

# SECTION Z: PIPE SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z1	Z48

Plotting Date: 4/16/2024

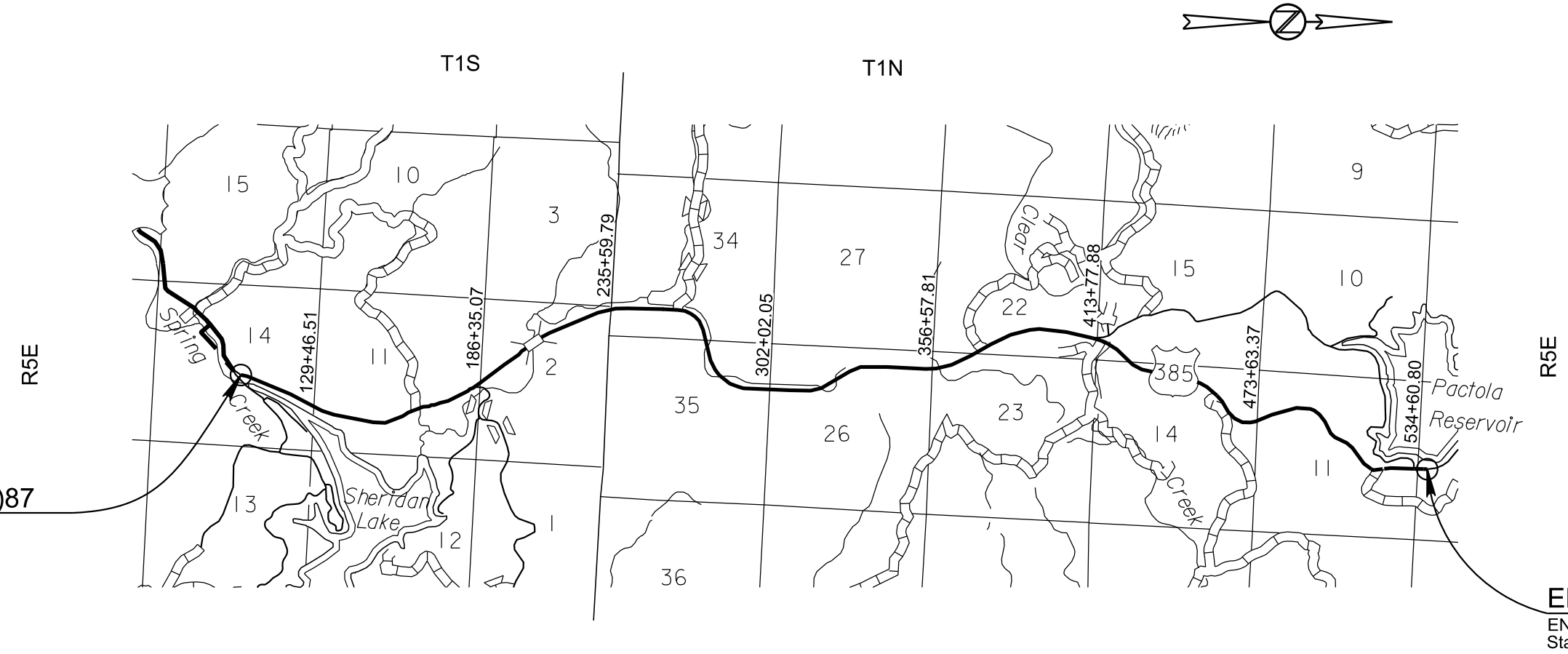
## INDEX OF SHEETS

- Z1 General Layout with Index
- Z2-Z43 Mainline Pipe Sections
- Z44-Z48 Approach Pipe Sections



Plot Scale - 1:200

Plotted From - KHEDMAN



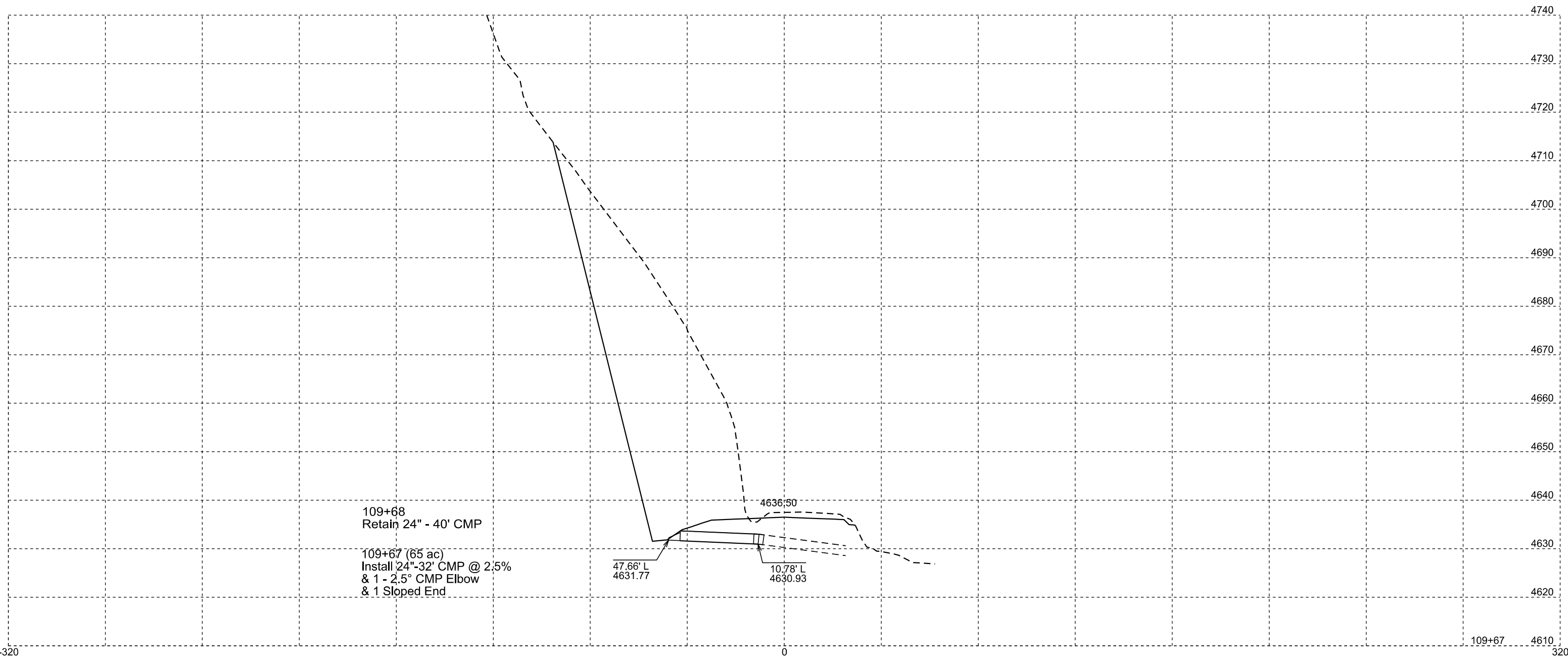
**BEGIN NH-PH-B 0385(51)87**  
 BEGIN GRADING  
 Station 106+72.48

**END NH-PH-B 0385(51)87**  
 END GRADING  
 Station 535+68.17

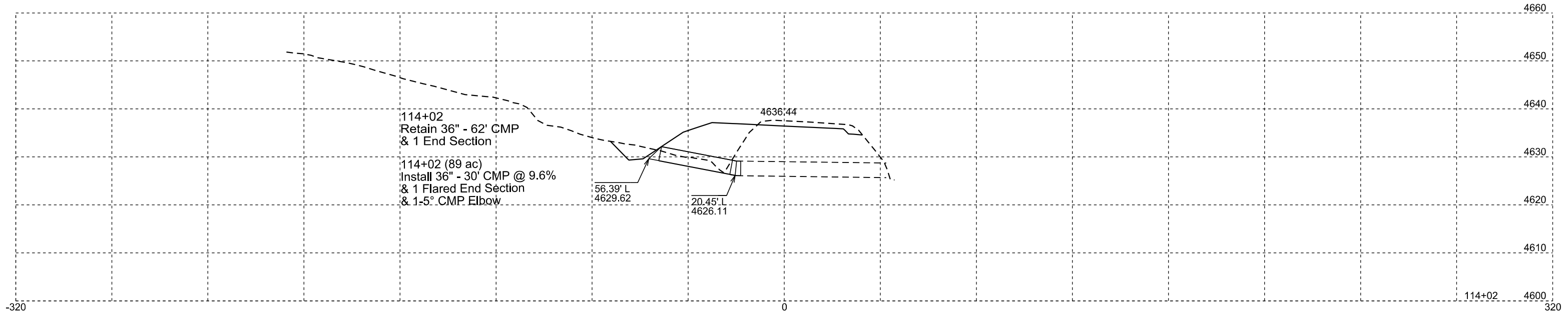
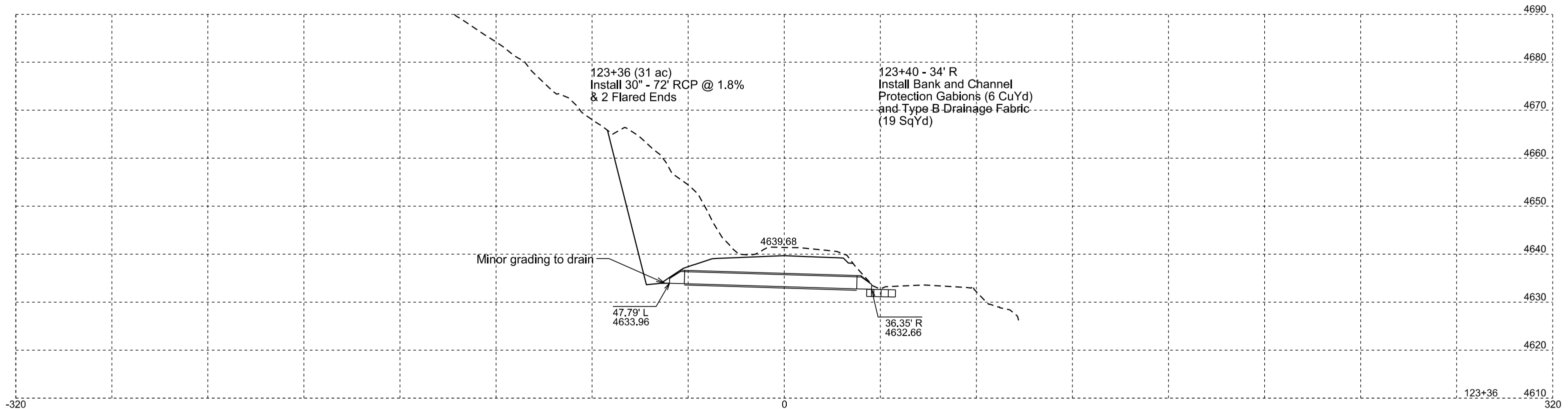




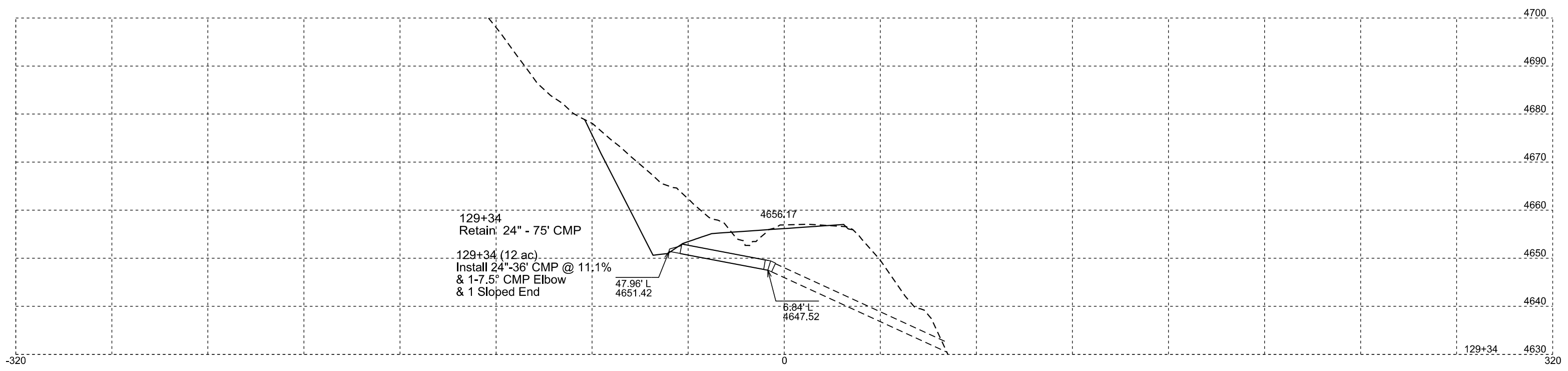
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z2	Z48



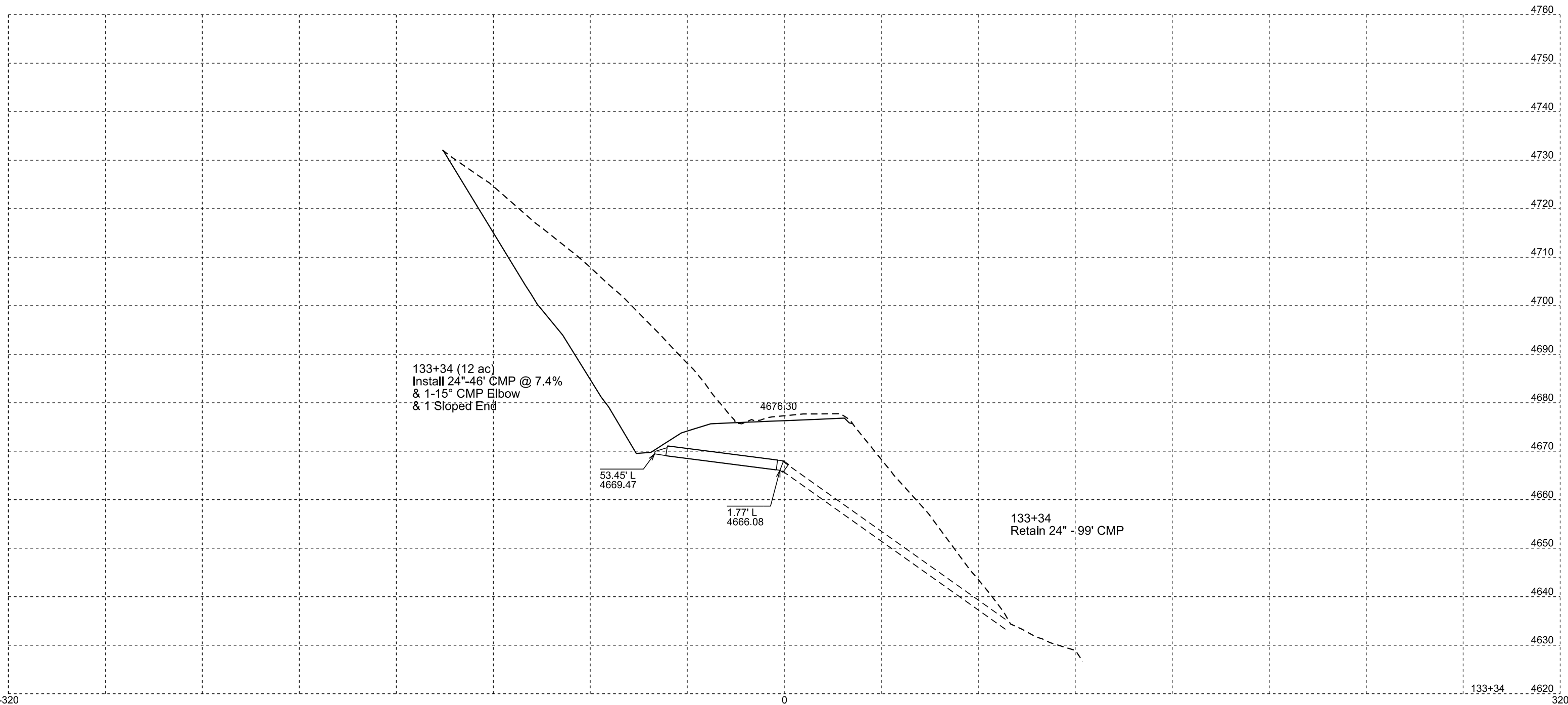
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	NH-PH-B 0385(51)87	Z3	Z48



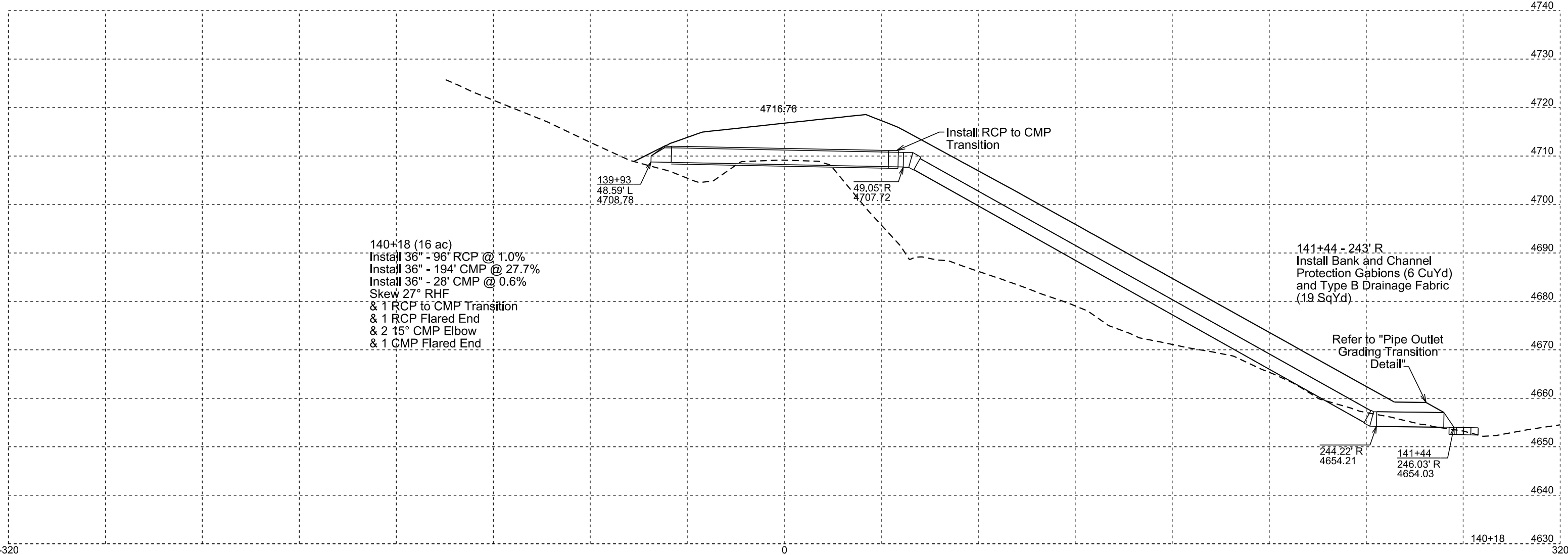
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z4	Z48



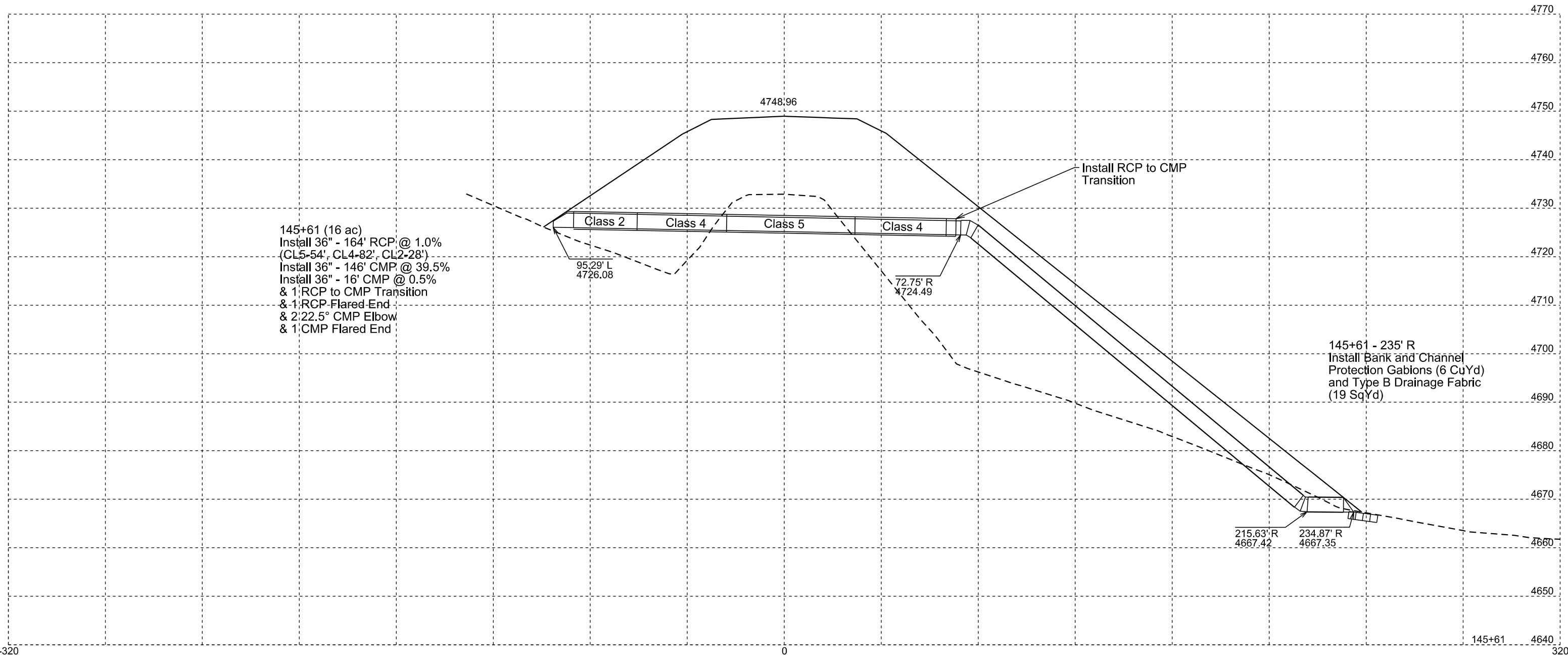
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z5	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z6	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z7	Z48



