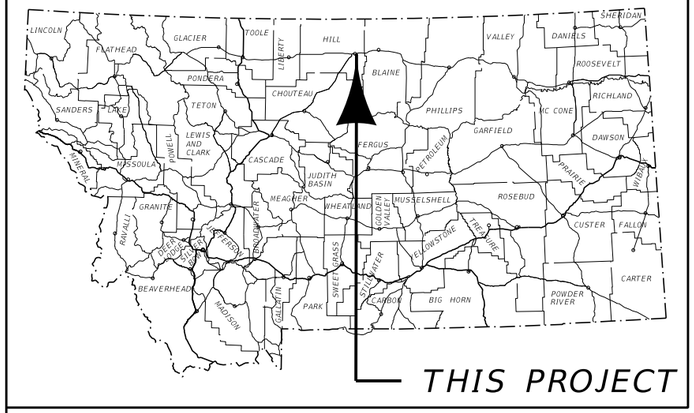
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MONTANA DEPARTMENT OF TRANSPORTATION

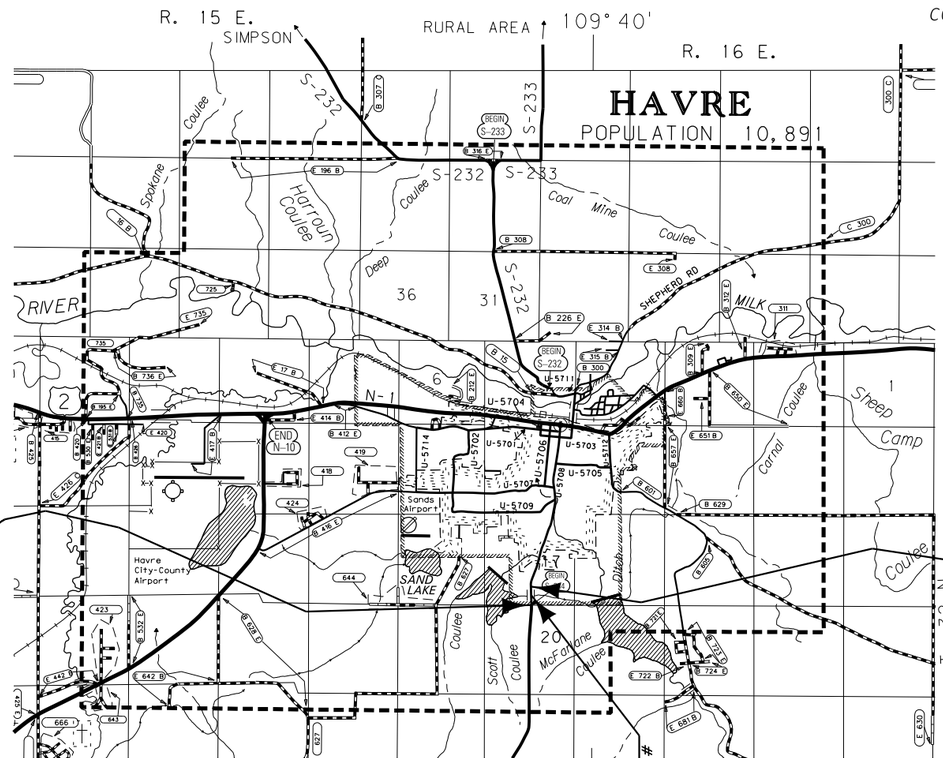
FEDERAL AID PROJECT STPB 234-1(25)2
MINOR BRIDGE REHABILITATION
BRIDGE DECK S-234 S HAVRE
HILL COUNTY

PROJECT DESIGN DATA		
PRESENT 2018	A.D.T. =	1220
LETTING 2022	A.D.T. =	1290
DESIGN 2042	A.D.T. =	1670
	D.H.V. =	210
	TRUCKS =	8.3%
	V. =	60 MPH
	18 KIP ESAL'S =	56
	GROWTH RATE =	1.3%

LETTING DATE - _____

LENGTH 0.1 MILES

SURFACING SOURCES - CONTRACTOR FURNISHED



STA. 535+82.50 ON RS-70(10)

STA. 535+82.50 ON STPB 234-1(25)2

STA. 538+53.00 # MBI STRUCTURE ID S002340000+03411 R.P. 0+03.42

STA. 541+23.500N STPB 234-1(25)2

STA. 541+23.50 ON RS-70(100

RP 1.8 TO RP 1.9

THIS CONTRACT

MONTANA DEPARTMENT OF TRANSPORTATION

MICHAEL T. TOOLEY
DIRECTOR OF TRANSPORTATION

APPROVED BY:

BRIDGE ENGINEER

MONTANA
STEPHANIE L F BRANDENBERGER
13094PE
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Stephanie Brandenberger 1/25/2021
D351A85FB36C411... DATE

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	
I.C.	
P. E.	STPB 234-1(24)2

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9437000rdtl001.dgn	DESIGNED BY	J.S. DUNBAR	2/5/2020
2		11/25/2020	REVIEWED BY	R.J. SNYDER	
		8:38:41 AM CPS - U216C	CHECKED BY	J. SABOL	

ROAD PLANS

UPN 9437000

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ROAD PLANS	SHEET NO.
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NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 1/2" AGG.	= 5.8% OF PL.MIX BIT.SURF.
HYDRATED LIME	= 1.4% OF PL.MIX BIT.SURF.
ASPHALT CEMENT	= 3.0% OF RECYCLED PL.MIX (50% RAP)
HYDRATED LIME	= 1.4% OF RECYCLED PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD

STATIONING - REFERENCE POSTS

STATIONING RUNS SOUTH TO NORTH AND REFERENCE POSTS RUN NORTH TO SOUTH.

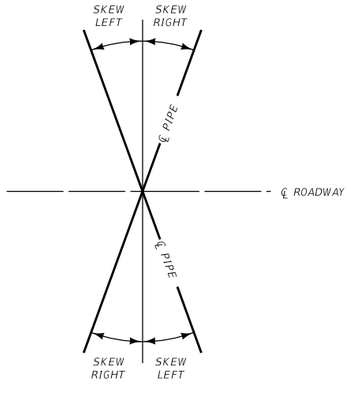
UTILITIES

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

WETLANDS

WETLANDS MAY EXIST ADJACENT TO THE ROADWAY AND BEYOND THE PROJECT LIMITS. A WETLAND DELINEATION HAS NOT BEEN COMPLETED FOR THIS PROJECT. IMPACTS TO WETLAND AREAS ARE NOT ANTICIPATED IN ASSOCIATION WITH THE PROPOSED WORK. NO PERMITS HAVE BEEN OBTAINED. ANY ACTION IMPACTING WETLAND AREAS WITHOUT THE APPROPRIATE PERMITTING IS THE RESPONSIBILITY OF THE CONTRACTOR.

SKEW DIAGRAM



LINEAR AND LEVEL DATA

LENGTH OF ROADWAY	2 LANE RURAL	400.00 ft
LENGTH OF BRIDGE	2 LANE RURAL	100.00 ft
LENGTH OF BRIDGE APPROACH SLAB	2 LANE RURAL	41.00 ft
TOTAL LENGTH OF STPB 234-1(25)2		541.00 ft

BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM NAD 83- 2011

LEVEL DATUM SOURCE

NAVD 88 (GNSS DERIVED ELEVATIONS USING GEOID 12A AND HOLDING BMS)
OR (ELEVATIONS DERIVED FROM DIFFERENTIAL LEVELS HOLDING BMS UPN5953000 0A AND 0B)

CENTERLINE ALIGNMENT COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
533+74.20	POT	1,558,583.910	1,924,433.270	
538+08.90	POT	1,559,018.583	1,924,428.427	
541+11.92	PC	1,559,321.583	1,924,425.270	
545+03.79	PI	1,559,713.435	1,924,421.188	
548+94.44	PT	1,560,102.194	1,924,470.495	
556+51.86	POT	1,560,853.591	1,924,565.796	

GPK NAME: J0B943.GPK CHAIN NAME: ASB PROFILE NAME: **PROF**

GPK NAME: JOB943.GPK CHAIN NAME: ASB PROFILE NAME: **PROF**

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CONTROL DIAGRAM

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
0A	1,559,895.755	1,924,383.655	2593.86**	FOUND MDT ALUMINUM CONTROL CAP STAMPED "0A 1996", AT MP 1.814, SET FOR CONTROL CN2837, STPS 234-1(4)8, HAVRE-SOUTH, 66.93 FT WEST OF CENTERLINE OF HIGHWAY 234, 6.6 FT WEST OF FENCE, 3.3 FT EAST OF WITNESS POST.
0B	1,557,069.137	1,924,386.985	2657.70**	FOUND MDT ALUMINUM CONTROL CAP STAMPED "0B 1996", 3820 FT SOUTH OF MP 0, 67 FT WEST OF CENTERLINE OF HIGHWAY 234, 6 FT WEST OF FENCE, 3 FT EAST OF WITNESS POST. SET FOR CONTROL CN2837, STPS 234-1(4)8, HAVRE-SOUTH.
A9437	1,559,116.949	1,924,360.958	2610.61	SET MDT ALUMINUM CAP ON 5/8 INCH REBAR STAMPED "A9437 2018" DRIVEN FLUSH, 68.5 FT WEST OF CENTERLINE US234 MP 1.9, 2.0 FT EAST OF WITNESS POST.
B9437	1,559,000.466	1,924,489.882	2616.74	SET MDT ALUMINUM CAP ON 5/8 INCH REBAR STAMPED "B9437 2018" DRIVEN FLUSH, 60 FT EAST OF US234 MP 1.924, 1.5 FT WEST OF WITNESS POST.
X277RESET	1,559,238.117	1,924,513.087	2622.74	FOUND BRASS CAP PER NGS DATA SHEET, 70 FT EAST OF US234 MP 1.89.

PROJECT NUMBER: STPB 234-1(25)2
PROJECT NAME: BRIDGE DECK S-234 S HAVRE
UPN: 9437000

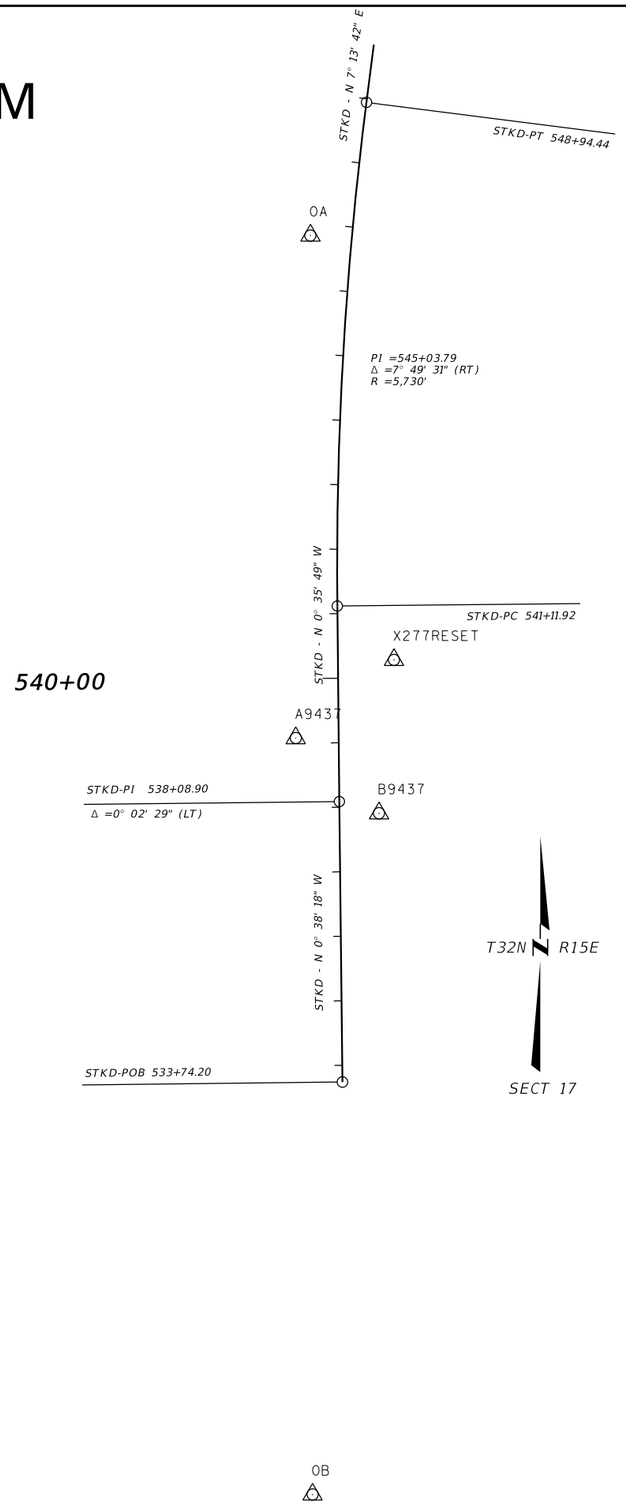
CSF: 0.99962092
GEOID12A

MARK	NORTHING	EASTING	ELEV. *
0A	1559895.755	1924383.655	2593.86**
0B	1557069.137	1924386.985	2657.70**
A9437	1559116.949	1924360.958	2610.61
B9437	1559000.466	1924489.882	2616.74
X277RESET	1559238.117	1924513.087	2622.74

** VALUES SHOWN ON THIS SURVEY SUPERSEDE ALL PREVIOUSLY PUBLISHED VALUES.

NOTES: HORIZONTAL STATE PLANE COORDINATES ARE INTERNATIONAL FEET (NAD83-2011)
ELEVATIONS ARE US SURVEY FEET (NAVD88)

* ELEVATIONS ARE DERIVED FROM DIFFERENTIAL LEVELS HOLDING THE NGS ELEVATION AT X277RESET



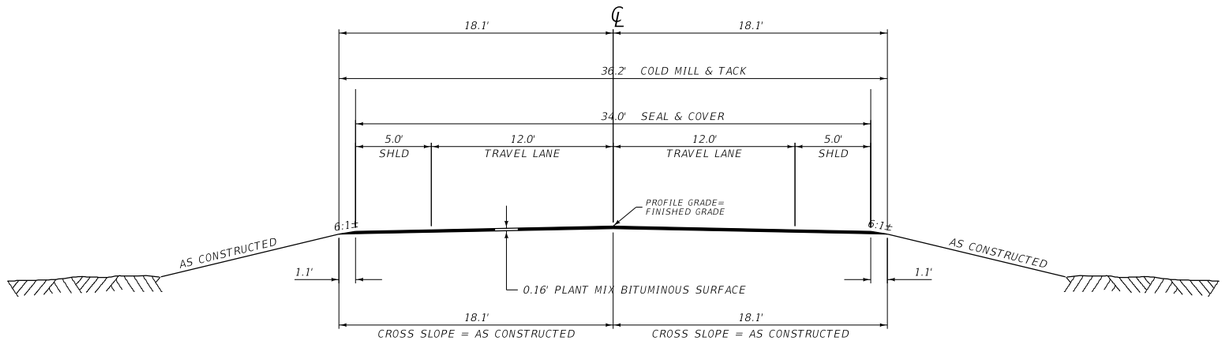
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2		11/25/2020	REVIEWED BY	R.J. SNYDER				
		8:38:54 AM CPS - U216C	CHECKED BY	J. SABOL		HILL COUNTY	CSF=0.99962092 UPN 9437000	SHEET 3

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TYPICAL SECTION NO. 1

MAINLINE

535+82.50	TO 537+82.50	TYPICAL SECTION NO, 1
539+23.50	TO 541+23.50	TYPICAL SECTION NO. 1



QUANTITIES									
UNIT	AGGREGATE						UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX							SEAL	TACK
AREA square feet		5.62					square yards PER STATION		378	402
cubic yards PER STATION		20.8					tons PER STATION		0.67	20
tons PER STATION		40.1								
square yards PER STATION	378									

3	MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9437000rdtyp001.dgn	DESIGNED BY J.S. DUNBAR		ROAD PLANS		BRIDGE DECK S-234 S HAVRE	STPB 234-1(25)2
		11/25/2020	REVIEWED BY R.J. SNYDER					
1		8:39:07 AM CPS - U216C	CHECKED BY J. SABOL		HILL COUNTY		CSF=0.99962092 UPN 9437000	SHEET 4

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SUMMARY

GUARDRAIL

STATION		linear feet						each				REMARKS
		REMOVE GUARDRAIL		RESET TEMPORARY BARRIER RAIL	TEMPORARY BARRIER RAIL	INTERSECTING ROADWAY TERMINAL SECTION		RESET TEMPORARY IMPACT ATTENUATOR	TEMPORARY IMPACT ATTENUATOR	BRIDGE APPROACH SECTION TYPE 3		
FROM	TO	LEFT	RIGHT			LEFT	RIGHT			LEFT	RIGHT	
NEW RAIL												
537+03.00	538+03.00					37.5	37.5			1	1	8.0' RADIUS
539+03.00	540+03.00					37.5	37.5			1	1	8.0' RADIUS
538+03.00	539+03.00			260.0	260.0			2	2			
REMOVE RAIL												
537+03.00	538+03.00	50.0	50.0									
539+03.00	540+03.00	50.0	50.0									
SUBTOTAL		100.0	100.0	260.0	260.0	75.0	75.0	2	2	2	2	
TOTAL		200.0		260.0	260.0	150.0		2	2	4		

SURFACING & ADDITIONAL SURFACING

STATION		linear feet				FOR	AGGREGATE		BITUMINOUS MATERIAL		REMARKS
		GROSS	NET	+	-		square yards	tons	tons	gallons	
FROM	TO						COVER TYPE 1	PLANT MIX BIT. SURF. GR. S - 1/2 IN COMM 64 28"	SEAL CHFRS-2	EMULS. ASPH.-TACK	
535+82.50	541+23.50	541.00	400.00		141.00	BRIDGE & APP. SLABS	1,512	160	2.7	80	TYPICAL SECTION NO. 1
SUBTOTAL		~	400.00	~	~		1,512	160	2.7	80	

COLD MILLING

STATION		sq. yards	REMARKS
		COLD MILLING	
FROM	TO	0.10-0.16 ft	
535+82.50	537+82.50	805	
539+23.50	541+23.50	805	
SUBTOTAL		1,610	
TOTAL		1,610	

SEE DETAILS

PAVEMENT MARKINGS

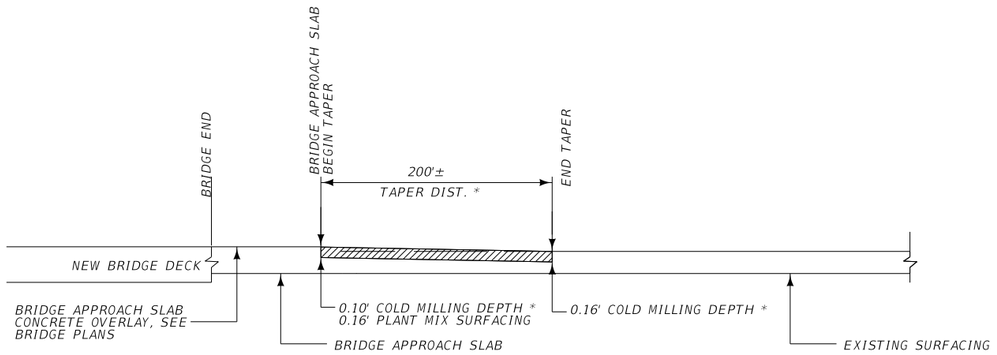
ITEM	UNIT	INTERIM APPLICATION	FINAL APPLICATION	TOTAL
STRIPING - WHITE EPOXY	gallon		5	5
STRIPING - YELLOW EPOXY	gallon		5	5
WORDS & SYMBOLS - WHITE EPOXY	gallon			0
TEMPORARY STRIPING	LNFT			541
FINAL SWEEP AND BROOM	mile		0.1	0.1

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COLD MILLING DETAILS

* ACTUAL TAPER DISTANCES AND DEPTHS TO BE DETERMINED DURING CONSTRUCTION BY THE PROJECT MANAGER.

