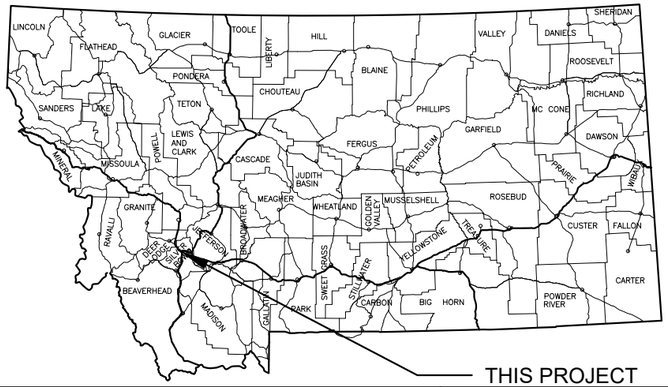
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MONTANA DEPARTMENT OF TRANSPORTATION



PROJECT DESIGN DATA

GERMAN GULCH ROAD (STRUCTURE 04457)

PRESENT	2019	A.A.D.T. = 1,500
LETTING	2024	A.A.D.T. = 1,570
DESIGN	2044	A.A.D.T. = 1,920
		D.H.V. = 360
		TRUCKS = 11.3%
		V. = 40 MPH
		18 KIP ESAL'S = 212
		GROWTH RATE = 1.0%

I-15 (STRUCTURES 01110/01111)

PRESENT	2022	A.A.D.T. = 16,620
LETTING	2024	A.A.D.T. = 17,140
DESIGN	2044	A.A.D.T. = 23,310
		D.H.V. = 2,280
		TRUCKS = 17.6%
		V. = 70 MPH
		18 KIP ESAL'S = 1,403
		GROWTH RATE = 1.6%

I-15 (STRUCTURES 01113/01114)

PRESENT	2022	A.A.D.T. = 16,630
LETTING	2024	A.A.D.T. = 17,240
DESIGN	2044	A.A.D.T. = 24,620
		D.H.V. = 2,240
		TRUCKS = 15.9%
		V. = 70 MPH
		18 KIP ESAL'S = 1,214
		GROWTH RATE = 1.8%

BURLINGTON STREET (STRUCTURE 04454)

PRESENT	2022	A.A.D.T. = 3,720
LETTING	2024	A.A.D.T. = 3,990
DESIGN	2044	A.A.D.T. = 7,930
		D.H.V. = 750
		TRUCKS = 5.0%
		V. = 35 MPH
		18 KIP ESAL'S = 158
		GROWTH RATE = 3.5%

BUTTE AREA NHS STRUCTURES
NHPB STWD(753)
BRIDGE DECK REHABILITATION
SILVER BOW AND JEFFERSON COUNTIES

LENGTH N/A MILES

2M SW Rocker
GERMAN GULCH RD. M.P. 94.36
I-15 M.P. 120.054
MDT STR ID 04457
SILVER BOW COUNTY

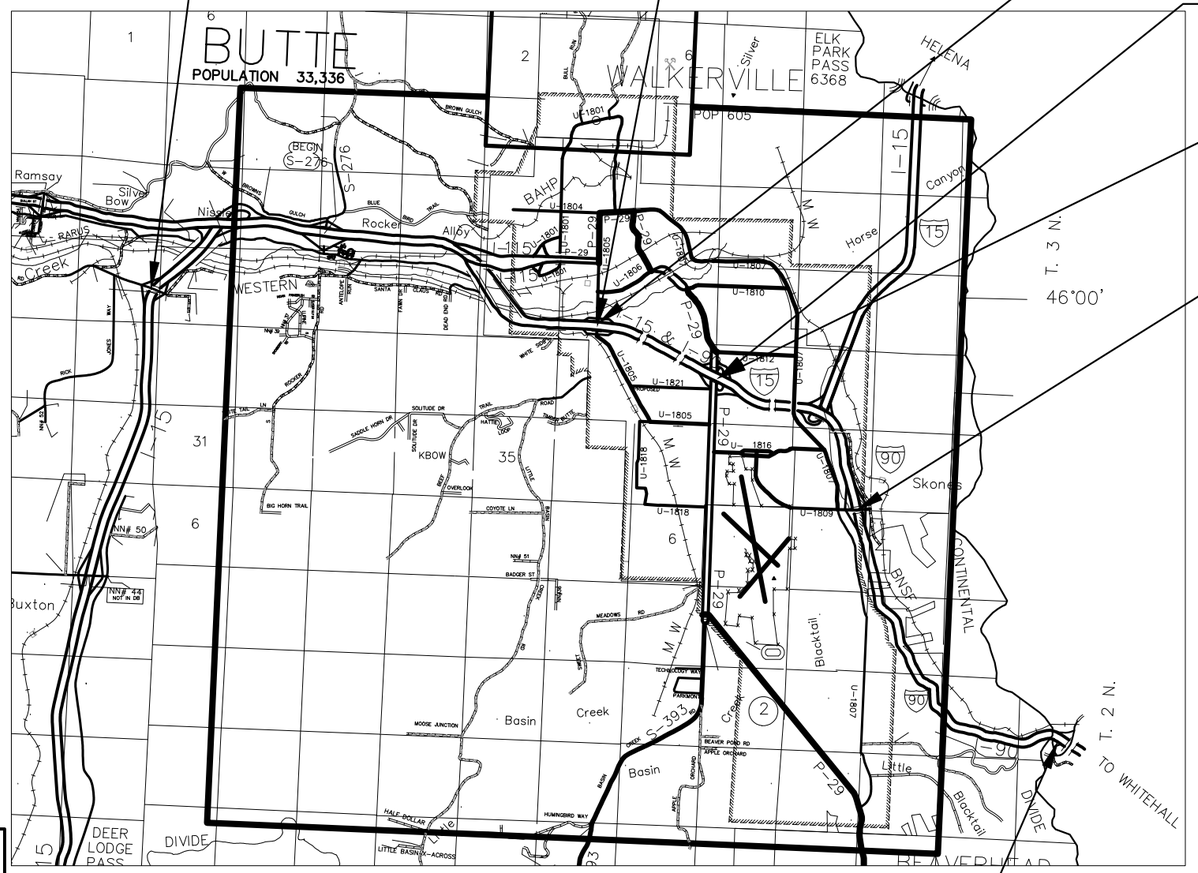
Butte
I-15 M.P. 126.31 SB
MDT STR ID 01111
REFER TO BRIDGE PLANS
SILVER BOW COUNTY

Butte
I-15 M.P. 126.31 NB
MDT STR ID 01110
REFER TO BRIDGE PLANS
SILVER BOW COUNTY

Butte
I-15 M.P. 127.93 NB
MDT STR ID 01113
REFER TO BRIDGE PLANS
SILVER BOW COUNTY

Butte
I-15 M.P. 127.93 SB
MDT STR ID 01114
REFER TO BRIDGE PLANS
SILVER BOW COUNTY

Butte - Burlington St.
M.P. 0.808
MDT STR ID 04454
REFER TO BRIDGE PLANS
SILVER BOW COUNTY



Homestake Pass
M.P. 0.10
MDT STR ID 03194
JEFFERSON COUNTY

PLANS PREPARED BY	ASSOCIATED PROJECT AGREEMENT NUMBERS	
HDR 700 SW Higgins Avenue, Suite 200 Missoula, MT 59803-1489 PHONE (406) 532-2200	R/W	
	I.C.	
	P.E.	NHPB STWD(752)

DocuSigned by:
Riley C. Lubbers
C6C069C8E44942D...
1/11/2024
DATE

MONTANA
RILEY C. LUBBERS
No.72244PE
LICENSED PROFESSIONAL ENGINEER

MONTANA
DEPARTMENT OF TRANSPORTATION

DocuSigned by:
RECEIVED BY Kelly Williams
EF7F8DDABBA7474...
1/11/2024
CONSULTANT DESIGN ENGINEER DATE

SHEET NO. 1

TITLE SHEET

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW AND JEFFERSON
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	SMORRISSEY	####

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MONTANA Department of Transportation
ROAD PLANS
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STANDARD BRIDGE RAIL TYPE	
SINGLE SLOPE 36" REINFORCING	SBR-SS36R

NOTES

UTILITIES

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

PUBLIC LAND SURVEY MONUMENTS

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

AS-BUILTS

SEE BRIDGE WORK SUMMARY FOR PROPOSED IMPROVEMENTS AT EACH STRUCTURE.
STR 01110: I 15-2(7) 127
STR 01111: I 15-2(7) 127
STR 01113: I 15-2(9) 128
STR 01114: I 15-2(9) 128
STR 03194: I-90-5(6)231
STR 04454: I-90-4(8)227
STR 04457: I-ING 15-2(8)118

DO NOT DISTURB

WEATHER MONITOR AND CAMERA NORTHWEST OF STRUCTURE 03194 - HOMESTAKE PASS.

OVERHEAD SIGNS THAT ARE ATTACHED TO STRUCTURES, AND NOT CALLED OUT IN PLANS FOR REPLACEMENT, ARE TO BE PROTECTED IN PLACE.

CATTLEGUARDS EAST AND WEST OF STRUCTURE 04457 - GERMAN GULCH ROAD.

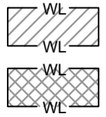
BASIS OF PLAN QUANTITIES

(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.
HYDRATED LIME	= 1.4% 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)
EMULSIFIED ASPHALT - TACK (CONCRETE SURFACES)	= 0.10 GAL. PER SQ. YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ. YARD (UNDILUTED)
COVER	= 25 LBS. PER SQ. YARD

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

SEE WETLAND DETAIL FOR ADDITIONAL INFORMATION.

WETLAND DELINEATION TABLE

WETLAND DESIGNATION	WETLAND AREA (acres) DELINEATED AREA	WETLAND AREA (acres) PERMANENT IMPACTED AREA	REMARKS
WL1a	0.80		DO NOT DISTURB
WL1b	0.26		DO NOT DISTURB
WL2	0.03		DO NOT DISTURB
TOTAL	1.09	~	

AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

SHEET NO. 2

TABLE OF CONTENTS & NOTES

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW AND JEFFERSON
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY: DHIROSE ####
REVIEWED BY: RLUBBERS ####
DESIGNED BY: MORRISSEY ####
9315001RDTTLZ01.DWG

MONTANA Department of Transportation

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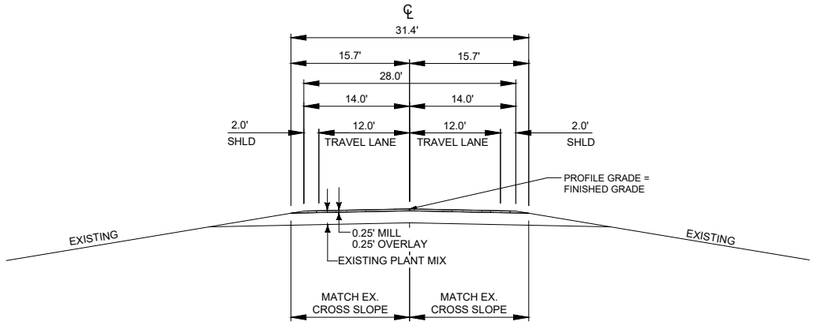
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TYPICAL SECTION NO. 1

EAST & WEST OF STRUCTURE 04457 - GERMAN GULCH RD.

SEE SHEET 7 FOR TYPICAL 1 EXTENTS AT STRUCTURE 04457

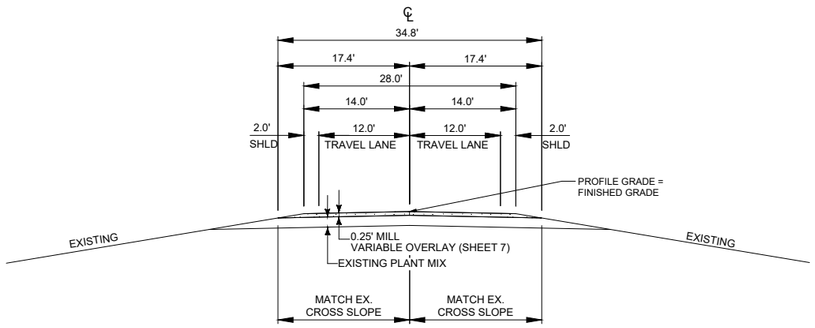


QUANTITIES					
	AGGREGATE		BITUMINOUS MATERIAL		
UNIT	PLANT MIX	UNIT	ASPHALT CEMENT	EMULSIFIED ASPHALT TACK	COLD MILLING
AREA SQ FT	7.43	SY PER STA		349	330
CY PER STA	27.5	TONS PER STA	3.29		
TONS PER STA	53.0	GAL PER STA		18	
SY PER STA					

TYPICAL SECTION NO. 2

EAST & WEST OF STRUCTURE 04457 - GERMAN GULCH RD.

SEE SHEET 7 FOR TYPICAL 2 EXTENTS AT STRUCTURE 04457



QUANTITIES					
	AGGREGATE		BITUMINOUS MATERIAL		
UNIT	PLANT MIX	UNIT	ASPHALT CEMENT	EMULSIFIED ASPHALT TACK	COLD MILLING
AREA SQ FT	10.99	SY PER STA		773	349
CY PER STA	40.7	TONS PER STA	4.86		
TONS PER STA	78.4	GAL PER STA		39	
SY PER STA					

NOTE: MILL/FILL DEPTH OF 0.35' ASSUMED FOR ESTIMATING PURPOSES.

SHEET NO. 3

TYPICAL SECTIONS

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW
PROJECT ID: NHPB STWD(753)
UPN: 9315001

	CHECKED BY	DHIROSE	####
	REVIEWED BY	RLUBBERS	####
	DESIGNED BY	MORRISSEY	####

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MONTANA Department of Transportation

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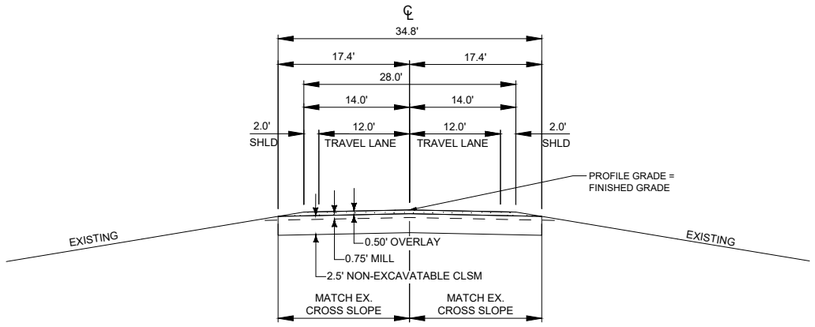
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TYPICAL SECTION NO. 3

EAST & WEST OF STRUCTURE 04457 - GERMAN GULCH RD.

SEE SHEET 7 FOR TYPICAL 3 EXTENTS AT STRUCTURE 04457

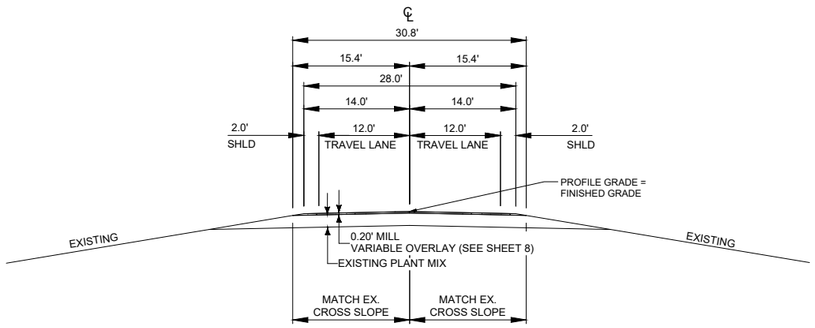


QUANTITIES						
	AGGREGATE			BITUMINOUS MATERIAL		
UNIT	PLANT MIX	CLSM	UNIT	ASPHALT CEMENT	EMULSIFIED ASPHALT TACK	COLD MILLING
AREA SQ FT	15.70	87.0	SY PER STA		773	349
CY PER STA	58.1	322.2	TONS PER STA	6.94		
TONS PER STA	112		GAL PER STA		39	
SY PER STA						

TYPICAL SECTION NO. 4

NORTH & SOUTH OF STRUCTURE 03194 - HOMESTAKE RD.

SEE SHEET 8 FOR TYPICAL 4 EXTENTS AT STRUCTURE 03194



QUANTITIES					
	AGGREGATE		BITUMINOUS MATERIAL		
UNIT	PLANT MIX	UNIT	ASPHALT CEMENT	EMULSIFIED ASPHALT TACK	COLD MILLING
AREA SQ FT	7.06	SY PER STA		342	327
CY PER STA	26.1	TONS PER STA	3.12		
TONS PER STA	50	GAL PER STA		17	
SY PER STA					

NOTE: MILL/FILL DEPTH OF 0.24' ASSUMED FOR ESTIMATING PURPOSES.

SHEET NO. 4

TYPICAL SECTIONS

PROJECT NAME BUTTE AREA NHS STRUCTURES
COUNTY SILVER BOW AND JEFFERSON
PROJECT ID NHPB STWD(753)
UPN 9315001

CHECKED BY	DHIROSE	####	
REVIEWED BY	RLUBBERS	####	
DESIGNED BY	MORRISSEY	####	9315001RDTYPZ01.DWG

MONTANA Department of Transportation

ROAD PLANS

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GRADING

STATION	cu. yards UNCL. EXC.	cu. yards EXCESS EXC.	cu. yards EMB.+	REMARKS
94.36	39	39	0	GERMAN GULCH ROAD 04457 WEST END
94.36	39	39	0	GERMAN GULCH ROAD 04457 EAST END
ADD. GRADING	98	98		
TOTAL	**176**	**# 176**	**# 0**	

FOR INFORMATION ONLY

BRIDGE END BACKFILL

RP	cu. yards CONTROLLED LOW STRENGTH MATERIAL #	REMARKS
94.36	24.2	GERMAN GULCH ROAD 04457 WEST END - TYPICAL SECTION NO. 3
94.36	24.2	GERMAN GULCH ROAD 04457 EAST END - TYPICAL SECTION NO. 3
TOTAL	**48.4**	

NON-EXCAVATABLE, SEE DETAILS FOR ADDITIONAL INFORMATION.

SURFACING

RP	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE tons COMM. MIX-PG 58V-34	AGGREGATE cu. yards CRUSHED AGG. COURSE	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL sq. yards AGG. TREATMENT	REMARKS
94.36		135.00			STRUCTURE 04457	72		24		GERMAN GULCH ROAD 04457 WEST END - TYPICAL SECTION NO. 1
94.36		40.00			STRUCTURE 04457	32		8		GERMAN GULCH ROAD 04457 WEST END - TYPICAL SECTION NO. 2
94.36		5.00			STRUCTURE 04457	6		1		GERMAN GULCH ROAD 04457 WEST END - TRANSITION BETWEEN TYPICAL SECTION NO. 2 AND 3
94.36		5.00			STRUCTURE 04457	6		1		GERMAN GULCH ROAD 04457 WEST END - TYPICAL SECTION NO. 3
94.36		5.00			STRUCTURE 04457	6		1		GERMAN GULCH ROAD 04457 WEST END - TYPICAL SECTION NO. 3
94.36		5.00			STRUCTURE 04457	6		1		GERMAN GULCH ROAD 04457 WEST END - TRANSITION BETWEEN TYPICAL SECTION NO. 2 AND 3
94.36		40.00			STRUCTURE 04457	32		8		GERMAN GULCH ROAD 04457 EAST END - TYPICAL SECTION NO. 2
94.36		135.00			STRUCTURE 04457	72		24		GERMAN GULCH ROAD 04457 EAST END - TYPICAL SECTION NO. 1
46.13		50.00			STRUCTURE 03194	25		9		HOMESTAKE PASS 03194 SOUTH END - TYPICAL SECTION NO. 4
46.13		50.00			STRUCTURE 03194	25		9		HOMESTAKE PASS 03194 NORTH END - TYPICAL SECTION NO. 4
					ADDITIONAL SURFACING	256	74	62	220	
TOTAL	**~**	**470.00**	**~**	**~**		**538**	**74**	**148**	**220**	

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

RP	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE tons COMM. MIX-PG 58V-34	AGGREGATE cu. yards CRUSHED AGG. COURSE	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
94.36		70.00			I-15 OFF RAMP	80		25		GERMAN GULCH ROAD 04475 WEST END
94.36		50.00			I-15 ON RAMP	49	13	17	33	GERMAN GULCH ROAD 04475 WEST END (INCL. WIDENING)
94.36		95.00			I-15 ON RAMP	69	32	11	97	GERMAN GULCH ROAD 04475 EAST END (INCL. WIDENING)
94.36		40.00			I-15 OFF RAMP	58	29	9	90	GERMAN GULCH ROAD 04475 EAST END (INCL. WIDENING)
SUBTOTAL	**~**	**255.00**	**~**	**~**		**256**	**74**	**62**	**220**	

QUANTITIES CALCULATED USING PLAN VIEW CADD AREA, SEE DETAILS FOR ADDITIONAL INFORMATION.

CURB

RP	linear feet 4" CONCRETE CURB LEFT	linear feet 4" CONCRETE CURB RIGHT	REMARKS
46.13	10.0		HOMESTAKE PASS 03194 SOUTH END
46.13	10.0		HOMESTAKE PASS 03194 NORTH END
SUBTOTAL	**20.0**	**0.0**	
TOTAL	**20.0**		

COLD MILLING

RP	sq. yards COLD MILLING	REMARKS
FROM	VARIES #	
94.36	1,300	GERMAN GULCH ROAD 04457 WEST END (EXCL. RECONSTRUCTION AREA)
94.36	748	GERMAN GULCH ROAD 04457 EAST END (EXCL. RECONSTRUCTION AREA)
0.10	156	HOMESTAKE PASS 03194 SOUTH END
0.10	156	HOMESTAKE PASS 03194 NORTH END
TOTAL	**2,360**	

DEPTH VARIES. SEE DETAILS FOR ADDITIONAL INFORMATION.

CONCRETE BARRIER RAIL

RP	each REMOVE CONCRETE BARRIER RAIL	each NEW CONCRETE BARRIER RAIL	each ONE-WAY DEPARTURE CONCRETE BARRIER SECTION	REMARKS
94.36	8	7		GERMAN GULCH ROAD 04457 WEST END LT.
94.36		10	1	GERMAN GULCH ROAD 04457 WEST END RT.
94.36		11	1	GERMAN GULCH ROAD 04457 EAST END LT.
94.36		8		GERMAN GULCH ROAD 04457 EAST END RT.
TOTAL	**8**	**36**	**2**	

SUMMARIES

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW AND JEFFERSON
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY: DHIROSE ####
REVIEWED BY: RLUBBERS ####
DESIGNED BY: MORRISSEY ####
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MONTANA Department of Transportation

ROAD PLANS

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TEMPORARY CONCRETE BARRIER

RP	linear feet	each	linear feet	each	REMARKS
	TEMPORARY CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATOR	RESET TEMPORARY BARRIER RAIL	RESET TEMPORARY IMPACT ATTENUATOR	
	MED	MED	MED	MED	
0.10	460	2	460	2	HOMESTAKE PASS 03194
TOTAL	**460**	**2**	**460**	**2**	

SEE PLAN OVERVIEW SHEETS FOR TEMPORARY CONCRETE BARRIER LIMITS.

TRAFFIC CONTROL

RP		each	miles	REMARKS
FROM	TO	CROSS OVER	TWO-WAY TRAFFIC	
119.12 NB	120.50 NB	2	1.3	CROSSOVER 1 TO CROSSOVER 2 (STRUCTURE 04457)
119.12 SB	120.50 SB	2	1.3	CROSSOVER 1 TO CROSSOVER 2 (STRUCTURE 04457)
TOTAL		**4**	**2.6**	

GUARDRAIL

RP	linear feet				each				REMARKS
	REMOVE GUARDRAIL		MGS GUARDRAIL		MASH W-BEAM TERMINAL SECTION		MASH THRIE-BEAM BRIDGE APPROACH SECTION		
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
94.36	80.0	148.0			1		1		GERMAN GULCH ROAD 04457 WEST END
94.36	96.0	106.0				1		1	GERMAN GULCH ROAD 04457 EAST END
SUBTOTAL	**176.0**	**254.0**	**0.0**	**0.0**	**1**	**1**	**1**	**1**	
TOTAL	**430.0**		**0.0**		**2**		**2**		

SEE PLAN OVERVIEW SHEETS FOR LIMITS OF GUARDRAIL REPLACEMENT.

MEDIAN CROSSOVER

RP		each				REMARKS
FROM	TO	OPEN MEDIAN CROSSOVER - MAINTAIN & CLOSE ##	OPEN MEDIAN CROSSOVER - CONSTRUCT, MAINTAIN, & CLOSE ##	RAMP CROSSOVER	TEMP. CLOSED MEDIAN CROSSOVER - MEDIAN BARRIER RAIL	
119.11		1				CROSSOVER 1
120.51		1				CROSSOVER 2
TOTAL		**2**	**~**	**~**	**~**	

LEAVE MEDIAN CROSSOVERS IN-PLACE AFTER THE PROJECT (DO NOT REMOVE)

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICATION #	FINAL APPLICATION	TOTAL
STRIPING - WHITE PAINT	gallon	7		7
STRIPING - YELLOW PAINT	gallon	6		6
STRIPING - WHITE PAINT W&S	gallon	4		4
STRIPING - WHITE EPOXY	gallon		9	9
STRIPING - YELLOW EPOXY	gallon		8	8
STRIPING - WHITE EPOXY W&S	gallon		5	5

BASED ON 1 APPLICATION.

