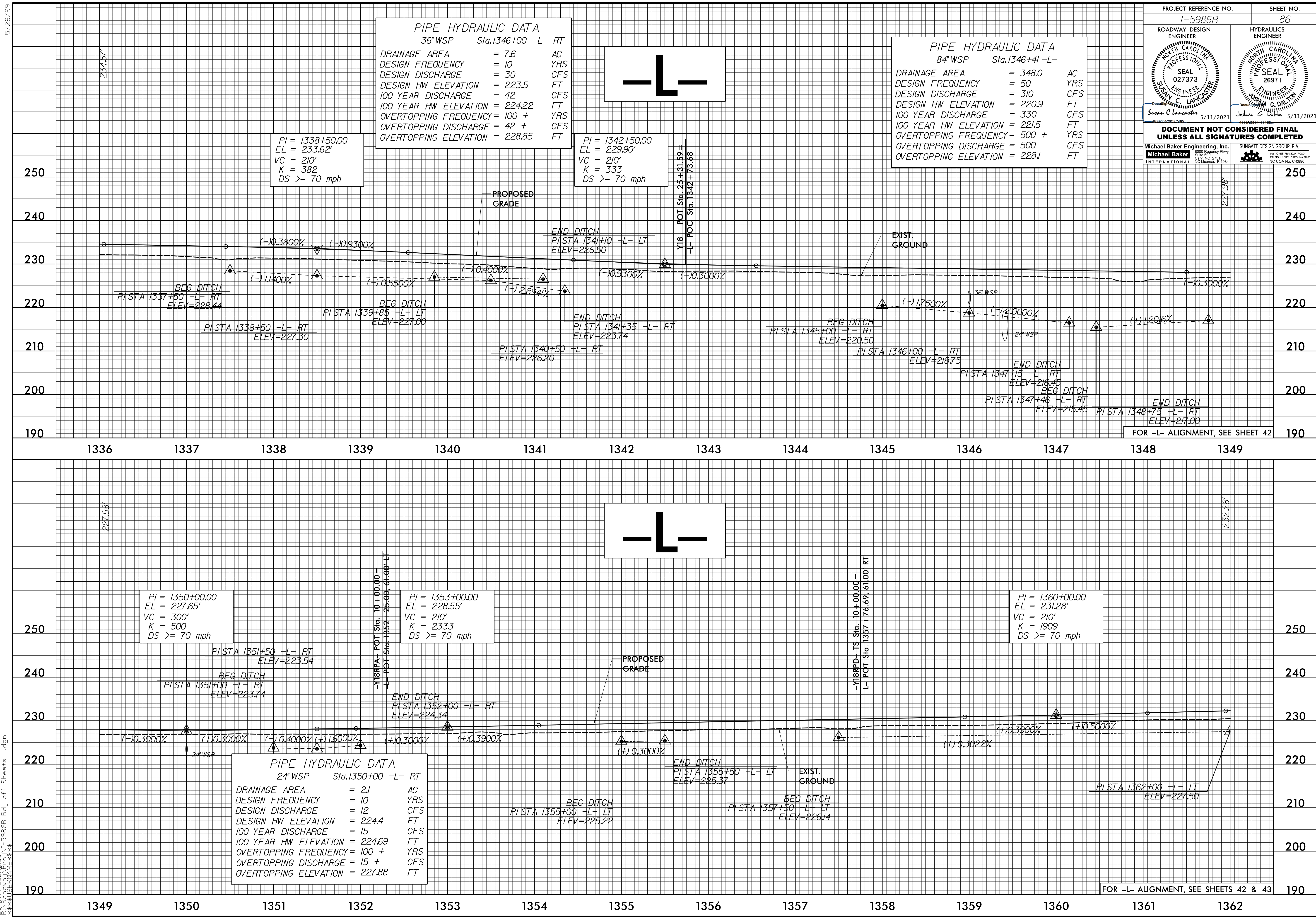
5/28/19



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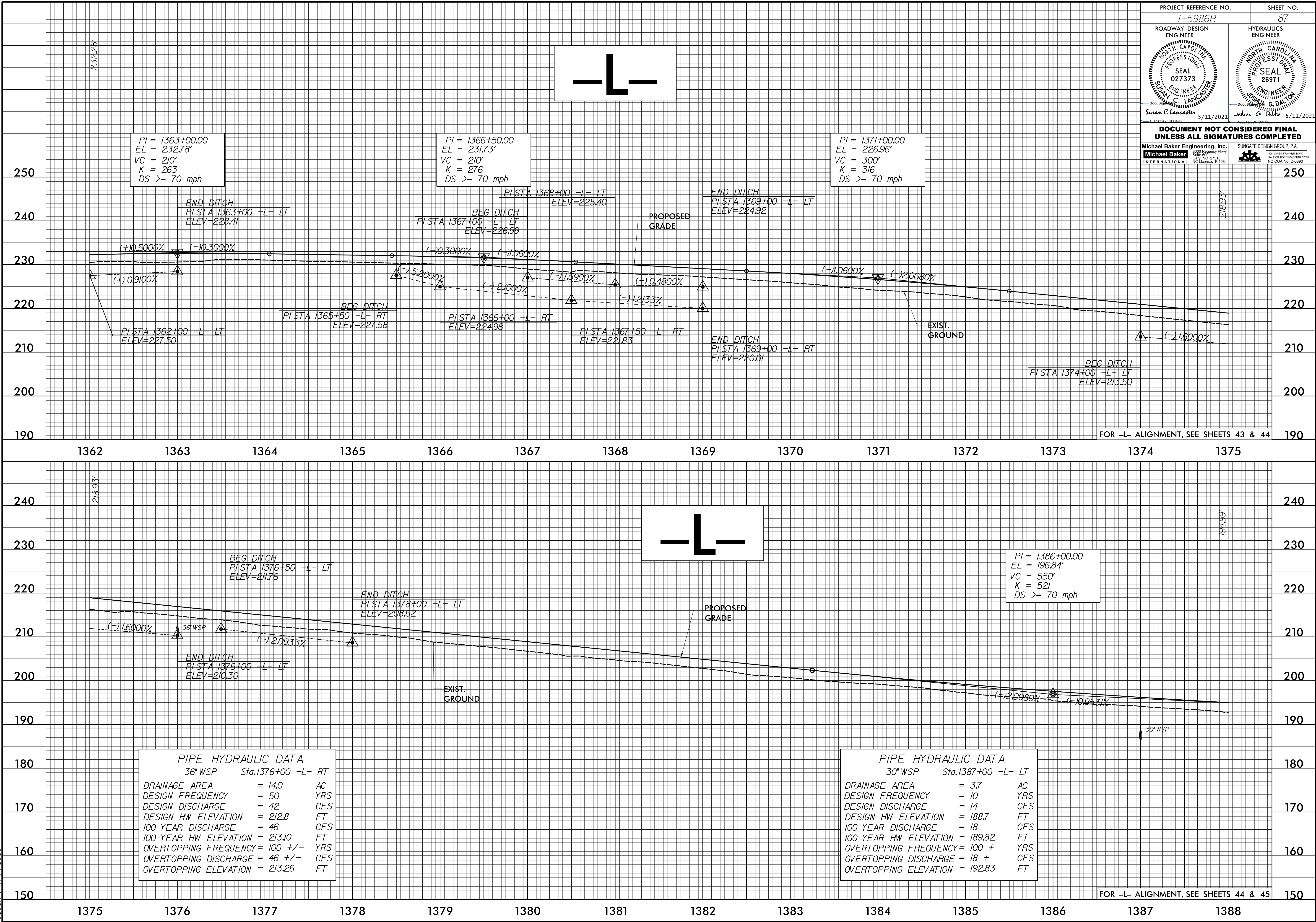


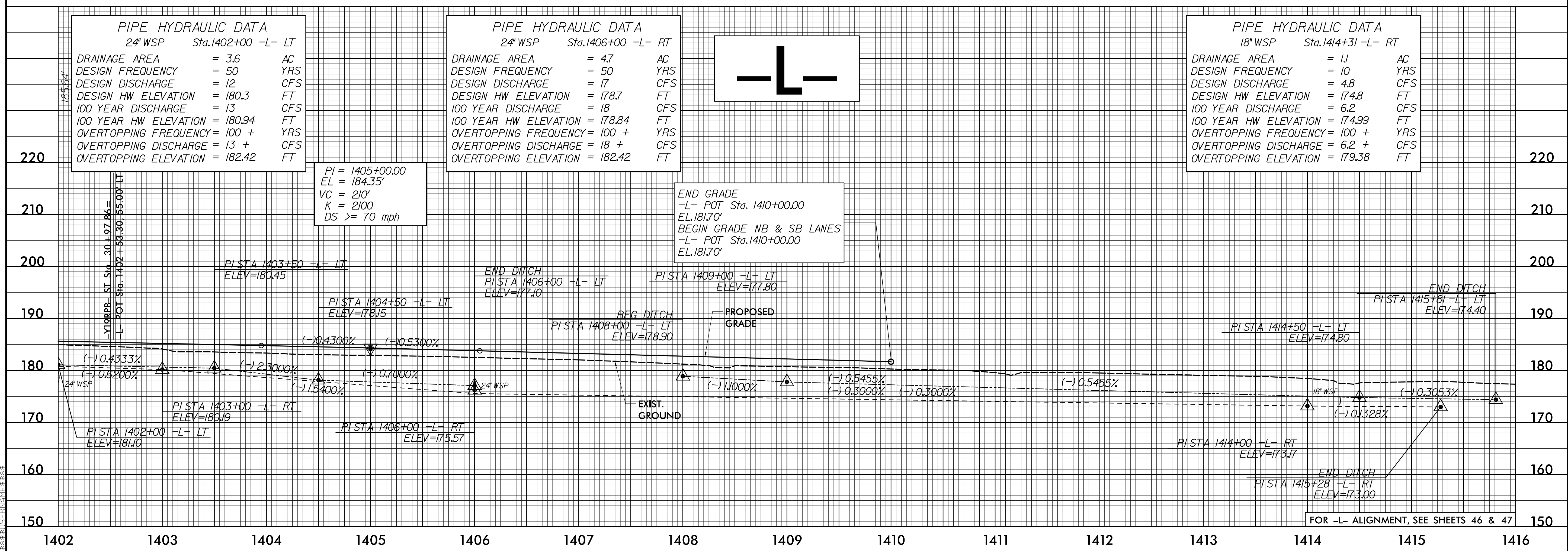
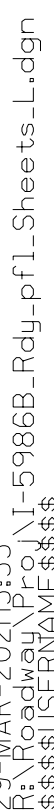
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I-5986B		86
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

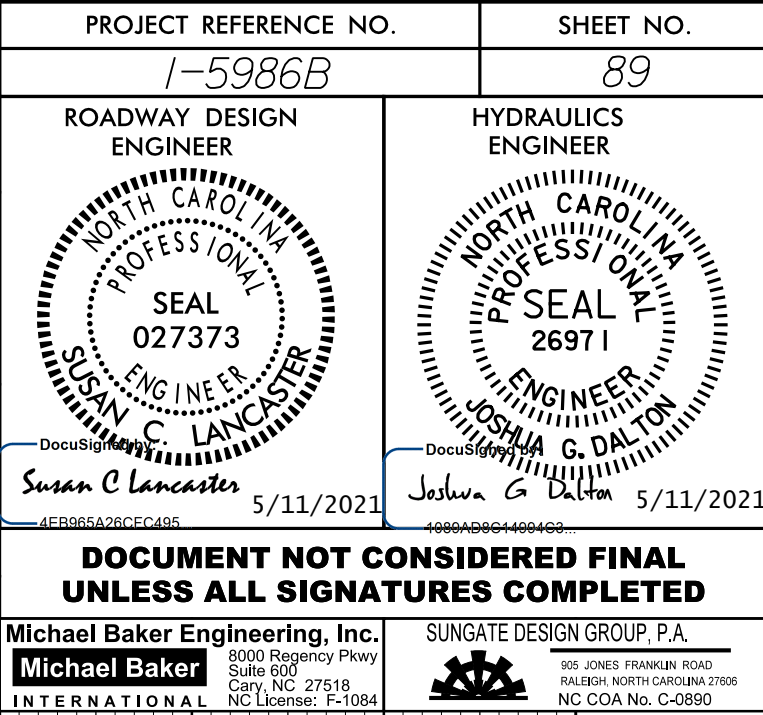
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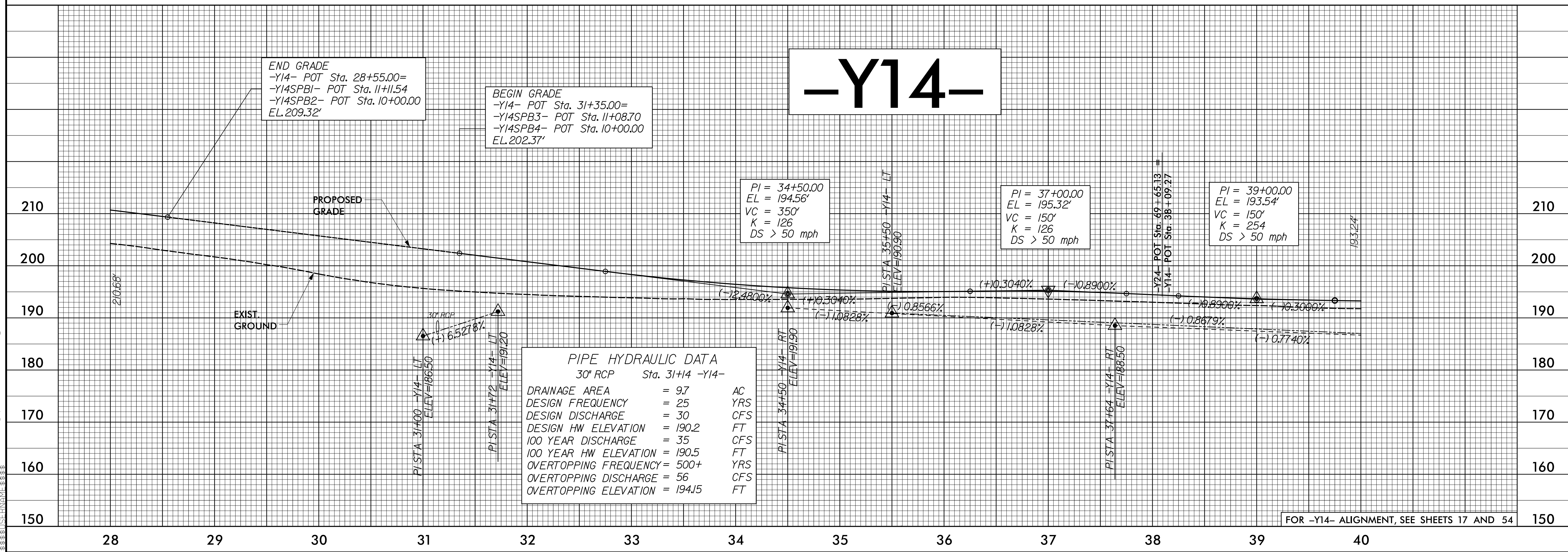
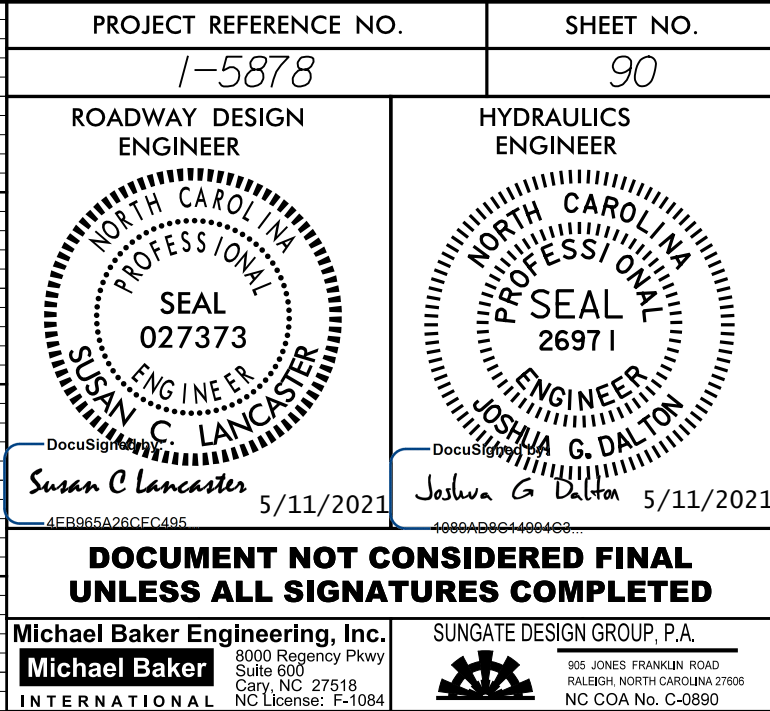
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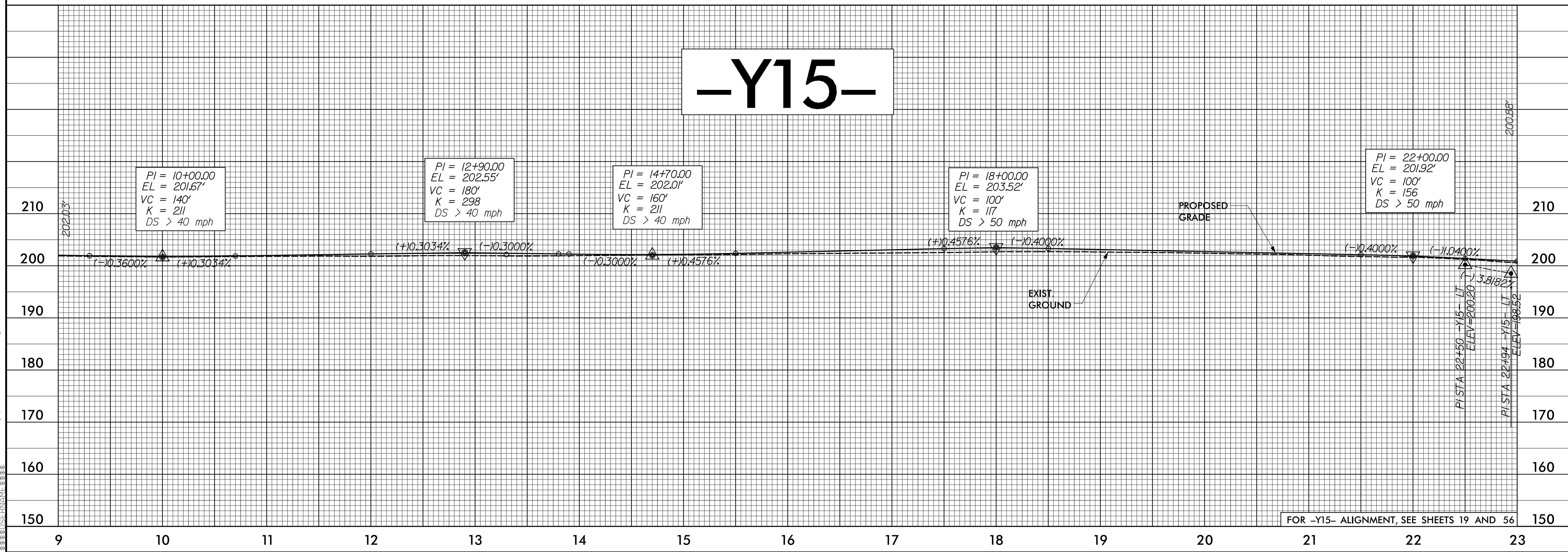
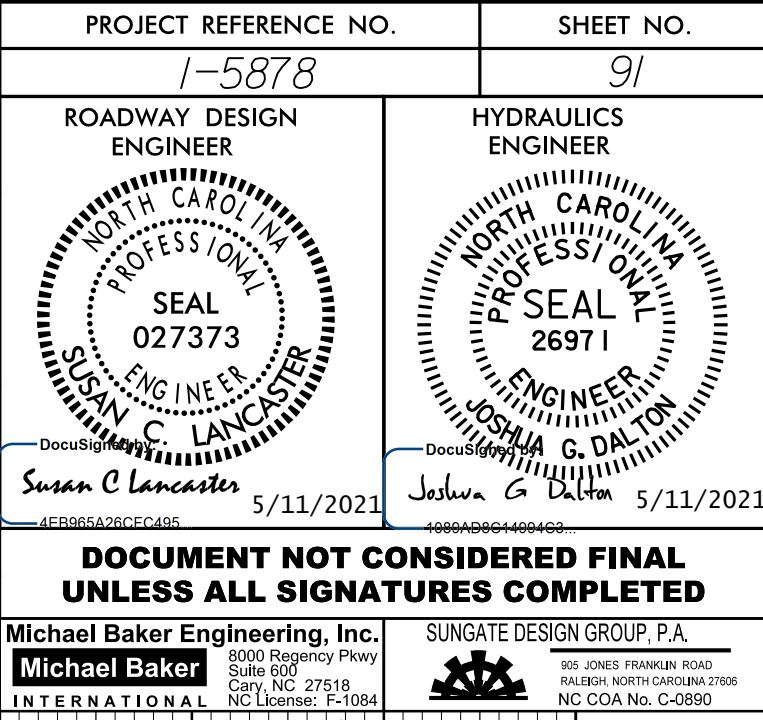
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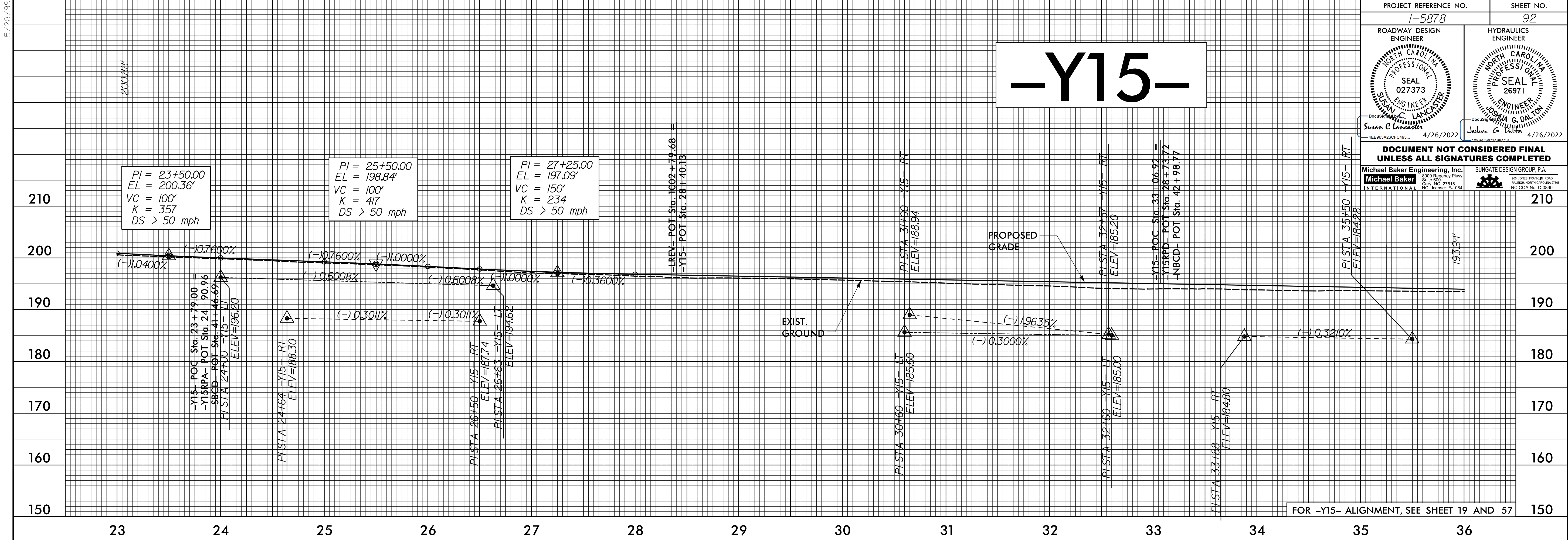






