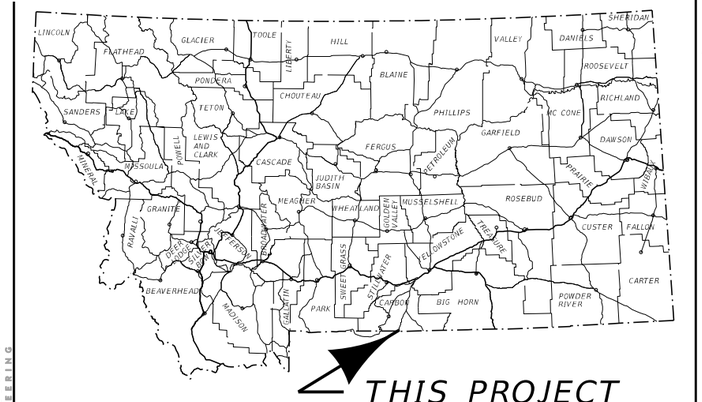
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MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT STPB 9005(55)
BRIDGE REPLACEMENT
CLARKS FORK - 9 M S BELFRY
CARBON COUNTY



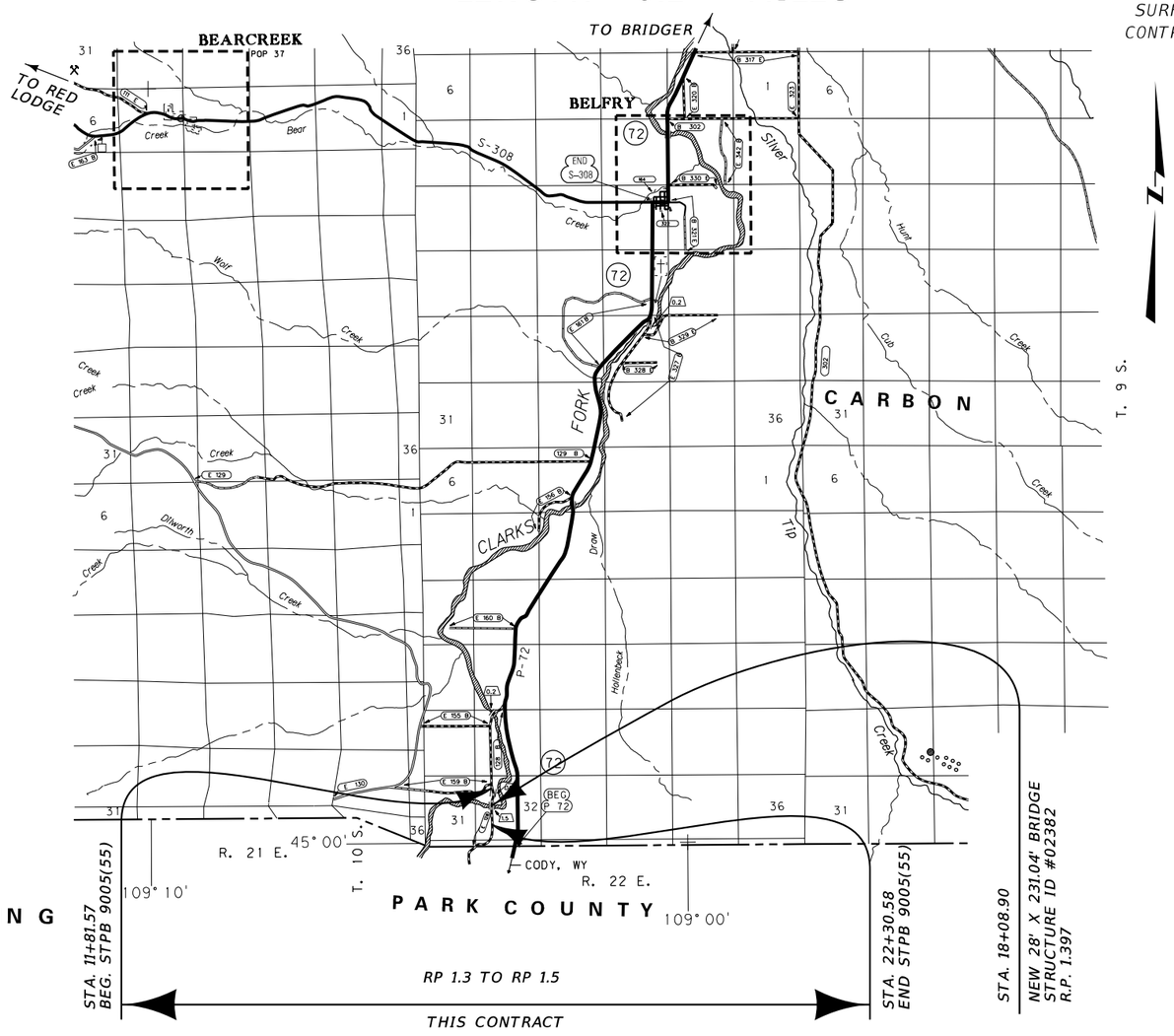
PROJECT DESIGN DATA	
PRESENT 2019	A.D.T. = 60
LETTING 2022	A.D.T. = 64
DESIGN 2042	A.D.T. = 84
	D.H.V. =
	TRUCKS =
	V. = 40 MPH
	18 KIP ESAL'S = 10
	GROWTH RATE = 1.0%

LETTING DATE - _____

CSF = 0.99980387

LENGTH 0.2 MILES

SURFACING SOURCES - CONTRACTOR FURNISHED



STA. 11+81.57
BEG. STPB 9005(55)

RP 1.3 TO RP 1.5

THIS CONTRACT

STA. 22+30.58
END STPB 9005(55)

STA. 18+08.90
NEW 28' X 231.04' BRIDGE
STRUCTURE ID #02382
R.P. 1.397

PLANS PREPARED BY

GreatWest ENGINEERING
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

RELATED PROJECTS

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	
I.C.	
P. E.	STPB 9005(54)

APPROVED BY:
GREAT WEST ENGINEERING

MONTANA * PROFESSIONAL ENGINEER * KARL F. YAKAWICH 15133 PE LICENSED

DocuSigned by:
Karl Yakawich
4791B33005A9454...
12/15/2022
DATE

MONTANA
DEPARTMENT OF TRANSPORTATION

RECIEVED BY: CONSULTANT DESIGN ENGINEER

DocuSigned by:
Kelly Williams
6625FECF85E2476...
12/15/2022
DATE

3	MONTANA Department of Transportation	...\9523000\RD\9523000rdTT.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022
2		11/2/2022	REVIEWED BY	R. HOLM	8/26/2022
		2:37:19 PM lwilliams	CHECKED BY	K. YAKAWICH	8/26/2022
					ROAD PLANS
					UPN 9523000

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NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 3/8" AGG.	= 6.2% OF PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)

MISC. TO BE MOVED OR REMOVED BY OTHERS

ALL PRIVATELY OWNED SIGNS TO BE REMOVED BY OWNER.

PUBLIC LAND SURVEY MONUMENTS

ALL MONUMENTS TO BE REMOVED AND RELOCATED OR RESET BY STATE FORCES.

CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION

APPROACHES

CONSTRUCT APPROACHES TO A 24' FINISHED TOP ON A 35' SUBGRADE UNLESS NOTED OTHERWISE IN THE PLANS.

PROVIDE THE FOLLOWING SURFACING ON PRIVATE APPROACHES:
- 0.20' PLANT MIX BITUMINOUS SURF.
- 0.60' CRUSHED AGGREGATE COURSE

PROVIDE THE FOLLOWING SURFACING ON FARM FIELD APPROACHES:
- 0.20' CRUSHED TOP SURFACING
- 0.40' CRUSHED AGGREGATE COURSE

SURFACE ALL APPROACHES TO R/W OR AS SHOWN ON PLANS.

DO NOT DISTURB

TELEPHONE PEDESTAL 55' LEFT OF STA. 16+18
TELEPHONE PEDESTAL 35' LEFT OF STA. 21+76
PROPERTY SOUTHEAST OF BRIDGE (PARCEL 3) INCLUDING TREES, FENCE, AND CATTLE GUARD 19+04 TO 22+31 LT

UTILITIES

CALL THE UTILITIES UNDERGROUND LOCATION CENTER (811) OR OTHER NOTIFICATION SYSTEM FOR THE MARKING AND LOCATION OF ALL LINES AND SERVICES BEFORE EXCAVATING. ALL CLEARANCES OR DEPTHS PROVIDED FOR UTILITIES ARE FROM EXISTING GROUND LINE.

SOILS INFORMATION

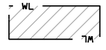
SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION. THE LOCATION OF GEOTECHNICAL BORINGS IS SHOWN ON THE PLAN VIEW WITH THE FOLLOWING SYMBOL:

BORING NUMBER

(GEOTECHNICAL BORING)

WETLANDS

WETLANDS EXIST ADJACENT TO THE ROADWAY AND MAY EXIST BEYOND THE PROJECT LIMITS. WETLAND AREAS AND PERMANENT WETLAND IMPACT AREAS WITHIN THE PROJECT LIMITS HAVE BEEN DELINEATED AND ARE SHOWN ON THE PLANS. ANY ACTION IMPACTING WETLAND AREAS OUTSIDE OF THE PERMANENT IMPACT AREAS SHOWN IS THE RESPONSIBILITY OF THE CONTRACTOR.

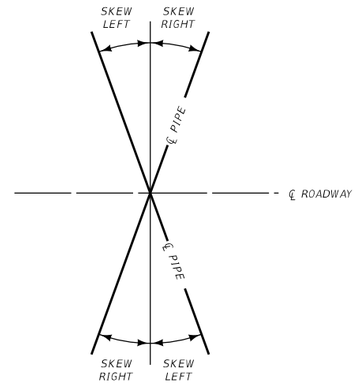


DELINEATED WETLAND AREAS



PERMANENT WETLAND IMPACTED AREAS

SKEW DIAGRAM



WETLAND DELINEATION TABLE

WETLAND DESIGNATION	STATION FROM	STATION TO	WETLAND AREA (acres) DELINEATED AREA	WETLAND AREA (acres) PERMANENT IMPACTED AREA	REMARKS
WL1a	12+37	15+24	0.088	0.037	RT, CLARKS FORK RIVER
WL1b	13+16	15+40	0.280	0.005	RT
WL2	16+56	20+28	0.183	0.020	LT & RT, CLARKS FORK RIVER
WL3	17+18	21+56	0.149	0.032	LT & RT, CLARKS FORK RIVER
TOTAL			0.70	0.09	

AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

APPROACHES (FOR INFORMATION ONLY)

STATION	TYPE	linear feet WIDTH	RADIUS # LEFT	RADIUS # RIGHT	linear feet LENGTH	EXISTING SURFACING	feet PMS THK.	feet CTS THK.	feet CAC THK.	PROPOSED SURFACE	tons PLANT MIX BIT. SURF. COMM. PG 64-28	cubic yards CR. TOP SURF. TY.B GR.3	cubic yards CRUSHED AGG. COURSE	cubic yards SPECIAL BORROW NEATLINE	sq. yards AGG. TREAT.	REMARKS
13+30.00	PRIVATE	24	15	15	47.5	ASPHALT	0.2	0.2	0.6/0.4	PAVE TO R/W, GRAVEL BEYOND R/W	8	20	58	10	362	PRIVATE APPROACH LT
14+00.00	FARM FIELD	24	15	15	32.7	GRAVEL		0.2	0.4	GRAVEL		7	14	66	98	FARM FIELD APPROACH RT
20+81.97	FARM FIELD	24	15	15	23.4	GRAVEL		0.2	0.4	GRAVEL		5	11	0	74	FARM FIELD APPROACH LT
20+81.97	FARM FIELD	24	15	15	46.3	GRAVEL		0.2	0.4	GRAVEL		9	20	56	136	FARM FIELD APPROACH RT
21+63.10	FARM FIELD	24	15	15	22.6	GRAVEL		0.2	0.4	GRAVEL		5	10	0	71	FARM FIELD APPROACH LT
SUBTOTAL	PRIVATE										8	46	113	132	741	

ALL RADII MEASURED TO FRONT OF GUTTER OR EDGE OF SHOULDER

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CENTERLINE ALIGNMENT COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
10+00.00	POT	278,925.521	2,081,762.190	BEGIN ALIGNMENT
11+81.57	POT	278,743.950	2,081,732.834	BEGIN STPB 9005(55)
12+22.17	PC	278,703.356	2,081,762.978	
13+32.86	PI	278,592.663	2,081,763.371	
14+43.54	PT	278,482.013	2,081,760.264	
14+43.54	PC	278,482.013	2,081,760.264	
15+54.23	PI	278,371.363	2,081,757.157	
16+64.90	PT	278,260.670	2,081,757.550	
16+93.39	POT	278,232.187	2,081,757.651	BRIDGE END
19+24.42	POT	278,001.155	2,081,758.470	BRIDGE END
19+52.90	PC	277,972.672	2,081,758.572	
20+22.33	PI	277,903.250	2,081,758.819	
20+91.74	PT	277,833.847	2,081,760.442	
20+91.74	PC	277,833.847	2,081,760.442	
21+61.17	PI	277,764.444	2,081,762.065	
22+30.58	PT	277,695.022	2,081,762.311	END STPB 9005(55)
23+80.58	POT	277,545.023	2,081,762.844	END ALIGNMENT

GPK NAME: JOB952.GPK CHAIN NAME: DESIGN PROFILE NAME: DESIGN_P

LINEAR AND LEVEL DATA

LENGTH OF ROADWAY (CHANCE ROAD)	817.98 ft
LENGTH OF BRIDGE	231.03 ft
TOTAL LENGTH OF STPB 9005(55)	1049.01 ft

BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM NAD 83-2011

LEVEL DATUM SOURCE

NAVD 88 (ELEVATIONS DERIVED FROM DIFFERENTIAL LEVELS HOLDING THE UPN 4065000 PROJECT ELEVATION AT MARK 604)

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CONTROL DIAGRAM

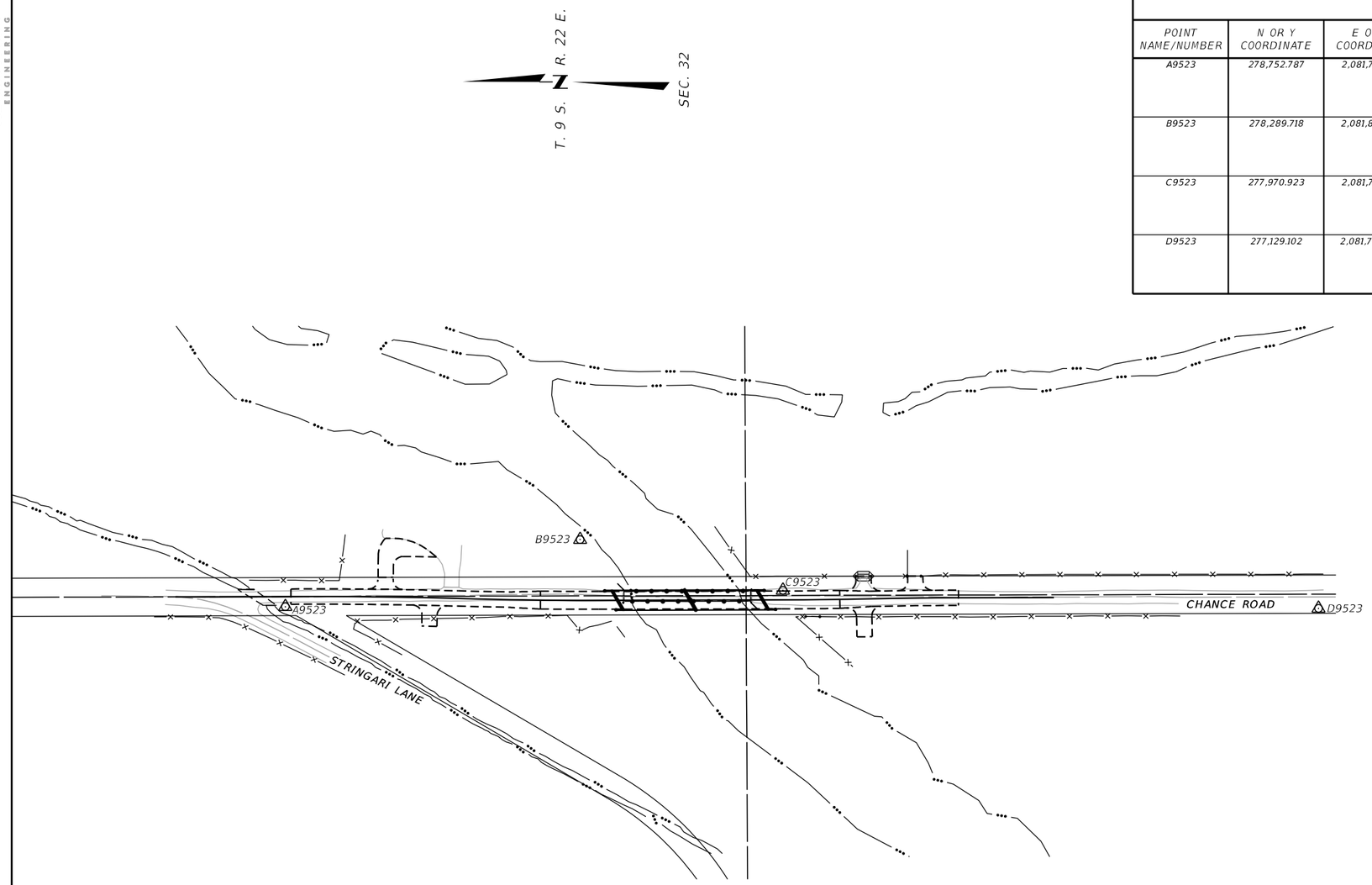
SCALE: 1"=1000'

NOTE:
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-2011.
NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF
INTERNATIONAL FEET AND ELEVATIONS ARE IN UNITS OF U.S. SURVEY FEET.

DIMENSIONS SHOWN ON THE PLANS ARE GRID. ALL SURVEY AND STAKING REQUIRE
THE USE OF A COMBINATION SCALE FACTOR (CSF) TO CONVERT GRID DIMENSIONS
TO GROUND DIMENSIONS (GRID DISTANCE / CSF = GROUND DISTANCE).
THE CSF FOR THIS PROJECT IS 0.99980387.

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
A9523	278,752.787	2,081,746.915	3997.02	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "A9523" FLUSH WITH THE GROUND. THE MONUMENT IS ON CHANCE ROAD 500' NORTH OF BRIDGE OVER CLARKS FORK RIVER, AND 15' WEST OF THE CENTERLINE OF CHANCE ROAD. 12' SOUTH OF THE SOUTHWEST CORNER OF A BRIDGE OVER AN IRRIGATION DITCH. SET A WITNESS POST 3' WEST OF THE CAP.
B9523	278,289.718	2,081,853.012	3997.01	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "B9523" FLUSH WITH THE GROUND. THE MONUMENT IS ON CHANCE ROAD 50' NORTH OF BRIDGE OVER CLARKS FORK RIVER, AND 80' EAST OF THE ROAD CENTERLINE. 3.8' NORTH OF THE RIVER BANK. 12.5' NORTHEAST OF A WOODPOST. 16.5' SOUTH OF A LARGE ROCK.
C9523	277,970.923	2,081,773.691	4002.73	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "C9523" FLUSH WITH THE GROUND. THE MONUMENT IS ON CHANCE ROAD EAST SIDE. 50' SOUTH OF THE BRIDGE OVER CLARKS FORK RIVER, 8.4' EAST OF CENTERLINE, AND 8.3' NORTHWEST OF SIGN.
D9523	277,129.102	2,081,746.238	4007.32	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "D9523" FLUSH WITH THE GROUND. THE MONUMENT IS ON CHANCE ROAD WEST SIDE, 900' SOUTH OF THE BRIDGE OVER CLARKS FORK RIVER. 15' WEST OF CHANCE ROAD CENTERLINE, 11' EAST OF A GATE POST, 20' NORTH OF A FIELD APPROACH. SET WITNESS POST 3' WEST OF THE CAP.



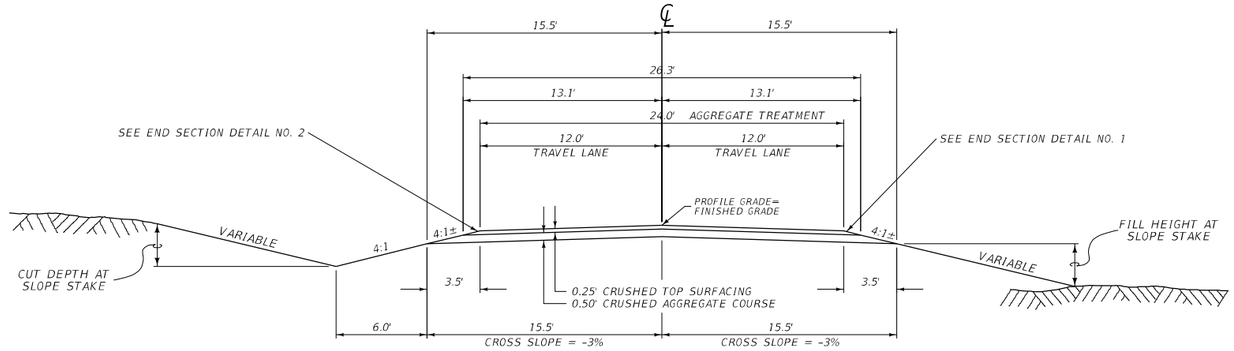
3	MONTANA Department of Transportation	...\9523000\RD\9523000rdTRCTRL.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022	ROAD PLANS	CLARKS FORK - 9 M S BELFRY / STPB 9005(55)
2		11/2/2022	REVIEWED BY	R. HOLM	8/26/2022		
		2:37:29 PM lwilliams	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000 / SHEET 4

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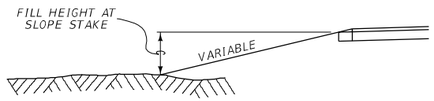
TYPICAL SECTION NO. 1

MAINLINE

11+81.57	TO	15+23.68	BEGIN PROJECT
15+23.68	TO	15+73.68	TRANS TYP NO 1 TO TYP NO 2
20+94.13	TO	22+30.58	END PROJECT



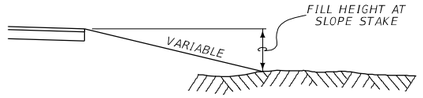
2. END SECTION DETAIL



STA. 20+69.36 TO STA. 22+30.58 LT

QUANTITIES				
UNIT	AGGREGATE		UNIT	AGG. TREATMENT
	CR. TOP SURFACING TY. B GR. 3	CR. AGG. COURSE		
AREA square feet	6.28	14.31	square yards PER STATION	267
cubic yards PER STATION	23.3	53.0		
tons PER STATION				
square yards PER STATION				

1. END SECTION DETAIL



STA. 11+81.57 TO STA. 12+20.00

TRANSITION FROM END SECTION DETAIL TO STD TYP NO 1
STA. 12+20.00 TO STA. 12+25.00

* FILL SLOPES	
0' - 10'	4:1
10' - 20'	3:1
20' - 30'	2:1
OVER 30'	2:1

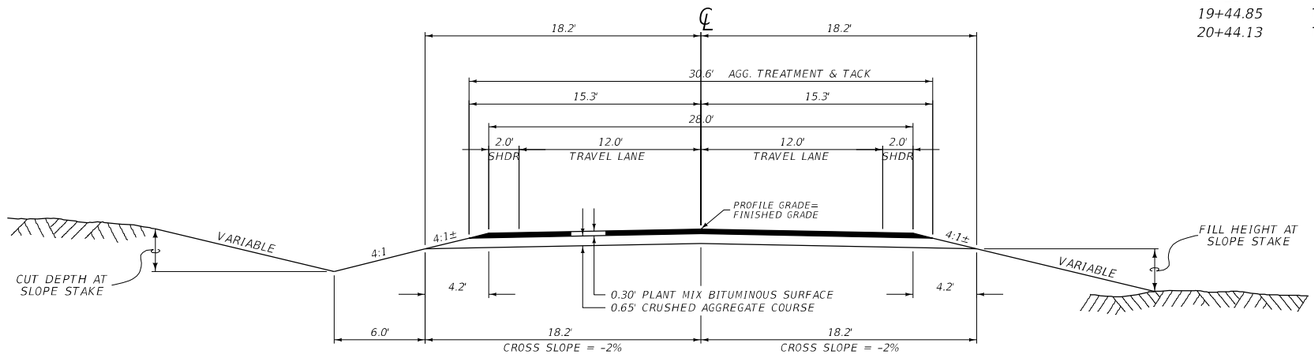
* BACK SLOPES	
0' - 5'	4:1
5' - 10'	3:1
10' - 15'	2:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 2

MAINLINE

15+73.68	TO	16+72.96	
16+72.96	TO	16+91.05	NO SURF INSLOPE LT
16+91.05	TO	16+93.39 B.E.	NO SURF INSLOPE LT & RT
19+24.42 B.E.	TO	19+26.76	NO SURF INSLOPE LT & RT
19+26.76	TO	19+44.85	NO SURF INSLOPE LT & RT
19+44.85	TO	20+44.13	NO SURF INSLOPE RT
20+44.13	TO	20+94.13	TRANS TYP NO 2 TO TYP NO 1



QUANTITIES					
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	AGG. TREATMENT	EMULSIFIED ASPHALT TACK**
AREA square feet	8.79	21.78	square yards PER STATION		340	340
cubic yards PER STATION	32.6	80.7	tons PER STATION	3.89		
tons PER STATION	62.8		gallons PER STATION			17
square yards PER STATION						

** BASED ON 1 APPLICATION

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SUMMARY

GRADING

STATION	cubic yards			REMARKS
	UNCL. EXC.	EXCESS EXC.	EMB.+	
11+81.57				
	518	518		
16+93.39 B.E.				
				CHANCE ROAD BRIDGE
19+24.42 B.E.				
	879	879		
22+30.58				
TOTAL	1,397	# 1,397	# 0	

FOR INFORMATION ONLY

ADDITIONAL GRADING

STATION		cubic yards			REMARKS
		INCL. IN ROADWAY		ADD. UNCL. EXC.	
FROM	TO	UNCL. EXC.	EMB.+		
13+30.00		45			PRIVATE APPROACH LT
14+00.00		5			FARM FIELD APPROACH RT
16+42.92	16+47.70	5			SUBEXCAVATION
16+47.70	16+93.39 B.E.	235			BRIDGE END BACKFILL
16+72.63	17+48.17	175			NORTH ABUTMENT EXC.
18+46.22	19+43.41	330			SOUTH ABUTMENT EXC.
19+24.42 B.E.	19+70.29	300			BRIDGE END BACKFILL
19+70.29	20+44.13	145			SUBEXCAVATION
20+81.97		15			FARM FIELD APPROACH LT
20+81.97		5			FARM FIELD APPROACH RT
21+63.10		15			FARM FIELD APPROACH LT
TOTAL		~	~	0	

SURFACING

STATION		linear feet				FOR	AGGREGATE			BITUMINOUS MATERIAL		REMARKS
							tons	cubic yards		gallons	square yards	
FROM	TO	GROSS	NET	+	-		PLANT MIX BIT. SURF. COMM. PG 64-28	CR. TOP SURF. TY.B GR.3	CRUSHED AGG. COURSE	EMULSIFIED ASPHALT TACK	AGG. TREAT.	
11+81.57	12+20.00	38.43	38.43					9	19		103	TYPICAL SECTION NO 1 - END SECTION RT
12+20.00	12+25.00	5.00	5.00					1	3		13	TYPICAL SECTION NO 1 - TRANS. END SECTION RT
12+25.00	15+23.68	298.68	298.68					70	158		797	TYPICAL SECTION NO 1
15+23.68	15+73.68	50.00	50.00					13	28		145	TRANS TYP SEC NO 1 TO TYP SEC NO 2
15+73.68	16+72.96	99.28	99.28				62		80	17	338	TYPICAL SECTION NO 2
16+72.96	16+91.05	18.09	18.09				11		13	3	56	TYPICAL SECTION NO 2 - NO SURF INSLOPE LT
16+91.05	16+93.39 B.E.	2.34	2.34				1		2	1	6	TYPICAL SECTION NO 2 - NO SURF INSLOPE RT &
16+93.39 B.E.	19+24.42 B.E.	231.03	0.00			231.03	BRIDGE					
19+24.42 B.E.	19+26.76	2.34	2.34				1		2	1	6	TYPICAL SECTION NO 2 - NO SURF INSLOPE RT &
19+26.76	19+44.85	18.09	18.09				11		13	3	56	TYPICAL SECTION NO 2 - NO SURF INSLOPE RT
19+44.85	20+44.13	99.28	99.28				62		80	17	338	TYPICAL SECTION NO 2
20+44.13	20+94.13	50.00	50.00					13	27		145	TRANS TYP SEC NO 2 TO TYP SEC NO 1
20+94.13	22+30.58	136.45	136.45					32	68		364	TYPICAL SECTION NO 1 - END SECTION LT
						ADDITIONAL SURFACING	108	46	170	40	793	
TOTAL		1,049.01	817.98	0.00	231.03		256	184	663	82	3,160	

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

STATION		linear feet				FOR	AGGREGATE			BITUMINOUS MATERIAL		REMARKS
							tons	cubic yards		gallons	square yards	
FROM	TO	GROSS	NET	+	-		PLANT MIX BIT. SURF. COMM. PG 64-28	CR. TOP SURF. TY.B GR.3	CRUSHED AGG. COURSE	EMULSIFIED ASPHALT TACK	AGG. TREAT.	
15+07.07	16+91.05					GUARDRAIL AGG. WIDENING RT			22			
15+67.60	16+72.96					GUARDRAIL AGG. WIDENING LT			11			
16+32.96	16+72.96					EMBANKMENT PROTECTOR LT	2			1	13	
16+51.05	16+91.05					EMBANKMENT PROTECTOR RT	2			1	13	
19+26.76	19+65.26					TYPE 3 BANK PROTECTION LT	2			1	13	
19+26.76	20+71.31					GUARDRAIL AGG. WIDENING LT			12			
19+44.85	19+83.35					TYPE 3 BANK PROTECTION RT	2			1	13	
19+44.85	20+50.24					GUARDRAIL AGG. WIDENING RT			12			
16+93.39 B.E.	19+24.42 B.E.	231.03	231.03			BRIDGE OVER CLARK'S FORK	92			36		0.2' PMS WEARING COURSE
						APPROACHES	8	46	113		741	
SUBTOTAL		~	~	~	~		108	46	170	40	793	

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SUMMARY

REMOVE STRUCTURE

STATION	lump sum REMOVE STRUCTURE	REMARKS
18+05	1	TRUSS STRUCTURE 15.6' X 203', NBI NO. L05129001+05001
TOTAL	1	

REMOVE TREES

STATION FROM	STATION TO	lump sum REMOVE TREES	REMARKS
15+05	16+03	0.3	LT
15+11	17+65	0.7	RT
TOTAL		1	

SPECIAL BORROW

STATION FROM	STATION TO	cubic yards SPECIAL BORROW NEATLINE	REMARKS
12+00.00	16+72.96	1,033	USE SPECIAL BORROW IN PLACE OF EMB.+ FOR ALL ROADWORK AND MAINLINE SUBEXCAVATION
13+30.00		10	PRIVATE APPROACH LT
14+00.00		66	FARM FIELD APPROACH RT
16+32.96	16+72.96	60	EMBANKMENT PROTECTOR LT
16+51.05	16+91.05	60	EMBANKMENT PROTECTOR RT
19+26.76	19+65.26	15	TYPE 3 BANK PROTECTION LT
19+44.85	19+83.35	15	TYPE 3 BANK PROTECTION RT
19+68.50	20+44.13	227	MAINLINE SUBEXCAVATION
20+44.13	22+30.58	43	USE SPECIAL BORROW IN PLACE OF EMB.+ FOR ALL ROADWORK
20+81.97		56	FARM FIELD APPROACH RT
TOTAL		1,585	

BRIDGE END BACKFILL

STATION FROM	STATION TO	cubic yards BRIDGE END BACKFILL * TYPE 3	square yards GEOTEXTILE PERM. EROS. CONTROL ** HIGH SURV. CLASS B	REMARKS
16+47.70	16+93.39 B.E.	405	209	BENT-1
19+24.42 B.E.	19+70.29	379	199	BENT-3
TOTAL		784	408	

* MEASUREMENT FOR PAYMENT IS THE FINAL IN-PLACE VOLUME
** SEE GEOTEXTILE SUMMARY RECAP

GEOTEXTILE SUMMARY RECAP

STATION FROM	STATION TO	square yards GEOTEXTILE PERM. EROS. CONTROL HIGH SURV. CLASS B	REMARKS
13+75.00	16+72.96	582	EMBANKMENT FOUNDATION TREATMENT RT
16+42.92	16+47.70	15	SUBEXCAVATION
16+47.70	16+93.39 B.E.	209	BRIDGE END BACKFILL - BENT-1
16+72.63	17+48.17	536	RANDOM RIPRAP - NORTH BRIDGE END *
18+46.22	19+43.41	643	RANDOM RIPRAP - SOUTH BRIDGE END *
19+24.42 B.E.	19+70.29	199	BRIDGE END BACKFILL - BENT-3
19+26.76	19+65.26	54	EMB. PROTECTOR - TYPE 3 BANK PROTECTION
19+44.85	19+83.35	62	EMB. PROTECTOR - TYPE 3 BANK PROTECTION
19+70.29	20+44.13	362	SUBEXCAVATION
TOTAL		2,662	

* 16 OZ/SY GEOTEXTILE REQUIRED UNDER CLASS 3 RIPRAP. SEE SPECIAL PROVISIONS.

