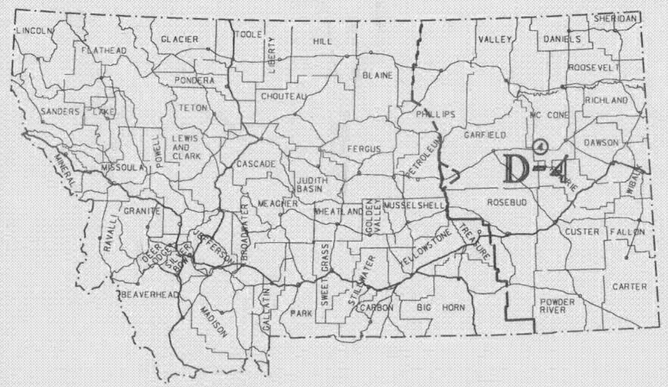
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MONTANA DEPARTMENT OF TRANSPORTATION

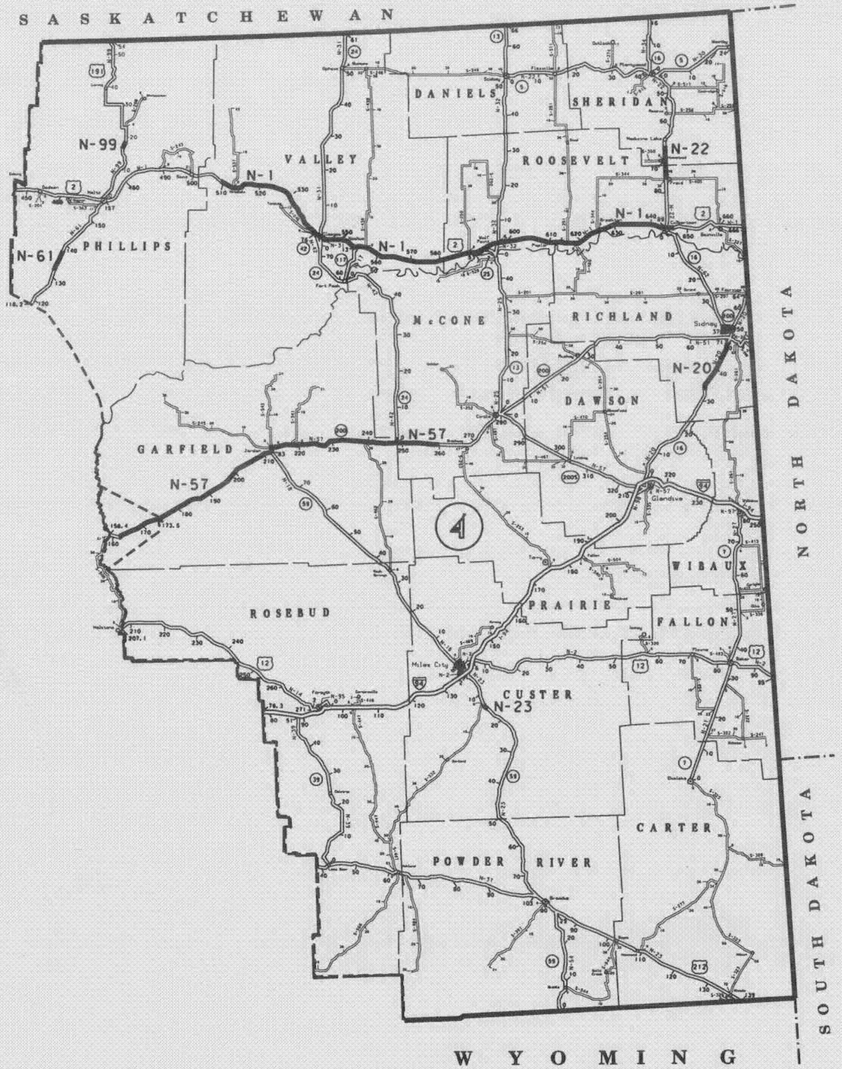
FEDERAL AID PROJECT NHTSA 0002 (393)
D4–NON–INTERSTATE GUARDRAIL
ROADWAY & ROADSIDE SAFETY IMPROVEMENTS
GLENDIVE DISTRICT

DESIGN DATA

N/A

LETTING DATE – 09-25-03
COMPLETION DATE: 07-08-2005

AS–BUILTS



4

N-1 N-23
N-20 N-57
N-22 N-61
N-99

APPROXIMATE WORK LOCATIONS

MISTY MINER
2-11-2005

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DESIGNED BY
REVIEWED BY
CHECKED BY

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B1

AS-BUILTS

BRIDGE BUREAU

MONTANA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT NO. NH-IM 0002(270) P.E.
NHTSA 0002(393) CONSTRUCTION

D4-NON-INTERSTATE GUARDRAIL

VALLEY, ROOSEVELT, RICHLAND, CUSTER, GARFIELD, McCONE AND PHILLIPS COUNTIES

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
B2	18743 Q2	QUANTITY SUMMARY
B3	18744	BRIDGE RAIL REVISION ON ROUTE N-1 AT RP 508+0.888 AND RP 514+0.737
B4	18745	BRIDGE RAIL REVISION ON ROUTE N-1 AT RP 514+0.943
B5	18746	BRIDGE APPROACH SECTIONS ON ROUTES N-20, N-22 AND N-57
B6	18747	BARRIER END MODIFICATION ON ROUTE N-20 AT RP 37+0.515
B7	18748	BRIDGE APPROACH SECTIONS ON ROUTE N-23 AT RP 15+0.943
B8	18749	BRIDGE RAIL REVISION ON ROUTE N-57 AT RP 231+0.023 AND RP 232+0.710
B9	18750	BRIDGE RAIL REVISION ON ROUTES N-1, N-57 AND N-61
B10	18751	BRIDGE RAIL REVISION ON ROUTE N-57 AT RP 239+0.257
B11	18752	DRILLED SHAFT ANCHOR POST
B12	18753	SWAY BRACING DETAILS ON ROUTE N-57 AT RP 232+0.710, 247+0.394 AND 255+0.300
B13	7020	EXISTING GENERAL LAYOUT ON ROUTE N-1 RP 508+0.888
B14	7026	EXISTING GENERAL LAYOUT ON ROUTE N-1 RP 514+0.737
B15	7032	EXISTING GENERAL LAYOUT ON ROUTE N-1 RP 514+0.943
B16	3700	EXISTING GENERAL LAYOUT ON ROUTE N-1 RP 645+0.625
B17	1809	EXISTING GENERAL LAYOUTS ON ROUTE N-57 RP 231+0.023 AND RP 232+0.710
B18	2057	EXISTING GENERAL LAYOUTS ON ROUTE N-57 RP 232+0.566 AND RP 235+0.652
B19	2176	EXISTING GENERAL LAYOUT ON ROUTE N-57 RP 234+0.523
B20	1810	EXISTING GENERAL LAYOUT ON ROUTE N-57 RP 239+0.257
B21	1949A	EXISTING GENERAL LAYOUT ON ROUTE N-57 RP 247+0.394
B22	1812	EXISTING GENERAL LAYOUT ON ROUTE N-57 RP 248+0.831
B23	1813	EXISTING GENERAL LAYOUTS ON ROUTE N-57 RP 249+0.748 AND RP 253+0.331
B24	1813A	EXISTING GENERAL LAYOUTS ON ROUTE N-57 RP 254+0.769, RP 254+0.838, RP 255+0.300 AND RP 257+0.150
B24A	1814	EXISTING GENERAL LAYOUT ON ROUTE N-57 RP 260+0.150
B25	2280	EXISTING GENERAL LAYOUTS ON ROUTE N-61 RP 133+0.425 AND RP 136+0.511
B26	2177	EXISTING GENERAL LAYOUT ON ROUTE N-61 RP 137+0.076

Misty Miner
22-10-2005

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FILENAME: DRAWING NO.

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B2

ADDENDUM NO. 1
ATTACHMENT NO. 3

AS-BUILTS

ESTIMATED BRIDGE PLAN QUANTITIES

ROUTE	REFERENCE POST	BRIDGE ID NUMBER	FEATURE CROSSED	REVISE BRIDGE RAIL-THRIE BEAM (m)	REVISE BRIDGE RAIL-CONCRETE BARRIER (m)	REVISE TIMBER BRIDGE RAIL-T101 (m)	ANCHOR POST (EACH)	TREATED TIMBER m^3	SPLIT
N-1	508+0.888	P00001508+0888	BEAVER CREEK	107.62					7
N-1	514+0.737	P00001514+0737	MILK RIVER	218.17					8
N-1	514+0.943	P00001514+0943	MILK RIVER OVERFLOW		89.27				9
N-1	645+0.625	P00001645+0625	SHEEP CREEK			~~42.54~~ 42.544	4		10
N-57	231+0.023	P00057231+0023	DRAINAGE			~~42.54~~ 42.544	4		11
N-57	232+0.566	P00057232+0566	DRAINAGE			~~22.22~~ 22.224	4		12
N-57	232+0.710	P00057232+0710	DRAINAGE			~~52.70~~ 52.704	4	~~0.79~~ 0.777	13
N-57	234+0.523	P00057234+0523	DRAINAGE			~~67.94~~ 67.944	4		14
N-57	235+0.652	P00057235+0652	DRAINAGE			~~62.86~~ 62.864	4		15
N-57	239+0.257	P00057239+0257	LITTLE DRY CREEK			~~253.36~~ 253.364	4		16
N-57	247+0.394	P00057247+0394	DRAINAGE			~~67.94~~ 67.944	4	~~0.14~~ 0.292	17
N-57	248+0.831	P00057248+0831	TIMBER CREEK			~~83.18~~ 83.184	4		18
N-57	249+0.748	P00057249+0748	SKULL CREEK			~~80.64~~ 80.644	4		19
N-57	253+0.331	P00057253+0331	DRAINAGE			~~57.78~~ 57.784	4		20
N-57	254+0.769	P00057254+0769	DRAINAGE			~~57.78~~ 57.784	4		21
N-57	254+0.838	P00057254+0838	DRAINAGE			~~52.70~~ 52.704	4		22
N-57	255+0.300	P00057255+0300	DRAINAGE			~~62.86~~ 62.864	4	~~1.51~~ 1.504	23
N-57	257+0.150	P00057257+0150	COULEE			~~52.70~~ 52.704	4		24
N-57	260+0.150	P00057260+0150	STOCKPASS			~~17.14~~ 17.144	4		25
N-61	133+0.425	P00061133+0425	BIG WARM SPRING CREEK			~~67.94~~ 67.944	4		26
N-61	136+0.511	P00061136+0511	WILD HORSE CR OVERFLOW			~~42.54~~ 42.544	4		27
N-61	137+0.076	P00061137+0076	WILD HORSE CREEK			~~67.94~~ 120.648	~~4~~ 8		28
TOTAL				325.79	89.27	~~1255.30~~ 1308.08	~~76~~ 80	~~2.44~~ 2.573	

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: Montana Department of Transportation and the Montana Transportation Commission Standard Specifications for Road and Bridge Construction, 1995 edition, and any amendments thereto, and the Special Provisions govern unless otherwise noted. Design was prepared in accordance with AASHTO Standard Specifications for Highway Bridges, 17th Edition - 2002, and any amendments thereto.

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31M Grade 60 (420).

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.

GALVANIZING: Galvanize all bolts, nuts and washers in accordance with AASHTO M 232M. Galvanize metal guardrail in accordance with ASTM Specification A 653M or AASHTO M 111M.

EPOXY RESIN BONDING AGENT: Thoroughly coat all existing concrete in contact with new concrete with an epoxy bonding agent (AASHTO M 235-91 Type V) immediately prior to placing new concrete. Include all costs associated with providing and applying the epoxy bonding agent in the other items.

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

DIMENSIONS: All dimensions are in millimeters 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.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

FEDERAL AID PROJECT NO. NHTSA 0002(393)

FEDERAL AID PROJECT NO. NHT

VARIOUS COUNTIES

QUANTITY SUMMARY

DESIGNED	6-11-03	L. M. S.
DRAWN	6-11-03	L. M. S.
CHECKED	6-26-03	D. J. R.
REVISED		
REVISED		
REVISED		

FILENAME: DRAWING NO.

Misty Miner
22-10-2005

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BRIDGE BUREAU

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B3

Metal Guardrail - Bridge Approach Section Type 3 (See Det. Dwg. No. 606-24, 606-25 and Road Plans) Warp new guardrail down gradually to conform with normal height of Road Guardrail

Included in the unit price bid for Revise Bridge Rail - Thrie Beam (See summary table for payment lengths)

Metal Guardrail - Bridge Approach Section Type 3 (See Det. Dwg. No. 606-24, 606-25 and Road Plans) Warp new guardrail down gradually to conform with normal height of Road Guardrail

Approach end station

Approach end station

A

B

C

NOTE: Make bridge approach section continuous with existing bridge rail.

℄ New post bolt

476

1 905 Transition Section (W-Beam to Thrie Beam)

℄ Splice (Transition Section to Thrie - Beam)

1 905 Transition Section (W-Beam to Thrie Beam)

476

℄ New post bolt

*195

241

40 (Typ.)

End of new curb (Extension required this end, both structures, see Curb Extension Detail)

℄ New rail post

Remove existing rail posts and guardrail (Typ.)

℄ New rail post

40 (Typ.)

321

*195

End of existing curb (No extension required on skewed bridge, extension required on square bridge)

Face of new guardrail

Block out to avoid placing concrete to a feathered edge

Face of new guardrail

NOTE: Thoroughly coat the existing concrete curb in contact with new concrete with an epoxy bonding agent (AASHTO M 235-91 Type V) immediately prior to placing new concrete.

Drill 18 mm Ø holes in blockout and post after transition section has been erected

PARTIAL PLAN VIEW

NOTE: Plug predrilled holes in rail with standard splice bolts. See Detailed Dwg. No. 606-82.

* NOTE: The 195 mm dimension is required with wood posts. The contractor has the option to use steel posts. See Detailed Drawings for dimensions.

A

B

B

A

New Cast-In-Place Concrete Curb Taper (Typical each end, see Dtl. Dwg. No. 606-27)

Existing grade at face of curb

PARTIAL ELEVATION VIEW

RAIL REVISION SUMMARY TABLE (Details shown apply to both sides of the structure)

STRUCTURE LOCATION		GENERAL LAYOUT DWG. NO.	SKEW	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LENGTH OF RAIL (ONE SIDE ONLY) (m)	TOTAL LENGTH FOR PAYMENT (m)	APPROACH END STATIONING BENT NO. 1	APPROACH END STATIONING BENT NO. 3 or 5
Route N-1	508+0.888	7020	30°	1 028	20 Spa. @ 2 540 = 50 800	1 028	53.808	107.616	10+45.72 Rt. 10+45.72 Lt.	9+54.28 Lt. 9+54.28 Rt.
Route N-1	514+0.737	7026	0°	727	42 Spa. @ 2 540 = 106 680	727	109.086	218.172	10+45.72 Rt. 10+45.72 Lt.	9+61.90 Lt. 9+61.90 Rt.

250 mm X 230 mm X 3.0 mm Steel shim

25

40

150

230

75

250

RAIL POST SHIM DETAIL

Scale ~ 1 : 10

24 mm Ø x 40 mm slotted holes for M20 stud bolt (Typ.)

80 125 45

6

2

45°

Front flange of post

Except face of post

6

40

150

230

10

250

BASE PLATE DETAIL

Scale ~ 1 : 10

400

Extended new concrete curb

230

Remove existing curb

NOTE: Detail shown is for skewed and square bridges.

597 ±

110

2-#13 U-bars centered in curb 100 mm apart

305 Embed

Face of existing rail

NOTE: Provide a bond breaker between new concrete curb and backwall.

CURB EXTENSION DETAIL

Scale ~ 1 : 15

2 extensions required on skewed bridge

4 extensions required on square bridge

150

35

℄ New post and ℄ blockout

℄ 18 mm Ø hole for M16 oval shouldered buttonhead bolt

℄ 18 mm Ø hole for M16 oval shouldered buttonhead bolt (End post only)

350

77 98 98 77

TYPICAL BLOCKOUT ELEVATION

Scale ~ 1 : 10

New W150 x 30 post with 25 mm thick base plate (see detail, this sheet) and 2 fiber reinforced pads with slotted holes to match base plate (Typ. @ ea. post)

597 ±

Face of curb

Transition section

℄ 6 mm Ø hole for 20d nail in flange of post

℄ New M16 oval shouldered buttonhead bolt with one hex nut, one lock washer, one flat washer and one plate washer

175

50

℄ 20d nail

New 150 mm x 150 mm x 350 mm blockout. (See Typical Blockout Elevation, this sheet)

610

305±

Existing curb (Typ.)

C

C

SECTION A-A

Scale ~ 1: 10

NOTE: See Detailed Dwg. No. 606-84 for plate washer detail.

Steel shims as required and 2 fiber reinforced pads (Typ. @ each post)

Existing curb (Typ.)

NOTE: The existing bridge rail and hardware remains the property of the State. Neatly stockpile as indicated by the Engineer.

NOTE: Place blockouts made of treated timber with the wood grain perpendicular to the bolt centerline.

Remove existing rail posts and guardrail

597 ±

Face of curb

250 mm x 230 mm x 25 mm steel base plate (See detail this sheet) (Typ.)

610

305±

New M20 galvanized high tensile strength stud bolt (ASTM F 568M Class 8.8) 4 per post (50 mm of thread) with standard cut washer and heavy hex nut (ASTM A 325M) (Typ. all rail posts)

SECTION B-B

Scale ~ 1: 10

NOTE: Furnish shims as necessary to adjust rail to grade. Place shims between fiber reinforced pads. Place shims with slots toward roadway centerline.

℄ New M16 oval shouldered buttonhead bolt with one hex nut, one lock washer, one flat washer and one plate washer

℄ New metal Thrie-beam

NOTE: Use fiber reinforced pads meeting the requirements of subsection 711.16 of the Standard Specifications. Size and position the pads so that not less than 10 mm of the pad protrudes on all sides of the base plate. Punch slotted holes in pads to match base plate.

NOTE: Install M20 stud bolts such that a minimum pullout strength of 78 kN is achieved assuming a concrete strength of f'c of 21 MPa. Do not tighten nuts before achieving full required strength.

40

New W150 x 30 post

℄ 6 mm Ø hole for 20d nail

℄ 18 mm Ø x 40 mm vertical slotted hole in post for M16 oval shouldered buttonhead bolt with lock washer, hex nut and plate washer

SECTION C-C

Scale ~ 1 : 10

NOTES

AS-BUILTS

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

REFLECTORS: Place a reflector on each end rail post and at approximately equal spacing (every third rail post but not to exceed 7620 mm) between end rail posts. Mount reflectors with reflectorized face toward oncoming traffic. See Dtl. Dwg. No. 606-05B for reflector detail.

PAYMENT: Revise Bridge Rail ~ Thrie Beam is paid for by the linear meter which is full compensation for all resources necessary to complete the item. The number of linear meters of Revise Bridge Rail ~ Thrie Beam for payment is shown on the Summary Table on this sheet. Use new posts and plates conforming to AASHTO M 270M Grade 250T3. Use metal guardrail conforming to AASHTO M 180 and lap in direction of traffic. Use Thrie Beam sections meeting the requirements of AASHTO designation Type I Class B. Use 1905 mm transition sections, from standard metal guard rail to thrie beam, meeting the requirements of AASHTO designation Type 1 Class A.

ERECTION: Set the rail parallel to the roadway grade. Adjust rail to proper rail height using vertical slots in rail post or rail post shims.

Replace any item which is to be incorporated in the rehabilitated structure that is damaged during construction at no additional cost to the State.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

ON ROUTE N-1 AT RP 508+0.888 & 514+0.737

FEDERAL AID PROJECT NO. NHTSA 0002(393)

VALLEY COUNTY

BRIDGE RAIL REVISION

Scale ~ 1 : 20 except as noted

DESIGNED	1-29-03	L. M. S.
DRAWN	2-24-03	L. M. S.
CHECKED	6-17-03	D. J. R.
REVISED		
REVISED		
REVISED		

FILENAME:

DRAWING NO.

Misty Miner

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BRIDGE BUREAU

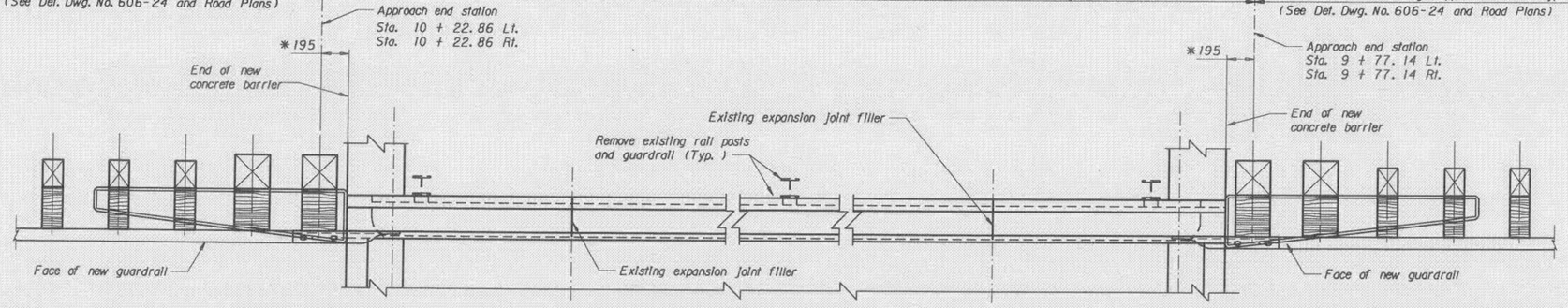
AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B4

Metal Guardrail - Bridge Approach Section Type 3 (See Det. Dwg. No. 606-24 and Road Plans)

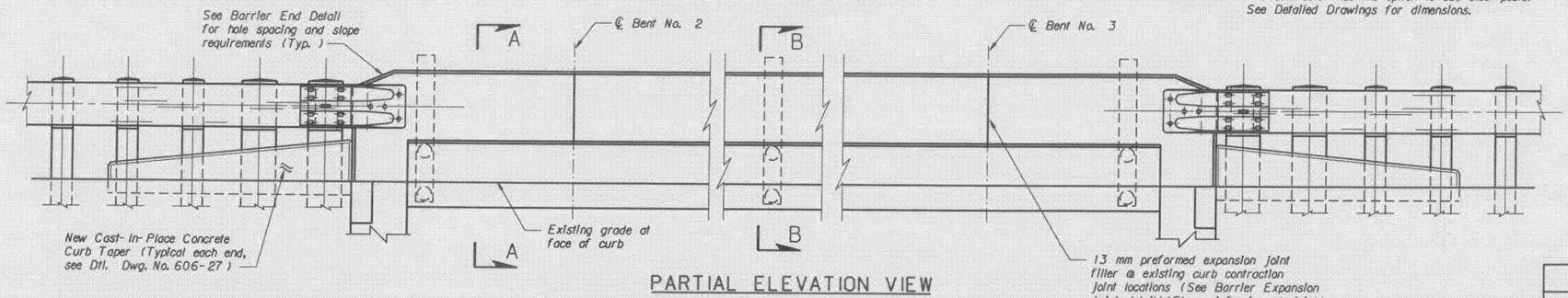
44.637 m included in the unit price bid for Revise Bridge Rail - Concrete Barrier. Total estimated length = 89.274 m

Metal Guardrail - Bridge Approach Section Type 3 (See Det. Dwg. No. 606-24 and Road Plans)



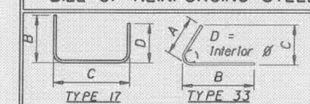
PARTIAL PLAN VIEW

*NOTE: The 195 mm dimension is required with wood posts. The contractor has the option to use steel posts. See Detailed Drawings for dimensions.



