Job 4

FEDERAL AID CER-1305(001)
GAP ROAD

GRADING AND AGGREGATE SURFACING

4 MILES NORTH AND 10 MILES WEST OF KILLDEER

DUNN COUNTY, NORTH DAKOTA

PCN 20609

STATE OF NORTH DAKOTA

DESIGN DATA					
TRAFFIC	PASS.	TRUCKS	TOTAL	EST 30th MAX HR.	ESAL'S
CURRENT 2016	400	-	400	-	-
FORECAST 2036	539	-	539	-	-
MINIMUM SIGHT DISTANCE (STOPPING)				DESIGN SPEED	
360 FEET				45 MPH	

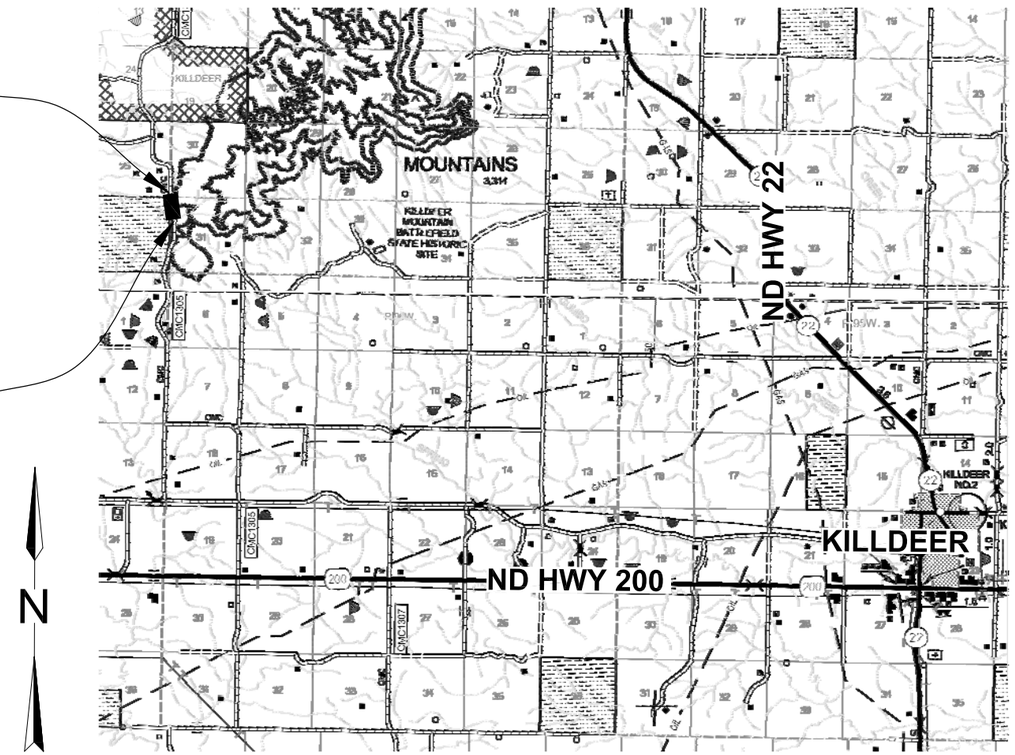
LENGTH OF PROJECT	
MILES (GROSS) 0.436	MILES (NET) 0.436

GOVERNING SPECIFICATIONS:

2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

END PROJECT: CER-1305(001)
Sta. 33+00.00 At 525.04' North and 14.58' East of the Northeast Corner of Section 36, Township 146 North, Range 97 West, 5th P.M., Dunn County, North Dakota.

BEGIN PROJECT: CER-1305(001)
Sta. 10+00.00 At 1,720.66' South and 246.49' East of the Northeast Corner of Section 36, Township 146 North, Range 97 West, 5th P.M., Dunn County, North Dakota.



I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

Jeremy Wood \s\ April 27, 2015

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NORTHERN PLAINS ENGINEERING

CER-1305(001)
DUNN COUNTY, ND
COVER SHEET

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PLAN NOTES

100-P01 **FENCES**: The County will attend to the removal of existing fences and the installation of temporary fences to the new highway right-of-way line.

100-P03 **SCOPE OF WORK:** This project consists of constructing a new alignment to the east of the existing road, grading and aggregate surfacing, and obliterating the existing roadway.

203-010 **SHRINKAGE:** 10 percent additional volume is included for shrinkage in earth embankment.

203-P01 **COMMON EXCAVATION - TYPE C**: Any item designated for removal and salvage but later determined by the County to be non-salvageable based on its condition shall be considered Contractor's property and responsible for proper disposal. Any item designated for removal and salvage shall be stored in the right of way for the County. Disposal shall be included in the price bid for "Common Excavation - Type C".

Payment for "Common Excavation - Type C" shall be paid for as plan quantity.

203-P02 **TOPSOIL:** Payment for "Topsoil" shall be plan quantity, modifying Section 203.05C of the Standard Specifications.

203-P03 **ROADWAY OBLITERATION:** The bid item "Roadway Obliteration" shall include the removal and salvaging of the existing surfacing material for use on the proposed alignment. Grade the existing roadway to the surfaces shown in the cross sections. "Topsoil", "Common Excavation-Type C", and Salvage Aggregate on the existing roadway shall be incidental to "Roadway Obliteration."

The aggregate on the existing road shall be removed and stockpiled for reuse. The Contractor shall use care while removing the aggregate to minimize contamination. The salvage aggregate will be spread evenly over the newly constructed roadway and used as temporary surfacing.

Obliteration plan and profile and cross sections shall be used for roadway obliteration. Plan mainline inslopes shall be constructed during Phase A operations. Additional inslope width shall be constructed during roadway obliteration operations.

251-P01 **SEEDING:** Seeding Class III shall consist of the following seed mixture in Section 31.

Species	Lbs. of PLS/Acre
Alfalfa	9
Western wheatgrass	4
Intermediate wheatgrass	5
Slender wheatgrass	2
Oats	32
Total	52

Seeding Class III shall consist of the following seed mixture in section 36 (State Land):

Species	Lbs. of PLS/Acre
Western wheatgrass	8
Slender wheatgrass	5
Green needlegrass	4
Side-oats grama	2
Total	19

All disturbed areas shall be seeded and will be paid at plan quantity within the design road prism. Seeding for construction activities shall be incidental to "Seeding Class III", including; staging areas, stockpile areas, and any other disturbed areas outside of the road prism.

255-P01 **DITCH CHECK:** The ditch check shall be 1.5-feet high with side slopes of 1:1 and cut to drain through the center at a minimum of 6-inches lower in elevation than the sides. "Riprap Grade II" will be used as rock material in the ditch check. "Geosynthetic Material Type S2" will be used as the soil retention blanket; which is constructed by laying the blanket under the riprap and stapling to the ground using 8-inch landscape staples on the down-stream side of the check.

261-P01 **FIBER ROLLS 12 IN:** The quantities and locations of fiber rolls listed in the plans may be increased or decreased as directed by the Engineer based on field conditions. An additional 420 LF has been provided for locations to be determined by the Engineer.

302-P01 **SALVAGE AGGREGATE:** The Salvage Aggregate is calculated at a depth of 4-inches and is included in the "Topsoil" quantity. The Salvage Aggregate will be handled the same as "Topsoil" as shown under Section 203.05C of the Standard Specifications.

704-P01 **TRAFFIC CONTROL:** Traffic control signing consists of two phases. During Phase A, the proposed signs shall be placed and remain for both phases; W20-1-48 and G20-2-48. During Phase B, Gap Road shall be closed during new alignment tie-in, for a period of ten (10) consecutive working days. The contractor shall be assessed liquidated damages for additional time Phase B remains in effect according to Specification 108.07 B. After the transition to new alignment with local traffic being allowed to pass safely, the project shall be signed according to Phase A, removing only R11-3-60 "ROAD CLOSED LOCAL TRAFFIC ONLY" and "LARGE ARROW" signs - barricade mounted.

714-P01 **PIPE CONDUIT _IN:** Mainline conduit at station 11+20 RT shall be Aluminized Type II and installed to manufacturer's recommendations. All conduits shall be constructed according to Standard Details D-714-25 and D-714-26. Geosynthetic Material Type R1 shall be bid incidental to the "Pipe Conduit __IN" bid items.

754-P01 **FLAT SHEET FOR SIGNS:** The cost of two inch (2") perforated tubular galvanized steel posts, anchors, bolt ties and fittings shall not be bid separately but shall be included in the bid item "Flat Sheet for Signs - Type XI Reflective Sheeting".

754-P02 **REMOVAL OF SIGNS:** Signs and supports located within the right-of-way shall be removed and salvaged and shall remain the property of Dunn County. The cost for removing and salvaging the signs and reinstalling the street name signs shall be included in the price bid for "Flat Sheet For Signs-Type XI Refl Sheeting."

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NORTHERN PLAINS ENGINEERING

CER-1305(001)
DUNN COUNTY, ND
PLAN NOTES

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LIST OF NDDOT STANDARD DRAWINGS

D-101-1,2,3	NDDOT Abbreviations
D-203-8	Standard Rural Approaches
D-256-1	Erosion and Siltation Controls
D-261-1	Fiber Roll Placement Details
D-704-7,8	Breakaway Systems for Construction Zone Sign Perforated Tube
D-704-9,10,11	Construction Sign Details
D-704-13	Barricade Details and Channelizing Devices
D-704-14	Construction Sign and Barricade Assembly Details
D-704-15	Road Closure Layouts
D-704-22	Construction Truck and Temporary Detour Layouts
D-714-1	Reinforced Concrete Pipe Culverts and End Sections
D-714-22	Concrete Pipe or Precast Concrete Box Culvert Ties
D-714-25 & 26	Transverse Mainline Pipe Installation Details
D-754-23	Perforated Tube Assembly Details
D-754-27	Sign Punching, Stringer & Supp Location Details Reg, Warn, & Guide Signs
D-754-29	Sign Punching, Stringer & Supp Location Details Reg, Warn, & Guide Signs

LIST OF SPECIAL PROVISIONS

SP-0003(14) Temporary Erosion and Sediment Best Management
SP-5113(14) Permits and Environmental Considerations

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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: Dunn County, the North Dakota Department of Transportation, and the Federal Highway Administration have made environmental commitments to various public agencies and the public to secure approval of this project. The environmental commitments are as follows:

Commitment No. 1: Fugitive dust emissions created during construction will be minimized.

Action Taken/Required: The contractor will implement BMP's, as appropriate, to control dust during construction. BMP's are shown in the plans and SWPPP and may include watering down the work area,

Commitment No. 2: Implement soil retention controls.

Action Taken/Required: The contractor will implement BMP's, as appropriate, to retain soil on the project.

Commitment No. 3: Lighting controls

Action Taken/Required: No work is allowed after sunset. Work only during daylight hours as temporary lighting, including portable light towers, are not permitted.

Commitment No. 4: Avoid impacts to cultural resources.

Action Taken/Required: A Class III Cultural Resources Inventory was conducted by Beaver Creek Archaeology and a "No Historic Properties Affected" determination was made. The NDDOT and SHPO have both concurred with this determination. A permitted professional archaeologist shall monitor topsoil stripping operations. The owner will pay for the services of the Archeologists to monitor the earthmoving activities near the sites. If cultural resources are found during construction, construction will be halted and the proper entities will be notified of the finding. Construction will not commence until proper procedures are followed.

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands[1]	Wetland Impacts (acres)		Wetland Mitigation				
									Mitigation Required			Bank	
							Temp.	Perm.	EO 11990	USACE	USFWS	Location	acres
1	Sec.31, T146N, R96W	PABFh	Freshwater Pond	0.47	Artificial	N	0.00	0.00	N	N	N	N/A	-
2	Sec. 36, T146N, R97W	PUBFx	Freshwater Pond	0.18	Artificial	N	0.00	0.00	N	N	N	N/A	-
3a	Sec.25, T146N, R97W	PEMFh	Freshwater Emergent Wetland	0.51	Artificial	N	0.00	0.00	N	N	N	N/A	-
3b	Sec.25, T146N, R97W	PABFh	Freshwater Pond	0.46	Artificial	N	0.00	0.00	N	N	N	N/A	-
			Totals	**1.62**			**0.00**	**0.00**					**0**

[1] A wetland Jurisdictional Determination was issued by the USACE on 2/19/2014; NWO-2014-0332-BIS.

[2] All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to artificial/jurisdictional wetlands require mitigation.

[3] All artificial/non-jurisdictional, deep water (impacts greater than 6.6 feet), Other Waters less than 300 linear feet (determined by the USACE on a case by case), and temporary impacts do not require mitigation.

Summary Impact Table

Total Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.00
Natural/Non-JD	0.00	Non-JD Temporary	0.00
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial /Non-JD	0.00	Permanent OW	0
Total	0.00	Temporary OW	0

Other Waters Impact Table

Other Waters											Other Water Mitiga		
			Size				Impacts to Other Waters				Mitigation Required		
							Acres		Linear Feet				
Number	Location	Type	Acres	Linear Feet	Feature	USACE Jurisdictional[1]	Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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NORTHERN PLAINS ENGINEERING

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ENVIRONMENTAL COMMITMENTS

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BASIS OF ESTIMATE

WATER

50 MGal/Mi Dust Palliative
10 Gal/CY Common Exc.
60 MGal/Mi Aggr. Surface Course

AGGREGATE SURFACE COURSE CL 13 (Volume +25%)

4,791 TON/Mile
45 TON/Section Line (1 Total)
27 TON/Field Drive (1 Total)

TOPSOIL

4" Depth - Mainline
12" Depth - Obliteration

AVERAGE HAUL

3.87 Sta

SEEDING - CLASS III - MAINLINE

Total Disturbed Area less Surfaced Area = Min 7.8 Acres to Max 10.7 Acres

SEEDING - CLASS III - OBLITERATION

Total Disturbed Area less Surfaced Area = Min 3.0 Acres to Max 6.2 Acres

SIGN SUPPORT LENGTHS

Assembly No. 1 (Single support)
Assembly No. 2 (Single support)
Assembly No. 3 (Single support)
Posts shall be 2" perforated tube (12.0' Min.)
Anchors shall be 2.25" tubing with anchor plate attached

FIBER ROLLS 12 IN

An additional 420 LF of fiber rolls have been included to be used at the discretion of the Engineer.

DITCH CHECK

Riprap Grade II = 16' x 3' x 1.5' Height
Geosynthetic Material Type S2 = 16' X 5'

CLEARING & GRUBBING

7.8 Acres

SUMMARY OF QUANTITIES

SPEC	CODE	DESCRIPTION	UNIT	TOTAL
103	100	CONTRACT BOND	LSUM	1
201	330	CLEARING & GRUBBING	LSUM	1
202	127	REMOVE & SALVAGE CULVERT-ALL TYPES & SIZES	LF	214
203	103	COMMON EXCAVATION-TYPE C	CY	68,669
203	109	TOPSOIL	CY	4,993
203	180	ROADWAY OBLITERATION	LF	1,850
216	100	WATER	MGAL	732
251	350	SEEDING CLASS III	MILE	0.4
251	2001	TEMPORARY COVER CROP	MILE	0.4
253	101	STRAW MULCH	ACRE	17
256	200	RIPRAP GRADE II	CY	67
261	112	FIBER ROLLS 12IN	LF	4,620
261	113	REMOVE FIBER ROLLS 12IN	LF	4,620
302	356	AGGREGATE SURFACE COURSE CL 13	TON	2,161
702	100	MOBILIZATION	LSUM	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	634
704	1052	TYPE III BARRICADE	EA	8
704	1060	DELINEATOR DRUMS	EA	10
704	1081	VERTICAL PANELS - BACK TO BACK	EA	20
709	162	GEOSYNTHETIC MATERIAL TYPE S2	SY	71
714	4105	PIPE CONDUIT 24IN	LF	8
714	4110	PIPE CONDUIT 30IN	LF	210
714	4125	PIPE CONDUIT 48IN	LF	200
714	9200	CATTLE PASS CONC INTERMED SECTION	LF	60
714	9350	END SECTION CONC CATTLE PASS	EA	2
754	110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	EA	17.6

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DUNN COUNTY, ND
SUMMARY OF QUANTITIES

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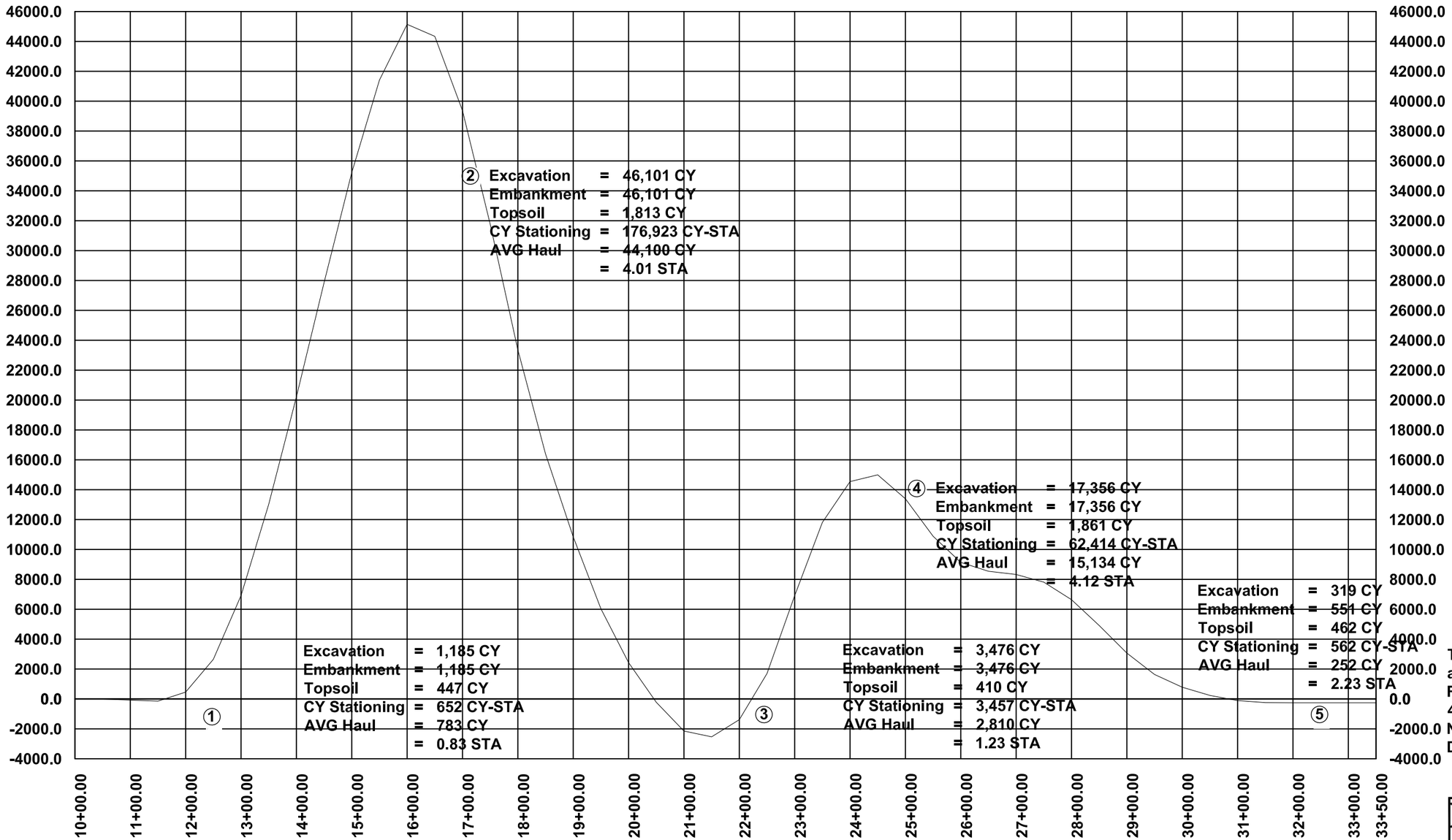
MASS HAUL DIAGRAM



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MASS HAUL DIAGRAM

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MASS HAUL TABLE

Station	Area (SF)		Volume (CY)	
	End Area Excavation	End Area Embankment	Excavation	Embankment
10+00	0.00	0.00	0.00	0.00
10+50	65.05	63.17	60.23	64.34
11+00	0.73	360.83	121.14	496.20
11+50	90.45	134.59	205.56	1000.79
12+00	677.37	32.02	925.78	1172.17
12+50	1584.66	9.25	3148.87	1213.12
13+00	2763.51	30.11	7415.04	1248.65
13+50	3518.96	96.25	13516.82	1361.82
14+00	4000.66	99.00	20704.38	1535.00
14+50	4134.65	24.21	28359.17	1643.23
15+00	3806.82	0.00	35717.72	1664.35
15+50	3003.23	0.00	41917.75	1664.35
16+00	1099.42	10.83	45716.50	1675.38
16+50	175.17	1776.17	46896.68	3495.47
17+00	0.00	3177.21	47072.26	8502.73
17+50	0.00	4261.98	47072.26	16076.08
18+00	34.64	3846.24	47101.93	24424.70
18+50	50.06	2784.45	47174.84	31317.60
19+00	0.00	2500.61	47218.08	36809.57
19+50	0.00	2090.30	47218.08	41579.31
20+00	35.45	1322.54	47249.03	45144.73
20+50	19.52	1157.44	47297.01	47752.97
21+00	17.57	691.27	47329.69	49692.48
21+50	347.01	62.78	47662.65	50477.84
22+00	951.33	123.84	48850.97	50679.53
22+50	2477.77	21.85	52026.07	50827.91
23+00	3294.19	0.00	57370.48	50850.17
23+50	2178.06	0.00	62437.38	50850.17
24+00	977.41	0.00	65359.11	50850.17
24+50	138.79	392.75	66392.62	51250.19
25+00	4.14	1269.26	66524.97	52942.97
25+50	0.00	1294.61	66528.81	55554.32
26+00	179.33	608.84	66694.86	57493.02
26+50	284.46	349.85	67124.30	58469.47
27+00	254.54	337.52	67623.38	59169.57
27+50	172.21	557.81	68018.52	60081.47
28+00	0.00	790.94	68177.97	61455.19
28+50	0.00	957.09	68177.97	63235.59
29+00	0.00	871.08	68177.97	65097.62
29+50	0.00	530.82	68177.97	66525.48
30+00	7.83	309.93	68185.22	67381.80
30+50	4.92	233.14	68197.02	67934.93
31+00	19.62	137.06	68219.73	68311.97
31+50	50.12	59.39	68284.30	68512.06
32+00	32.18	35.04	68360.51	68608.23
32+50	24.34	11.60	68412.84	68655.73
33+00	1.43	1.60	68436.70	68669.15

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MASS HAUL TABLE

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DRAINAGE DATA

LOCATION	25 YEAR DESIGN FREQUENCY						100 YEAR DESIGN FREQUENCY		CULVERT LENGTH		
	SIZE (IN.)	DRAINAGE AREA (ACRES)	DESIGN H.W. (FT.)	DESIGN DISCHARGE (C.F.S.)	DESIGN VELOCITY (F.P.S.)	MAX STAGE ELEV.	DESIGN DISCHARGE (C.F.S.)	MAX STAGE ELEV.	24"	30"	48"
MILE 1											
STA. 11+00 CSP C.L.	24"	N/A							84'		
STA. 17+65 RCP C.L.	48"	191.4	2,823.2	132.0	11.0	48.1	205.5	2,829.6			200'
STA. 25+35 RCP C.L.	30"	17.2	2,869.4	23.8	5.1	71.2	37.2	2,870.7		100'	
STA. 28+65 RCP C.L.	30"	5.2	2,857.2	10.3	2.1	62.0	16.2	2,857.4		110'	

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SUPERELEVATION DATA

STA	LT SLOPE	RT SLOPE
10+50	-3.33	-2.96
11+00	-3.33	-0.72
11+50	-3.33	1.53
12+00	-3.78	3.78
12+50	-4.00	4.00
13+00	-4.00	4.00
13+50	-4.00	4.00
14+00	-4.00	4.00
14+50	-4.00	4.00
15+00	-4.00	4.00
15+50	-2.33	2.33
16+00	-0.11	0.11
16+50	2.11	-2.11
17+00	4.00	-4.00
17+50	4.00	-4.00
18+00	4.00	-4.00
18+50	4.00	-4.00
19+00	4.00	-4.00
19+50	4.00	-4.00
20+00	4.00	-4.00
20+50	4.00	-4.00
21+00	4.00	-4.00
21+50	4.00	-4.00
22+00	3.95	-3.95
22+50	1.51	-3.33
23+00	-0.76	-3.33
23+50	-3.02	-3.33

CURVE DATA

MAINLINE CURVE 1
PC STA=11+87.11
PT STA=15+61.33
DELTA=30°37'49"
LENGTH=374.22'
RADIUS=700.00'
PI NORTHING= 98,950.85
PI EASTING= 100,038.31

MAINLINE CURVE 2
PC STA=16+44.65
PT STA=22+16.08
DELTA=32°44'27"
LENGTH=571.44'
RADIUS=1000.00'
PI NORTHING= 98,460.53
PI EASTING= 100,326.53

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NORTHERN PLAINS ENGINEERING

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DUNN COUNTY, ND
ALIGNMENT DETAILS