GEOTEXTILE

STATION FROM	STATION TO	square yards GEOTEXTILE PERM. EROS. CONTROL * HIGH SURV. CLASS B	REMARKS
13+75.00	16+72.96	582	EMBANKMENT FOUNDATION TREATMENT RT
16+42.92	16+47.70	15	SUBEXCAVATION
19+70.29	20+44.13	362	SUBEXCAVATION
TOTAL		959	

* SEE GEOTEXTILE SUMMARY RECAP

RANDOM RIPRAP

STATION FROM	STATION TO	cubic yards RANDOM RIPRAP CL. 3	cubic yards GRANULAR BEDDING MATERIAL #	square yards GEOTEXTILE PERM. EROS. CONTROL * HIGH SURV. CLASS B	square yards RIPRAP REVEGE-TATION	REMARKS
16+72.63	17+48.17	413.6	75	536	247	NORTH BRIDGE END
18+46.22	19+43.41	518.3	88	643	291	SOUTH BRIDGE END
TOTAL		931.9	~	1,179	538	

\# FOR INFORMATION ONLY- INCLUDED IN RIPRAP REVEGETATION BID ITEM
* 16 OZ/SY GEOTEXTILE REQUIRED UNDER CLASS 3 RIPRAP. SEE SPECIAL PROVISIONS. SEE GEOTEXTILE SUMMARY RECAP.

EMBANKMENT PROTECTORS

STATION FROM	STATION TO	linear feet EMBANKMENT PROTECTOR 18" LEFT	linear feet EMBANKMENT PROTECTOR 18" RIGHT	linear feet CONCRETE CURB 4" LEFT	linear feet CONCRETE CURB 4" RIGHT	cubic yards BANK PROTECTION TYPE 3	square yards GEOTEXTILE PERM. EROS. CONTROL * HIGH SURV. CLASS B	REMARKS
16+32.96	16+72.96	18		49.8		3.0		LT
16+51.05	16+91.05		18		49.8	3.0		RT
19+26.76	19+65.26			40.3		2.2	54	LT
19+44.85	19+83.35				40.3	2.6	62	RT
SUBTOTAL		18	18	90.1	90.1			
TOTAL		36		180.2		10.8	116	

* SEE GEOTEXTILE SUMMARY RECAP

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SUMMARY

GUARDRAIL

STATION		linear feet		each				REMARKS
		BOX BEAM GUARDRAIL		BOX BEAM TERMINAL SECTION		BOX BEAM BRIDGE APPROACH SECTION TYPE 2		
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
NEW RAIL								
15+38.03	16+90.97		90		1		1	
15+91.95	16+72.89	18		1		1		
19+26.84	20+43.78	54		1		1		
19+44.92	20+25.86		18		1		1	
REMOVE RAIL								
SUBTOTAL		72	108	2	2	2	2	
TOTAL		180		4		4		

FENCING

STATION		linear feet					each					linear feet		REMARKS
		FARM FENCE				TEMP. FENCE	FARM FENCE PANEL		DEADMAN	PEDESTRIAN PASS	WILDLIFE FRIENDLY FENCING	FARM GATE		
		TYPE F2W-32WW	TYPE F3M-39WW	TYPE F5M	TYPE F5W		SINGLE	DOUBLE				TYPE G2	TYPE G3	
FROM	TO													
21+51.16	21+83.16												32	LT, DOUBLE GATE
21+83.16	22+30.58				47		2							LT, TIE TO EXISTING FENCE
13+28.59	13+92.03			47			1	1						RT, GALVANIZED POSTS
13+92.03	14+08.03											16		RT
14+08.03	16+86.01			274			2	1						RT, GALVANIZED POSTS, WING TO BRIDGE
16+86.01										1				RT
16+87.35	16+91.05						1							RT, WING TO BRIDGE
19+44.85	19+51.75						1							RT, WING TO BRIDGE
19+54.25										1				RT
19+54.25	20+74.11				99		2	1						RT, WING TO BRIDGE
20+74.11	20+89.83											16		
20+89.83	22+30.58				109		2	1						RT, TIE TO EXISTING FENCE
TOTAL		0	0	321	255	0	11	4	3	2		32	32	

SIGNING

SIGN NO.	ITEM	UNIT	QUANTITY	REMARKS
W5-1	REMOVE	EACH	1	NARROW BRIDGE SIGN
R12-1	REMOVE	EACH	1	WEIGHT LIMIT SIGN ON WOOD POLE
W8-1	REMOVE	EACH	1	BUMP SIGN ON WOOD POLE
W12-2	REMOVE	EACH	1	LOW CLEARANCE SIGN ON WOOD POLE
W13-1	REMOVE	EACH	1	MPH WARNING SIGN ON WOOD POLE
BRIDGE SIGNS	REMOVE	EACH	5	4 OBJECT MARKERS AND 1 BUMP SIGN WITH STEEL POSTS
W12-2	REMOVE	EACH	1	LOW CLEARANCE SIGN ON WOOD POLE
W13-1	REMOVE	EACH	1	MPH WARNING SIGN ON WOOD POLE
TOTAL			12	

REVEGETATION

STATION		lump sum	cu. yards	acres			REMARKS
		REVEGE-TATION	TOPSOIL SALVAGING & PLACING	SEED	FERTILIZER	CONDITION SEEDBED	
FROM	TO						
11+81.57	16+93.39 B.E.	0.7	136	0.3	0.3	0.3	
19+24.42 B.E.	22+30.58	0.3	43	0.1	0.1	0.1	
TOTAL		1	~	~	~	~	

FOR INFORMATION ONLY

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HYDRAULIC DATA SUMMARY *

STATION	STREAM NAME (IF NAMED)	SIZE / TYPE STRUCTURE (1)(1A)	DESIGN FLOOD			BASE FLOOD (1%)		OVERTOPPING FLOOD (2)(3)			REMARKS (FLOOD OF RECORD, Qp(max), etc.) (5)
			MAGNITUDE (cfs)	FREQUENCY (%)	H.W. ELEV. (ft)	MAGNITUDE (cfs)	H.W. ELEV. (ft)	MAGNITUDE (cfs)	APPROX. FREQUENCY (%)	H.W. ELEV. (ft)	
18+06.00	CLARKS FORK RIVER	184' - 2 SPAN BRIDGE	10,830	10	3,996.85	14,140	3,998.38	13,190	2.0	3,997.79	OVERTOPPING OCCURS ~440' NORTH OF NORTH BRIDGE END

NOTES :

* H.W. ELEVATIONS SHOWN ARE BASED UPON PEAK FLOW ANALYSIS UNLESS NOTED IN REMARKS COLUMN.

(1) STRUCTURE SIZE OR TYPE AND RELATED HYDRAULIC DATA MAY NOT REFLECT CHANGES MADE DUE TO R/W OR OTHER CONSIDERATIONS (I.E., STOCKPASS ADDED, STRUCTURE SIZE OR TYPE CHANGED, ROAD GRADE CHANGED DURING CONSTRUCTION, ETC.)

(1A) BRIDGE LENGTH SHOWN EQUALS THE WATER SURFACE WIDTH IN THE OPENING AT THE DESIGN H.W. ELEVATION MEASURED NORMAL TO FLOW.

(2) OVERTOPPING IS DEFINED AS FLOW OVER THE ROAD, FLOW THROUGH A SIGNIFICANT RELIEF STRUCTURE OR FLOW OVER THE BASIN DIVIDE WHICHEVER IS LOWER.

(3) FOR THOSE CROSSINGS NOTED BY Qp(max) IN THE REMARKS COLUMN OVERTOPPING DOES NOT OCCUR AND THE FLOOD MAGNITUDE LISTED CORRESPONDS TO THE FLOOD OF SECTION 650.115 (a) (1) (ii) OF FEDERAL-AID POLICY GUIDE; SUBCHAPTER G, PART 650, SUBPART A (DEC. 1991)
THE FLOOD SPECIFIED IS SUBJECT TO STATE-OF-THE-ART CAPABILITY TO ESTIMATE THE EXCEEDANCE PROBABILITY.
(PIPES 0.5%; BRIDGE 0.2%)

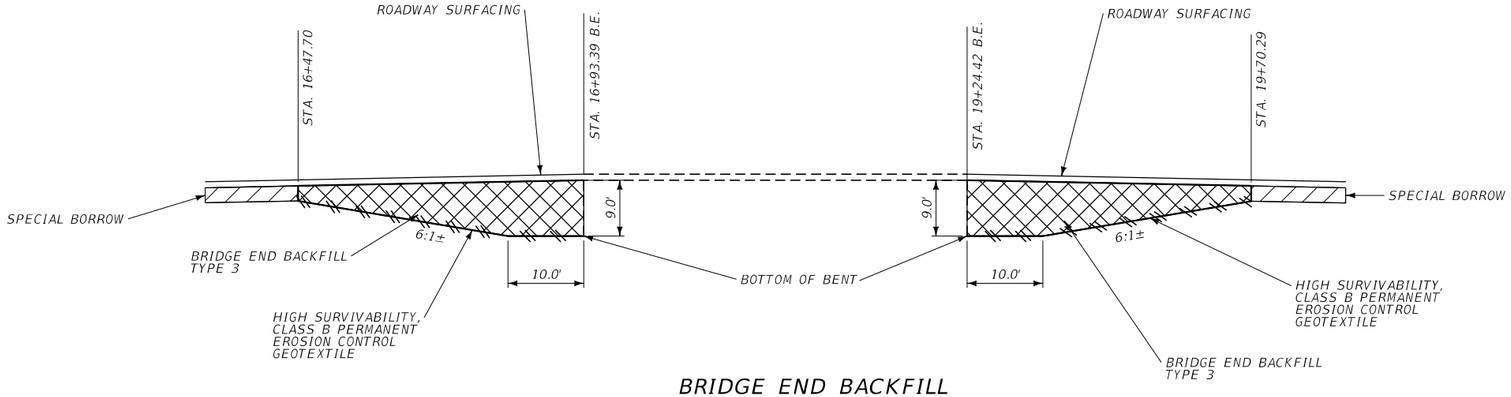
(4) HIGH WATER ELEVATIONS MAY VARY SLIGHTLY DEPENDING UPON THE PIPE OPTION SELECTED.

(5) PROCEDURE MEMORANDUM NO.10, HYDRAULICS MANUAL CHAPTER 9 APPENDIX H.

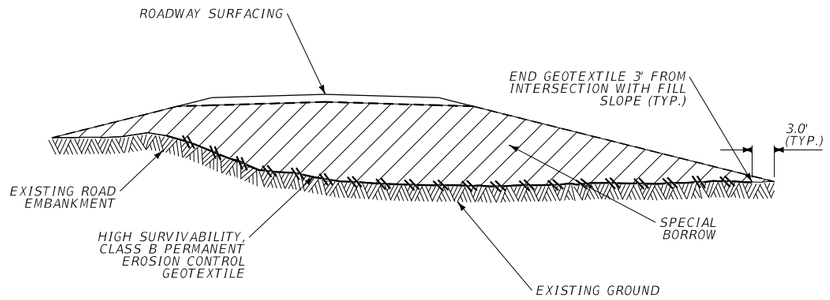
EXCEEDANCE	PROBABILITIES
10 YEAR	10% CHANCE
25 YEAR	4% CHANCE
50 YEAR	2% CHANCE
100 YEAR	1% CHANCE
200 YEAR	.5% CHANCE
500 YEAR	.2% CHANCE

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DETAIL



BRIDGE END BACKFILL



EMBANKMENT FOUNDATION TREATMENT

NOTES:

1. SPECIAL BORROW IS TO BE PLACED ON TOP OF HIGH SURVIVABILITY CLASS B PERMANENT EROSION CONTROL GEOTEXTILE.

2. SEE SPECIAL PROVISIONS.

BRIDGE END BACKFILL

EMBANKMENT FOUNDATION TREATMENT

NO SCALE

3 2	MONTANA Department of Transportation	...\9523000\RD\9523000rdDET01.dgn 11/2/2022 2:37:51 PM lwilliams	DESIGNED BY REVIEWED BY CHECKED BY	R. HOLM, L. WILLIAMS R. HOLM K. YAKAWICH	8/26/2022 8/26/2022 8/26/2022	ROAD PLANS CARBON COUNTY	CLARKS FORK - 9 M S BELFRY UPN 9523000	STPB 9005(55) SHEET 10

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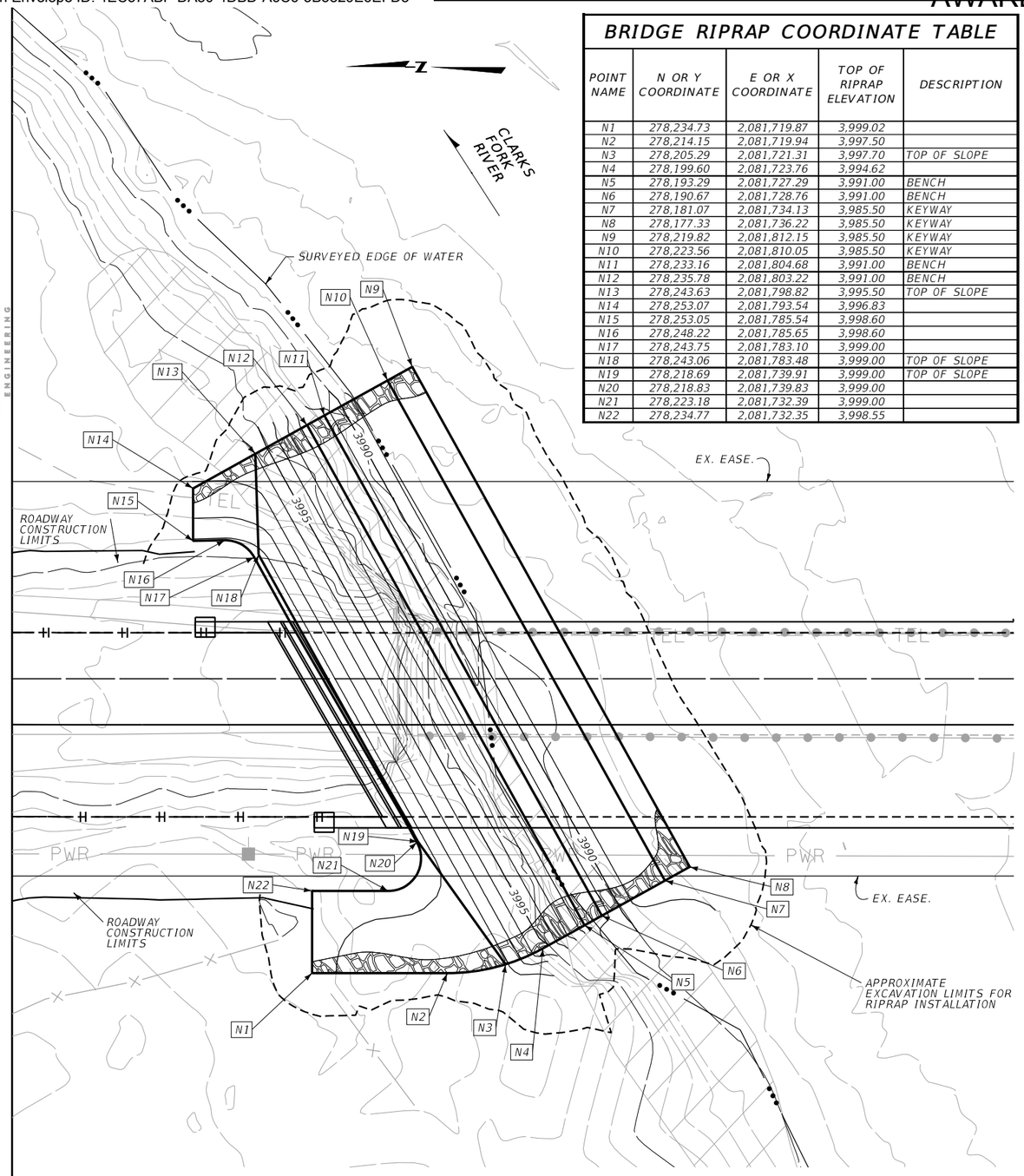
GreatWest ENGINEERING

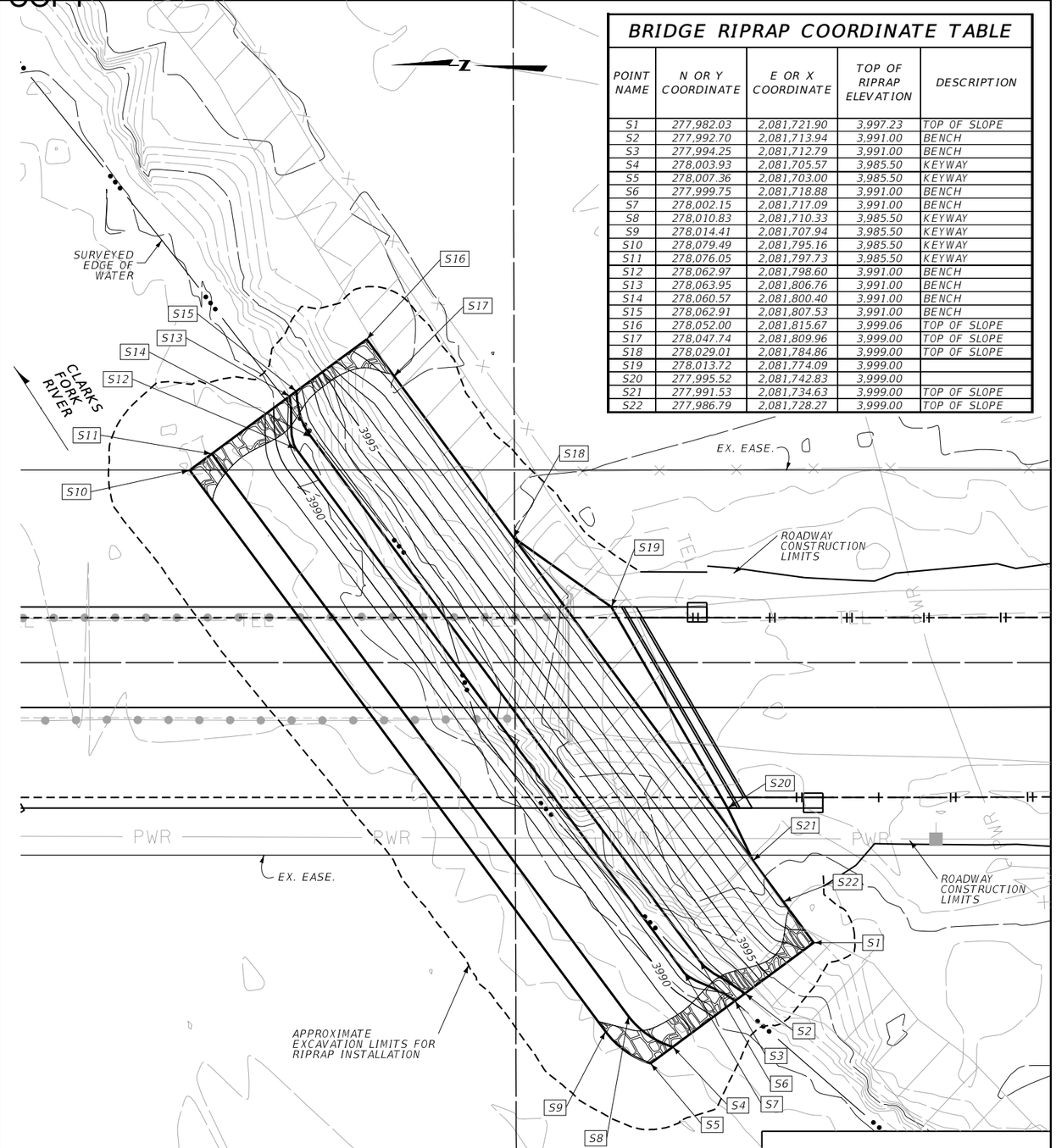
BRIDGE RIPRAP COORDINATE TABLE

POINT NAME	N OR Y COORDINATE	E OR X COORDINATE	TOP OF RIPRAP ELEVATION	DESCRIPTION
N1	278,234.73	2,081,719.87	3,999.02	
N2	278,214.15	2,081,719.94	3,997.50	
N3	278,205.29	2,081,721.31	3,997.70	TOP OF SLOPE
N4	278,199.60	2,081,723.76	3,994.62	
N5	278,193.29	2,081,727.29	3,991.00	BENCH
N6	278,190.67	2,081,728.76	3,991.00	BENCH
N7	278,181.07	2,081,734.13	3,985.50	KEYWAY
N8	278,177.33	2,081,736.22	3,985.50	KEYWAY
N9	278,219.82	2,081,812.15	3,985.50	KEYWAY
N10	278,223.56	2,081,810.05	3,985.50	KEYWAY
N11	278,233.16	2,081,804.68	3,991.00	BENCH
N12	278,235.78	2,081,803.22	3,991.00	BENCH
N13	278,243.63	2,081,798.82	3,995.50	TOP OF SLOPE
N14	278,253.07	2,081,793.54	3,996.83	
N15	278,253.05	2,081,785.54	3,998.60	
N16	278,248.22	2,081,785.65	3,998.60	
N17	278,243.75	2,081,783.10	3,999.00	
N18	278,243.06	2,081,783.48	3,999.00	TOP OF SLOPE
N19	278,218.69	2,081,739.91	3,999.00	TOP OF SLOPE
N20	278,218.83	2,081,739.83	3,999.00	
N21	278,223.18	2,081,732.39	3,999.00	
N22	278,234.77	2,081,732.35	3,998.55	

BRIDGE RIPRAP COORDINATE TABLE

POINT NAME	N OR Y COORDINATE	E OR X COORDINATE	TOP OF RIPRAP ELEVATION	DESCRIPTION
S1	277,982.03	2,081,721.90	3,997.23	TOP OF SLOPE
S2	277,992.70	2,081,713.94	3,991.00	BENCH
S3	277,994.25	2,081,712.79	3,991.00	BENCH
S4	278,003.93	2,081,705.57	3,985.50	KEYWAY
S5	278,007.36	2,081,703.00	3,985.50	KEYWAY
S6	277,999.75	2,081,718.88	3,991.00	BENCH
S7	278,002.15	2,081,717.09	3,991.00	BENCH
S8	278,010.83	2,081,710.33	3,985.50	KEYWAY
S9	278,014.41	2,081,707.94	3,985.50	KEYWAY
S10	278,079.49	2,081,795.16	3,985.50	KEYWAY
S11	278,076.05	2,081,797.73	3,985.50	KEYWAY
S12	278,062.97	2,081,798.60	3,991.00	BENCH
S13	278,063.95	2,081,806.76	3,991.00	BENCH
S14	278,060.57	2,081,800.40	3,991.00	BENCH
S15	278,062.91	2,081,807.53	3,991.00	BENCH
S16	278,052.00	2,081,815.67	3,999.06	TOP OF SLOPE
S17	278,047.74	2,081,809.96	3,999.00	TOP OF SLOPE
S18	278,029.01	2,081,784.86	3,999.00	TOP OF SLOPE
S19	278,013.72	2,081,774.09	3,999.00	
S20	277,995.52	2,081,742.83	3,999.00	
S21	277,991.53	2,081,734.63	3,999.00	TOP OF SLOPE
S22	277,986.79	2,081,728.27	3,999.00	TOP OF SLOPE





LEGEND

RANDOM RIPRAP CLASS III, SEE TYPICAL SECTION A ON SHEET 12

XX POINT NAME

NOTES

1. CONTOUR INTERVAL = 1'
2. DESIGN CONTOURS REPRESENT FINISH GRADE (I.E. TOP OF RIPRAP REVEGETATION).
3. COORDINATE TABLE ELEVATIONS REPRESENT TOP OF RIPRAP ELEVATIONS.

RIPRAP LAYOUT

SCALE: 1" = 20'

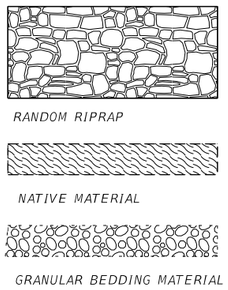
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			REVIEWED BY R. HOLM	8/26/2022			
			CHECKED BY K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 11

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DETAIL

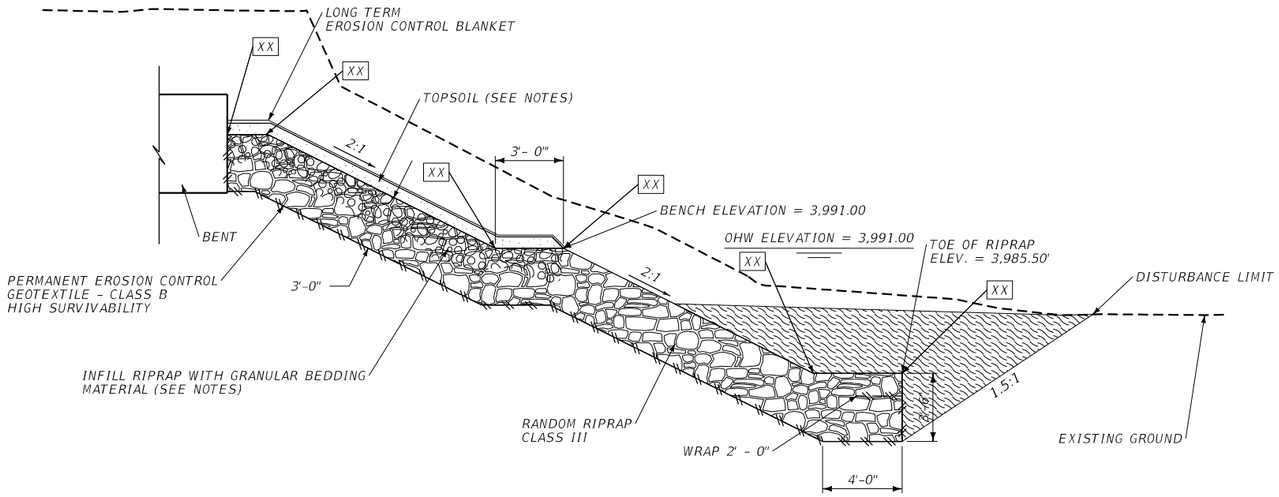
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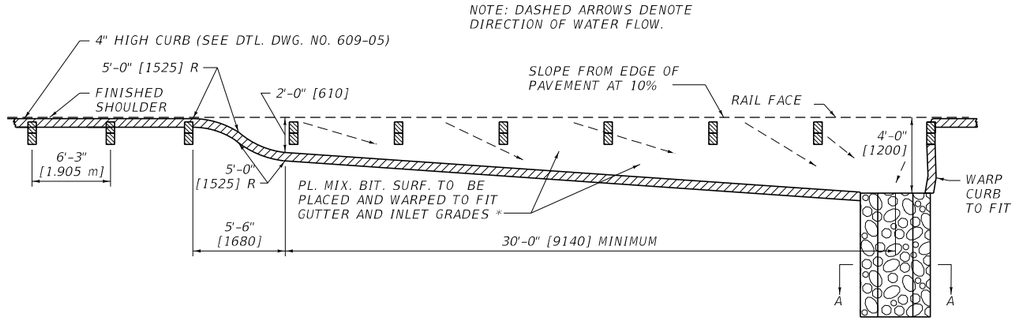
NOTES:

1. FILL RIPRAP VOIDS WITH GRANULAR BEDDING MATERIAL, OR A MATERIAL OF SIMILAR GRADATION OBTAINED ON SITE TO PROVIDE A UNIFORM SURFACE FOR THE PLACEMENT OF TOPSOIL, AS APPROVED BY THE ENGINEER. BEDDING MATERIAL UNDER RIPRAP REVEGETATION IS INCLUDED IN THE RIPRAP REVEGETATION BID ITEM.
2. PLACE TOPSOIL WITH A MINIMUM THICKNESS OF 6".
3. REFER TO THE SPECIAL PROVISIONS FOR PLANTING AND SEEDING SPECIFICATIONS.
4. MINIMIZE DISTURBANCE INSTALLING RIPRAP AND CONSTRUCTING BRIDGE.
5. RIPRAP REVEGETATION TYPICAL SECTION DRAWN ORTHOGONAL TO RIPRAP SLOPE.

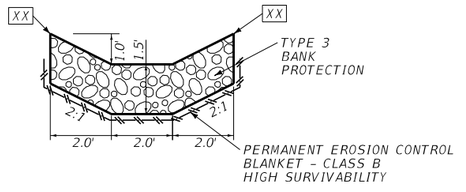
RIPRAP REVEGETATION TYPICAL SECTION



TYPE 3 BANK PROTECTION DETAIL



PLAN VIEW



SECTION A-A

NOTES:

1. UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
2. THE COST OF SS-1 FOG SEAL IS INCLUDED IN THE COST OF PLANT MIX SURFACING

* INCLUDED WITH ROADWAY QUANTITIES

RIPRAP REVEGETATION TYPICAL SECTION

TYPE 3 BANK PROTECTION

NO SCALE

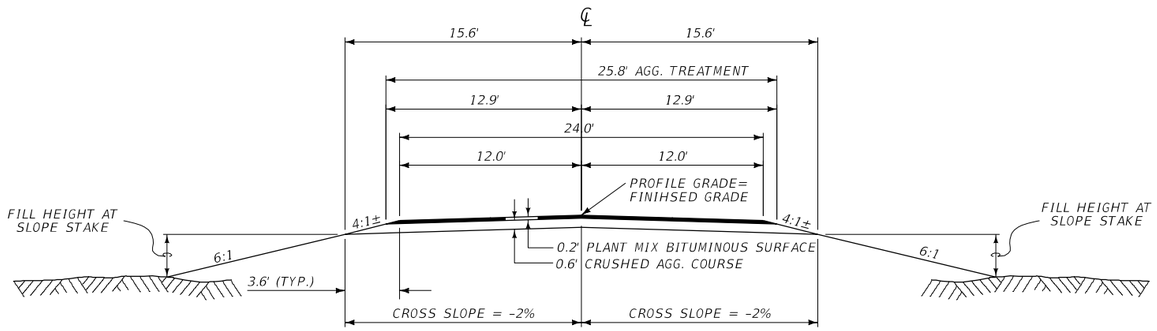
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1		11/2/2022	REVIEWED BY	R. HOLM	8/26/2022		
		2:37:54 PM lwilliams	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000 / SHEET 12

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DETAIL

TYPICAL PAVED APPROACH SECTION



PRIVATE APPROACH COORDINATE TABLE

POINT NAME	N OR Y COORDINATE	E OR X COORDINATE	ELEVATION	DESCRIPTION
1	278,595.38	2,081,774.53	3,996.82	CENTERLINE APPROACH
2	278,594.82	2,081,821.99	3,995.55	CENTLERINE APPROACH
3	278,622.32	2,081,774.80	3,996.64	EDGE OF PMS
4	278,607.20	2,081,789.62	3,996.18	EDGE OF PMS
5	278,607.16	2,081,793.31	3,996.08	EDGE OF PMS
6	278,606.76	2,081,826.85	3,995.20	EDGE OF CTS
7	278,595.89	2,081,854.55	3,995.13	EDGE OF CTS
8	278,515.49	2,081,825.45	3,995.75	EDGE OF CTS
9	278,567.77	2,081,826.08	3,994.89	EDGE OF CTS
10	278,582.95	2,081,811.25	3,995.47	EDGE OF CTS
11	278,583.16	2,081,793.40	3,996.08	EDGE OF PMS
12	278,583.21	2,081,789.33	3,996.18	EDGE OF PMS
13	278,568.44	2,081,774.16	3,997.07	EDGE OF PMS

LEGEND

EDGE OF APPROACH SURFACING

XX POINT #

MATCH EX. EDGE OF PAVEMENT

EXISTING PRIVATE RESIDENCE

NEW CRUSHED TOP SURFACING

NEW PLANT MIX SURFACING TO R/W

EX. EASE.

