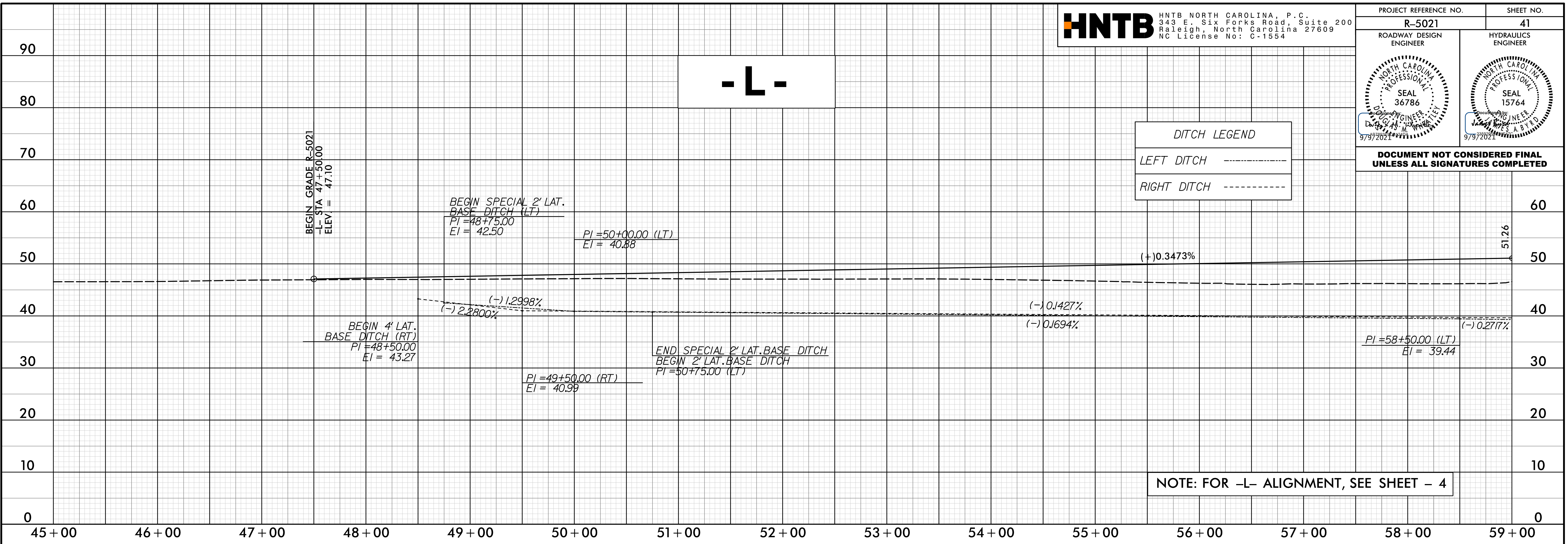


5/28/99

PROJECT REFERENCE NO. R-5021	SHEET NO. 41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

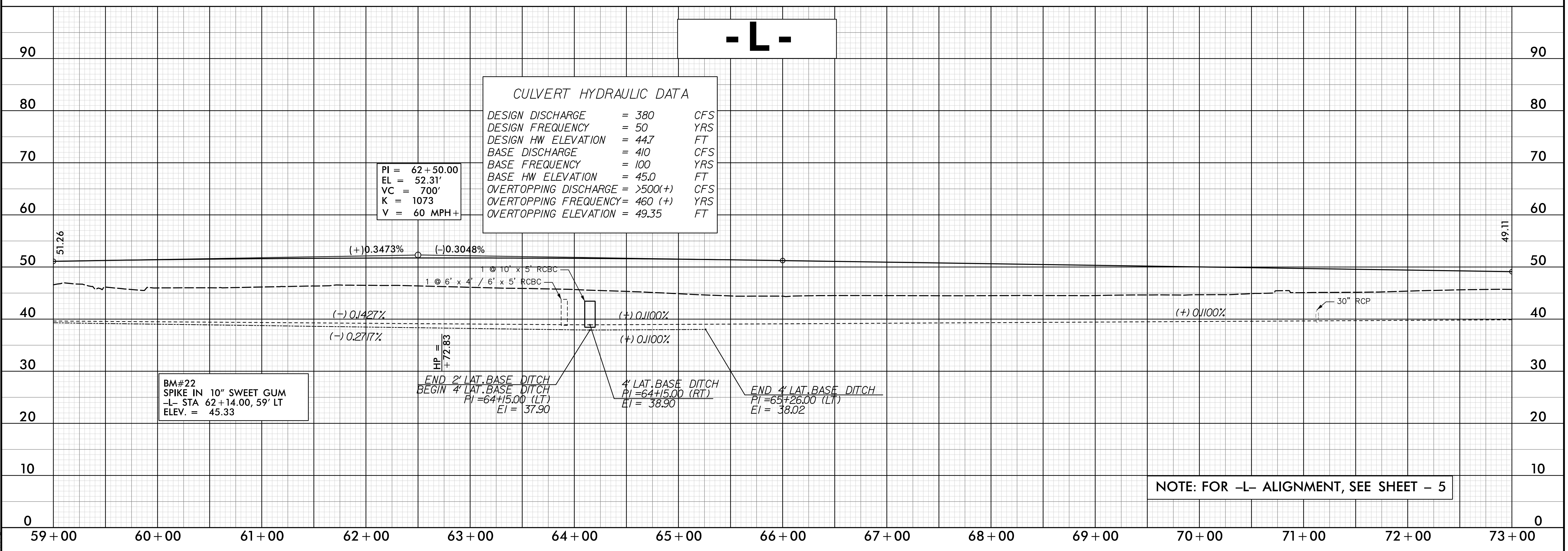


DITCH LEGEND

LEFT DITCH -----

RIGHT DITCH -----

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 4



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 380	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 44.7	FT
BASE DISCHARGE	= 410	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 45.0	FT
OVERTOPPING DISCHARGE	= >500(+)	CFS
OVERTOPPING FREQUENCY	= 460 (+)	YRS
OVERTOPPING ELEVATION	= 49.35	FT

PI = 62+50.00
 EL = 52.31'
 VC = 700'
 K = 1073
 V = 60 MPH+

BM#22
 SPIKE IN 10" SWEET GUM
 -L- STA 62+14.00, 59' LT
 ELEV. = 45.33

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 5

22-JUL-2021 09:58
 R:\Roadway\Projects\5021\RDY_PFL_PSH41.dgn

5/28/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 42
ROADWAY DESIGN ENGINEER SEAL 36786 9/9/2021	HYDRAULICS ENGINEER SEAL 15764 9/9/2021

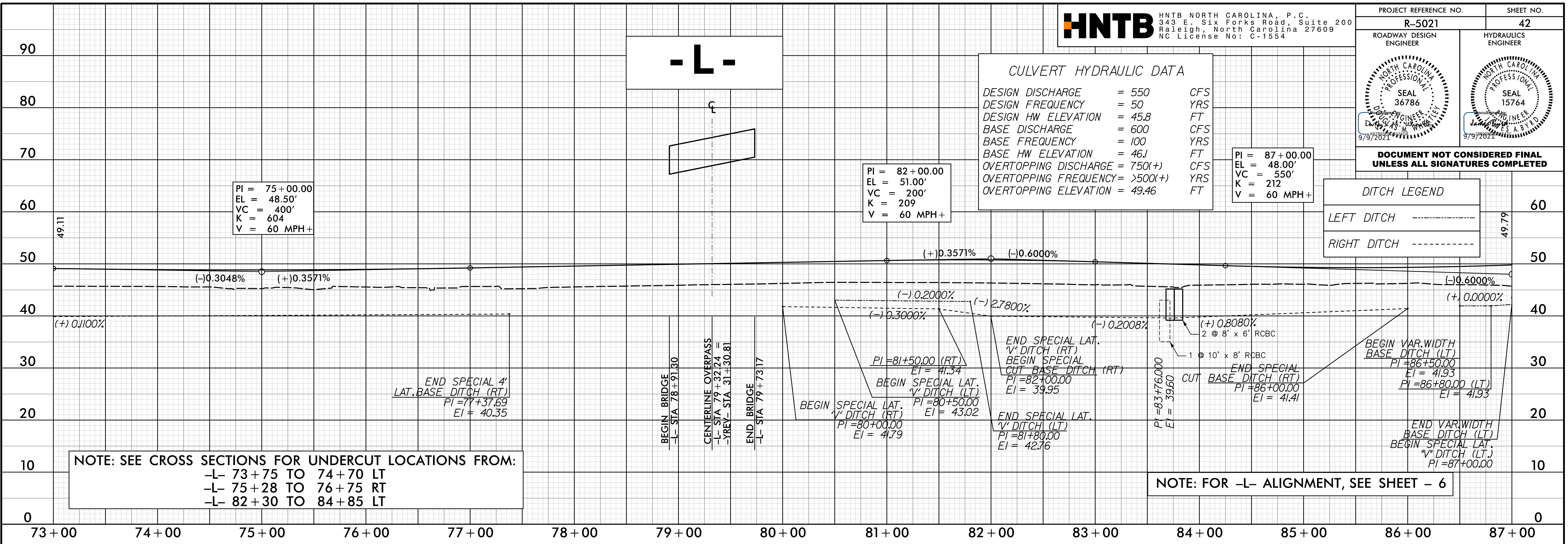
CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 550	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 45.8	FT
BASE DISCHARGE	= 600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 46.1	FT
OVERTOPPING DISCHARGE	= 750(+)	CFS
OVERTOPPING FREQUENCY	= >500(+)	YRS
OVERTOPPING ELEVATION	= 49.46	FT

PI = 87+00.00
EL = 48.00'
VC = 550'
K = 212
V = 60 MPH+

DITCH LEGEND

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



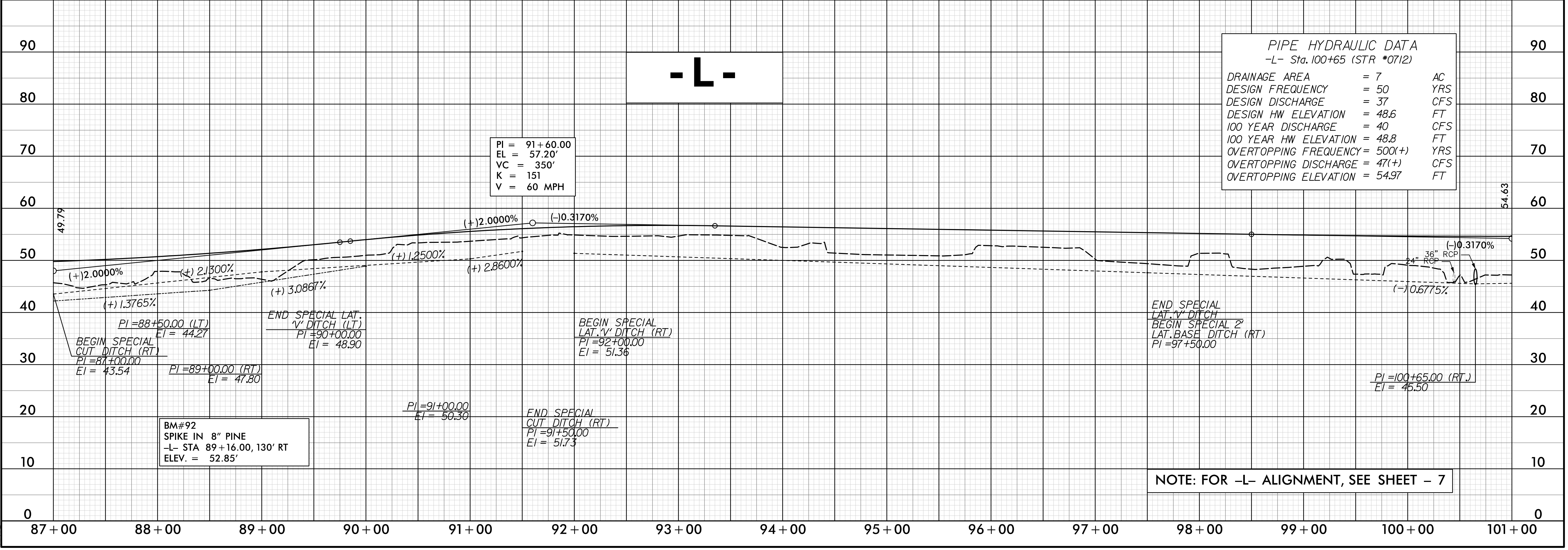
NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 73+75 TO 74+70 LT
 -L- 75+28 TO 76+75 RT
 -L- 82+30 TO 84+85 LT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 6

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PIPE HYDRAULIC DATA
-L- Sta. 100+65 (STR *0712)

DRAINAGE AREA	= 7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 37	CFS
DESIGN HW ELEVATION	= 48.6	FT
100 YEAR DISCHARGE	= 40	CFS
100 YEAR HW ELEVATION	= 48.8	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 47(+)	CFS
OVERTOPPING ELEVATION	= 54.97	FT



BM#92
SPIKE IN 8" PINE
-L- STA 89+16.00, 130' RT
ELEV. = 52.85'

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 7

5/28/21

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 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

PROJECT REFERENCE NO. R-5021	SHEET NO. 43
ROADWAY DESIGN ENGINEER [Signature]	HYDRAULICS ENGINEER [Signature]
NORTH CAROLINA PROFESSIONAL SEAL 36786 9/9/2021	NORTH CAROLINA PROFESSIONAL SEAL 15764 9/9/2021

PIPE HYDRAULIC DATA
 -L- Sta. 106+64 (STR *0804)

DRAINAGE AREA	= 23	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 48.6	FT
100 YEAR DISCHARGE	= 47	CFS
100 YEAR HW ELEVATION	= 49.0	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 80(+)	CFS
OVERTOPPING ELEVATION	= 54.97	FT

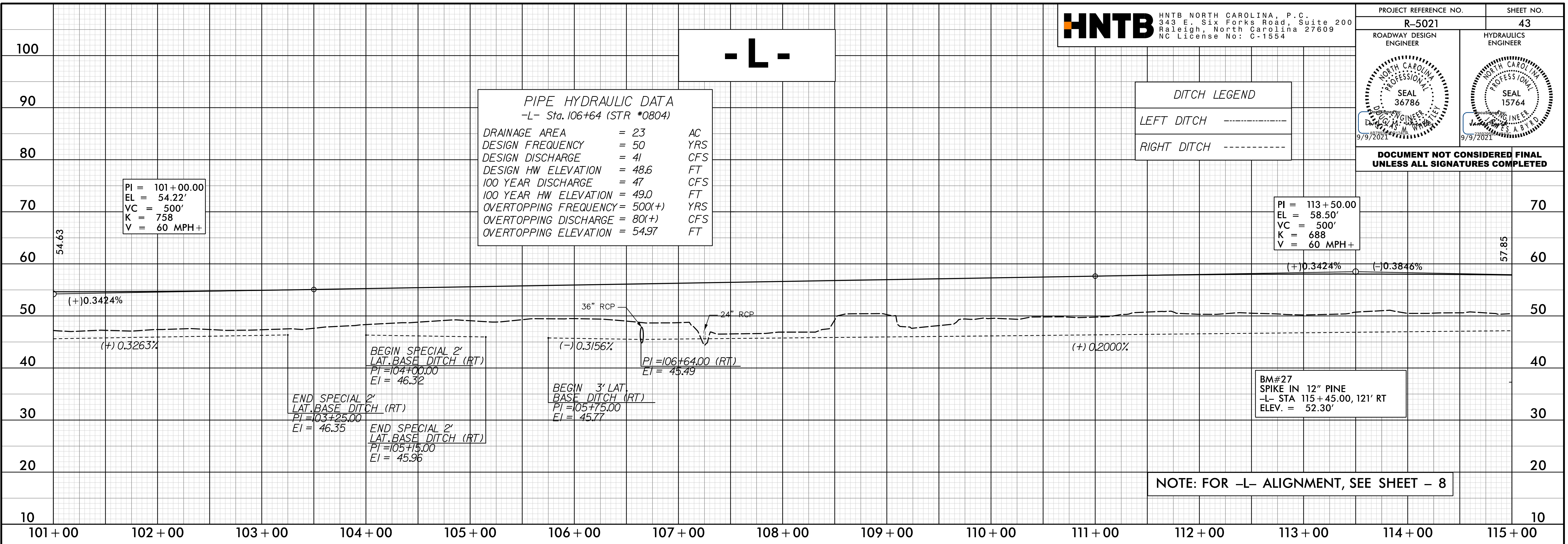
DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

PI = 101+00.00
 EL = 54.22'
 VC = 500'
 K = 758
 V = 60 MPH+

PI = 113+50.00
 EL = 58.50'
 VC = 500'
 K = 688
 V = 60 MPH+



BM#27
 SPIKE IN 12" PINE
 -L- STA 115+45.00, 121' RT
 ELEV. = 52.30'

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 8

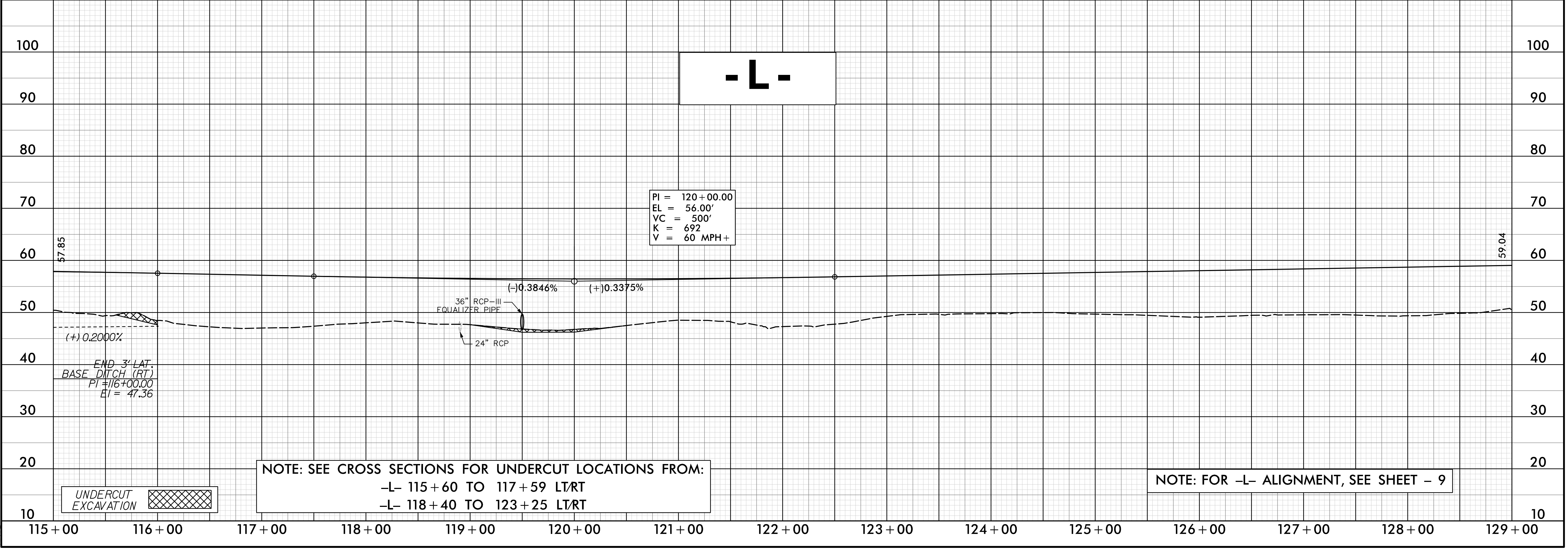
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PI = 120+00.00
 EL = 56.00'
 VC = 500'
 K = 692
 V = 60 MPH+

UNDERCUT EXCAVATION [Hatched Box Symbol]

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 115+60 TO 117+59 LTRT
 -L- 118+40 TO 123+25 LTRT

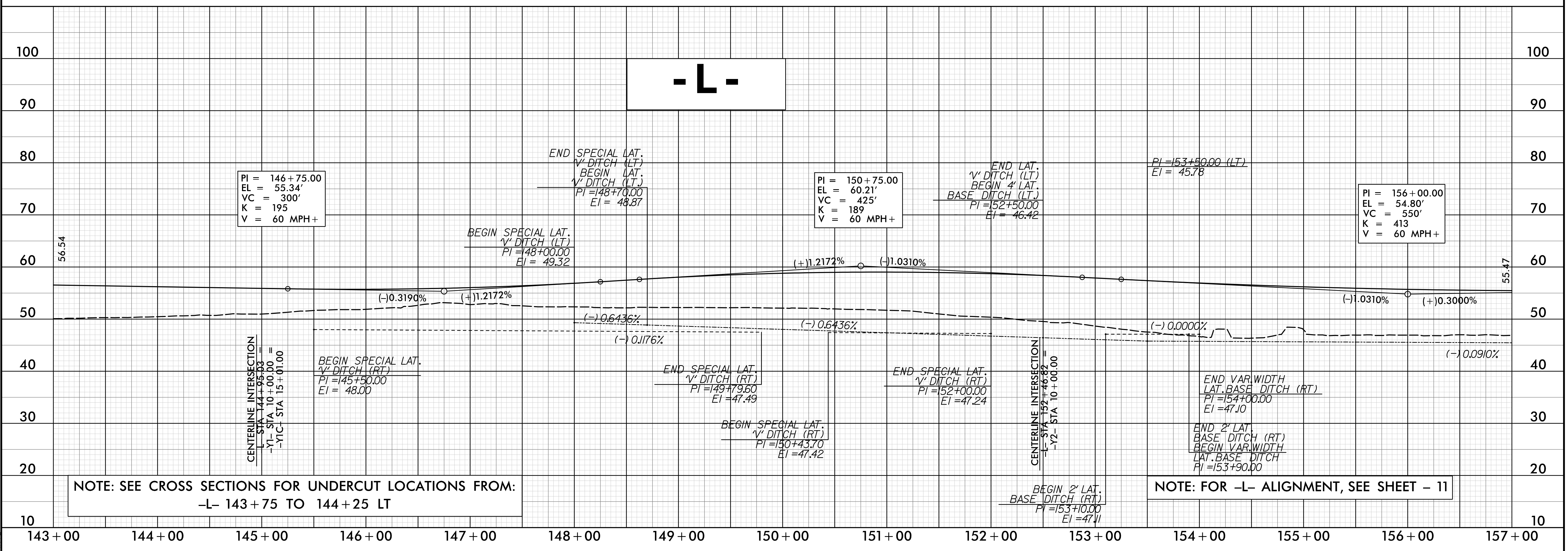
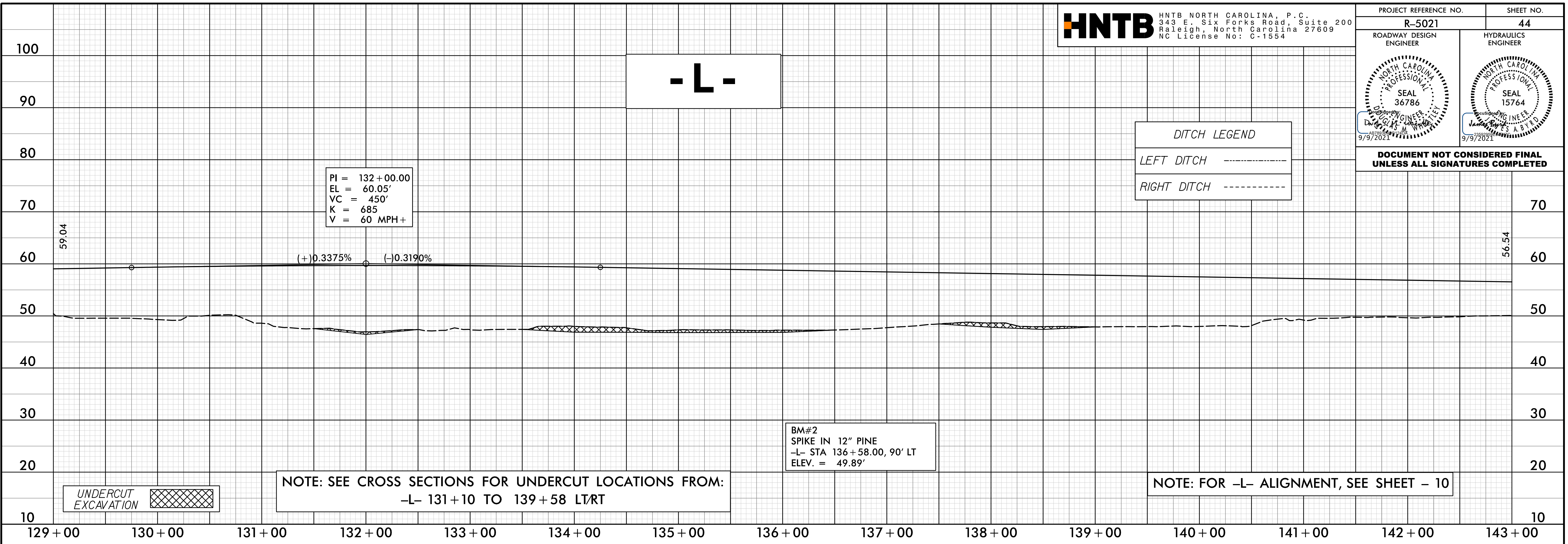
NOTE: FOR -L- ALIGNMENT, SEE SHEET - 9