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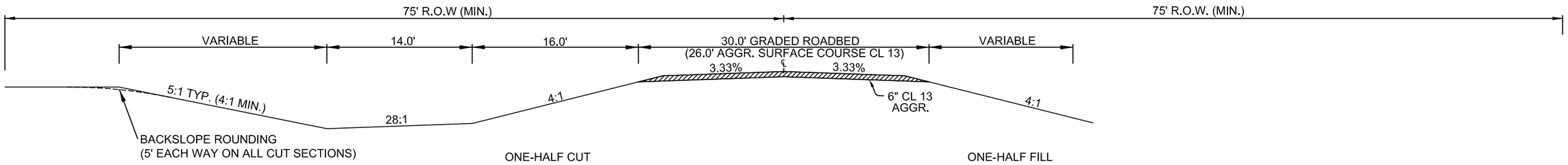
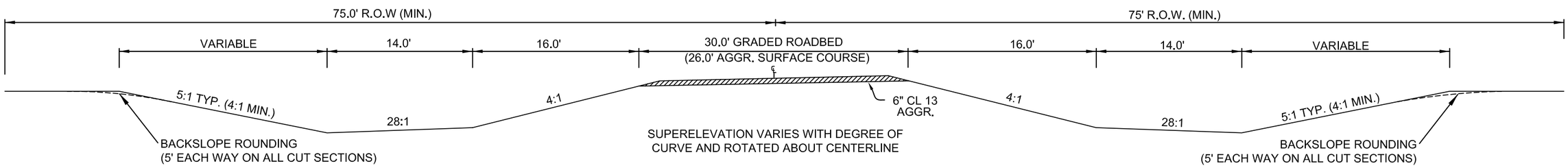
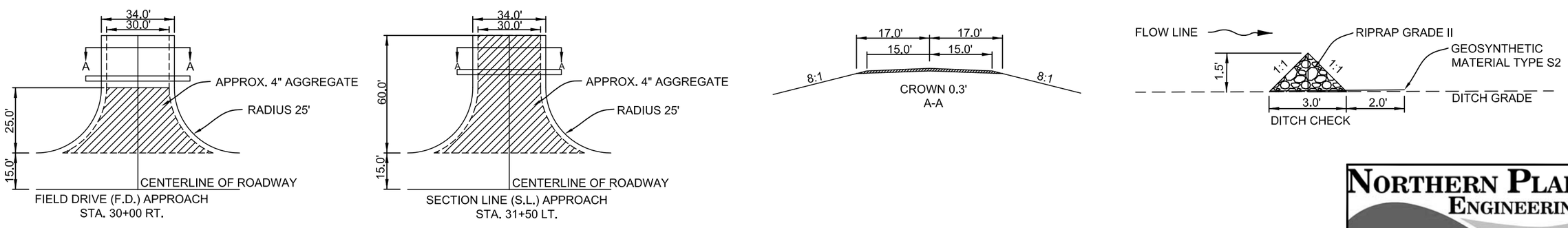
TYPICAL SECTIONS



TANGENT MAINLINE
STA 10+00 TO 10+50
STA 23+50 TO 33+00



SUPERELEVATION MAINLINE
STA 10+50 TO 23+50



APPROACH AND DITCH CHECK

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TYPICAL SECTIONS

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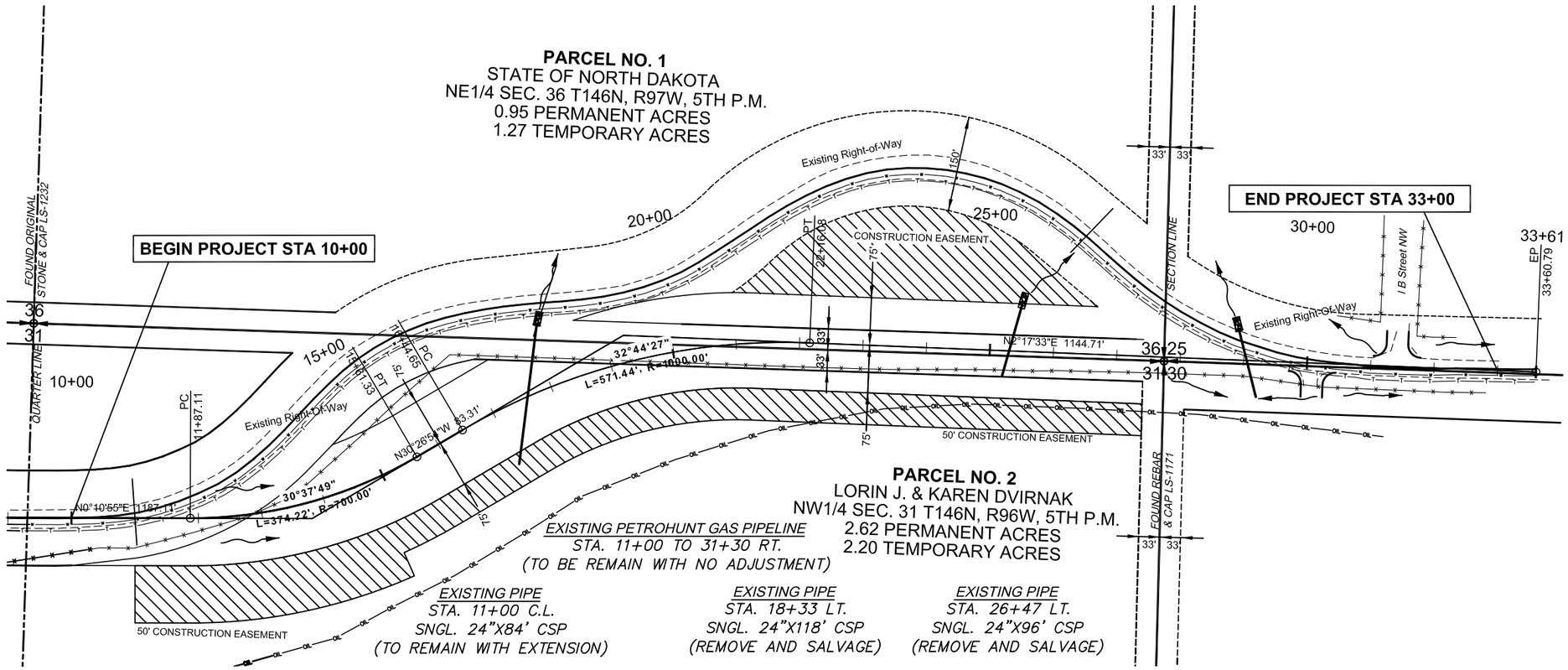


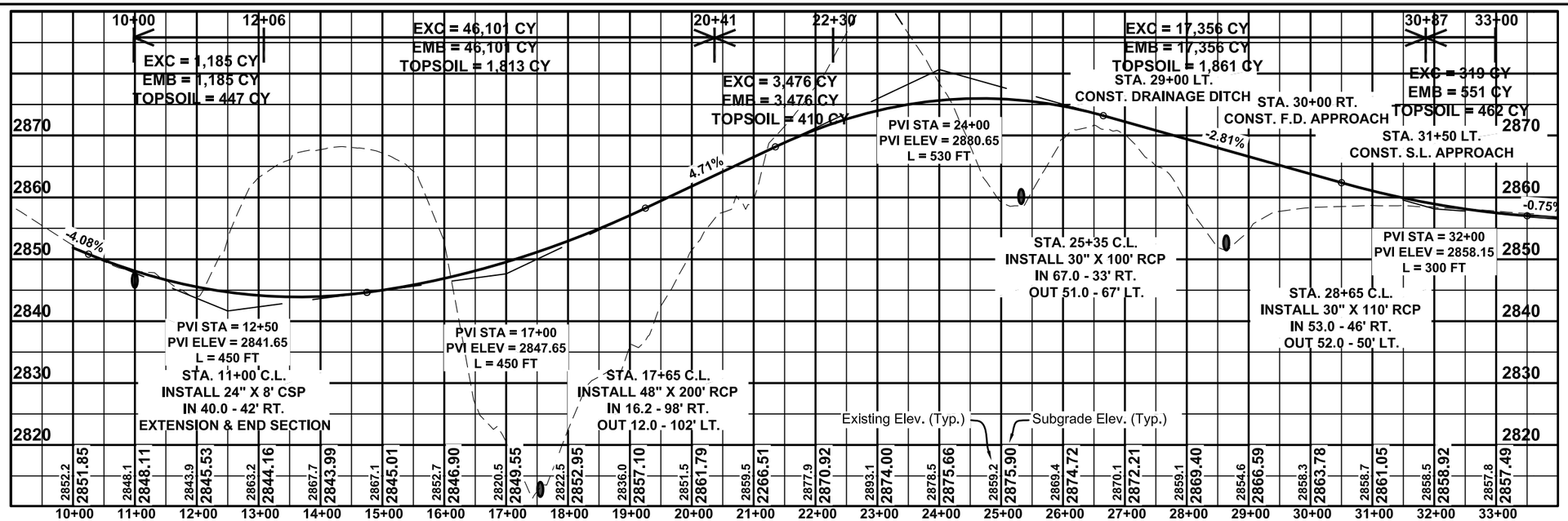
INSTALL PIPE CULVERTS
STA. 11+00 C.L. 24" X 8' CSP (& END SECTION)
STA. 17+65 C.L. 48" X 200' RCP, SKEW 32° RT. & BK.
STA. 25+35 C.L. 30" X 100' RCP, SKEW 14° RT. & BK.
STA. 28+65 C.L. 30" X 110' RCP, SKEW 16° RT. & AH.

INSTALL CATTLE PASS
STA. 11+30 C.L. 5' X 7' X 60 LF RCP

INSTALL REFLECTIVE SIGNS
STA. 10+00 - 30' RT. W1-4-30 - 6.3 SF
STA. 24+00 - 30' LT. W1-4-30 - 6.3 SF
STA. 31+00 - 30' LT. R2-1-24 - 5.0 SF

INSTALL RIPRAP 12IN
STA. 17+65 LT. - 15 CY (10' X 20' X 2' DEPTH)
STA. 25+35 LT. - 15 CY (10' X 20' X 2' DEPTH)
STA. 29+10 LT. - 15 CY (10' X 20' X 2' DEPTH)

SCALE:
1"=200' HORIZ.
1'=20' VERT.



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NORTHERN PLAINS ENGINEERING

CER-1305(001)
GAP ROAD
DUNN COUNTY, ND
PLAN & PROFILE SHEET

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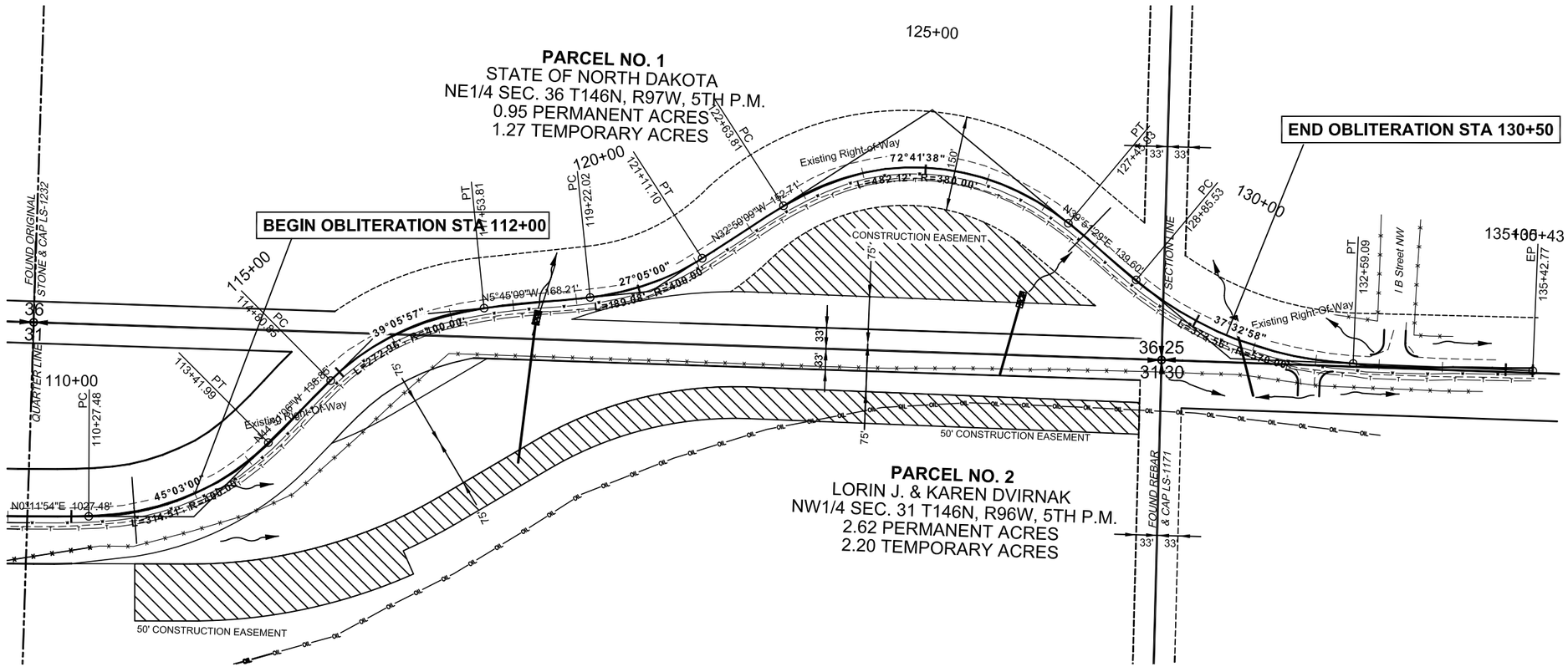

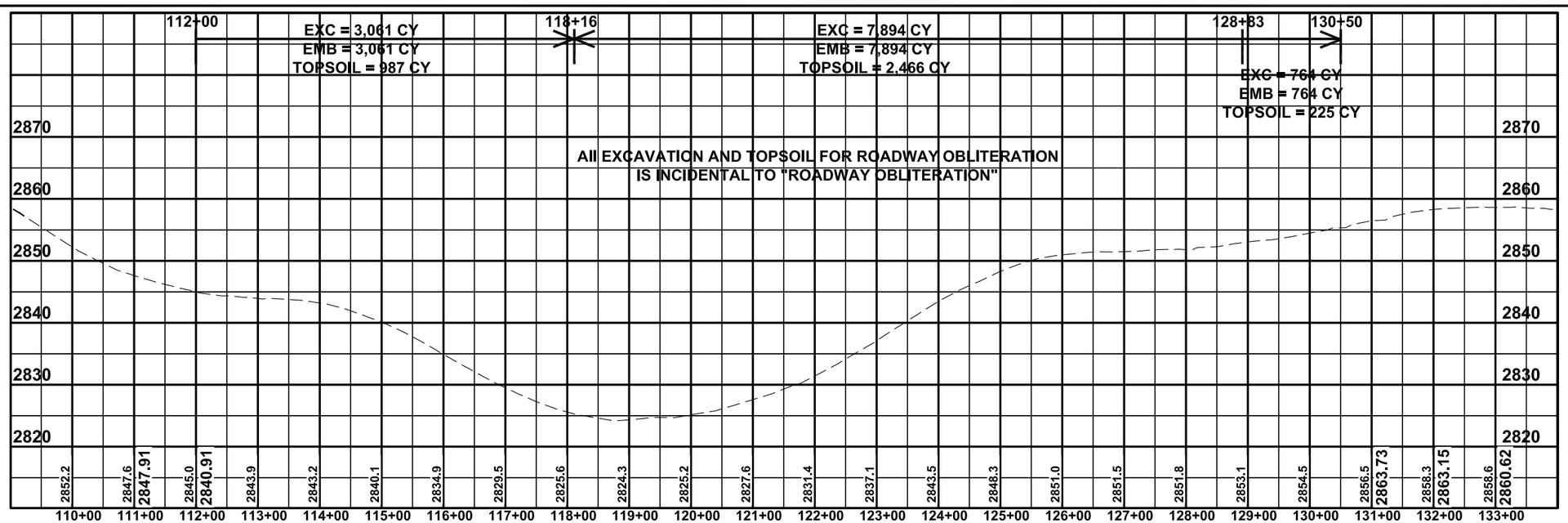

SCALE:
1"=200' HORIZ.
1'=20' VERT.

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NORTHERN PLAINS ENGINEERING

CER-1305(001)
GAP ROAD
DUNN COUNTY, ND
RDWY OBLITERATION SHEET

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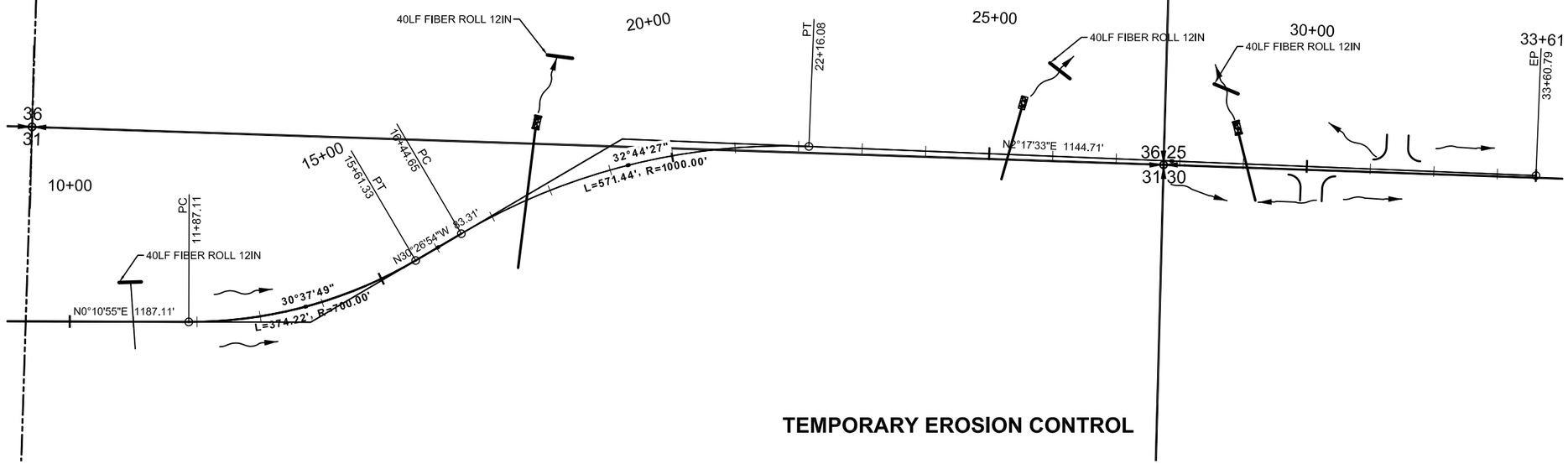
EROSION CONTROL

TEMPORARY FIBER ROLLS 12 IN

STA. 10+75 TO 11+05 LT. - 40 LF
STA. 18+10 TO 18+50 LT. - 40 LF
STA. 25+40 TO 25+80 LT. - 40 LF
STA. 28+70 TO 29+10 LT. - 40 LF



TEMPORARY EROSION CONTROL

N

SCALE:
1"=200' HORIZ.
1'=20' VERT.

INSTALL GEOSYNTHETIC MATERIAL TYPE-S2

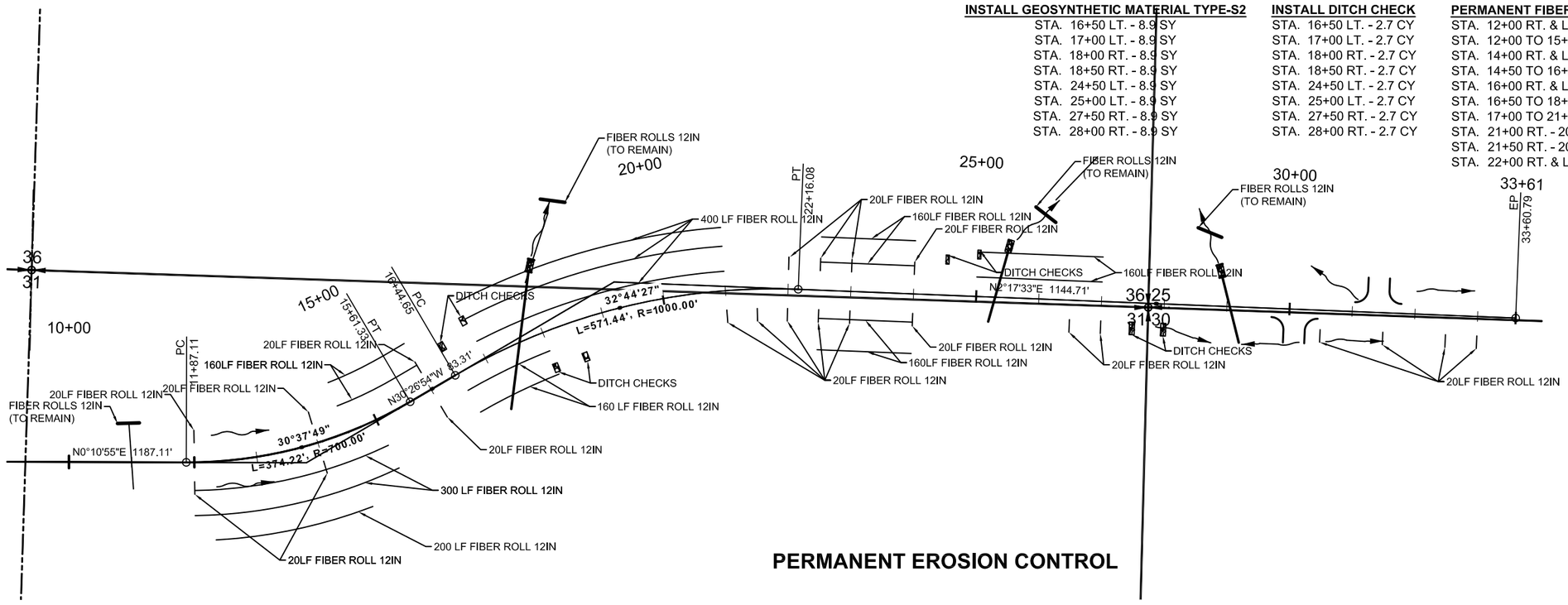
STA. 16+50 LT. - 8.9 SY
STA. 17+00 LT. - 8.9 SY
STA. 18+00 RT. - 8.9 SY
STA. 18+50 RT. - 8.9 SY
STA. 24+50 LT. - 8.9 SY
STA. 25+00 LT. - 8.9 SY
STA. 27+50 RT. - 8.9 SY
STA. 28+00 RT. - 8.9 SY

INSTALL DITCH CHECK

STA. 16+50 LT. - 2.7 CY
STA. 17+00 LT. - 2.7 CY
STA. 18+00 RT. - 2.7 CY
STA. 18+50 RT. - 2.7 CY
STA. 24+50 LT. - 2.7 CY
STA. 25+00 LT. - 2.7 CY
STA. 27+50 RT. - 2.7 CY
STA. 28+00 RT. - 2.7 CY

PERMANENT FIBER ROLLS 12 IN

STA. 12+00 RT. & LT. - 40 LF
STA. 12+00 TO 15+00 RT. - 800 LF
STA. 14+00 RT. & LT. - 40 LF
STA. 14+50 TO 16+00 LT. - 320 LF
STA. 16+00 RT. & LT. - 40 LF
STA. 16+50 TO 18+00 RT. - 320 LF
STA. 17+00 TO 21+00 LT. - 1,200 LF
STA. 21+00 RT. - 20 LF
STA. 21+50 RT. - 20 LF
STA. 22+00 RT. & LT. - 40 LF
STA. 22+50 RT. & LT. - 40 LF
STA. 22+50 TO 24+00 RT. & LT. - 640 LF
STA. 23+00 RT. & LT. - 40 LF
STA. 24+00 RT. & LT. - 40 LF
STA. 25+00 TO 27+00 LT. - 320 LF
STA. 26+50 RT. - 20 LF
STA. 27+00 RT. - 20 LF
STA. 30+50 RT. - 20 LF
STA. 31+50 RT. - 20 LF
STA. 32+50 RT. - 20 LF
STA. 33+00 RT. - 20 LF



PERMANENT EROSION CONTROL

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NORTHERN PLAINS ENGINEERING

CER-1305(001)
GAP ROAD
DUNN COUNTY, ND
EROSION CONTROL

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SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"X6"	STREET NAME SIGN (Sign and installation only		6	
G20-1a-60	60"x24"	ROAD WORK NEXT_MILES		34	
G20-1b-60	60"x24"	WORK IN PROGRESS/NO WORK IN PROGRESS (Sign and installation only)		26	
G20-2a-48	**48"x24"**	**END ROAD WORK**	**2**	**19**	**38**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME		18	
G20-10-108	108"x48"	CONTRACTOR SIGN		64	
G20-50a-72	72"x36"	ROAD WORK NEXT_MILES RT & LT ARROWS		37	
G20-52a-72	72"x24"	ROAD WORK NEXT_MILES RT OR LT ARROW		30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT		59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and install only)		10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and install only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and install only)		10	
M3-1-24	24"x12"	NORTH (Mount on route marker post)		7	
M3-2-24	24"x12"	EAST (Mount on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mount on route marker post)		7	
M4-4-24	24"x12"	WEST (Mount on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mount on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT		23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT (Mounted on route marker post)		7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)		7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)		7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)		7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)		7	
R1-1-48	48"x48"	STOP		32	
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back		5	
R1-2-60	60"x60"	YIELD		29	
R2-1-48	48"x60"	SPEED LIMIT_		39	
R2-1a-24	24"x18"	MINIMUM FEE $80 (Mounted on Speed Limit post)		10	
R3-7-48	48"X48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT		35	
R4-1-48	48"x60"	DO NOT PASS		39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT		13	
R7-1-12	12"x18"	NO PARKING		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED		28	
R11-3-60	**60"x30"**	**ROAD CLOSED LOCAL TRAFFIC ONLY**	**2**	**31**	**62**
R11-3a-60	**60"x30"**	**ROAD CLOSED_MILES AHEAD LOCAL TRAFFIC ONLY**	**2**	**31**	**62**
R11-3c-60	60"x30"	STREET CLOSED_MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC		31	
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW		35	
W1-4-48	**48"x48"**	**RIGHT or LEFT REVERSE CURVE ARROW**	**4**	**35**	**140**
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-6-48	**48"x24"**	**LARGE ARROW**	**2**	**26**	**52**
W3-1-48	48"x48"	STOP AHEAD SYMBOL		35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL		35	
W3-4-48	48"x48"	BE PREPARED TO STOP		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD		35	
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL		35	
W8-1-48	48"x48"	BUMP		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF		35	
W8-11-48	48"x48"	UNEVEN LANES		35	
W8-12-48	48"x48"	NO CENTER STRIPE		35	
W8-53-48	**48"x48"**	**TRUCKS ENTERING HIGHWAY**	**4**	**35**	**140**
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD OR _FT.		35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD OR_FT.		35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL		35	
W13-1-24	24"x24"	_MPH ADVISORY SPEED PLATE (Mount on warning sign post)		11	
W13-4-48	48"x60"	RAMP ARROW		39	
W14-3-48	48"x36"	NO PASSING ZONE		23	
W20-1-48	48"x48"	ROAD WORK AHEAD or _FT or MILE		35	
W20-2-48	48"x48"	DETOUR AHEAD or _FT		35	
W20-3-48	**48"x48"**	**ROAD or STREET CLOSED AHEAD or _FT.**	**4**	**35**	**140**
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or _FT.		35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or _FT.		35	
W20-7a-48	48"x48"	FLAGGING SYMBOL		35	
W20-7k-24	24"x18"	_FEET (Mounted on warning sign post)		10	
W20-8-48	48"x48"	STREET CLOSED		35	
W20-51-48	48"x48"	EQUIPMENT WORKING		35	
W20-52-54	54"x12"	NEXT_MILES (Mounted on warning sign post)		12	
W21-1a-48	48"x48"	WORKERS SYMBOL		35	
W21-2-48	48"x48"	FRESH OIL		35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or _FT		35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5-48	48"X48"	SHOULDER WORK		35	
W21-5a-48	48"X48"	RIGHT or LEFT SHOULDER CLOSED		35	
W21-5b-48	48"X48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or _ FT.		35	
W21-6a-48	48"X48"	SURVEY CREW AHEAD		35	
W21-50-48	48"X48"	BRIDGE PAINTING AHEAD or _ FT.		35	
W21-51-48	48"X48"	MATERIAL ON ROADWAY		35	
W22-8-48	48"X48"	FRESH OIL LOOSE ROCK		35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)		11	