OBLITERATE EX. PAVED APPROACH TO R/W

R 42'

R 15'

R 15'

R 15'

12+00

13+00

14+00

TEL

PWR

CHANCE ROAD

PC 12+22.17

PRC 14+43.54

14+00
FARM FIELD APPROACH RT

PRIVATE APPROACH STA. 13+30 LT

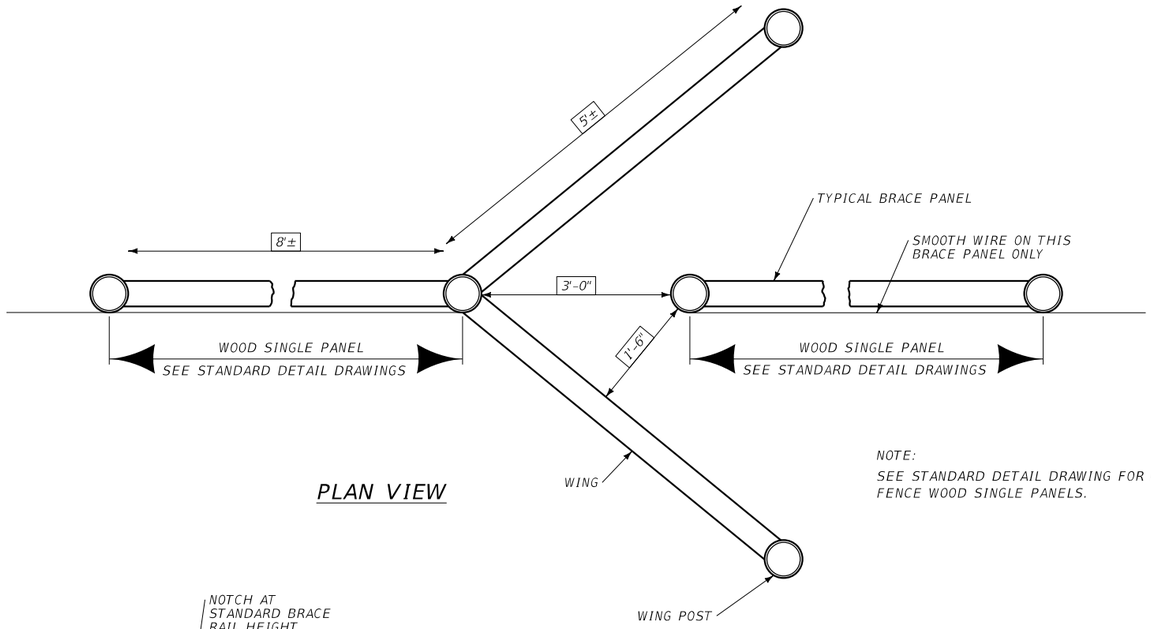
SCALE: 1" = 20'

3	MONTANA Department of Transportation	...\9523000\RD\9523000rdDETAIL.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022	ROAD PLANS	CLARKS FORK - 9 M S BELFRY	STPB 9005(55)
2		11/2/2022	REVIEWED BY	R. HOLM	8/26/2022			
		2:37:58 PM lwilliams	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 13

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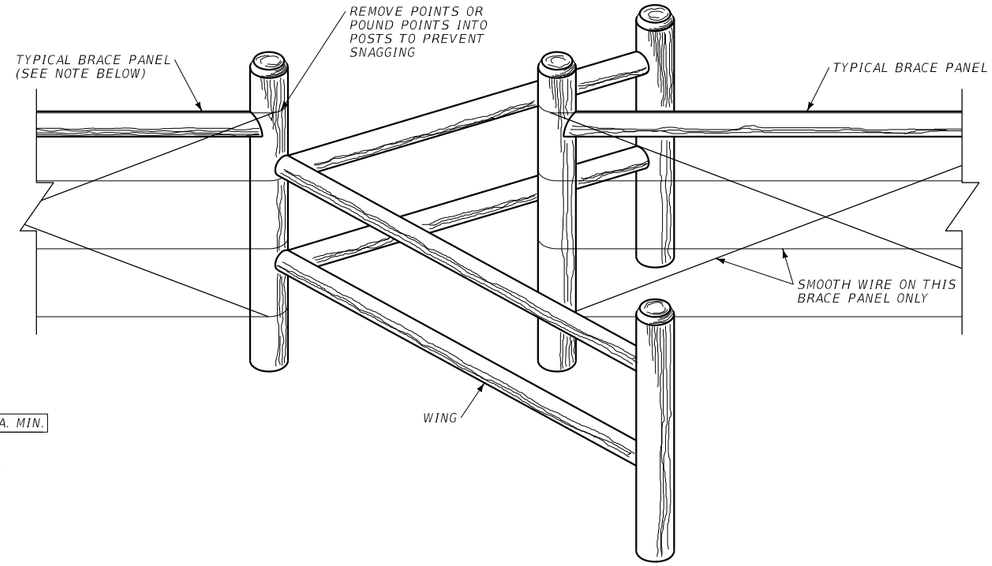
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DETAIL



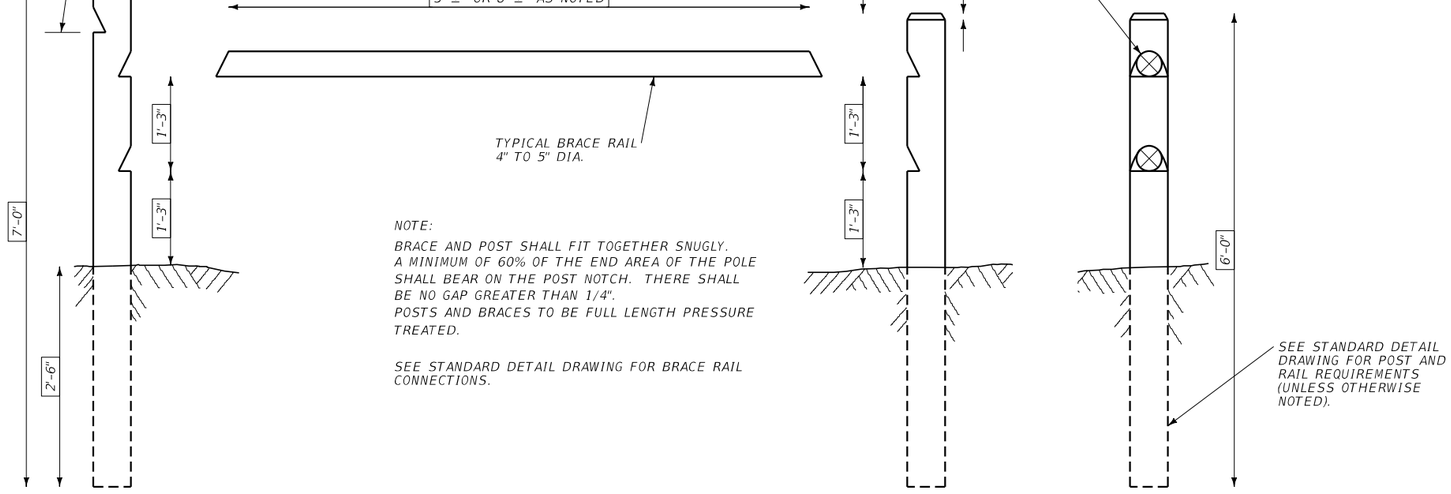
PLAN VIEW

NOTE:
SEE STANDARD DETAIL DRAWING FOR FARM FENCE WOOD SINGLE PANELS.



PERSPECTIVE

NOTE:
THE WOOD SINGLE PANEL (TYPICAL BRACE PANEL) WILL BE INSTALLED TO FIT FIELD CONDITIONS. SEE STANDARD DETAIL DRAWING FOR WIRE SPACING.



BRACE POST

WING POST

WING POST

NOTE:
BRACE AND POST SHALL FIT TOGETHER SNUGLY. A MINIMUM OF 60% OF THE END AREA OF THE POLE SHALL BEAR ON THE POST NOTCH. THERE SHALL BE NO GAP GREATER THAN 1/4".
POSTS AND BRACES TO BE FULL LENGTH PRESSURE TREATED.

SEE STANDARD DETAIL DRAWING FOR BRACE RAIL CONNECTIONS.

ELEVATION VIEW - FRONT

ELEVATION VIEW - SIDE

PEDESTRIAN PASS

NO SCALE

3	MONTANA Department of Transportation	...\9523000\RD\9523000rdDET02.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022	ROAD PLANS	CLARKS FORK - 9 M S BELFRY / STPB 9005(55)
		11/2/2022	REVIEWED BY	R. HOLM	8/26/2022		
1		2:38:00 PM lwilliams	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000 / SHEET 14

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Wetland ID = WL1a
Measured Area = 0.088 ac
Impacted Area = 0.037 ac

Wetland ID = WL3
Measured Area = 0.149 ac
Impacted Area = 0.032 ac

Wetland ID = WL2
Measured Area = 0.183 ac
Impacted Area = 0.020 ac

Wetland ID = WL1b
Measured Area = 0.280 ac
Impacted Area = 0.005 ac

POB 10+00.00

10+00

20+00

14+43.54 R/W 33.51' EX. EASE. = R/W BEG. ACQUISITION LT

PT 16+64.90 R/W 68'

PC 19+52.90 R/W 68'

PRC 20+91.74 R/W 35.62' R/W = EX. EASE. END ACQUISITION LT

POE 23+80.58

T. 9 S. R. 22 E. SEC. 32

N

UTILITY CROSSINGS
19+65 POWER LINE X-ING ℄ - 22.4' CLEAR

DO NOT DISTURB
PROPERTY SOUTHEAST OF BRIDGE (PARCEL 3) INLCUDING TREES, FENCE, AND CATTLEGUARD
19+04 TO 22+31 LT

PI =15+54.23
Δ =1° 48' 43" (LT)
R =7,000'
T =110.69'
L =221.37'
E =0.88'
S =NC

PI =20+22.33
Δ =1° 08' 11" (LT)
R =7,000'
T =69.42'
L =138.84'
E =0.34'
S =NC

PI =21+61.17
Δ =1° 08' 11" (RT)
R =7,000'
T =69.42'
L =138.84'
E =0.34'
S =NC

PI =13+32.86
Δ =1° 48' 43" (RT)
R =7,000'
T =110.69'
L =221.37'
E =0.88'
S =NC

CLARKS FORK RIVER

CHANCE ROAD

STRINGARI LANE

EX. EASE.

TEL

PWR

WL

ST-1

ST-2

ST-100

ST-101

S 0° 12' 12" E

60'

REMOVE TREES
15+05 TO 16+03 LT
15+11 TO 17+65 RT

PC 12+22.17

R/W 12+68.89 30' EX. EASE. = R/W BEG. ACQUISITION RT

PRC 14+43.84

R/W 16+00.00 67'

16+37 NEW 18" EMB. PROTECTOR LT

16+54 NEW 18" EMB. PROTECTOR RT

18+05 15.6' X 203' BRIDGE IN PL REMOVE

18+08.90 NEW 28' X 231.04' BRIDGE

R/W 19+52.90 67'

PT 22+30.58

R/W 22+30.58 25.75' = EX. EASE. R/W = EX. EASE. END ACQUISITION RT

STA. 11+81.57
BEG. STPB 9005(55)

STA. 22+30.58
END STPB 9005(55)

13+30.00
PRIVATE APP. LT

14+00.00
FARM FIELD APP. RT

+91.95 NEW GUARDRAIL LT +72.89

16+72.63 TO 17+48.17
CLASS 3 RIPRAP
(SEE DETAIL)

18+46.22 TO 19+43.41
CLASS 3 RIPRAP
(SEE DETAIL)

+26.84 NEW GUARDRAIL LT +43.78

20+81.97
FARM FIELD APP. LT

20+81.97
FARM FIELD APP. RT

21+63.10
FARM FIELD APP. LT

+38.03 NEW GUARDRAIL RT +90.97

+44.92 NEW GUARDRAIL RT +25.86

15+67.60 TO 16+72.96
GUARDRAIL AGG. WIDENING LT

15+07.07 TO 16+91.05
GUARDRAIL AGG. WIDENING RT

19+26.76 TO 20+71.31
GUARDRAIL AGG. WIDENING LT

19+44.85 TO 20+50.24
GUARDRAIL AGG. WIDENING RT

11+81.57 EL.3,997.11

16+30.00 EL.4,004.11

16+93.39 B.E. EL.4,005.29

18+08.90 EL.4,008.30

19+24.42 B.E. EL.4,005.29

22+30.58 EL.4,000.42

21+31.66 EL.4,000.74

13+90.00 EL.3,995.79

+2.340% -2.340% +3.466% -0.630% -0.324%

400' VC

227.955' VC

195' VC

75' VC

13+75.00 TO 16+72.96
EMBANKMENT FOUNDATION TREATMENT RT
(SEE DETAIL)

16+42.92 TO 16+47.70
SUBEXCAVATION

16+47.70 TO 16+93.39 B.E.
BRIDGE END BACKFILL
(SEE DETAIL)

19+24.42 B.E. TO 19+70.29
BRIDGE END BACKFILL
(SEE DETAIL)

19+70.29 TO 20+44.13
SUBEXCAVATION

19+26.76 TO 19+65.26 LT
19+44.85 TO 19+83.35 RT
TYPE 3 BANK PROTECTION AND GEOTEXTILE (SEE DETAIL)

SCALE:
HORIZ. SCALE: 1" = 100'
VERT. SCALE: 1" = 10'

4,020 4,010 4,000 3,990 3,980

10+00 12+00 14+00 16+00 18+00 20+00 22+00 24+00

3	MONTANA Department of Transportation	...\9523000\RD\9523000rdPLN05.dgn	DESIGNED BY R. HOLM, L. WILLIAMS	8/26/2022	ROAD PLANS	CLARKS FORK - 9 M S BELFRY	STPB 9005(55)
2		11/2/2022	REVIEWED BY R. HOLM	8/26/2022			
		2:38:03 PM lwilliams	CHECKED BY K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 15

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ASSOCIATED PROJECT AGREEMENT NUMBERS	
P. E.	STPB 9005(54)

MONTANA DEPARTMENT OF TRANSPORTATION

DocuSigned by:
Karl Yakawich
4791B33005A9454...
DATE 12/15/2022

MONTANA
KARL F. YAKAWICH 15133 PE
PROFESSIONAL ENGINEER
LICENSED

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT STPB 9005(55)

CLARKS FORK - 9 M S BELFRY

CARBON COUNTY

BRIDGE IDENTIFICATION	
MDT STR ID	NBI NUMBER
02382	000000202102382

SCALES SHOWN ON BRIDGE PLAN SHEETS ARE FOR FULL SIZE (22 X 34) PRINTS
REDUCED PRINTS ARE APPROXIMATELY ONE-HALF ORIGINAL SCALE

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
BRIDGE DRAWINGS		
B1	27813	LIST OF DRAWINGS & ESTIMATED BRIDGE PLAN QUANTITIES
B2	27814	GENERAL LAYOUT AT STA. 18+08.90
B3	27815	FOOTING PLAN
B4	27816	BENT NO. 1 & BENT NO. 3
B5	27817	BENT NO. 1 & NO. 3 DETAILS
B6	27818	BENT NO. 1 & NO. 3 WINGWALL DETAILS
B7	27819	BENT NO. 1 & NO. 3 WINGWALL DETAILS
B8	27820	BENT NO. 2
B9	27821	BENT NO. 2 DRILLED SHAFT DETAILS
B10	27822	ERECTION PLAN
B11	27823	MISCELLANEOUS DETAILS
B12	27824	BEAM DETAILS

DWG. NO.	TITLE
STANDARD DRAWINGS	
PSD (APPROVED 1-30-15)	STANDARD PILE SPLICE DETAILS AND PILE TIPS
SBR-W830 (APPROVED 3-15-17)	STANDARD BRIDGE RAIL TYPE W830

ESTIMATED BRIDGE PLAN QUANTITIES

MDT STRUCTURE NUMBER 02382 / LOCATION	LENGTH (FT)	PRESTRESSED BEAM-BULB TEE (LNFT)	CONCRETE - CLASS STRUCTURE (CUYD)	CONCRETE - CLASS DRILLED SHAFT (CUYD)	REINFORCING STEEL		STRUCTURAL STEEL - MISC (LS)	DRILLED SHAFT - 6.0 FT (LNFT)	TEMPORARY DRILLED SHAFT CASING (LNFT)	DRILLED SHAFT CASING (LB)	THERMAL INTEGRITY PROFILER (EACH)	DYNAMIC LOAD TEST (EACH)	HP14x89		PILE DRIVING POINT (EACH)	WATERPROOF MEMBRANE (SQYD)	BRIDGE RAIL-W830 (LNFT)
					REGULAR (LB)	EPOXY (LB)							FURNISH STEEL PILE (LB)	DRIVE STEEL PILE (LNFT)			
BENT NO. 1			50.3		4549	1873						1	19634	206.6	7		
BENT NO. 2			46.3	59.5	16058			51	19	21882	1						
BENT NO. 3			50.3		4549	1873						1	24867	265.4	7		
SUPERSTRUCTURE	228.0	1130			914		1									719	508
TOTAL	228.0	1130	146.9	59.5	26070	3746	1	51	19	21882	1	2	44501	472	14	719	508

SHEET NO. B1

LIST OF DRAWINGS & ESTIMATED BRIDGE PLAN QUANTITIES

SCALE: No Scale

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED	REVISED	REVISED	REVISED	10-25-22	08-26-22	08-26-22	08-26-22	
				P.K.S.	K.F.Y.	P.K.S.	G.C.G.	\\9523000\BR\9523000brQSH201.dgn

MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

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ROUTE C005128A

REF POINT 1+0.399

MDT STR. ID 02382

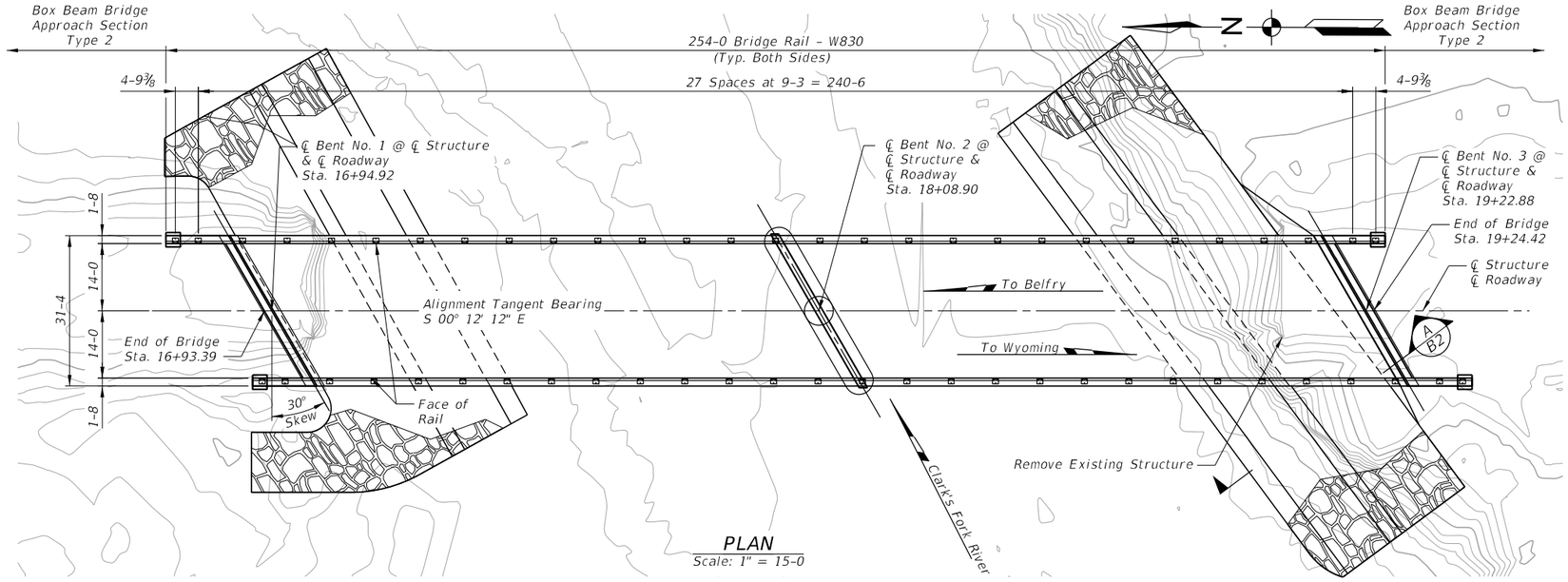
UPN NUMBER 9523000

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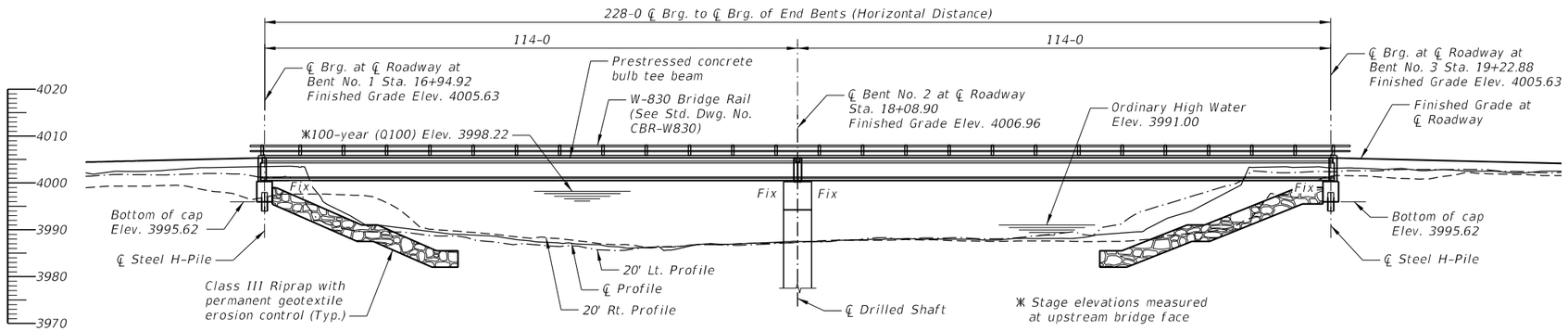
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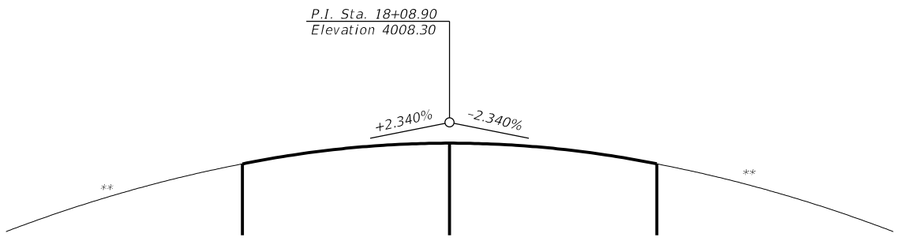


PLAN
Scale: 1" = 15-0



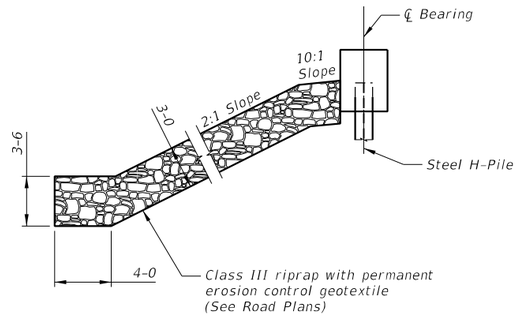
* Stage elevations measured at upstream bridge face

ELEVATION
Scale: 1" = 15-0



** Note: See Road Plans

PROFILE GRADE
No Scale



A B2 RIPRAP CROSS-SECTION
SCALE ~ 3/16" = 1-0

NOTES

FINISHED GRADE: Finished grade of bridge at centerline roadway is the same as the Profile Grade shown on Road Plans.

LIVE LOAD: Standard HL-93 loading.

SPECIFICATIONS: Montana Department of Transportation Standard and Supplemental Specifications for Road and Bridge Construction; 2020 Edition; V1.2 and any amendments thereto, and the Special Provisions govern unless otherwise noted. The design was prepared in accordance with AASHTO LRFD Bridge Design Specifications, Eighth edition - with current Interim revisions.

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31 Grade 60 or ASTM Specification A 706 Grade 60 as specified. Include all costs associated with furnishing and placing new reinforcing steel in the unit price bid for either Reinforcing Steel, Reinforcing Steel - Epoxy or Reinforcing Steel - Seismic.

REINFORCING STEEL SUFFIX:
The suffix E denotes epoxy coated reinforcing steel. The suffix W denotes A706 reinforcing steel.

REINFORCING STEEL COVER: Unless specified otherwise on the drawings, the minimum concrete cover measured from the face of the concrete to the face of any reinforcing steel is 2" except as noted below:

Bottom of Slab	1"
Top of Slab	2½"
Bottom of Abutment Caps	3"
Concrete Barriers & Curbs	1½"

Concrete cover to any tie bar is ½" less than what is listed above.

CAST IN PLACE CONCRETE: Unless otherwise approved or specified, use Concrete Class Structure for all substructure concrete.

CONCRETE STRENGTH: For structural design purposes only, use f'c = 4000 p.s.i. for Concrete Class Structure.

PRESTRESSED CONCRETE BEAMS: Use Class Pre concrete that includes 4-6% entrained air. Maximum f'c = 7.5 ksi.

STRUCTURE EXCAVATION: Include structure excavation in the unit price bid for Concrete Class Structure.

TRAFFIC CONTROL PLAN AND SEQUENCE OF OPERATIONS:
See Special Provisions.

EXISTING STRUCTURE: Remove the existing structure (see Road Plan sheets and Special Provisions).

STATE PLANE COORDINATES: Stations shown on the bridge plans are state plane grid stations based on (NAD83-1992). Dimensions shown on the bridge plans are horizontal ground distances and not state plane grid distances. The combination scale factor (CSF) at this location is 0.99980387.

Horizontal ground distance x CSF = Grid Distance
Grid Distance/CSF = Distance to stake.

STRUCTURAL STEEL: All structural steel will be measured and paid for on the lump sum basis as set forth in the Standard Specifications. Use structural steel meeting the requirements of AASHTO M 270 Grade 36. Estimated weight = 3638 lbs for steel diaphragms.

HYDRAULIC DATA

Drift:	LIGHT
Low Scour Elevation:	3977.58'
Ice:	MODERATE
Drainage Area:	1,286 sq. mi.
* Ordinary High Water:	3991.00'
10 yr. Flood Flow:	10,830 cfs
* 10 yr. Flood Stage:	3996.85'
100 yr. Flood Flow:	14,140 cfs
* 100 yr. Flood Stage (Q100):	3998.38'
100yr. Flood Velocity:	8.00 fps
Actual Low Beam Elevation:	4000.33'
Allowable Low Beam Elevation:	4000.22'

Also see Hydraulic Data Summary sheet.
* Stage elevations are measured approximately 250 feet upstream of the proposed bridge and include backwater.

SHEET NO. B2

GENERAL LAYOUT

SCALE: As Noted

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED			
REVISED			
REVISED			
REVISED	CHECKED	08-26-22	K.F.Y.
	DRAWN	08-26-22	P.K.S.
	DESIGNED	08-26-22	G.C.G.

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8/25/2022

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE C005128A

REF POINT 1+0.399

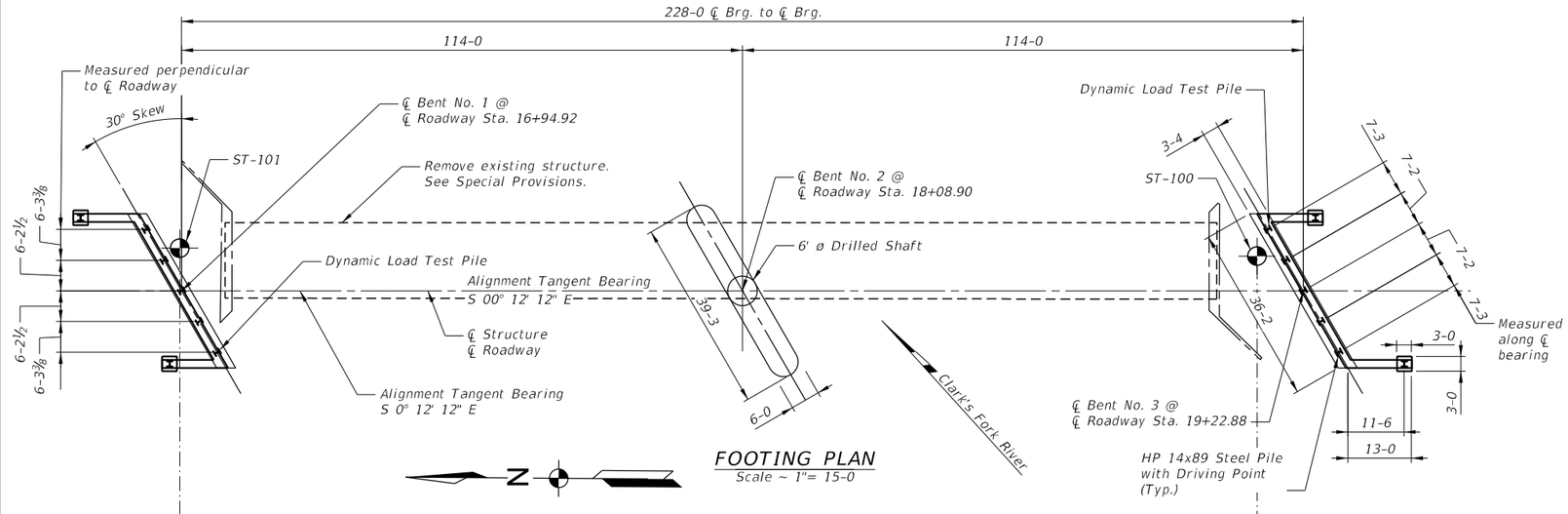
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UPN NUMBER 9523000

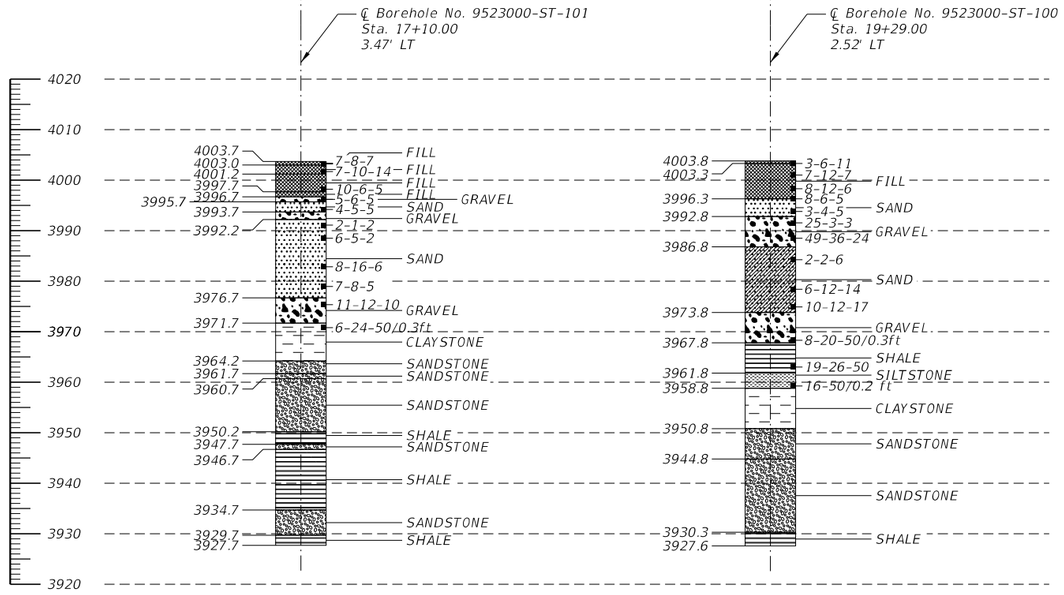
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FOOTING PLAN
Scale ~ 1"= 15-0



SUMMARY OF LOG OF BORINGS
No Scale

NOTES

SOILS AND FOUNDATION MATERIALS: The Footing Plan shows points where SK Geotechnical drilled boreholes.