145+61 (16 ac)  
 Install 36" - 164' RCP @ 1.0%  
 (CL5-54', CL4-82', CL2-28')  
 Install 36" - 146' CMP @ 39.5%  
 Install 36" - 16' CMP @ 0.5%  
 & 1' RCP to CMP Transition  
 & 1' RCP Flared End  
 & 2' 22.5° CMP Elbow  
 & 1' CMP Flared End

Install RCP to CMP  
 Transition

145+61 - 235' R  
 Install Bank and Channel  
 Protection Gabions (6 CuYd)  
 and Type B Drainage Fabric  
 (19 SqYd)

Class 2    Class 4    Class 5    Class 4

95.29' L  
 4726.08

72.75' R  
 4724.49

215.63' R  
 4667.42

234.87' R  
 4667.35

4748.96

4770

4760

4750

4740

4730

4720

4710

4700

4690

4680

4670

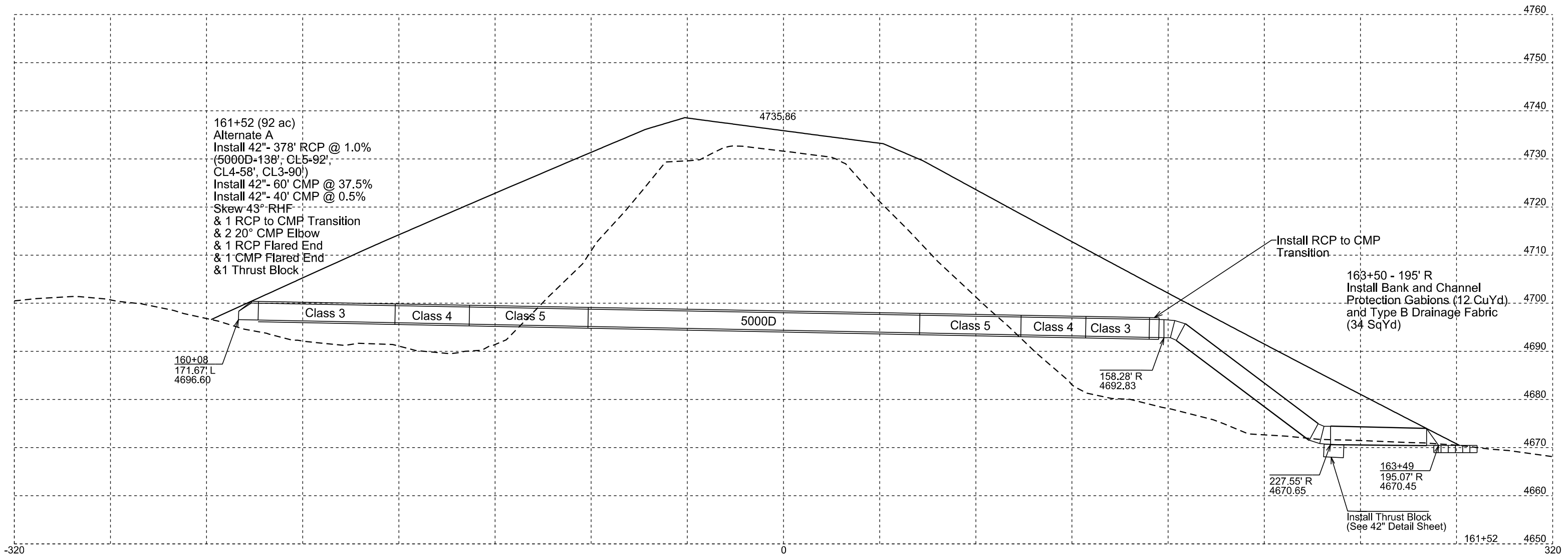
4660

4650

4640



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z8	Z48



161+52 (92 ac)  
 Alternate A  
 Install 42" - 378' RCP @ 1.0%  
 (5000D-138', CL5-92',  
 CL4-58', CL3-90')  
 Install 42" - 60' CMP @ 37.5%  
 Install 42" - 40' CMP @ 0.5%  
 Skew 43° RHF  
 & 1 RCP to CMP Transition  
 & 2 20° CMP Elbow  
 & 1 RCP Flared End  
 & 1 CMP Flared End  
 & 1 Thrust Block

Install RCP to CMP  
 Transition

163+50 - 195' R  
 Install Bank and Channel  
 Protection Gabions (12 CuYd)  
 and Type B Drainage Fabric  
 (34 SqYd)

Install Thrust Block  
 (See 42" Detail Sheet)

160+08  
 171.67' L  
 4696.60

158.28' R  
 4692.83

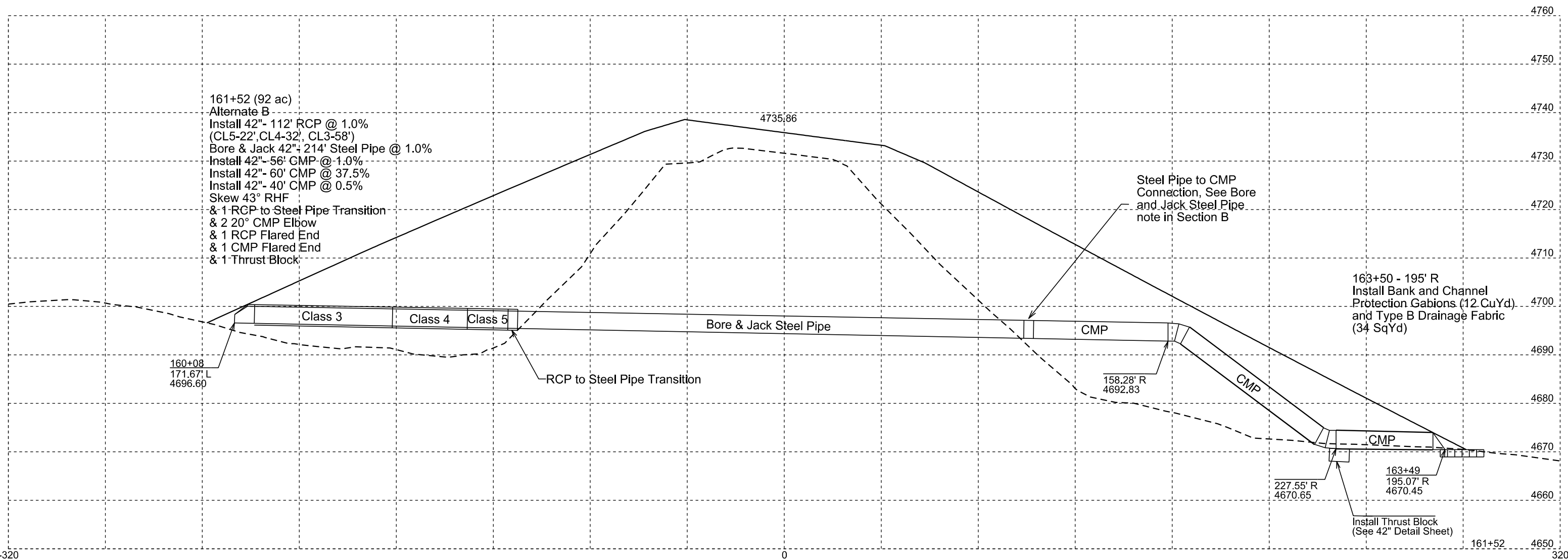
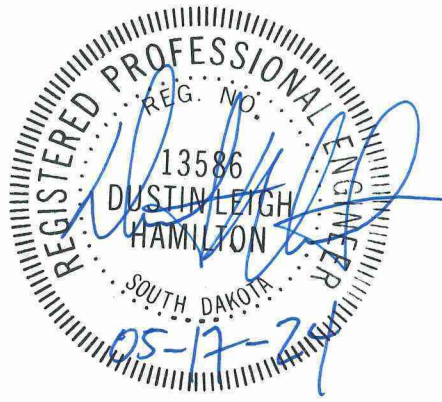
227.55' R  
 4670.65

163+49  
 195.07' R  
 4670.45

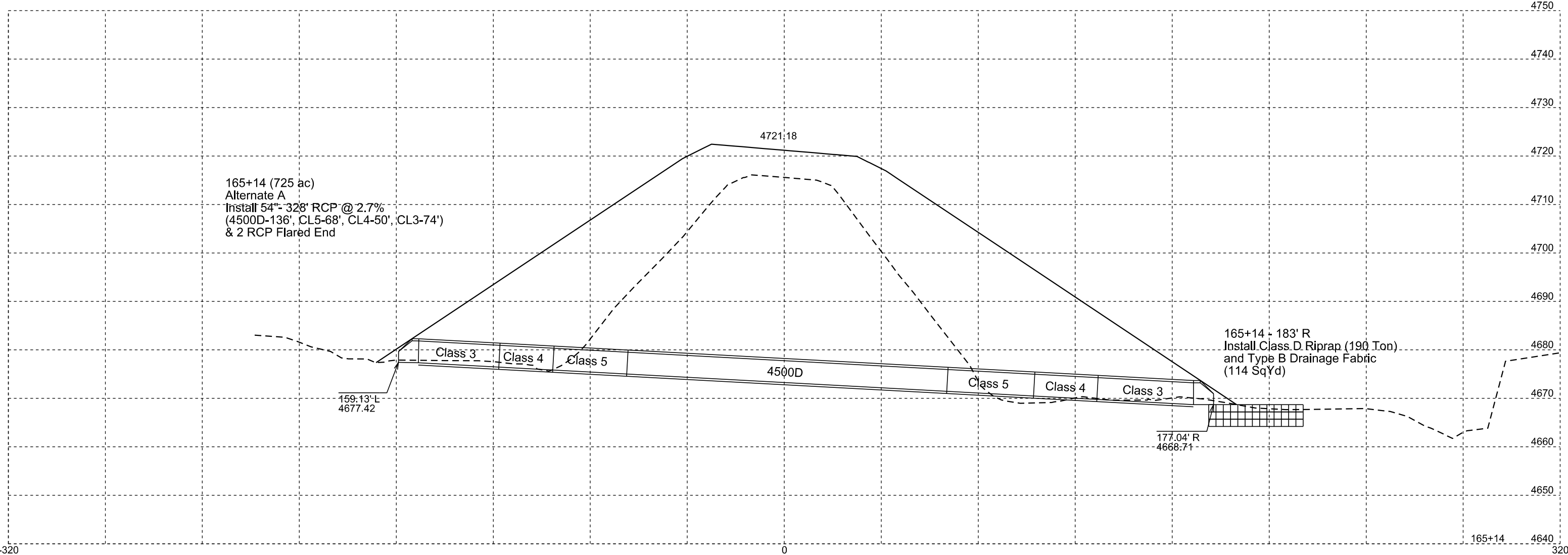
4735.86

5000D

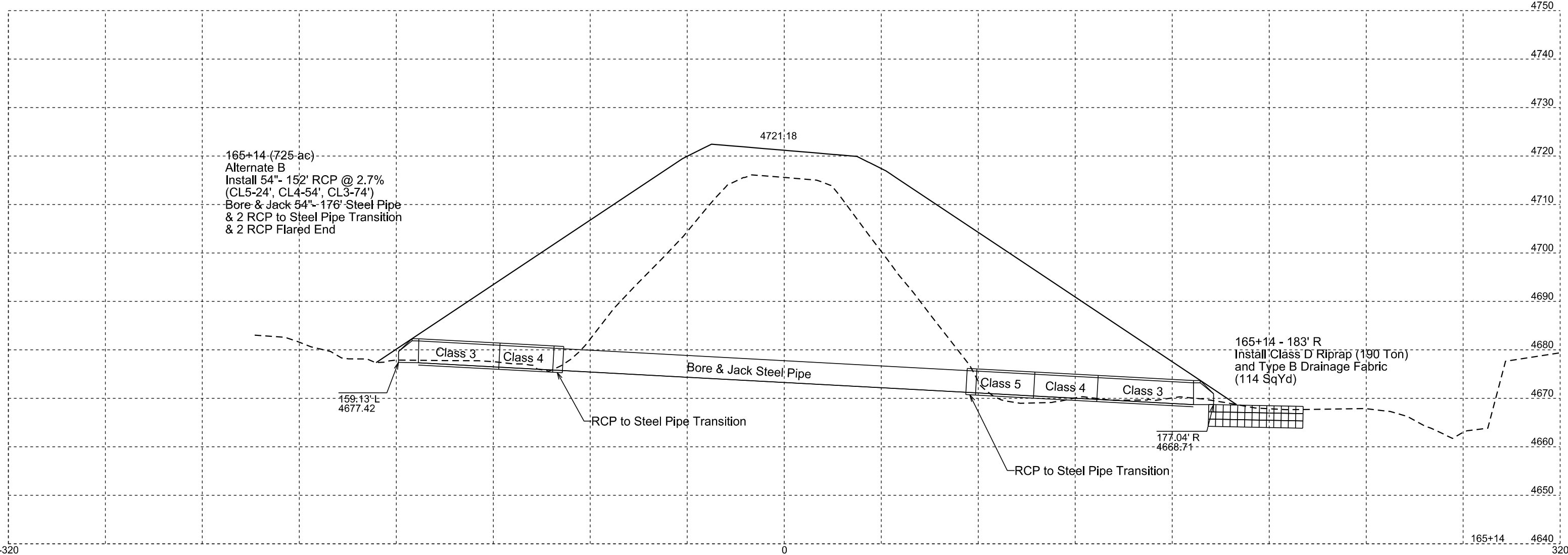
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z9	Z48



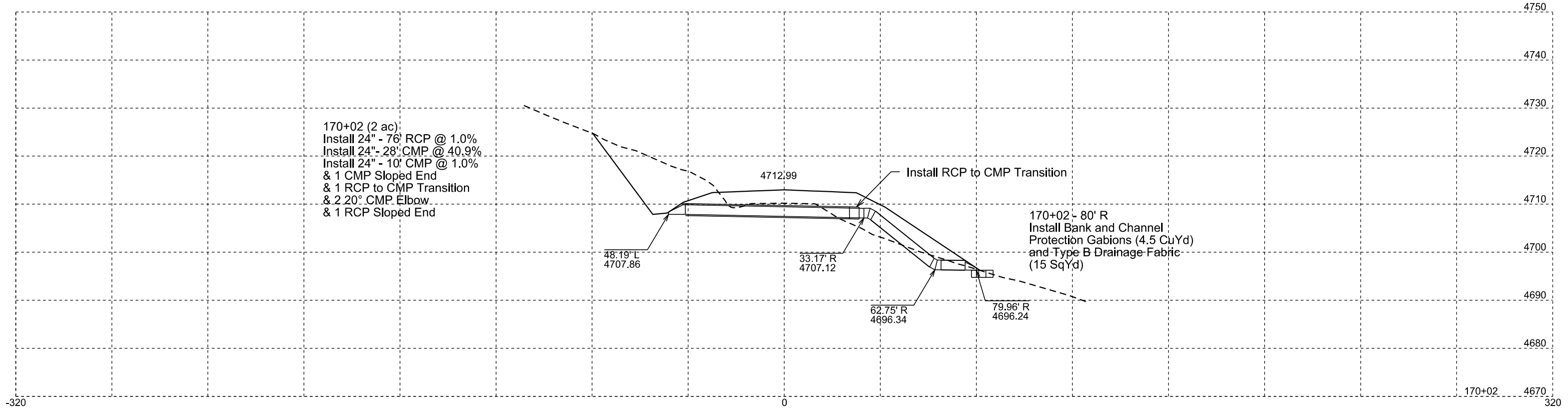
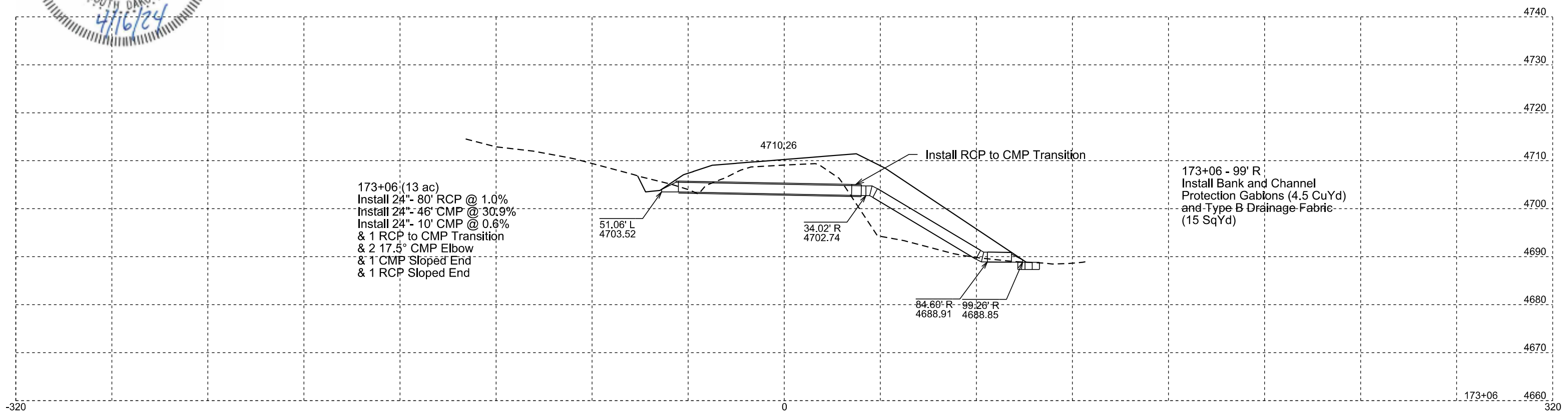
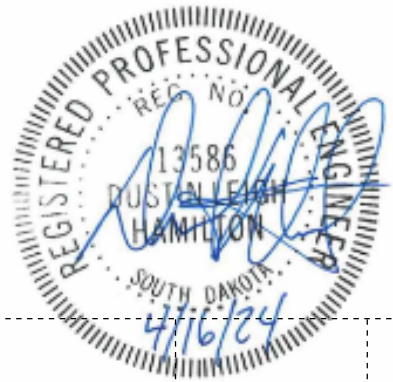
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	NH-PH-B 0385(51)87	Z10	Z48



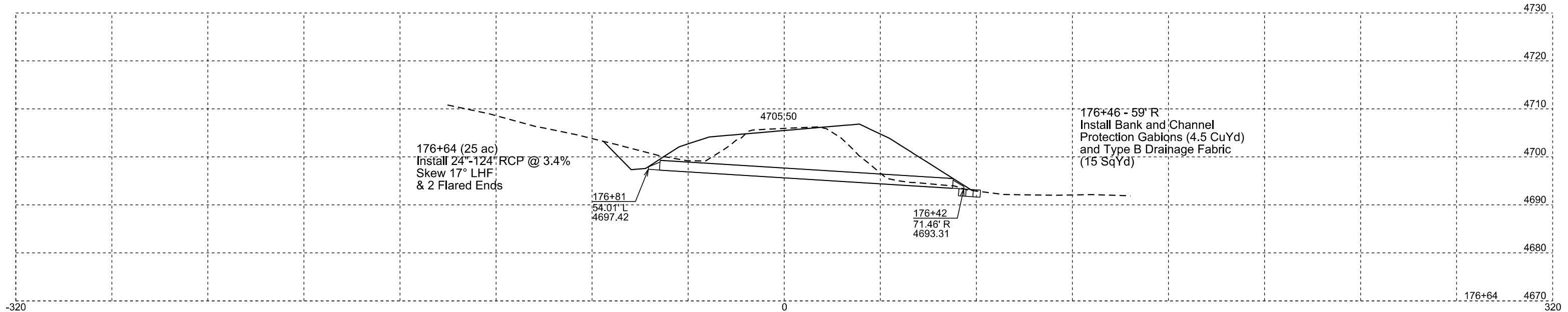
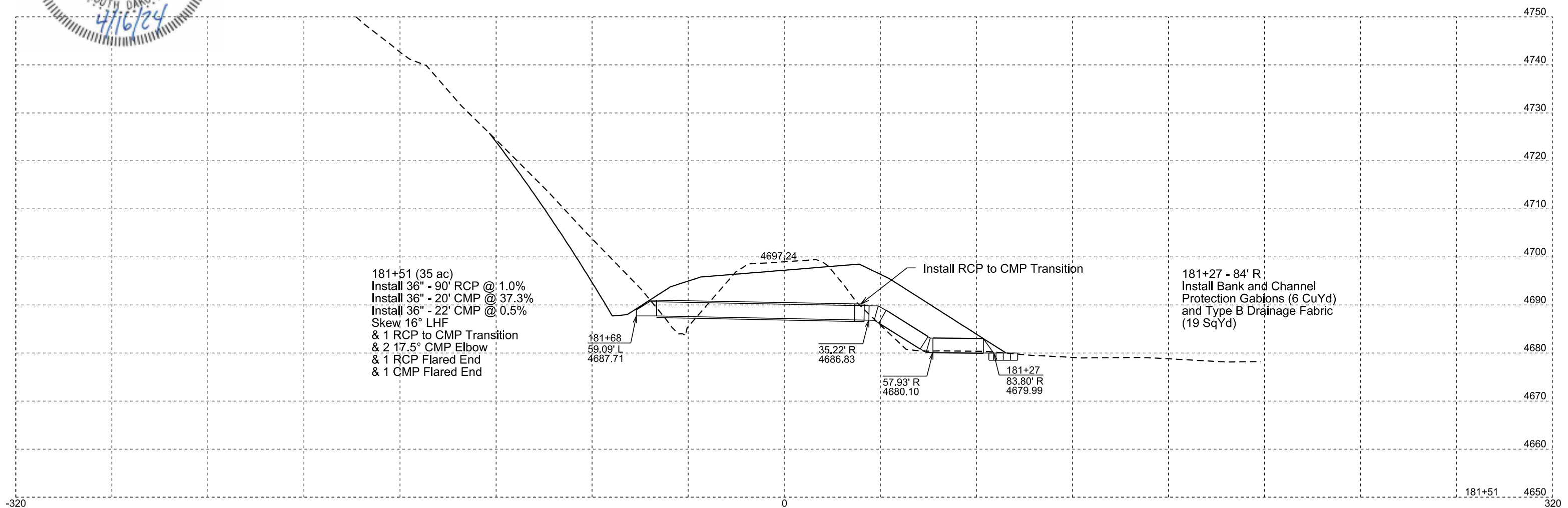
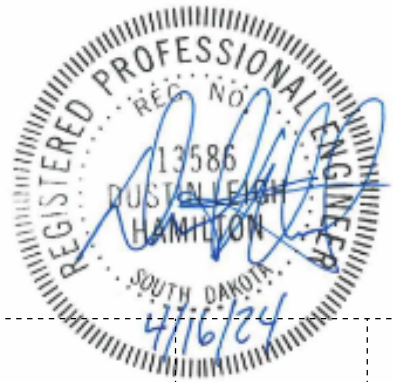
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	NH-PH-B 0385(51)87	Z11	Z48



