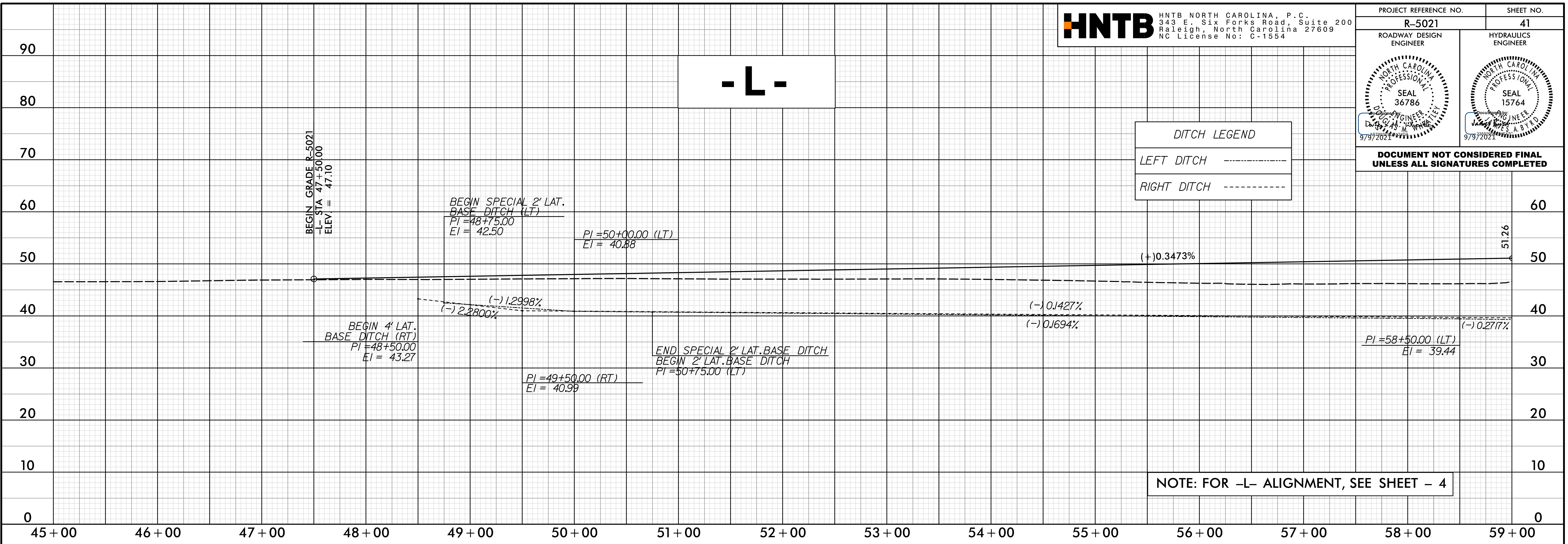


5/28/99

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>41</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



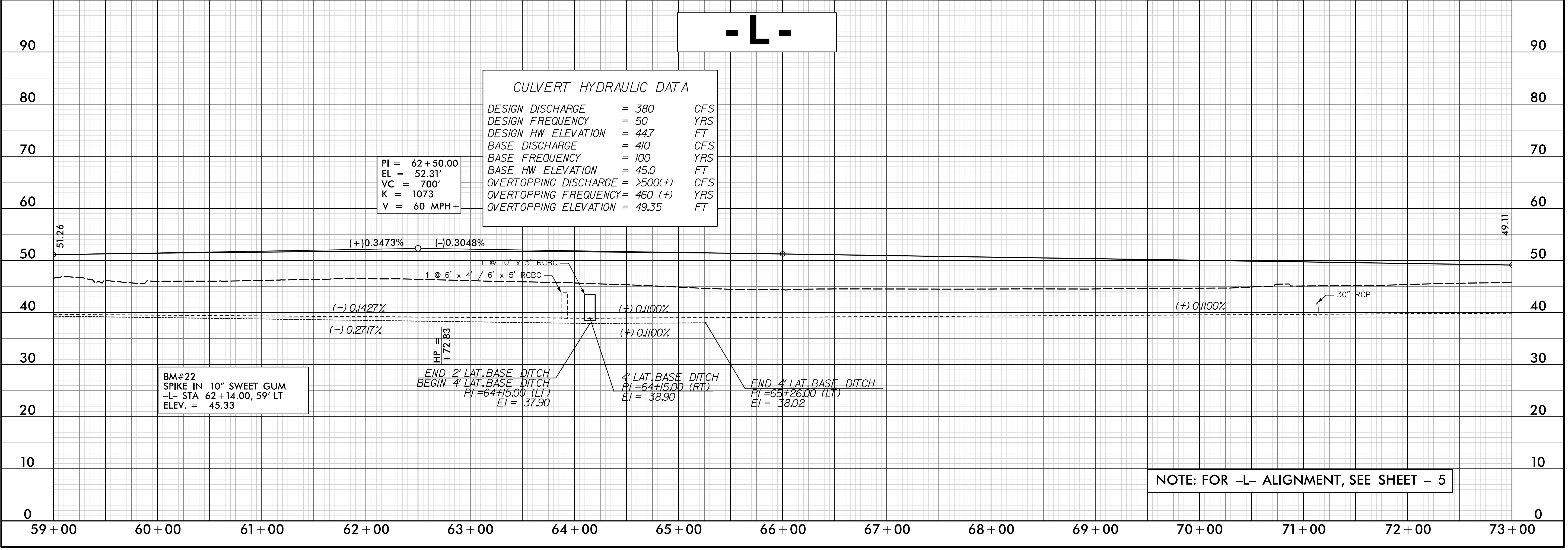
**DITCH LEGEND**

LEFT DITCH -----

RIGHT DITCH -----

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

22-JUL-2021 09:58  
K:\Roadway\Projects\5021\RDY\_PFL\_PSH41.dgn



**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

HP = +72.83  
 END 2' LAT. BASE DITCH  
 BEGIN 4' LAT. BASE DITCH  
 PI = 64+15.00 (LT)  
 EI = 37.90

4' LAT. BASE DITCH  
 PI = 64+15.00 (RT)  
 EI = 38.90

END 4' LAT. BASE DITCH  
 PI = 65+26.00 (LT)  
 EI = 38.02

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

5/28/2021

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>42</b>
ROADWAY DESIGN ENGINEER [Signature]	HYDRAULICS ENGINEER [Signature]
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

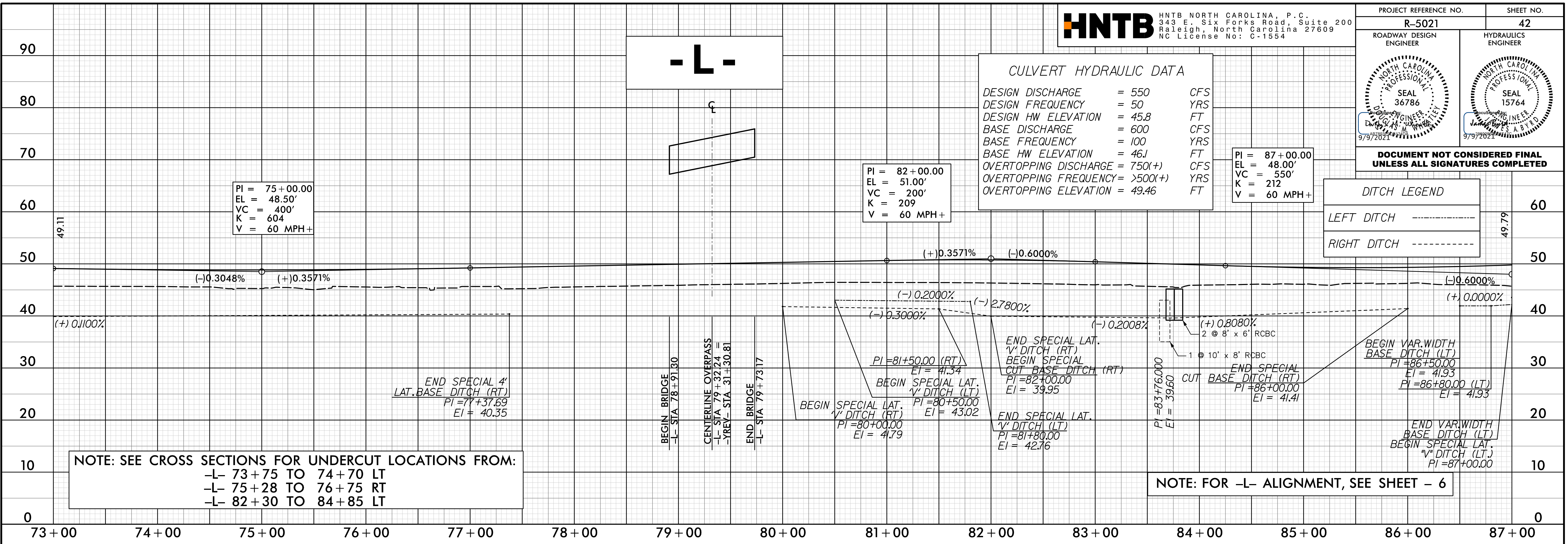
**CULVERT HYDRAULIC DATA**

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

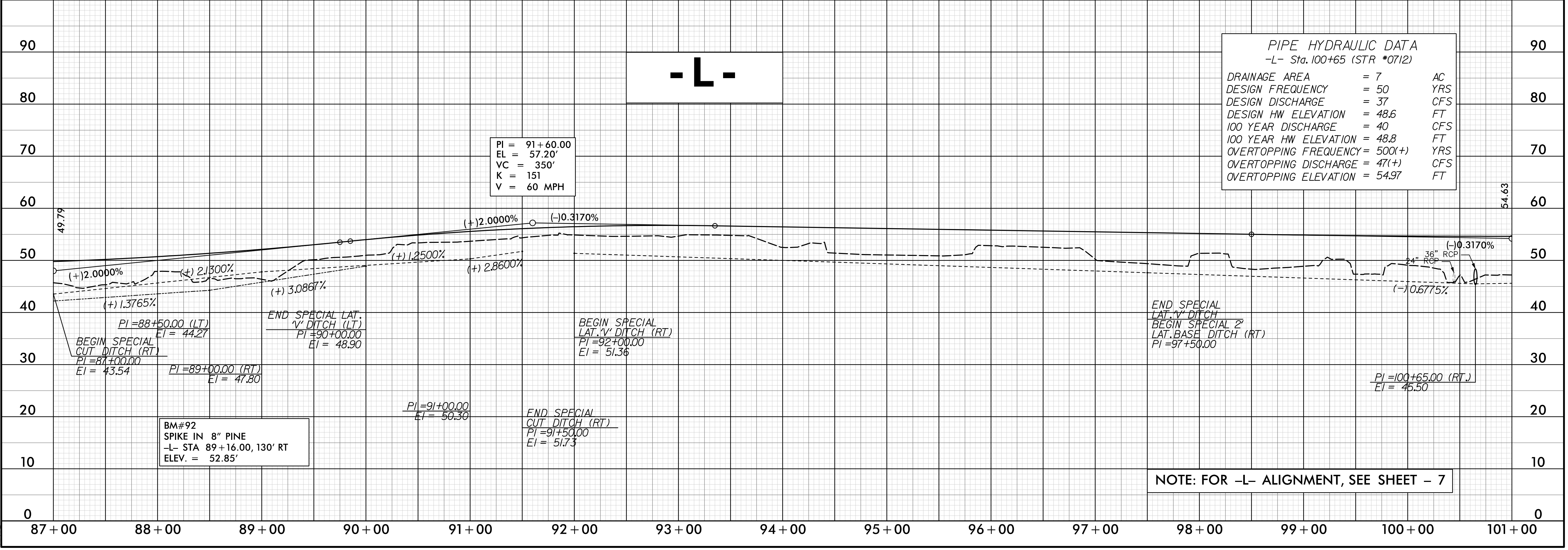
**NOTE: FOR -L- ALIGNMENT, SEE SHEET - 6**

22-JUL-2021 09:58  
[Signature]

**-L-**

**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

**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. <b>R-5021</b>	SHEET NO. <b>43</b>
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)

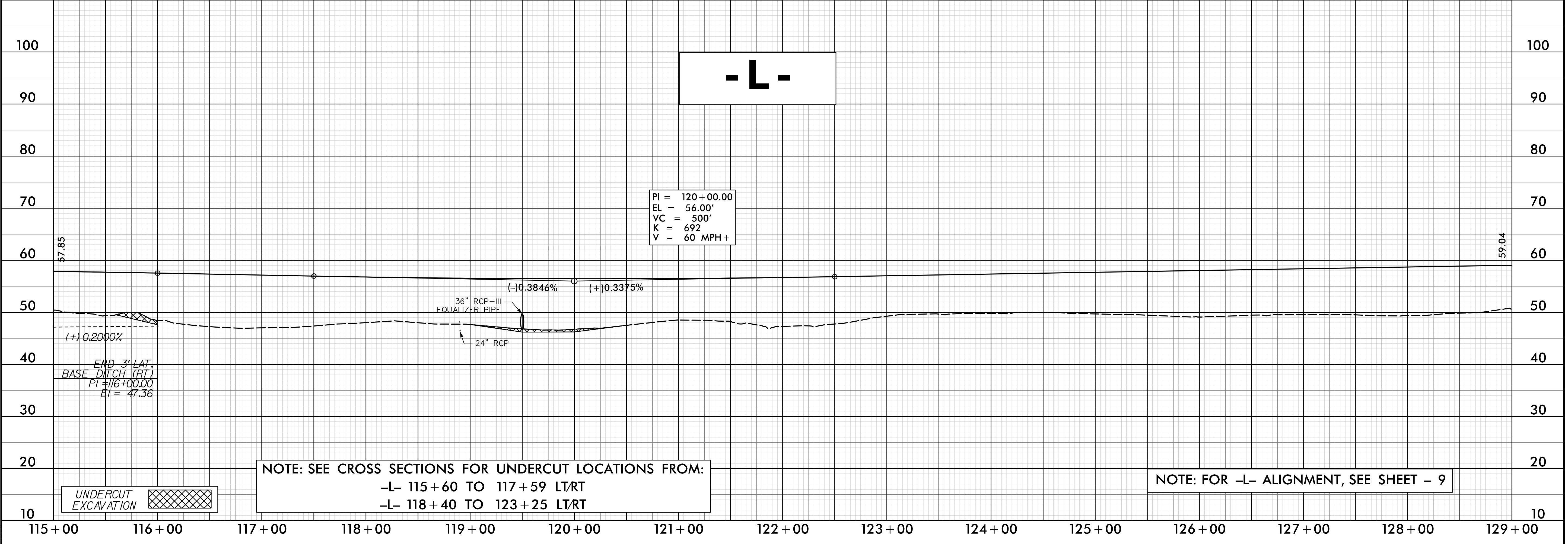
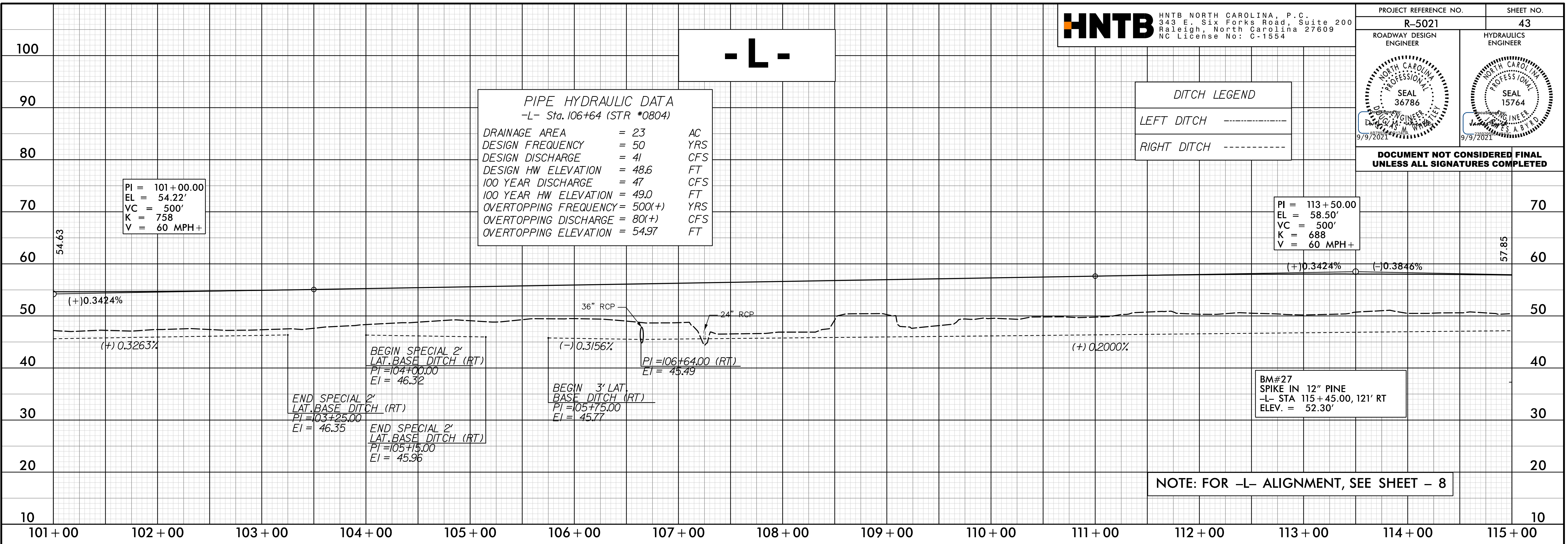
DRAINAGE AREA	= 23	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 48.6	FT
100 YEAR DISCHARGE	= 47	CFS
100 YEAR HW ELEVATION	= 49.0	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 80(+)	CFS
OVERTOPPING ELEVATION	= 54.97	FT

**DITCH LEGEND**

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

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

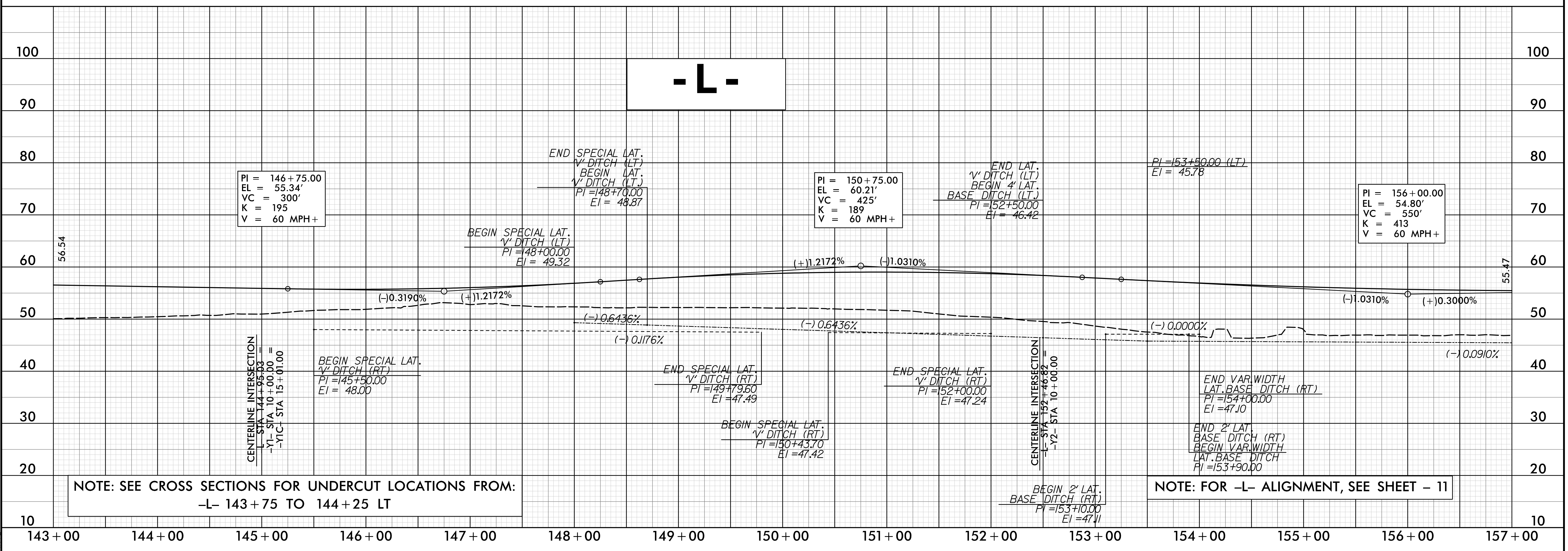
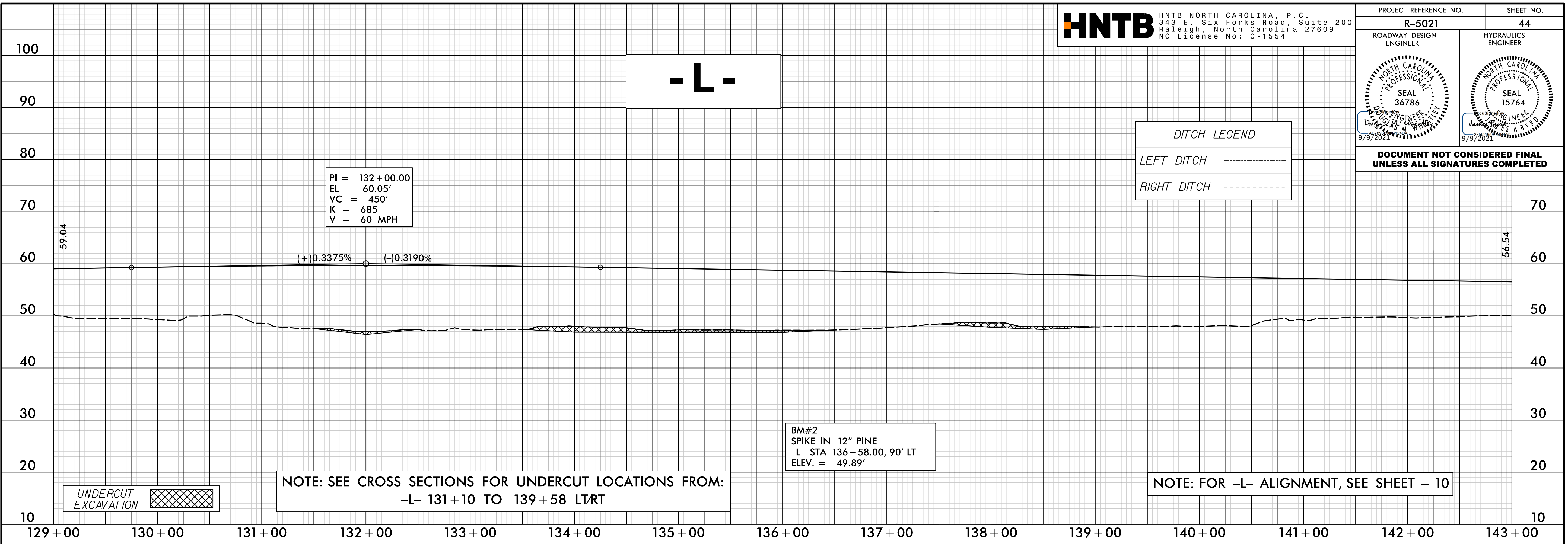


22-JUL-2021 09:58  
 R:\Roadway\Projects\5021\RDY\_PFL\_PSH43.dgn  
 HNTB

5/28/20

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>44</b>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