PARTIAL ELEVATION VIEW

BILL OF REINFORCING STEEL (FOR INFORMATION ONLY)



STRAIGHT BARS

Mark	Size	No.	Length
B100	#13	30	12 190
B101	#13	20	2400
B102	#13	10	3820
D1	#13	294	740

BENT BARS (All dimensions are out to out)

Mark	Size	No.	Type	Length	A	B	C	D
B1	#13	8	33	1 590	770	770	230	90
B2	#13	4	33	1 400	670	670	230	110
B3	#13	294	33	1 010	480	480	205	90
B4	#13	8	17	1 150		690	160	300

NOTES:

REFLECTORS: Place a white reflector on top of concrete barrier at 9.15 meter spacing between ends of barrier. Mount reflectors with reflectorized face toward oncoming traffic. See Dtl. Dwg. No. 606-60 for reflector detail.

PAYMENT: With the exception to Bridge Approach Sections, the unit price bid for Revise Bridge Rail - Concrete Barrier includes all resources necessary to complete the item as shown on the plans.

See General Layout Dwg. No. 7032 for more information.

Use Class SD concrete in barriers. Galvanize all new hardware.

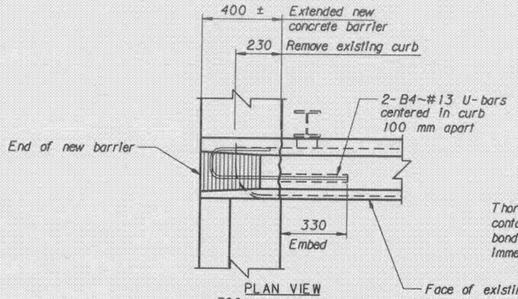
Details shown on this drawing apply to both sides for the entire length of the structure.

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

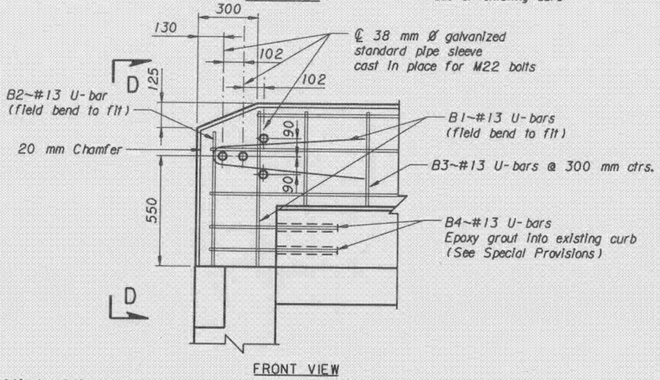
The existing bridge rail and hardware remains the property of the State. Neatly stockpile as indicated by the Engineer.

REVISE BRIDGE RAIL - CONCRETE BARRIER

STRUCTURE LOCATION		GENERAL LAYOUT NO.	LENGTH OF BARRIER (one side only)	TOTAL LENGTH
Route N-1	514 + 0.943	7032	44.637 m	89.274 m

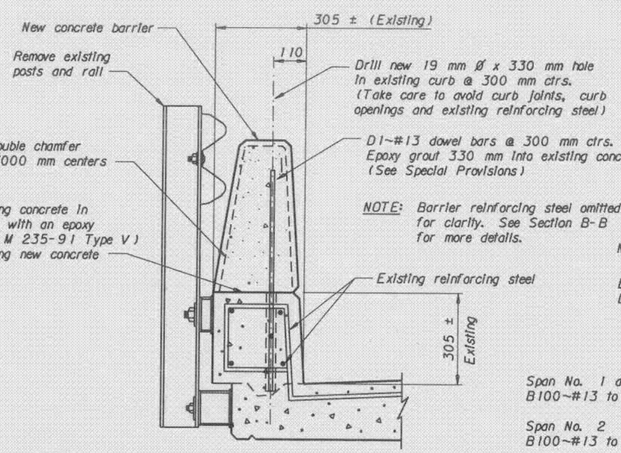


PLAN VIEW

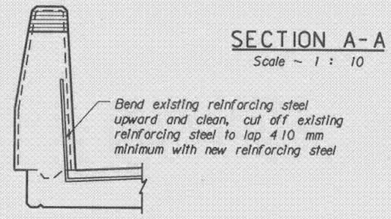


FRONT VIEW

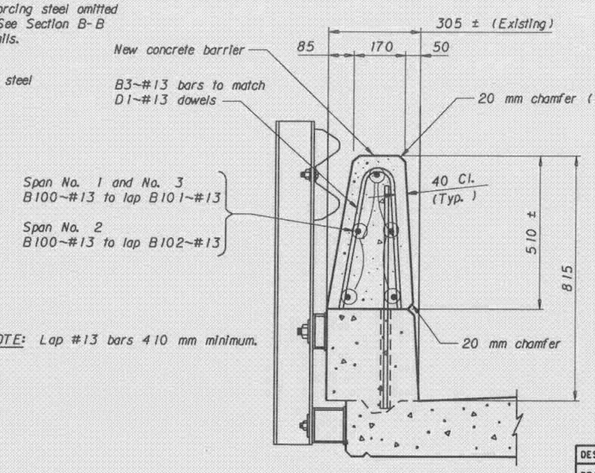
BARRIER END DETAIL
Scale ~ 1 : 15



SECTION A-A
Scale ~ 1 : 10

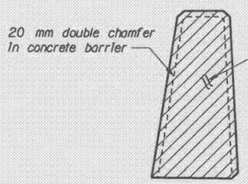


VIEW D-D
Scale ~ 1 : 15



NOTE: Lap #13 bars 410 mm minimum.

SECTION B-B
Scale ~ 1 : 10



BARRIER EXPANSION JOINT
Scale ~ 1 : 10

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL
ON ROUTE N-1 AT RP 514+0.943
FEDERAL AID PROJECT NO. NHTSA 0002(393)
VALLEY COUNTY
BRIDGE RAIL REVISION

Scale ~ 1 : 20 except as noted

DESIGNED	3-10-03	L. M. S.
DRAWN	3-11-03	L. M. S.
CHECKED	6-18-03	D. J. R.
REVISED		
REVISED		
REVISED		

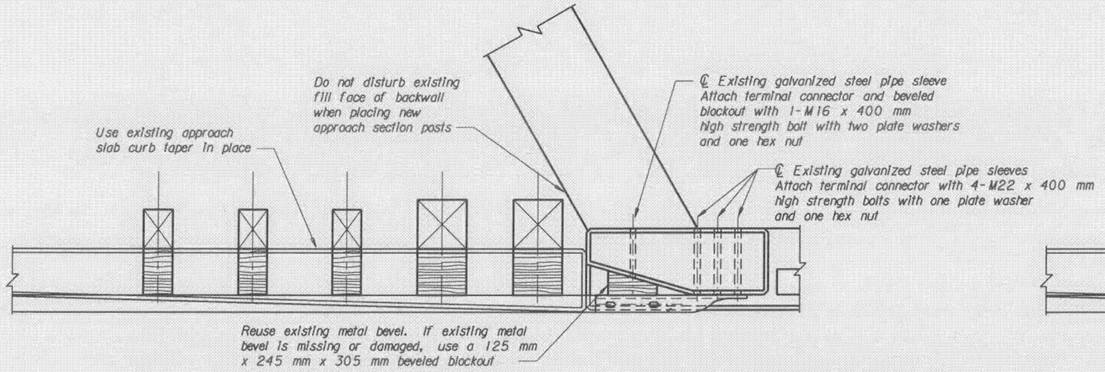
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Misty Miner
22-10-2005

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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B5

BRIDGE BUREAU

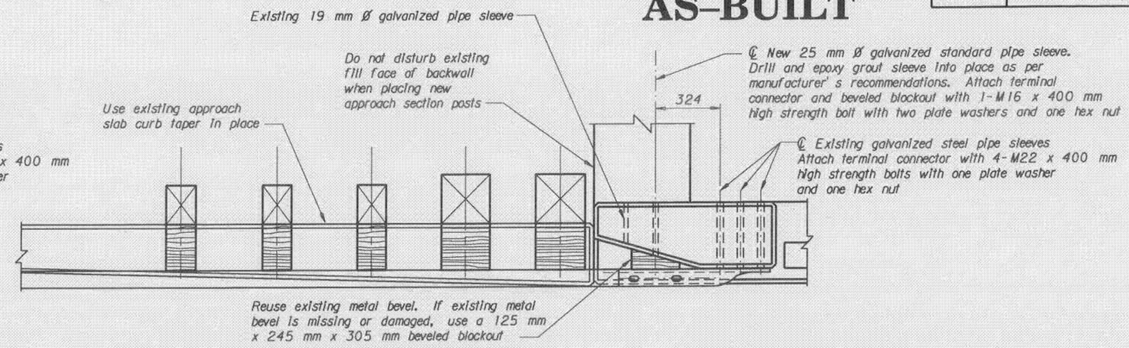


PARTIAL PLAN VIEW

NOTE: See Detailed Drawing No. 606-24 for more details and notes.

** See revised bridge approach section this sheet.

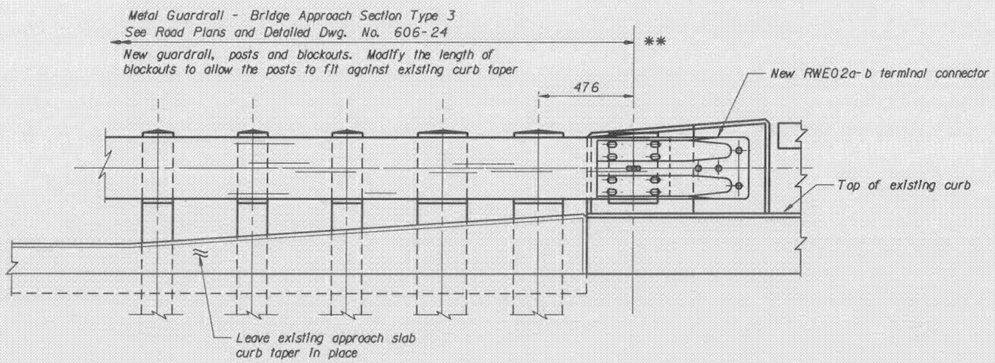
AS-BUILT



PARTIAL PLAN VIEW

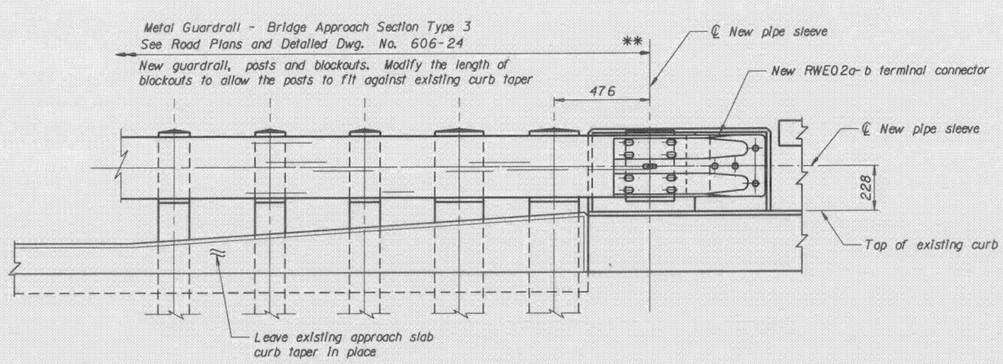
NOTE: See Detailed Drawing No. 606-24 for more details and notes.

** See revised bridge approach section this sheet.



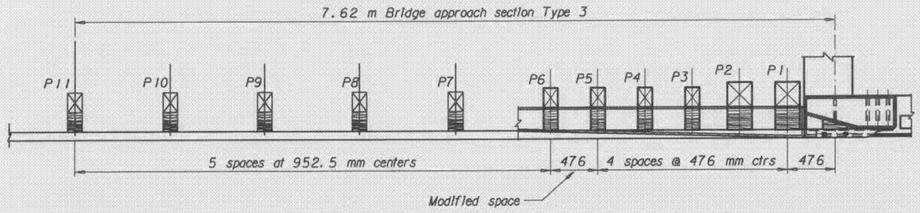
PARTIAL ELEVATION VIEW

R. P. P00 020 032+0.107
R. P. P00 020 032+0.399
R. P. P00 020 032+0.652
R. P. P00 020 046+0.683
R. P. P00 022 065+0.625
R. P. P00 057 161+0.243
R. P. P00 057 187+0.853



PARTIAL ELEVATION VIEW

R. P. P00 022 075+0.877



** REVISED TYPE 3 BRIDGE APPROACH SECTION

SUMMARY TABLE

STRUCTURE LOCATION		* GENERAL LAYOUT DRAWING NO.	BRIDGE APPROACH SECTIONS		RAIL ATTACHMENT STATIONS (METERS)			
			New Curb Tapers	TYPE 3				
Route N-20	032+0.107	10466	NO	4	BENT 1 LEFT 10 + 30.48	BENT 1 RIGHT 10 + 30.48	BENT 2 LEFT 9 + 69.52	BENT 2 RIGHT 9 + 69.52
Route N-20	032+0.399	10470	NO	4	BENT 1 LEFT 10 + 30.48	BENT 1 RIGHT 10 + 30.48	BENT 4 LEFT 9 + 69.52	BENT 4 RIGHT 9 + 69.52
Route N-20	032+0.652	10475	NO	4	BENT 1 LEFT 10 + 00.00	BENT 1 RIGHT 10 + 00.00	BENT 2 LEFT 9 + 69.52	BENT 2 RIGHT 9 + 69.52
Route N-20	046+0.683	10366	NO	4	BENT 1 LEFT 10 + 53.34	BENT 1 RIGHT 10 + 53.34	BENT 4 LEFT 9 + 69.52	BENT 4 RIGHT 9 + 69.52
Route N-22	065+0.625	11058	YES (4)	4	BENT 1 LEFT 10 + 30.48	BENT 1 RIGHT 10 + 30.48	BENT 6 LEFT 9 + 69.52	BENT 6 RIGHT 9 + 69.52
Route N-22	075+0.877	9626	NO	4	BENT 1 LEFT 10 + 15.24	BENT 1 RIGHT 10 + 11.43	BENT 3 LEFT 9 + 50.47	BENT 3 RIGHT 9 + 50.47
Route N-57	161+0.243	10821	NO	4	BENT 1 LEFT 10 + 30.48	BENT 1 RIGHT 10 + 30.48	BENT 3 LEFT 9 + 69.52	BENT 3 RIGHT 9 + 69.52
Route N-57	187+0.853	10521	NO	4	BENT 1 LEFT 10 + 30.48	BENT 1 RIGHT 10 + 30.48	BENT 2 LEFT 9 + 69.52	BENT 2 RIGHT 9 + 69.52

* NOTE: The General Layouts are available from the MDT Bridge Bureau.

NOTES

PAYMENT: Guardrail - Steel/Bridge Approach Type 3 is paid for by the unit price bid which is full compensation for all resources necessary to complete the item.

Plug predrilled holes in rail with standard splice bolts. See Detailed Dwg. No. 606-82.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL
ON ROUTES N-20, N-22 AND N-57
FEDERAL AID PROJECT NO. NHTSA 0002(393)
RICHLAND COUNTY

BRIDGE APPROACH SECTIONS

Scale ~ 1 : 15

	DESIGNED	4-25-03	L. M. S.
	DRAWN	4-28-03	L. M. S.
	CHECKED	6-19-03	D. J. R.
**	REVISED	12-9-03	L. M. S.
	REVISED		
	REVISED		

FILENAME: DRAWING NO.

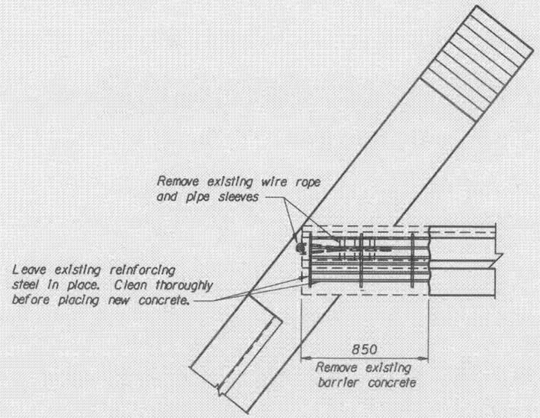
Misty Miner
22-10-2005

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11/22/2005
8:34:18 AM
u7047

AS-BUILT

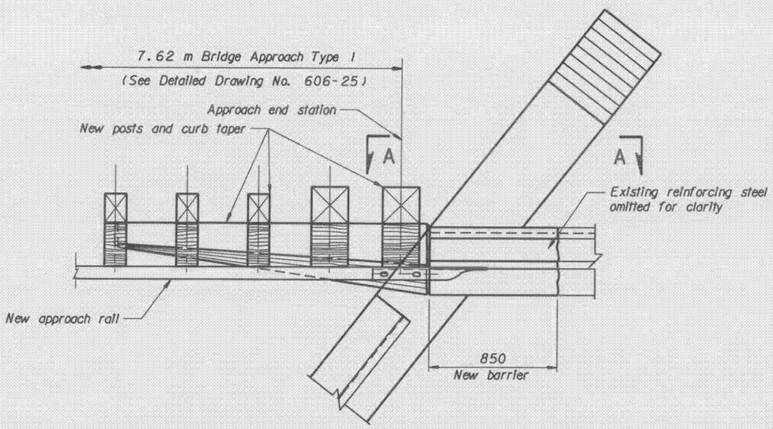
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B6

BRIDGE BUREAU



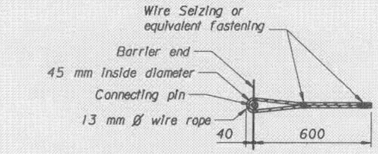
EXISTING BARRIER END MODIFICATION DETAILS - PLAN VIEW

Bent No. 1 - Left side only



NEW BARRIER END DETAILS - PLAN VIEW

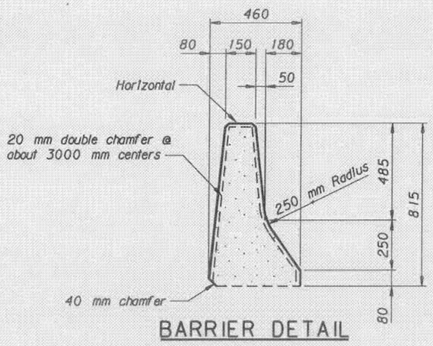
Bent No. 1 - Left side only



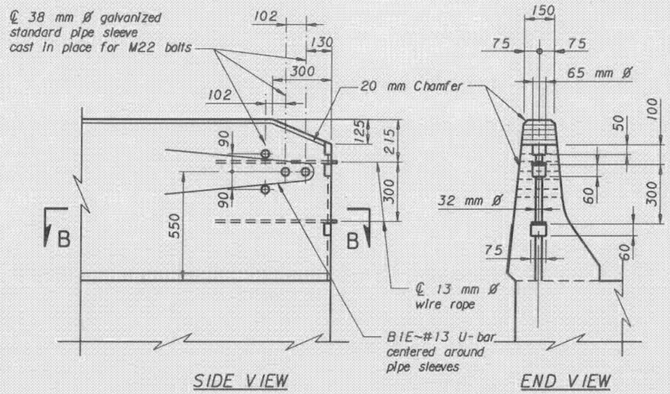
SECTION B-B

NOTE: Use zinc-coated steel wire (7) strand utilities grade wire rope with minimum breaking strength of 111.2 kN conforming to ASTM A 475.

NOTE: Use a connecting pin meeting the requirements of AASHTO M 227M Grade 310.

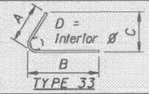


BARRIER DETAIL



VIEW A-A

BILL OF REINFORCING STEEL *(FOR INFORMATION ONLY)*



STRAIGHT BARS				BENT BARS (All dimensions are out to out)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D
				B1E	#13	1	33	1 450	730	730	220	60

NOTES:

PAYMENT: Include all costs associated with furnishing materials, equipment, labor and incidentals necessary to complete the item in the unit price bid for Guard Rail - Steel/Bridge Approach Type 1.

General Layout Dwg. No. 13438 is available from the MDT Bridge Bureau.

Use Class SD concrete in barrier. Galvanize all new hardware.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

ON ROUTE N-20 AT RP 37+0.515

FEDERAL AID PROJECT NO. NHTSA 0002(393)

RICHLAND COUNTY

BARRIER END MODIFICATION

Scale ~ No Scale

DESIGNED	4-25-03	L. M. S.
DRAWN	4-28-03	L. M. S.
CHECKED	6-19-03	D. J. R.
REVISED		
REVISED		
REVISED		

FILENAME:

DRAWING NO.

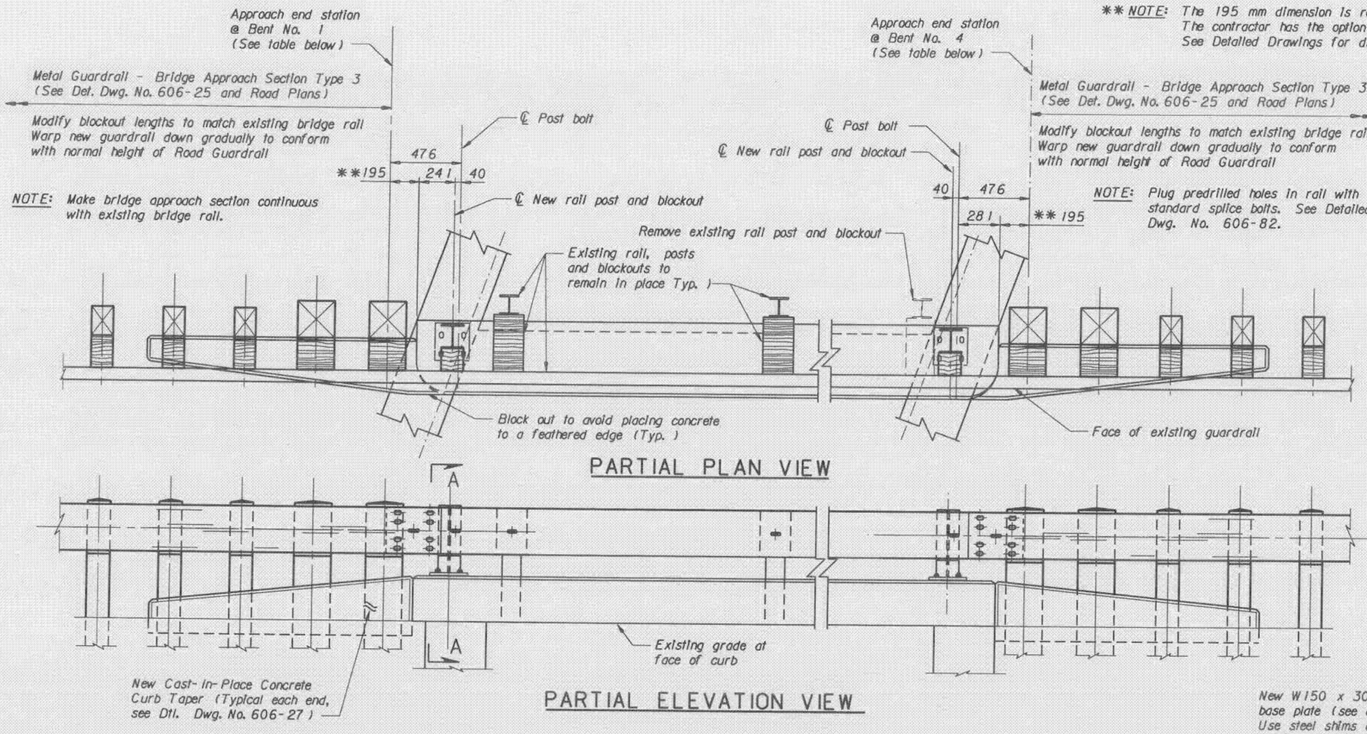
Misty Miner
22-10-2005

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11/2/2005
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BRIDGE BUREAU

AS-BUILT

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	87

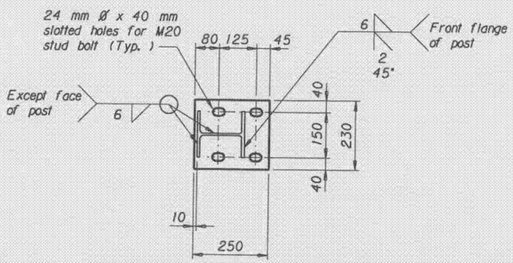


PARTIAL PLAN VIEW

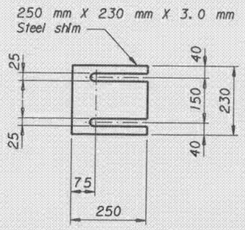
PARTIAL ELEVATION VIEW

RAIL REVISION SUMMARY TABLE (Details shown apply to both sides and ends of the structure)						
STRUCTURE LOCATION		GENERAL LAYOUT DWG. NO.	SKEW	TYPE 3 BRIDGE APPROACH SECTIONS (EACH)	APPROACH END STATIONING	
					BENT NO. 1	BENT NO. 4
Route N-23	015+0.943	*5155	20°	4	10 + 22.86 Rt. 10 + 22.86 Lt.	9 + 77.14 Rt. 9 + 77.14 Lt.