The series of numbers on the Log of Borings shows the number of blows from a 140 pound hammer with a 30" drop required to drive a 2" split spoon sampler 6" (Standard Penetration Test). The length of the split spoon sampler is 18". The sampler length is measured as three 6" intervals. If the split spoon sampler did not penetrate 6" after 50 blows, the Log of Borings shows the measured penetration within that particular interval.

See the Special Provisions for original boring logs and additional subsurface information.

Dimensions shown for bents are similar for Bent No. 1 and Bent No. 3.

Contact the MDT Geotechnical Section at (406)444-6281 if pile tip elevations deviate more than 1 foot from the elevation indicated.

Pile furnished quantities increased by 10' (5' each test pile) to accommodate PDA tests.

Piles are to be fitted with steel driving points.

Bottom of permanent casing to be installed to elevation 3960.00 or 3 feet into bedrock, whichever is lower.

COORDINATE TABLE

LOCATION	N OR Y COORDINATE	E OR X COORDINATE	DESCRIPTION
BENT NO. 1	278230.648	2081757.656	CL Brg. at Bent No. 1 & CL Structure
BENT NO. 2	278116.671	2081758.061	CL Brg. at Bent No. 2 & CL Structure 6'-0" Ø Drilled Shaft
BENT NO. 3	278002.694	2081758.466	CL Brg. at Bent No. 3 & CL Structure

PILE INFORMATION

LOCATION	DESIGN PILE TIP ELEVATION	MAXIMUM PILE CUT-OFF ELEVATION (FT)	PILE TIP TREATMENT	REQUIRED BEARING RESISTANCE DURING DRIVING (KIP)	MAXIMUM PILE REACTION UNDER SERVICE I (KIPS)
BENT NO. 1	3966.90	3997.62	STEEL DRIVING POINTS	311.0	144.3
BENT NO. 3	3958.50	3997.62	STEEL DRIVING POINTS	311.0	144.3

DRILLED SHAFT INFORMATION

LOCATION	DESIGN DRILLED SHAFT TIP ELEVATION	TOP OF DRILLED SHAFT ELEVATION	ESTIMATED DRILLED SHAFT LENGTH (FT)	APPROXIMATE GROUND ELEVATION	BOTTOM OF PERMANENT DRILLED SHAFT CASING	ESTIMATED PERMANENT DRILLED SHAFT CASING LENGTH (FT)	APPROXIMATE LENGTH OF DRILLED SHAFT BELOW GROUND
BENT NO. 2	3945.00	3995.33	50.33	3987.49	3960.00	36.00	42.49

SHEET NO. B3

FOOTING PLAN

SCALE: As Noted

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED		CHECKED	08-26-22 K.F.Y.
REVISED		DRAWN	08-26-22 P.K.S.
REVISED		DESIGNED	08-26-22 G.C.G.
REVISED			

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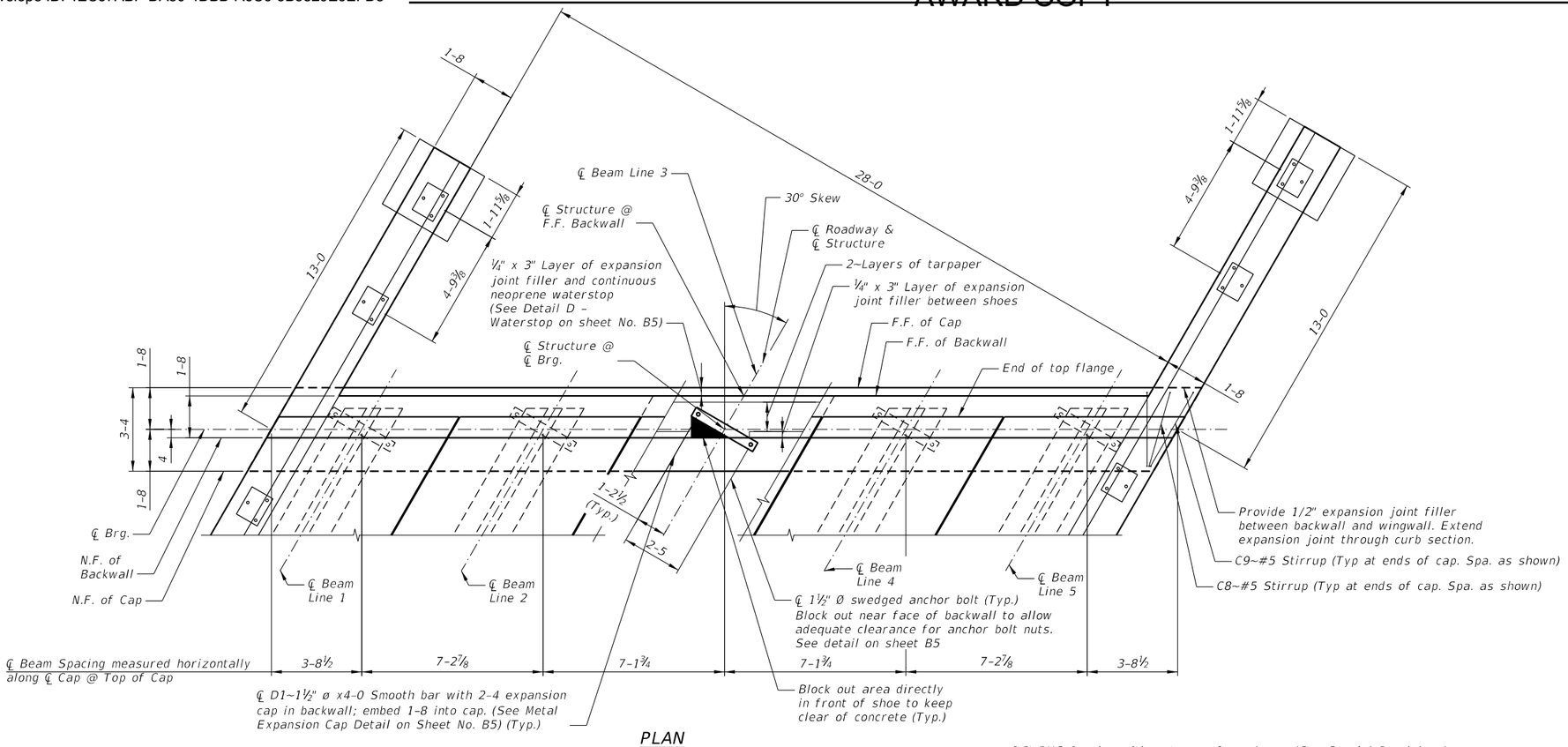
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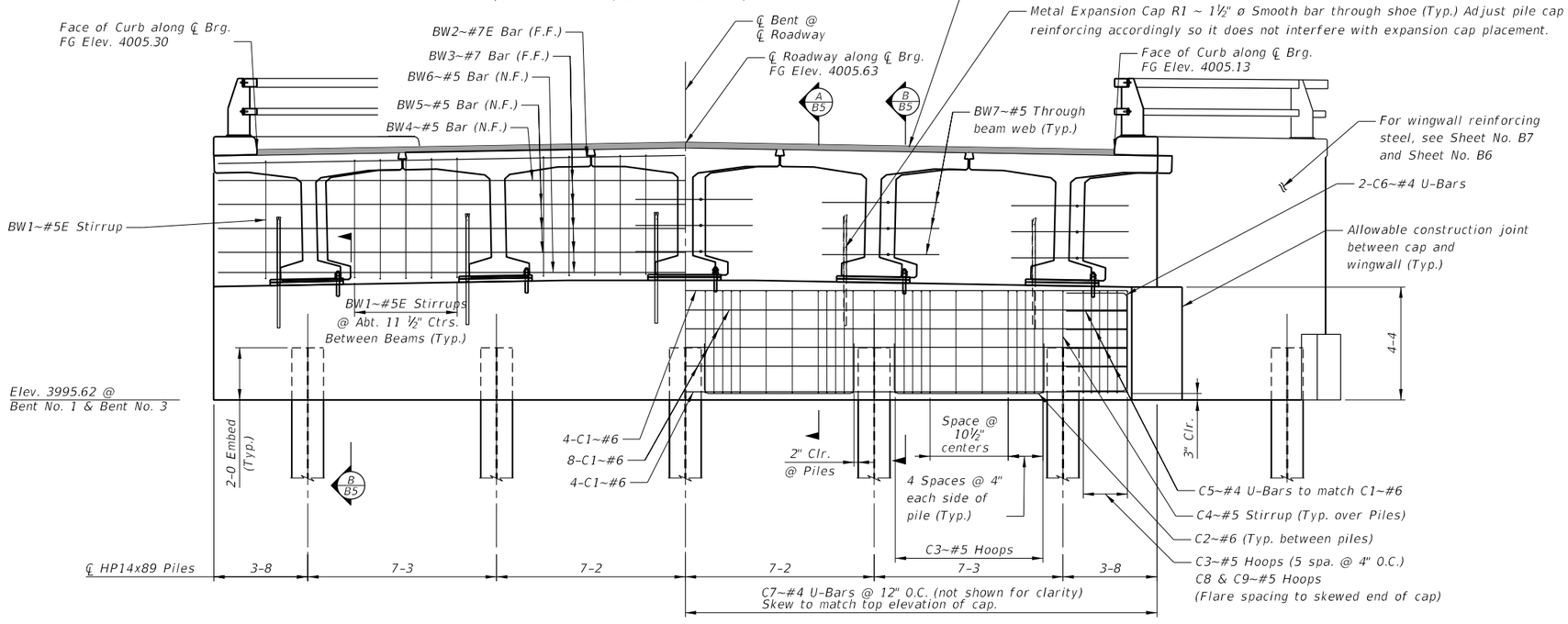
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PLAN

(Bent No. 3 Shown, Bent No. 1 Similar)



ELEVATION

(Looking ahead at Bent No. 3, Looking back at Bent No. 1)

NOTE: For cap and backwall reinforcement see Sheet B7.

NOTE: Include all costs associated with furnishing and placing the expansion joint filler, tarpaper and neoprene waterstop in the unit price bid for Concrete Class Structure.

NOTE: Securely nail expansion joint filler to pile cap concrete and hold in proper position while placing backwall concrete.

NOTE: N.F. denotes near face.
F.F. denotes fill face.
F.G. denotes finished grade.

NOTE: Lap #4 bars 2-0 minimum.
Lap #5 bars 2-6 minimum.
Lap #6 bars 3-0 minimum.
Lap #5E bars 3-0 minimum.

NOTE: Finish beam seats to match the crown of the roadway and to the elevations shown on this drawing.

NOTE: Ensure reinforcing steel does not interfere with anchor bolt placement.

NOTE: Use Concrete Class Structure for all concrete in backwall and cap.

TABLE OF ELEVATIONS
(TOP OF CAP AT CENTERLINE OF GIRDER)

GIRDER LINE	BENT NO. 1	BENT NO. 3
1	4000.22	4000.39
2	4000.39	4000.48
3	4000.49	4000.49
4	4000.48	4000.39
5	4000.39	4000.22

SHEET NO. B4

BENT NO. 1 & BENT NO. 3

SCALE: ⅜" = 1-0

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

	K.F.Y.	P.K.S.	G.C.G.
REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	08-26-22	08-26-22	08-26-22
DRAWN			
DESIGNED			

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MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

ROUTE C005128A

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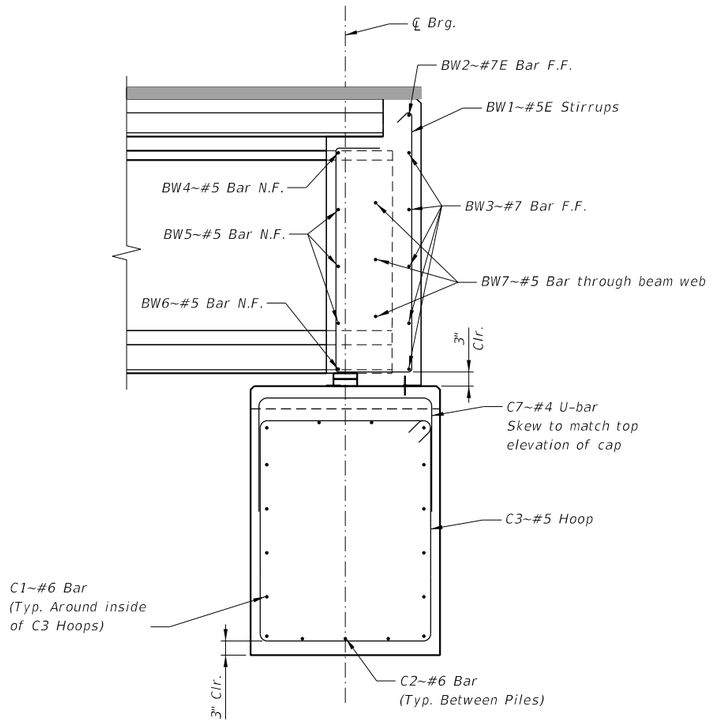
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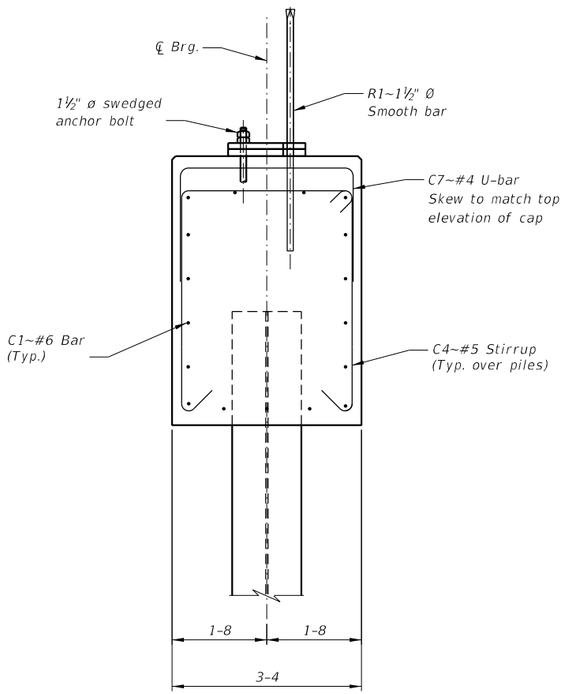
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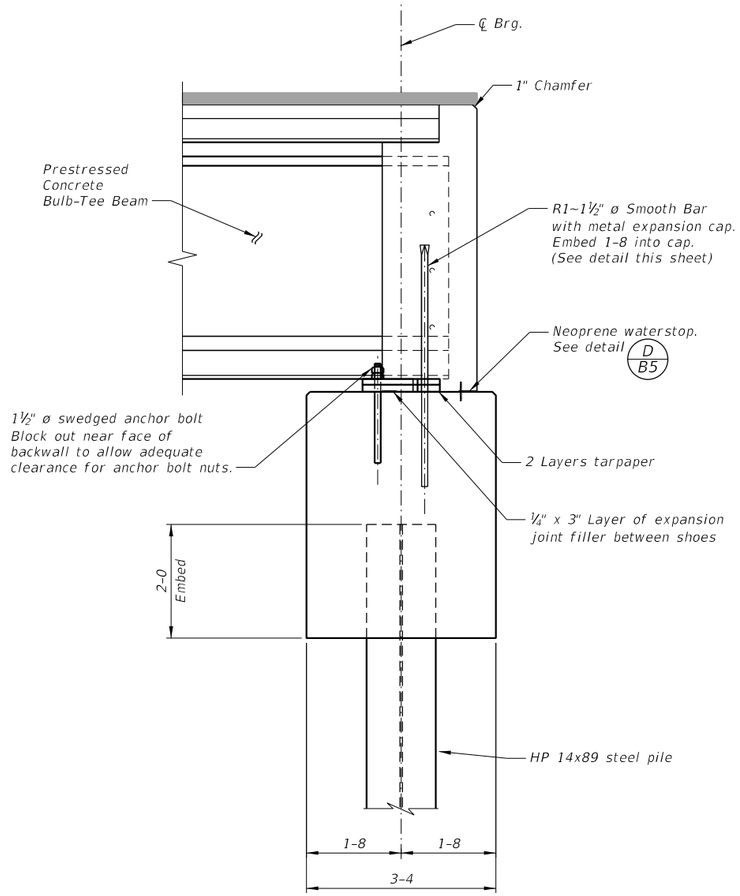
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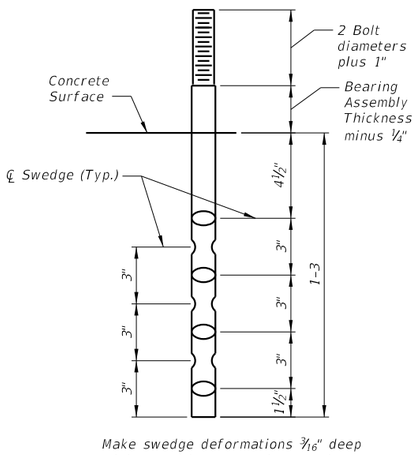
A/B5 SECTION A
Scale ~ ¾" = 1-0



B/B5 SECTION B
Scale ~ ¾" = 1-0



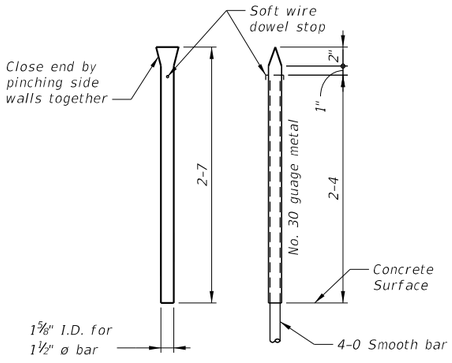
C/B5 SECTION C
Scale ~ ¾" = 1-0



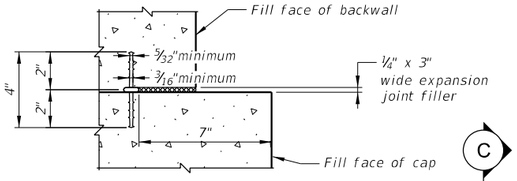
Make swedge deformations 3/16" deep minimum without removing metal.

ANCHOR BOLT DETAIL
No Scale

NOTE: Use R1 - 1 1/2" ∅ smooth bars meeting the requirements of AASHTO M270 Grade 36. Include all costs associated wih furnishing and placing smooth bars in the unit price for prestressed beam-bulb tee.

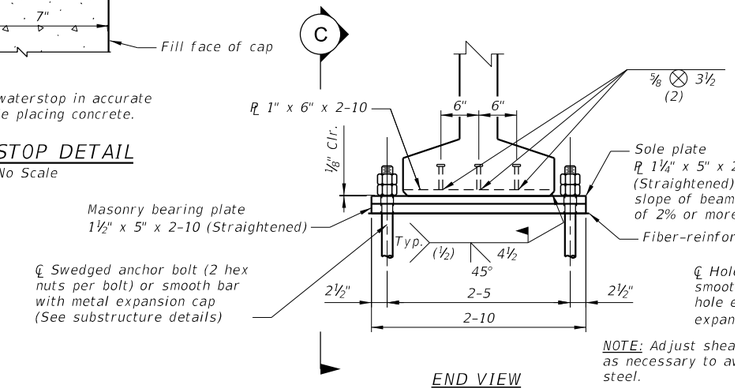


METAL EXPANSION CAP DETAIL
No Scale



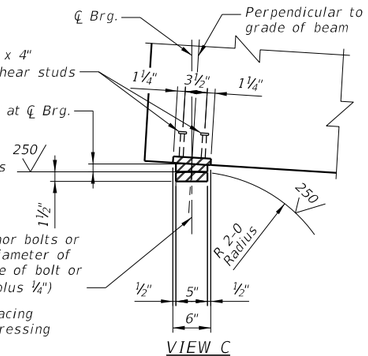
NOTE: Hold waterstop in accurate position while placing concrete.

D/B5 WATERSTOP DETAIL
No Scale



END VIEW

NOTE: Adjust shear stud spacing as necessary to avoid prestressing steel.



VIEW C

FIXED BEARING DETAILS
No Scale

SHEET NO.
B5

BENT NO. 1 & BENT NO. 3
DETAILS

SCALE: As Noted

BRIDGE OVER
THE CLARK'S FORK
OF THE YELLOWSTONE RIVER
AT STA.
18+08.90

FEDERAL AID PROJECT
STPB 9005(55)

COUNTY
CARBON

DESIGNED	08-26-22	K.F.Y.
DRAWN	08-26-22	P.K.S.
CHECKED	08-26-22	G.C.G.
REVISED		
REVISED		
REVISED		
REVISED		

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8/25/2022

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

ROUTE
C005128A

REF POINT
1+0.399

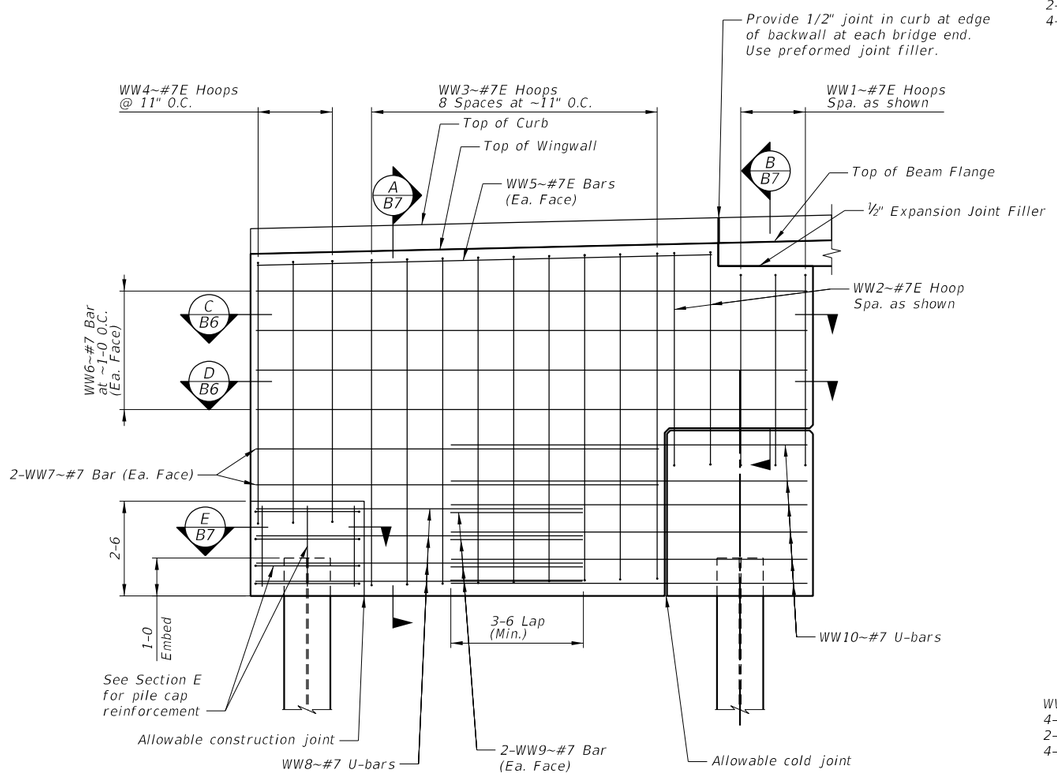
MDT STR. ID
02382

UPN NUMBER
9523000

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27817

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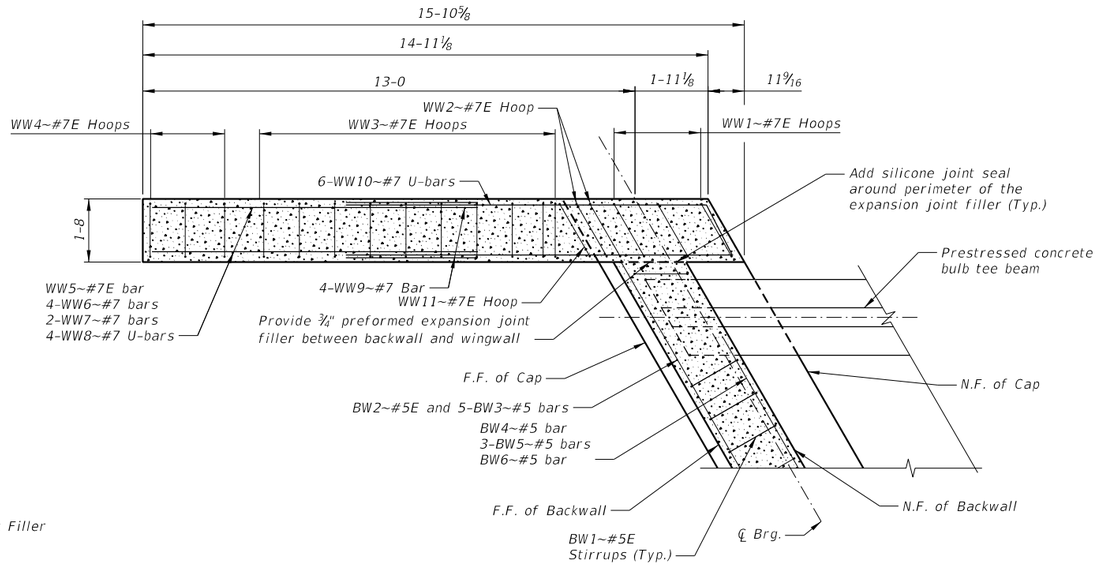


ELEVATION

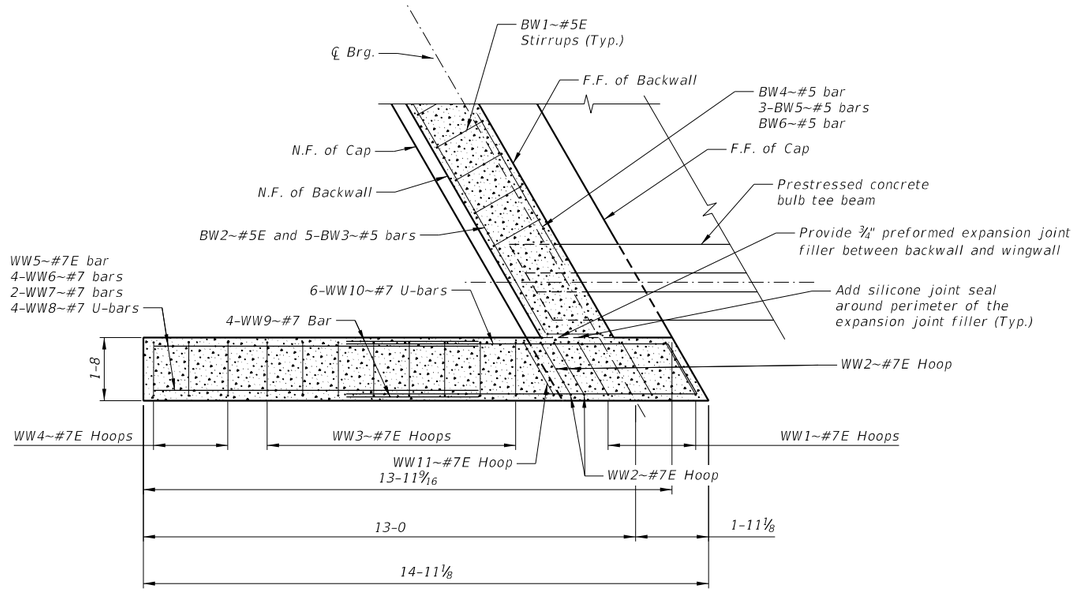
Bent No. 1 shown ahead on line. Bent No. 3 opposite hand

Note: Top of wingwall elevation and top of curb elevation to match roadway profile.

Note: Curb reinforcing not shown for clarity.



C B6 SECTION C



D B6 SECTION D

SHEET NO. B6

BENT NO.1 & BENT NO.3
WINGWALL DETAILS

SCALE: ½" = 1-0

BRIDGE OVER
THE CLARK'S FORK
OF THE YELLOWSTONE RIVER

AT STA.
18+08.90

FEDERAL AID PROJECT
STPB 9005(55)

COUNTY
CARBON

REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	08-26-22	K.F.Y.	
DRAWN	08-26-22	P.K.S.	
DESIGNED	08-26-22	G.C.G.	