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

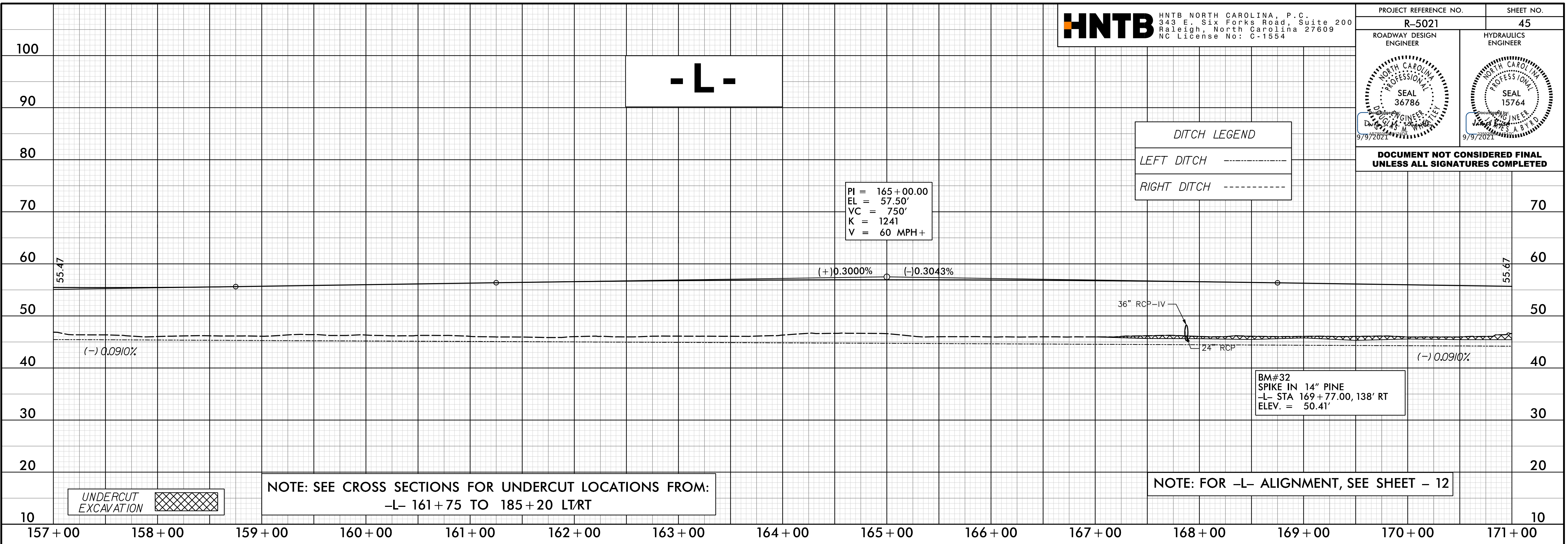


22-JUL-2021 09:58  
\\p03dway\p-coj\vr-5021\LDY\_PFL\_PSH44.dgn  
DATE

5/28/21

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>45</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

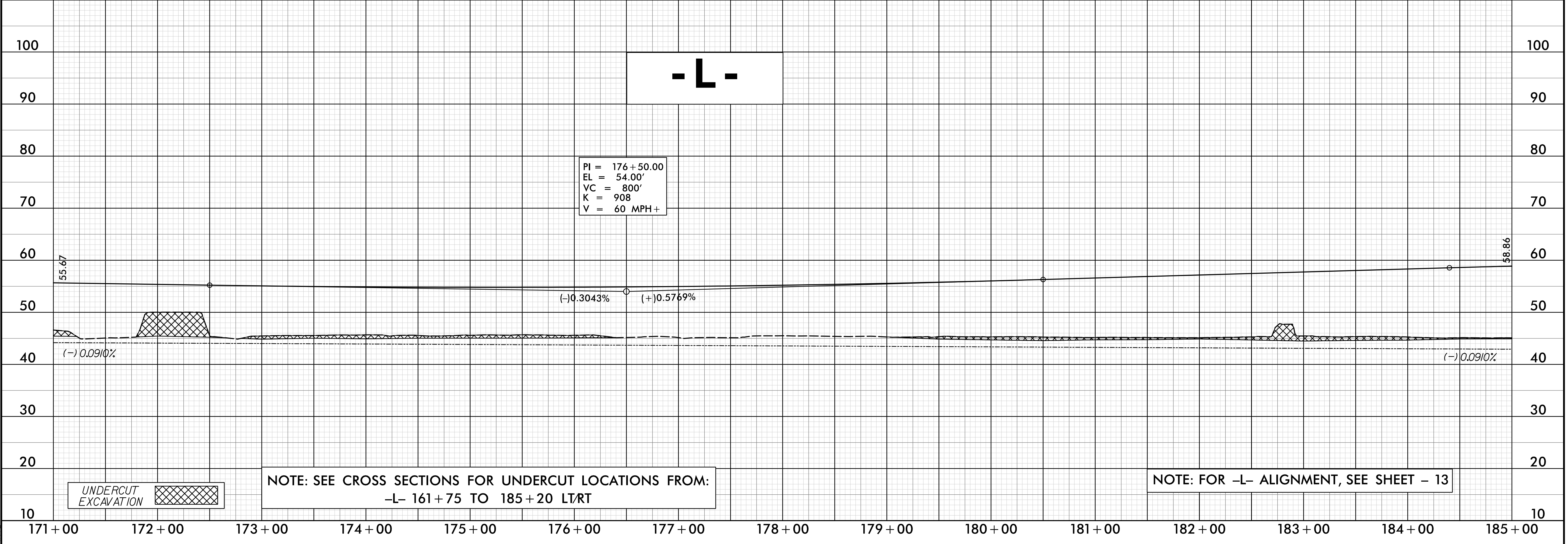
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



UNDERCUT EXCAVATION

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:  
-L- 161+75 TO 185+20 LT/RT

NOTE: FOR -L- ALIGNMENT, SEE SHEET - 12



UNDERCUT EXCAVATION

NOTE: SEE CROSS SECTIONS FOR UNDERCUT LOCATIONS FROM:  
-L- 161+75 TO 185+20 LT/RT

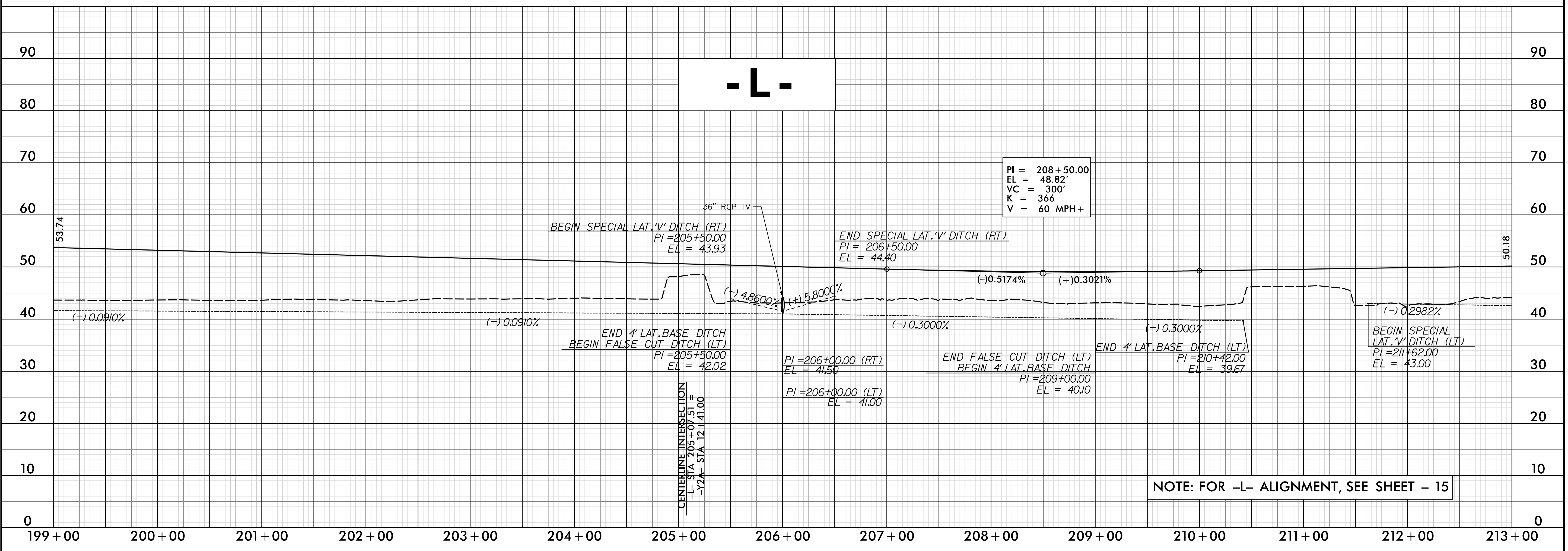
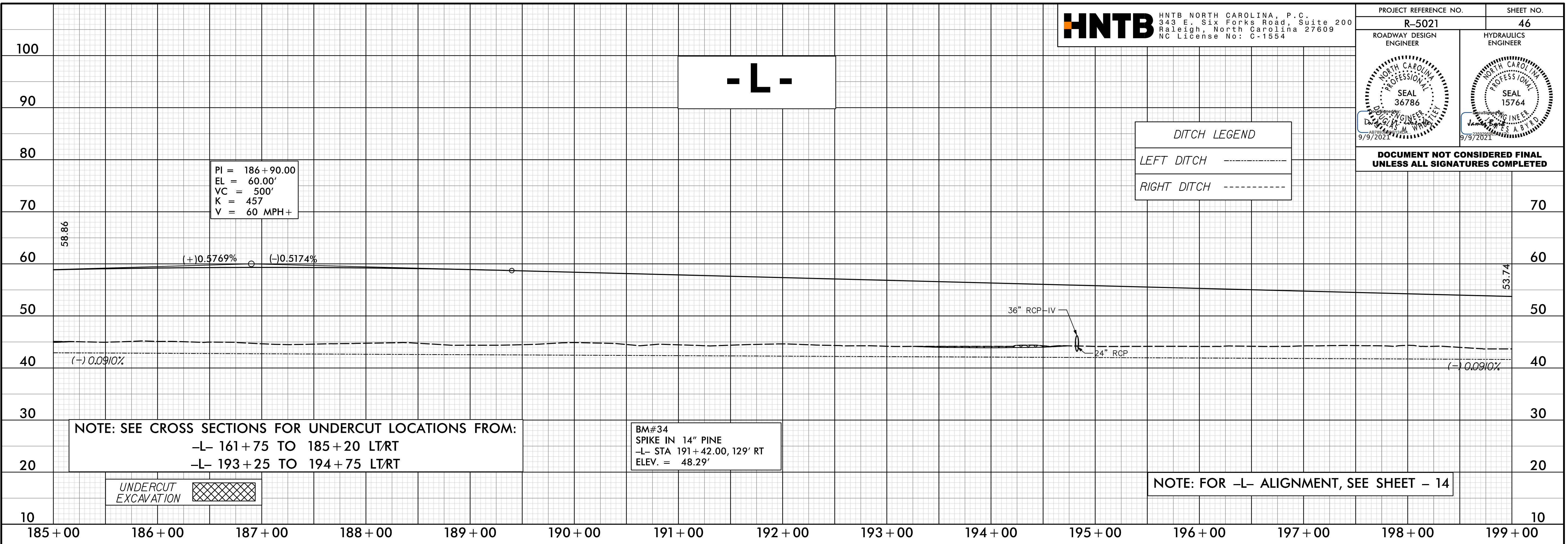
NOTE: FOR -L- ALIGNMENT, SEE SHEET - 13

22-JUL-2021 09:58  
N:\Roadway\Projects\21-5021\RDY\_PFL\_PSH45.dgn

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>46</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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



22-JUL-2021 09:58  
 (P:\gdm\way\p-coj\19-5021-L-RDY\_PFL\_PSH46.dgn  
 FILE

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>47</b>
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 -----

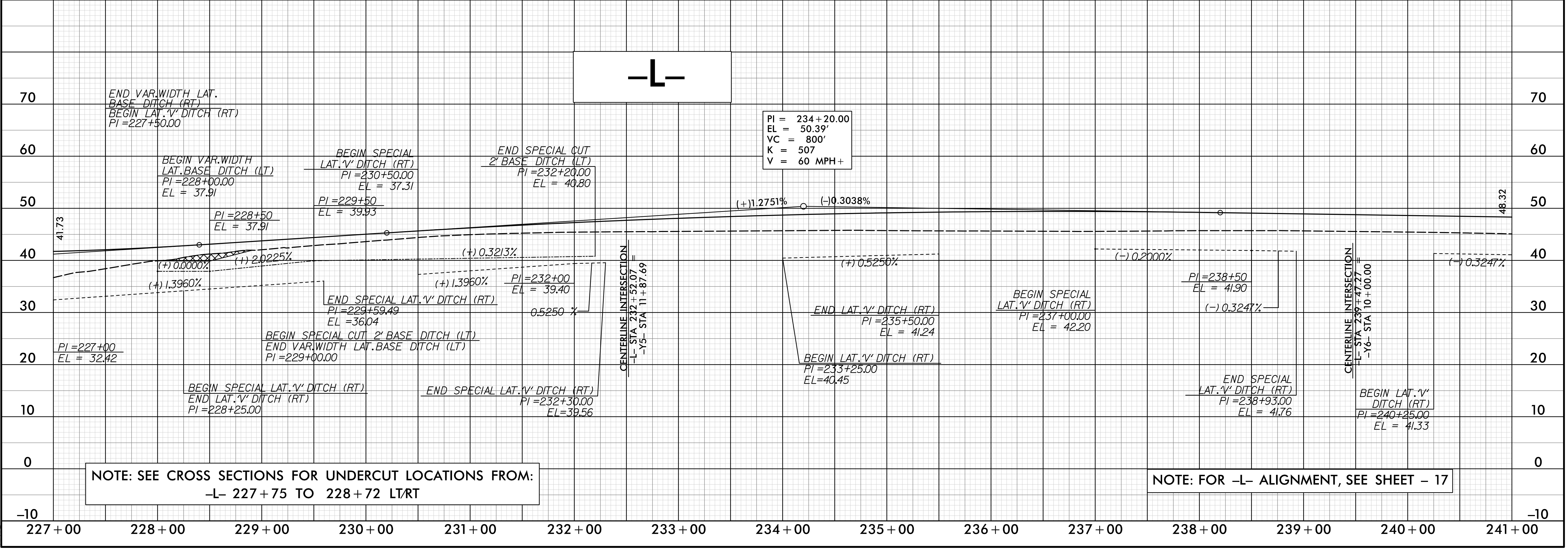
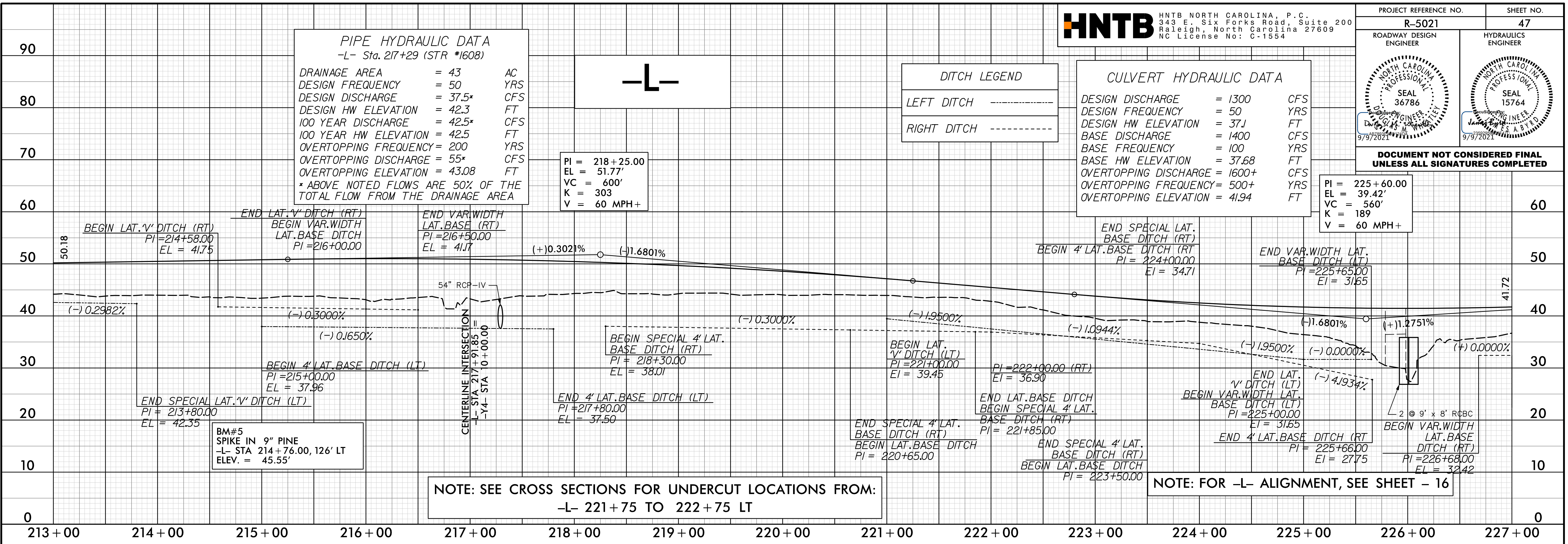
RIGHT DITCH -----

**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+

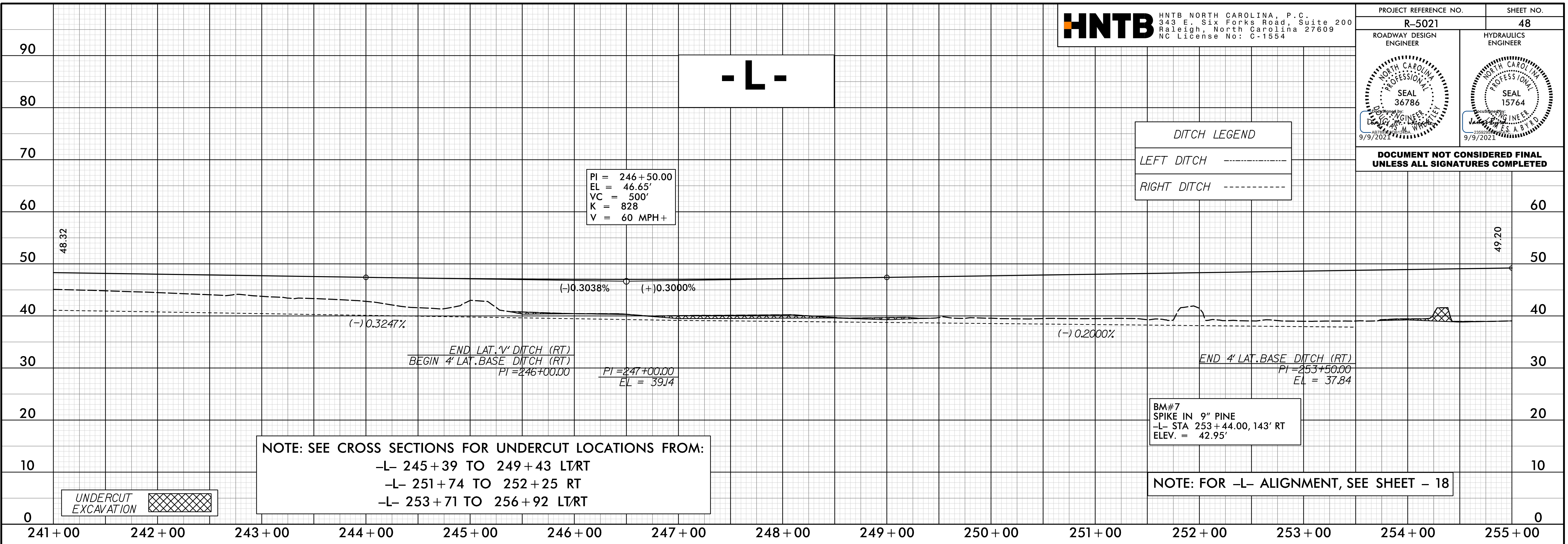


22-JUL-2021 09:58  
\\p01dway\p-coj\19-5021\RDY\_PFL\_PSH47.dgn  
AUTE

5/28/20

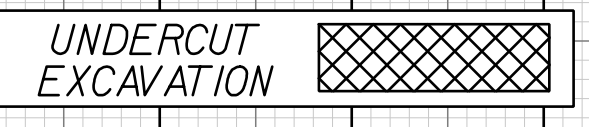
PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>48</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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



**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**



**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**

**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

22-JUL-2021 09:58  
K:\p\daway\p-coj\18-5021-L-RDY\_PFL\_PSH48.dgn  
DWG



5/28/21

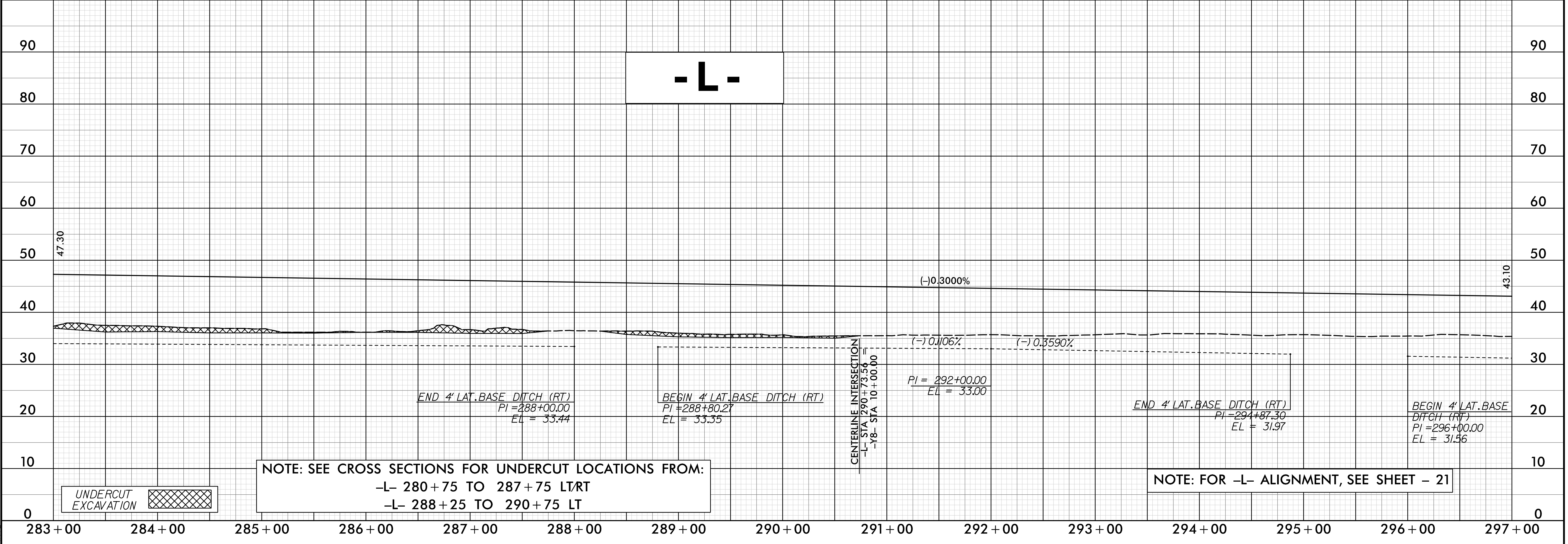
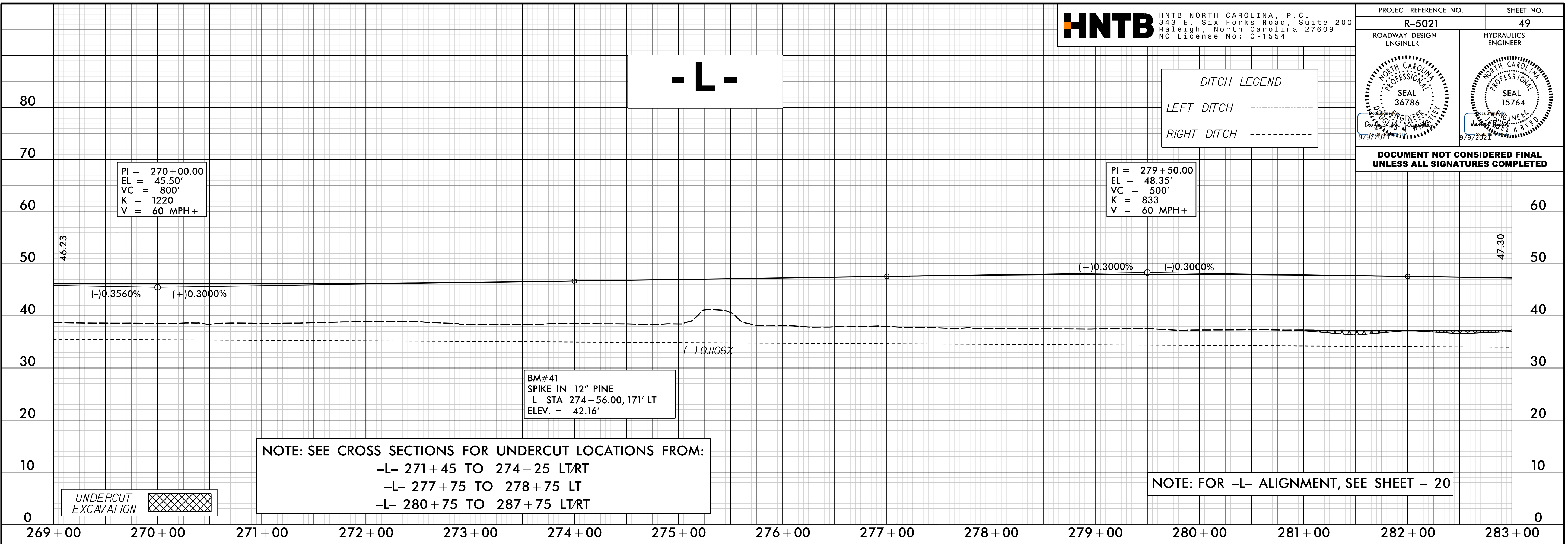
PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>49</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