* NOTE: The General Layout is available from the MDT Bridge Bureau.

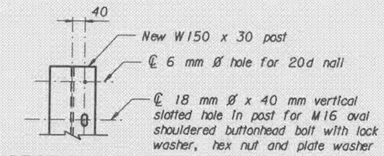


BASE PLATE DETAIL
Scale ~ 1: 10

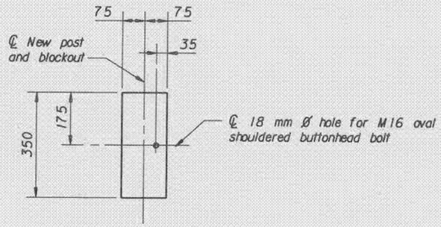


RAIL POST SHIM DETAIL
Scale ~ 1: 10

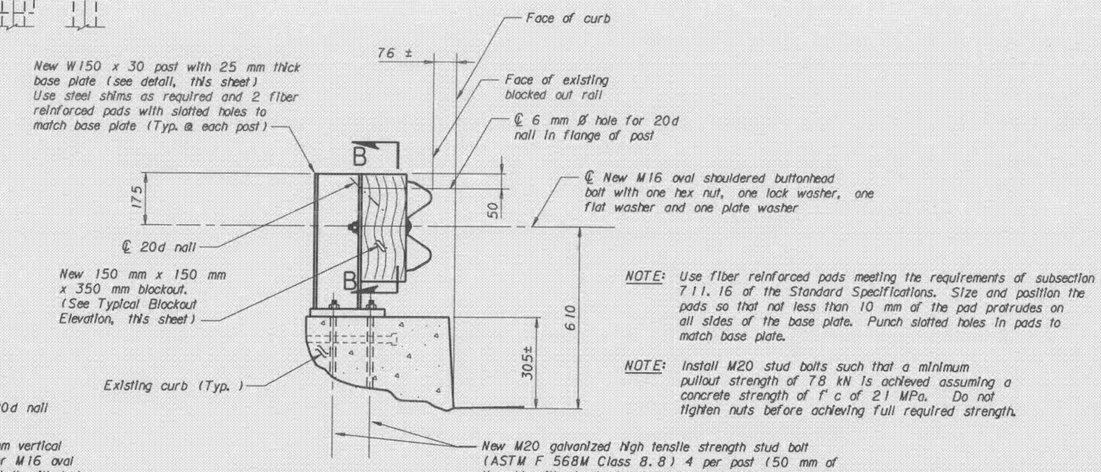
NOTE: Furnish shims as necessary to adjust rail to grade. Place shims between fiber reinforced pads. Place shims with slots toward roadway centerline.



SECTION B-B
Scale ~ 1: 10



TYPICAL BLOCKOUT ELEVATION
Scale ~ 1: 10



SECTION A-A
Scale ~ 1: 10

NOTE: Use fiber reinforced pads meeting the requirements of subsection 711.16 of the Standard Specifications. Size and position the pads so that not less than 10 mm of the pad protrudes on all sides of the base plate. Punch slotted holes in pads to match base plate.

NOTE: Install M20 stud bolts such that a minimum pullout strength of 78 kN is achieved assuming a concrete strength of f'c of 21 MPa. Do not tighten nuts before achieving full required strength.

NOTES

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

REFLECTORS: Place a reflector on each end rail post and at approximately equal spacing (every third rail post but not to exceed 7620 mm) between end rail posts. Mount reflectors with reflectorized face toward oncoming traffic. See Dtl. Dwg. No. 606-05B for reflector detail.

PAYMENT: Include all costs associated with furnishing materials, equipment, labor and incidentals necessary to complete the item in the unit price bid for Guard Rail - Steel/Bridge Approach Type 3. Use new posts and plates conforming to AASHTO M 270M Grade 250T3. Use metal guardrail conforming to AASHTO M 180 and lap in direction of traffic.

ERECTION: Set the rail parallel to the roadway grade. Adjust rail to proper rail height using vertical slots in rail post or rail post shims.

Cut existing rail sections square. Flame cutting is not permitted. Coat new cut ends and holes with an approved galvanizing paint.

Place blockouts made of treated timber with the wood grain perpendicular to the bolt centerline.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

ON ROUTE N-23 AT RP 15+0.943

FEDERAL AID PROJECT NO. NHTSA 0002(393)

CUSTER COUNTY

BRIDGE APPROACH SECTIONS

Scale ~ 1 : 20 except as noted

DESIGNED	4-29-03	L. M. S.
DRAWN	4-30-03	L. M. S.
CHECKED	6-21-03	D. J. R.
REVISED		
REVISED		
REVISED		

FILENAME:

DRAWING NO.

Misty Miner

22-10-2005

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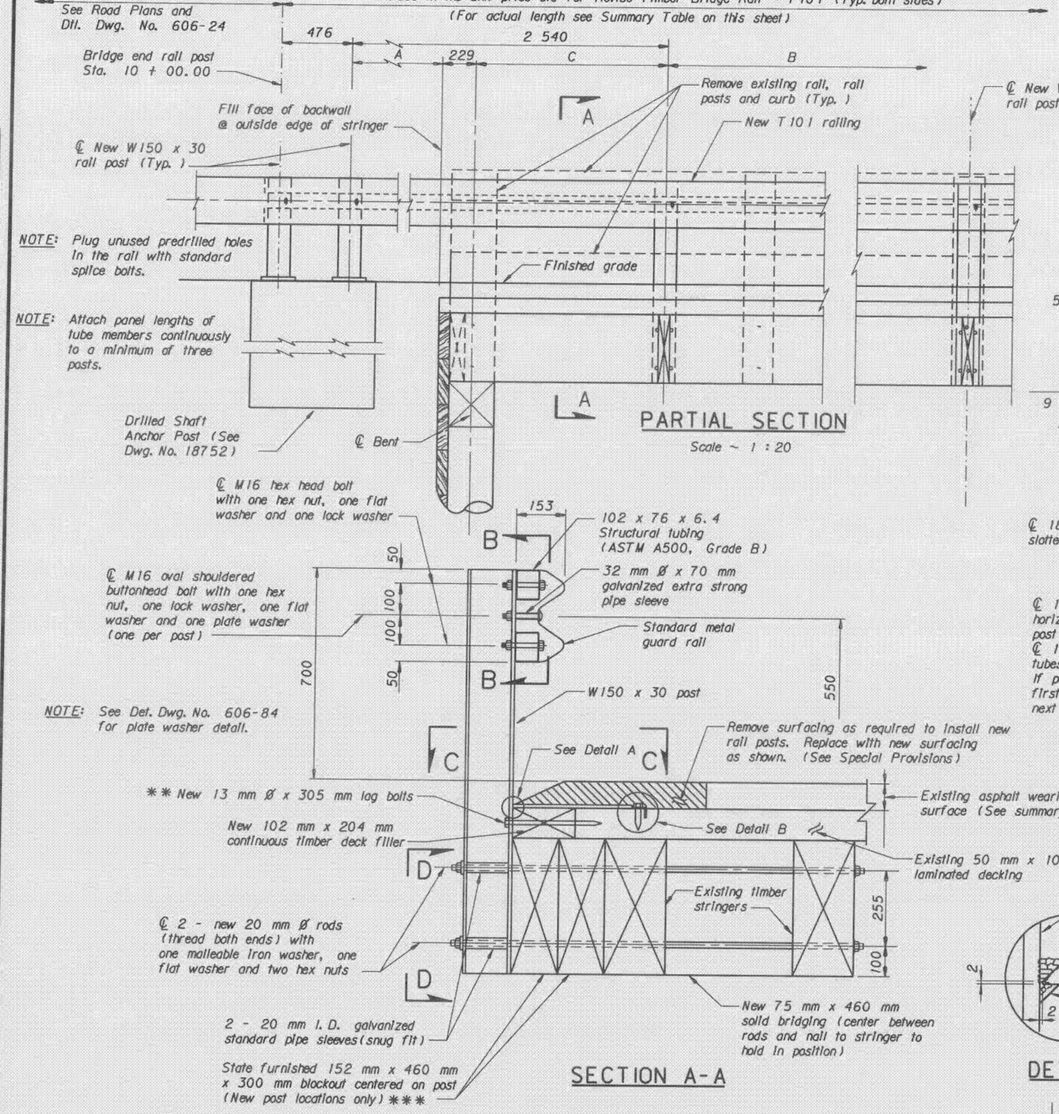
AS-BUILT

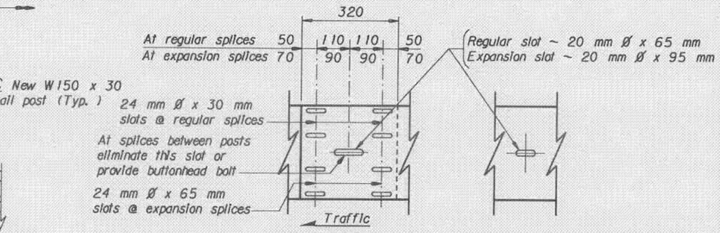
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	88

BRIDGE BUREAU

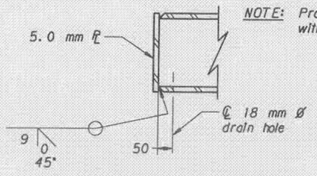
Type 2 Bridge Approach Section
See Road Plans and Dtl. Dwg. No. 606-24

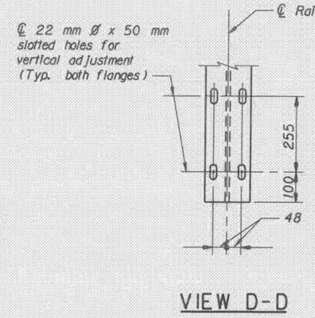
Include in the unit price bid for Revise Timber Bridge Rail ~ T101 (Typ. both sides)
(For actual length see Summary Table on this sheet)

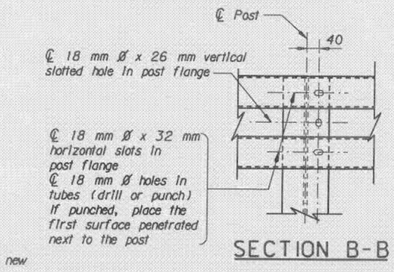


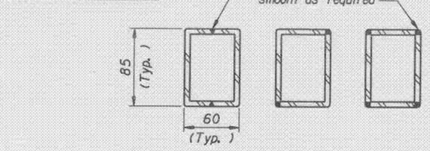


NOTE: Provide M16 oval shouldered buttonhead bolts with hex nuts at all splice slots.

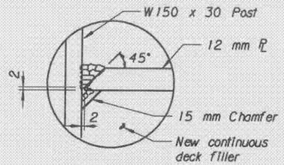






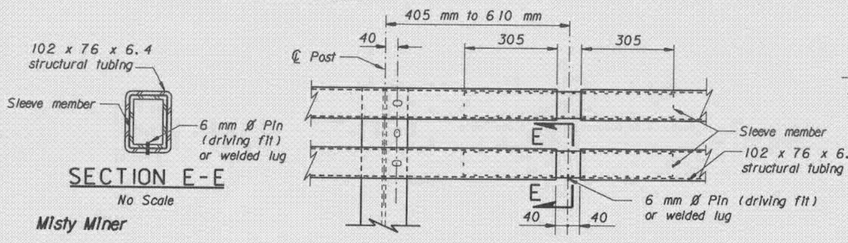


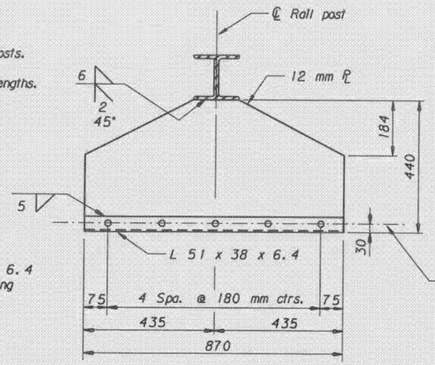
NOTE: Other sections of equal or greater strength with 6 mm minimum wall thickness are acceptable for sleeves.

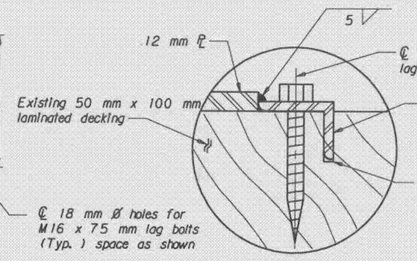


** NOTE: Run new 102 mm x 204 mm deck filler continuous along existing deck edge. Center filler ends at new posts. Equally space 3-13 mm Ø x 305 mm log bolts between posts.

*** NOTE: The State of Montana will supply salvaged stringers for the contractor to cut into 300 mm lengths. The stringers will be stock piled for the contractor's use at a maintenance yard stated in the Special Provisions







NOTES

REFLECTORS: Place a reflector on each end rail post and at approximately equal spacing (every third rail post but not to exceed 7620 mm) between end rail posts. Mount reflectors with reflectorized face toward oncoming traffic. See Detail see Dtl. Dwg. No. 606-05 for reflector detail. Mount reflector to W-beam post web with an approved adhesive. Include the cost of the reflector in the unit price bid for Revise Timber Bridge Rail - T101.

PAYMENT: Revise Timber Bridge Rail - T101 is paid for by the linear meter which is full compensation for all resources necessary to complete the item. The number of linear meters of Revise Timber Bridge Rail - T101 for payment is the distance between centerlines of the drilled shaft posts as shown on this sheet (See Summary Table below). Use posts and plates conforming to AASHTO M 270M Grade 250T3. Use metal guardrail conforming to AASHTO M 180 and lap in direction of traffic.

ERECTION: Set the rail parallel to the roadway grade. Set rail posts perpendicular to adjacent roadway grade and vertical in relation to roadway cross slopes. Adjust rail to proper rail height using vertical slots in rail posts.

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 111M is allowed.

SELECT STRUCTURAL TIMBER FOR SOLID BRIDGING: Use standard sawn Inter-mountain Douglas Fir, Western Larch or Pacific Coast Douglas Fir conforming to AASHTO M 168 meeting the requirements for numerical stress values shown on the table below for Dense No. 1 timber for solid bridging. Clearly note the grade of timber on the shop plans to avoid oversight. AASHTO classification for solid bridging is Beams and Stringers.

DESCRIPTION	EXTREME FIBER IN BENDING Fb & TENSION PARALLEL TO GRAIN Ft (MPa)		HORIZ. SHEAR Fv (MPa)	COMPRESSION (MPa)		MODULUS OF ELASTICITY E (MPa)
				PERPENDICULAR TO GRAIN Fc⊥	PARALLEL TO GRAIN Fc	
	Fb	Ft				
75 x 460 Bridging	10.7	5.3	0.59	5	7.6	11 700

Details shown on this drawing apply to both sides for the entire length of the structure.

Remove existing rails, rail posts, curb and hardware as shown on this drawing. Removed items become the property of the contractor. (See Special Provisions for disposal of unwanted materials.) Removal costs are included in the unit price bid for Revise Timber Bridge Rail - T101.

Replace any timber which is to be incorporated in the rehabilitated structure that is damaged during construction at no additional cost to the State.

Chamfer edge of new timber deck filler directly under location where 12 mm plate connects with rail post to clear fillet weld as shown in Detail A.

Plug open holes exposed by revisions with treated dowels. Thoroughly coat all new holes, cuts and chamfers as per Standard Specifications.

RAIL REVISION SUMMARY TABLE (Details shown apply to both sides of the structure)

STRUCTURE LOCATION		GENERAL LAYOUT DWG. NO.	SKEW	WEARING SURFACE DEPTH (mm)	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LENGTH OF RAIL (ONE SIDE ONLY) (m)	TOTAL LENGTH FOR PAYMENT (m)	ANCHOR POST (EACH)
Route N-57	231+0.023	1809	0°	152 ±	1 244	6 Spa. @ 2 540 = 15 240	1 067	21.272	42.544	4
Route N-57	232+0.710	1809	0°	152 ±	889	8 Spa. @ 2 540 = 20 320	1 422	26.352	52.704	4

Misty Miner
22-10-2005

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

ON ROUTE N-57 AT RP 231+0.023 & 232+0.710

FEDERAL AID PROJECT NO. NHTSA 0002(393)

GARFIELD COUNTY

BRIDGE RAIL REVISION

Scale ~ 1 : 10 except as noted

DESIGNED	3-14-03	LMS/KFM
DRAWN	3-18-03	L. M. S.
CHECKED	6-21-03	D. J. R.
REVISED		
REVISED		
REVISED		

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DRAWING NO.

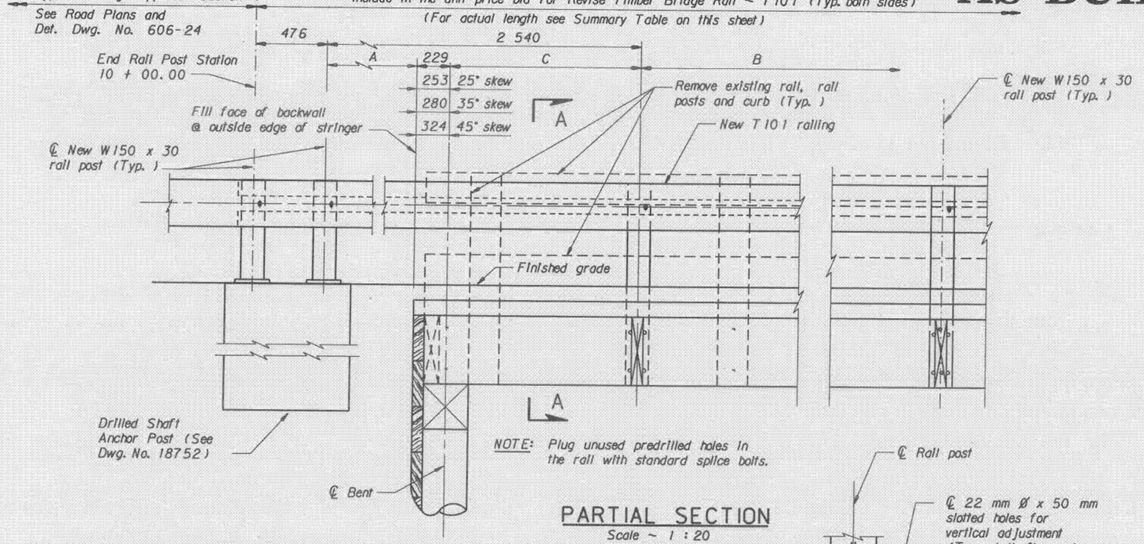
AS-BUILT

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	89

NOTE: See Dwg. No. 18749 for Section B-B, Detail A, Detail B and additional notes and details.

Type 2 Bridge Approach Section
See Road Plans and Det. Dwg. No. 606-24

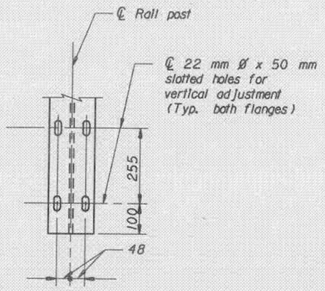
Include in the unit price bid for Revise Timber Bridge Rail ~ T101 (Typ. both sides)
(For actual length see Summary Table on this sheet)



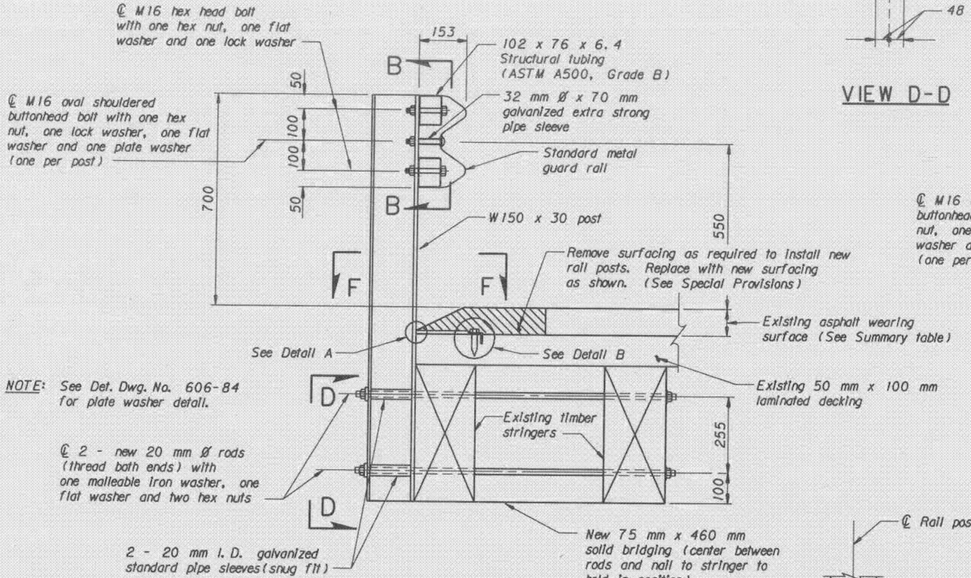
NOTE: Plug unused predrilled holes in the rail with standard splice bolts.

PARTIAL SECTION
Scale ~ 1 : 20

NOTE: Attach panel lengths of tube members continuously to a minimum of three posts.

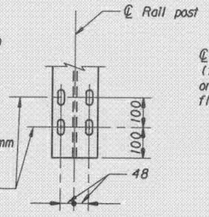


VIEW D-D



NOTE: See Det. Dwg. No. 606-84 for plate washer detail.