CONNECTION TO PTW



COLD MILLING DETAILS

(NO SCALE)

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9437000rddet001.dgn 11/25/2020 8:39:32 AM CPS – U2160	DESIGNED BY REVIEWED BY CHECKED BY	J.S. DUNBAR R.J. SNYDER J. SABOL	ROAD PLANS HILL COUNTY	BRIDGE DECK S-234 S HAVRE CSF=0.99962092	UPN 9437000	STPB 234-1(25)2 SHEET 6

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537+68.70
U.G. TEL. X-ING
2.55' COVER
1.5' TO PROPOSED GUARDRAIL POST

POB 533+74.20

PI 538+08.90

540+00

P.I. 538+08.9
0°02'29" RT

TEST HOLE 1

TEST HOLE 2

TEL

FO

N 0° 38' 18" W

N 0° 35' 49" W

PI =545+03.79
Δ =7° 49' 31" (RT)
R =5,730'
T =391.87'
L =782.53'
E =13.39'

SEC.20

T 32N R.16E

SEC.17

T 32N R.16E

SLOW PITCH COMPLEX

SCOTT COULEE
DIVERSION CHANNEL

537+10
28"SX20"R RCSP
SKEWED 5° RIGHT

PC 541+11.92

STA. 535+82.50
BEG. STPB 234-1(25)2

STA. 541+23.50
END STPB 234-1(25)2

537+82.5 TO 538+02.5
TYPE B APPROACH SLAB
IN PLACE

539+03.5 TO 539+23.5
TYPE B APPROACH SLAB
IN PLACE

534+74.20
2,622.77

BE 538+03.0

BE 539+03.0

-1.855%

-1.680%

-1.157%

536+00.00
EL.2,618.58

537+00.00
EL.2,616.90

2606.93

2607.40 H.W.

2605.78

37.5' X 100'
CONCRETE BRIDGE
IN PLACE

543+41.50
EL.2,609.48

-1.157%

-5.231%

400' VC

550+67.87
2,587.17

2630
2620
2610
2600
2590

535+00
540+00
545+00

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9437000rdplp001.dgn	DESIGNED BY J.S. DUNBAR		ROAD PLANS	BRIDGE DECK S-234 S HAVRE	STPB 234-1(25)2
2		11/25/2020	REVIEWED BY R.J. SNYDER		HILL COUNTY	CSF=0.99962092 UPN 9437000	SHEET 7
		8:39:55 AM CPS - U2160	CHECKED BY J. SABOL				

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ASSOCIATED PROJECT AGREEMENT NUMBERS	
P. E.	STPB 234-1(24)2

BRIDGE IDENTIFICATION	
MDT STR ID	NBI NUMBER
06422	S00234000+03411

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT STPB 234-1(25)2

BRIDGE DECK S-234 S HAVRE

HILL COUNTY

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

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
BRIDGE DRAWINGS		
B1	24281	LIST OF DRAWINGS & ESTIMATED BRIDGE PLAN QUANTITIES
B2	24282	GENERAL NOTES & MISCELLANEOUS DETAILS
B3	24283	PHASE 1 DECK REMOVAL AND DECK REPLACEMENT
B4	24284	PHASE 2 DECK REMOVAL AND DECK REPLACEMENT
B5	24285	PHASE 2 CLOSURE POUR, DIAPHRAGM REPLACEMENT & COMPLETED DECK REPLACEMENT
B6	24286	DECK REINFORCEMENT PLACEMENT
B7	24287	DIAPHRAGM REINFORCING, HAUNCH REINFORCING, SLAB CONSTRUCTION JOINT & BILL OF REINFORCING STEEL
B8	24288	DECK REINFORCING PLACEMENT PLAN, CAMBER DIAGRAM & DEAD LOAD DEFLECTION TABLE

DWG. NO.	TITLE
STANDARD DRAWINGS	
SBR-0R42 (APPROVED 9-17-19)	STANDARD BRIDGE RAIL TYPE OPEN RAIL 42"
SBR-0R42-PP (APPROVED 9-17-19)	STANDARD BRIDGE RAIL TYPE OPEN RAIL 42" PARAPET
AS-BUILT DRAWINGS	
10905	AS-BUILT GENERAL LAYOUT
10907	AS-BUILT BENT NO. 1 & NO. 2
10908	AS-BUILT ERECTION PLAN
SL-1 (REVISED 12-29-72)	STANDARD SLAB, CURB, DIAPHRAGM & END POST DETAILS
B-4 (REVISED 3-31-72)	STANDARD PRESTRESSED CONCRETE BEAMS TYPE IV
SBR-T5 (REVISED 12-29-72)	STANDARD STEEL BRIDGE RAIL TYPE NO. 5
Std. Dwg. 18 (Effective 3/1/72)	STANDARD CONCRETE APPROACH SLAB TO STRUCTURES

ESTIMATED BRIDGE PLAN QUANTITIES

FEATURE INTERSECTED	REFERENCE POINT	MDT STRUCTURE I.D. NUMBER	NBI STRUCTURE I.D. NUMBER	GENERAL LAYOUT DWG. NUMBER	CONSTRUCTION PHASE	REMOVE DECK (YD^2)	CONCRETE-CLASS STRUCTURE LOW SLUMP (YD^3)	TRANSVERSE DECK GROOVING (YD^2)	REINFORCING STEEL - EPOXY COATED (LB.)	BRIDGE DECK MILLING (YD^2)	REMOVE GUARD ANGLE (LN FT)	* CONCRETE CLASS OVERLAY (YD^3)	EXPANSION JOINT - PRECOMPRESSED (LN FT)	42 IN OPEN RAIL PARAPET - BR - CSC (EACH)	42 IN OPEN RAIL - BR - CSC (LN FT)	MODIFY BRIDGE APPROACH SLAB (EACH)
SCOTT'S COULEE	1+0.923	06422	S00234000+03411	10905	PHASE 1	252.1	45.5	220.1	11885	97.1	87.0	6.3	32.5	2	92.1	2
					PHASE 2	195.9	58.3	328.2	13077	75.0	67.0	8.1	42.5	2	92.1	2
TOTAL						448.0	103.8	548.3	24962	172.1	154.0	14.4	75.0	4	184.2	4

* Concrete - Class Overlay is based on an average deck removal depth of 3" to account for surface irregularities and the removal of additional unsound concrete below the nominal removal depth shown on plans.

SHEET NO. B1

LIST OF DRAWINGS & ESTIMATED BRIDGE PLAN QUANTITIES

REVISED	REVISED	REVISED	REVISED	CHECKED	DRAWN	DESIGNED
				10-5-20	10-5-20	6-3-20

D.C.M. P.H.Jr. L.M.M.

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MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

11/25/2020 8:40:05 AM

UPN NUMBER 9437000

DRAWING NO. 24281

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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 current version of the Standard and Supplemental Specifications for Road and Bridge Construction, adopted by the Montana Department of Transportation, applies.

The design was prepared in accordance with AASHTO LRFD Bridge Design Specifications, Eighth edition 2017, with standard HL-93 loading.

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

Replace existing reinforcing steel damaged during construction that is called out to remain in place at no additional cost to the State.

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

If any longitudinal slab reinforcing does not extend to within 2" of the new slab end at the joint, lap splice new reinforcing of the same bar size and long enough to meet the minimum lap indicated on this sheet, and provide 1" clear to the new slab end. Include all costs associated with furnishing and installing the required additional reinforcing in the unit price bid for Reinforcing Steel or Reinforcing Steel – Epoxy Coated.

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

DIMENSIONS: All dimensions are in feet and inches except as noted. 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 COVER: Unless specified otherwise on the drawings, provide 2"minimum concrete cover measured from the face of the concrete to the face of any reinforcing steel, except as noted below:

Bottom of Slab	1"
Top of Slab	2 1/2"
Bottom of Abutment Caps	3"
Concrete Barriers and Curbs	1 1/2"

Concrete cover to any tie bar is 1/2" less than what is listed above.

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

CONTROL SURVEY: Establish a control elevation at the bridge before removing or milling the deck and approach slabs.

BRIDGE PLANS: Existing bridge plans are available upon request from Montana Department of Transportation.

TEMPORARY BARRIER: See road plans for additional information. Do not use type 2 or 3 anchors to attach the temporary barrier to the new deck.

EXISTING BRIDGE RAIL: Include the cost to remove the existing bridge rail in the unit price bid for Remove Deck.

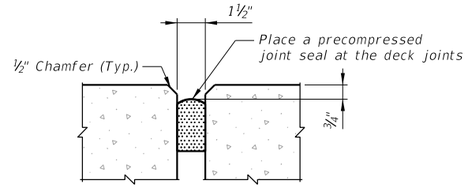
REINFORCING STEEL PROTECTION: Do not permit epoxy coated reinforcing steel to be exposed to sunlight in excess of 60 calendar days.

CONCRETE STRENGTH: Use f'c = 4000 p.s.i. for Concrete – Class Structure Low Slump.

42 INCH OPEN RAIL – BR: Field measure the actual longitudinal finished distance between the bridge rail parapets. Use the dimensions on the Open Rail 42" standard drawings to determine the bridge rail post spacings. Provide 11 equal spaces (a total of 12 posts, each side) between the steel end posts. The estimated distance between the bridge rail posts is 8.0 feet. Fabricate the 42 inch Open Rail hardware to fit the constructed post spacing.

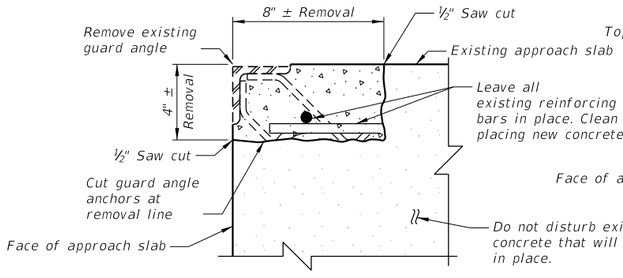
EXISTING DIAPHRAGMS: Include the cost to remove the existing diaphragms in the unit price bid for Remove Deck.

BARRIER END: See Special Provisions for barrier end details to include both Type 3 and Std. Thrie Beam Bolt patterns.

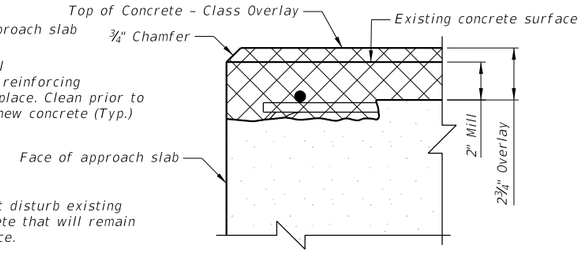


PRECOMPRESSED JOINT SEAL DETAIL
Scale ~ 3" = 1'-0"

NOTE: Install joint seal per manufacturer's instructions. Include all costs associated with furnishing and installing joint seal in the unit bid for Expansion Joint – Precompressed.

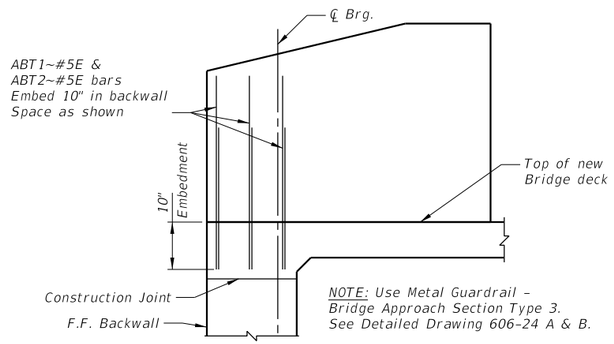


EXISTING GUARD ANGLE REMOVAL
NO SCALE

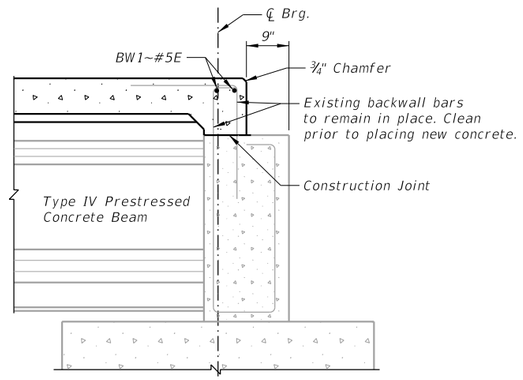


NEW CONCRETE OVERLAY AT GUARD ANGLE REMOVAL
NO SCALE

NOTE: Include the cost of any approach pavement subgrade removal or formwork required for the guard angle removal and concrete placement in the unit price bid for Remove Guard Angle.



MODIFIED PARAPET REINFORCING DETAIL
Scale ~ ¾" = 1'-0"



SECTION AT ABUTMENT
Scale ~ ¾" = 1'-0"

NOTE: Slab reinforcing omitted for clarity.
NOTE: See Sheet No. B7 for Bill of Reinforcing Steel.

SHEET NO. B2

GENERAL NOTES & MISCELLANEOUS DETAILS

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED				D.C.M.	
REVISED				P.H.Jr.	
REVISED				L.M.M.	
REVISED	CHECKED	10-5-20			
	DRAWN	10-6-20			
	DESIGNED	6-3-20			

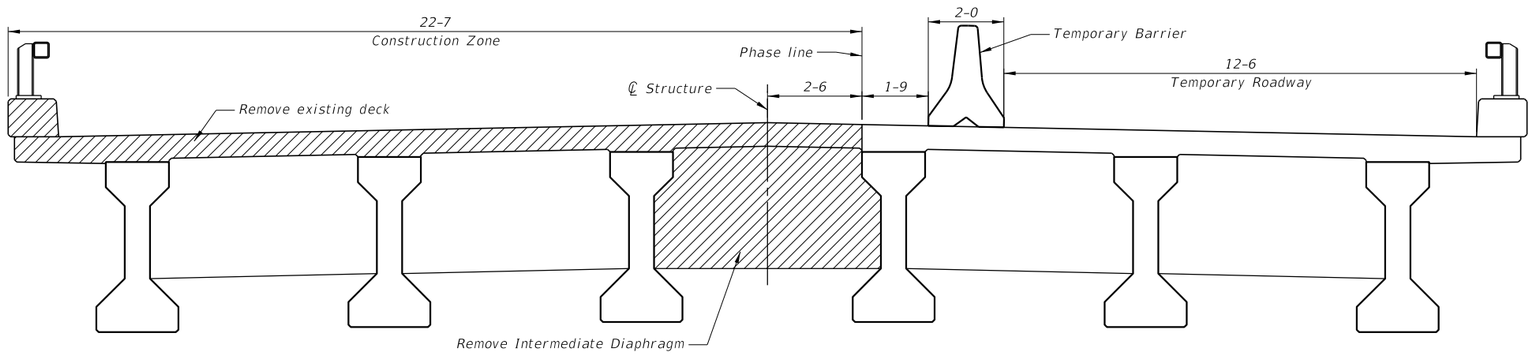
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BRIDGE BUREAU
MONTANA DEPARTMENT OF TRANSPORTATION

UPN NUMBER
9437000

DRAWING NO.
24282

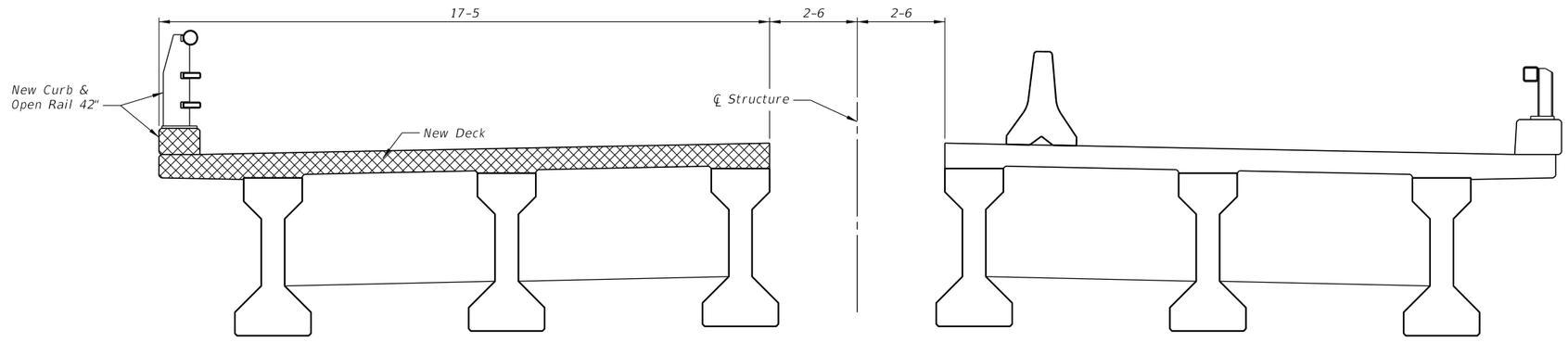
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PHASE 1 - DECK REMOVAL

SCALE ~ ½" = 1'-0"
Looking Ahead on Line



PHASE 1 - DECK REPLACEMENT

SCALE ~ ½" = 1'-0"
Looking Ahead on Line

SHEET NO.
B3

PHASE 1
DECK REMOVAL AND
DECK REPLACEMENT

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED							
REVISED							
REVISED							
REVISED							
CHECKED	10-5-20	D.C.M.					
DRAWN	10-6-20	P.H.Jr.					
DESIGNED	11-21-19	L.M.M.					