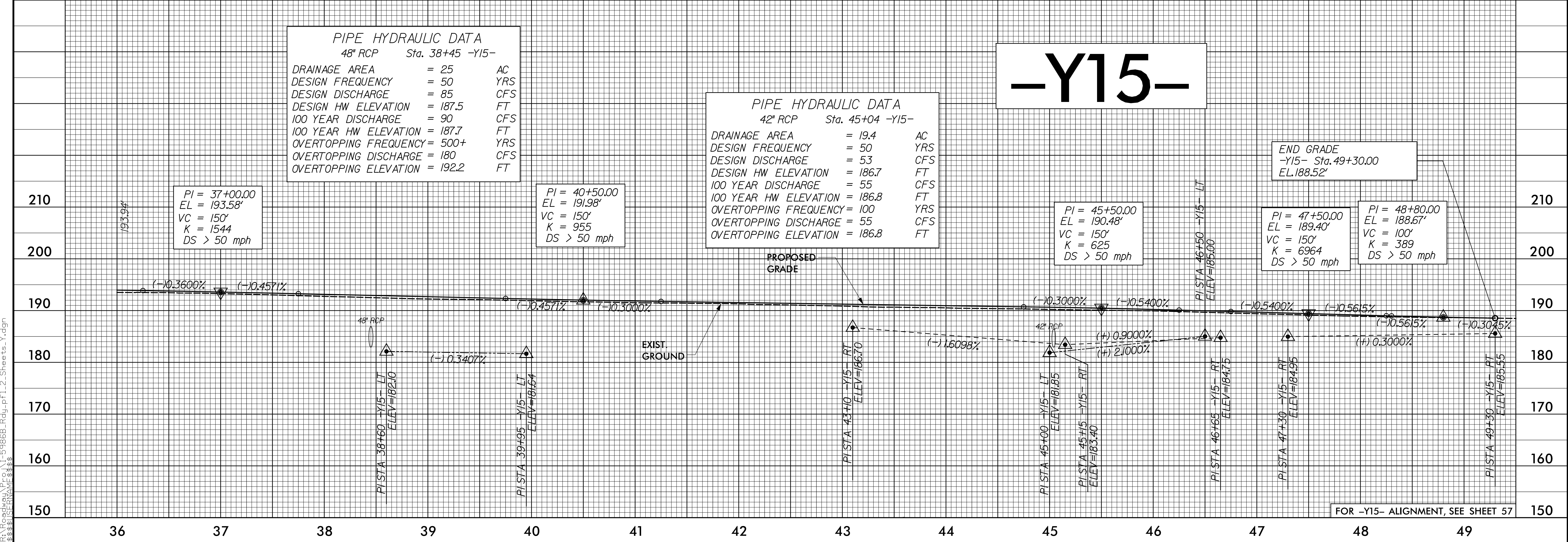


5/28/19



PROJECT REFERENCE NO.		SHEET NO.
1-5878		92
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Susan C. Lancaster	Joshua G. Dalton	
4/26/2022	4/26/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
 Michael Baker INTERNATIONAL	 SUNGATE DESIGN GROUP, P.A.	

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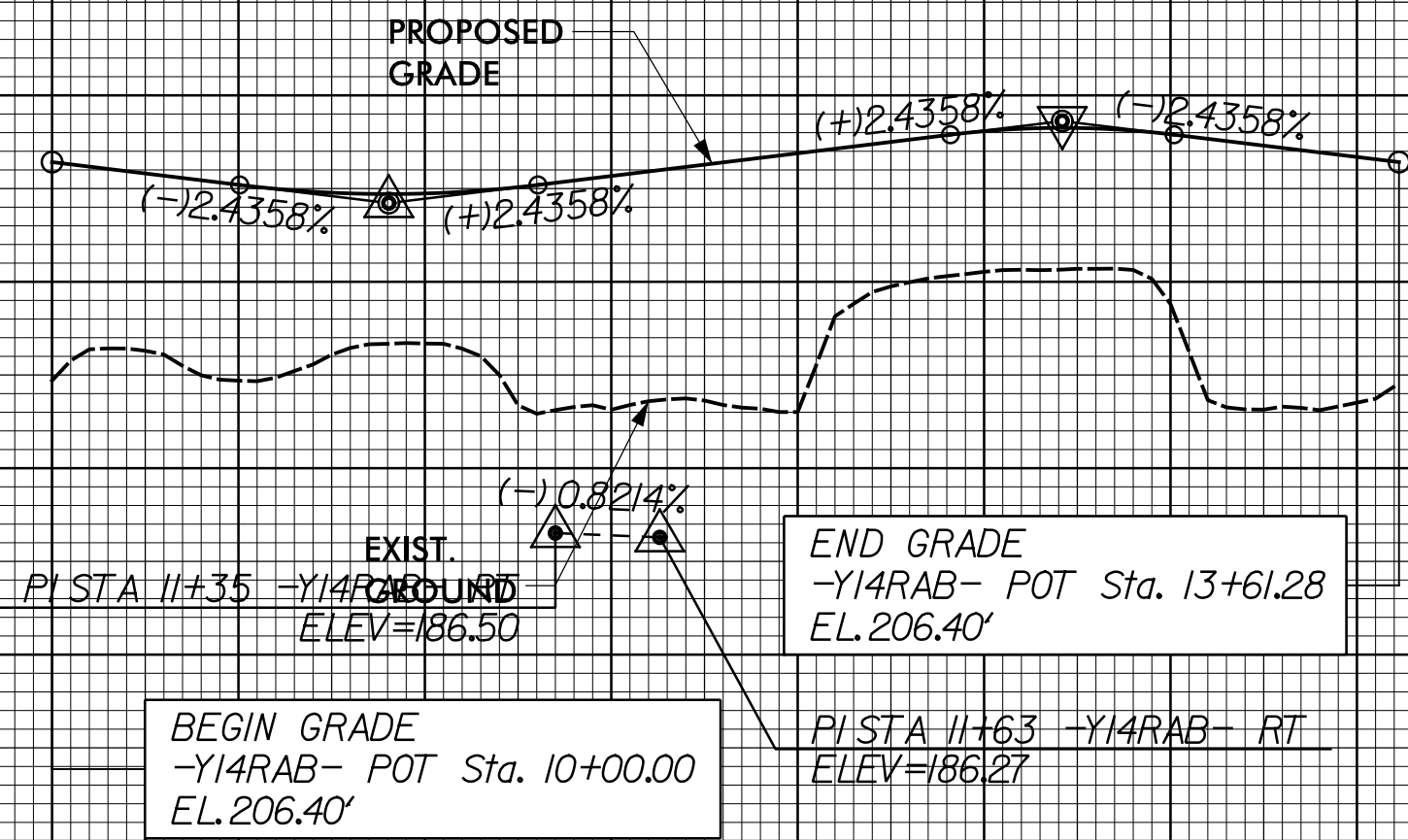


5/28/99

-Y14RAB-

PI = 10+90.32
EL = 204.20'
VC = 80'
K = 16

PI = 12+70.96
VC = 60'
EL = 208.60'
K = 12



FOR -Y14RAB- ALIGNMENT, SEE SHEET 17

-Y14SPB1-

PI = 10+60.00
EL = 207.96'
VC = 35'
K = 19

(+12.4800%)

(+10.8841%) (+12.6833%)

EXIST. GROUND

PI = 11+00.00
EL = 209.03'
VC = 20'
K = 98

END GRADE -Y14SPB1- POT Sta. 11+11.54 EL. 209.32'

BEGIN GRADE -Y14SPB1- POT Sta. 10+41.07= -Y14RAB- POC Sta. 12+55.61 - 17.50' RT. EL. 207.79'

FOR -Y14SPB1- ALIGNMENT, SEE SHEET 17

-Y14SPB2-

PI = 10+10.00
EL = 209.07'
VC = 20'
K = 709

(-12.4800%) (-10.6444%) (-12.5082%)

EXIST. GROUND

PI = 10+55.00
EL = 207.94'
VC = 29'
K = 16

END GRADE -Y14SPB2- POC Sta. 10+69.54= -Y14RAB- POC Sta. 12+80.77 - 17.50' RT. EL. 207.85'

BEGIN GRADE -Y14SPB2- POT Sta. 10+00.00 EL. 209.32'

FOR -Y14SPB2- ALIGNMENT, SEE SHEET 17

-Y14SPB3-

PI = 10+55.00
EL = 204.05'
VC = 20'
K = 16

PI = 10+95.00
EL = 202.71'
VC = 20'
K = 23

(-12.1133%) (-13.3455%) (-12.4800%)

EXIST. GROUND

END GRADE -Y14SPB3- POT Sta. 11+08.70 EL. 202.37'

PI STA 10+89 -Y14SPB3- RT. ELEV=187.05

PI STA 10+80 -Y14SPB3- RT. ELEV=187.09

BEGIN GRADE -Y14SPB3- POC Sta. 10+40.02= -Y14RAB- POC Sta. 10+80.51 - 17.50' RT. EL. 204.37'

FOR -Y14SPB3- ALIGNMENT, SEE SHEET 17

-Y14SPB4-

PI = 10+15.00
EL = 202.74'
VC = 30'
K = 35

(+12.4800%) (+13.3443%) (+12.2732%)

EXIST. GROUND

PI = 10+55.00
EL = 204.08'
VC = 20'
K = 19

END GRADE -Y14SPB4- POC Sta. 10+68.68= -Y14RAB- POC Sta. 11+03.83 - 17.50' RT. EL. 204.39'

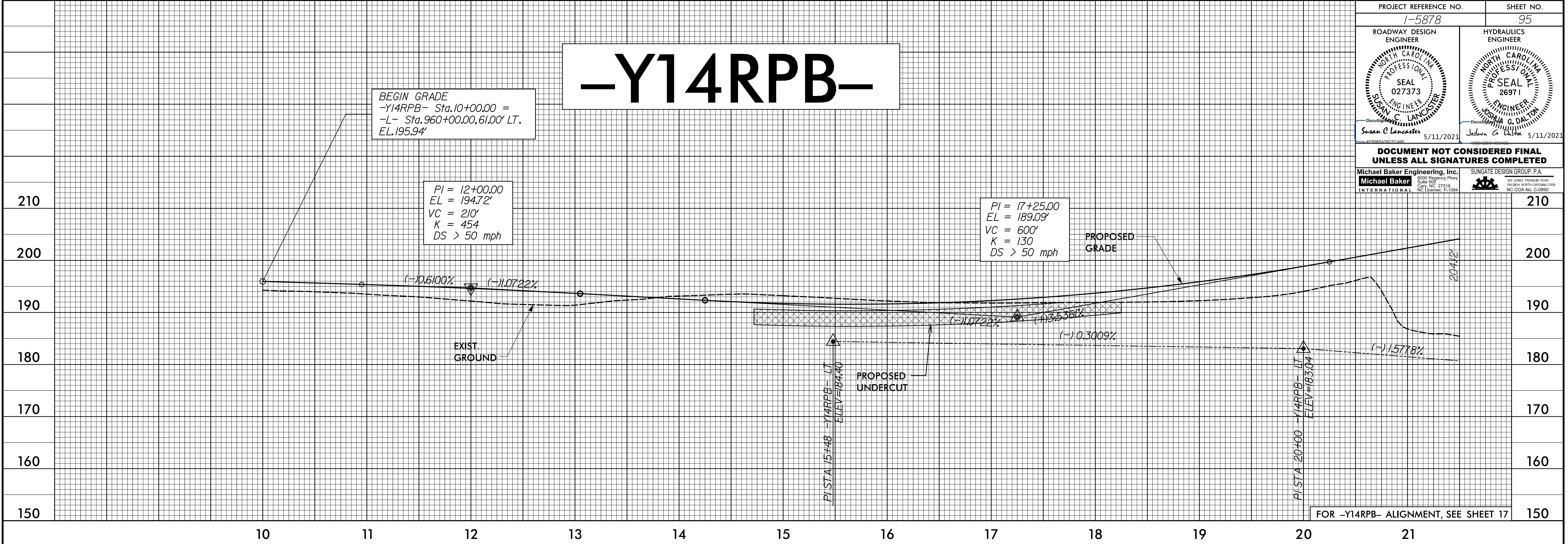
BEGIN GRADE -Y14SPB4- POT Sta. 10+00.00 EL. 202.37'