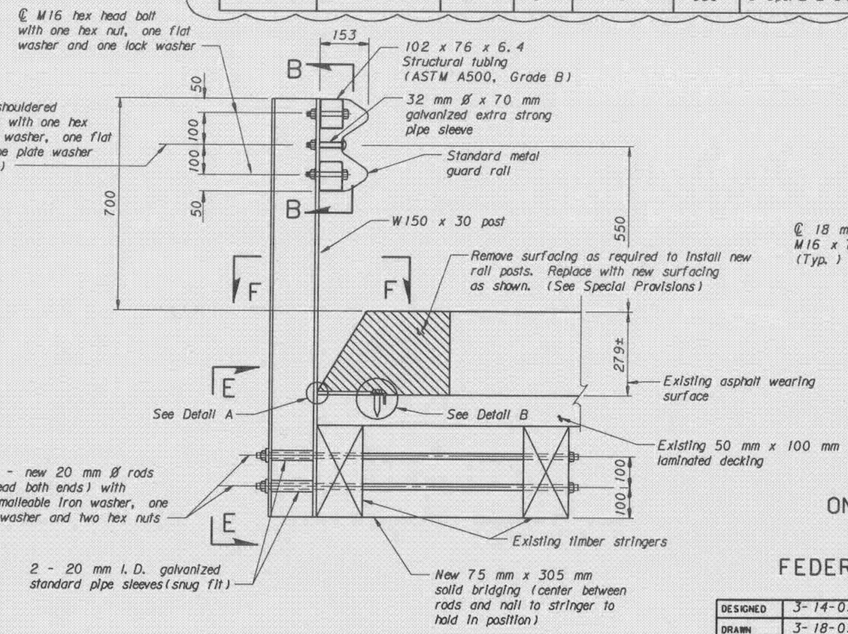
SECTION A-A



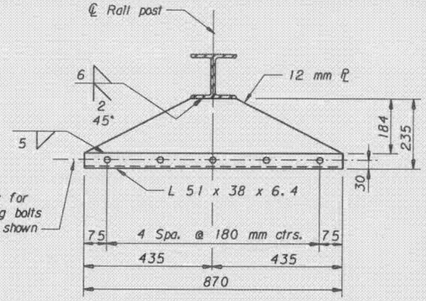
VIEW E-E

RAIL REVISION SUMMARY TABLE (Details shown apply to both sides of the structure)

	STRUCTURE LOCATION	GENERAL LAYOUT DWG. NO.	SKEW	WEARING SURFACE DEPTH (mm)	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LENGTH OF RAIL (ONE SIDE ONLY) (m)	TOTAL LENGTH FOR PAYMENT (m)	ANCHOR POST (EACH)
	Route N-1 645+0.625	3700	0°	178 ±	1 244	6 Spa. @ 2 540 = 15 240	1 067	21.272	42.544	4
	Route N-57 232+0.566	2057	0°	152 ±	1 041	2 Spa. @ 2 540 = 5 080	1 270	11.112	22.224	4
	Route N-57 234+0.523	2176	0°	178 ±	889	11 Spa. @ 2 540 = 27 940	1 422	33.972	67.944	4
	Route N-57 235+0.652	2057	35°	178 ±	787	10 Spa. @ 2 540 = 25 400	1 473	31.432	62.864	4
	Route N-57 247+0.394	1949A	0°	102 ±	1 803	11 Spa. @ 2 540 = 27 940	508	33.972	67.944	4
	Route N-57 248+0.831	1812	25°	178 ±	1 017	14 Spa. @ 2 540 = 35 560	1 270	41.592	83.184	4
	Route N-57 249+0.748 Lt.	1813	0°/45°	178 ±	635~0° 540~45°	15 Spa. @ 2 540 = 38 100	1 676	44.132	80.644	2
	Route N-57 249+0.748 Rt.	1813	0°/45°	178 ±	787~0° 692~45°	12 Spa. @ 2 540 = 30 480	1 524	36.512		2
	Route N-57 253+0.331	1813	0°	203 ±	787	9 Spa. @ 2 540 = 22 860	1 524	28.892	57.784	4
	Route N-57 254+0.769	1813A	45°	229 ±	692	9 Spa. @ 2 540 = 22 860	1 524	28.892	57.784	4
	Route N-57 254+0.838	1813A	0°	229 ±	889	8 Spa. @ 2 540 = 20 320	1 422	26.352	52.704	4
	Route N-57 255+0.300	1813A	35°	203 ±	482	10 Spa. @ 2 540 = 25 400	1 778	31.432	62.864	4
	Route N-57 257+0.150	1813A	0°	203 ±	1 041	8 Spa. @ 2 540 = 20 320	1 270	26.352	52.704	4
	Route N-57 260+0.150	1814	0°	279 ±	1 905	1 Spa. @ 2 540 = 2 540	406	8.572	17.144	4
	Route N-61 133+0.425	2280	0°	102 ±	1 041	11 Spa. @ 2 540 = 27 940	1 270	33.972	67.944	4
	Route N-61 136+0.511	2280	0°	102 ±	1 244	6 Spa. @ 2 540 = 15 240	1 067	21.272	42.544	4
	Route N-61 137+0.076	2177	0°	127 ±	1 041	11 Spa. @ 2 540 = 27 940	1 270	33.972	67.944	4
*	Route N-99 017+0.400	3044	0°	178 ±	889	8 Spa. @ 2 540 = 20 320	1 422	26.352	52.704	4



SECTION A-A
(At Structure N-57 260+0.150 only)



SECTION F-F

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL
ON ROUTES N-1, N-57, N-61 AND N-99*
LOCATIONS AS SHOWN
FEDERAL AID PROJECT NO. NHTSA 0002(393)
VARIOUS COUNTIES
BRIDGE RAIL REVISION
Scale ~ 1 : 10 except as noted

DESIGNED	3-14-03	LMS/KFM
DRAWN	3-18-03	L. M. S.
CHECKED	6-21-03	D. J. R.
* REVISED	12-9-03	L. M. S.
REVISED		
REVISED		

FILENAME: DRAWING NO.

BRIDGE BUREAU

Misty Miner

22-10-2005

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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B10

AS-BUILTS
ADDENDUM NO. 1
ATTACHMENT NO. 4

BRIDGE BUREAU

Type 2 Bridge Approach Section
See Road Plans and
Dtl. Dwg. No. 606-25

126.682 m included in the unit price bid for Revise Timber Bridge Rail ~ T101 (Typ. both sides)

476 | 1 041 | 229 | 1 270 | 2 540 | 5 spaces @ 2 540 mm ctrs. = 12 700 | 2 175 | 1 000 | 17 spaces @ 2 540 mm ctrs. = 43 180 | 1 270

Sta. 10 + 00 Bent I
Sta. 10 + 00 Bent II

Dimensions are symmetrical about this line

Remove existing rail, rail posts and curb (Typ.)

New T101 railing

Fill face of backwall @ outside edge of stringer

℄ New W150 x 30 rail post (Typ.)

℄ Pier No. 3 or 9

*Existing expansion joint

℄ Pier No. 6

Existing expansion joint*

Finished grade

Drilled Shaft Anchor Post (See Dwg. No. 18752)

℄ Bent

NOTE: Plug unused predrilled holes in the rail with standard splice bolts.

NOTE: Do not provide a tube splice in first panel. Provide tube splices for tubes within panel over expansion joints.

NOTE: Tube shop splices are not allowed.

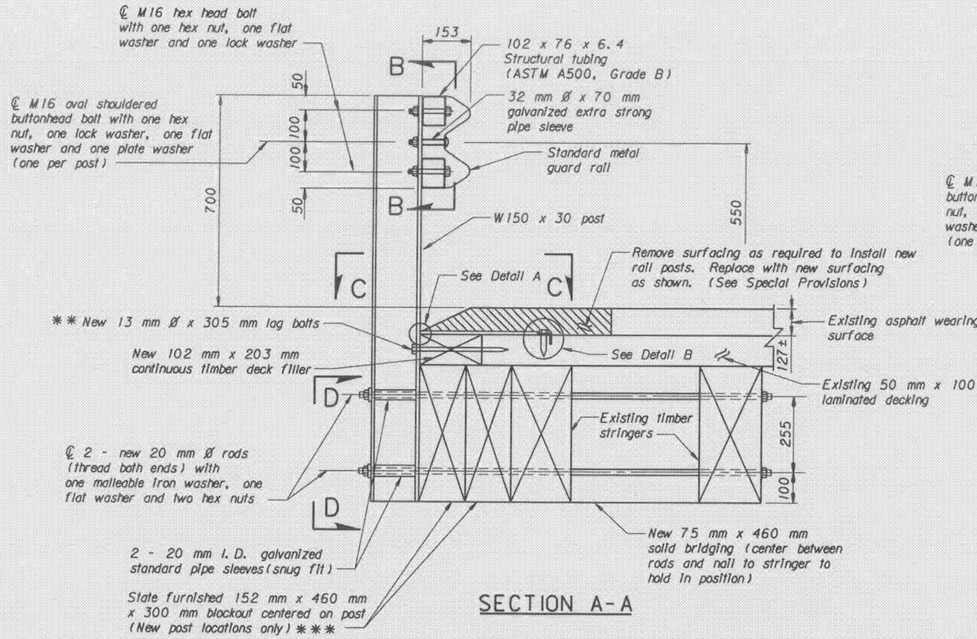
* NOTE: Place expansion splice in rail at either the first or second post either side of expansion joint. Provide expansion slot in rail at first post when splice is made at second post to allow for movement.

NOTE: Attach panel lengths of tube members continuously to a minimum of three posts.

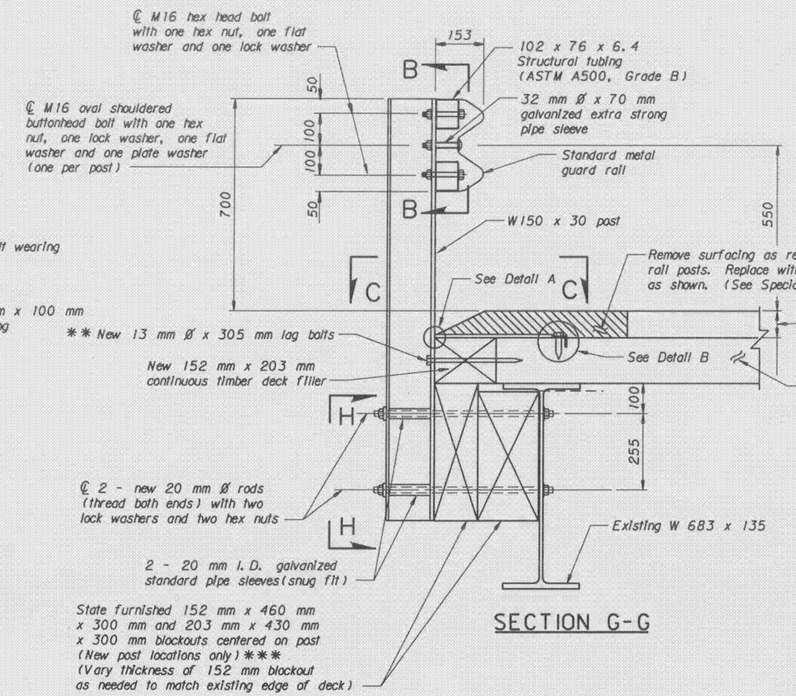
NOTE: Place rail posts as shown in details, perpendicular to adjacent roadway grade and vertical in relation to roadway cross slopes.

NOTE: See Dwg. No. 18749 for Section B-B, Section C-C, Detail A, Detail B, View D-D and additional notes and details. See General Layout Dwg. No. 1810 for expansion joint locations.

PARTIAL ELEVATION

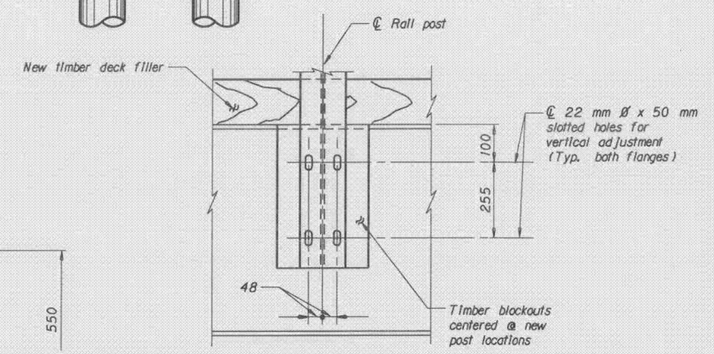


SECTION A-A



SECTION G-G

NOTE: See Det. Dwg. No. 606-84 for plate washer detail.



VIEW H-H

** NOTE: Run new timber deck filler continuous along existing deck edge. Center filler ends at new posts. Equally space 3- 13 mm Ø x 305 mm lag bolts between posts.

*** NOTE: The State of Montana will supply salvaged stringers for the contractor to cut into 300 mm lengths. The stringers will be stock piled for the contractor's use at a maintenance yard stated in the Special Provisions.

MISTY MINER
2-11-2005

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MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL
ON ROUTE N-57 AT RP 239+0.257
FEDERAL AID PROJECT NO. NHTSA 0002(393)
GARFIELD COUNTY
BRIDGE RAIL REVISION

DESIGNED	4-25-03	L. M. S.
DRAWN	6-11-03	L. M. S.
CHECKED	6-22-03	D. J. R.
REVISED		
REVISED		
REVISED		

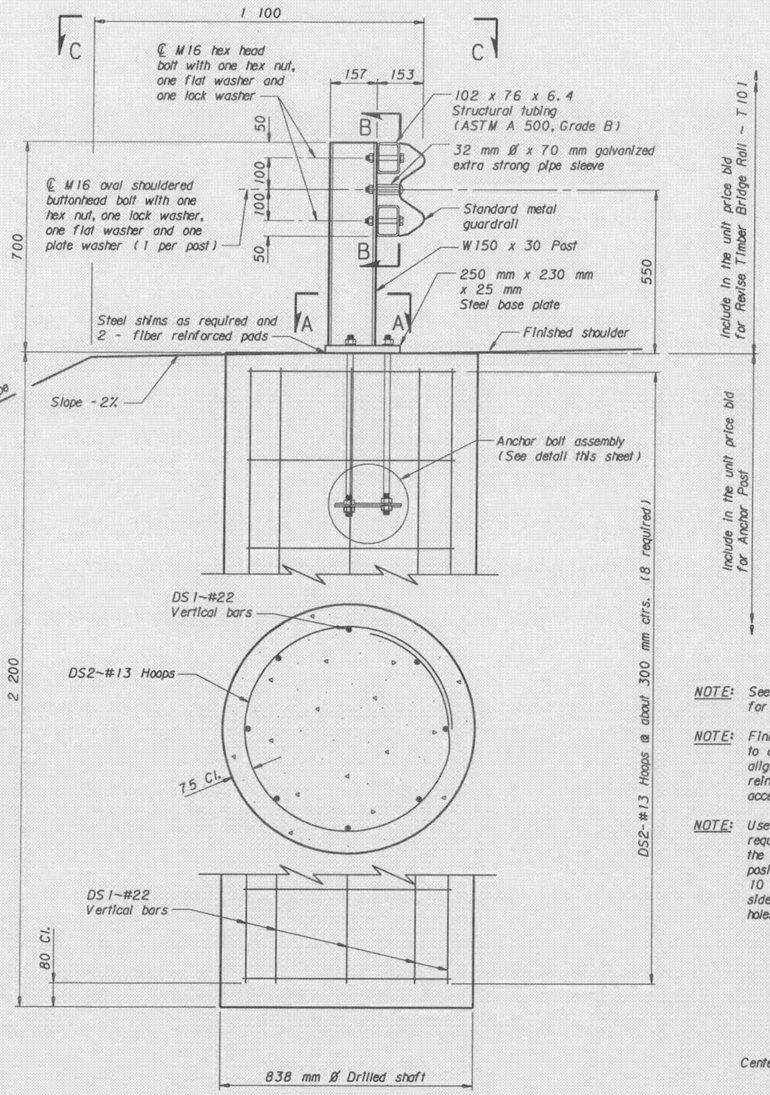
Scale ~ 1 : 10 except as noted

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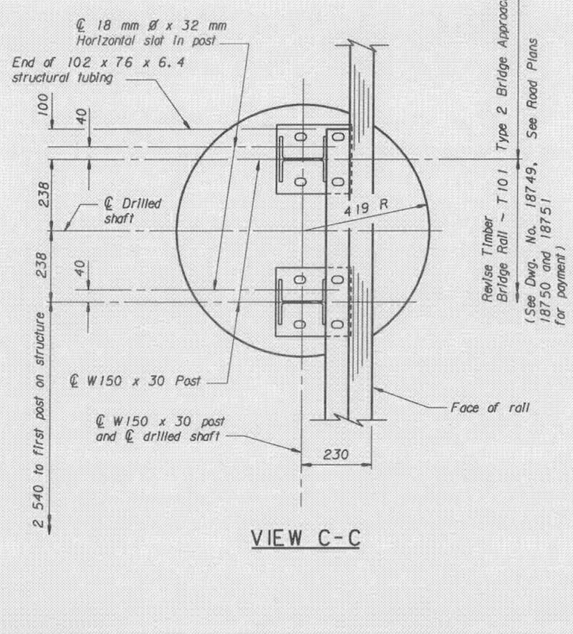
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B11

AS-BUILTS

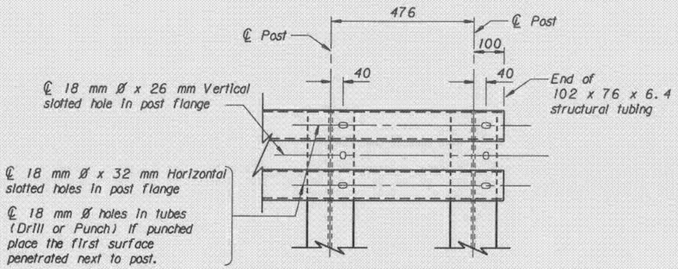
BRIDGE BUREAU



ELEVATION

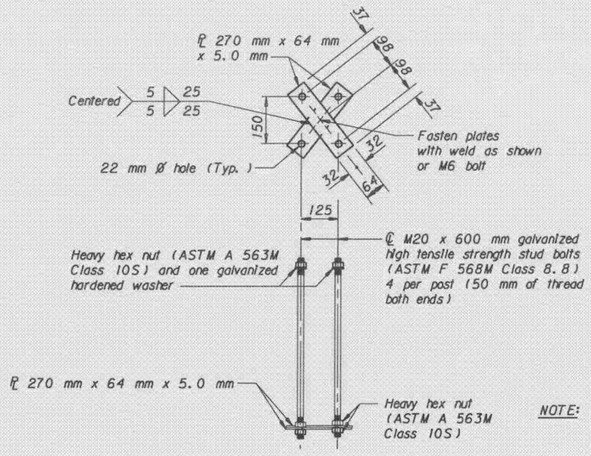


VIEW C-C

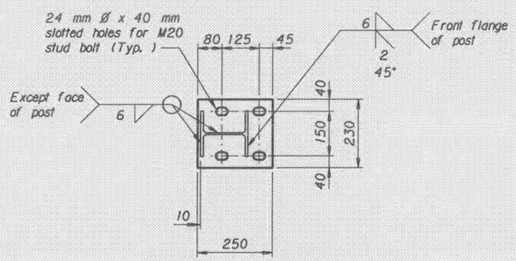


SECTION B-B

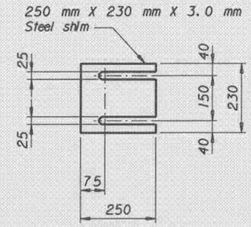
MISTY MINER
2-11-2005



ANCHOR BOLT ASSEMBLY DETAIL

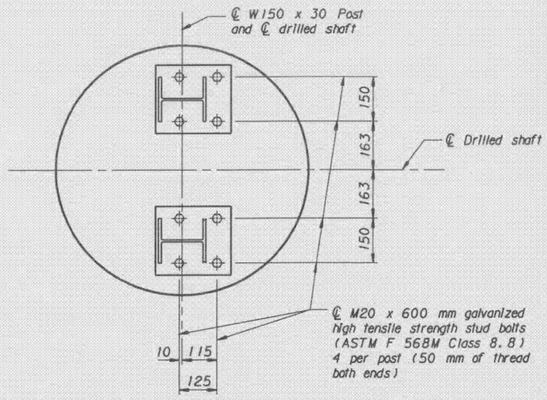


SECTION A-A



RAIL POST SHIM DETAIL

NOTE: Furnish shims as necessary to adjust rail to grade. Place shims between fiber reinforced pads. Place shims with slots toward roadway centerline.



T101 POST ANCHOR BOLT LOCATION

NOTE: See Dtl. Dwg. No. 606-84 for rectangle plate washer detail.

NOTE: Finish the top of the shaft 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 so that not less than 10 mm of the pad protrudes on all sides of the base plate. Punch slotted holes in pads to match base plate.

BILL OF REINFORCING STEEL (One Anchor Post)



TYPE 1

STRAIGHT BARS				BENT BARS (All dimensions are out to out)						
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B
DS1	#22	8	2 070	DS2	#13	8	1	2 680	690	510

NOTES

PAYMENT: Anchor Post is paid for at the unit price bid which is full compensation for all resources necessary to complete the item.

ERECTION: Set rail posts perpendicular to roadway grade and set rail parallel to the roadway grade. Adjust rail to proper rail height using vertical slots in the rail posts or rail post shims.

Use Class DD Concrete. Estimated volume per shaft = 1.2 cubic meters

Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31M Grade 60 (420). Estimated rebar mass = 72 kg

Construct the portion of the approach fills, where the drilled shaft is constructed, of select material meeting the specified requirements for embankments.

See Dwg. No. 18749 for additional notes and details.

Remove all loose or disturbed material from the bottom of the shaft excavation prior to placing reinforcing steel or concrete. Clean the drilled shaft so the thickness of loose or disturbed material remaining in the excavation does not exceed a thickness of 50 mm. Add 0.25 bag (10.5 kg) cement to the loose material remaining in the excavation and dry mix with the loose material using the drill bit or other means approved by the Engineer prior to placing any reinforcement or structural concrete in the shaft excavation.