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

ROUTE
C005128A

REF POINT
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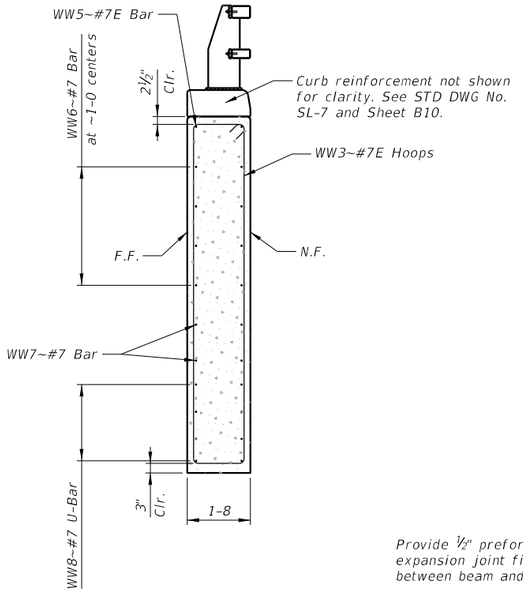
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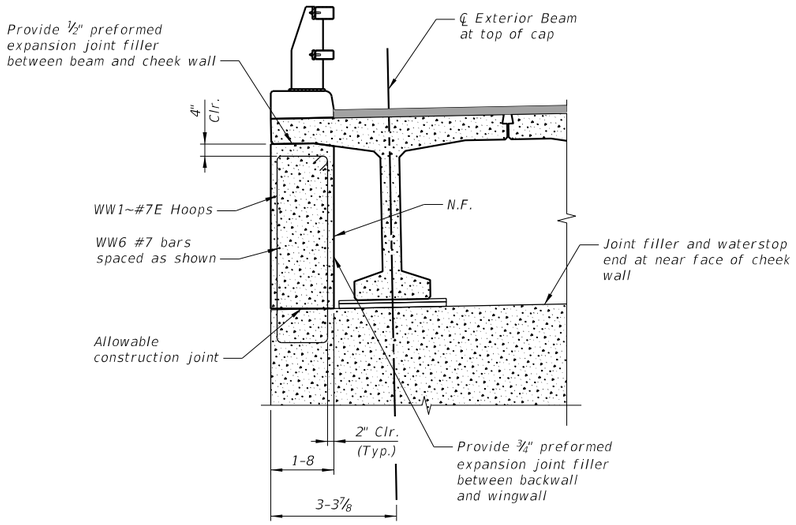
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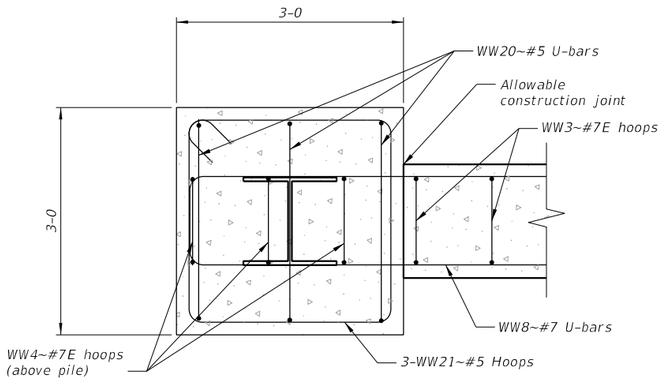
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A / B7 SECTION A
Scale ~ ½" = 1-0



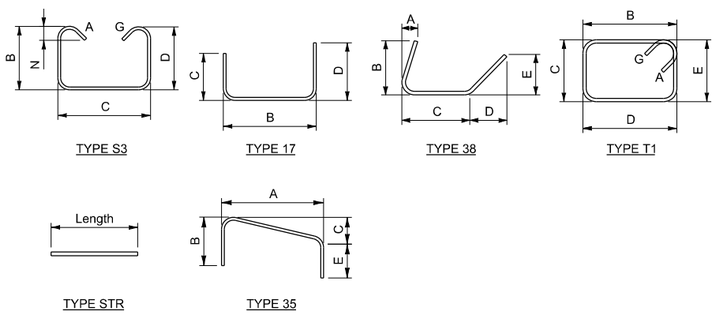
B / B7 SECTION B
Scale ~ ½" = 1-0



E / B7 SECTION E
Scale ~ 1" = 1-0

BILL OF REINFORCING STEEL

FOR ONE BENT ONLY
(ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
C1	6	16	STR	35-9½							
C2	6	4	17	11-7½		5-7½	3-0	3-0			
C3	5	64	T1	14-8	0-5½	3-0	3-10½	3-0	3-10½	0-5½	
C4	5	5	S3	12-0	0-5½	3-10½	3-0	3-10½		0-5½	0-4
C5	4	8	38	7-6	1-0	1-9	3-5½	1-0	1-9		
C6	4	4	17	7-10½		3-10½	2-0	2-0			
C7	4	4	17	7-5½		3-5½	2-0	2-0			
C8	5	2	T1	14-10	0-5½	3-1	3-10½	3-1	3-10½	0-5½	
C9	5	2	T1	15-7	0-5½	3-5½	3-10½	3-5½	3-10½	0-5½	
BW1	5E	22	30	11-0½	0-5½	4-7	1-4	3-11	0-9		
BW2	7E	1	STR	35-10							
BW3	7	5	STR	35-10							
BW4	5	4	STR	6-0							
BW5	5	20	STR	6-4							
BW6	5	4	STR	4-7							
BW7	5	15	STR	5-0							
WW1	7E	6	T1	14-10	0-9	1-7	5-1	1-7	5-1	0-9	
WW2	7E	4	T1	16-0	0-9	1-7	5-8	1-7	5-8	0-9	
WW3	7E	18	T1	21-5	0-9	1-4	8-7½	1-4	8-7½	0-9	
WW4	7E	6	T1	18-0	0-9	1-4	6-11	1-4	6-11	0-9	
WW5	7E	4	STR	12-0							
WW6	7	16	STR	14-6½							
WW7	7	8	STR	10-7½							
WW8	7	8	17	18-6		1-2	8-8	8-8			
WW9	7	16	STR	4-0							
WW10	7	12	35	21-3½	1-4	10-3	0-9		9-6		
WW11	7E	2	T1	21-11	0-9	1-7	8-7½	1-7	8-7½	0-9	
WW20	5	6	17	7-6		2-6	2-6	2-6			
WW21	5	6	T1	11-7	0-5½	2-8	2-8	2-8	2-8	0-5½	
R1	1½"	5	STR	4-0							

SHEET NO. B7

BENT NO.1 & BENT NO.3
WINGWALL DETAILS

SCALE: As Noted

BRIDGE OVER
THE CLARK'S FORK
OF THE YELLOWSTONE RIVER
AT STA.
18+08.90

FEDERAL AID PROJECT
STPB 9005(55)

COUNTY
CARBON

REVISED			K.F.Y.	
REVISED			P.K.S.	
REVISED			G.C.G.	
REVISED	08-26-22	08-26-22	08-26-22	...\BR9523000bnt\nt07.dgn
CHECKED				
DRAWN				
DESIGNED				

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU
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ROUTE
C005128A

REF POINT
1+0.399

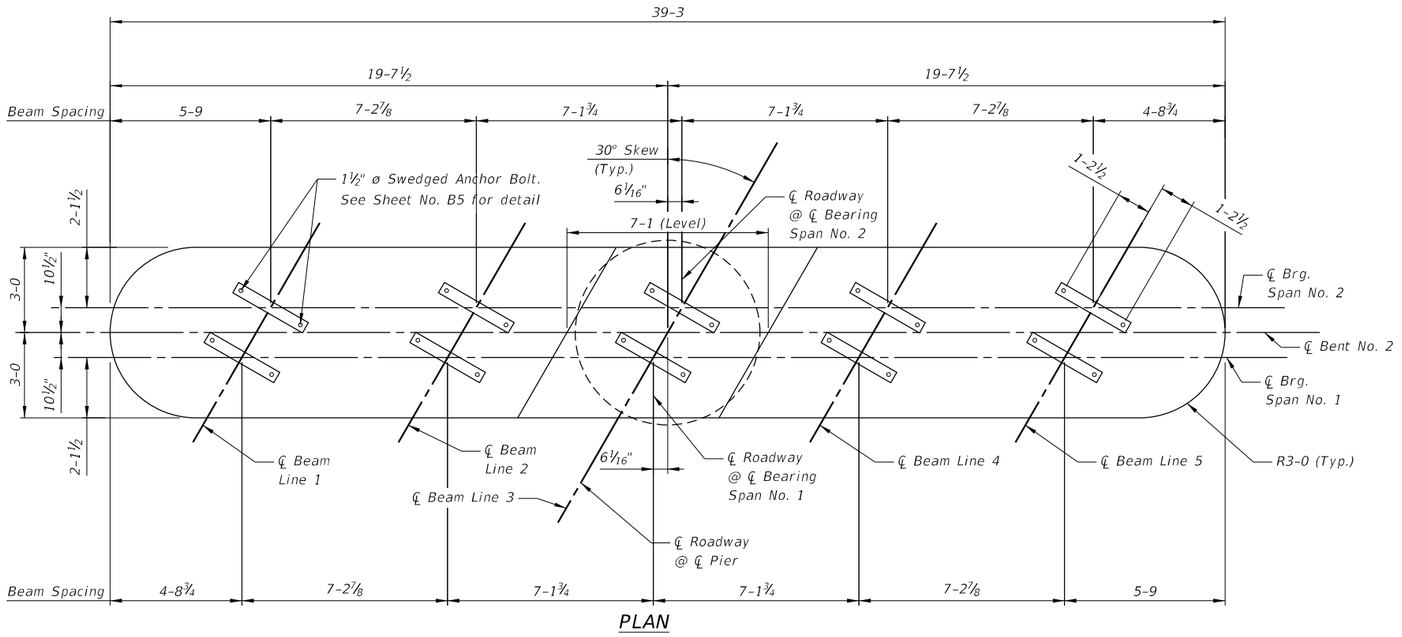
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UPN NUMBER
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DRAWING NO.
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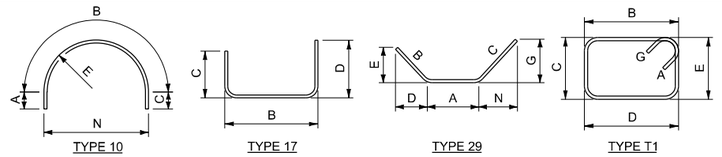
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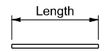


PLAN

BILL OF REINFORCING STEEL

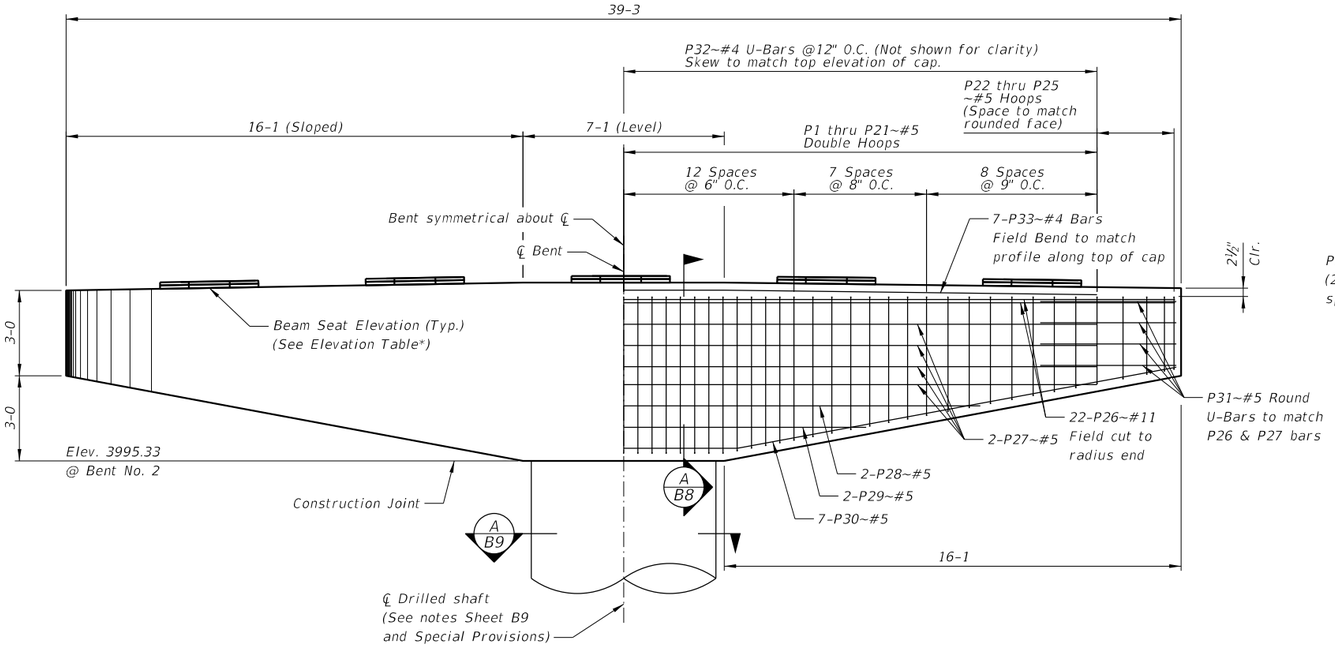
(ALL DIMENSIONS ARE OUT TO OUT)





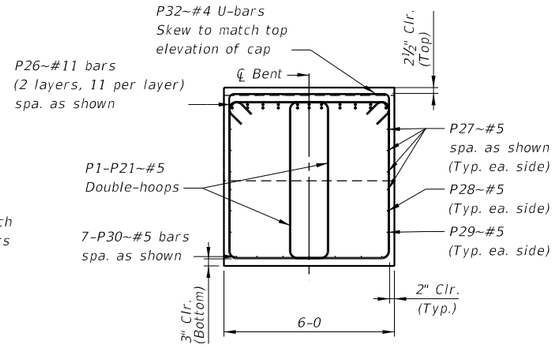
TYPE STR

Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
P1	5	30	T1	19-0	0-5½	3-6	5-6½	3-6	5-6½	0-5½	
P2	5	8	T1	18-10	0-5½	3-6	5-5½	3-6	5-5½	0-5½	
P3	5	8	T1	18-7	0-5½	3-6	5-4	3-6	5-4	0-5½	
P4	5	8	T1	18-5	0-5½	3-6	5-3	3-6	5-3	0-5½	
P5	5	8	T1	18-3	0-5½	3-6	5-2	3-6	5-2	0-5½	
P6	5	8	T1	18-1	0-5½	3-6	5-1	3-6	5-1	0-5½	
P7	5	8	T1	17-10	0-5½	3-6	4-11½	3-6	4-11½	0-5½	
P8	5	8	T1	17-7	0-5½	3-6	4-10	3-6	4-10	0-5½	
P9	5	8	T1	17-4	0-5½	3-6	4-8½	3-6	4-8½	0-5½	
P10	5	8	T1	17-1	0-5½	3-6	4-7	3-6	4-7	0-5½	
P11	5	8	T1	16-10	0-5½	3-6	4-5½	3-6	4-5½	0-5½	
P12	5	8	T1	16-7	0-5½	3-6	4-4	3-6	4-4	0-5½	
P13	5	8	T1	16-4	0-5½	3-6	4-2½	3-6	4-2½	0-5½	
P14	5	8	T1	16-1	0-5½	3-6	4-1	3-6	4-1	0-5½	
P15	5	8	T1	15-9	0-5½	3-6	3-11	3-6	3-11	0-5½	
P16	5	8	T1	15-6	0-5½	3-6	3-9½	3-6	3-9½	0-5½	
P17	5	8	T1	15-2	0-5½	3-6	3-7½	3-6	3-7½	0-5½	
P18	5	8	T1	14-11	0-5½	3-6	3-6	3-6	3-6	0-5½	
P19	5	8	T1	14-8	0-5½	3-6	3-4½	3-6	3-4½	0-5½	
P20	5	8	T1	14-4	0-5½	3-6	3-2½	3-6	3-2½	0-5½	
P21	5	8	T1	14-1	0-5½	3-6	3-1	3-6	3-1	0-5½	
P22	5	8	T1	17-5	0-5½	5-4	2-11	5-4	2-11	0-5½	
P23	5	4	T1	15-1	0-5½	4-4	2-9	4-4	2-9	0-5½	
P24	5	4	T1	11-10	0-5½	2-10	2-7½	2-10	2-7½	0-5½	
P25	5	4	T1	8-1	0-5½	1-0	2-7	1-0	2-7	0-5½	
P26	11	22	STR	38-10							
P27	5	8	STR	33-4							
P28	5	2	STR	25-1							
P29	5	2	STR	17-1							
P30	5	7	29	39-4	8-0	15-8	15-8	15-5½	2-10½	2-10½	15-5½
P31	5	8	10	13-10	2-6	8-10	2-6		2-10		
P32	4	55	17	10-6½		6-6½	2-0	2-0			
P33	4	7	STR	33-4							



ELEVATION

Note: Shaft reinforcing not shown for clarity.



A B8 SECTION A

TABLE OF ELEVATIONS

(TOP OF CAP AT CENTERLINE OF GIRDER)

GIRDER LINE	BENT NO. 2
1	4001.64
2	4001.77
3	4001.83
4	4001.77
5	4001.64

SHEET NO. B8

BENT NO. 2

SCALE: ⅜" = 1-0

BRIDGE OVER
THE CLARK'S FORK
OF THE YELLOWSTONE RIVER

AT STA.
18+08.90

FEDERAL AID PROJECT
STPB 9005(55)

COUNTY
CARBON

REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	08-26-22	K.F.Y.	
DRAWN	08-26-22	P.K.S.	
DESIGNED	08-26-22	G.C.G.	

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE
C005128A

REF POINT
1+0.399

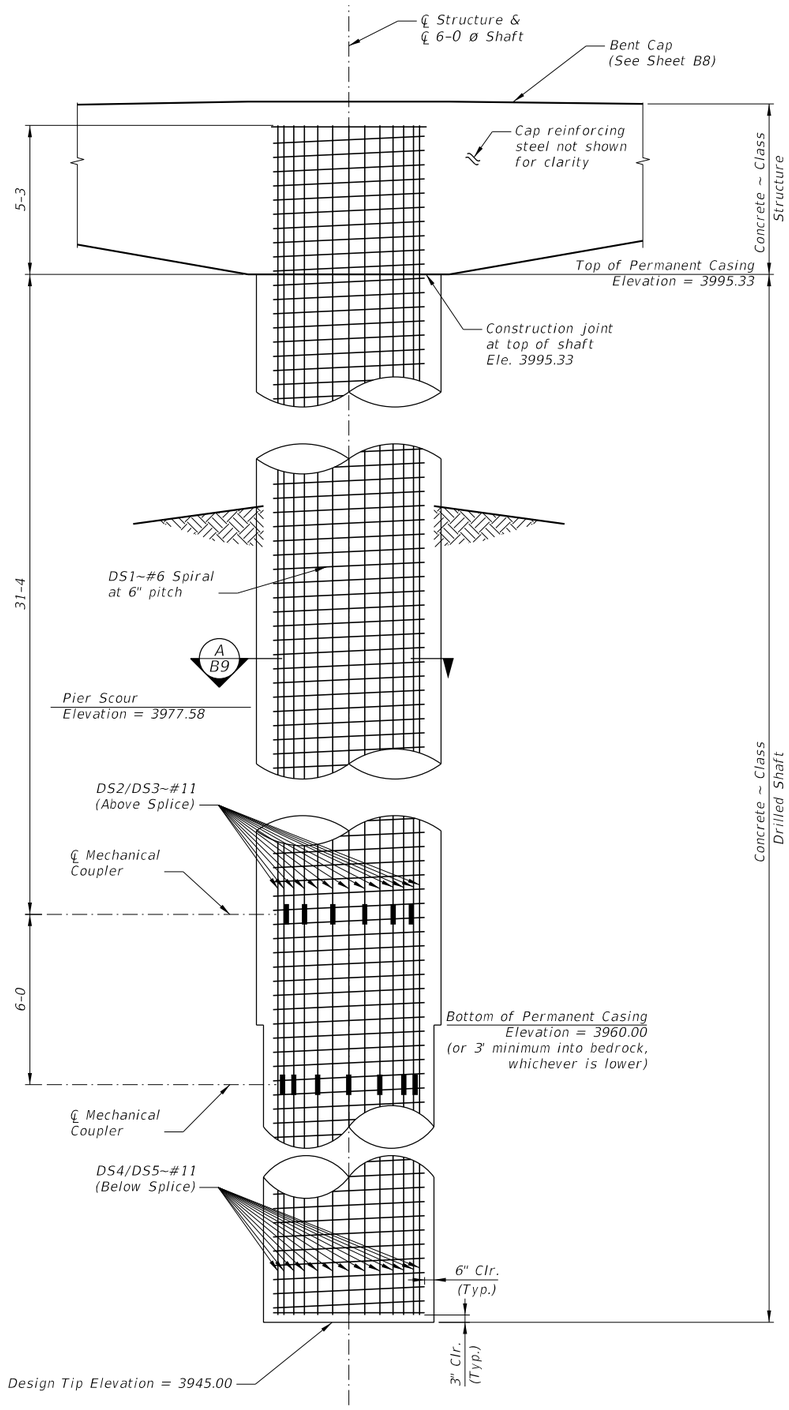
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02382

UPN NUMBER
9523000

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DRILLED SHAFT ELEVATION

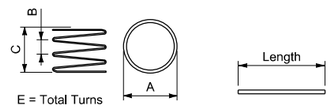
Scale ~ 3/8" = 1-0

NOTE: Ground line elevation approximatly 3987.49 (As of 6-23-2020)

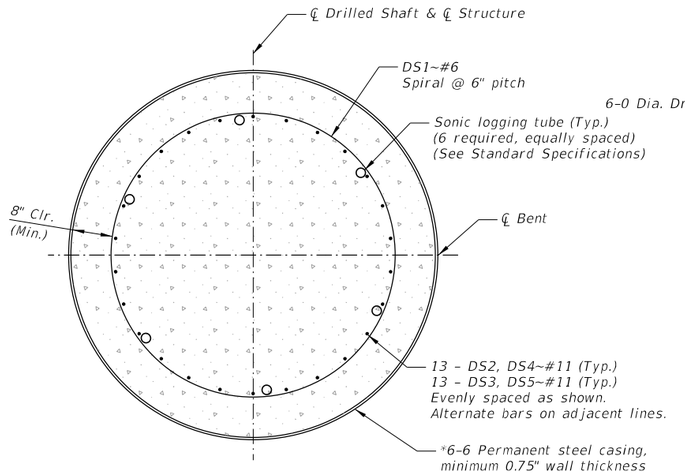
NOTE: The drilled shaft cage rebar centering method selected by the contractor must be approved by the engineer.

BILL OF REINFORCING STEEL

(ALL DIMENSIONS ARE OUT TO OUT)

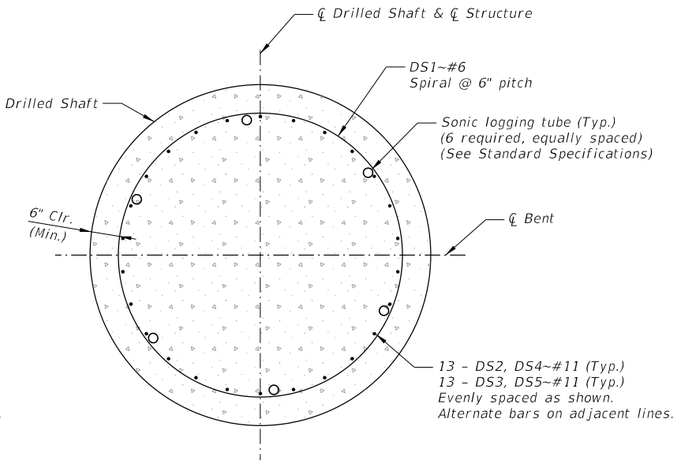


Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
DS1	6	1	SP	2148-10	5-2	0-6	55-6	3	114		
DS2	11	13	STR	42-7							
DS3	11	13	STR	36-7							
DS4	11	13	STR	12-4½							
DS5	11	13	STR	18-4½							



A B9 DRILLED SHAFT SECTION - WITH CASING

Scale ~ 3/4" = 1-0



B B9 DRILLED SHAFT SECTION - WITHOUT CASING

Scale ~ 3/4" = 1-0

NOTES:

Use mechanical splices for #11 drilled shaft bars. Alternate location of mechanical splices as shown.

Reinforcing steel lengths shown do not include any modifications required to install splices.

Ensure CSL tubes extend to bottom of shaft.

Alternate DS2 and DS3 bars on adjacent lines to stagger the mechanical splices. DS4 bars shall be mechanically spliced to DS2 bars. DS5 bars shall be mechanically spliced to DS3 bars.

*PERMANENT CASING NOTES:

Provide a permanent casing as shown to prevent cave-in, subsidience, and/or displacement of the surrounding ground during excavation and construction of the drilled shaft.

Install casing to elevation 3960.00 (or 3.0' minimum into bedrock, whichever is lower).

SHEET NO. B9

BENT NO. 2
DRILLED SHAFT DETAILS

SCALE: As Noted

BRIDGE OVER
THE CLARK'S FORK
OF THE YELLOWSTONE RIVER

AT STA.
18+08.90

FEDERAL AID PROJECT
STPB 9005(55)

COUNTY
CARBON

REVISED				CHECKED	K.F.Y.	
REVISED				DRAWN	P.K.S.	
REVISED				DESIGNED	G.C.G.	
REVISED	10-25-22	P.K.S.		08-26-22	08-26-22	...\9523000\BR\9523000sPRD\d09.dgn

MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

10/25/2022 3:10:17 PM

ROUTE
C005128A

REF POINT
1+0.399

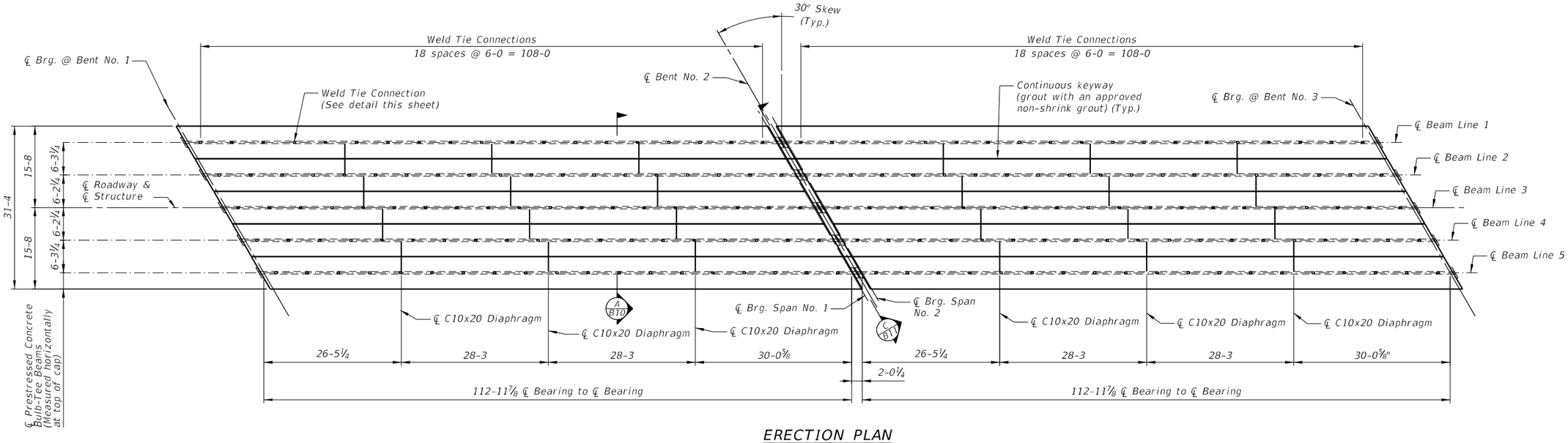
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UPN NUMBER
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27821

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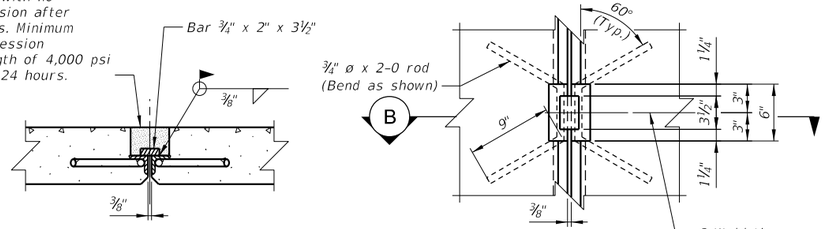


ERECTION PLAN

Scale ~ 3/32" = 1-0

Continuous keyway (Fill with non-shrink grout) Use structural non-shrink epoxy grout with no expansion after 7 days. Minimum compression strength of 4,000 psi after 24 hours.

Include all costs to furnish, place and weld bars, rods, and angles, non-shrink grout and other incidentals incorporated in the beam in the unit price bid for Prestressed Beam - Bulb Tee.



SECTION B — PLAN VIEW

WELD TIE CONNECTION DETAILS

No Scale

DIAPHRAGM NOTES

Paint steel diaphragms in acordance with the Standard Specifications.

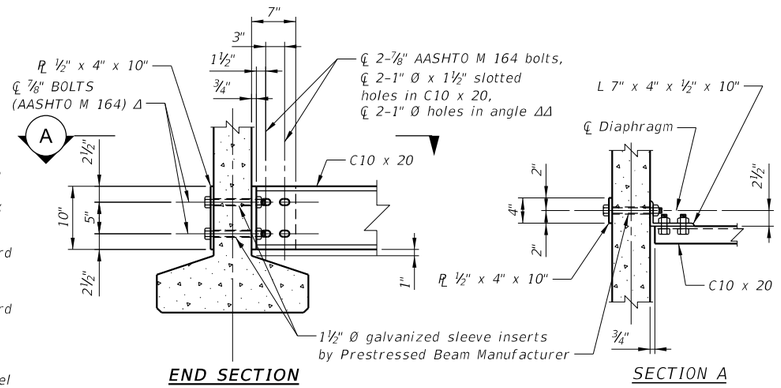
Include all costs associated with furnishing and placing steel diaphragms, channels, plates, angles and bolts incidental to the diaphragms in the lump sum bid for Structural Steel.

Middle diaphragm: Use the slotted holes to adjust for the bulb tee web being out of plumb while the C10 x 20 is level. Provide a minimum ⅜" gap between the end of the C10 x 20 and the L 7 x 4 x ½. Show the assembled detail on the shop drawings.

Δ Tighten bolts in accordance with the Turn-of-Nut Tightening Standard Specification, Sec. 556.03.9, to half of the value specified in Table 556-6.

ΔΔ Tighten bolts in accordance with the Turn-of-Nut Tightening Standard Specification, Sec. 556.03.9, to the full value specified in Table 556-6.

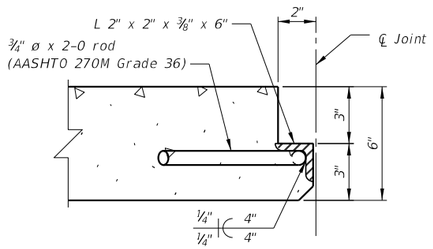
Install diaphragms immediately after setting the beams in place. Tighten the bolts through the beam web and hand-tighten the channel to the clip angle bolts. Perform the final tightening of the channel to the clip angle bolts after field leveling and welding the tie connections, but prior to welding bearings and grouting the keyway.



END SECTION — SECTION A

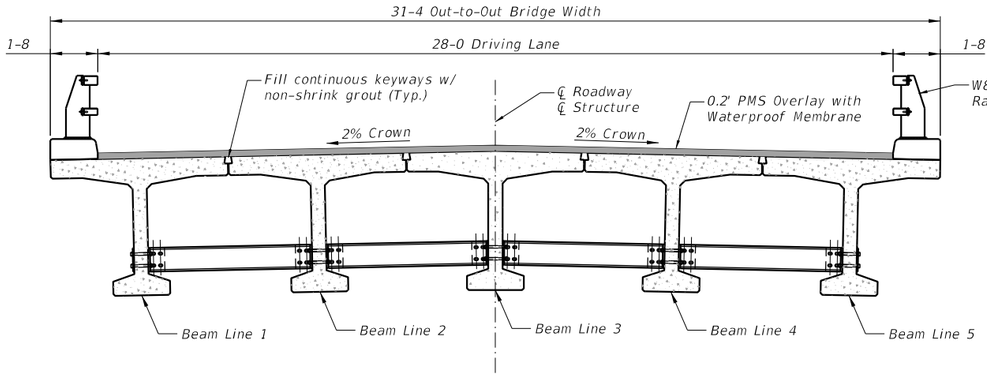
DIAPHRAGM DETAILS

Scale ~ 1" = 1-0



BULB TEE JOINT CONNECTION DETAIL

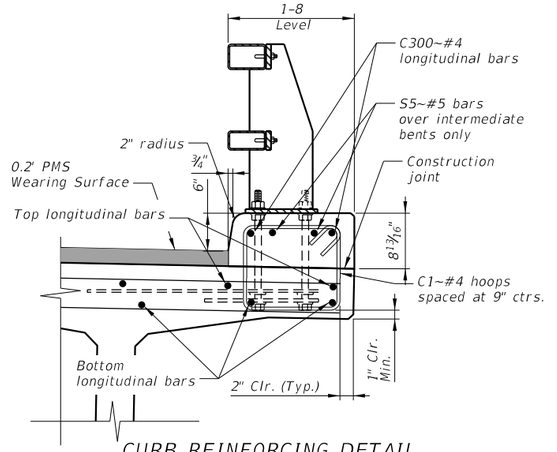
No Scale



A B10 TYPICAL BULB TEE BRIDGE SECTION

Scale ~ ⅜" = 1-0

(Looking ahead, up station)



CURB REINFORCING DETAIL

NOTE: Maintain level top of curb in final position. Maintain 8⅜" face of curb dimension shown. Ensure #4 curb hoop leg dimension to incorporate the #4 bottom longitudinal bars.

NOTE: For Bridge Rail-W830 Curb Concrete-Class Structure or Concrete-Class Pre may be used in place of Concrete-Class Deck at no additional cost. Include cost off curb reinforcement in the unit bid price for Bridge Rail-W830.