**DITCH LEGEND**

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

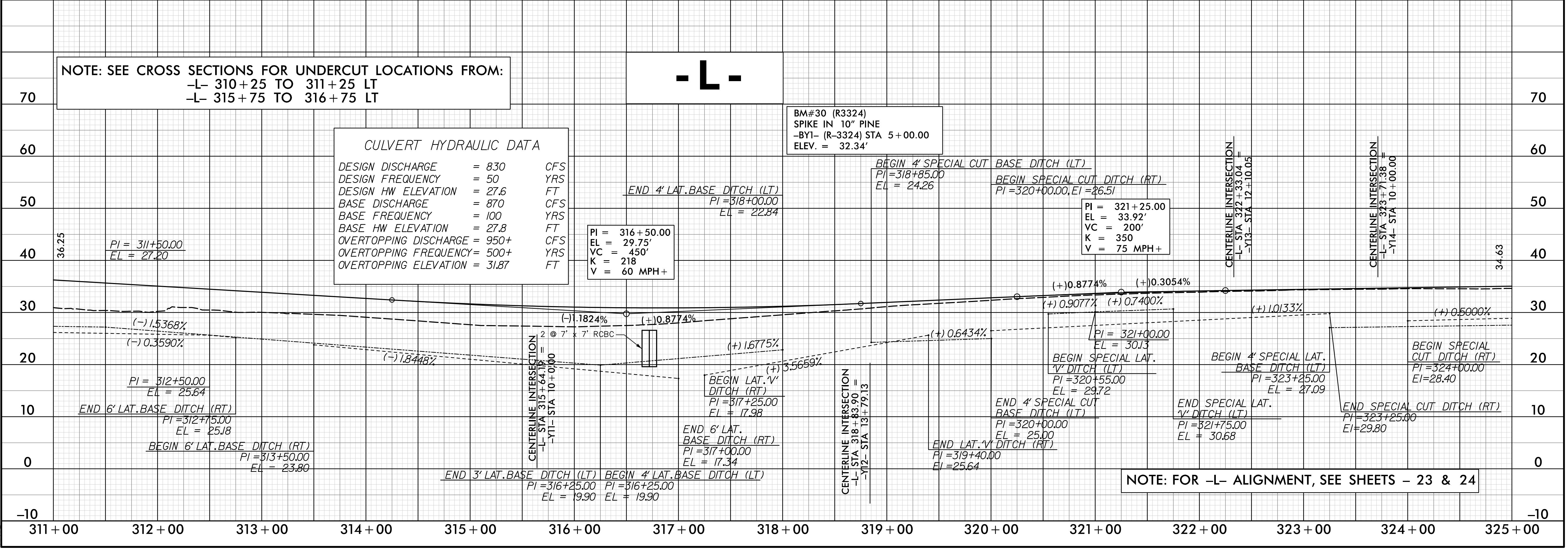
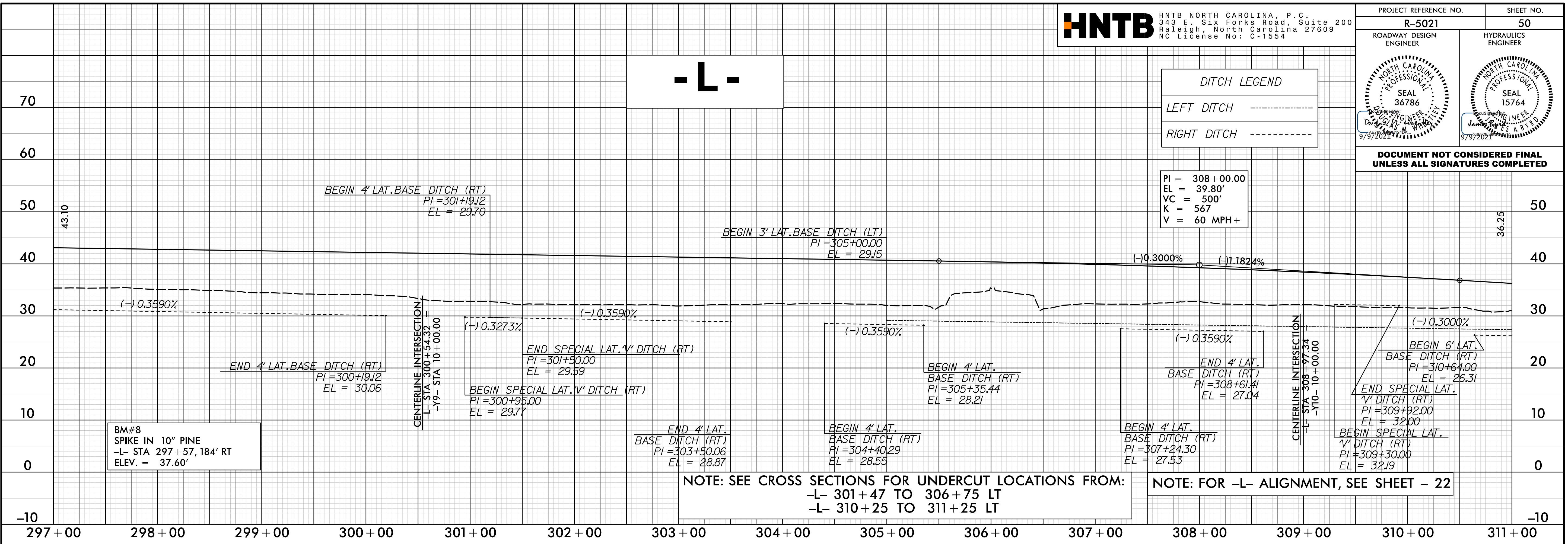


22-JUL-2021 09:58  
 N:\Roadway\Projects\5021\RDY\_PFL\_PSH49.dgn  
 HNTB

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>50</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



22-JUL-2021 09:58  
Roadway (P-co) R-5021\_L\_PFL\_PSH50.dgn  
DATE

5/28/19

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

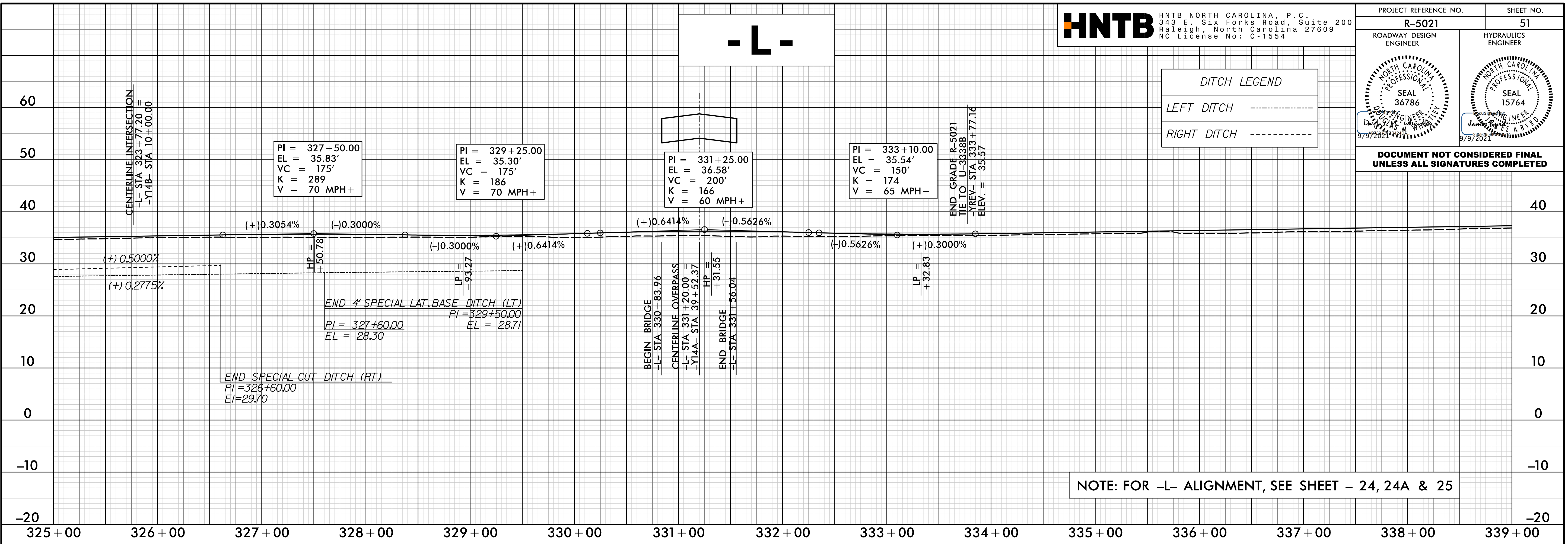
PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>51</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

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

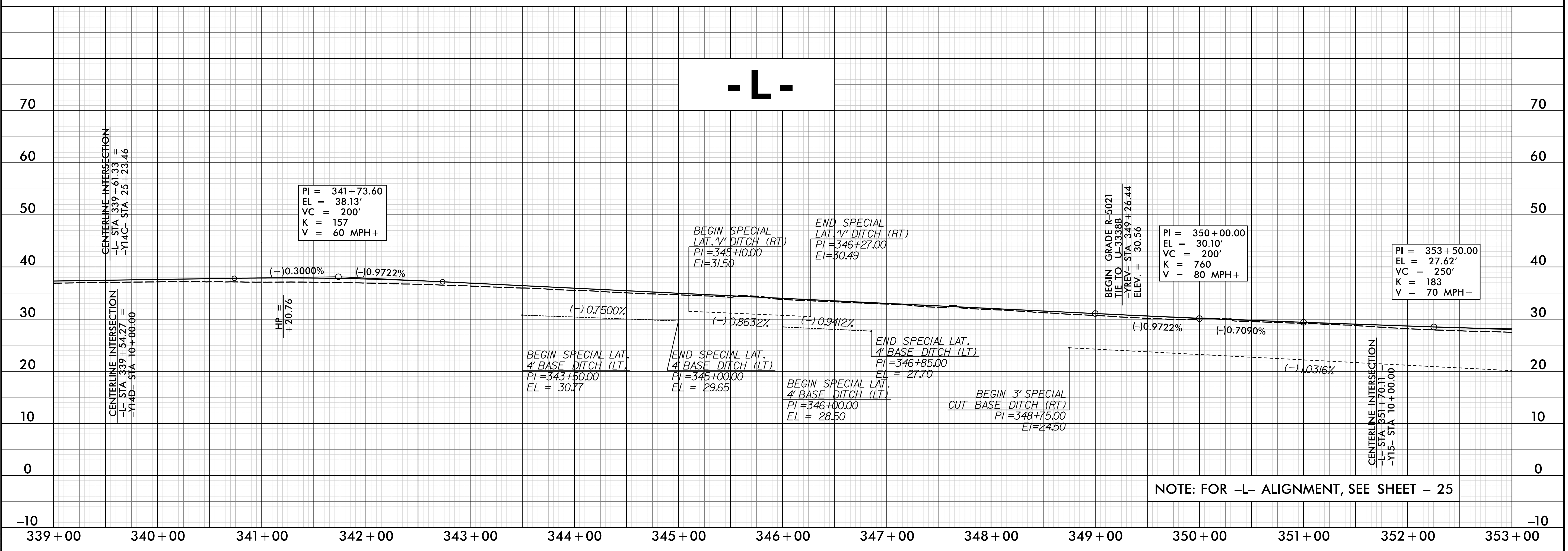
**DITCH LEGEND**

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

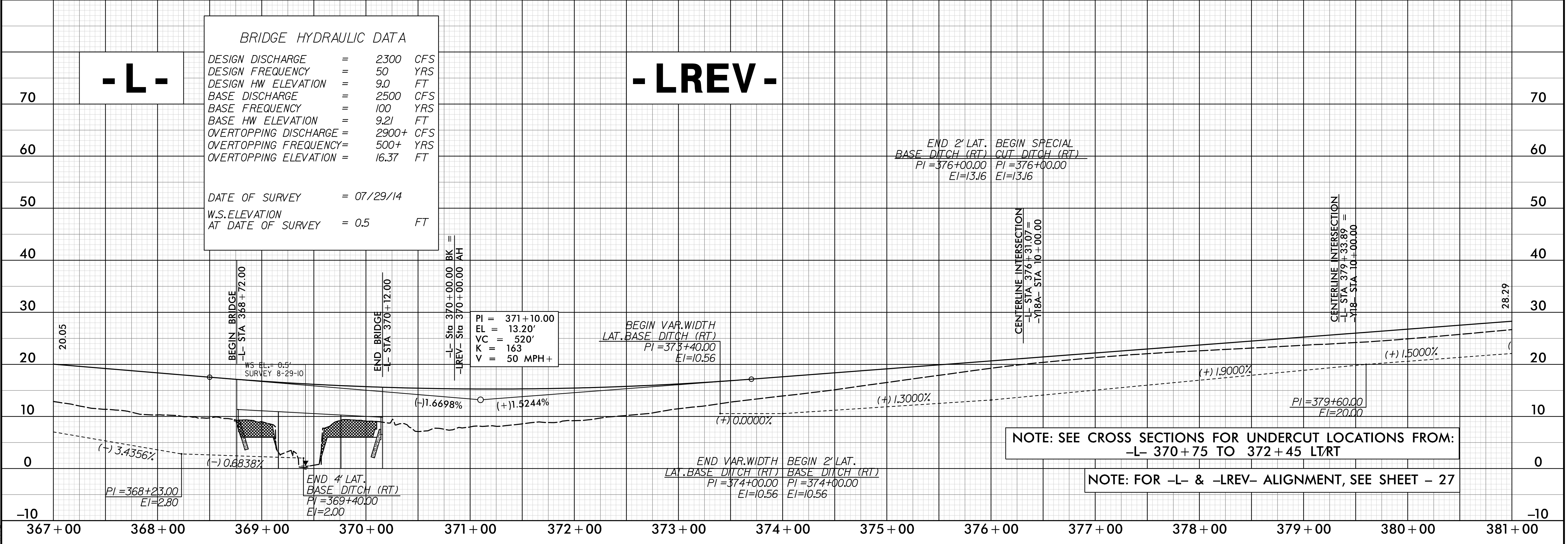
PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>52</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	=	2300	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	9.0	FT
BASE DISCHARGE	=	2500	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	9.21	FT
OVERTOPPING DISCHARGE	=	2900+	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	16.37	FT
DATE OF SURVEY = 07/29/14			
W.S. ELEVATION AT DATE OF SURVEY = 0.5 FT			



22-JUL-2021 09:58  
R:\Roadway\Projects\19-5021-L\_PFL\_PSH52.dgn  
AHL

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>53</b>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

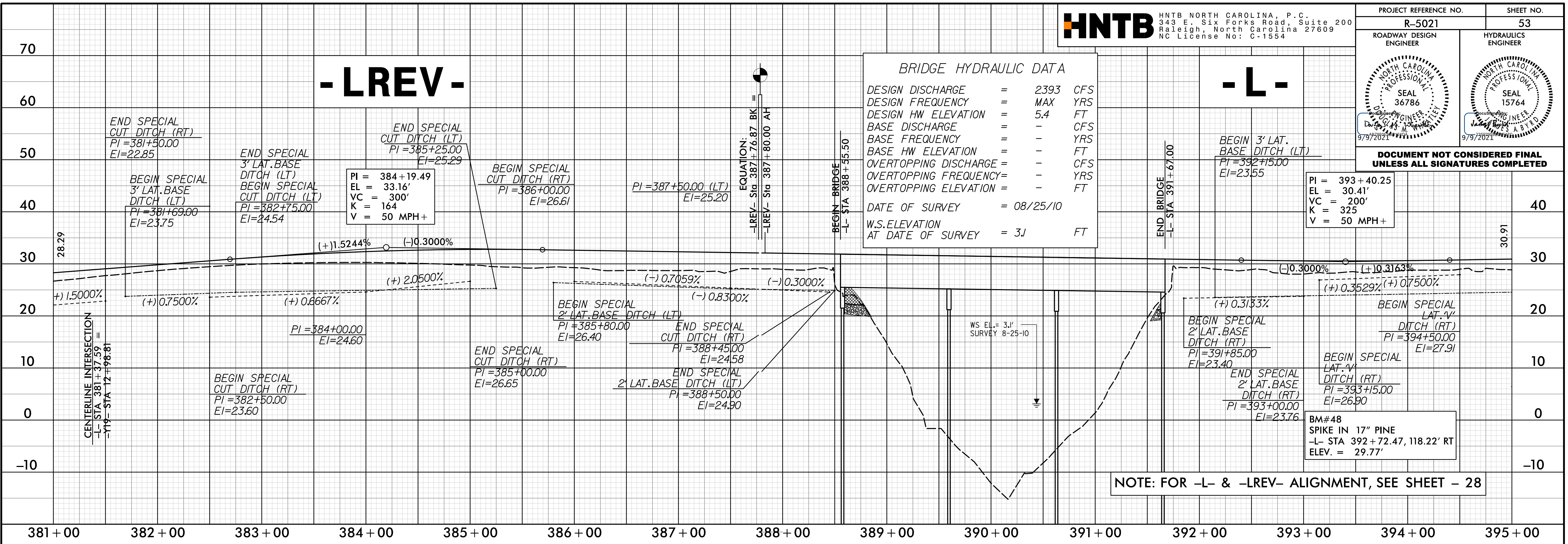
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

# -LREV-

**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

# -L-

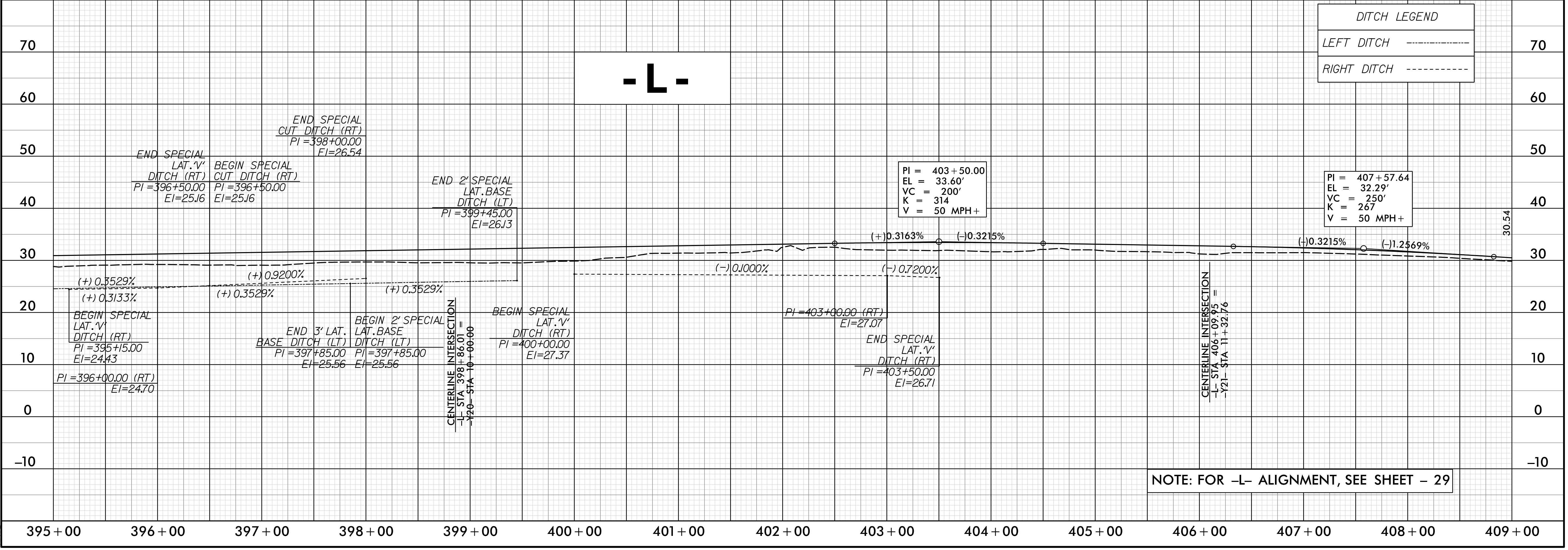


NOTE: FOR -L- & -LREV- ALIGNMENT, SEE SHEET - 28

# -L-

**DITCH LEGEND**

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



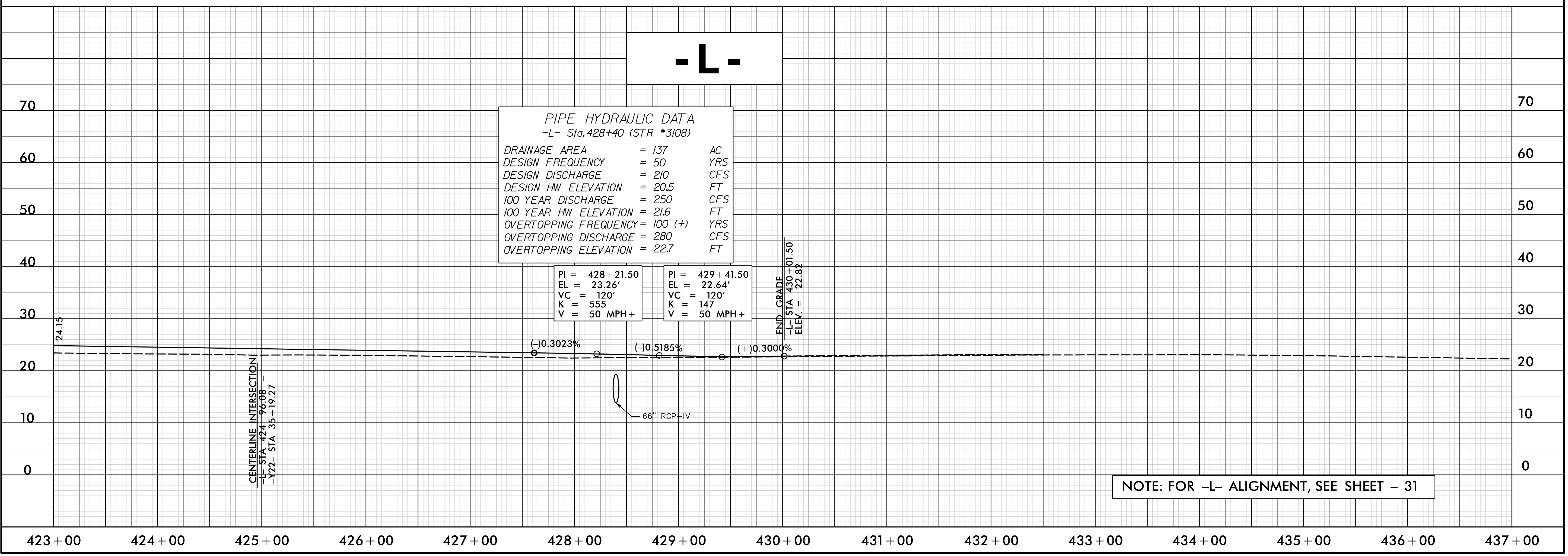
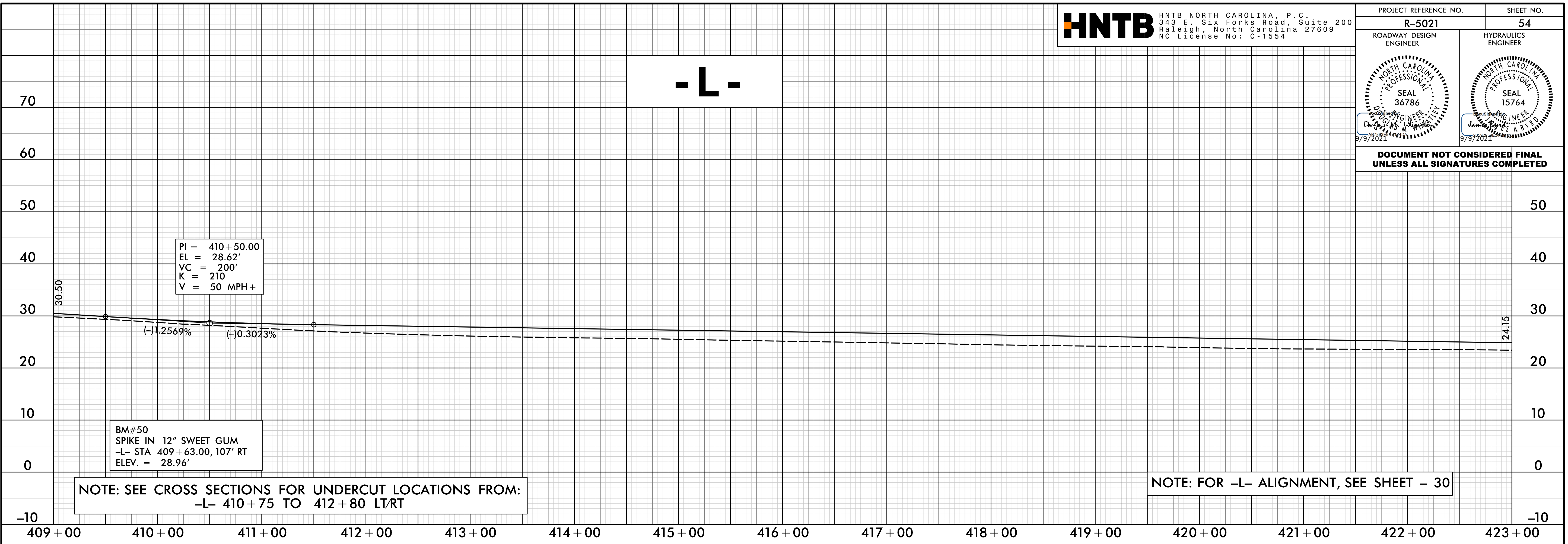
NOTE: FOR -L- ALIGNMENT, SEE SHEET - 29