SIGNING

		each	each	square feet	square feet	lb	linear feet	REMARKS
SIGN	SIZE	REMOVE SIGN	REMOVE SIGN GUIDE	SIGNS-ALUM. REFL. SHEET XI	SIGNS - ALUM. SHEET INCR. XI	POSTS - STEEL STRUCTURAL SIGN	4" DIA. WOOD POST	
R1-1	4' X 4'	1		13.3			12	R1-1 = STOP SIGN, GERMAN GULCH ROAD 04457 WEST END
OHG12-100	31.5' X 10.5'		1		330.8	1532.0		OHG12-100 = MISSOULA 1 MILE/BUTTE RT, GERMAN GULCH ROAD 04457 #
OHEB-121	9' X 2.5'		1		22.5			OHEB-121 = EXIT 121, GERMAN GULCH ROAD 04457, ANGLE IRON REQD. #
R1-1	4' X 4'	1		13.3			12	R1-1 = STOP SIGN, GERMAN GULCH ROAD 04457 EAST END
R6-1L	3' X 1'	1		3.0			10	R6-1L = ONE WAY LEFT, GERMAN GULCH ROAD 04457 EAST END
R6-1R	3' X 1'			3.0				R6-1R = ONE WAY RIGHT, GERMAN GULCH ROAD 04457 EAST END
R3-2B	3' X 4'	1		12.0			12	R3-2B = NO LEFT TURN, GERMAN GULCH ROAD 04457 WEST END
TOTAL		**4**	**2**	**44.6**	**353.3**	**1,532**	**46**	

MOUNTED TO BRIDGE, SEE BRIDGE PLANS FOR SUPPORT INFORMATION

REVEGETATION *

RP	lump sum	cu. yards	acres			REMARKS
	REVEGETATION	TOPSOIL SALVAGING & PLACING #	SEED #	FERTILIZER #	CONDITION SEEDBED #	
94.36		10	0.1	0.1	0.1	GERMAN GULCH ROAD 04457
0.10		10	0.1	0.1	0.1	HOMESTAKE PASS 03194
TOTAL	**1**	**~**	**~**	**~**	**~**	

* TO BE PLACED AS DIRECTED BY THE PROJECT MANAGER
# FOR INFORMATION ONLY

SHEET NO. 6

SUMMARIES

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW AND JEFFERSON
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY: DHIROSE ####
REVIEWED BY: RLUBBERS ####
DESIGNED BY: MORRISSEY ####
9315001RDSUM201.DWG

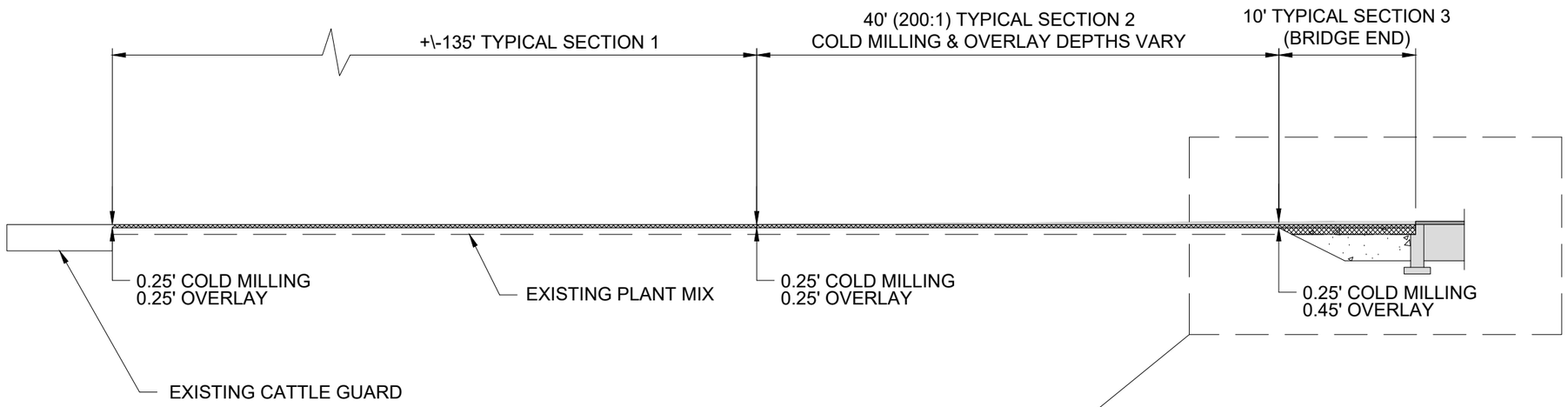
MONTANA Department of Transportation

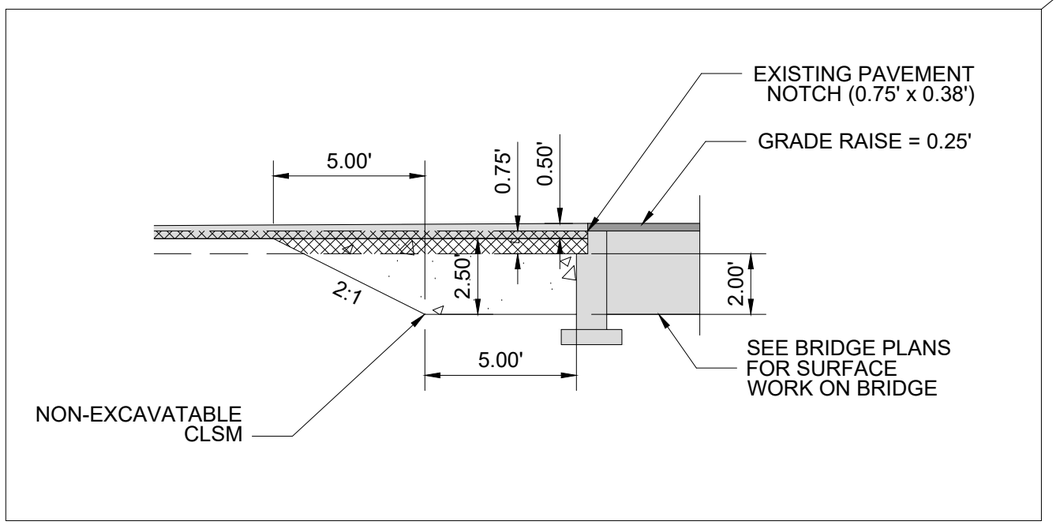
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DETAIL





OVERLAY

COLD MILLING/PLANT MIX REMOVAL

NOTES:
WEST BRIDGE APPROACH SHOWN, MIRROR
FOR EAST BRIDGE APPROACH

BRIDGE END DETAIL
GERMAN GULCH RD
04457

SHEET NO.
7

DETAILS

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	MORRISSEY	####

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MONTANA
Department of Transportation

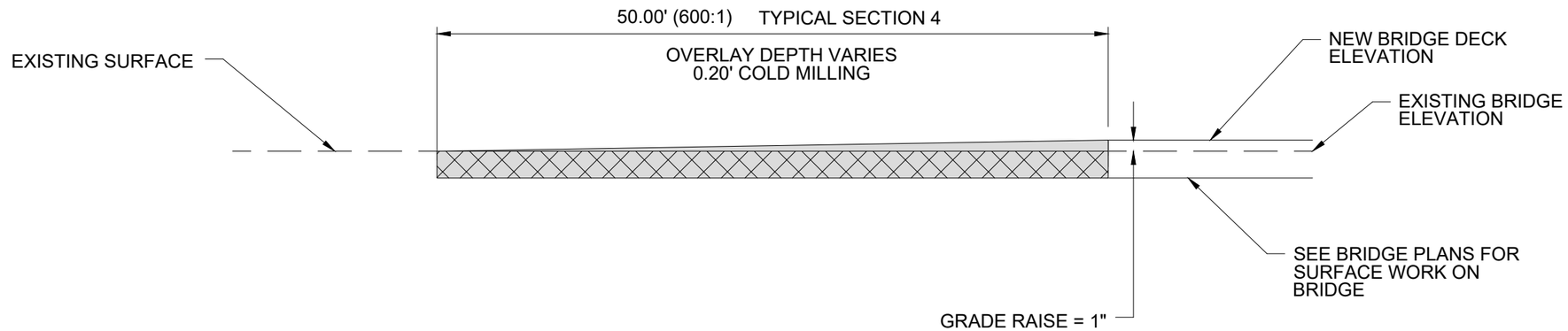
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FDR

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DETAIL



OVERLAY

COLD MILLING

NOTE:
SOUTH BRIDGE APPROACH SHOWN, MIRROR FOR NORTH BRIDGE APPROACH

BRIDGE END DETAIL
HOMESTAKE PASS
03194

SHEET NO.
8

DETAILS

PROJECT NAME BUTTE AREA NHS STRUCTURES
COUNTY JEFFERSON
PROJECT ID NHPB STWD(753)
UPN 9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	MORRISSEY	####

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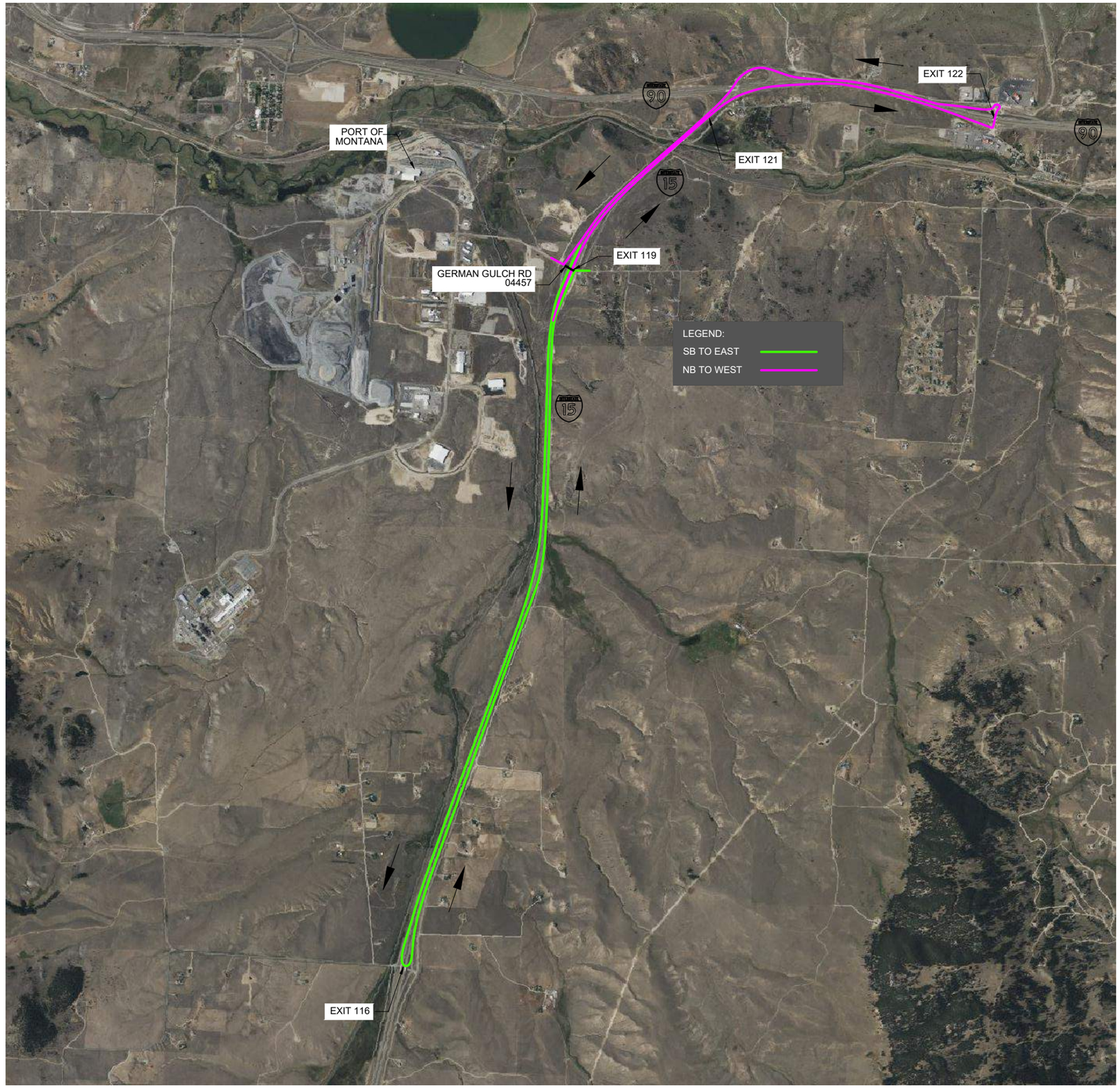
MONTANA Department of Transportation

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DETAIL



POTENTIAL DETOUR ROUTE DETAIL - GERMAN GULCH RD 04457

SHEET NO.
9

DETAILS

PROJECT NAME
BUTTE AREA NHS STRUCTURES

COUNTY
SILVER BOW

PROJECT ID
NHPB STWD(753)

UPN
9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	SMORRISSEY	####

9315001RDDETZ01.DWG

MONTANA
Department of Transportation

ROAD PLANS

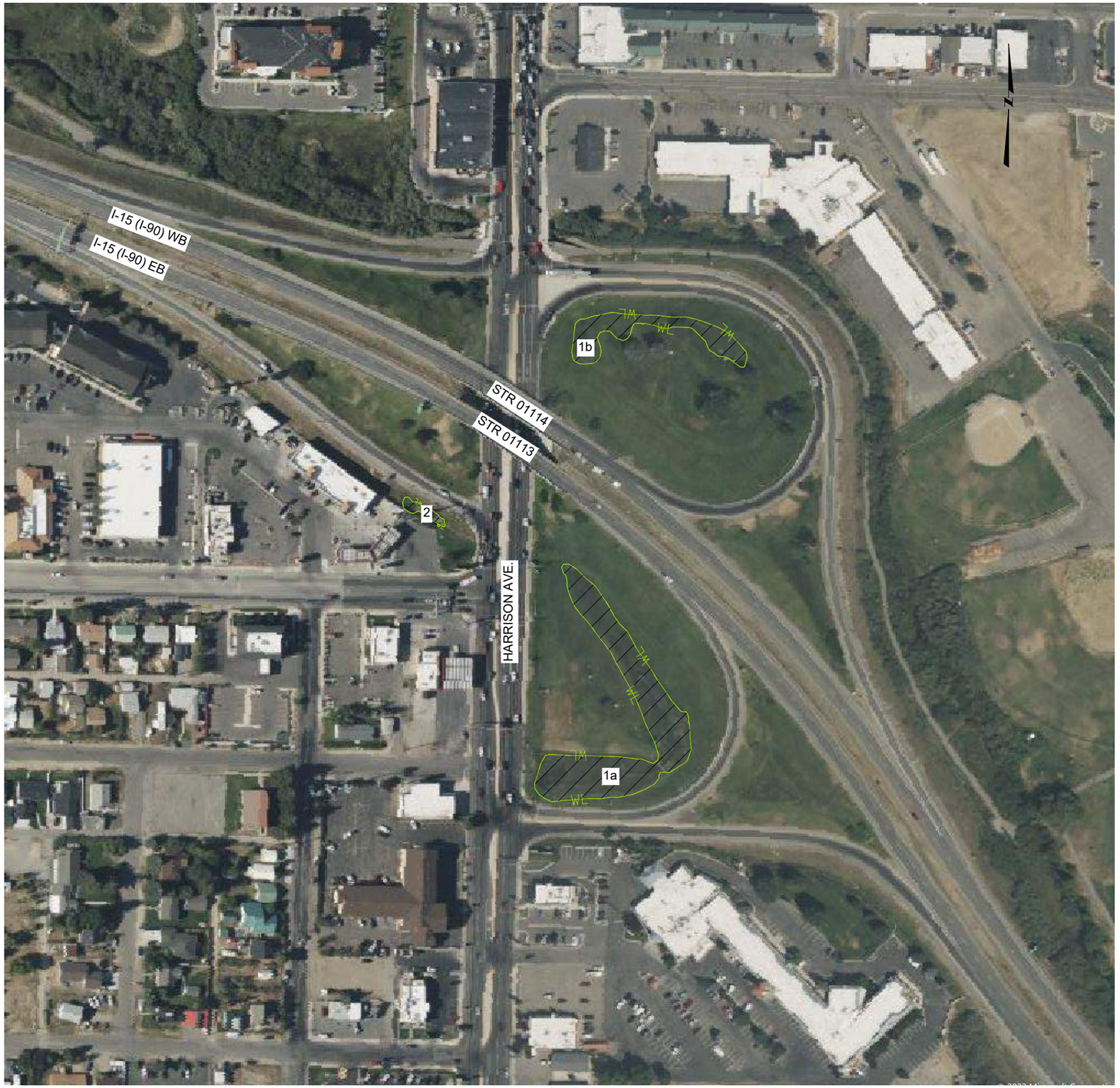
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DETAIL



NOTE:
WETLANDS EXIST ADJACENT TO THE ROADWAY AND MAY EXIST BEYOND THE PROJECT LIMITS SHOWN IN THIS DETAIL. WETLAND AREAS WITHIN THE PROJECT LIMITS HAVE BEEN DELINEATED AND ARE SHOWN ON THE PLANS. NO PERMANENT WETLAND IMPACTS ARE ANTICIPATED. ANY ACTION IMPACTING WETLAND AREAS IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE PERMITTED ACCORDININGLY.

WL1a = 0.80 AC.
WL1b = 0.26 AC.
WL2 = 0.03 AC.

SEE BRIDGE PLANS FOR PROPOSED IMPROVEMENTS.

WL
WL — DELINEATED WETLAND AREAS

WETLAND DETAIL
HARRISON AVE
01113 & 01114

SHEET NO.
10

DETAILS

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY	DHIROSE	#####
REVIEWED BY	RLUBBERS	#####
DESIGNED BY	SMORRISSEY	#####

MONTANA Department of Transportation

ROAD PLANS

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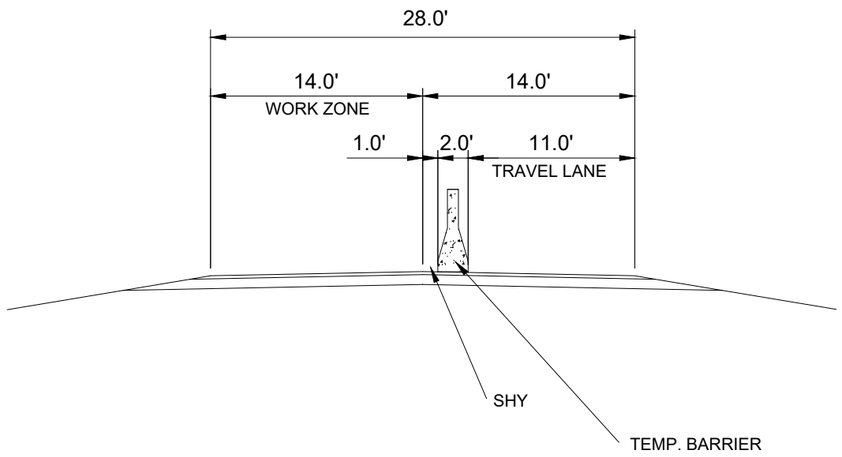
NOTE:

ALL SIGNS NOT LABELED ARE TO BE PROTECTED IN PLACE.

COORDINATE WITH MDT AND REMOVE AND REPLACE THE REMOTE TRAFFIC CAMERA AND ANY NECESSARY EQUIPMENT AND ATTACHMENT HARDWARE REQUIRED TO COMPLETE THE REHABILITATION OF BRIDGE.

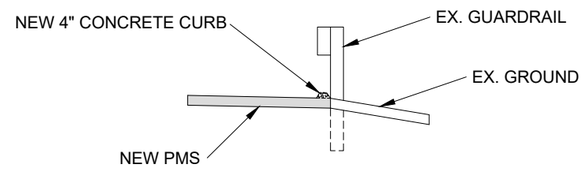
COLD MILL AND OVERLAY

PHASES 1 & 2



NOTE: MIRROR PHASE 1 AND 2

CURB DETAIL



BUTTE 03194
HOMESTAKE RD
SITE OVERVIEW

SHEET NO. 11

SITE OVERVIEW

PROJECT NAME BUTTE AREA NHS STRUCTURES
COUNTY JEFFERSON
PROJECT ID NHPB STWD(753)
UPN 9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	SMORRISSEY	####

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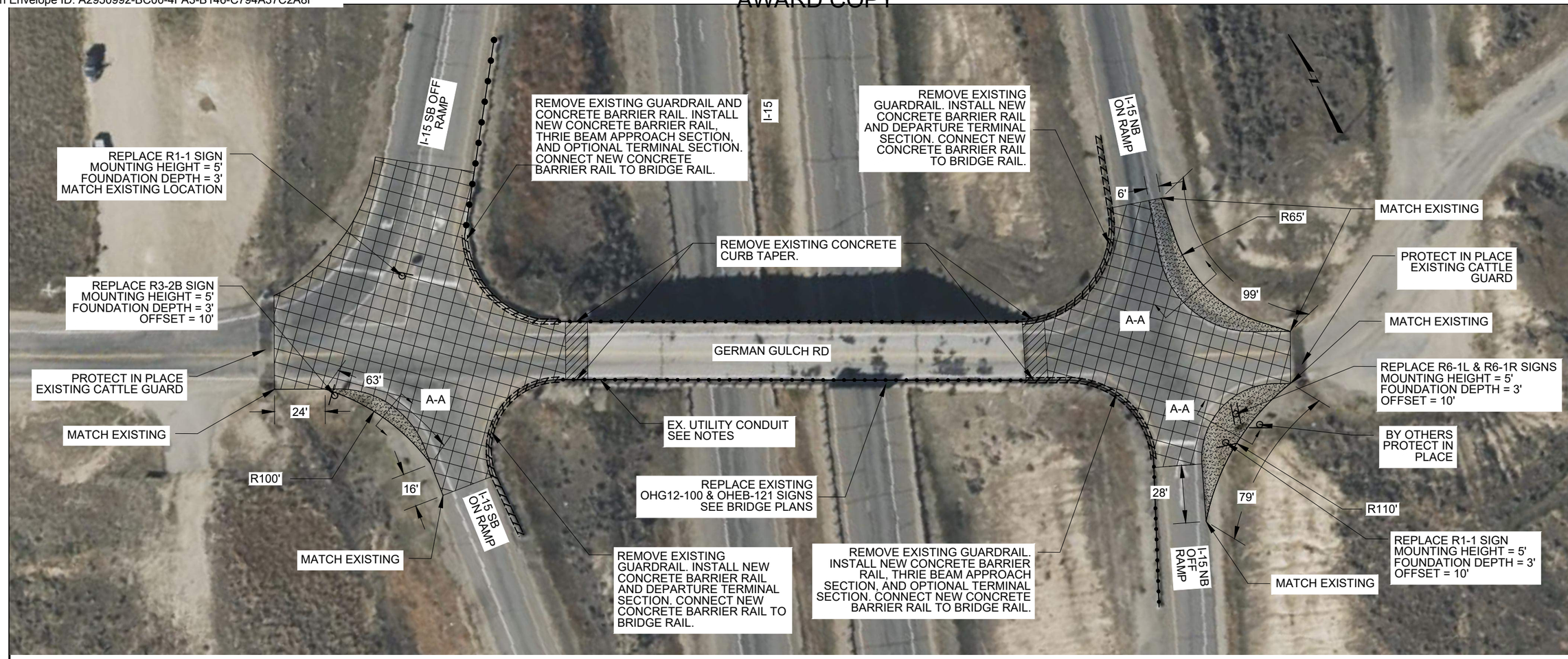
MONTANA Department of Transportation

ROAD PLANS

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NOTES:

ALL SIGNS NOT LABELED ARE TO BE PROTECTED IN PLACE.

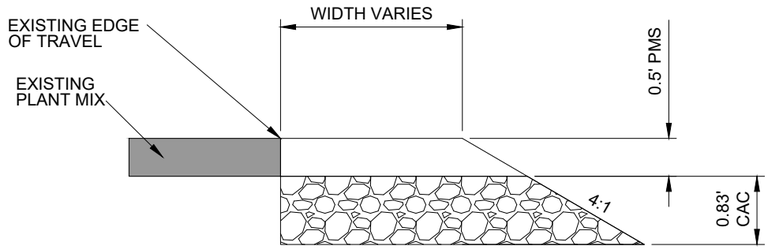
SEE BRIDGE PLANS FOR ADDITIONAL INFORMATION AND DETAILS ON CONNECTION OF NEW CONCRETE BARRIER RAIL TO BRIDGE RAIL.

REMOVE AND SALVAGE EXISTING CONDUCTOR, CONDUIT MOUNTED ON STRUCTURE, AND ABANDON UNDERGROUND CONDUIT.

COLD MILL AND OVERLAY

RECONSTRUCT

BRIDGE END REPAIR



SECTION A-A

BUTTE 04457
GERMAN GULCH RD
SITE OVERVIEW

SHEET NO.
12

SITE OVERVIEW

PROJECT NAME: BUTTE AREA NHS STRUCTURES
COUNTY: SILVER BOW
PROJECT ID: NHPB STWD(753)
UPN: 9315001

CHECKED BY	DHIROSE	####
REVIEWED BY	RLUBBERS	####
DESIGNED BY	MORRISSEY	####

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MONTANA Department of Transportation

ROAD PLANS

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ASSOCIATED PROJECT AGREEMENT NUMBERS

P.E.	NHPB STWD(752)

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT NHPB STWD(753)

BUTTE AREA NHS STRUCTURES

SILVER BOW & JEFFERSON COUNTIES

BRIDGE IDENTIFICATION	
MDT STR ID	NBI NUMBER
01110	I00015126+03161
01111	I00015126+03162
01113	I00015127+09361
01114	I00015127+09362
03194	L22119000+01001
04454	L47426000+01001
04457	L47534000+00101

DocuSigned by:
Jeremy Carl Miles
92A375DF7B1F44F...
1/11/2024
DATE

MONTANA
JEREMY CARL MILES
No. 20293 PE
LICENSED PROFESSIONAL ENGINEER

SCALES SHOWN ON BRIDGE PLANS SHEETS ARE FOR HALF SIZE (11X17) PRINTS
FULL SIZE PRINTS ARE APPROXIMATELY TWICE ORIGINAL SCALE

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
B1	28411	LIST OF DRAWINGS
B2	28412	BRIDGE WORK SUMMARY & ESTIMATED BRIDGE PLAN QUANTITIES
B3	28413	GENERAL NOTES, REMOVAL DETAILS & OVERLAY DEPTHS
B4	28414	REPAIR DETAILS
B5	28415	DECK TYPICAL SECTIONS (04457)
B6	28416	DECK REPLACEMENT (04457) (SHEET 1 OF 4)
B7	28417	DECK REPLACEMENT (04457) (SHEET 2 OF 4)
B8	28418	DECK REPLACEMENT (04457) (SHEET 3 OF 4)
B9	28419	DECK REPLACEMENT (04457) (SHEET 4 OF 4)
B10	28420	EXPANSION JOINT DETAILS (04457)
B11	28421	DRAINAGE DETAILS (04457)
B12	28422	SIGN SUPPORT DETAILS (04457)
B13	28423	SUBSTRUCTURE REPAIR LOCATIONS (01110) (SHEET 1 OF 2)
B14	28424	SUBSTRUCTURE REPAIR LOCATIONS (01110) (SHEET 2 OF 2)
B15	28425	SUBSTRUCTURE REPAIR LOCATIONS (01111) (SHEET 1 OF 2)
B16	28426	SUBSTRUCTURE REPAIR LOCATIONS (01111) (SHEET 2 OF 2)
B17	28427	SUBSTRUCTURE REPAIR LOCATIONS (01113) (SHEET 1 OF 2)
B18	28428	SUBSTRUCTURE REPAIR LOCATIONS (01113) (SHEET 2 OF 2)
B19	28429	SUBSTRUCTURE REPAIR LOCATIONS (01114) (SHEET 1 OF 2)
B20	28430	SUBSTRUCTURE REPAIR LOCATIONS (01114) (SHEET 2 OF 2)
B21	28431	SUBSTRUCTURE REPAIR LOCATIONS (03194) (SHEET 1 OF 2)
B22	28432	SUBSTRUCTURE REPAIR LOCATIONS (03194) (SHEET 2 OF 2)
B23	28433	SUBSTRUCTURE REPAIR LOCATIONS (04454) (SHEET 1 OF 2)
B24	28434	SUBSTRUCTURE REPAIR LOCATIONS (04454) (SHEET 2 OF 2)
B25	28435	SUBSTRUCTURE REPAIR LOCATIONS (04457) (SHEET 1 OF 2)
B26	28436	SUBSTRUCTURE REPAIR LOCATIONS (04457) (SHEET 2 OF 2)

DWG. NO.	TITLE
SBR-SS36 (REVISED 9-27-18)	STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36"
SBR-SS36R (REVISED 9-27-18)	STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36" REINFORCING

HDR

SHEET NO.
B1

LIST OF DRAWINGS

REVISED	REVISED	REVISED	REVISED	CHECKED	DRAWN	DESIGNED	9315001 br-ds-hz01.dwg \ 05H001	11/30/2023 10:38:32 AM
				J.C.M.	G.H.S.	G.H.S.		
				12-19-22	12-12-22	12-12-22		

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28411

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AWARD COPY

BRIDGE WORK SUMMARY

MDT STRUCTURE ID	BRIDGE DECK REPLACEMENT	TRANSVERSE DECK GROOVING	NEW CONCRETE BARRIER RAIL	CLASS A BRIDGE DECK REPAIR	CLASS B BRIDGE DECK REPAIR	BRIDGE DECK MILLING	MODIFIED CONCRETE OVERLAY	BRIDGE DECK CRACK SEAL	EXPANSION JOINT STRIP SEAL	REMOVE GUARD ANGLE	DRAINAGE SCUPPERS	SUBSTRUCTURE REPAIR	APPROACH ROADWAY	GUARDRAIL REPLACE	REPLACE OVERHEAD SIGN
01110												✔			
01111												✔			
01113												✔			
01114												✔			
03194		✔		✔	✔	✔	✔	✔		✔		✔	✔		
04454												✔			
04457	✔	✔	✔						✔		✔	✔	✔	✔	✔

NOTE: See Roadway Plans for Approach Roadway and Guardrail Replace details.