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

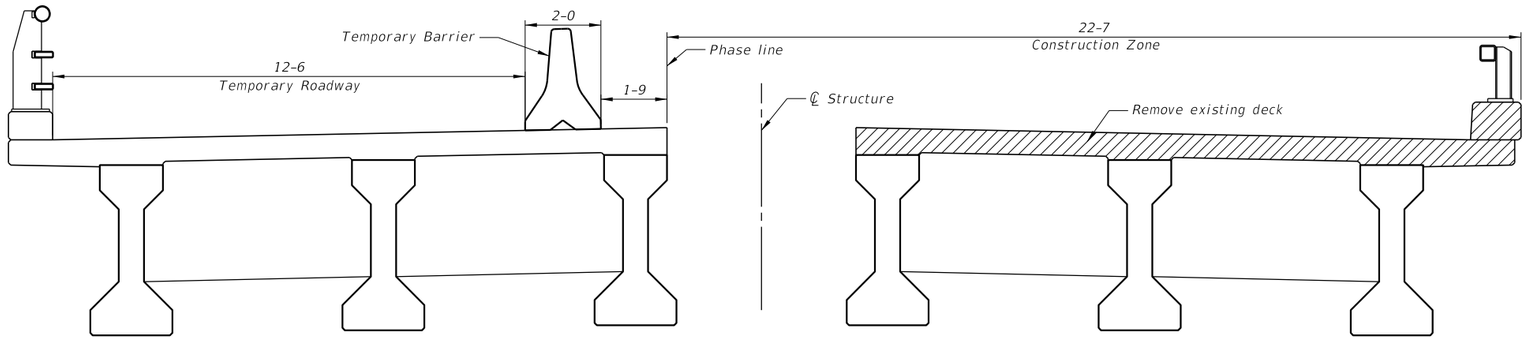
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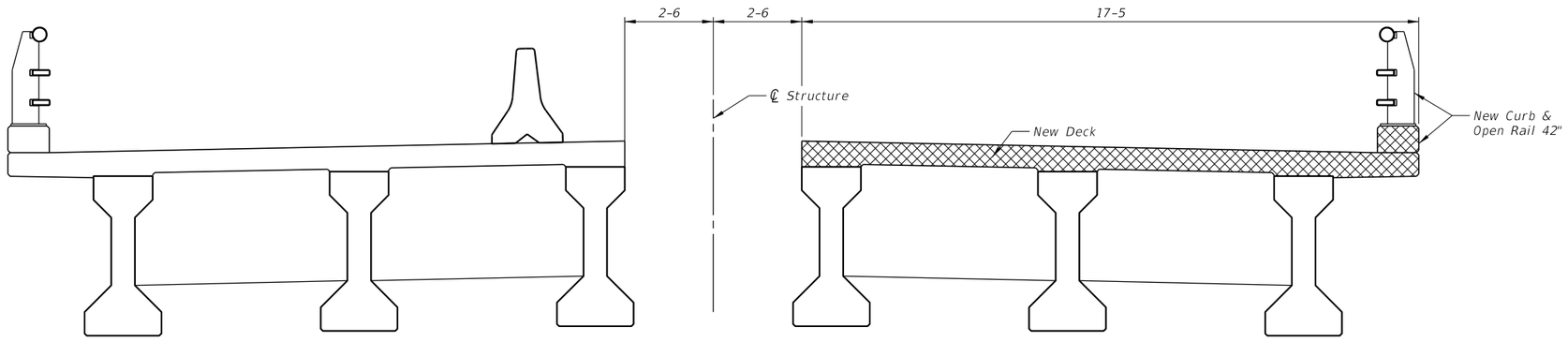
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PHASE 2 - DECK REMOVAL

SCALE ~ ½" = 1'-0"
Looking Ahead on Line



PHASE 2 - DECK REPLACEMENT

SCALE ~ ½" = 1'-0"
Looking Ahead on Line

SHEET NO.
B4

PHASE 2
DECK REMOVAL AND
DECK REPLACEMENT

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED				D.C.M.	
REVISED				P.H.Jr.	
REVISED				L.M.M.	
REVISED				CHECKED	10-5-20
				DRAWN	10-6-20
				DESIGNED	11-21-19

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

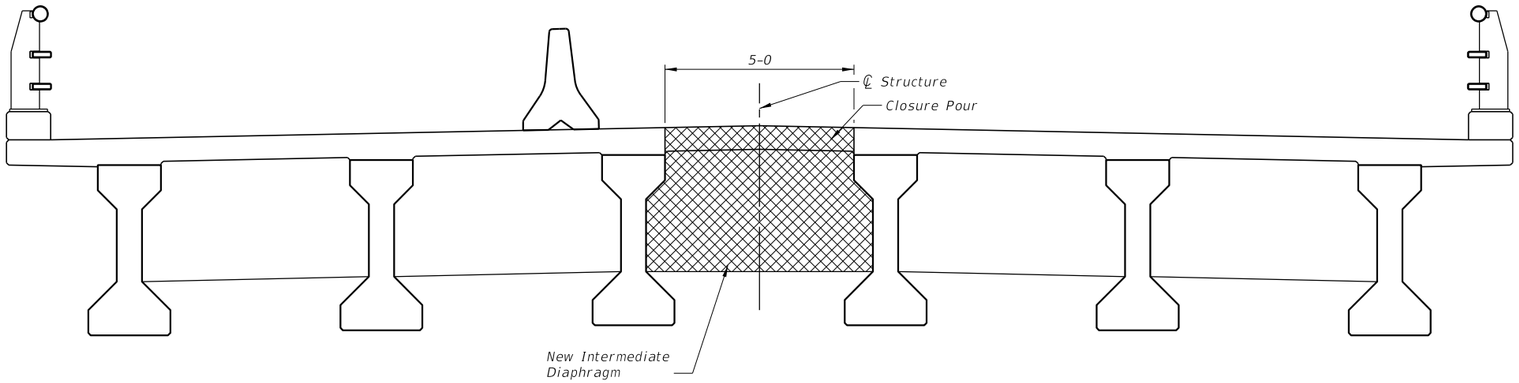
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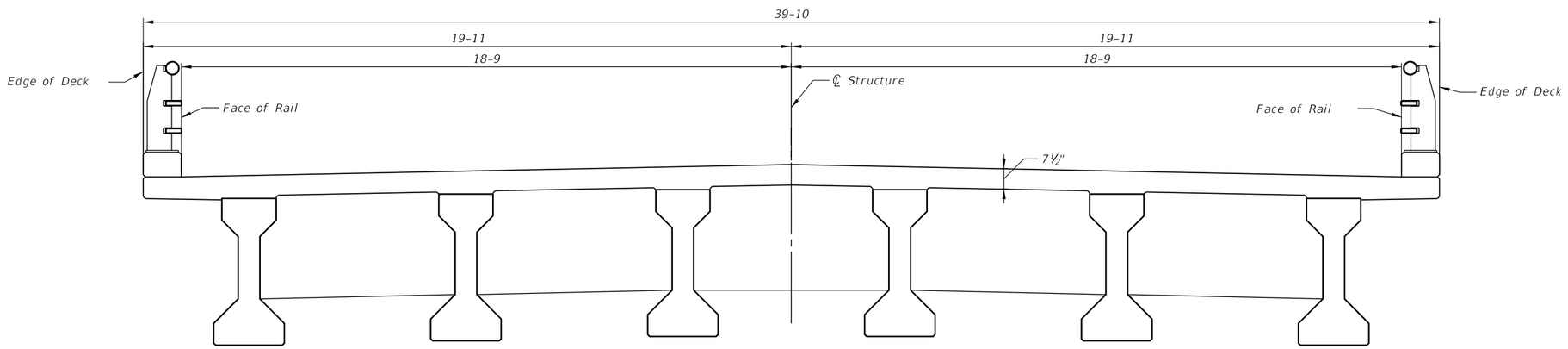
AWARD COPY



PHASE 2 - CLOSURE POUR & DIAPHRAGM REPLACEMENT

SCALE ~ ½" = 1'-0"

Looking Ahead on Line



COMPLETED DECK REPLACEMENT

SCALE ~ ½" = 1'-0"

Looking Ahead on Line

SHEET NO. B5

PHASE 2 CLOSURE POUR, DIAPHRAGM REPLACEMENT & COMPLETED DECK REPLACEMENT

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED						
REVISED						
REVISED						
REVISED						
CHECKED	10-5-20	D.C.M.				
DRAWN	10-6-20	P.H.Jr.				
DESIGNED	11-21-19	L.M.M.				

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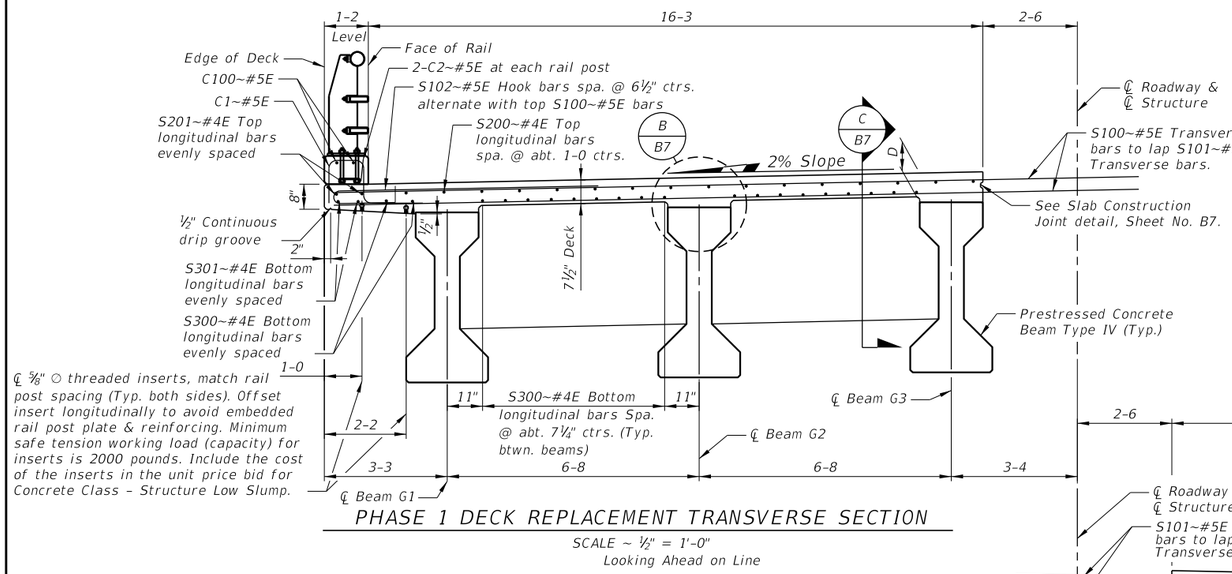
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BRIDGE BUREAU

UPN NUMBER
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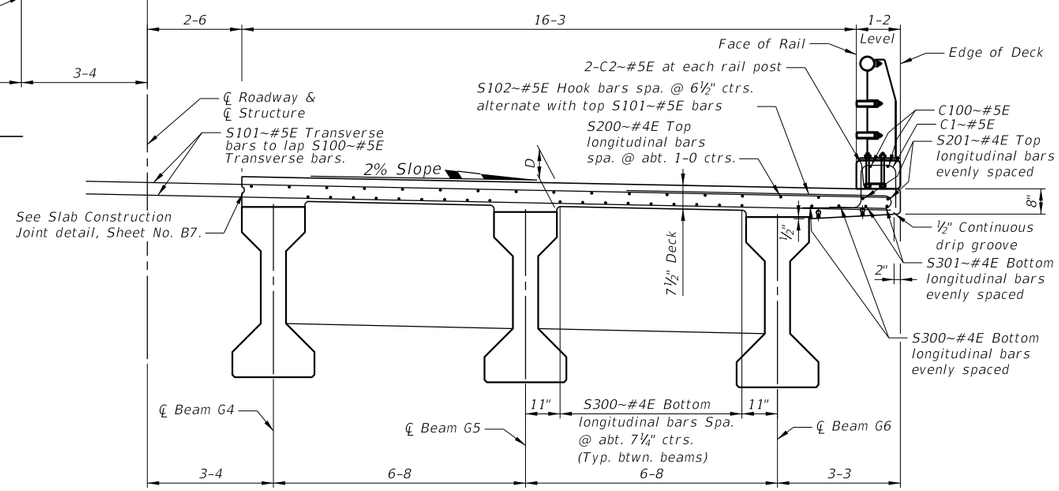
PHASE 1 DECK REPLACEMENT TRANSVERSE SECTION

SCALE ~ ½" = 1'-0"
Looking Ahead on Line

NOTES

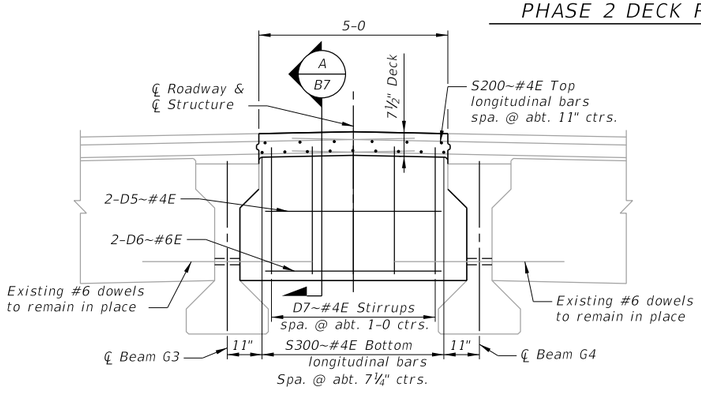
HAUNCH DEPTH: Dimension D = 9¼" @ ℄ Brg. (Varies at tenth points). See Dead Load Deflection Table and Camber Diagram on Sheet No. B8.

See Sheet No. B7 for Bill of Reinforcing Steel.



PHASE 2 DECK REPLACEMENT TRANSVERSE SECTION

SCALE ~ ½" = 1'-0"
Looking Ahead on Line



PHASE 2 CLOSURE POUR & DIAPHRAGM REPLACEMENT

SCALE ~ ½" = 1'-0"
Looking Ahead on Line

SHEET NO. B6

DECK REINFORCEMENT PLACEMENT

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED							
REVISED							
REVISED							
REVISED							
CHECKED					10-5-20	D.C.M.	
DRAWN					10-6-20	P.H.Jr.	
DESIGNED					11-21-19	L.M.M.	

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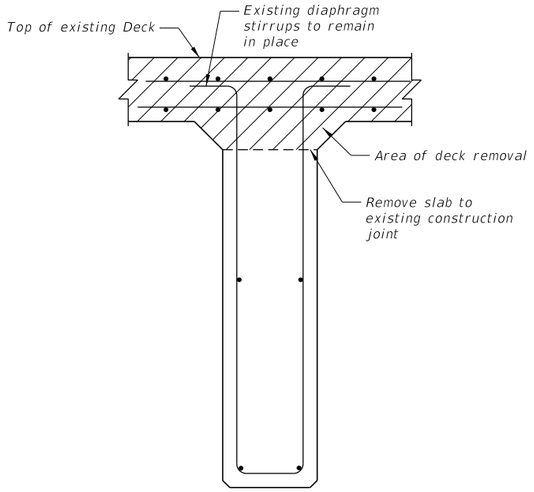
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BRIDGE BUREAU

UPN NUMBER
9437000

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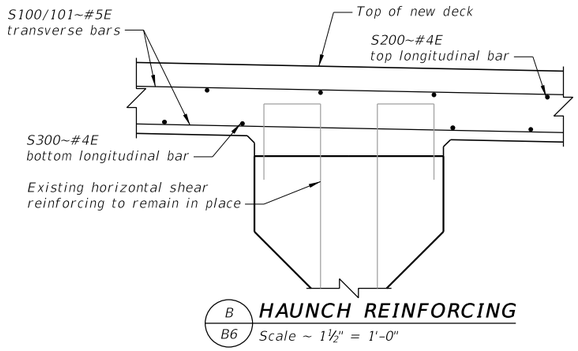
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INTERMEDIATE DIAPHRAGM

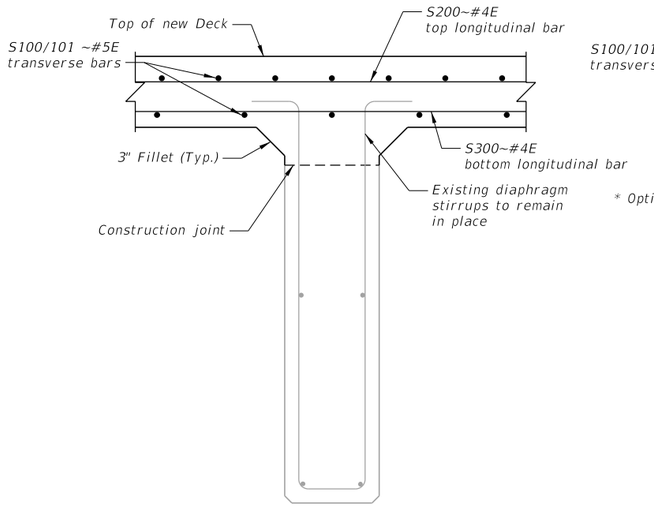
C / B6 DECK REMOVAL AT EXISTING DIAPHRAGMS

Scale ~ 1½" = 1'-0"



B / B6 HAUNCH REINFORCING

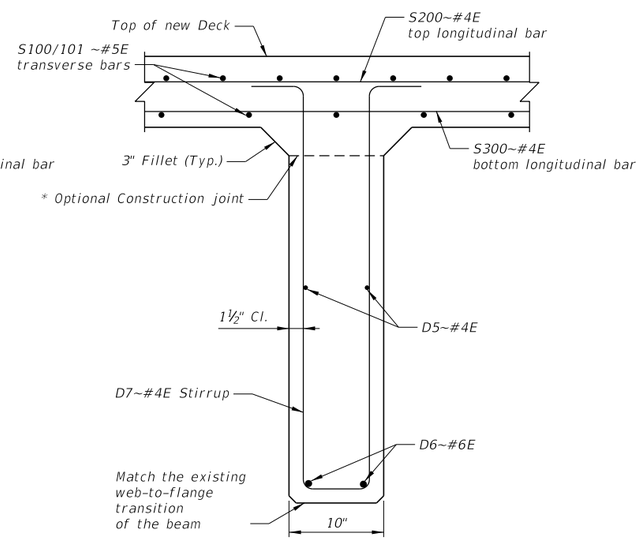
Scale ~ 1½" = 1'-0"



INTERMEDIATE DIAPHRAGM

C / B6 DECK REPLACEMENT AT EXISTING DIAPHRAGMS

Scale ~ 1½" = 1'-0"



INTERMEDIATE DIAPHRAGM

A / B6 DIAPHRAGM REPLACEMENT DETAIL

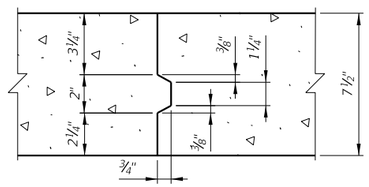
Scale ~ 1½" = 1'-0"

NOTES

* The new diaphragms are allowed to be poured at the same time as the deck.

4" additional per lap splice has been provided for construction tolerances.

Lap #4E longitudinal bars 2-0 minimum, 2-4 lap provided.
Lap #5E longitudinal bars 2-5 minimum, 2-9 lap provided.



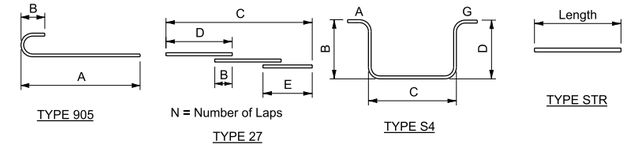
SLAB CONSTRUCTION JOINT

No Scale

NOTE: Thoroughly coat the slab construction joint with an epoxy resin bonding agent which meets the requirements of AASHTO M 235 (Type V). Apply the bonding agent within 30 minutes prior to placing concrete. Continue slab reinforcing through the joints.

BILL OF REINFORCING STEEL

(ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
PHASE 1											
S100	5E	318	STR.	21-1½							
S102	5E	185	905	8-7½	7-0	1-7½					
S200	4E	16	27	105-4		2-4	100-8	40-0	25-4		2
S201	4E	2	27	106-10		2-4	102-2	40-0	26-10		2
S300	4E	20	27	105-4		2-4	100-8	40-0	25-4		2
S301	4E	2	27	106-10		2-4	102-2	40-0	26-10		2
BW1	5E	4	STR	21-1½							
PHASE 2											
S101	5E	318	STR.	21-1½							
S102	5E	185	905	8-7½	7-0	1-7½					
S200	4E	22	27	105-4		2-4	100-8	40-0	25-4		2
S201	4E	2	27	106-10		2-4	102-2	40-0	26-10		2
S300	4E	29	27	105-4		2-4	100-8	40-0	25-4		2
S301	4E	2	27	106-10		2-4	102-2	40-0	26-10		2
D5	4E	4	STR.	5-0							
D6	6E	4	STR.	5-0							
D7	4E	10	S4	8-11	8"	3-6	7"	3-6		8"	
BW1	5E	4	STR.	21-1½							
CURB & PARAPET REINFORCEMENT (ONE PHASE ONLY)											
C1		186	See Std. Dwg. No. SBR-0R42 for additional curb reinforcing information								
C2		24	See Std. Dwg. No. SBR-0R42 for additional curb reinforcing information								
C100	5E	2	27	94-6		2-9	91-9	60-0	34-6		1
PT1		6	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-1		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-2		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-3		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-4		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-5		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT2-6		2	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT3		12	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT4		12	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT5		16	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
PT6		4	See Std. Dwg. No. SBR-0R42-PP for additional parapet reinforcing information								
ABT1	5E	6	STR.	3-5							
ABT2	5E	6	STR.	2-6							

SHEET NO. B7

DIAPHRAGM REINFORCING, HAUNCH REINFORCING, SLAB CONSTRUCTION JOINT & BILL OF REINFORCING STEEL

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

REVISED							
REVISED							
REVISED							
REVISED							
CHECKED	10-5-20	D.C.M.					
DRAWN	10-6-20	P.H.Jr.					
DESIGNED	11-21-19	L.M.M.					