SPECIAL SIGNS

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**634**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH	
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH	
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH	
704-1050	TYPE I BARRICADES	EACH	
704-1051	TYPE II BARRICADES	EACH	
704-1052	**TYPE III BARRICADES**	**EACH**	**8**
704-1060	**DELINEATOR DRUMS**	**EACH**	**10**
704-1065	TUBULAR MARKERS	EACH	
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1081	**VERTICAL PANELS - BACK TO BACK**	**EACH**	**20**
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH	
704-1095	TYPE B FLASHERS	EACH	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	
762-1500	OBLITERATION OF PVMT MK	SF	
772-2110	FLASHING BEACON - POST MOUNTED	EACH	

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
http://www.dot.nd.gov/

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NORTHERN PLAINS ENGINEERING

CER-1305(001)
DUNN COUNTY, ND
TRAFFIC CONTROL DEVICES

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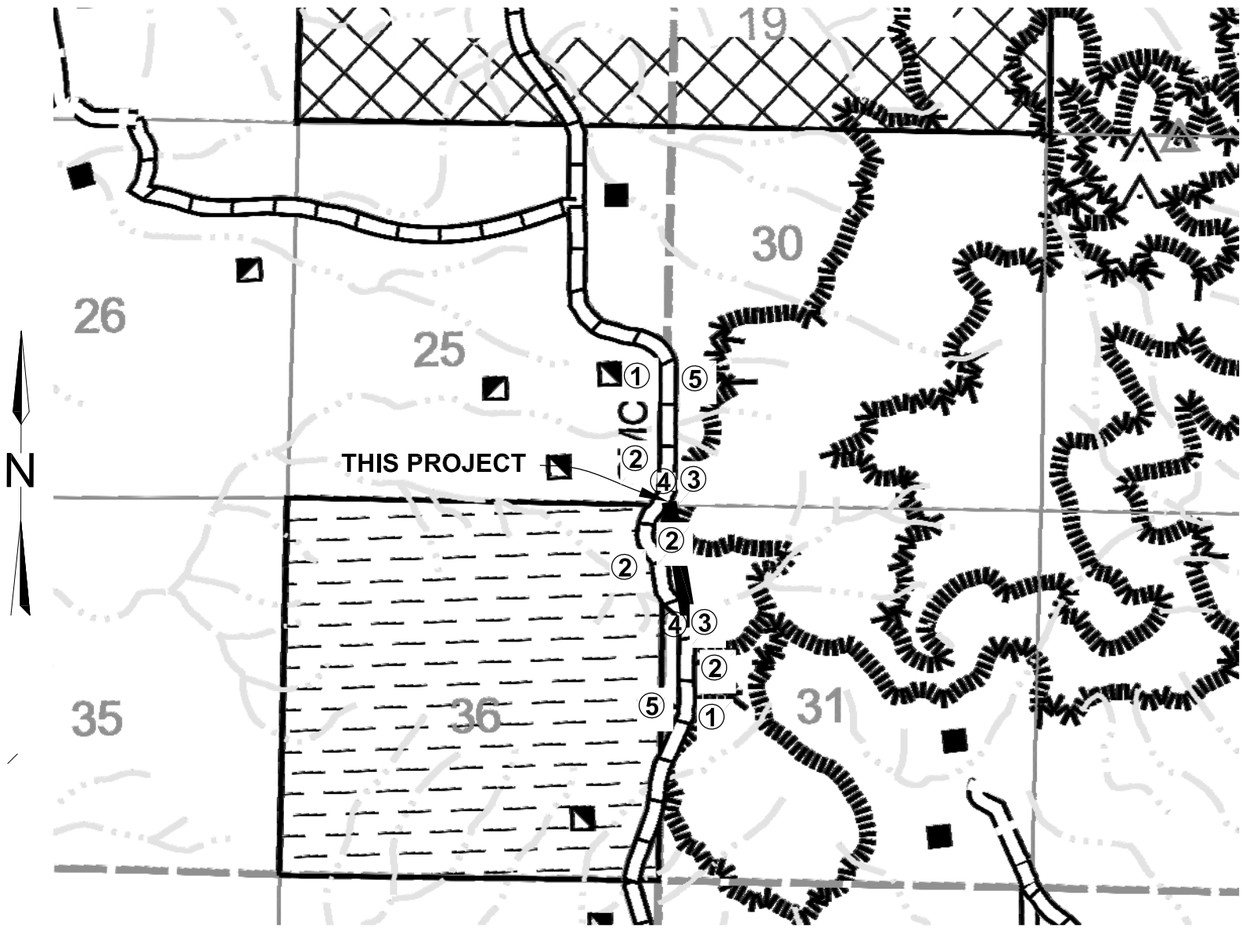
CONSTRUCTION SIGN LAYOUT - PHASE A



①	W20-1-48	ROAD WORK XXX FT
②	W1-4-48	RIGHT OR LEFT REVERSE CURVE ARROW WITH W13-1-30 ATTACHED
③	R11-3-60	ROAD CLOSED LOCAL TRAFFIC ONLY (BARRICADE MOUNTED)
④	W1-6-48	LARGE ARROW (BARRICADE MOUNTED)
⑤	G20-2-48	END ROAD WORK

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DUNN COUNTY, ND
CONST. SIGN LAYOUT

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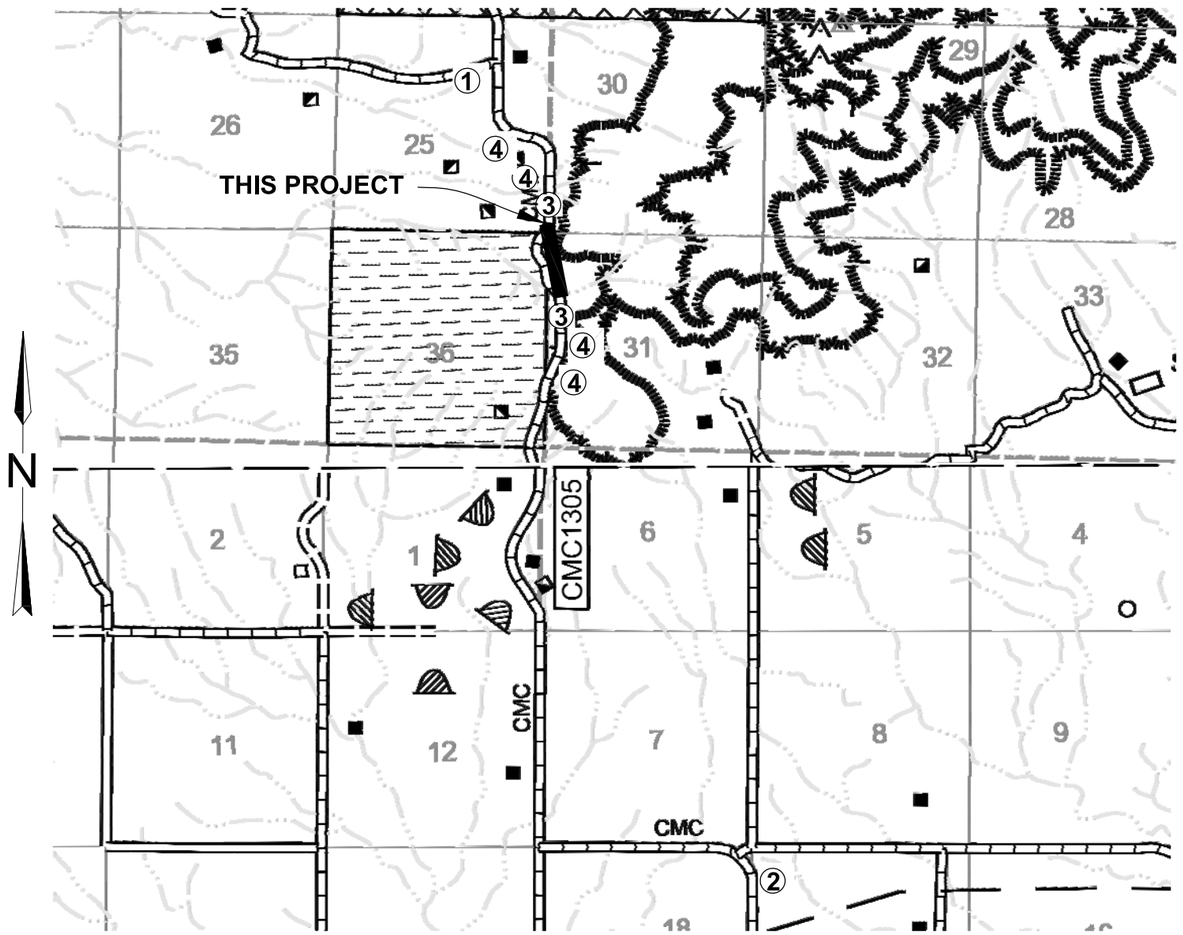
CONSTRUCTION SIGN LAYOUT - PHASE B

①	R11-3a-60	ROAD CLOSED 0.8 MILES AHEAD LOCAL TRAFFIC ONLY	BARRICADE MOUNTED
②	R11-3a-60	ROAD CLOSED 3.6 MILES AHEAD LOCAL TRAFFIC ONLY	BARRICADE MOUNTED
③	R11-3-60	ROAD CLOSED LOCAL TRAFFIC ONLY	BARRICADE MOUNTED (3 EACH LOCATION)
④	W20-3-48	ROAD CLOSED XXX FT	POST MOUNTED



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NORTHERN PLAINS ENGINEERING

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DUNN COUNTY, ND
CONST. SIGN LAYOUT

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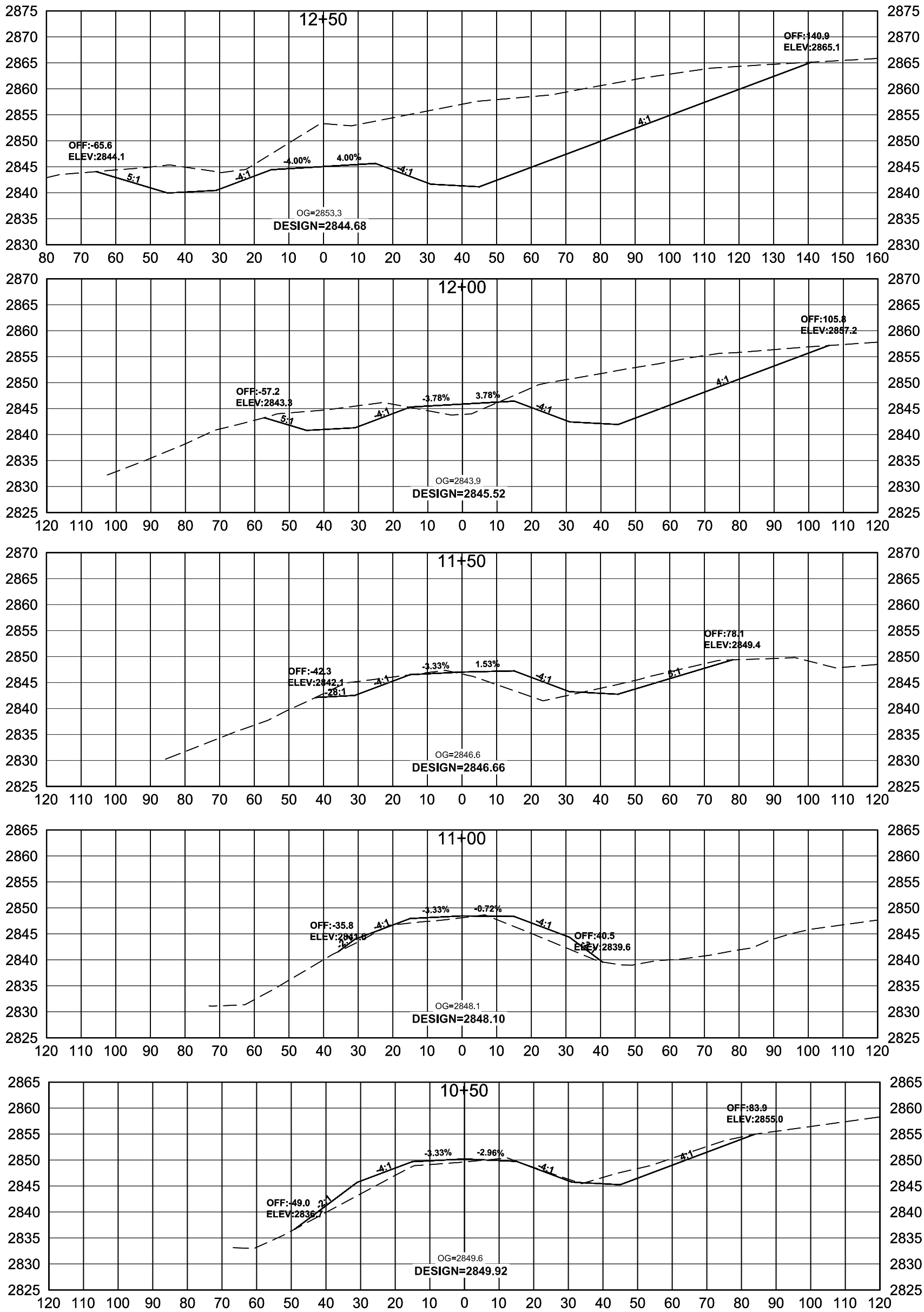

STATION 10+50 TO STATION 10+00
TRANSITION TO EXISTING ROADWAY

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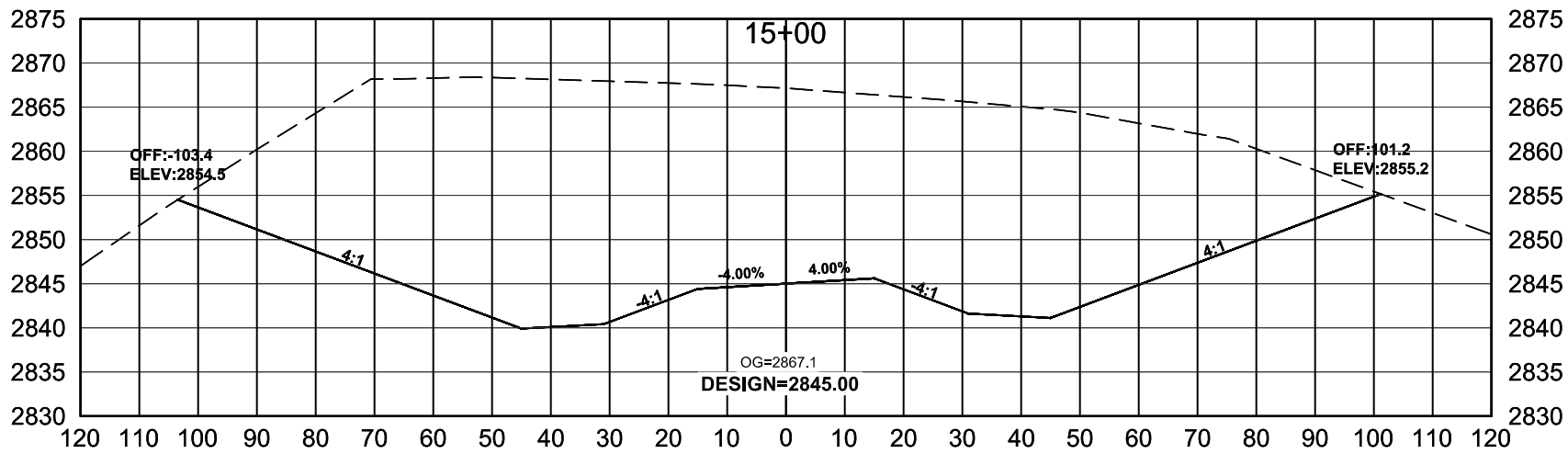

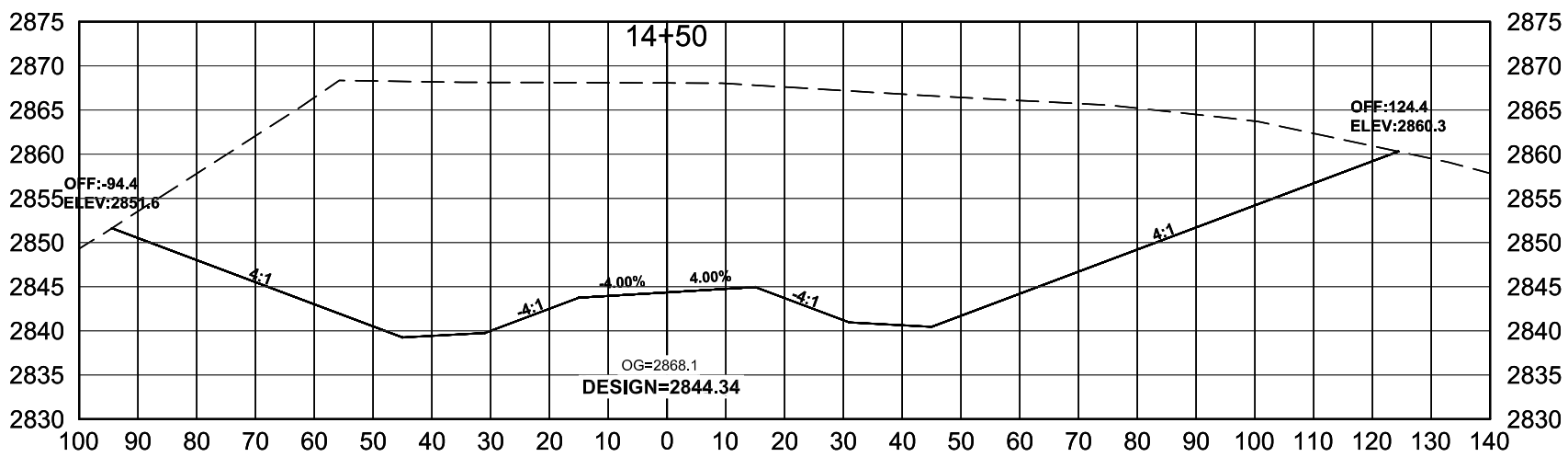

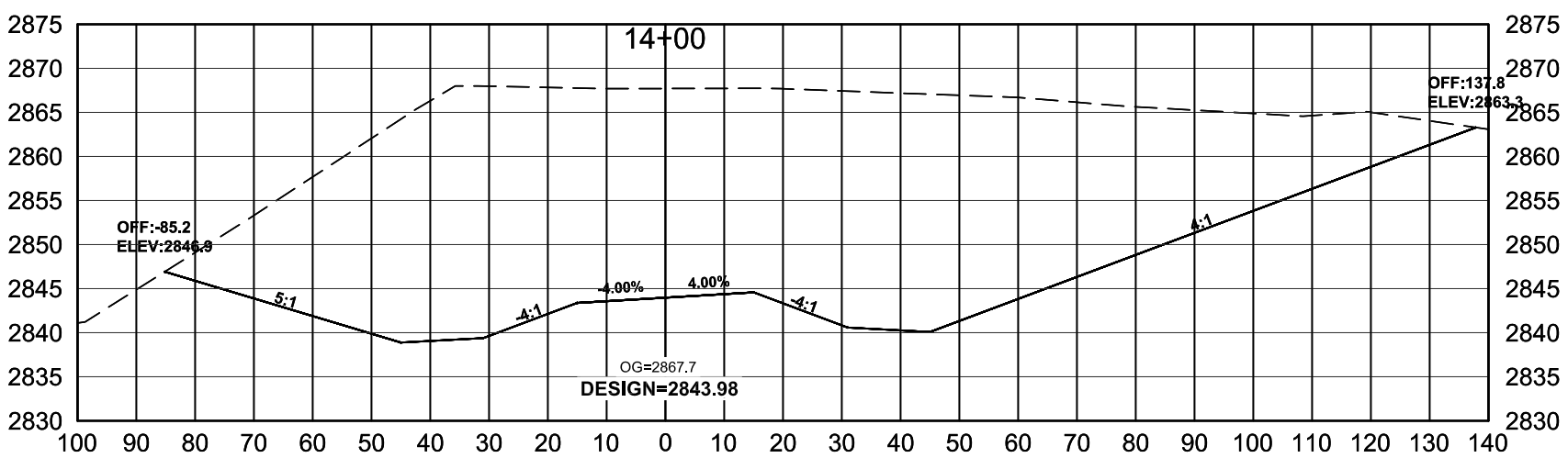

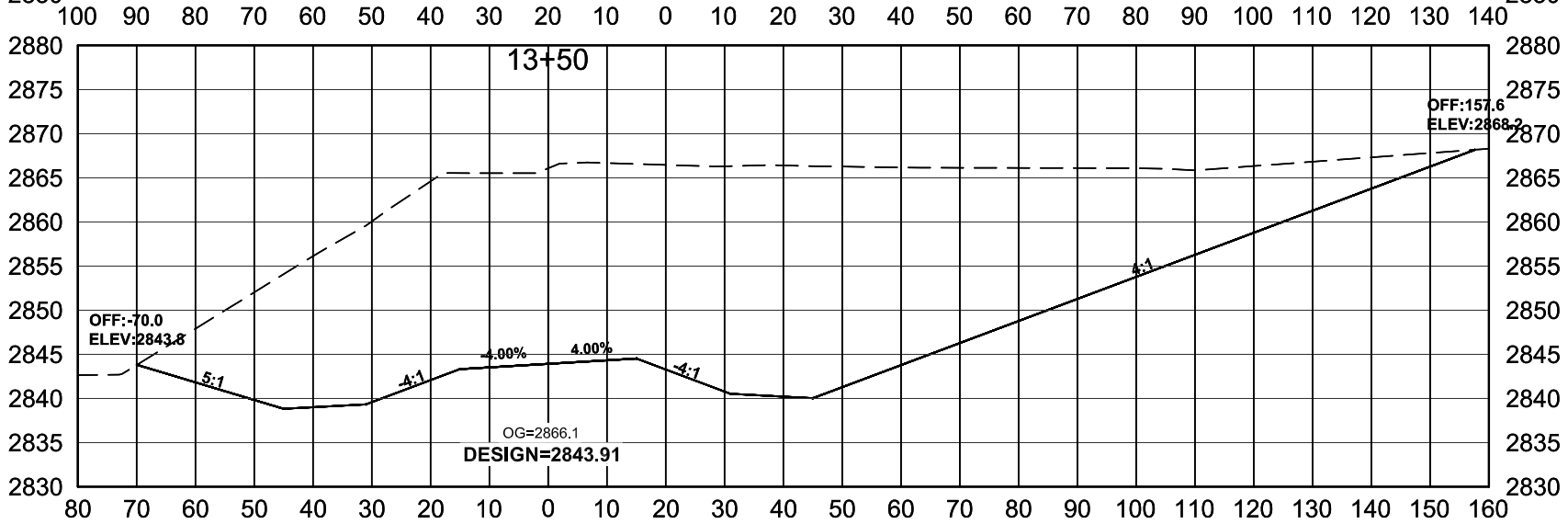

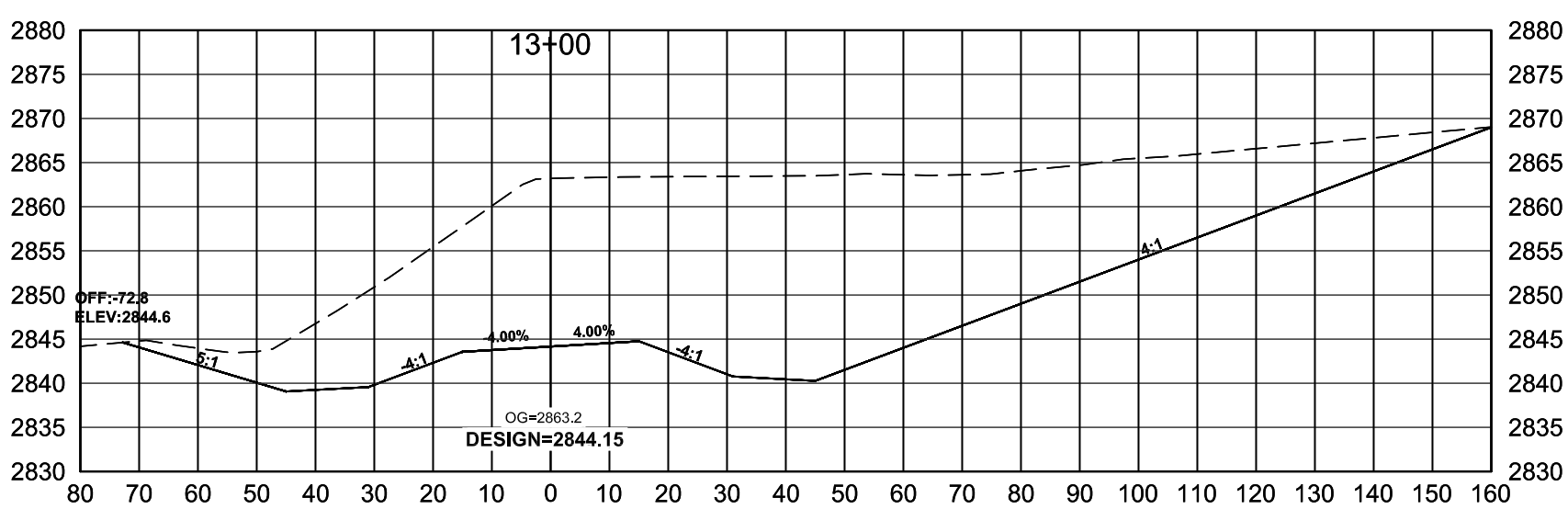

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CROSS SECTION SHEET

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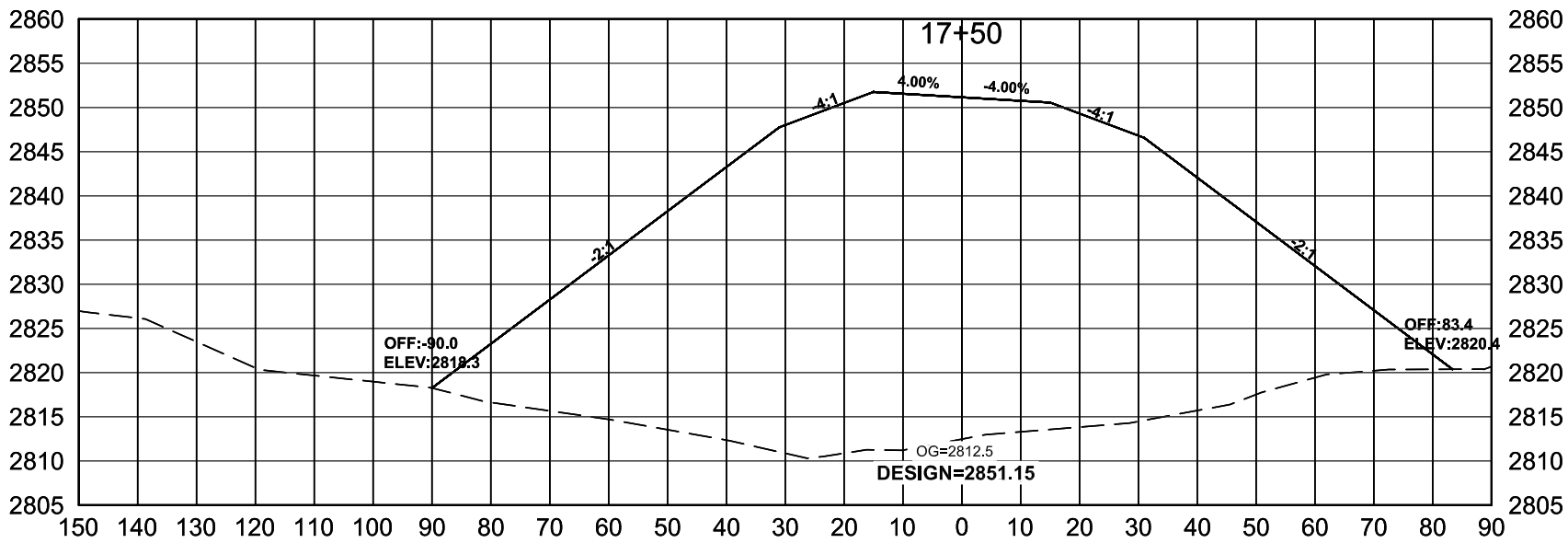