ESTIMATED BRIDGE PLAN QUANTITIES

MDT STRUCTURE ID	FEATURE INTERSECTED	GENERAL LAYOUT DRAWING NO.	REMOVE GUARD ANGLE (LN FT)	REMOVE DECK (YD^2)	*CONCRETE SHALLOW REPAIR (YD^2)	CONCRETE - CLASS STRUCTURE LOW SLUMP (YD^3)	EPOXY INJECTION (LN FT)	TRANSVERSE DECK GROOVING (YD^2)	**BRIDGE DECK CRACK SEAL (YD^2)	EXPANSION JOINT STRIP SEAL (LN FT)	JOINT SEALS - POLYURETHANE (LN FT)
01110	INT S MONTANA STREET	4999			0.7						
01111	INT S MONTANA STREET	4999			7.2		4.5				
01113	INT HARRISON AVENUE	4895			8.8		6.0				
01114	INT HARRISON AVENUE	4884			6.0						
04454	SEP I 90 006	6543			5.3		11.0				
04457	INT VICTOR I 15 003	4605		737.6	11.0	170.6	11.0	604.5		30.3	56.0
SILVER BOW COUNTY SUBTOTAL				737.6	39.0	170.6	32.5	604.5		30.3	56.0
03194	INT HOMESTAKE-I 90 005	6692	56.5		2.1		1.0	666.7	717.8		
JEFFERSON COUNTY SUBTOTAL			56.5		2.1		1.0	666.7	717.8		
PROJECT TOTAL			56.5	737.6	41.1	170.6	33.5	1271.2	717.8	30.3	56.0

*NOTE: The shallow concrete repair quantities shown may turn into deep repairs depending on the depth to sound concrete. Concrete repairs no matter the depth will all be paid for using the Concrete – Shallow Repair bid item.

**NOTE: Bridge Deck Crack Seal quantities are measured over the total bridge length between face of barrier/curb.

ESTIMATED BRIDGE PLAN QUANTITIES

MDT STRUCTURE ID	SCUPPER (EA)	REINFORCING STEEL - EPOXY COATED (LB)	BRIDGE DECK MILLING (YD^2)	***CLASS A BRIDGE DECK REPAIR (YD^2)	***CLASS B BRIDGE DECK REPAIR (YD^2)	****CONCRETE - CLASS OVERLAY (YD^2)	WATERPROOFING (YD^2)	36 IN SS CONCRETE BARRIER RAIL - BR (LN FT)
01110							198	
01111							203	
01113							321	
01114							448	
04454							267	
04457	4	78,932					275	423.0
SILVER BOW COUNTY SUBTOTAL	4	78,932					1712	423.0
03194			713.1	5.0	5.0	713.1	293	
JEFFERSON COUNTY SUBTOTAL			713.1	5.0	5.0	713.1	293	
PROJECT TOTAL	4	78,932	713.1	5.0	5.0	713.1	2005	423.0

***NOTE: Specific Class A Deck Repair & Class B Deck Repair areas have not been measured. Repair quantities are estimated from previous inspection reports. The Project Manager will identify and authorize any deck repair, if needed.

****NOTE: Estimated overlay concrete volume for Structure 03194 is 49.5 YD^2. This quantity will not be measured for payment. This quantity will be used to determine overrun quantities for payment if applicable.

HDR

SHEET NO. B2

BRIDGE WORK SUMMARY & ESTIMATED BRIDGE PLAN QUANTITIES

SCALE: No Scale

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01110, 01111, 01113, 01114, 03194, 04454, 04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW & JEFFERSON

REVISED						12-19-22	
REVISED						12-12-22	
REVISED						12-12-22	
REVISED							
CHECKED						J.C.M.	
DRAWN						G.H.S.	
DESIGNED						P.C.J.	

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

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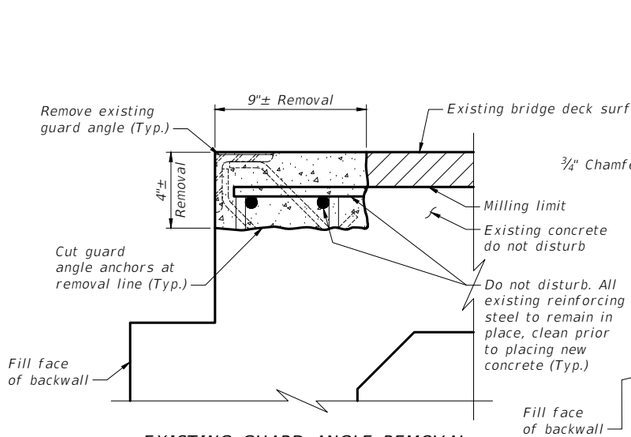
UPN NUMBER
9315001

DRAWING NO.
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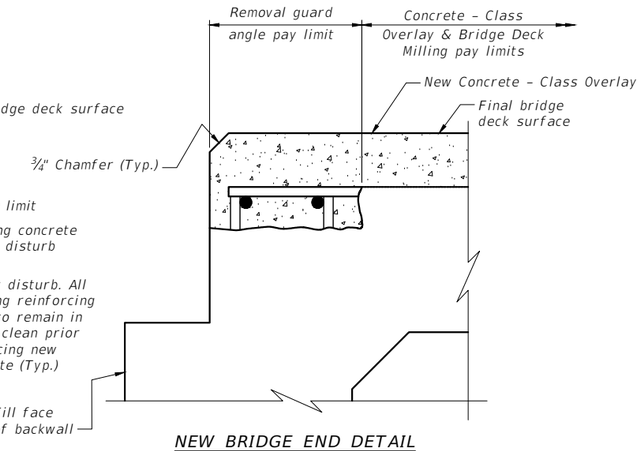
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TABLE OF REMOVAL AND OVERLAY DEPTHS			
MDT STRUCTURE ID	REMOVAL DEPTH	MODIFIED CONCRETE OVERLAY THICKNESS	TOTAL GRADE RAISE
	(IN)	(IN)	(IN)
03194	1½	2½	1



EXISTING GUARD ANGLE REMOVAL



NEW BRIDGE END DETAIL

NOTE: If two transverse reinforcing bars are not present within 3" of the top of slab, place new epoxy coated #4 transverse bars as necessary so there are two bars within the repair area. Ensure new bars have a minimum 1½" clear cover.

NOTE: Include all costs associated with removing the existing guard angle and placing new reinforcing steel and concrete that is required to complete the work in the unit price bid for Remove Guard Angle.

REMOVE GUARD ANGLE DETAIL

No Scale
(03194 only)

GENERAL NOTES

GENERAL: Plans were prepared from original drawings and as-built drawings. No additional survey information was procured for this project. Existing structure dimensions may vary from those shown on the drawings. Verify all dimensions necessary to complete the work.

SPECIFICATIONS: The 2020 Standard and Supplemental Specifications for Road and Bridge Construction, adopted by the Montana Department of Transportation applies. The awarded contract will specify the controlling version of these specifications. The new deck design was prepared in accordance with AASHTO LRFD Bridge Design Specifications, 9th edition – 2020, with standard HL-93 loading.

DIMENSIONS: Verify all necessary dimensions of the existing structures in the field before ordering materials. Obtain approval of shop plans from the State of Montana, Department of Transportation before beginning fabrication. If the dimensions and details of the existing structure are not as shown on the plans, vary construction as necessary to best suit existing conditions and the nature of the intended work.

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31 Grade 60. Except where noted otherwise, include all costs associated with furnishing and placing AASHTO M31 reinforcing steel in the unit price bid for Reinforcing Steel – Epoxy Coated.

Avoid damaging existing reinforcing steel. Replace any reinforcing bars damaged during construction that have lost more than 25% of the cross-sectional area at no cost to the State.

Include cleaning exposed existing reinforcing steel in other items of work.

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

Bottom of Slab	1"
Top of Slab	2½"
Concrete Barrier & Curbs	1½"

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

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

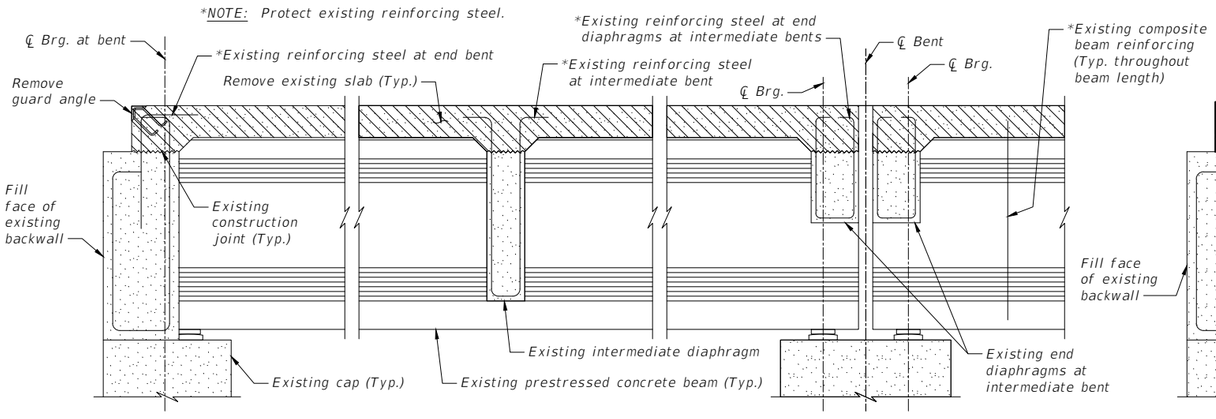
TRAFFIC CONTROL PLAN AND SEQUENCE OF OPERATION: See Special Provisions.

CLASS A AND B BRIDGE DECK REPAIR: Quantities shown may vary from actual field quantities. Refer to Section 562 of the Standard Specifications.

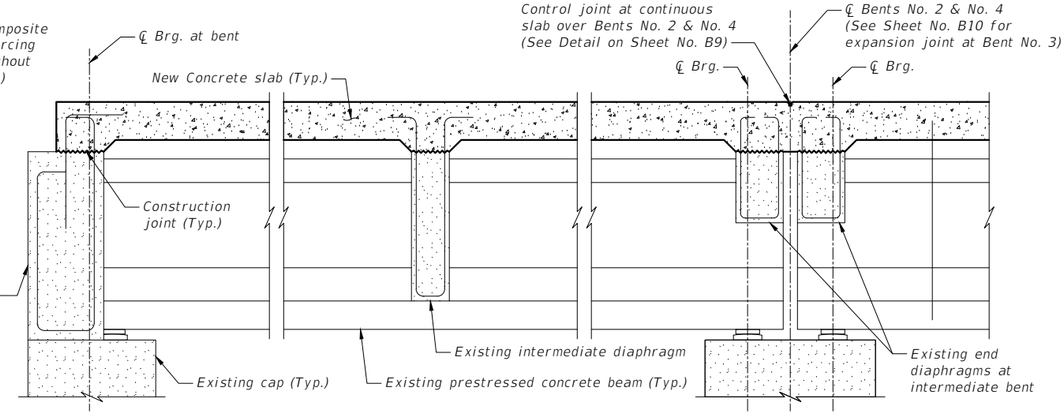
OVERLAY TREATMENT: Use Concrete Class Overlay on bridge decks requiring Modified Concrete Overlay.

CONTROL SURVEY: Establish a control elevation at each bridge before removing or milling the deck. New bridge deck profile to follow surveyed existing bridge deck profile and include noted grade raise shown on Sheet No. B5.

CONSTRUCTION JOINT: Roughen all construction joints to a ¼" amplitude between existing hardened concrete and new concrete.



EXISTING DECK



NEW DECK

NOTE: Remove existing slab, curb, steel bridge rail and existing sign support to the top of the existing prestressed beam and the construction joint at the diaphragms and backwalls. Existing beams and diaphragms to remain in place. Do not damage reinforcing steel prior to placing new concrete. Clean exposed reinforcing steel prior to placing new concrete. Include all costs associated with removal of slab, curb and steel bridge rail in the unit price bid for Remove Deck.

DECK REMOVAL AND REPLACEMENT DETAILS

No Scale
(04457 only)
(Slab reinforcing not shown for clarity)

HDR

SHEET NO. B3

GENERAL NOTES, REMOVAL DETAILS & OVERLAY DEPTHS

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01110, 01111, 01113, 01114, 03194, 04454, 04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW & JEFFERSON

REVISED	REVISED	REVISED	REVISED	CHECKED	DRAWN	DESIGNED
				P.C.J.	G.H.S.	J.C.M.
				12-19-22	12-12-22	12-12-22

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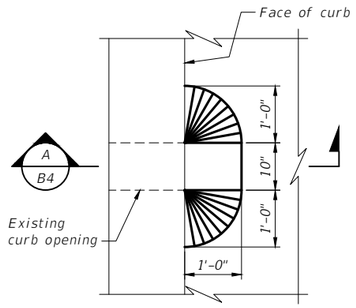
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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

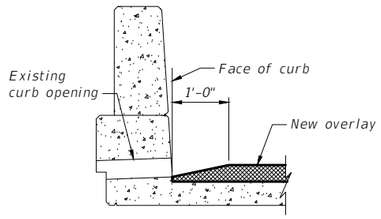
DRAWING NO.
28413

DocuSign Envelope ID: A2950992-BC00-4FA3-B146-C794A37C2A8F



OVERLAY TREATMENT AT CURB OPENING

Scale ~ 3/8" = 1'-0"
(03194 only)



A / B4 SECTION A

Scale ~ 3/8" = 1'-0"

SUBSTRUCTURE REPAIR NOTES

Replace all deteriorated, spalled, loose, hollow and honeycombed concrete within the repair locations shown on the plans with a deteriorated depth greater than ¾" and as directed by the Project Manager. Spalls less than ¾" depth should have material removed to a minimum depth of ¾" prior to completing repair. Clean and remove all rust from exposed rebar.

See Sheets No. B13 thru B26 for substructure repair locations.

Use repair concrete for deep and shallow repair areas. See Special Provisions for requirements.

Include all costs associated with repairing existing substructure concrete in the following items:

- Concrete – Shallow Repair (YD²)
- Epoxy Injection (LN FT)
- Waterproofing (YD²)

See Special Provisions for additional information on concrete repairs, crack repairs, corrosion inhibitors and waterproofing.

Saw cut the periphery of repair areas to a depth of ½". Remove deteriorated concrete within a periphery of the sound concrete.

Remove a maximum depth of 3" of concrete past the exterior most reinforcing if sound concrete is not reached. Remove the remaining loose concrete and clean the area to the Project Managers satisfaction.

Avoid damaging any exposed or uncovered reinforcing steel. Repair any reinforcing bars that have lost more than 25% of the cross-sectional area, are broken, or as directed, by splicing a new section of bar having the same cross-section area.

Install 4x4 – W1.4xW1.4 steel welded wire mesh in deep repair areas over 4'-0" square or as directed. Use a single piece of wire mesh cut 1½" clear of saw cut repair boundary. Drill and grout support anchors into existing concrete as needed to support welded wire mesh during concrete placement and ensure secure bond to existing structure. Use epoxy adhesive meeting the requirements of AASHTO M235 Type V. Alternatively drill and grout additional reinforcing bars in lieu of wire mesh upon approval of the project manager.

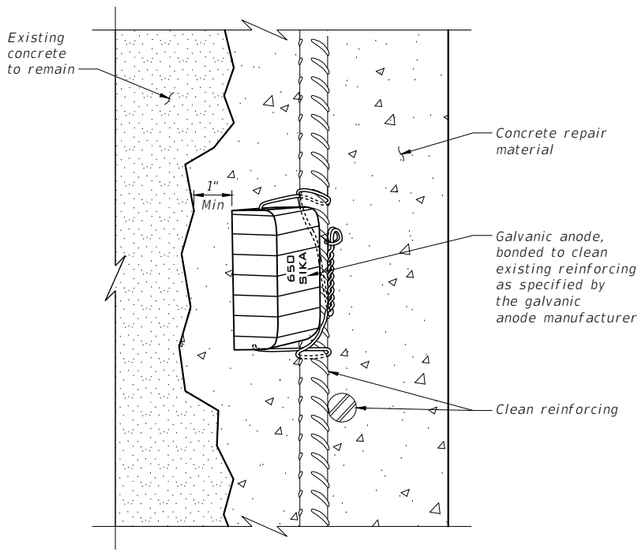
Install Sika FerroGard-650 discrete galvanic anodes or an approved equal in deep repair locations with exposed reinforcing steel. See special provisions for additional information on installation requirements. Cost of discrete galvanic anode is incidental to the cost of repairs.

GALVANIZED ANODE NOTES

Provide a minimum of 1" clearance behind reinforcing or galvanic anode.

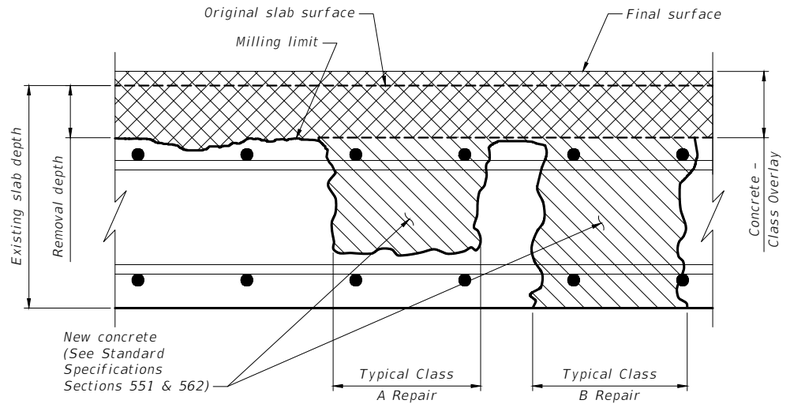
Locate galvanic anode so that it has a minimum cover of 2". Remove the least amount of sound concrete needed to meet the cover requirements and minimum clearance to existing concrete.

Install galvanic anodes per manufacturer's recommendations.



GALVANIC ANODE INSTALLATION DETAIL

No Scale

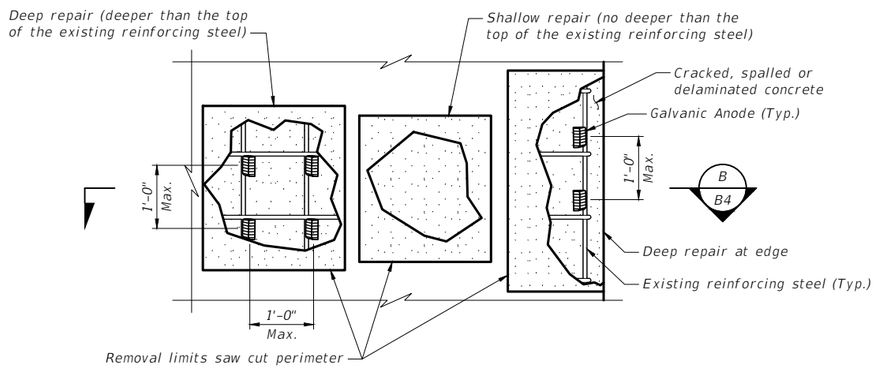


NOTE: Existing reinforcing steel may be located above the milling limit. Ensure reinforcing is not damaged by milling. Repair all damage to the satisfaction of the Project Manager at no cost to the State.

NOTE: For removal depths, see Table of Removal and Overlay Depths on Sheet No. B3.

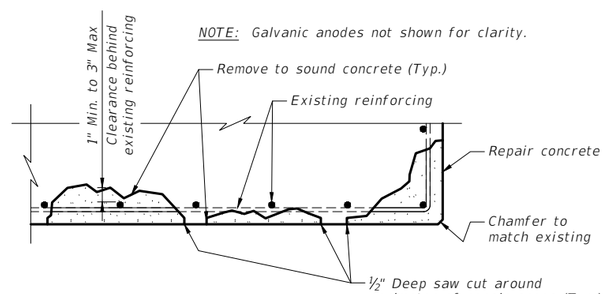
BRIDGE DECK REPAIR AND THICK OVERLAY DEFINITION

No Scale
(03194 only)



ELEVATION - TYPICAL SUBSTRUCTURE REPAIR AREAS

No Scale



B / B4 SECTION B

No Scale

SHEET NO. B4

REPAIR DETAILS

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01110, 01111, 01113, 01114, 03194, 04454, 04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW & JEFFERSON

REVISED				
REVISED				
REVISED				
REVISED				
CHECKED	J.C.M.	12-19-22		
DRAWN	G.H.S.	12-12-22		
DESIGNED	P.C.J.	12-12-22		

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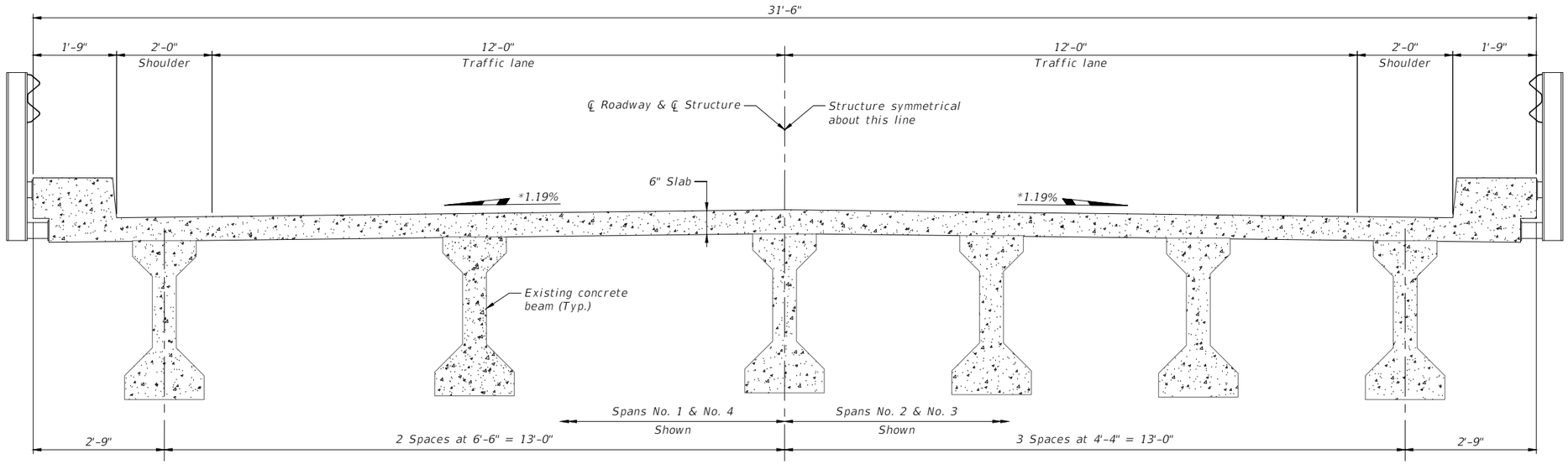
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MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28414

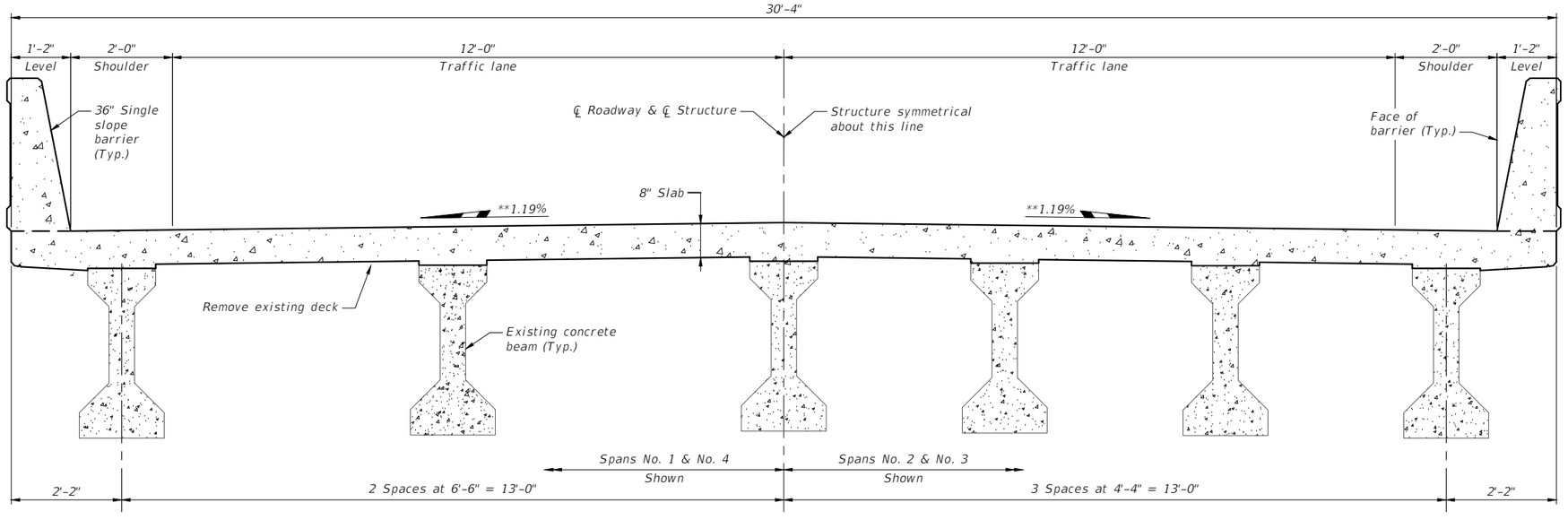
DocuSign Envelope ID: A2950992-BC00-4FA3-B146-C794A37C2A8F



*NOTE: The existing bridge deck has a parabolic crown.