22-JUL-2021 09:58  
Roadway (P-co) R-5021\_LFDY\_PFL\_PSH53.dgn  
DATE

5/28/21

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>54</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



**PIPE HYDRAULIC DATA**  
 -L- Sta. 428+40 (STR \*3108)

DRAINAGE AREA	= 137	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 210	CFS
DESIGN HW ELEVATION	= 20.5	FT
100 YEAR DISCHARGE	= 250	CFS
100 YEAR HW ELEVATION	= 21.6	FT
OVERTOPPING FREQUENCY	= 100 (+)	YRS
OVERTOPPING DISCHARGE	= 280	CFS
OVERTOPPING ELEVATION	= 22.7	FT

PI = 428 + 21.50	PI = 429 + 41.50
EL = 23.26'	EL = 22.64'
VC = 120'	VC = 120'
K = 555	K = 147
V = 50 MPH+	V = 50 MPH+

22-JUL-2021 09:58  
 \\p01dway\p-coj\1R-5021\RDY\_PFL\_PSH54.dgn  
 TITLE

5/28/2021

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

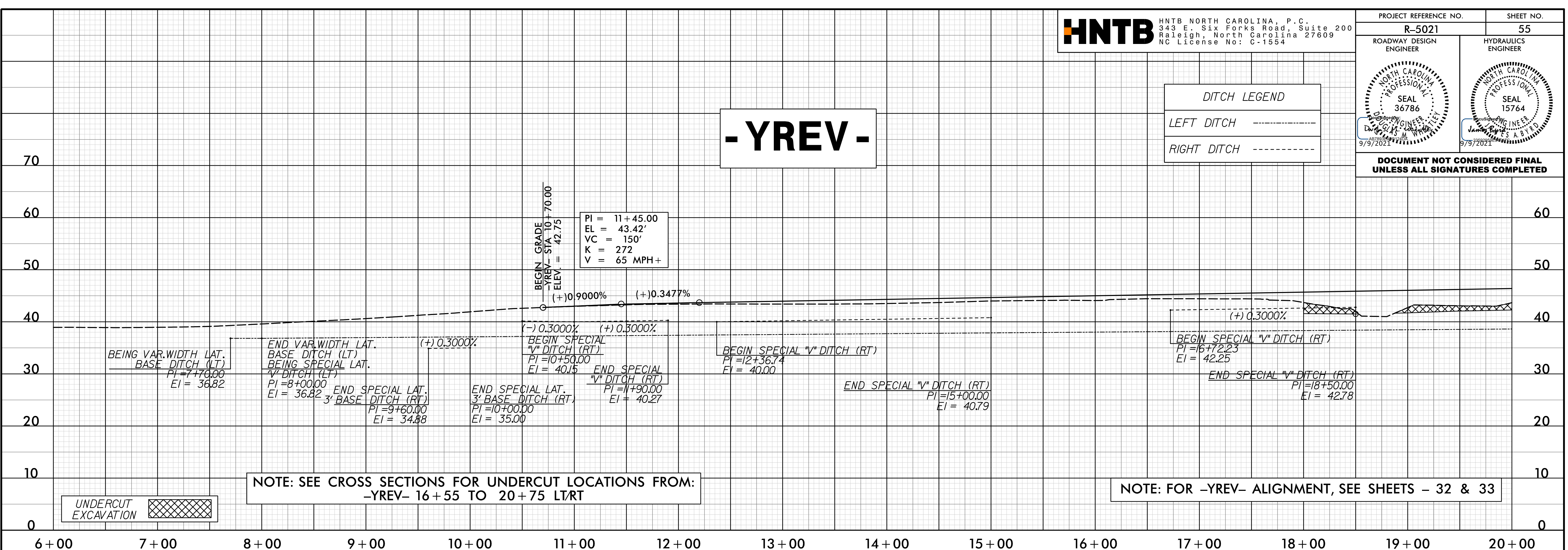
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**DITCH LEGEND**

LEFT DITCH -----

RIGHT DITCH -----

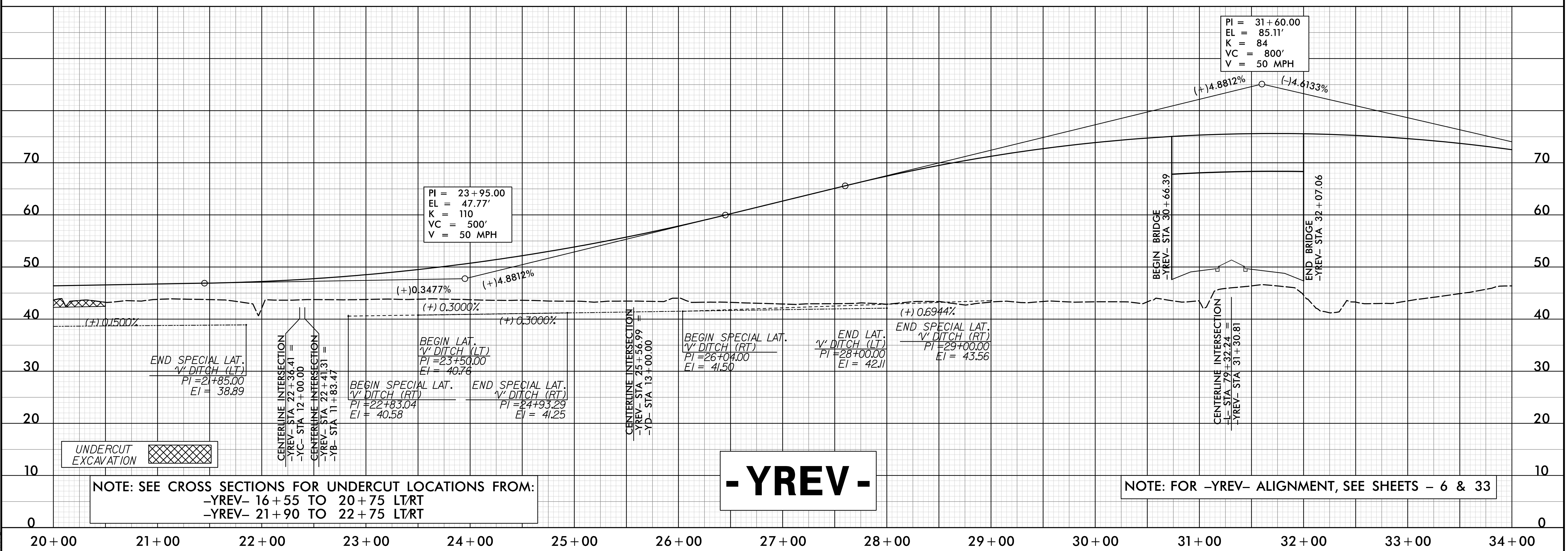
**- YREV -**



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

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

UNDERCUT EXCAVATION



**- YREV -**

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

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

UNDERCUT EXCAVATION

22-JUL-2021 09:58  
\\p02dway\p-coj\j-r-5021\FDY\_PFL\_PSH55.dgn  
AULIE

5/28/19

**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. <b>R-5021</b>	SHEET NO. <b>56</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

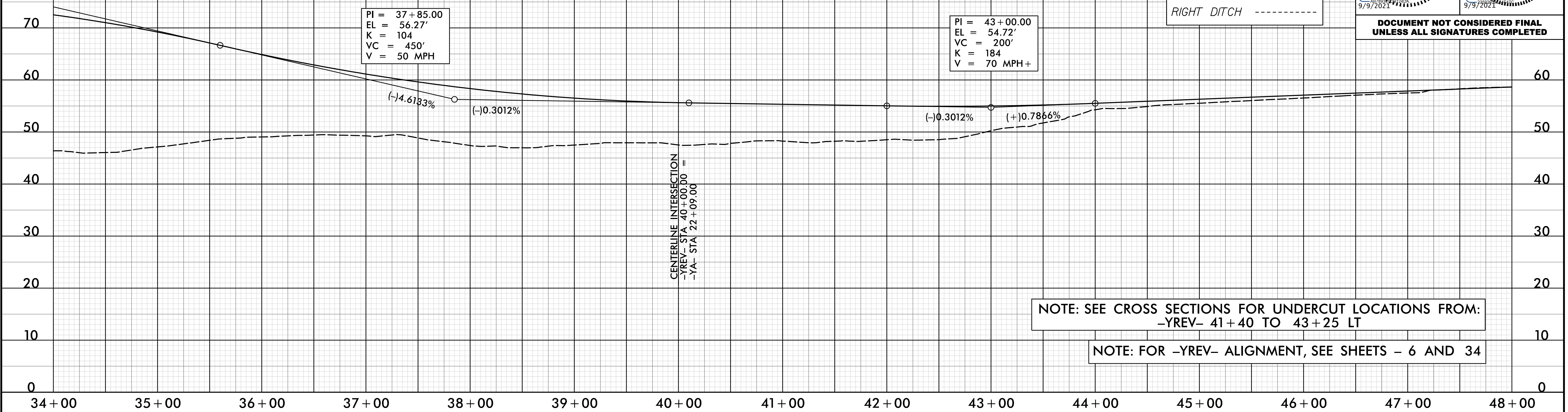
# - YREV -

**DITCH LEGEND**

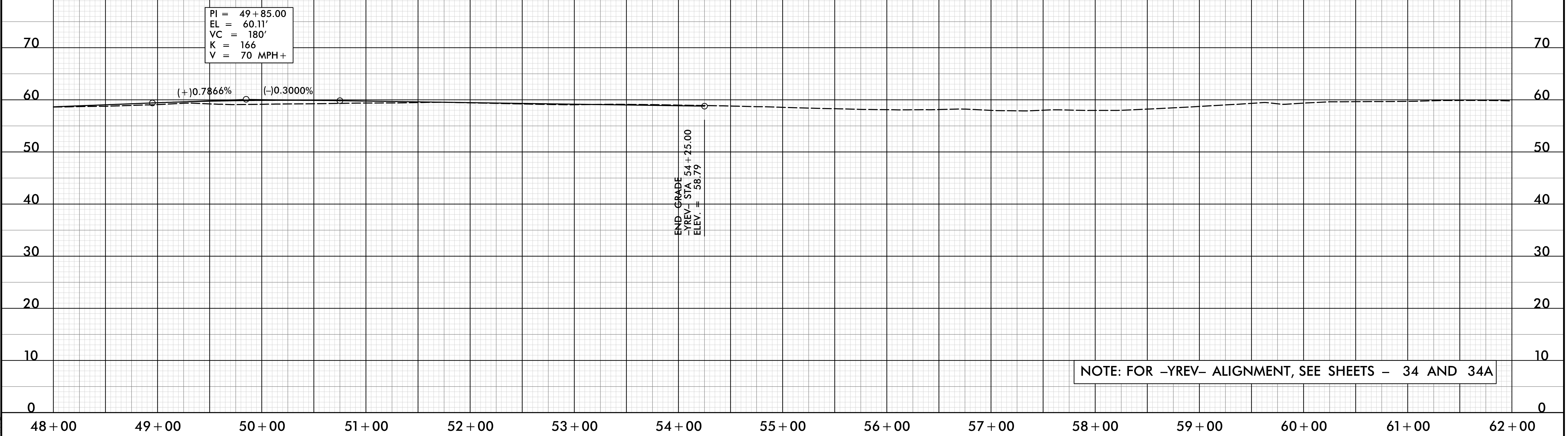
LEFT DITCH -----

RIGHT DITCH -----

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



# - YREV -



22-JUL-2021 09:58  
 N:\Roadway\Projects\5021\RDY\_PFL\_PSH56.dgn  
 HNTB

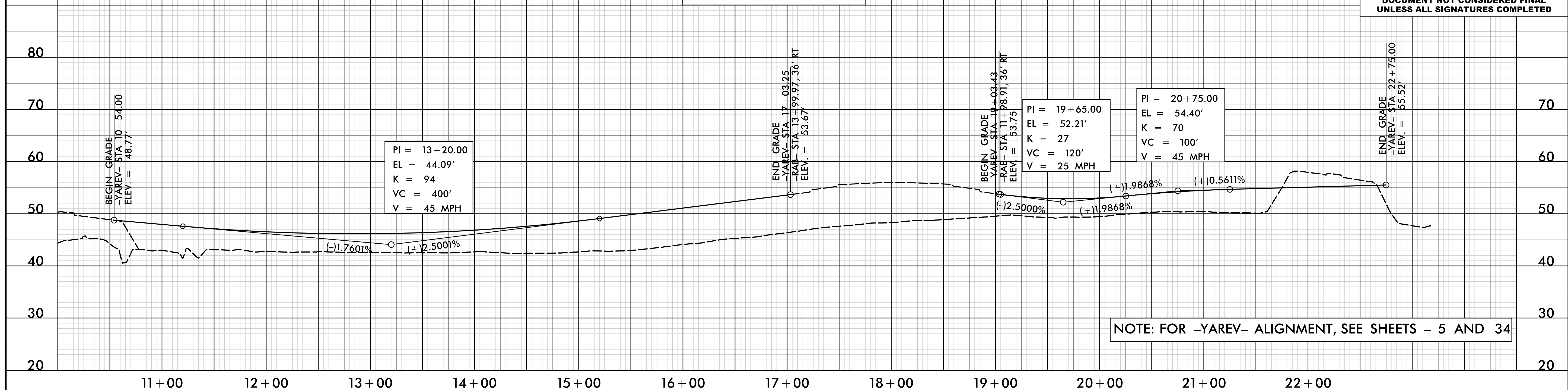


5/28/2021

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

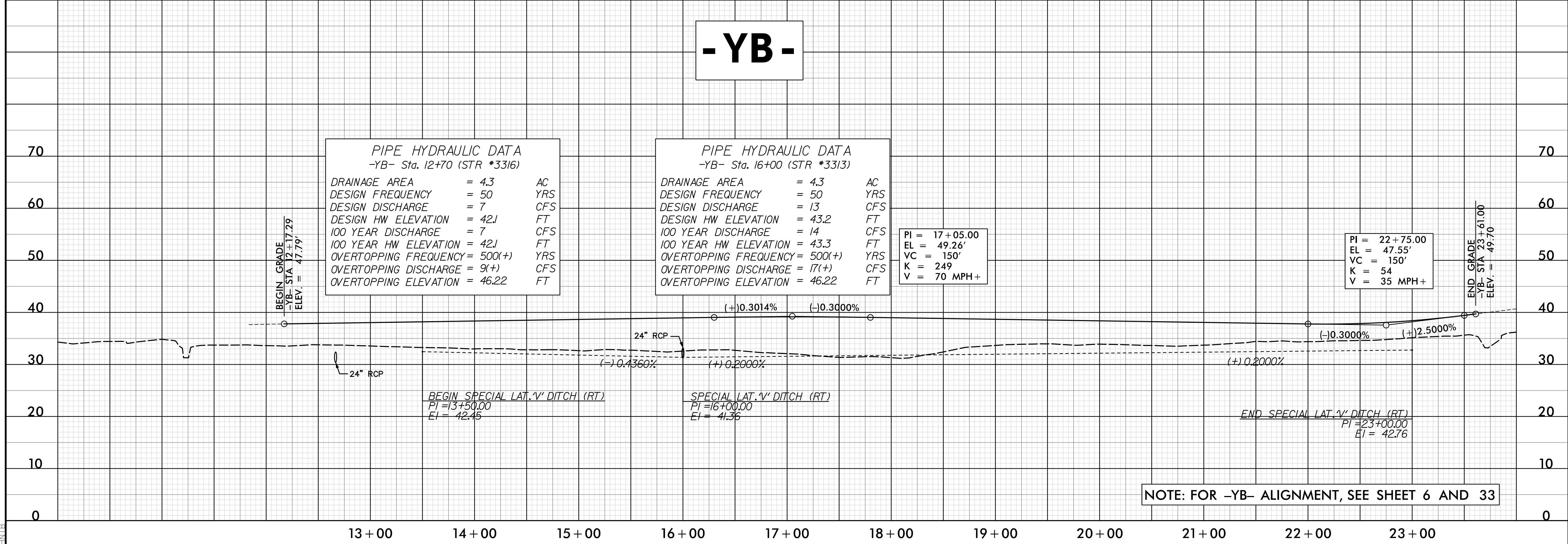
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

# - YAREV -



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

# - YB -



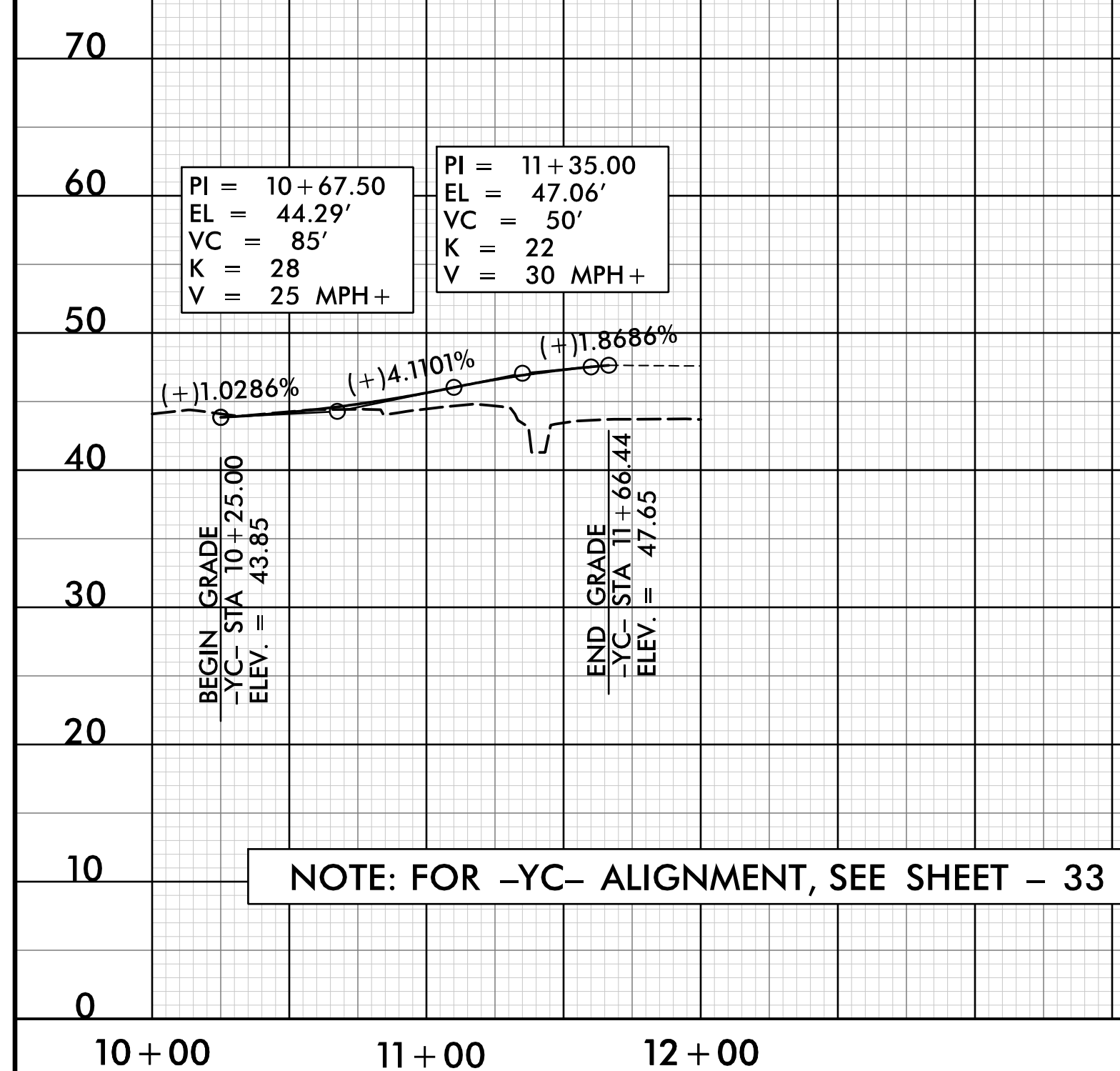
NOTE: FOR -YB- ALIGNMENT, SEE SHEET 6 AND 33

R:\SEP-2021\6503\PROJECTS\5021\RDY\_PFL\_PSH57.dgn

5/28/2021

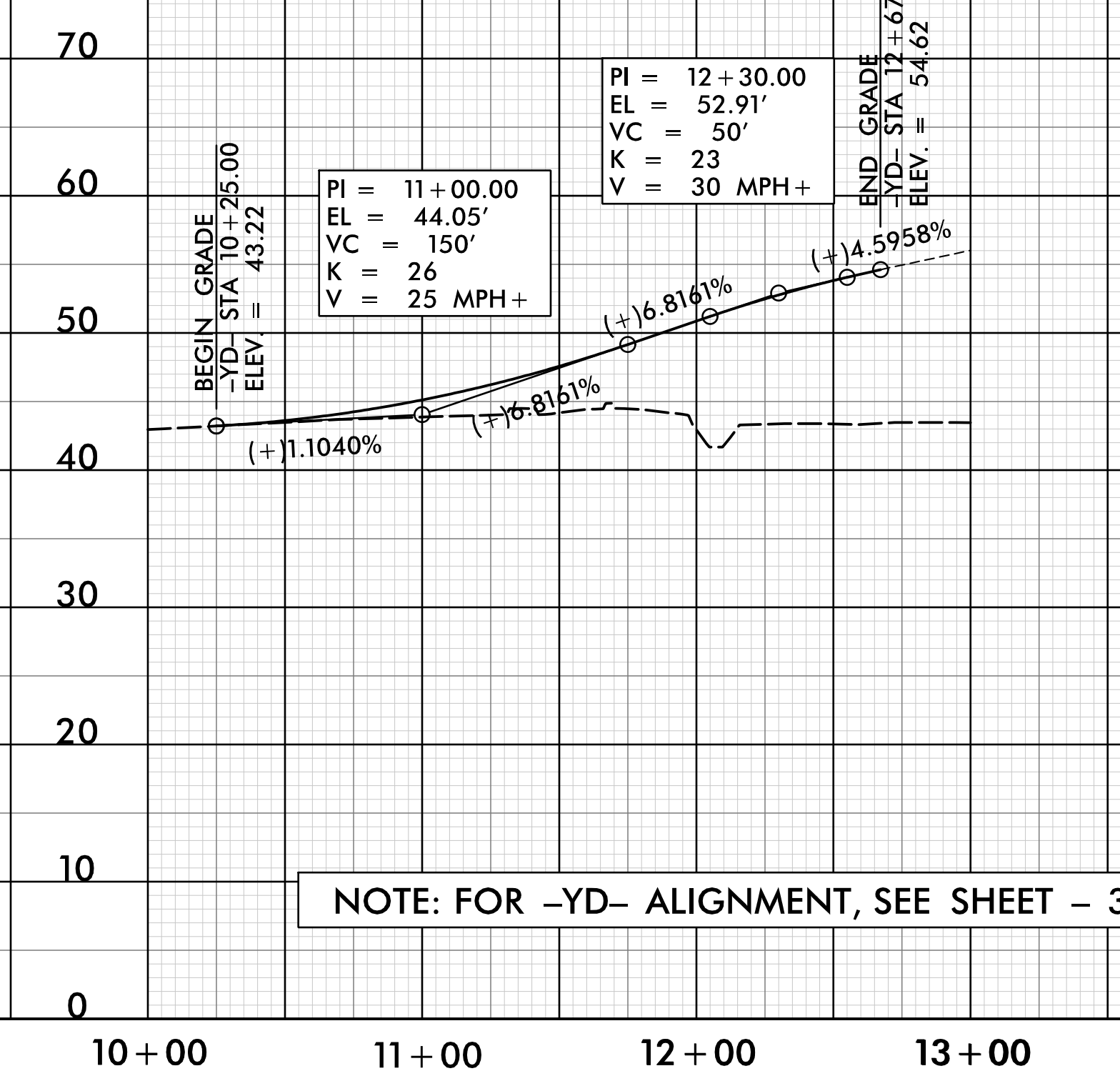
PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>58</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