SHEET NO. B10

ERECTION PLAN

SCALE: As Noted

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER

AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED					K.F.Y.
REVISED					P.K.S.
REVISED					G.C.G.
REVISED	CHECKED	08-26-22			
	DRAWN	08-26-22			
	DESIGNED	08-26-22			

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MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

ROUTE C005128A

REF POINT 1+0.399

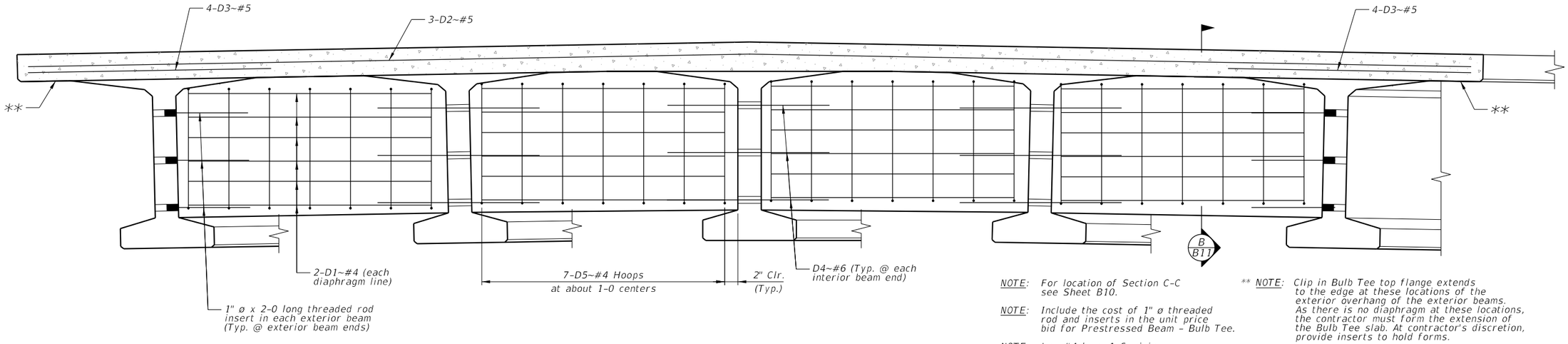
MDT STR. ID 02382

UPN NUMBER 9523000

DRAWING NO. 27822

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C B11 SECTION

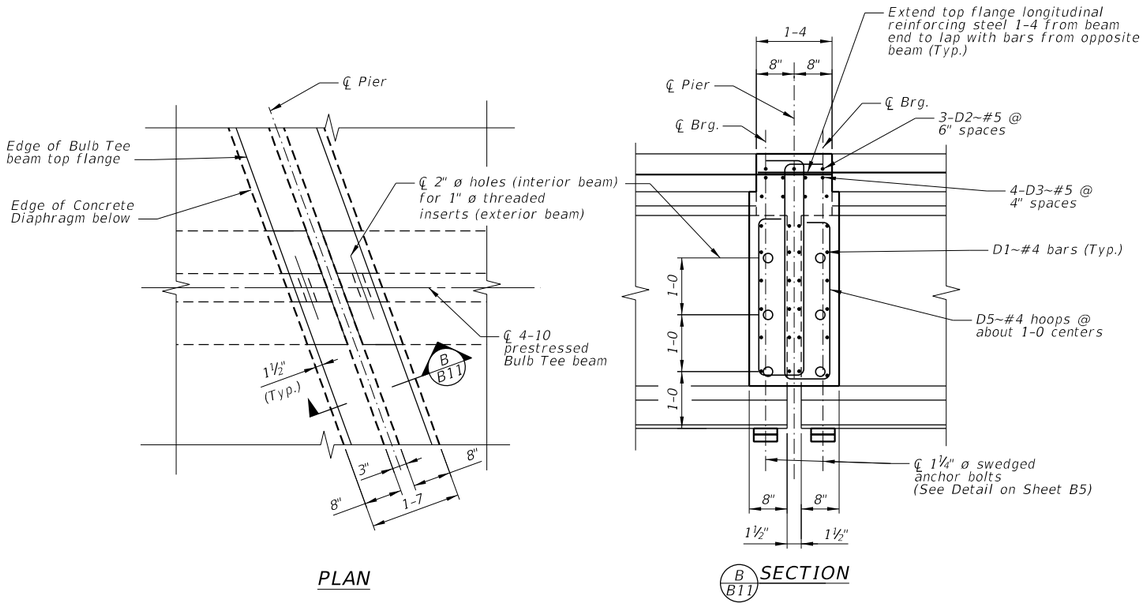
NOTE: For location of Section C-C see Sheet B10.

NOTE: Include the cost of 1" ø threaded rod and inserts in the unit price bid for Prestressed Beam – Bulb Tee.

NOTE: Lap #4 bars 1-6 minimum.

NOTE: All concrete in Diaphragm is Concrete Class Structure.

** NOTE: Clip in Bulb Tee top flange extends to the edge at these locations of the exterior overhang of the exterior beams. As there is no diaphragm at these locations, the contractor must form the extension of the Bulb Tee slab. At contractor's discretion, provide inserts to hold forms.

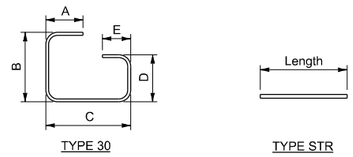


PLAN

B B11 SECTION

CONCRETE DIAPHRAGM DETAILS

BILL OF REINFORCING STEEL (ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	No.	Type	Length	A	B	C	D	E
D1	4	96	STR	6-4					
D2	5	3	STR	35-10					
D3	5	8	STR	6-0					
D4	6	9	STR	4-0					
D5	4	56	30	7-3½	0-4	3-7½	0-4	2-9	0-3

SHEET NO. B11

MISCELLANEOUS DETAILS

SCALE: ¾" = 1-0

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER

AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED			K.F.Y.
REVISED			P.K.S.
REVISED	08-26-22	CHECKED	G.C.G.
	08-26-22	DRAWN	
	08-26-22	DESIGNED	...\9523000BR\9523000bDETz11.dgn

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ROUTE C005128A

REF POINT 1+0.399

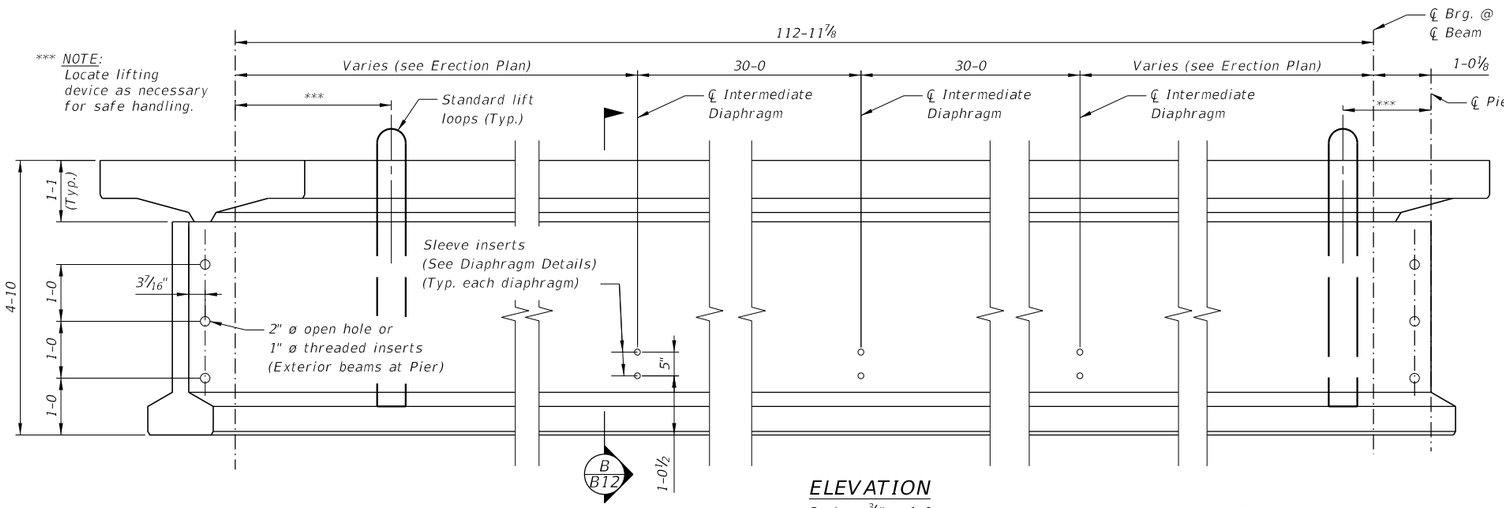
MDT STR. ID 02382

UPN NUMBER 9523000

DRAWING NO. 27823

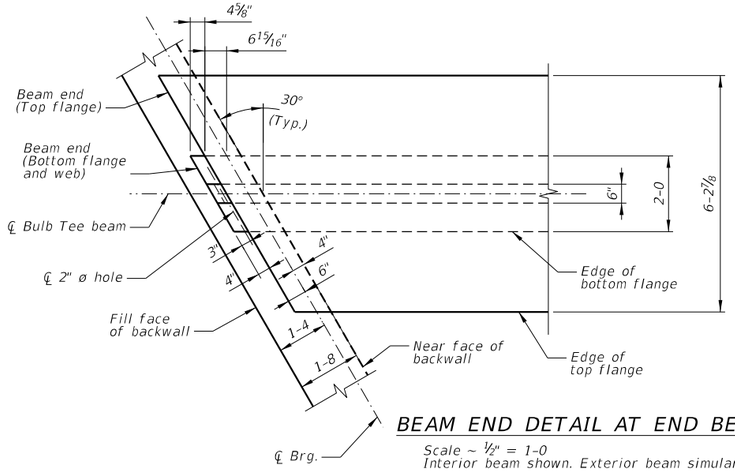
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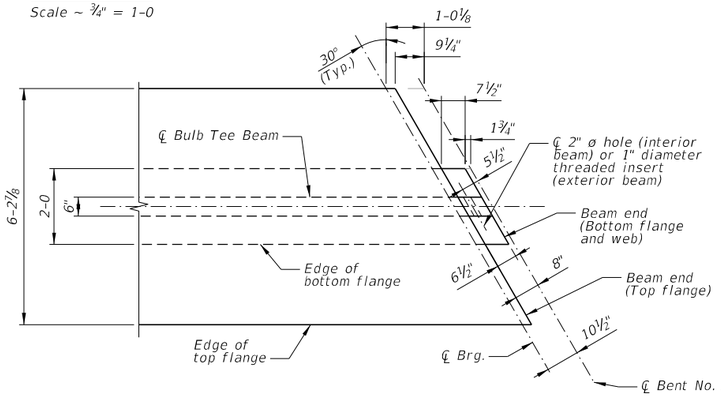
ELEVATION

Scale ~ ¾" = 1-0



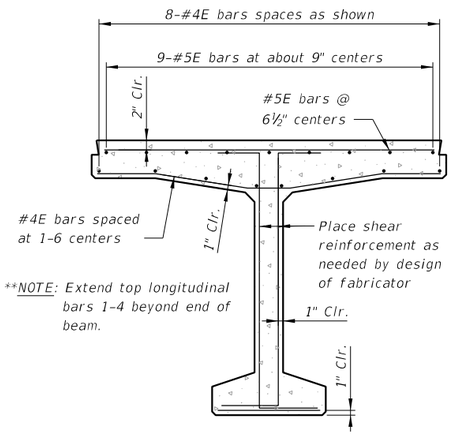
BEAM END DETAIL AT END BENT

Scale ~ ½" = 1-0
Interior beam shown. Exterior beam simular



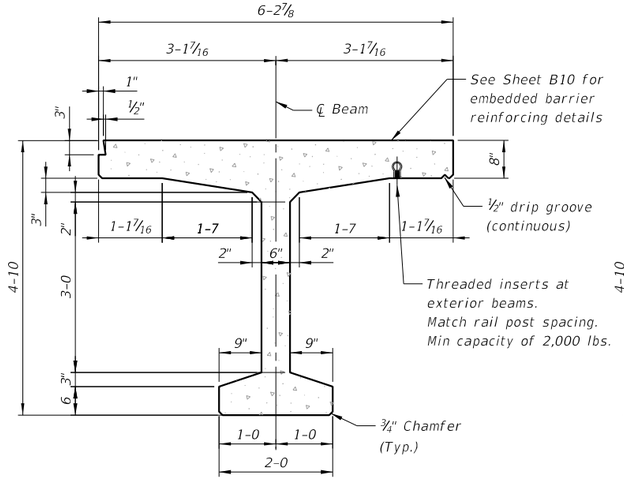
BEAM END DETAIL AT INTERMEDIATE BENT

Scale ~ ½" = 1-0
Interior beam shown, Exterior beam similar



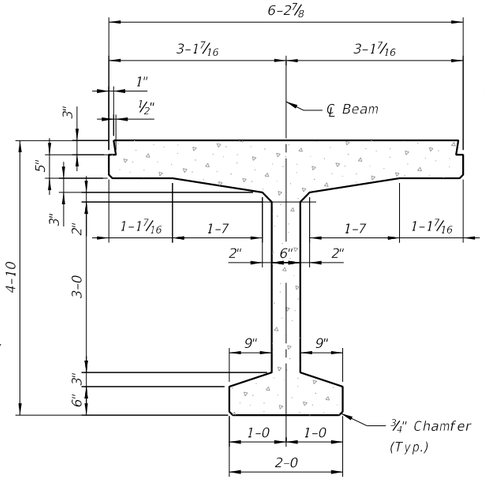
REINFORCING PLACEMENT DETAIL

Scale ~ ¾" = 1-0



SECTION B-B EXTERIOR BEAM

Scale: ¾" = 1-0



SECTION B-B INTERIOR BEAM

Scale ~ ¾" = 1-0

PRESTRESSED BEAM DESIGN PARAMETERS	
AASHTO Specifications	LRFD 9th edition with current interims
Structure Type	Simple Span
Deck Concrete Strength	N/A
Deck Concrete Density	N/A
Prestressing Strand	270 ksi Low Relaxation - (0.500" or 0.600" diameter)
Shear Reinforcing	AASHTO M 31 Grade 60
Alternate Shear Reinforcing	Welded Wire Reinforcement - AASHTO M55, M221, or M54
Section Property Calculations	Gross Section
Prestress Loss Method	Approximate Losses per LRFD 5.9.5 and 5.9.5.3
Shear Computation Method	Sectional Model per LRFD 5.8.3
Beam / Slab Interface	N/A
Load Rating Requirements	AASHTO LRFR Design Load

PRESTRESSED BEAM LOAD TABLE		
LOAD TYPE	LOADS	APPLICATION METHOD
Barrier Load	0.173 kip/ft per rail	Equally to all beams
PMS Wearing Surface	29 lb/ft² applied between curbs	Equally to all beams
Future Wearing Surface	10 lb/ft² applied between curbs	Equally to all beams
Intermediate Diaphragms	0.140 kip/diaphragm	At point load
Additional Dead Load	--------	--------
Live Load	LRFD - HL-93	per AASHTO LRFD

NOTES:
PRESTRESSING STEEL: Use 0.500" diameter or 0.600" diameter 7 wire strand prestressing steel.

HARDWARE: Obtain the Engineer's approval for all embedded plates, threaded inserts, hold down devices, lifting devices and any other hardware incorporated in the beam prior to fabrication.

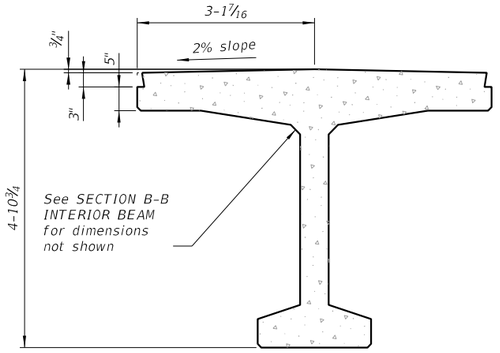
BEAM LENGTH: Increase the overall length of the beam to allow for elastic shortening, shrinkage, and creep.

VARIATIONS: Do not change the general shape, the deck width or span lengths from those shown on the Bridge drawings without the prior approval of the Engineer. Obtain approval from the engineer of any variation requiring the alteration of the backwall, diaphragm and sleeve spaces as shown on the Bridge drawings.

PRESTRESSED CONCRETE BULB TEE BEAMS: Fabricate the prestressed concrete bulb tee beams in accordance with the details shown on this drawing. Sheet No. B12 and SBR-W830. Maximum f'c (Compressive strength of concrete in 28 days for design is 7000 p.s.i.) Design and fabricate beams to support the dead load and live loads and provide a minimum capacity based on the design parameters shown on this sheet. Show stresses in the beam under each loading condition that is anticipated in the manufacturing, handling and service life of the beam. All values shown in the table below are based on the beam sections shown on this sheet. Alternate beam sections will be allowed provided they meet the requirements of these plans and Special Provisions.

STRUCTURAL STEEL: Use structural steel meeting the requirements of AASHTO M 270 Grade 36 for embedded plates, smooth bars, and shoes. Use structural steel meeting the requirements of AASHTO M 314 Grade 55 for anchor bolts. Galvanize the anchor bolts meeting the requirements of AASHTO M 232. Use headed shear studs meeting the requirements of AASHTO M 169 Grades 1010 through 1020.

PAYMENT: Include all costs to furnish and install anchor bolts, nuts, smooth bars, metal expansion caps, shoes, fiber reinforced pads and embedded plates in the unit price bid for Prestressed Beam - Bulb Tee.



SECTION B-B CENTER BEAM

Scale: ¾" = 1-0

SHEET NO. B12

BEAM DETAILS

SCALE: As Noted

BRIDGE OVER THE CLARK'S FORK OF THE YELLOWSTONE RIVER

AT STA. 18+08.90

FEDERAL AID PROJECT STPB 9005(55)

COUNTY CARBON

REVISED		
REVISED		
REVISED		
REVISED		
CHECKED	K.F.Y.	08-26-22
DRAWN	P.K.S.	08-26-22
DESIGNED	G.C.G.	08-26-22

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE C005128A

REF POINT 1+0.399

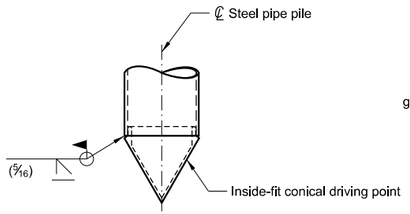
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UPN NUMBER 9523000

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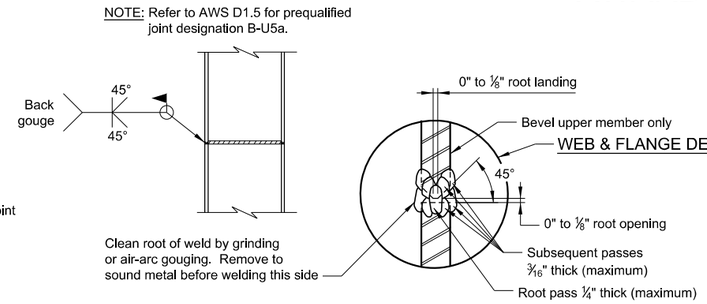
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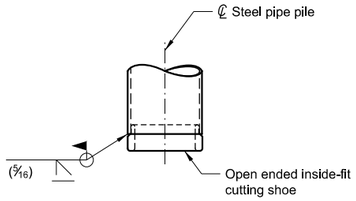
CONICAL DRIVING POINT WELD DETAIL

Slip driving point inside pipe.



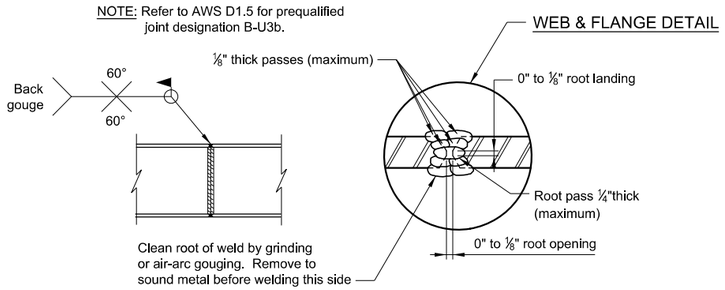
PILE EXTENSION AFTER DRIVING

(Pile Vertical)



CUTTING SHOE WELD DETAIL

Slip shoe inside pipe.



PILE EXTENSION BEFORE DRIVING

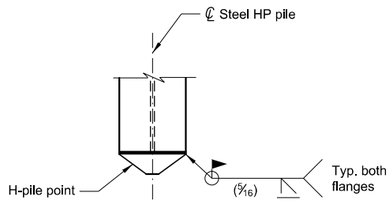
WELDED SPLICES FOR STEEL HP PILES

NOTES

PILE SPLICES: Use only E7018 series electrodes. Prepare the weld surfaces to a smooth, uniform finish. Remove all fins, tears, loose scale, slag, rust, grease, moisture and other material that would prevent proper welding.

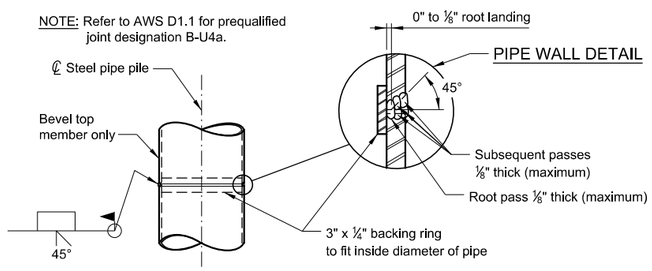
PILE TIPS: Use only E7018 series electrodes to attach pile tips.

PILE TYPE: See Footing Plan sheets for correct pile type, pile tip and pile tip elevations.



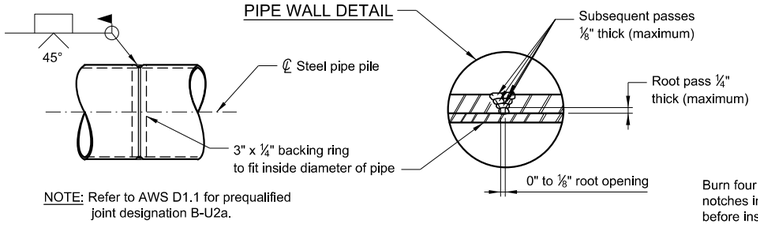
H-PILE POINT WELD DETAIL

Do not weld web or inside of flanges.



PILE EXTENSION AFTER DRIVING

(Pile Vertical)



PILE EXTENSION BEFORE DRIVING

WELDED SPLICES FOR STEEL PIPE PILES

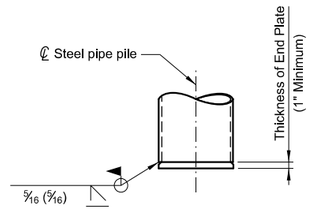
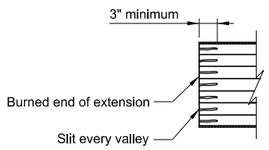


PLATE END WELD DETAIL

Align plate with outside of pipe.

FIRST STEP:

Burn or cut slits in valleys.

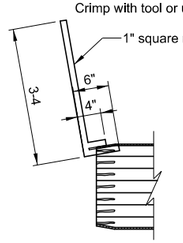


THIRD STEP:

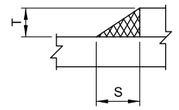
Insert field crimped end into pile to be extended. Fit snug and weld.

SECOND STEP:

Crimp with tool or use sledge.

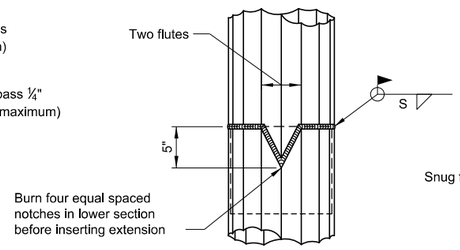


Gage of Pile T	Weld Size S
9 gage (0.1495")	1/4"
7 gage (0.1793")	5/16"
5 gage (0.2092")	5/16"
3 gage (0.2391")	3/8"

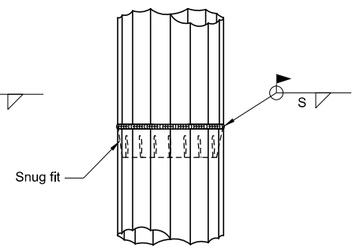


FIELD CRIMPING DETAIL FOR CUT-OFF EXTENSIONS

NOTE: Refer to AWS D1.1 for weld requirements.



FACTORY CRIMPED EXTENSION



FIELD CRIMPED EXTENSION

WELDED SPLICES FOR STEEL FLUTED PILES

STANDARD PILE SPLICE DETAILS AND PILE TIPS

No Scale

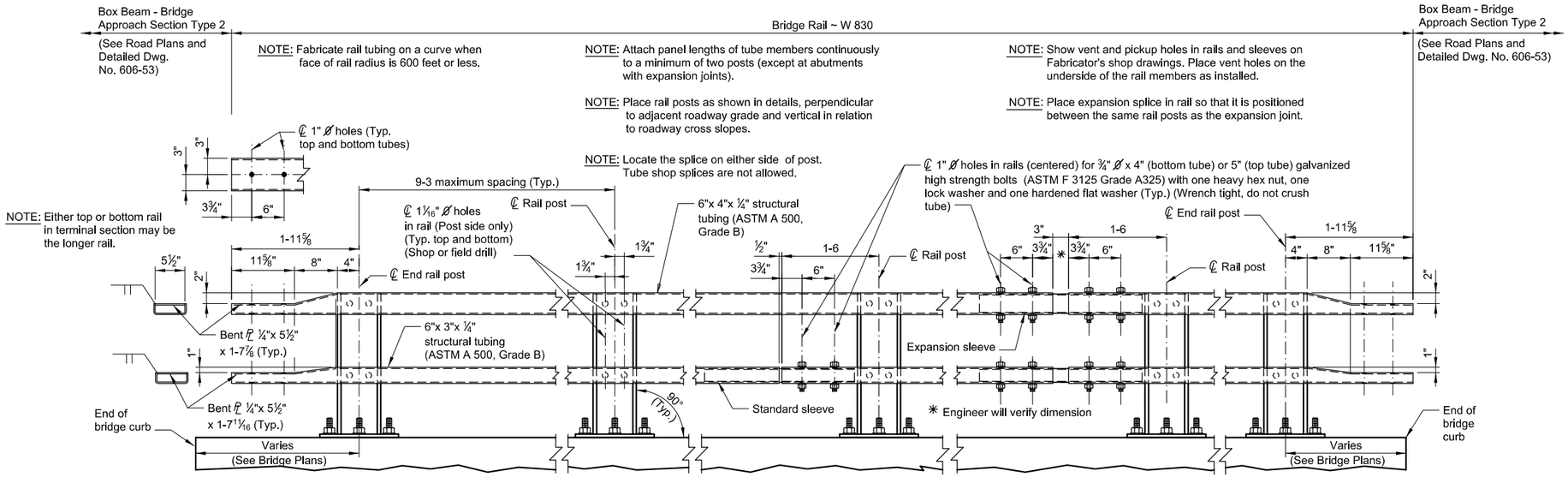
MDT MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

REVISED			
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REVISED			
APPROVED	1-30-15	D.F.J.	
CHECKED	1-30-15	D.F.J.	
DRAWN	1-23-15	T.J.B.	$FILEABBREV$
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ELEVATION AT BOX BEAM GUARDRAIL CONNECTION

NOTE: Do not provide a tube splice in first panel unless it crosses an expansion joint.

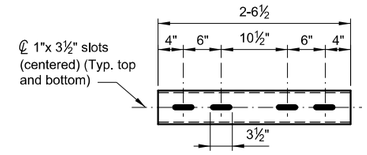
STANDARD SPLICE

(Top or bottom rail)

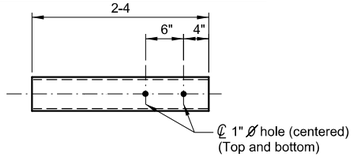
EXPANSION SPLICE

(Top and bottom rail)

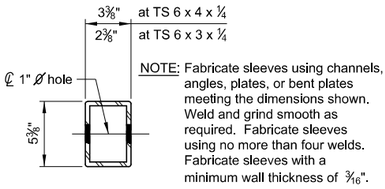
INSIDE ELEVATION OF RAIL



EXPANSION SLEEVE DETAIL



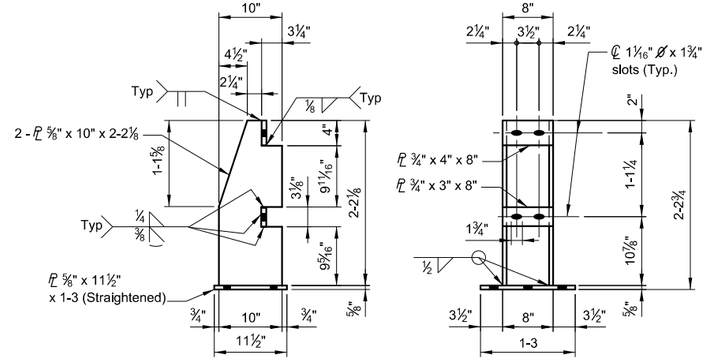
STANDARD SLEEVE DETAIL



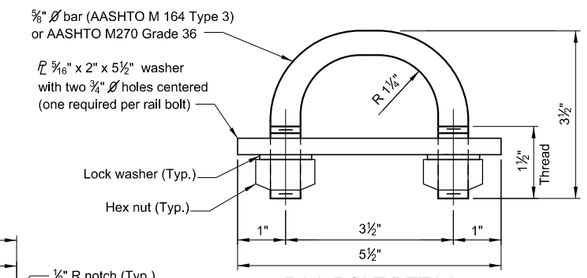
NOTE: Fabricate sleeves using channels, angles, plates, or bent plates meeting the dimensions shown. Weld and grind smooth as required. Fabricate sleeves using no more than four welds. Fabricate sleeves with a minimum wall thickness of 3/16".

SLEEVE FABRICATION OPTIONS

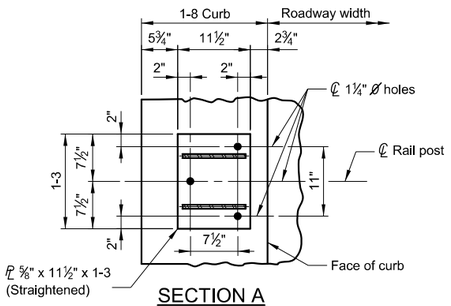
POST ASSEMBLY DETAIL



POST DETAILS

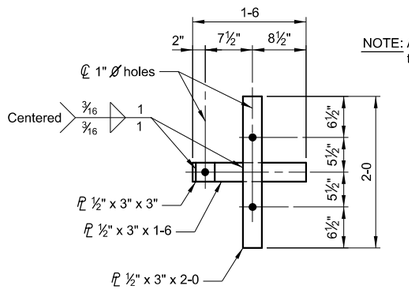


RAIL BOLT DETAIL



SECTION A

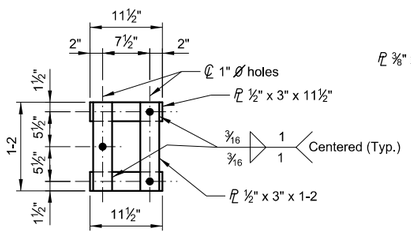
(Anchor bolts not shown)



VIEW B

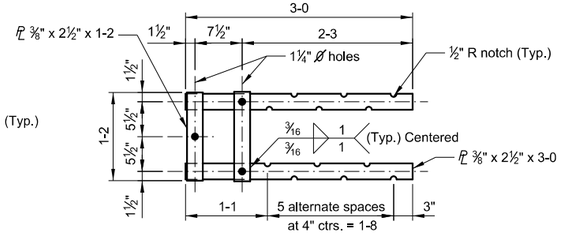
(Showing lower anchorage)
(Do not galvanize)
(Anchor bolts not shown)

NOTE: Anchor bolts may be tack welded to anchorage (shop or field).



VIEW B (U-TYPE BENT)

(Do not galvanize)
(Anchor bolts not shown)



VIEW B

(Showing upper anchorage)
(Do not galvanize)
(Anchor bolts not shown)

NOTES

GALVANIZING: Galvanize all bolts, nuts, washers and pipe sleeves in accordance with ASTM F 2329.

REFLECTORS: Place a white reflector on top of the top tube rail at equal spacing (not to exceed 30 foot spacing) between ends of rail. See Dtl. Dwg. No. 605-00 for reflector detail. Mount the reflector on the tube rail with an approved adhesive. Include the cost of reflector in the unit price bid for Bridge Rail ~ W830.

PAYMENT: Payment for Bridge Rail ~ W830 per linear foot includes compensation for the cost of Concrete Class Deck in the curb and for all resources necessary to complete the work. See the General Layout for the number of linear feet for payment of Bridge Rail ~ W830. Use rail post plates and base plates conforming to AASHTO M 270 Grade 36 T3. Use AASHTO M 270 Grade 36 for all other plates.

ERECTION: Place rail posts as shown in details, perpendicular to adjacent roadway grade and vertical in relation to roadway cross slopes. Place posts in proper alignment prior to placement of curb.

PAINTING: Paint all posts, structural tubing and plates (except as noted) in accordance with the Standard Specifications. Galvanizing the posts, structural tubing and plates in accordance with AASHTO M 111 will be allowed.

EXCEPTIONS: Use details shown on this drawing only as they apply to the project. Anchorage details may vary. Refer to other drawings for variations in these details.

FABRICATION: For the purposes of fabrication, this rail system is considered an ancillary item. The requirements of subsection 1.3.7 of AASHTO/AWS D1.5 apply.

RAIL WEIGHT: For informational purposes only, the rail weight is approximately 123.0 lb/ft for the curb and 50.0 lb/ft for the rail.