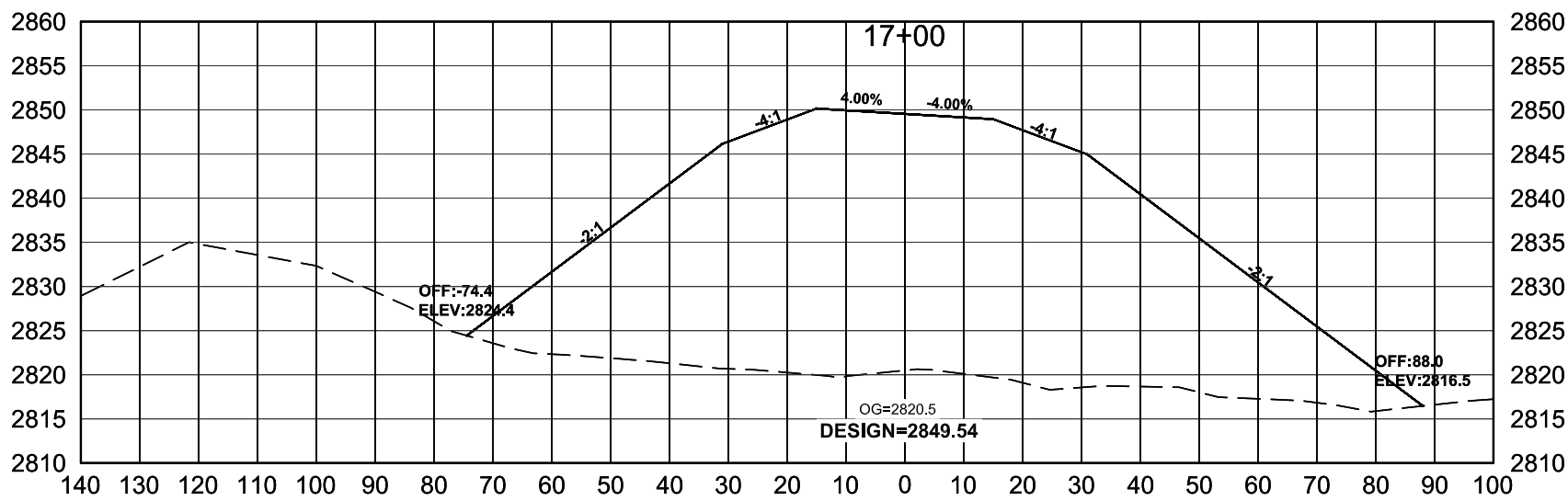

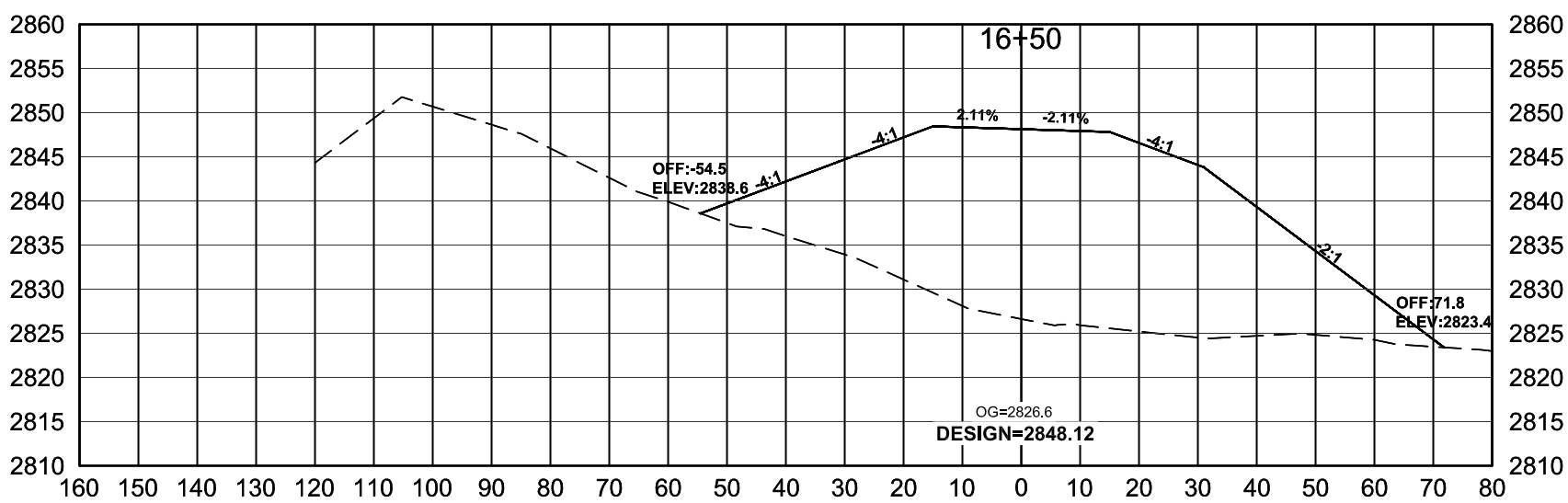

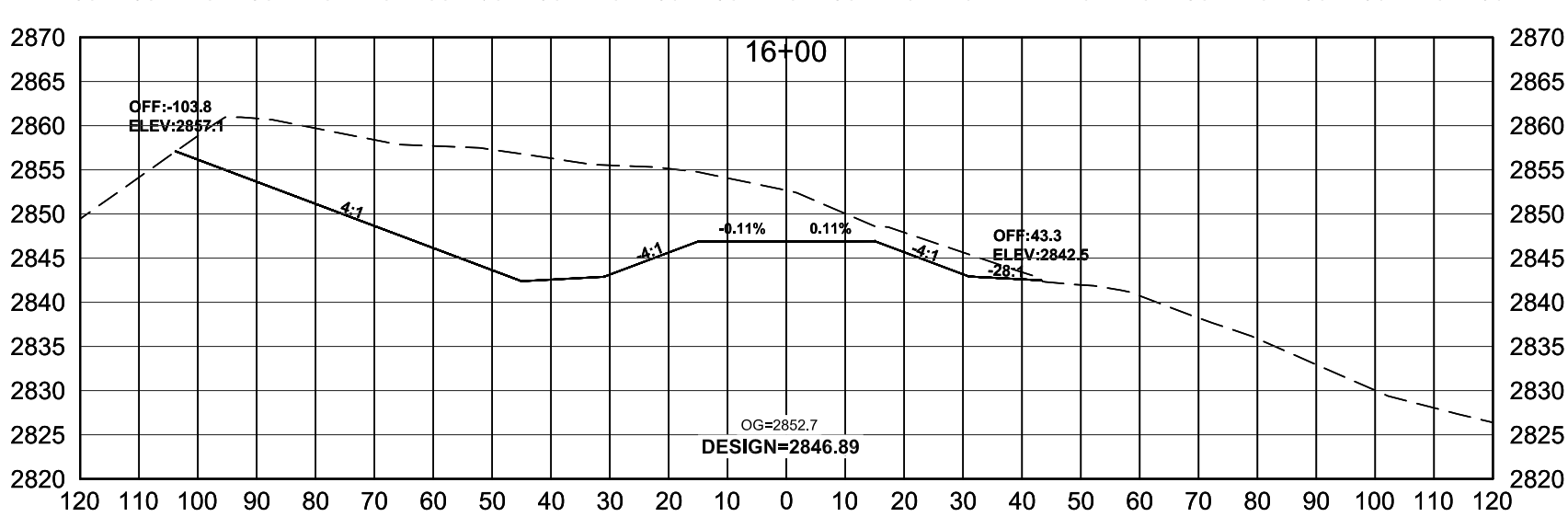

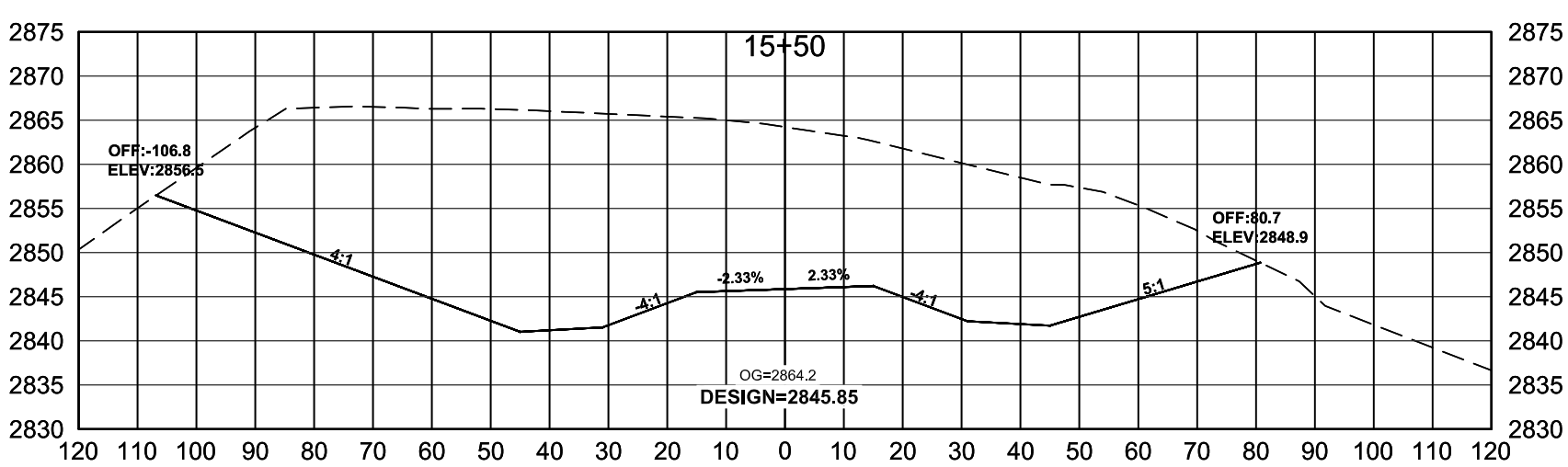

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DUNN COUNTY, ND
CROSS SECTION SHEET

NORTHERN PLAINS ENGINEERING

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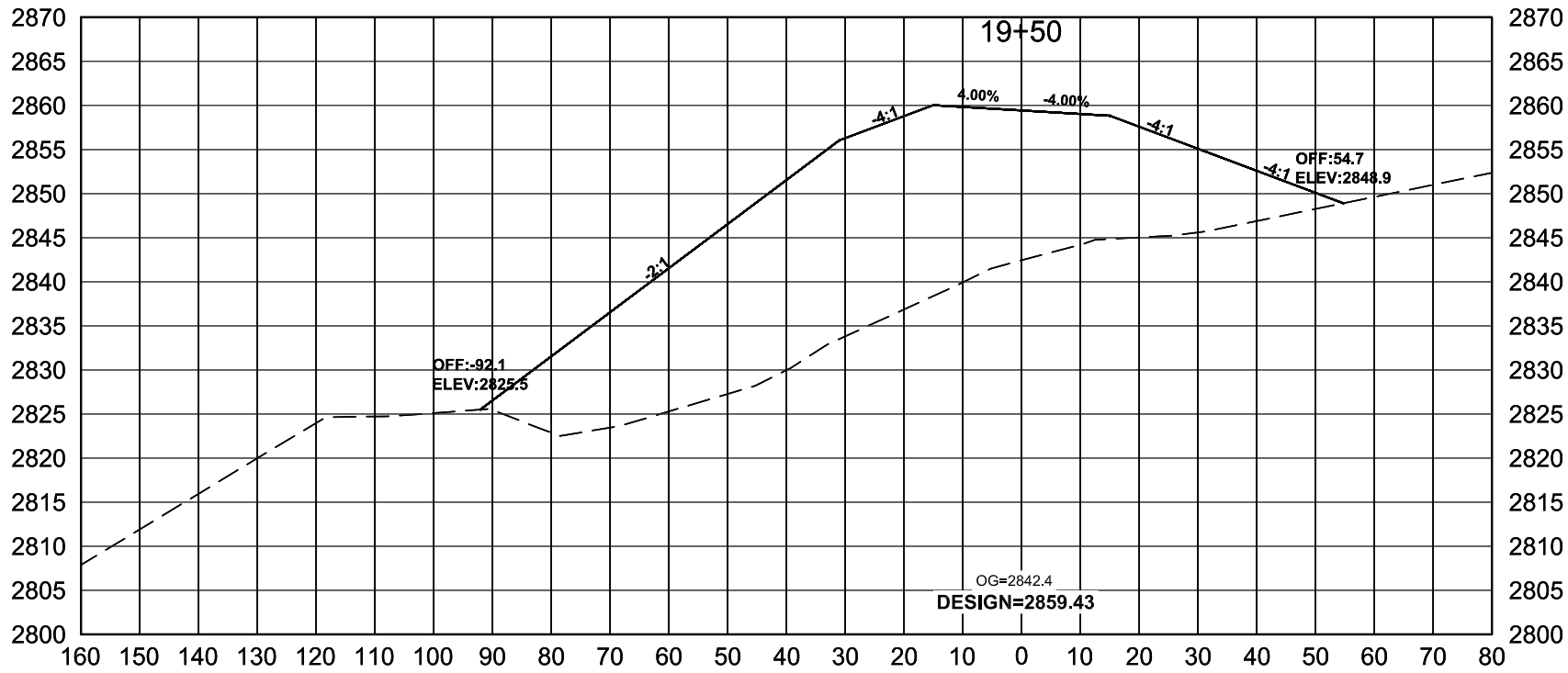

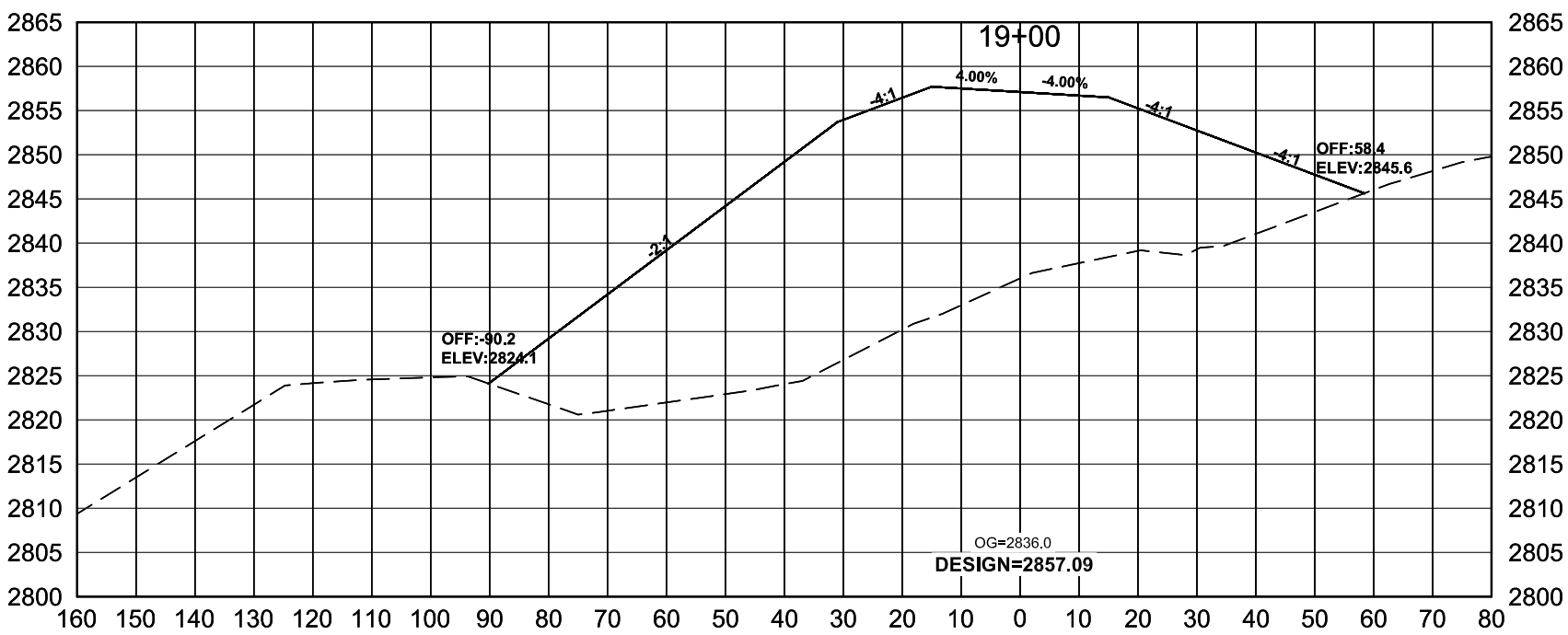

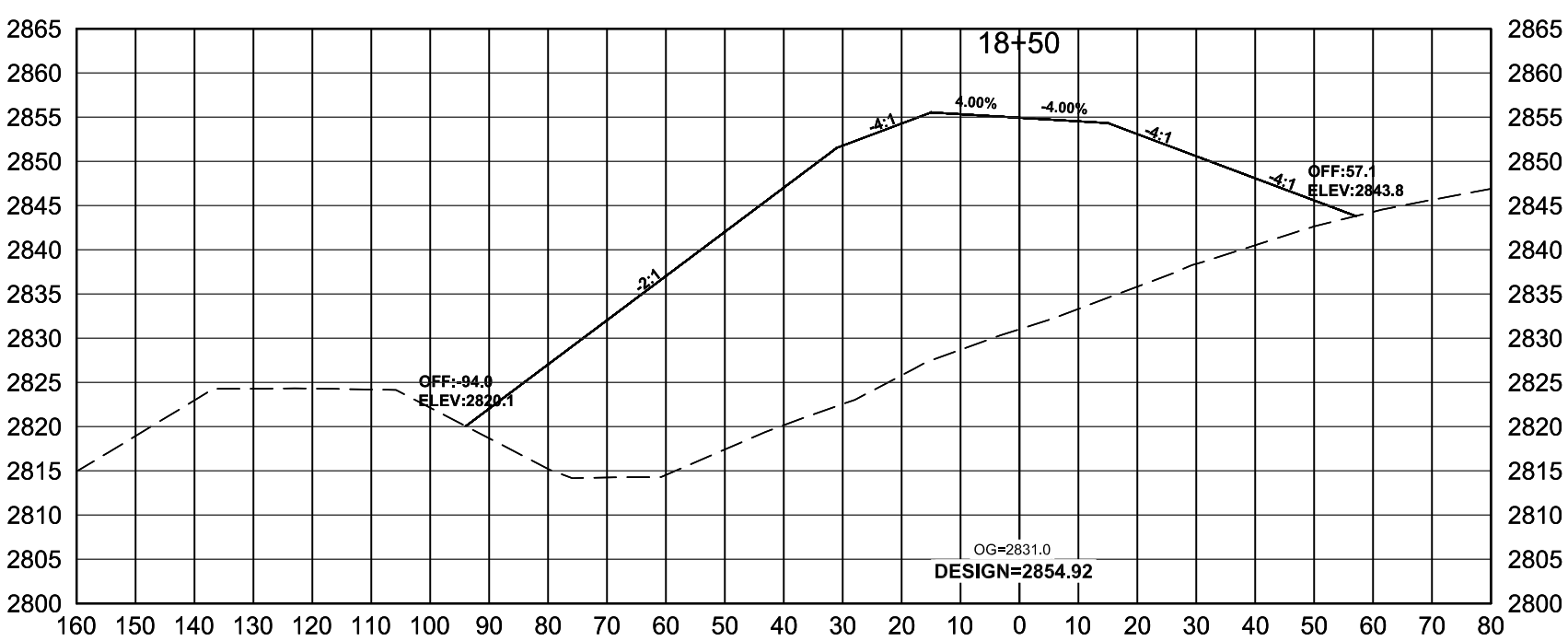

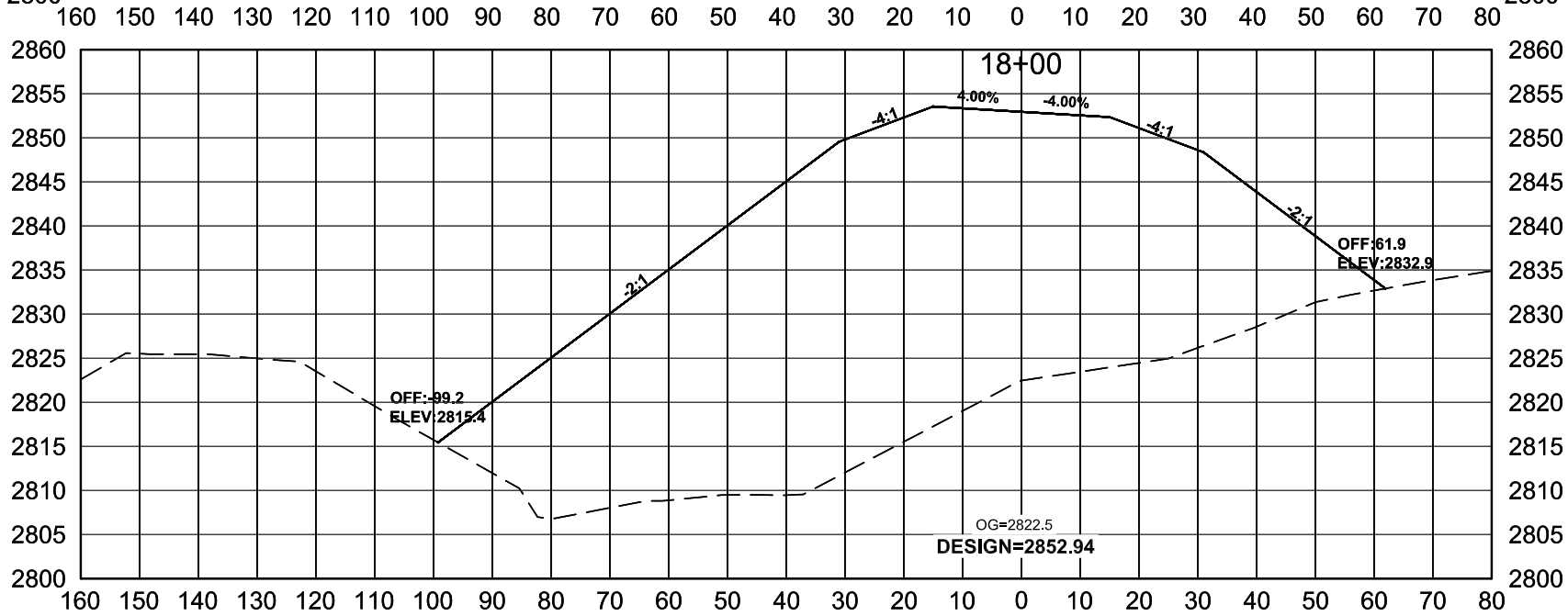

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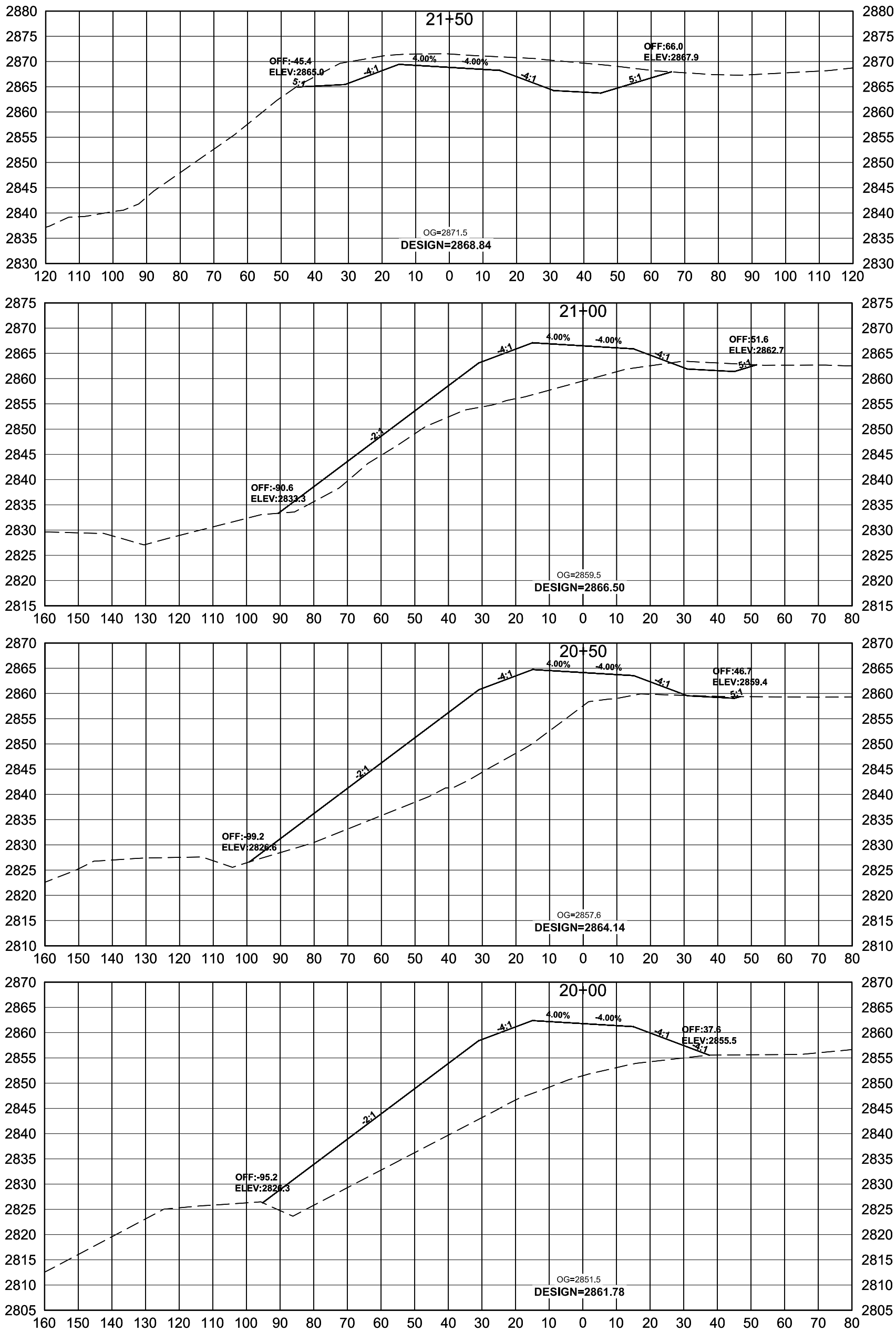