FOR -Y14SPB4- ALIGNMENT, SEE SHEET 17

PROJECT REFERENCE NO.		SHEET NO.
I-5878		94
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27519 NC License: F-1084		SUNGATE DESIGN GROUP, P.A. 100 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27603 NC License: S-4890

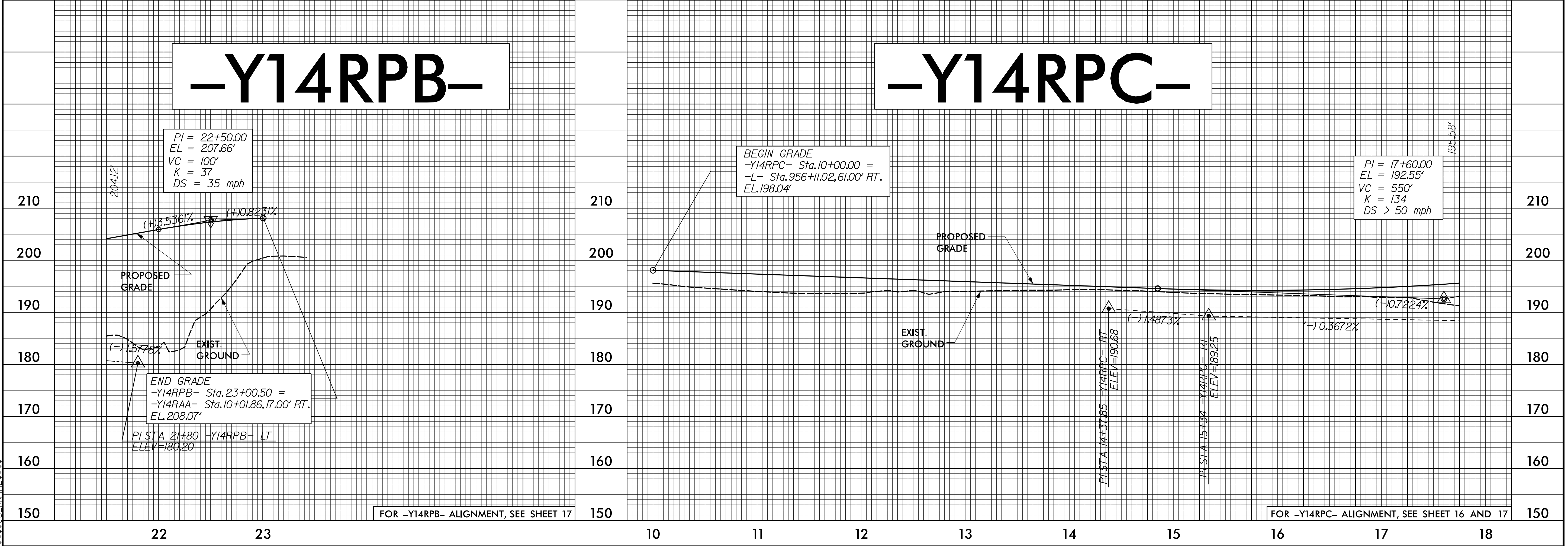
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5/28/19



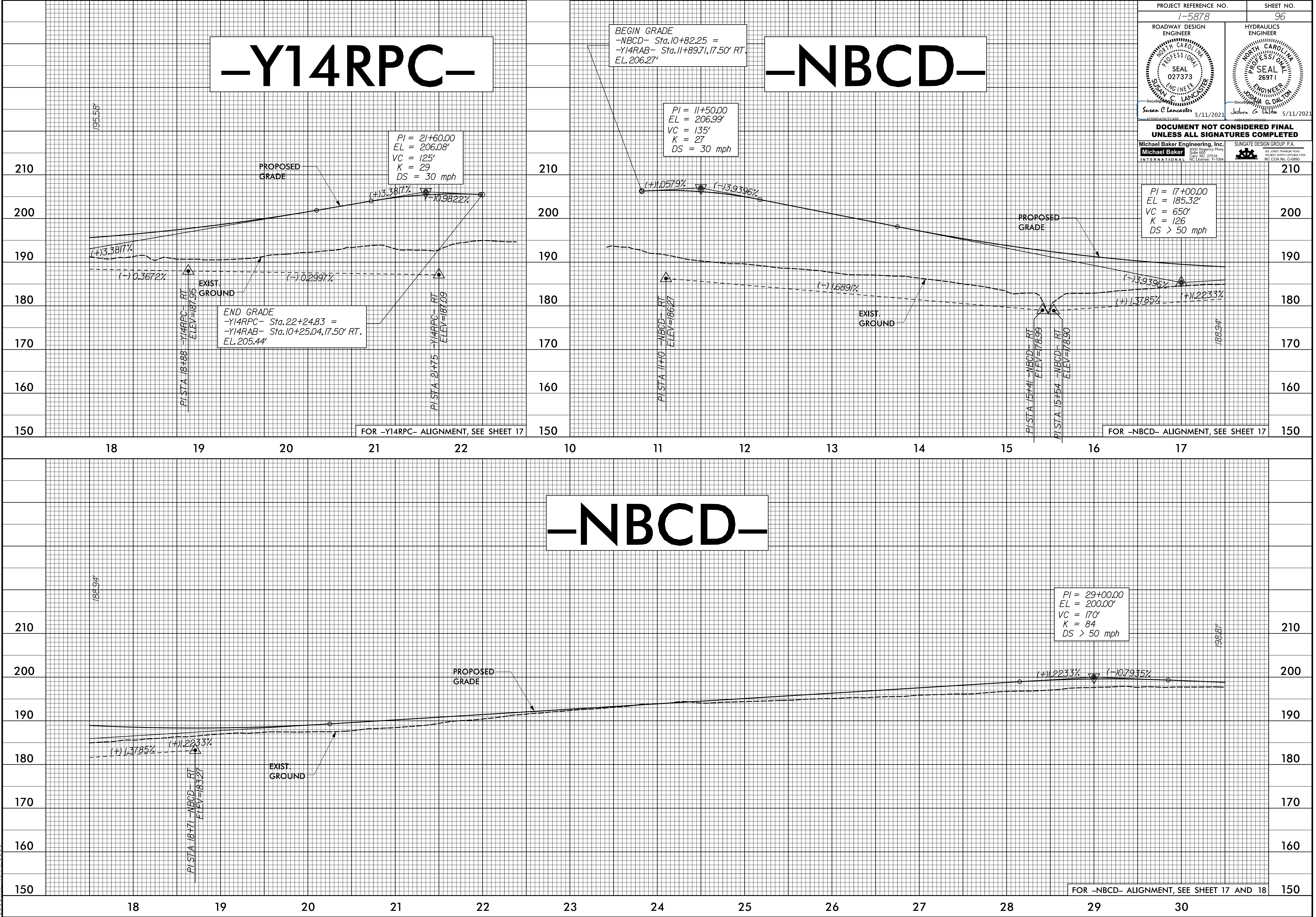
PROJECT REFERENCE NO.		SHEET NO.
1-5878		95
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

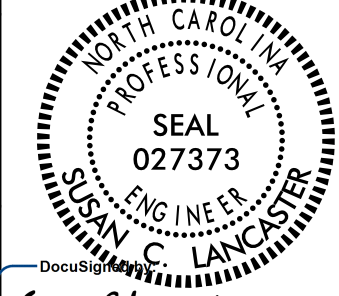
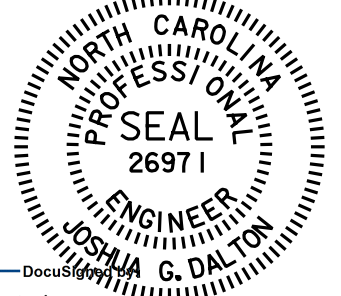
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5/28/19

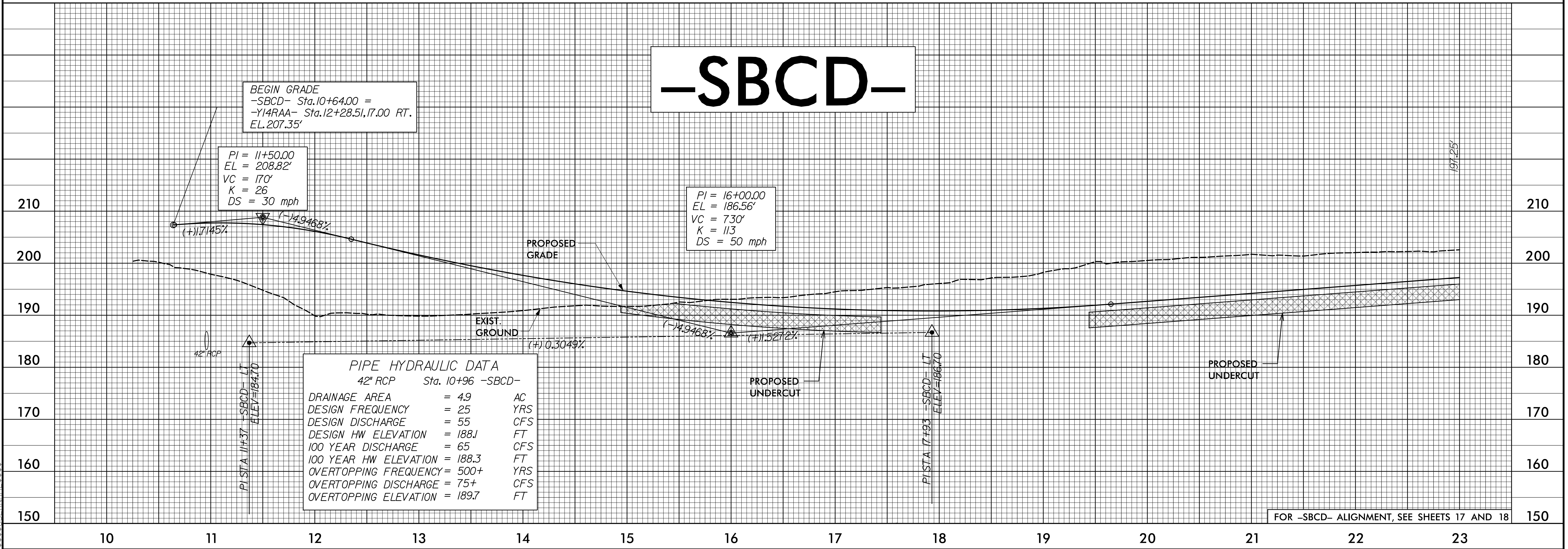
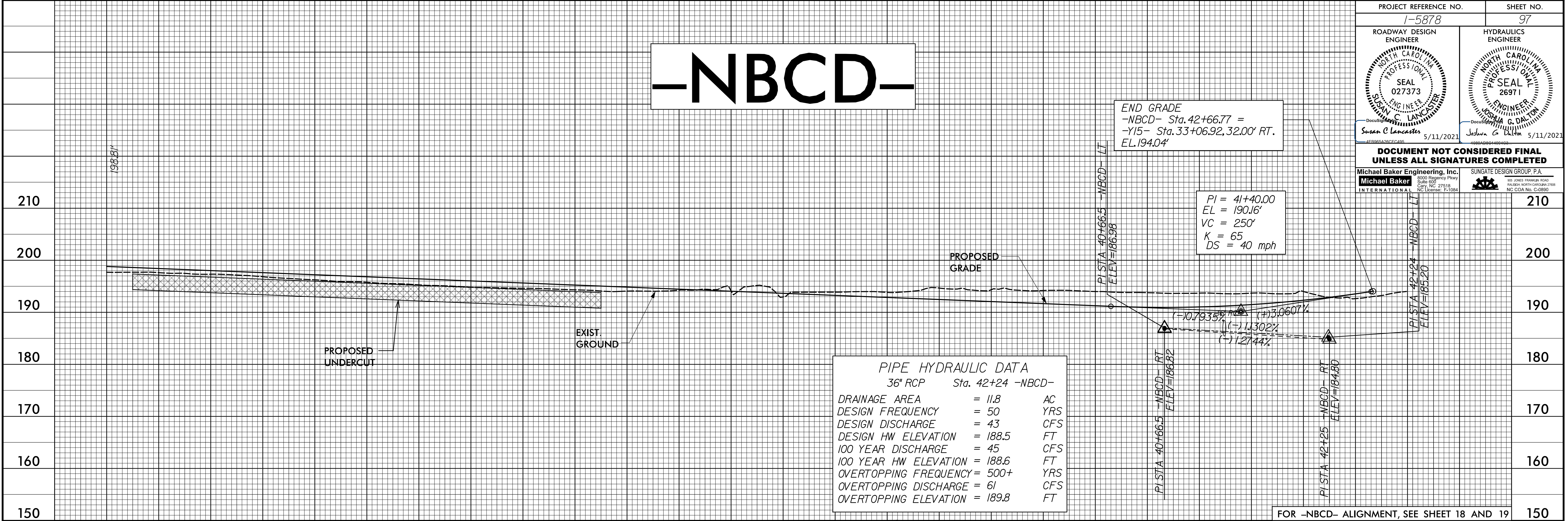
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PROJECT REFERENCE NO.		SHEET NO.	
1-5878		96	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
Susan C. Lancaster		Joshua G. Dalton	
5/11/2021		5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Cary, NC 27519 NC License No. C-4890		SUNGATE DESIGN GROUP, P.A. 105 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27603 NC License No. C-4890	

5/28/19

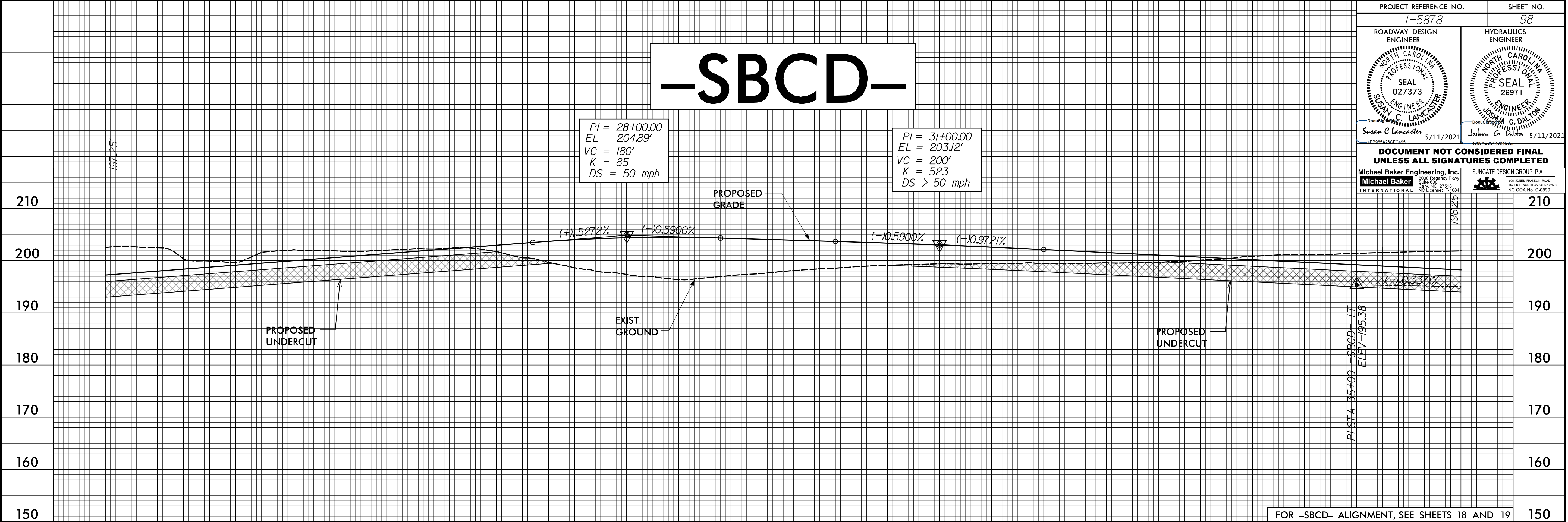
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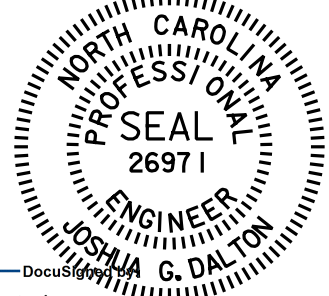