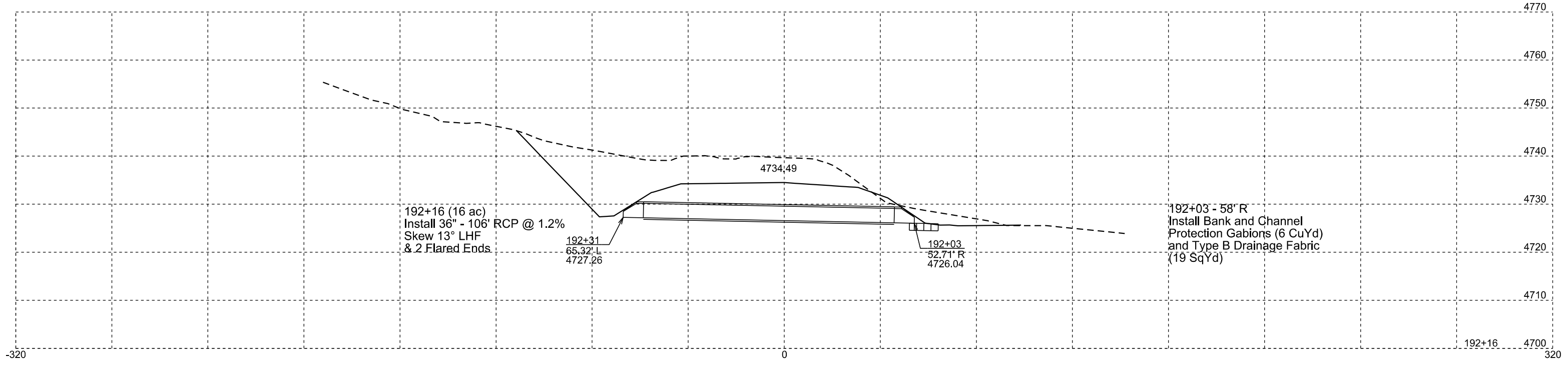
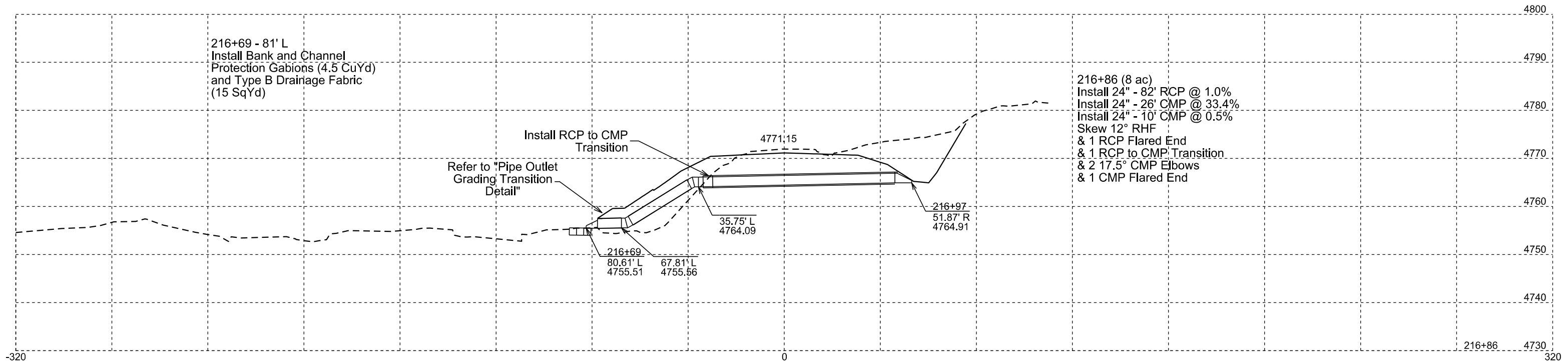
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z12	Z48



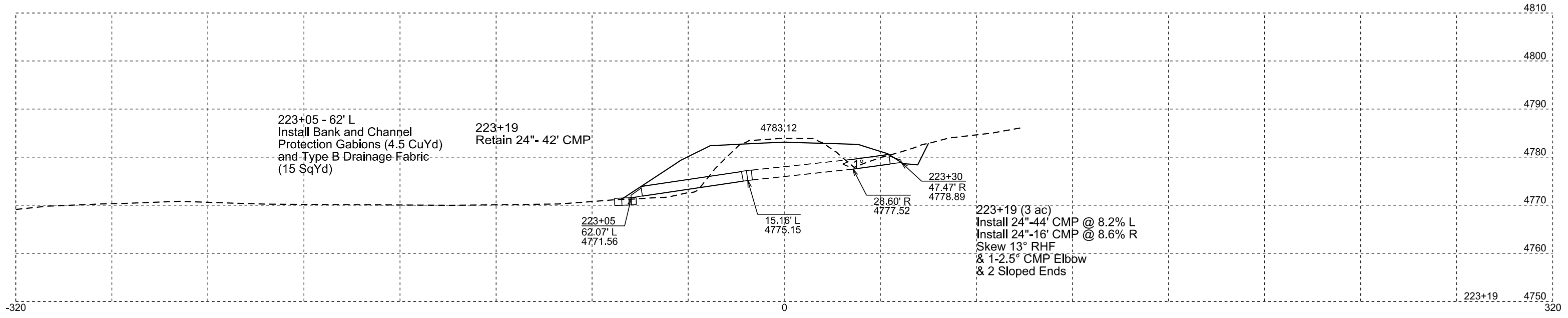
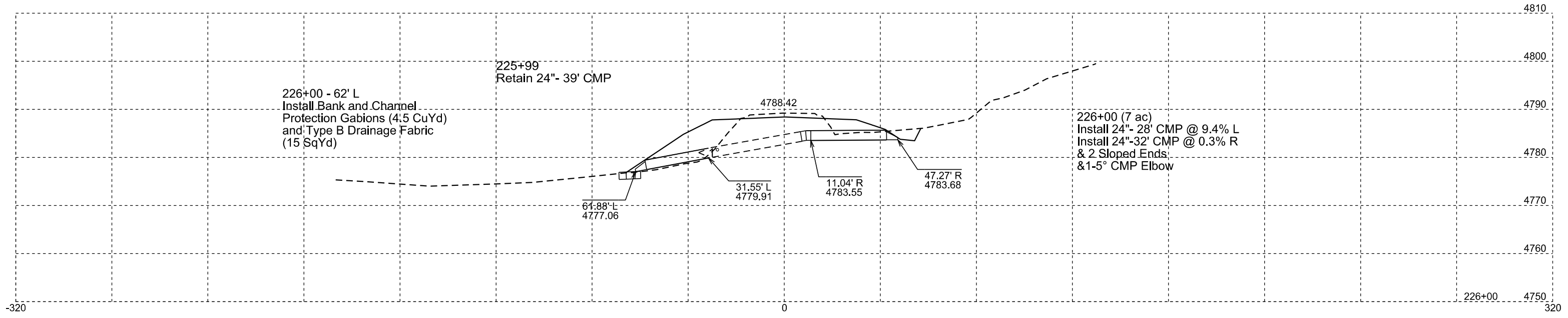
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z13	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z14	Z48

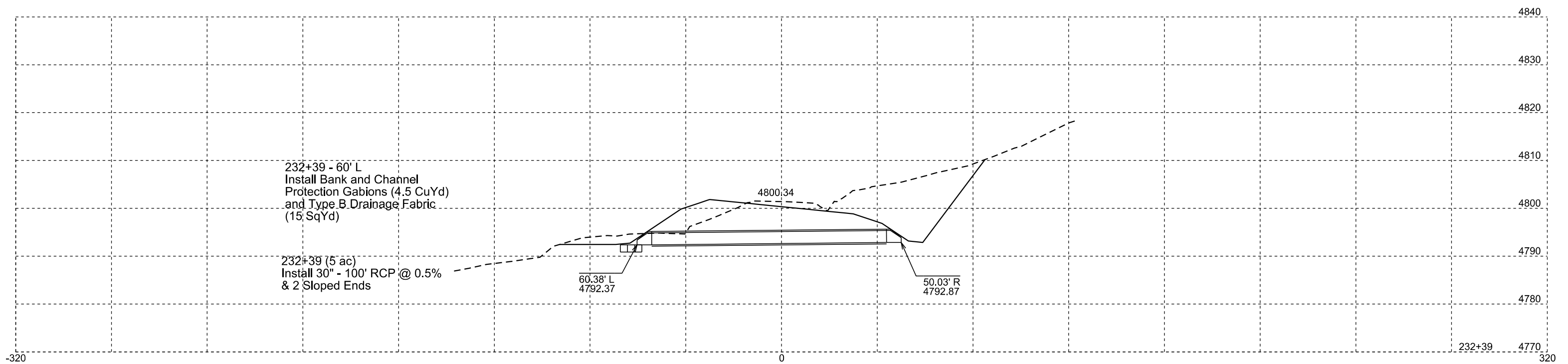
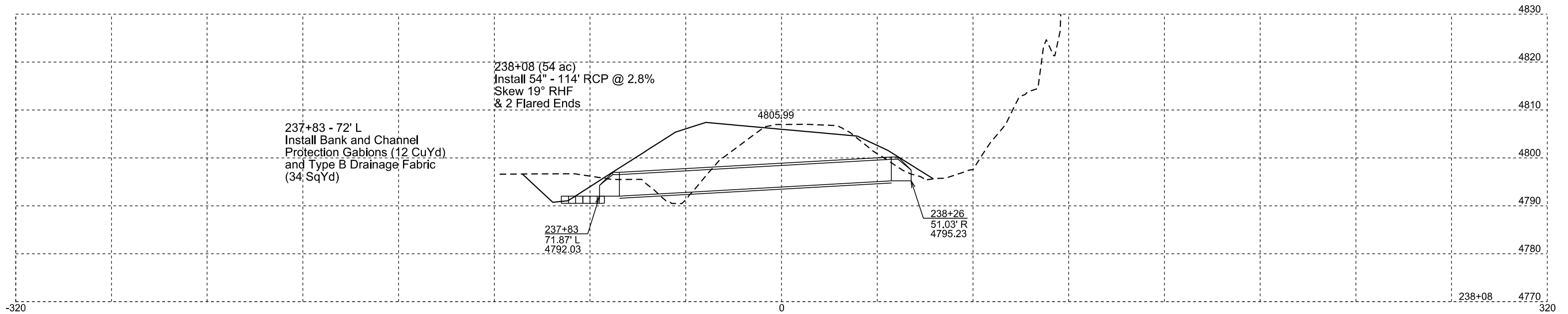


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z15	Z48

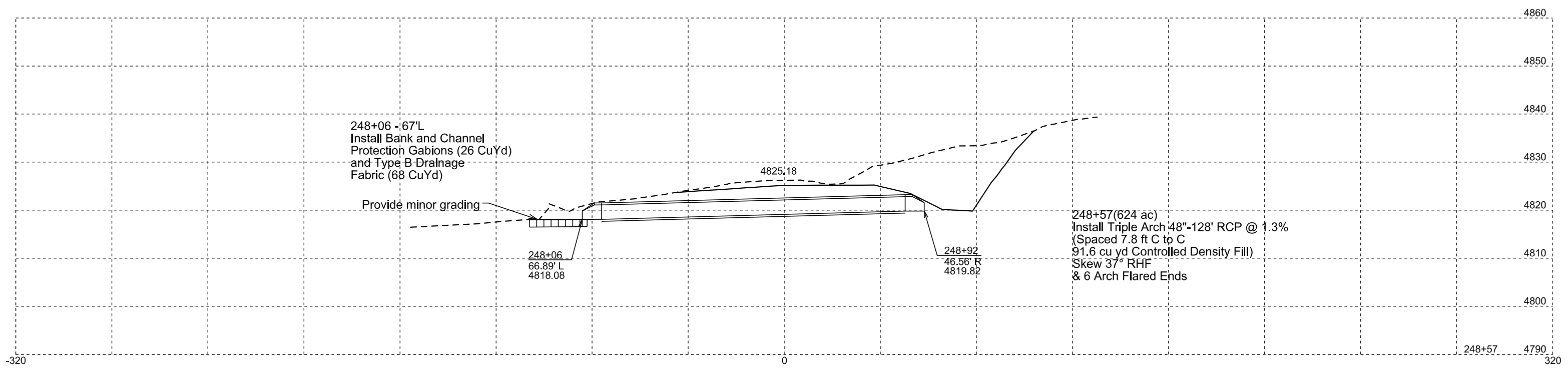
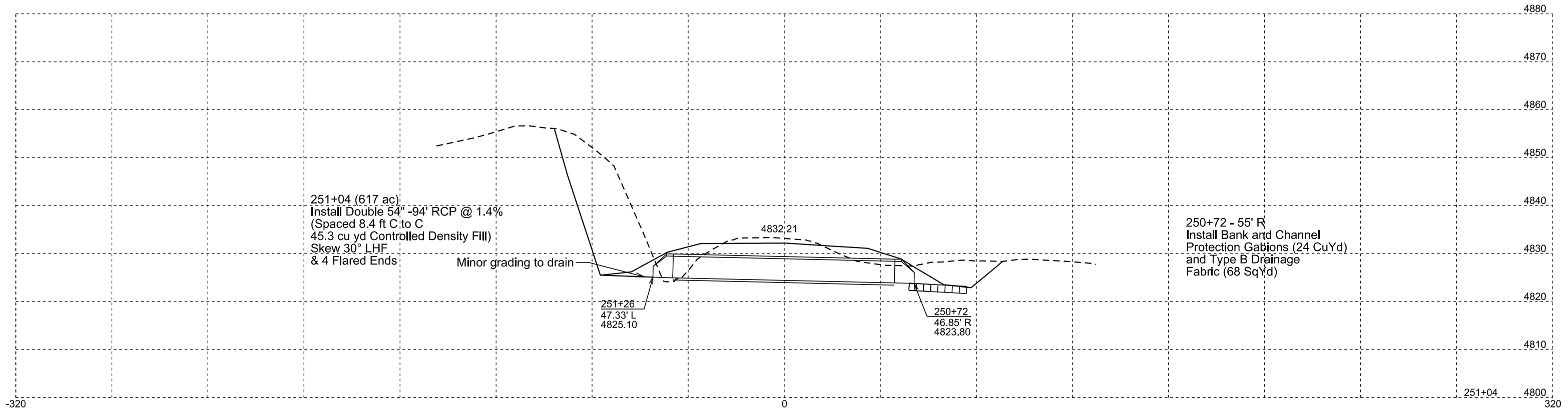




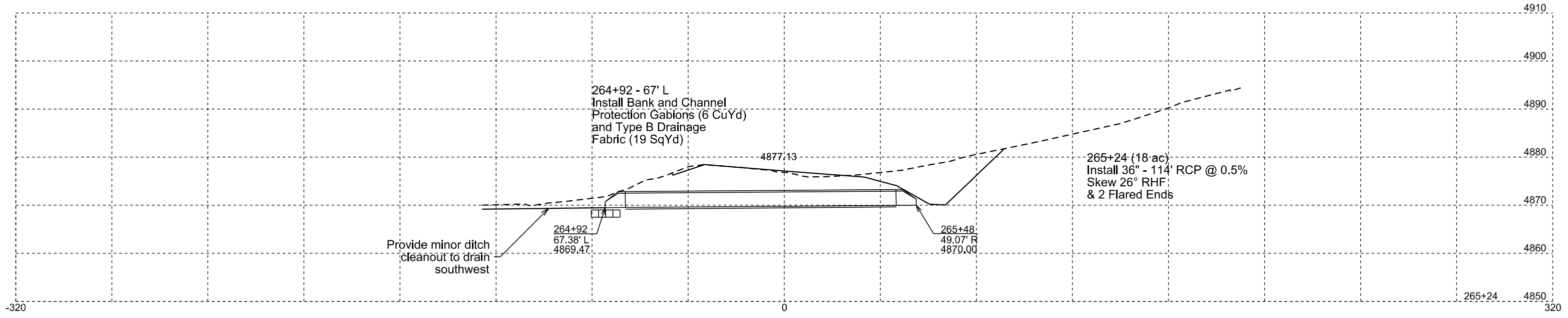
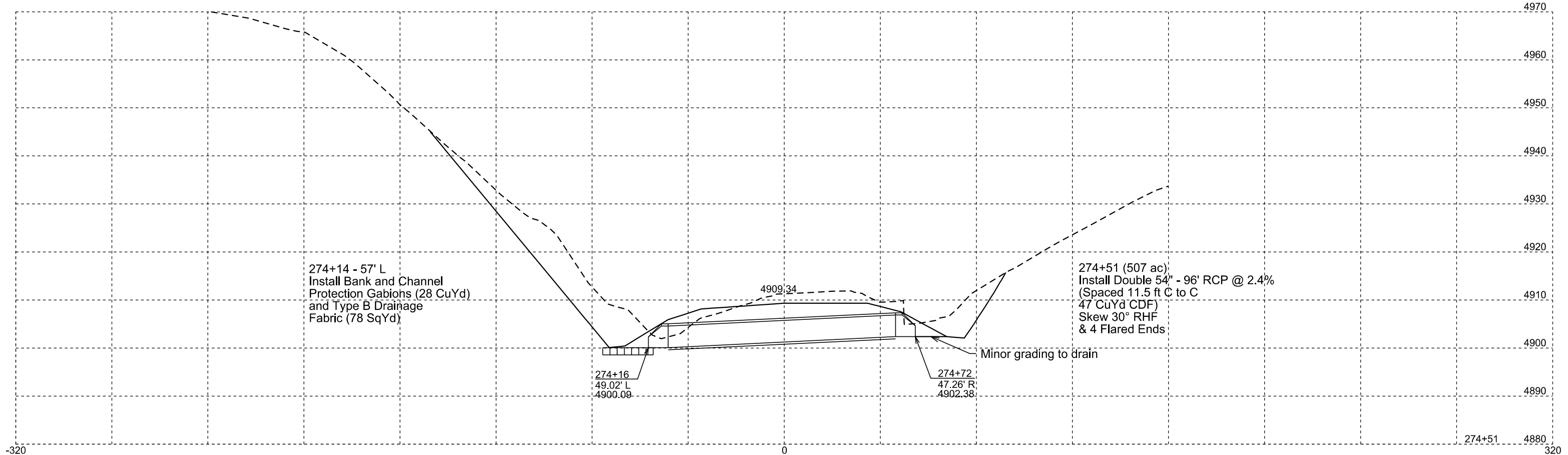
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z16	Z48