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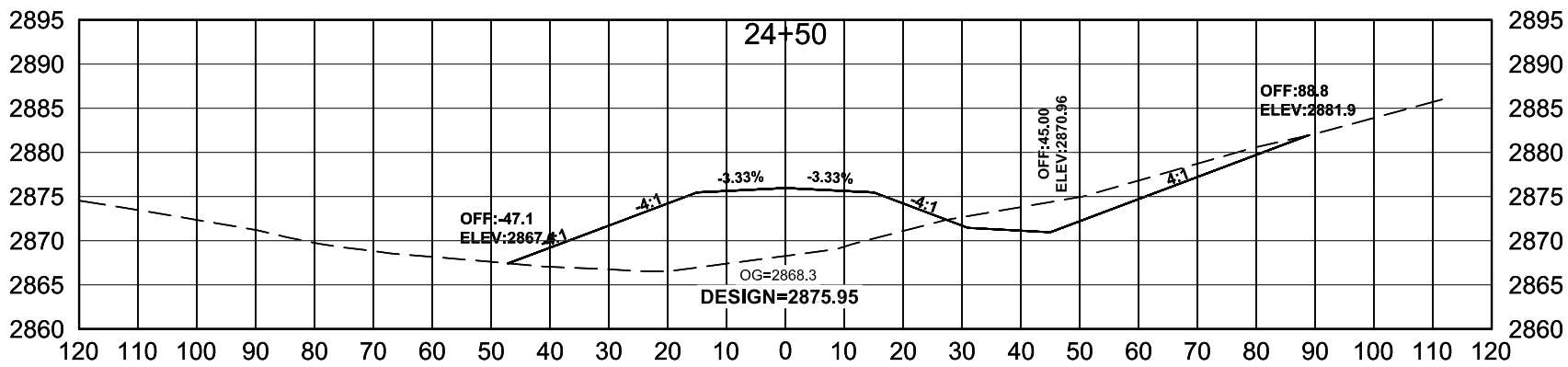

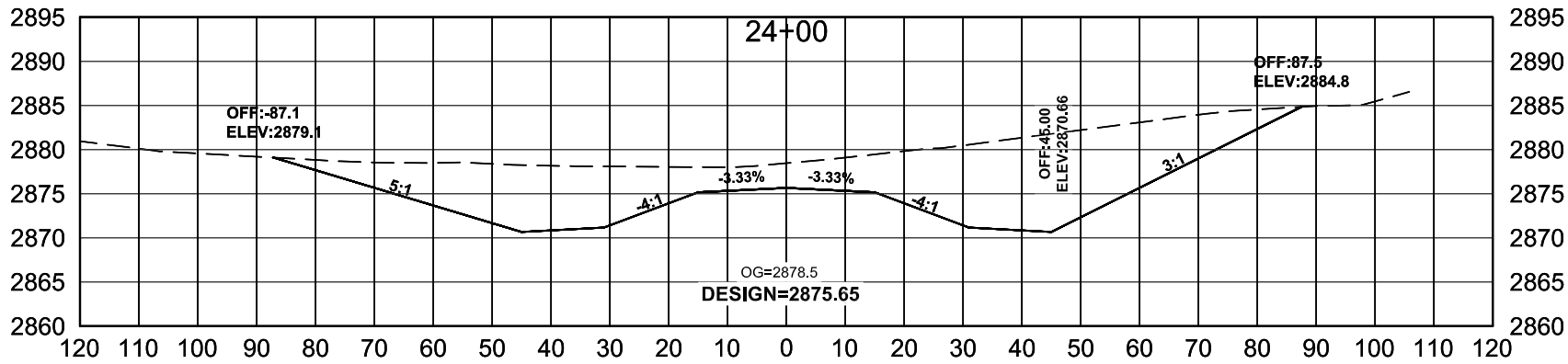

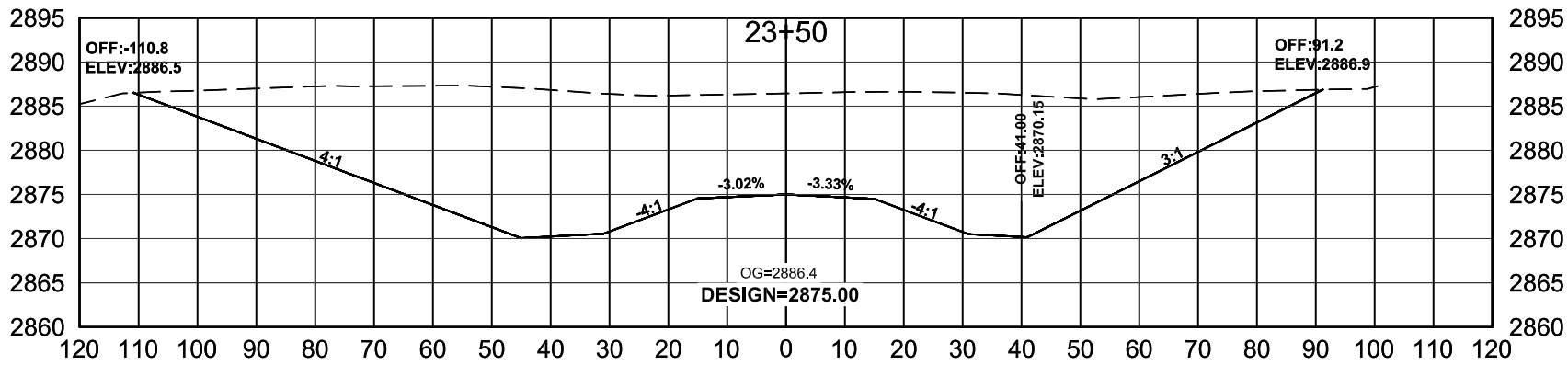

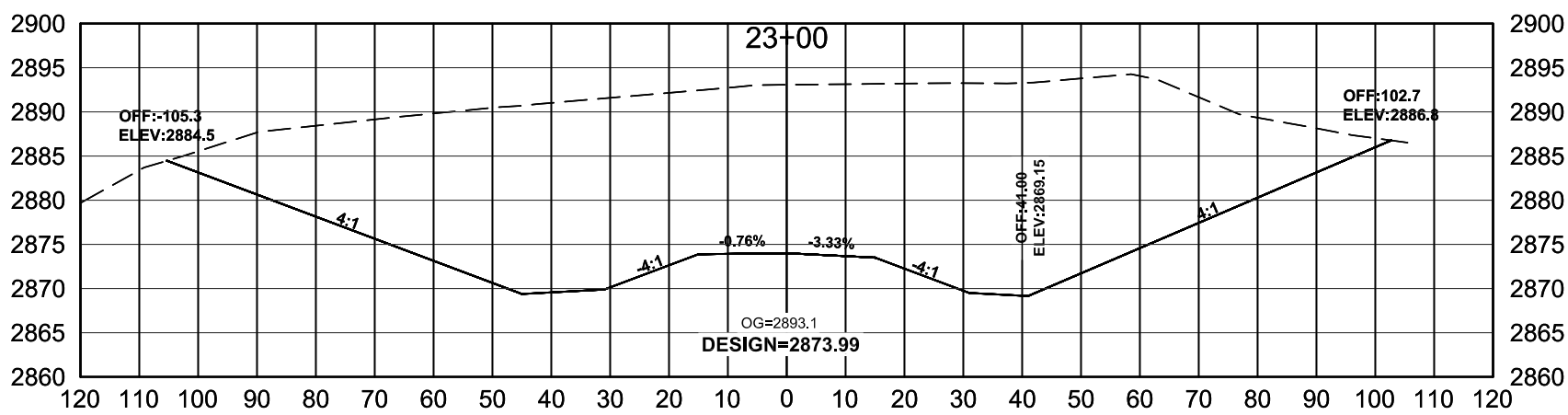

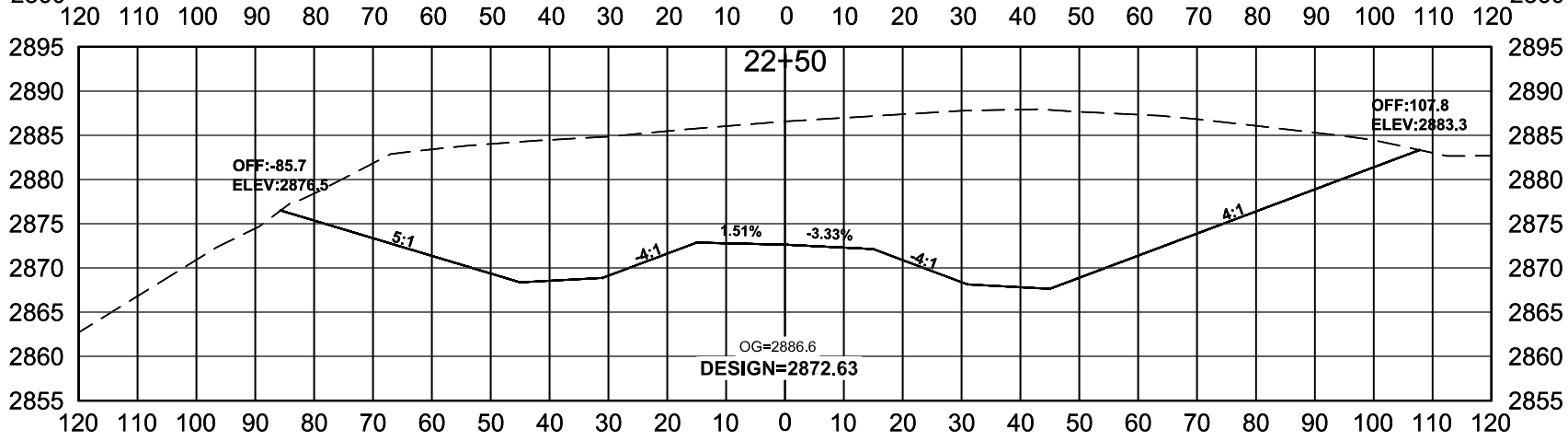

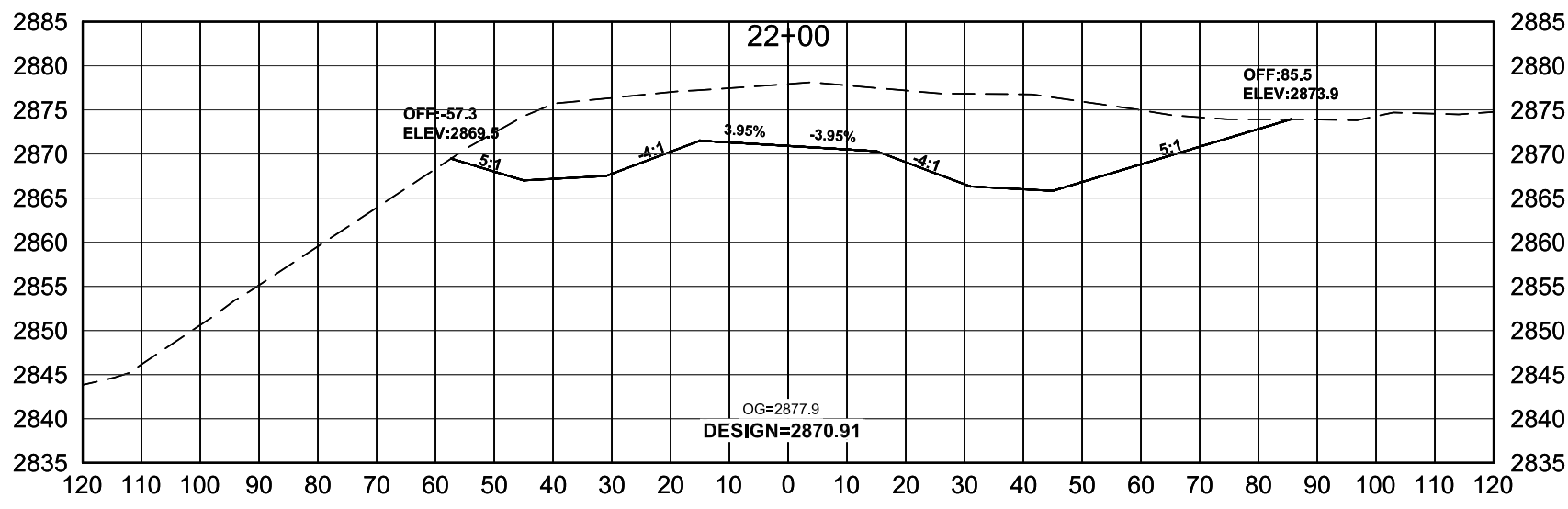

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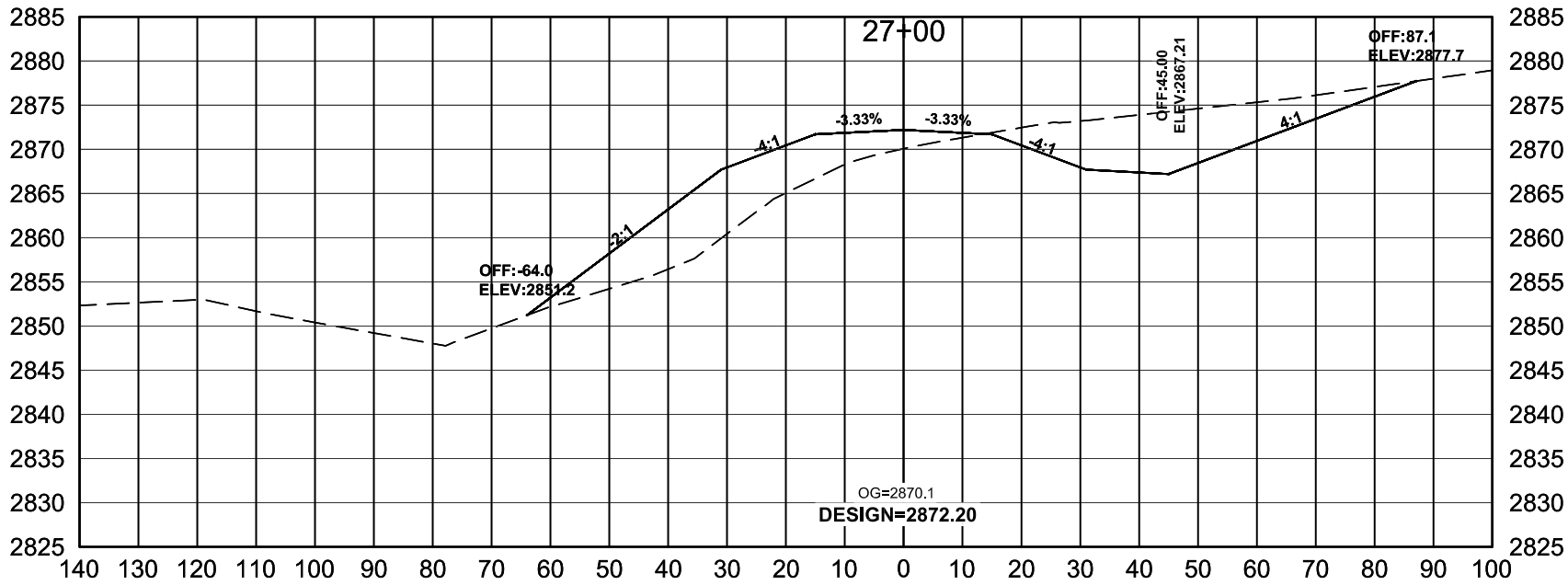