5/28/20

PROJECT REFERENCE NO. R-5021	SHEET NO. 44
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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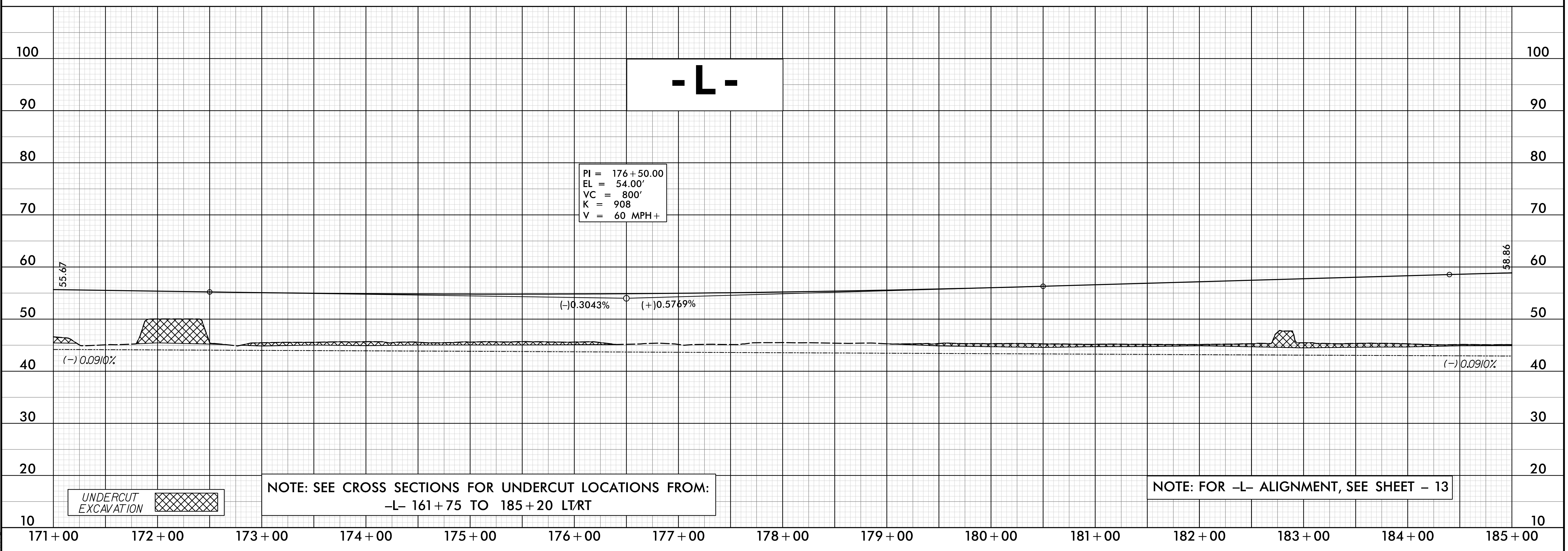
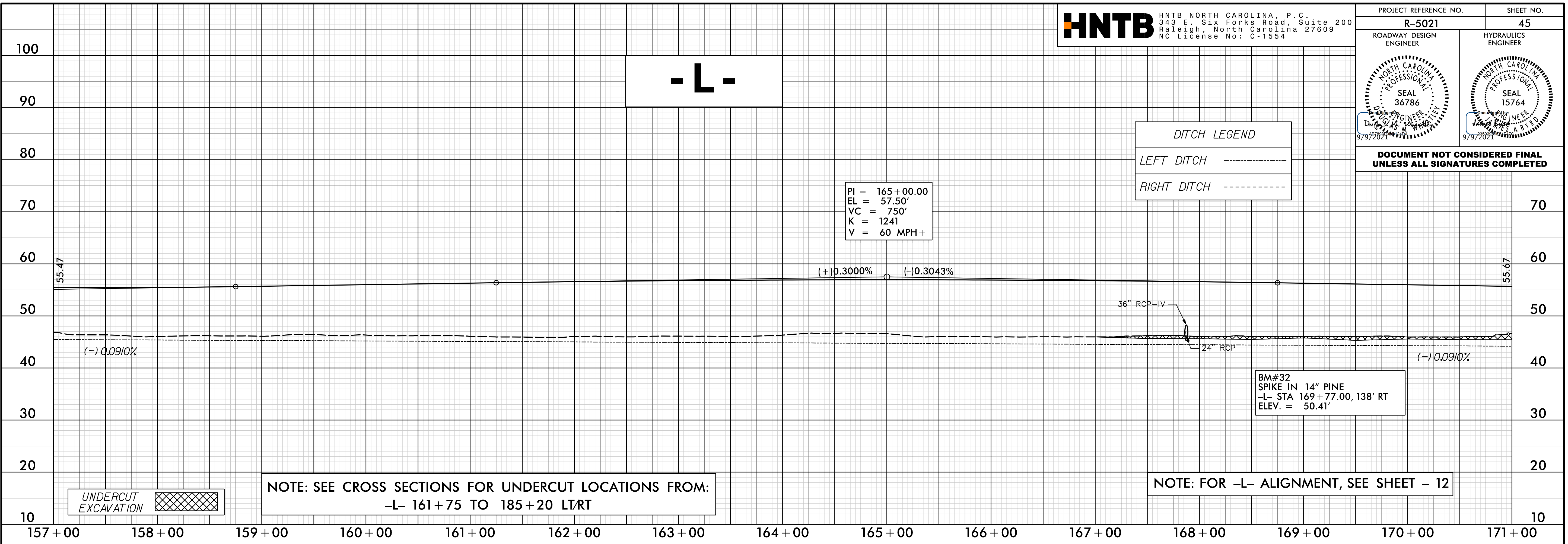


22-JUL-2021 09:58
 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH44.dgn)
 DATE

5/28/21

PROJECT REFERENCE NO. R-5021	SHEET NO. 45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PROJECT REFERENCE NO. R-5021	SHEET NO. 47
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

PIPE HYDRAULIC DATA
-L- Sta. 217+29 (STR #1608)

DRAINAGE AREA	= 43	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 37.5*	CFS
DESIGN HW ELEVATION	= 42.3	FT
100 YEAR DISCHARGE	= 42.5*	CFS
100 YEAR HW ELEVATION	= 42.5	FT
OVERTOPPING FREQUENCY	= 200	YRS
OVERTOPPING DISCHARGE	= 55*	CFS
OVERTOPPING ELEVATION	= 43.08	FT

* ABOVE NOTED FLOWS ARE 50% OF THE TOTAL FLOW FROM THE DRAINAGE AREA

DITCH LEGEND

LEFT DITCH - - - - -

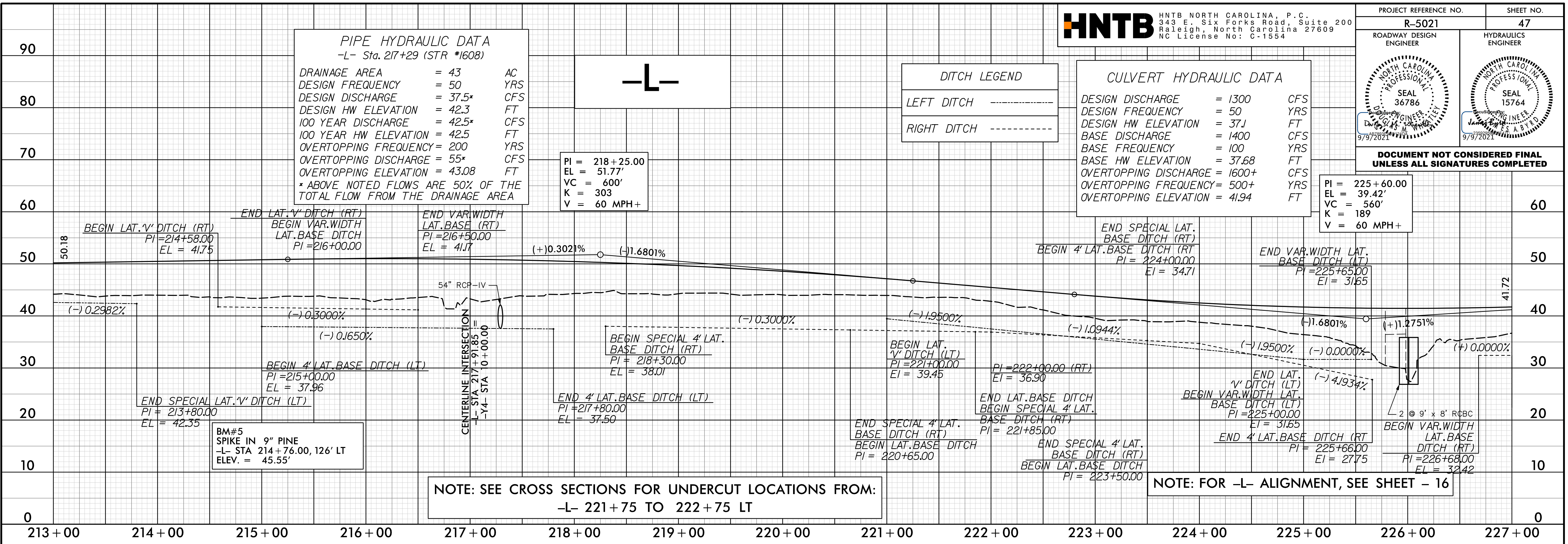
RIGHT DITCH - - - - -

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1300	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 37.1	FT
BASE DISCHARGE	= 1400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 37.68	FT
OVERTOPPING DISCHARGE	= 1600+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 41.94	FT

PI = 225+60.00
EL = 39.42'
VC = 560'
K = 189
V = 60 MPH+

PI = 218+25.00
EL = 51.77'
VC = 600'
K = 303
V = 60 MPH+



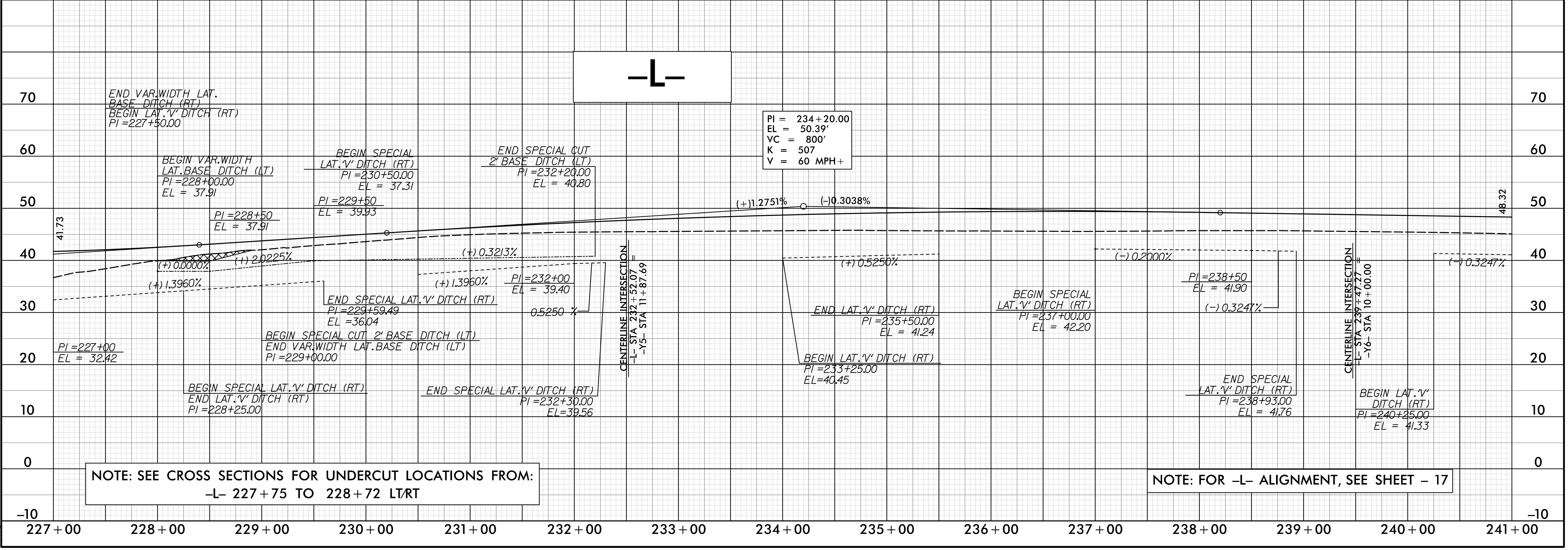
BM#5
SPIKE IN 9" PINE
-L- STA 214+76.00, 126' LT
ELEV. = 45.55'

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
-L- 221+75 TO 222+75 LT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 16

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-L-



PI = 234+20.00
EL = 50.39'
VC = 800'
K = 507
V = 60 MPH+

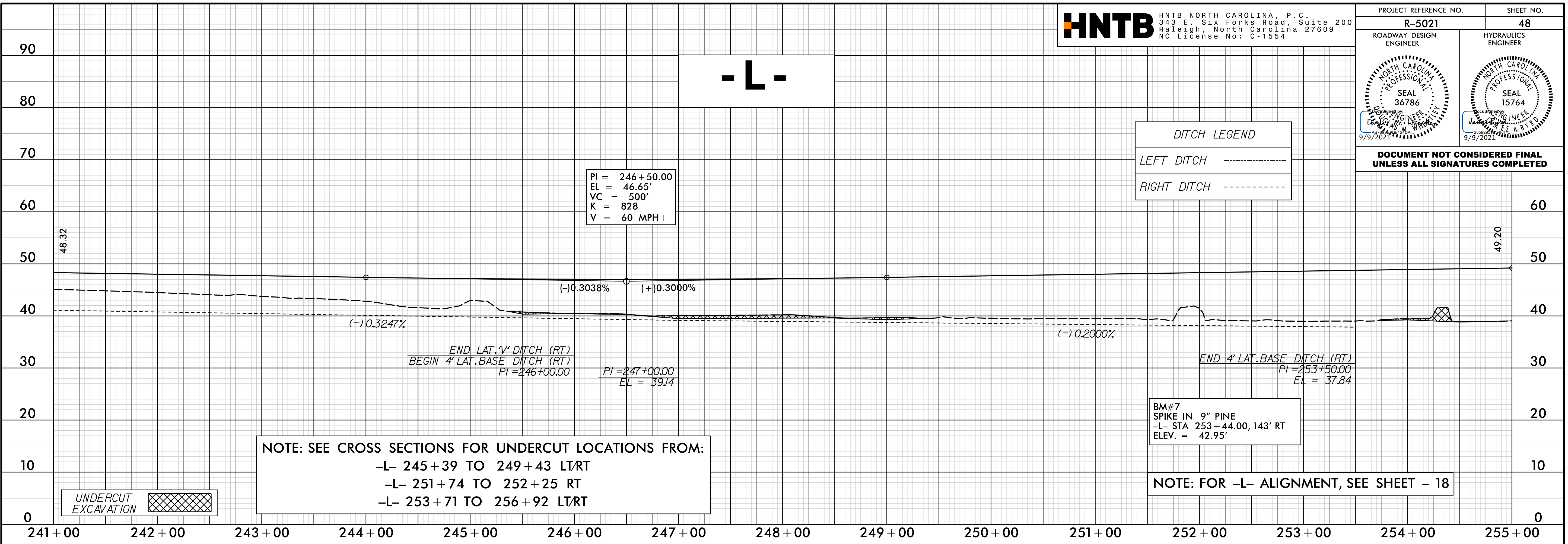
NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
-L- 227+75 TO 228+72 L/RT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 17

5/28/2021

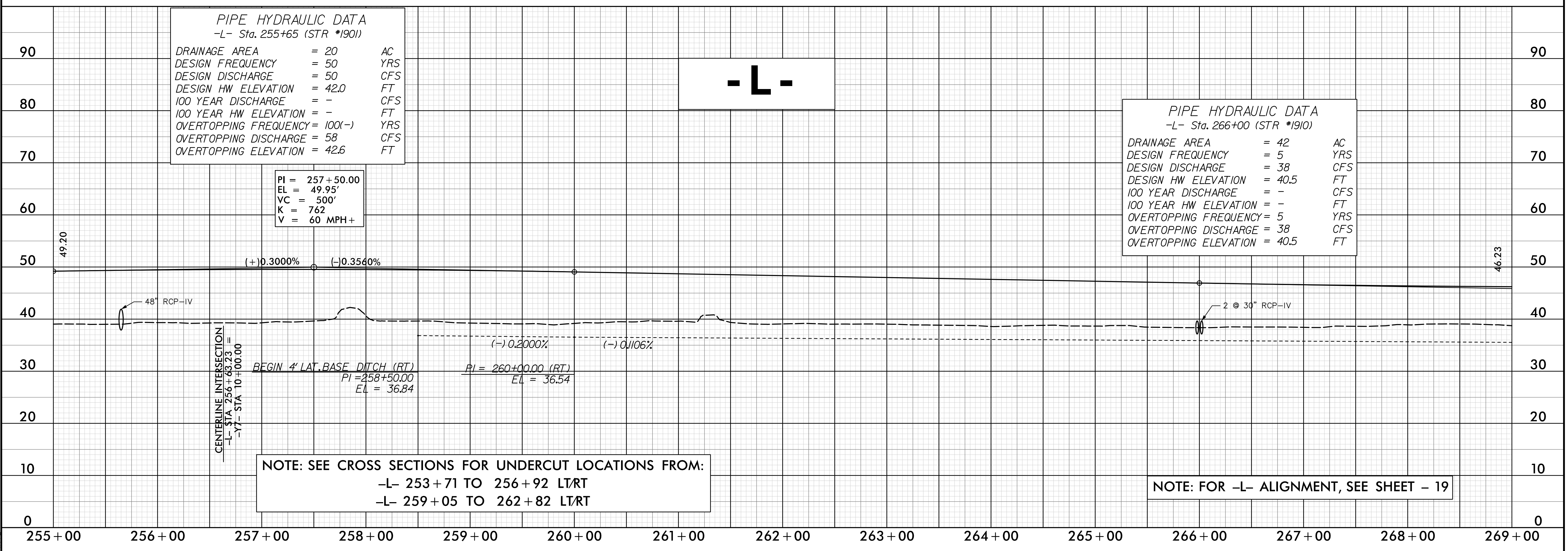
PROJECT REFERENCE NO. R-5021	SHEET NO. 48
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 245+39 TO 249+43 LT/RT
 -L- 251+74 TO 252+25 RT
 -L- 253+71 TO 256+92 LT/RT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 18



PIPE HYDRAULIC DATA
-L- Sta. 255+65 (STR #1901)

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 50	CFS
DESIGN HW ELEVATION	= 42.0	FT
100 YEAR DISCHARGE	= -	CFS
100 YEAR HW ELEVATION	= -	FT
OVERTOPPING FREQUENCY	= 100(-)	YRS
OVERTOPPING DISCHARGE	= 58	CFS
OVERTOPPING ELEVATION	= 42.6	FT

PIPE HYDRAULIC DATA
-L- Sta. 266+00 (STR #1910)

DRAINAGE AREA	= 42	AC
DESIGN FREQUENCY	= 5	YRS
DESIGN DISCHARGE	= 38	CFS
DESIGN HW ELEVATION	= 40.5	FT
100 YEAR DISCHARGE	= -	CFS
100 YEAR HW ELEVATION	= -	FT
OVERTOPPING FREQUENCY	= 5	YRS
OVERTOPPING DISCHARGE	= 38	CFS
OVERTOPPING ELEVATION	= 40.5	FT

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 253+71 TO 256+92 LT/RT
 -L- 259+05 TO 262+82 LT/RT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 19

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PROJECT REFERENCE NO. R-5021	SHEET NO. 49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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DITCH LEGEND

LEFT DITCH -----

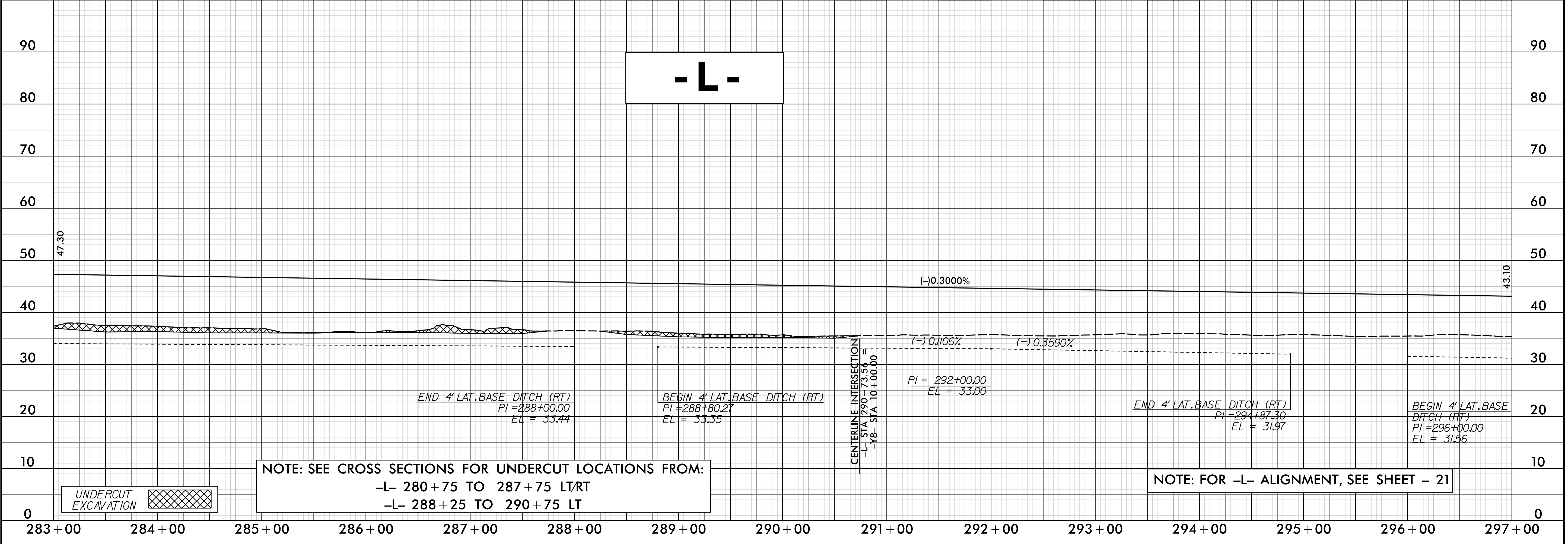
RIGHT DITCH -----



NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 271+45 TO 274+25 LT/RT
 -L- 277+75 TO 278+75 LT
 -L- 280+75 TO 287+75 LT/RT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 20