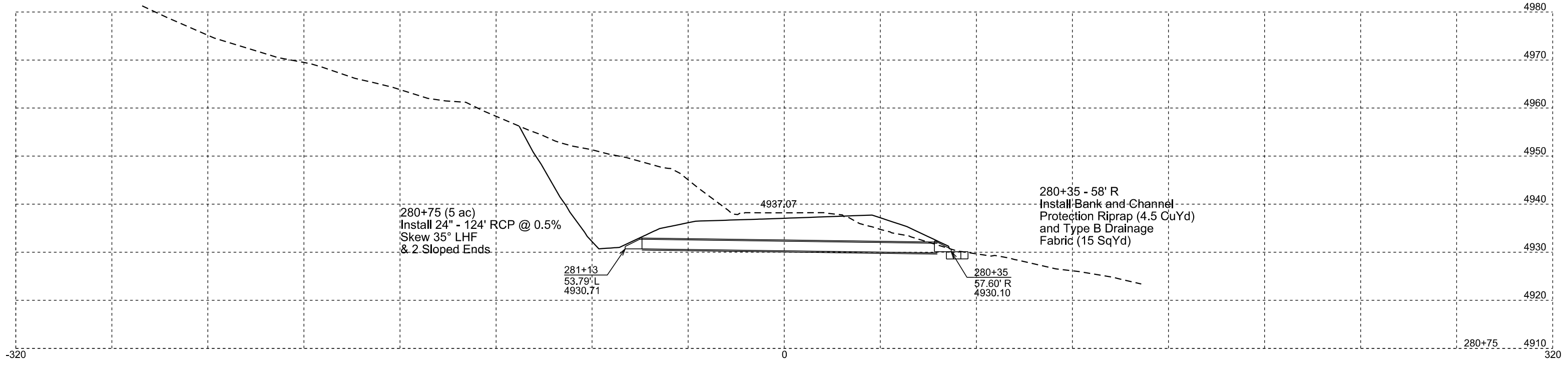
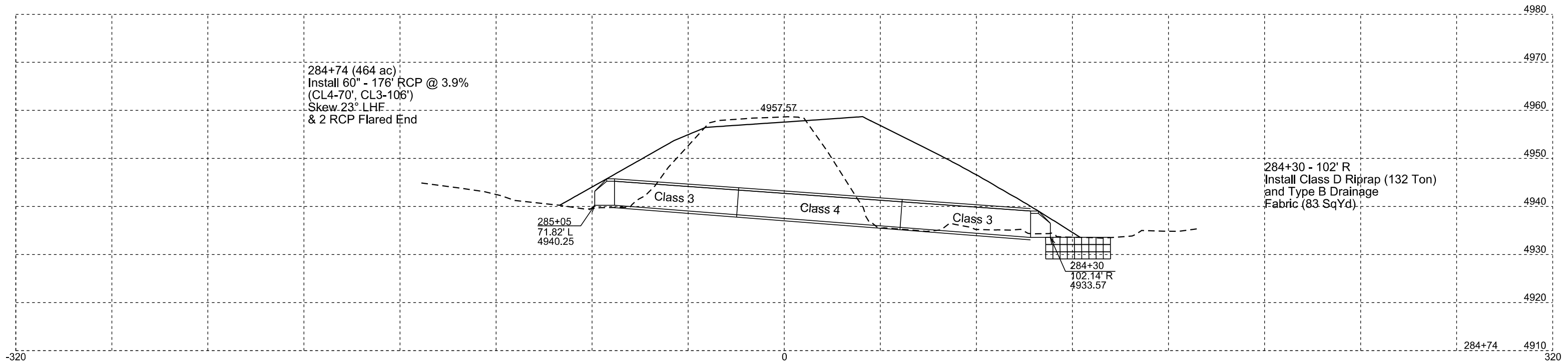
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z17	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z18	Z48

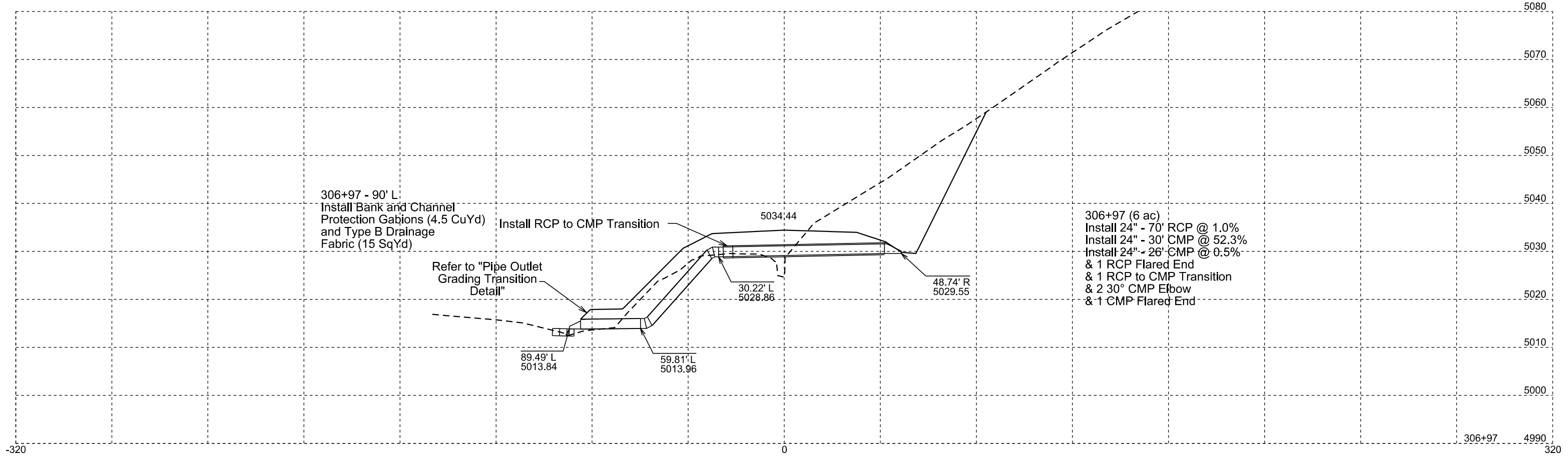
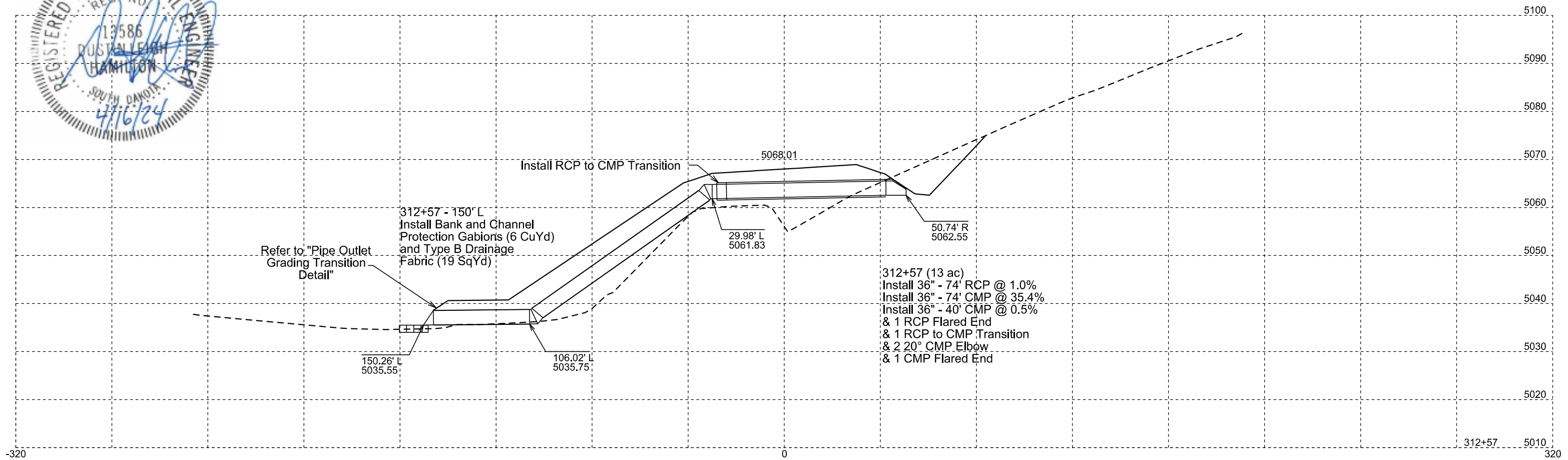
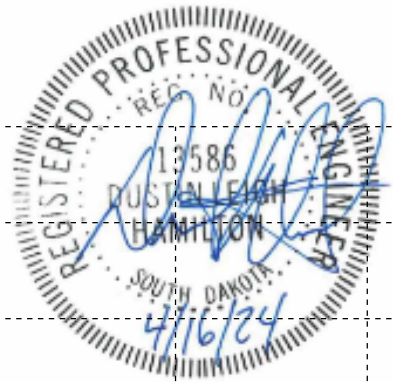


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z19	Z48



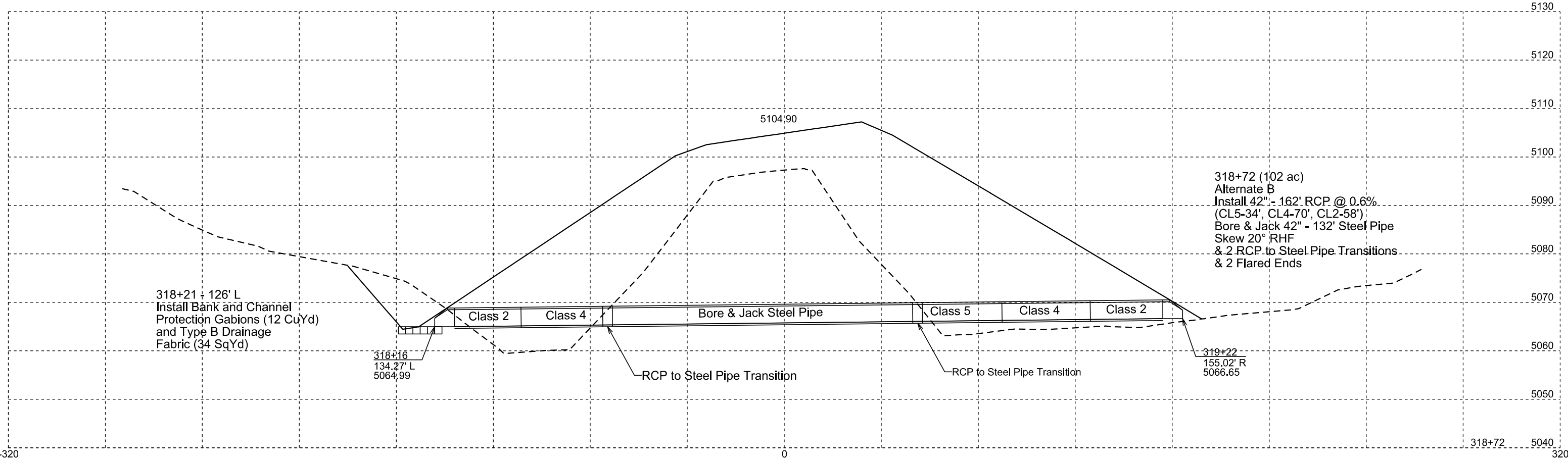


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z21	Z48



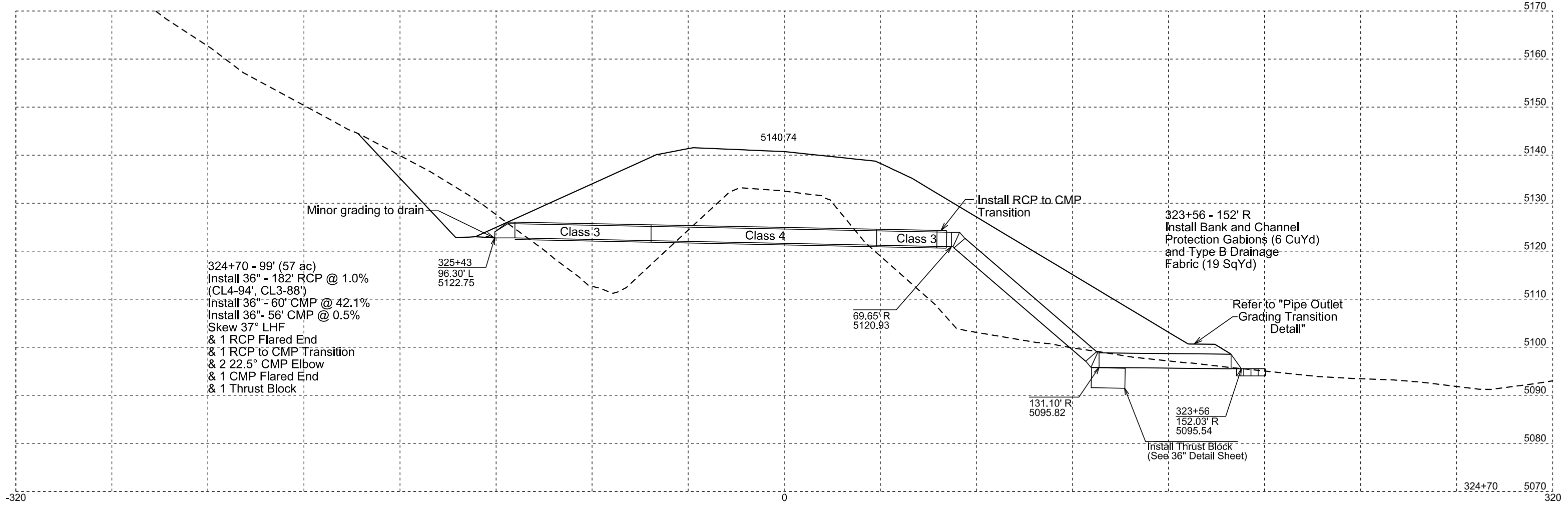
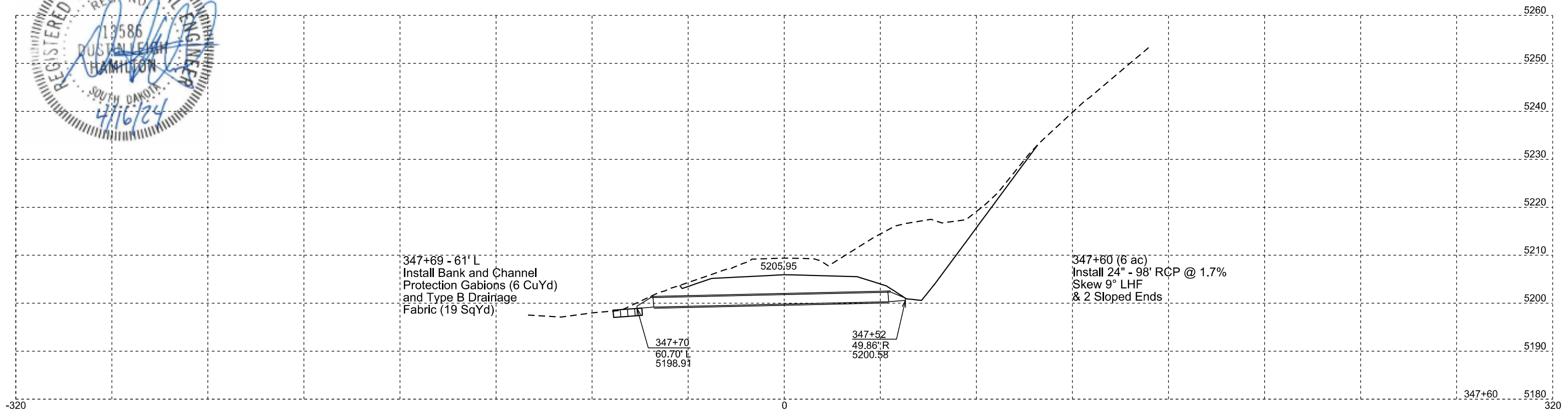
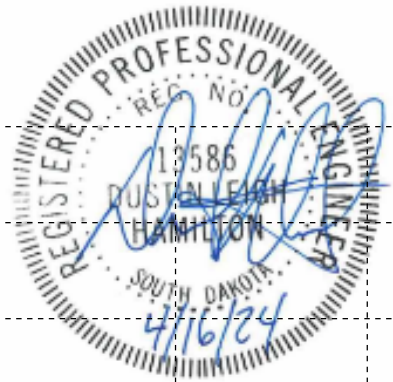


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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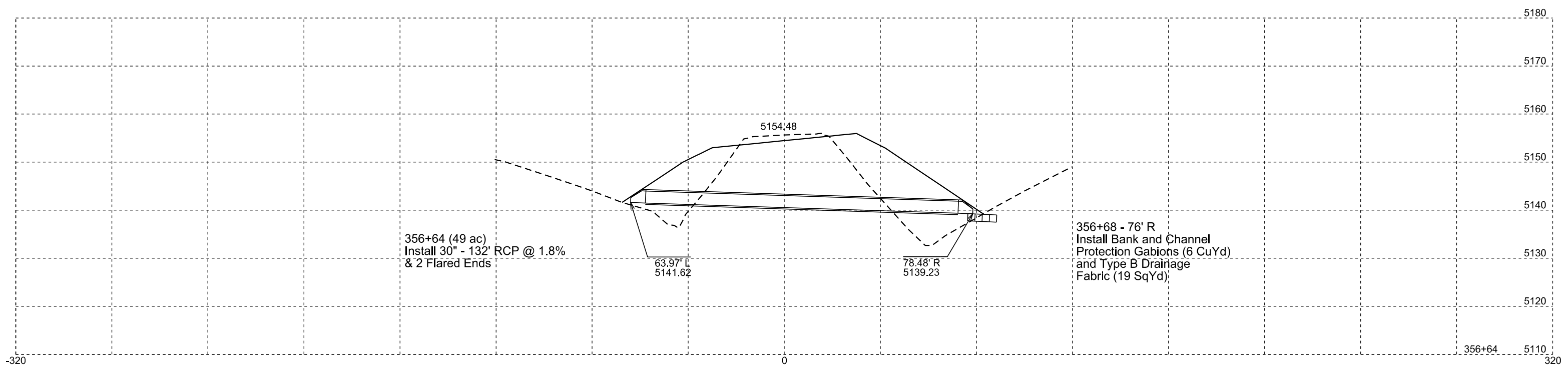
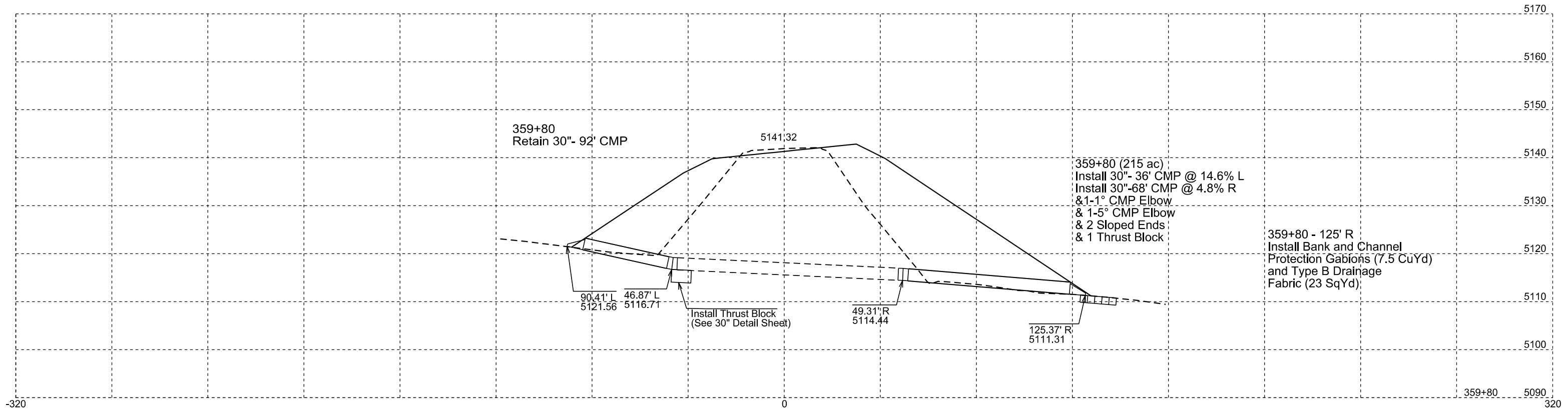




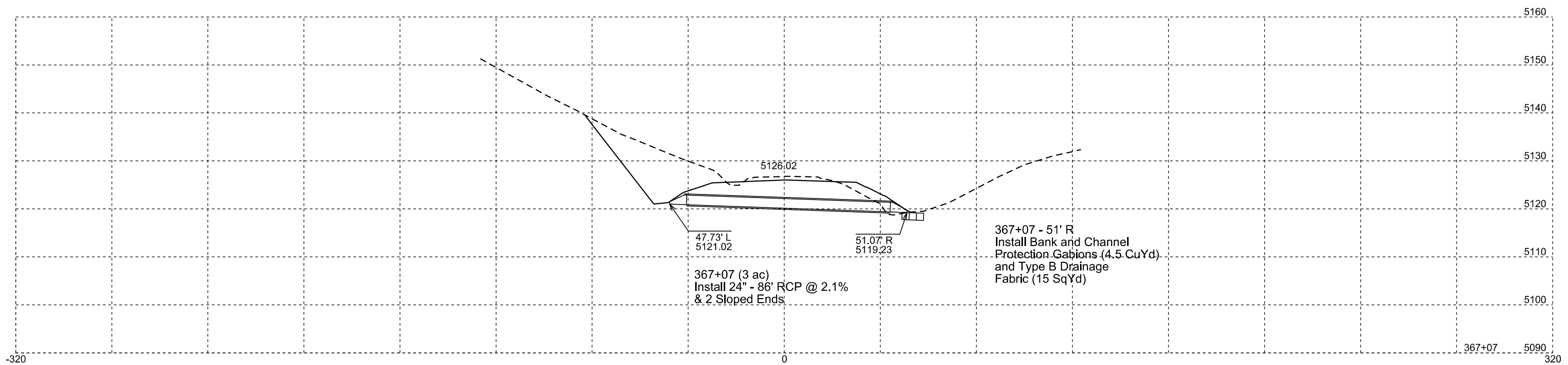
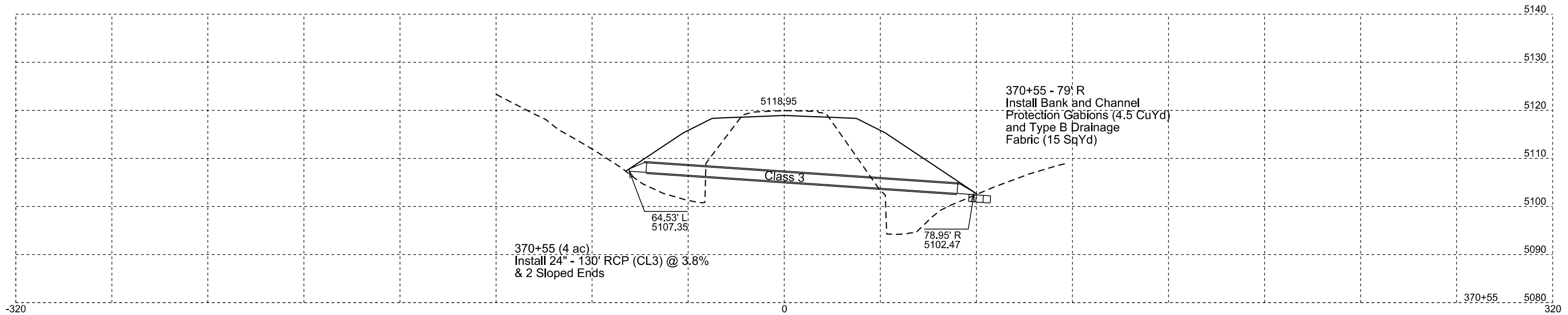
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	NH-PH-B 0385(51)87	Z24	Z48