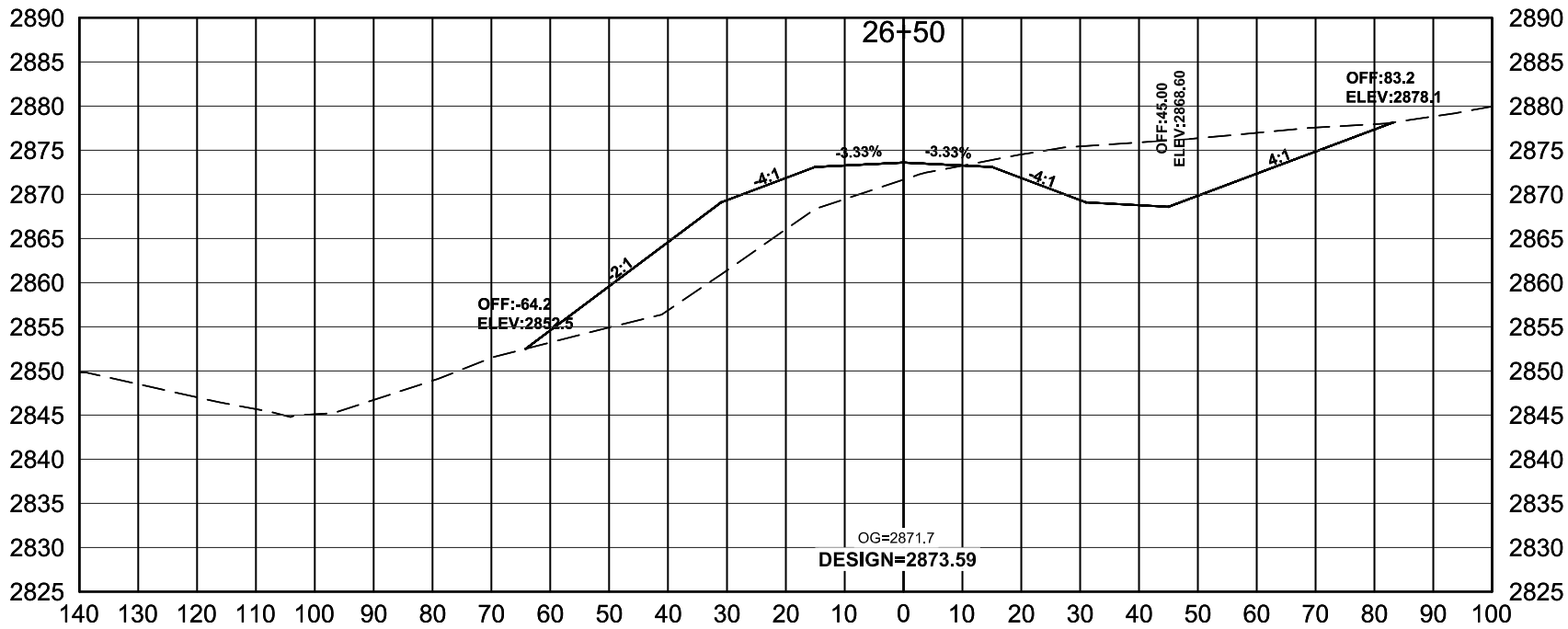

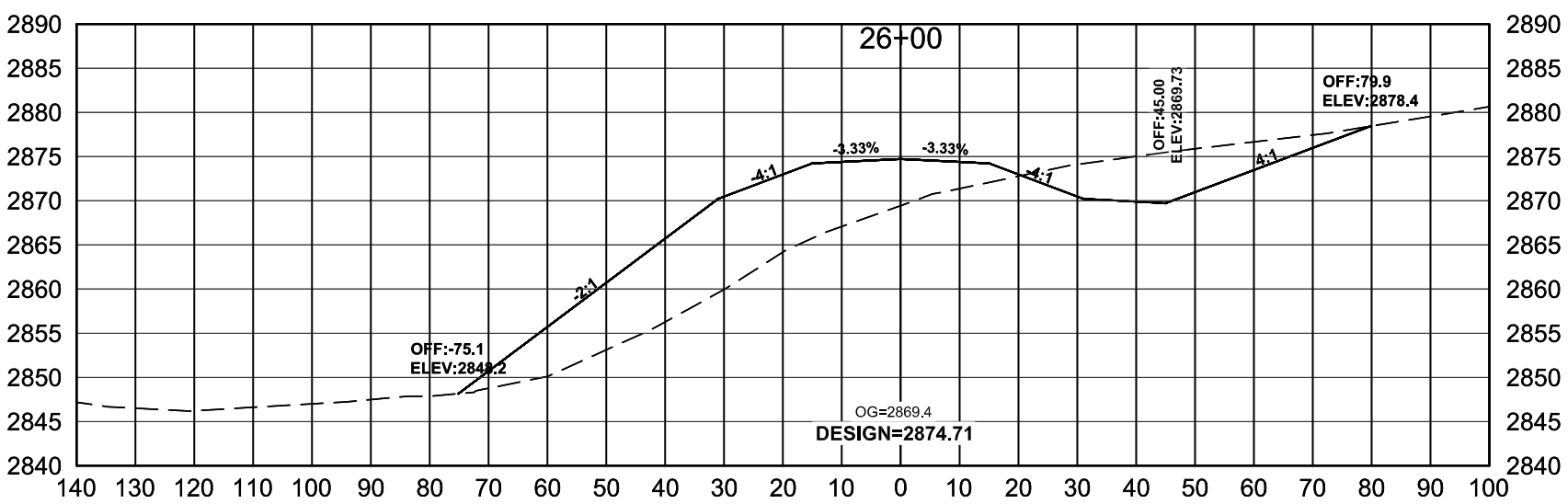

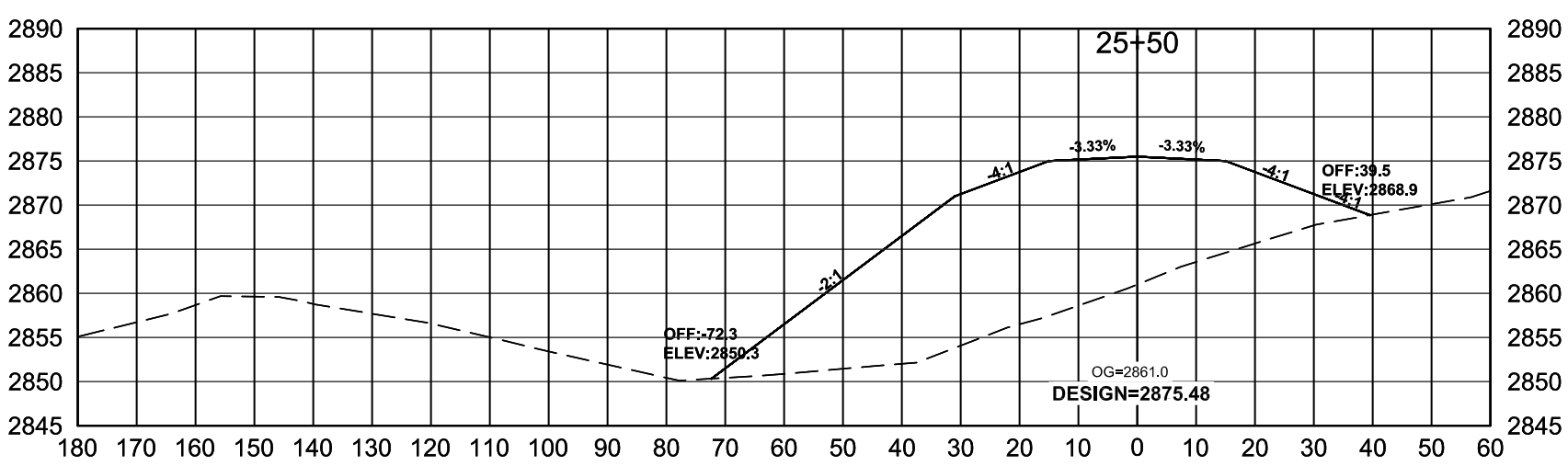

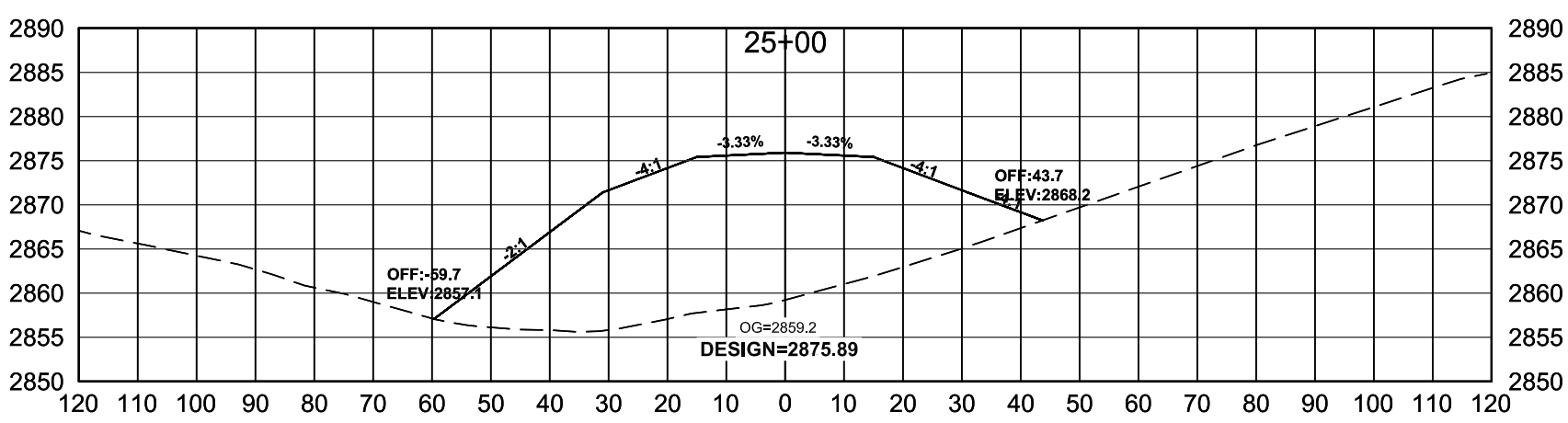

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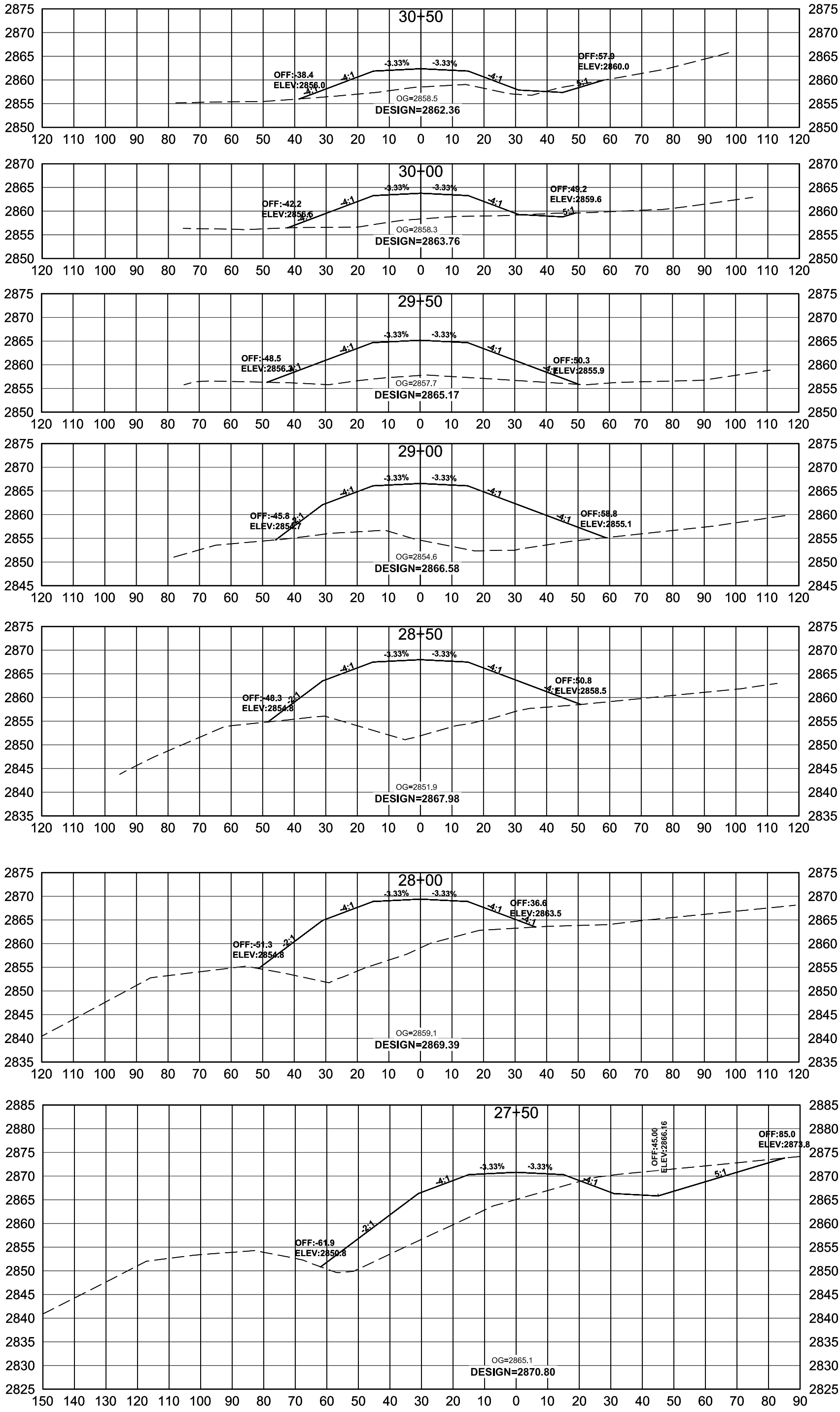

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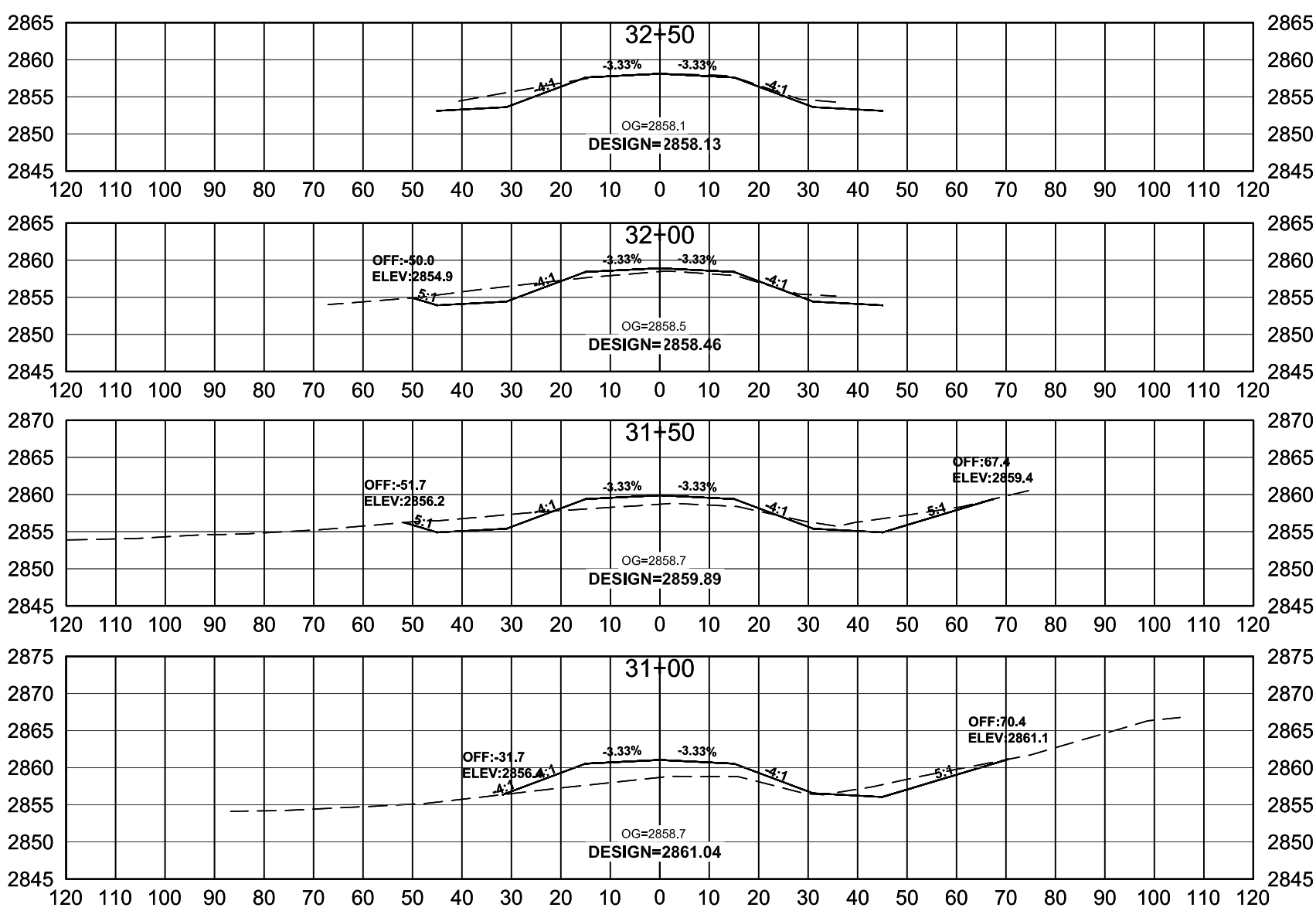
STATION 32+50 TO STATION 34+00
TRANSITION TO EXISTING ROADWAY



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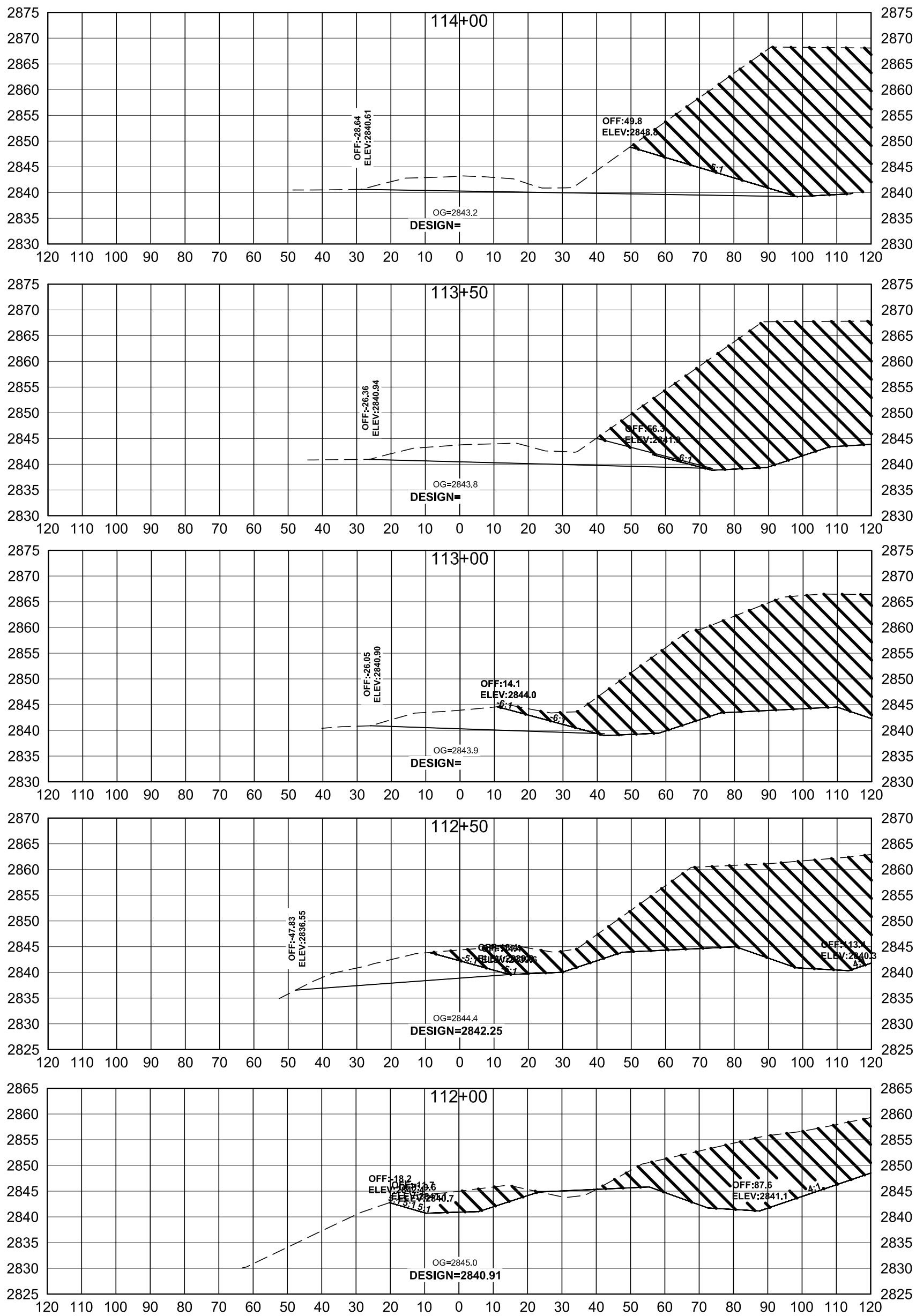

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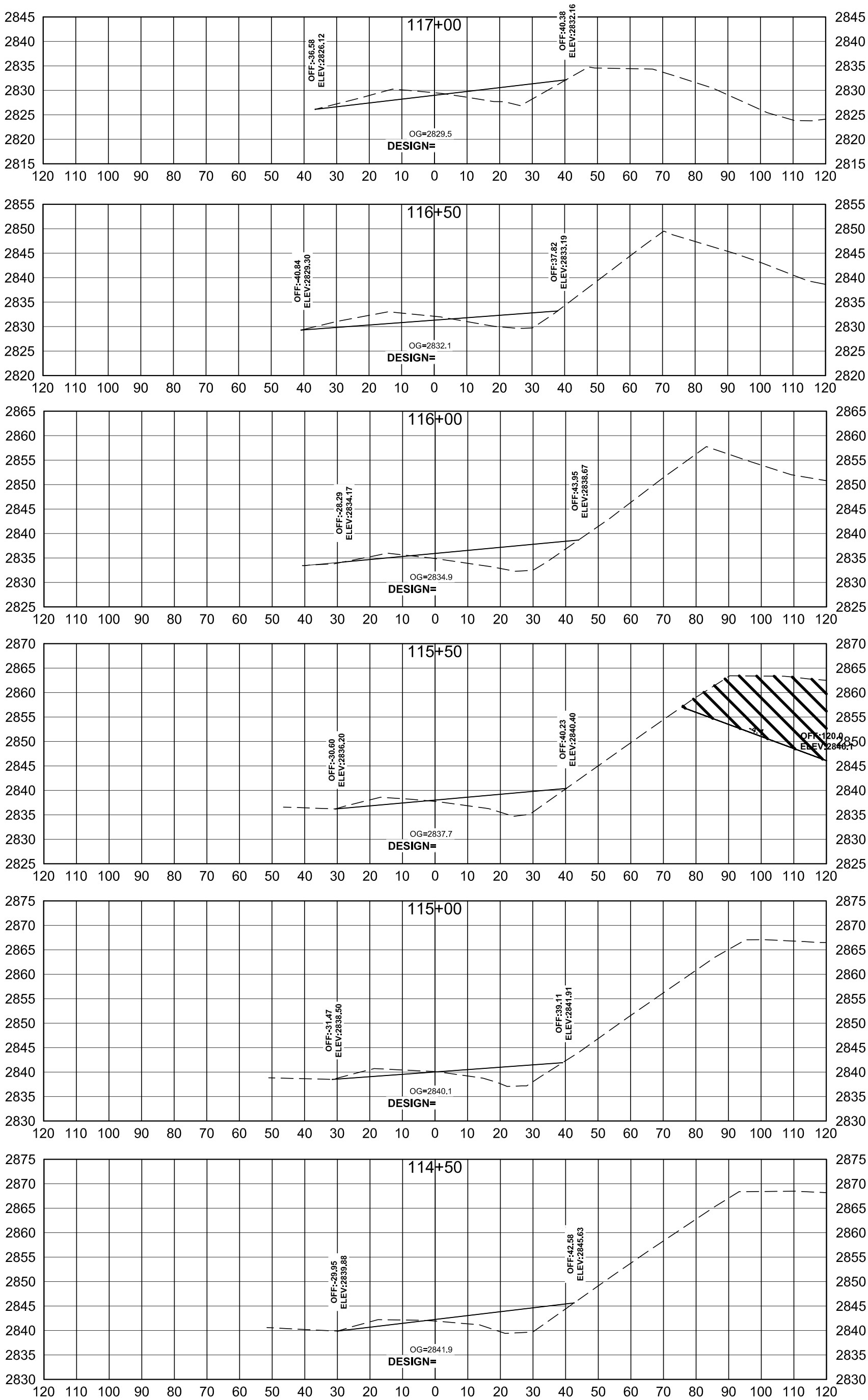

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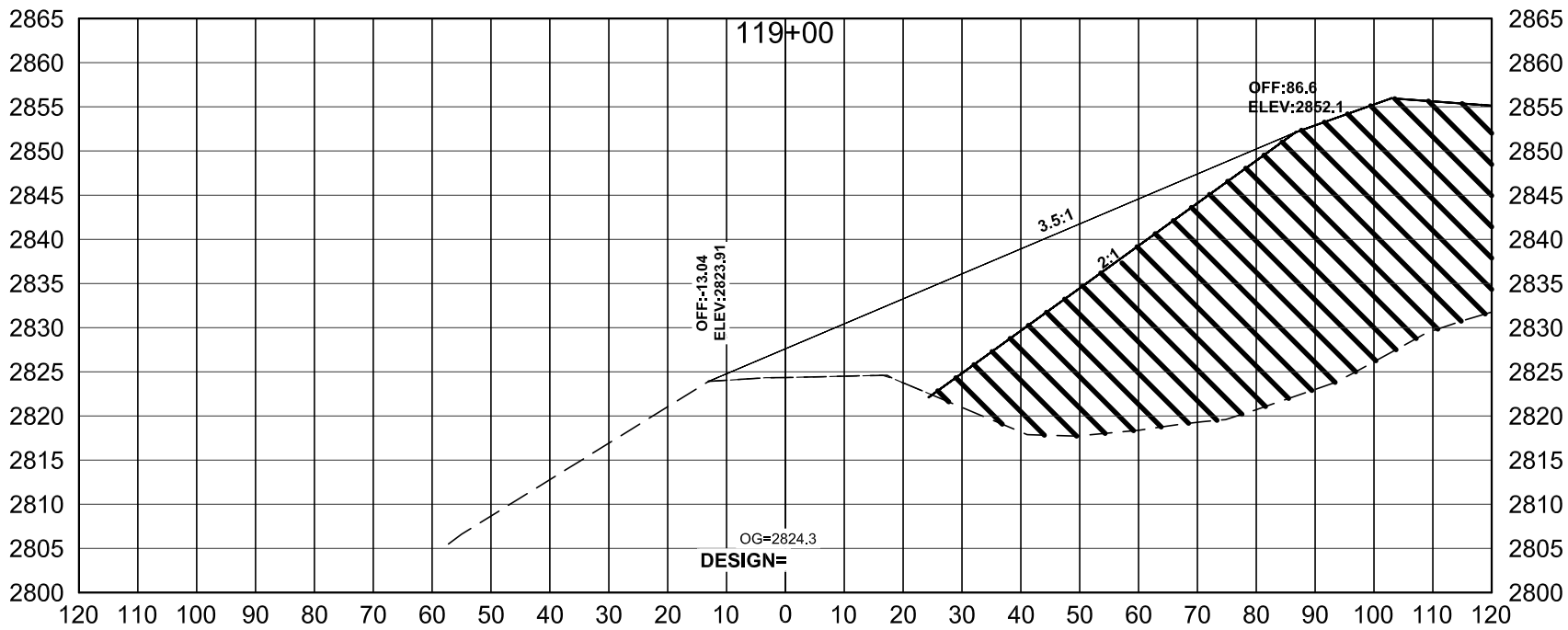