EXISTING TYPICAL SECTION

Scale ~ ⅜" = 1'-0"
(Looking Ahead on Line)



**NOTE: The proposed bridge deck has a normal crown.

NEW TYPICAL SECTION

Scale ~ ⅜" = 1'-0"
(Looking Ahead on Line)

NOTE: Perform a control survey to establish existing slab profile and finished grade by surveying the centerline of roadway and face of barrier locations at 10'-0" intervals prior to removing deck. Proposed ℄ of Roadway on bridge has a 3" grade raise. Submit screed and survey data to the Project Manager. Costs for this work are incidental to other items.

HDR

SHEET NO.
B5

DECK TYPICAL SECTIONS
(04457)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED					
REVISED					
REVISED					
REVISED					
CHECKED	P.C.J.	12-19-22			
DRAWN	G.H.S.	12-12-22			
DESIGNED	J.C.M.	12-12-22			

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

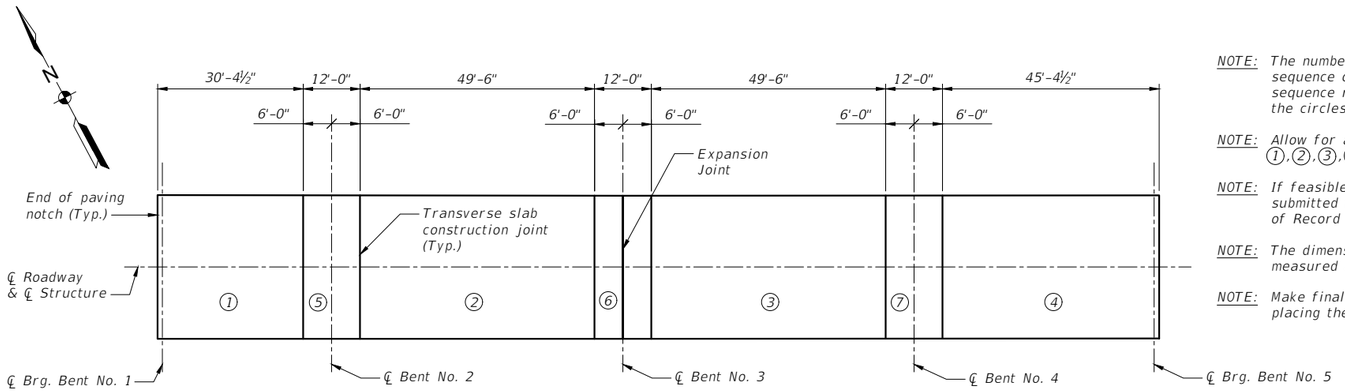
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UPN NUMBER
9315001

DRAWING NO.
28415

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AWARD COPY



NOTE: The numbers inscribed in the circles represent the sequence of placing sections in the slab. Follow the sequence represented by the numbers inscribed in the circles when placing sections of the slab shown.

NOTE: Allow for a minimum of 48 hours between placements ①,②,③,④ and placements ⑤,⑥,⑦.

NOTE: If feasible, one continuous pour procedure may be submitted for review and approval by the Engineer of Record and Project Manager.

NOTE: The dimensions shown are horizontal dimensions measured along ℄ Roadway.

NOTE: Make final adjustments to expansion devices before placing the slab section in which the device is located.

SLAB POURING SEQUENCE

Scale ~ 1/32" = 1'-0"

NOTES

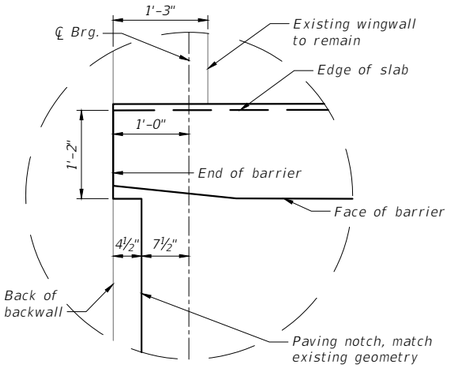
Lap #4E 2-8 minimum.

See Sheet No. B8 for additional scupper reinforcing steel.

See Sheet No. B9 for Bill of Reinforcing Steel.

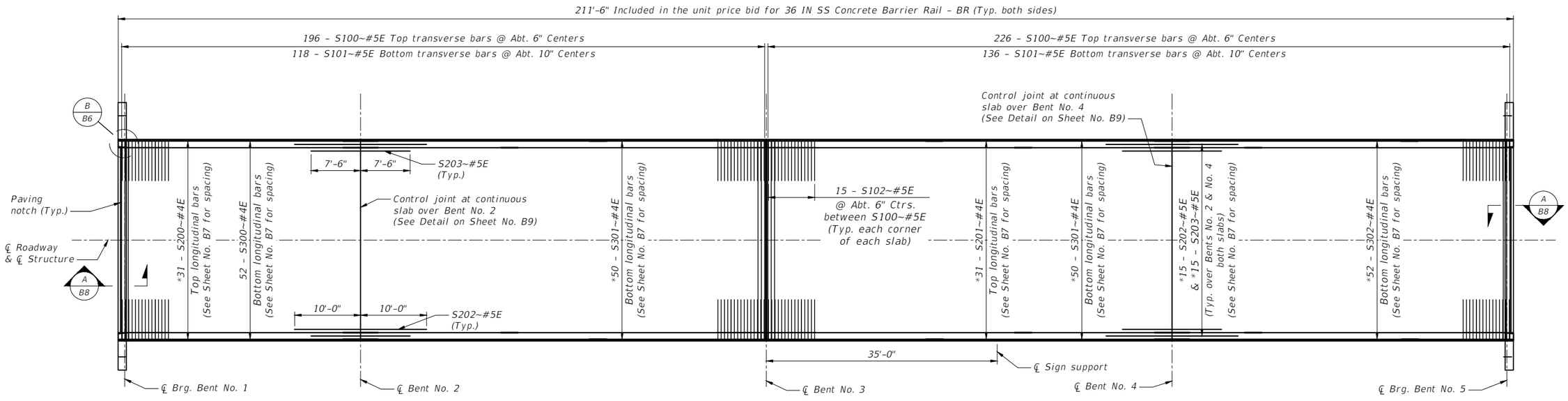
See Std. Dwg. No. SBR-SS36R for bridge rail reinforcing steel.

See Sheet No. B12 for Sign Support Details. Cast the sign support headed anchor studs into the deck and the barrier.



B / B6 SLAB CORNER

Scale ~ ½" = 1'-0"



*NOTE: Alternate bar order on adjacent lines to stagger lap splice locations.

SLAB REINFORCING PLACEMENT PLAN

Scale ~ 1/16" = 1'-0"

NOTE: Deck is continuous over Bent No. 2 and Bent No. 4 with an expansion joint at Bent No. 3.

NOTE: Additional end slab reinforcing not shown for clarity. See Section A on Sheet No. B8 for details.

SHEET NO. B6

DECK REPLACEMENT (04457) (SHEET 1 OF 4)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED		
REVISED		
REVISED		
REVISED		
CHECKED	N.W.B.	03-10-23
DRAWN	J.C.C.	03-03-23
DESIGNED	J.C.M.	03-03-23

9315001bridge02.dwg \ SLD002

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28416

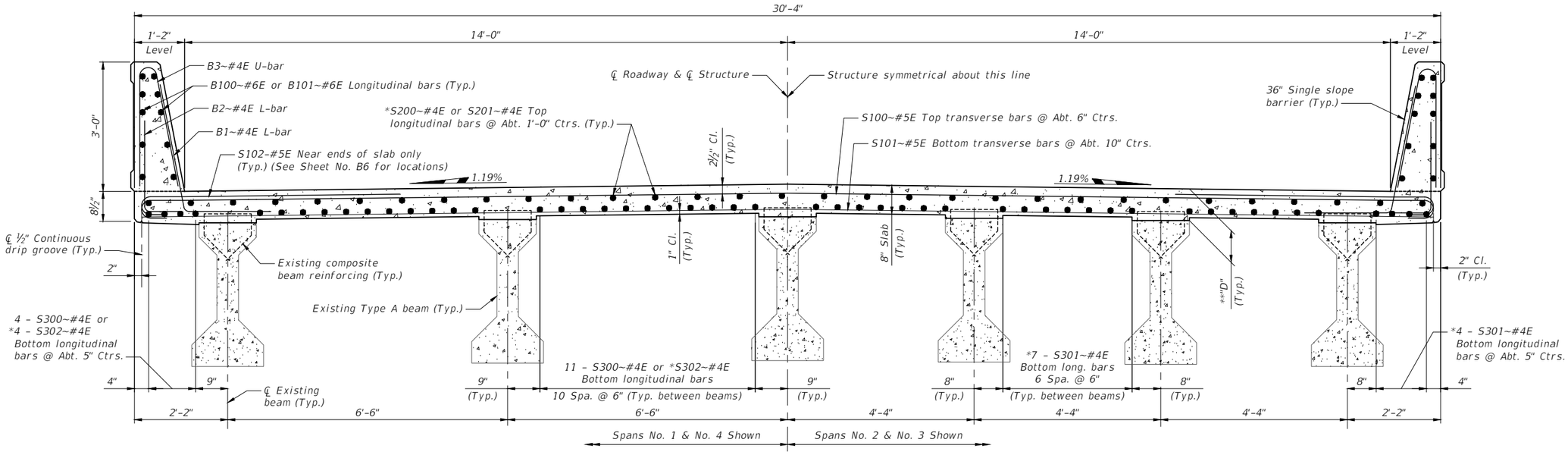
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NOTES

See Sheet No. B9 for Bill of Reinforcing Steel.

See Std. Dwg. No. SBR-SS36R for bridge rail reinforcing steel.

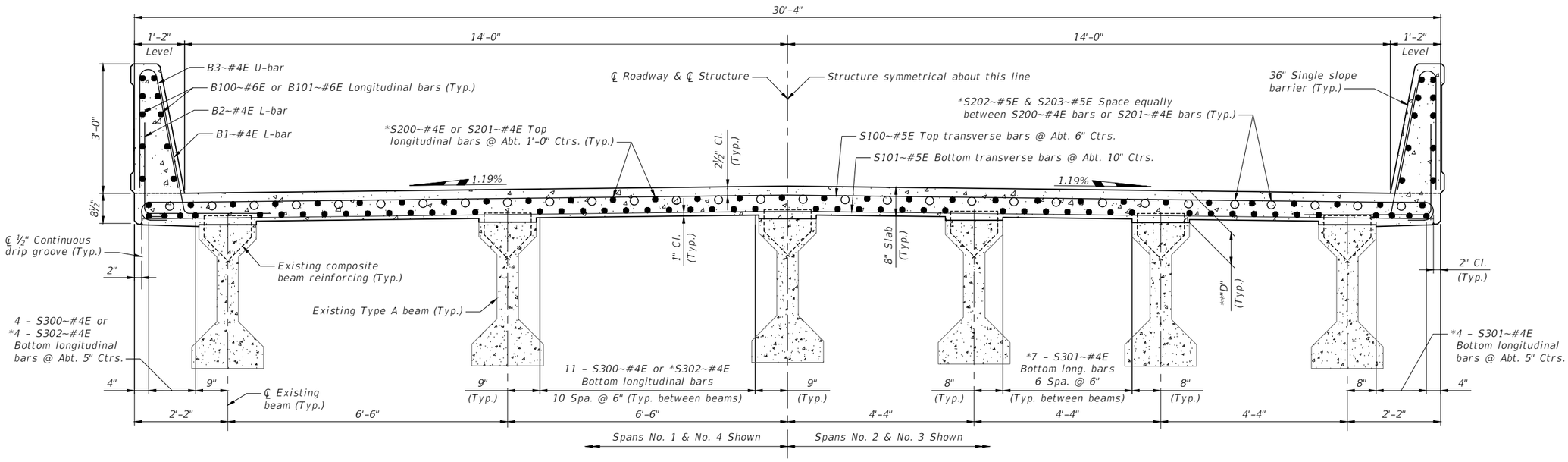


*NOTE: Alternate bar order on adjacent lines to stagger lap splice locations.

TRANSVERSE SECTION

Scale ~ ⅜" = 1'-0"
(Looking Ahead on Line near mid span and slab ends)

**NOTE: Dimension D is measured from top of deck to top of beam at the low side of Beam. Dimension D varies between beams. See table on Sheet No. B8 for D dimension at ℄ Brgs. D will vary at tenth points along span; See Dead Load Deflection Table on Sheet No. B8. Notify the Project Manager and Engineer of Record if D is not between 8" and 11" to meet finished grade requirements noted. Coordinate finished deck elevation with the Project Manager after deck removal and control survey. Coordinate finished deck elevation with approach roadway grade to ensure a smooth road to bridge transition. Profile adjustment may be required.



TRANSVERSE SECTION

Scale ~ ⅜" = 1'-0"
(Looking Ahead on Line near intermediate bents)

HDR

SHEET NO. B7

DECK REPLACEMENT (04457) (SHEET 2 OF 4)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED							
REVISED							
REVISED							
REVISED							
CHECKED							03-10-23
DRAWN							03-03-23
DESIGNED							03-03-23
J.C.M.	J.C.C.	N.W.B.					

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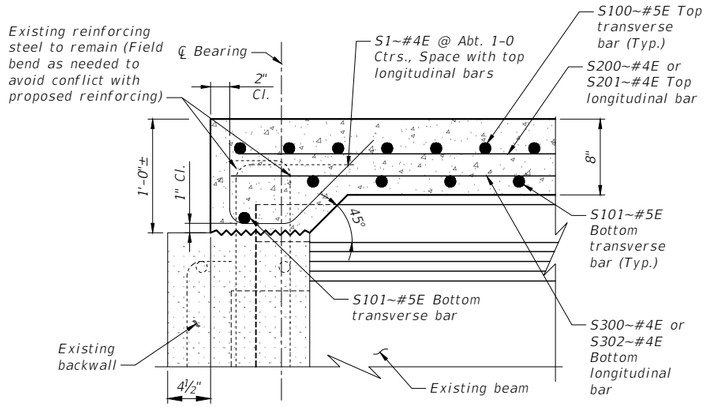
MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28417

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A / B8 **SLAB ENDS AT END BENTS**

Scale ~ ¾" = 1'-0"

DEPTH OF HAUNCH "D" AT ℄ BRGS.		
LOCATION	SPANS NO. 1 & NO. 4	SPANS NO. 2 & NO. 3
Beam No. 1	8⅝"	8⅝"
Beam No. 2	8 5/16"	8⅜"
Beam No. 3	8⅞"	8⅜"
Beam No. 4	8 5/16"	8⅞"
Beam No. 5	8⅝"	8⅜"
Beam No. 6	-	8⅜"
Beam No. 7	-	8⅝"

DEAD LOAD DEFELCTION TYPE A PRESTRESSED CONCRETE BEAM					
SPAN LENGTH	TENTH POINT				
	0.1	0.2	0.3	0.4	0.5
35'-0"	0"	1/16"	1/16"	1/16"	1/16"
50'-0"	⅛"	3/16"	¼"	5/16"	5/16"
60'-0"	⅛"	5/16"	⅜"	7/16"	½"

NOTE: Deflections symmetrical about 0.5 point and do not include beam dead load.

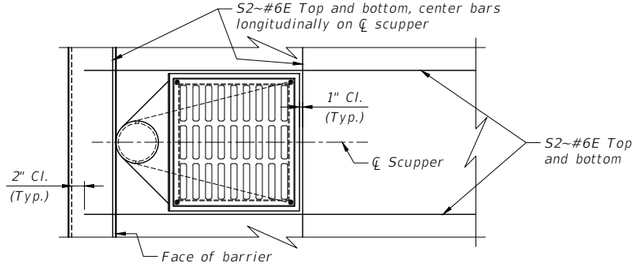
NOTES

Layout holes for ABT1~#4E & ABT2~#4E installed into existing concrete as shown on the plans using a pachometer, ground penetrating radar or other means to accurately locate existing reinforcing steel prior to drilling. Relocate holes in conflict with the existing reinforcing steel while drilling holes. Coring holes is not permitted. Clean holes and install adhesive per adhesive manufacturer's recommendations.

See Sheet No. B9 for Bill of Reinforcing Steel.

See Sheet No. B11 for additional details on Scupper Reinforcing layout.

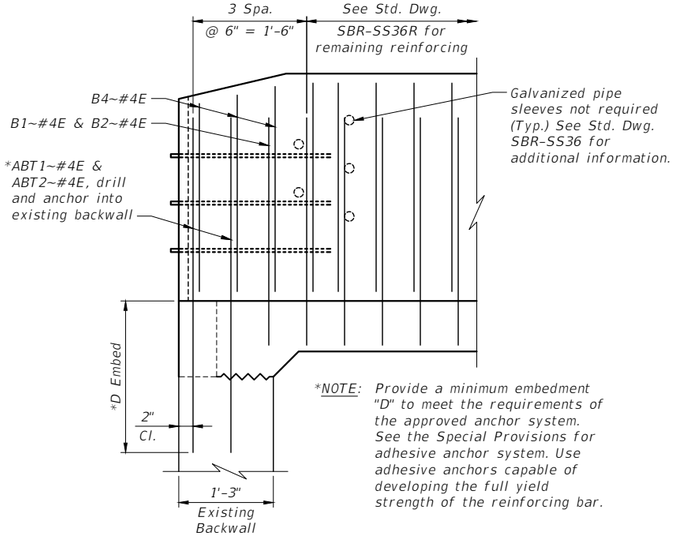
See Std. Dwg. No. SBR-SS36R for bridge rail reinforcing steel.



NOTE: Cut longitudinal deck bars in conflict with scuppers. Shift and bundle transverse deck and barrier bars in conflict with scuppers. Trim and/or shift bars to maintain 1" cover to the scuppers.

SCUPPER REINFORCING AT EDGE OF DECK

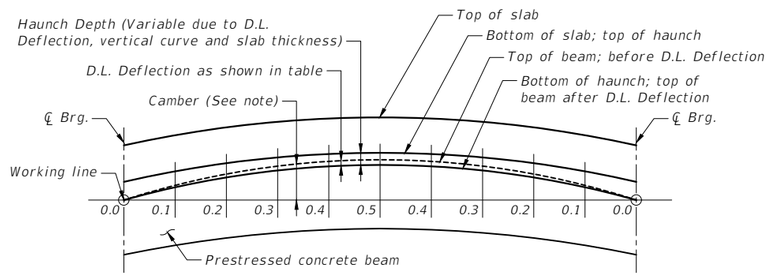
Scale ~ ½" = 1'-0"
(Barrier and deck reinforcing not shown for clarity)



*NOTE: Provide a minimum embedment "D" to meet the requirements of the approved anchor system. See the Special Provisions for adhesive anchor system. Use adhesive anchors capable of developing the full yield strength of the reinforcing bar.

BARRIER END DETAIL

Scale ~ ½" = 1'-0"

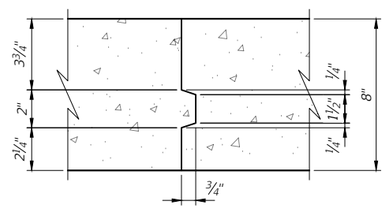


NOTE: Camber is noted as the distance from the working line to the top of beam and may vary from theoretically calculated D.L. deflection.

CAMBER DIAGRAM

No Scale

NOTE: Continue slab reinforcing through the joints.



SLAB CONSTRUCTION JOINT

Scale ~ 1½" = 1'-0"

HDR

SHEET NO. B8

DECK REPLACEMENT (04457) (SHEET 3 OF 4)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	N.W.B.	03-30-23	
DRAWN	K.R.H.	03-03-23	
DESIGNED	J.C.M.	03-03-23	9315001brsld204.dwg \ SLD004

MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

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UPN NUMBER
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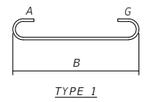
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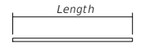
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BILL OF REINFORCING STEEL

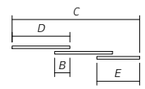
04457 DECK SLAB AND BARRIER ONLY
(ALL DIMENSIONS ARE OUT TO OUT)



TYPE 1

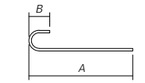


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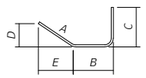


N = Number of Laps

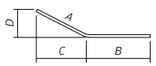
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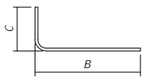
TYPE 905



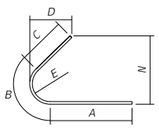
TYPE VL



TYPE 28



TYPE 37



TYPE 33

Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
S100	#5E	422	1	31'-2"	7"	30'-0"				7"	
S101	#5E	258	STR	30'-0"							
S102	#5E	120	905	6'-7"	6'-0"	7"					
S200	#4E	31	27	103'-2"		2'-8"	97'-10"	40'-0"	23'-2"		2
S201	#4E	31	27	118'-2"		2'-8"	112'-10"	40'-0"	38'-2"		2
S202	#5E	30	STR	20'-0"							
S203	#5E	30	STR	15'-0"							
S300	#4E	52	STR	39'-3"							
S301	#4E	100	27	66'-7"		2'-8"	63'-11"	40'-0"	26'-7"		1
S302	#4E	52	27	56'-11"		2'-8"	54'-3"	40'-0"	16'-11"		1
S1	#4E	62	VL	2'-2½"	1'-0"	6"	8½"	8½"	8½"		
S2	#6E	32	STR	10'-0"							
B100	#6E	20	27	102'-6"		4'-8"	97'-10"	60'-0"	42'-6"		1
B101	#6E	20	27	117'-6"		4'-8"	112'-10"	60'-0"	57'-6"		1
B1	#4E	462	28	5'-0"	3'-0"	2'-0"	6¾"	2'-11¼"			
B2	#4E	462	37	2'-11¼"		10"	2'-1¼"				
B3	#4E	458	33	5'-9¼"	2'-6½"	7¼"	2'-7½"	2'-9"	2"		11"
B4	#4E	12	33	5'-5¾"	2'-4¼"	8¾"	2'-5¼"	2'-7"	2¼"		11¼"
*ABT 1	#4E	8	28	4'-6½"	2'-6½"	2'-0"	2'-6"	5¾"			
*ABT 2	#4E	8	STR	3'-8"							

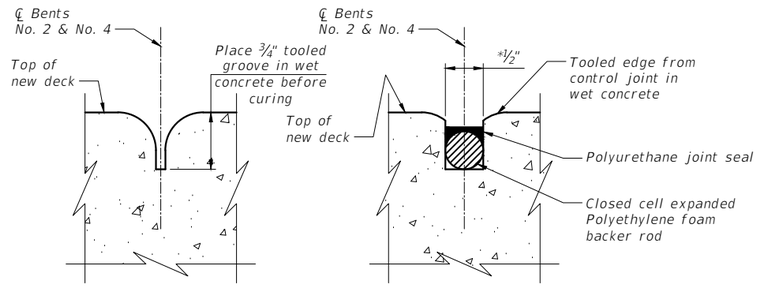
*NOTE: Based on dimensions provided on Standard Drawings SBR-SS36R. Adjust length base upon actual embedment.

NOTES:
Do not place transverse reinforcement directly beneath the sawcut control joint.

Include all costs associated with sawcutting, furnishing and installing back rod and joint sealant in the unit price bid for Joint Seals – Polyurethane.

*Sawcut and install joint per manufacturer's recommendations.

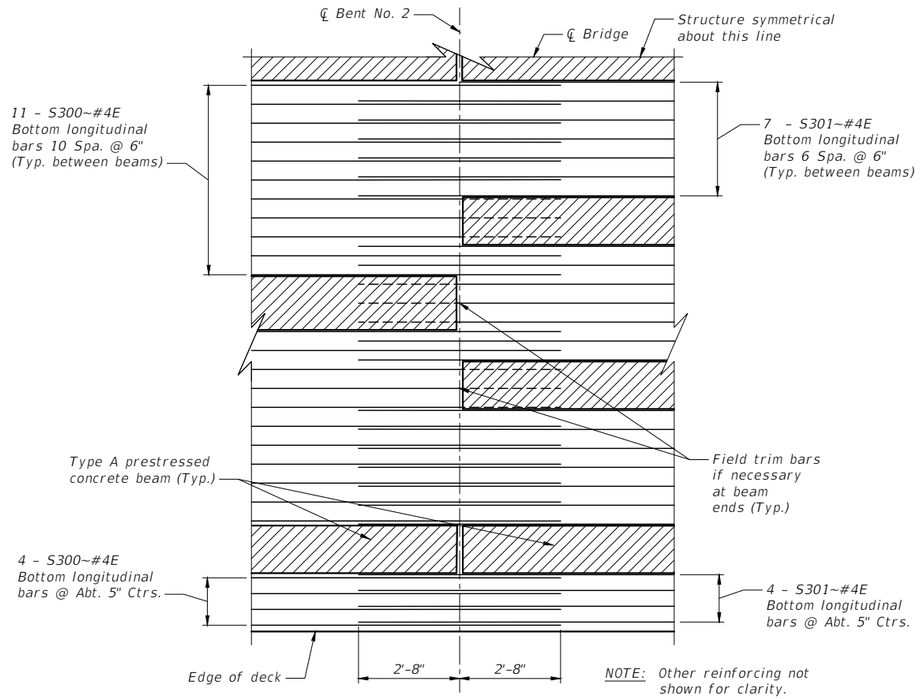
Place joint directly above ℄ Bents No. 2 & No. 4 along the length between face of barriers.