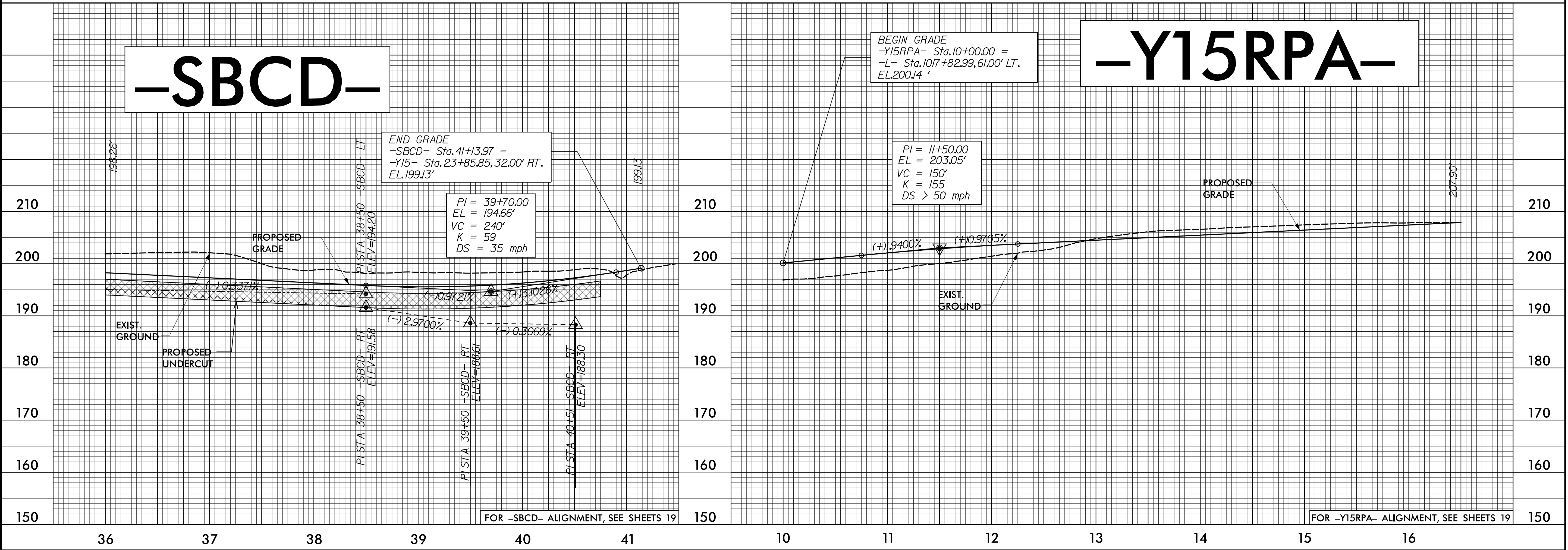
PROJECT REFERENCE NO.		SHEET NO.	
1-5878		97	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Susan C. Lancaster 5/11/2021		Joshua G. Dalton 5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Place Suite 600 Cary, NC 27519 NC License: F-1084		SUNGATE DESIGN GROUP, P.A. 105 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 NC License: No. S-4890	

5/28/21

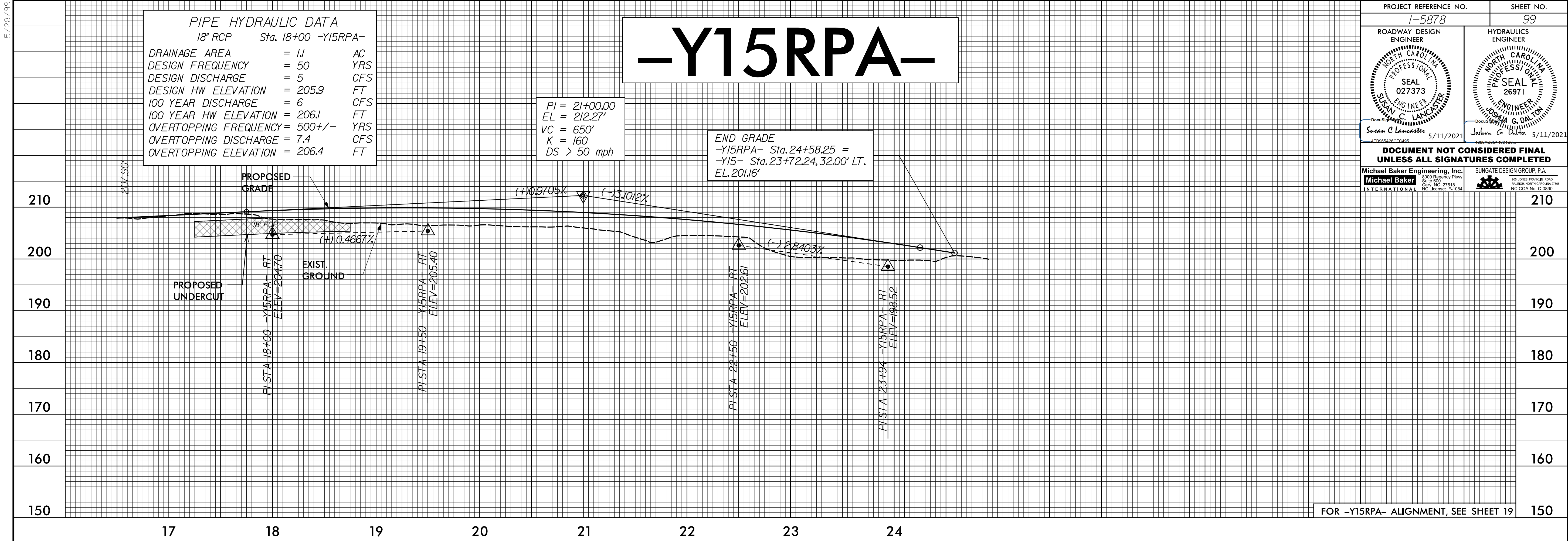
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\$\$\$\$\$DSCN0001-0888\$



PROJECT REFERENCE NO. 1-5878		SHEET NO. 98	
ROADWAY DESIGN ENGINEER  Susan C. Lancaster 5/11/2021		HYDRAULICS ENGINEER  Joshua G. Dalton 5/11/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 Michael Baker INTERNATIONAL		 SUNGATE DESIGN GROUP, P.A.	

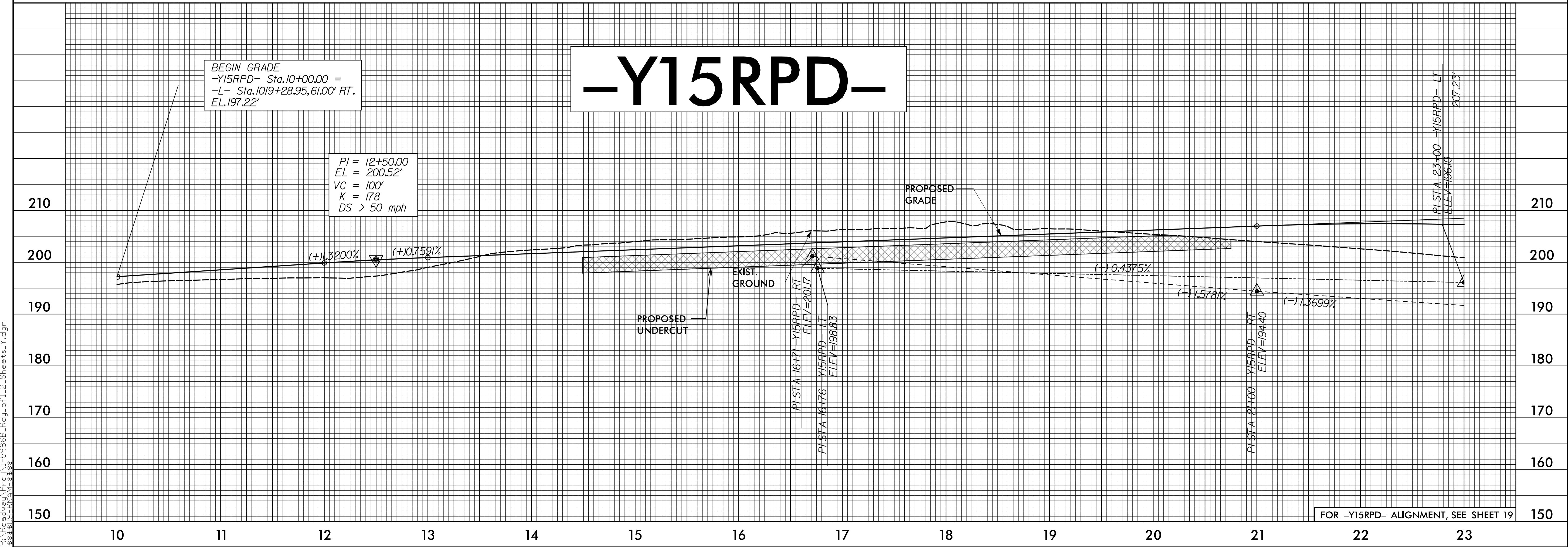


5/28/19



PROJECT REFERENCE NO.		SHEET NO.
1-5878		99
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Susan C. Lancaster	5/11/2021	Joshua G. Dalton 5/11/2021
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PROJECT REFERENCE NO.
I-5878

SHEET NO.
100

ROADWAY DESIGN ENGINEER

Susan C. Lancaster
5/11/2021

HYDRAULICS ENGINEER

Joshua G. Dalton
5/11/2021

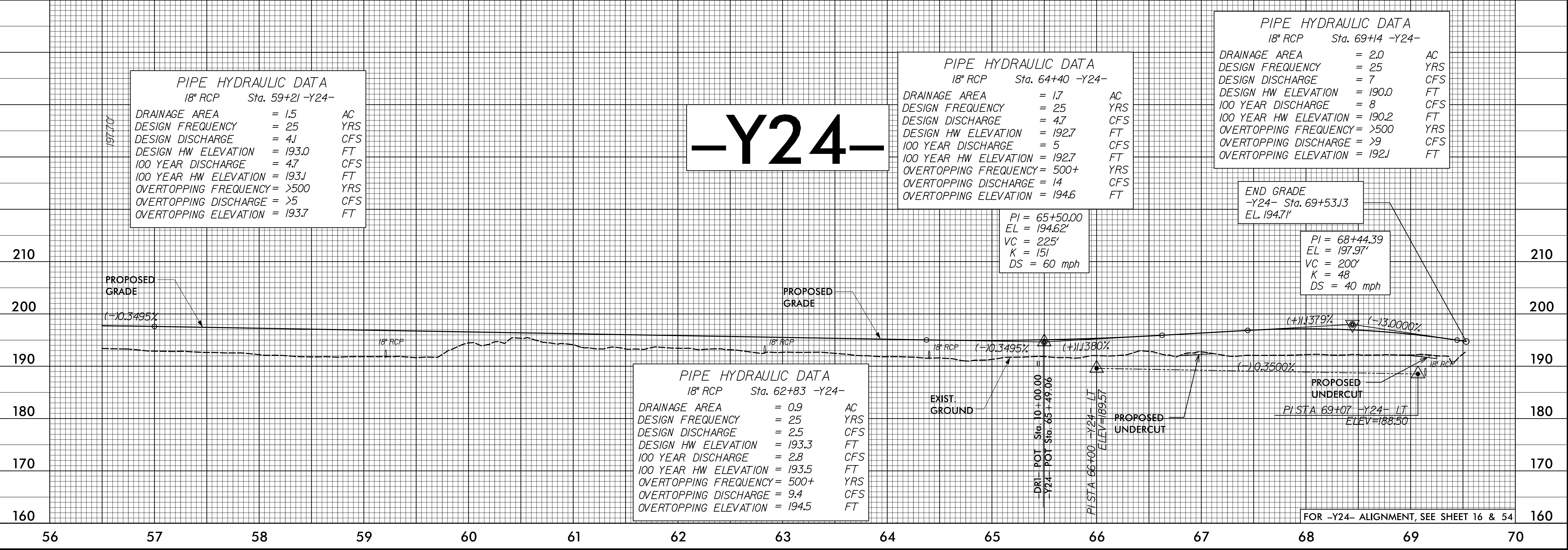
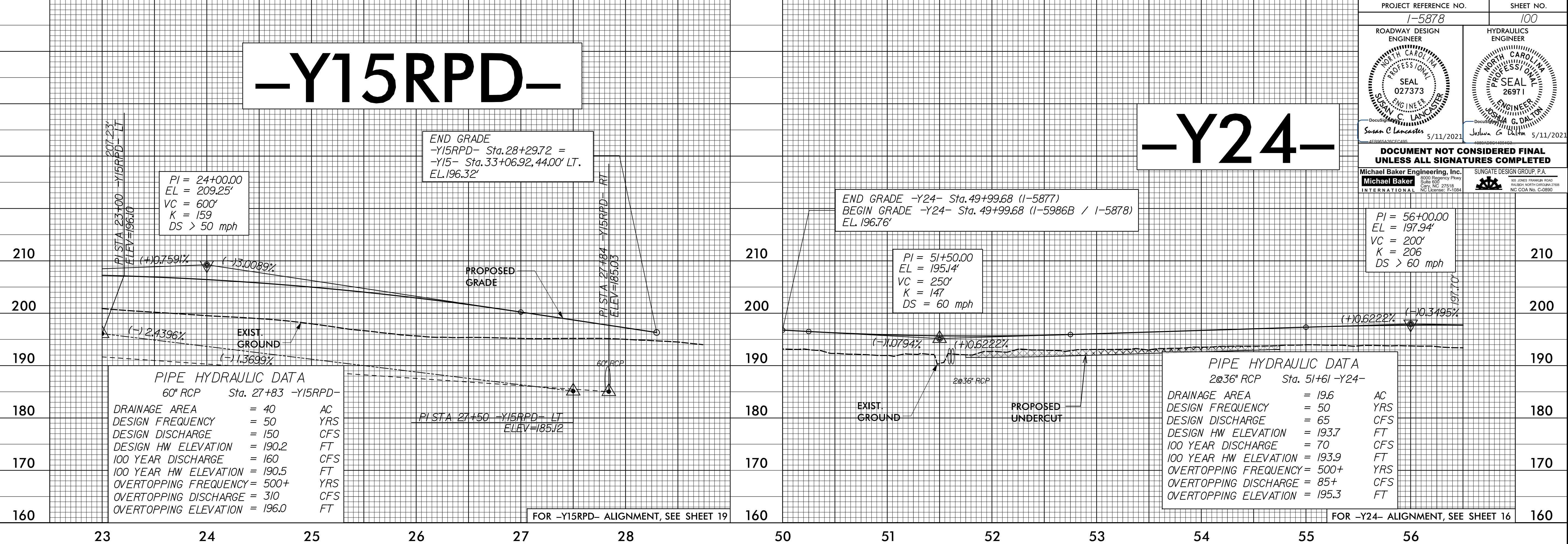
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105 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27605
NC License No. C-28900