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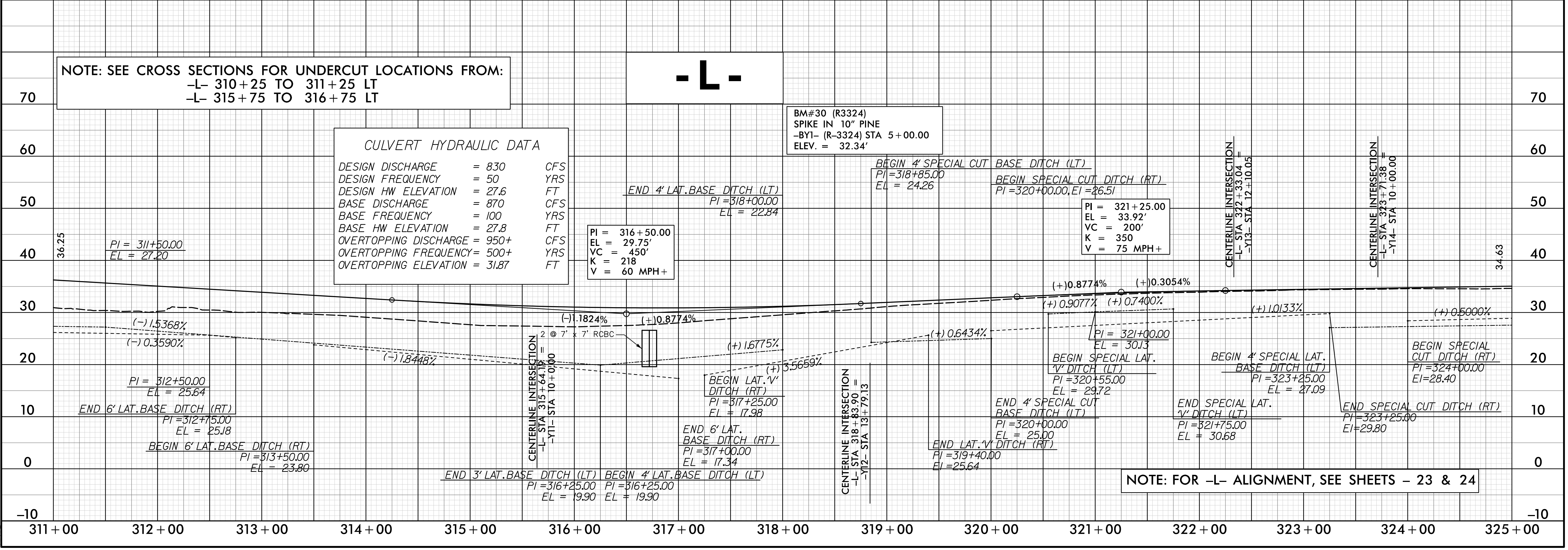
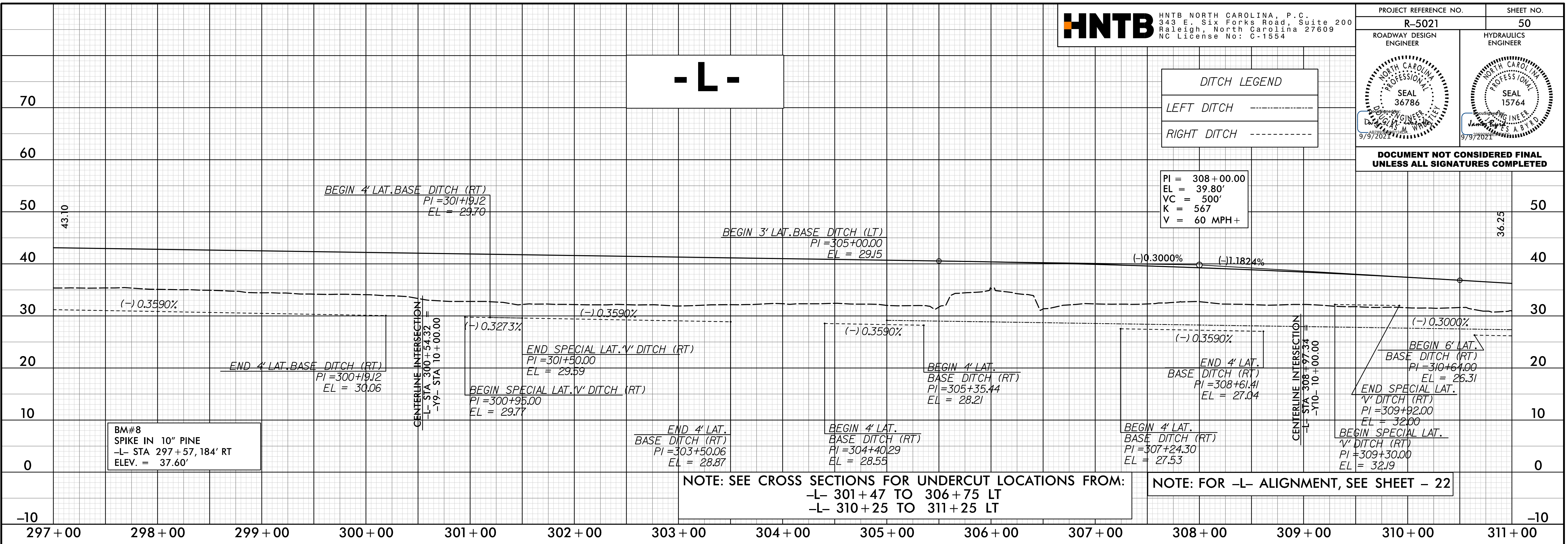
NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -L- 280+75 TO 287+75 LT/RT
 -L- 288+25 TO 290+75 LT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 21

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PROJECT REFERENCE NO. R-5021	SHEET NO. 50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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22-JUL-2021 09:58
Roadway (P-co) R-5021_L_PFL_PSH50.dgn
DATE

5/28/19

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 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

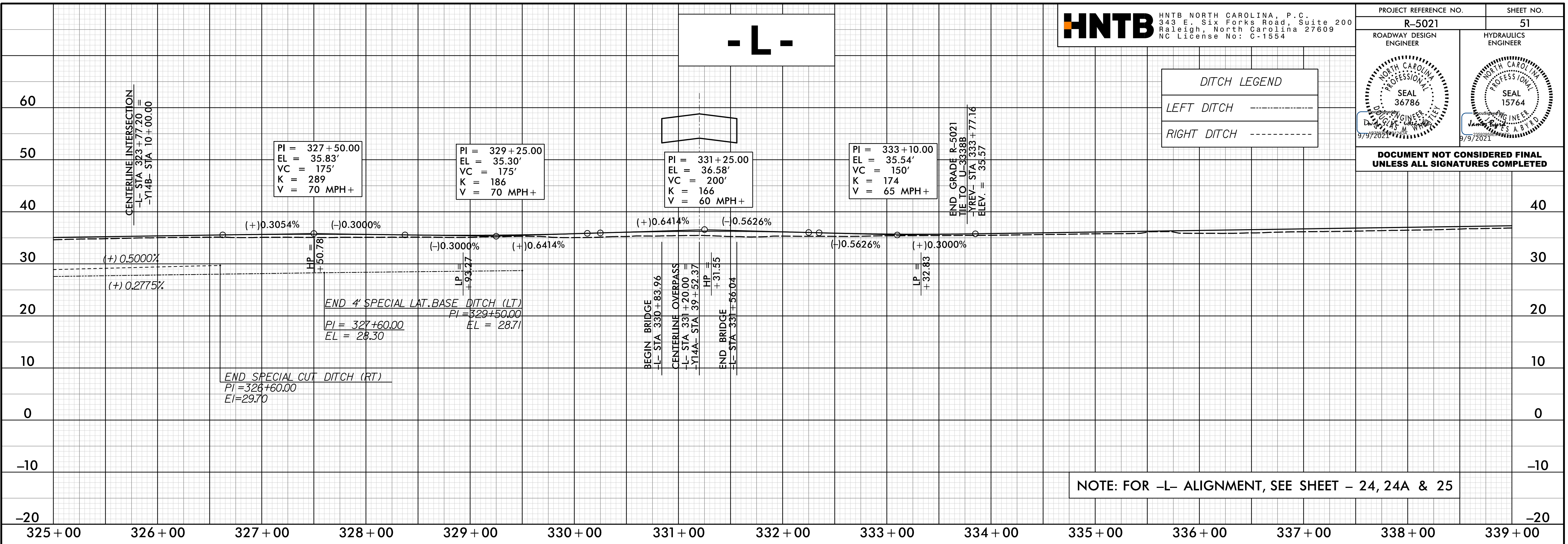
PROJECT REFERENCE NO. R-5021	SHEET NO. 51
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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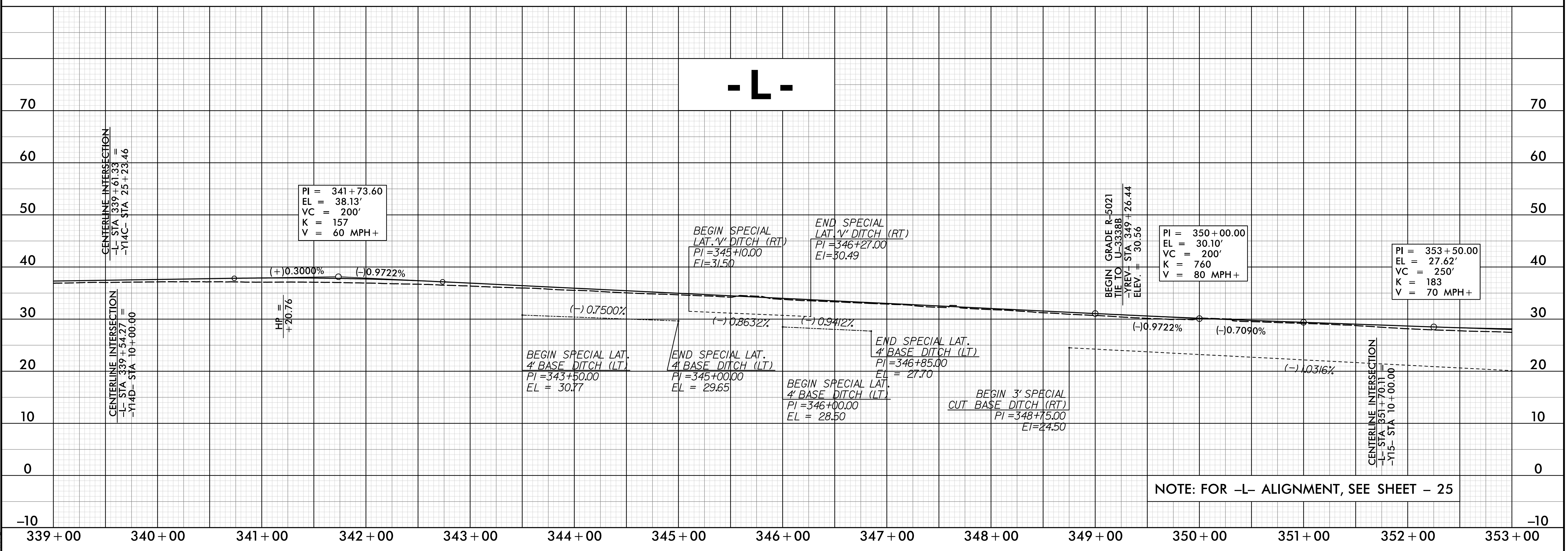
DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -



NOTE: FOR -L- ALIGNMENT, SEE SHEET - 24, 24A & 25



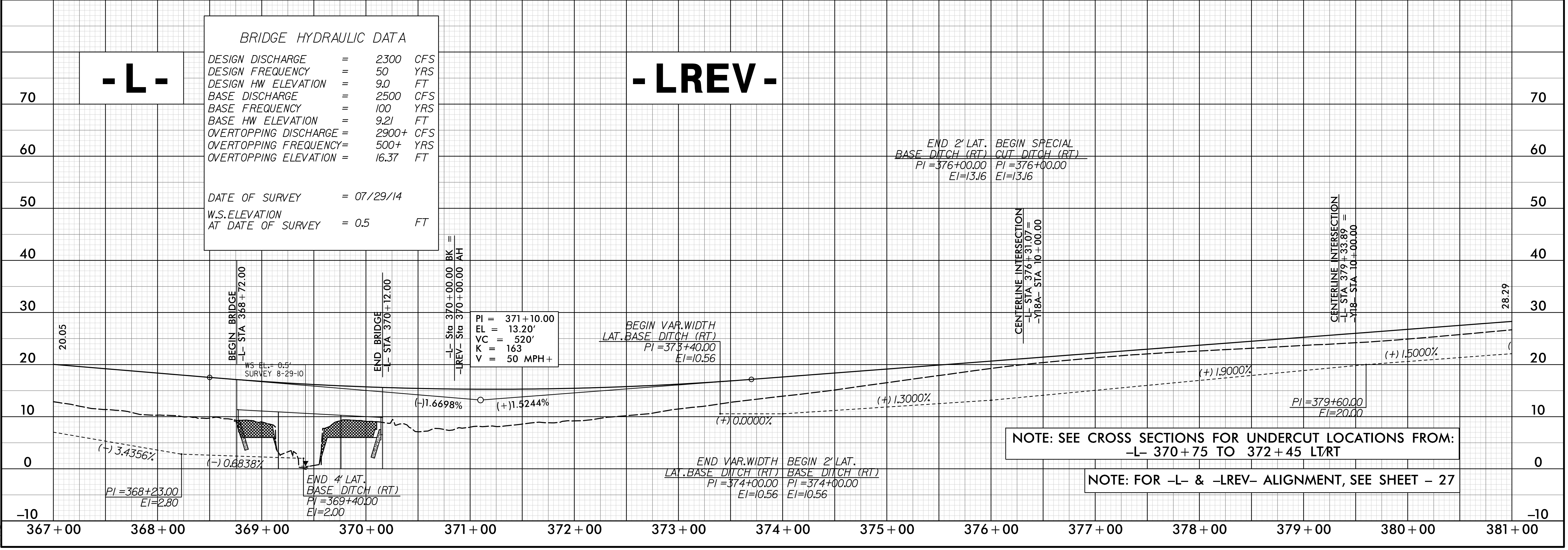
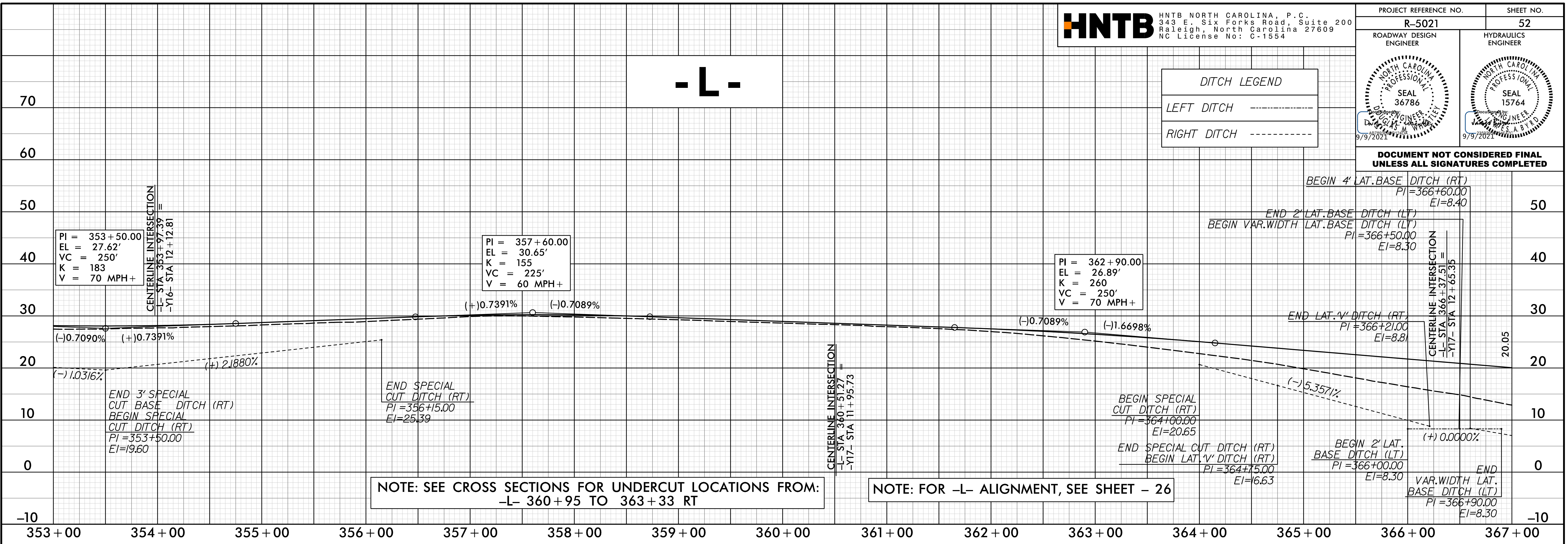
NOTE: FOR -L- ALIGNMENT, SEE SHEET - 25

22-JUL-2021 09:58
 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH51.dgn)
 DATE

5/28/19

PROJECT REFERENCE NO. R-5021	SHEET NO. 52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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22-JUL-2021 09:58
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AHL

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO. R-5021 SHEET NO. 53

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL 36786

SEAL 15764

9/9/2021

9/9/2021

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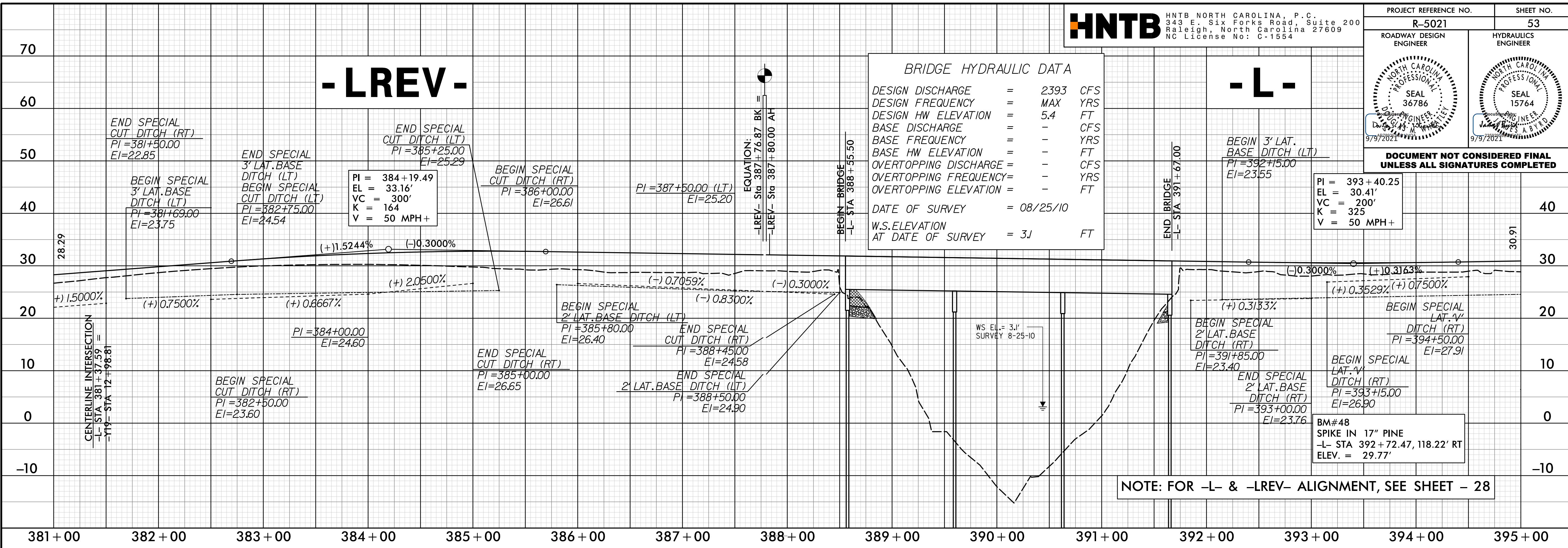
-LREV-

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 2393 CFS
 DESIGN FREQUENCY = MAX YRS
 DESIGN HW ELEVATION = 5.4 FT
 BASE DISCHARGE = - CFS
 BASE FREQUENCY = - YRS
 BASE HW ELEVATION = - FT
 OVERTOPPING DISCHARGE = - CFS
 OVERTOPPING FREQUENCY = - YRS
 OVERTOPPING ELEVATION = - FT

DATE OF SURVEY = 08/25/10
 W.S. ELEVATION AT DATE OF SURVEY = 3J FT

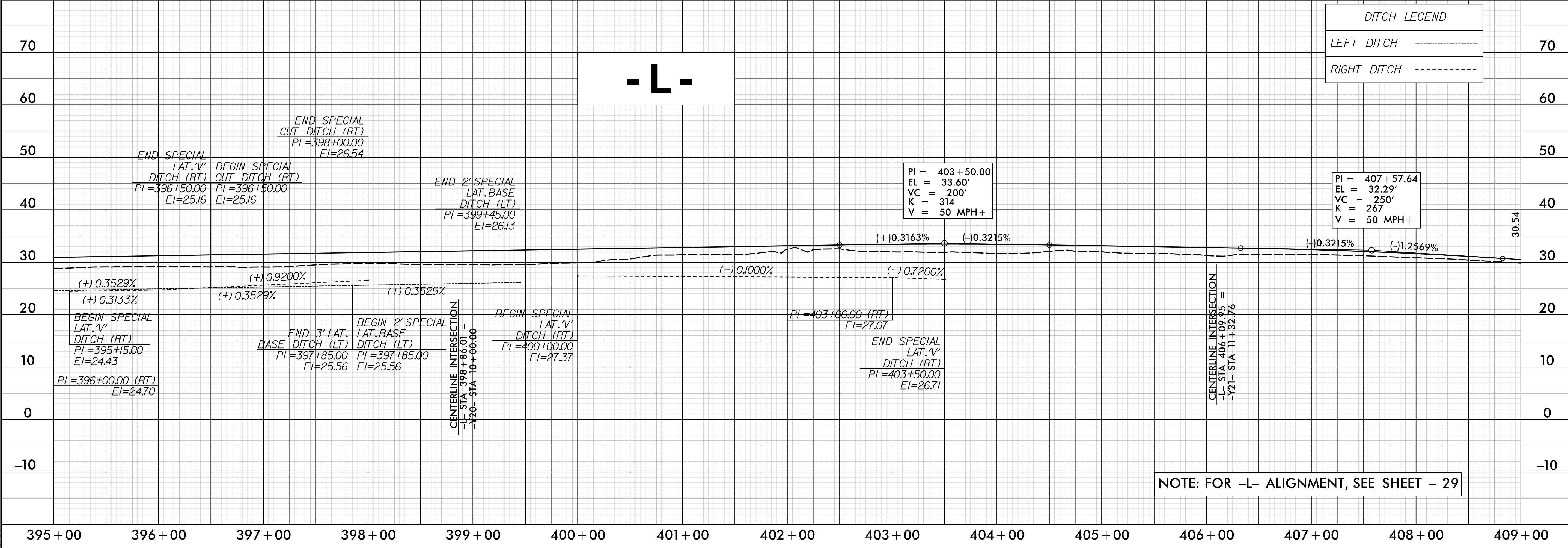


DITCH LEGEND

LEFT DITCH -----

RIGHT DITCH -----

-L-

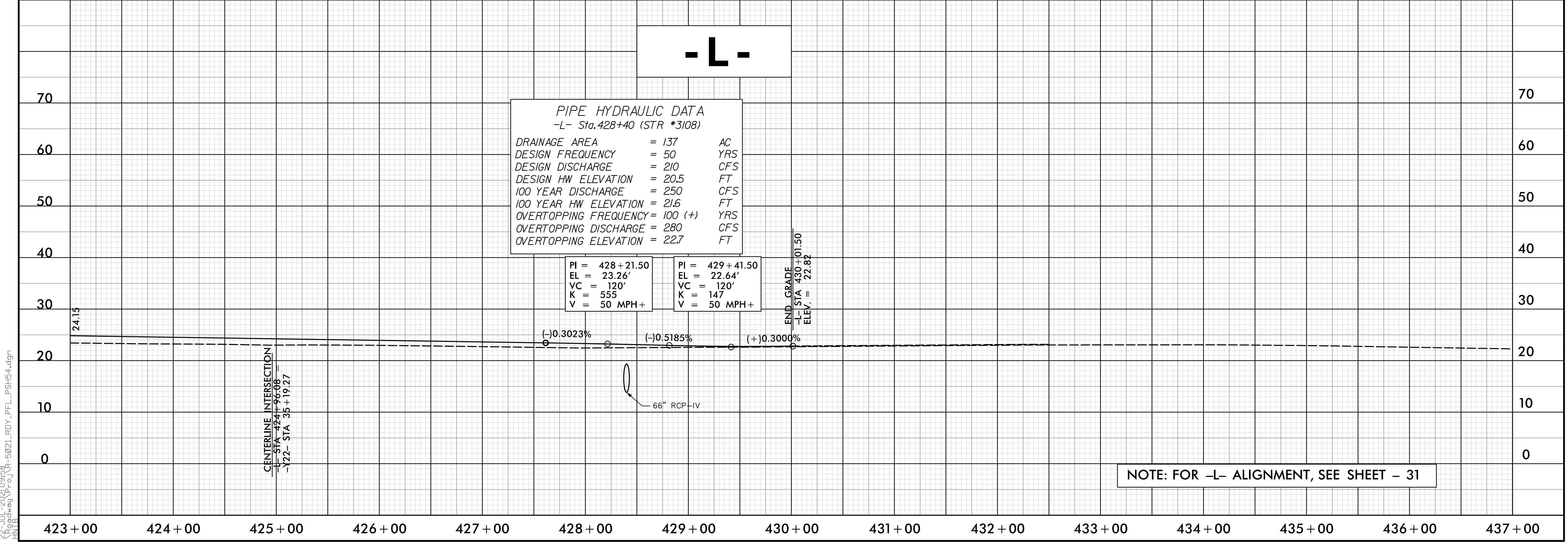
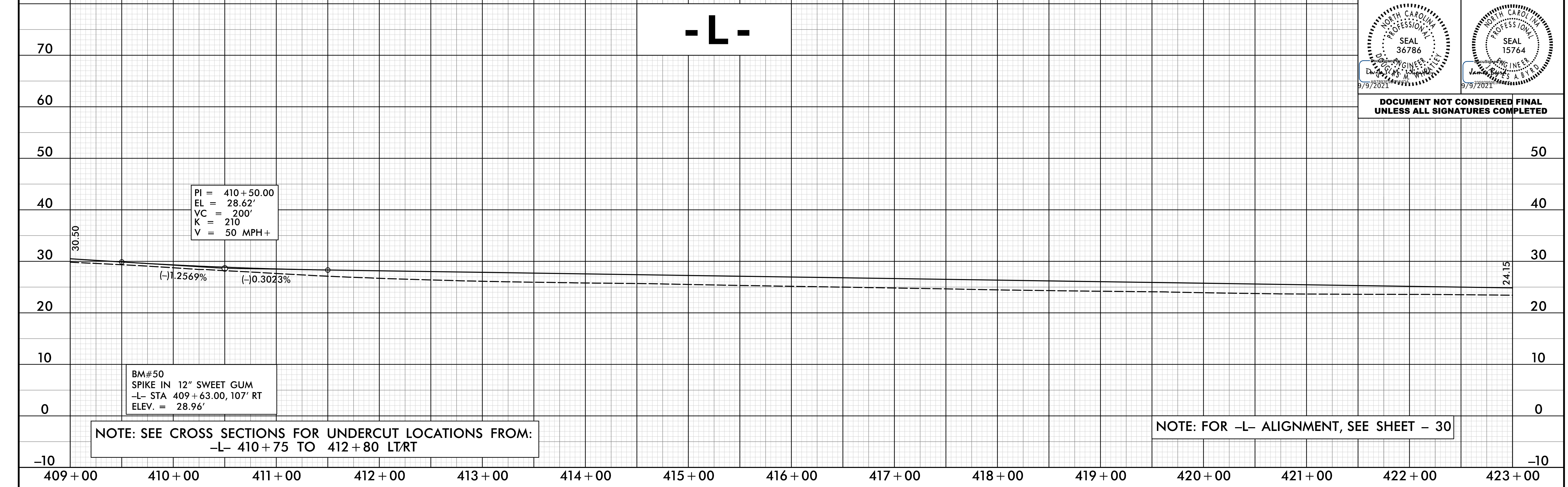