STEP NO. 1
(WET CONCRETE)

STEP NO. 2
(CURED CONCRETE)

DECK CONTROL JOINT
No Scale



BOTTOM MAT REINFORCING OVER BENT NO. 2
Scale ~ ¼" = 1'-0"
(Bent No. 4 similar)

HDR

SHEET NO.
B9

DECK REPLACEMENT (04457)
(SHEET 4 OF 4)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED								
REVISED								
REVISED								
REVISED								
CHECKED	N.W.B.	03-10-23						
DRAWN	J.C.C.	03-03-23						
DESIGNED	J.C.M.	03-03-23						

9315001 br sld205.dwg \ SLD005

11/3/2023 8:28:37 AM

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

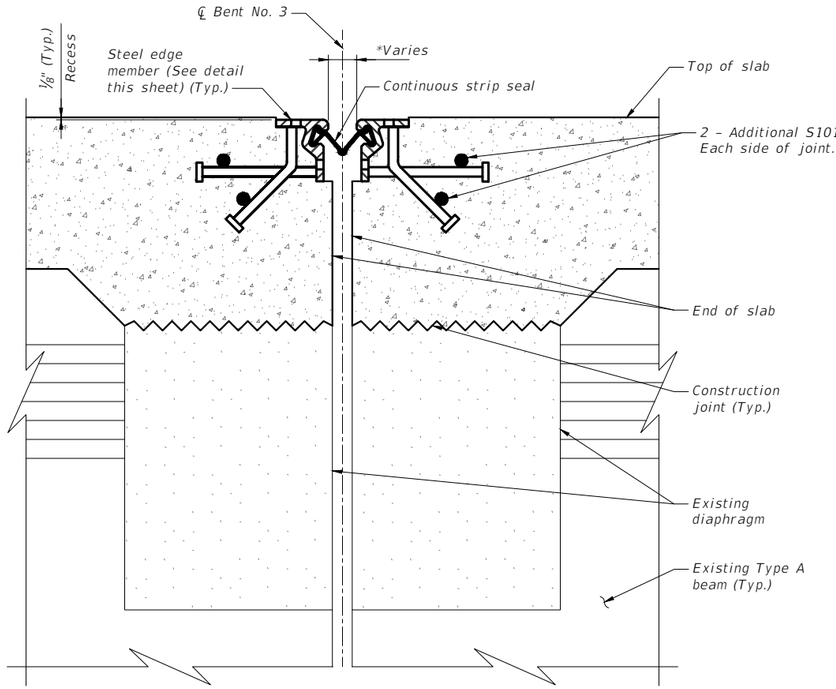
DRAWING NO.
28419

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*NOTE: See Table of Expansion Joint Gaps on this sheet.

NOTE: Slab reinforcing steel not shown for clarity. Adjust reinforcing steel the minimum amount necessary to provide 2" clear to new expansion joint edge members.

NOTE: Field bend existing reinforcing steel as needed to avoid conflict with expansion joint armor.



NEW EXPANSION JOINT DETAIL

Scale ~ 1½" = 1'-0"

NOTES

Fabricated edge member to match deck cross slope.

Support the expansion joint assembly accurately and firmly while placing concrete. Use a support method strong enough to withstand contact with concrete vibrators.

For all requirements of expansion joint, see Special Provisions.

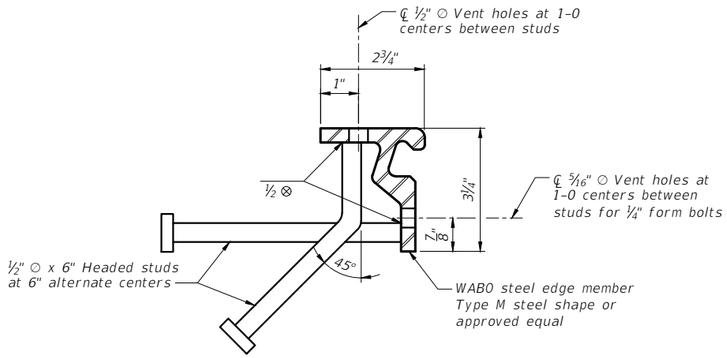
Form end of slab to conform to Table of Expansion Joint Gaps.

TABLE OF EXPANSION JOINT GAPS

LOCATION	TEMPERATURE (°F)					
	-40	0	38	60	90	115
Bent No. 3	3½"	2 15/16"	2 5/16"	2"	1 9/16"	1 3/16"

NOTE: The movements shown are not factored. They are the actual anticipated movements for the temperature shown.

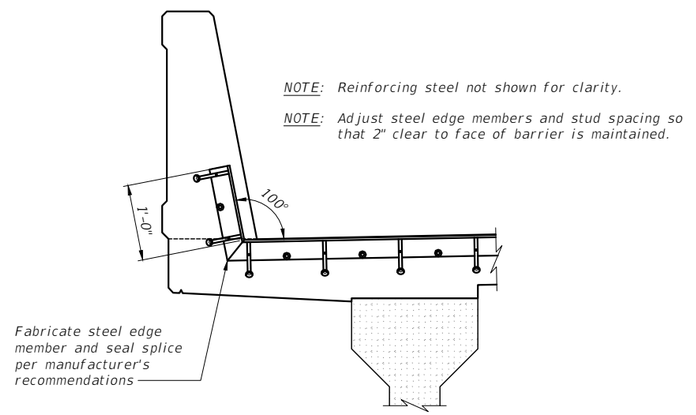
NOTE: Change in temperature for 1/16" of unfactored movement = 4.14° - Bent No. 3



NOTE: Set steel edge members ⅛" below finished grade of deck.

STEEL EDGE MEMBER AND ANCHORAGE SYSTEM

Scale ~ 6" = 1'-0"



NOTE: Reinforcing steel not shown for clarity.

NOTE: Adjust steel edge members and stud spacing so that 2" clear to face of barrier is maintained.

NEW EXPANSION JOINT SECTION THRU BARRIER

Scale ~ ½" = 1'-0"

HDR

SHEET NO. B10

EXPANSION JOINT DETAILS (04457)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED		
REVISED		
REVISED		
REVISED		
CHECKED	N.W.B.	03-30-23
DRAWN	K.R.H.	03-03-23
DESIGNED	J.C.M	03-03-23

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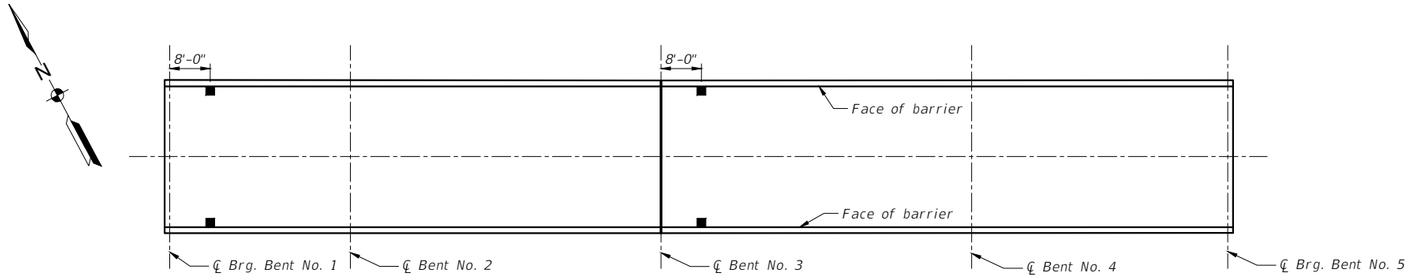
MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28420

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AWARD COPY



SCUPPER LOCATION PLAN (04457)

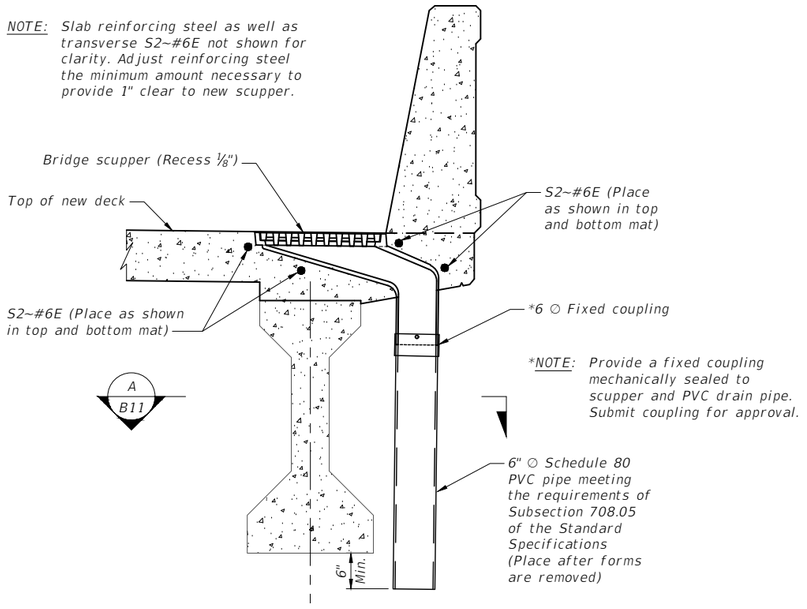
Scale ~ 1" = 30'-0"

NOTES

Neenah Foundry R-3936-A Scupper with Type "C" grate shown. Similar alternate scuppers and grates may be submitted for approval. Match geometry of the scupper and provide a grate with at least 144 in² of intake area.

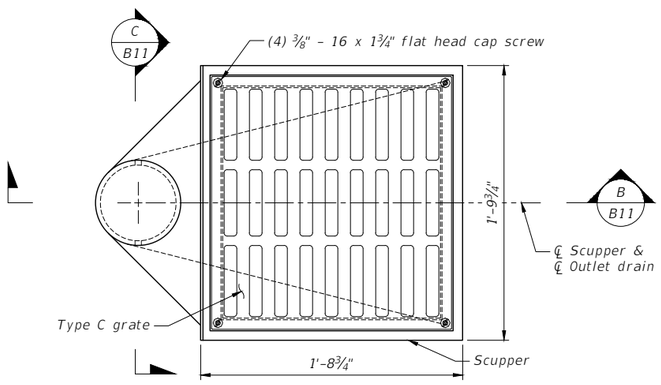
Include all costs to furnish and install scuppers, frame, grate, PVC pipes, and associated hardware in the unit price bid for Scupper.

See Sheet No. B8 for Scupper Reinforcing Details.



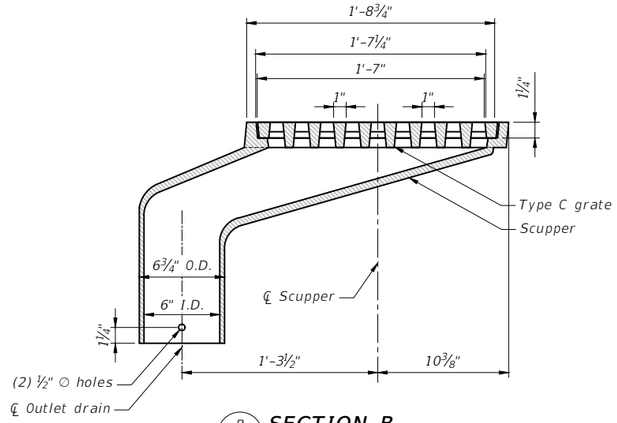
DECK DRAIN AT EDGE OF DECK

Scale ~ ½" = 1'-0"



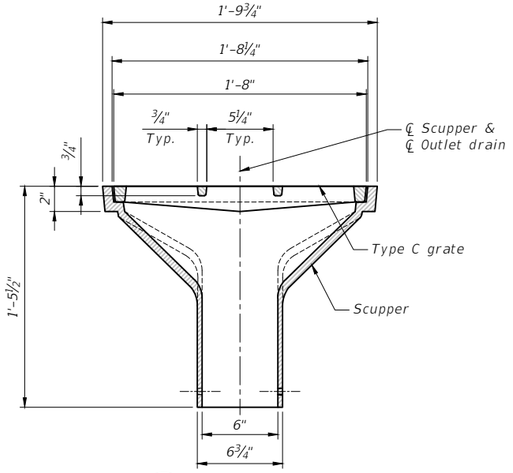
BRIDGE SCUPPER

Scale ~ 1" = 1'-0"



B B11 **SECTION B**

Scale ~ 1" = 1'-0"



C B11 **SECTION C**

Scale ~ 1" = 1'-0"

HDR

SHEET NO. B11

DRAINAGE DETAILS (04457)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED					
REVISED					
REVISED					
REVISED					
CHECKED	P.C.J.	03-10-23			
DRAWN	K.R.H.	03-10-23			
DESIGNED	J.C.M.	03-03-23			

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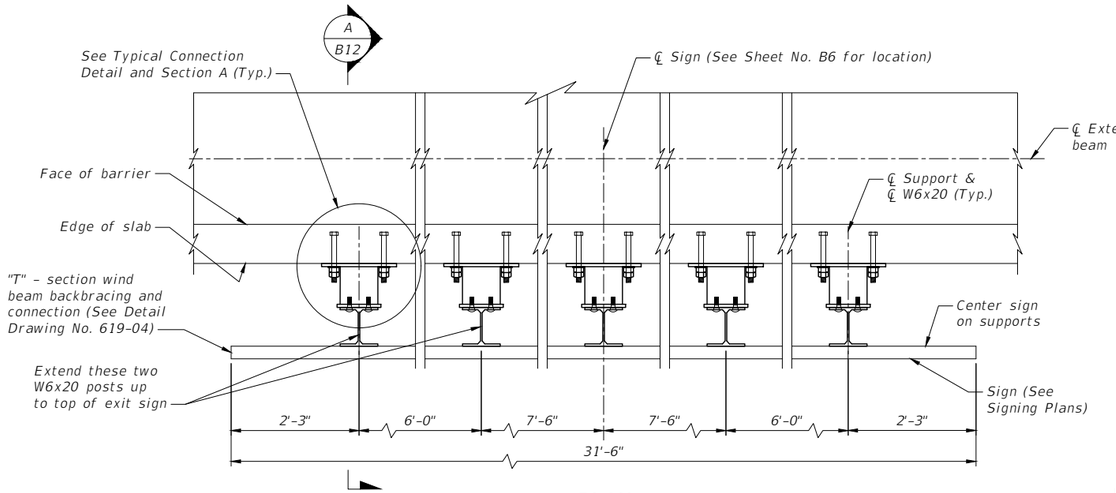
MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28421

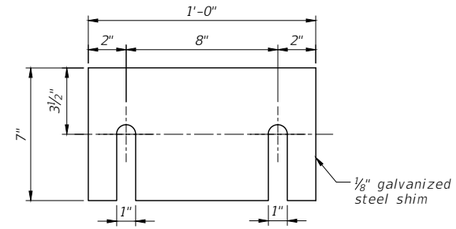
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AWARD COPY



PLAN

Scale ~ ⅜" = 1'-0"
(Lower slab connection shown, upper connection at barrier similar)



BASE PLATE SHIM DETAIL

NOTE: Furnish shims as necessary to ensure uniform bearing and plumb sign. Place shims between fiber reinforcing pads. Place shims with slots facing downward.

NOTES

Galvanize all bolts, nuts, and washers in accordance with AASHTO M 232 unless stainless steel or noted otherwise. Galvanize sign support and connection after fabrication in accordance with AASHTO M 111.

Use structural steel meeting the requirements of AASHTO M 270 Grade 50 unless noted otherwise.

Install sign level. Field drill ⅞" ∅ holes in ½" plate.

For the purposes of fabrication, this sign support is considered an ancillary item. The requirements of subsection 1.3.7 of AWS D1.5 2020 apply. Submit shop drawings prior to fabrication.

Use ASTM F1554 Grade 55 for all anchor bolts and furnish Heavy Hex nuts and hardened washers per the Standard Specifications.

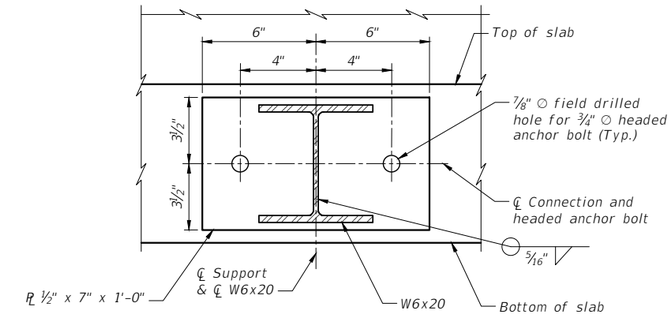
Use ASTM F3125 Grade A325 Type 1 – Galvanized for all high strength bolts. See the Standard Specifications for the requirements of heavy hex nuts and washers.

Post-installed, sustained tension load epoxy anchors not permitted.

Use fiber reinforcing pads meeting the requirements of Specification 711.16 of the Standard Specifications. Size and position the pads so that not less than ¼" of the pad protrudes on all sides of the connection plate. Punch holes in pads to match connection plate.

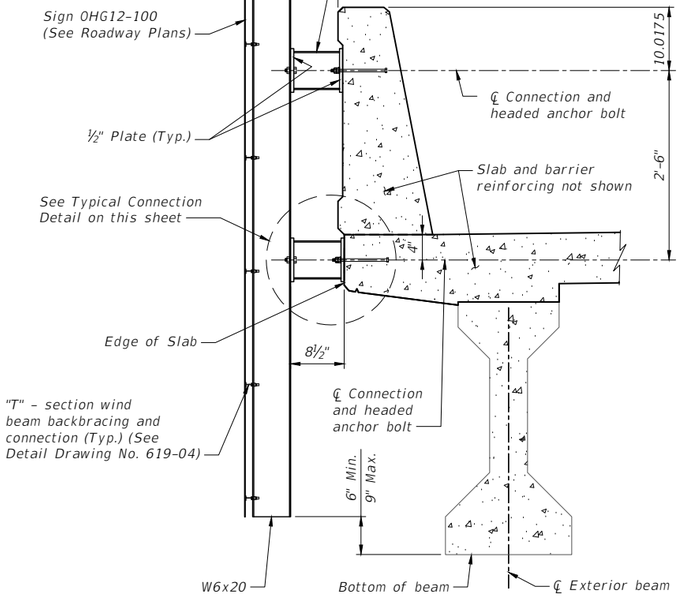
Set anchor bolts prior to placing concrete. Adjust any reinforcing in conflict the minimum amount necessary. Secure anchor bolts in the correct position while placing concrete. Post installed anchor bolts will not be accepted.

Include all costs to furnish and install sign W6x20 support posts, connection brackets, high strength bolts and headed anchor bolts in the unit price bid for Posts – Steel Structural Sign. See Roadway Plans for additional information.

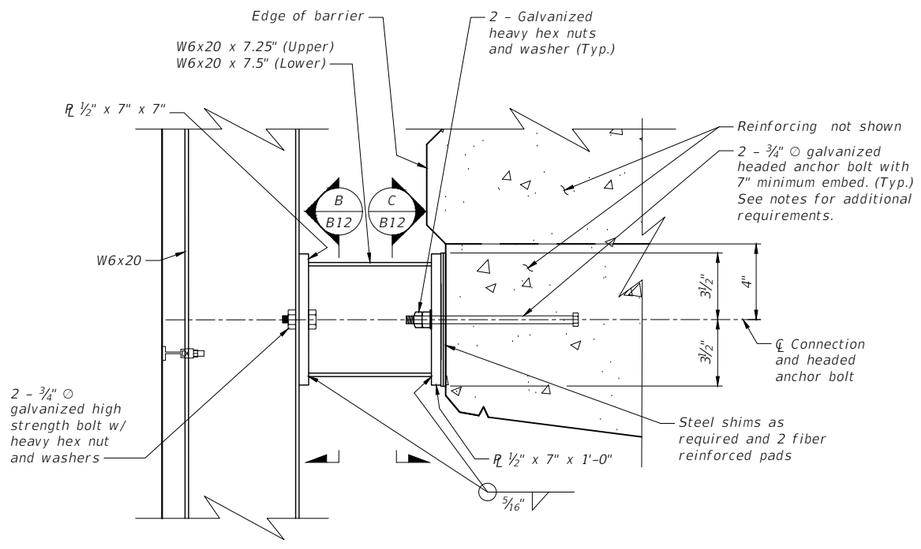


C B12 **SECTION C**
Scale ~ 3" = 1'-0"

NOTE: Lower slab connection shown, upper connection at barrier similar.



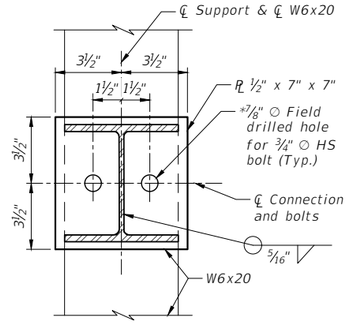
A B12 **SECTION A**
Scale ~ ½" = 1'-0"



TYPICAL CONNECTION DETAIL

Scale ~ 1½" = 1'-0"
(Lower slab connection shown, upper connection at barrier similar)

*NOTE: Field drill holes in both ½" plate and vertical W6x20 post.



B B12 **SECTION B**
Scale ~ 3" = 1'-0"

HDR

SHEET NO. B12

SIGN SUPPORT DETAILS (04457)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED					
REVISED					
REVISED					
REVISED					
CHECKED	P.C.J.	03-03-23			
DRAWN	K.R.H.	03-03-23			
DESIGNED	J.C.M.	03-03-23			

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28422

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SUBSTRUCTURE REPAIR SEQUENCING

Step 1: Perform concrete repairs.
- Step 1.1) Remove deteriorated, spalled, loose, hollow, or honeycombed concrete as directed by the Project Manager.
- Step 1.2) Clean and remove all rust from exposed reinforcing. Repair/replace damaged reinforcing as necessary.
- Step 1.3) Bond sacrificial galvanic anode, Sika FerroGard-650 or an approved equal, to the exposed reinforcing as directed by the anode manufacturer.
- Step 1.4) Coat any exposed anchor rods with epoxy primer.
- Step 1.5) Patch repair areas with repair concrete.

Step 2: Repair cracked concrete.
- Step 2.1) Apply epoxy injection to concrete cracks greater than ⅛ inch wide as directed by the epoxy manufacturer.

Step 3: Apply migrating corrosion inhibitor, Sika FerroGard-903, to all exposed substructure concrete surfaces.

Step 4: Apply crystalline waterproofing surface treatment, Xypex Concentrate, to all exposed substructure concrete surfaces.

NOTES

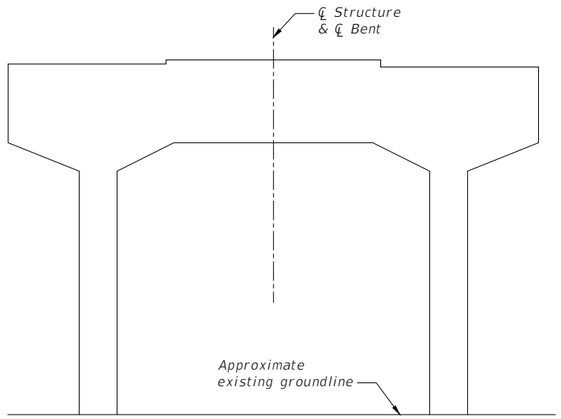
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

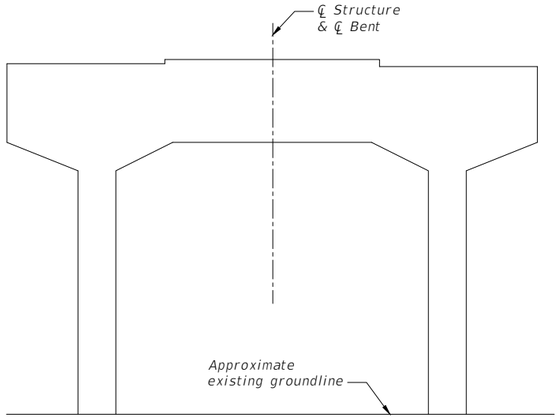
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

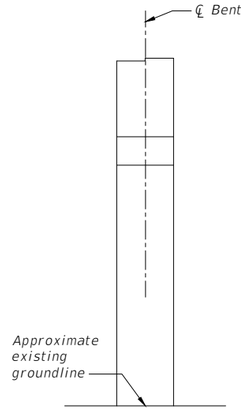
Remove dirt/debris from abutments and cap tops.