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL
AT VARIOUS LOCATIONS
FEDERAL AID PROJECT NO. NHTSA 0002(393)
VARIOUS COUNTIES
DRILLED SHAFT ANCHOR POST

Scale ~ 1 : 10

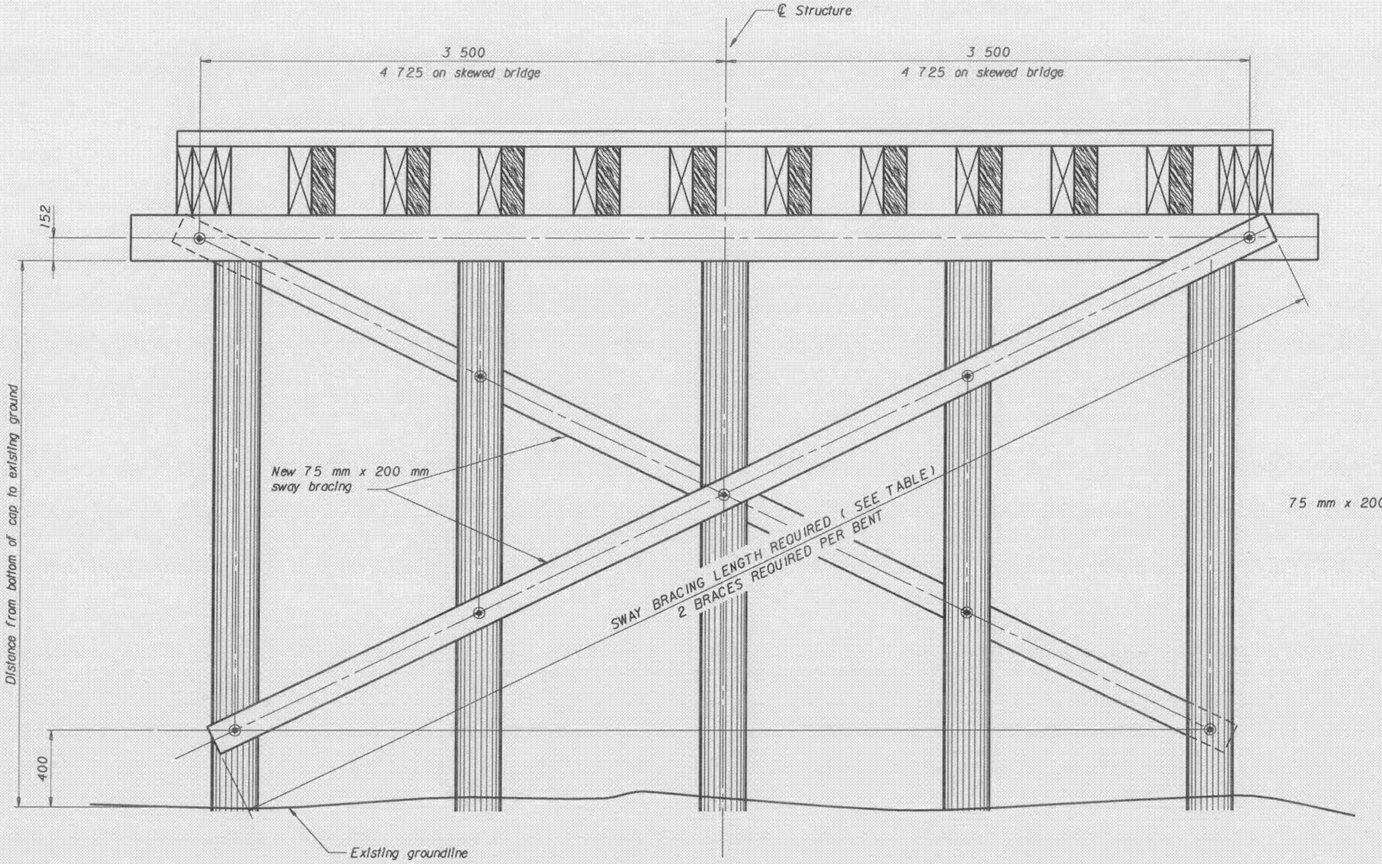
CONVERTED	3-27-96	L. R. T.
DRAWN	3-27-96	L. R. T.
CHECKED	3-29-96	D. J. R.
REVISED	3-4-03	L. M. S.
REVISED		
REVISED		

FILENAME: D457BRDSD001.DGN DRAWING NO. 18752

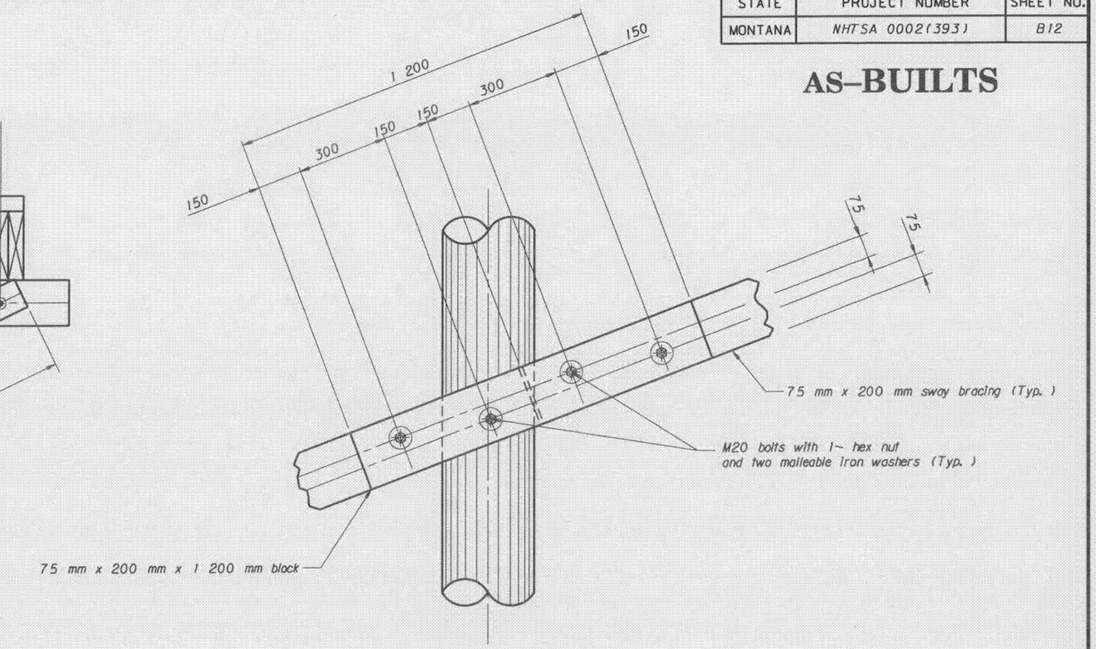
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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHTSA 0002(393)	B12

AS-BUILTS



NEW SWAY BRACING DETAIL



SWAY BRACING SPLICE

NOTES

PAYMENT: Include the sway bracing in the unit price bid for Treated Timber which is full compensation for all resources necessary to complete the item.

SELECT STRUCTURAL TIMBER FOR SWAY BRACING: Use standard sawn Inter-mountain Douglas Fir, Western Larch or Pacific Coast Douglas Fir conforming to AASHTO M 168 meeting the requirements for numerical stress values shown on the table below for Dense No. 1 timber for solid bridging. Clearly note the grade of timber on the shop plans to avoid oversight. AASHTO classification for sway bracing is Beams and Stringers.

DESCRIPTION	EXTREME FIBER IN BENDING Fb & TENSION PARALLEL TO GRAIN Ft (MPa)		HORIZ. SHEAR Fv (MPa)	COMPRESSION (MPa)		MODULUS OF ELASTICITY E (MPa)
				PERPENDICULAR TO GRAIN Fc⊥	PARALLEL TO GRAIN Fc	
75 x 200 Sway bracing	Fb	Ft	0.59	5	7.6	11 700
	10.7	5.3				

SWAY BRACING SUMMARY TABLE

STRUCTURE LOCATION		GENERAL LAYOUT DWG. NO.	SKEW	SWAY BRACING LENGTH REQUIRED (m)				NUMBER OF SPLICES PERMITTED (EACH)	TREATED TIMBER m³
				BENT NO. 2	BENT NO. 3	BENT NO. 4	BENT NO. 5		
Route N-57	232+0.710	1809	0°	7620	7620	7620	NA	1	0.79
Route N-57	247+0.394	1949A	0°	NA	7880	NA	NA	1	0.14
Route N-57	255+0.300	1813A	35°	10 100	10 330	10 330	10 100	2	1.51

MISTY MINER

2-11-2005

BRIDGE BUREAU

MONTANA DEPARTMENT OF TRANSPORTATION

D4-NON-INTERSTATE GUARDRAIL

ON ROUTE N-57 AT RP 232+0.710, 247+0.394 AND RP 255+0.300

FEDERAL AID PROJECT NO. NHTSA 0002(393)

GARFIED & McCONE COUNTIES

SWAY BRACING DETAILS

Scale ~ 1: 30 except as shown

DESIGNED	6-20-03	L. M. S.
DRAWN	6-20-03	L. M. S.
CHECKED	6-22-03	D. J. R.
REVISED		
REVISED		
REVISED		

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AS-BUILT

FED. ROAD DIV. NO.	STATE	FED. AID PROJ NO.	SHEET NO.	TOTAL SHEETS
8		NHTSA 0002(393)		813

PI Sta. 1986+00
Elev. 2158.90
+0.557% Fin. Gr.
-0.000% Fin. Gr.
400' V.C.

Note – Reflector Signals will not be required on this bridge. Name on markers shall be "BEAVER CREEK" in one line.

172'-0 Ctr. to Ctr. Brgs. at end bents (Horizontal Distance)
86'-0 | 86'-0

℄ Brg. @ Bent No. 1
Sta. 1990+44.75
Fin. Gr. @ ℄ Rdwy.
Elev. 2158.90

℄ Pier No. 2
Sta. 1991+30.75
Fin. Gr. @ ℄ Rdwy.
Elev. 2158.90

℄ Brg. @ Bent No. 3
Sta. 1992+16.75
Fin. Gr. @ ℄ Rdwy.
Elev. 2158.90

PRESTRESSED CONCRETE BEAMS TYPE III

Fin. Gr. @ ℄ Rdwy.

℄ Profile
20 Ft. Rt. Profile
20 Ft. Lt. Profile

Fix. | Fix. | Fix.

H.W. Elev. 2152.50

Top of Rip Rap
Elev. 2153.50

Elev. 2146.50

2:1

2-0

Type A Random Rip Rap By Road Contractor (See Road Plans)

Elev. 2129.84

4-0

*Treated Timber Piles

Bottom of Channel
Elev. 2127.70

Bottom of Channel

Unclassified Excavation by Road Contractor (See Road Plans)

℄ Elev. 2119.84

*Untreated Timber Piles

Treated Timber Piles*

STREAM DATA:

Ice - Medium
Drift - Slight
Scour - Some
Subsoil - See "Log of Borings" Dwg. No. 7021

ELEVATION

Note – For location of test piles See "Footing Plan" Dwg. No. 7021

Beaver Creek

℄ Brg. @ Bent No. 3

10'-0

2 spa. @ 7'-2 = 14'-4

0'-8

2 to 1 Slope

℄ Brg. @ Bent No. 1

10'-0

1'-0

2 spa. @ 7'-2 = 14'-4

Rail Post Spacing

(Horizontal Distance) 17 Spa. @ 8'-4 = 141'-8

℄ Brg. @ outside face of curb

℄ End Rail Post

Curb Opening

30'-0

90'-0

30°

Typical

1/4 in. Expansion Jt. Filler in curb only (typical) (See Dwg. No. SL-1)

1'-10 Curb

28'-0 Rdwy.

14'-0

14'-0

4'-6

℄ Roadway

TO MALTA

(Alignment tan. Bearing S44°-42'E)

TO HINSDALE

Slab Continuous over Pier.

℄ Pier No. 2

PLAN

Top of Rip Rap
Elev. 2153.50

6'-0 Berm

2:1 Slope

SECTION A-A
Scale 1/4" = 1'-0"

MISTY MINER
2-11-2005

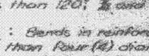
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NOTES

SPECIFICATIONS : Montana State Highway Commission Standard Specifications for Road and Bridge Construction, 1962 Edition, and any amendments thereto, and Special Provisions shall govern unless otherwise noted. Design prepared in accordance with AASHO Specifications, 1961 Edition, and any amendments thereto.

CAST IN PLACE CONCRETE : Unless otherwise noted, all concrete in superstructure shall be Class "A". All concrete in substructure shall be Class "A". An "Air Entraining Agent" shall be added to all concrete except Class "S". Chamfer all exposed corners of concrete with enclosed angle less than 120° ℄ and fillet with for angles ℄ unless otherwise noted.

REINFORCING STEEL : Bends in reinforcing bars shall be made to a radius of not less than Four (4) diameters of the bar, except for stirrups and tie bars, which shall be bent around a diameter of not less than two (2) bar diameters. Bends shall conform to the dimensions shown in the following sketches, except as otherwise noted.



APPROVAL : Shop plans shall be approved by the [illegible] Highway Department before fabrication is begun.

SETTING OF MASONRY PLATES : Care shall be taken in placing reinforcing steel so as to clear anchor bolts.

Contractor shall finish concrete under bases or other masonry slightly high and bush-hammer to exact elevation. Where masonry plates shall be placed on steel grillage beams, they shall be supported with rod hangers as shown on the General Layout or Footing Plans.

SOILS AND FOUNDATION MATERIALS : Borings were taken by the Montana State Highway Department at the points [illegible] General Layout or Footing Plans.

The series of three numbers shown on the logs of borings indicate the number of blows per 6" penetration of the [illegible] series of a 2" sample tube which was driven by means of the Standard Penetration Test apparatus, that is, driven by using a 140# hammer having a 30" stroke, to drive the sample tube to penetrate 6" into the soil.

The State Highway Department does not warrant any responsibility for any variation or misinterpretation of the data, and adjustment in bid prices will not be allowed if conditions found do not agree with those shown in the log of borings.

BACKFILL : The backfill of end bents may be completed as to the bottoms of the backwalls before the concrete in the backwall against the backwall shall have attained the concrete roadway slabs have been placed.

STRUCTURAL STEEL : Unless [illegible] shall be paid for at the unit price bid for [illegible] weight paid for shall be the [illegible] ance with the Standard Specifications.

For requirements governing the fabrication of [illegible] see the Standard Specifications. Any exceptions to the requirements shall be clearly noted on the plans.

Structural steel shall receive one (1) shop coat of [illegible] zinc chromate primer and two (2) field coats of [illegible] of first field a primer coat and one (1) finish coat of [illegible] as specified in the Standard Specifications.

FOOTINGS : Elevation shown for bottom of footings [illegible] Final elevations to be determined by the Engineer.

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

LIVE LOAD: Standard H520-44 loading

STRUCTURE EXCAVATION : Only the excavation below natural ground line, existing before construction is started, at Bents No. 1 & No. 3, shall be restricted to the area inside the cofferdams. The cost of backfilling shall be included in the unit price bid for Structure Excavation.

FOUNDATION PILES : For bidding purposes only, pile lenghts have been estimated as noted on the details. See the Special Provisions for Test Piles and service pile requirements.

OTHER NOTES : For other notes see Dwgs. No. 7024 & No. 7025.

**THIS CONTRACT NHTSA 0002(393) EXISTING RAIL REPLACED WITH THRIE BEAM SEE DWG. NO. 18744 FOR DETAILS.

REFERENCES

DWG. NO.	DESCRIPTION
7021	Footing Plan
7022	Bents No. 1 & No. 3 Beam & Backwall
7023	Bents No. 1 & No. 3 Column & Footing
7024	Pier No. 2
7025	Erection Plan
B-4	Standard Prestressed Concrete Beams Type III
SL-1	Standard Slab, Curb, Safty Walk, & Diaphragm Details
SBR-74	Standard Steel Bridge Rail Type No. 4

DESIGNED			
DRAWN	4-8-64	G.H.P.	
CHECKED	8-5-64	D.R.S.	
*REVISED	9-8-64	D.R.S.	
**REVISED	6-19-03	L.M.S.	
REVISED			

STATE OF MONTANA
STATE HIGHWAY COMMISSION
BRIDGE OVER BEAVER CREEK
AT ℄ STA. 1991+30.75
FED. AID PROJECT NO. F-148(8)
VALLEY COUNTY
GENERAL LAYOUT
Scale 1" = 10'-0"
Except as noted.

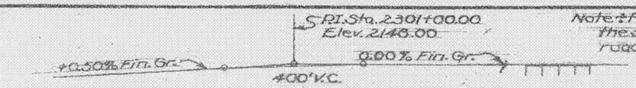
APPROVED BY [signature]
BRIDGE ENGINEER

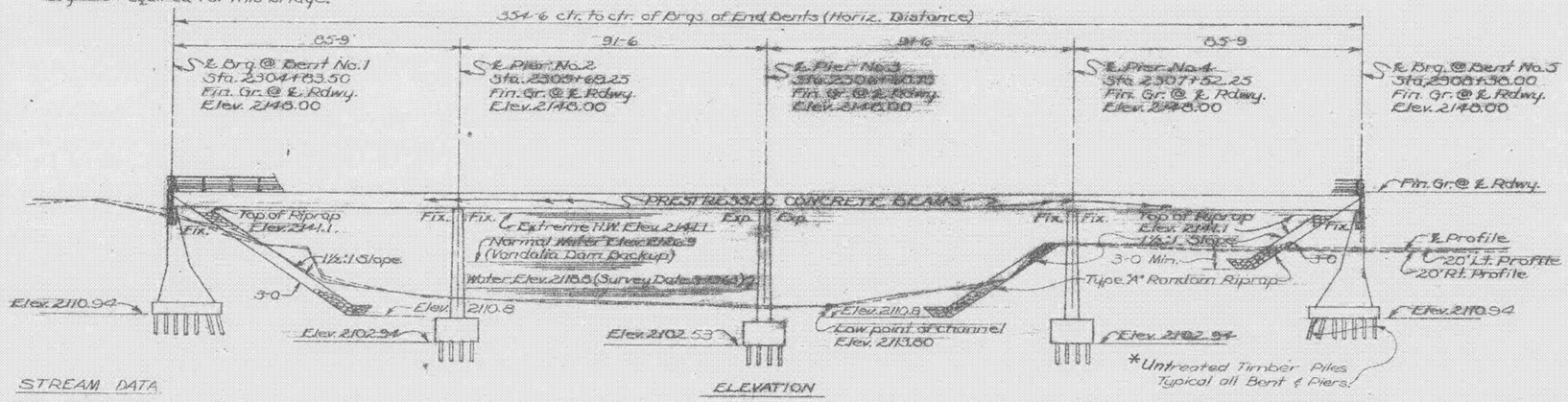
DRAWING NO. 7020

Note:- For location of Utilities see appropriate Road Plan sheets.

Note:- Name on Bridge Markers shall be "MILK RIVER" in one line. No Reflector Signals required for this bridge.

Note:- Finished plan grade of bridge is the same as profile grade shown on road plans.





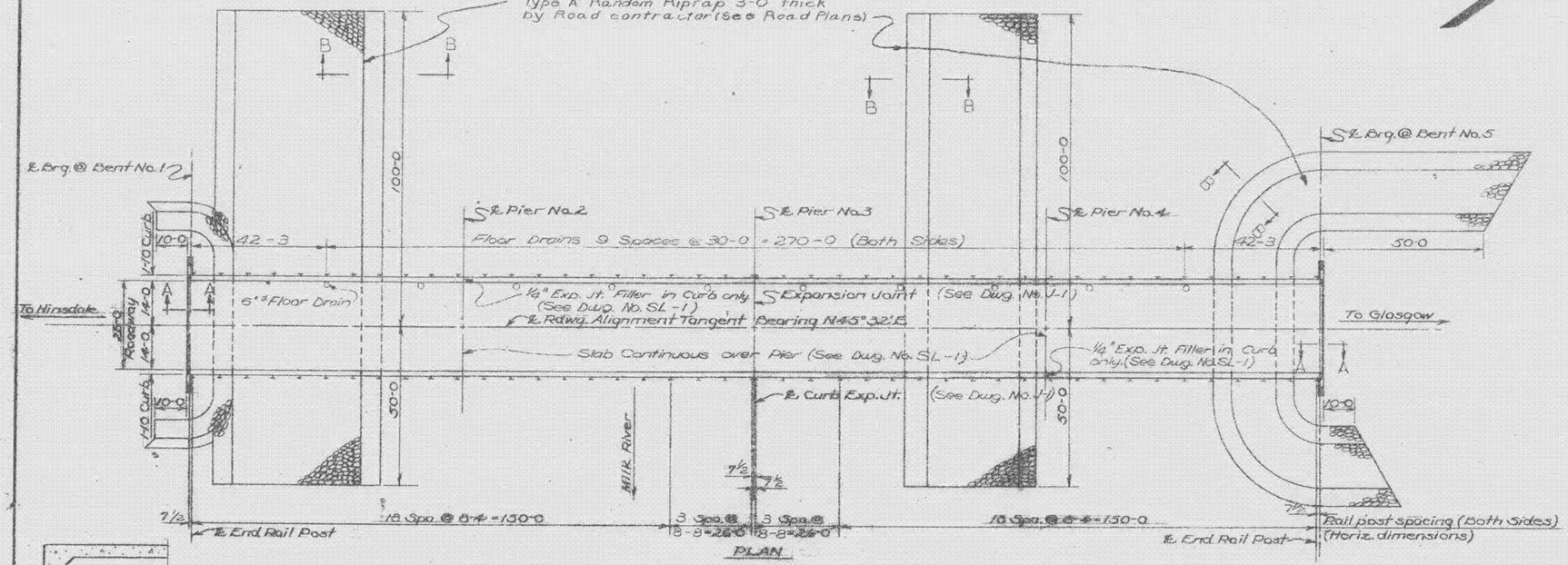
*Untreated Timber Piles Typical all Bent & Piers.

Note:- For location of Test Piles see "Footing Plan" on Dwg. No. 7027

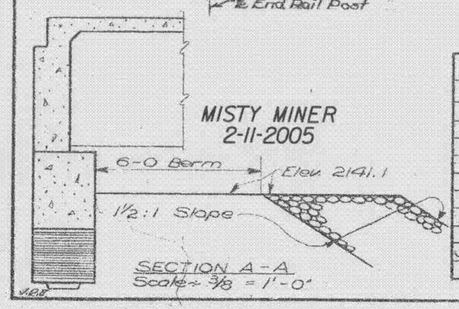
ELEVATION

STREAM DATA

ICE :- Medium
DRIFT. - Medium
Scour - Medium
Soil - See Borings Dwg. No. 7027

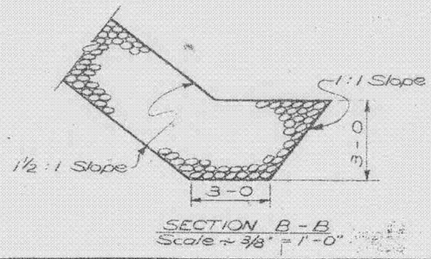


PLAN



SECTION A-A
Scale:- ⅜" = 1'-0"

REFERENCES	
DRAWING NO.	DESCRIPTION
7027	FOOTING PLAN
7028	BENTS NO.1 & NO.5 - BEAM & BACKWALL DETAILS
7029	BENTS NO.1 & NO.5 - COLUMN & FOOTING DETAILS
7030	PIERS NO.2, NO.3 & NO.4
7031	ERECTION PLAN & SLAB DETAILS
B-4	STANDARD PRESTRESSED CONCRETE BEAMS TYPE IV
SL-1	STANDARD SLAB, CURB, SAFETY WALK & DIAPHRAGM DETAILS
SBR-T4 (Rev. 11-27-63)	STANDARD STEEL BRIDGE RAIL TYPE NO.4
J-1 (Rev. 7-20-64)	STANDARD SLAB & CURB JOINTS



SECTION B-B
Scale:- ⅜" = 1'-0"

AS-BUILTS

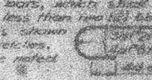
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	NHTSA 0002(393)	B14	

NOTES

SPECIFICATIONS : Montana State Highway Commission Standard Specifications for Road and Bridge Construction, 1961 Edition, any amendments thereto, and Special Provisions, unless otherwise noted. Design prepared in accordance with AASHO Specifications, 1961 Edition, and any amendments thereto.

CAST IN PLACE CONCRETE : Unless otherwise noted, all concrete in the Superstructure shall be Class "A" and all concrete in the Substructure shall be Class "A". All Reinforcing steel shall be placed as shown on the plans. All concrete except Class "S" Chamfers, all exposed edges of concrete at enclosed angle less than 120° shall be rubbed unless otherwise noted.