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5/28/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 54
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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22-JUL-2021 09:58
 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH54.dgn)
 TITLE

5/28/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

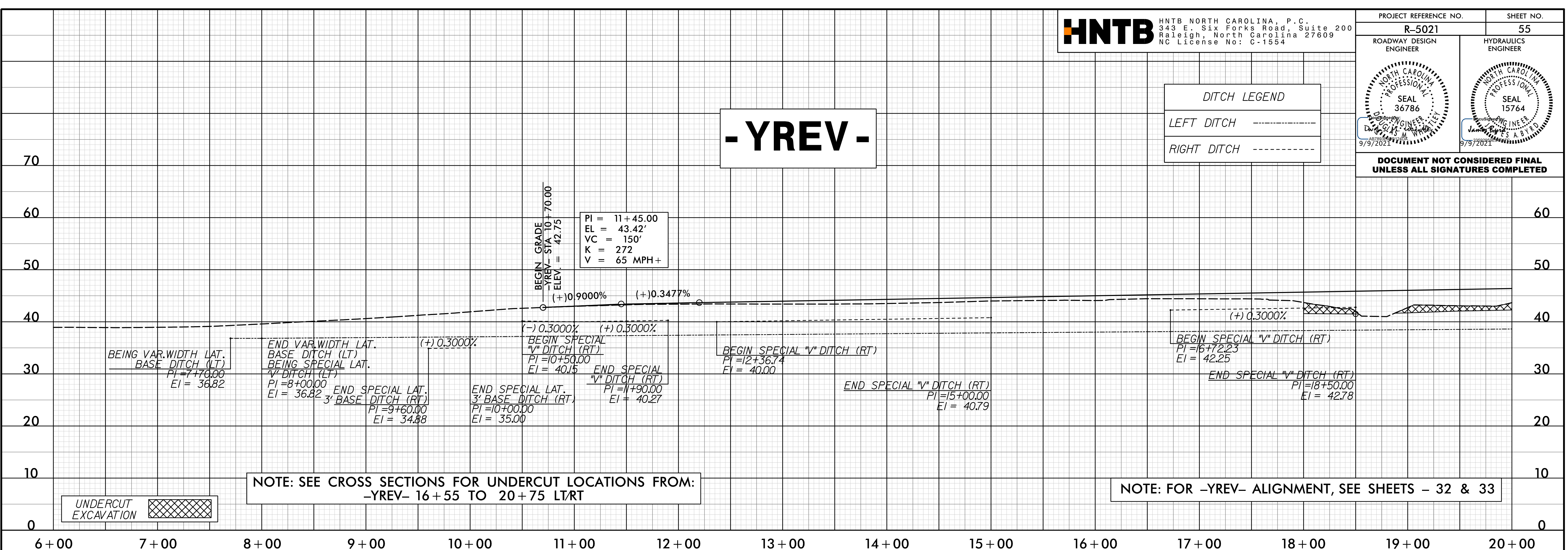
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH -----

RIGHT DITCH -----

- YREV -

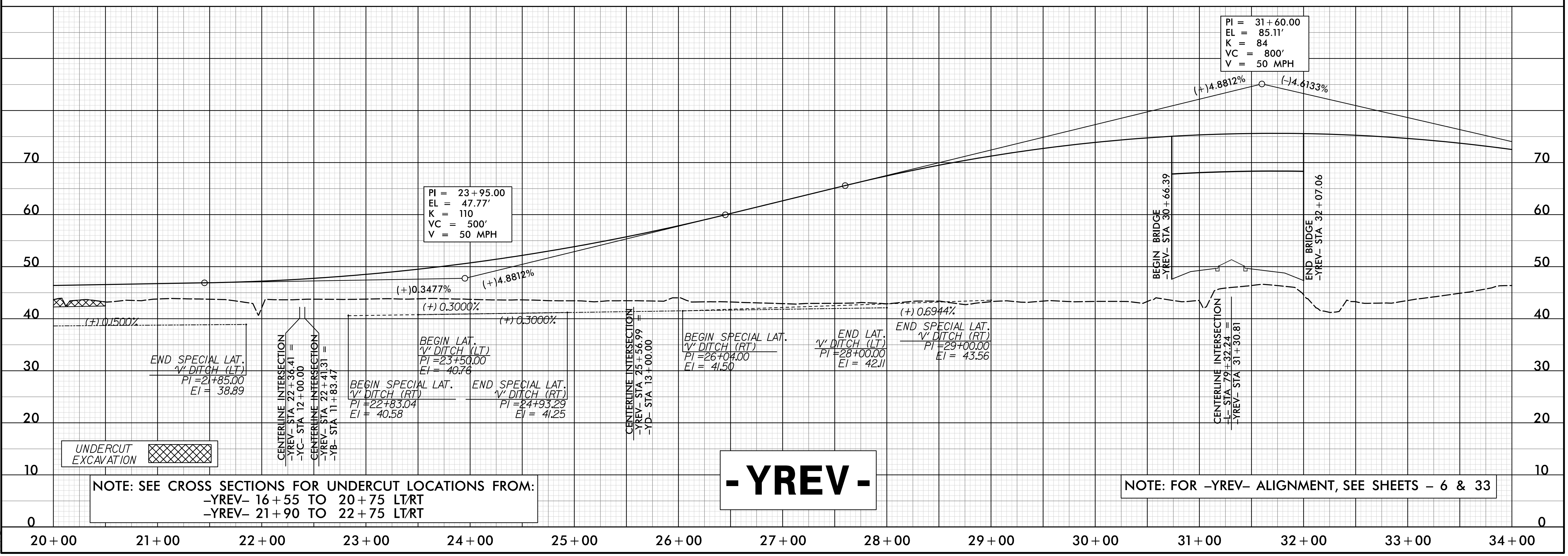


UNDERCUT EXCAVATION

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -YREV- 16+55 TO 20+75 LT/RT

NOTE: FOR -YREV- ALIGNMENT, SEE SHEETS - 32 & 33

22-JUL-2021 09:58
Roadway (P-co) R-5021_PFL_PSH55.dgn



UNDERCUT EXCAVATION

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:
 -YREV- 16+55 TO 20+75 LT/RT
 -YREV- 21+90 TO 22+75 LT/RT

- YREV -

NOTE: FOR -YREV- ALIGNMENT, SEE SHEETS - 6 & 33

5/28/21

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 343 E. SIX FORKS ROAD, SUITE 200
 RALEIGH, NORTH CAROLINA 27609
 NC License No: C-1554

PROJECT REFERENCE NO. R-5021	SHEET NO. 56
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

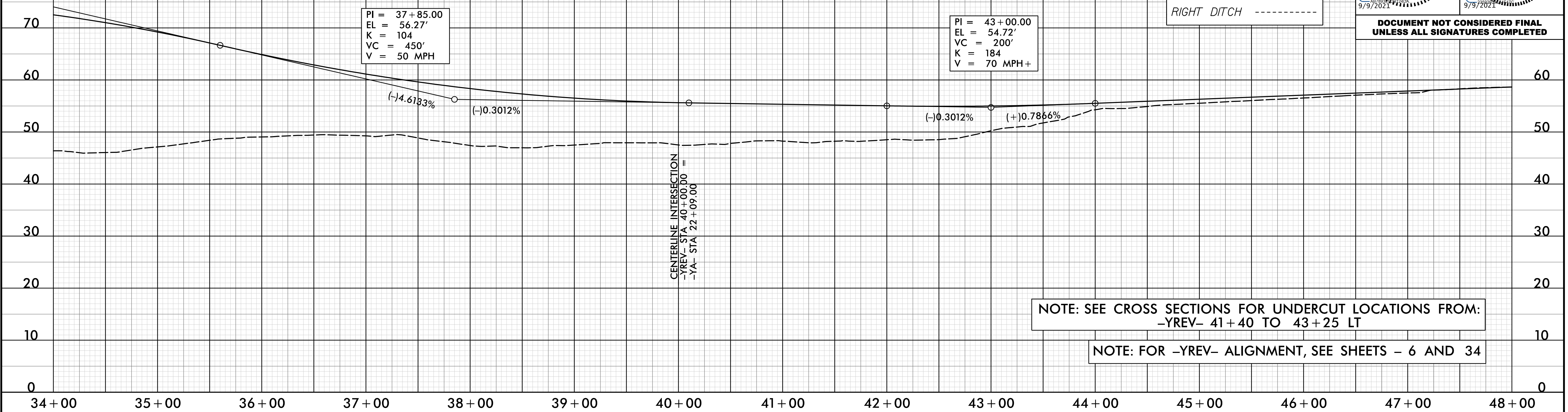
- YREV -

DITCH LEGEND

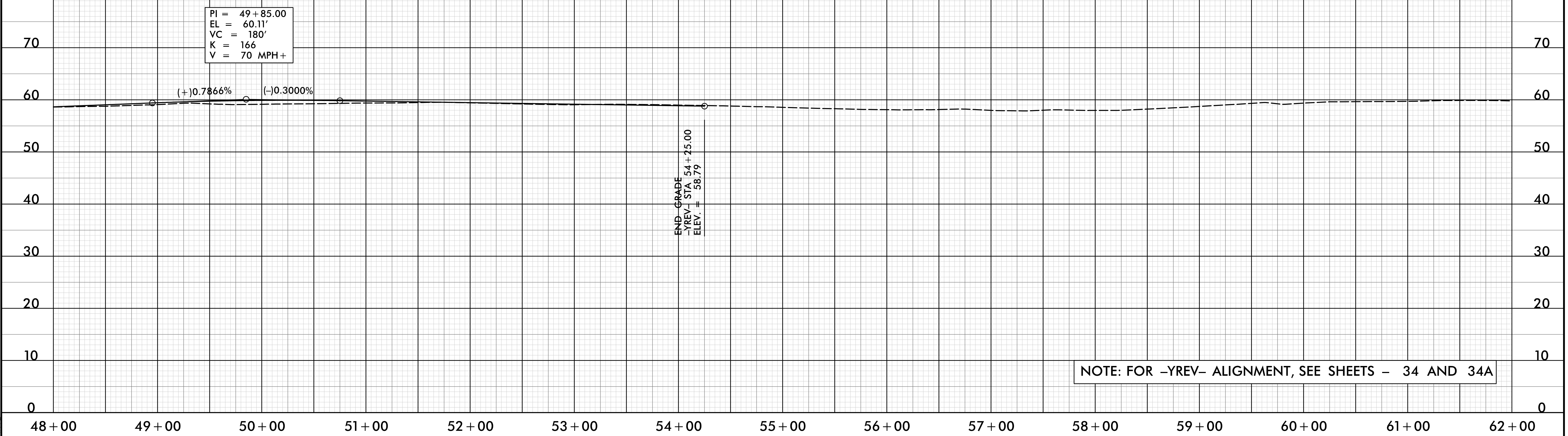
LEFT DITCH -----

RIGHT DITCH -----

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



- YREV -



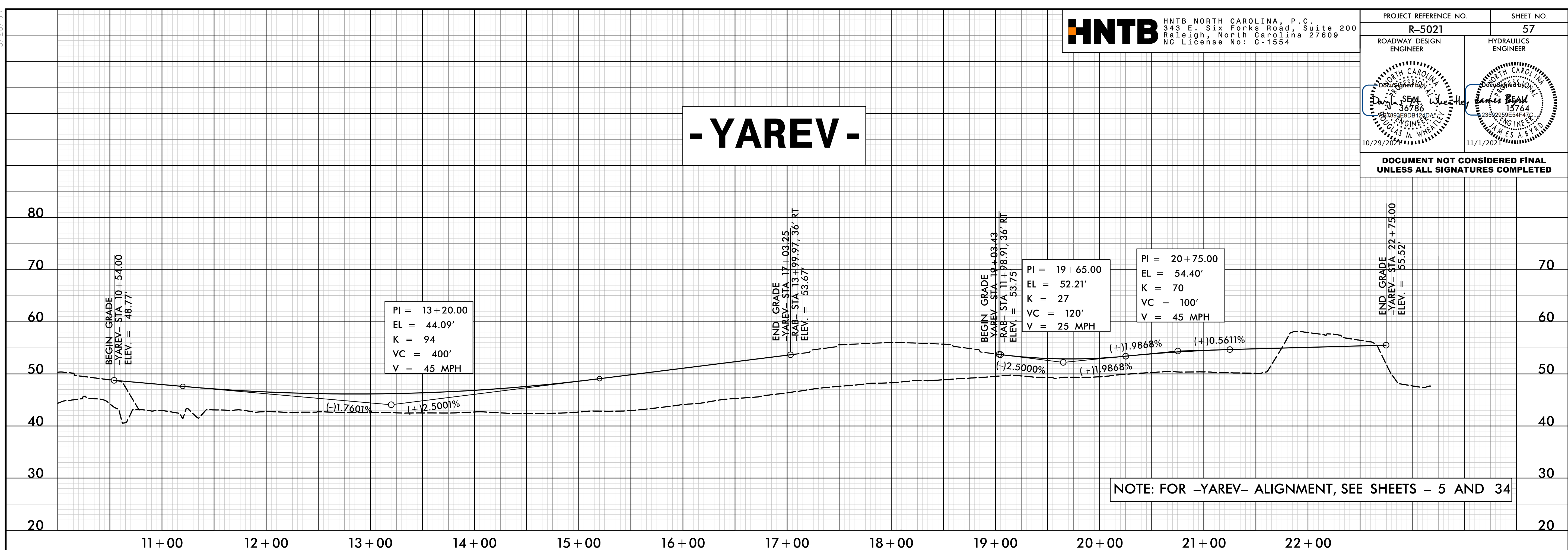
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 HNTB

5/28/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 57
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<i>James M. Whitley</i> SEAL 36786 10/29/2021	<i>James Beal</i> SEAL 15764 11/1/2021

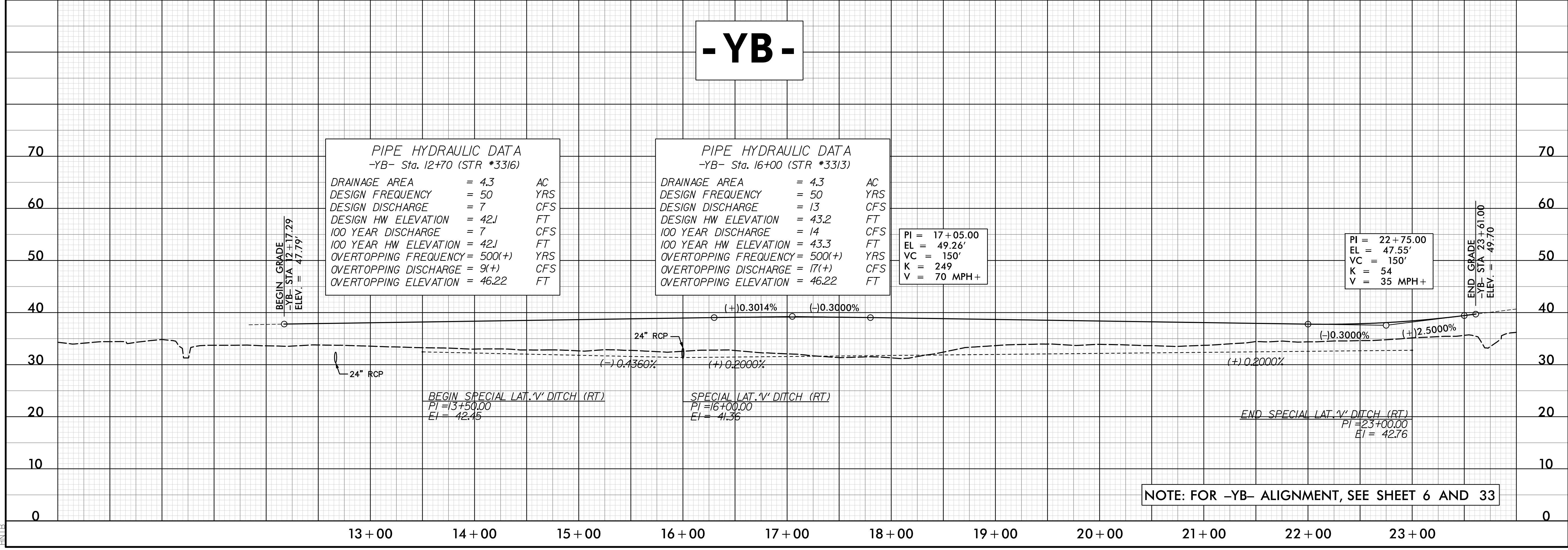
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

- YAREV -



NOTE: FOR -YAREV- ALIGNMENT, SEE SHEETS - 5 AND 34

- YB -



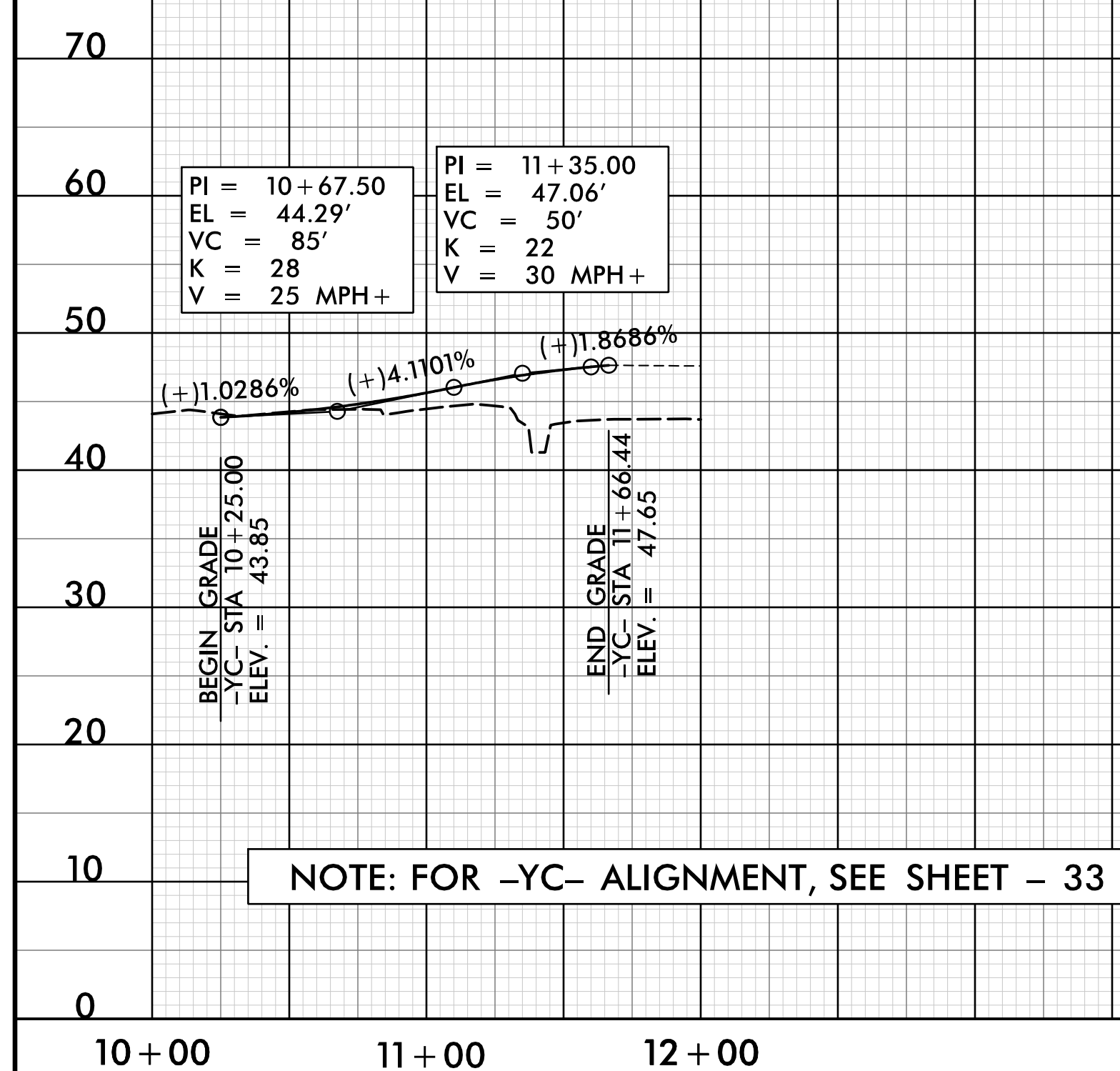
NOTE: FOR -YB- ALIGNMENT, SEE SHEET 6 AND 33