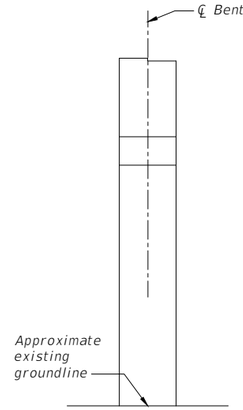
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(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

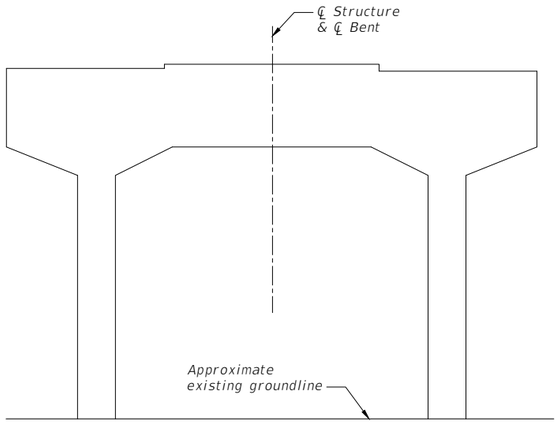


SOUTH END
(Looking North)

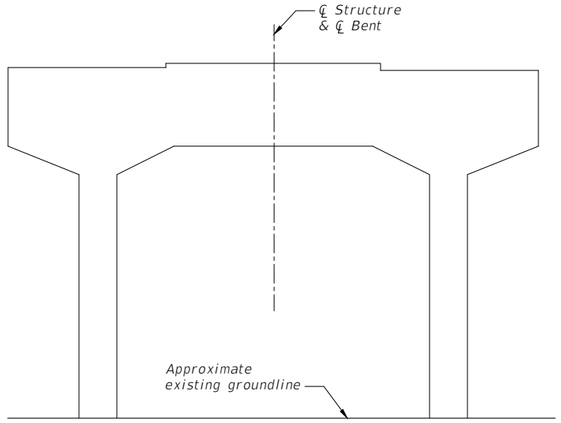


NORTH END
(Looking South)

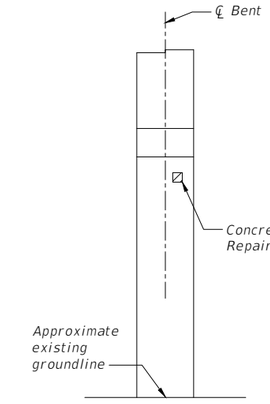
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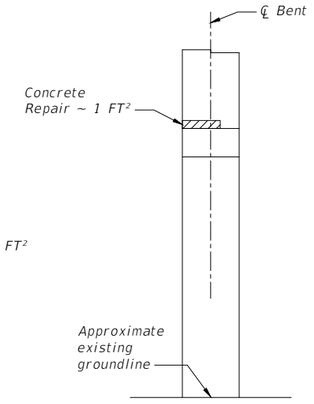
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(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3
No Scale

HDR

SHEET NO.
B13

SUBSTRUCTURE REPAIR LOCATIONS (01110) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01110

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED					
REVISED					
REVISED					
REVISED					
CHECKED	N.W.B.	03-16-23			
DRAWN	J.C.C.	03-10-23			
DESIGNED	J.C.M.	03-10-23			

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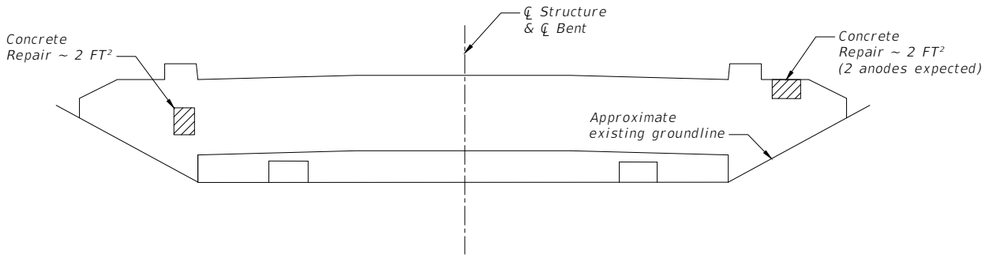
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BRIDGE BUREAU

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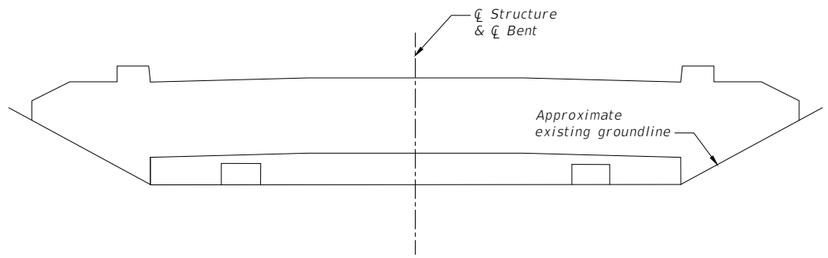
UPN NUMBER
9315001

DRAWING NO.
28423

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BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 4
No Scale
(Looking East and Ahead on Station)

BRIDGE 01110 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT²)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD²)	PENETRATING SEALER (YD²)	*SACRIFICIAL GALVANIC ANODE (EA)
1	4.0		29	29	2
2			70	70	
3	2.0		70	70	
4			29	29	
SUBTOTAL	6.0		198	198	2

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B14

SUBSTRUCTURE REPAIR LOCATIONS (01110) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01110

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	N.W.B	03-16-23	
DRAWN	J.C.C	03-10-23	
DESIGNED	J.C.M.	03-10-23	9315001brreh203.dwg \ REH004

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

11/3/2023 8:29:02 AM

UPN NUMBER
9315001

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28424

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NOTES

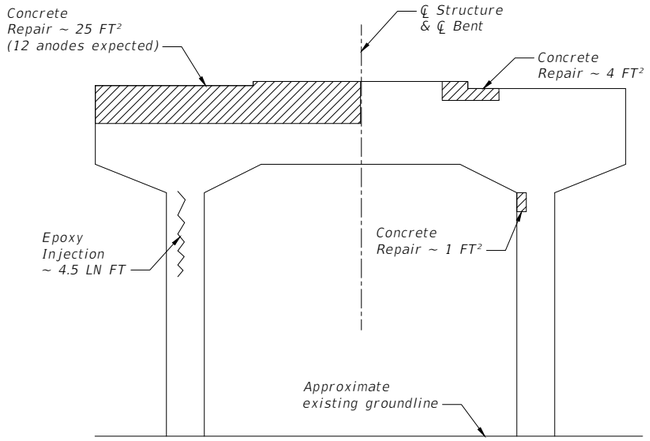
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

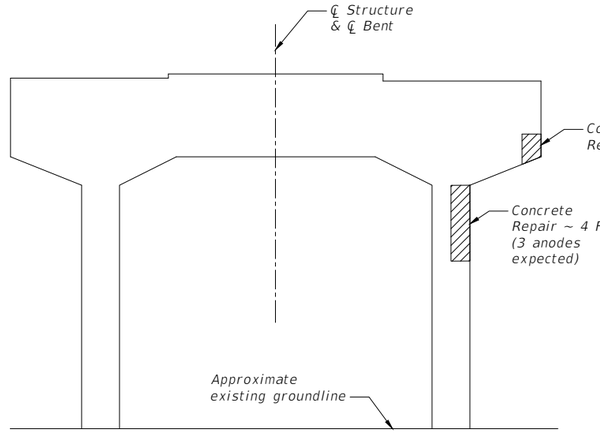
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

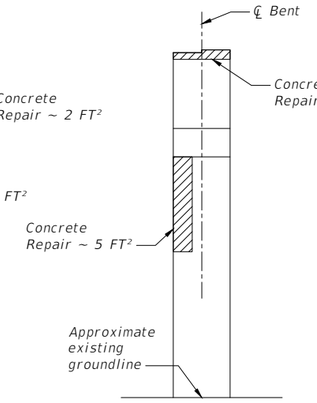
Remove dirt/debris from abutments and cap tops.



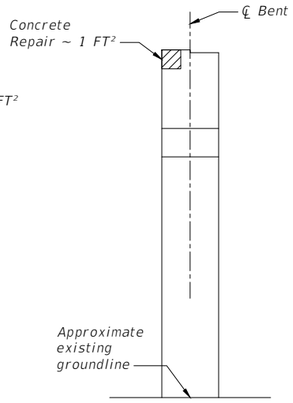
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

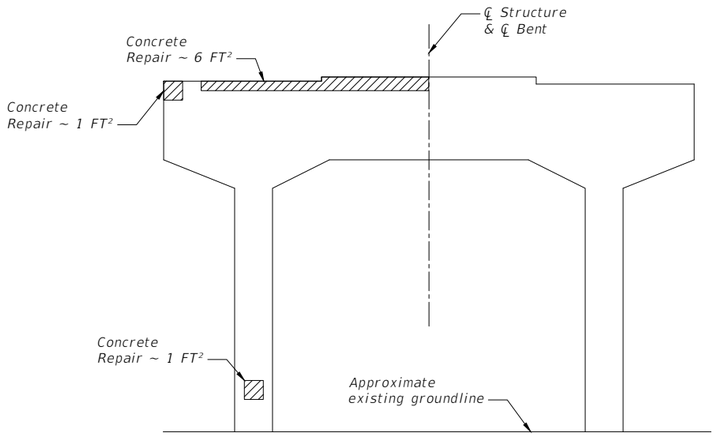


SOUTH END
(Looking North)

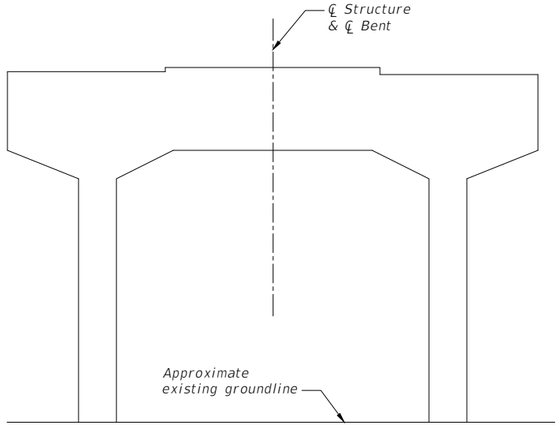


NORTH END
(Looking South)

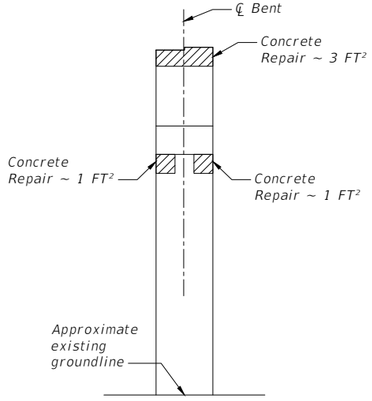
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No Scale



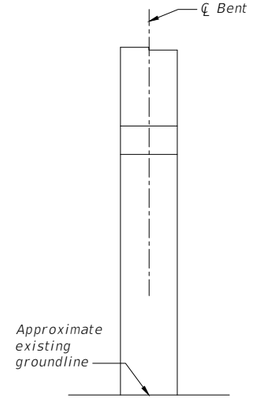
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3
No Scale

HDR

SHEET NO.
B15

SUBSTRUCTURE REPAIR LOCATIONS (01111) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01111

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED				CHECKED	W.W.B	03-16-23
REVISED				DRAWN	J.C.C	3-10-23
REVISED				DESIGNED	J.C.M	3-10-23

9315001brreh203.dwg \ REH005

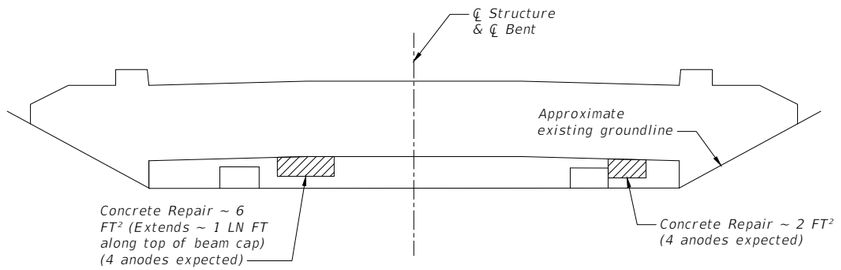
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MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

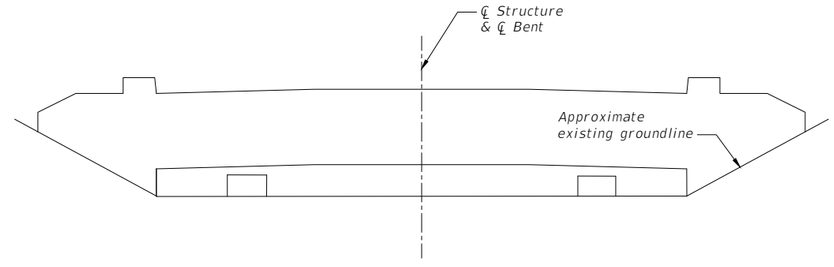
UPN NUMBER
9315001

DRAWING NO.
28425

DocuSign Envelope ID: A2950992-BC00-4FA3-B146-C794A37C2A8F



BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 4
No Scale
(Looking East and Ahead on Station)

BRIDGE 01111 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT²)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD²)	PENETRATING SEALER (YD²)	*SACRIFICIAL GALVANIC ANODE (EA)
1	8.0		29.0	29.0	8
2	44.0	4.5	72.0	72.0	15
3	13.0		73.0	73.0	
4			29.0	29.0	
SUBTOTAL	65.0	4.5	203.0	203.0	23

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B16

SUBSTRUCTURE REPAIR LOCATIONS (01111) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01111

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED			
REVISED			
REVISED			
REVISED			
CHECKED	N.W.B	03-16-23	
DRAWN	J.C.C.	03-10-23	
DESIGNED	J.C.M.	03-10-23	9315001brreh203.dwg \ REH006

MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

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UPN NUMBER
9315001

DRAWING NO.
28426

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AWARD COPY

NOTES

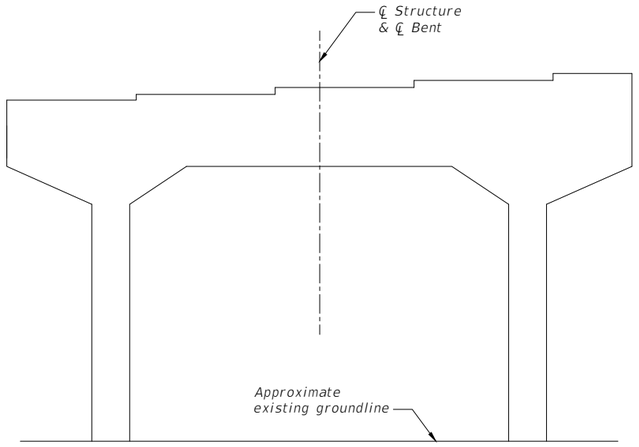
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

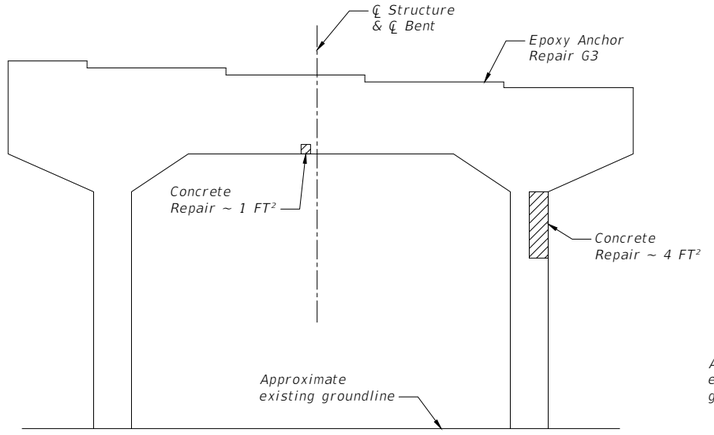
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

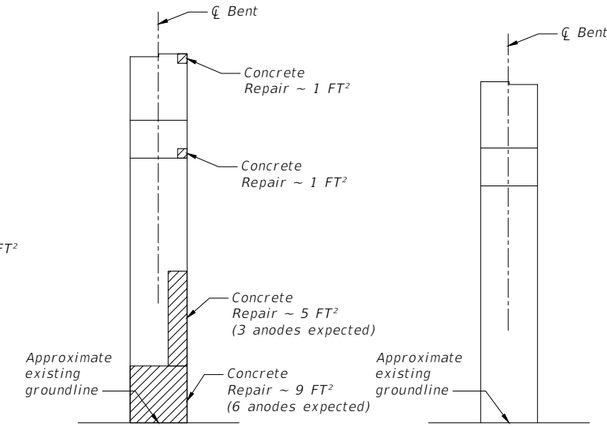
Remove dirt/debris from abutments and cap tops.



EAST FACE
(Looking West and Back on Station)



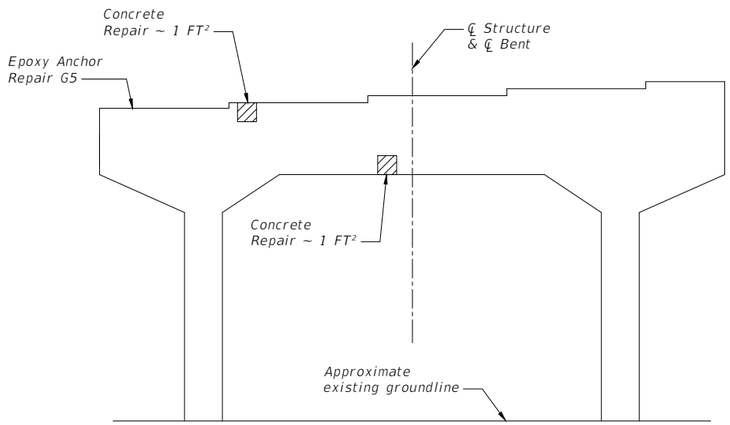
WEST FACE
(Looking East and Ahead on Station)



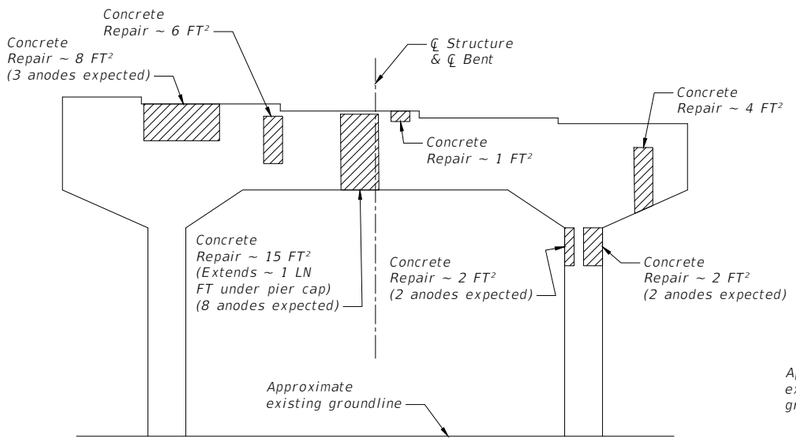
SOUTH END
(Looking North)

NORTH END
(Looking South)

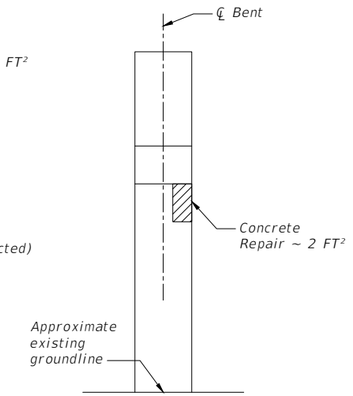
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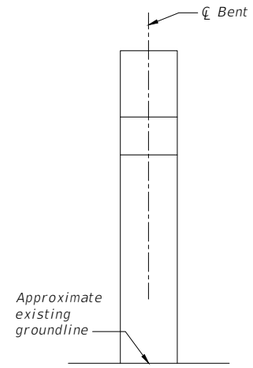
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3
No Scale

HDR

SHEET NO.
B17

SUBSTRUCTURE REPAIR LOCATIONS (01113) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01113

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED			CHECKED	K.W.B.	03-16-23
REVISED			DRAWN	J.C.C	03-10-23
REVISED			DESIGNED	J.C.M.	03-10-23

9315001brreh203.dwg \ REH007

11/3/2023 8:29:17 AM

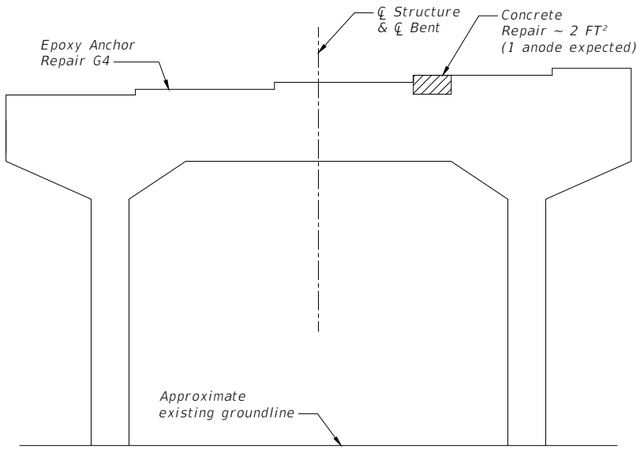
MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

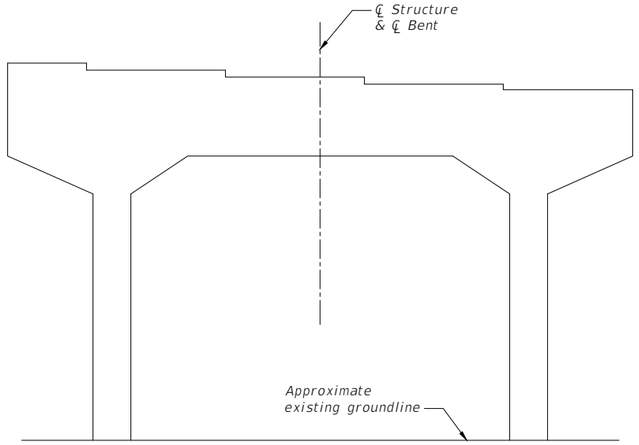
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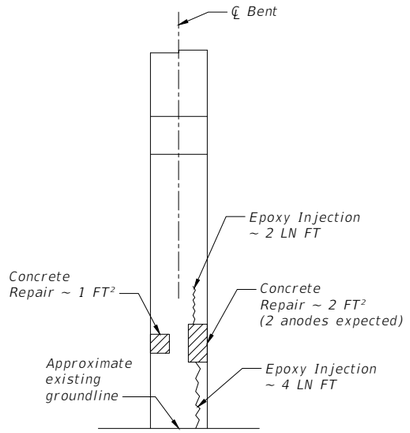
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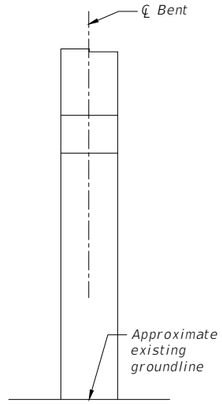
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

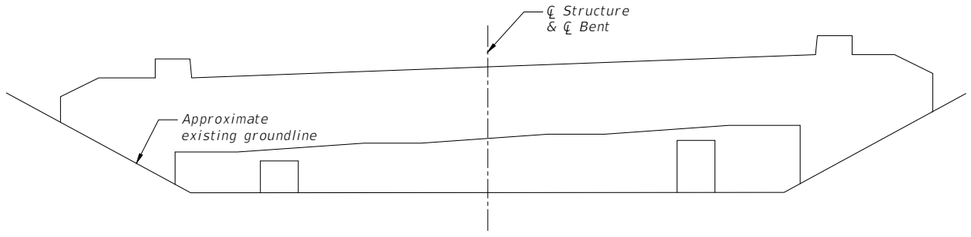


SOUTH END
(Looking North)

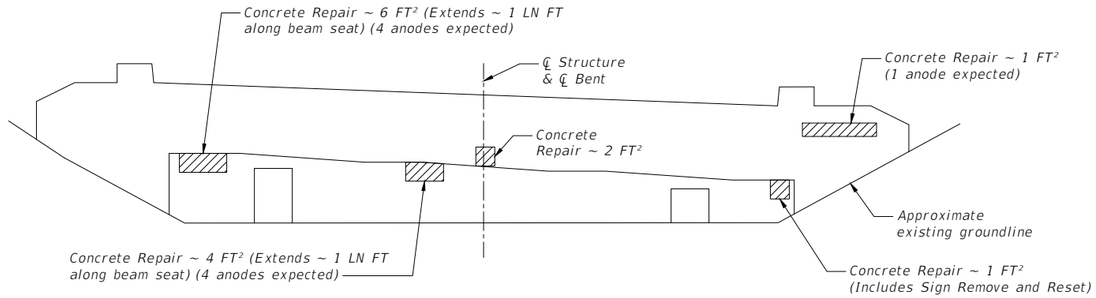


NORTH END
(Looking South)

BENT NO. 4
No Scale



BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 5
No Scale
(Looking East and Ahead on Station)

BRIDGE 01113 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT²)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD²)	PENETRATING SEALER (YD²)	*SACRIFICIAL GALVANIC ANODE (EA)
1			33.0	33.0	
2	19.0		85.0	85.0	9
3	42.0		83.0	83.0	15
4	5.0	6.0	85.0	85.0	3
5	13.0		35.0	35.0	9
SUBTOTAL	79.0	6.0	321.0	321.0	36

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B18

SUBSTRUCTURE REPAIR LOCATIONS (01113) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01113

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED					03-16-23	N.W.B.
REVISED					03-10-23	J.C.C.
REVISED					03-10-23	J.C.M.
CHECKED	N.W.B.					
DRAWN	J.C.C.					
DESIGNED	J.C.M.					

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11/3/2023 8:29:22 AM

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28428

DocuSign Envelope ID: A2950992-BC00-4FA3-B146-C794A37C2A8F

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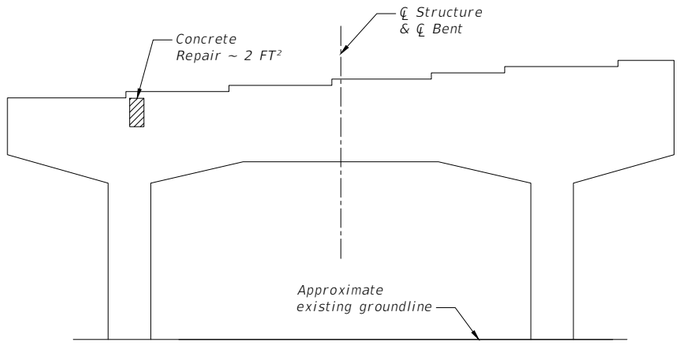
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

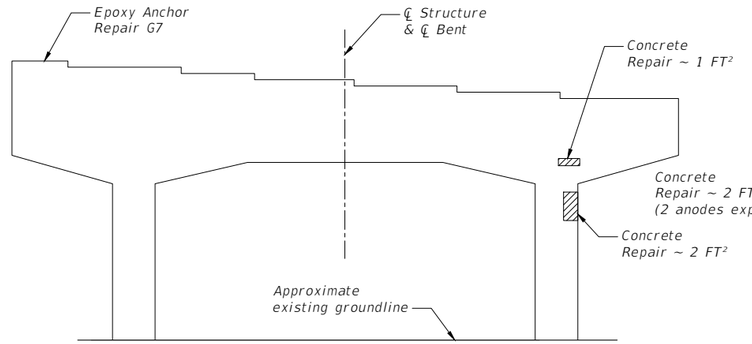
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

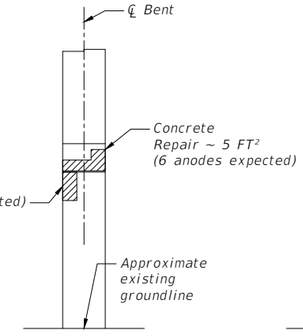
Remove dirt/debris from abutments and cap tops.