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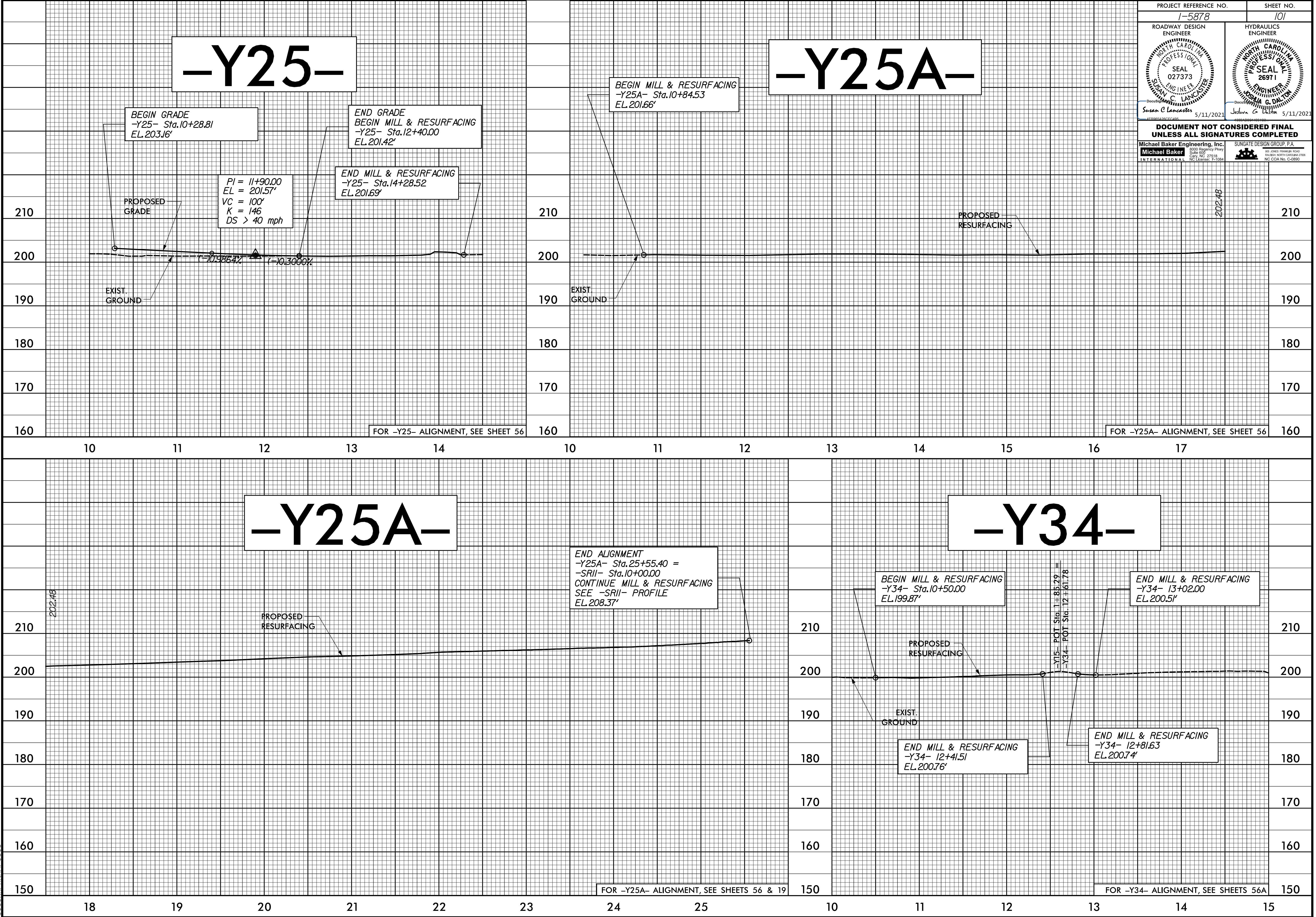
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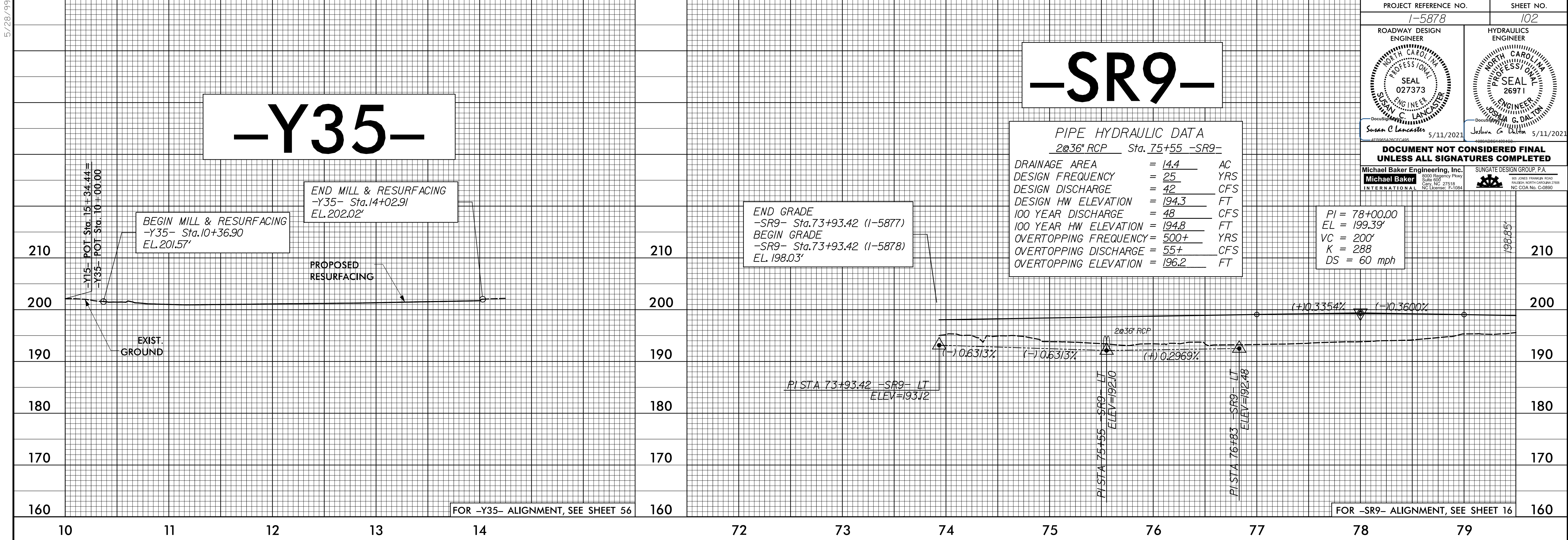
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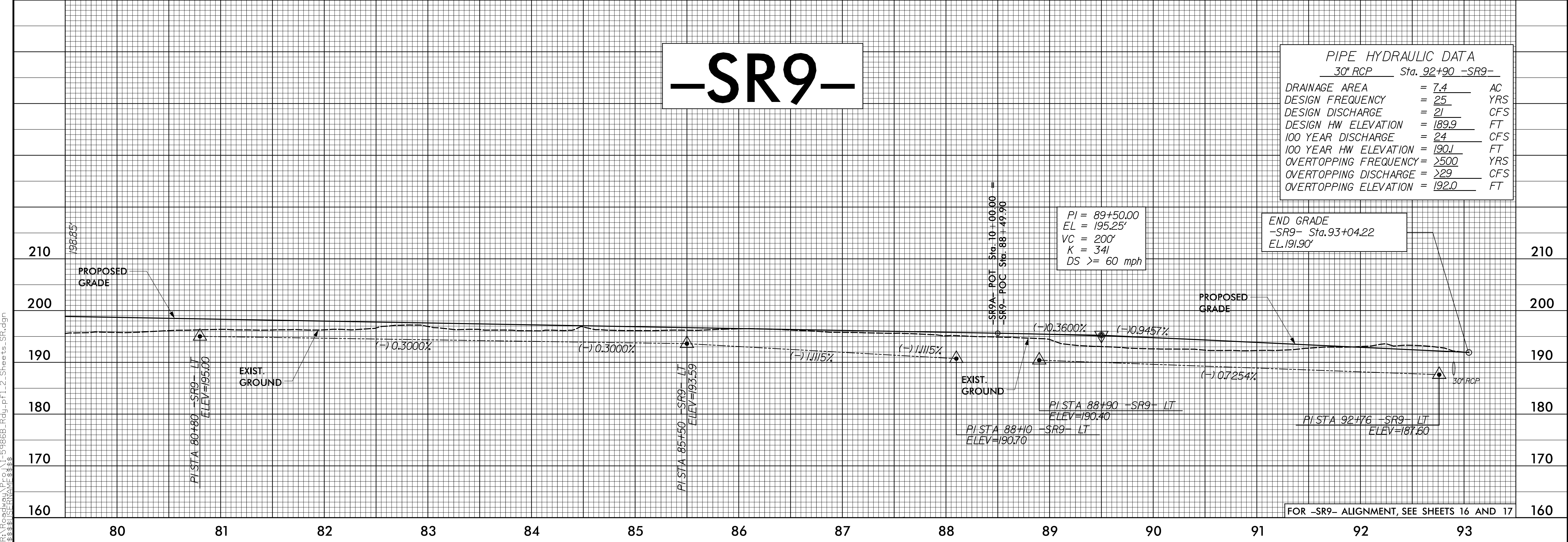
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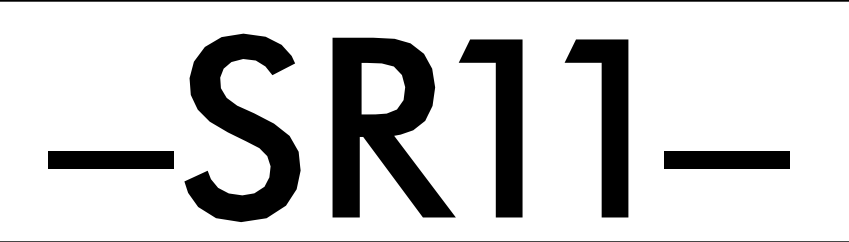
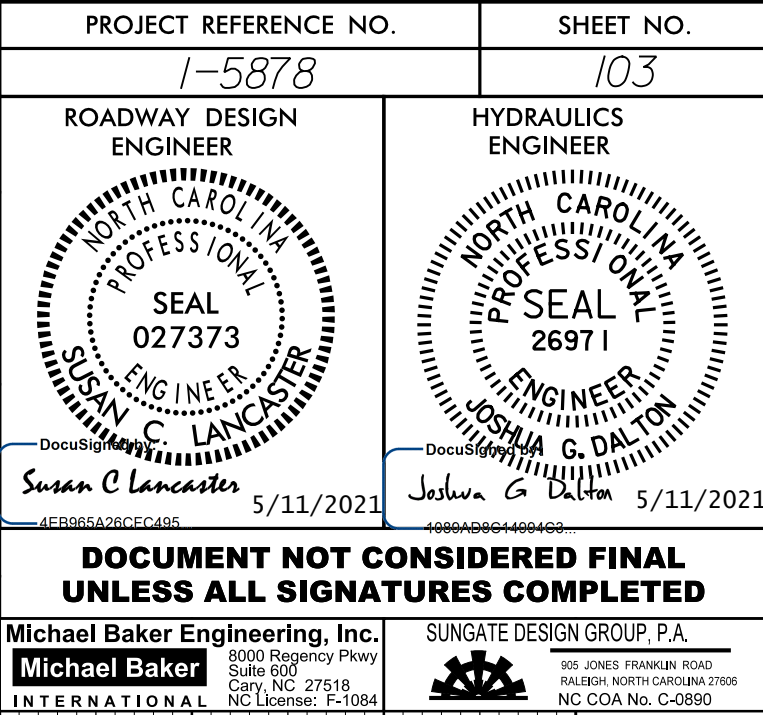


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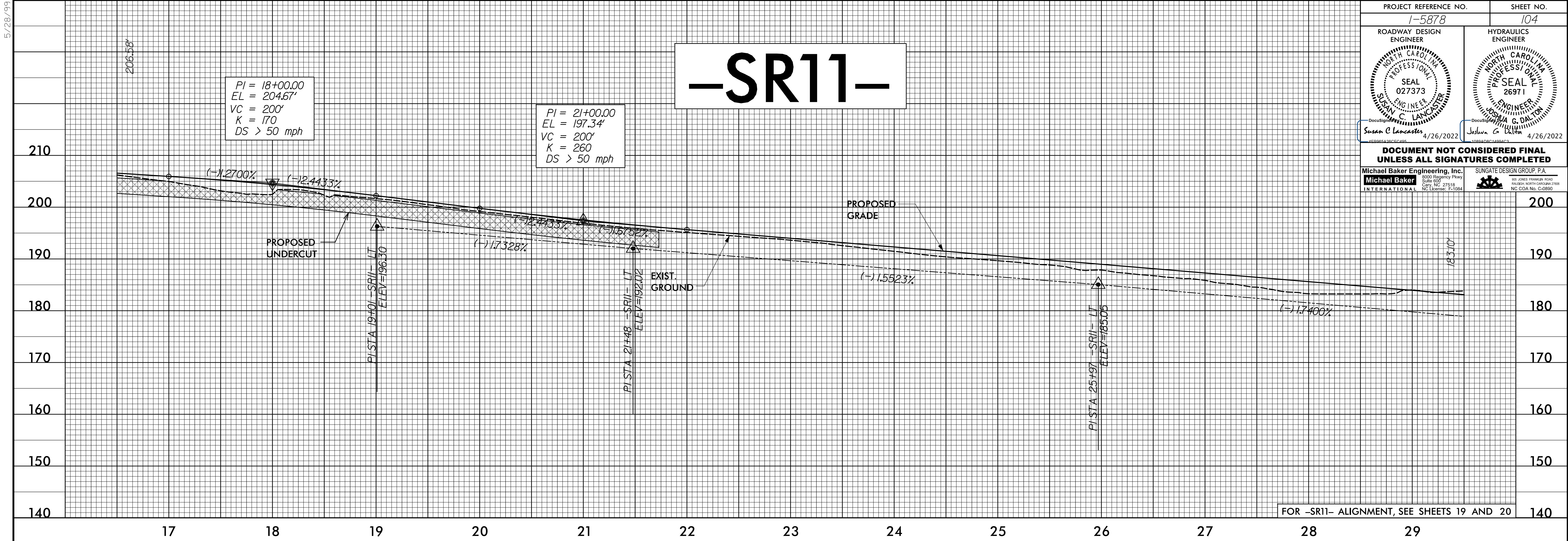


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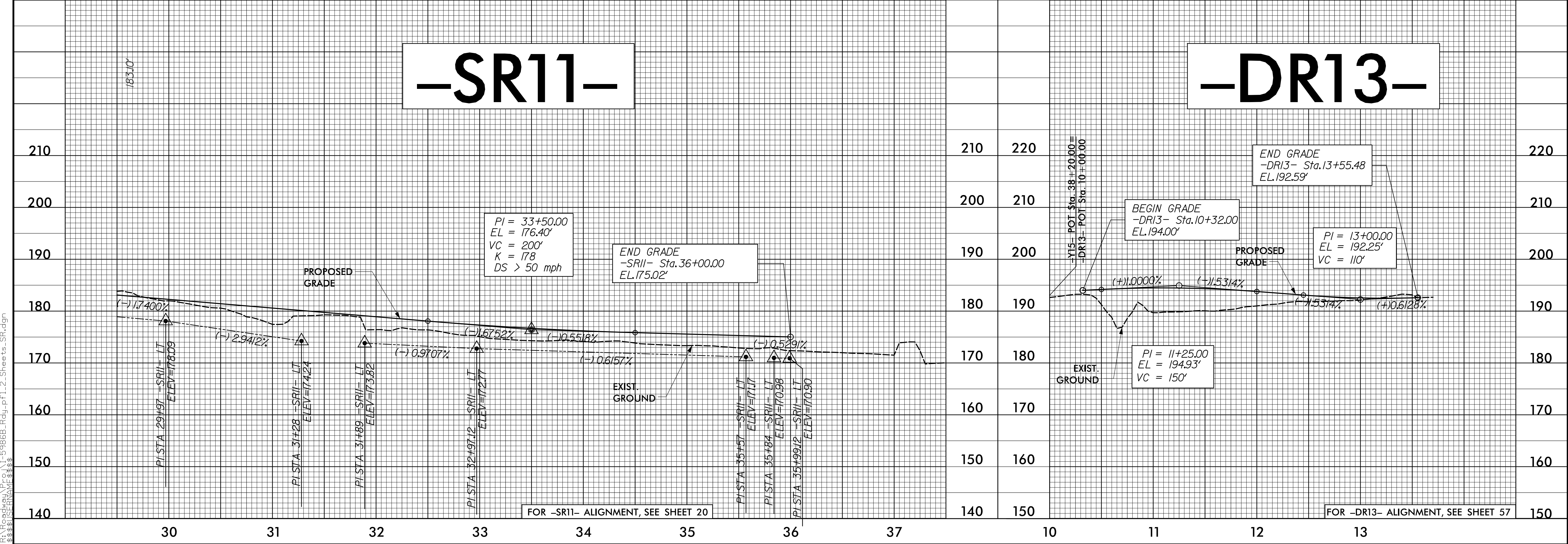


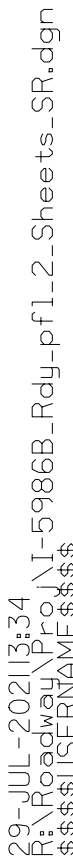
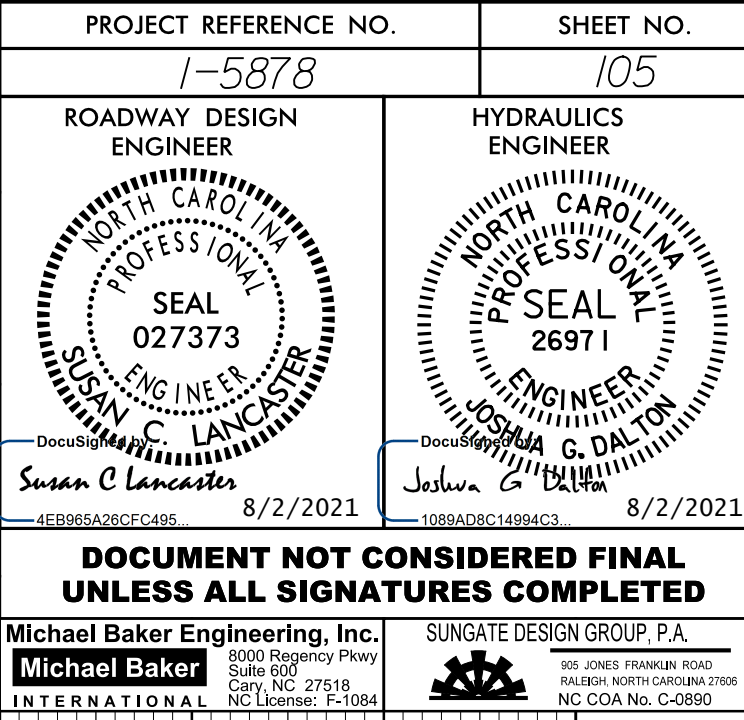
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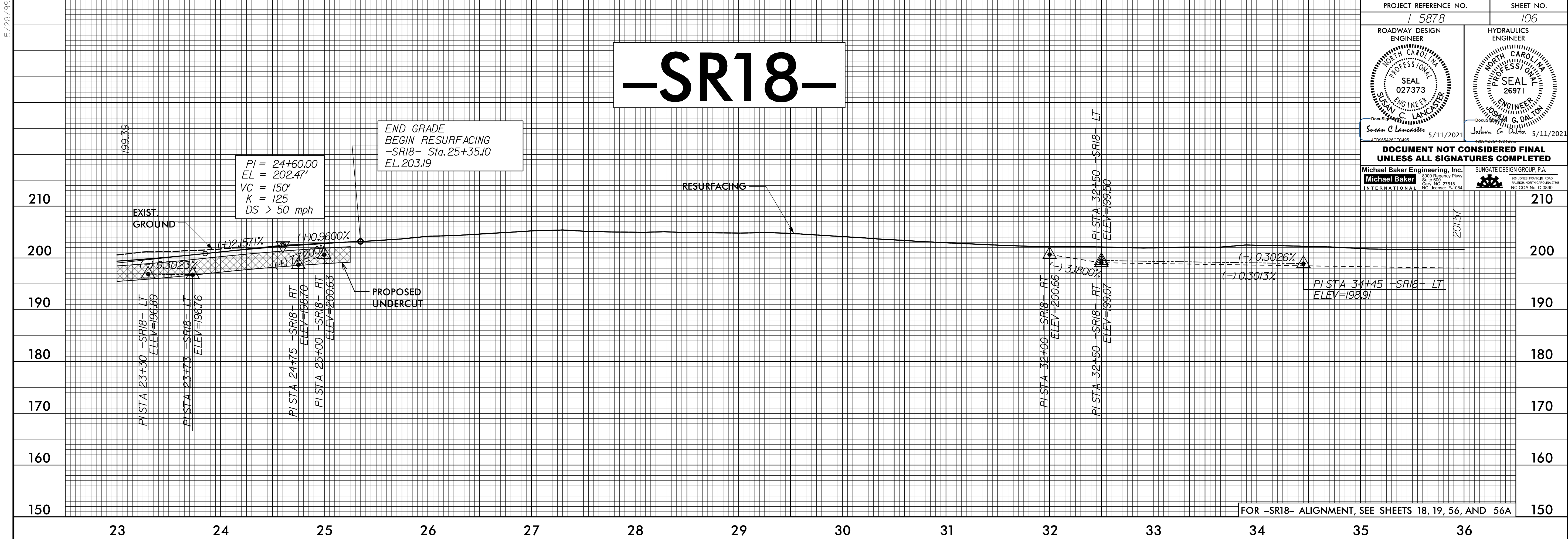
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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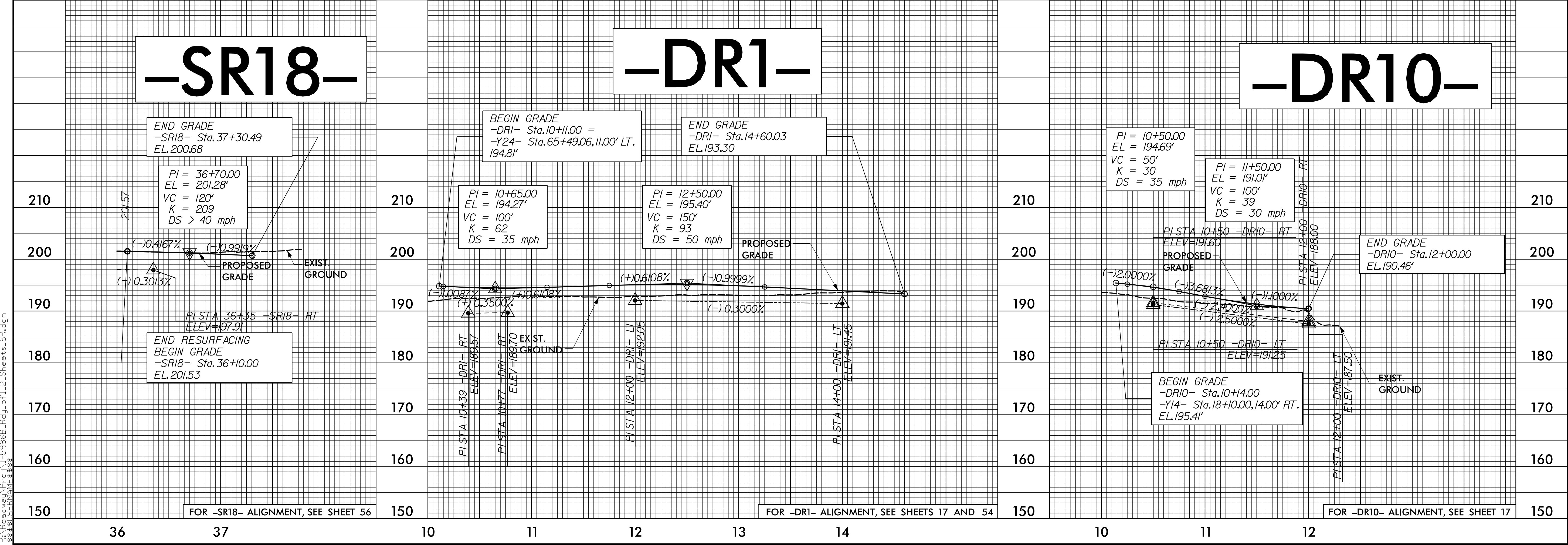