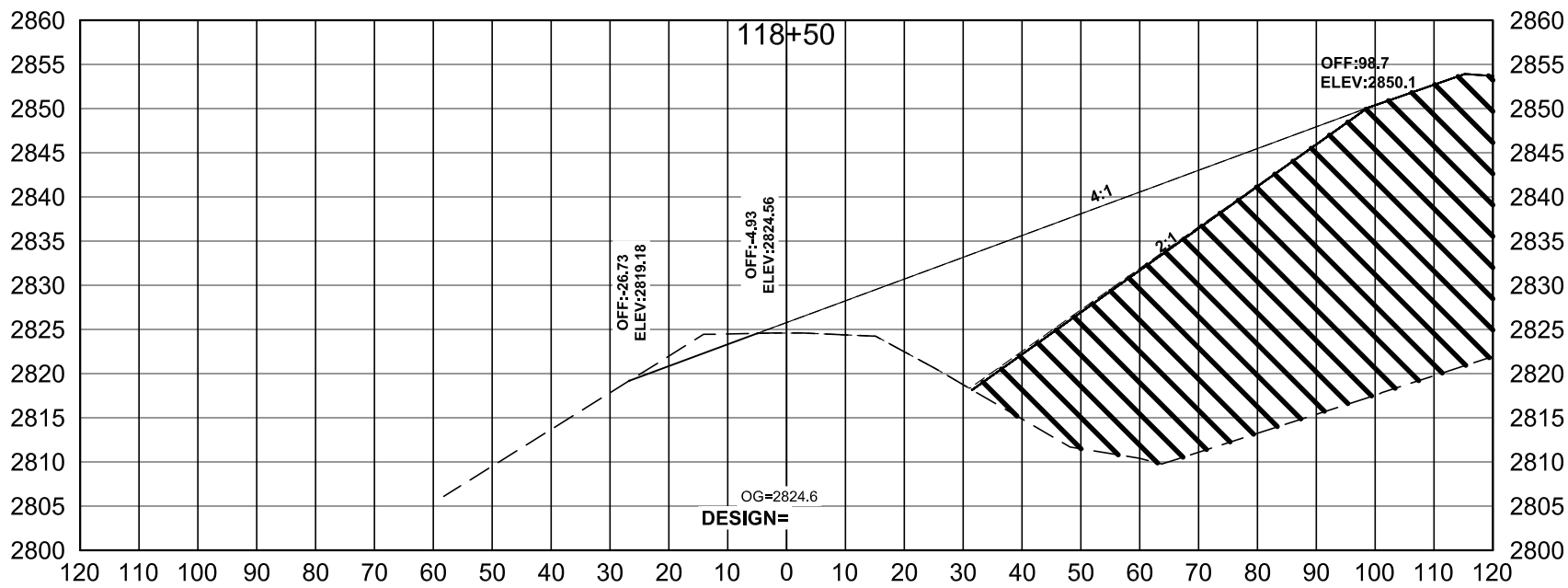

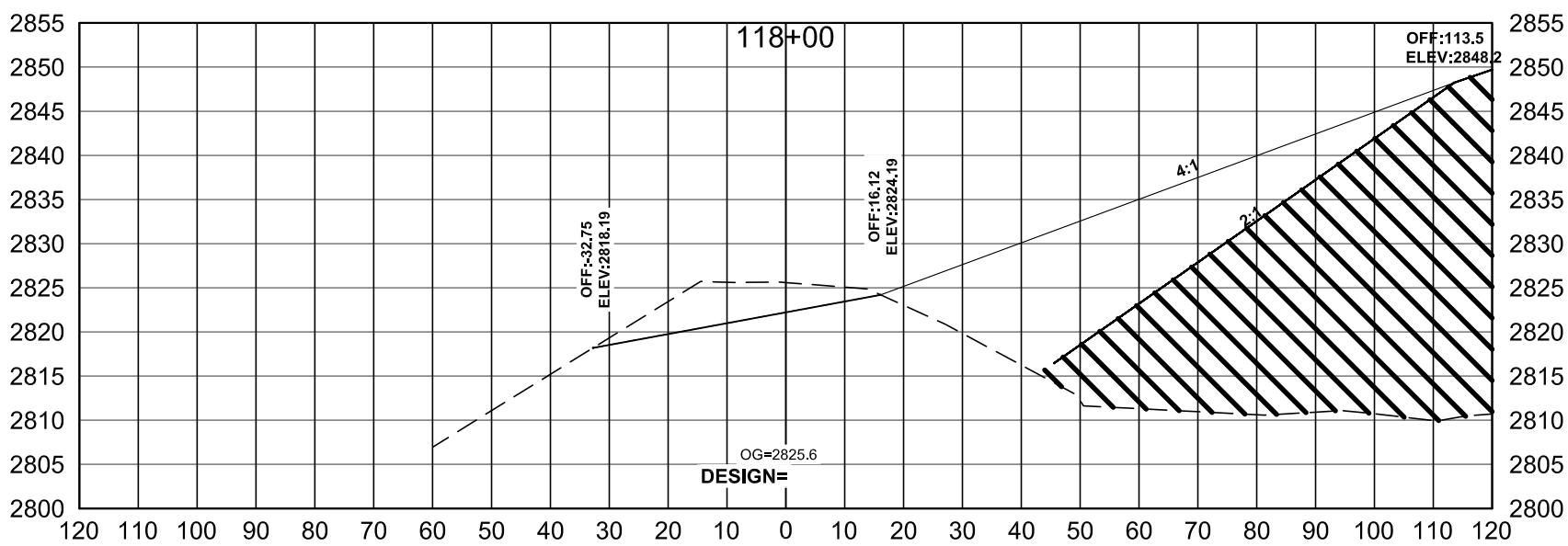

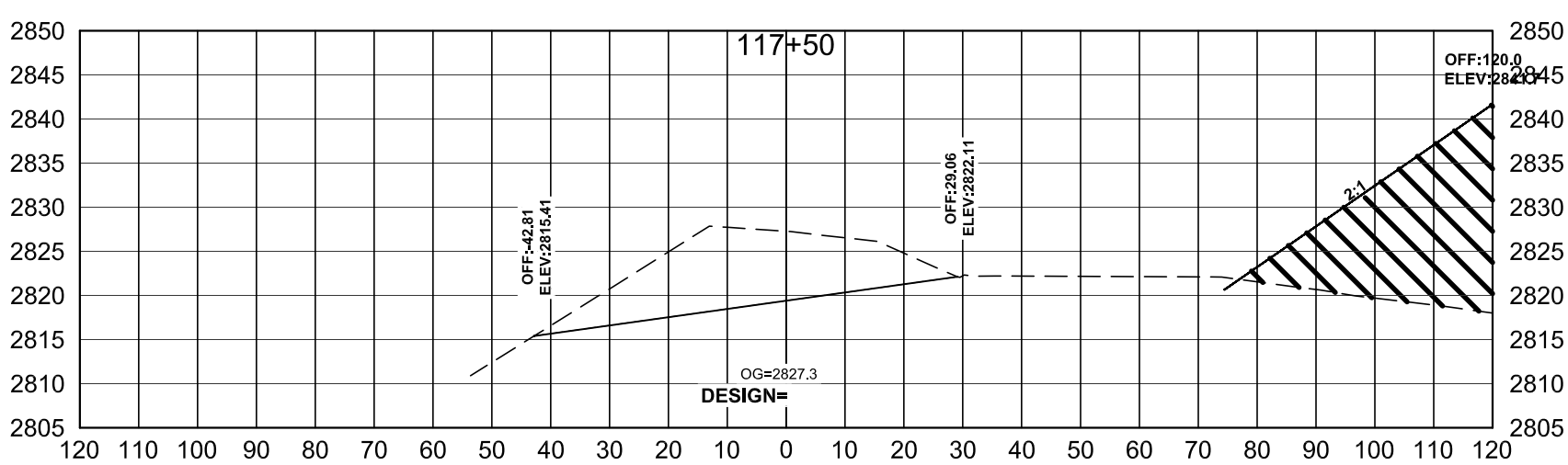

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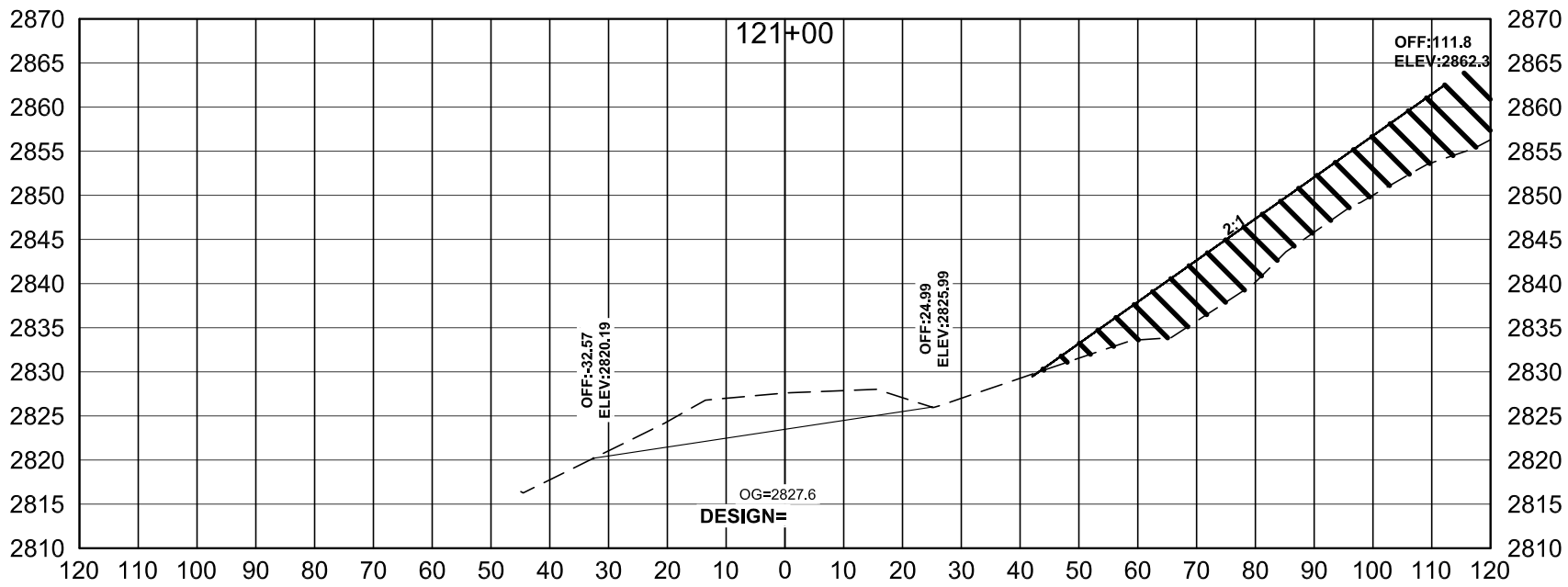

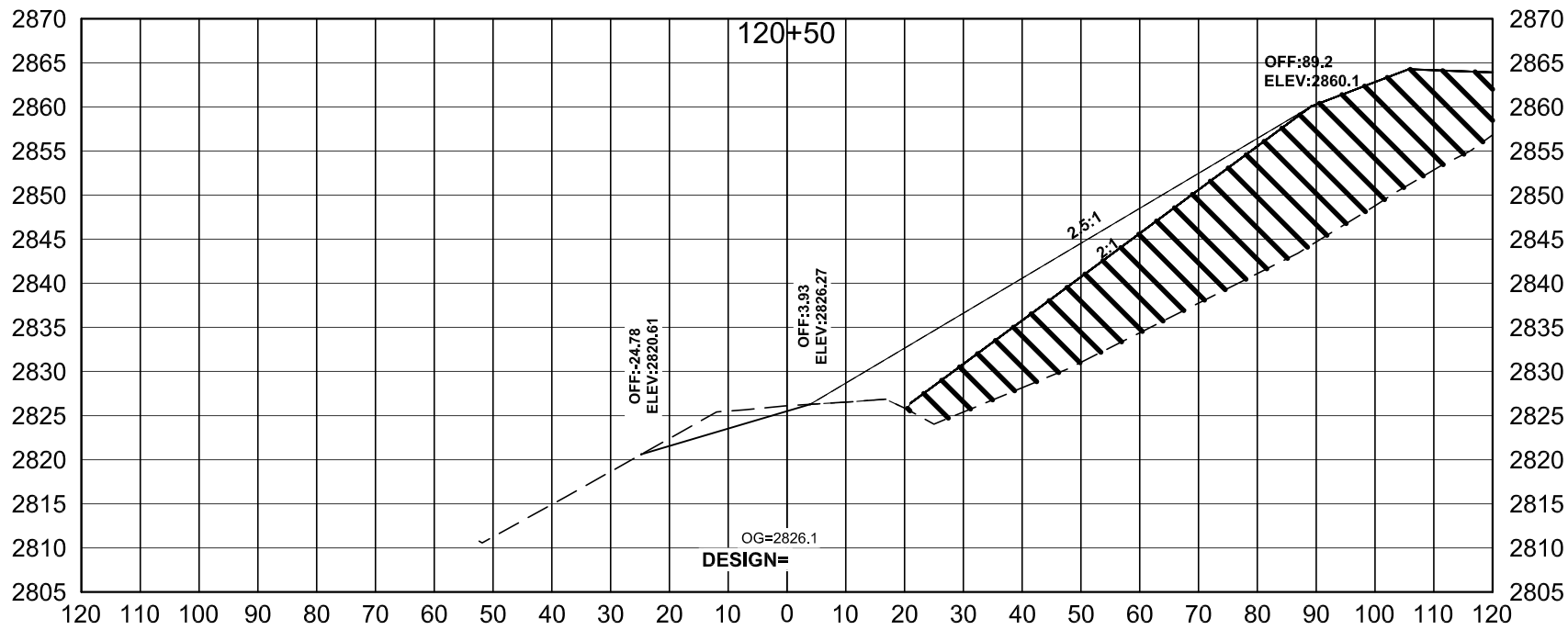

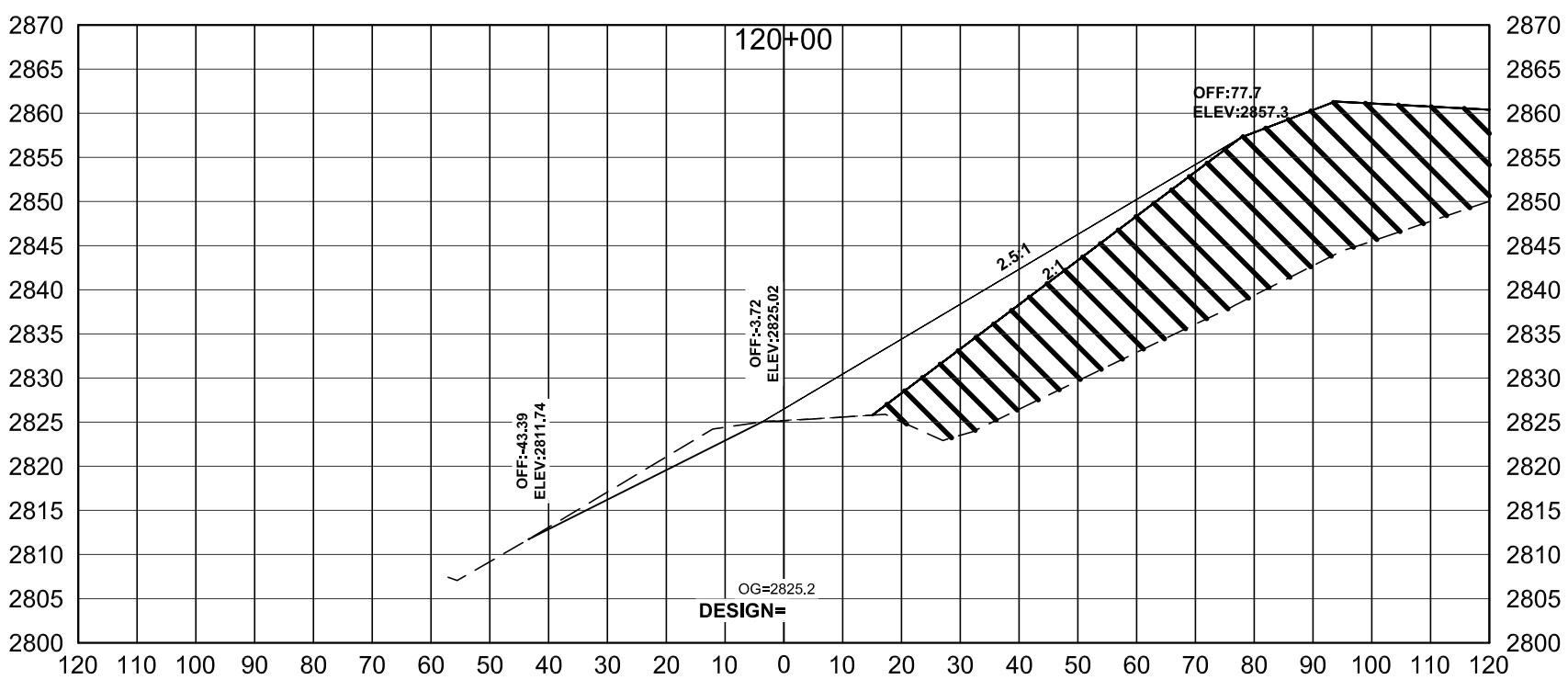

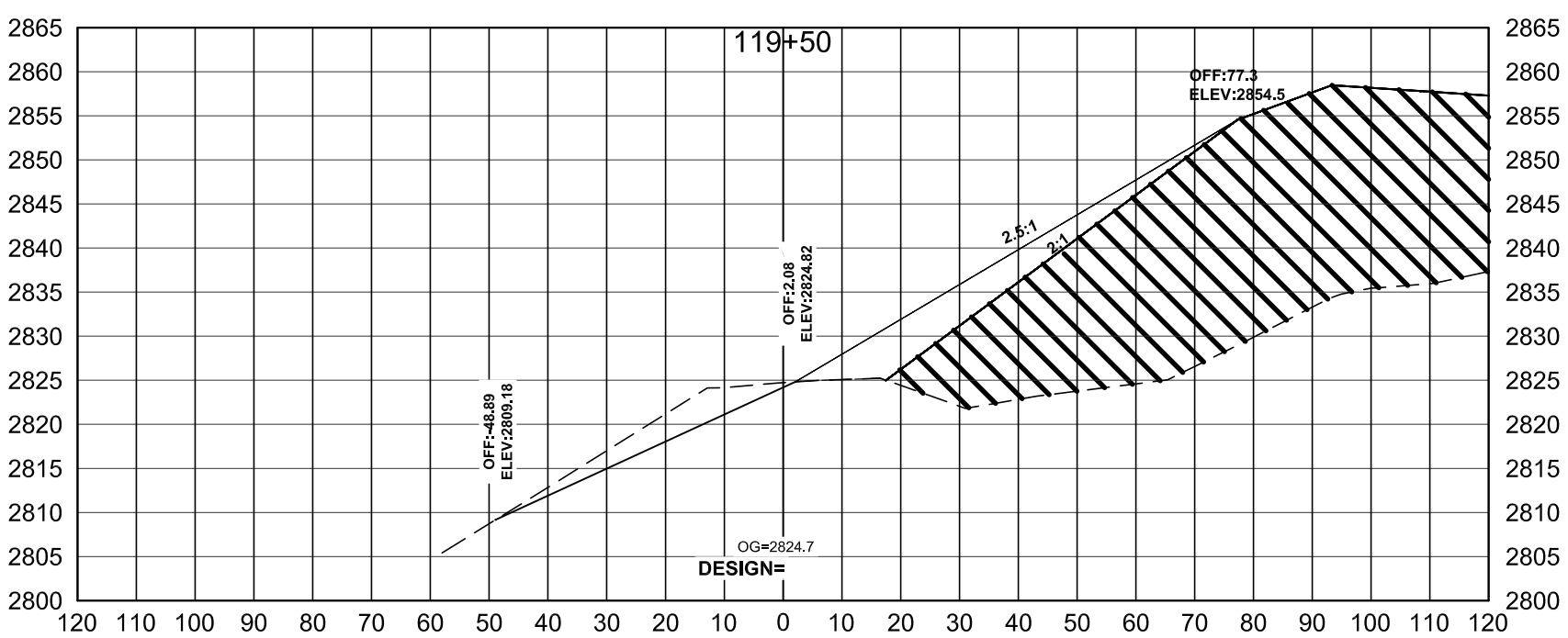

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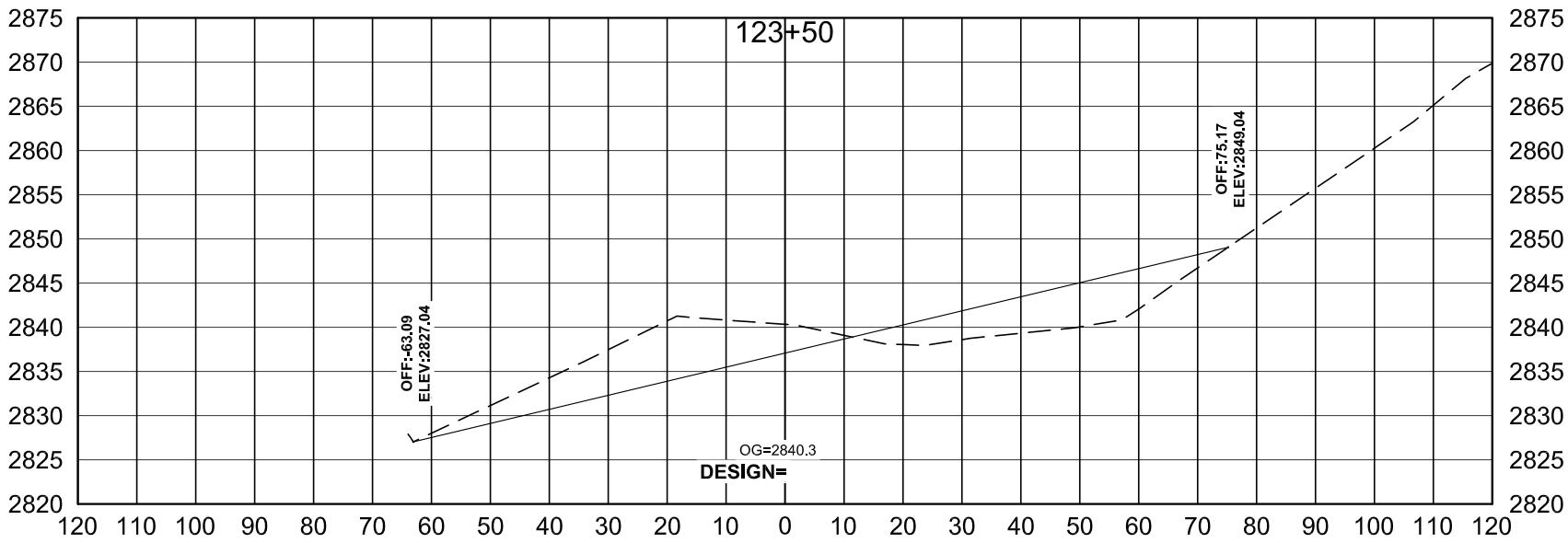

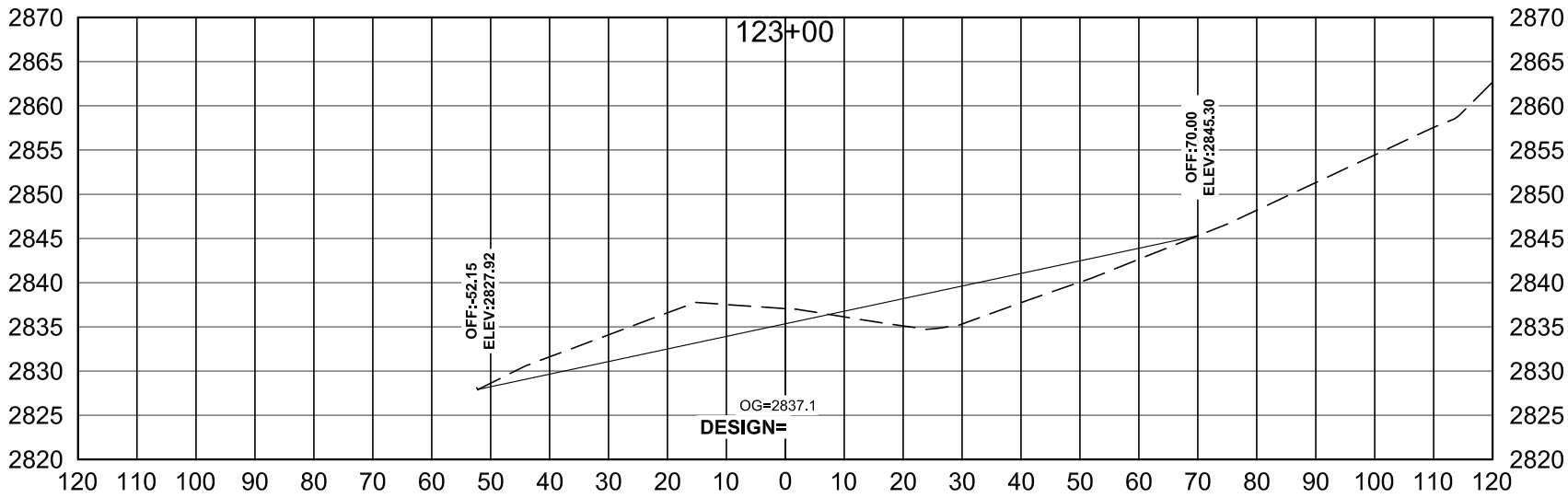

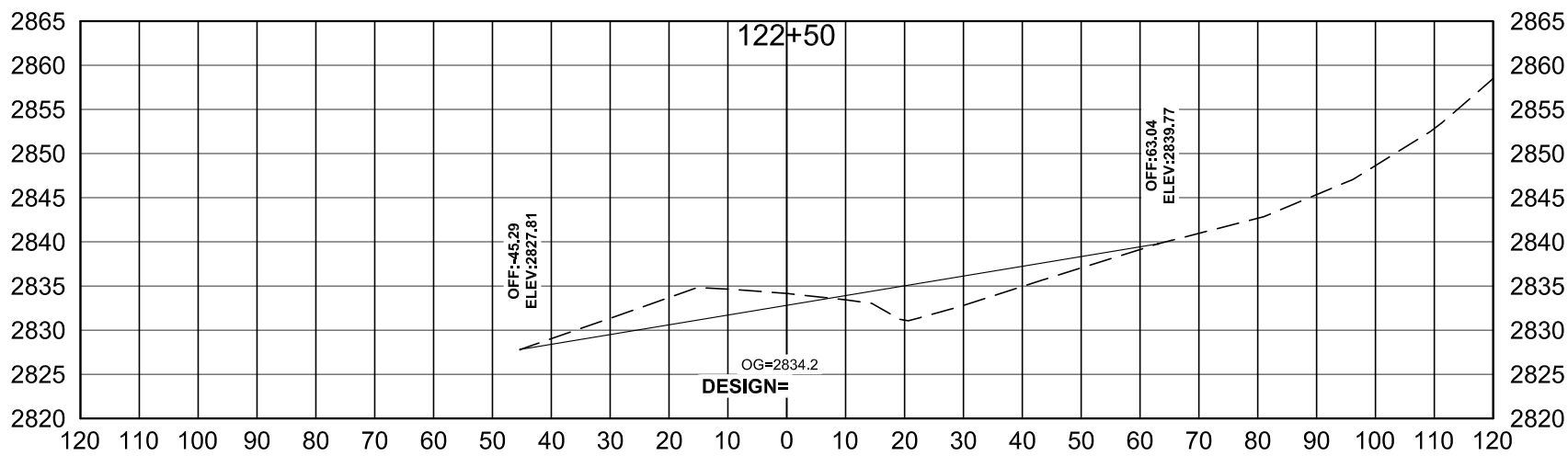

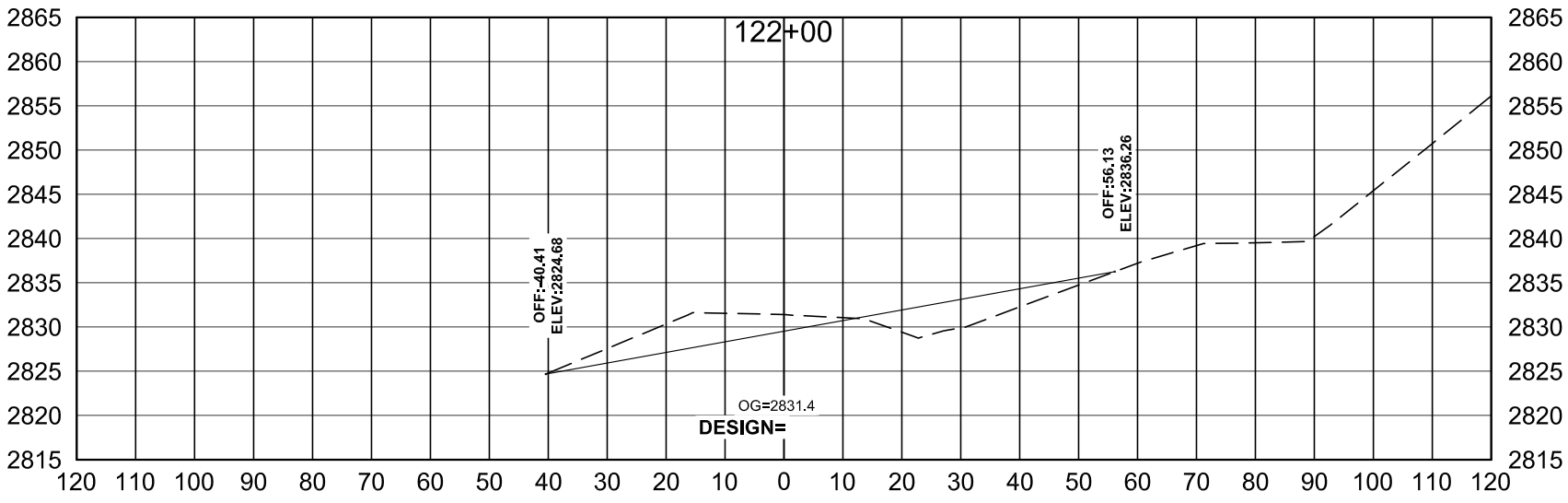

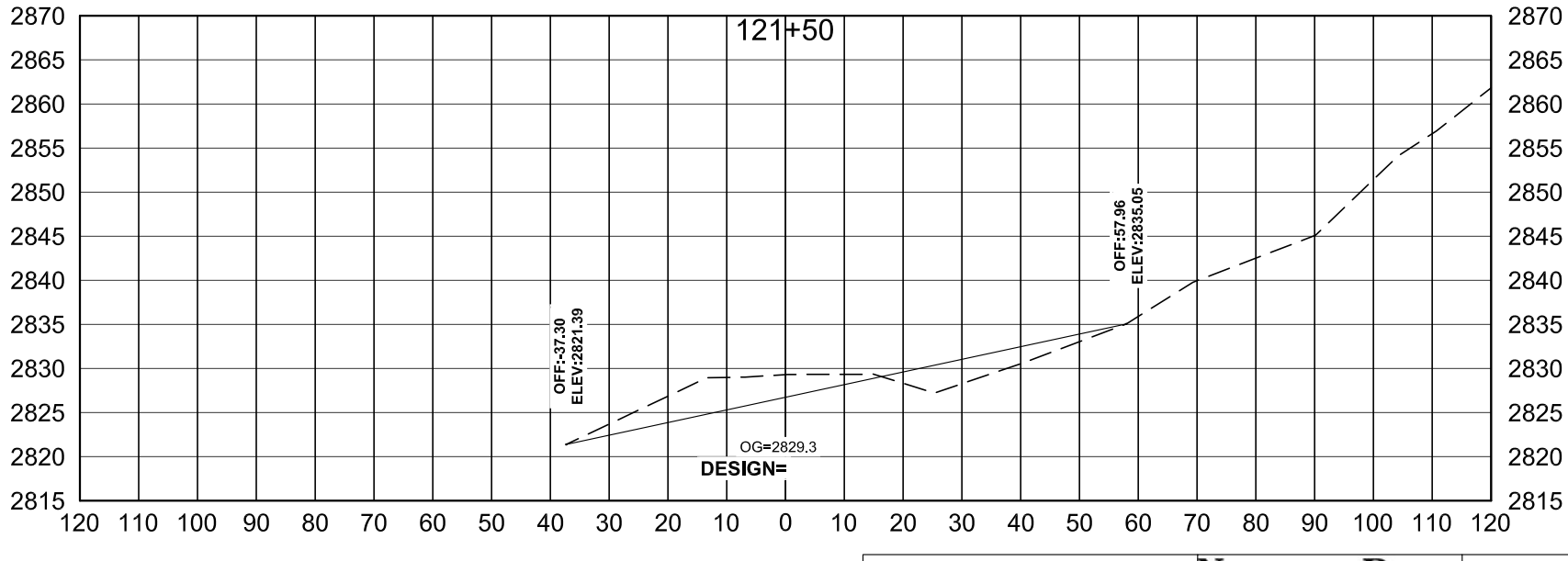

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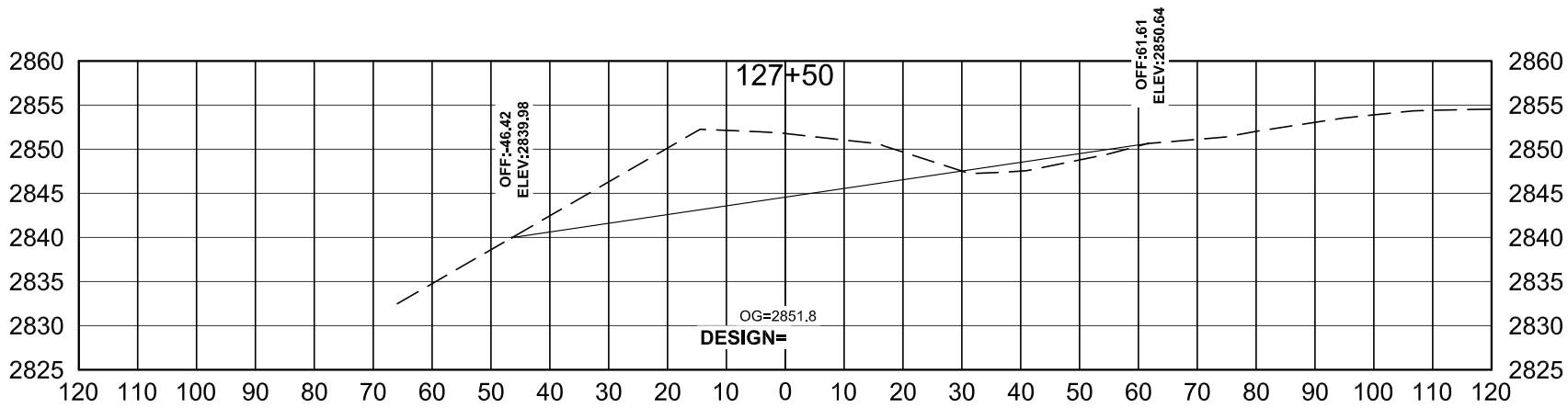