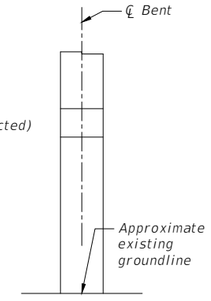
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(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

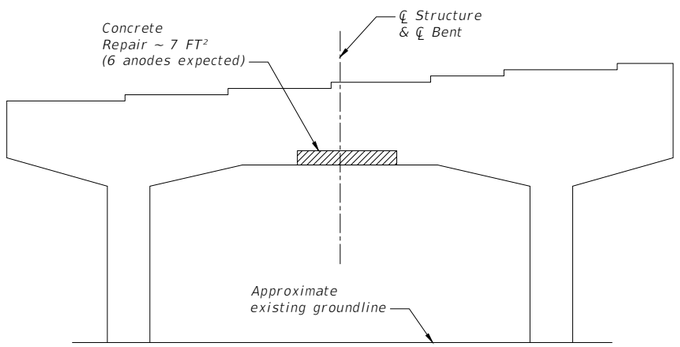


SOUTH END
(Looking North)

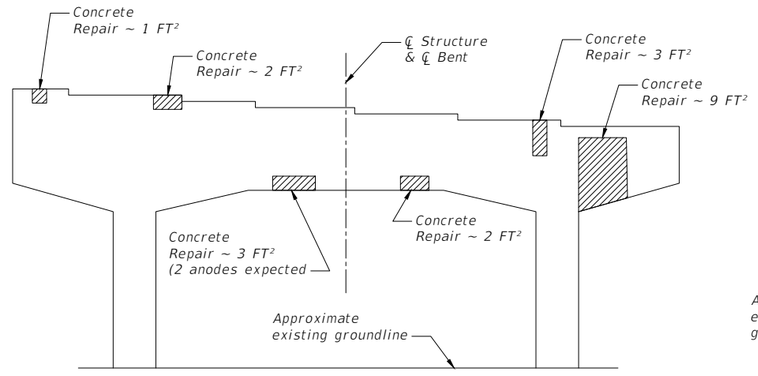


NORTH END
(Looking South)

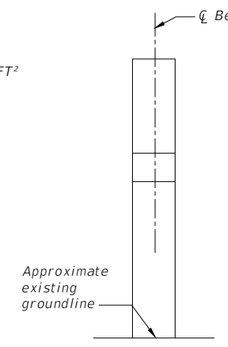
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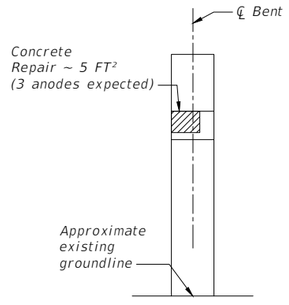
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3
No Scale

HDR

SHEET NO.
B19

SUBSTRUCTURE REPAIR LOCATIONS (01114) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01114

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED			
REVISED			
REVISED			
CHECKED	N.W.B	03-16-23	
DRAWN	J.C.C.	03-10-23	
DESIGNED	J.C.M.	03-10-23	9315001brreh203.dwg \ REH009

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

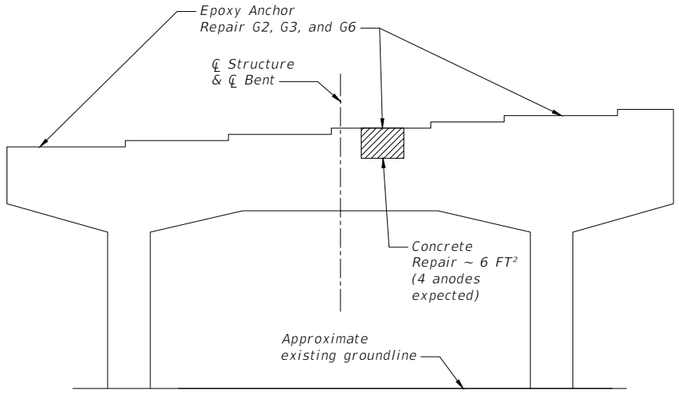
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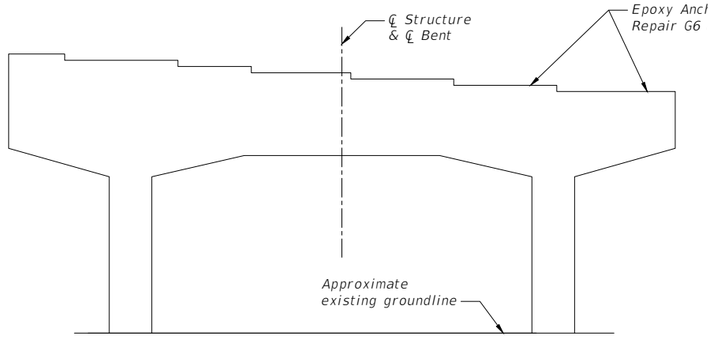
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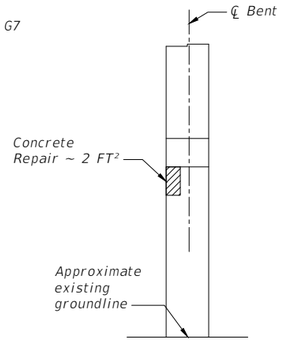
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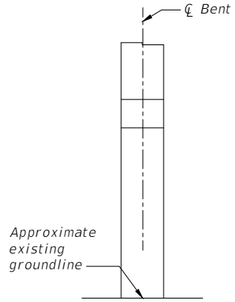
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

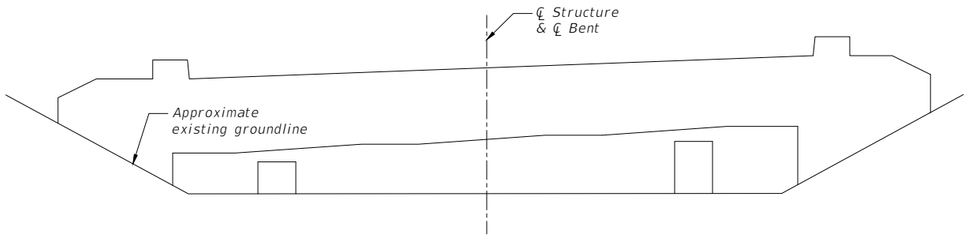


SOUTH END
(Looking North)

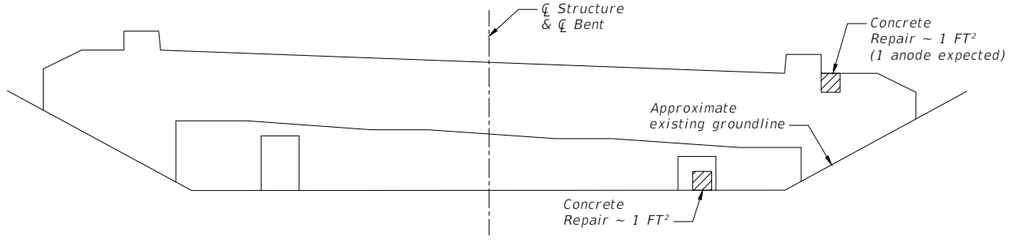


NORTH END
(Looking South)

BENT NO. 4
No Scale



BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 5
No Scale
(Looking East and Ahead on Station)

BRIDGE 01114 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT^2)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD^2)	PENETRATING SEALER (YD^2)	*SACRIFICIAL GALVANIC ANODE (EA)
1			38.0	38.0	
2	12.0		122.0	122.0	8
3	32.0		122.0	122.0	11
4	8.0		126.0	126.0	4
5	2.0		40.0	40.0	1
SUBTOTAL	54.0		448.0	448.0	24

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode plaement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B20

SUBSTRUCTURE REPAIR LOCATIONS (01114) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
01114

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED							
REVISED							
REVISED							
REVISED							
CHECKED	N.W.B.	03-16-23					
DRAWN	J.C.C.	03-10-23					
DESIGNED	J.C.M.	03-10-23					

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

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UPN NUMBER
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DRAWING NO.
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AWARD COPY

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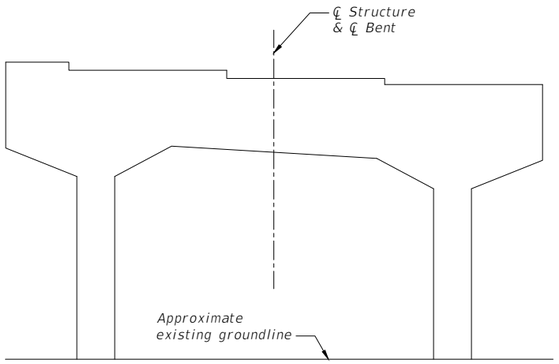
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

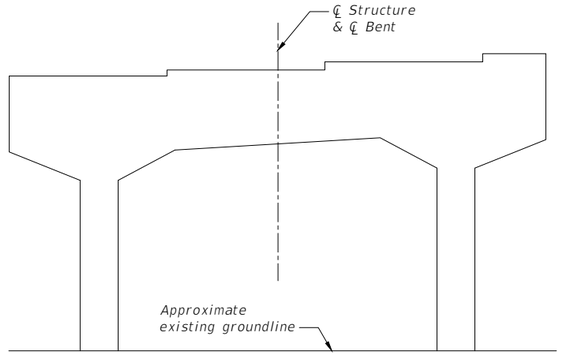
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

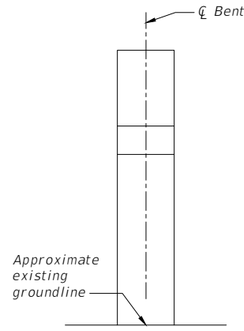
Remove dirt/debris from abutments and cap tops.



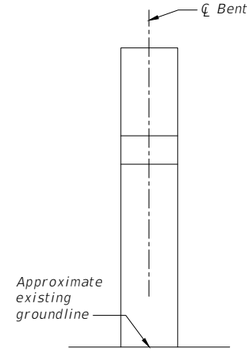
NORTH FACE
(Looking South and Back on Station)



SOUTH FACE
(Looking North and Ahead on Station)

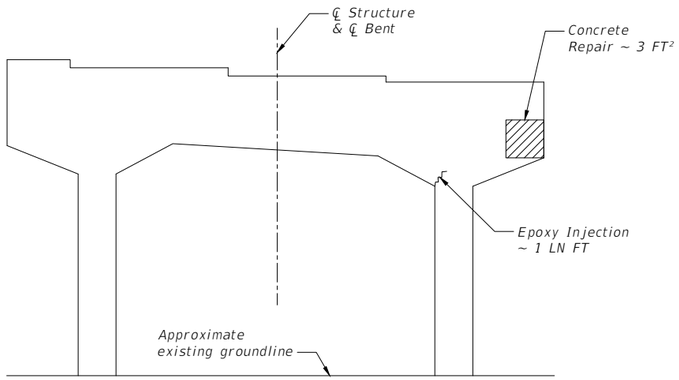


WEST END
(Looking East)

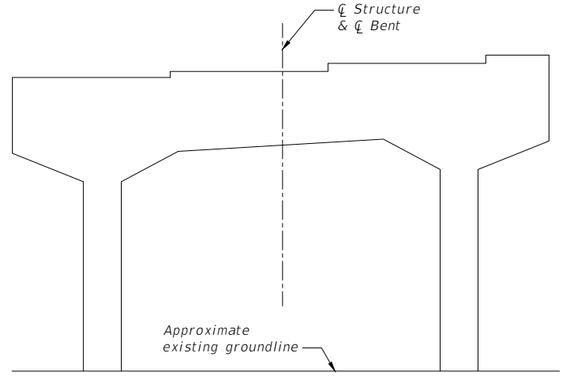


EAST END
(Looking West)

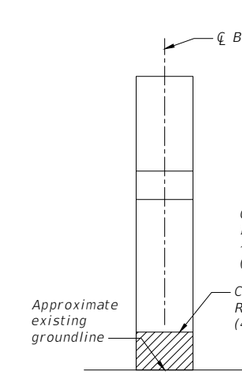
BENT NO. 2
No Scale



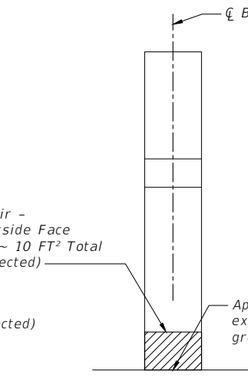
NORTH FACE
(Looking South and Back on Station)



SOUTH FACE
(Looking North and Ahead on Station)



WEST END
(Looking East)



EAST END
(Looking West)

BENT NO. 3
No Scale

HDR

SHEET NO.
B21

SUBSTRUCTURE REPAIR LOCATIONS (03194) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
03194

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
JEFFERSON

REVISED			
REVISED			
REVISED			
CHECKED	W.W.B.	03-16-23	
DRAWN	J.C.C.	03-10-23	
DESIGNED	J.C.M.	03-10-23	931500	brreh	03.dwg \ REH01

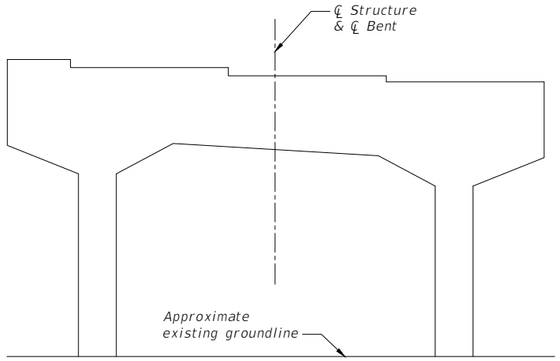
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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

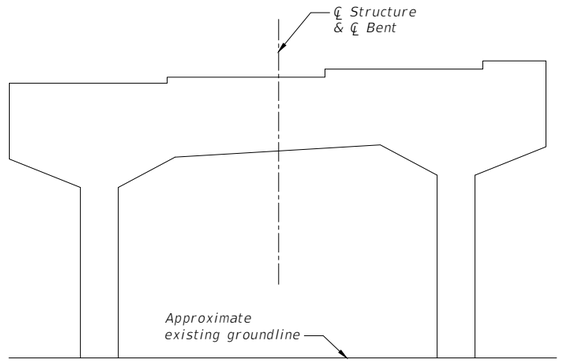
UPN NUMBER
9315001

DRAWING NO.
28431

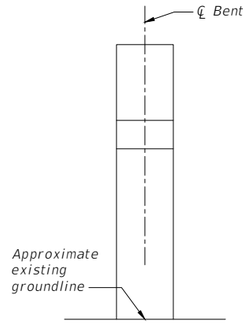
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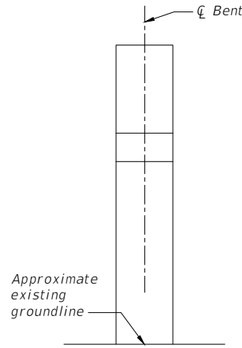
NORTH FACE
(Looking South and Back on Station)



SOUTH FACE
(Looking North and Ahead on Station)

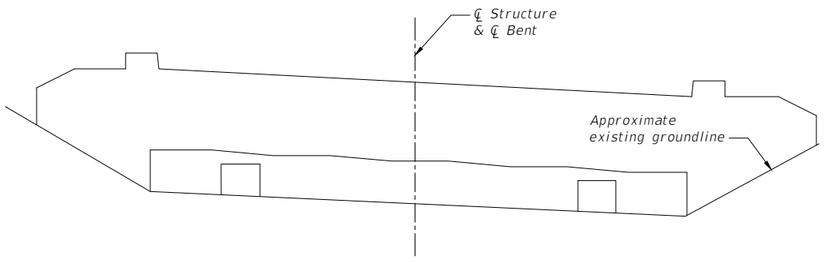


WEST END
(Looking East)

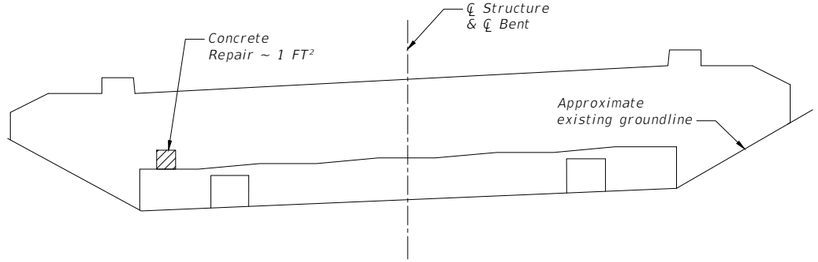


EAST END
(Looking West)

BENT NO. 4
No Scale



BENT NO. 1
No Scale
(Looking South and Back on Station)



BENT NO. 5
No Scale
(Looking North and Ahead on Station)

BRIDGE 03194 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT²)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD²)	PENETRATING SEALER (YD²)	*SACRIFICIAL GALVANIC ANODE (EA)
1			28.0	28.0	
2			80.0	80.0	
3	18.0	1.0	80.0	80.0	12
4			78.0	78.0	
5	1.0		27.0	27.0	
SUBTOTAL	19.0	1.0	293.0	293.0	12

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B22

SUBSTRUCTURE REPAIR LOCATIONS (03194)
(SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
03194

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
JEFFERSON

REVISED				
REVISED				
REVISED				
REVISED				
CHECKED	N.W.B.	03-16-23		
DRAWN	J.C.C.	03-10-23		
DESIGNED	J.C.M.	03-10-23		

9315001brrehz03.dwg \ REH012

11/3/2023 8:29:42 AM

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28432

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AWARD COPY

NOTES

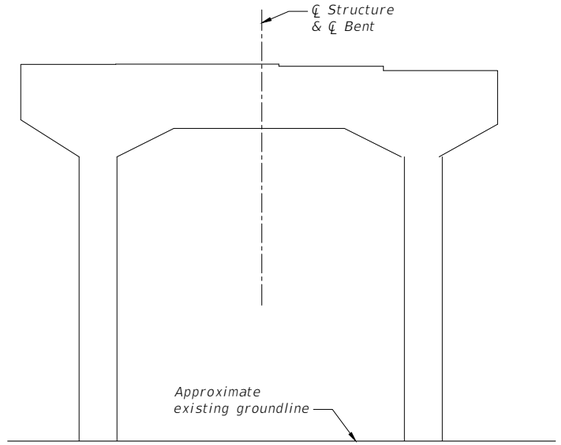
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

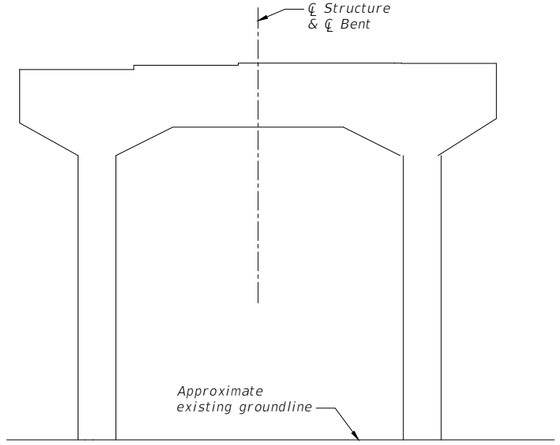
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

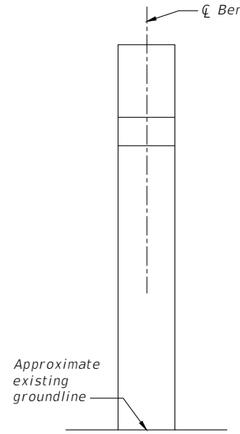
Remove dirt/debris from abutments and cap tops.



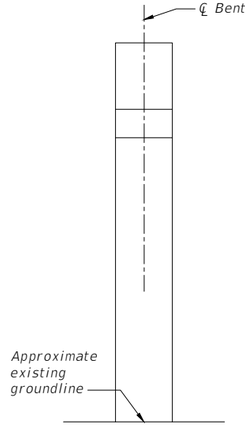
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(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

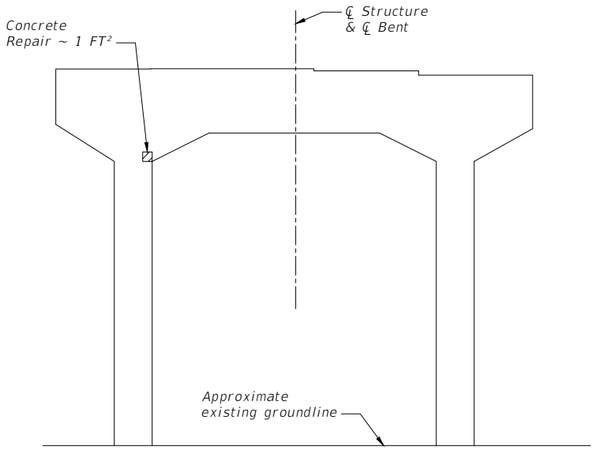


SOUTH END
(Looking North)

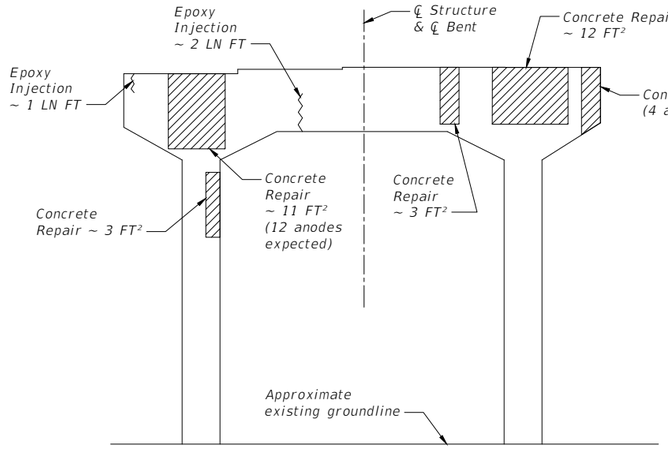


NORTH END
(Looking South)

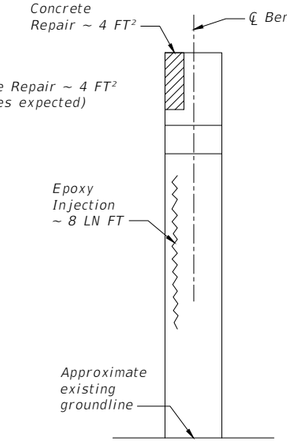
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No Scale



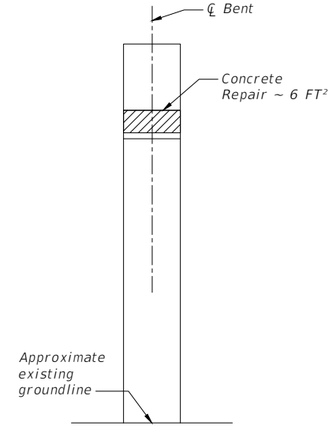
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3
No Scale

HDR

SHEET NO.
B23

SUBSTRUCTURE REPAIR LOCATIONS (04454) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04454

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED				
REVISED				
REVISED				
CHECKED	N.W.B.	03-16-23		
DRAWN	J.C.C.	03-10-23		
DESIGNED	J.C.M.	03-10-23		

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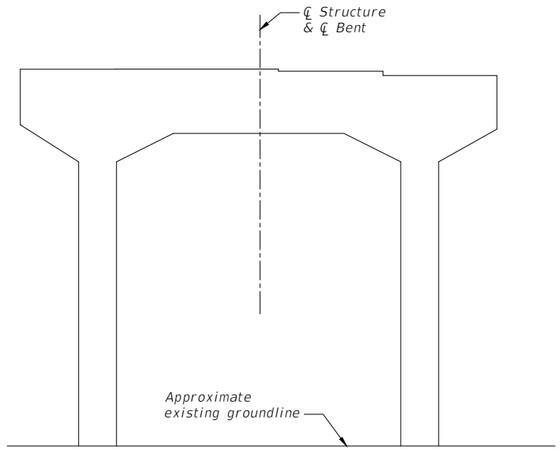
MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
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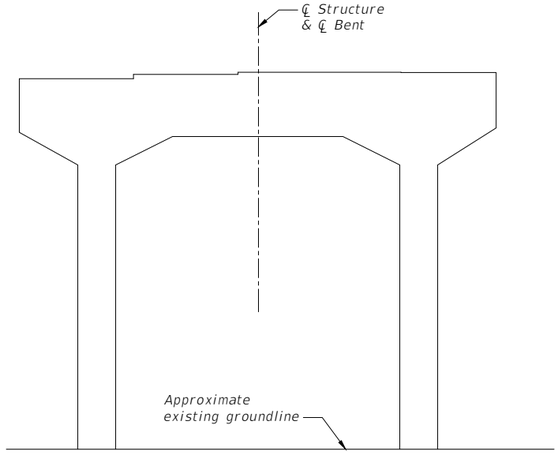
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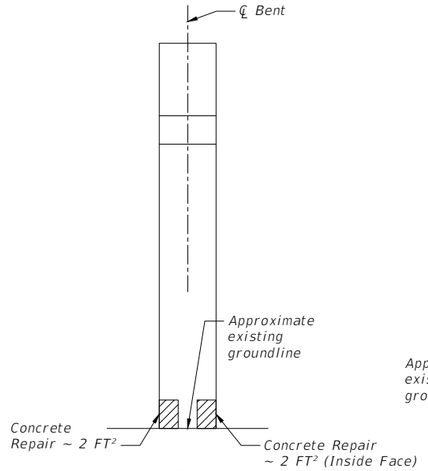
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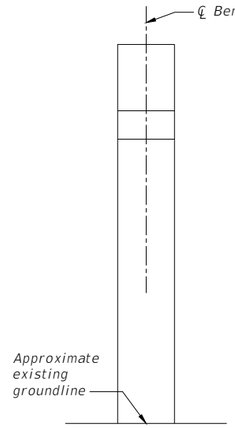
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

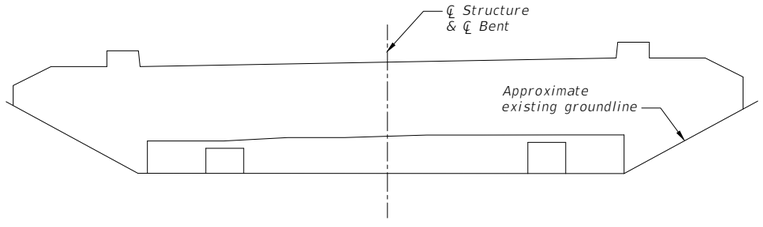


SOUTH END
(Looking North)

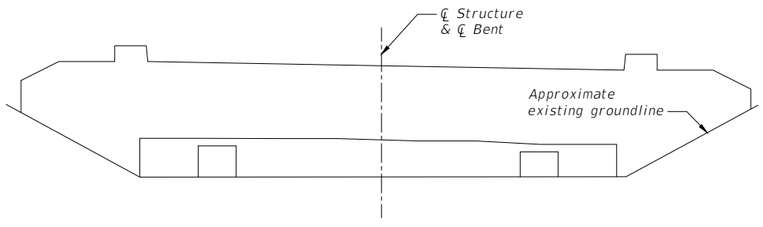


NORTH END
(Looking South)

BENT NO. 4
No Scale



BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 5
No Scale
(Looking East and Ahead on Station)

BRIDGE 04454 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT^2)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD^2)	PENETRATING SEALER (YD^2)	*SACRIFICIAL GALVANIC ANODE (EA)
1			26.0	26.0	
2			70.0	70.0	
3	44.0	11.0	72.0	72.0	16
4	4.0		73.0	73.0	
5			26.0	26.0	
SUBTOTAL	48.0	11.0	267.0	267.0	16

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B24

SUBSTRUCTURE REPAIR LOCATIONS (04454) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04454

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED				N.W.B.	03-16-23
REVISED				J.C.C.	03-10-23
REVISED				J.C.M.	03-10-23
CHECKED					
DRAWN					
DESIGNED					

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11/3/2023 8:29:52 AM

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

DRAWING NO.
28434

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AWARD COPY

NOTES

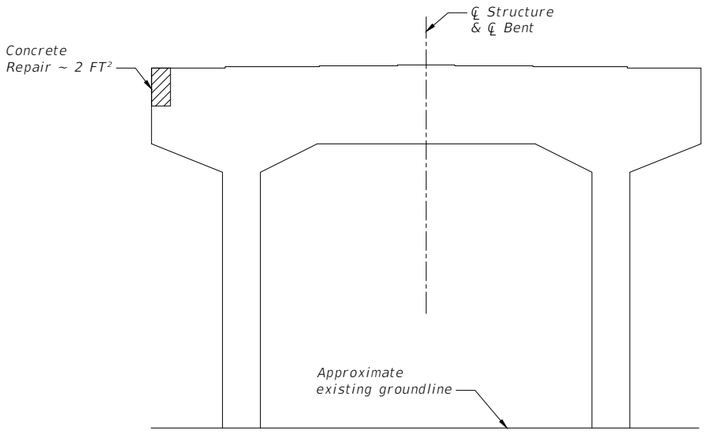
See Sheet No. B4 for substructure repair details and additional information.