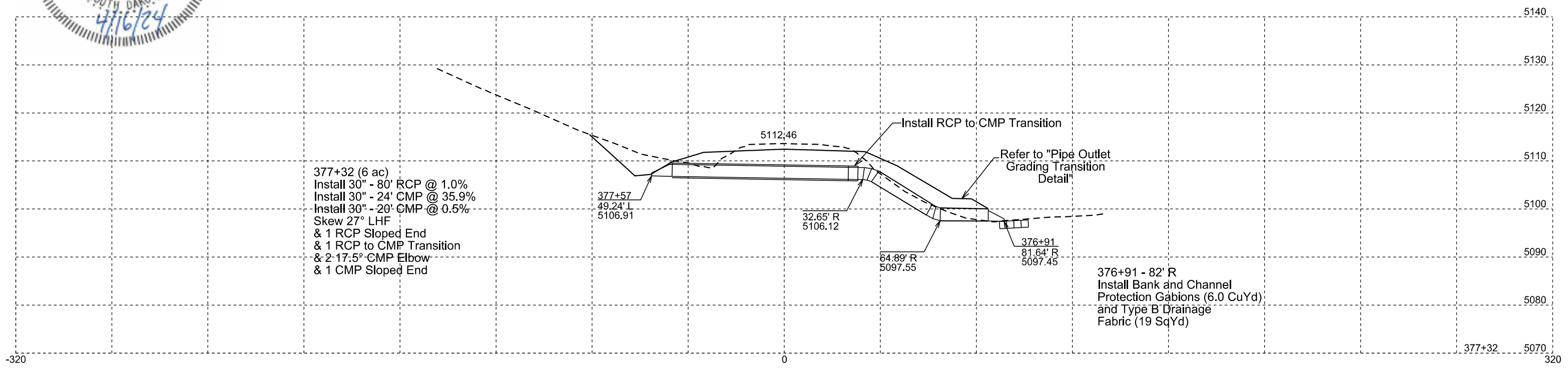
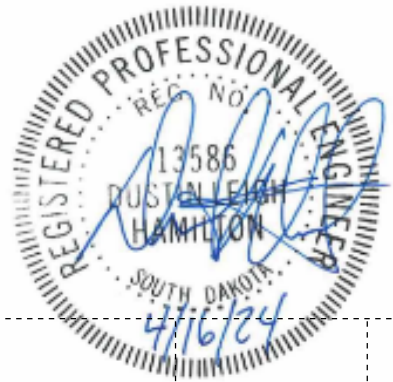
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z25	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z26	Z48

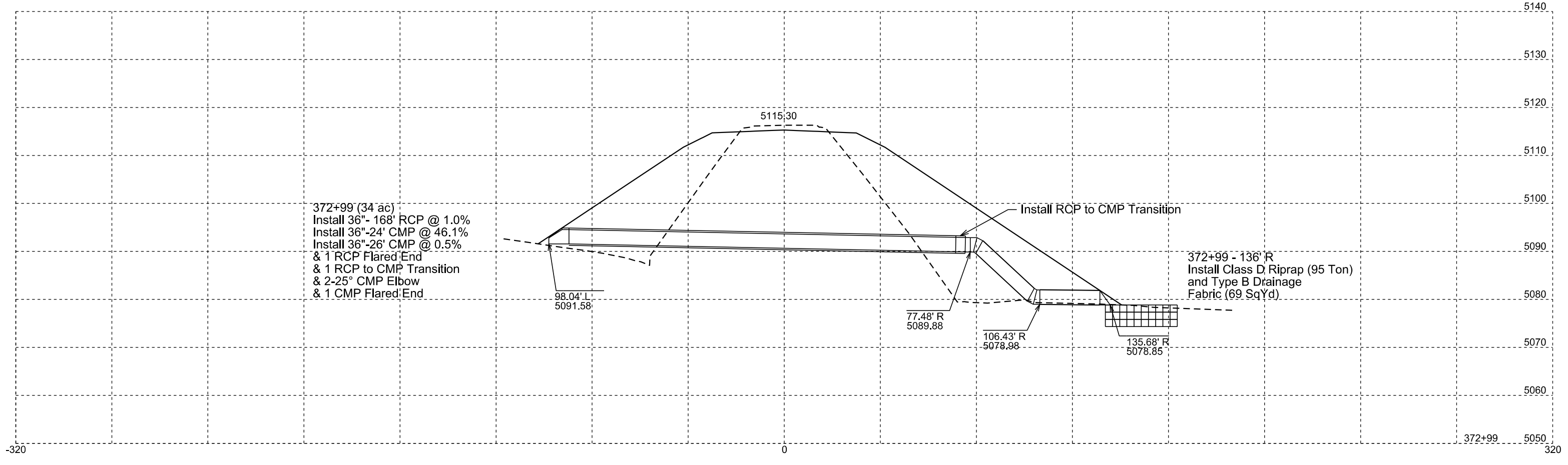


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z27	Z48



377+32 (6 ac)  
 Install 30" - 80' RCP @ 1.0%  
 Install 30" - 24' CMP @ 35.9%  
 Install 30" - 20' CMP @ 0.5%  
 Skew 27° LHF  
 & 1 RCP Sloped End  
 & 1 RCP to CMP Transition  
 & 2-17.5° CMP Elbow  
 & 1 CMP Sloped End

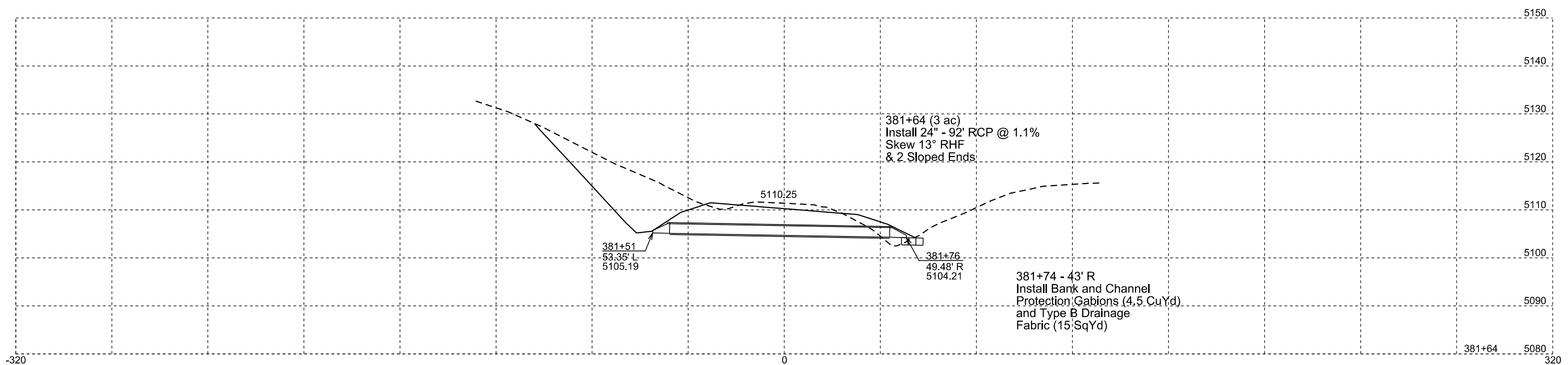
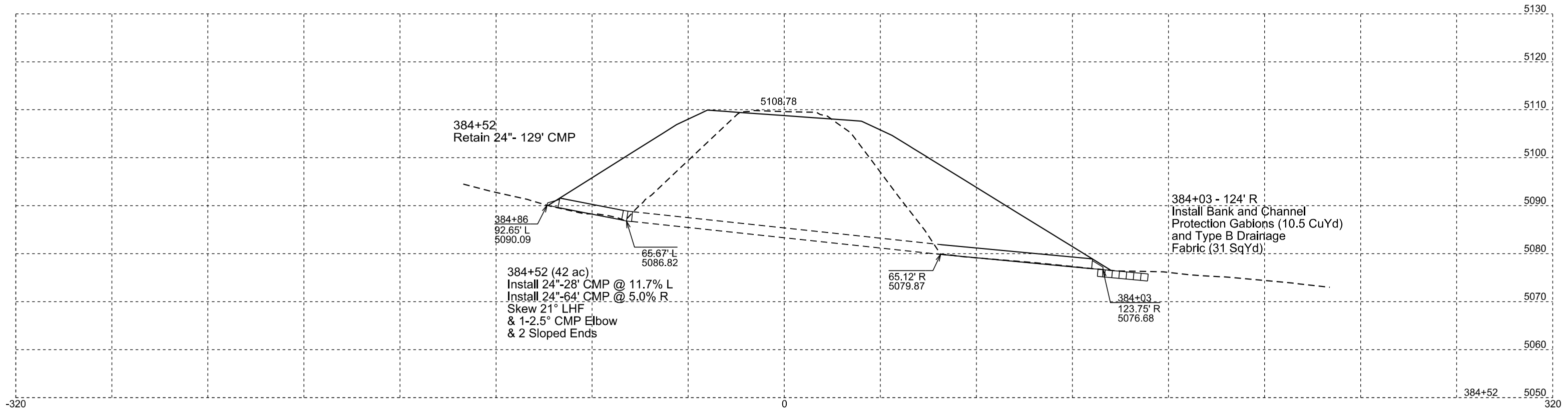
376+91 - 82' R  
 Install Bank and Channel  
 Protection Gabions (6.0 CuYd)  
 and Type B Drainage  
 Fabric (19 SqYd)



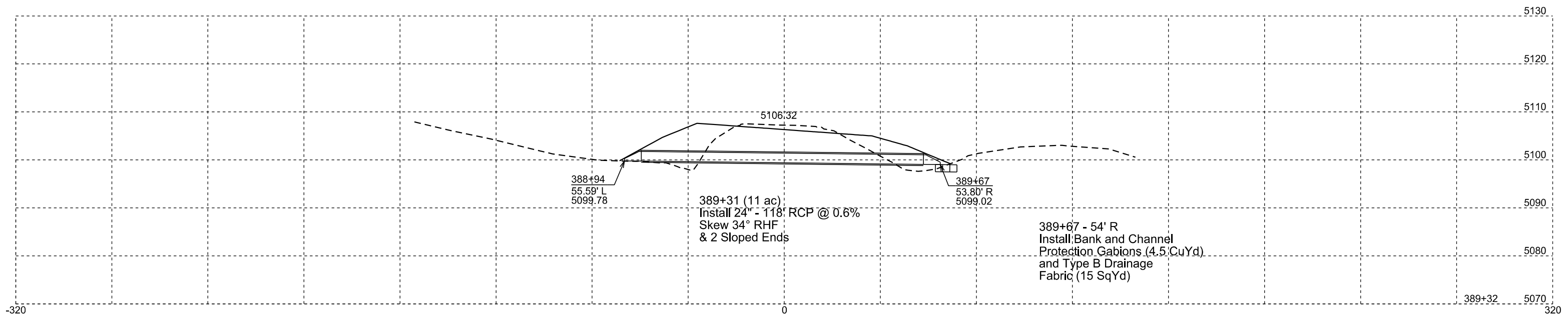
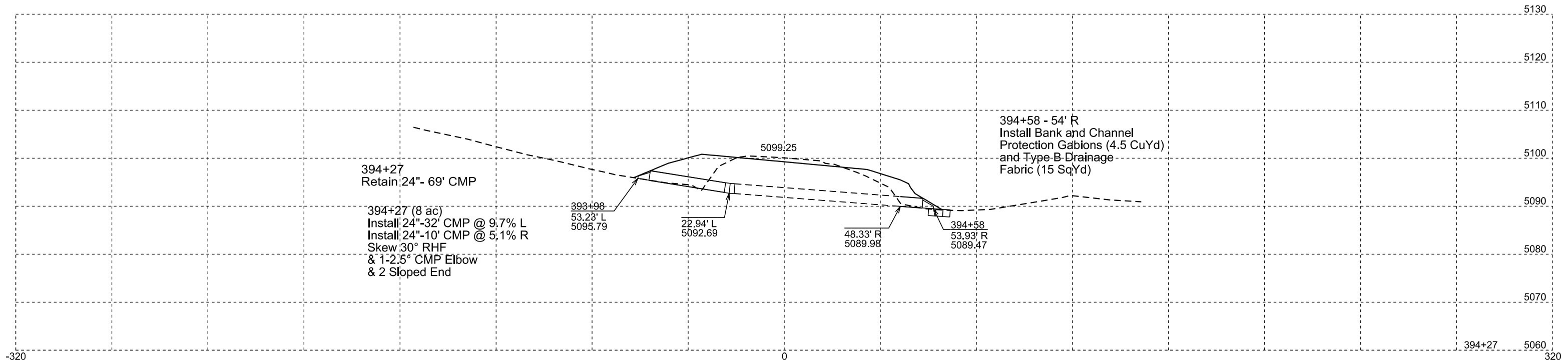
372+99 (34 ac)  
 Install 36" - 168' RCP @ 1.0%  
 Install 36" - 24' CMP @ 46.1%  
 Install 36" - 26' CMP @ 0.5%  
 & 1 RCP Flared End  
 & 1 RCP to CMP Transition  
 & 2-25° CMP Elbow  
 & 1 CMP Flared End

372+99 - 136' R  
 Install Class D Riprap (95 Ton)  
 and Type B Drainage  
 Fabric (69 SqYd)

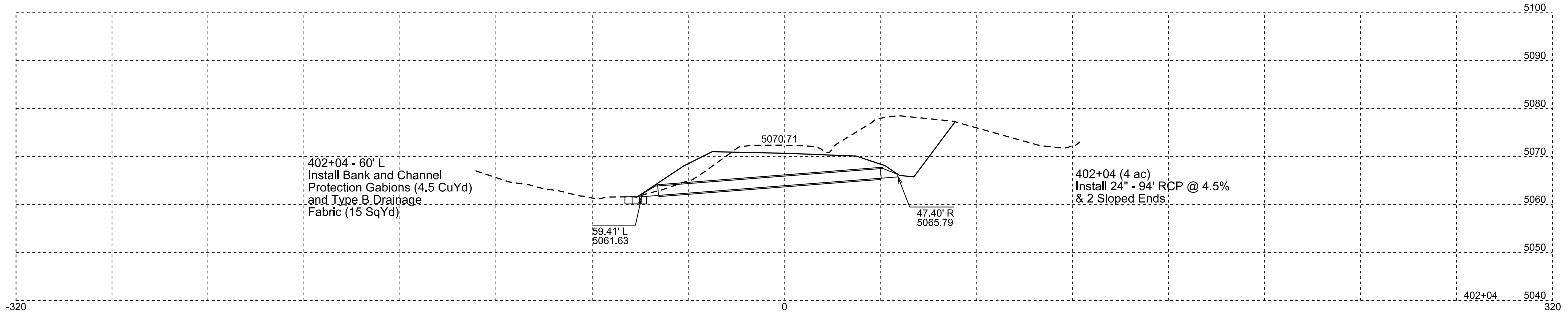
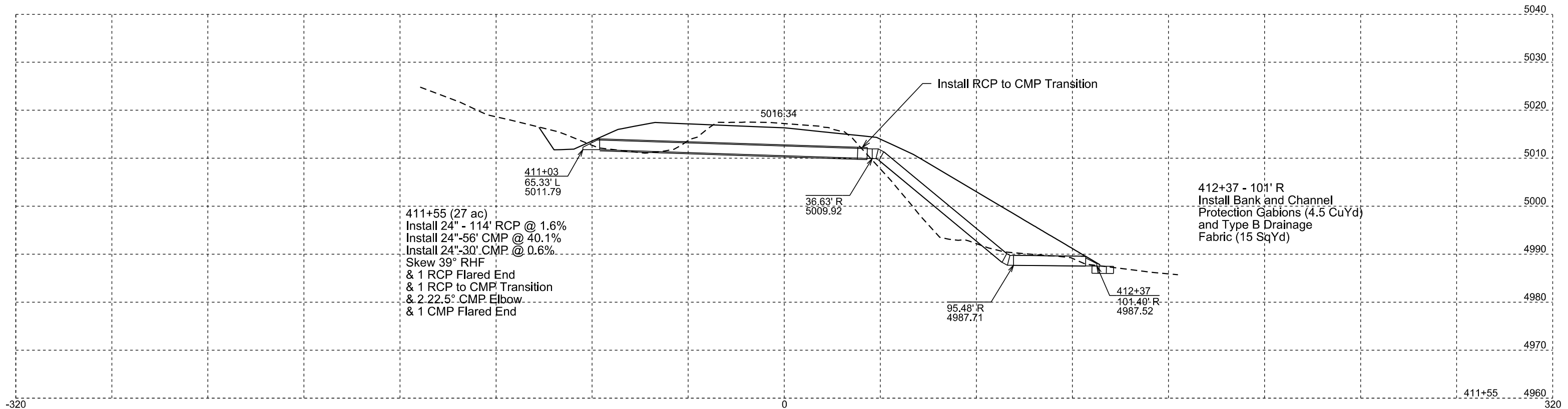
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z28	Z48



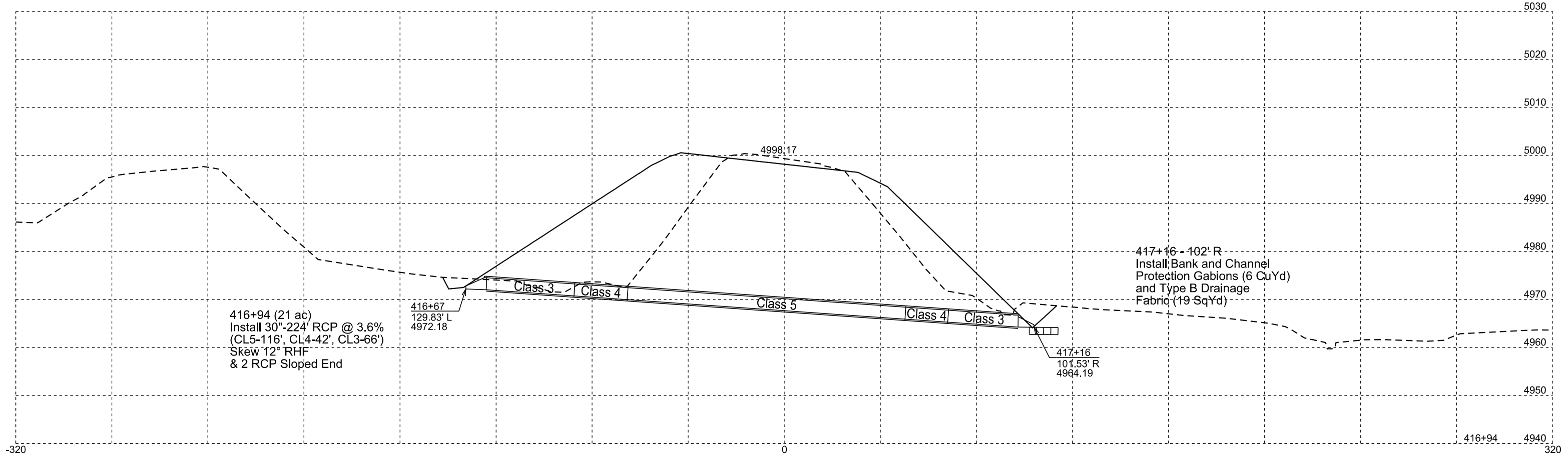
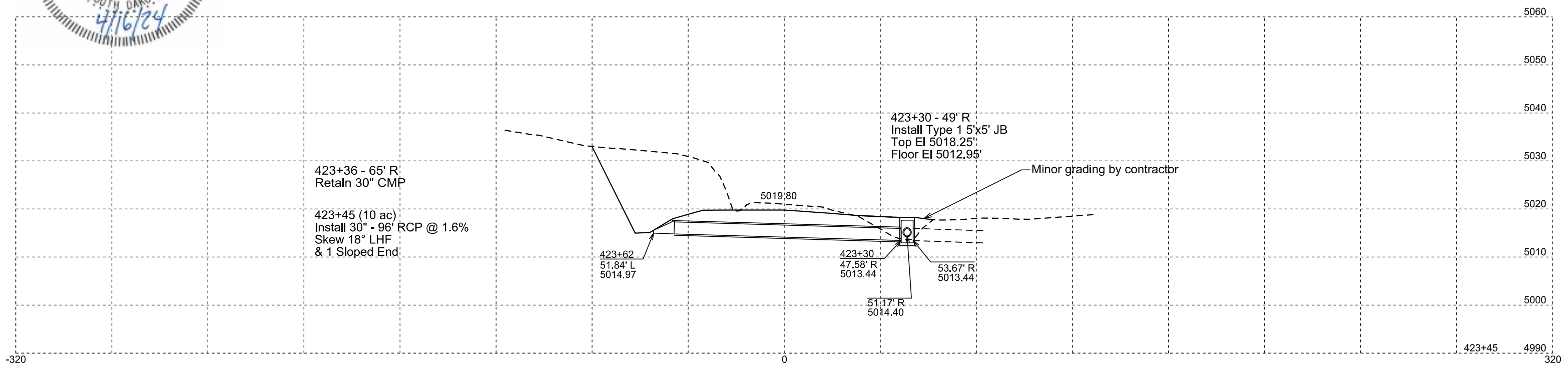
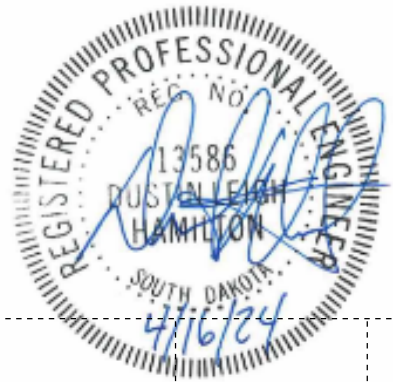
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z29	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z30	Z48