20 SEP 2021 16:03
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HNTB

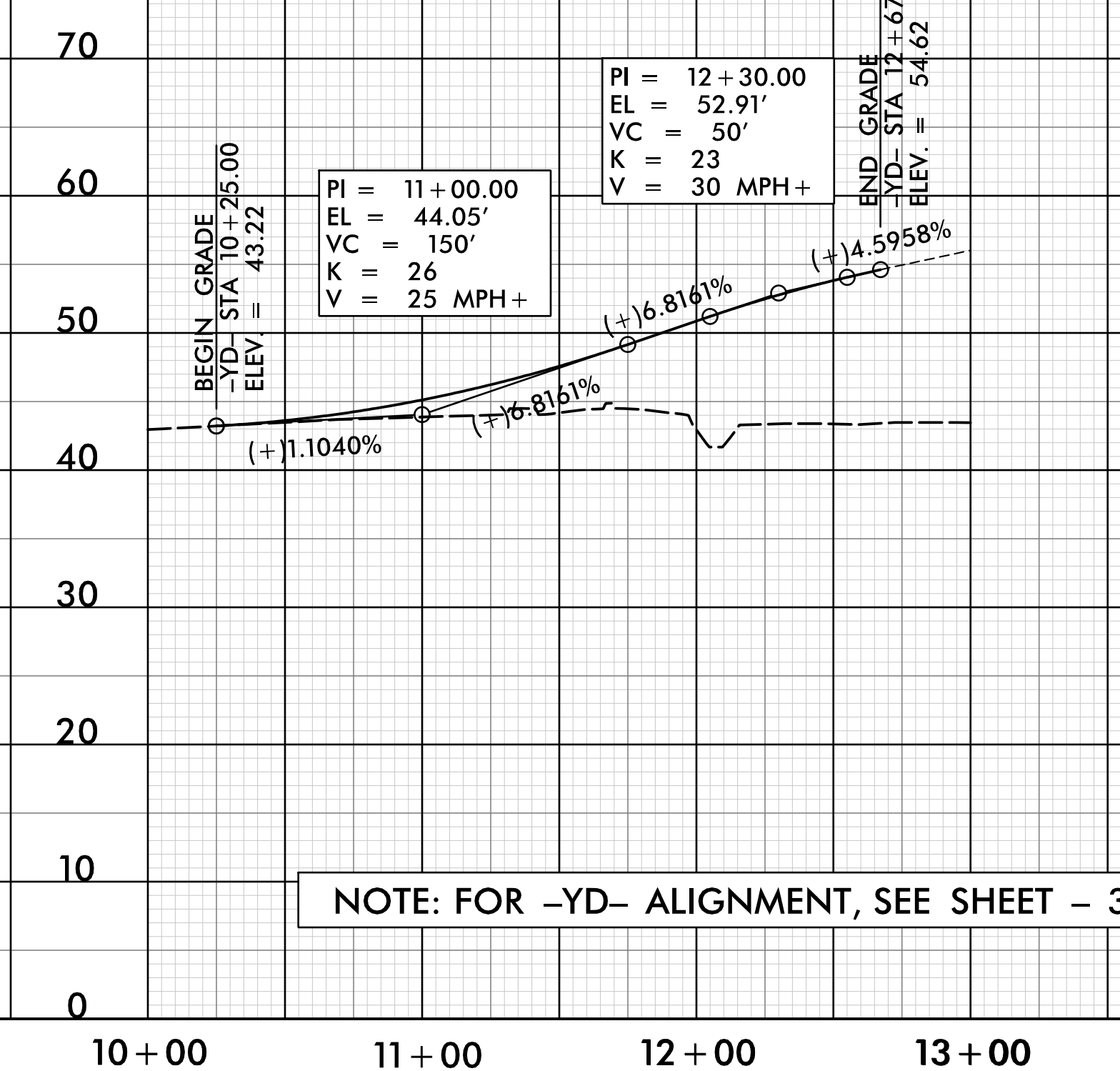
5/28/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 58
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

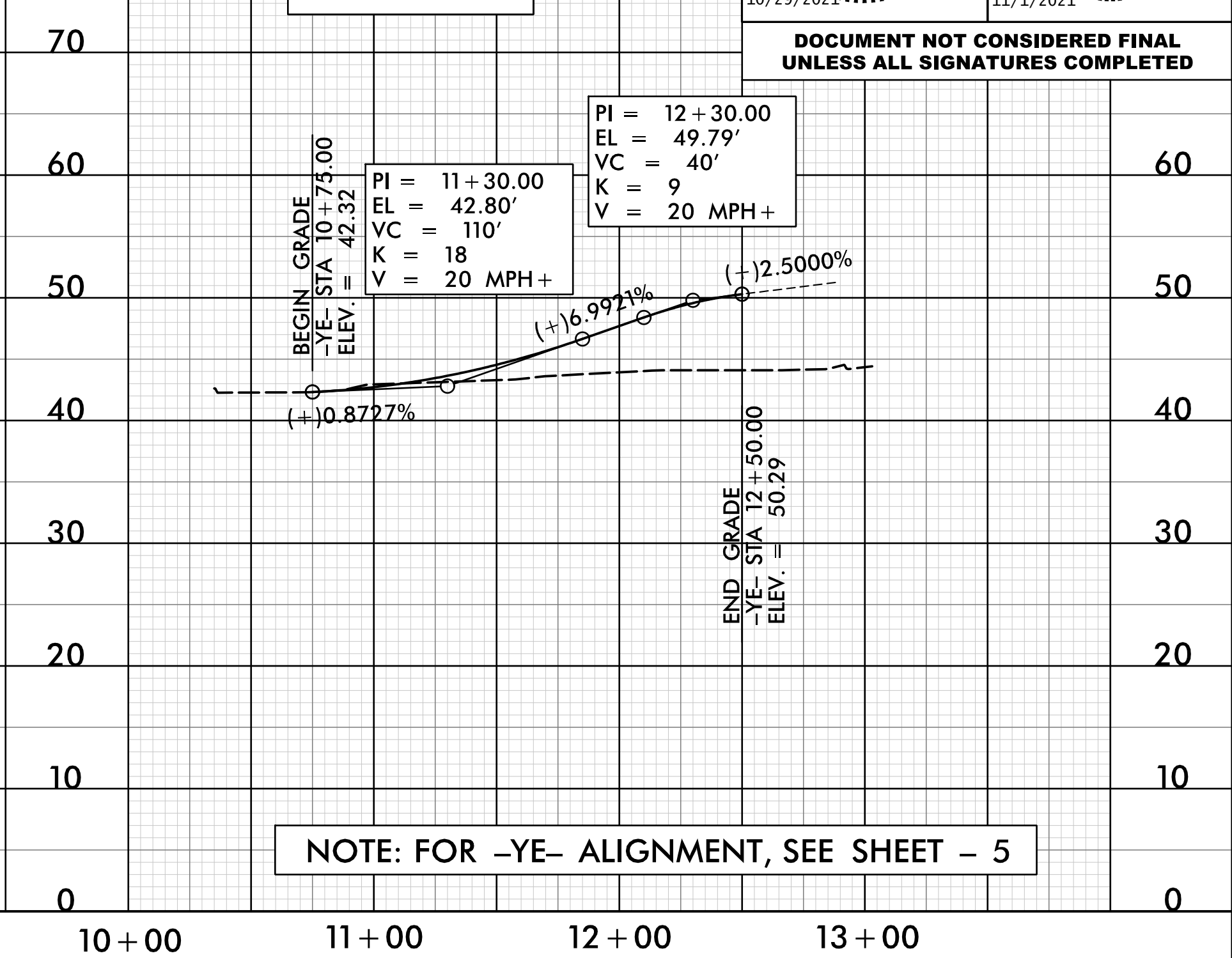
-YC-



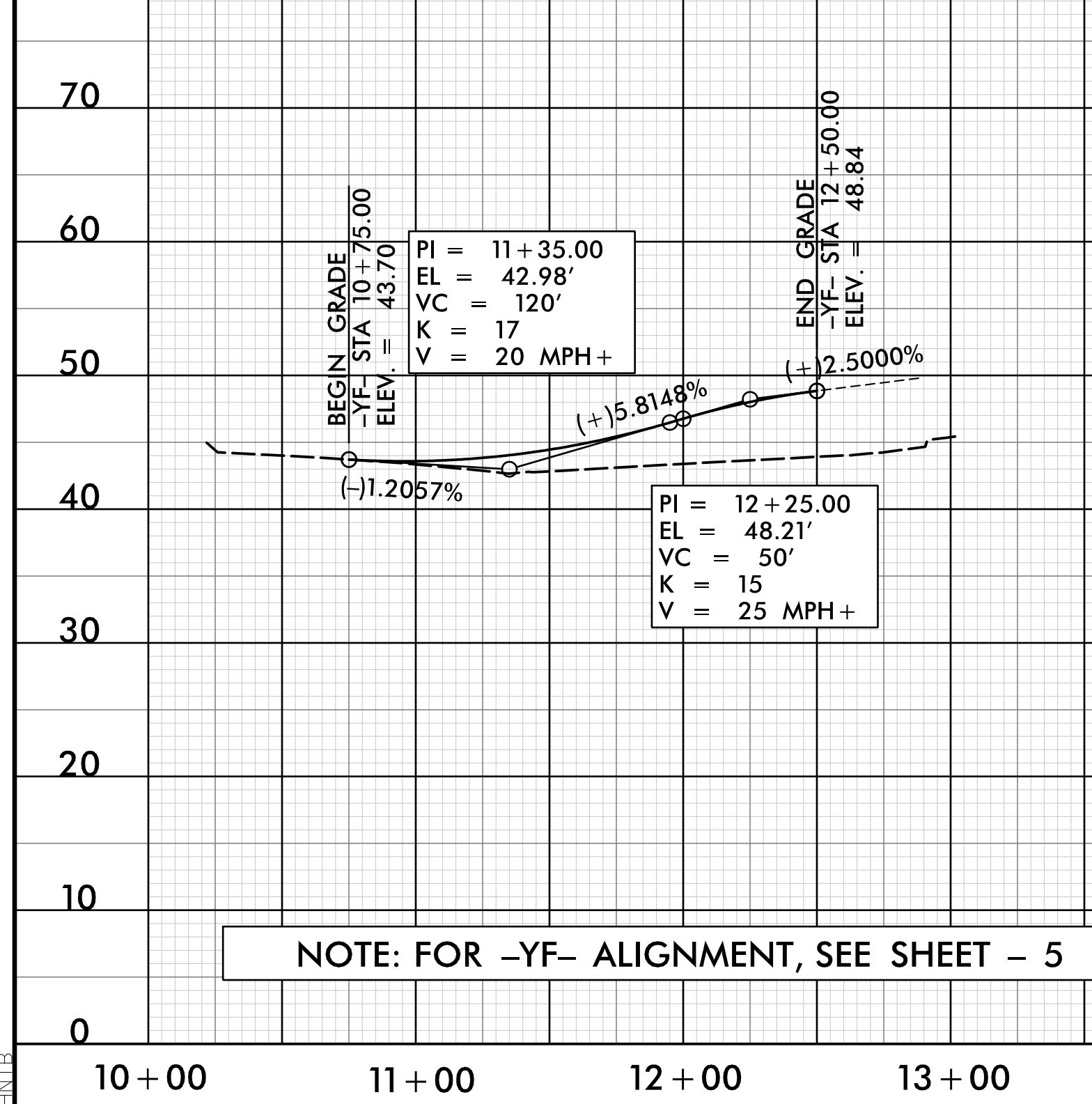
-YD-



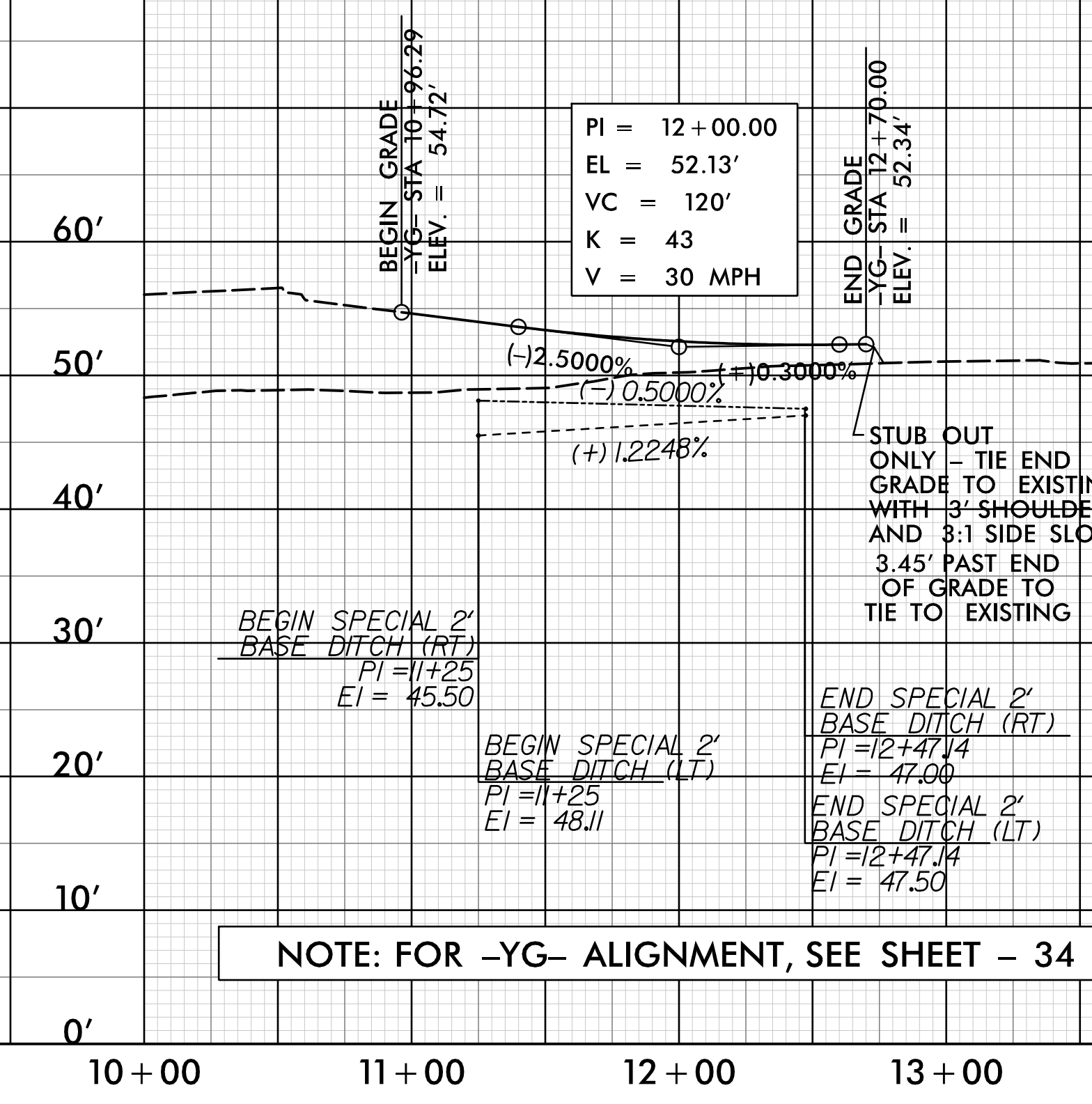
-YE-



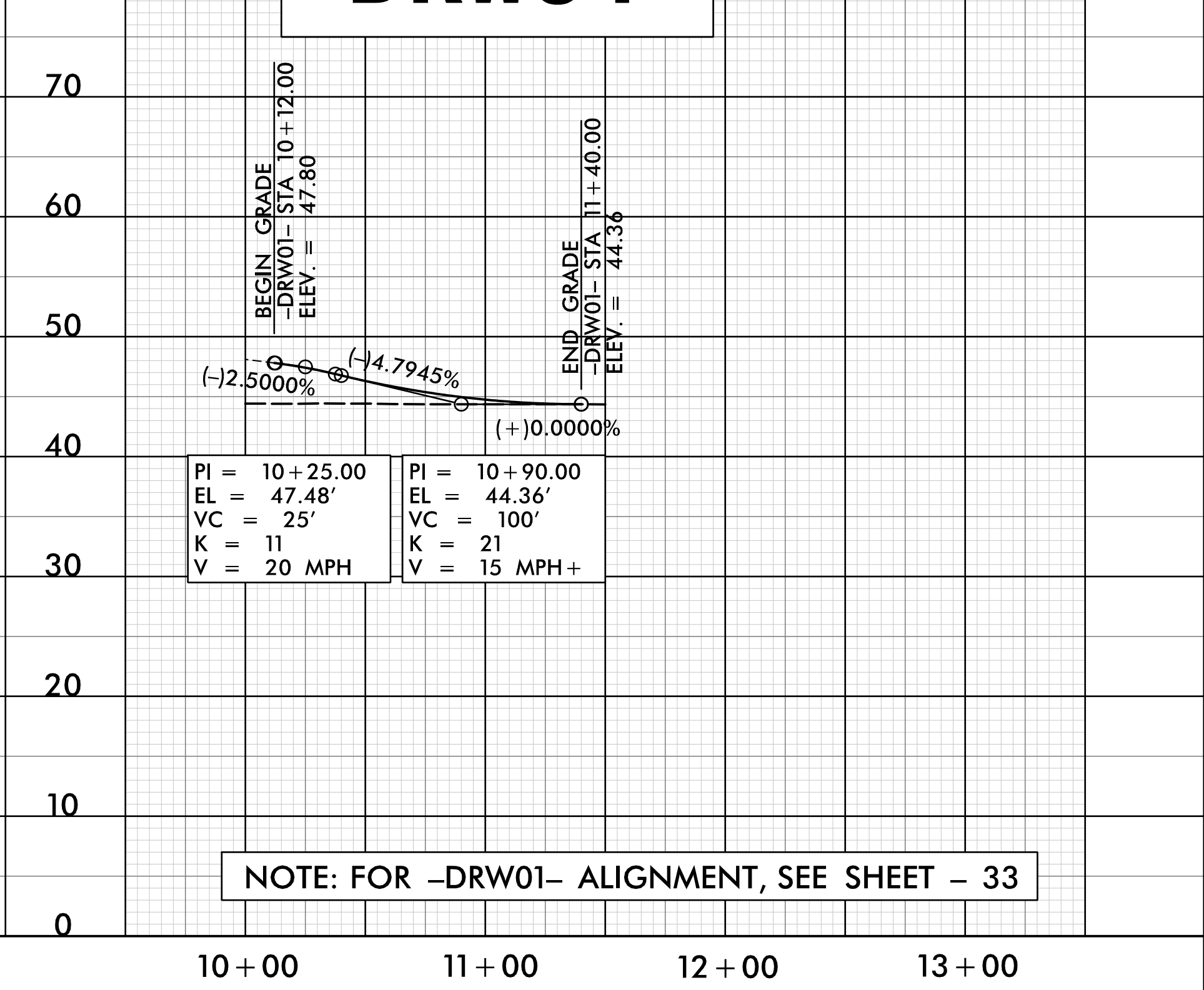
-YF-



-YG-



-DRW01-



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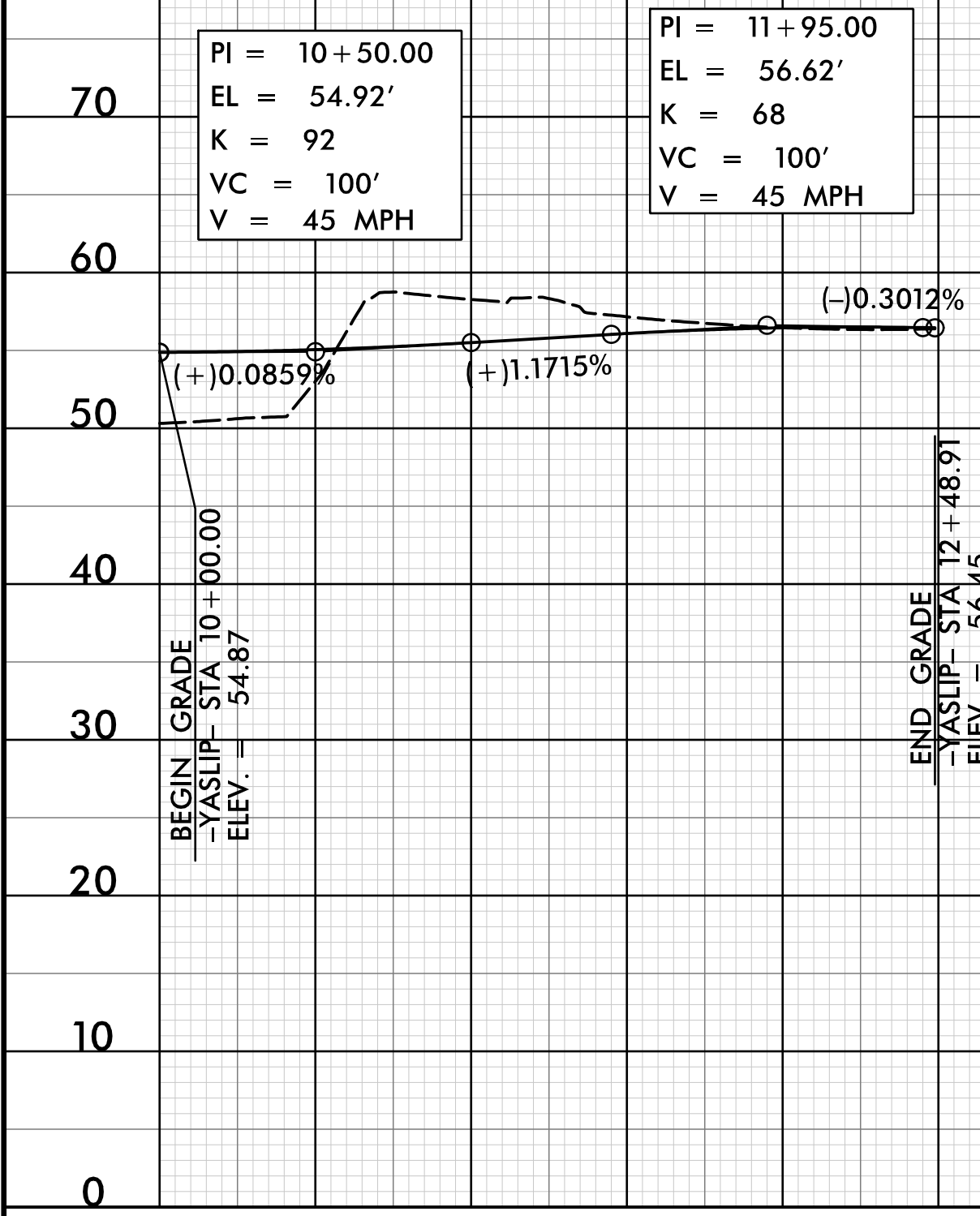
5/28/20

PROJECT REFERENCE NO. R-5021	SHEET NO. 59
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-YASLIP-

PI = 10+50.00 EL = 54.92' K = 92 VC = 100' V = 45 MPH	PI = 11+95.00 EL = 56.62' K = 68 VC = 100' V = 45 MPH
---	---



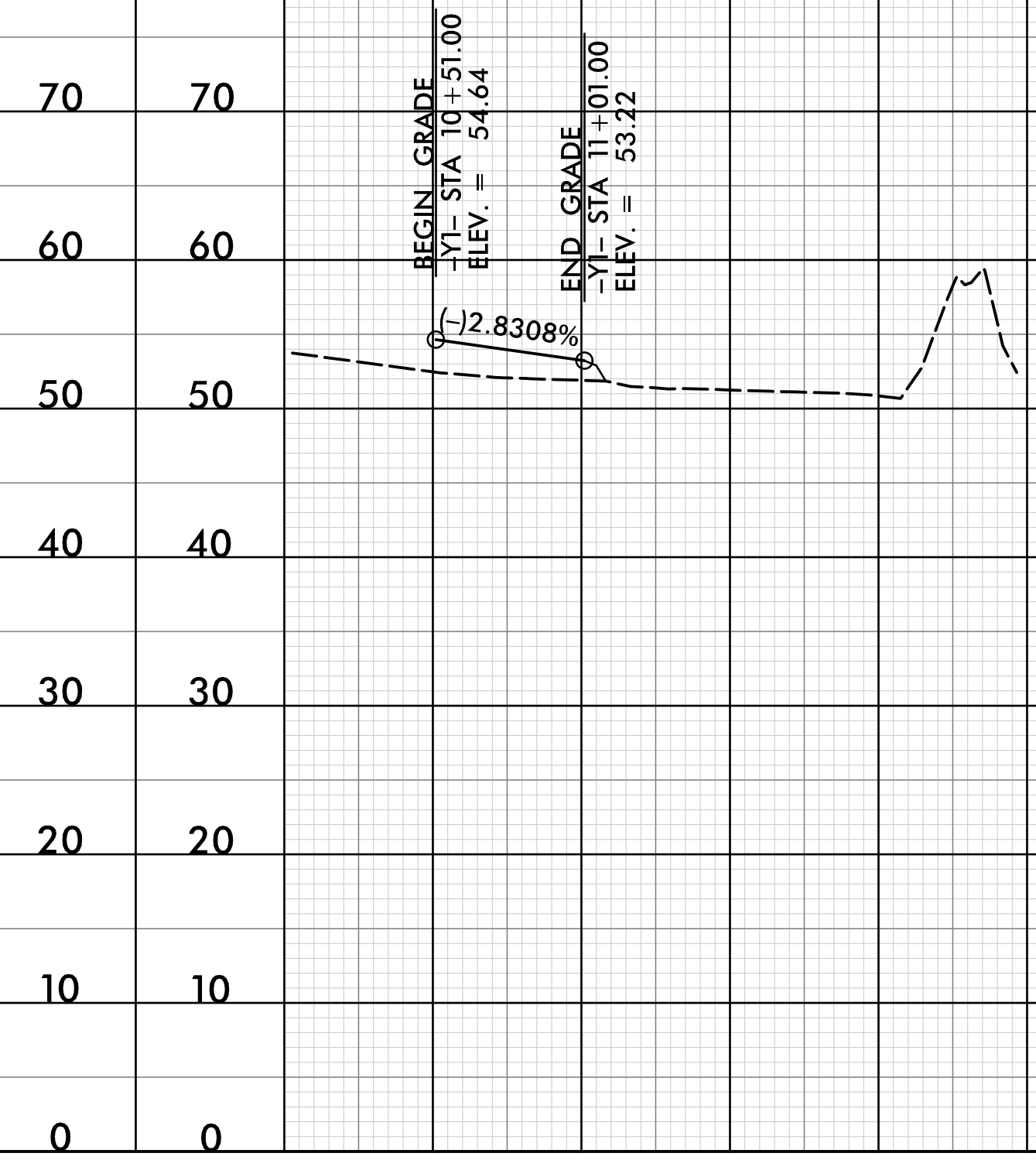
NOTE: FOR -YASLIP- ALIGNMENT, SEE SHEET - 34