Apply corrosion inhibitor and waterproofing surface treatment on all exposed substructure concrete surfaces.

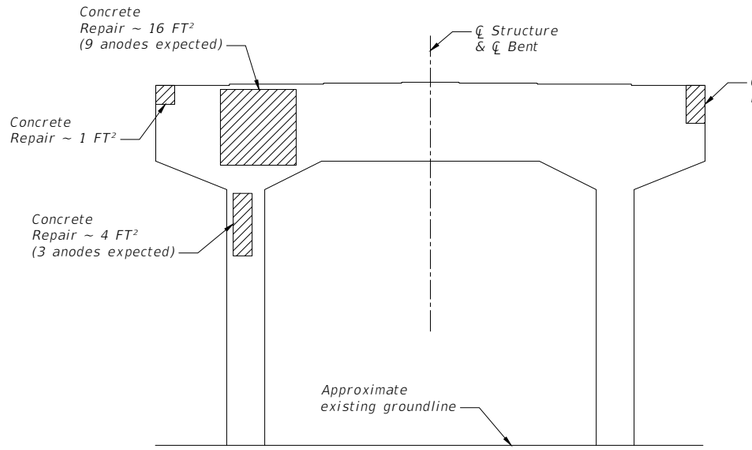
Costs associated with coating exposed steel reinforcement and anchor rods is incidental to other substructure repair items.

Repair locations and quantities were measured in 2023 and are approximate. Final limits are to be verified by the Project Manager.

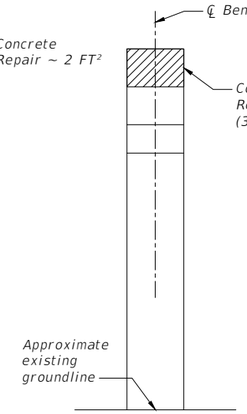
Remove dirt/debris from abutments and cap tops.



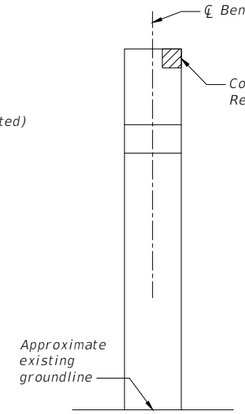
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



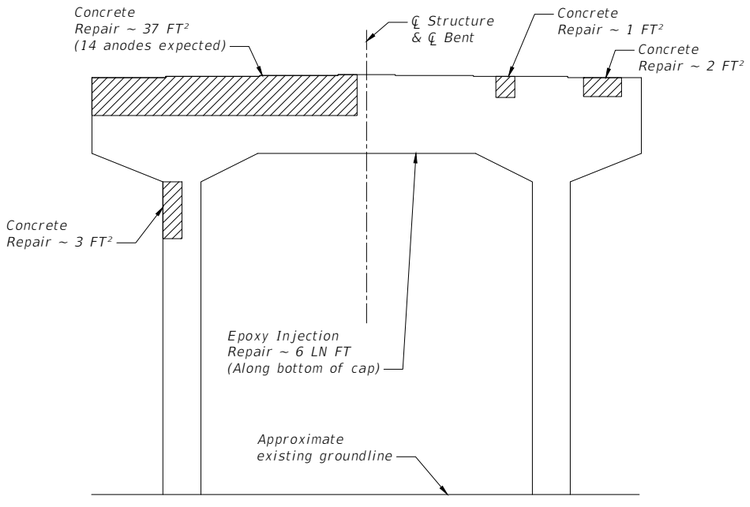
SOUTH END
(Looking North)



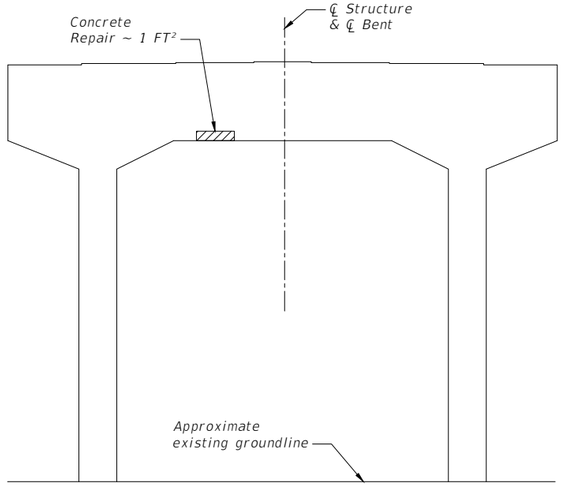
NORTH END
(Looking South)

BENT NO. 2

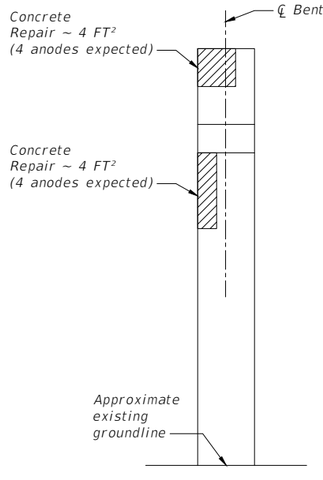
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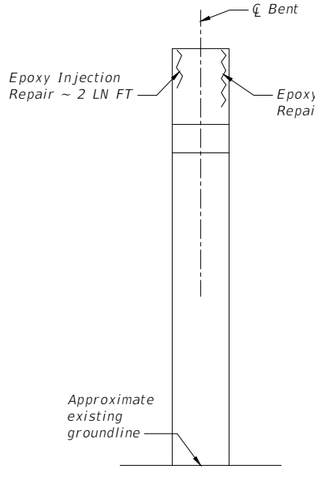
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)



SOUTH END
(Looking North)



NORTH END
(Looking South)

BENT NO. 3

No scale

HDR

SHEET NO.
B25

SUBSTRUCTURE REPAIR LOCATIONS (04457) (SHEET 1 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED						
REVISED						
REVISED						
REVISED						
CHECKED	N.W.B.	03-16-23				
DRAWN	J.C.C.	03-10-23				
DESIGNED	J.C.M.	03-10-23				

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11/3/2023 8:29:57 AM

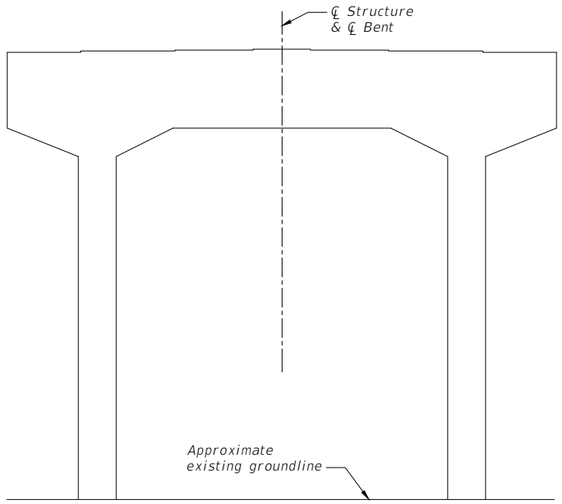
MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
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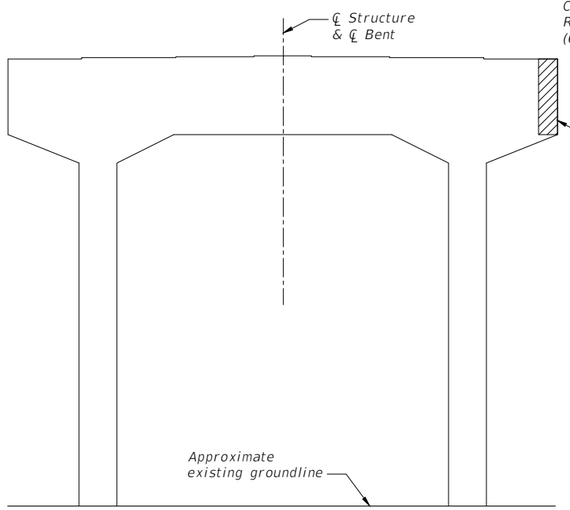
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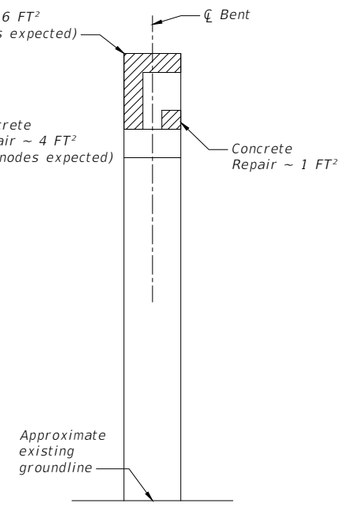
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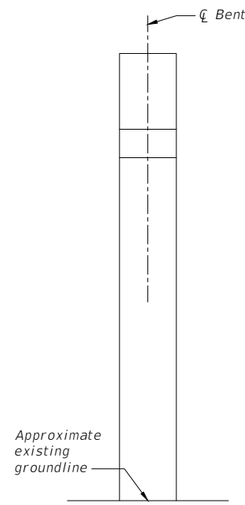
EAST FACE
(Looking West and Back on Station)



WEST FACE
(Looking East and Ahead on Station)

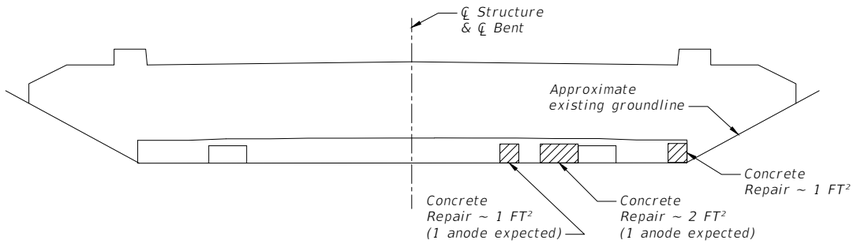


SOUTH END
(Looking North)

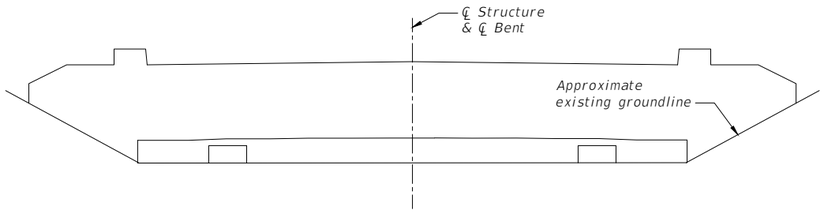


NORTH END
(Looking South)

BENT NO. 4
No Scale



BENT NO. 1
No Scale
(Looking West and Back on Station)



BENT NO. 5
No Scale
(Looking East and Ahead on Station)

BRIDGE 04457 SUBSTRUCTURE REPAIR SUMMARY

BENT NO.	CONCRETE REPAIR (FT^2)	EPOXY INJECTION (LN FT)	CORROSION INHIBITORS (YD^2)	PENETRATING SEALER (YD^2)	*SACRIFICIAL GALVANIC ANODE (EA)
1	4.0		27.0	27.0	2
2	32.0		67.0	67.0	15
3	52.0	11.0	75.0	75.0	22
4	11.0		79.0	79.0	10
5			27.0	27.0	
SUBTOTAL	99.0	11.0	275.0	275.0	49

*NOTE: Sacrificial Galvanic Anode quantities have not been measured. Quantities provided are based on the estimated amount of deep repairs and are approximate. Final anode placement is to be verified by the Project Manager. The anode amount provided is the maximum number of anodes to be used at each bent location.

HDR

SHEET NO.
B26

SUBSTRUCTURE REPAIR LOCATIONS (04457) (SHEET 2 OF 2)

SCALE: As Noted

PROJECT NAME
BUTTE AREA NHS STRUCTURES

MDT STRUCTURE ID
04457

FEDERAL AID PROJECT
NHPB STWD(753)

COUNTY
SILVER BOW

REVISED				N.W.B.	03-16-23	
REVISED				J.C.C.	03-10-23	
REVISED				J.C.M.	03-10-23	9315001brehz03.dwg \ REH016
CHECKED						
DRAWN						
DESIGNED						11/3/2023 8:30:02 AM

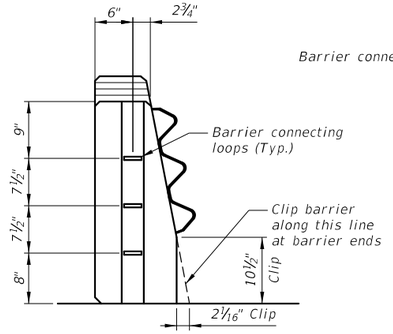
MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

UPN NUMBER
9315001

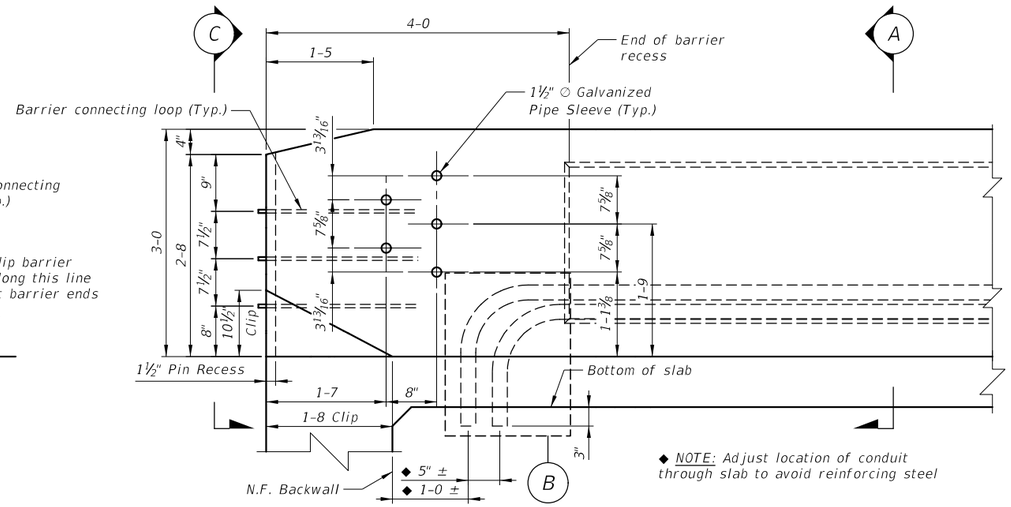
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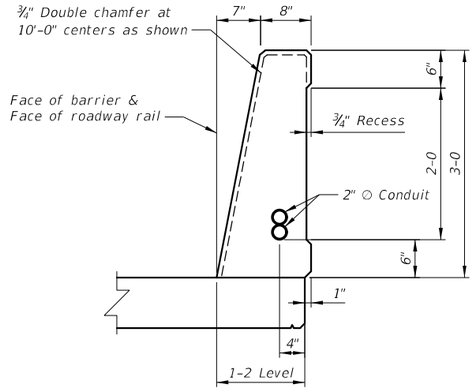
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VIEW C



BARRIER INSIDE ELEVATION



SECTION A

NOTES

PLACEMENT: Do not disturb the deck cure to construct the concrete barrier.

CONCRETE STRENGTH: Do not place construction vehicles or equipment on the deck until the concrete has reached 90% of its specified 28-Day compressive strength or without approval from the Project Manager.

Do not open bridge to traffic for at least 14 days after placement of concrete barrier or until concrete in barrier has reached 90% of its specified 28-Day compressive strength.

CONTROL JOINT: Do not place ¾" double chamfer in the barrier recess or the bottom outside edge of the barrier.

REFLECTOR: Place a white reflector on the top of barrier rail at 30-foot spacing between the barrier ends. See Dtl. Dwg. No. 605-00 for reflector detail.

TOLERANCES: Construct the concrete bridge rail to the same tolerances specified for concrete barrier rail, see Section 564 of the Standard Specifications.

REINFORCING STEEL: See Std. Dwg. No. SBR-SS36R for reinforcing steel locations.

GALVANIZING: Galvanize pipe sleeves in accordance with AASHTO M 111.

RADIUS: A ¾" radius may be substituted for the ¾" chamfers and fillets shown.

PAYMENT: Include all costs associated with the barrier as shown on this sheet in the unit price bid for 36 IN SS Concrete Barrier Rail-Br. See Std. Dwg. No. SBR-SS36R for reinforcing steel payment.

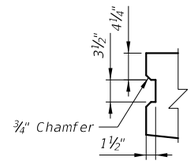
EXCEPTIONS: Use details shown on this drawing only as they apply to the project. Refer to other drawings for variations in these details.

CONDUIT: Omit conduit in any barrier not located at the edge of slab.

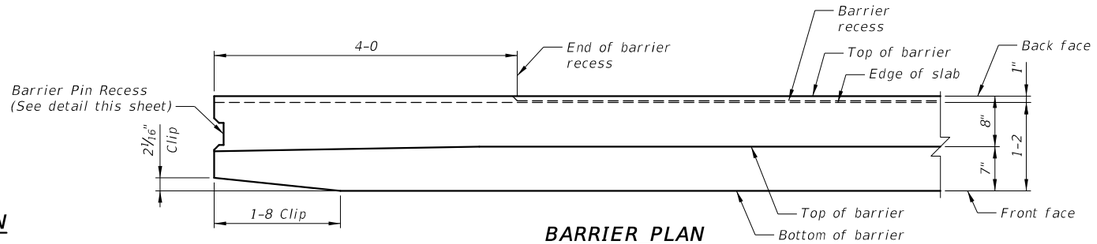
RAIL WEIGHT: For informational purposes only and based on Section A dimensions.
Rail weight = 411 lb/ft
Rail Volume = 2.74 ft3/ft

CRASH TEST: This rail has been evaluated and approved to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-4 criteria.

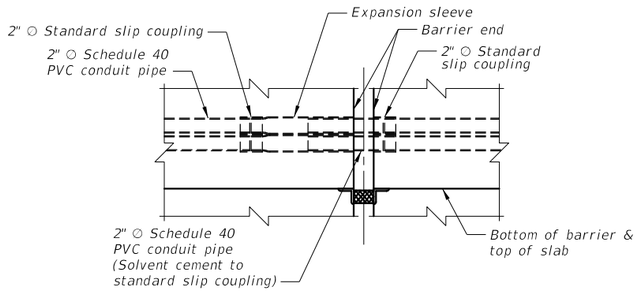
RAIL DESIGN CAPACITY		
	Interior Region	End Region
Rw	100 kips	67 kips
Lc	16'-9"	5'-9"
Mc	106 kip*in/ft	209 kip*in/ft



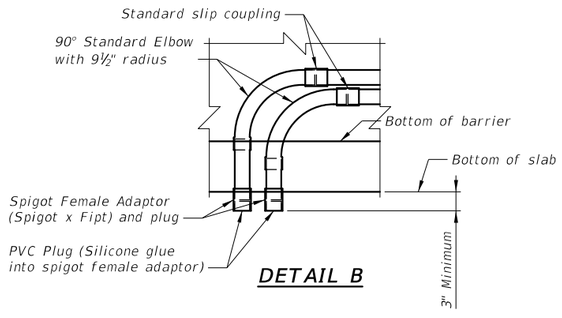
BARRIER PIN RECESS PLAN



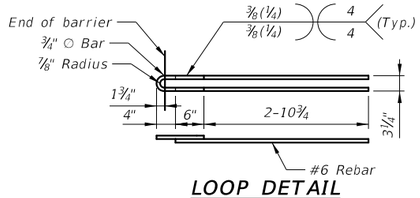
BARRIER PLAN



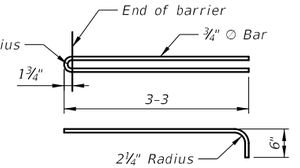
CONDUIT EXPANSION JOINT DETAIL



DETAIL B



LOOP DETAIL



OPTIONAL LOOP DETAIL

NOTE: Use reinforcing steel conforming to ASTM A 706, Grade 60 for rebar being welded to loops.

NOTE: Loop ends and the optional loop detail consist of smooth round bars conforming to AASHTO M 270, Grade 36.

NOTE: Cold bend the loops by using a jig that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.

NOTE: Weld rebar to loops using ⅛" ∅ E8018 rod. Do not tack weld the pieces together prior to welding. Use a certified welder in accordance with the current edition of AWS D1.4. Do not place the welded assembly in the form until it has been inspected.

NOTE: No additional welding is permitted on the smooth round bars or reinforcing steel.

STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36"

No Scale

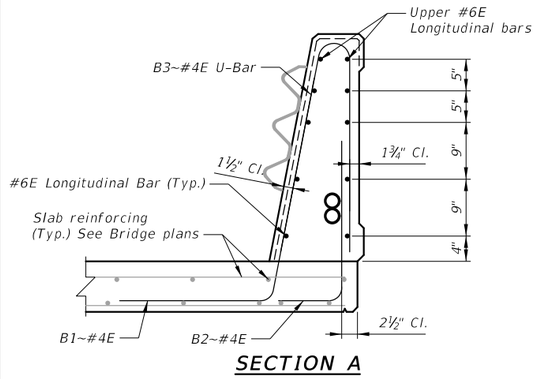
MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

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APPROVED	9-27-18	J.S.O.		
CHECKED	6-28-18	T.W.S.		
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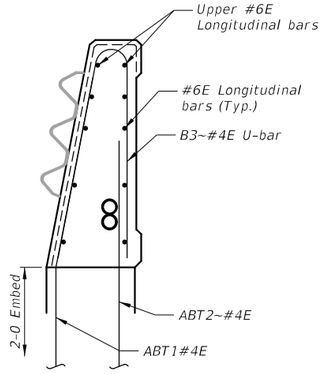
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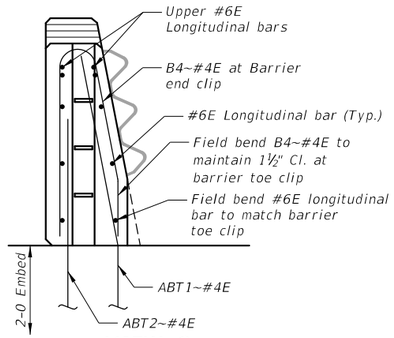
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SECTION A



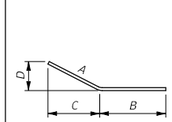
SECTION B



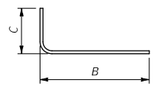
VIEW C

BILL OF REINFORCING STEEL

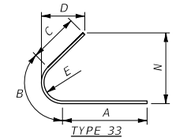
(ALL DIMENSIONS ARE OUT TO OUT)



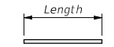
TYPE 28



TYPE 37



TYPE 33



TYPE STR

NOTE: See Bridge Plans for number of bars required and longitudinal bars.

Mark	Size	Type	Length	A	B	C	D	E	G	N
B1	#4E	28	5-0	3-0	2-0	6¾"	2-11¼			
B2	#4E	37	2-11¼		10"	2-1¼				
B3	#4E	33	5-9¼	2-6½	7¼"	2-7½	2-9	2"		11"
B4	#4E	33	5-5¾	2-4¼	8¼"	2-5¼	2-7	2¼"		11¼"
ABT1	#4E	28	4-6½	2-6½	2-0	2-6	5¾"			
ABT2	#4E	STR	3-8							

NOTES

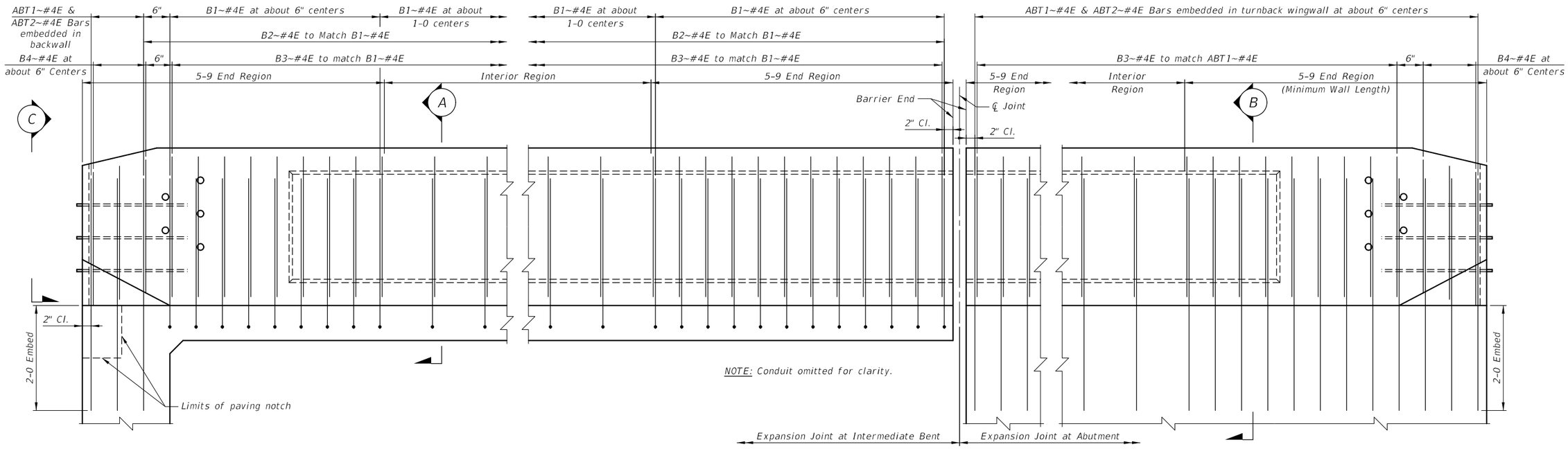
REINFORCING STEEL: All barrier reinforcing steel is epoxy coated.

DETAILS: See Std. Dwg. No SBR-SS36 for barrier details not shown on this drawing.

PAYMENT: Include all costs associated with furnishing and placing reinforcing steel in the barrier in the unit price bid for Reinforcing Steel - Epoxy Coated.

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.

UPPER LONGITUDINAL BARS: Adjust the lap length by approximately 10½" at the tapered ends of the barrier.



SEMI-INTEGRAL ABUTMENT

ABUTMENT OR INTERMEDIATE BENT
WITH EXPANSION JOINT

TURNBACK WINGWALL

BARRIER INSIDE ELEVATION

STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36" REINFORCING

No Scale

MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

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