REINFORCING STEEL : Bends in reinforcing steel shall be made to a radius of not less than four (4) diameters of the bar except for stirrups and tie bars, which shall be bent around a pin having a diameter of not less than two (2) bar diameters. Hooks shall conform to the dimensions shown in the following sketches, except as otherwise noted.



APPROVAL : Shop plans shall be approved by the Montana State Highway Department before fabrication is begun.

SETTING OF MASONRY PLATES : Care shall be taken in placing reinforcing steel so as to clear anchor bolts.

Contractor shall finish screeds under bases or girder seats slightly high and bush-hammer to exact elevation after beams are set. Masonry plates shall be placed on three (3) layers of roofing felt, lightly swabbed with red lead, as called for in the Standard Specifications.

SOILS AND FOUNDATION MATERIALS : Borings were taken by the Montana State Highway Department at the points shown on the General Layout or Footing Plan.

The series of three numbers shown on the log of borings indicate the number of blows per 6" penetration for each foot. The first series of 6" sample tube which was driven in accordance with the Standard Penetration Test made with a 2" split tube sampler using a 140# hammer having a 30" drop. 6" indicates reflect of the sample tube to penetrate 6" after 50 blows.

The State Highway Department does not assume any responsibility for any variation or misinterpretations of the classes of materials and estimates in bid prices will not be made if the materials found do not agree with those shown in the log of borings.

BACKFILL : The backfill at end bents may be completed up to the bottoms of the backwalls before superstructure is in place. The backfill against the backwalls shall not be placed until after the concrete roadway slab has been placed.

STRUCTURAL STEEL : Unless otherwise noted, structural steel shall be paid for at the unit price bid for reinforcing steel and the weight paid for shall be the "computed weight as detailed in accordance with the Standard Specifications.

For requirements governing the fabrication of structural steel see the Standard Specifications. To avoid oversight the requirements shall be clearly noted on the shop drawings.

Structural steel shall recieve one (1) shop coat of red lead in zinc 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.

FOOTINGS : Elevations shown for bottom of footings are approximate and final elevations to be determined by the engineer.

STRUCTURE EXCAVATION :- Only the excavation below natural ground line existing before construction is started, at Bents No.1 & No.5 & Pier No.4 shall be restricted to the area inside the Cofferdams.

The cost of backfilling shall be included in the unit price bid for Structure Excavation.

FOUNDATION PILES :- For bidding purposes only, pile lengths have been estimated as noted on the details. See the Special Provisions for Test Pile and service pile requirements.

LIVE LOAD :- Standard HS 20 - 44.

OTHER NOTES :- For other notes See Dwgs. No. 7030 and No. 7031.

** THIS CONTRACT: NHTSA 0002(393)
EXISTING RAIL REPLACED WITH THRIE BEAM
SEE DWG. NO. 18744 FOR DETAILS

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER MILK RIVER
AT STA 2306+60.75
FEDERAL AID PROJECT NO. F 148 (8)
VALLEY COUNTY
GENERAL LAYOUT
Scale:- 1" = 20'-0" Except as Noted

DESIGNED		
DRAWN	G.C.S.	2-20-64
CHECKED	D.R.S.	8-12-64
* REVISED	D.R.S.	9-3-64
** REVISED	L.M.S.	6-19-03

APPROVED BY - [signature] BRIDGE ENGINEER

DRAWING NO. 7026

AS-BUILTS

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	NHTSA 0002(393)	B15	

℄ Brg. @ Bent No. 1
Sta. 2316 + 78.50
Fin. Gr. @ ℄ Rdwy.
Elev. 2147.42

143 - 0
45 - 9 | 51 - 6 | 45 - 9

℄ Bent No. 2
Sta. 2317 + 24.25
Fin. Gr. @ ℄ Rdwy.
Elev. 2147.27

℄ Bent No. 3
Sta. 2317 + 75.75
Fin. Gr. @ ℄ Rdwy.
Elev. 2147.11

℄ Brg. @ Bent No. 4
Sta. 2318 + 21.50
Fin. Gr. @ ℄ Rdwy.
Elev. 2146.97

PI. Sta. 2313 + 00.0
Elev. 2148.00
Fin. Gr. 00.0%
400' V.C.
-0.313% Fin. Gr.

Note ÷ Name on Bridge Marker shall be "MILK RIVER OVERFLOW" in two lines.
No reflector Signals required on this Bridge.

Top of Riprap Elev. 2141.0

Prestressed Concrete Beams

Fin. Gr. ℄ ℄ Rdwy.

Fix | Fix | H.W. Elev. 2141.1 | Fix | Fix | Fix

3'-0" Rip-rap
Slope 1½ : 1

Top of riprap Elev. 2141.0
3 - 0 Riprap
1½ : 1 slope

20'- Lt Profile ℄ Profile
20'- Rt Profile

Elev. 2125.26
Elev. 2117.12
Elev. 2124.81
Elev. 2116.96

Type "A" Random Riprap 3-0 Thick by Road Contractor. (See Road Plans)

Treated Timber Piles. (Typical all Bents.)

B

ELEVATION

Note ÷ No roadway approach fills shall be placed near End Bents until End Bents are completed. Care shall be taken during operations of placing and compacting embankment fills that no bent shall be displaced from its true vertical alignment.

Top of Riprap Elev. 2141.0
Slope 1½ : 1
SECTION A-A

Note ÷ For location of Test Piles See "Footing Plan" on Dwg. No. 7033.

℄ Brg. @ Bent No. 1
Slope 1½ : 1
0 - 8
℄ End Rail Post
17 spa @ 8-4 = 141 - 8
Slope 1½ : 1
℄ Brg. @ Bent No. 4
0 - 8
Rail Post Spacing measured along Curb
℄ End Rail Post

STREAM DATA

ICE – None
DRIFT – Slight
Scour – Medium
Subsoil – See Borings on Dwg. No. 7032

10 - 0
℄ Bent No. 2
STREAM FLOW
℄ Bent No. 3
10 - 0

5 1/4" Layer of Exp. Jt. Filler in curb only (See dwg. No. SL-1).

CURVE DATA

Δ	44° 13' RT
D	3° 00'
T	775.9'
L	1473.9'
R	1910.0'
S	0.07

To Hinsdale

42 - 0 Rail to Rail
20 - 0
22 - 0
0 - 9 Brush Curb

A | A

℄ Rdwy. on a 3° 00' curve.
Bearing long chord N 64° 29' 35" E
℄ 142 - 11 5/8 Long Chord
90° | 90° | 90°
Slab continuous over Bents.
Superelevation 0.07 ft. per ft.
To Glasgow

P.C. Sta. 2311 + 18.1
P.T. Sta. 2325 + 92.0

10 - 0
0 - 8
0 - 9 Brush Curb
17 Spa. @ 8-4 = 141 - 8
℄ End Rail Post
Slope 1½ : 1
Curb Opening
10 - 0
0 - 8
Rail Post Spacing measured along Curb
Slope 1½ : 1
End Rail Post

PLAN

3 - 0
1½ : 1 Slope
3 - 0
SECTION B-B
Scale ÷ 3/8" = 1' - 0"

MISTY MINER
2-11-2005

Note ÷ Roadway Slab & Curbs shall be built on concentric arcs to the 3° ℄ Curve. Bents to be parallel to each other.

LIVE LOAD ÷ Standard HS 20 - 44
FINISH GRADE ÷ Finished plan grade of Bridge @ ℄ Rdwy. as shown on "Elevation" is 0.60 ft. above profile grade shown on Road Plans due to Superelevation.
FOUNDATION PILES ÷ For bidding purposes only, pile lengths have been estimated as noted on the details. See the Special Provisions for Test Pile and service pile requirements.
OTHER NOTES ÷ For other notes see Dwg. No. 7037

* THIS CONRACT: NHTSA 0002(393)
EXISTING RAIL REPLACED WITH CONCRETE BARRIER SHAPE. SEE DWG NO. 18745 FOR DETAILS

REFERENCES

DRAWING NO.	DESCRIPTION
7033	Footing Plan
7034	Bent No. 1 & No. 4 Backwall & Beam Details
7035	Bent No. 1 & No. 4 Column & Footing Details
7036	Bent No. 2 & No. 3
7037	Erection Plan
B-A	Standard Prestressed Concrete Beam-Type A
S.B.B.R. (rev. 11-27-63)	Steel Beam Bridge Rail And Details
S.E.1	Std. Slab, Curb, Safety Walk, & Diaphragm Details

DESIGNED		
DRAWN	5-22-64	G.A.P.
TRACED		
CHECKED	8-17-64	D.R.S.
* REVISED	6-19-03	L.M.S.
REVISED		

STATE OF MONTANA
STATE HIGHWAY COMMISSION
BRIDGE OVER MILK RIVER OVERFLOW
AT STA. 2317+50.00
FED. AID PROJ. NO. F 148 (8)
VALLEY COUNTY
GENERAL LAYOUT
Scale ÷ 1" = 10' - 0"
Except as noted.

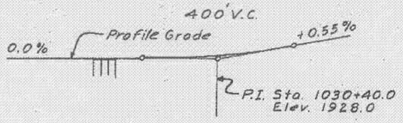
Approved By [signature]
BRIDGE ENGINEER

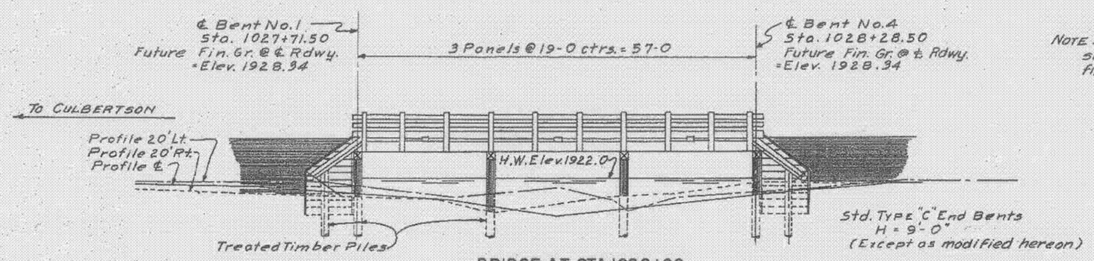
DRAWING NO. 7032

M.R.B.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.		SHEET NO.	TOTAL SHEETS
8	MONT.	NHTSA 0002(393)	B16		

AS-BUILTS





BRIDGE AT STA. 1028+00

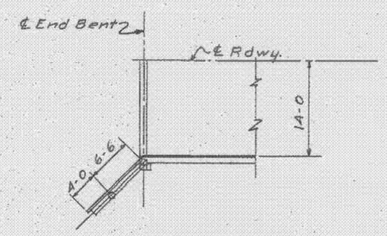
No Marker Required

Scale-1"=10'-0"

Pile lengths:
All piles shall be 30' long.

NOTE: Top of laminated decking shall be .42' below future finish grade elevations.

REFERENCES			
DWG. NO.	REV. DATE	RDWY.	DESCRIPTION
51	12-19-47	28'	STANDARD TREATED TIMBER TRESTLE
53	3-1-46	28'	STANDARD TREATED TIMBER TRESTLE
57	2-10-48	28'	STANDARD TREATED TIMBER TRESTLE



WING DETAIL

Scale-1"=10'-0"

Normally Dry
No Ice
No Drift
No Scour
Subsoil-Heavy loam

CURVE DATA

Δ = 11°-43' Lt.
D = 0°-15'
T = 2351.6'
L = 4,686.7'
R = 22,920.0'
PI Sta. 1044+70.6
PC Sta. 1021+19.0
PT Sta. 1068+05.7
Bearing N 89°-44' E (Bk)
Bearing N 78°-01' E (Ah)
Superelevation: 0.4' per 24'-0"

BRIDGE PLAN QUANTITIES		
UNTREATED TIMBER	TREATED TIMBER	TREATED TIMBER PILES
M.b.m.	M.b.m.	30'
1.24	24.54	28

THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER BRIDGE RAIL REPLACED WITH T 101 RAIL SEE DWG NO. 18750

NOTES

SPECIFICATIONS :— Montana State Highway Commission Standard Specifications for Road and Bridge Construction, adopted January 1, 1946, and any amendments thereto, and Special Provisions shall govern unless otherwise noted. Design prepared in accordance with A.A.S.H.O. Specifications, 1953 Edition.

LIVE LOAD :— Standard H15-S12 loading.

DETAILS :— Structure shown on this sheet shall be built in accordance with details shown on Dnge. No. 51, 53, & 57, with modifications shown hereon.

FINISHED GRADE :— Future Finished plan grade of bridge at centerline of Rdwy. is 0.34' above profile grade shown on road plans.

PILE PENETRATION :— In case 10 feet of pile penetration, below the low point of the channel, cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, exercising care to shatter only the subsoil immediately around the pile, or he shall excavate and set the piles the required depth and strike the piles with the hammer to bring them to a firm bearing. Cost of such work shall be included in the unit price bid for treated timber piling.

EXCAVATION :— Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, backing plank, and bracing shall be included in the unit price bid for treated timber.

PEELING OF PILES :— All piles shall be peeled in accordance with the Standard Specifications soon after cutting. All peeling shall be accomplished by such means as will not damage, destroy, or remove any of the sapwood.

MISTY MINER
2-11-2005

J.R.B.

DESIGNED		
DRAWN	C.A.M.	4-27-55
TRACED	E.R.T.	5-7-55
CHECKED	L.W.H.	5-16-55
REVISED	L.M.S	6-19-03
REVISED		

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE AT STA. 1028+00
NEAR CULBERTSON
FEDERAL AID PROJECT NO. F 84 (20)
ROOSEVELT COUNTY
GENERAL LAYOUT
Scale-1"=10'-0"

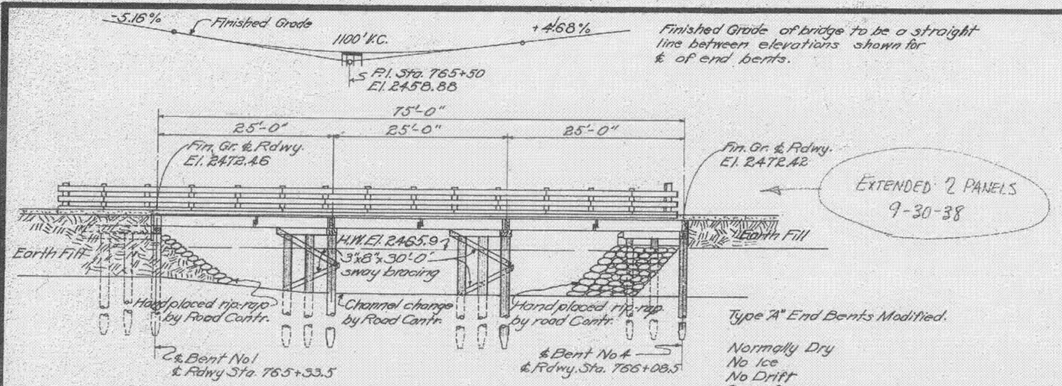
APPROVED BY _____ BRIDGE ENGINEER

STATE PRECONST. NUMBER 1084-20

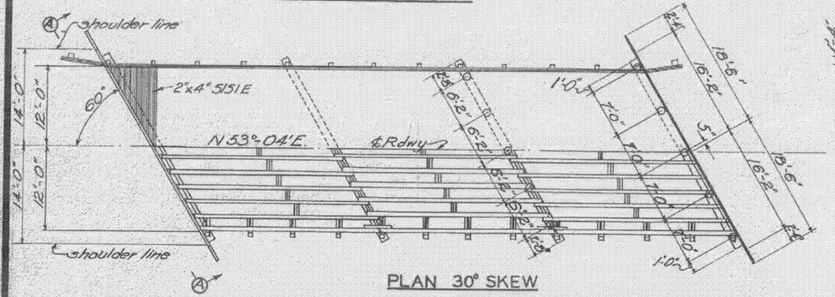
DRAWING NO. 3700

FED. ROAD DIST. NO.	STATE	FED. AID PROJ.NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)	B17		

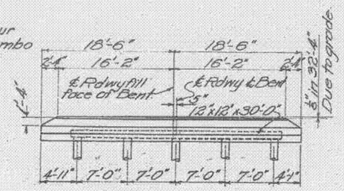
AS-BUILTS



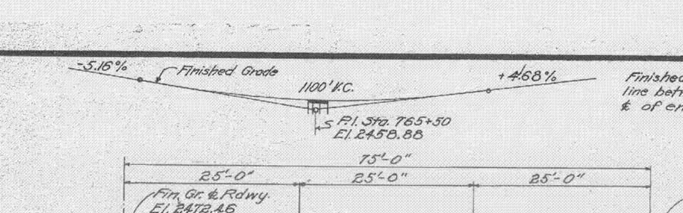
SECTION AT ℄ RDWY



PLAN 30° SKEW

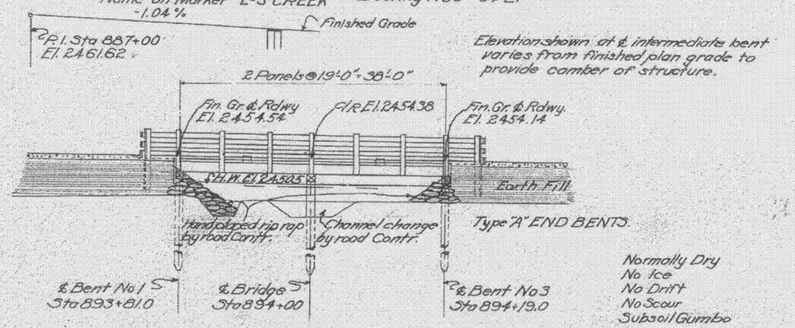


VIEW A-A

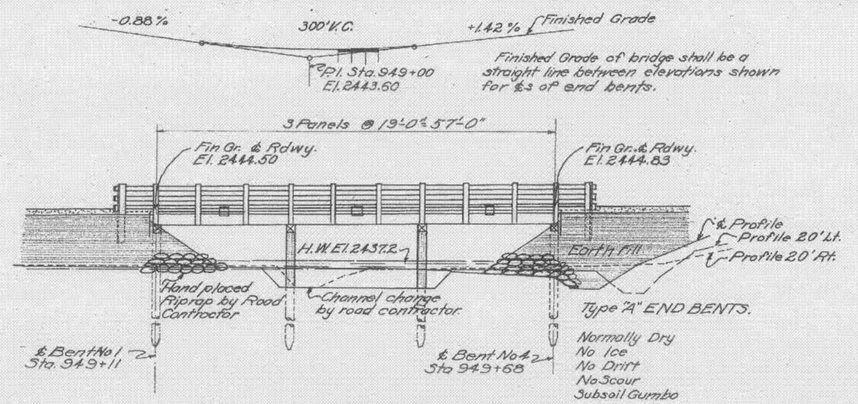


PART PLAN AT TOP OF STRINGERS
Scale: ¼"=1'-0"

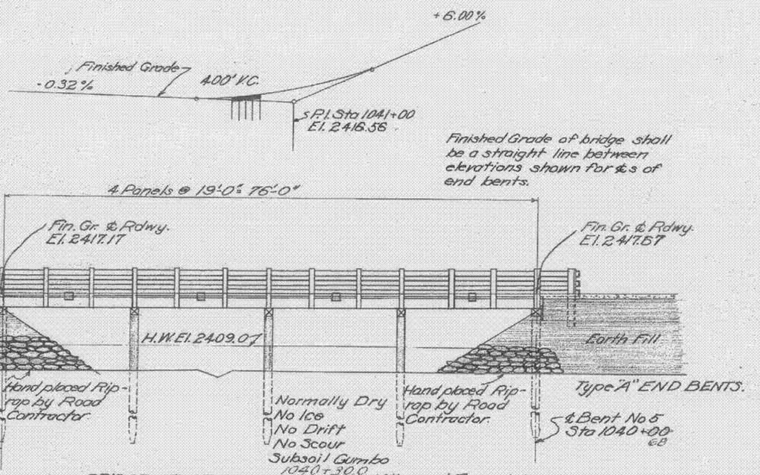
BRIDGE AT STATION 765+71 (Alignment Tangent)
Name on Marker "L-S CREEK" (Bearing N53°-04'E)



BRIDGE AT STATION 894+00 (Alignment Tangent)
No Marker required (Bearing N84°-29'E)



* BRIDGE AT STATION 949+39.5 (Alignment Tangent)
No Marker required. (Bearing N84°-29'E)



* * BRIDGE AT STATION 1039+55.5 (Alignment Tangent)
No Marker required (Bearing N84°-29'E)

GENERAL NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, revised April 1935; Design Specifications for Highway Structures, revised July 1935; and Special provisions, shall govern unless otherwise noted.

DETAILS:- Structures shown on this sheet shall be built in accordance with details shown on Dwgs. No. R23TT19 and R23TT25.

FINISHED GRADE:- Finished plan grade of bridges is 0.5 ft. above profile grade shown on road plans.

GRAVEL BALLAST:- Gravel ballast shall be placed by the bridge contractor. It shall meet requirements for top course gravel surfacing, except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, and backing plank shall be included in the unit price bid for treated lumber. Excavation for the box culverts to be paid for as a separate item.

BOX CULVERTS:- Box Culverts at Stations 988+00; 1081+80; 1085+52; 1099+15; 1135+48; 1194+60; 1233+08; 1258+00; 1289+05 and 1319+05 shall be constructed in accordance with details shown on Dwg No. TT Box Culv.

SHEET PILING:- Sheet piling cut off wall shall be used at each end of box culvert as shown on Dwg No. TT Box Culv. The piling shall be driven 4 ft. into undisturbed material.

RIPRAP:- At points where riprap is shown carried into channel changes, extend riprap to toe of slopes at sides, turn back and key 3 ft. into bank.

*THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL. SEE DWG NO. 18749
NEW SWAY BRACING ADDED SEE DWG. NO. FOR DETAILS. 18753 *

PILING						
STATION	20'	25'	30'	35'	40'	50'
765+71	5	15				
894+00	15					
949+39.5		20				
1039+55.5			25			
TOTAL	20	35	25			

1040+30.0

REFERENCES	
DWG. NO.	DESCRIPTION
1810	OTHER BRIDGES
1811	" "
R23TT19	STANDARD TRESTLE
R23TT25	" "
TT100	STANDARD ICE BREAKER
TTBOXCULV.	TIMBER BOX CULVERTS

*	REVISED	L.M.S.	6-19-09

	BY	DATE
DESIGNED		
DRAWN	MM	5-11-36
TRACED	DWEE	10-14-36
CHECKED	V.P.M.	11-9-36
REVISED	BY	
REVISED	BY	

MISTY MINER
2-11-2005

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STATIONS 765+71; 894+00; 949+39.5; 1039+55.5 (1040+30.0)

F.A.P. No. 247C UNIT 2
GARFIELD COUNTY
GENERAL LAYOUTS
Scale: 1"=1'-0" except as noted

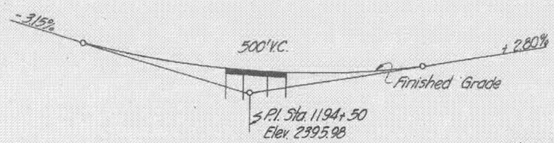
APPROVED BY B.J. Cornburn
BRIDGE DESIGNING ENGINEER

FILE NO. 755 DRAWING NO. 1809

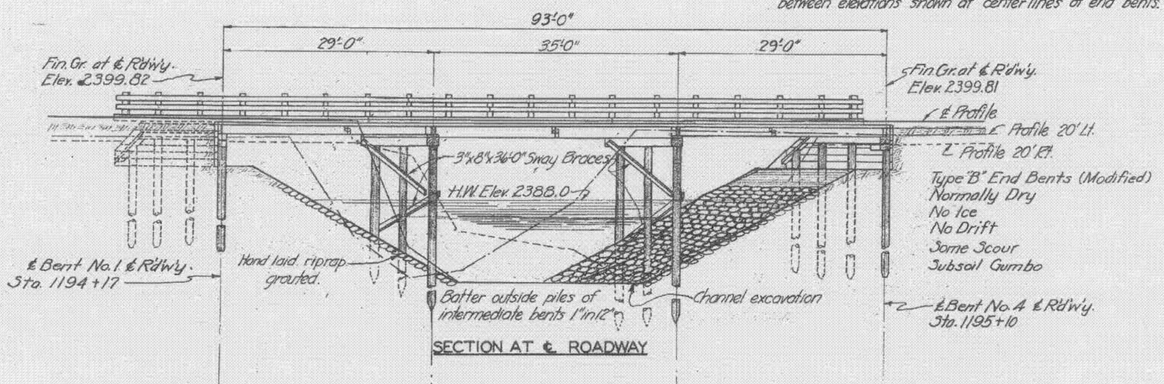
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)		B18	

AS-BUILTS

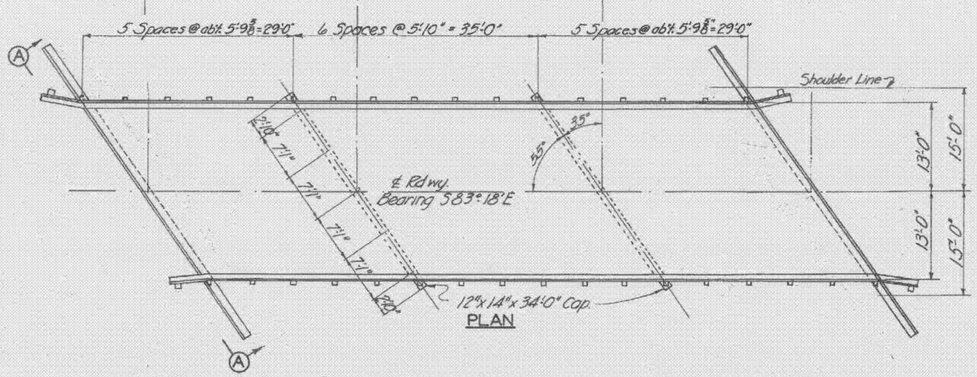
THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL SEE DWG. NO. 18750

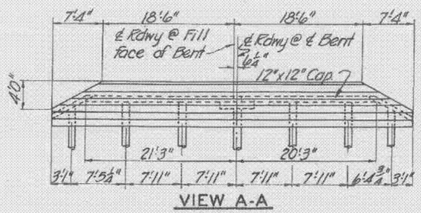


Note:- Finished grade of bridge is on a straight line between elevations shown at center lines of end bents.

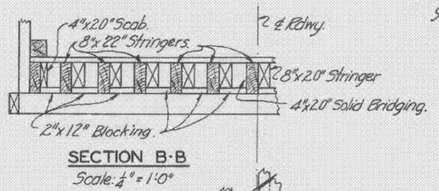


SECTION AT ℄ ROADWAY

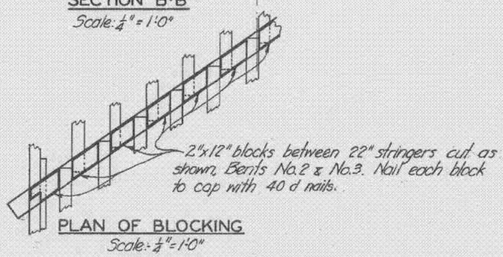




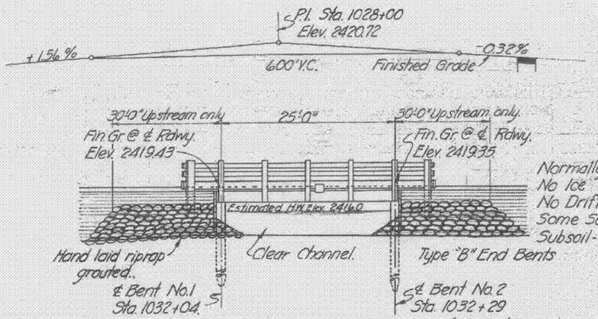
VIEW A-A



SECTION B-B
Scale: 1/4" = 1'-0"



PLAN OF BLOCKING
Scale:- 1/4" = 1'-0"



* BRIDGE AT STA. 1032+16.5 (Alignment Tangent Bearing, N 84° 29' E)
No markers required.

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, revised April, 1935; Design Specifications for Highway Structures, revised July, 1935; and Special Provisions shall govern unless otherwise noted.

DETAILS:- Structures shown on this sheet shall be built in accordance with details shown on Dwgs. No. R24-TT25 and No. R24-TT Details with modifications shown hereon.

GRAVEL BALLAST:- Gravel ballast shall be placed before traffic is permitted. It shall meet requirements for top course gravel surfacing except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, backing plank and bracing shall be included in the unit price bid for treated lumber.

RIPRAP:- At points where rip rap is shown carried into channel change, extend rip rap to toes of slopes at sides, turn back and key 3 ft. into bank.

FINISHED GRADE:- Finished plan grade of bridges is 0.50 ft. above profile grade shown on road plans.

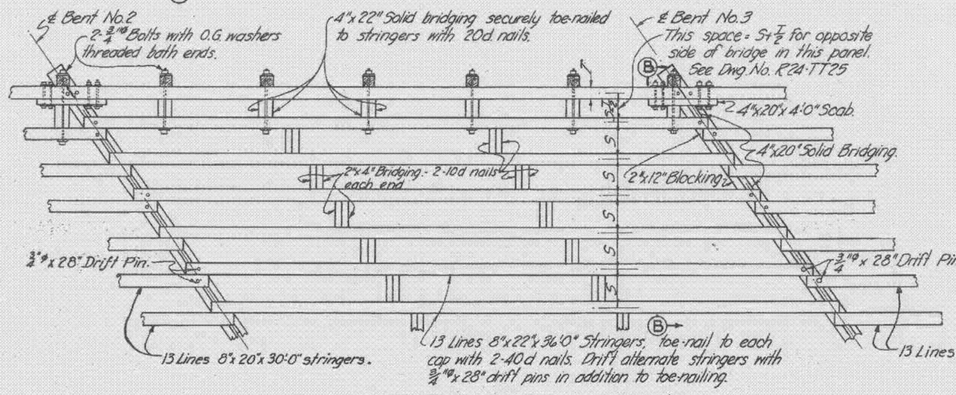
REFERENCES	
DWG. NO.	DESCRIPTION
R24 TT25	Standard Timber Trestle
R24TT Details	Standard Trestle Details.

DESIGNED	BY	MM	
DRAWN	BY	TCC	
TRACED	BY	L.G.H.	9-29-39
CHECKED	BY		
REVISED	BY		
REVISED	BY		

MISTY MINER
2-11-2005

PART PLAN AT TOP OF STRINGERS
Scale:- 1/4" = 1'-0"

* BRIDGE AT STATION 1194+63.5
No marker required.



* REVISION	L.M.S	6-19-03

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STAS. 1032+16.5, 1194+63.5

FED. AID PROJ. NO. 247 C(2)

GARFIELD COUNTY

GENERAL LAYOUT

&

MODIFICATIONS

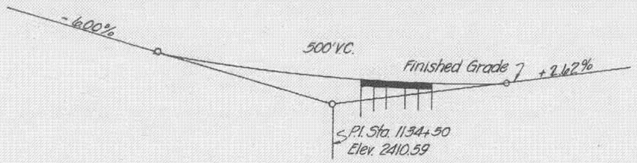
Scale:- 1" = 10'-0" Except as noted.

APPROVED BY R. J. Cranburn
BRIDGE DESIGNING ENGINEER

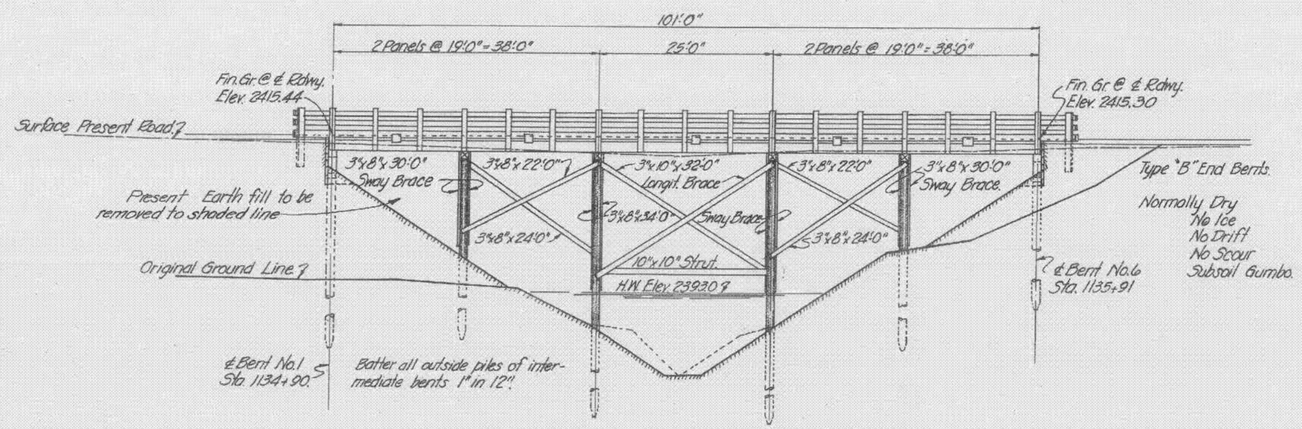
FILE NO. 755 DRAWING NO. 2057

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393) B19			

AS-BUILTS



Note:- Finished grade of bridge shall be on a straight line between elevations shown at center lines of end bents.



BRIDGE AT STA. 1135+40.5 (Alignment Tangent) (Bearing S83°18'E)
No markers required.

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction revised April, 1935; Design Specifications for Highway Structures, revised July, 1935 and Special Provisions shall govern unless otherwise noted.

DETAILS:- Structure shown on this sheet shall be built in accordance with details shown on Dwgs. No. R24-TT19, No. R24-TT25 and No. R24-TT Details.

FINISHED GRADE:- Finished plan grade of bridge is 0.5 ft. above profile grade shown on road plans.

GRAVEL BALLAST:- Gravel ballast shall be placed by Bridge Contractor. It shall meet requirements for top course gravel surfacing except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the Contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile-hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the placing of caps and backing plank on the end bents and payment for backfilling around end bents up to finished lines shown on plan shall be included in the unit prices bid for lumber.

DESIGNED BY	MMK	7-30-38
DRAWN BY	R.C.E.	8-1-38
TRACED BY	MMT.	8-7-38
CHECKED BY		
REVISED BY		
REVISED BY		

* THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER BRIDGE MAY BE REPLACED WITH T101 RAIL SEE DWG. NO. 18750

BRIDGE QUANTITIES Excavation Swelled approx. 10%

STATION	LENGTH IN FEET	TREATED LUMBER M.F.B.M.	UNTREATED LUMBER M.F.B.M.	TREATED TIMBER PILES 25'	30'	45'	GRAVEL BALLAST CU.YDS.	EXCAVATION CUBIC YARDS
1135+40.5	101	36.40	2.34	7	17	10	27	4700
TOTAL	101	36.40	2.34	7	17	10	27	4700

REFERENCES

DWG. NO.	DESCRIPTION
R24-TT19	Standard Timber Trestle
R24-TT25	Standard Timber Trestle
R24-TT Details	Standard Trestle Details.

MISTY MINER
2-11-2005

* REVISED L.M.S 6-19-03

STATE OF MONTANA
STATE HIGHWAY COMMISSION

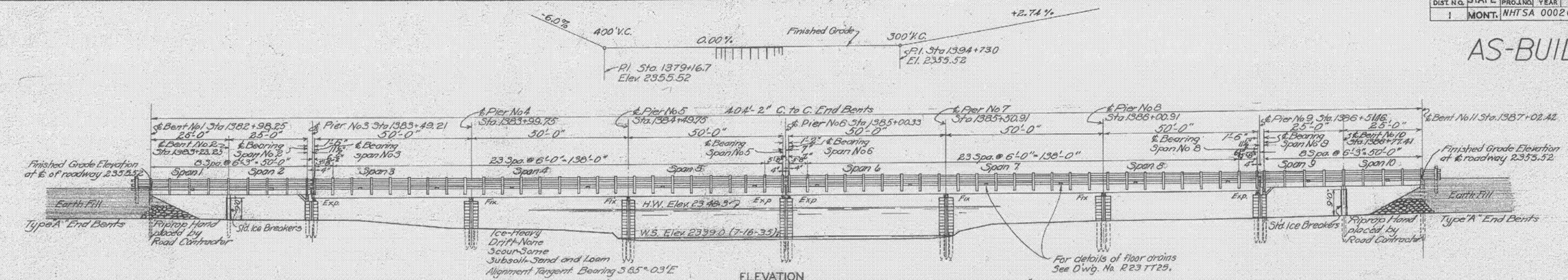
BRIDGE AT STA. 1135+40.5
(FED. AID PROJ. NO. 247 C)
17 MA-10-47
GARFIELD COUNTY
GENERAL LAYOUT
Scale:- 1"=10"

APPROVED BY B.J. Amberson
BRIDGE DESIGNING ENGINEER

FILE NO. 955 DRAWING NO. 2176

FED.ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)		B20	

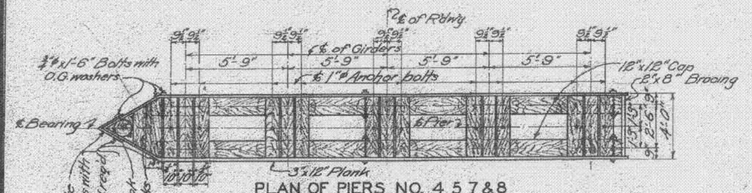
AS-BUILTS



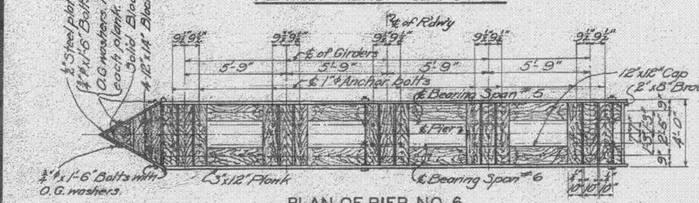
ELEVATION

Scale: 1/8"=1'-0"

Name on marker-"Little Dry River."

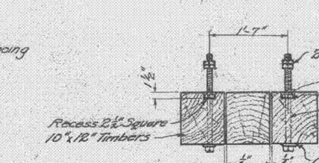


PLAN OF PIERS NO. 4 5 7&8



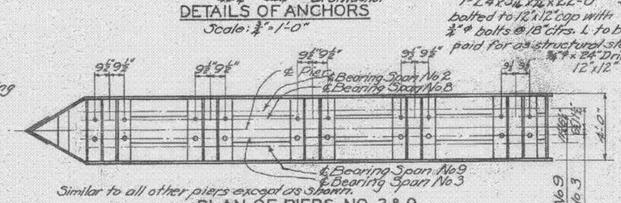
PLAN OF PIER NO. 6

Scale: 1/4"=1'-0"



DETAILS OF ANCHORS

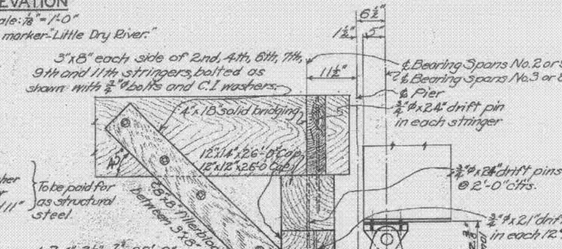
Scale: 3/4"=1'-0"



Similar to all other piers except as shown.

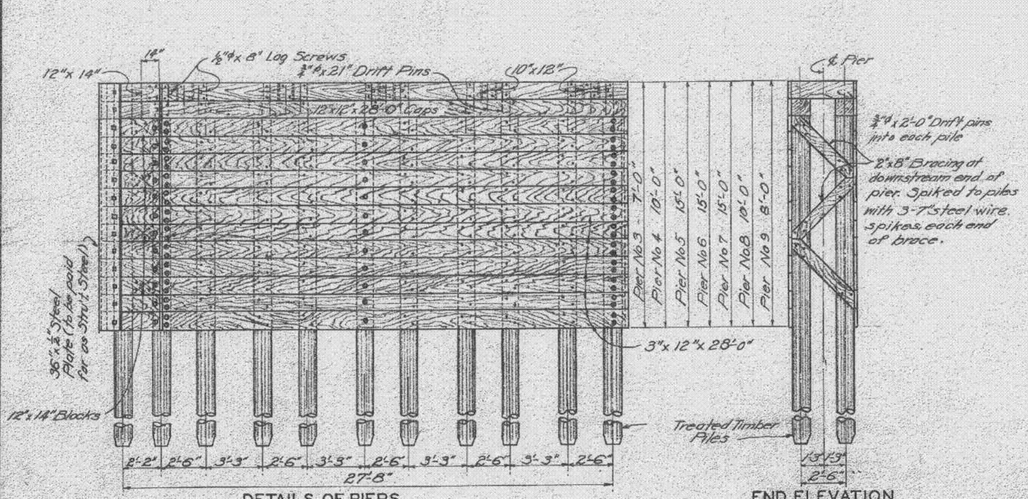
PLAN OF PIERS NO. 3& 9

Scale: 1/4"=1'-0"



DETAILS OF BEARINGS PIERS NO. 3&9

Scale: 1/4"=1'-0"



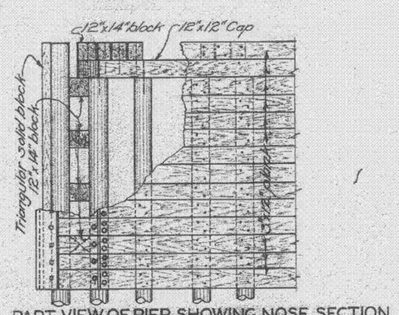
DETAILS OF PIERS

Note:-Spike planks to piles with 2-7" wire spikes except where ¾"ø bolts are shown.

Scale: 1/4"=1'-0"

END ELEVATION

PILING				
STATION	20'	25'	30'	35'
1382+98.25		5		
1383+23.25		5		
1383+49.21		21		
1383+99.75			21	
1384+49.75				21
1385+00.33				21
1385+50.91				21
1386+00.91			21	
1386+51.46			21	
1386+77.42			5	
1387+02.42			5	
TOTAL		31	73	63



PART VIEW OF PIER SHOWING NOSE SECTION

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

REFERENCES	
DWG. NO.	DESCRIPTION
1811	Other details this bridge
1809	Other Bridges on 247-C2
R23-TT25	Std. Trestle
TT 100	" Ice Breakers
R23TT19	Std. Trestle

* THIS CONTRACT, NHTSA 0002(393) EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL. SEE DWG NO. 18751

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for road and bridge construction, revised April, 1935; Design Specifications for Highway Structures, revised July, 1935, and Special Provisions shall govern unless otherwise noted.

LIVE LOAD:- Standard H-15 Loading.

DETAILS:- Except as modified on Dwg. No. 1811, approach spans shall be built in accordance with details shown on Dwg. No. R23-TT25.

FINISHED GRADE:- Finished plan grade of bridges is 0.5 Ft. above profile grade shown on road plans.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of bracing plank, bracing, and ice breakers shall be included in the unit price bid for treated lumber.

STRUCTURAL STEEL:- For requirements governing structural steels and their fabrication, see the Standard Specifications. To avoid oversight, these requirements shall be clearly noted on the shop drawings.

Structural steel shall receive one shop coat and two field coats of paint on all surfaces not in contact with timber, except as noted in paragraph 33.8 of the Standard Specifications.

Shop Coat:- Lead paint as described in Section 53 of the Standard Specifications.

First Field Coat:- Primer coat for aluminum paint as described in Section 54 of the Standard Specifications.

Second Field Coat:- Aluminum paint, as described in Section 54 of the Standard Specifications.

RIVETS:- ¾" ø rivets unless otherwise noted.

HARDWARE:- All notes on hardware on Dwg. No R23TT25 apply. All bolts, washers, etc., used for connecting timber and steel to timber (except as noted on details) spikes, drift pins, and metal clips for attaching deck, shall be considered as hardware and payment for same shall be included in the price bid for treated timber and untreated timber.

PILE PENETRATION:- In case 10 Ft. of pile penetration cannot be obtained by ordinary driving, the contractor, as directed by the engineer, shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 8 Ft. deep and strike the piles with the pile hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

GRAVEL BALLAST:- Gravel ballast shall be placed by the bridge contractor. It shall meet requirements for top course gravel surfacing except that crushing will not be required.

BEARING FOR GIRDERS:- The timber grillages under girder shoes shall provide level and smooth bearing surfaces of the exact elevations shown. All piling under grillages shall be cut off at the exact elevation and care shall be taken to obtain uniform bearing of grillages on pile butts.

TREATED TIMBER:- Timber in grillages under girder shoes shall be dense structural grade. The decking on steel spans No. 3 to 8 inclusive shall be dense select structural grade in accordance with par. 2M and 302 of the West Coast Lumbermens Association, Book No. 10 dated July 1, 1934, instead of select merchantable grade specified in the Standard Specifications. This decking shall be plainly marked so that it can easily be identified in the field. This material shall be paid for at the unit price bid for treated lumber. For other grades of timber, treatment and construction details see notes on drawing No R23TT25.

OTHER NOTES:- For other notes on lumber, gravel ballast, waterproofing, drains & ice breakers See Dwgs. No. R23TT25 & TT100.

DESIGNED	BY	W.P.M.	Oct'36
DRAWN	BY	DWG.	11-6-36
TRACED	BY	DWG.	11-9-36
CHECKED	BY	M.B.	12-2-36
REVISED	BY	DW.2	4-16-37
REVISED	BY		

MISTY MINER
2-11-2005

* REVISION	L.M.S.	6-19-03

STATE OF MONTANA
STATE HIGHWAY COMMISSION

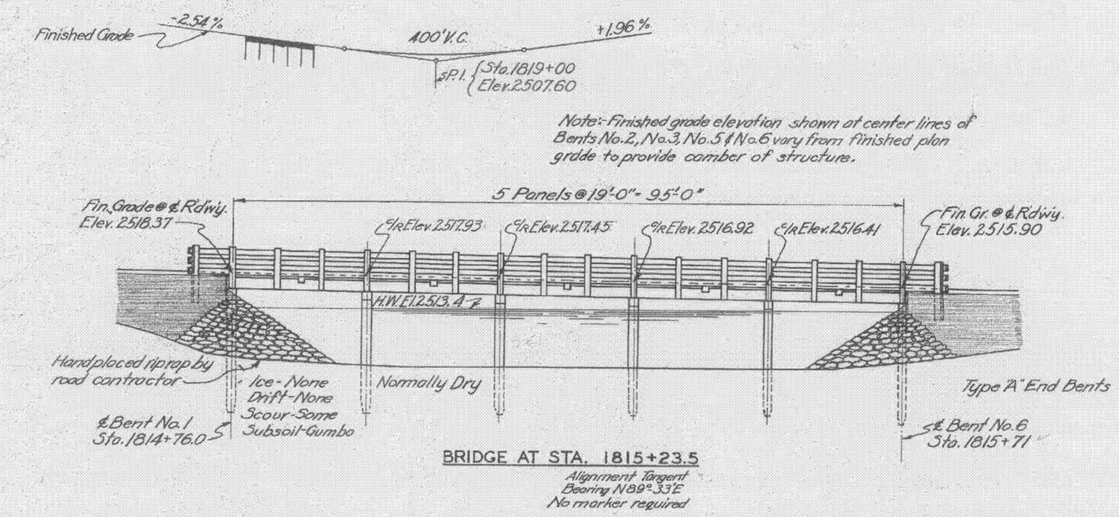
BRIDGE OVER LITTLE DRY RIVER
JORDAN-CIRCLE ROAD
F.A.P. NO. 247-C UNIT 2
GARFIELD COUNTY
GENERAL LAYOUT & PIERS
Scale-As Noted

APPROVED BY: B.J. Amburn

FILE NO. 755 DRAWING NO. 1810

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)	B21		

AS-BUILTS



BRIDGE AT STA. 1815+23.5

Alignment Tangent
Bearing N89°-33'E
No marker required

* THIS CONTRACT: NHTSA 0002(393) EXISTING TIMBER RAIL REPLACED WITH T101 RAIL SEE DWG. NO. 18750 NEW SWAY BRACING ADDED SEE DWG. NO. 18753 FOR DETAILS.