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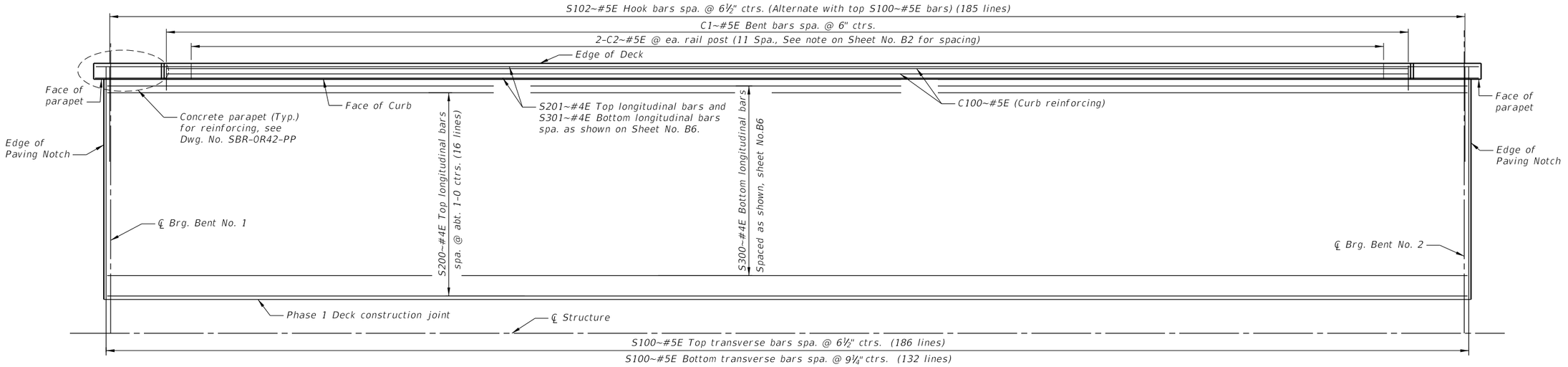
MONTANA MDT DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

UPN NUMBER
9437000

DRAWING NO.
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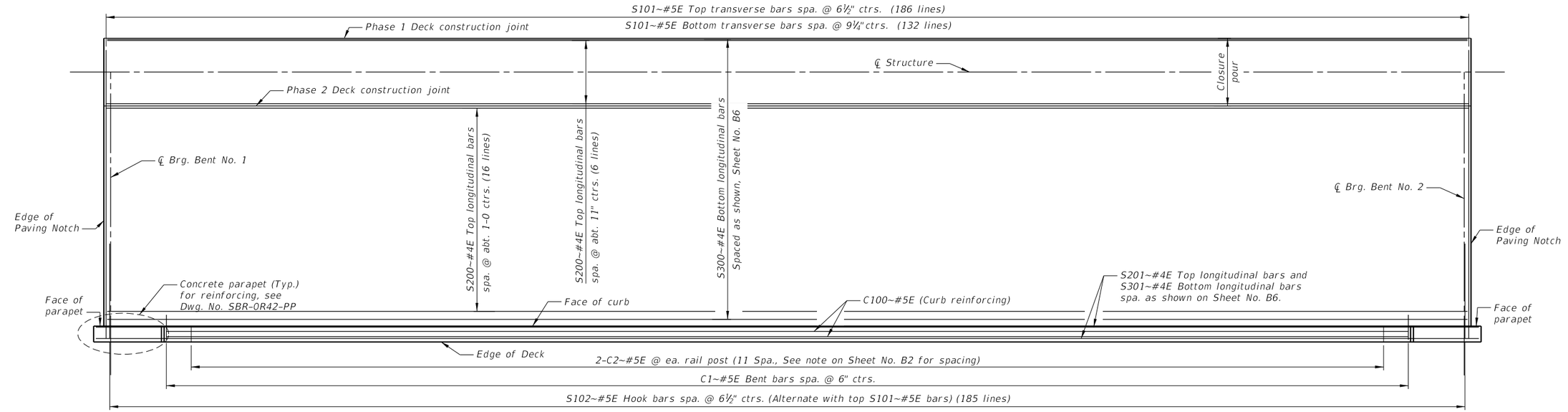
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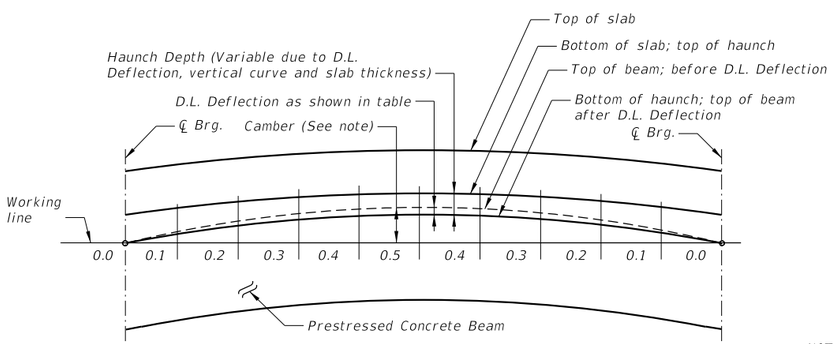
PHASE 1 - DECK REINFORCING PLACEMENT PLAN

Scale ~ ¼" = 1'-0"



PHASE 2 - DECK REINFORCING PLACEMENT PLAN

Scale ~ ¼" = 1'-0"



CAMBER DIAGRAM

No Scale

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.

DEAD LOAD DEFLECTION TABLE

TYPE IV PRESTRESSED CONCRETE BEAM

SPAN LENGTH		TENTH POINT				
		0.1	0.2	0.3	0.4	0.5
100' - 0"	Beam G1/G6	1/2"	1"	1 5/16"	1 9/16"	1 5/8"
	Beam G2/G5	1/2"	15/16"	1 1/4"	1 7/16"	1 9/16"
	Beam G3/G4	7/16"	7/8"	1 3/16"	1 3/8"	1 7/16"

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

SHEET NO. B8

DECK REINFORCING PLACEMENT PLAN, CAMBER DIAGRAM & DEAD LOAD DEFLECTION TABLE

SCALE: AS NOTED

PROJECT NAME
BRIDGE DECK S-234 S HAVRE

MDT STRUCTURE ID
06422

FEDERAL AID PROJECT
STPB 234-1(25)2

COUNTY
HILL

	D.C.M.	P.H.Jr.	L.M.M.
CHECKED	10-5-20		
DRAWN	10-7-20		
DESIGNED	6-8-20		

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REVISED

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MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

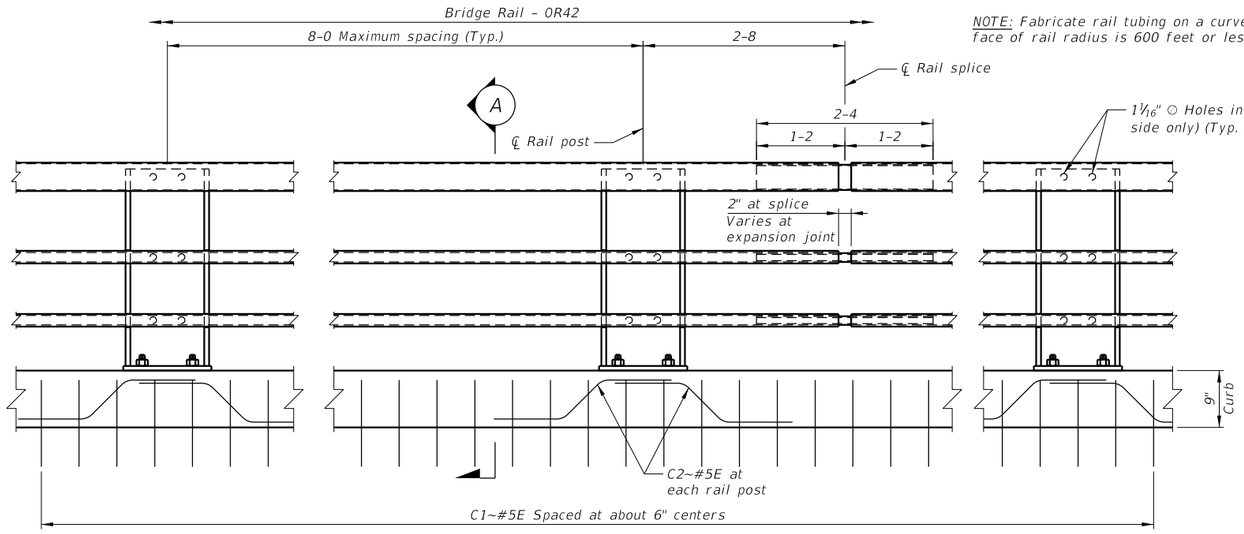
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9437000

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NOTE: Fabricate rail tubing on a curve when face of rail radius is 600 feet or less.

NOTE: Locate the splice on either side of post. Tube shop splices are not allowed.

NOTE: Show vent and pickup holes in rails and sleeves on Fabricator's shop drawings. Place vent holes on the underside of the rail members as installed.

NOTE: Attach panel lengths of tube members continuously to a minimum of two posts (except at abutments with expansion joints).

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

NOTE: Place expansion splice in rail such that it is positioned between the same rail posts as the expansion joint.

INSIDE ELEVATION OF RAIL

NOTES

PLACEMENT: Do not disturb the deck cure to construct the curb and rail.

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.

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

REFLECTORS: Place a white reflector on top of the top tube rail at equal spacing (not to exceed 30 foot spacing) between ends of rail. See Dtl. Dwg. No. 605-00 for reflector detail. Mount the reflector on the tube rail with an approved adhesive. Include the cost of reflector in the unit price bid for 42 IN Open Rail – BR.

PAYMENT: Payment for 42 IN Open Rail – BR per linear foot includes compensation for the cost of Concrete – Class Deck in the curb and for all resources necessary to complete the work. See the General Layout for the number of linear feet for payment of 42 IN Open Rail – BR. Use rail post plates and base plates conforming to AASHTO M 270 Grade 50 T3. Use AASHTO M 270 Grade 50 for all other plates and ASTM A500 Grade B for structural tubing.

ERECTION: Place rail posts as shown in details, perpendicular to adjacent roadway grade and vertical in relation to roadway cross slopes.

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

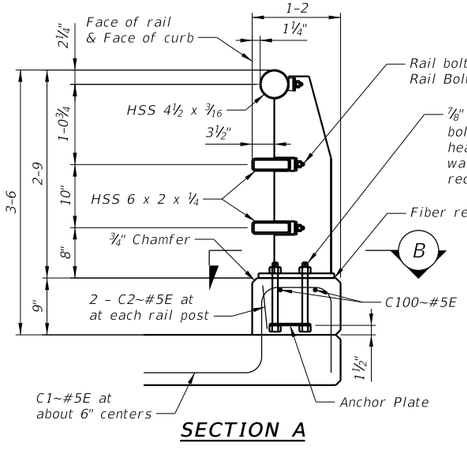
EXCEPTIONS: Use details shown on this drawing only as they apply to the project. Anchorage details may vary. Refer to other drawings for variations in these details.

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

RAIL WEIGHT: For informational purposes only, the rail weight is approximately:
Curb weight = 131.3 lb/ft
Curb volume = 0.875 cu. ft / ft
Rail weight = 52.9 lb/ft

PICKETS: See Std. Dwg. No. SBR-0R42-PK for rail pickets when called for in the Bridge Plans.

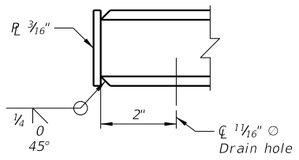
CRASH TEST: This rail has been evaluated and approved to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-4 criteria.



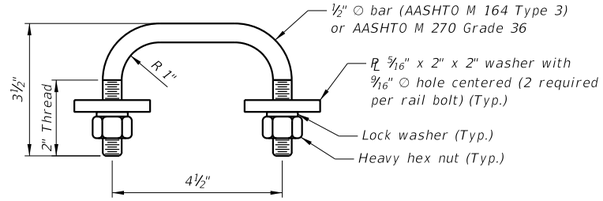
SECTION A

NOTE: Finish the top of slab under each rail post to a smooth and uniform surface to assure a proper alignment of the post and a tight fit between the fiber reinforced pad and concrete. Bush hammering is acceptable only to remove high spots.

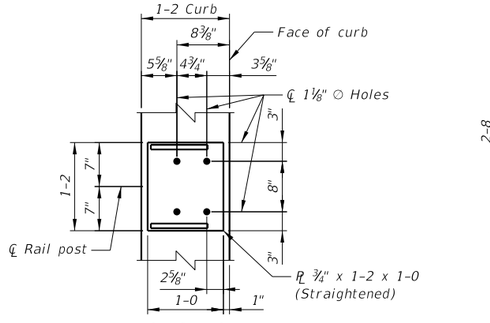
NOTE: Use fiber reinforced pads meeting the requirements of subsection 711.16 of the Standard Specifications. Size and position the pads such that not less than 1/2" of the pad protrudes on all sides of the base plate. Punch slotted holes in pads to match base plate.



TUBE CAP DETAIL

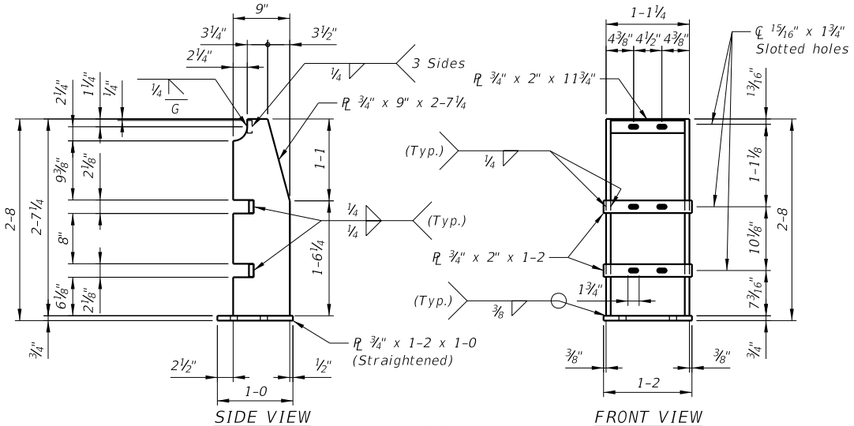


RAIL BOLT DETAIL

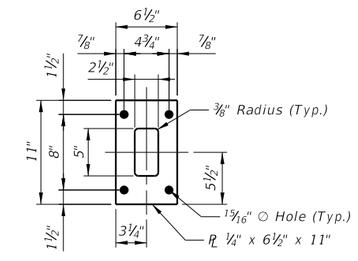


SECTION B

(Anchor bolts not shown)

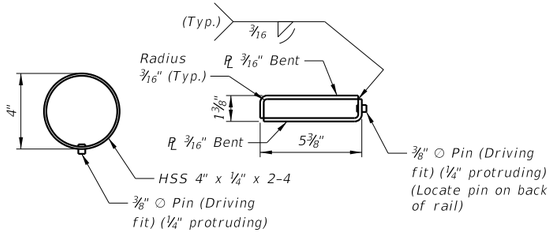


RAIL POST DETAIL



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

ANCHOR PLATE DETAIL

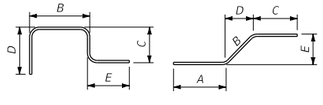


NOTE: Locate 3/8" ∅ Pin at mid-length of sleeve.

SLEEVE FABRICATION DETAILS

BILL OF REINFORCING STEEL

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



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

Mark	Size	Type	Length	A	B	C	D	E	G	N
C1	#5E	526	4-0 1/2		11"	1-1 3/4	1-1 3/4	10"		
C2	#5E	41	2-6 3/4	11"	8 3/4"	11"	6 1/4"	6 1/4"		

STANDARD BRIDGE RAIL
TYPE OPEN RAIL 42"

No Scale

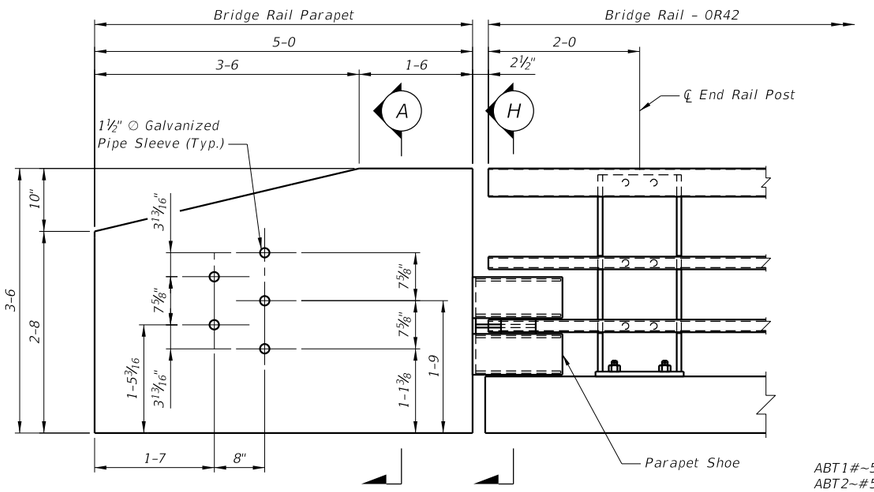
MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

REVISED				
REVISED				
REVISED				
APPROVED	9-17-19	N.A.H.		
CHECKED	2-7-19	L.M.M.		
DRAWN	3-14-18	T.J.B.	C:\DGN\943700\brstdc42.dgn	
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DRAWING NO.
SBR-0R42

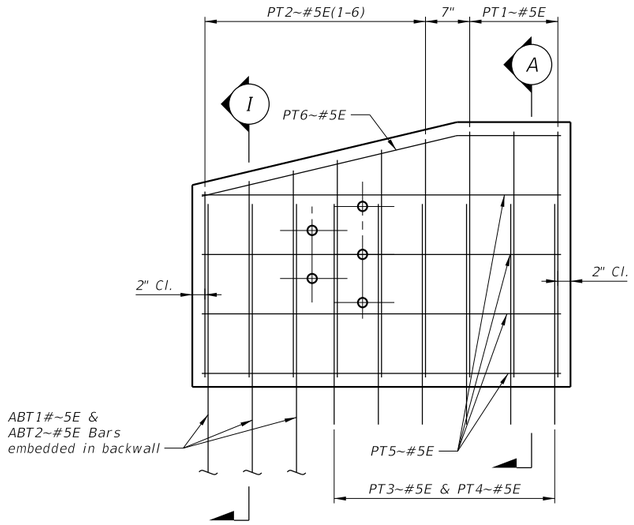
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INSIDE ELEVATION OF PARAPET

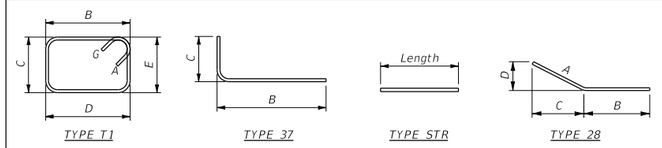
NOTE: Reinforcing steel shown is for a typical stub abutment. For turnback wingwalls substitute ABT1~#5E bars for PT3~#5E and ABT2~#5E bars for PT4~#5E bars shown for the parapet.



PARAPET REINFORCING ELEVATION

BILL OF REINFORCING STEEL

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



Mark	Size	Type	Length	A	B	C	D	E	G	N
PT1	#5E	T1	9-3	5½"	11"	3-3	11"	3-3	5½"	
PT2-1	#5E	T1	7-8	5½"	11"	2-5½	11"	2-5½	5½"	
PT2-2	#5E	T1	7-11	5½"	11"	2-7	11"	2-7	5½"	
PT2-3	#5E	T1	8-2½	5½"	11"	2-8¾	11"	2-8¾	5½"	
PT2-4	#5E	T1	8-6	5½"	11"	2-10½	11"	2-10½	5½"	
PT2-5	#5E	T1	8-9	5½"	11"	3-0	11"	3-0	5½"	
PT2-6	#5E	T1	9-0½	5½"	11"	3-1¾	11"	3-1¾	5½"	
PT3	#5E	37	4-11		2-0	2-11				
PT4	#5E	37	2-11		10"	2-1				
PT5	#5E	STR	4-8							
PT6	#5E	28	4-10	3-5½	1-4½	3-4½	9¾			
ABT1	#5E	STR	4-6							
ABT2	#5E	STR	3-7							

RAIL DESIGN CAPACITY

	Parapet
Rw	86 kips
Lc	6'-2"
Mc	292 kip*in/ft

NOTES

GENERAL: See Std. Dwg. No. SBR-0R42 for additional rail details.

REINFORCING STEEL: All parapet reinforcing steel is epoxy coated.