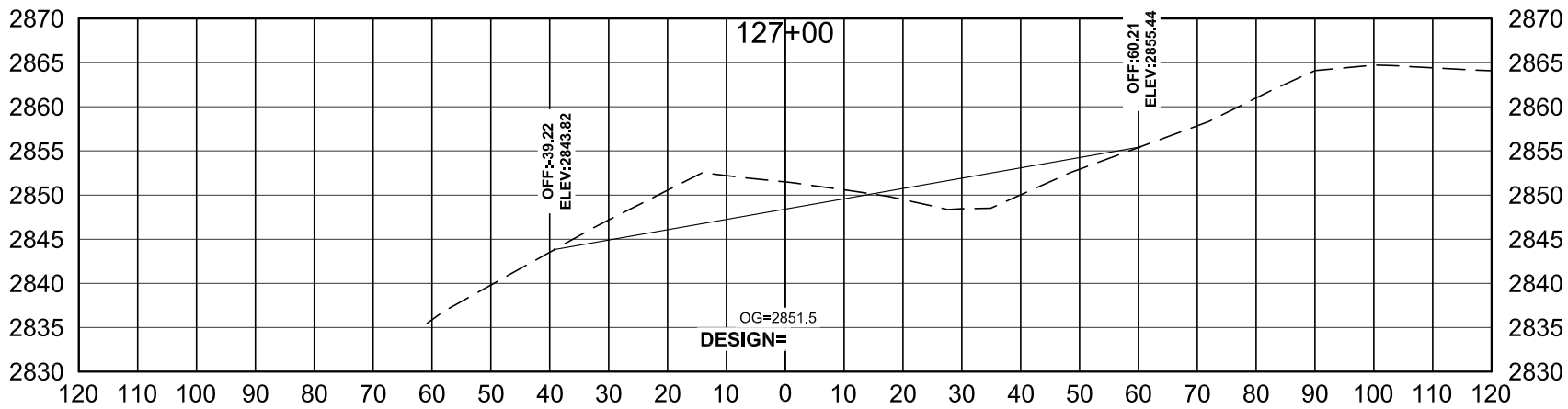

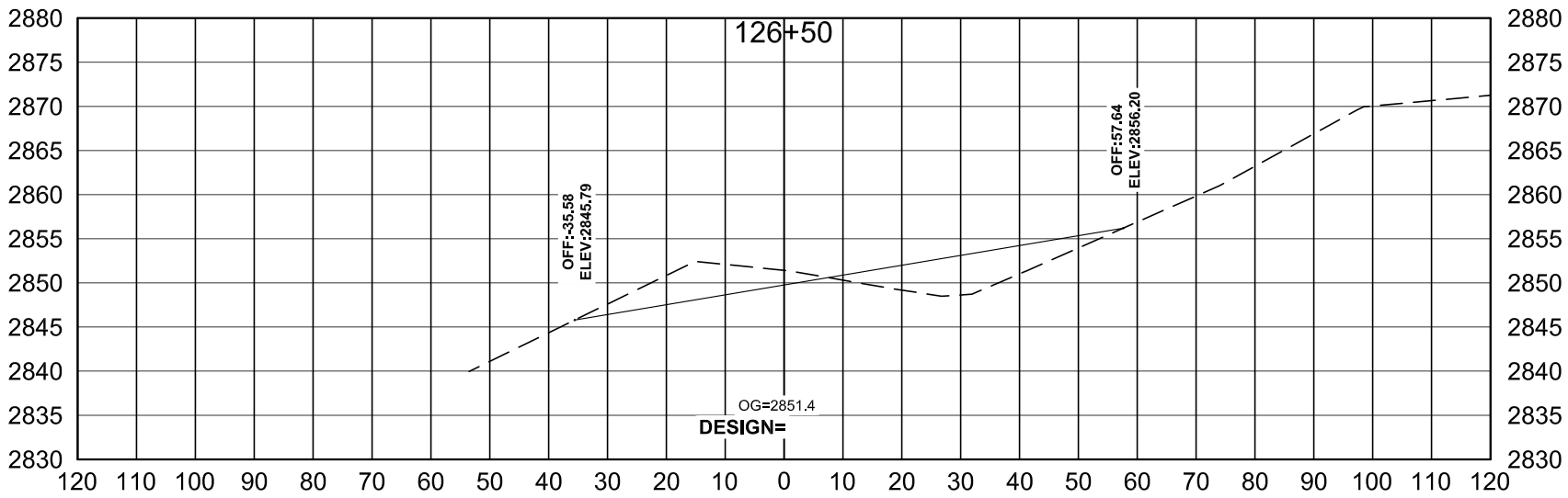

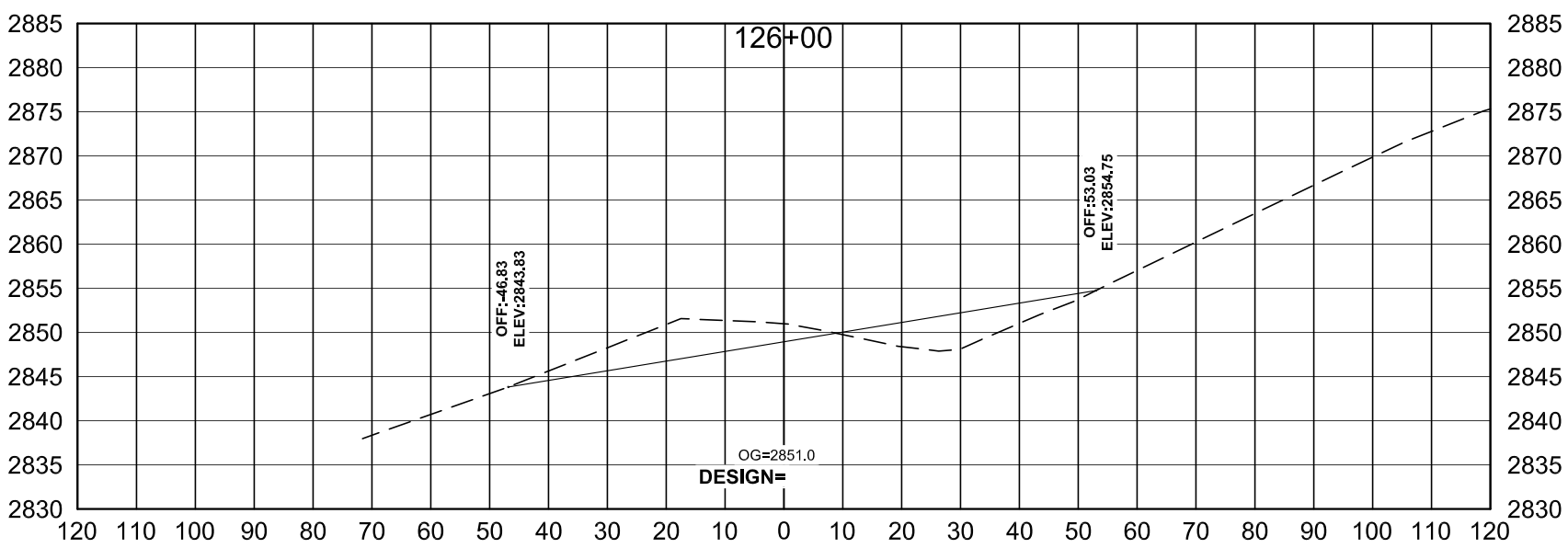

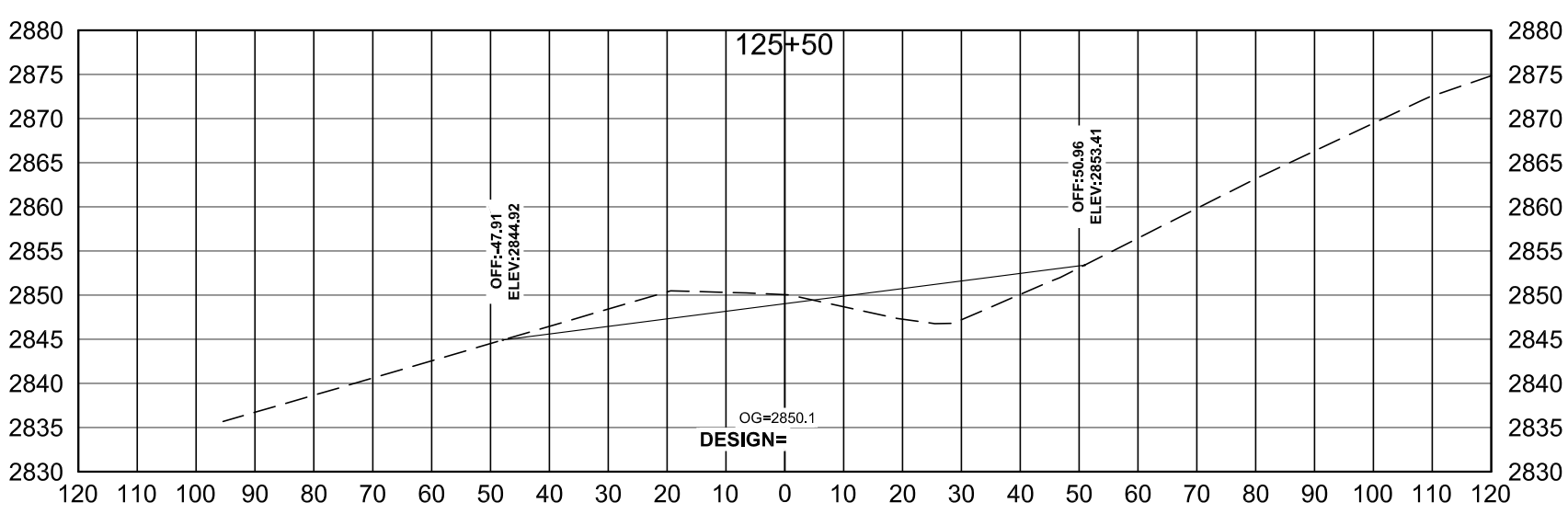

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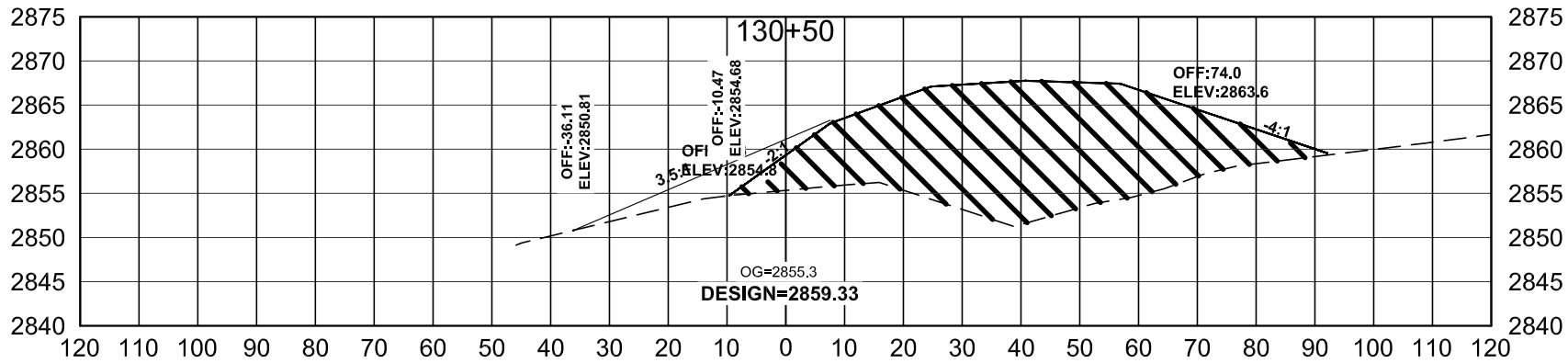

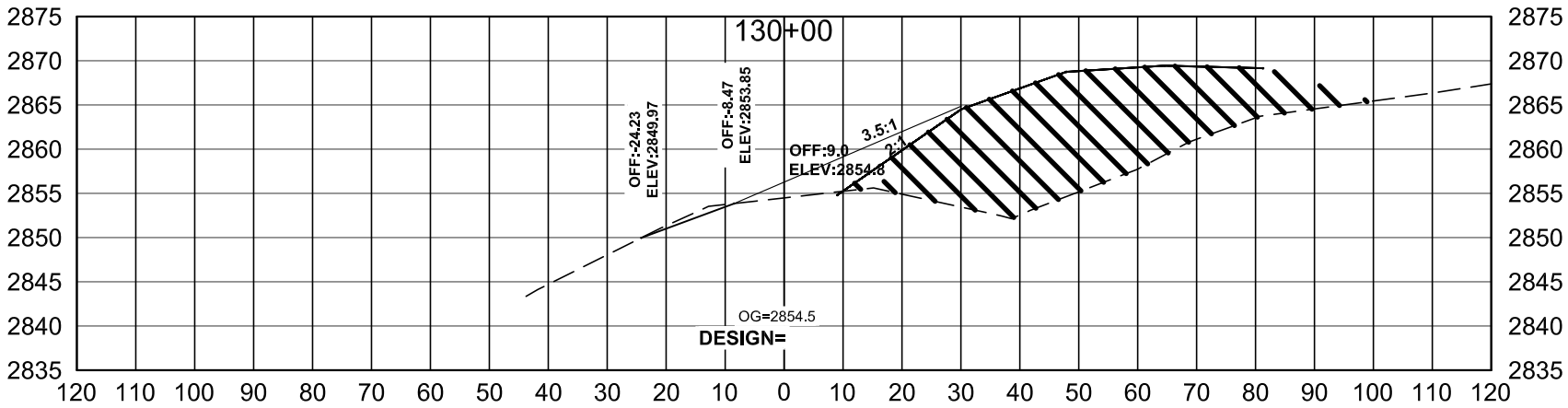

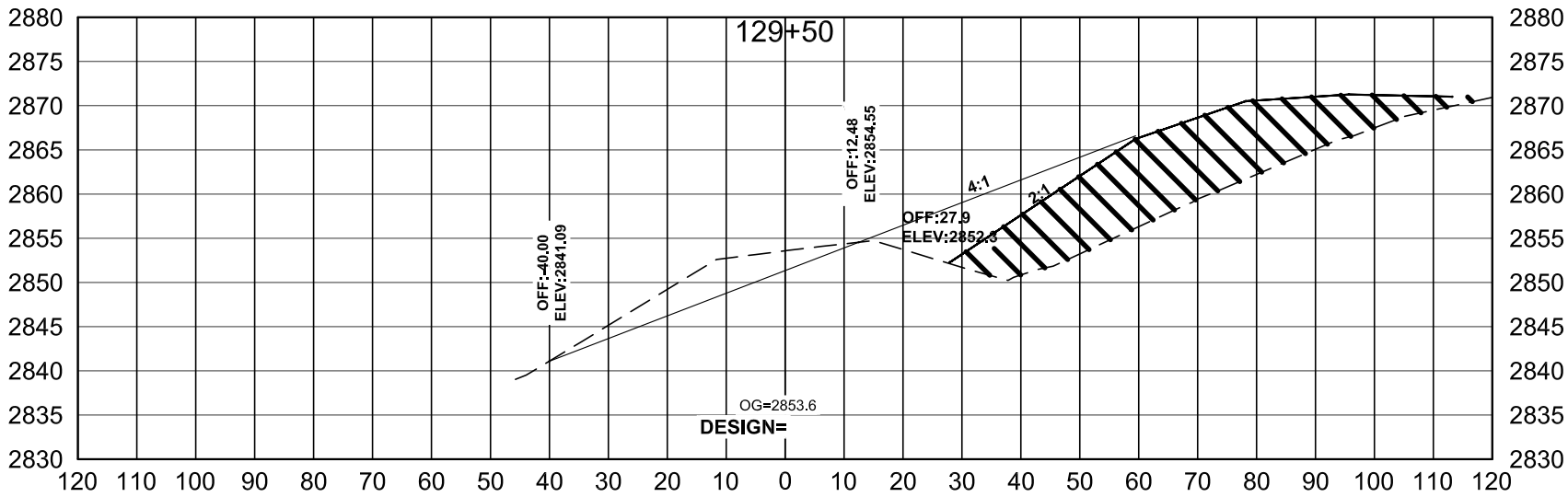

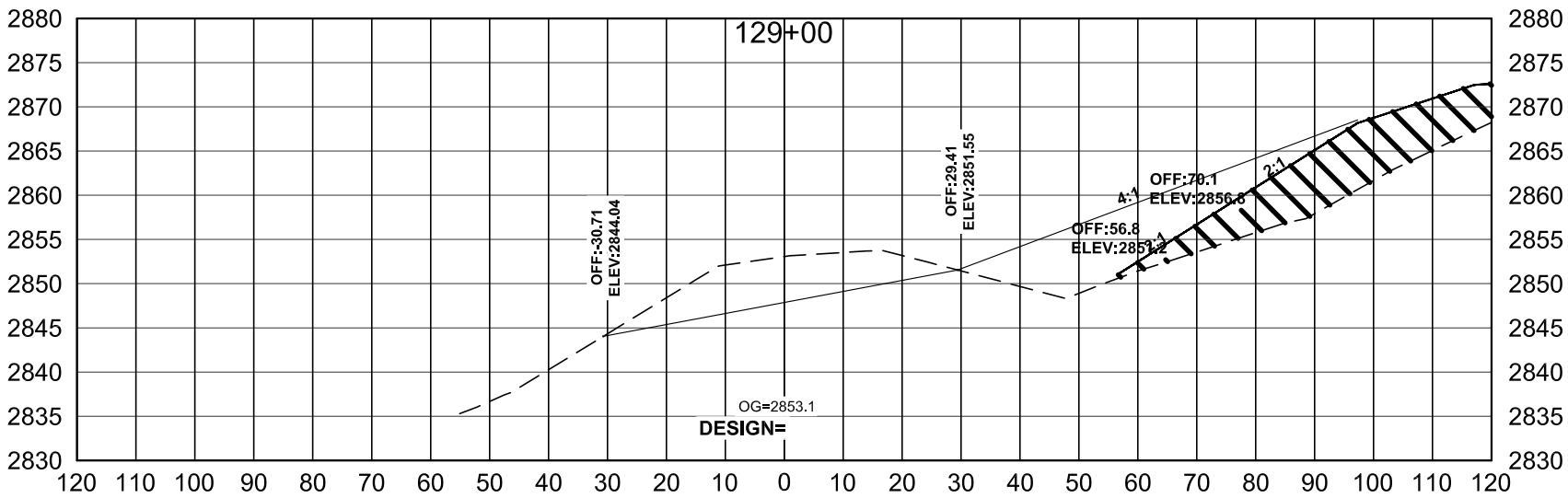

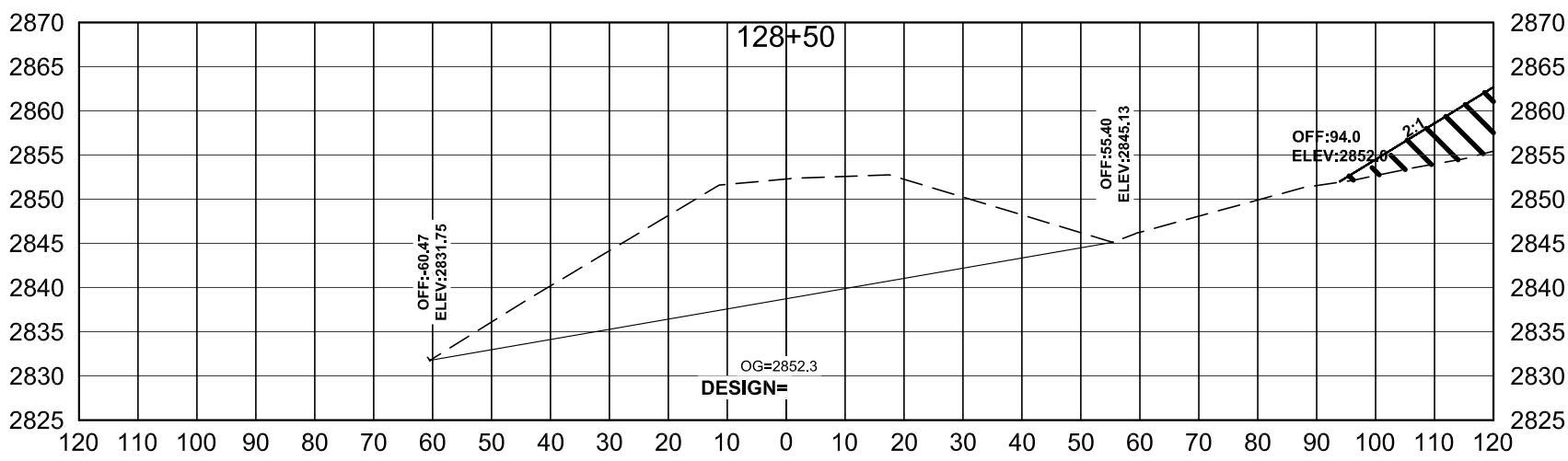

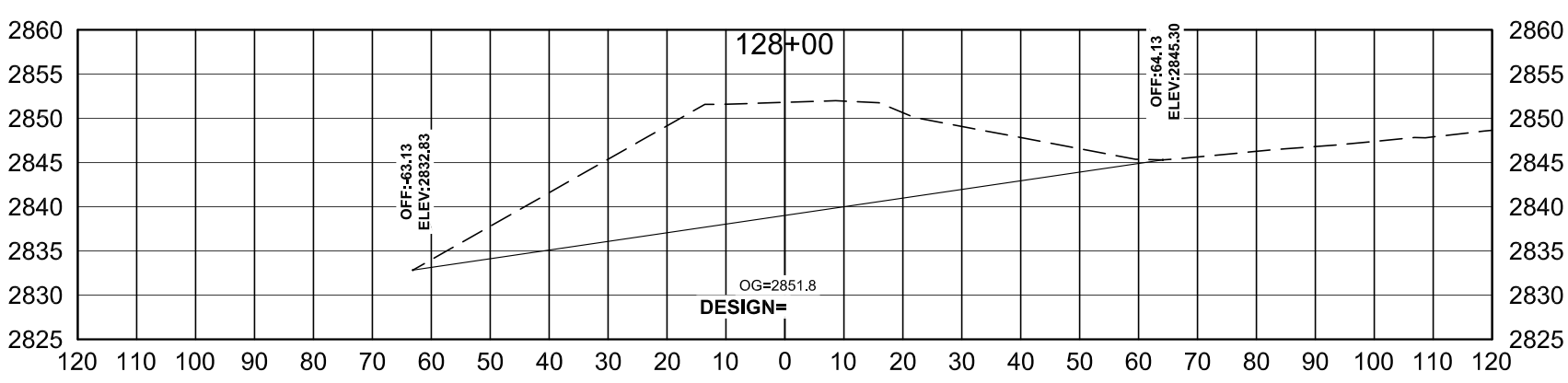

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