# -YC-



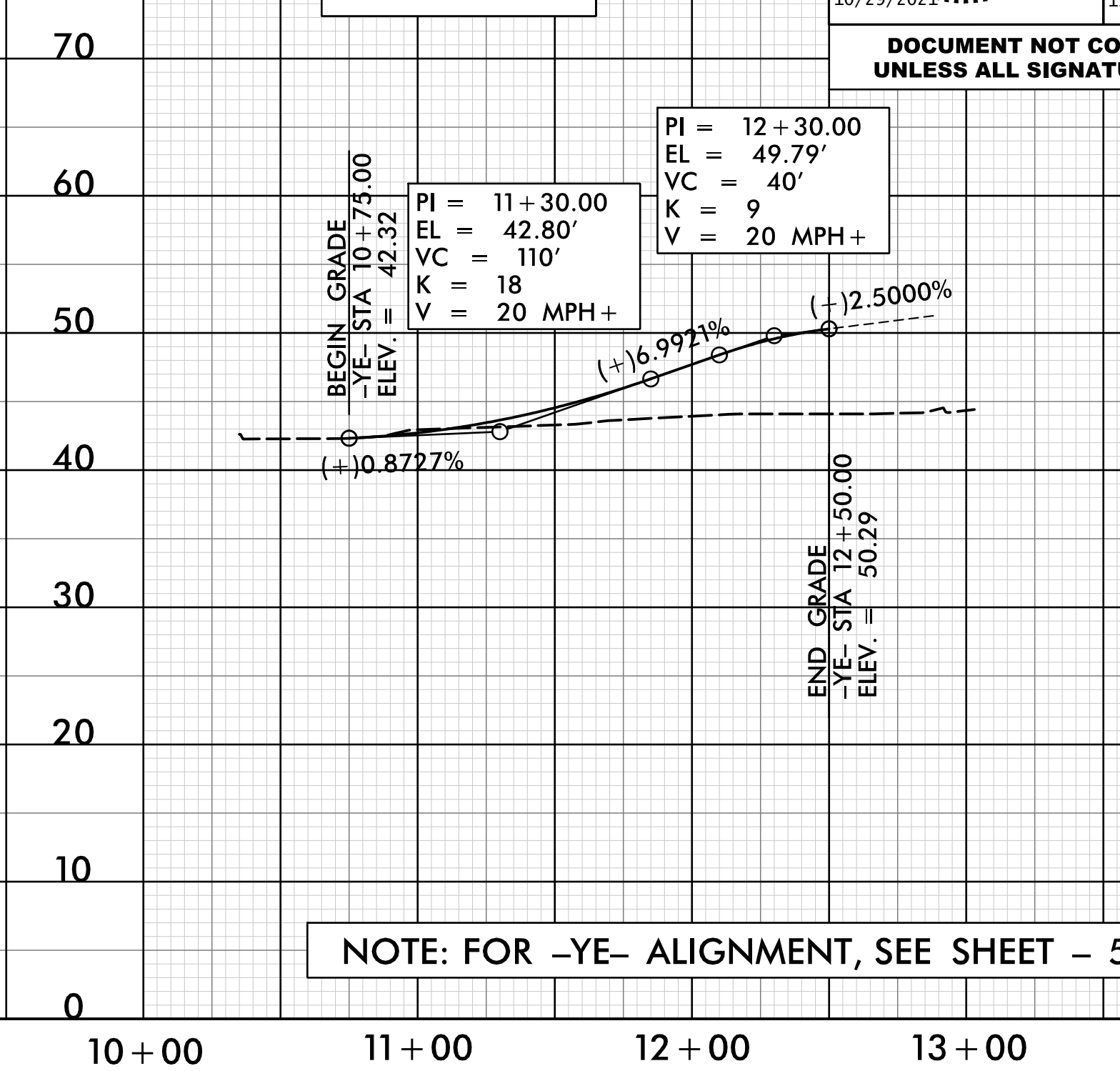
NOTE: FOR -YC- ALIGNMENT, SEE SHEET - 33

# -YD-



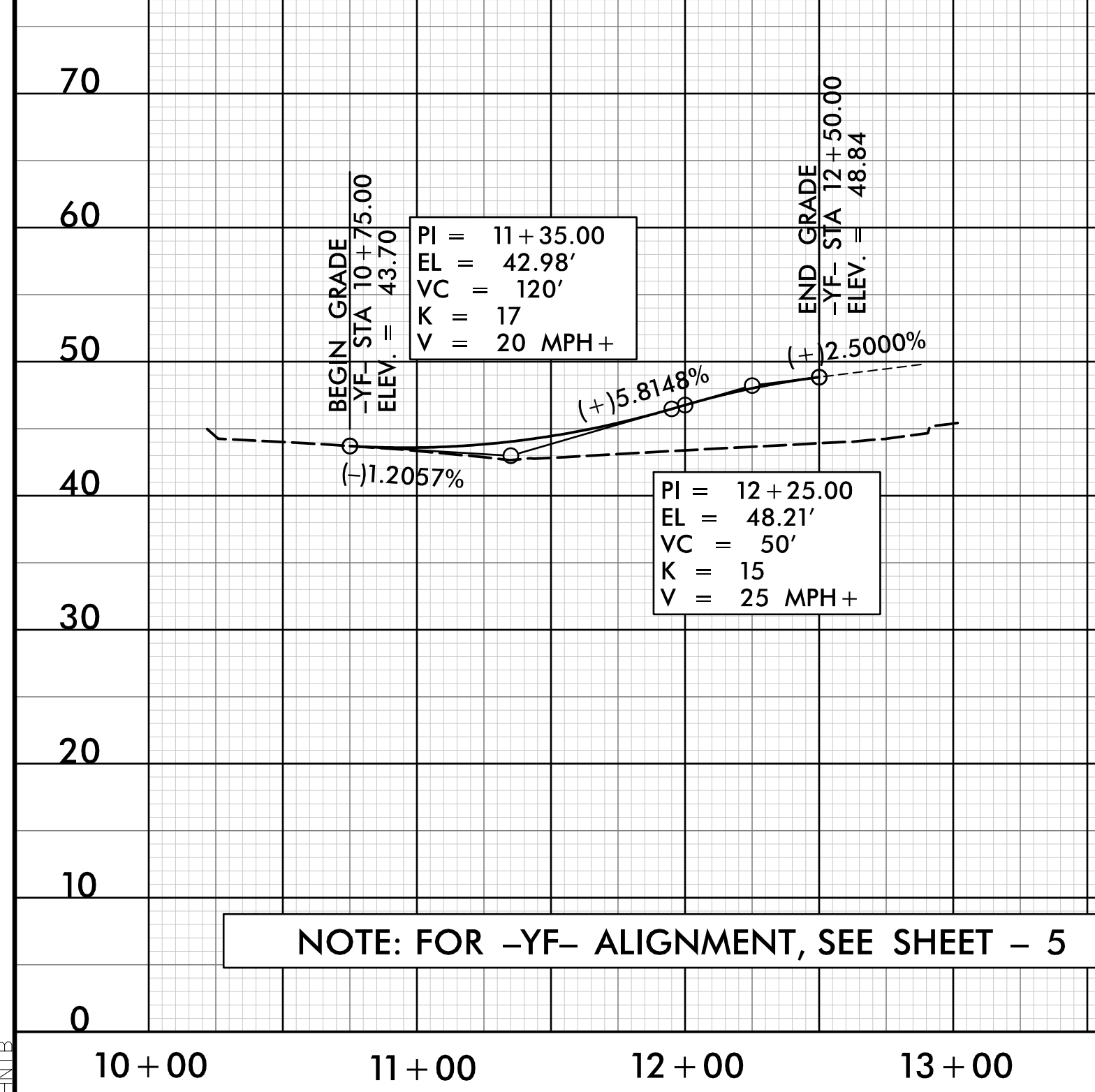
NOTE: FOR -YD- ALIGNMENT, SEE SHEET - 33

# -YE-



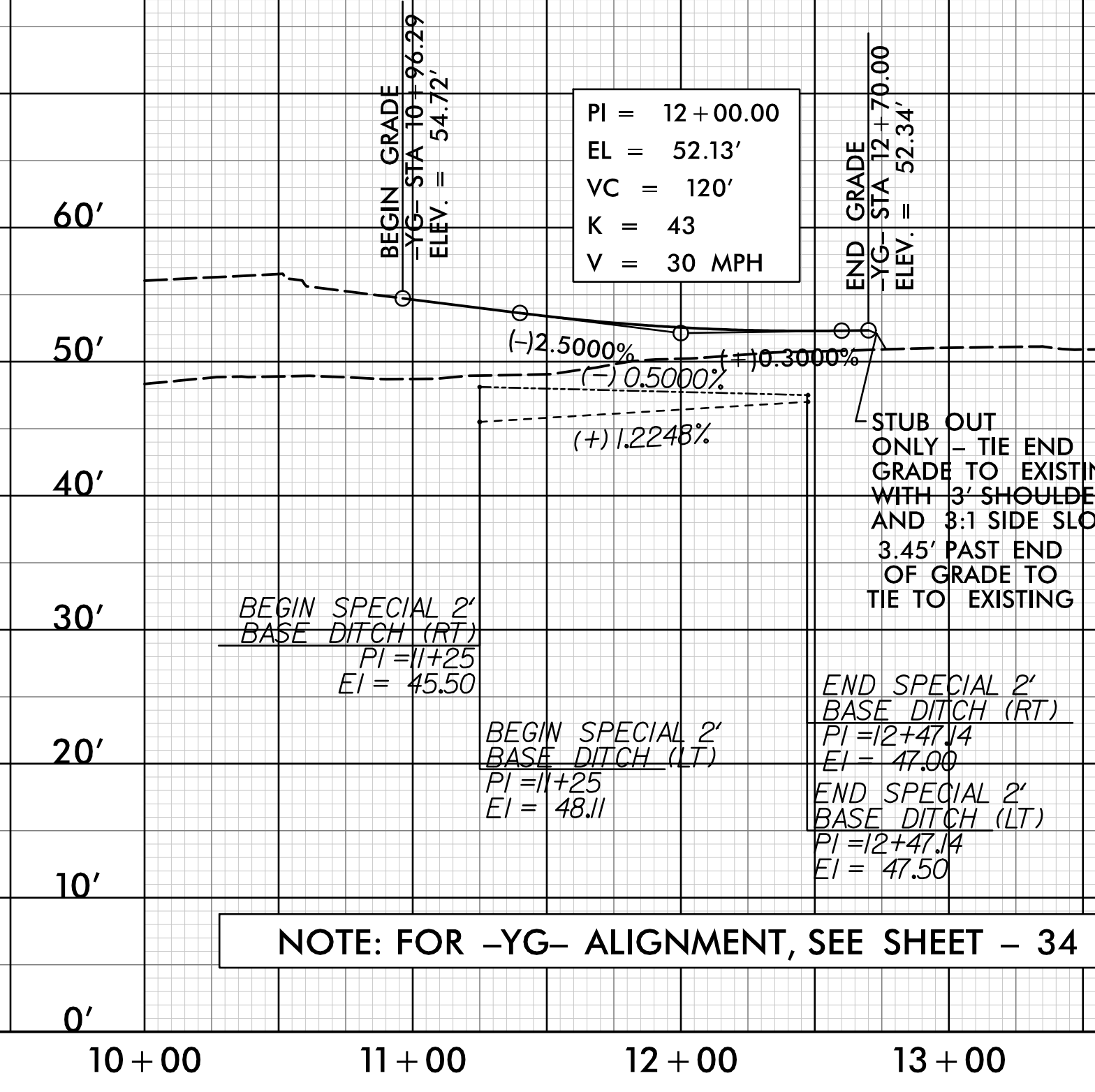
NOTE: FOR -YE- ALIGNMENT, SEE SHEET - 5

# -YF-



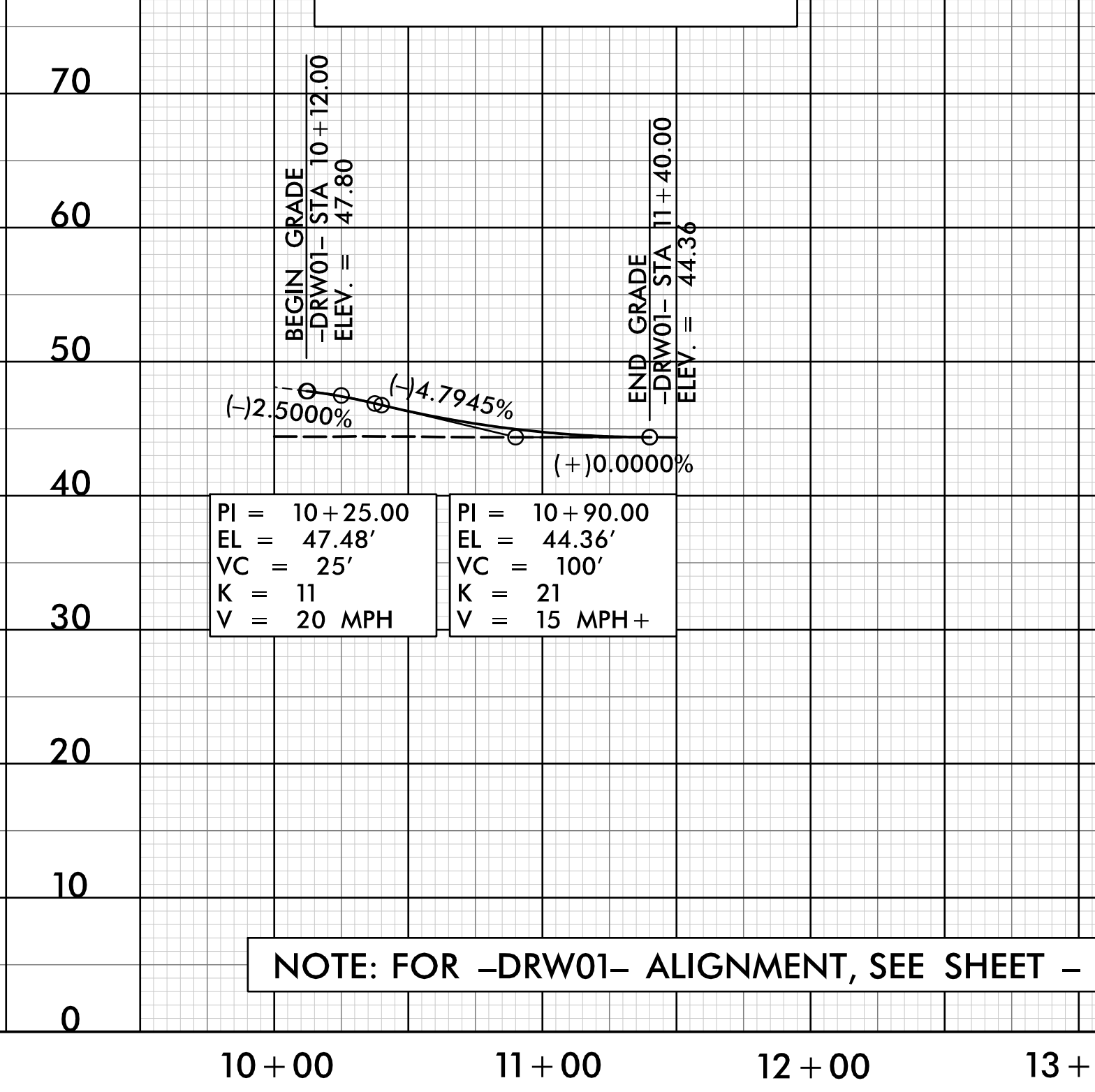
NOTE: FOR -YF- ALIGNMENT, SEE SHEET - 5

# -YG-



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

# -DRW01-



NOTE: FOR -DRW01- ALIGNMENT, SEE SHEET - 33

X:\P\2021\0616\5 R-5021\RDY\_PFL\_PSH58.dgn

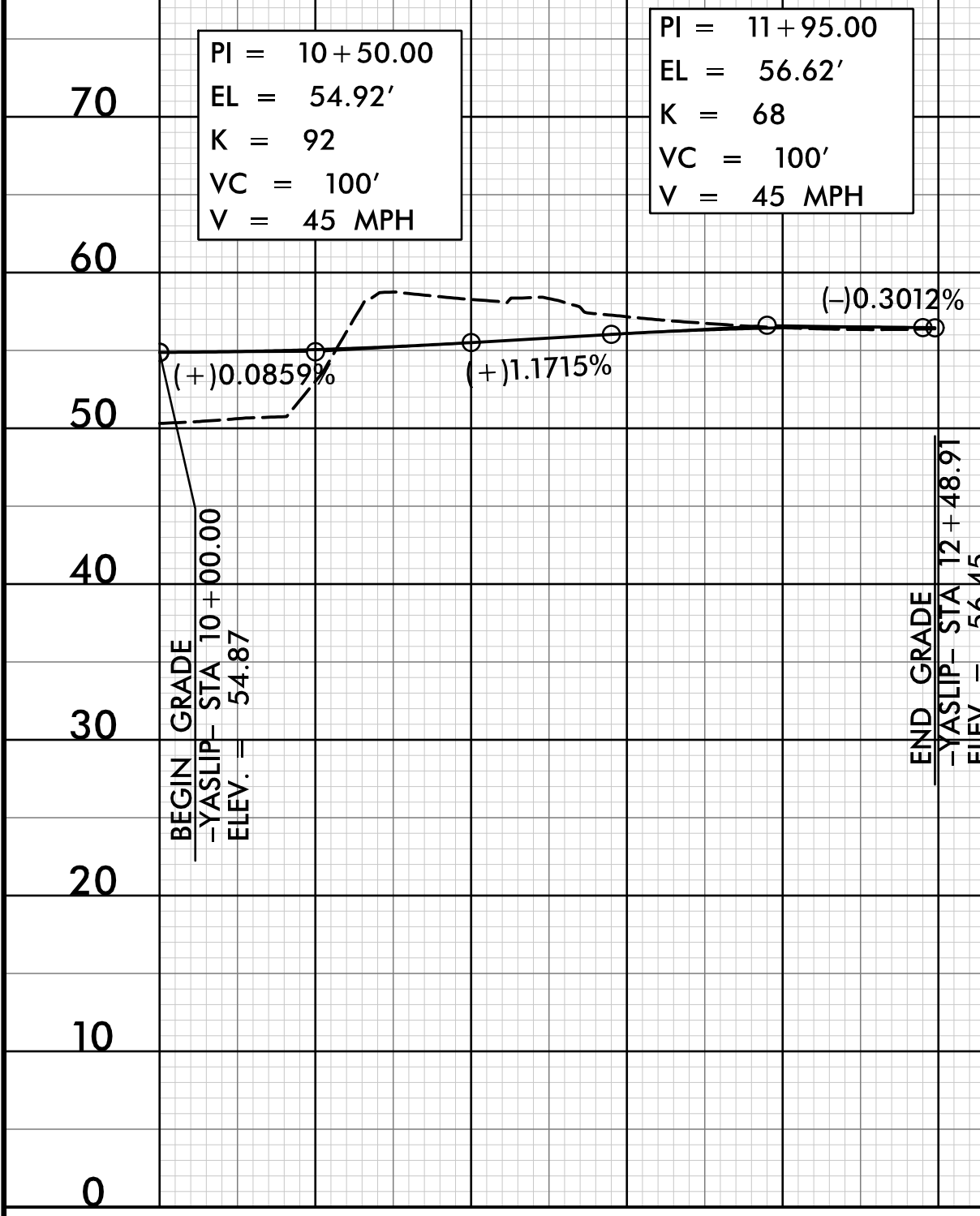
5/28/20

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>59</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

# -YASLIP-

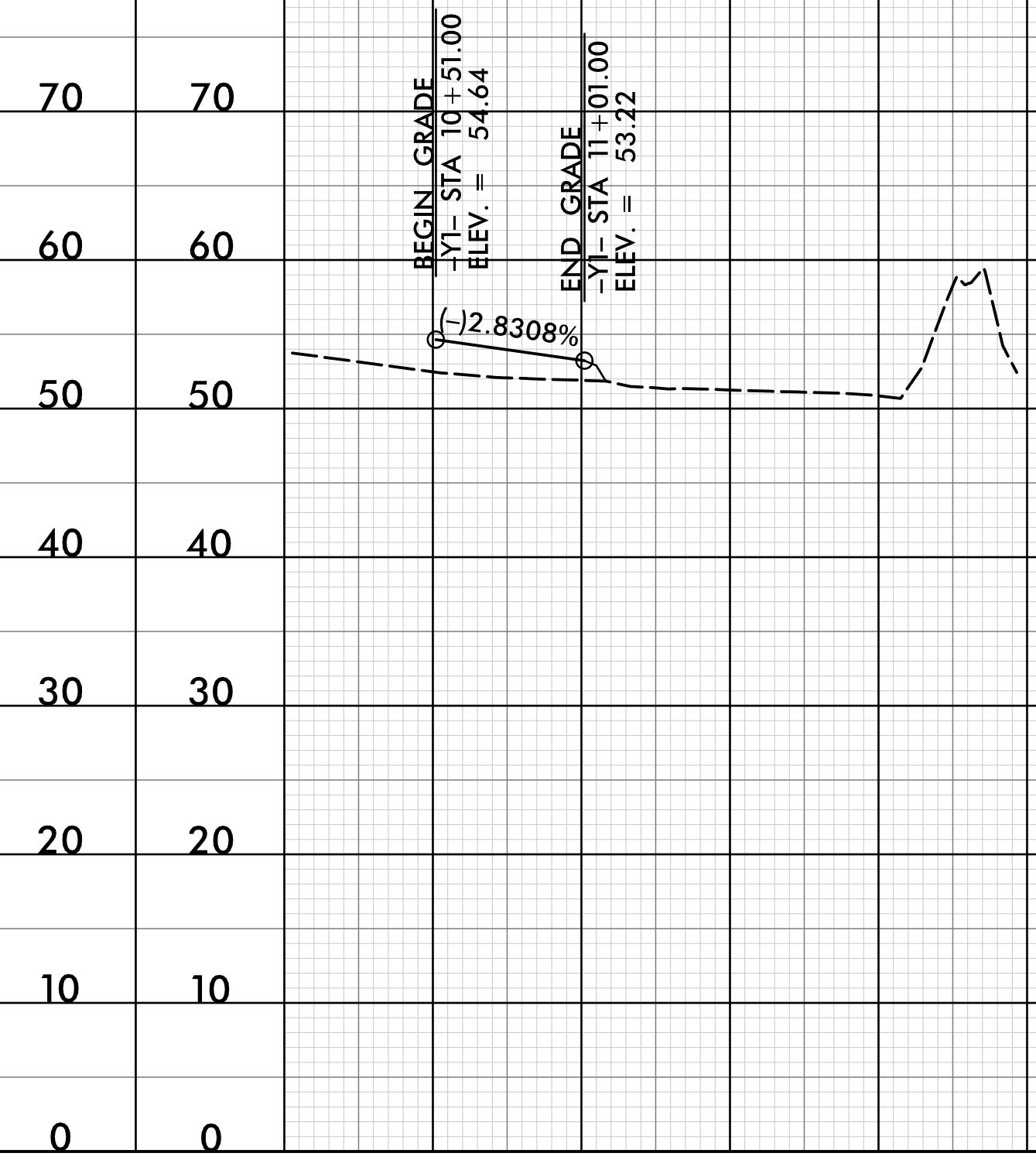
PI = 10+50.00 EL = 54.92' K = 92 VC = 100' V = 45 MPH	PI = 11+95.00 EL = 56.62' K = 68 VC = 100' V = 45 MPH
---	---