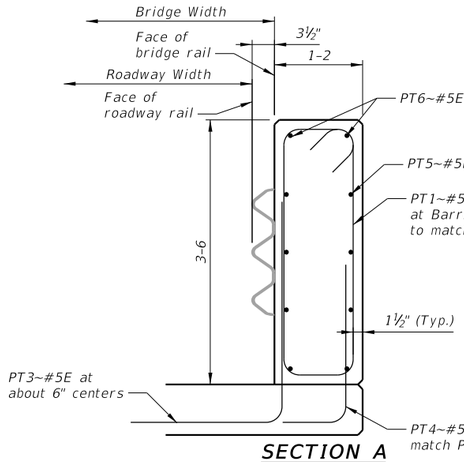
PAYMENT: Include all costs associated with furnishing and placing reinforcing steel in the parapet in the unit price bid for Reinforcing Steel - Epoxy Coated.

Include all costs associated with furnishing and placing Concrete - Class Deck in the parapet in the unit price bid for 42 IN Open Rail Parapet - Br.

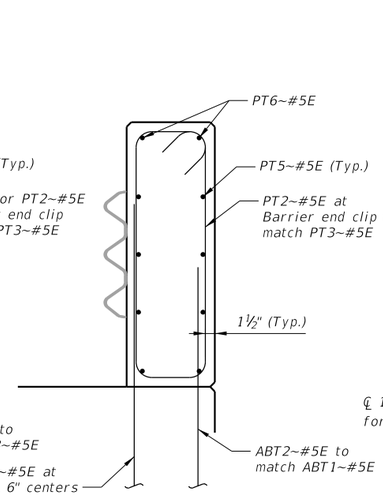
Use structural steel for the shoes meeting the requirements of AASHTO M270 Grade 50. Include all costs associated with furnishing and installing parapet shoes in the unit price bid for 42 IN Open Rail Parapet - BR. Estimated weight = 78.7 lb / per shoe

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 thise details.

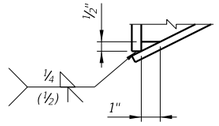
RAIL WEIGHT: For informational purposes only.
Parapet Weight = 2807 lb
Parapet Volume = 18.7 cu. ft



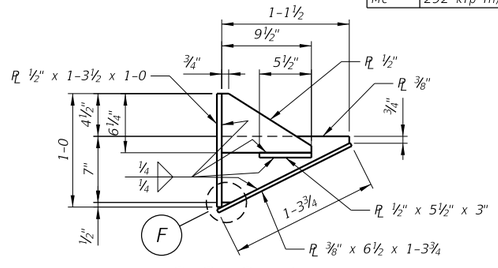
SECTION A



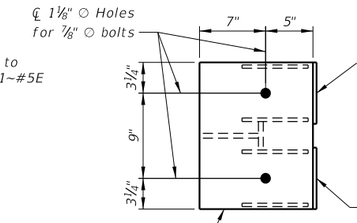
SECTION I



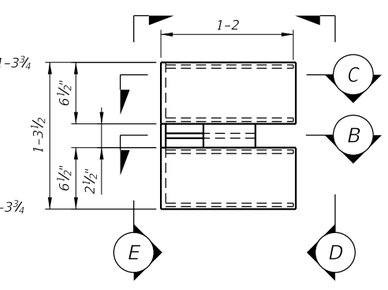
DETAIL F



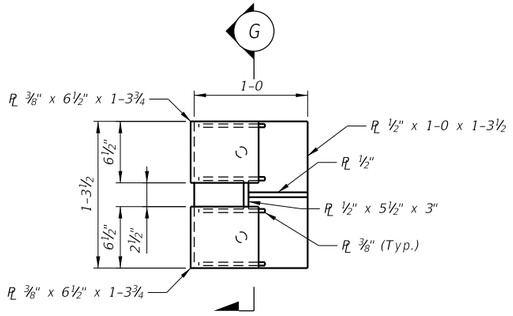
SECTION B



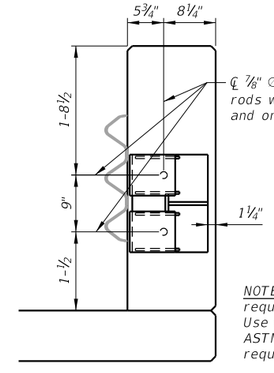
VIEW E



PARAPET SHOE ELEVATION



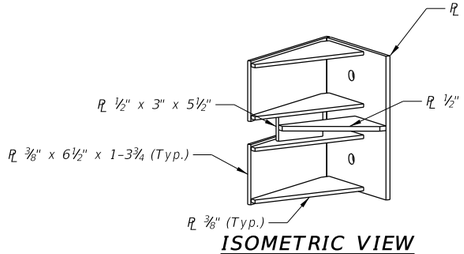
VIEW D



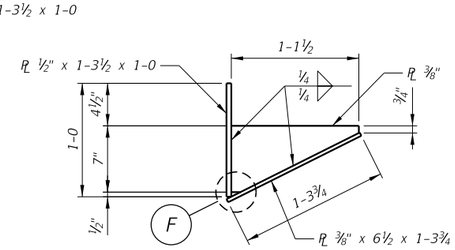
NOTE: Embed threaded rods into parapet 8" (See Special Provisions for Adhesive Anchor specifications)

NOTE: Use threaded rods meeting the requirements of ASTM F1554 Grade 105. Use washers meeting the requirements of ASTM F436 and nuts meeting the requirements of ASTM A563.

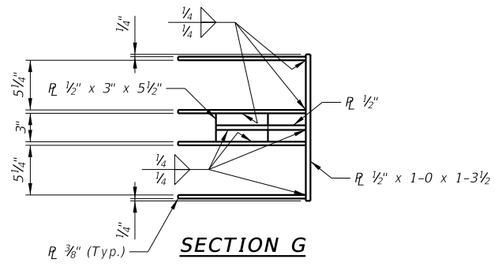
VIEW H



ISOMETRIC VIEW



SECTION C



SECTION G

STANDARD BRIDGE RAIL
TYPE OPEN RAIL 42"
PARAPET

No Scale

MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

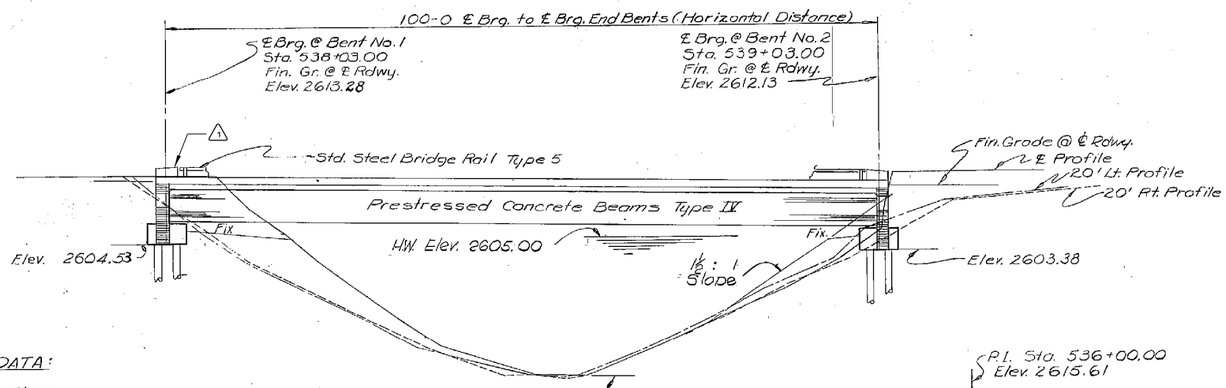
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CHECKED	2-7-19	L.M.M.		
DRAWN	3-14-18	T.J.B.		
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SBR-0R42-PP

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8	MONT.	RS-70(10)	2	8

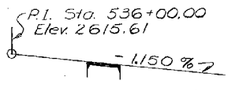


ELEVATION

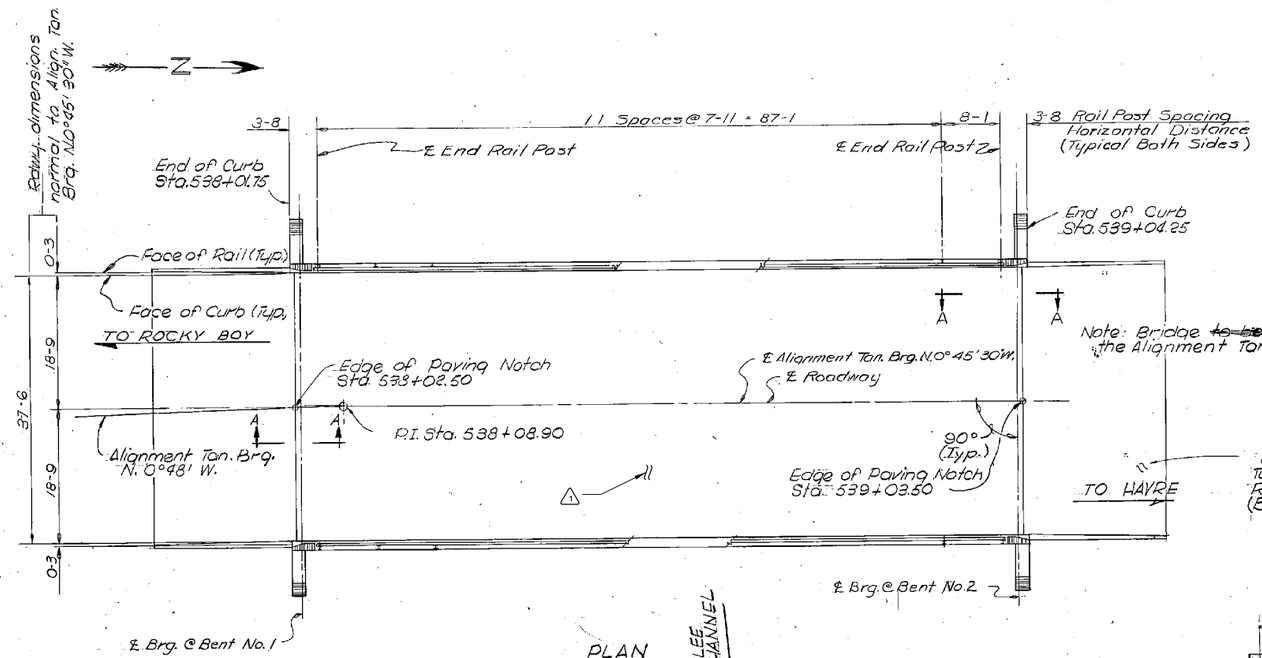
STREAM DATA:

Scour	None
Ice	None
Drift	None
Subsoil	See "Log of Borings" (Dwg. No. 10906)

Design Flow: 5,000 c.f.s. (50 year frequency)
Drainage Area: 57 sq. miles
Design Velocity: 5.8 f.p.s.



PROFILE GRADE
No Scale



PLAN

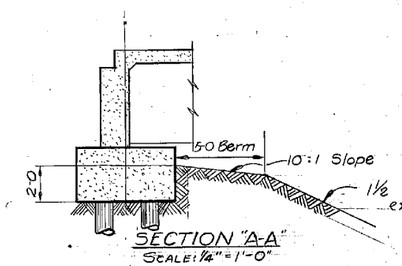
Note: The Bridge Contractor did not disturb the existing banks, unnecessarily and any portion of the bank which is disturbed shall be finished to the satisfaction of the Engineer at no additional cost to the State.

Note ÷ Structure excavation was be computed from ground lines as they exist after the existing structure has been removed and the canal banks have been reshaped.

Note ÷ For removal existing structure see Road Plans Special Provisions (By Road Contractor)

Note ÷ Contractor may substitute Class "DO" for Class "AD" concrete; however all concrete shall be bid as Class "AD" concrete unless the contractor specifies otherwise.

Note ÷ For Sequence of Work and Maintenance of Traffic see Special Provisions.



SECTION "A-A"
SCALE: ½" = 1'-0"

1	THIS CONTRACT STPB 234-1(25)2 — Replace Deck and bridge rail, mill & overlay approach slabs, replace joints see Dwg. No. 24281 thru 24288

NOTES

Live Load: Standard HS20-44 Loading

Finished Grade: Finished Plan Grade of Bridge at centerline Roadway is same as Profile Grade shown on Road Plans.

SPECIFICATIONS: MONTANA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1970 EDITION, AND ANY AMENDMENTS THERETO, AND SPECIAL PROVISIONS SHALL COVERN UNLESS OTHERWISE NOTED. DESIGN PREPARED IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS, 1969 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: ~~UNLESS OTHERWISE APPROVED~~, ALL CONCRETE ~~SHALL BE~~ CLASS "AD". AN "AIR ENTRAINING AGENT" SHALL BE ADDED TO ALL CONCRETE EXCEPT CLASS "AS". CHAMFER E.P ALL EXPOSED EDGES OF CONCRETE WITH ENCLOSED ANGLE LESS THAN 120°, 3/4" AND FILLET ENTRANT ANGLES 3/4" UNLESS OTHERWISE NOTED. ALL FORMS FOR DECK SLAB ~~SHALL BE~~ REMOVED.

STRUCTURAL STEEL: ALL STRUCTURAL STEEL ~~SHALL BE~~ MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS.
ESTIMATED WEIGHT = 966 POUNDS.

FOR REQUIREMENTS GOVERNING THE FABRICATION OF "STRUCTURAL STEEL" SEE THE STANDARD SPECIFICATIONS. TO AVOID OVERSIGHT THESE REQUIREMENTS ~~SHALL BE~~ ARE CLEARLY NOTED ON THE SHOP DRAWINGS.

STRUCTURAL STEEL SHALL RECEIVE ONE (1) SHOP COAT OF RED LEAD OR BASIC LEAD SILICO CHROMATE PRIMER AND TWO (2) FIELD COATS CONSISTING OF FIRST FIELD OR PRIMER COAT AND ONE (1) COAT OF ALUMINUM PAINT AS SPECIFIED IN THE STANDARD SPECIFICATIONS.

APPROVAL: SHOP PLANS ~~SHALL BE~~ APPROVED BY THE STATE OF MONTANA, DEPARTMENT OF HIGHWAYS BEFORE FABRICATION ~~IS BEGUN~~

SETTING OF MASONRY PLATES: CARE ~~SHALL BE~~ WAS TAKEN IN PLACING REINFORCING STEEL SO AS TO CLEAR ANCHOR BOLTS. MASONRY PLATES ~~SHALL BE~~ PLACED ON THREE LAYERS OF CANVAS THOROUGHLY SWABBED WITH RED LEAD AS CALLED FOR IN THE STANDARD SPECIFICATIONS. THE CONTRACTOR ~~SHALL~~ FINISH E.P CONCRETE UNDER MASONRY PLATES TO THE EXACT ELEVATION SHOWN, BUSH HAMMERING ~~WILL BE~~ PERMITTED AND USED ONLY AS A MEANS OF LEVELING THE CONCRETE SURFACE TO ASSURE FULL AND LEVEL BEARING AND TO REMOVE LAITANCE. LOOSE AND FOREIGN MATERIAL. STEEL SHIMS ~~SHALL BE~~ USED TO BRING THE MASONRY PLATES UP TO GRADE ~~IS~~ AS NECESSARY. STEEL SHIMS ~~SHALL BE~~ PLACE THE SAME SIZE EXCEPT FOR THICKNESS, AS THE MASONRY PLATE. MINIMUM THICKNESS OF ANY SHIMS ~~SHALL BE~~ 1/8". THE COST OF BUSH HAMMERING AND SHIMS, IF ANY, ~~SHALL BE~~ INCLUDED IN THE UNIT PRICES BID FOR CLASS "AD" CONCRETE.

BACKFILL: THE BACKFILL AT END BENTS ~~WILL BE~~ WAS COMPLETE UP TO THE BOTTOMS OF THE BACKWALLS BEFORE SUPERSTRUCTURE ~~IS~~ WAS IN PLACE. THE BACKFILL AGAINST THE BACKWALLS ~~SHALL~~ NOT BE PLACED UNTIL AFTER THE CONCRETE ROADWAY SLAB ~~HAS BEEN~~ PLACED.

FOOTINGS: ~~ELEVATIONS SHOWN FOR BOTTOM OF FOOTINGS ARE APPROXIMATE ONLY~~. FINAL ELEVATIONS TO BE WERE DETERMINED BY THE ENGINEER.

PROTECTIVE COATING: DECK, CURBS AND CONCRETE END POSTS ~~SHALL BE~~ GIVEN A PROTECTIVE COATING OF BOILED LINSEED OIL, "SEE STANDARD SPECIFICATIONS".

COVERING: THE MINIMUM COVERING, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCEMENT BAR, IS ~~SHALL BE~~ NOT LESS THAN 2 INCHES EXCEPT AS FOLLOWS OR OTHERWISE NOTED:

BOTTOM OF SLAB	1 INCH
STIRRUPS AND TIES	1½ INCHES

IN ALL FOOTINGS AND PIER SHAFTS, THE MINIMUM COVERING SHALL BE 3 INCHES.

UTILITIES: FOR LOCATION OF UTILITIES SEE APPROPRIATE ROAD PLANS SHEET.

DESIGNED		
DRAWN	10/7/71	G.A.P.
CHECKED	10/30/72	N.H.R.
APPROVED	10/21/74	Hes.
1 REVISED	10-7-20	P. H. Jr.
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER SCOTTS COULEE
AT STA. 538+53.00
FEDERAL AID PROJECT NO. RS-70(10)
HILL COUNTY

GENERAL LAYOUT

SCALE: 1" = 10'-0" (Except as shown)

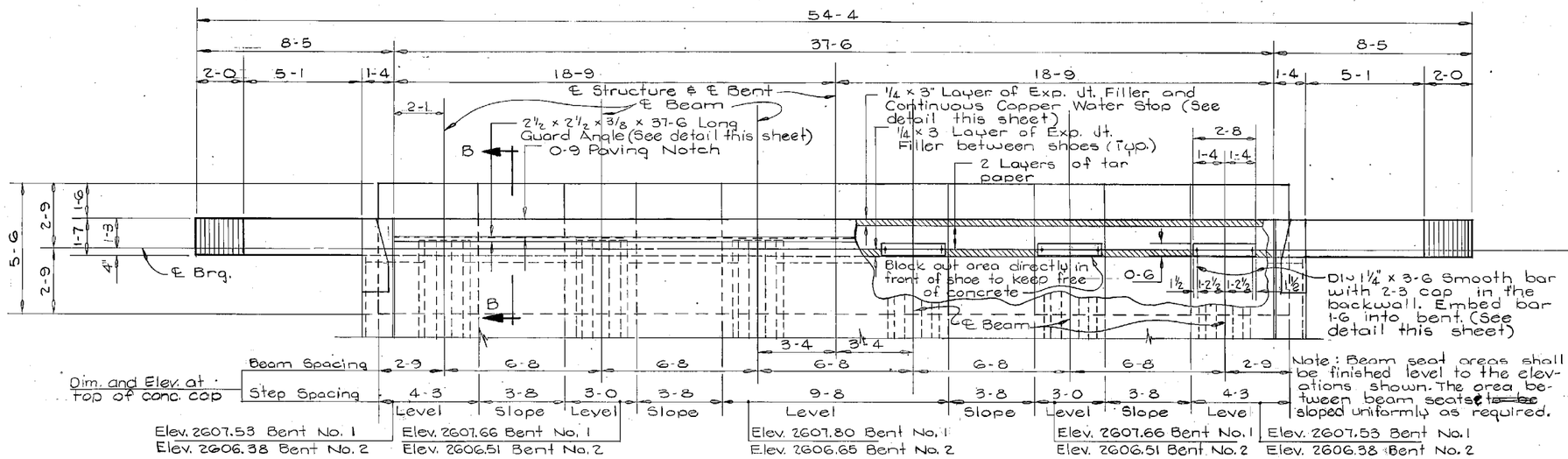
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8	MONT.	RS-70(10)	4	8



PLAN

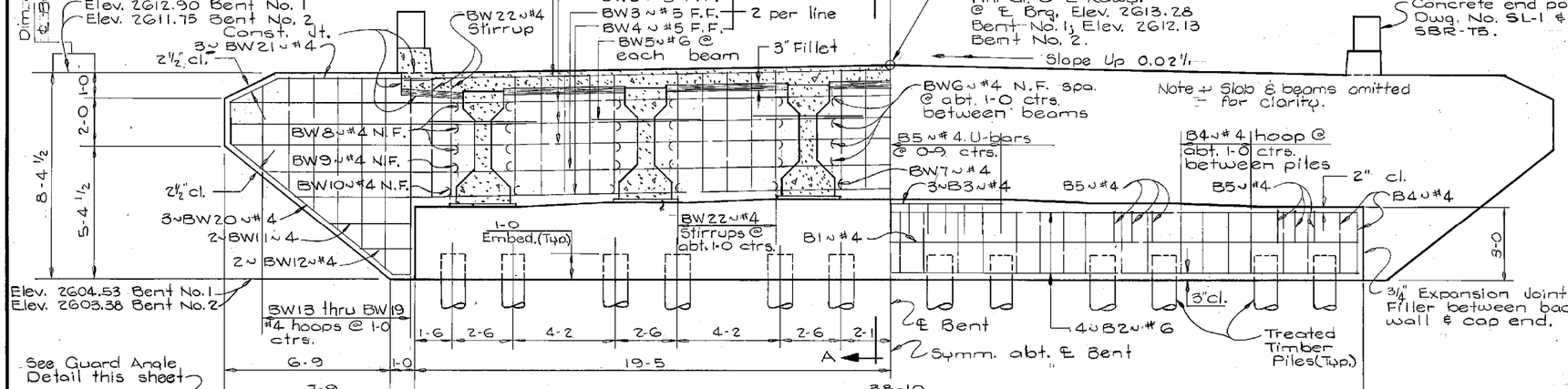
Note: Beam seat areas shall be finished level to the elevations shown. The area between beam seats ~~to be~~ sloped uniformly as required.