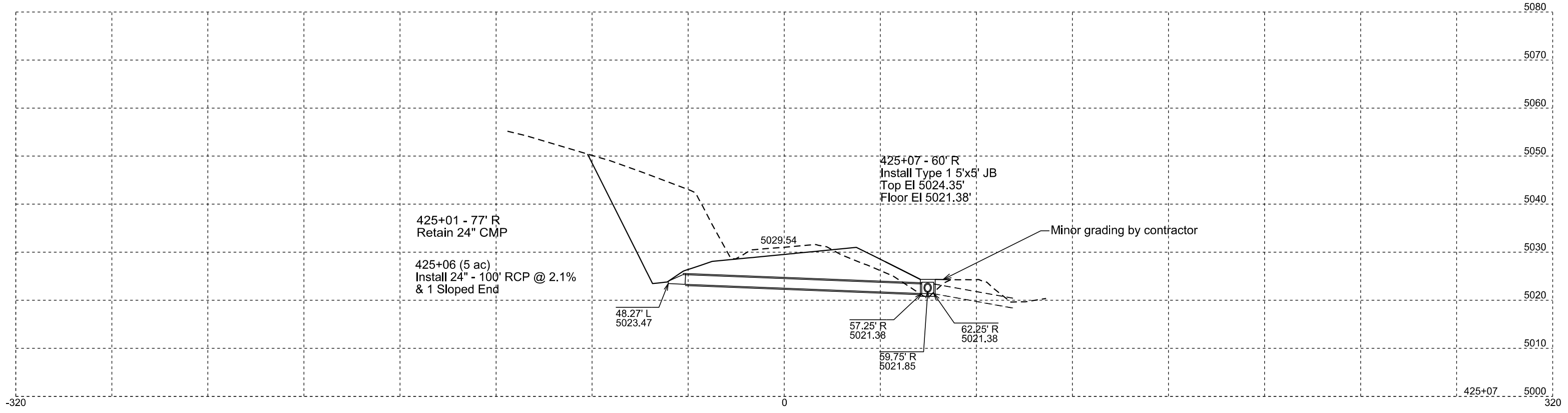
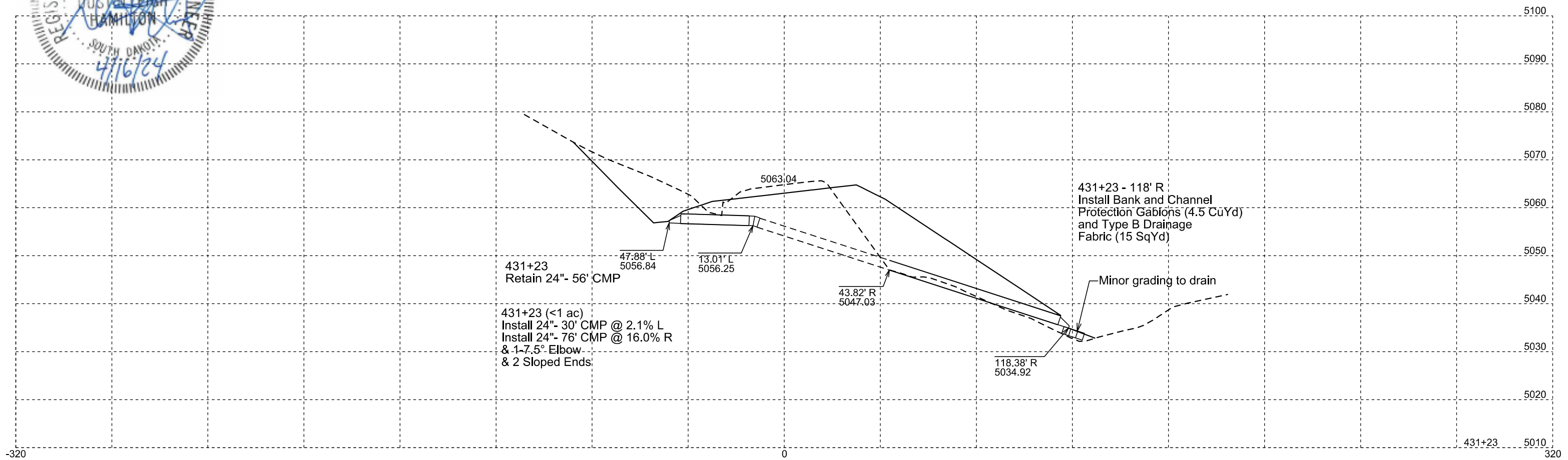
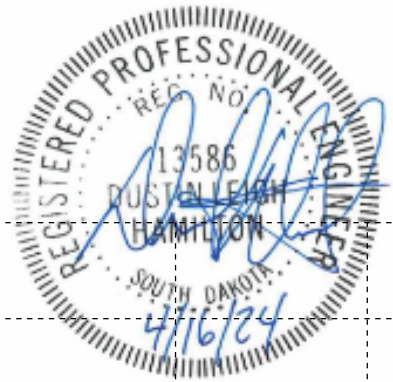


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z31	Z48

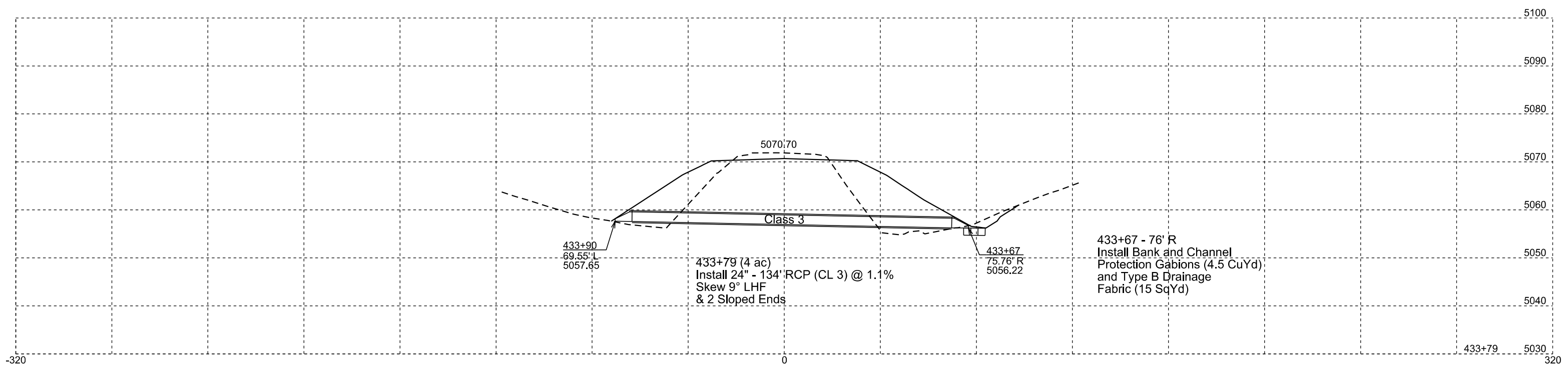
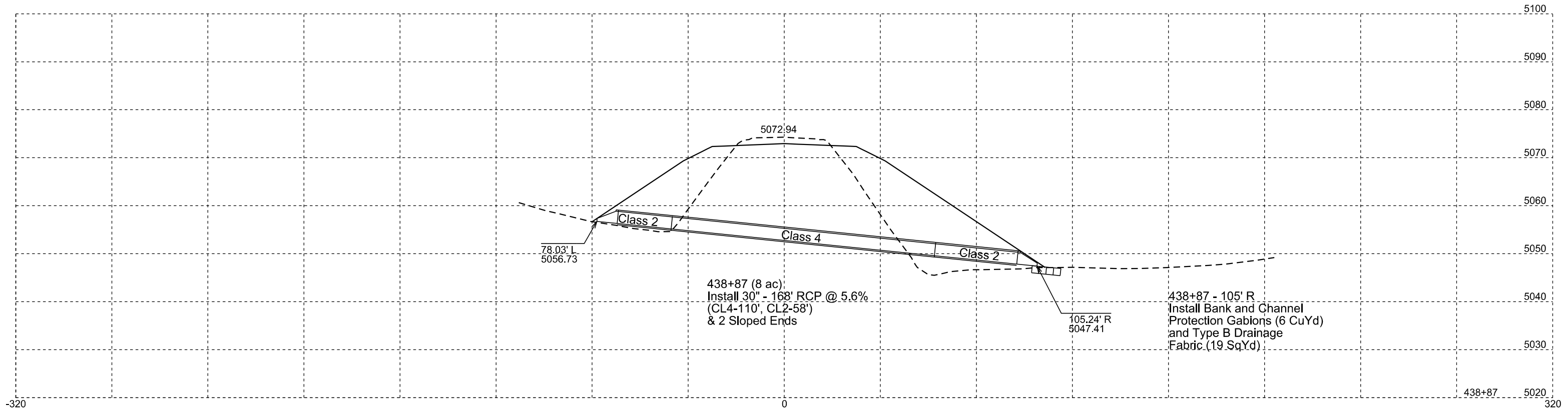




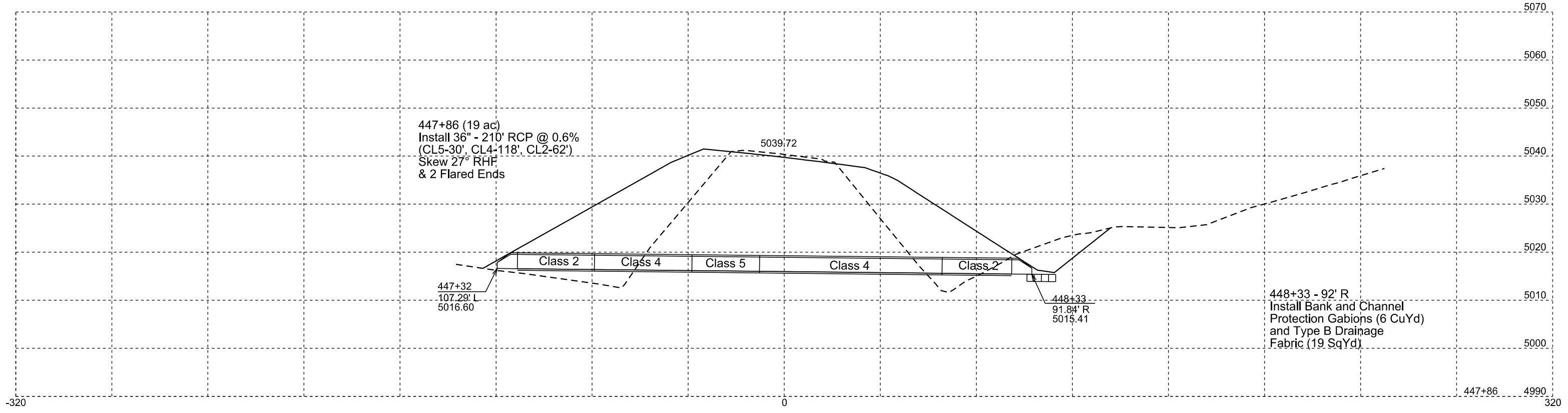
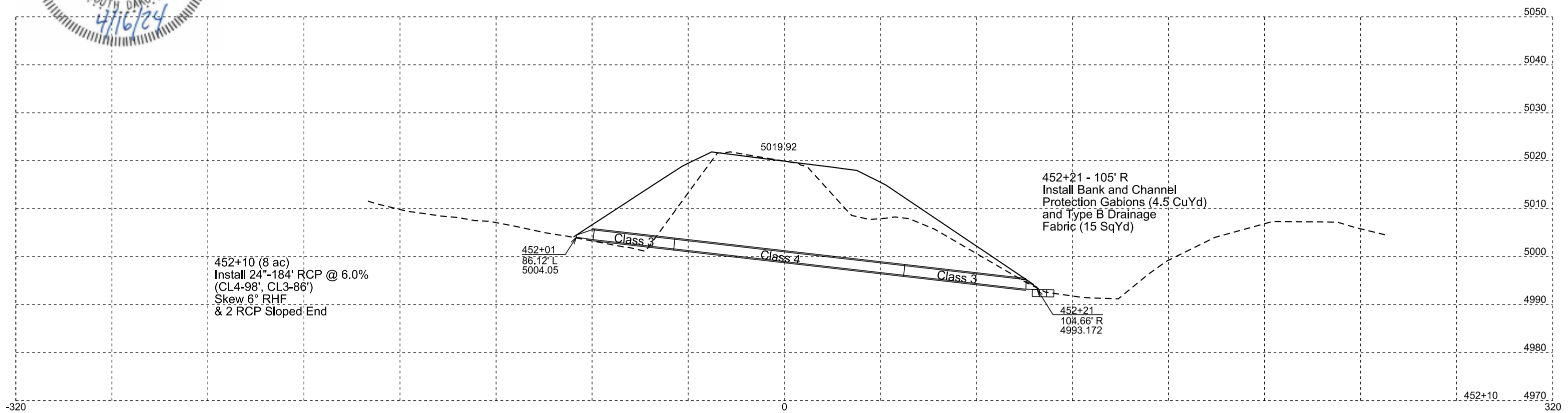
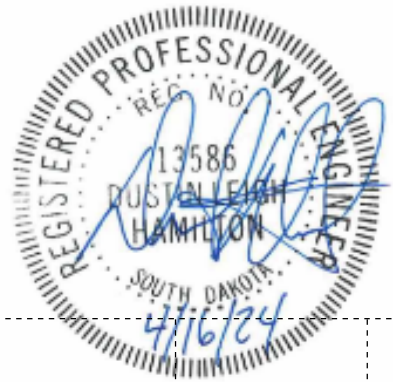
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z32	Z48



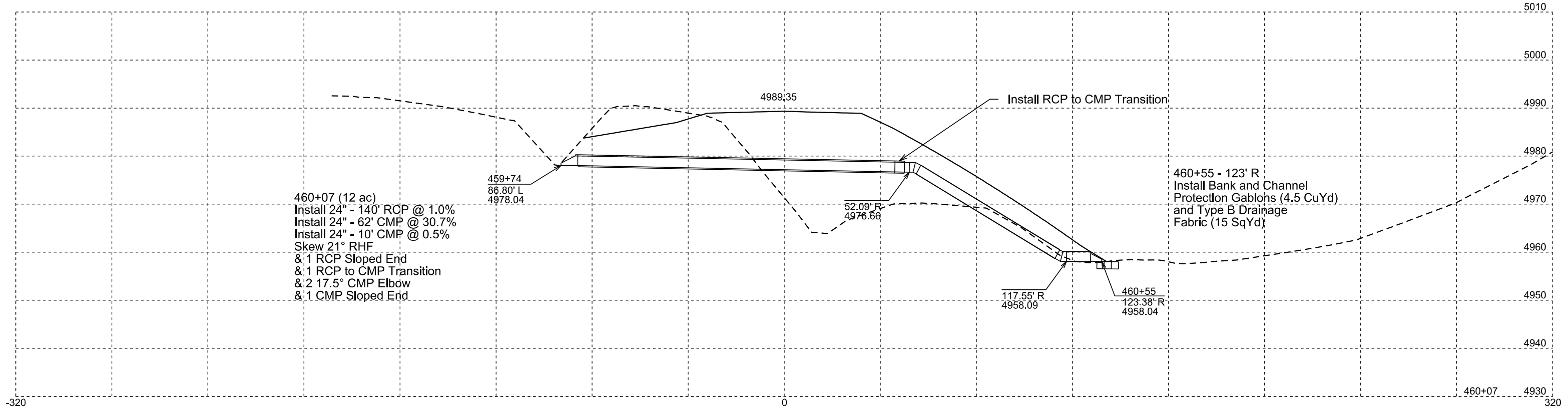
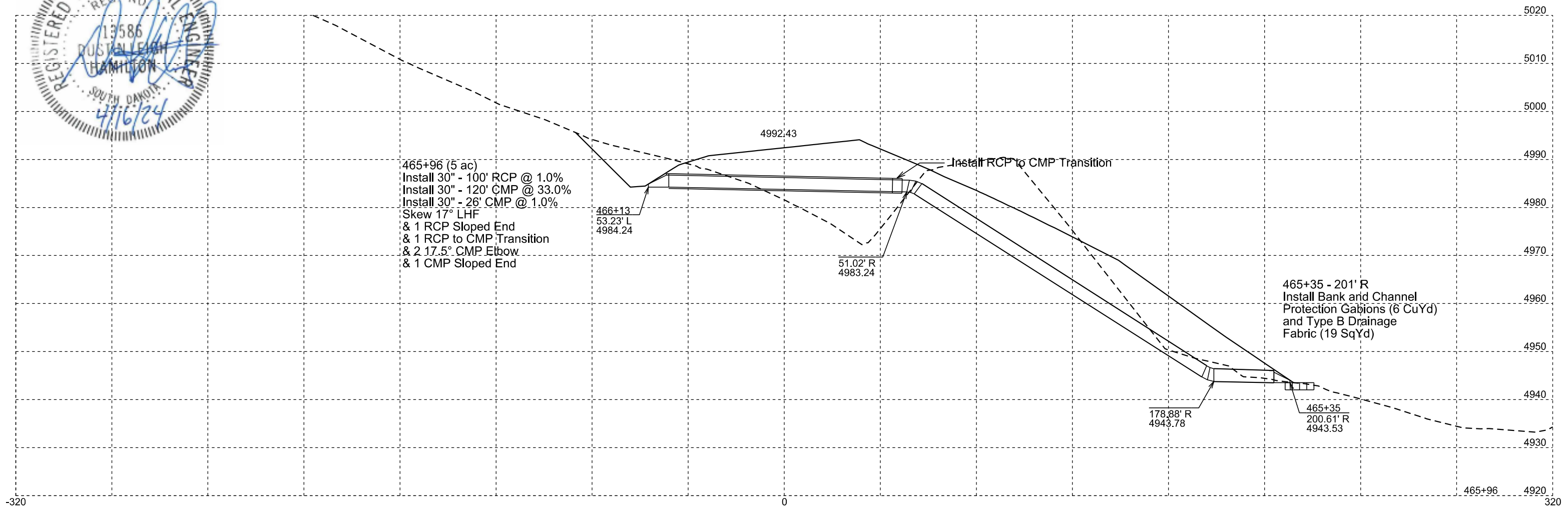
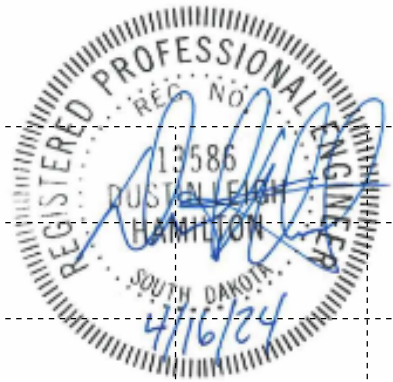
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z33	Z48



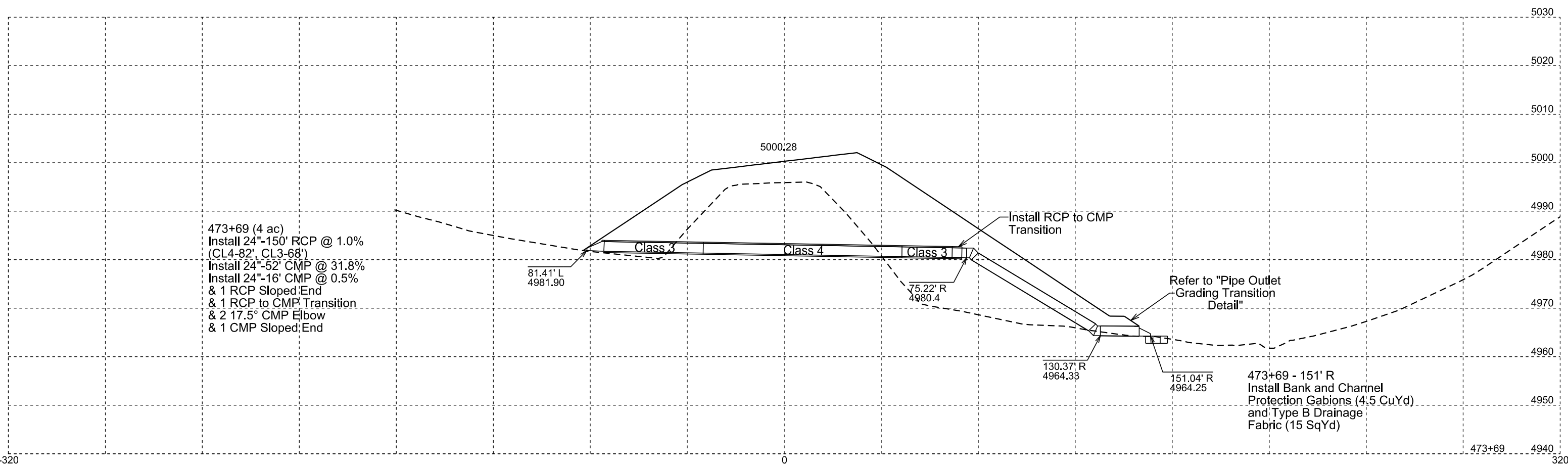
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z34	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z35	Z48