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

# -Y1-

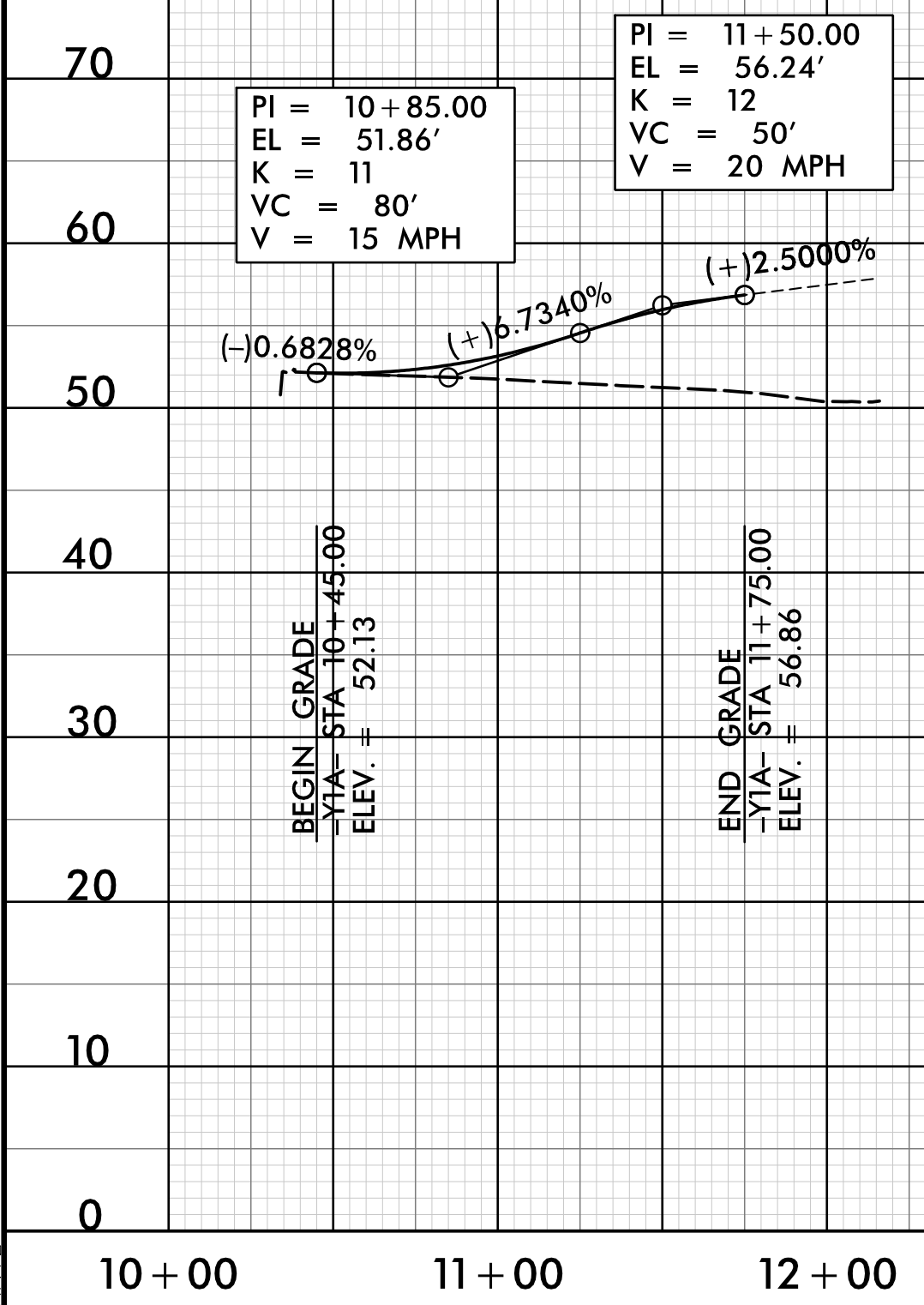
**DITCH LEGEND**  
 LEFT DITCH - - - - -  
 RIGHT DITCH - - - - -



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

# -Y1A-

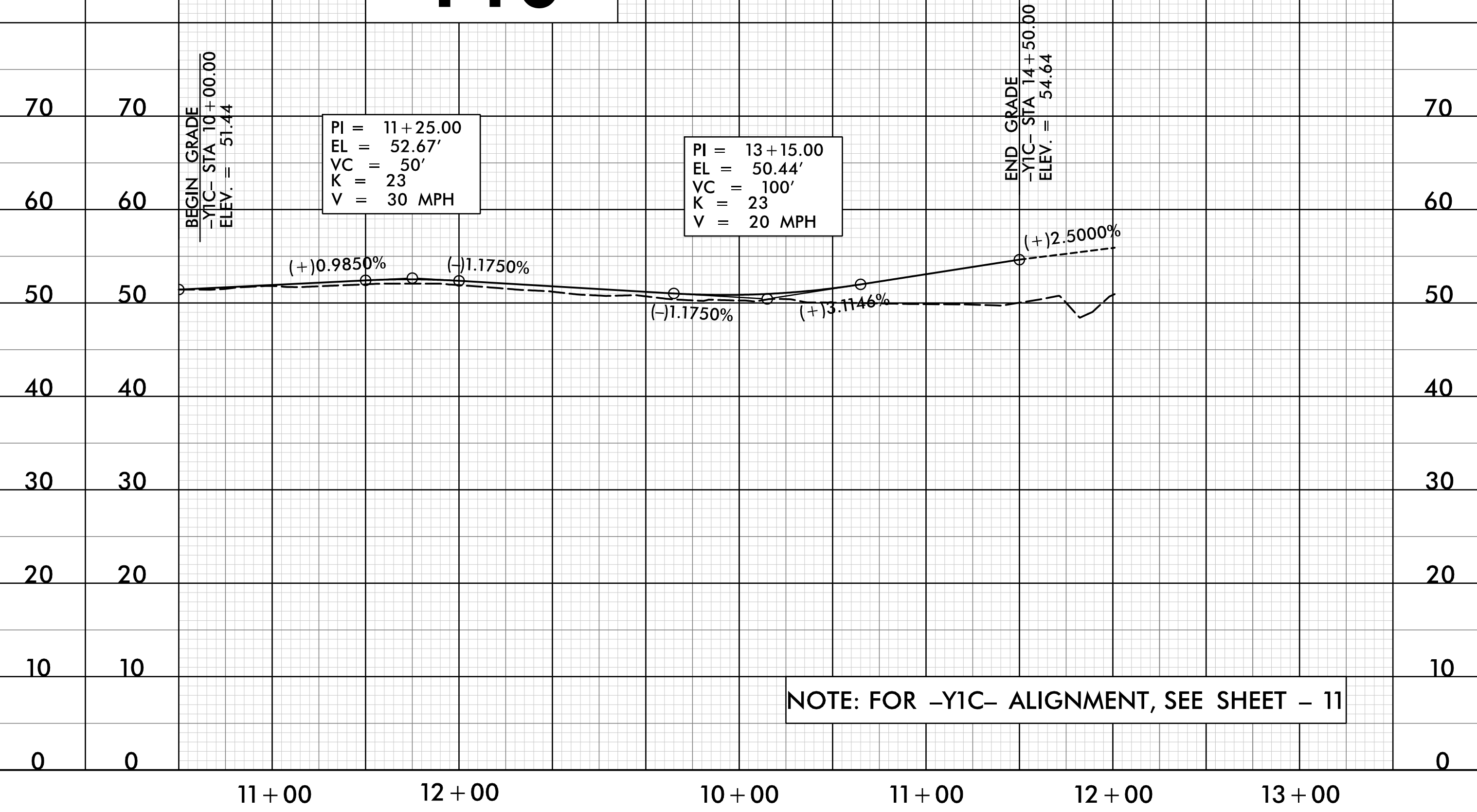
PI = 10+85.00 EL = 51.86' K = 11 VC = 80' V = 15 MPH	PI = 11+50.00 EL = 56.24' K = 12 VC = 50' V = 20 MPH
--	--



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

# -Y1C-

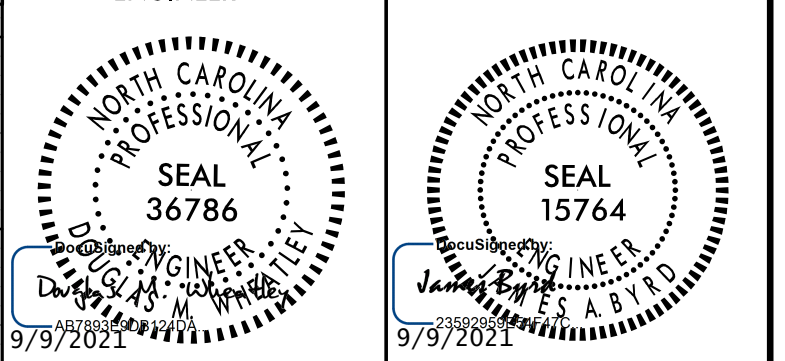
PI = 11+25.00 EL = 52.67' VC = 50' K = 23 V = 30 MPH	PI = 13+15.00 EL = 50.44' VC = 100' K = 23 V = 20 MPH
--	---



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

22-JUL-2021 09:58  
K:\Roadway\Projects\5021\RDY\_PFL\_PSH5.dgn

5/28/19



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

# - Y2 -

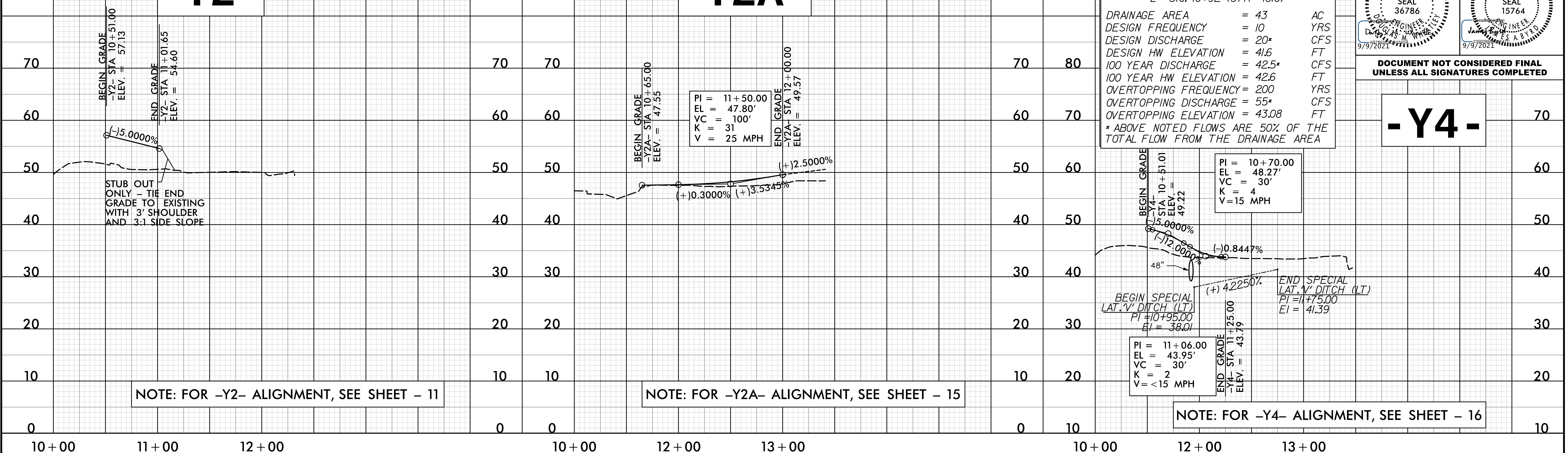
# - Y2A -

**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 -



# - Y3 -

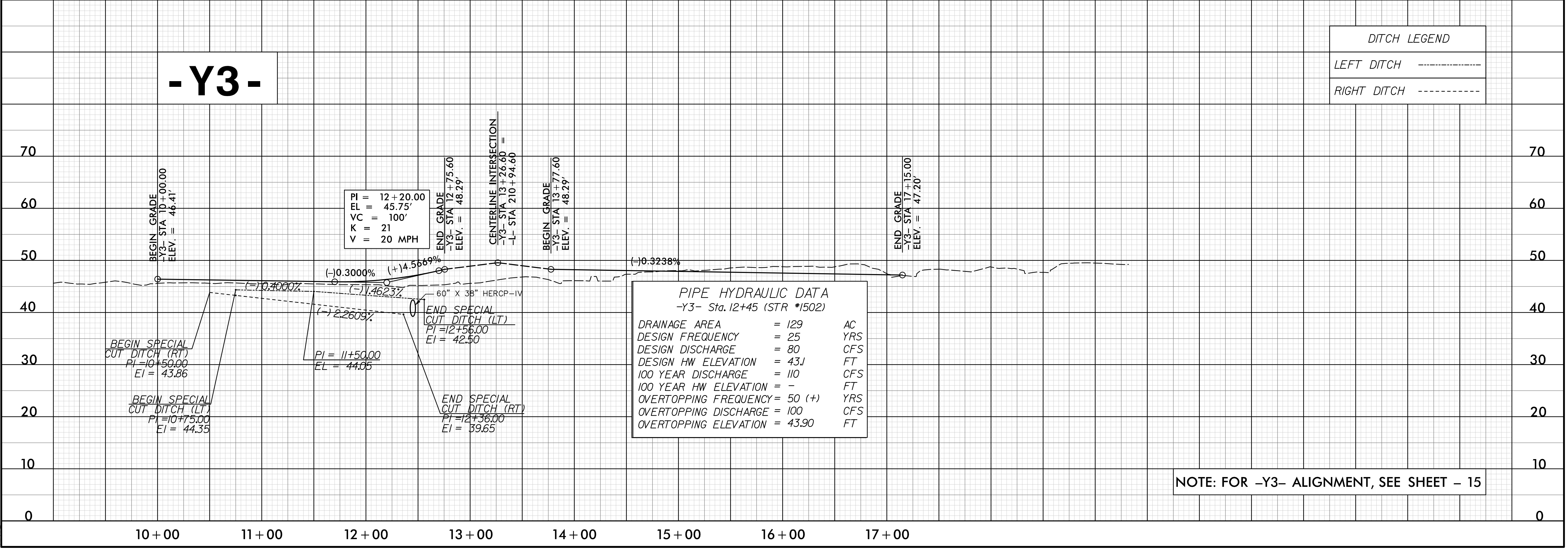
**DITCH LEGEND**

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



22-JUL-2021 09:58  
\\p01dway\p-coj\19-5021-FDY\_PFL\_PSH60.dgn  
A:\FILE

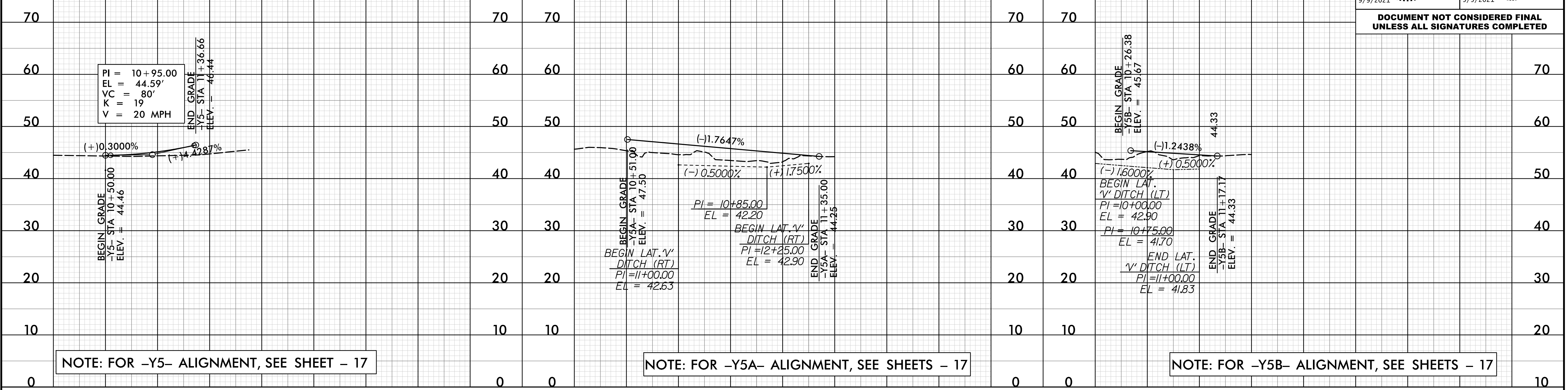
5/28/99

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>61</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# - 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)

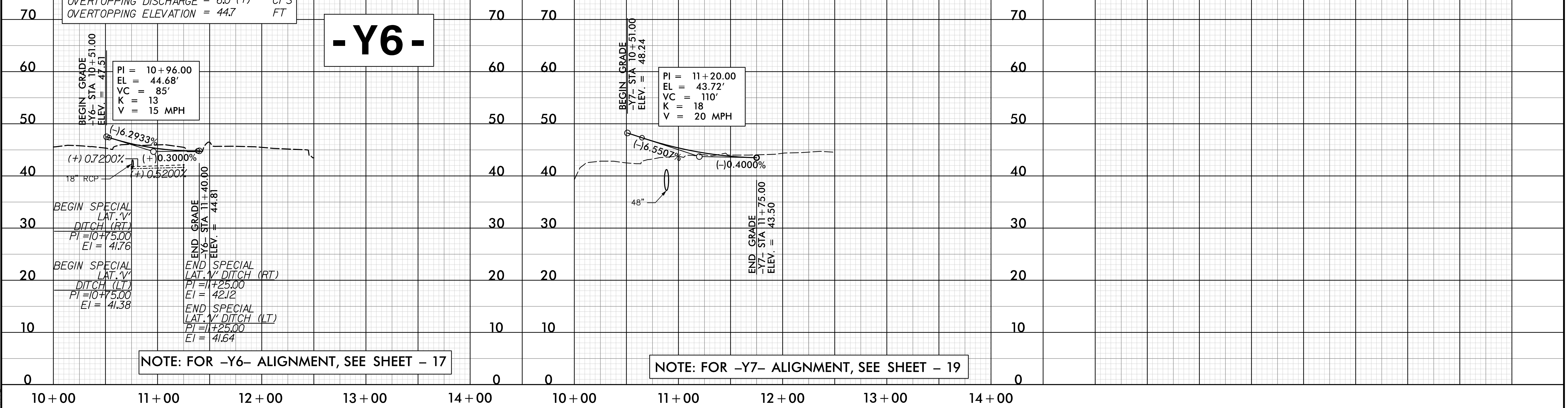
DRAINAGE AREA	= 0.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4.4	CFS
DESIGN HW ELEVATION	= 42.9	FT
100 YEAR DISCHARGE	= 5.0	CFS
100 YEAR HW ELEVATION	= 43.0	FT
OVERTOPPING FREQUENCY	= 500 (+)	YRS
OVERTOPPING DISCHARGE	= 6.0 (+)	CFS
OVERTOPPING ELEVATION	= 44.7	FT

**DITCH LEGEND**

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

# - Y6 -

# - Y7 -



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

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

22-JUL-2021 09:58  
\\p01dway\p-coj\p-r-5021-rd\p-fl\_psh61.dgn  
AUTE

5/28/20

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>62</b>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

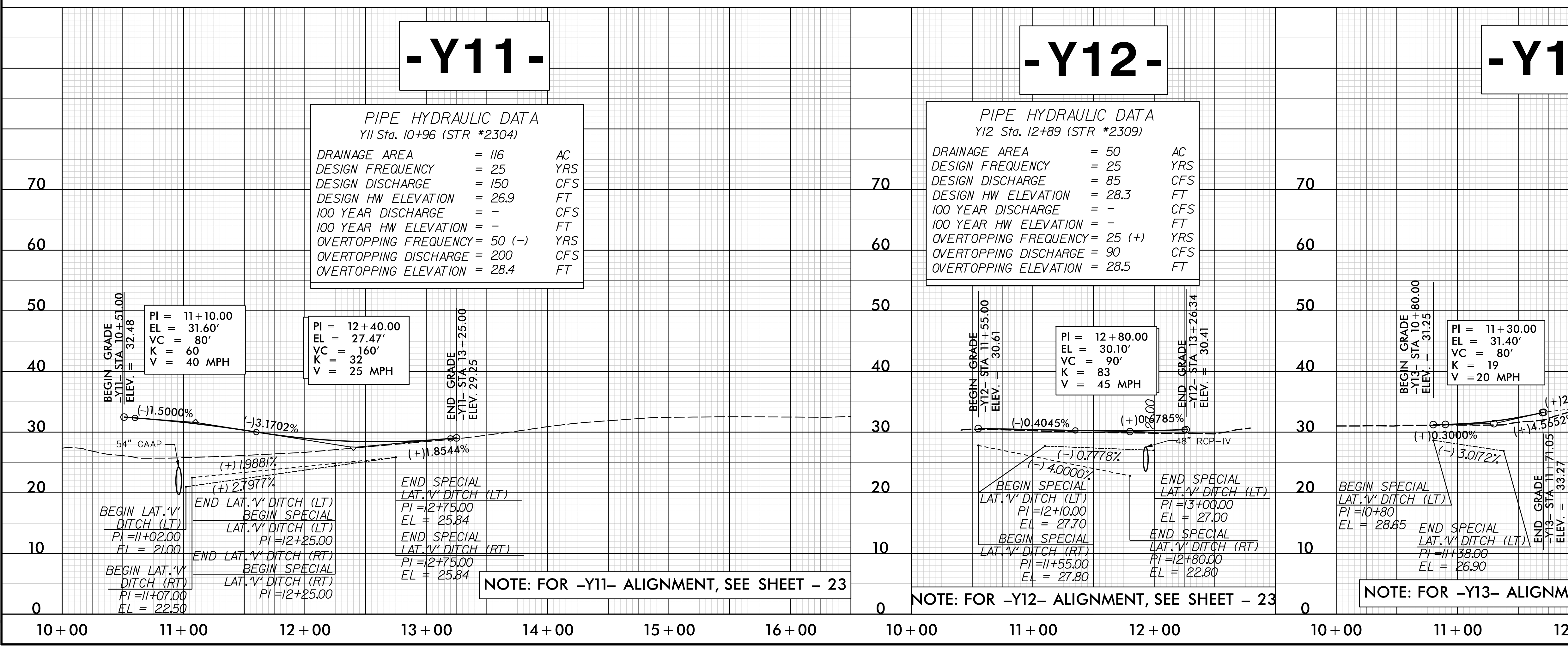
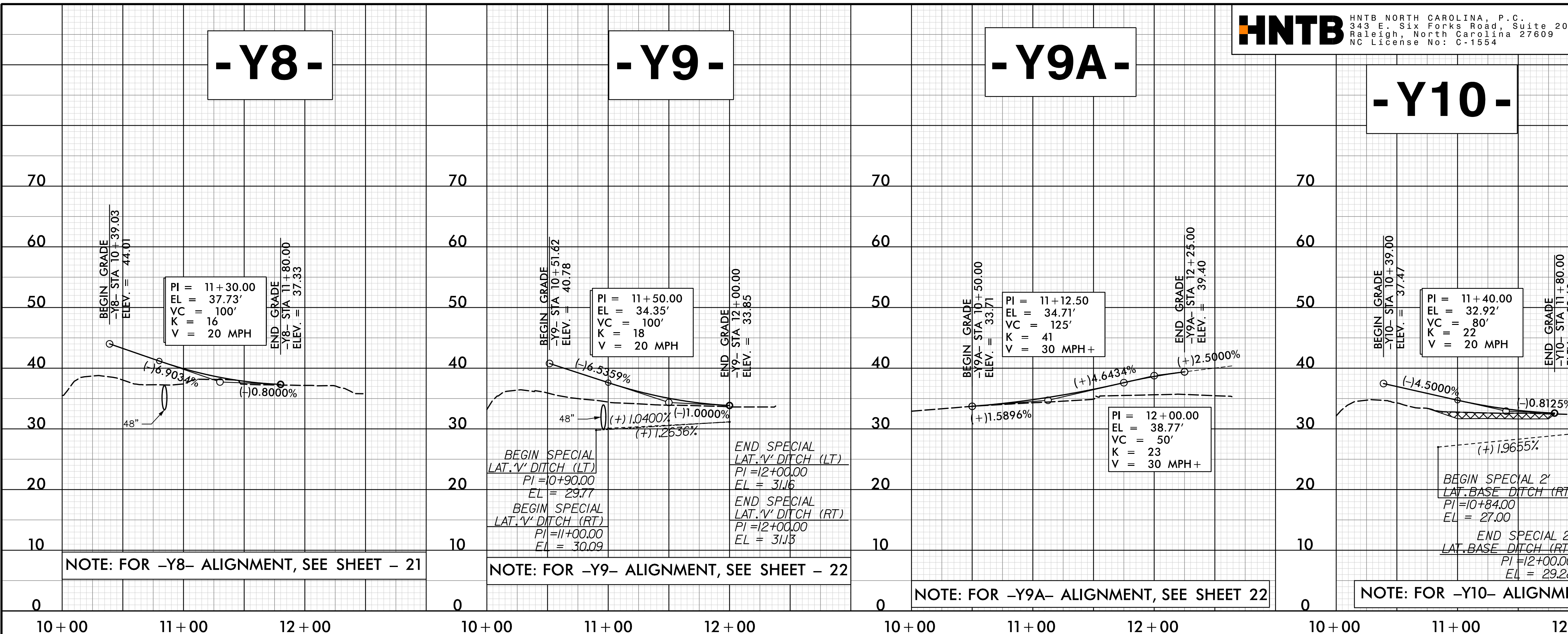
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**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**



22-JUL-2021 09:58  
K:\Roadway\Projects\5021\RDY\_PFL\_PSH62.dgn  
A.M.T.E.