Note: Cost of furnishing & placing expansion joint filler, tar paper, copper water stop & metal expansion caps ~~to be~~ included in the unit price bid for Class "AD" concrete.

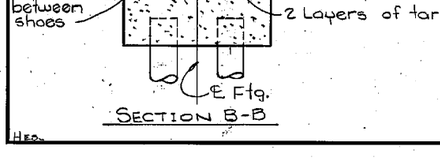
Note: See Dwg. No. SBR-T5 for rail connections and details. For rail post locations see Dwg. No. 10905.

Note: Slab, Beam & Curb reinforcing steel omitted for clarity. For details see Dwgs. No. SL-1, No. B-4 & No. 10908

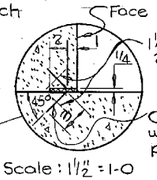
Note: F.F. = Fill Face
N.F. = Near Face

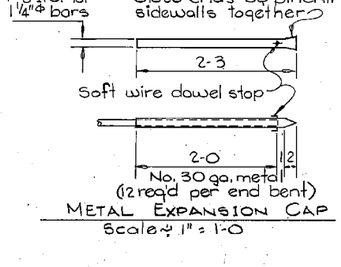


ELEVATION
(Back on line) (Bent No. 1)
(Ahead on line) (Bent No. 2)

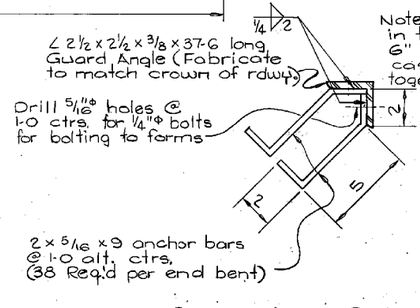


SECTION B-B





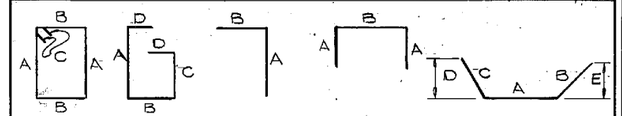
METAL EXPANSION CAP
Scale: 1" = 1-0



GUARD ANGLE DETAIL
Scale: 3" = 1-0

Note: Guard Angle may be furnished in two pieces with end anchor bars 6" Max. from each end in which case the pieces shall be field welded together. Angles shall be held in accurate position while concrete is poured.

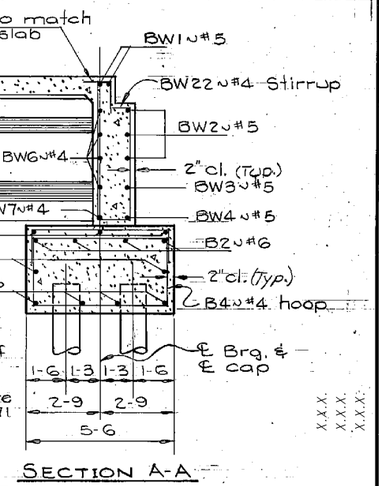
BILL OF REINFORCING STEEL (For one bent only)



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5

STRAIGHT BARS				BENT BARS (All dim. are out to out)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D	E
BW1	#5	2	39'-7"	BW13	#4	2	1	10'-7"	3'-8"	1'-3"	0'-4½		
2	5	6	27-7	14	4	2	1	12-7	4-8	"	"		
3	5	2	24-3	15	4	2	1	14-1	5-5				
4	5	2	21-9	16	4	2	1	15-9	6-3				
5	6	8	4-6	17	4	2	1	17-5	7-1				
6	4	20	4-8	18	4	2	1	18-11	7-10	"	"		
7	4	5	4-2	19	4	2	1	19-3	8-0	1-3	0-4½		
8	4	6	9-4	20	4	6	5	10-2	8-5	1-0	0-9	0-6	0-9"
9	4	2	7-10	21	4	6	5	10-1	2-1	1-9	6-3	2-10	1-7
10	4	2	6-3	22	4	29	2	10-10	5-0	1-3	4-0	0-3½	
11	4	4	3-4	BW23	4	28	3	4-0	2-0	2-0			
BW12	4	4	2-1										
				B4	4	36	1	16-3	2-7	5-2	0-4½		
B1	4	2	38-6	B5	#4	25	4	7-8	1-3	5-2			
B2	6	8	38-6										
B3	#4	3	9-4										
* DI	1¼"℄ Sm.	12	3-6										

* DI ν 1¼"℄ smooth bars ~~shall~~ conform to A.S.T.M. A-36 steel.



SECTION A-A

Note: ~~Estimated~~ Pile Length:
Bent No. 1 = 15~~.0~~ Ft.
Bent No. 2 = 29~~.33~~ Ft.

Note: For length & location of test piles see Dwg. No. 10906

Note: Maximum Pile Pressure Under: D.L. + L.L. + E. = 22.71 Tons per pile.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER SCOTTS COULEE
AT STA. 538+53.00
FEDERAL AID PROJECT NO. RS-70(10)
HILL COUNTY
BENT NO. 1 & NO. 2

Scale: 3/8" = 1-0 (Except as noted)

DRAWING NO. 10907

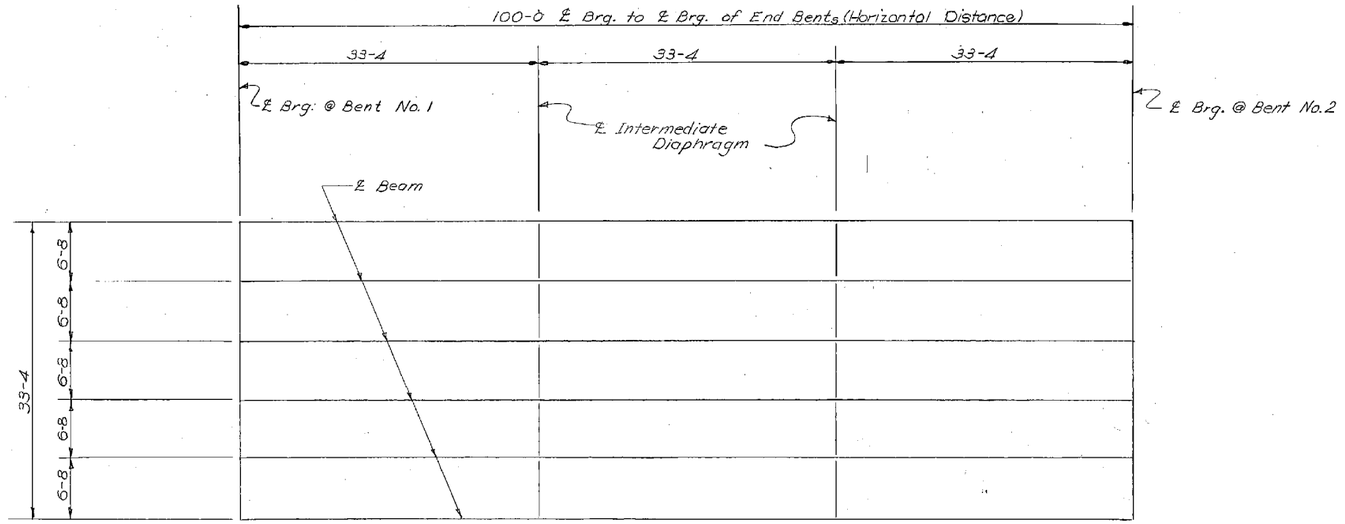
DESIGNED	4-6-72	L.D.D.
DRAWN	6-8-72	K.H.L.
CHECKED	10-30-72	N.H.R.
REVISED		
REVISED		
REVISED		

HED.

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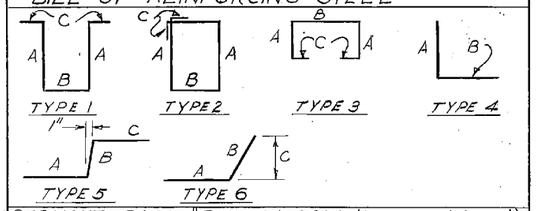
AWARD COPY

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	RS-70(10)	5	8

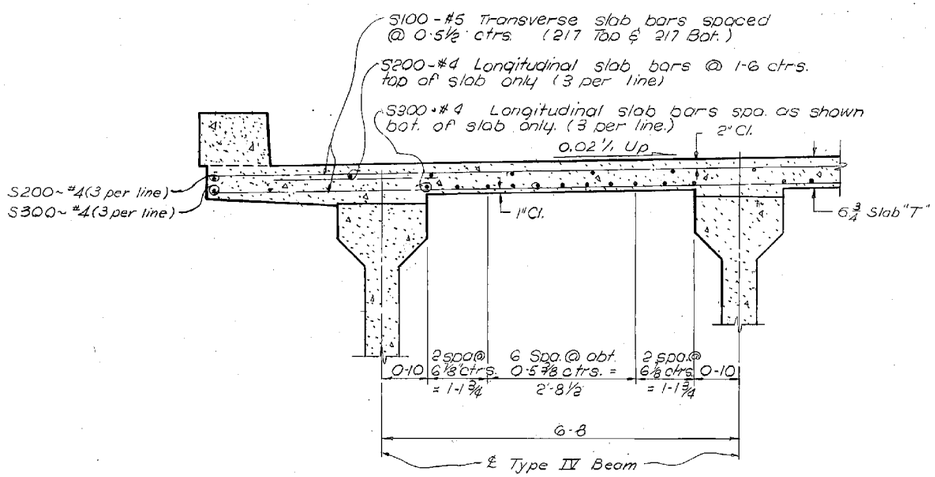


ERECTION PLAN
Scale: 1/8" = 1-0

BILL OF REINFORCING STEEL



STRAIGHT BARS				BENT BARS (All dim. are out to out)							
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C
S100	#5	434	39'-7"	C1	#4	274	3	3'-4"	0'-9	1'-0"	0'-5
S200	4	84	34'-3	2	4	258	5	2'-6	1'-0	1'-0	0'-6
S300	4	177	34'-3	3	4	52	2	3'-7	0'-10	0'-8	0'-3 1/2
				4	5	68	5	4'-9	3'-3	1'-0	0'-6
C300	4	24	35'-1	C5		4	4	2'-0	1'-0	1'-0	
P1	5	24	2'-9	P2	5	16	6	2'-9	1'-1 1/2	1'-7 1/2	0'-6
D8	6	8	5'-4	3	4	12	2	6'-9	0'-10	2'-0	0'-3 1/2
				4	4	4	2	6'-1	0'-9		
D5	4	20	4'-10	5	4	4	2	5'-11	0'-8		
D6	#6	20	4'-10	6	4	4	2	5'-9	0'-7		
				7	4	4	2	5'-7	0'-6		
				8	4	4	2	5'-5	0'-5		
				P9	4	4	2	5'-3	0'-4	2'-0	0'-3 1/2
				D7	#4	50	1	8'-0	3'-5	0'-7	0'-3 1/2



TRANSVERSE SECTION
Scale ~ 3/4" = 1'-0

Note: For additional slab, curb, end post end diaphragm, and intermediate diaphragm details see Dwg. No. SL-1 & SBR-T5.

DEAD LOAD DEFLECTION TABLE					
Tenth Point	.1	.2	.3	.4	.5
Total Deflection	7/16"	13/16"	1 3/16"	1 5/16"	1 7/16"

Note: Deflections are symmetrical about ℄ of span.

PRESTRESSED CONCRETE BEAMS: Prestressed concrete beams shall be fabricated in accordance with Dwg. No. B-4. Max. f'c (compressive strength of concrete at 28 days) for design shall be 6000 psi. Design stresses before prestress are as follows:

SPAN LENGTH		100-0
Beam D.L. Stresses (PSI.)	Fb.	-1169
	Ft.	1384
Total D.L. + L.L. Design Stresses (PSI.)	Fb.	-3104
	Ft.	3433
Required Ultimate Moment Capacity. (Foot Kips)	M	5863

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER SCOTTS COULEE
AT STA. 538+53.00
FEDERAL AID PROJECT NO. RS-70(10)
HILL COUNTY
ERECTION PLAN

DESIGNED	4-10-72	L.D.D.
DRAWN	4-24-72	L.D.D.
CHECKED	10-31-72	N.H.R.
REVISED		
REVISED		
REVISED		

Scale: As Noted

DRAWING NO. 10908

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	FED. ROAD DIV. NO.	STATE	STATE PROJ. NO.	SHEET NO.	TOTAL SHEETS
*	8	MONT.	ARS 120-0002-1200	5	8

NOTE:-
Details shown on this sheet are to be used only as they apply to the subject project. Beam spacing, slab thickness, size and spacing of S100 bars, no. and placement of S200 and S300 -#4 bars, deck joint arrangement, bridge rail, bill of reinforcing steel and curb width are shown on the "General Layout" or "Erection Plan".

When adjoining spans have a different number of longitudinal slab bars, the longitudinal bars of the shorter are continuous over the bent and extend 3-0 into the longer span.

If bridge is skewed the transverse slab reinforcing steel shall be placed as shown on the "Erection Plan".

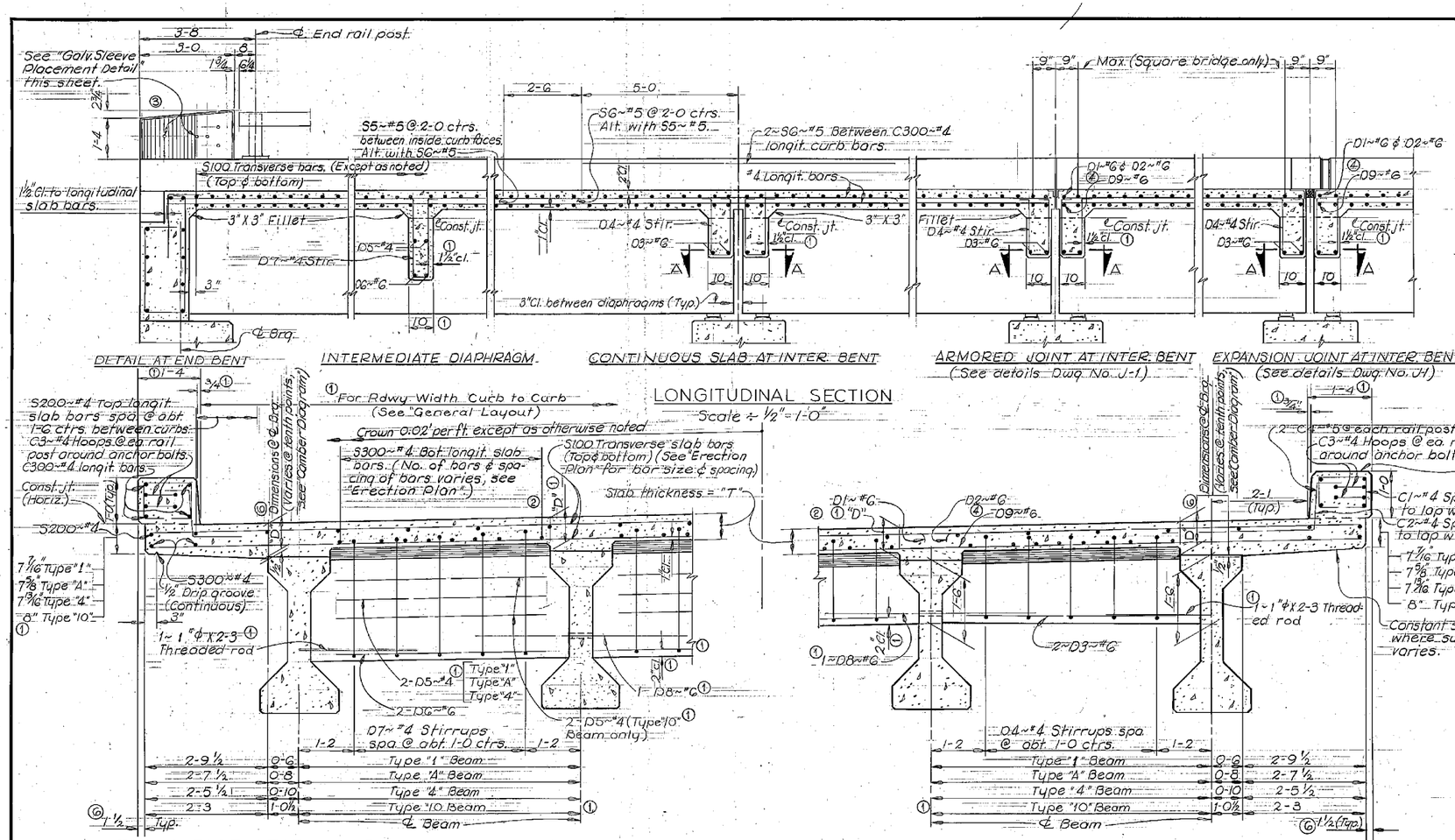
Concrete curb shall not be poured for at least 72 hours after concrete in slab has taken initial set.

①Galvanized pipe sleeves in End Posts shall be included in the unit price bid for Std. Steel Bridge Rail.

Top of curb to be parallel to rdwy. grade. See Std. rail dwg. for concrete finish requirements at rail posts.

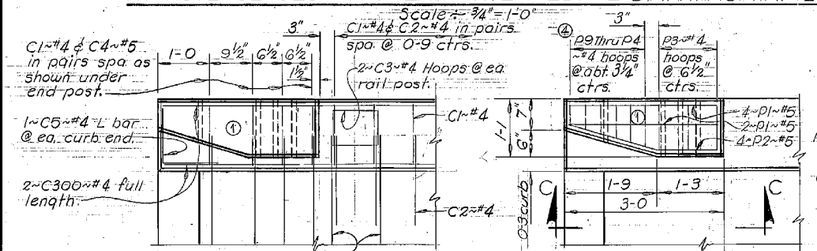
* FOR REFERENCE ONLY

Note: For theoretical "D.L. Deflection Table" for Prestressed Concrete Beams, see "Erection Plan."