-Y1-

DITCH LEGEND

LEFT DITCH -----

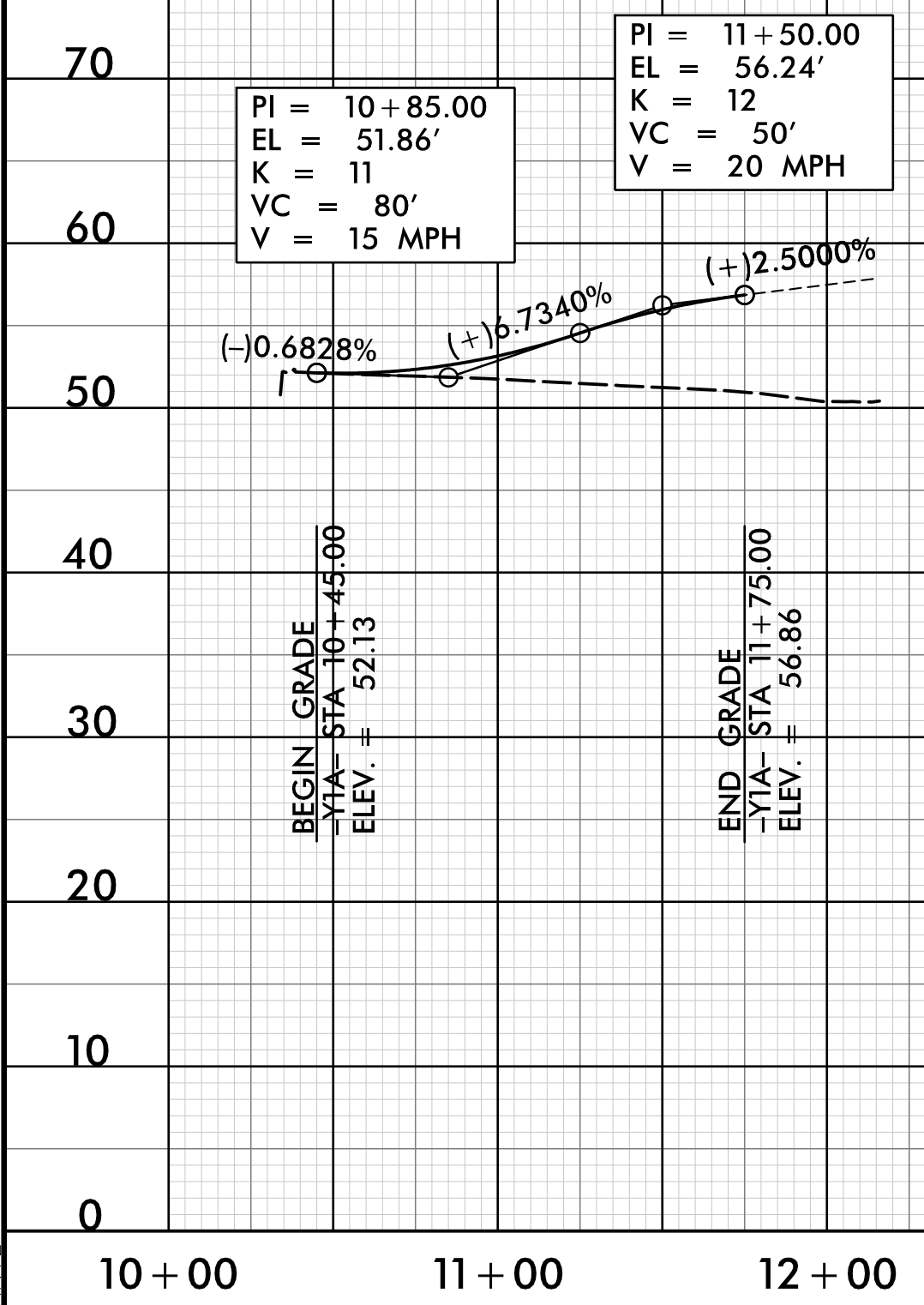
RIGHT DITCH -----



NOTE: FOR -Y1- ALIGNMENT, SEE SHEET - 11

-Y1A-

PI = 10+85.00 EL = 51.86' K = 11 VC = 80' V = 15 MPH	PI = 11+50.00 EL = 56.24' K = 12 VC = 50' V = 20 MPH
--	--

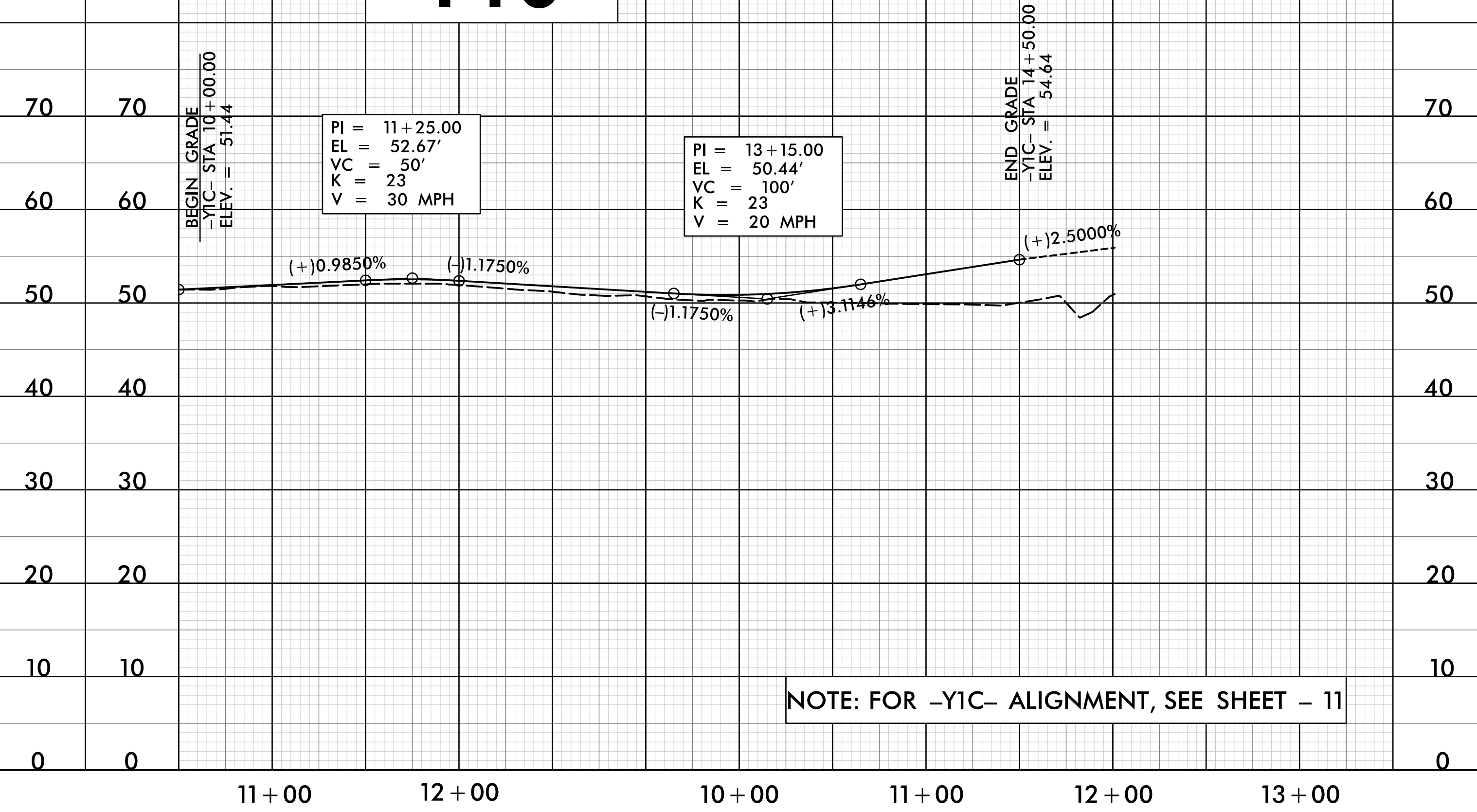


NOTE: FOR -Y1A- ALIGNMENT, SEE SHEET - 8

-Y1C-

PI = 11+25.00 EL = 52.67' VC = 50' K = 23 V = 30 MPH
--

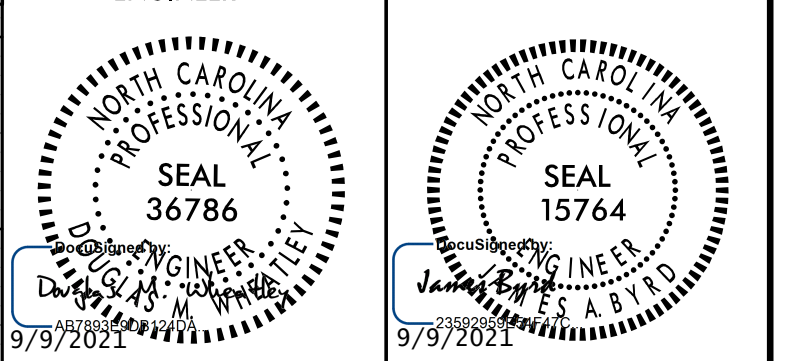
PI = 13+15.00 EL = 50.44' VC = 100' K = 23 V = 20 MPH



NOTE: FOR -Y1C- ALIGNMENT, SEE SHEET - 11

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- Y2 -

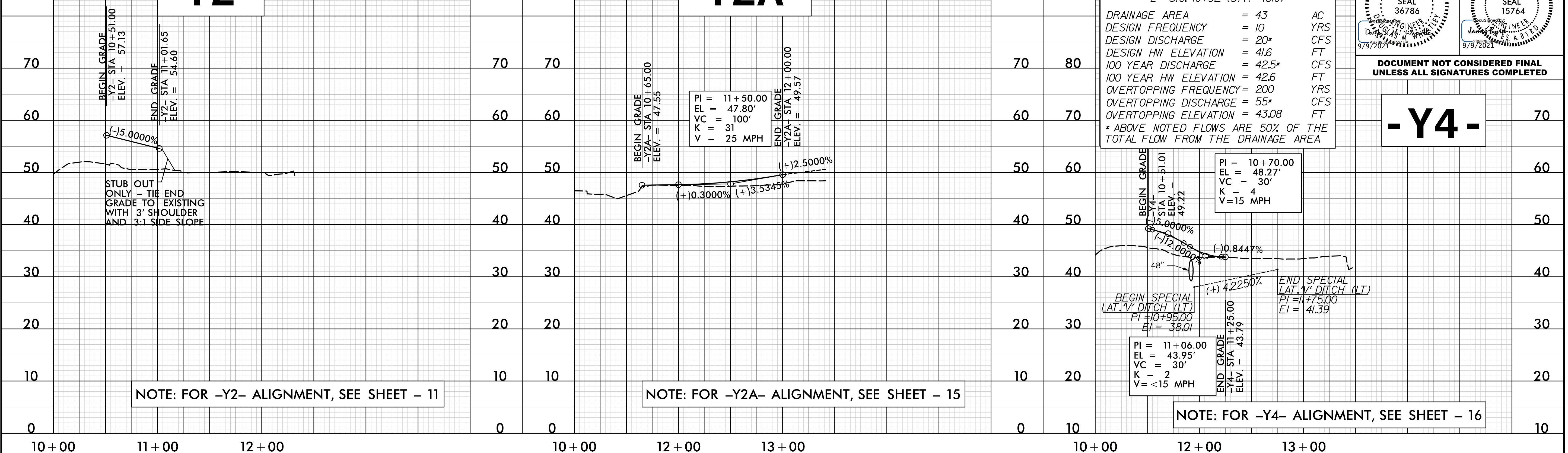
- Y2A -

PIPE HYDRAULIC DATA
-L- Sta. 10+92 (STR #1610)

DRAINAGE AREA	= 43	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 20*	CFS
DESIGN HW ELEVATION	= 41.6	FT
100 YEAR DISCHARGE	= 42.5*	CFS
100 YEAR HW ELEVATION	= 42.6	FT
OVERTOPPING FREQUENCY	= 200	YRS
OVERTOPPING DISCHARGE	= 55*	CFS
OVERTOPPING ELEVATION	= 43.08	FT

* ABOVE NOTED FLOWS ARE 50% OF THE TOTAL FLOW FROM THE DRAINAGE AREA

- Y4 -



NOTE: FOR -Y2- ALIGNMENT, SEE SHEET - 11

NOTE: FOR -Y2A- ALIGNMENT, SEE SHEET - 15

NOTE: FOR -Y4- ALIGNMENT, SEE SHEET - 16

- Y3 -

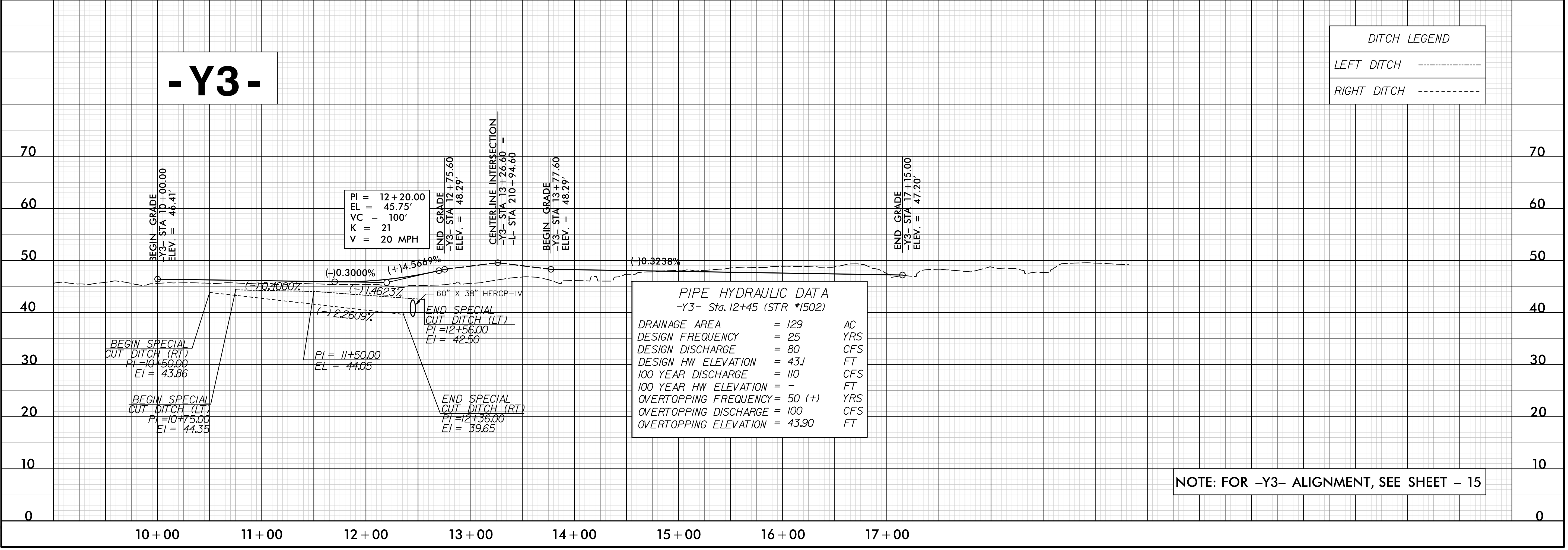
DITCH LEGEND

LEFT DITCH -----

RIGHT DITCH -----

PIPE HYDRAULIC DATA
-Y3- Sta. 12+45 (STR #1502)

DRAINAGE AREA	= 129	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 43.1	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= -	FT
OVERTOPPING FREQUENCY	= 50 (+)	YRS
OVERTOPPING DISCHARGE	= 100	CFS
OVERTOPPING ELEVATION	= 43.90	FT



NOTE: FOR -Y3- ALIGNMENT, SEE SHEET - 15

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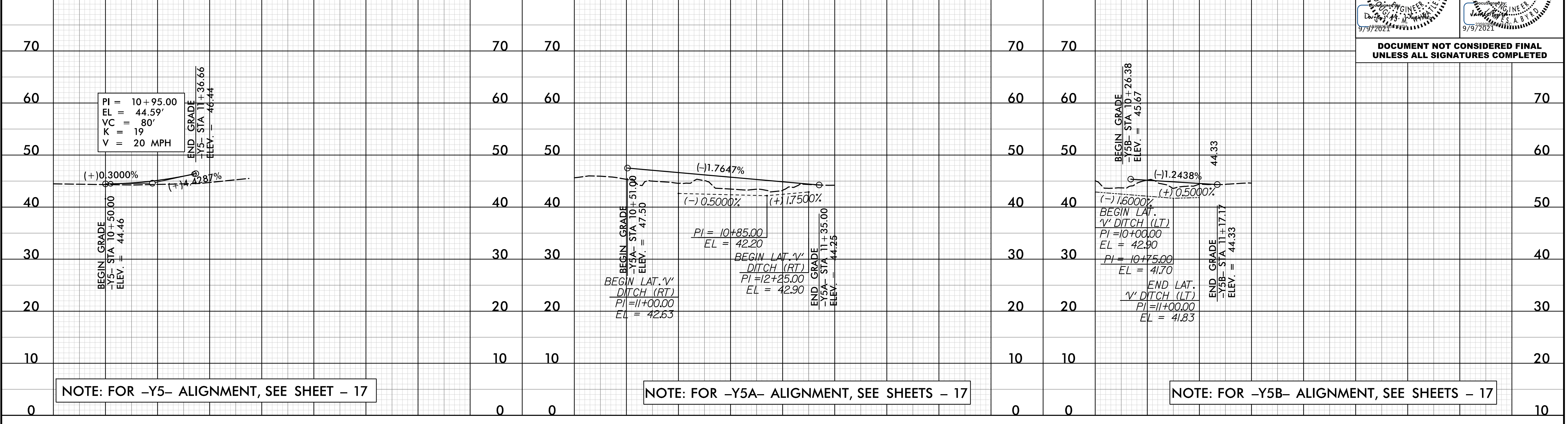
PROJECT REFERENCE NO. R-5021	SHEET NO. 61
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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- Y5 -

- Y5A -

- Y5B -



NOTE: FOR -Y5- ALIGNMENT, SEE SHEET - 17

NOTE: FOR -Y5A- ALIGNMENT, SEE SHEETS - 17

NOTE: FOR -Y5B- ALIGNMENT, SEE SHEETS - 17

PIPE HYDRAULIC DATA
-Y6- Sta.10+76 (STR *1709)

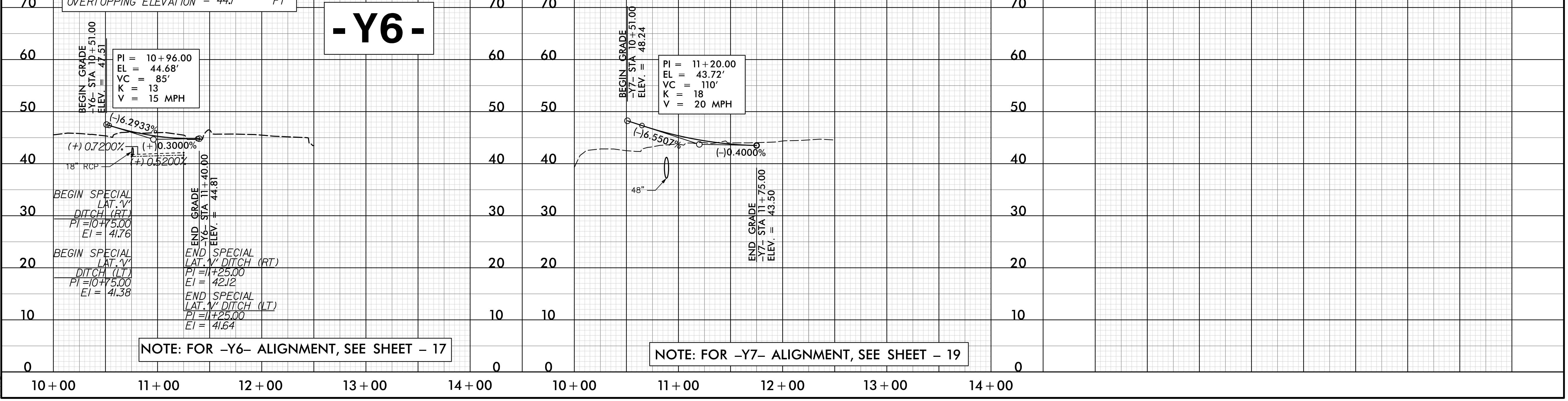
DRAINAGE AREA	= 0.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4.4	CFS
DESIGN HW ELEVATION	= 42.9	FT
100 YEAR DISCHARGE	= 5.0	CFS
100 YEAR HW ELEVATION	= 43.0	FT
OVERTOPPING FREQUENCY	= 500 (+)	YRS
OVERTOPPING DISCHARGE	= 6.0 (+)	CFS
OVERTOPPING ELEVATION	= 44.7	FT

DITCH LEGEND

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

- Y6 -

- Y7 -



NOTE: FOR -Y6- ALIGNMENT, SEE SHEET - 17

NOTE: FOR -Y7- ALIGNMENT, SEE SHEET - 19

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PROJECT REFERENCE NO. R-5021	SHEET NO. 62
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