5/28/99

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>63</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

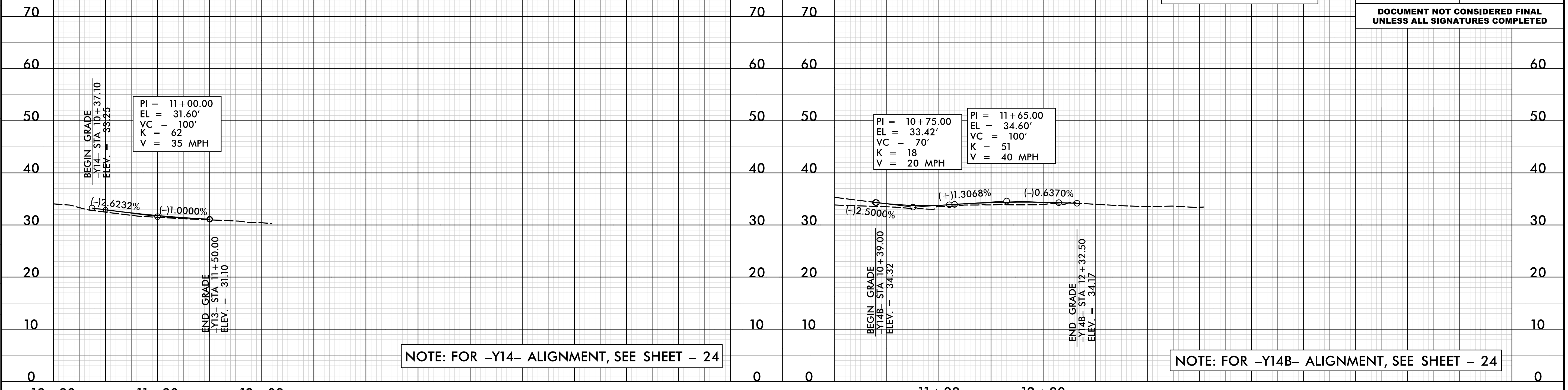
**-Y14-**

**-Y14B-**

**DITCH LEGEND**

LEFT DITCH -----

RIGHT DITCH -----



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

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

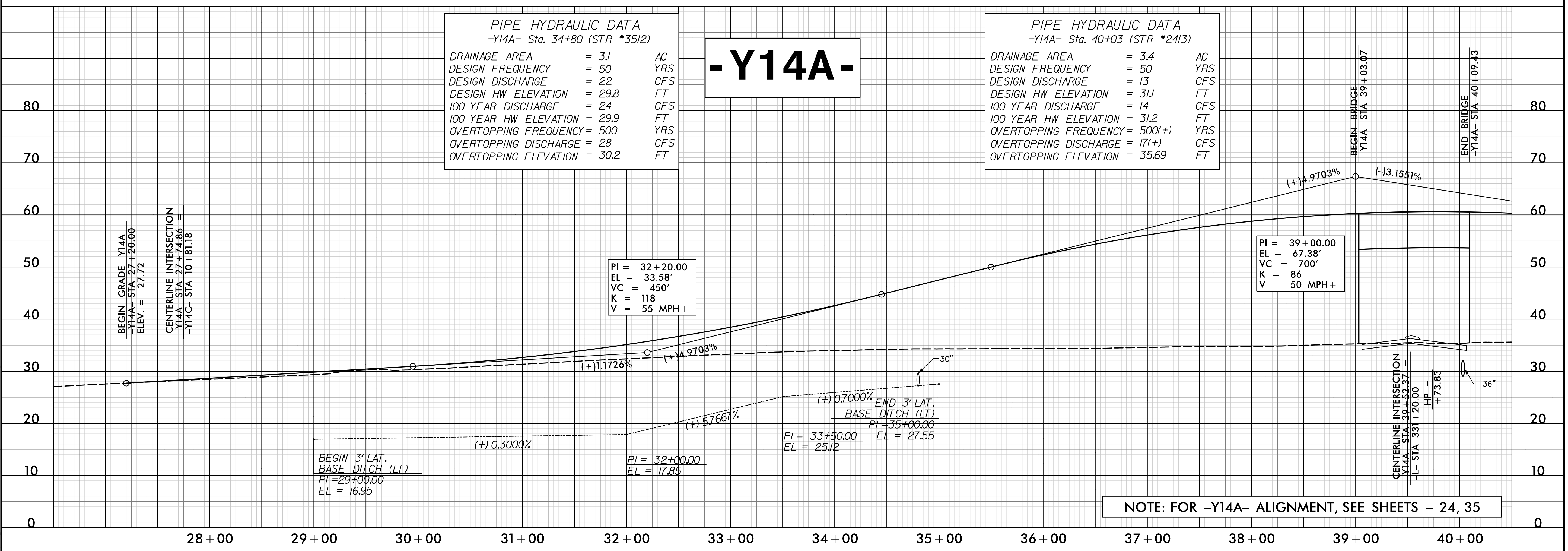
**PIPE HYDRAULIC DATA**  
-Y14A- Sta. 34+80 (STR #3512)

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

22-JUL-2021 09:58  
K:\Roadway\N-C\JVR-5021\FDY\_PFL\_PSH63.dgn  
JVR

5/28/19

**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. <b>R-5021</b>	SHEET NO. <b>64</b>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

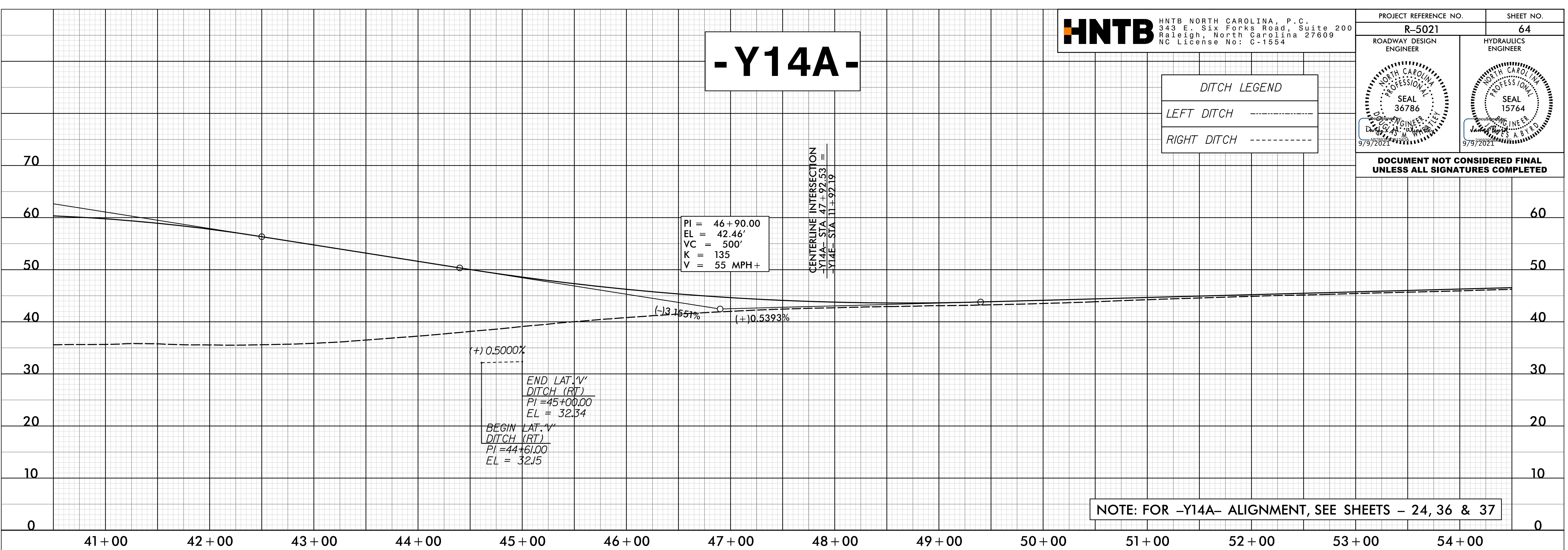
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

# -Y14A-

**DITCH LEGEND**

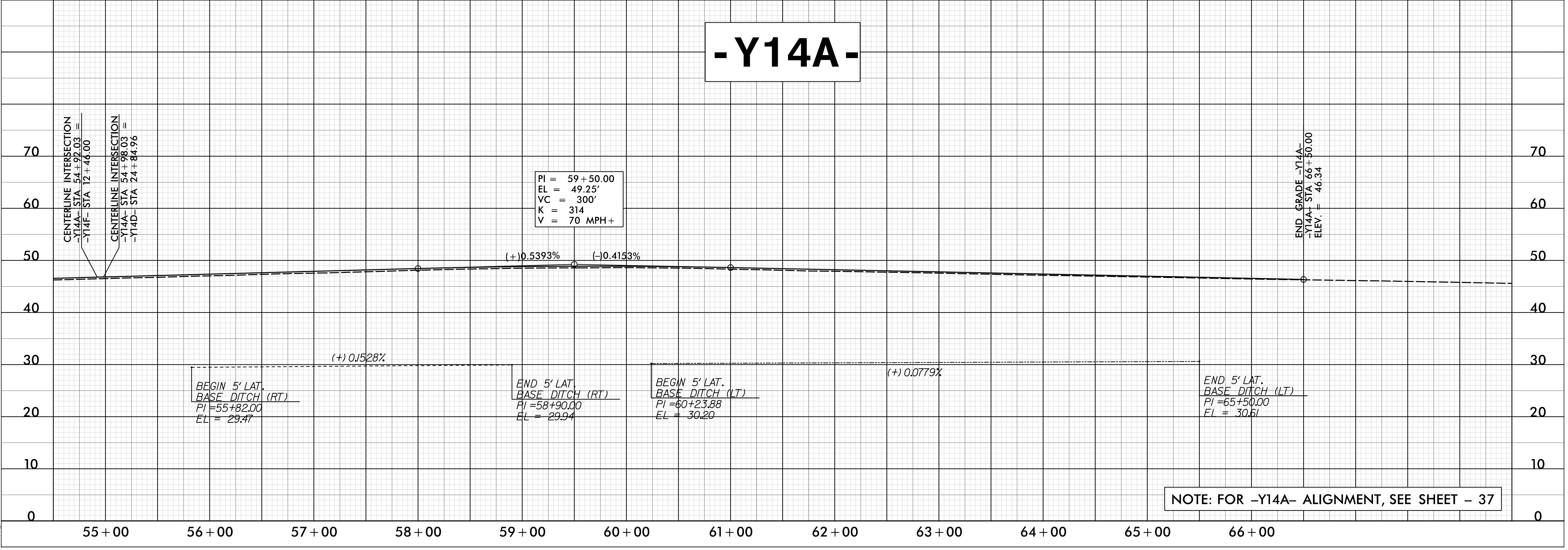
LEFT DITCH - - - - -

RIGHT DITCH - - - - -



NOTE: FOR -Y14A- ALIGNMENT, SEE SHEETS - 24, 36 & 37

# -Y14A-



NOTE: FOR -Y14A- ALIGNMENT, SEE SHEET - 37

22-JUL-2021 09:58  
 N:\Roadway\Projects\5021\RDY\_PFL\_PSH64.dgn  
 HNTB



5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>65</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

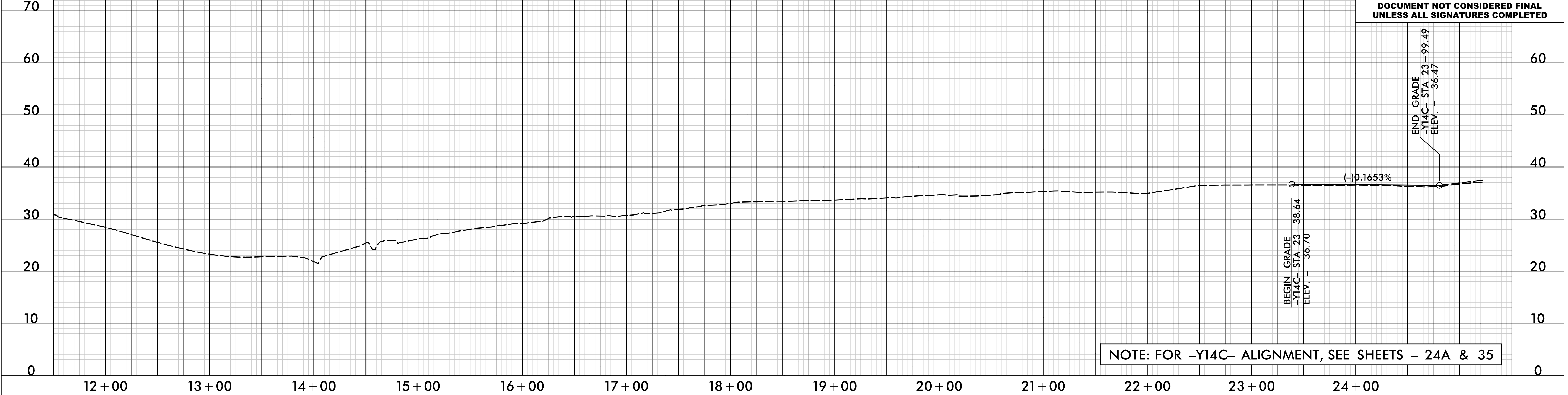
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

# - Y14C -

**DITCH LEGEND**

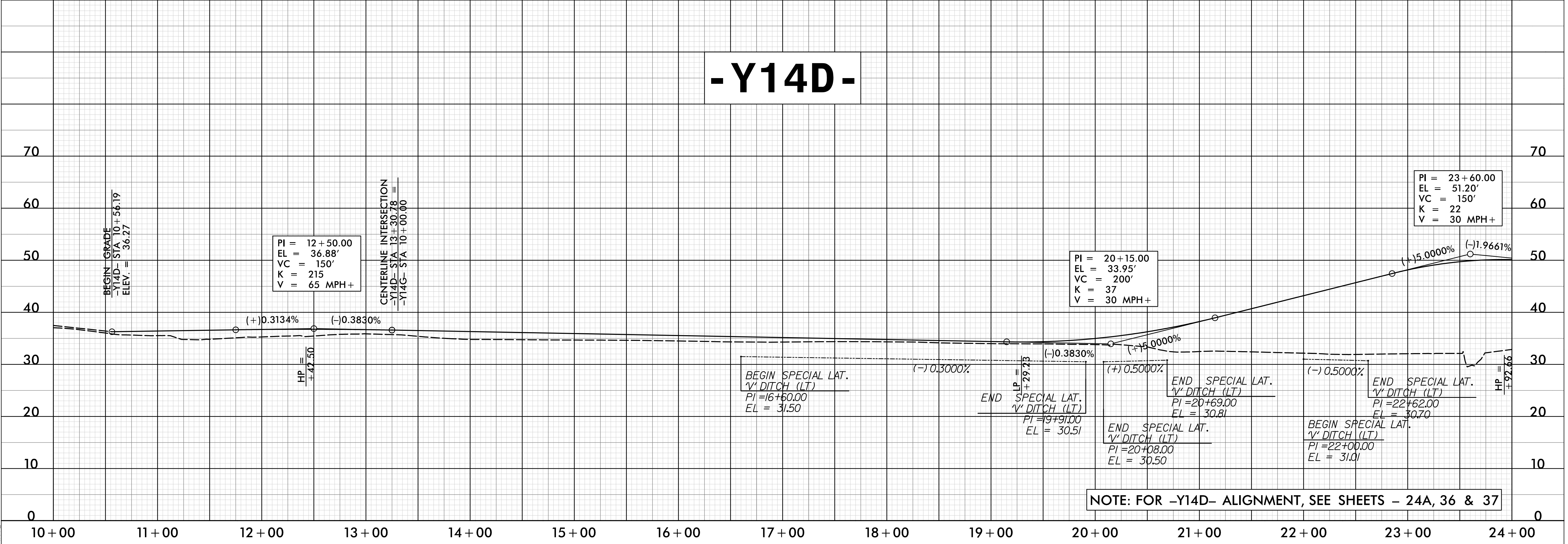
LEFT DITCH - - - - -

RIGHT DITCH - - - - -



NOTE: FOR -Y14C- ALIGNMENT, SEE SHEETS - 24A & 35

# - Y14D -



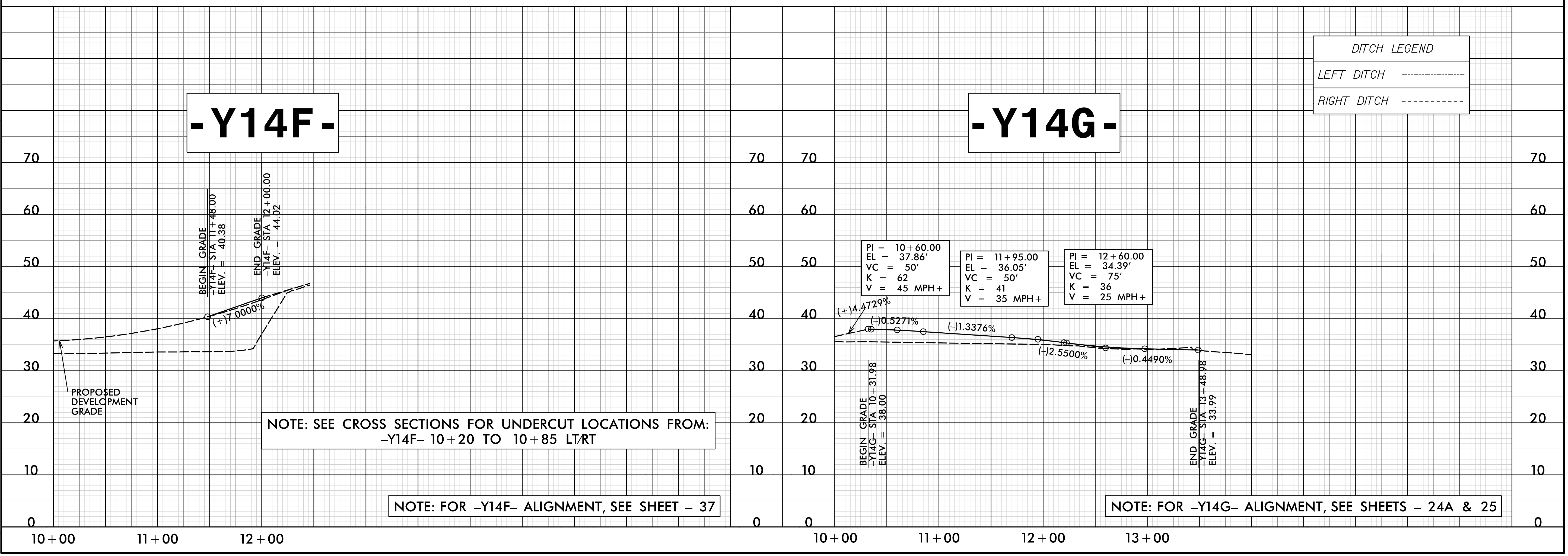
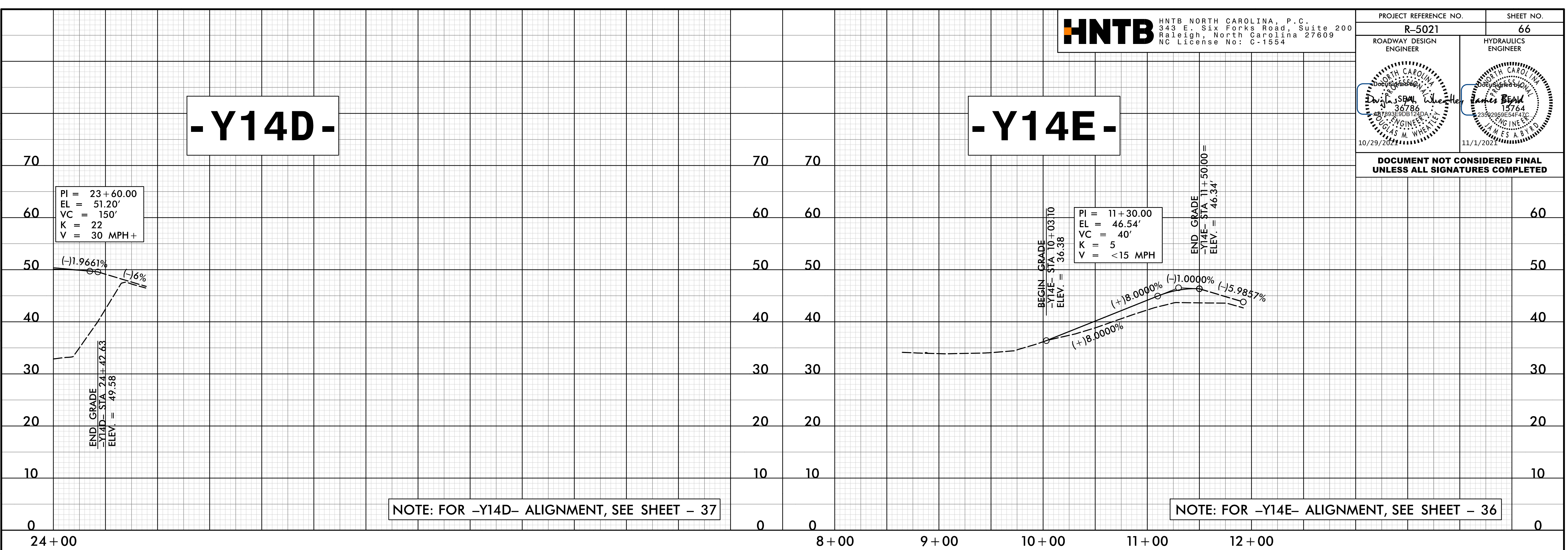
NOTE: FOR -Y14D- ALIGNMENT, SEE SHEETS - 24A, 36 & 37