TRANSVERSE SECTION NEAR INTERMEDIATE DIAPHRAGM AT LOW SIDE

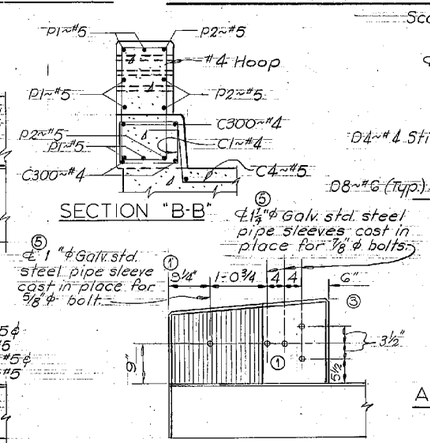
TRANSVERSE SECTION AT INTERMEDIATE BENT AT HIGH SIDE

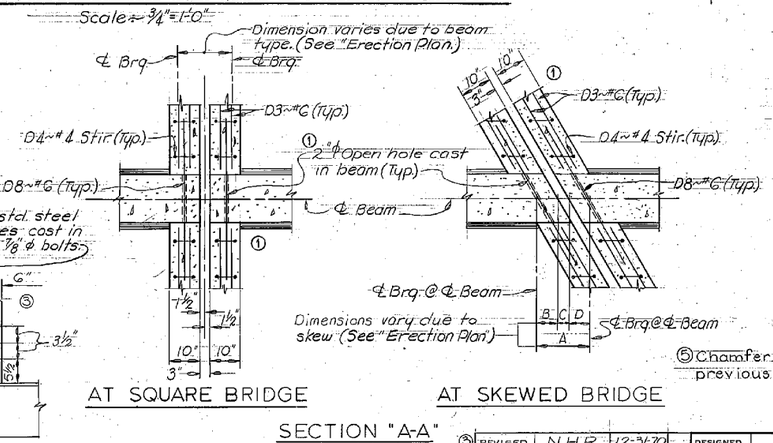


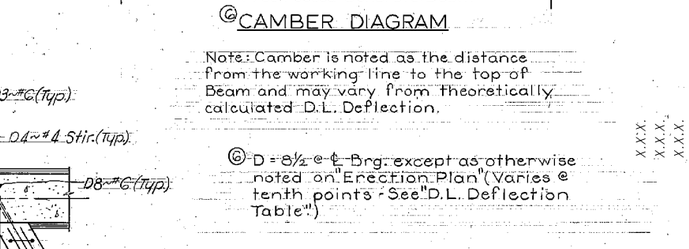
CURB DETAILS

CONCRETE END POST DETAILS

Scale ÷ ¾" = 1'-0"







⑥CAMBER DIAGRAM

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.

⑥D = 8½ @ ℄ Brg. except as otherwise noted on "Erection Plan" (Varies @ tenth points - See "D.L. Deflection Table")

⑤Chamfer added where previously omitted.

X.XXX.
X.XXX.
X.XXX.

SECTION "A-A"
Scale ÷ ½" = 1'-0"

⑤	REVISED	N.H.R.	12-31-70	DESIGNED			
④	REVISED	N.H.R.	3-31-72	DRAWN	D.E. MILOT	12-31-69	
⑤	REVISED	R.N.D.	7-31-72	CHECKED	N.H. ROANLIE	12-31-69	
⑥	REVISED	R.N.D.	12-29-72	APPROVED	A.W.J.	12-31-69	
				①	REVISED	R.N.D.	11-1-70
				②	REVISED	N.H.R.	11-2-70

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

STANDARD SLAB, CURB, DIAPHRAGM, & END POST DETAILS

Scale ÷ As Noted

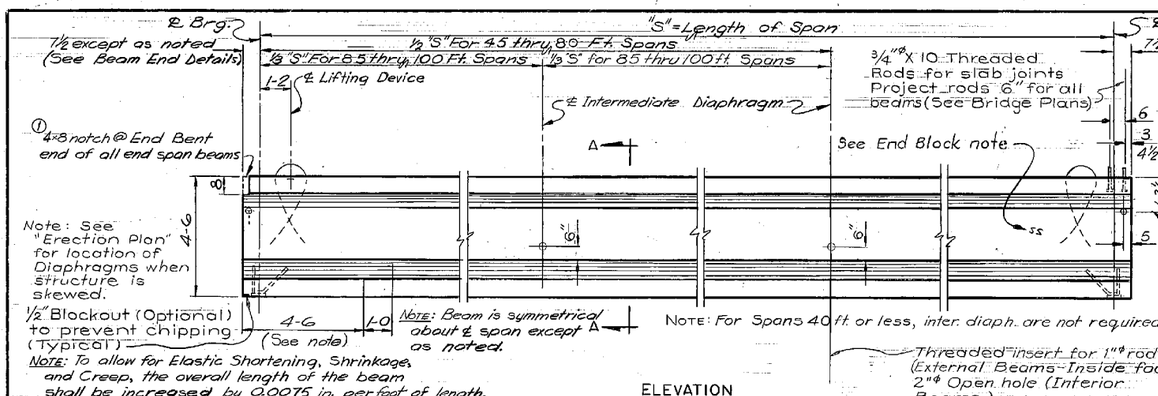
DRAWING NO. SL-1

R.D.K.

K&E 19 1153 3-69

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Number of B-1 required per beam					
Span	No.	Span	No.	Span	No.
30	40	55	72	80	106
35	46	60	80	85	112
40	52	65	86	90	120
45	60	70	92	95	126
50	66	75	100	100	132
				105	138

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.			SHEET NO.	TOTAL SHEETS
8	MONT.					

NOTES:

PLACING STEEL: Steel clearance from side forms shall be maintained by stays, ties, hangers or approved metal chairs. Steel clearance at the bottom of beam shall be maintained with the use of continuous steel chairs with stainless steel legs.

CONCRETE: All concrete shall have a min. compressive strength of 5000 p.s.i. at the age of 28 days & a min. compressive strength at the transfer of prestress of 4000 p.s.i. except as otherwise noted on the fabrication drawings.

END BLOCK: Beams with post-tensioned tendons shall have end blocks as detailed hereon. Where all tendons are pre-tensioned 7 wire strand, the use of end blocks will not be required.

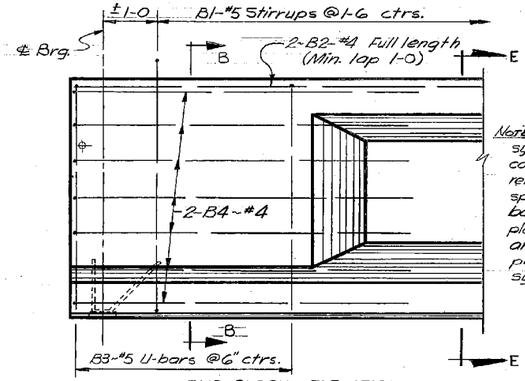
PRESTRESSING REINFORCEMENT: All beams shall be prestressed so they can safely withstand the effect of dead loads and working live loads as shown on the "General Layout" or "Erection Plan". Post-tensioned prestressing reinforcement shall conform to Section 42 of the Standard Specifications or the Supplemental Specifications. Pretensioned prestressing steel shall be 7/16"ϕ or ½"ϕ seven wire bright prestressing strand conforming to the requirements of A.S.T.M. Specification A 416 with the exceptions shown in "Table I" below. Either of the above mentioned types of prestressing reinforcement may be used; however, design calculations substantiating the type of prestressing system selected shall be submitted to and approved by the engineer before fabrication is begun. Design calculations shall show stresses in the beam under each loading condition that is anticipated in the manufacture, handling and service life of the beam. All design shall be in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, 1969 Edition, and any Amendments thereto.

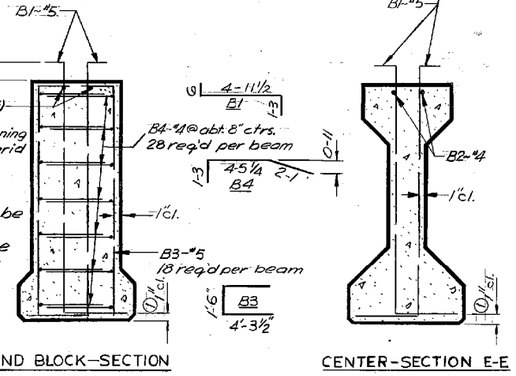
FINISH OF BEAMS: Beams & beam ends unless embedded in concrete, shall be given an ordinary finish as specified in Art. 41.04(L)(1) of the Std. Specs. Prior to finishing, strands shall be cut back ½" min. and the depression filled with an approved epoxy. When beams are embedded in concrete, ends may be left rough and strands may be cut to project 1" max. from concrete.

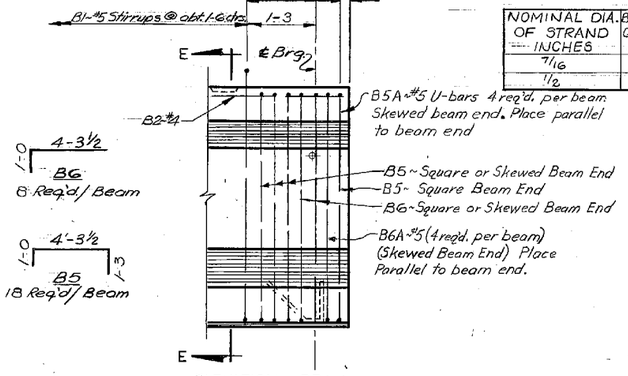
FINISH OF TOPS: Tops of beams shall be left rough. At approximately the time of initial set all laitance shall be removed with a coarse wire brush. Grade strips or other approved methods shall be used at the top edges to establish the nominal depth of the beam.

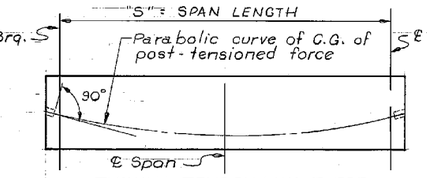
TABLE 1

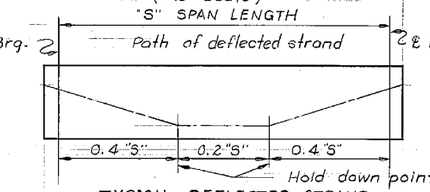
NOMINAL DIA. OF STRAND INCHES	BREAKING STRENGTH OF STRAND MIN. LBS.	NOMINAL STEEL AREA OF STRAND SQ. INCHES	NOMINAL WT. OF STRAND LB. PER 1000'	YIELD STRENGTH REQUIREMENTS INITIAL LOAD LB.	YIELD STRENGTH REQUIREMENTS MIN LOAD @ 1% EXTENSION LB.
7/16	31,000	.117	400	3,100	26,350
½	41,300	.153	525	4,130	35,100

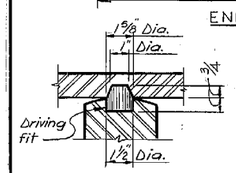




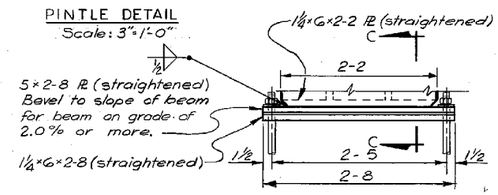


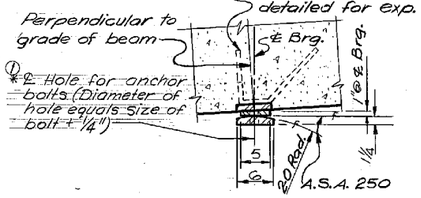


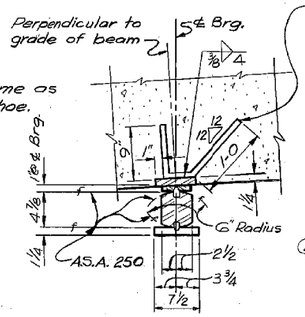


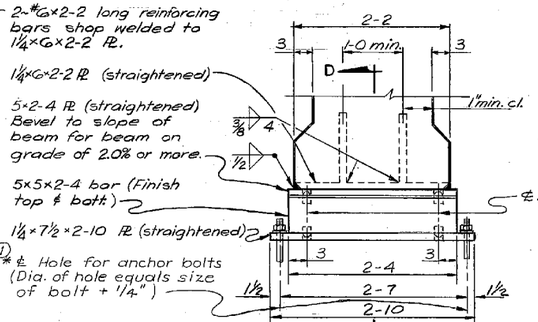


NOTE: Rocker shoes shall be set vertical under full dead load @ 60° F. If rockers are not in correct position with final dead load on spans, spans shall be jacked and adjustments made.









Note: See "General Layout" for type of shoe required

FIXED SHOE DETAILS

REINFORCING STEEL DETAILS
Scale: ¾"=1'-0"

① *NOTE: See substructure details for length and size of anchor bolts.

① REVISED	NHR	3-31-72	REVISED	N.H.R	12-31-70	REVISED	W.H.L.	5-15-68
			REVISED	NHR	7-1-69	REVISED	R.N.D.	10-25-68

DESIGNED	D. N.	12-1-61
DRAWN	D.M.B.	723-63
TRACED		
CHECKED	R.D.K.	8-28-63
REVISED	K.G.R.	9-15-65
REVISED	W.H.L.	3-23-67

APPROVED BY _____ BRIDGE ENGINEER

DRAWING NO. B-4

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

STANDARD PRESTRESSED CONCRETE BEAMS

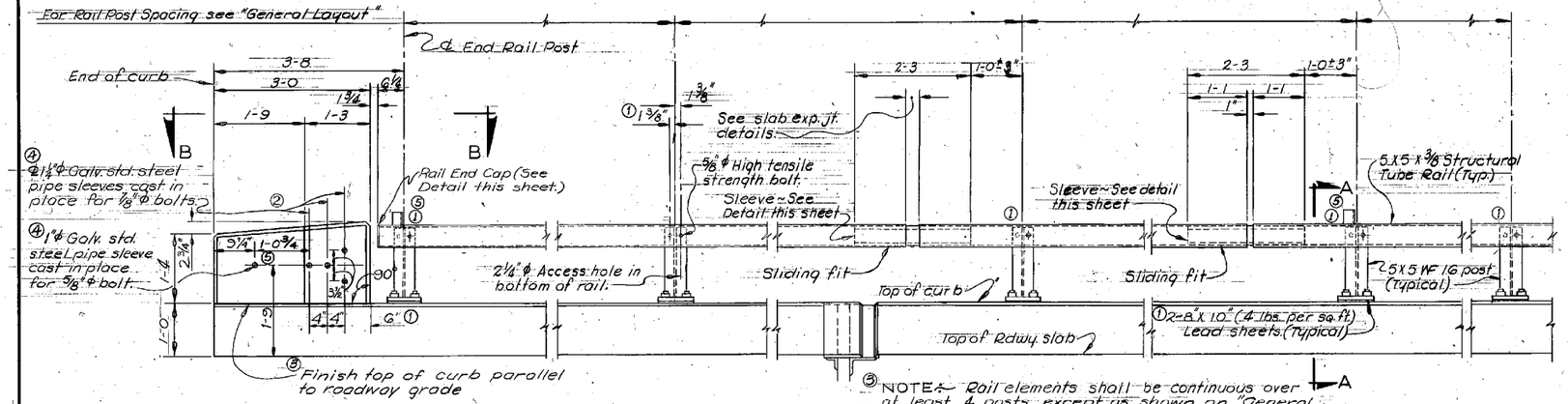
TYPE IV

JRB

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FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.			



NOTES

STRUCTURAL STEEL:~ Posts, sleeves & plates shall be structural steel conforming to ASTM A-36. The rails shall conform to ASTM A-500, cold-formed welded & seamless carbon steel structural tubing in rounds and shapes, grade B, or ASTM A501, hot-formed welded and seamless carbon steel structural tubing.

PAYMENT:~ Steel bridge rail~Type No. 5 shall be paid for by the lineal foot which shall be full compensation for furnishing all materials, equipment and labor necessary to complete the item. The number of lineal feet of steel bridge rail for payment shall be computed as the distance between centerlines of the end rail posts.

⑤① PAINTING:~ All rail elements, posts & anchor plates shall be given three coats of paint as called for in the Standard Specifications except as noted. The finish coat shall be the color as specified on the "General Layout."

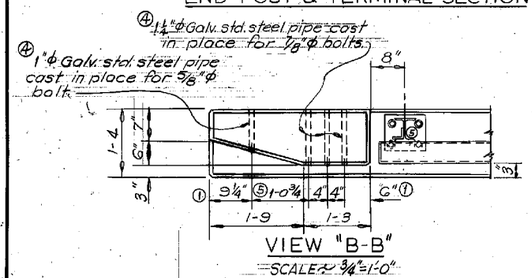
ERECTION:~ Rail posts shall be set perpendicular to top of curb, and the rails shall be set parallel to grade of roadway to obtain proper alignment, anchor bolt assemblies must be held in exact position while pouring curb. To obtain proper grade, use vertical slots in rail post for adjustment.

GALVANIZING:~ Galvanizing for bolts, nuts & washers shall be in accordance with ASTM Specification A153.

① GALVANIZED PIPE SLEEVE:~ Galvanized pipe sleeves shall be included in the unit price bid for Std. Steel Bridge Rail.

⑤ REFLECTORS:~ A reflector shall be placed on each end rail post and at approximately equal spacing (25' maximum ctrs. or on every third rail post) between end rail posts. The reflector is symmetrical and may be rotated to properly position it on the post. Reflectors shall be mounted with a reflectorized face toward oncoming traffic and ℄ Rdwy. The reflectors shall be included in the unit price bid per linear foot of bridge rail.

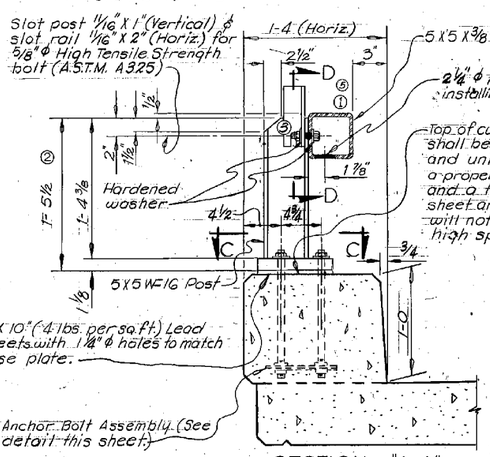
END POST & TERMINAL SECTION



VIEW "B-B"
SCALE:~ ¾"=1'-0"

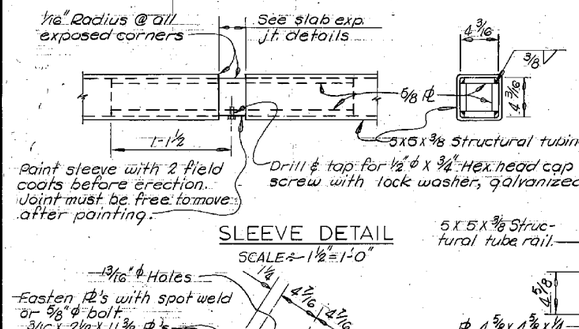
TYPICAL RAIL POST

SCALE:~ ¾"=1'-0"

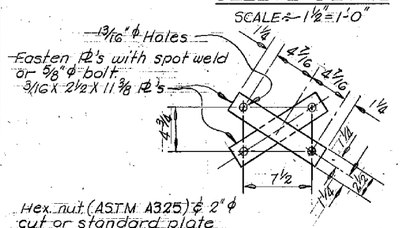


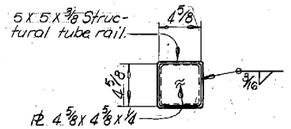
SECTION "A-A"
SCALE:~ 1½"=1'-0"

SLEEVE EXPANSION JOINT

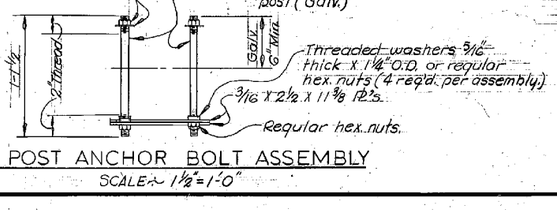


SLEEVE DETAIL
SCALE:~ 1½"=1'-0"

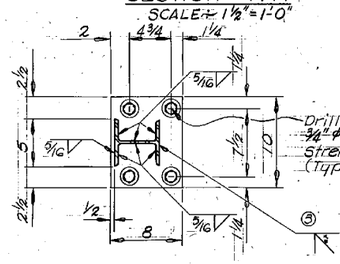




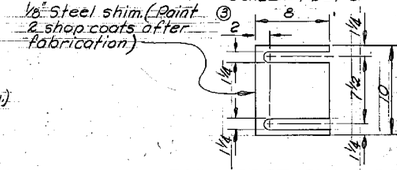
RAIL END CAP DETAIL
SCALE:~ 1½"=1'-0"



RAIL POST ANCHOR BOLT ASSEMBLY
SCALE:~ 1½"=1'-0"



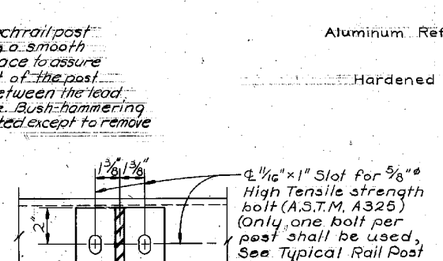
SECTION C-C
SCALE:~ 1½"=1'-0"



③ NOTE:~ The contractor shall furnish shims as required to adjust rail to grade. Shims shall be placed between lead sheet & base plate with slots toward ℄ Rdwy.