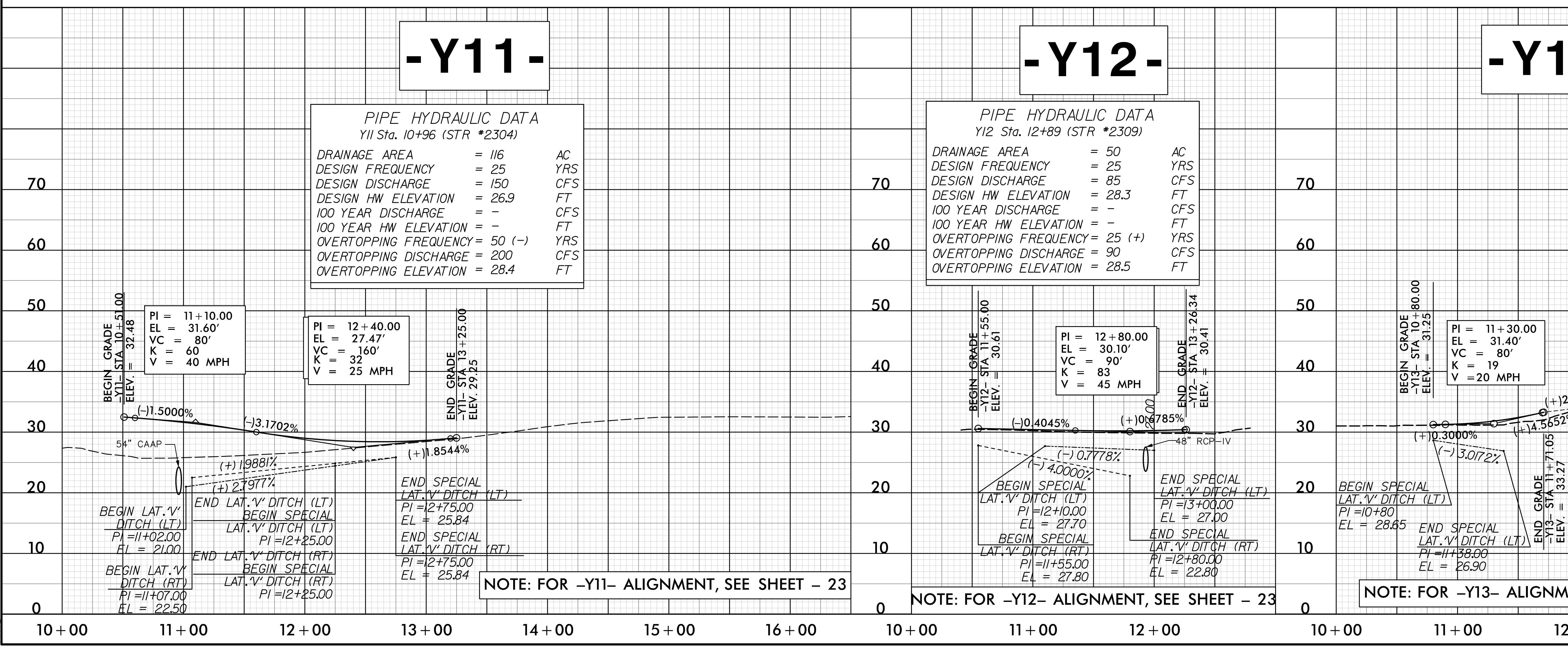
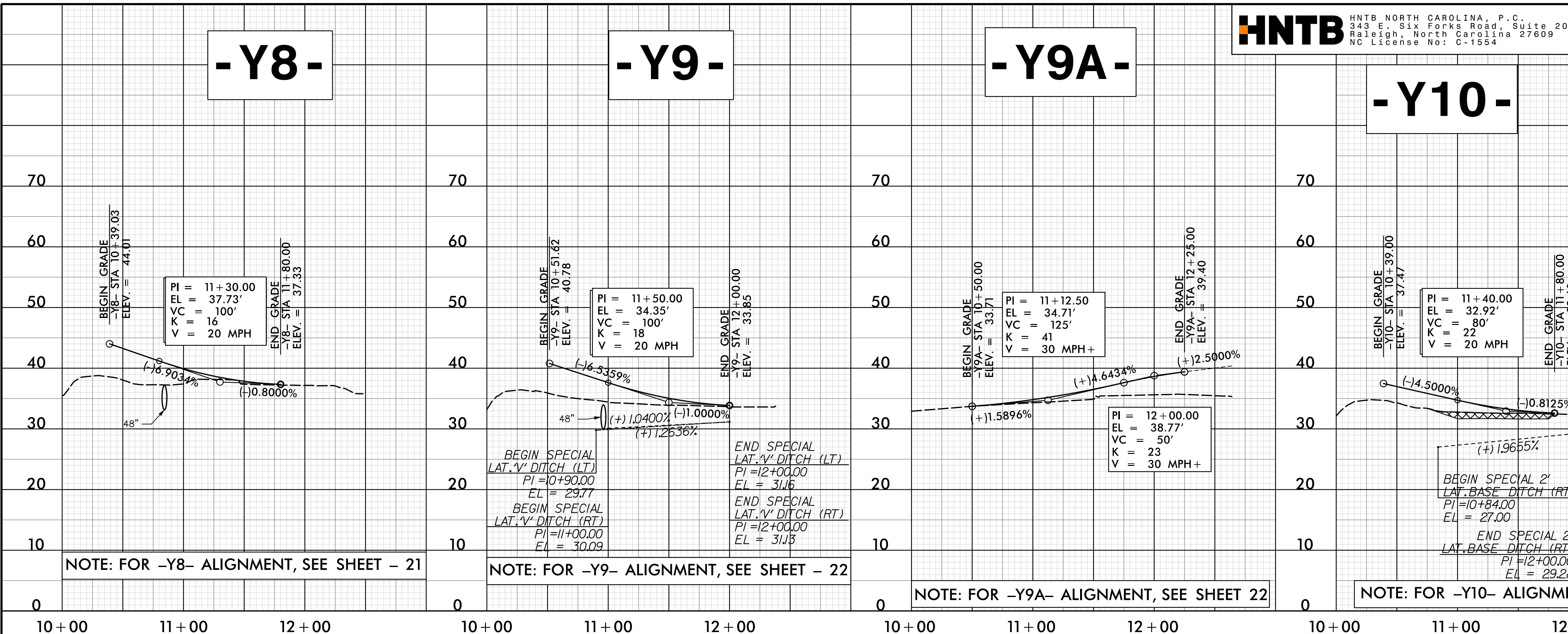
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

DITCH LEGEND

LEFT DITCH	-----	70
RIGHT DITCH	-----	60

UNDERCUT EXCAVATION		50
---------------------	--	----

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM: -Y10- 10+75 TO 11+80 LT/RT



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PROJECT REFERENCE NO. R-5021	SHEET NO. 63
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

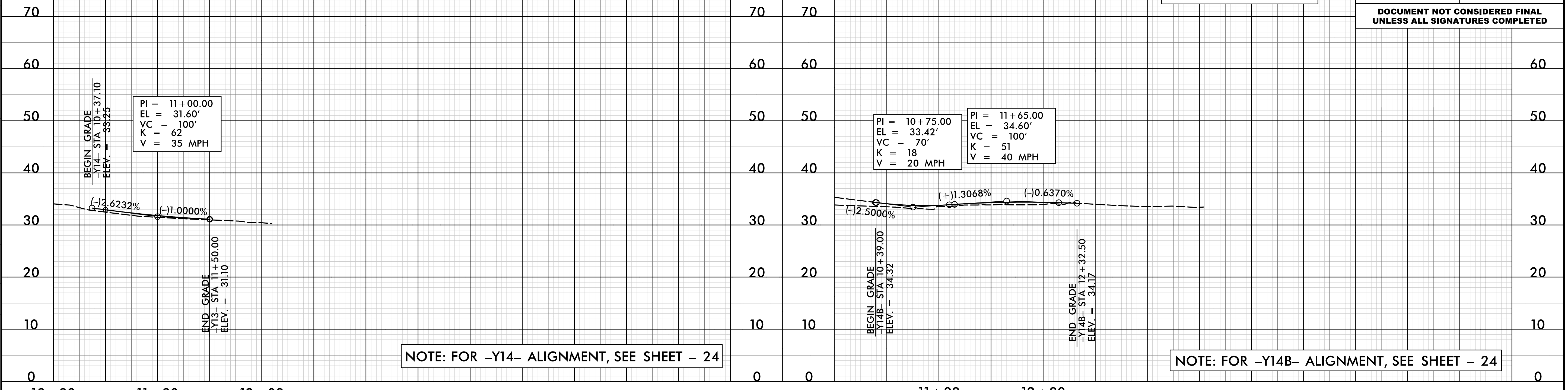
DITCH LEGEND

LEFT DITCH -----

RIGHT DITCH -----

-Y14-

-Y14B-



NOTE: FOR -Y14- ALIGNMENT, SEE SHEET - 24

NOTE: FOR -Y14B- ALIGNMENT, SEE SHEET - 24

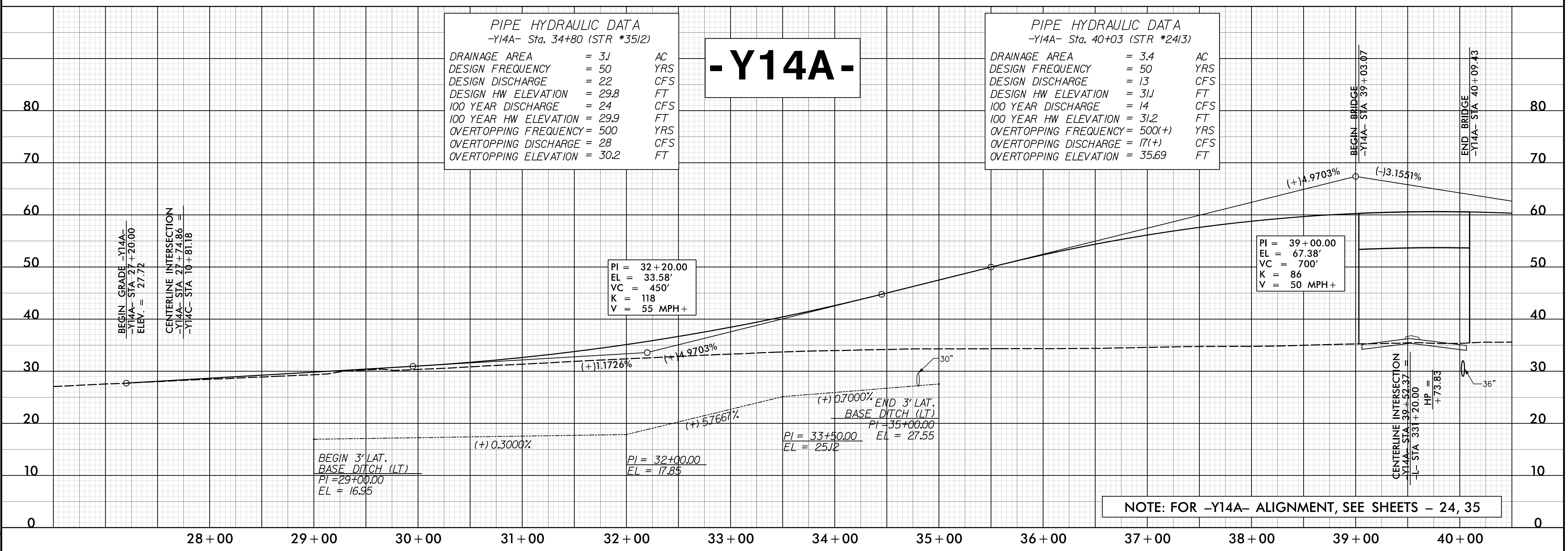
PIPE HYDRAULIC DATA
-Y14A- Sta. 34+80 (STR #3512)

DRAINAGE AREA	= 3.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 29.8	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 29.9	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 28	CFS
OVERTOPPING ELEVATION	= 30.2	FT

-Y14A-

PIPE HYDRAULIC DATA
-Y14A- Sta. 40+03 (STR #2413)

DRAINAGE AREA	= 3.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 31.1	FT
100 YEAR DISCHARGE	= 14	CFS
100 YEAR HW ELEVATION	= 31.2	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 17(+)	CFS
OVERTOPPING ELEVATION	= 35.69	FT



NOTE: FOR -Y14A- ALIGNMENT, SEE SHEETS - 24, 35

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HNTB HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

PROJECT REFERENCE NO. R-5021	SHEET NO. 64
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

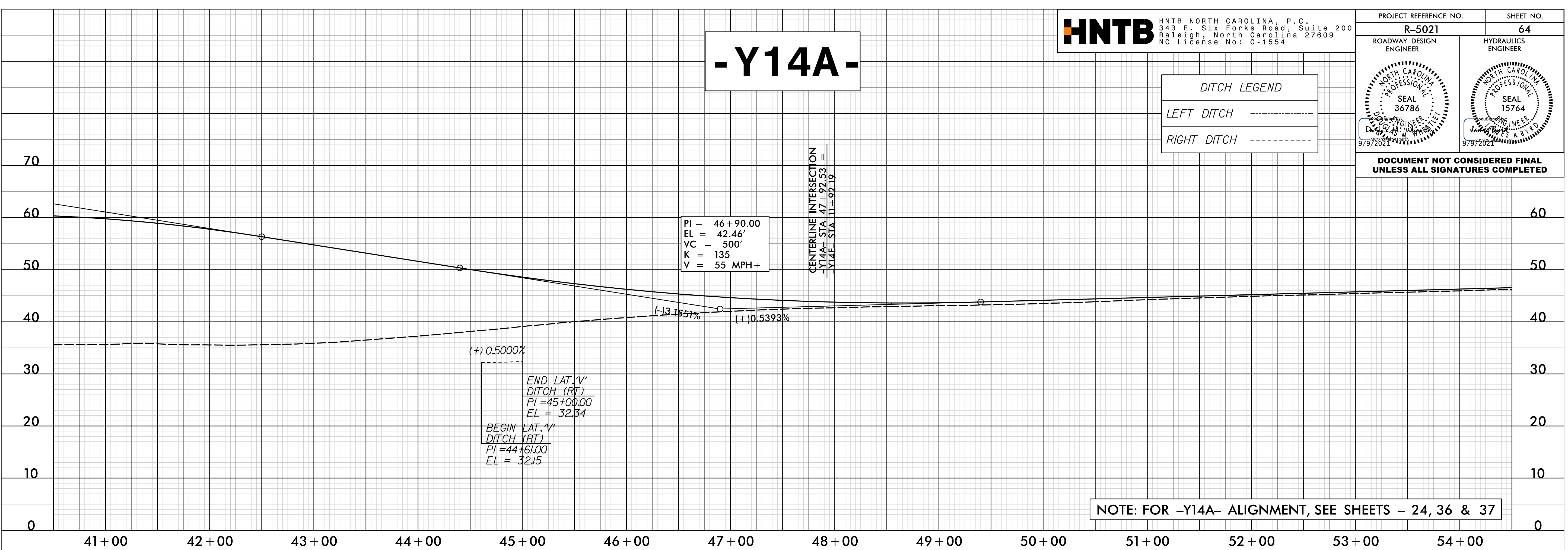
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

-Y14A-

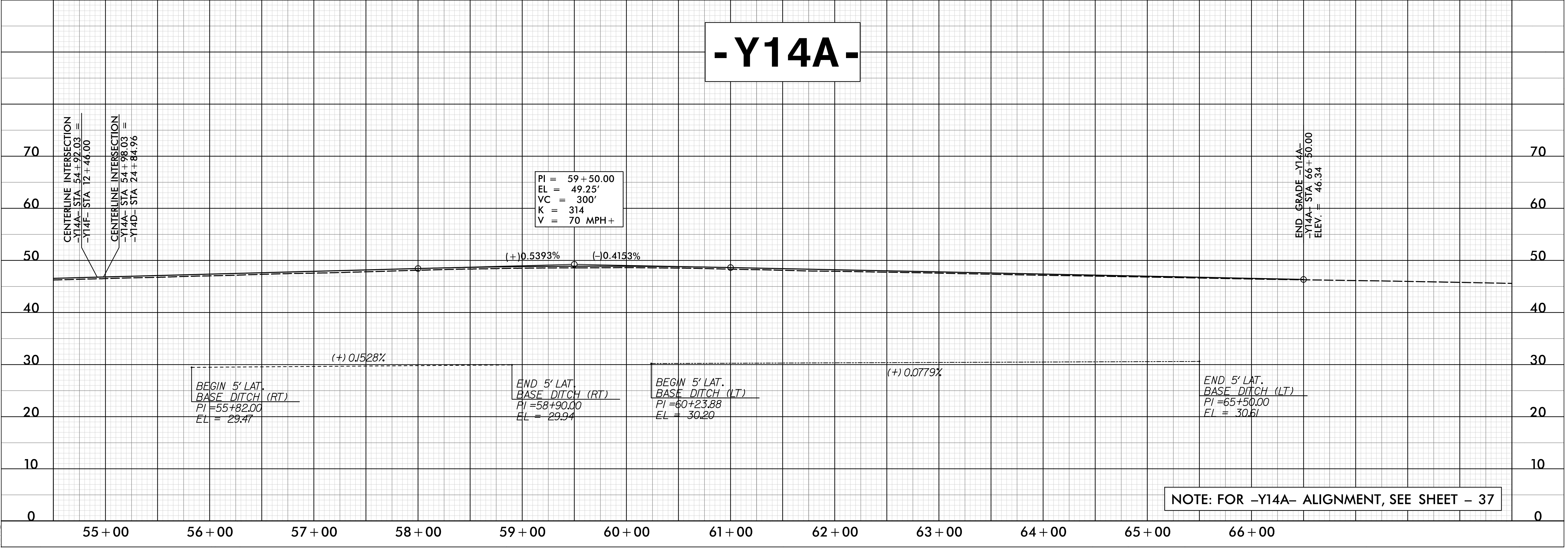
DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -



-Y14A-



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PROJECT REFERENCE NO. R-5021	SHEET NO. 65
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

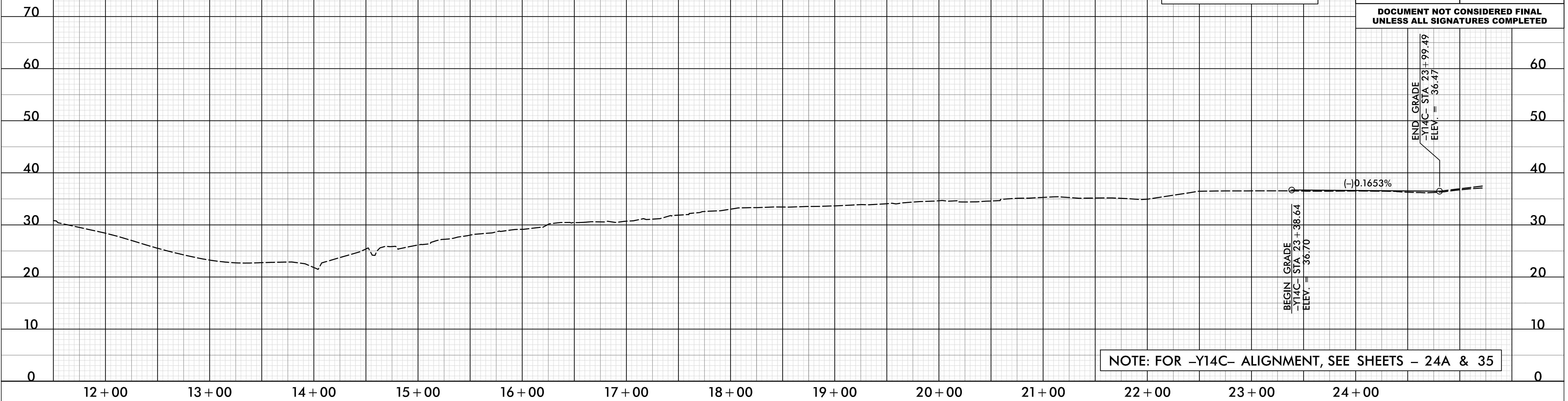
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

- Y14C -

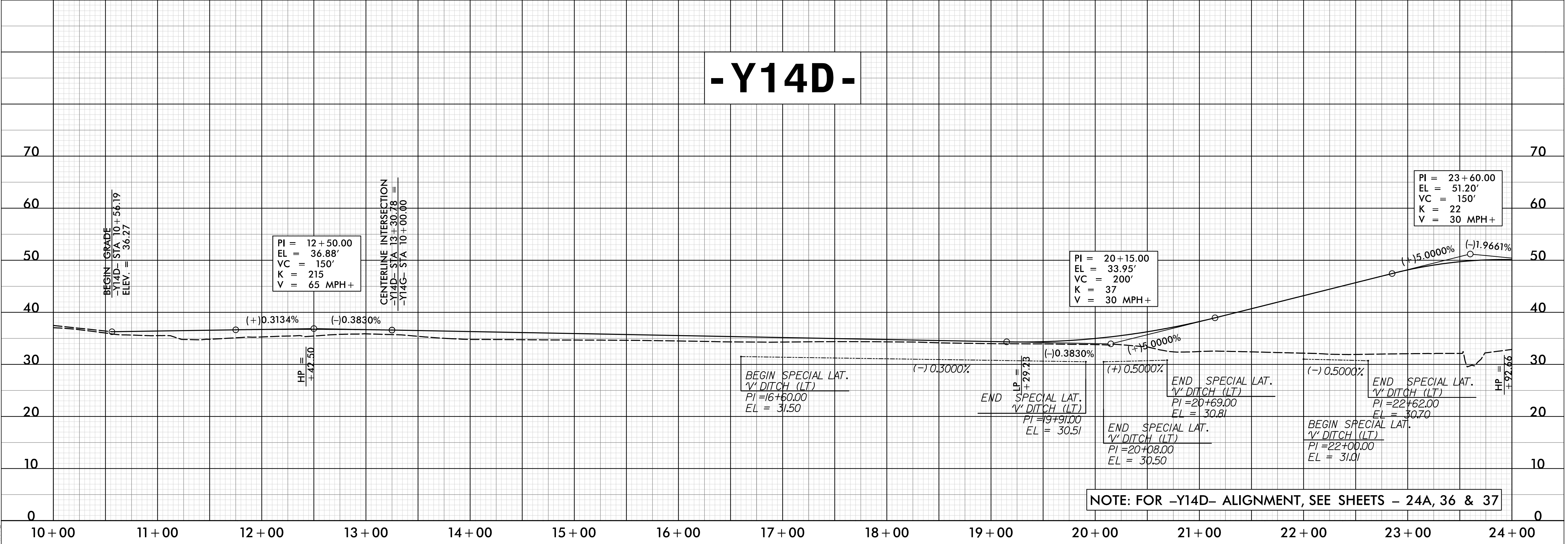
DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -



- Y14D -

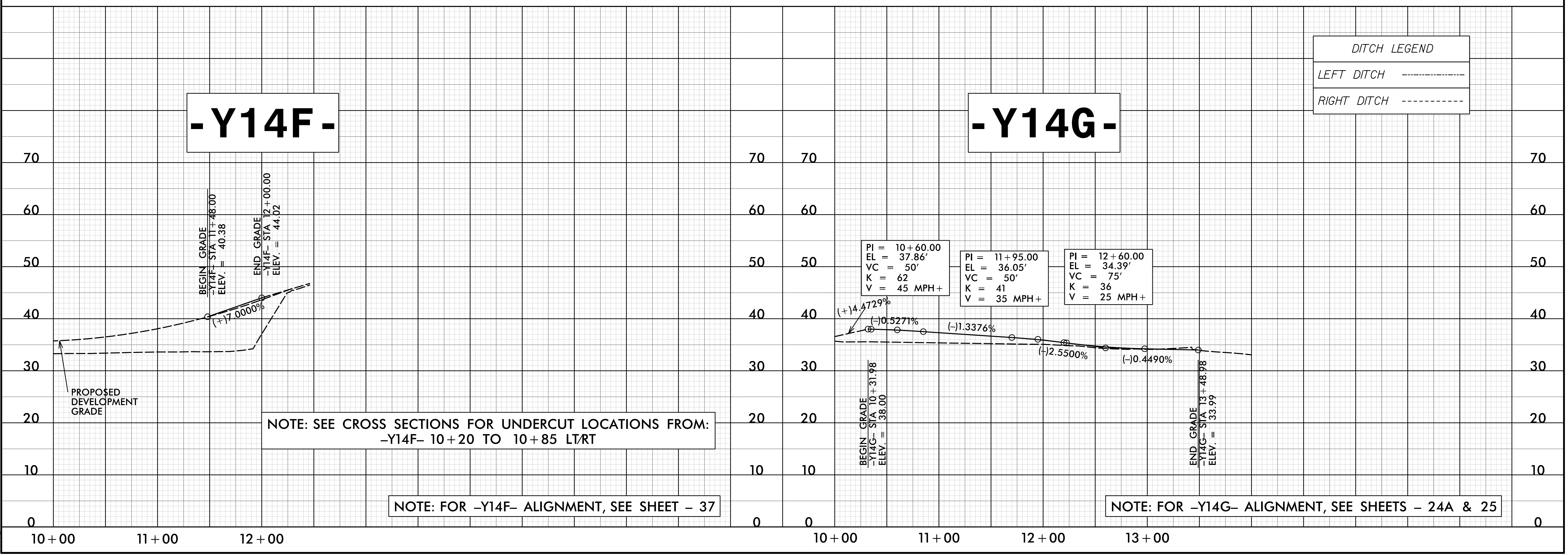
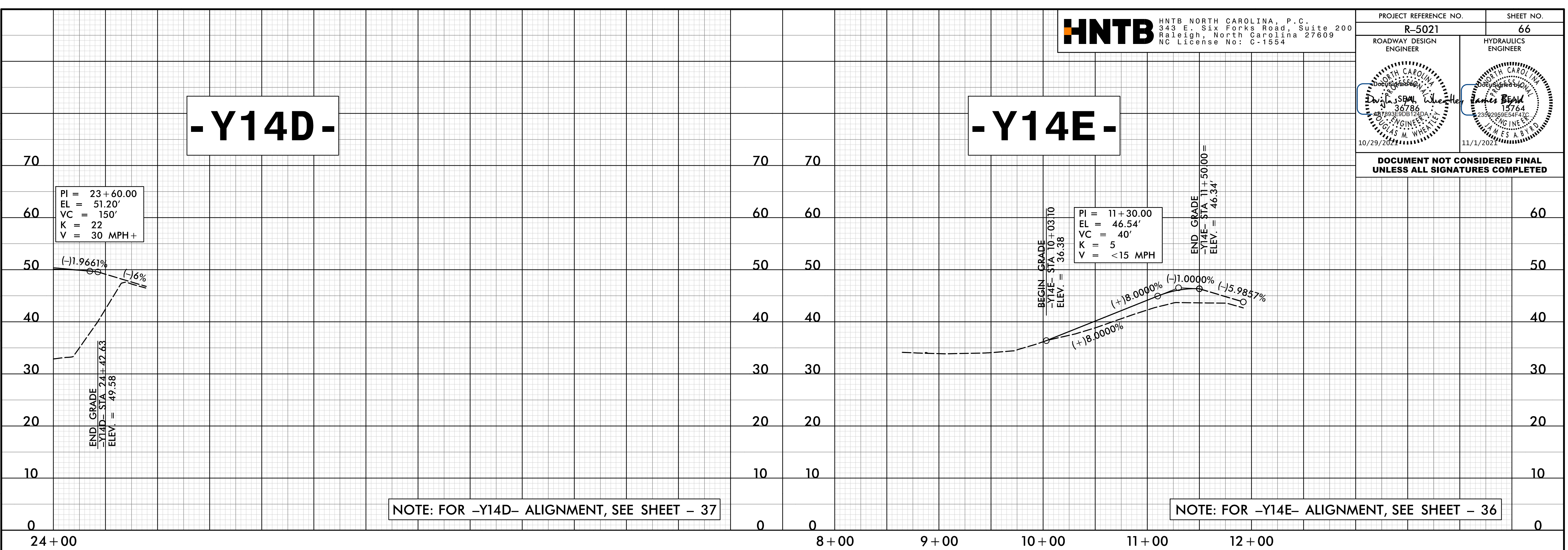