22-JUL-2021 09:58  
K:\gdm\way\p-coj\R-5021\FDY\_PFL\_PSH65.dgn  
HNTB

5/28/99

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

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

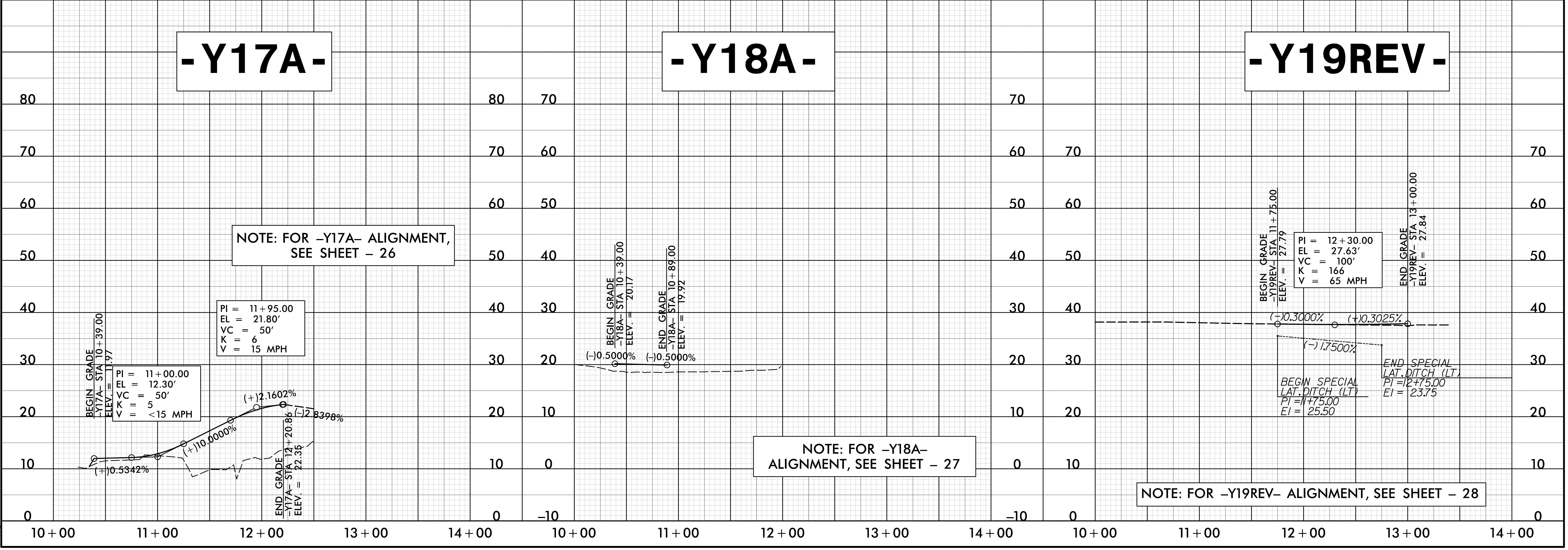
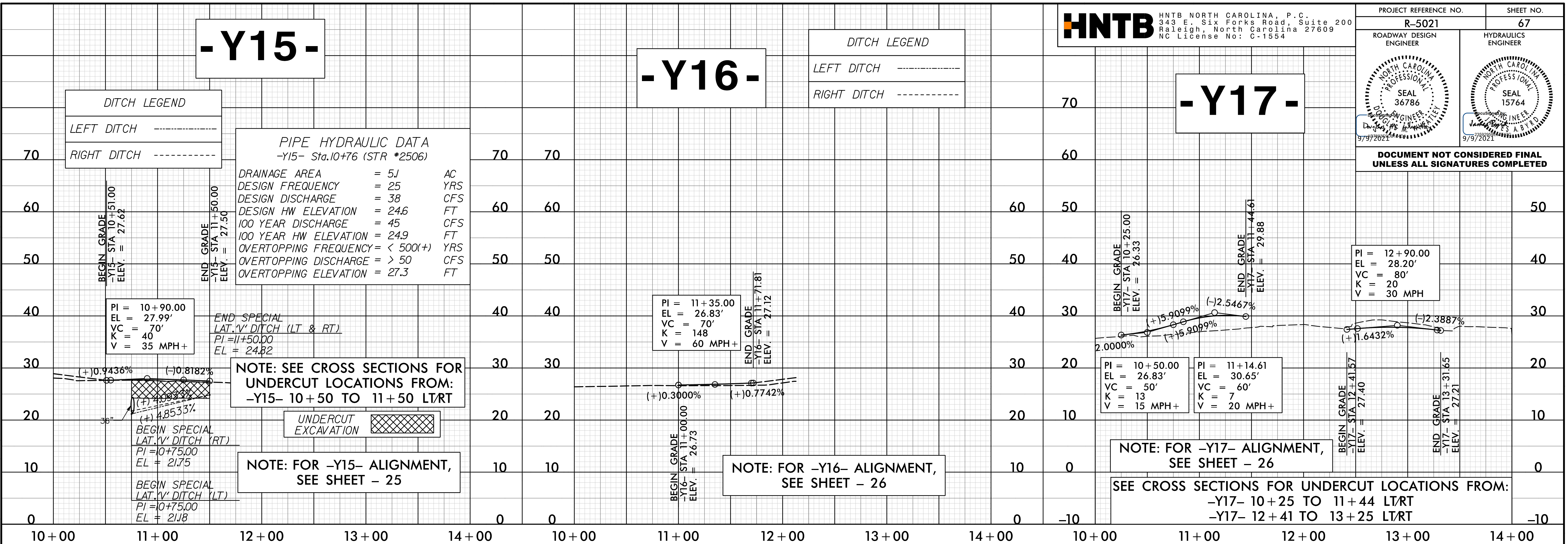


22-OCT-2021 10:24 AM  
 (Roadway) (P-co) (R-5021) (RDY\_PFL\_PSH66.dgn)  
 TITLE

5/28/20

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>67</b>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

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



22-JUL-2021 09:59  
K:\Roadway\N-Co\19-5021-RD\Y\_PFL\_PSH67.dgn  
AUTE

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>68</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# - Y20 -

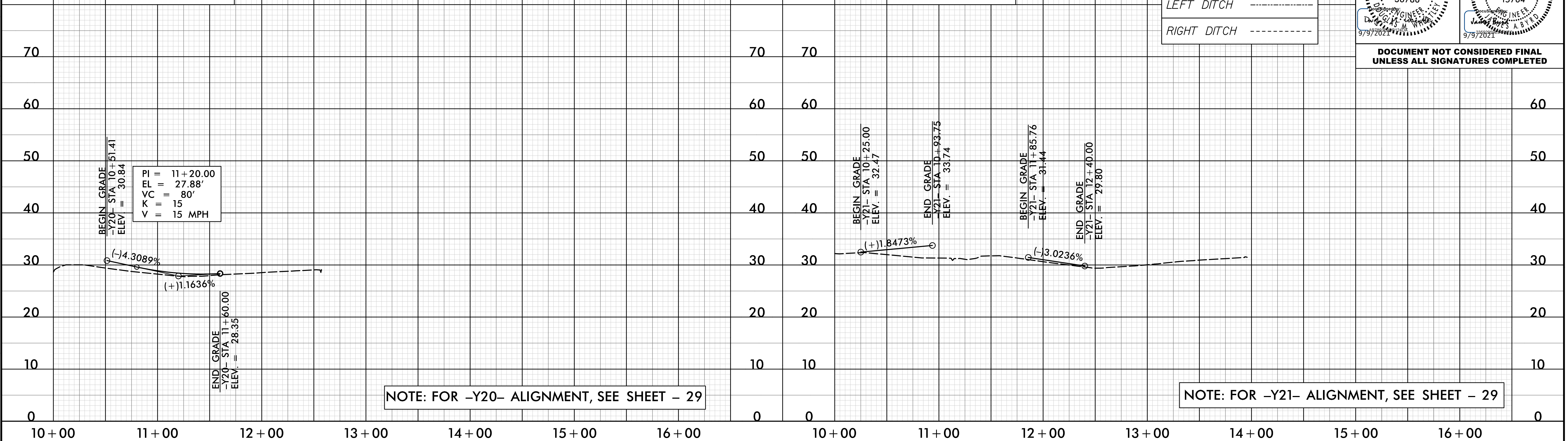
# - Y21 -

**DITCH LEGEND**

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

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



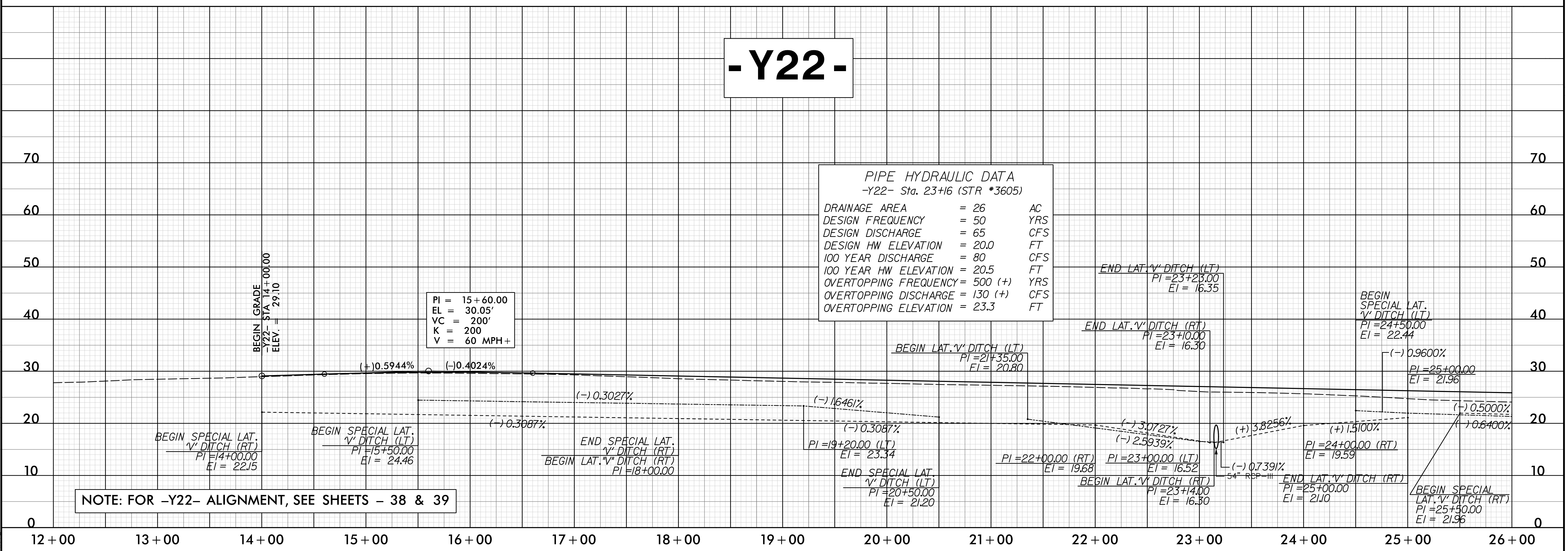
NOTE: FOR -Y20- ALIGNMENT, SEE SHEET - 29

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. <b>R-5021</b>	SHEET NO. <b>69</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

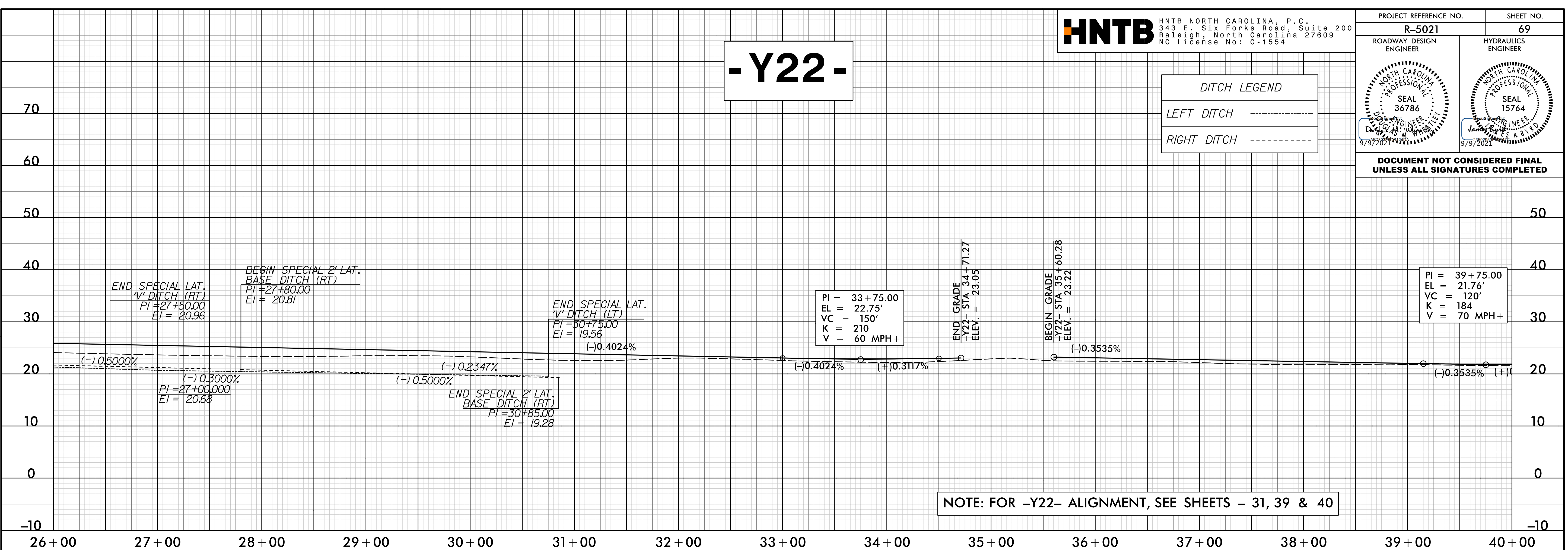
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

# - Y22 -

**DITCH LEGEND**

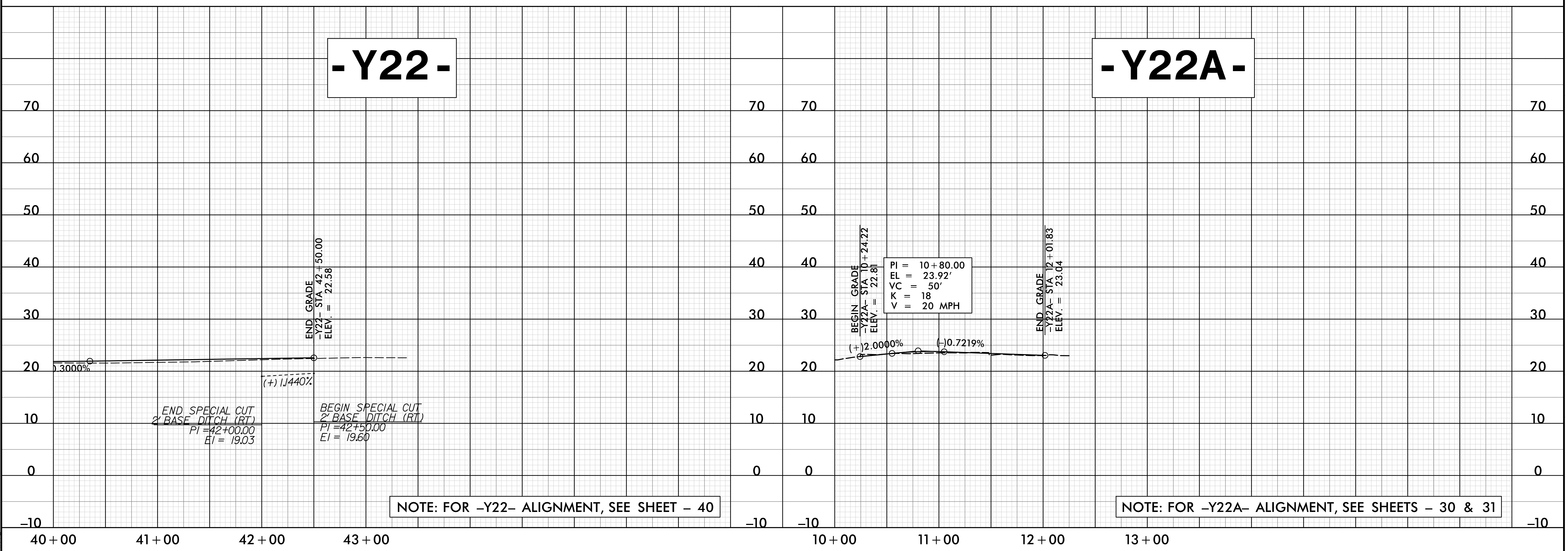
LEFT DITCH -----

RIGHT DITCH -----



# - Y22 -

# - Y22A -



22-JUL-2021 09:59  
 (Roadway) (P-co) (R-5021) (RDY\_PFL\_PSH69.dgn)  
 HNTB

5/28/19

PROJECT REFERENCE NO. <b>R-5021</b>	SHEET NO. <b>70</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

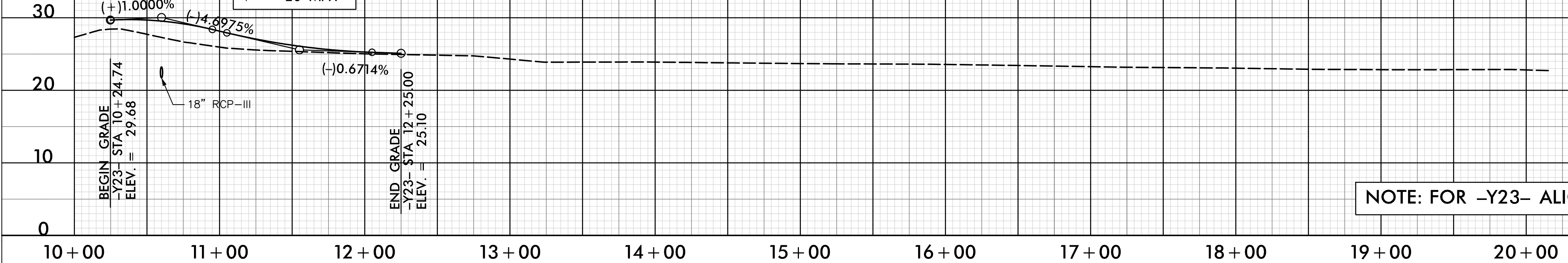
# - Y23 -

**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	EL = 30.03'
VC = 70'	K = 12
V = 70 MPH	

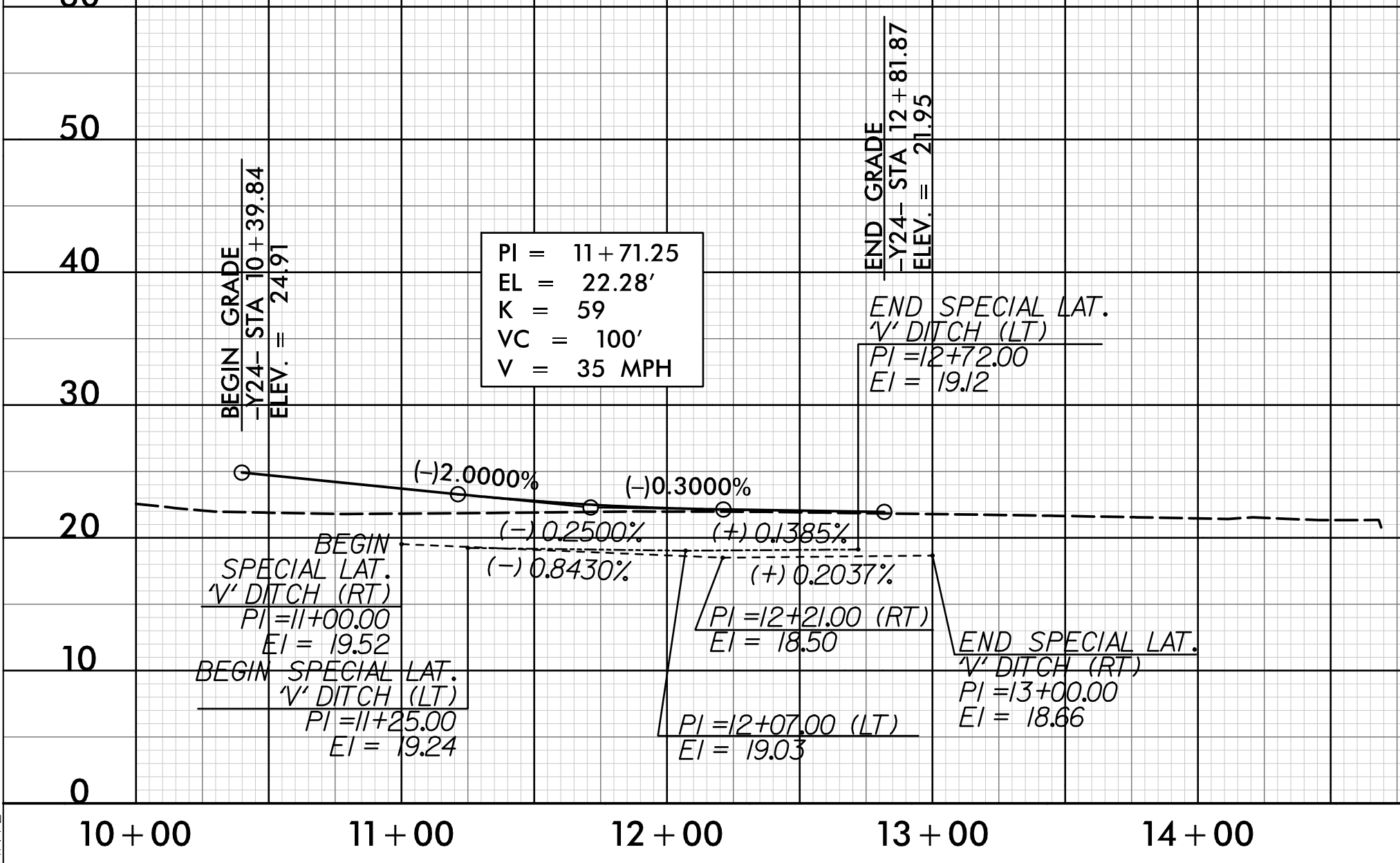
PI = 11+55.00	EL = 25.57'
VC = 100'	K = 25
V = 20 MPH	



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

# - Y24 -

PI = 11+71.25	EL = 22.28'
K = 59	VC = 100'
V = 35 MPH	

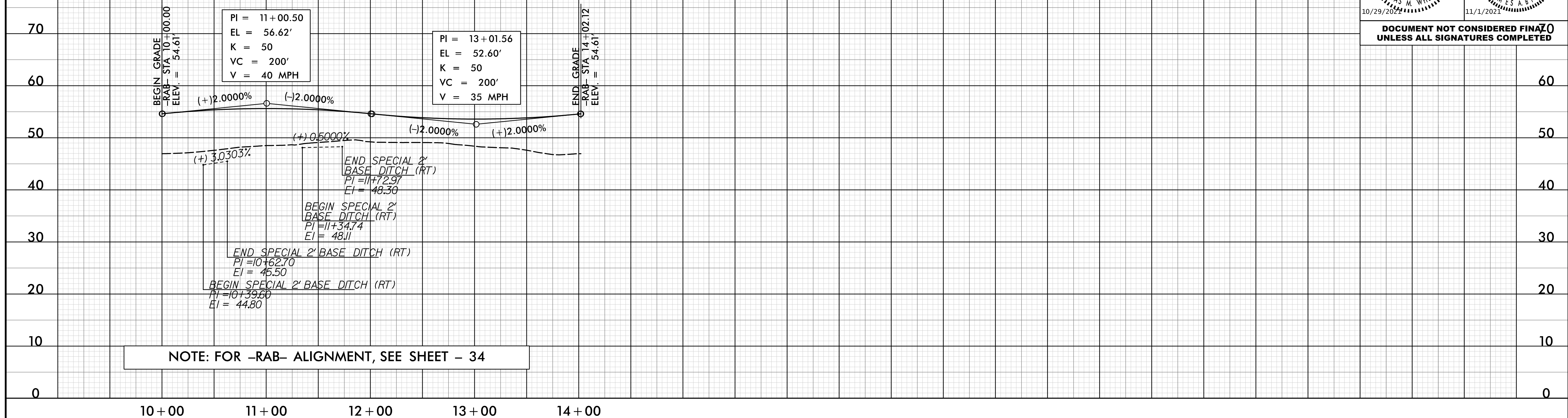


NOTE: FOR -Y24- ALIGNMENT, SEE SHEET - 39

22-JUL-2021 09:59  
 (P:\gdm\p-coj\5021\_PFL\_PSH70.dgn  
 HNTB

5/28/21

**- RAB -**



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

NOTE: THIS SHEET IS INTENTIONALLY