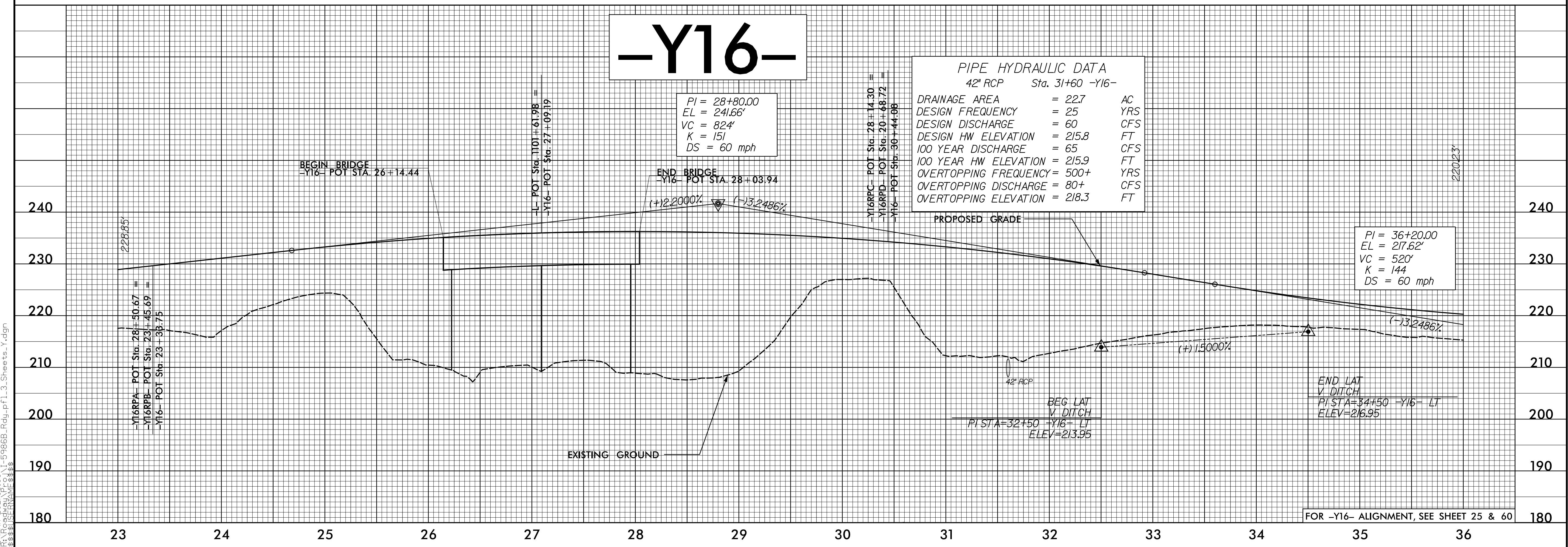
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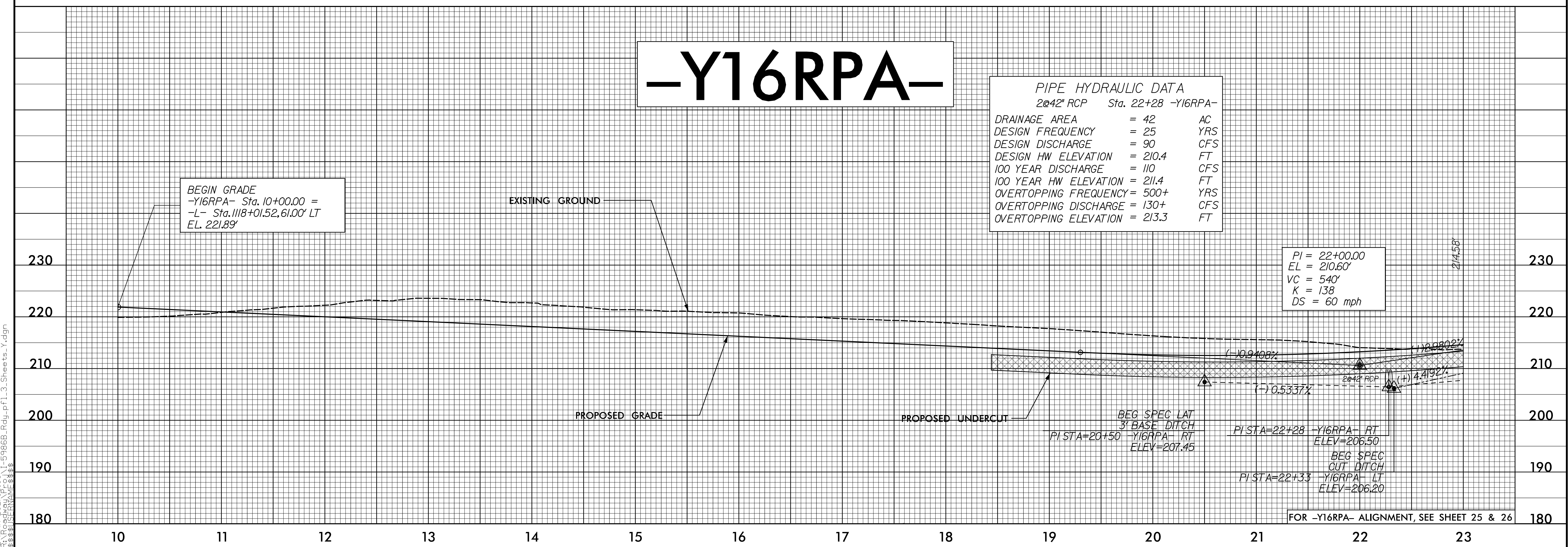


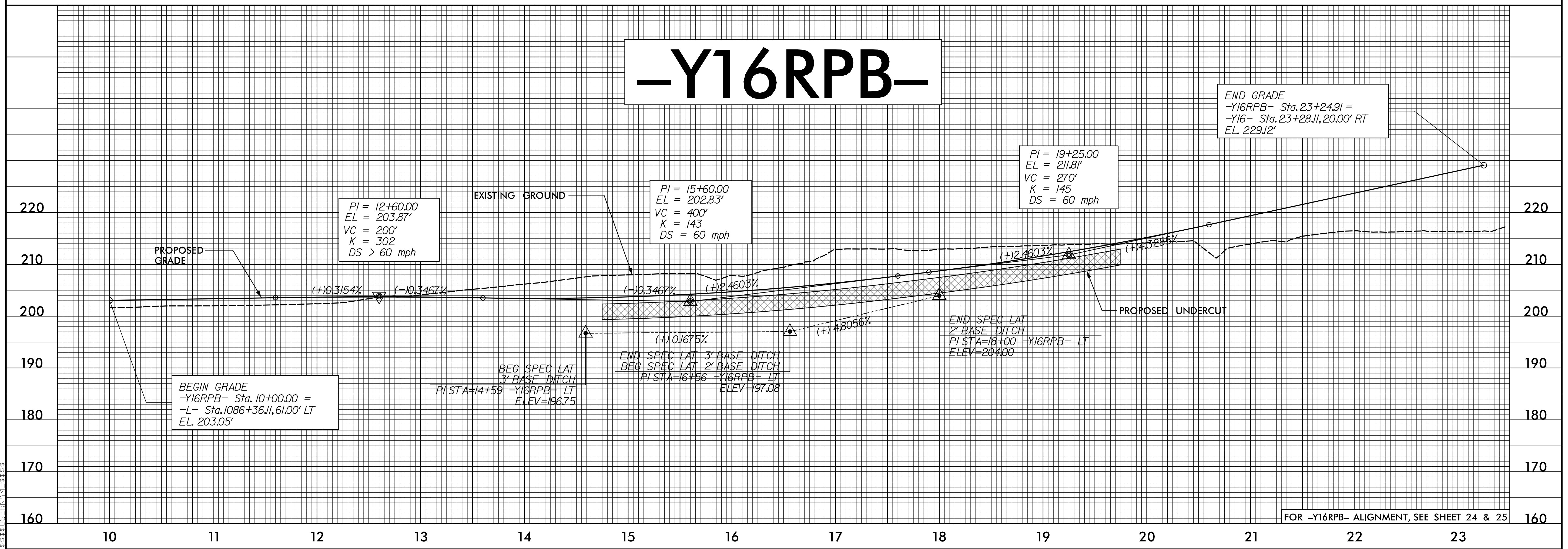
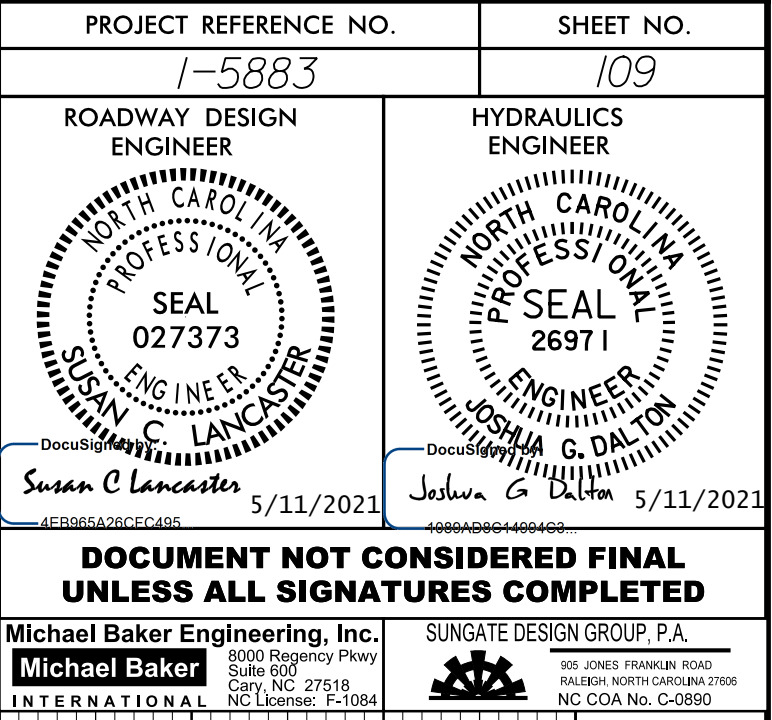
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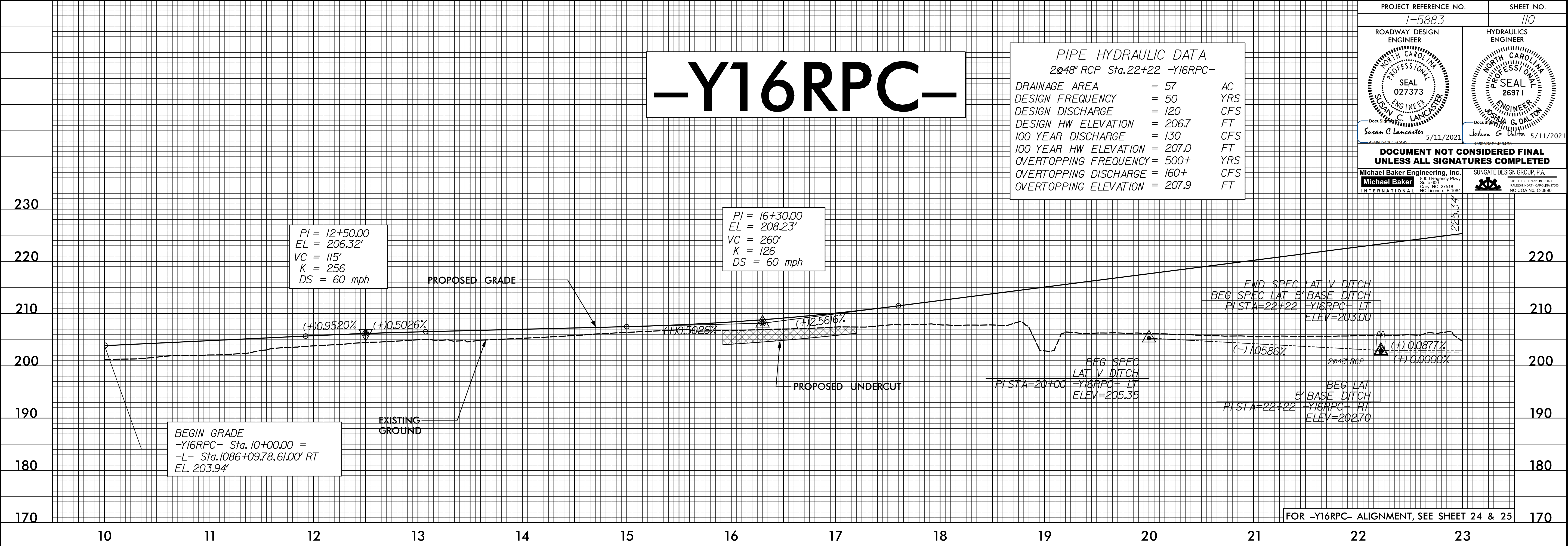
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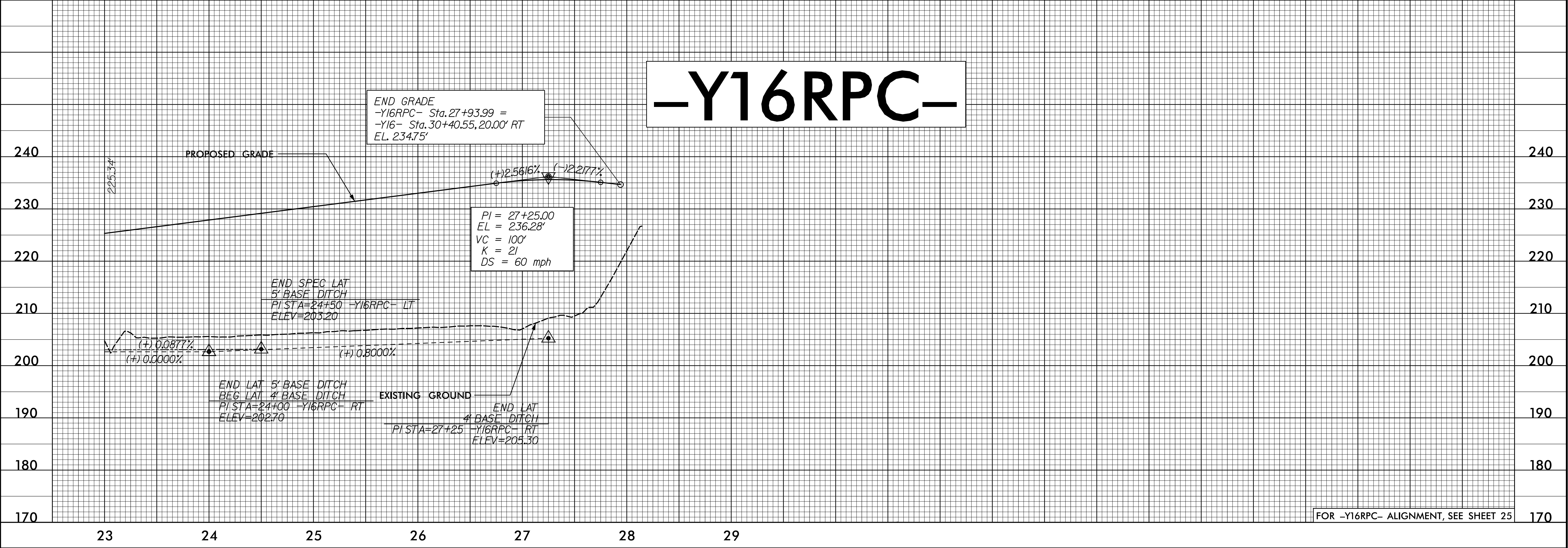