STANDARD BRIDGE RAIL TYPE W830

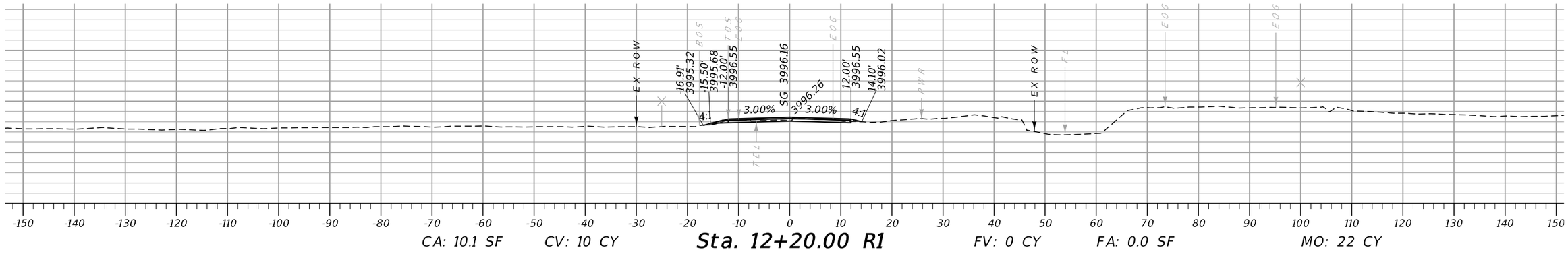
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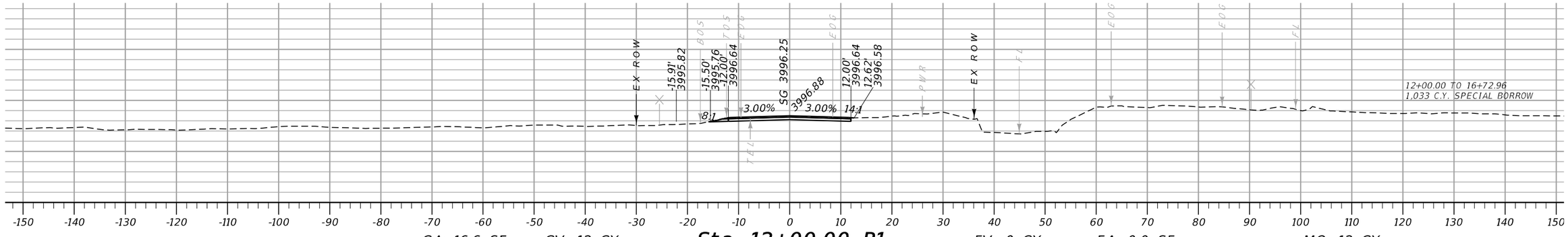
MDT MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

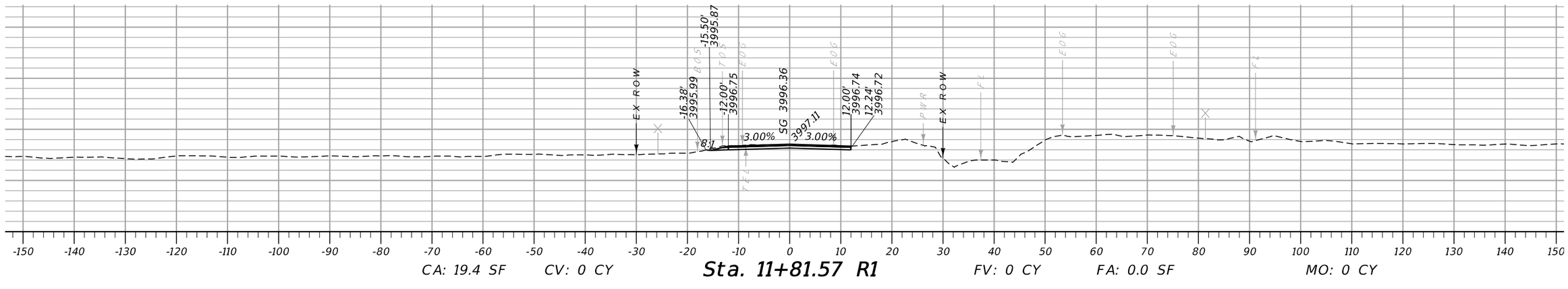
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APPROVED	3-26-08	D.F.J.	
CHECKED	3-20-08	D.J.R.	
DRAWN	8-2-06	L.M.S.	
$DATES	$TIMES		$FILEABBREVS

DRAWING NO. SBR-W830

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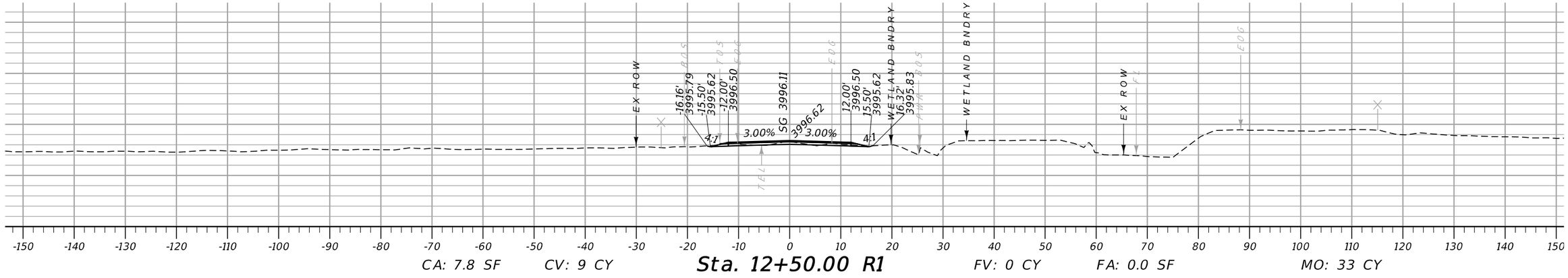




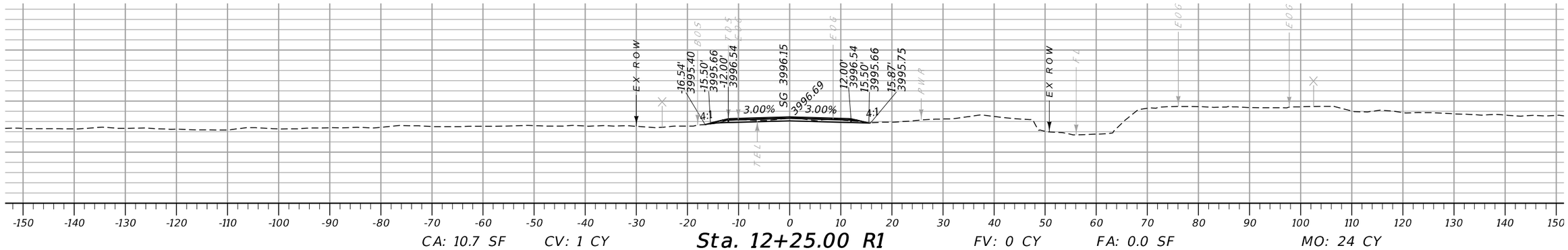
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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022		
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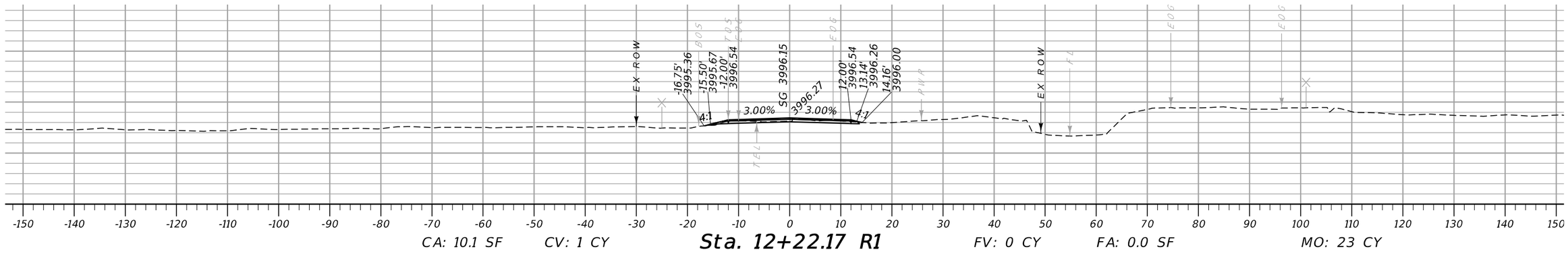
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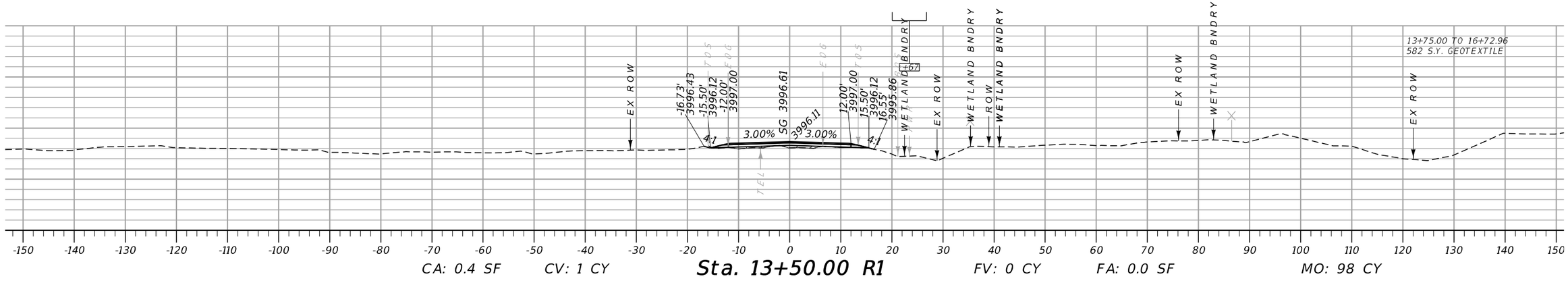
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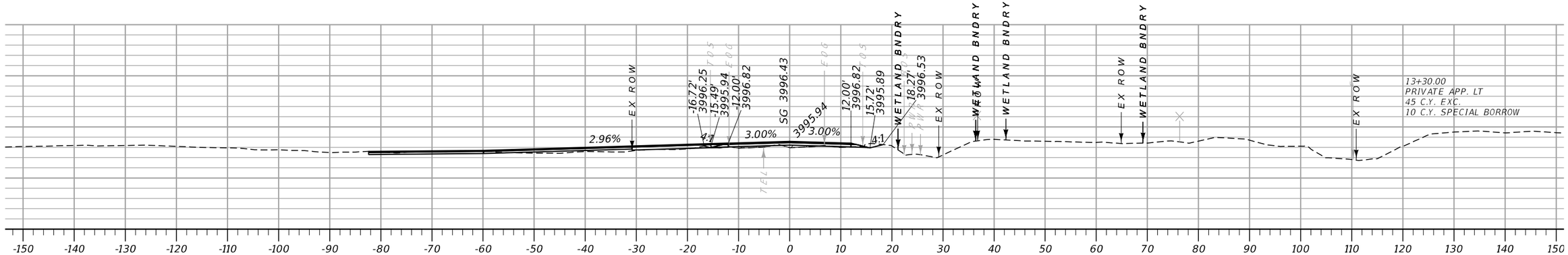


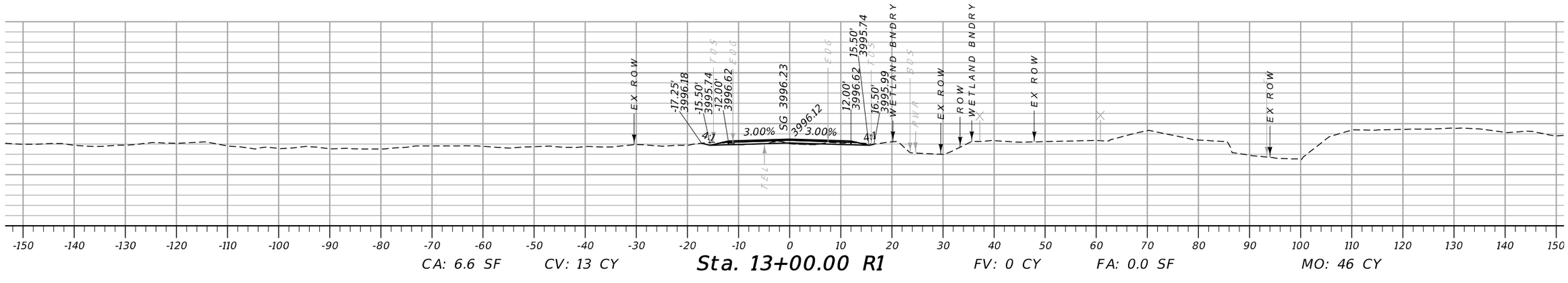
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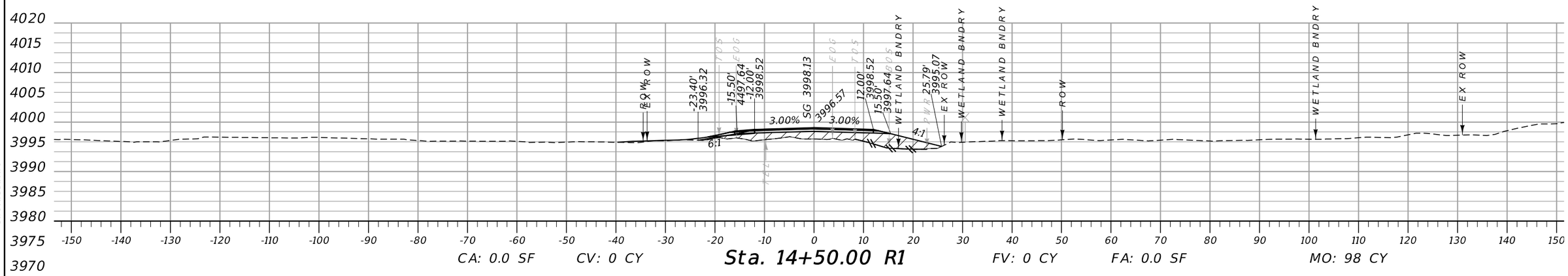


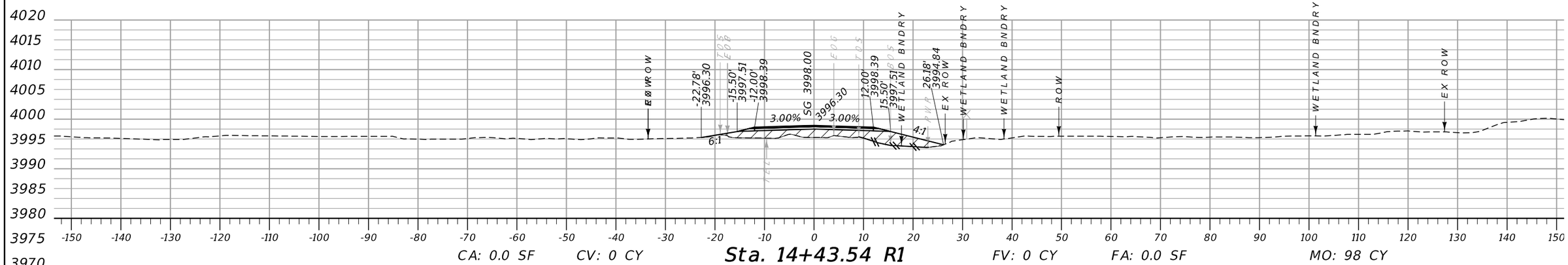


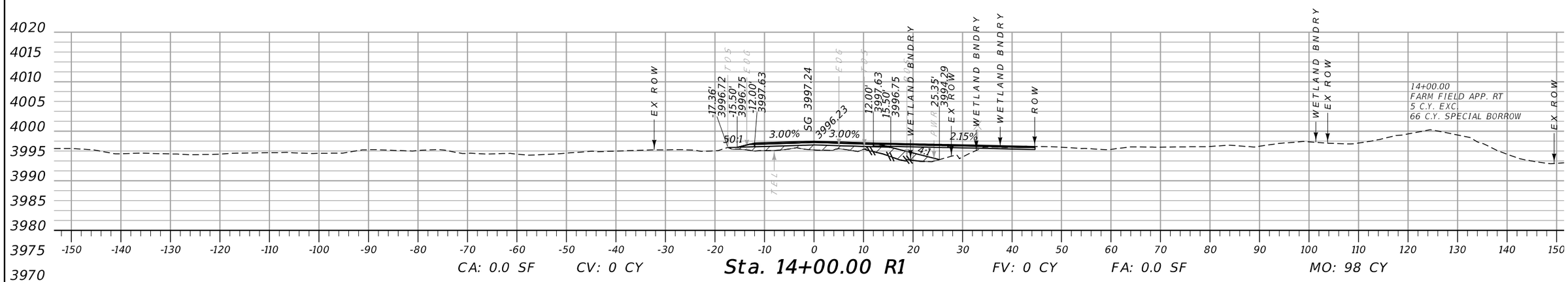
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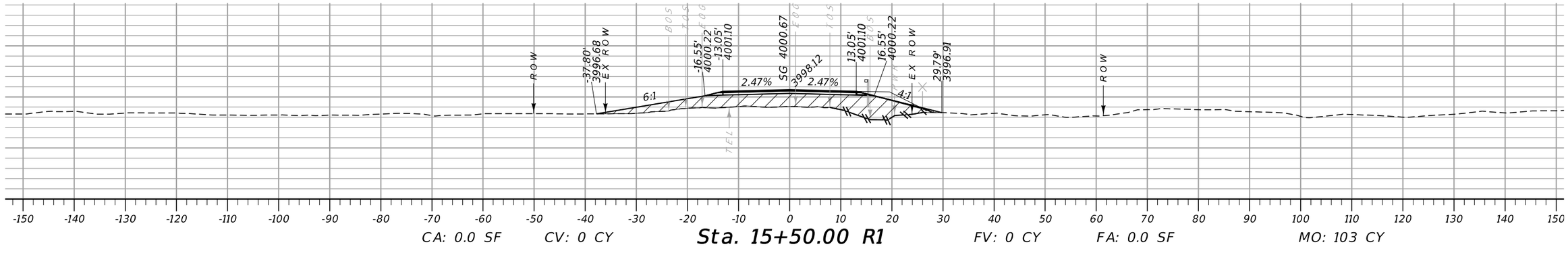


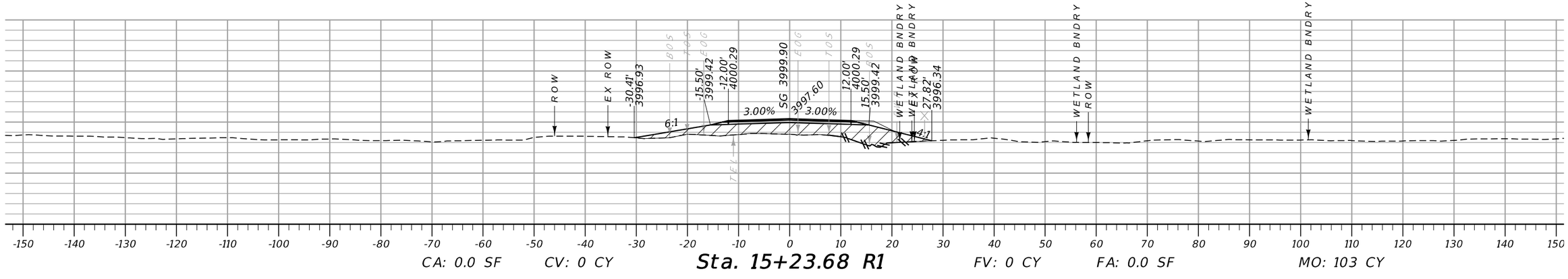


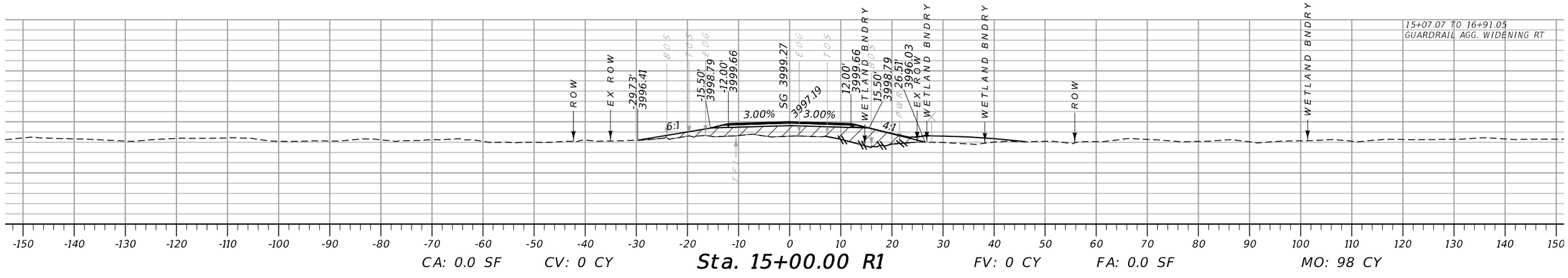
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MDT MONTANA DEPARTMENT OF TRANSPORTATION

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8/24/2022	REVIEWED BY	R. HOLM	8/26/2022
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MAINLINE CROSS SECTIONS

CARBON COUNTY

CLARKS FORK - 9 M S BELFRY

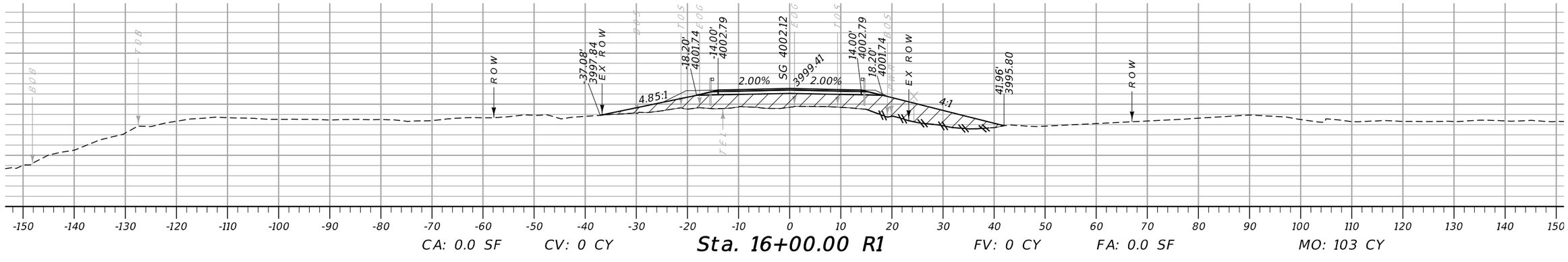
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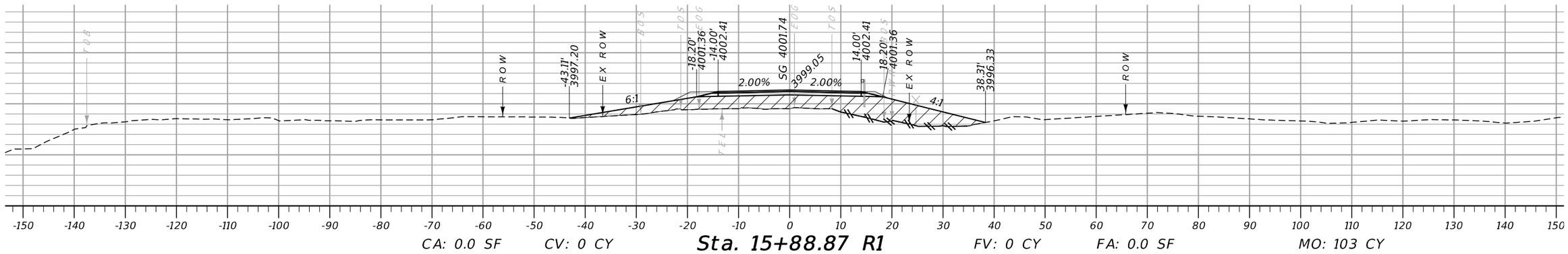
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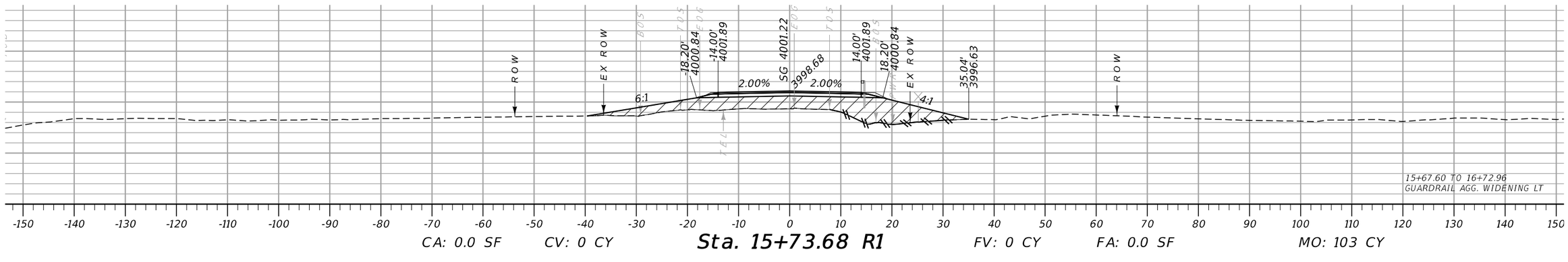
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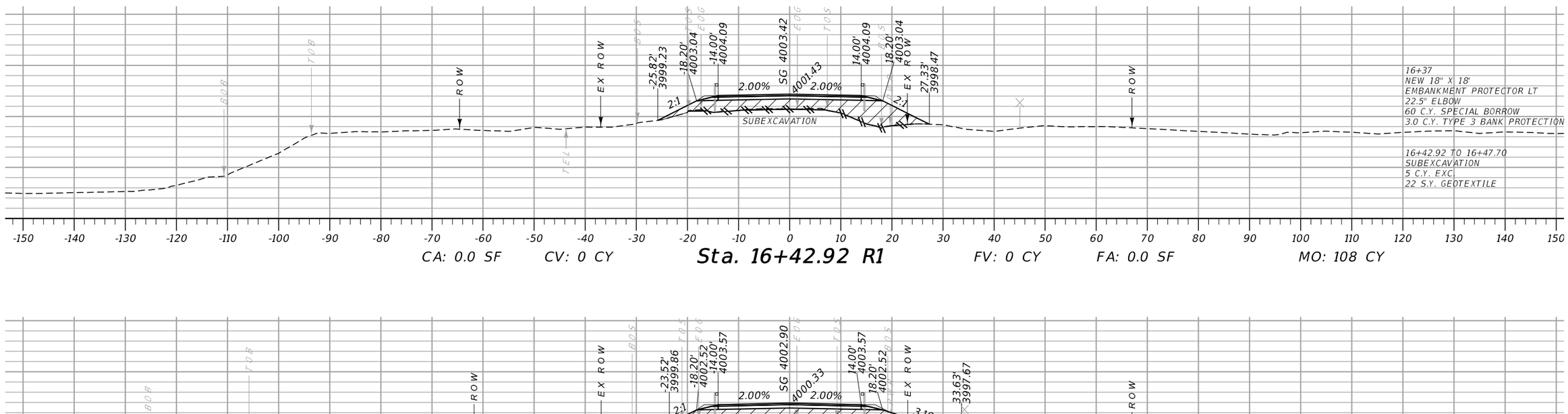


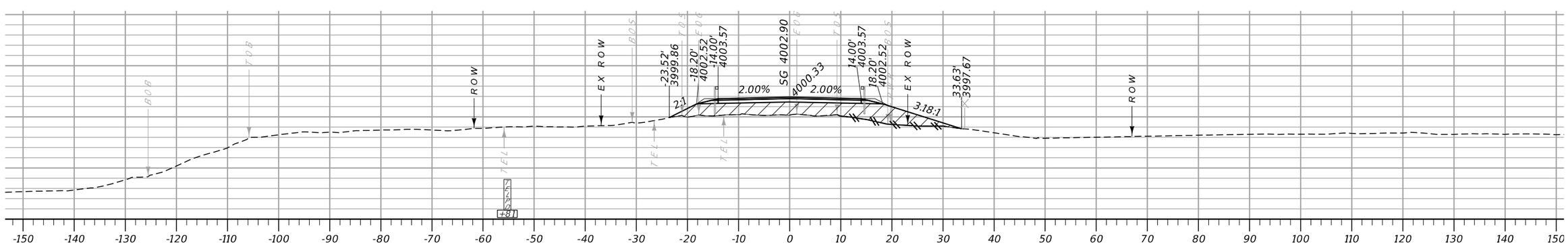


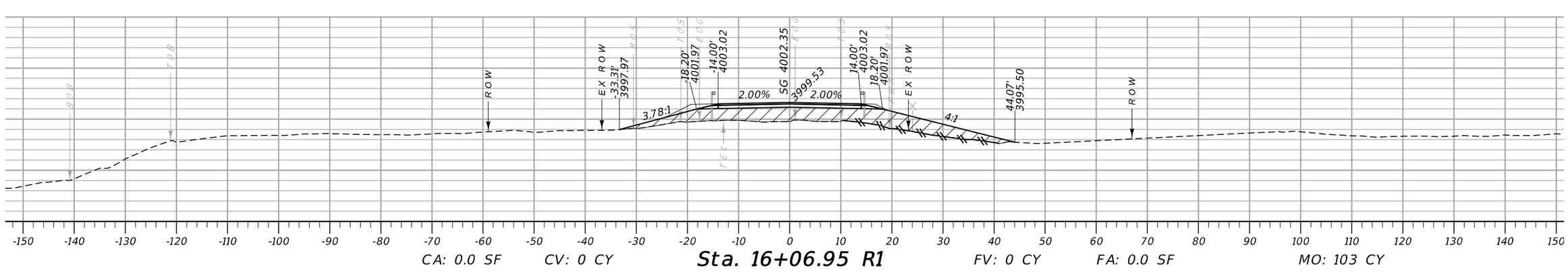
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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022			
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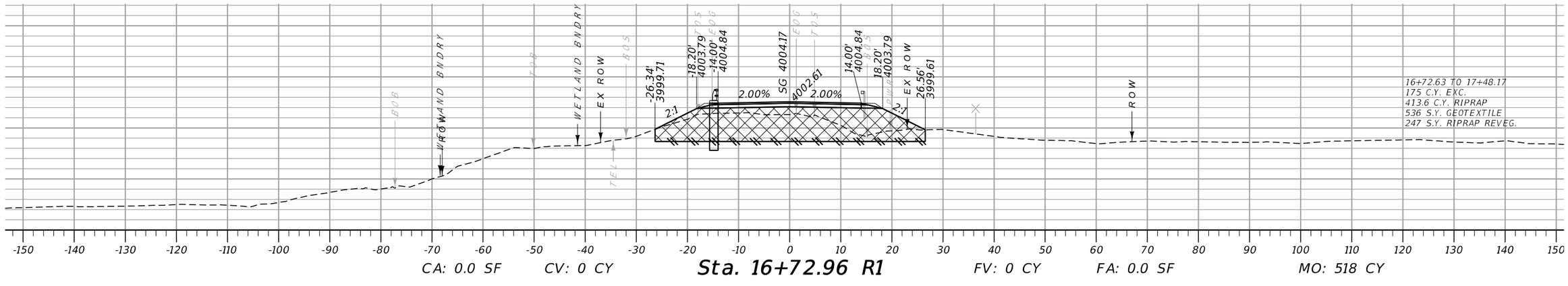