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PROJECT REFERENCE NO. R-5021	SHEET NO. 66
ROADWAY DESIGN ENGINEER <i>James M. Wheeler</i> 36786	HYDRAULICS ENGINEER <i>James B. Smith</i> 13764
10/29/2021	11/1/2021

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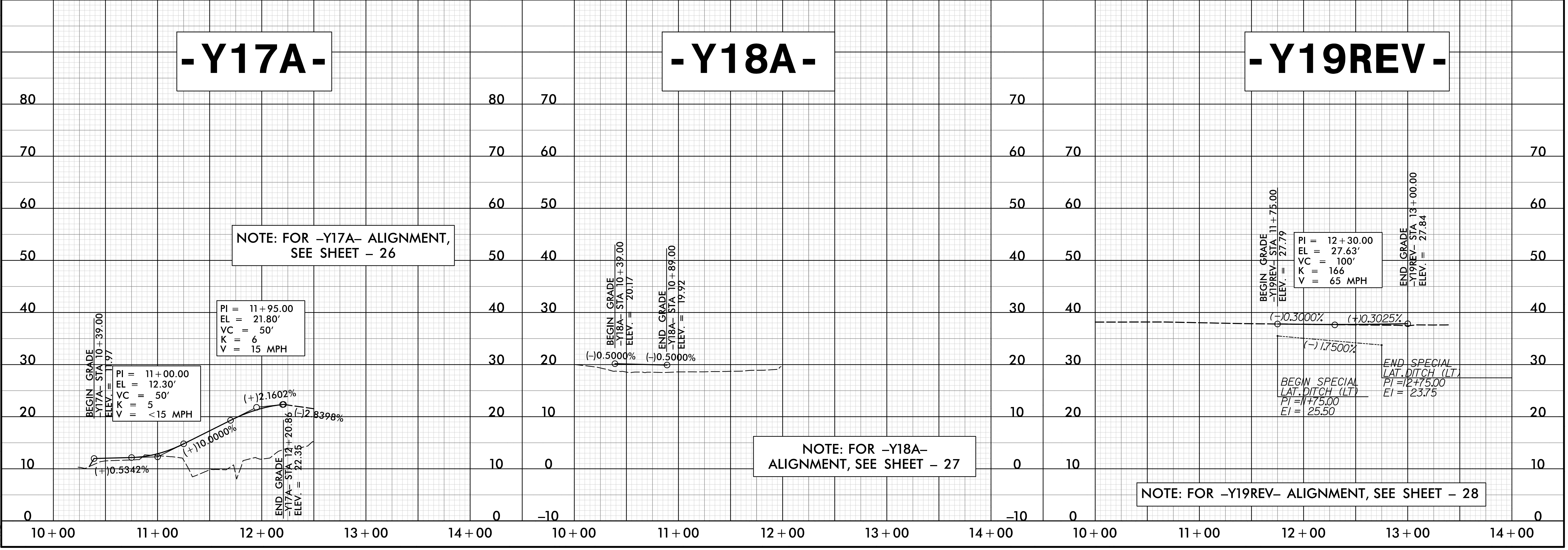
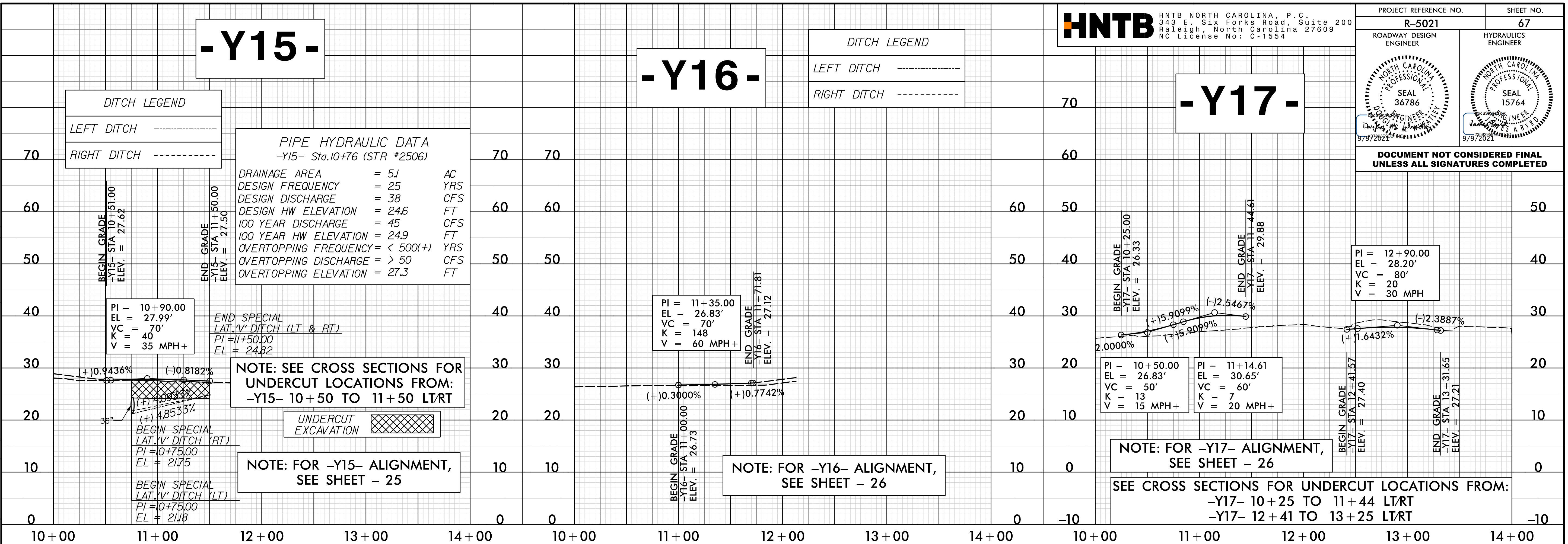


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 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH66.dgn)
 TITLE

5/28/20

PROJECT REFERENCE NO. R-5021	SHEET NO. 67
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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PROJECT REFERENCE NO. R-5021	SHEET NO. 68
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

- Y20 -

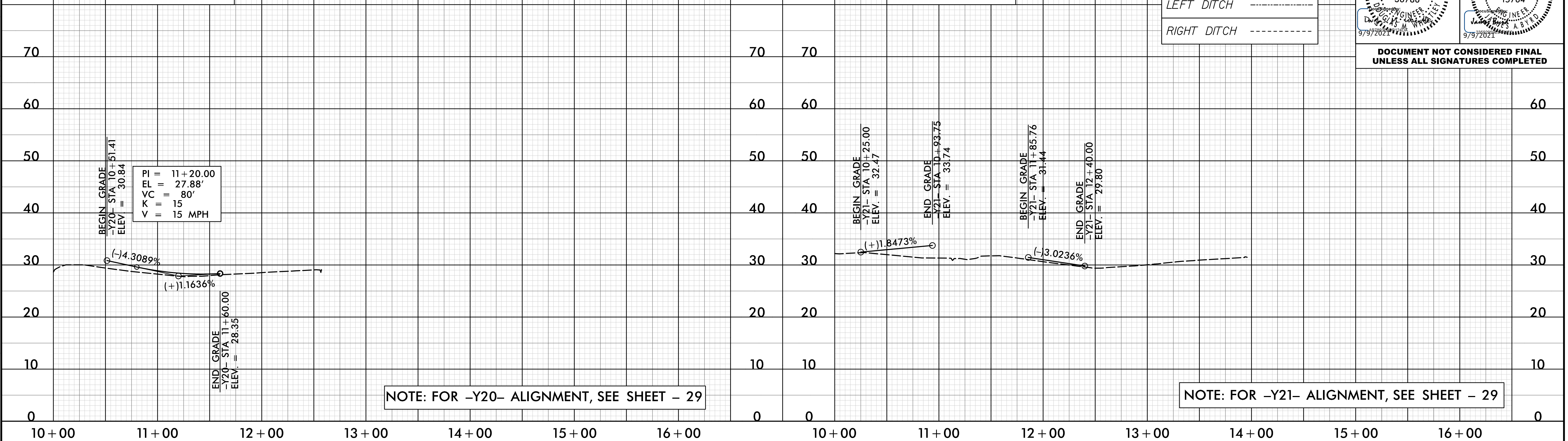
- Y21 -

DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

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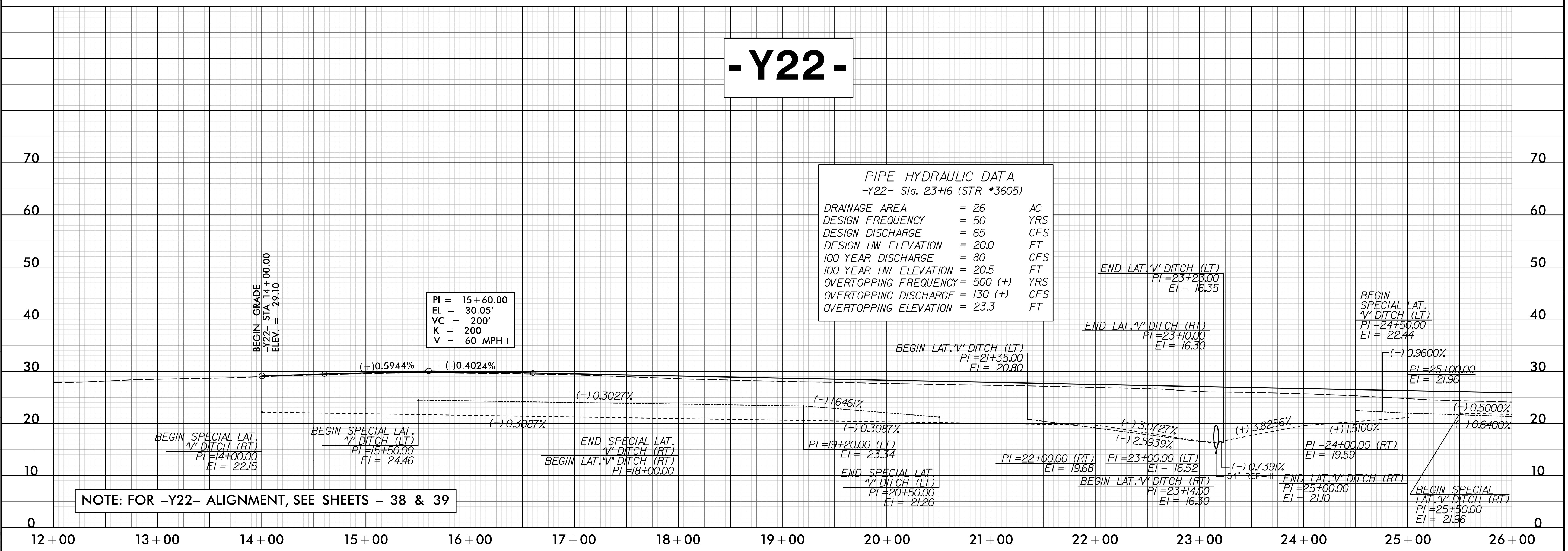
NOTE: FOR -Y20- ALIGNMENT, SEE SHEET - 29

NOTE: FOR -Y21- ALIGNMENT, SEE SHEET - 29

- Y22 -

PIPE HYDRAULIC DATA
 -Y22- Sta. 23+16 (STR *3605)

DRAINAGE AREA	= 26	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 20.0	FT
100 YEAR DISCHARGE	= 80	CFS
100 YEAR HW ELEVATION	= 20.5	FT
OVERTOPPING FREQUENCY	= 500 (+)	YRS
OVERTOPPING DISCHARGE	= 130 (+)	CFS
OVERTOPPING ELEVATION	= 23.3	FT



NOTE: FOR -Y22- ALIGNMENT, SEE SHEETS - 38 & 39

22-JUL-2021 09:59
 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH68.dgn)
 TITLE

5/28/99

PROJECT REFERENCE NO. R-5021	SHEET NO. 69
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

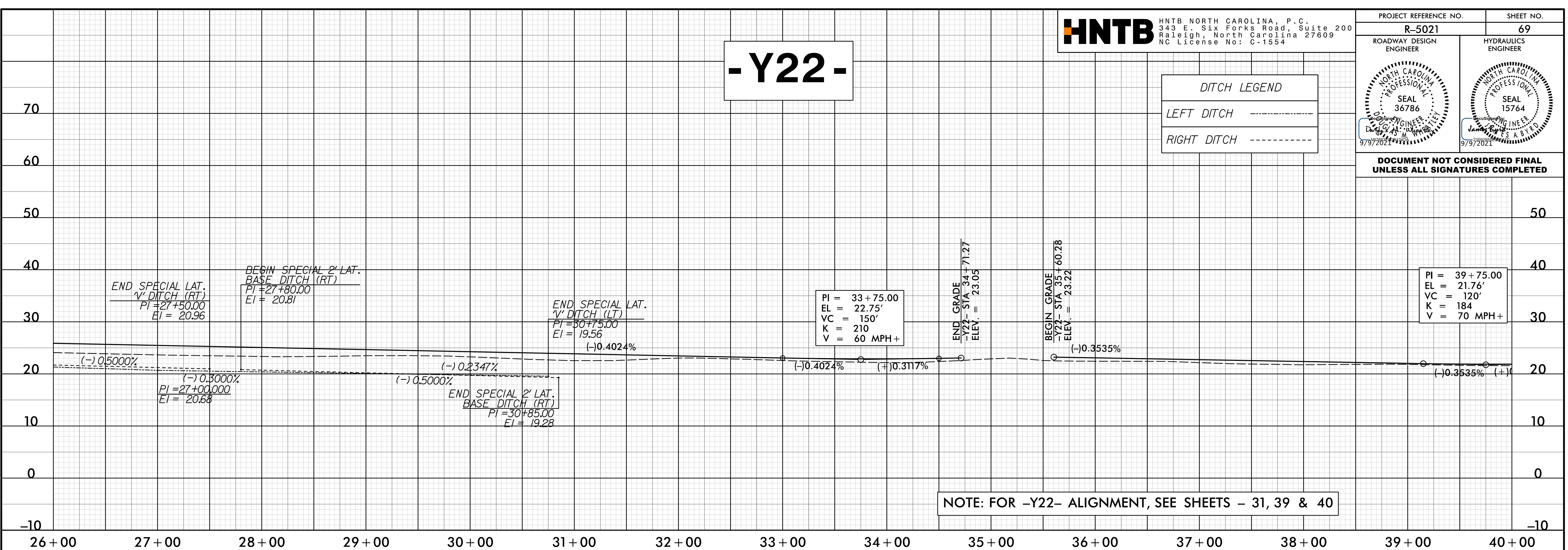
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

- Y22 -

DITCH LEGEND

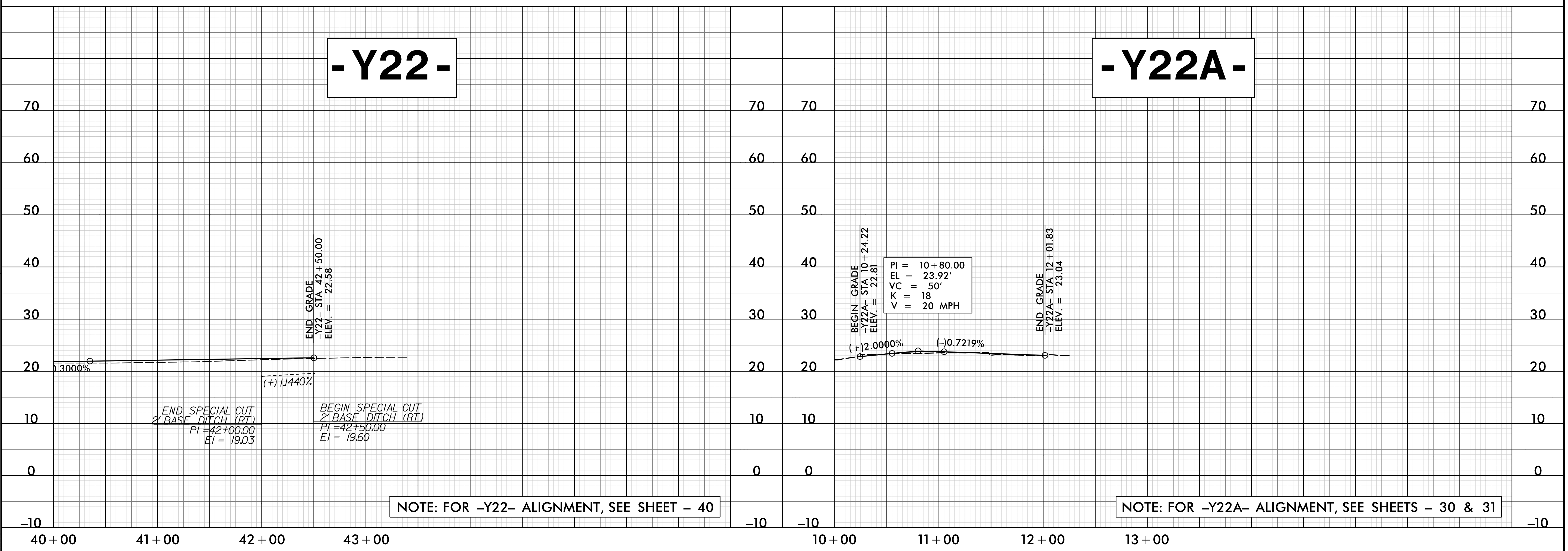
LEFT DITCH -----

RIGHT DITCH -----



- Y22 -

- Y22A -



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 (Roadway) (P-co) (R-5021) (RDY_PFL_PSH69.dgn)

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PROJECT REFERENCE NO. R-5021	SHEET NO. 70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

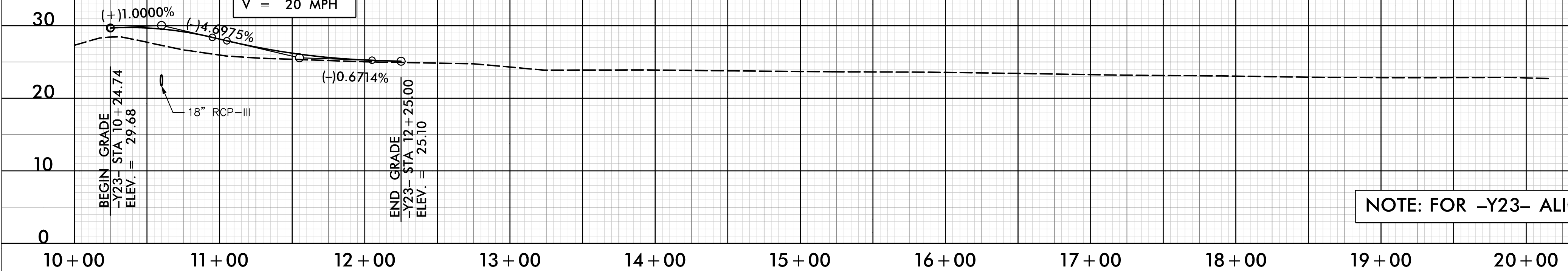
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

- Y23 -

PIPE HYDRAULIC DATA
 -Y23- Sta. 10+60 (STR *3603)

DRAINAGE AREA	1.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 7.4	CFS
DESIGN HW ELEVATION	= 23.5	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 23.9	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 7.4	CFS
OVERTOPPING ELEVATION	= 23.5	FT

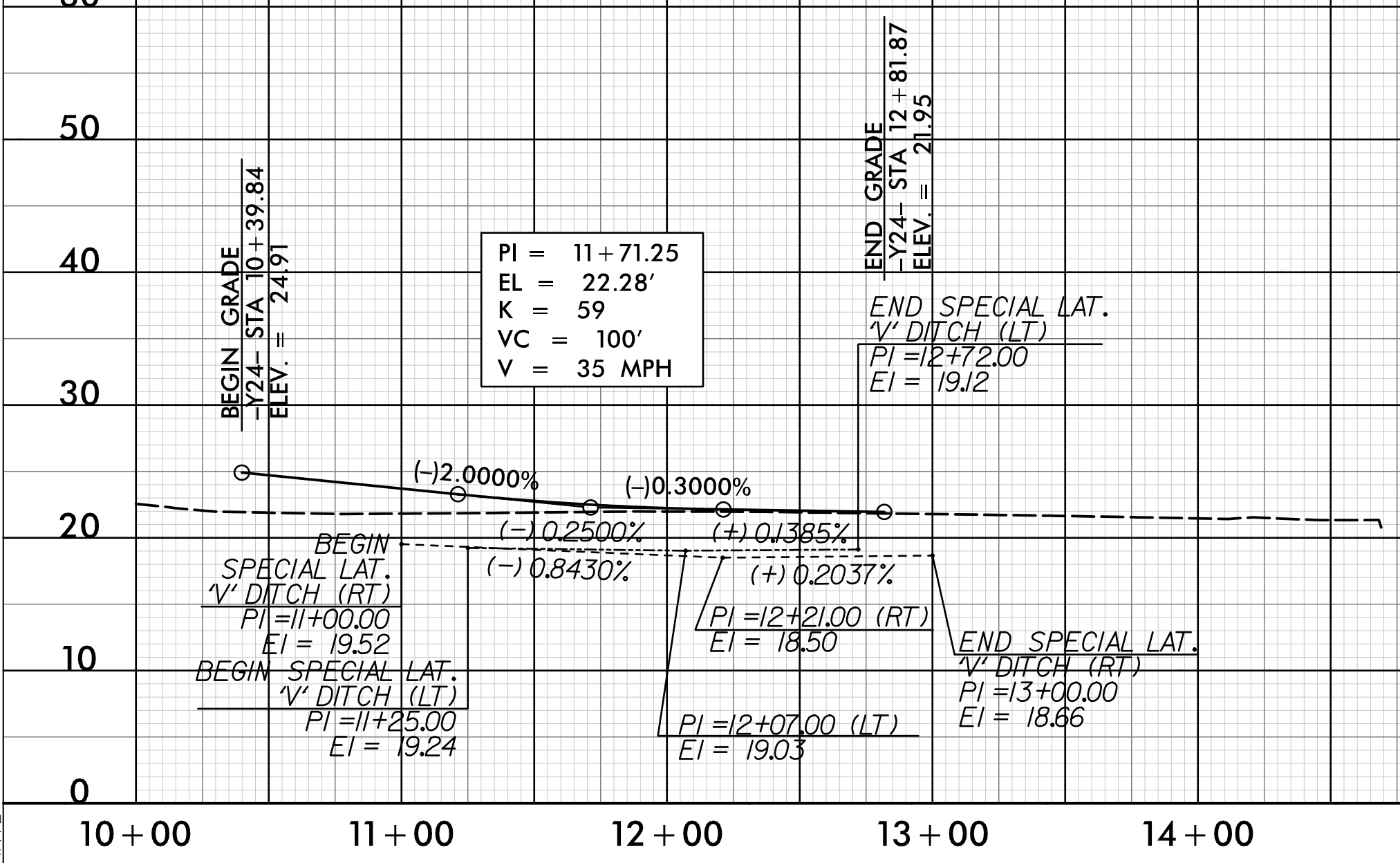
PI = 10+60.00	PI = 11+55.00
EL = 30.03'	EL = 25.57'
VC = 70'	VC = 100'
K = 12	K = 25
V = 70 MPH	V = 20 MPH



NOTE: FOR -Y23- ALIGNMENT, SEE SHEET - 38

- Y24 -

PI = 11+71.25	PI = 12+21.00 (RT)
EL = 22.28'	EL = 18.50
K = 59	K = 25
VC = 100'	VC = 100'
V = 35 MPH	V = 20 MPH



NOTE: FOR -Y24- ALIGNMENT, SEE SHEET - 39

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