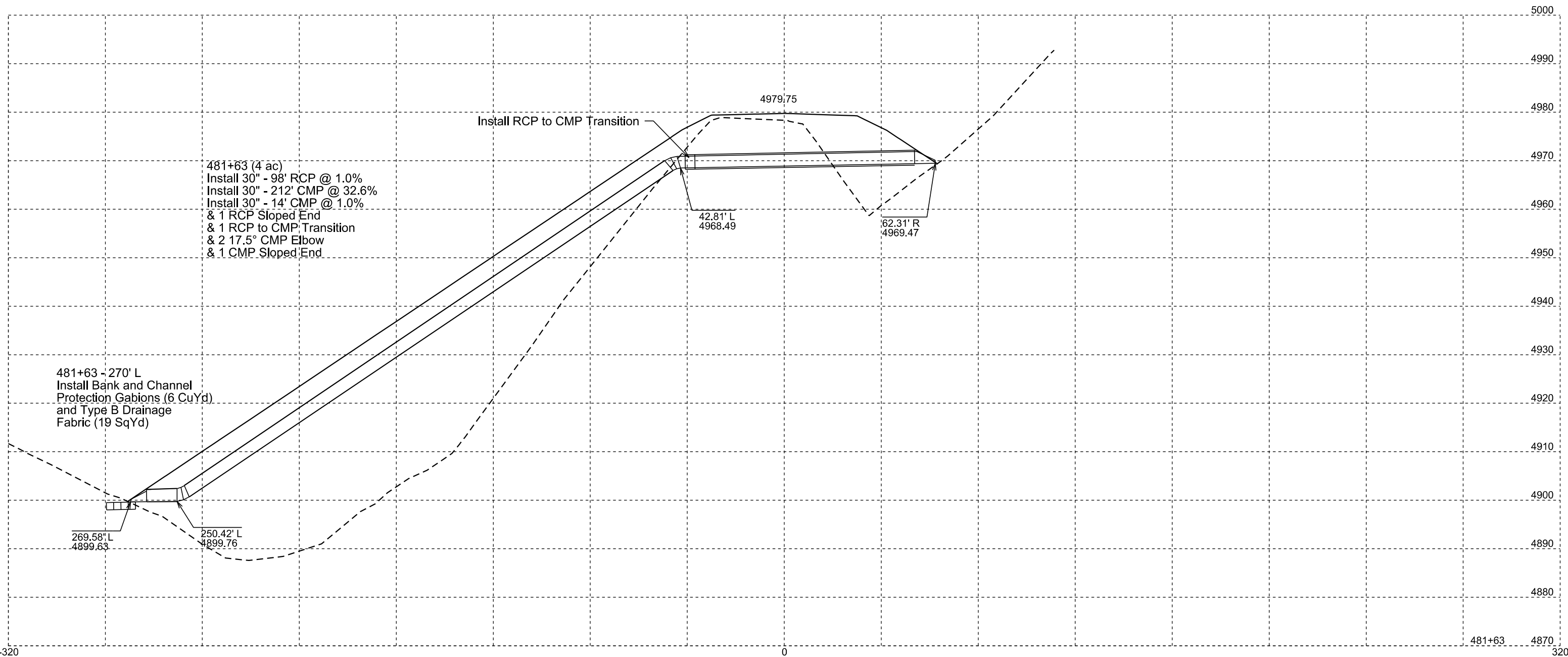
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z36	Z48



473+69 (4 ac)  
 Install 24"-150' RCP @ 1.0%  
 (CL4-82', CL3-68')  
 Install 24"-52' CMP @ 31.8%  
 Install 24"-16' CMP @ 0.5%  
 & 1 RCP Sloped End  
 & 1 RCP to CMP Transition  
 & 2 17.5° CMP Elbow  
 & 1 CMP Sloped End

473+69 - 151' R  
 Install Bank and Channel  
 Protection Gabions (4.5 CuYd)  
 and Type B Drainage  
 Fabric (15 SqYd)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z37	Z48



481+63 (4 ac)  
 Install 30" - 98' RCP @ 1.0%  
 Install 30" - 212' CMP @ 32.6%  
 Install 30" - 14' CMP @ 1.0%  
 & 1 RCP Sloped End  
 & 1 RCP to CMP Transition  
 & 2 17.5° CMP Elbow  
 & 1 CMP Sloped End

481+63 - 270' L  
 Install Bank and Channel  
 Protection Gabions (6 CuYd)  
 and Type B Drainage  
 Fabric (19 SqYd)

269.58' L  
 4899.63

250.42' L  
 4899.76

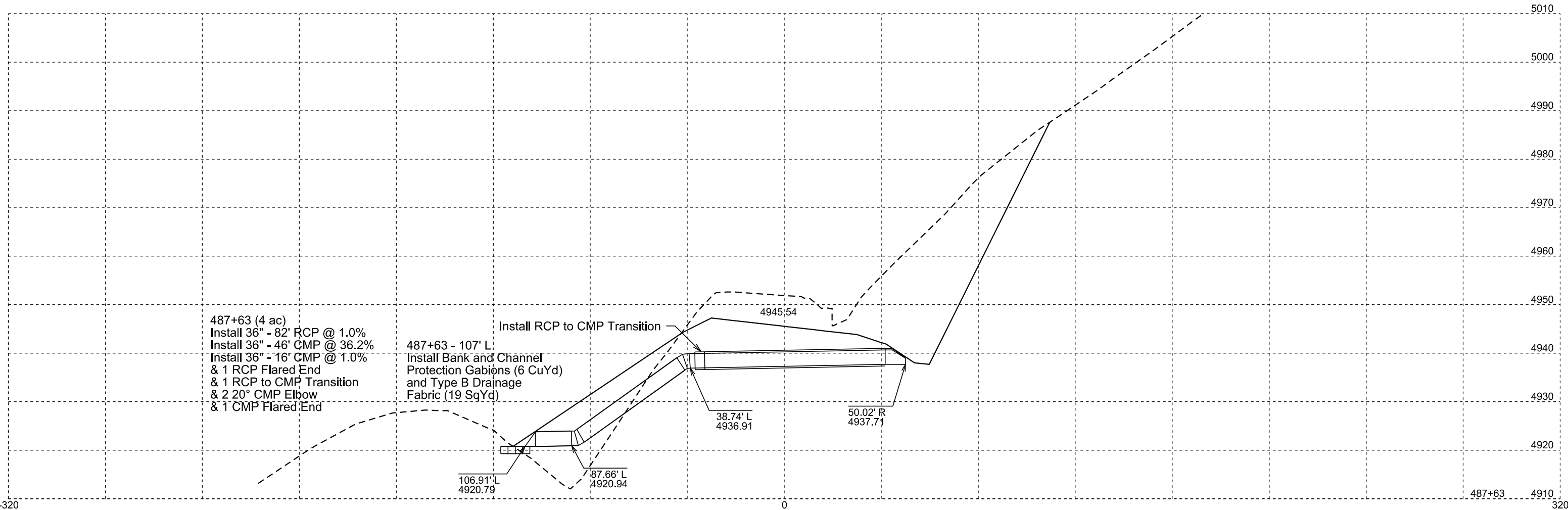
Install RCP to CMP Transition

42.81' L  
 4968.49

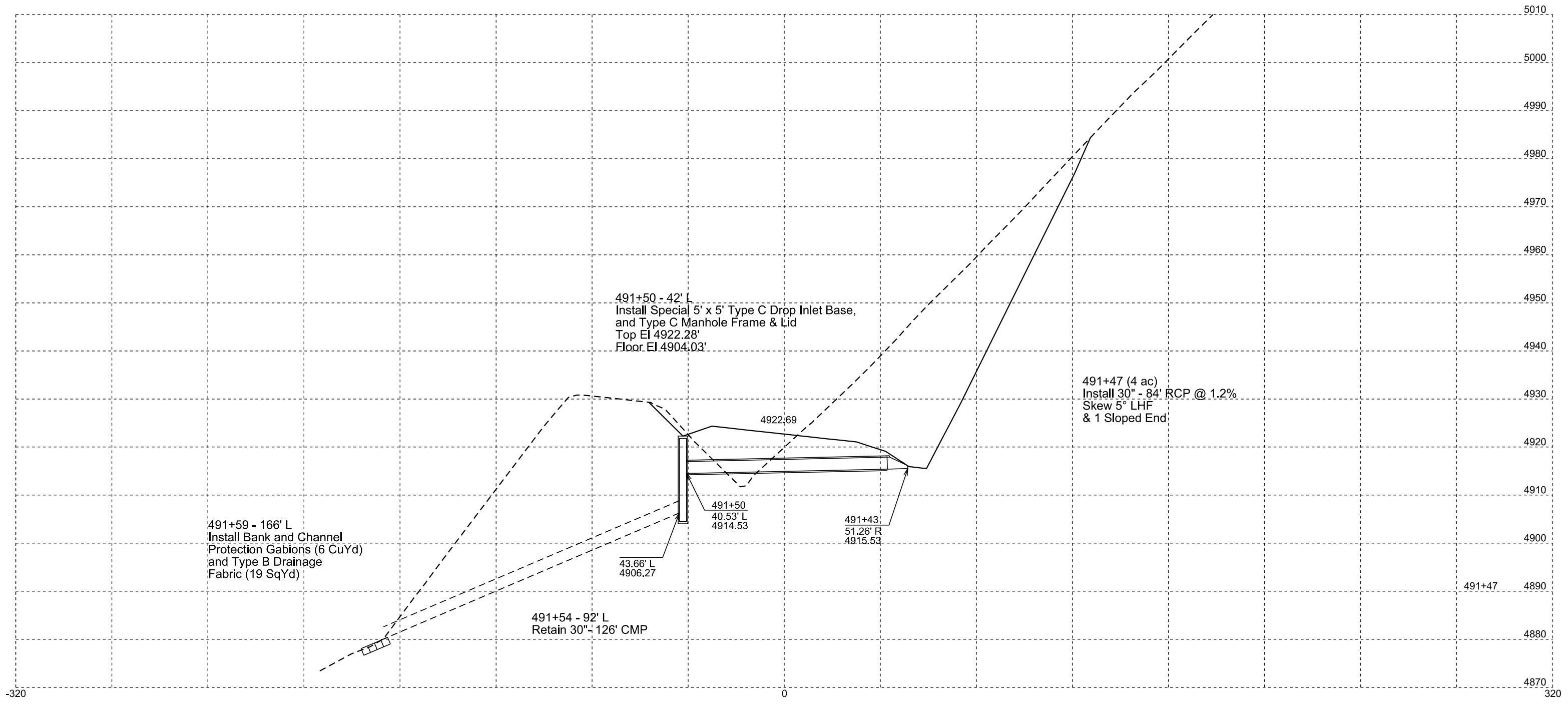
62.31' R  
 4969.47

4979.75

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z38	Z48

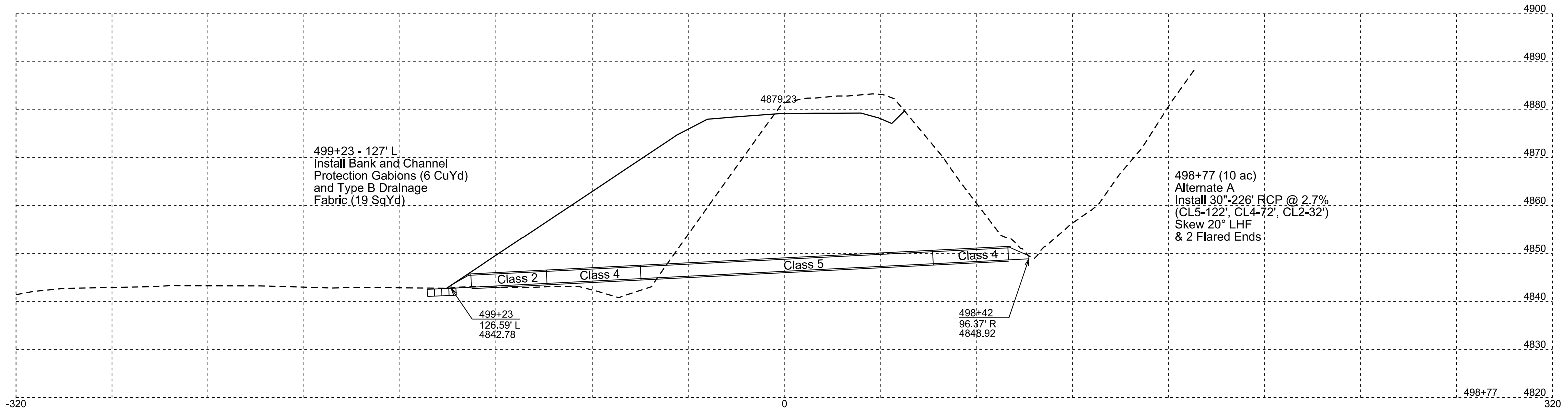


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z39	Z48

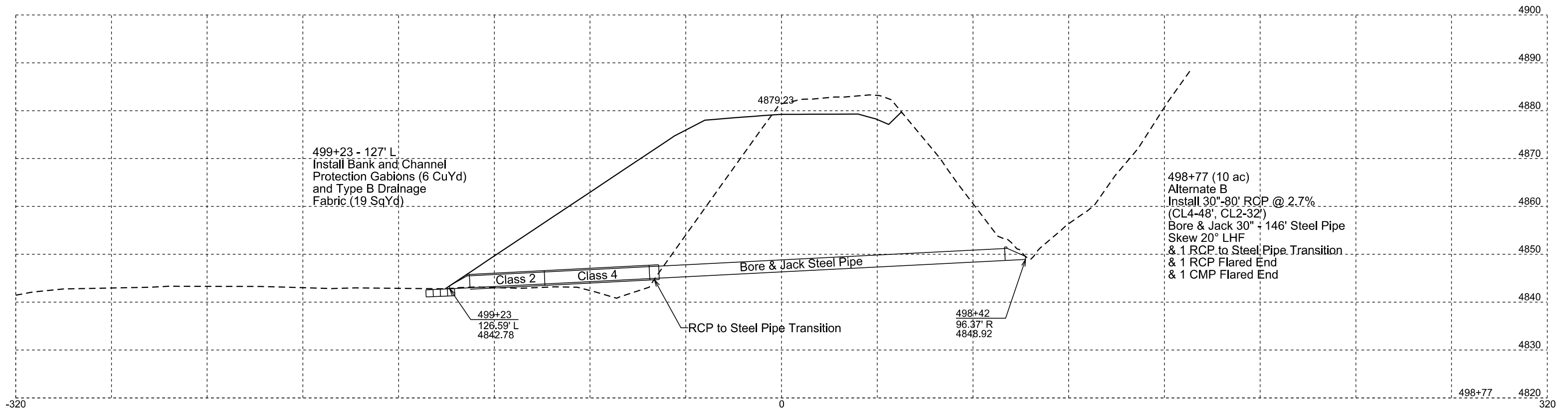




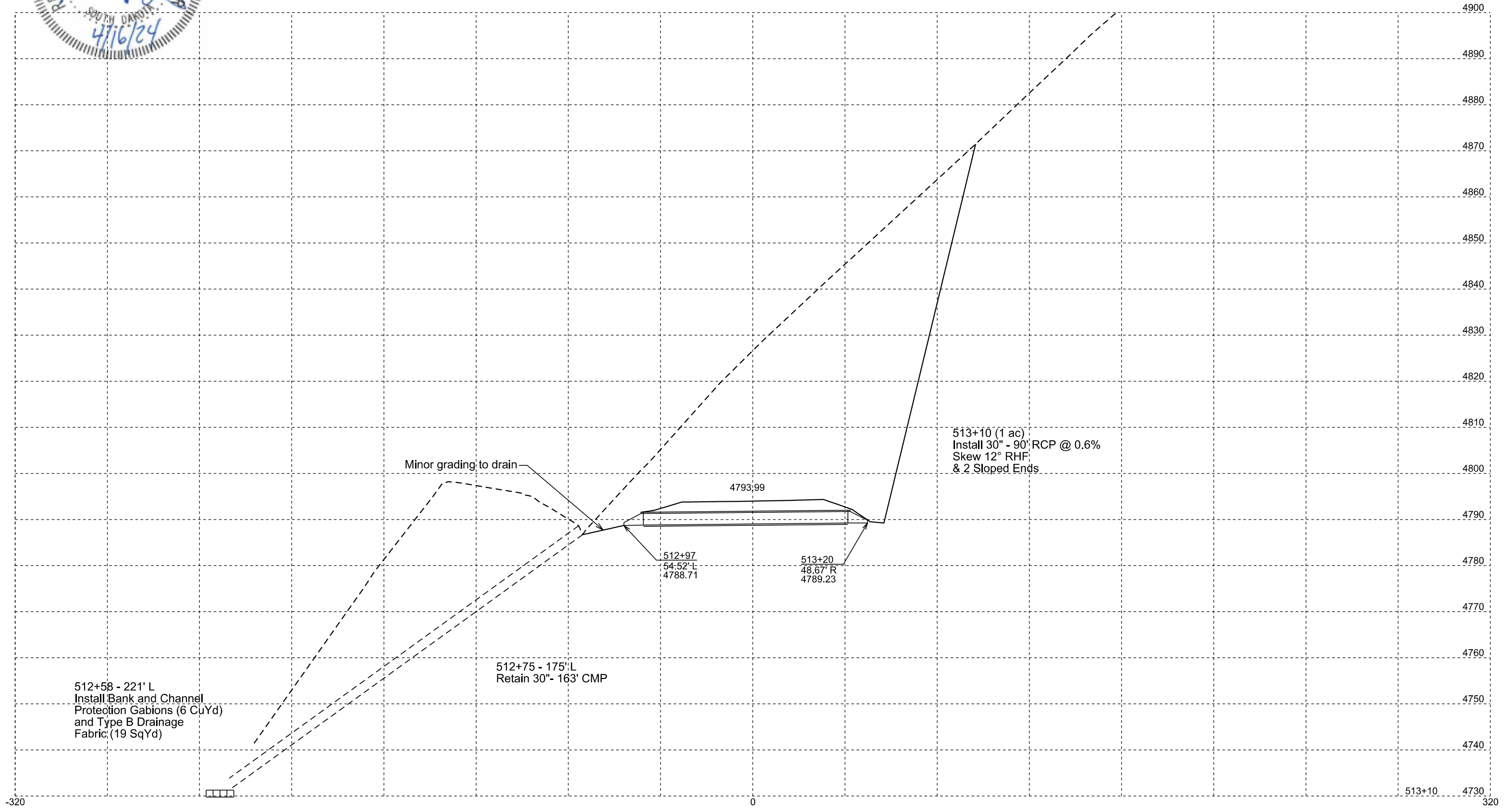
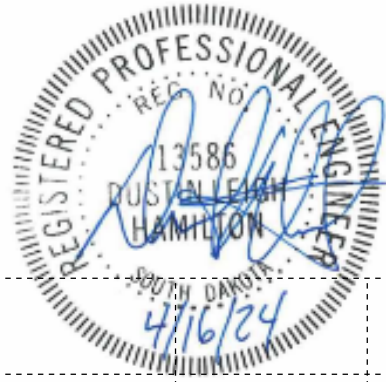
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z40	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z41	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z42	Z48



512+58 - 221' L  
Install Bank and Channel  
Protection Gabions (6 CuYd)  
and Type B Drainage  
Fabric (19 SqYd)