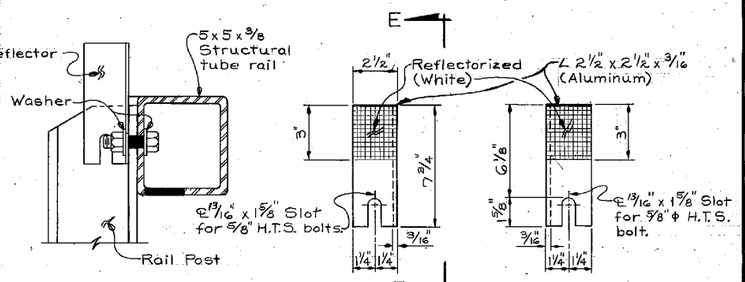
RAIL POST SHIM DETAIL
SCALE:~ 1½"=1'-0"

NOTE: Splices in structural tubing will not be permitted without prior approval by the Engineer. Splices shall be shown on shop drawings.

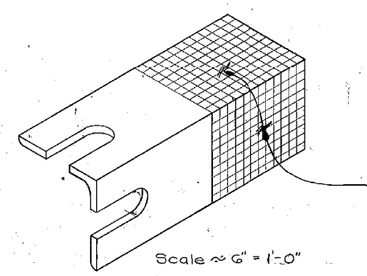


SECTION D-D ①
Scale:~ 3"=1'-0"

Note: Reflector omitted for clarity.



VIEW E-E



Note: The reflectorized (white) material shall be in accordance with the Standard Specifications.

REFLECTOR DETAILS ⑤
Scale ~ 3"=1'-0" (Except as noted.)

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

STANDARD STEEL BRIDGE RAIL
TYPE NO. 5

SCALE:~ AS NOTED

③	REVISED	NHR	3-31-72	DESIGNED		
④	REVISED	R.N.D.	7-31-72	DRAWN	D.E.MILOT	12-31-69
⑤	REVISED	RND	12-29-72	CHECKED	N.H.R.	12-31-69
				APPROVED	A.W.J.	12-31-69
				REVISED	R.N.D.	11-1-70 ①
				REVISED	N.H.R.	12-31-70 ②

DRAWING NO. SBR-T5

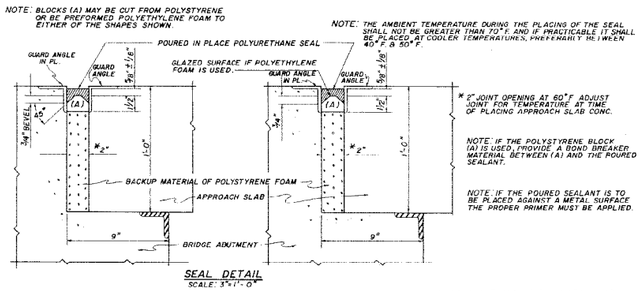
P.D.K.

K&E 19 1153 3-69

DocuSign Envelope ID: 9CA06B0A-0E4B-43A8-B933-E2ECADC9E5D9

AWARD COPY

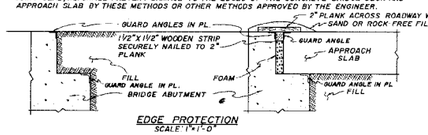
STATE	PROJECT NO.	SHEET NO.
MONTANA		



SEAL DETAIL

SCALE: 3"=1'-0"

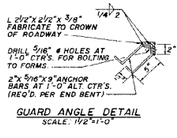
NOTE: IF THE CONTRACTOR INTENDS TO USE CONSTRUCTION EQUIPMENT ON THE BRIDGE DECK PRIOR TO THE PLACEMENT OF THE APPROACH SLAB, OR PRIOR TO THE ACCEPTANCE OF THE JOINT SEAL, HE SHALL PREVENT DAMAGE TO THE EDGES OF THE CONCRETE BRIDGE DECK AND APPROACH SLAB BY THESE METHODS OR OTHER METHODS APPROVED BY THE ENGINEER.



EDGE PROTECTION

SCALE: 1"=1'-0"

GUARD ANGLE MAY BE FURNISHED IN TWO PIECES WITH END ANCHOR BARS 6" MAX FROM EACH END.



GUARD ANGLE DETAIL

SCALE: 1 1/2"=1'-0"

MIXING GREAT CARE SHOULD BE USED IN MIXING

THE SEALANT IS NORMALLY A TWO COMPONENT SYSTEM WITH SPECIFIC MIXING INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. GENERALLY, THE MIX RPM MUST BE REDUCED TO LOW SPEED TO AVOID EXCESSIVE AIR ENTRAPMENT. APPLICATION MAY BE MADE BY GUN OR POURING.

SOME TYPES OF SEALANT ARE PROVIDED IN TWO GRADES, (1) SELF LEVELING AND (2) NON SAG. THERE IS GENERALLY NO DIFFERENCE IN COST AND DEPENDING UPON THE RECOMMENDATIONS OF THE MANUFACTURER ONE GRADE IS USED IN THE HORIZONTAL OR SLAB SECTION OF THE JOINT AND ANOTHER GRADE MAY BE REQUIRED FOR THE VERTICAL OR CURB SECTION OF THE JOINT.

JOINT PREPARATION THE VERTICAL FACES OF THE HORIZONTAL SHALL BE CLEANED BY SANDBLASTING UNTIL FREE OF ALL BONDED JOINT FORM WATERPROOFING, DUST, DIRT, CURING COMPOUND, LAITANCE, AND OTHER FOREIGN MATTER. FOLLOWING SANDBLASTING, REMOVE ALL LOOSE MATERIAL FROM THE JOINT WITH OIL FREE COMPRESSED AIR AT A PRESSURE OF APPROXIMATELY 120 CFM AND NOT LESS THAN 90 PSI NOZZLE PRESSURE AT THE TIME OF BLOWING.

IF THE SEAL IS TO BE PLACED AGAINST METAL, SUCH AS A GUARD ANGLE, THE METAL SURFACE SHALL BE DRY, CLEAN, FREE OF CORROSION, MILL SCALE, OIL, TAR, PAINT OR OTHER CONTAMINATION. THE BOND SURFACE SHOULD BE SAND-BLASTED TO WHITE METAL. THE JOINT SHOULD AGAIN BE BLOWN OUT BY MEANS OF DRY, OIL FREE COMPRESSED AIR AFTER THE COMPLETION OF ALL CLEANING OPERATIONS, PLACEMENT OF POLYSTYRENE FILLERS AND BLOCK A AND JUST PRIOR TO PRIMING (WHEN REQUIRED).

PRIMING MOST SEALANTS REQUIRE A PRIMER. AFTER CLEANING OPERATIONS HAVE BEEN COMPLETED AND THE BACKUP MATERIAL IS IN PLACE THE PRIMER IS APPLIED. PRIMERS ARE SUPPLIED FOR VARIOUS CONDITIONS. THEY ARE AVAILABLE FOR APPLICATION TO CONCRETE OR METAL SURFACES AND FOR TEMPERATURES OF 15° TO 40° AND FOR TEMPERATURES ABOVE 80°. IT IS OF MOST IMPORTANCE THAT THE PROPER PRIMER IS USED AND THAT ITS APPLICATION IS TO THE VERTICAL SURFACES ONLY. PRIMING OF THE BACKUP MATERIAL OR THE TOP SURFACES OF BLOCK A SHOULD BE AVOIDED AS MUCH AS POSSIBLE.

A CAREFUL INSPECTION SHOULD BE MADE AFTER PRIMER APPLICATION TO INSURE COMPLETE COVERAGE OF THE SIDE FACES. IF "MISSED SPOTS" OCCUR, RE-PRIME.

THE SEALANT SHOULD NOT BE PLACED UNTIL THE PRIMER IS COMPLETELY DRY. IF CONDITIONS PREVENT PLACEMENT OF SEALANT FOR MORE THAN SIX HOURS AFTER PRIMING THE SURFACE SHOULD BE REPRIMED.

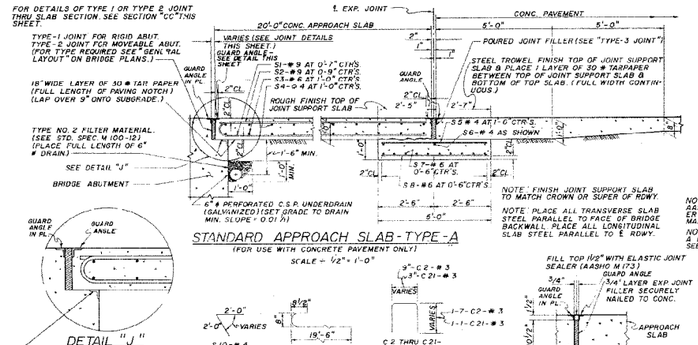
A BOND BREAKER MATERIAL MAY BE REQUIRED BETWEEN BLOCK A AND THE SEALANT AS NOTED ON THE ATTACHED SKETCH.

SEALING THE MOST IMPORTANT REQUIREMENT OF PLACING THE SEALANT IS TO INSURE THAT THE MAXIMUM THICKNESS ABOVE BLOCK A DOES NOT EXCEED 3/4" AT THE CENTER OF THE JOINT. BE ESPECIALLY CERTAIN TO MAINTAIN THE 3/4" MEAN DIMENSION AS SHOWN ON THE ATTACHED DETAIL.

SINCE THE VARIOUS ACCEPTABLE PRODUCTS USED AS SEAL MATERIAL VARY SOMEWHAT WITH RESPECT TO APPLICATION TEMPERATURES, CURE REQUIREMENTS, METHOD OF APPLICATION, ETC., ONLY THE VERY IMPORTANT KNOWN PROBLEM AREAS ARE MENTIONED HERE.

LINSEED TREATMENT IN THE EVENT THE LINSEED TREATMENT IS APPLIED PRIOR TO INSTALLATION OF THIS APP. SLAB SEAL, EXTREME CARE SHALL BE TAKEN TO INSURE THAT THE THE TREATMENT DOES NOT COME INTO CONTACT WITH THE APPROACH SLAB-SEAL CONTACT SURFACES.

SINCE THE LINSEED TREATMENT PENETRATES CONCRETE SURFACES TO A CONSIDERABLE DEPTH, A FAILURE OF BOND BETWEEN THE APPROACH SLAB SEAL AND ADJOINING CONC. SURFACES IS NEARLY CERTAIN UNLESS PROTECTIVE MEASURES ARE TAKEN TO PROTECT THE EXPOSED JOINT SURFACE FROM OVERSPRAY.



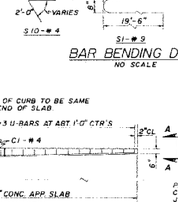
STANDARD APPROACH SLAB - TYPE - A

(FOR USE WITH CONCRETE PAVEMENT ONLY)

SCALE = 1/2" = 1'-0"

DETAIL "J"

SCALE = 1"=1'-0"



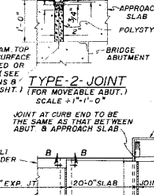
BAR BENDING DETAILS

NO SCALE

TYPE-1 JOINT

(FOR RIGID ABUT.)

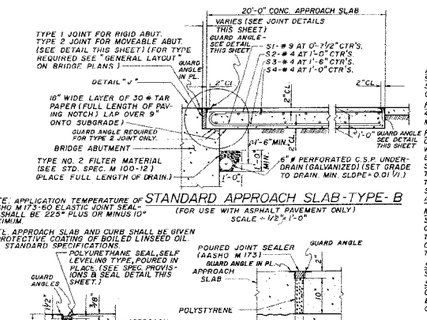
SCALE = 1"=1'-0"



TYPE-2-JOINT

(FOR MOVEABLE ABUT.)

SCALE = 1"=1'-0"



STANDARD APPROACH SLAB - TYPE - B

(FOR USE WITH ASPHALT PAVEMENT ONLY)

SCALE = 1/2" = 1'-0"

NOTE: APPLICATION TEMPERATURE OF AASHO M 173-60 ELASTIC JOINT SEALER SHALL BE 225° PLUS OR MINUS 10°

NOTE: APPROACH SLAB AND CURB SHALL BE GIVEN A PROTECTIVE COATING OF BOILED LINSEED OIL SEE STANDARD SPECIFICATIONS.

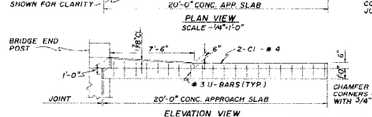
TYPE-3-JOINT

(FOR USE OVER JOINT SUPPORT SLAB)

SCALE = 1"=1'-0"

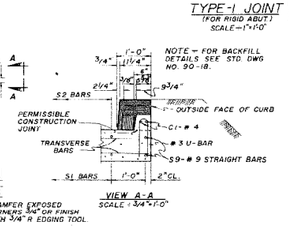
PLAN VIEW

SCALE = 1/4"=1'-0"



ELEVATION VIEW

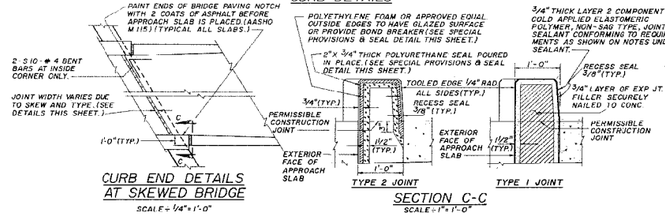
SCALE = 1/4"=1'-0"



VIEW A-A

SCALE = 3/4"=1'-0"

CURB DETAILS



CURB END DETAILS AT SKEWED BRIDGE

SCALE = 1/4"=1'-0"

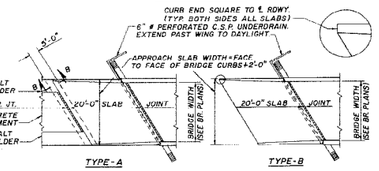
TYPE 2 JOINT

TYPE 1 JOINT

SECTION C-C

SCALE = 1"=1'-0"

TYPE-A AT SQUARE BRIDGE TYPE-B



TYPE-A AT SKEWED BRIDGES TYPE-B

PLAN VIEW OF APPROACH SLABS

NO SCALE

NOTE: SLAB & CURB SHALL BE CURVED OR TAPERED WHEN NECESSARY TO MATCH ROADWAY.

NOTES

APPROACH SLAB: APPROACH SLAB SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 41 OF THE STANDARD SPECIFICATION. THE SLAB SHALL BE FINISHED AS SPECIFIED FOR BRIDGE DECKS IN ARTICLE 41.041(12) & 3. CONCRETE SHALL BE EITHER CLASS "AD" OR CLASS "AP" AT CONTRACTORS OPTION.

REINFORCING STEEL: REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SECTION 67 OF THE STANDARD SPECIFICATIONS EXCEPT METHOD OF MEASUREMENT AND PAYMENT SHALL BE AS SET FORTH BELOW.

FOUNDATION: THE FOUNDATION FOR THE APPROACH SLAB AND JOINT SUPPORT SLAB SHALL CONSIST OF THE SUBGRADE AND BASE CONSTRUCTED AND COMPACTED IN ACCORDANCE WITH STANDARD PLANS AND SPECIFICATIONS. EXCAVATION FOR JOINT SUPPORT SLAB SHALL BE HELD TO A MINIMUM AND ALL AREA EXCAVATED BUT NOT FILLED WITH CONCRETE SHALL BE BACKFILLED WITH THE SAME MATERIAL THAT WAS TAKEN FROM THE EXCAVATION. ALL BACKFILL SHALL BE LAYER PLACED AND COMPACTED WITH MECHANICAL TAMPERS. THE COST OF ALL EXCAVATION NECESSARY FOR THE PLACEMENT OF APPROACH SLAB AND JOINT SUPPORT SLAB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "CONCRETE APPROACH SLAB" AS SET FORTH BELOW.

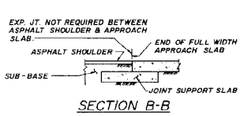
MEASUREMENT & PAYMENT: APPROACH SLABS SHALL BE MEASURED BY AREA IN SQ. YDS. THE WIDTH AND LENGTH FOR MEASUREMENT SHALL BE FROM OUT TO OUT OF COMPLETED SLAB. NO ADDITIONAL AREA WILL BE ALLOWED FOR THE JOINT SUPPORT SLAB. THE UNIT PRICE BID PER SQ. YD. FOR "CONCRETE APPROACH SLAB" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, EQUIPMENT, TOOLS AND LABOR NECESSARY TO COMPLETE THE WORK, INCLUDING THE JOINT SUPPORT SLAB AND LINSEED TREATMENT.

SEALS: FOR TYPE AND METHOD OF APPLICATION OF POLYURETHANE SEALS SEE SPECIAL PROVISIONS.

SEALANT: POLYURETHANE SEALANTS SHALL MEET FEDERAL SPECIFICATION SS-S-00995A-(1)(CE) OR SSS-S-00200 C SEALING COMPOUND, TWO-COMPONENT ELASTOMERIC POLYMER TYPE, COLD-APPLIED, CONCRETE PAVING JOINTS AND SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUAL.

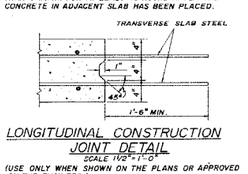
1. PRC 3105 PRODUCTS RESEARCH AND CHEMICAL CORP. BURBANK, CALIF.
2. U-SEAL 3201 EDGCO TECHNICAL PRODUCTS, INC. LONG BEACH, CALIFORNIA
3. SIKAFLEX T-68 SIKA CHEMICAL CORP. LYNNHURST, NEW JERSEY
4. META-SEAL 220 AMERICAN METASEAL CO. DETROIT, MICHIGAN

PROTECTIVE COATING: APPROACH SLAB AND CURB SHALL BE GIVEN A PROTECTIVE COATING OF BOILED LINSEED OIL. SEE STANDARD SPECIFICATIONS.



SECTION B-B

NOTE: TRAFFIC SHALL NOT BE PERMITTED ON NEW APPROACH SLAB FOR AT LEAST 14 DAYS AFTER CONC. HAS BEEN PLACED. TRAFFIC SHALL NOT BE ALLOWED TO DRIVE WITHIN 5 FEET OF THE CONSTRUCTION JOINT AND SHALL BE RESTRICTED TO A SPEED OF NOT MORE THAN 5 M.P.H. FOR AT LEAST 48 HOURS AFTER THE CONCRETE IN ADJACENT SLAB HAS BEEN PLACED.



LONGITUDINAL CONSTRUCTION JOINT DETAIL

SCALE 1 1/2" = 1'-0"

(USE ONLY WHEN SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER.)

X.X.X.
X.X.X.
X.X.X.

STANDARD DRAWING	
REFERENCE: STANDARD SPEC. SECTION 39	DWG. NO. 18
STANDARD CONCRETE APPROACH SLAB TO STRUCTURES	
REVISED	
EFFECTIVE 3/1/72	APPROVED: H.J. ANDERSON - DIRECTOR OF HIGHWAYS BY ADMINISTRATOR - ENGINEERING DIVISION