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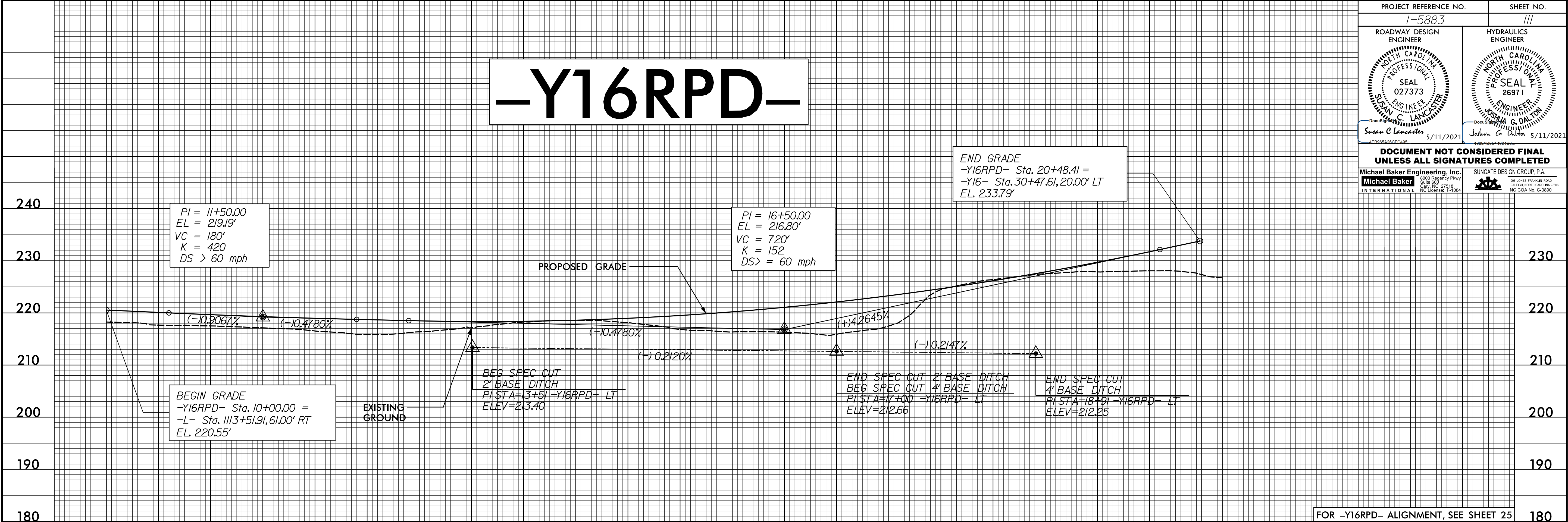
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ROADWAY DESIGN ENGINEER Susan C. Lancaster 5/11/2021	HYDRAULICS ENGINEER Joshua G. Dalton 5/11/2021	
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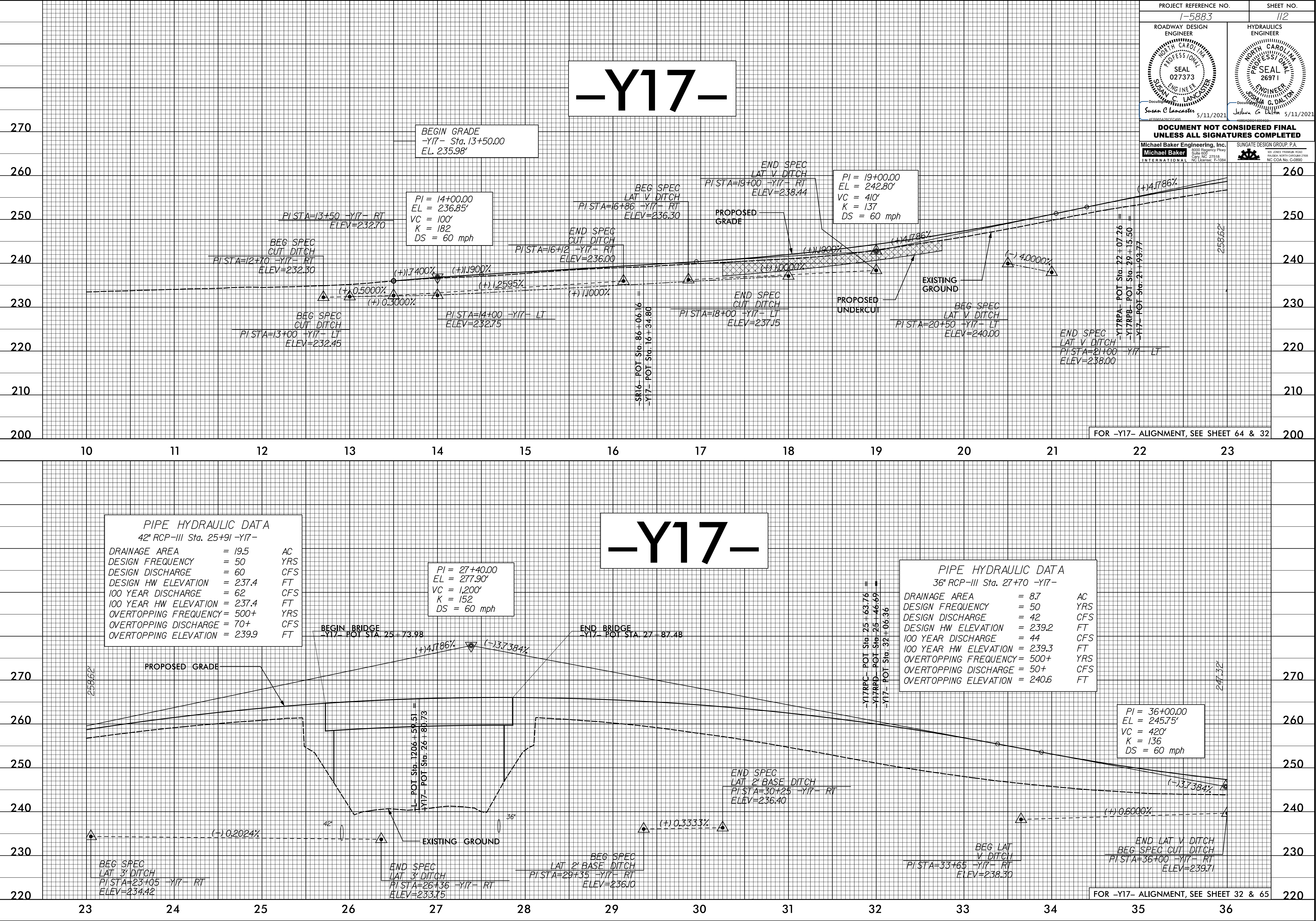
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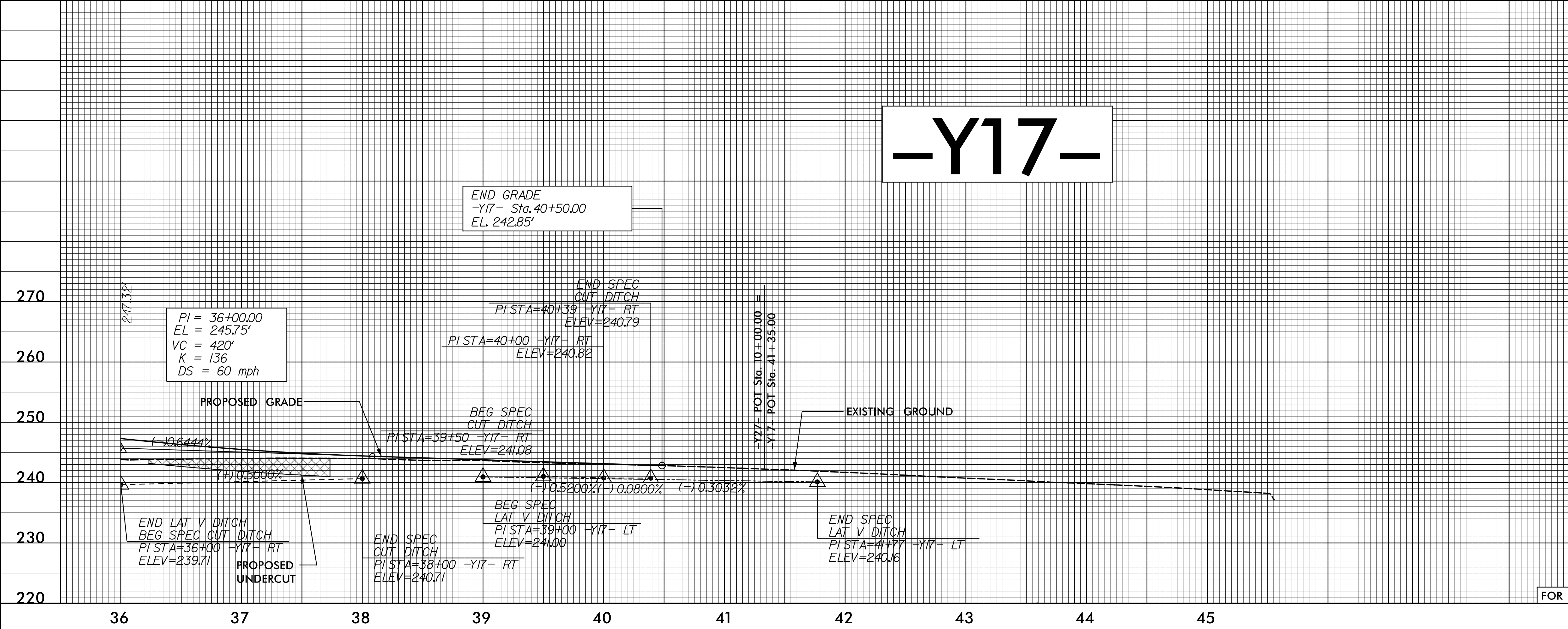
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ROADWAY DESIGN ENGINEER Susan C. Lancaster 5/11/2021		HYDRAULICS ENGINEER Joshua G. Dalton 5/11/2021	
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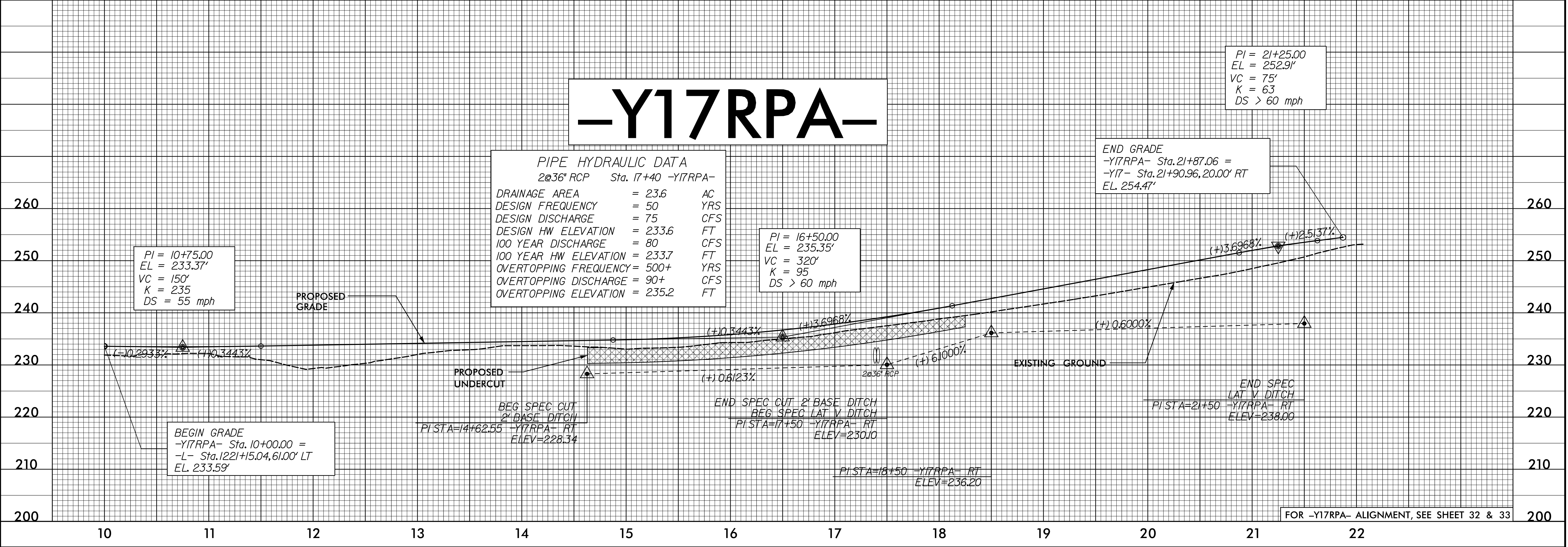


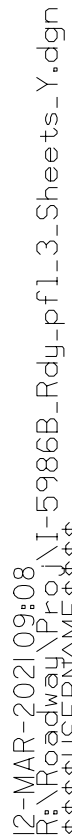
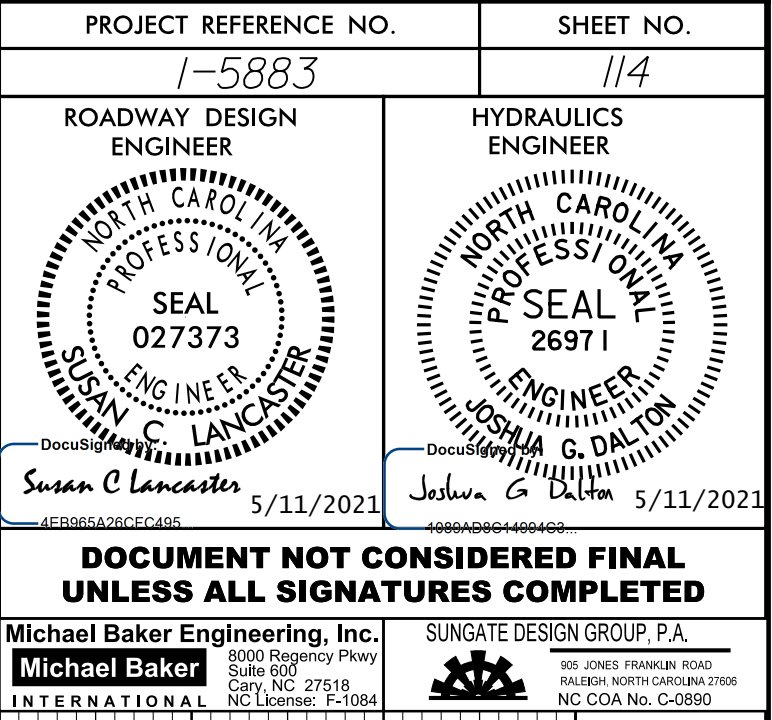
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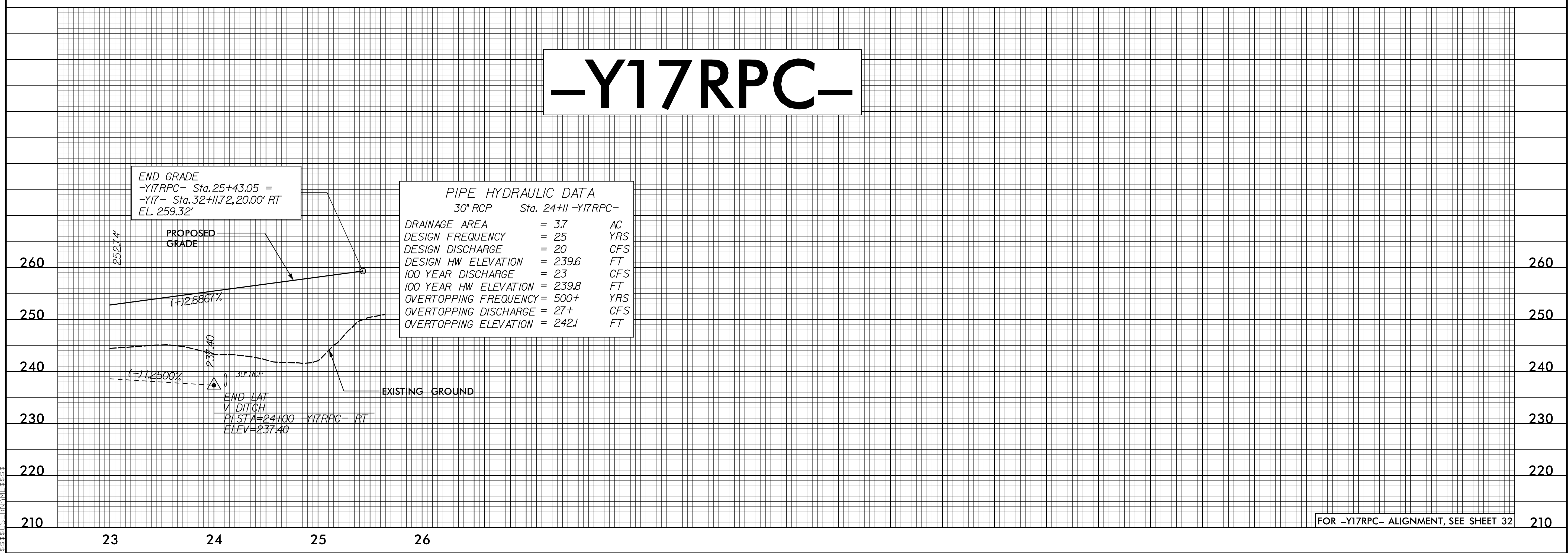
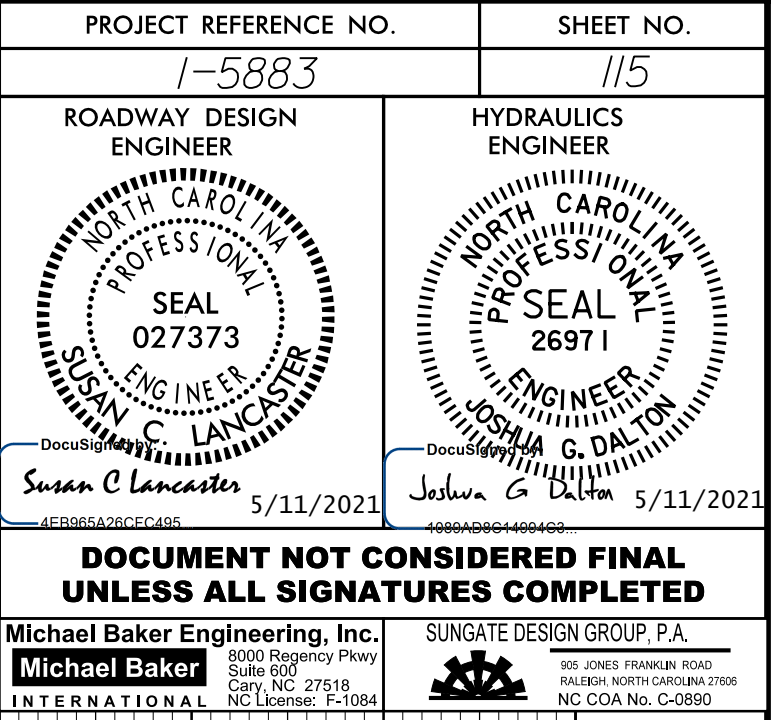