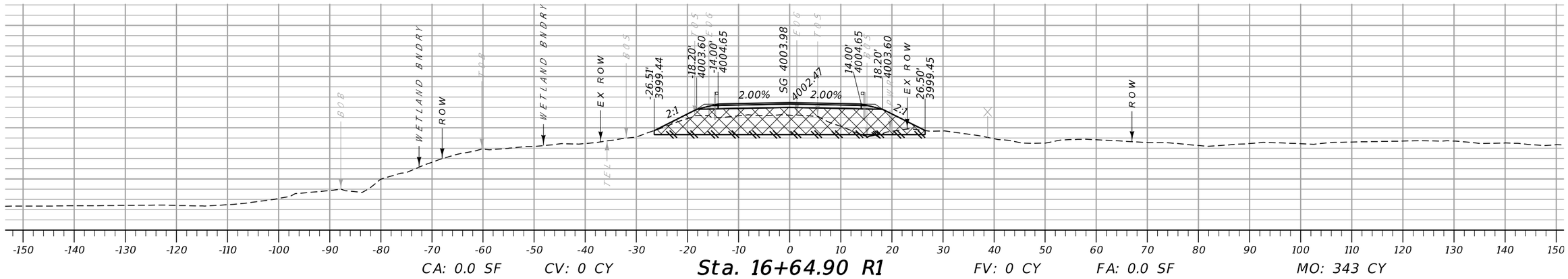


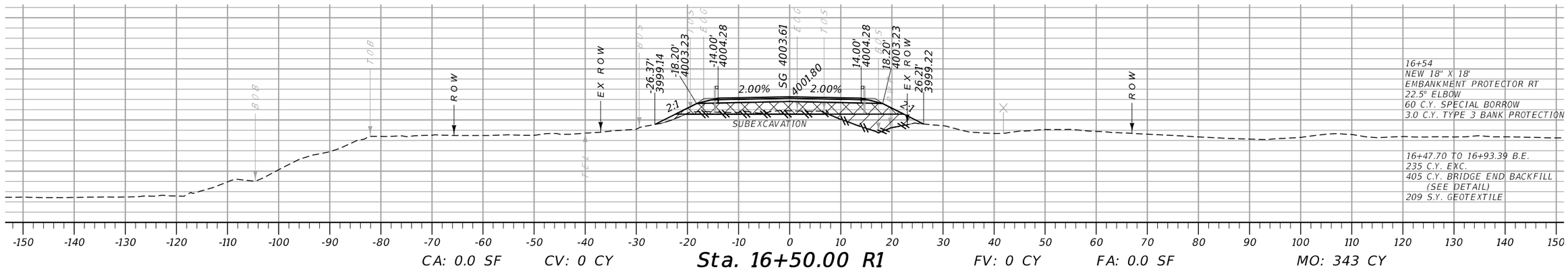
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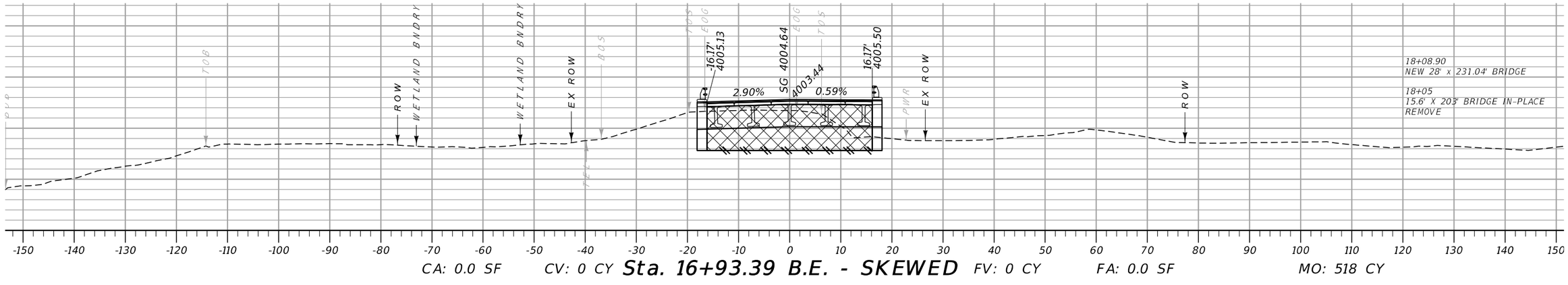




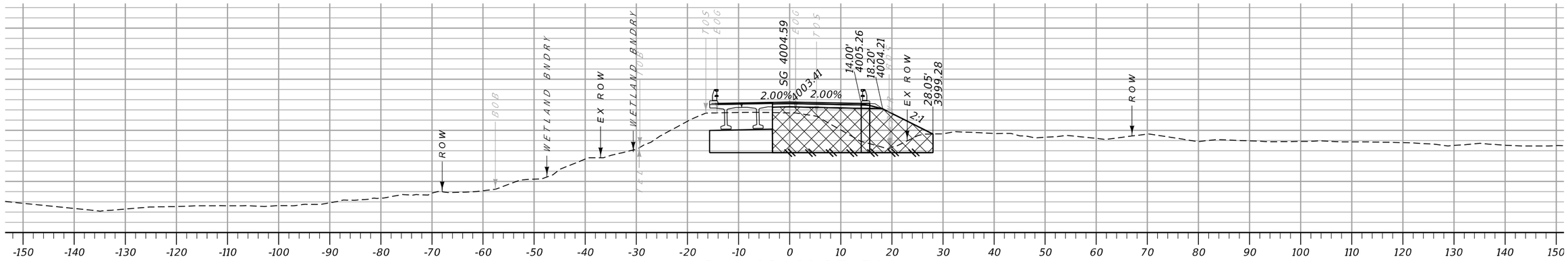


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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022	CARBON COUNTY	UPN 9523000 / SHEET 8
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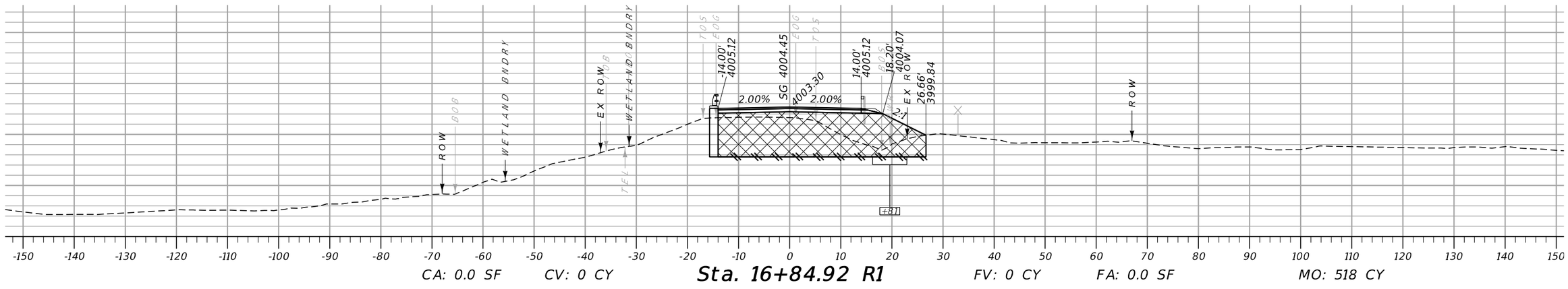
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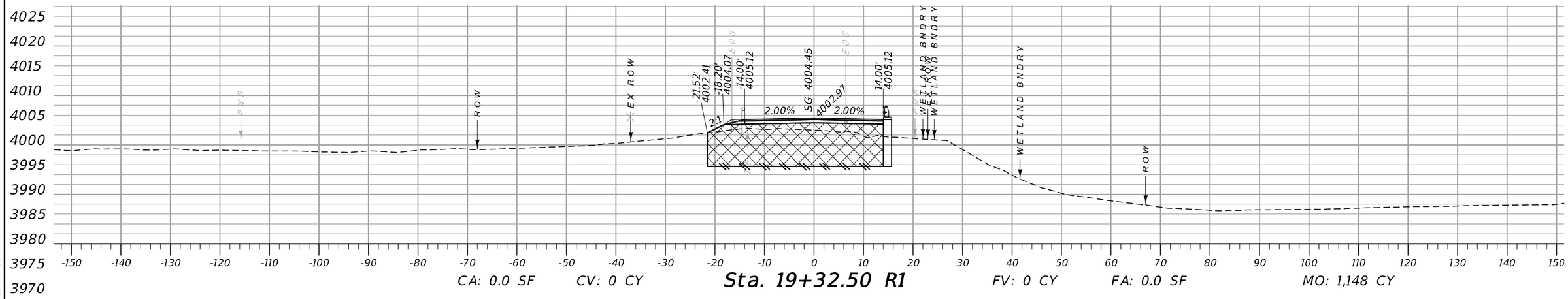


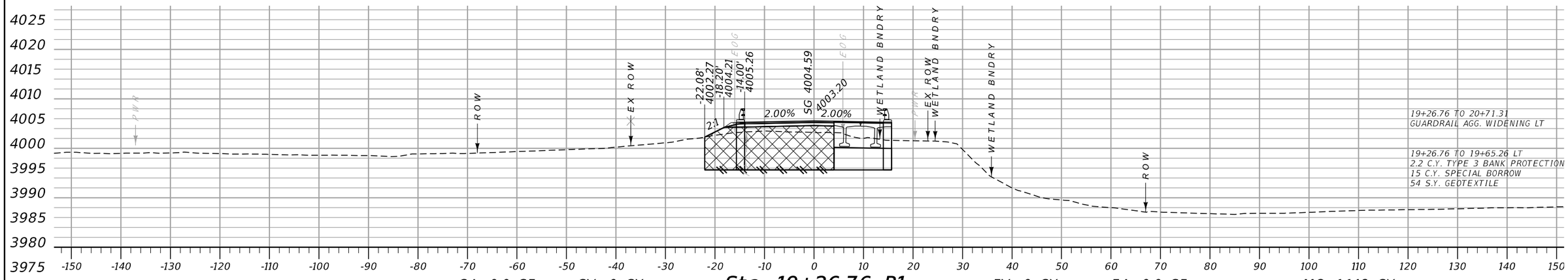
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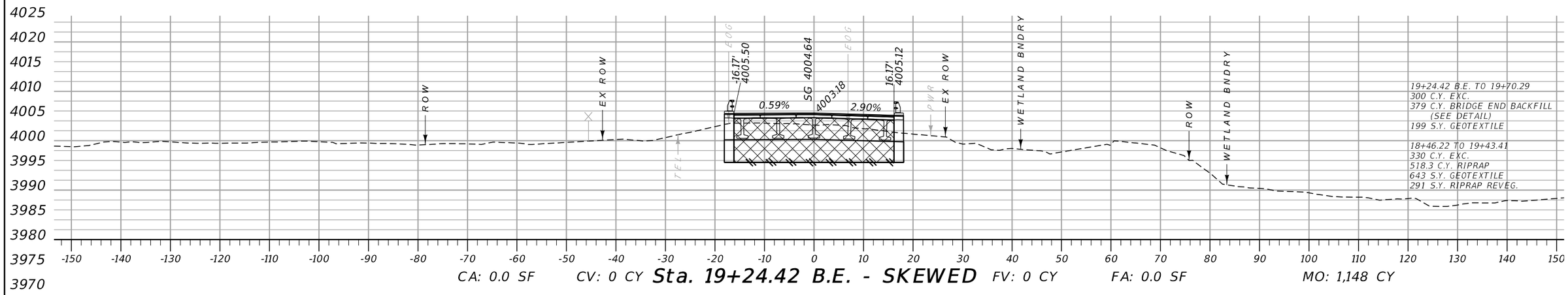
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MDT MONTANA DEPARTMENT OF TRANSPORTATION

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MAINLINE CROSS SECTIONS

CARBON COUNTY

CLARKS FORK - 9 M S BELFRY

UPN 9523000

STPB 9005(55)

SHEET 10

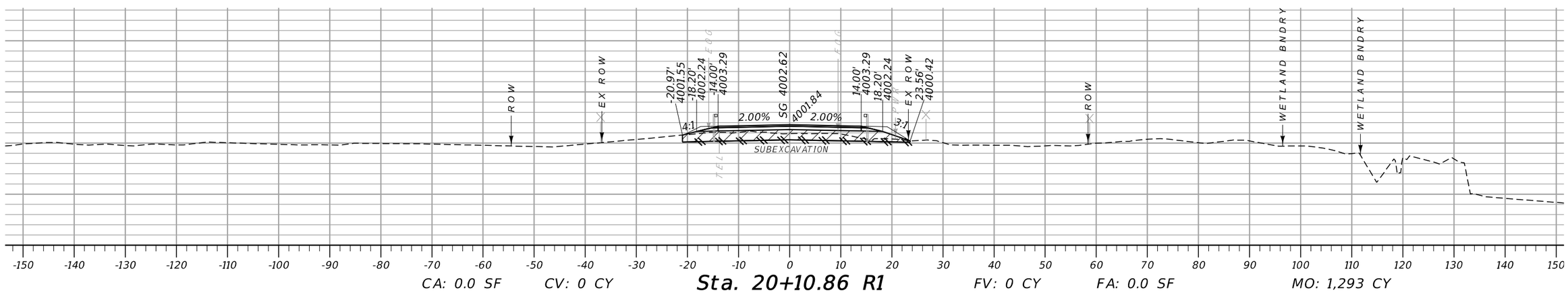
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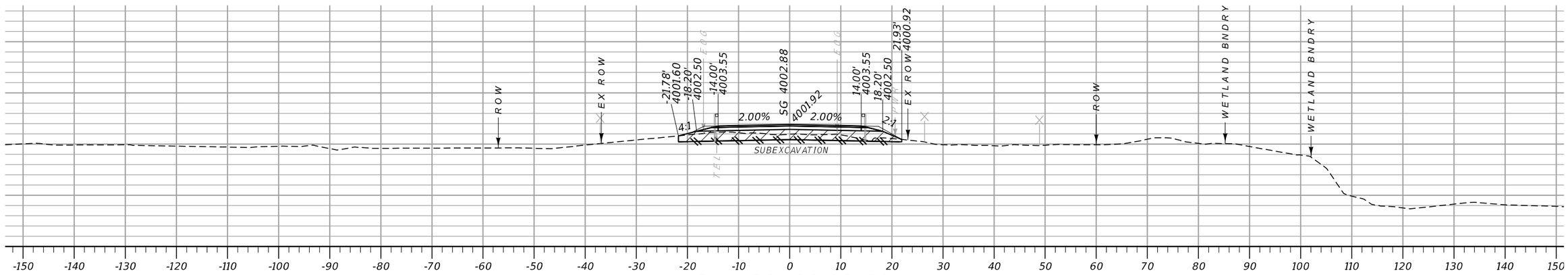
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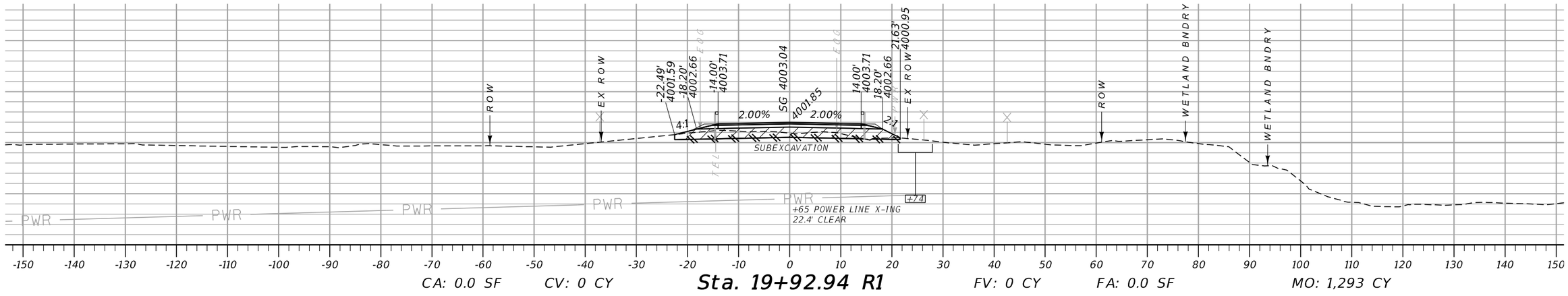
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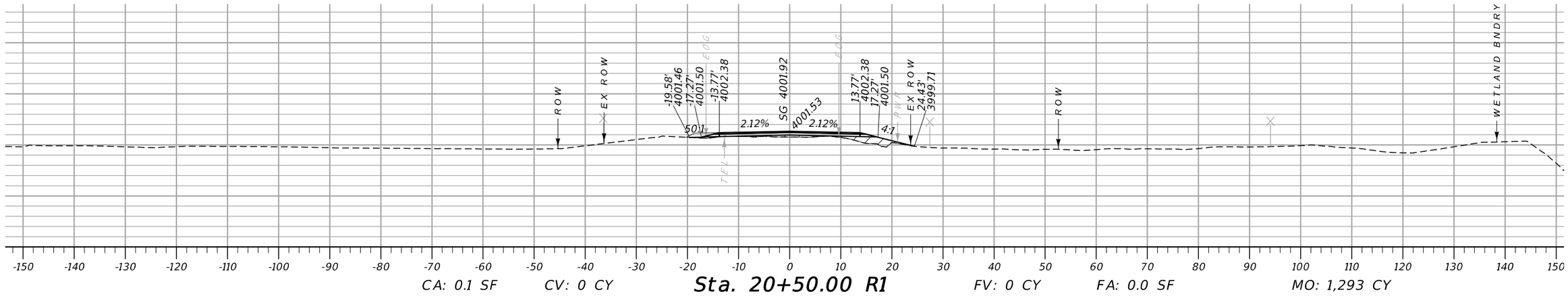


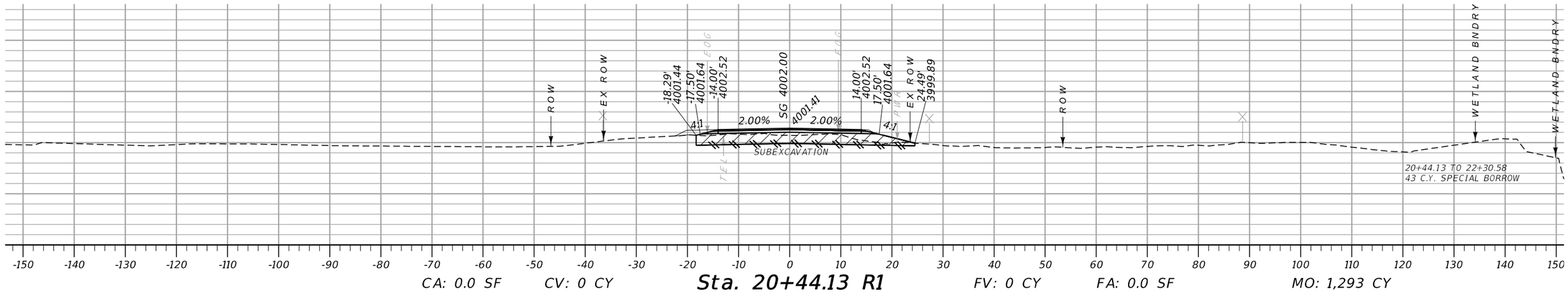


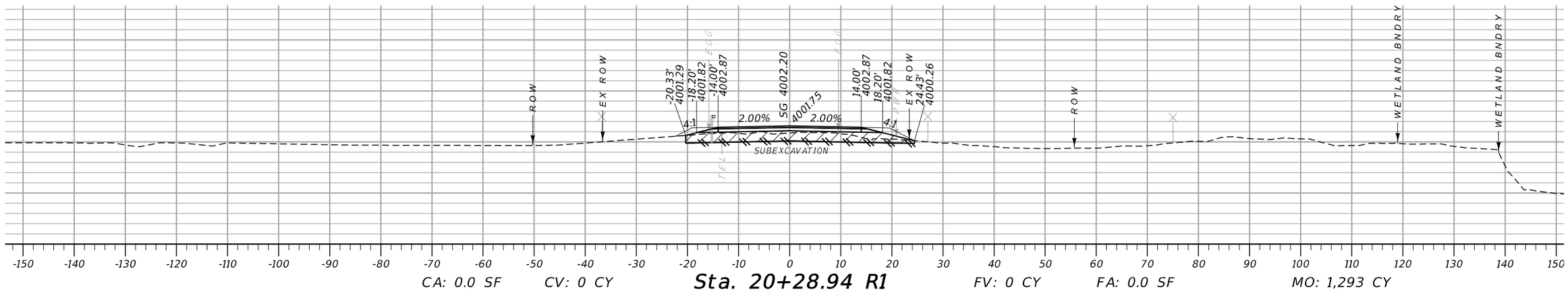
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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022			
	3:37:16 PM RHolm	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 12

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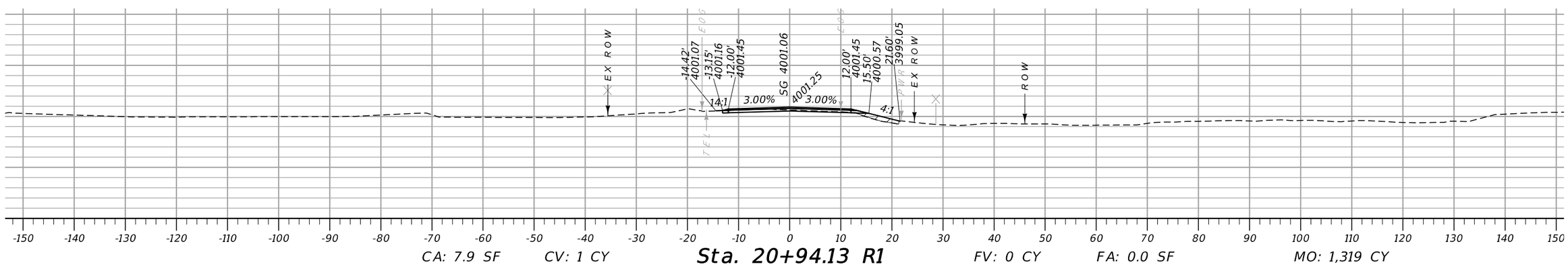


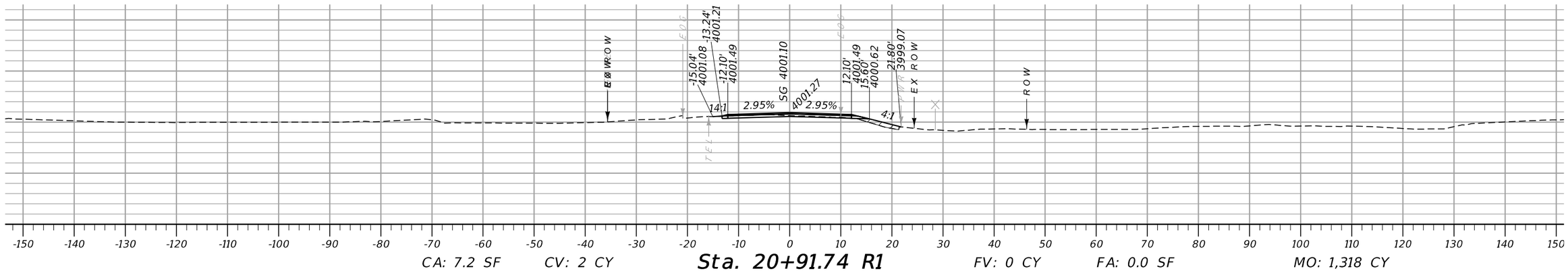


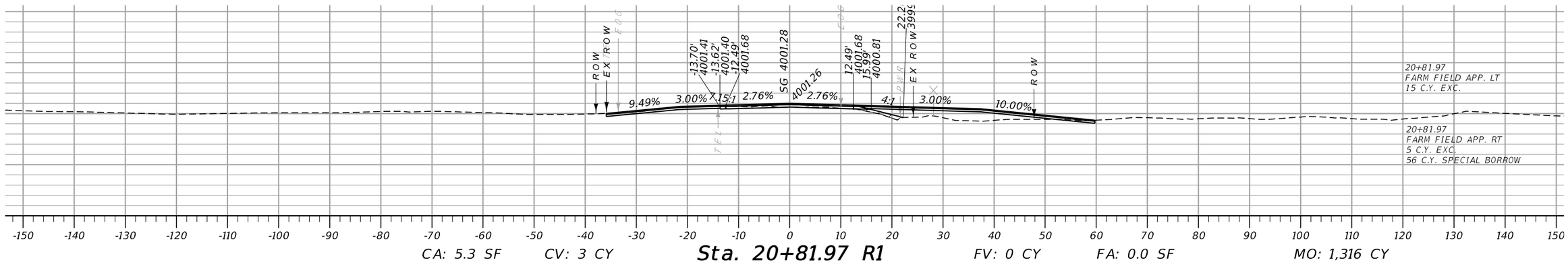
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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022			
	3:37:17 PM RHolm	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 13

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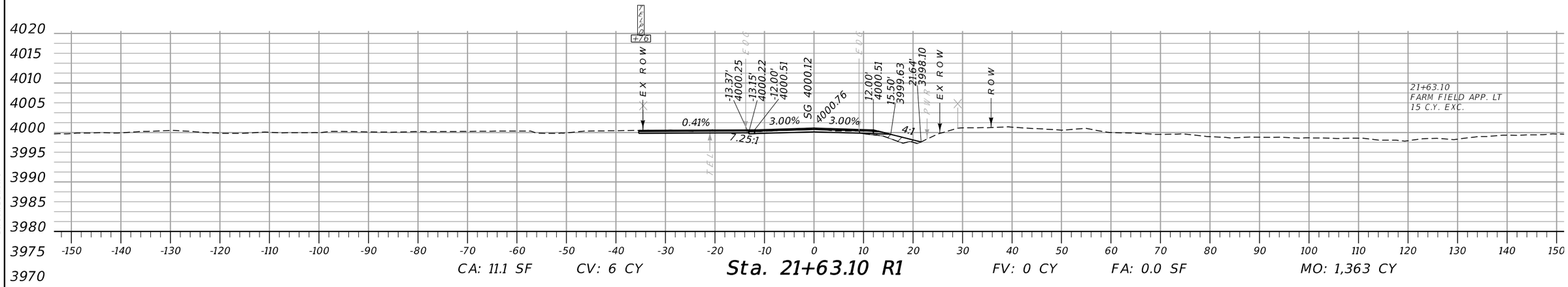


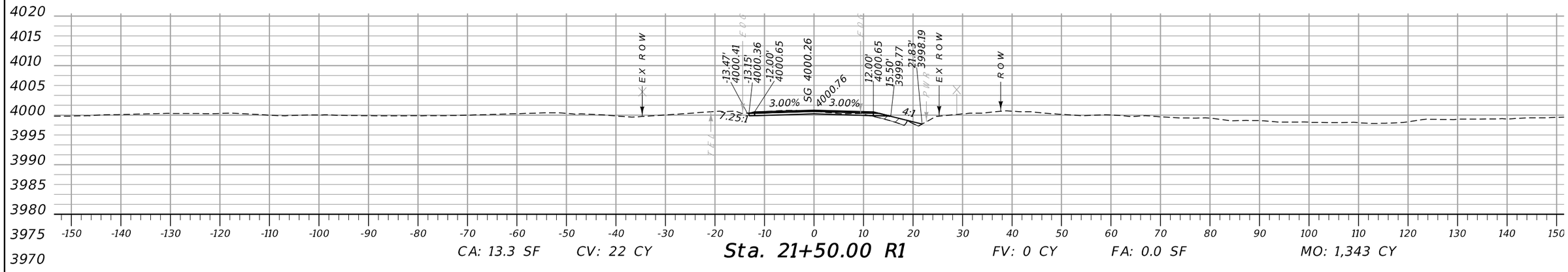


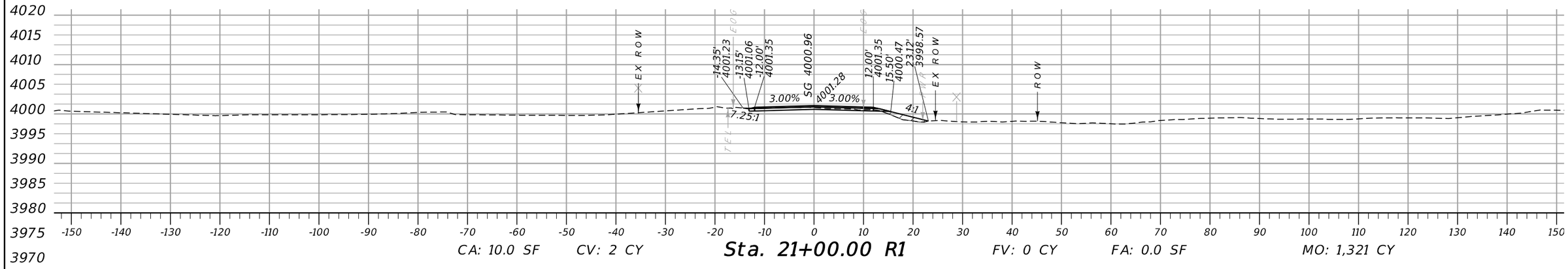
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	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022		
	3:37:18 PM RHolm	CHECKED BY	K. YAKAWICH	8/26/2022	CARBON COUNTY	UPN 9523000 / SHEET 14

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MDT MONTANA DEPARTMENT OF TRANSPORTATION

...\9523000\RD\9523000rdLAY25.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022
8/24/2022	REVIEWED BY	R. HOLM	8/26/2022
3:37:19 PM RHolm	CHECKED BY	K. YAKAWICH	8/26/2022

MAINLINE CROSS SECTIONS

CARBON COUNTY

CLARKS FORK - 9 M S BELFRY

UPN 9523000

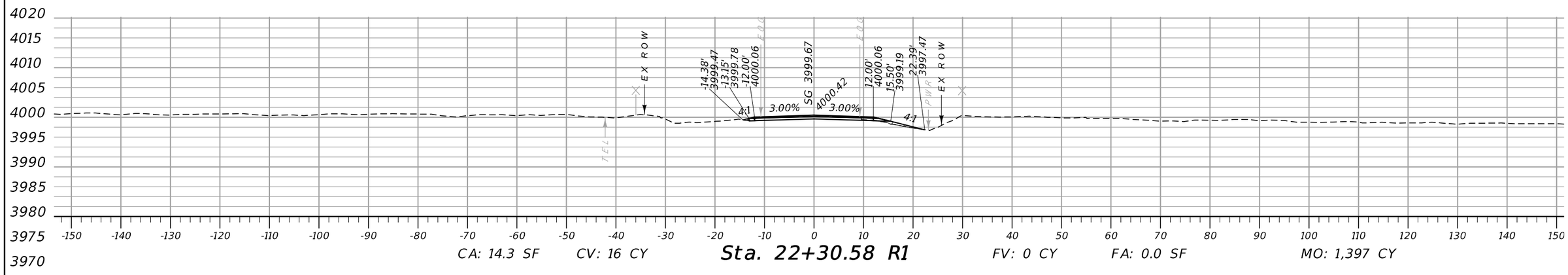
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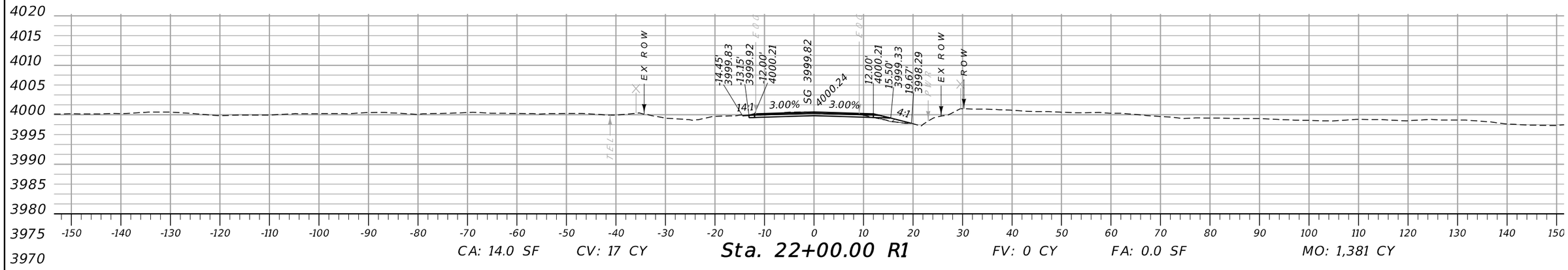
SHEET 15

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MDT MONTANA DEPARTMENT OF TRANSPORTATION	...\9523000\RD\9523000rdLAY05.dgn	DESIGNED BY	R. HOLM, L. WILLIAMS	8/26/2022	MAINLINE CROSS SECTIONS	CLARKS FORK - 9 M S BELFRY	STPB 9005(55)
	8/24/2022	REVIEWED BY	R. HOLM	8/26/2022	CARBON COUNTY	UPN 9523000	SHEET 16
	3:37:20 PM RHolm	CHECKED BY	K. YAKAWICH	8/26/2022			