Minor grading to drain

512+75 - 175' L  
Retain 30" - 163' CMP

512+97  
54.52' L  
4788.71

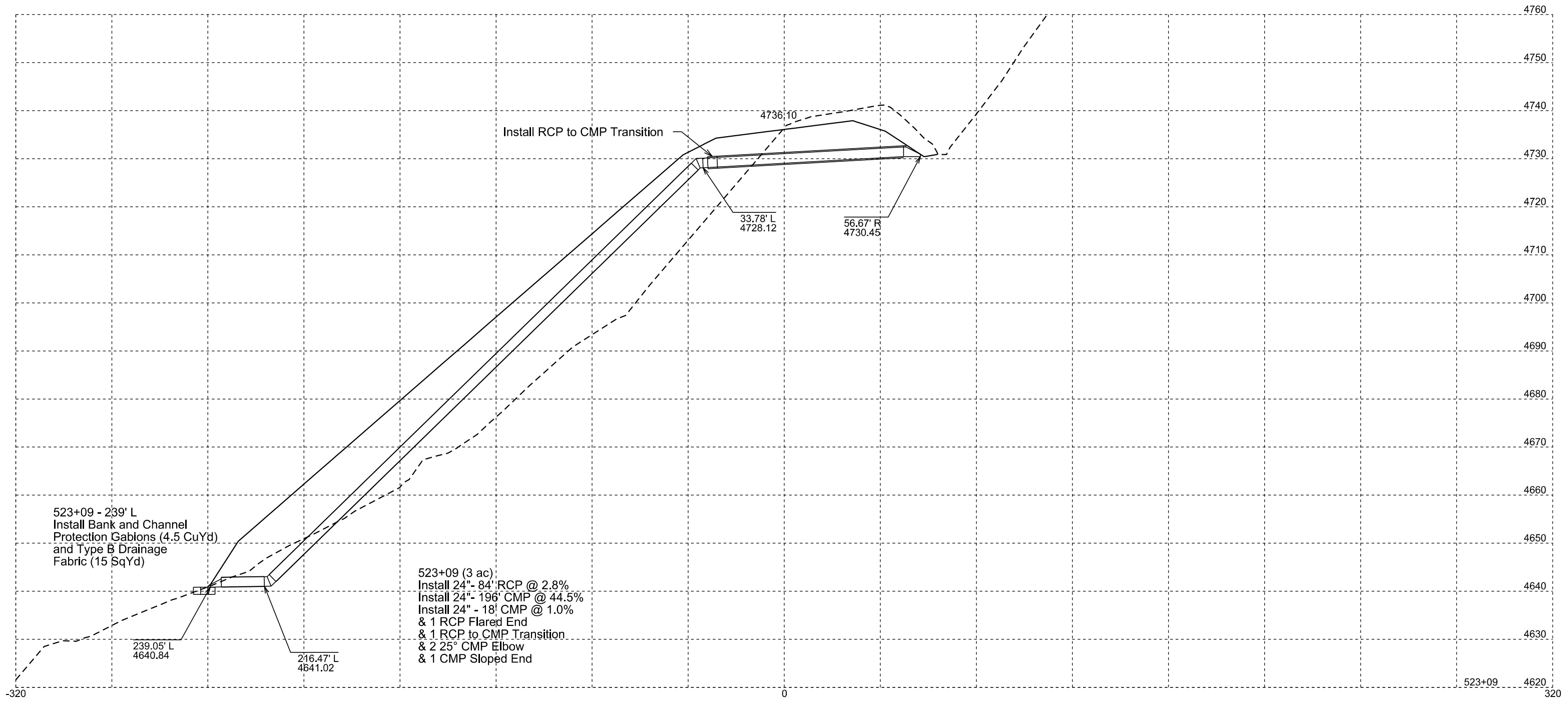
4793.99

513+20  
48.67' R  
4789.23

513+10 (1 ac)  
Install 30" - 90" RCP @ 0.6%  
Skew 12° RHF  
& 2 Sloped Ends

513+10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z43	Z48



523+09 - 239' L  
 Install Bank and Channel  
 Protection Gabions (4.5 CuYd)  
 and Type B Drainage  
 Fabric (15 SqYd)

523+09 (3 ac)  
 Install 24" - 84' RCP @ 2.8%  
 Install 24" - 196' CMP @ 44.5%  
 Install 24" - 18' CMP @ 1.0%  
 & 1 RCP Flared End  
 & 1 RCP to CMP Transition  
 & 2 25° CMP Elbow  
 & 1 CMP Sloped End

Install RCP to CMP Transition

239.05' L  
 4640.84

216.47' L  
 4641.02

33.78' L  
 4728.12

56.67' R  
 4730.45

4736.10

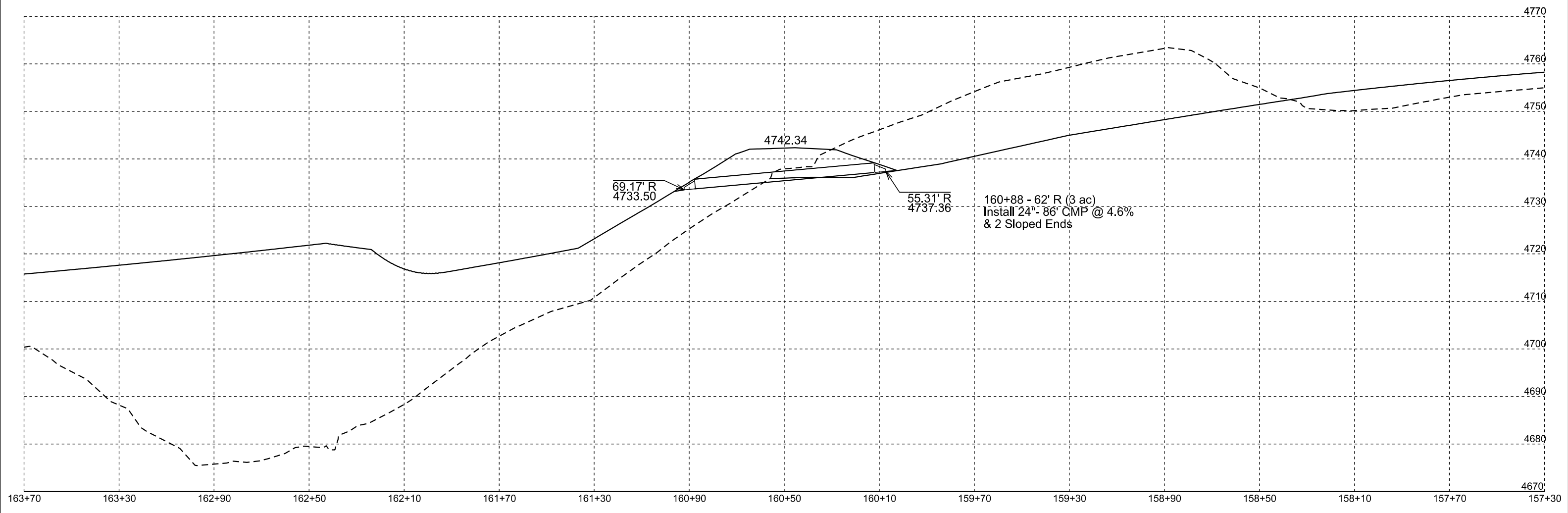
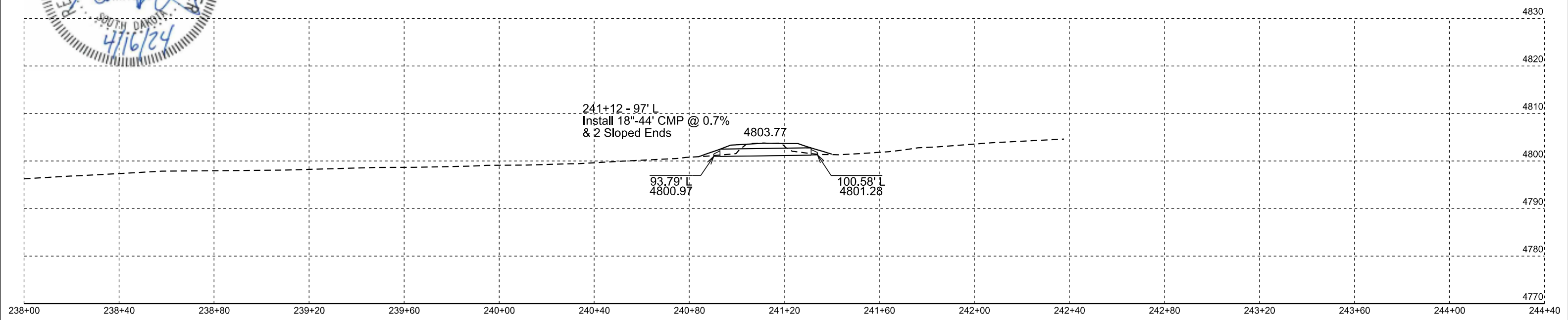
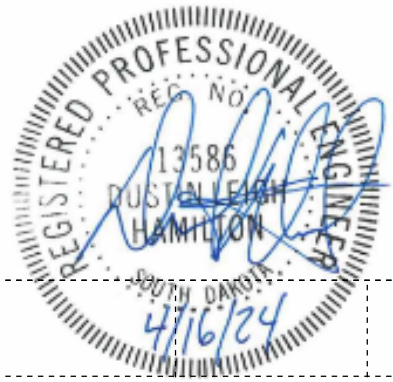
523+09 4620

-320

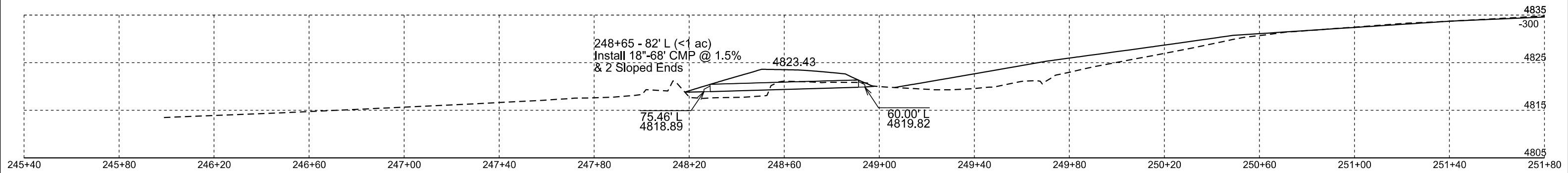
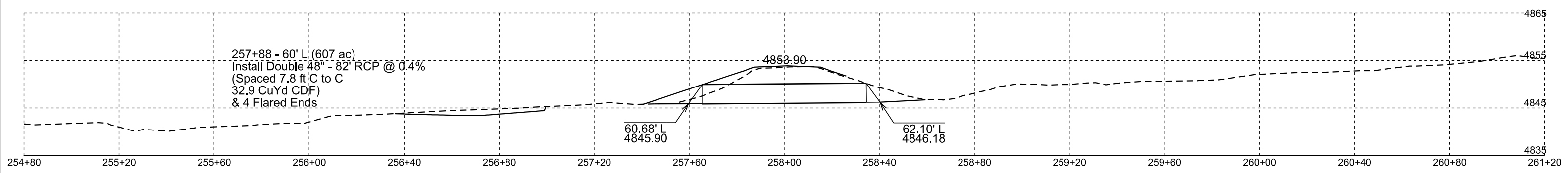
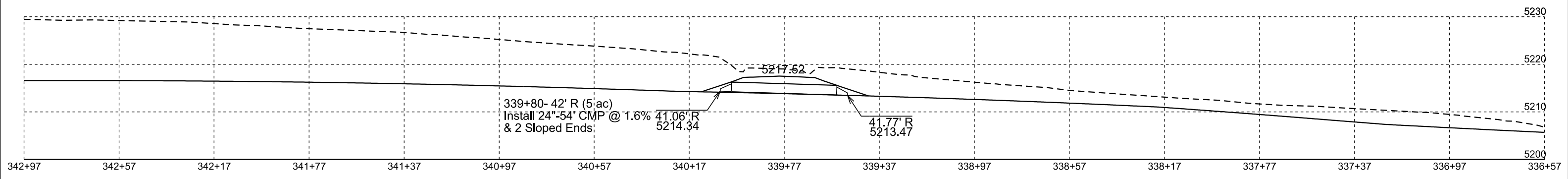
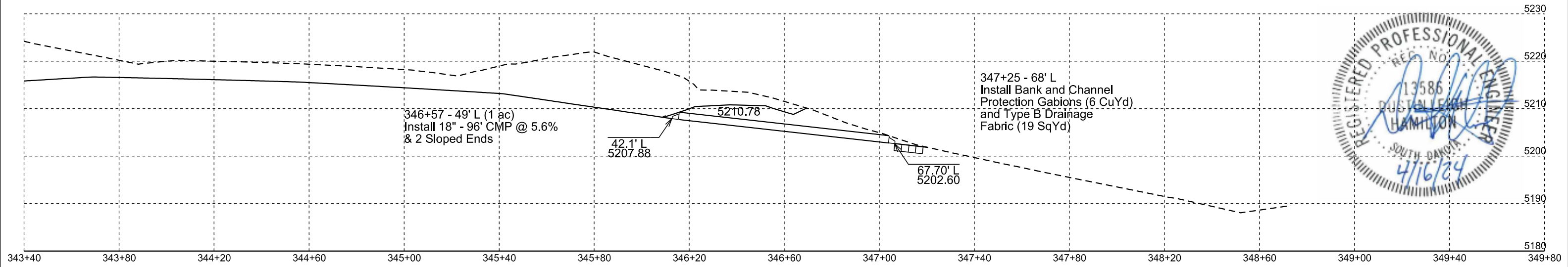
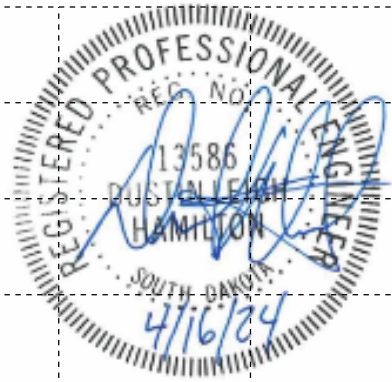
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320

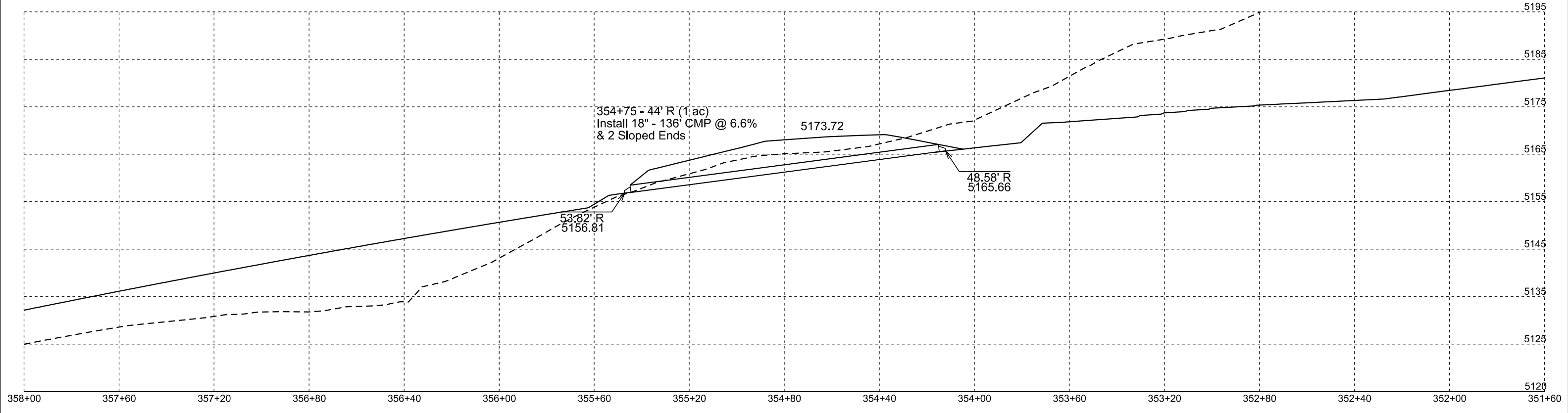
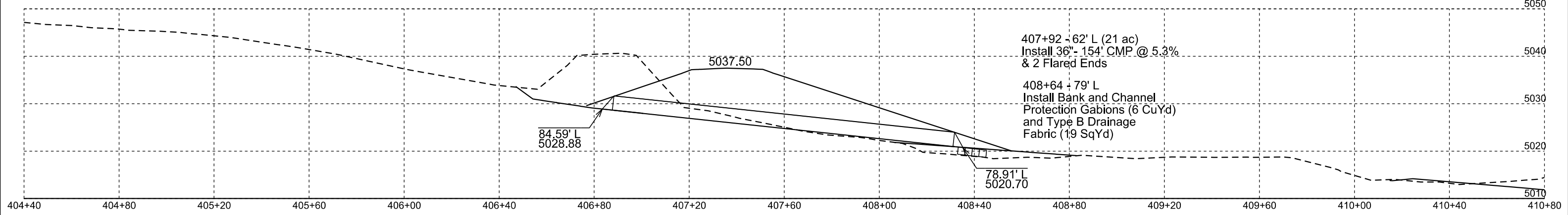
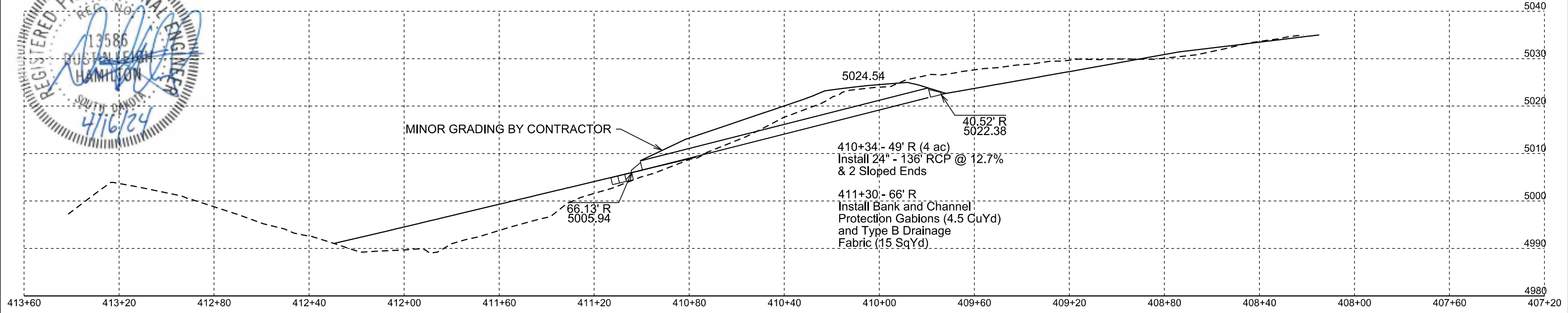
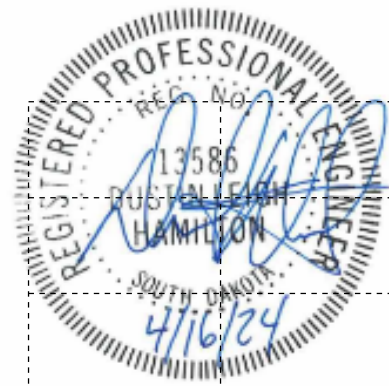
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z44	Z48



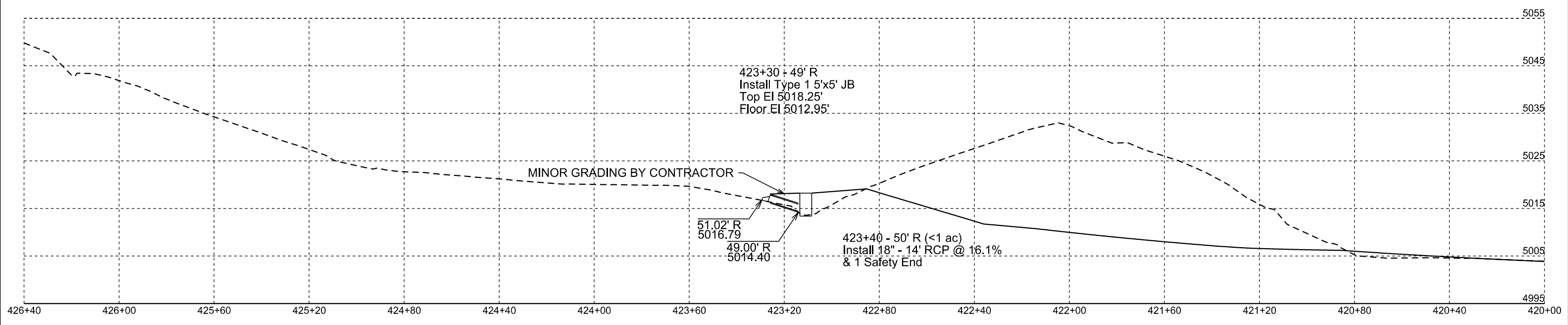
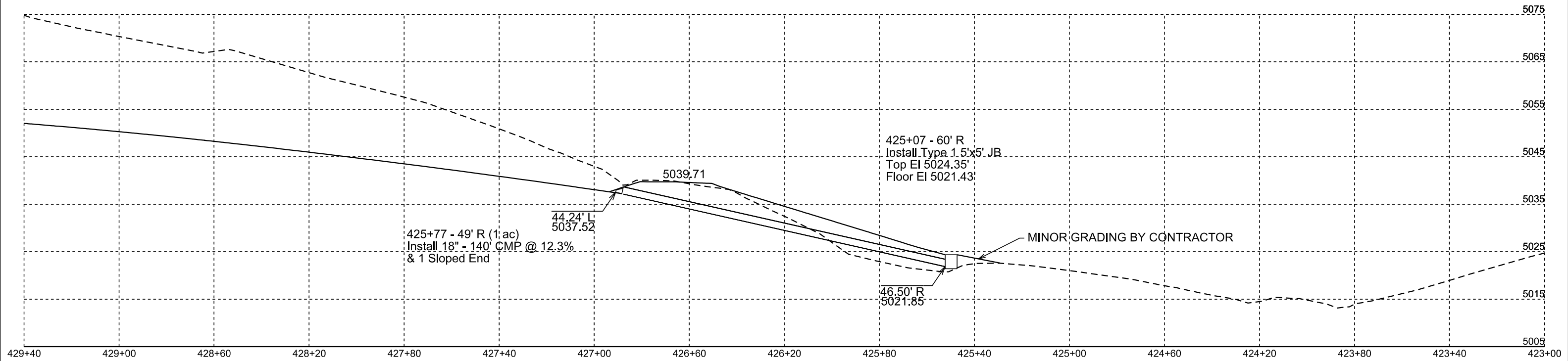
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z45	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z46	Z48



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z47	Z48





STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH-B 0385(51)87	Z48	Z48