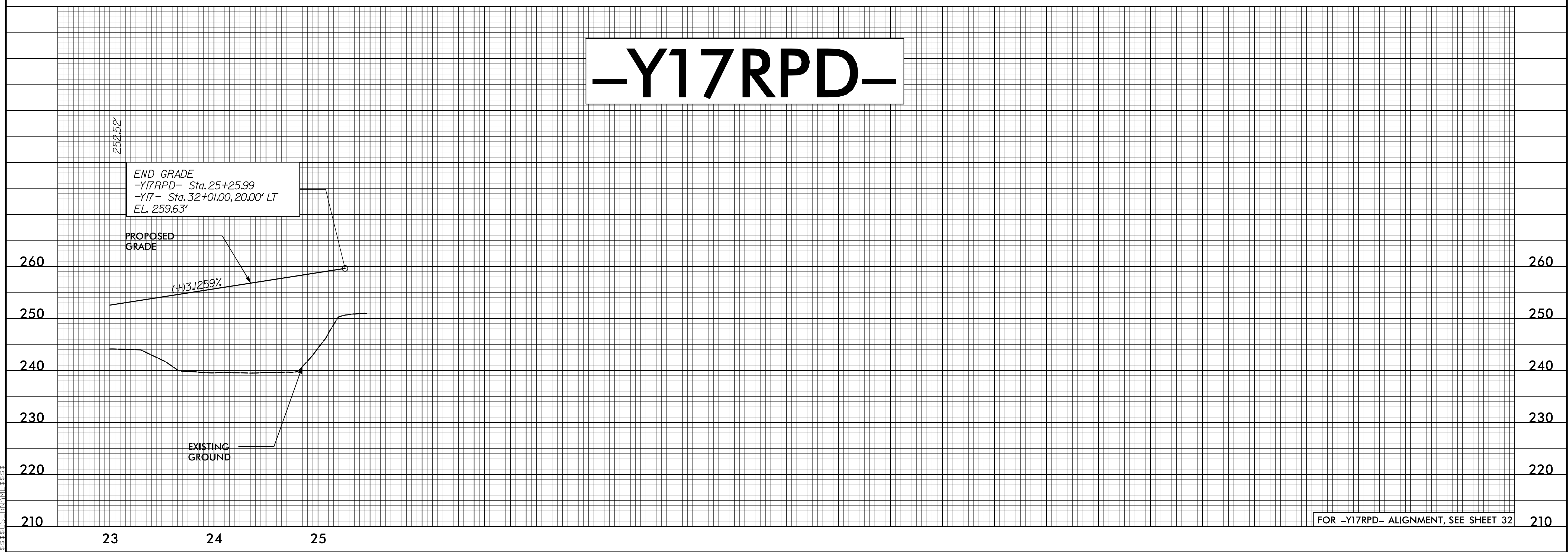
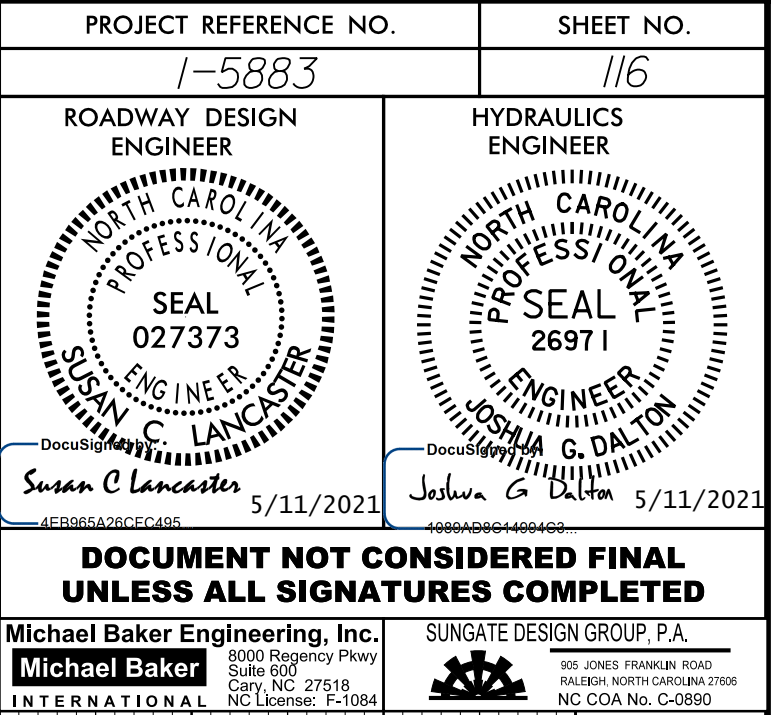
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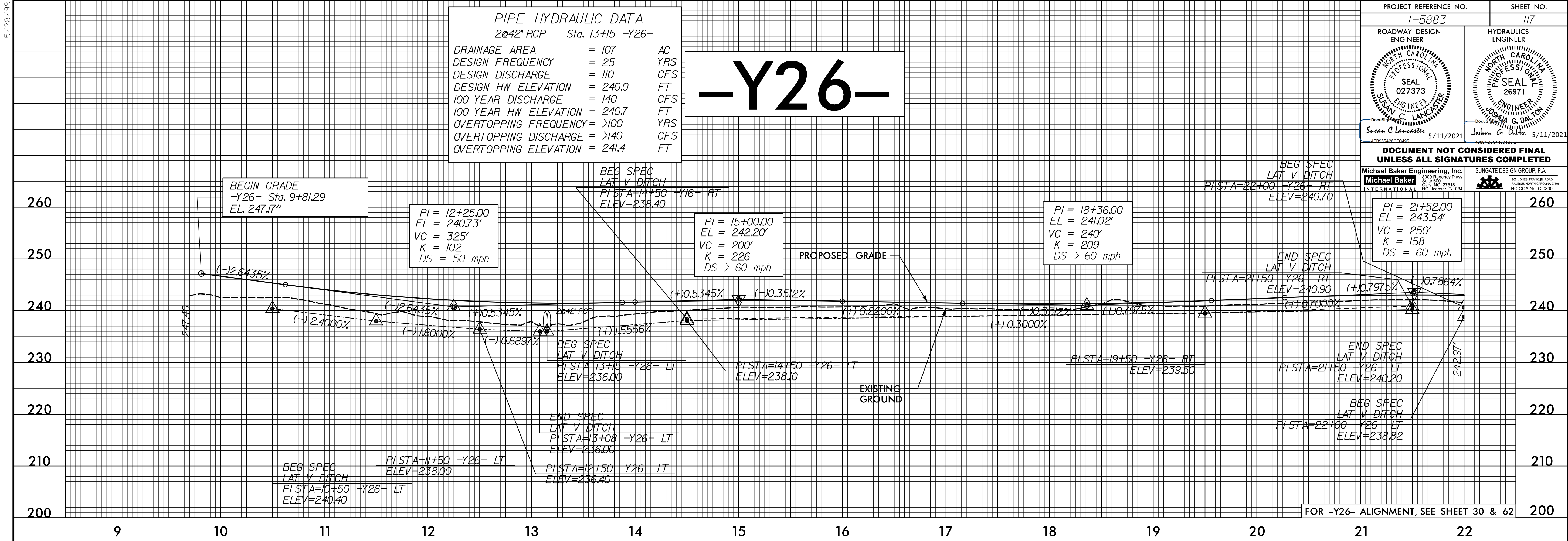






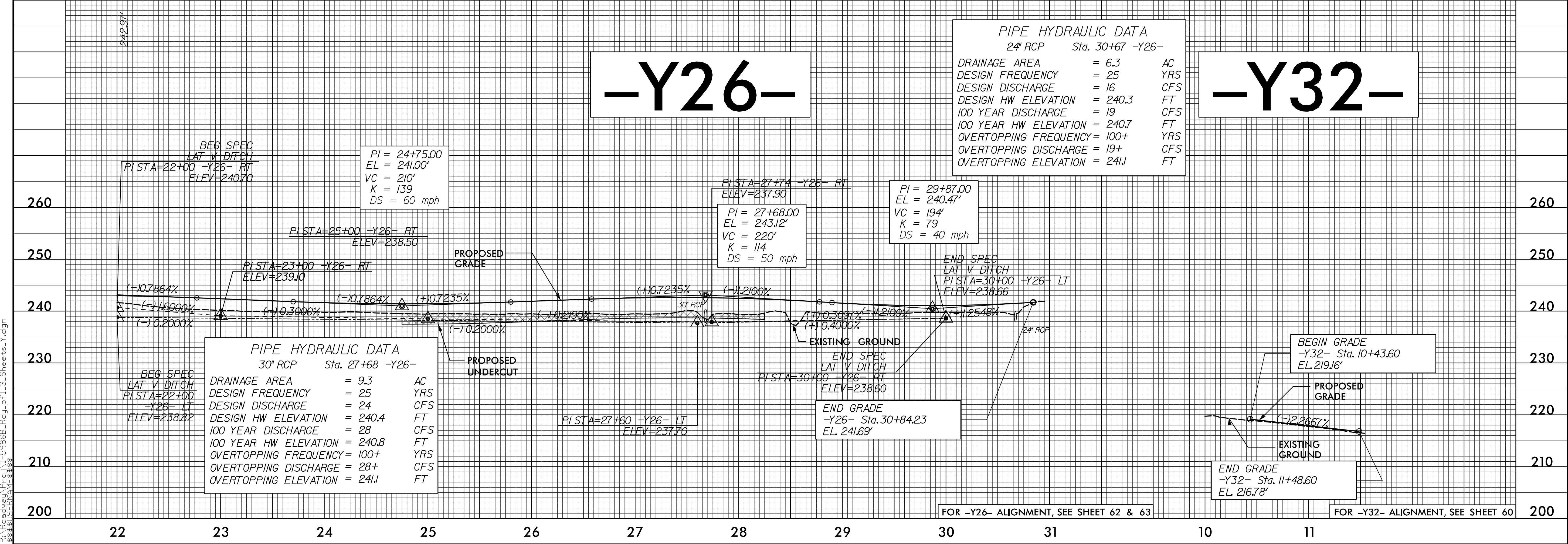


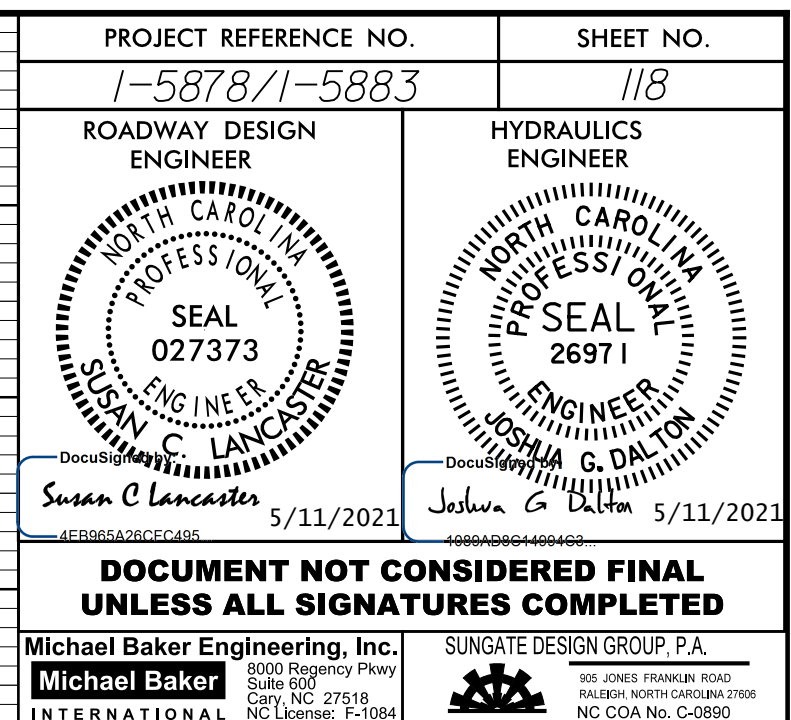
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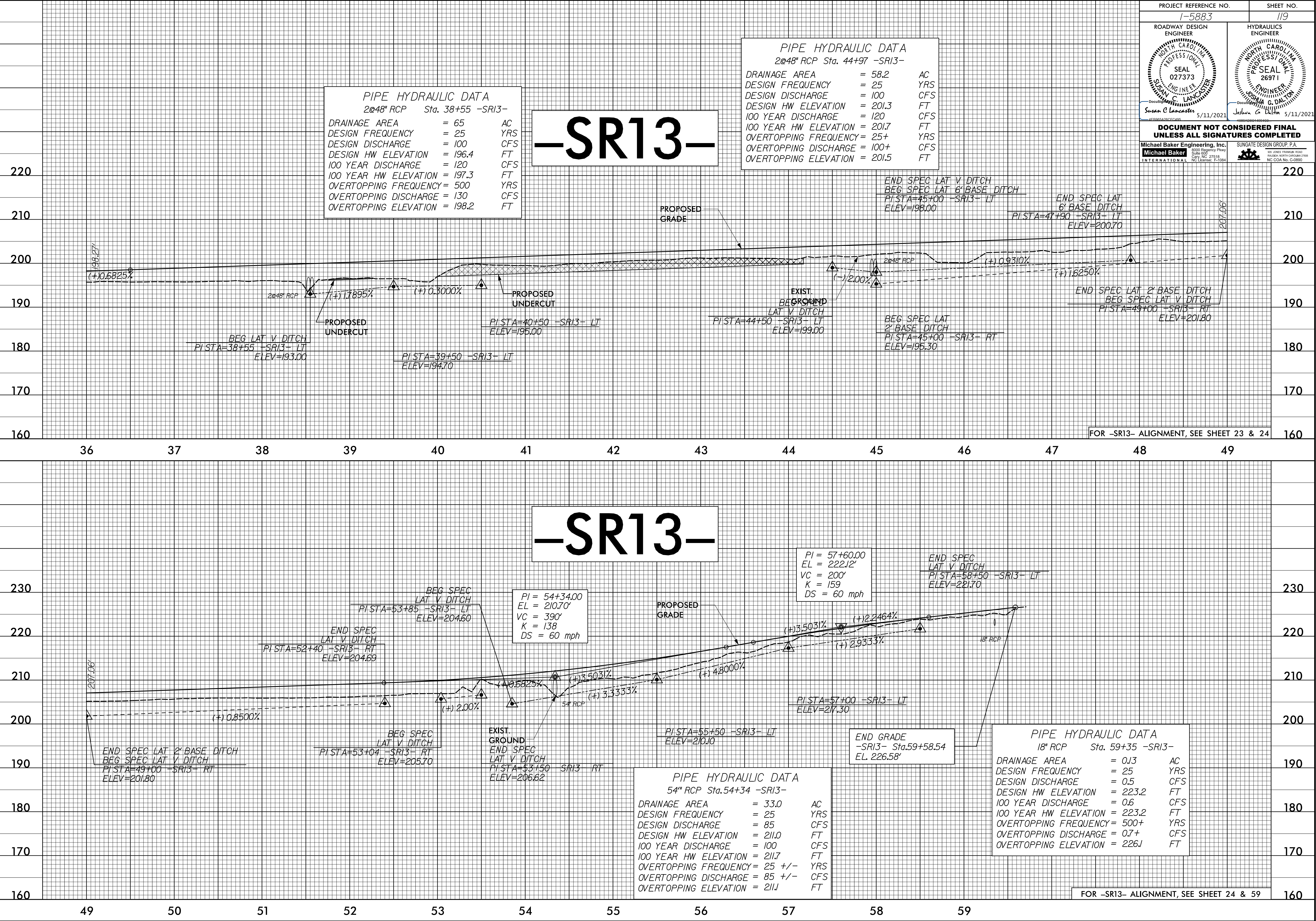
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