BRIDGE QUANTITIES

STATION	LENGTH IN FEET	TREATED LUMBER M.F.B.M.	UNTREATED LUMBER M.F.B.M.	TREATED TIMBER PILES 25'	GRAVEL BALLAST CU. YDS.	STRUCTURE EXCAVATION CU. YDS.	REMARKS
MAJOR STRUCTURES							
1815+23.5	95	31.03	2.22	30	26		
TOTAL MAJOR STRUCTURES	95	31.03	2.22	30	26		
BOX CULVERTS							
1470+25	5X6X132	30.26				187	FILL 20 TO 30 SQ
1692+70	4X5X52	7.79				54	FILL 0 TO 15 SQ
TOTAL BOX CULVERTS		38.05				241	
TOTAL ALL STRUCTURES	*95	69.08	2.22	30	26	241	

* Length of Box Culverts not included.

NOTES:- For notes see Drawing No. 1949

REFERENCES

DWG. NO.	DESCRIPTION
1949	Box Culverts on 247E
R247119	Standard Timber Trestle
R247 Det.	Standard Trestle Details

DESIGNED BY	
DRAWN BY	DWB 8-16-38
TRACED BY	DWB 8-16-38
CHECKED BY	HWA 8-16-38
REVISED BY	
REVISED BY	

MISTY MINER
2-11-2005

* REVISION Bill. 5 679.03

STATE OF MONTANA
STATE HIGHWAY COMMISSION
BRIDGE AT STA. 1815+23.5

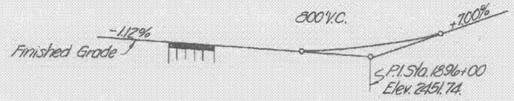
FED. AID PROJ. NO. 247E
GARFIELD COUNTY
GENERAL LAYOUT
Scale: 1"-10'-0"

APPROVED BY B. J. Ombarn
BRIDGE DESIGNING ENGINEER

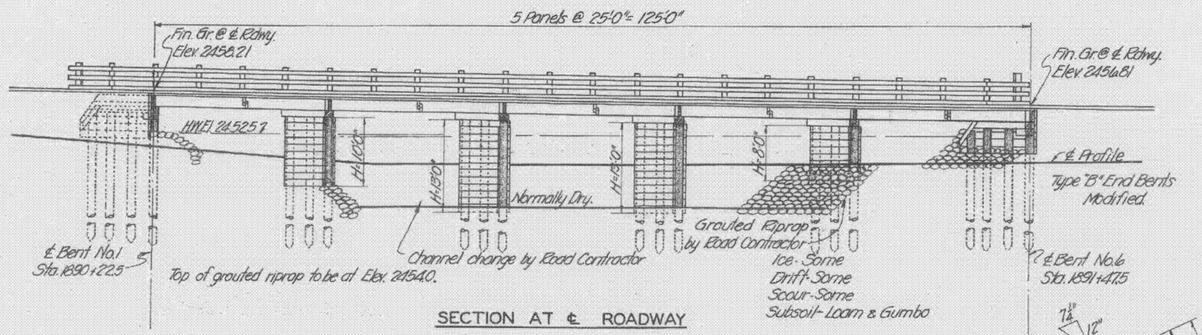
FILE NO. 797 DRAWING NO. 1949A

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	WHTSA 0002(393)		B22	

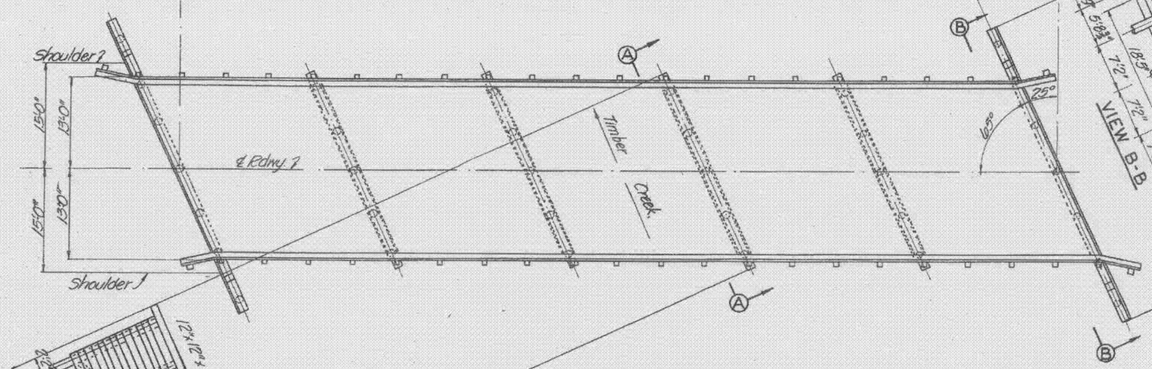
AS-BUILTS



Note:- Finished grade of bridge shall be on a straight line between elevations shown at center-lines of end bents.



SECTION AT ℄ ROADWAY



*BRIDGE AT STA. 1890+85.0 (Alignment Tangent) (Bearing N 89°33' E)
Name on markers: TIMBER CREEK.

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, revised April, 1935; Design Specifications for Highway Structures, revised July, 1935, and Special Provisions shall govern unless otherwise noted.

DETAILS:- Structures shown on these sheets shall be built in accordance with details shown on Dwgs. No. R24-TT19, No. R24-TT25 and No. R24-TT Details with modifications shown herein. Ice breakers for bridges as shown shall be built in accordance with details on Dwg. No. TT100.

GRAVEL BALLAST:- Gravel ballast shall be placed by bridge contractor. It shall meet requirements for top course gravel surfacing, except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile-hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, backing plank, bracing and ice breakers shall be included in the unit price bid for treated lumber.

FINISHED GRADE:- Finished plan grade of bridges is 0.5 ft. above profile grade shown on road plans.

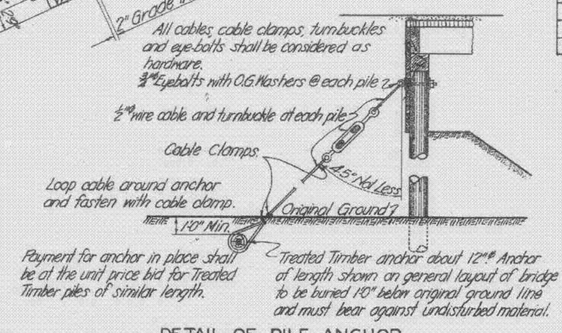
GROUTED RIPRAP:- At points where riprap is shown carried into channel changes, extend riprap 50 ft. from ℄ Rdwy. in each direction, turn back and key 3 ft. into bank.

STOCKPASS:- At Sta. 2376+00 and Sta. 2425+00 a Standard Stock Pass 7 ft. high with a 28 ft. roadway, (R28-H7) shall be constructed in accordance with details shown on Dwg. No. SP11.

STEEL NOSE PLATES:- Steel nose plates on ice breakers shall be paid for as structural steel.

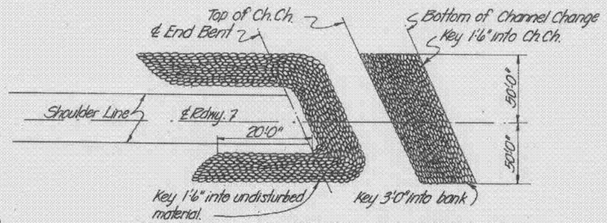
*THIS CONTRACT: WHTSA 0002(393)
EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL SEE DWG. NO. 18750

PILING						
STATION	20'	25'	30'	35'	40'	45'
1890+85.0		14		20		
1939+67.5		19	6	12		
2112+78.0	2	6	20			
2129+48.5	1	5	10	10		
2200+00.0		2	2	16	12	
2209+16.0	2	2	19	10		
2224+62.5	2		2	7	7	20
~~2391+90.0~~ 2392+12.5	2	2	4	20		
2376+00.15.5	16					
2425+00	16					
Total	41	50	43	95	19	20

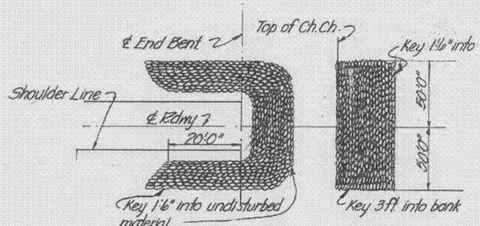


DETAIL OF PILE ANCHOR
Scale: ¼" = 1'0"

REFERENCES	
DWG. NO.	DESCRIPTION
1813	Other Bridges on F.A.P. No. 247 F(1)2
1813A	" " " " " " " "
R24-TT19	Standard Timber Trestle
R24-TT25	Standard Timber Trestle
R24-T Details	Standard Trestle Details
TT100	Standard Ice Breaker
SP11	Standard Stock Pass



TYPICAL RIPRAP DETAIL FOR SKEWED BRIDGE



TYPICAL RIPRAP DETAIL FOR SQUARE BRIDGE

* REVISION L.M.S. 6-19-03		

DESIGNED BY	L.G.H.	10.6.38	
DRAWN BY	T.E.P.	4.25.39	
TRACED BY	R.C.H.	4.27.39	
CHECKED BY			
REVISED BY			
REVISED BY			

MISTY MINER
2-11-2005

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE AT STA. 1890+85.0

FED AID PROJ. NO. 247 F(1) UNIT 2

Mc CONE COUNTY

GENERAL LAYOUT

Scale:- 1"=10'0" except as noted.

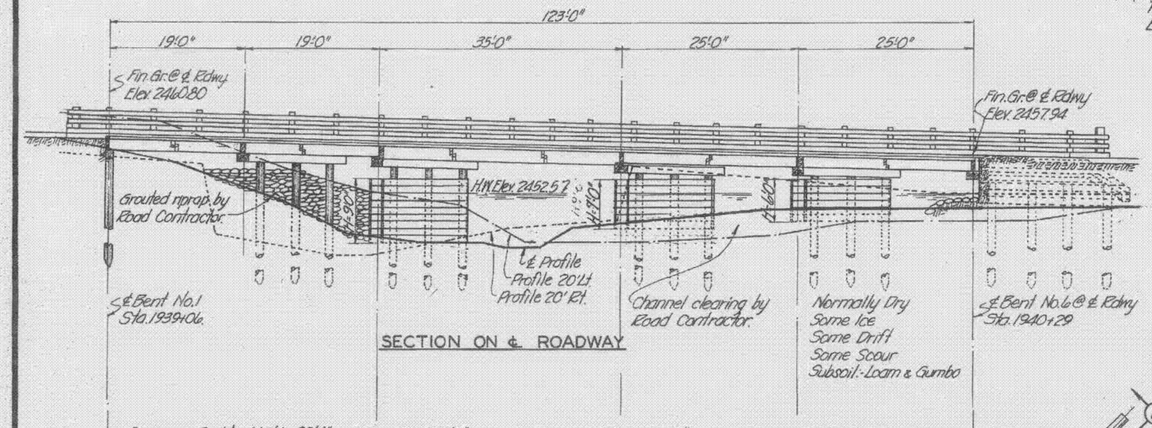
APPROVED BY B. J. Cameron
BRIDGE DESIGNING ENGINEER

FILE NO. 755 DRAWING NO. 1812

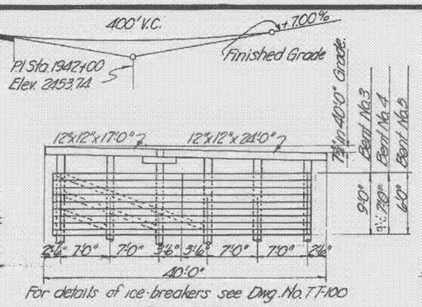
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	WHT SA 0002(393)		B23	

AS-BUILTS

Notes: Finished grade of bridges shall be on a straight line between elevations shown at center-lines of end bents.

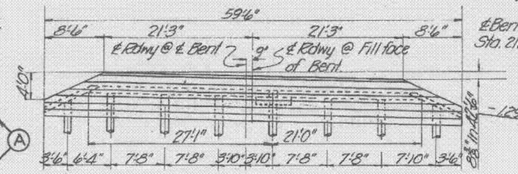


SECTION ON ℄ ROADWAY

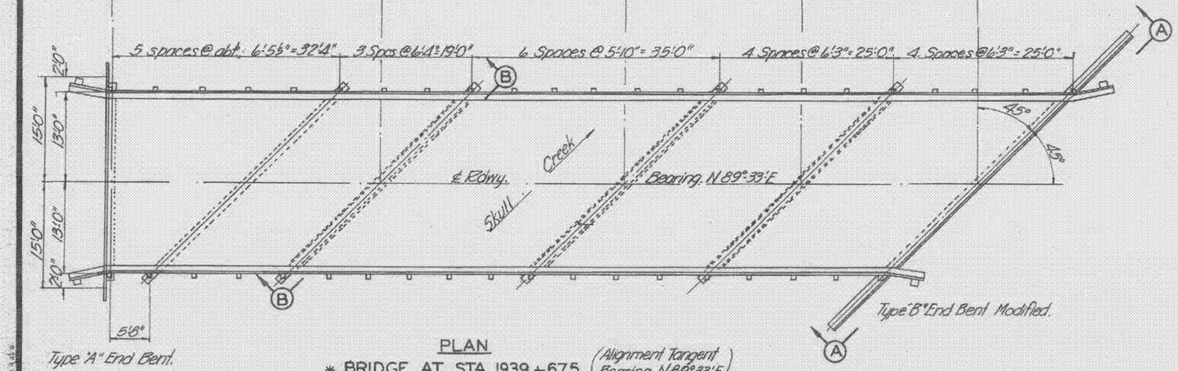


For details of ice-breakers see Dwg. No. T7-100

VIEW B-B



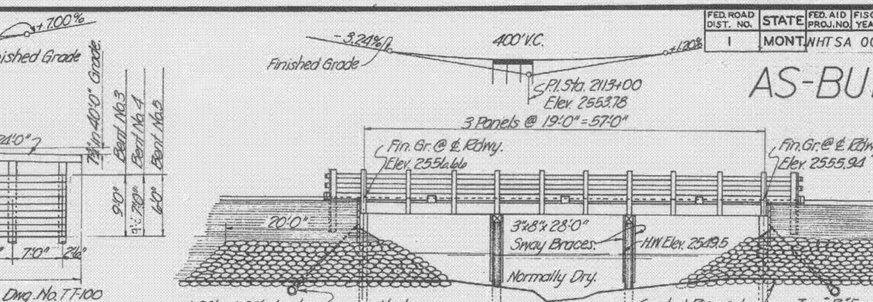
VIEW A-A



PLAN

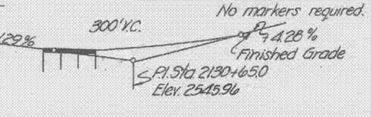
* BRIDGE AT STA. 1939+67.5 (Alignment Tangent Bearing N 89°33' E)

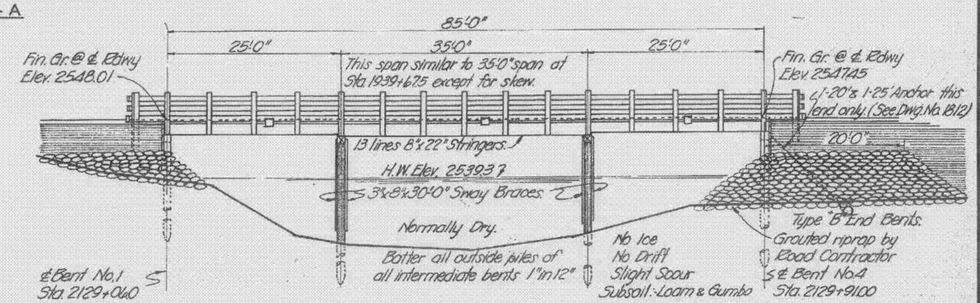
Name on markers SKULL CREEK



* BRIDGE AT STA. 2112+78.0 (Alignment Tangent Bearing N 89°33' E)

No markers required.

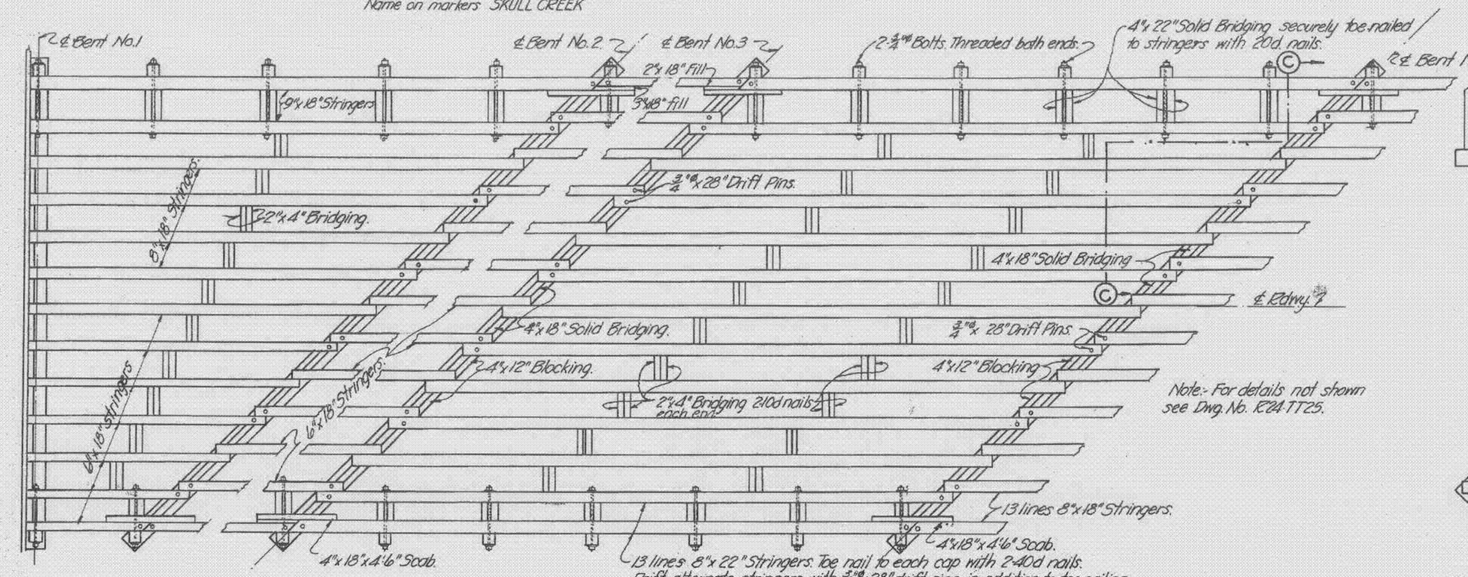




* BRIDGE AT STA. 2129+48.5 (Alignment Tangent Bearing N 89°33' E)

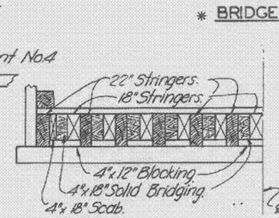
No markers required.

* THIS CONTRACT: NHTSA 0002(393) EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL. SEE DWG. NO. 18750



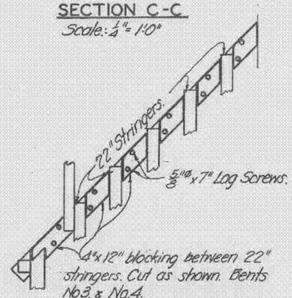
PART PLAN AT TOP OF STRINGERS

Scale: ¼" = 1'-0"



SECTION C-C

Scale: ¼" = 1'-0"



PLAN OF BLOCKING

Scale: ¼" = 1'-0"

Note:- For notes, riprap details, and table of pile lengths see Dwg. No. 1812

DESIGNED	BY	MR	4-25-39		
DRAWN	BY	TCJE	4-27-39		
TRACED	BY				
CHECKED	BY	RLW	4-27-39		
REVISED	BY				
REVISED	BY				

Construction Plans Page No. 44

MISTY MINER
2-11-2005

* REVISION L.M.S. 6-17-05

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STAS. 1939+67.5, 2112+78.0, 2129+48.5

FED. AID PROJ. NO. 247 F(0)UNIT 2
Mc CONE COUNTY

GENERAL LAYOUTS

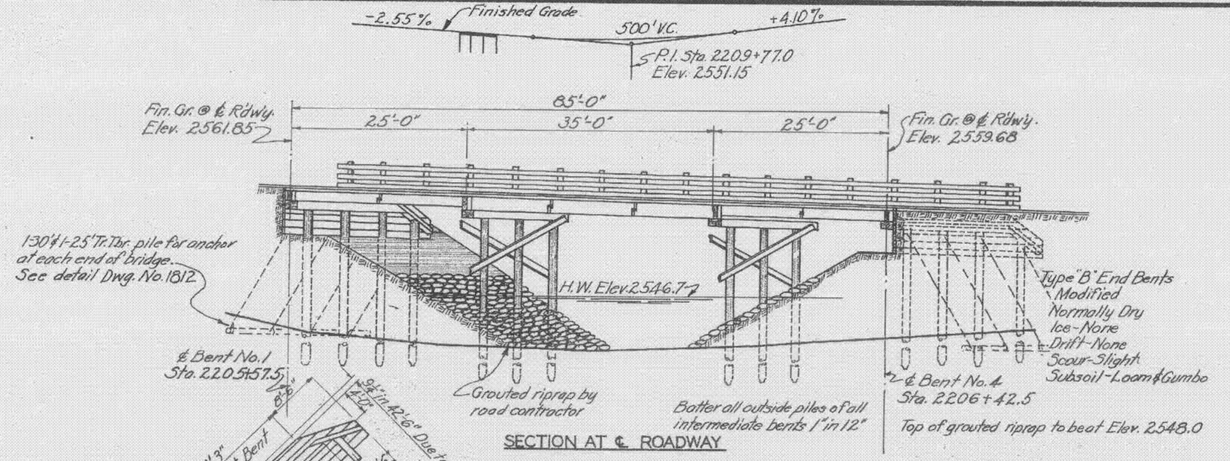
Scale: 1" = 10'-0" except as noted.

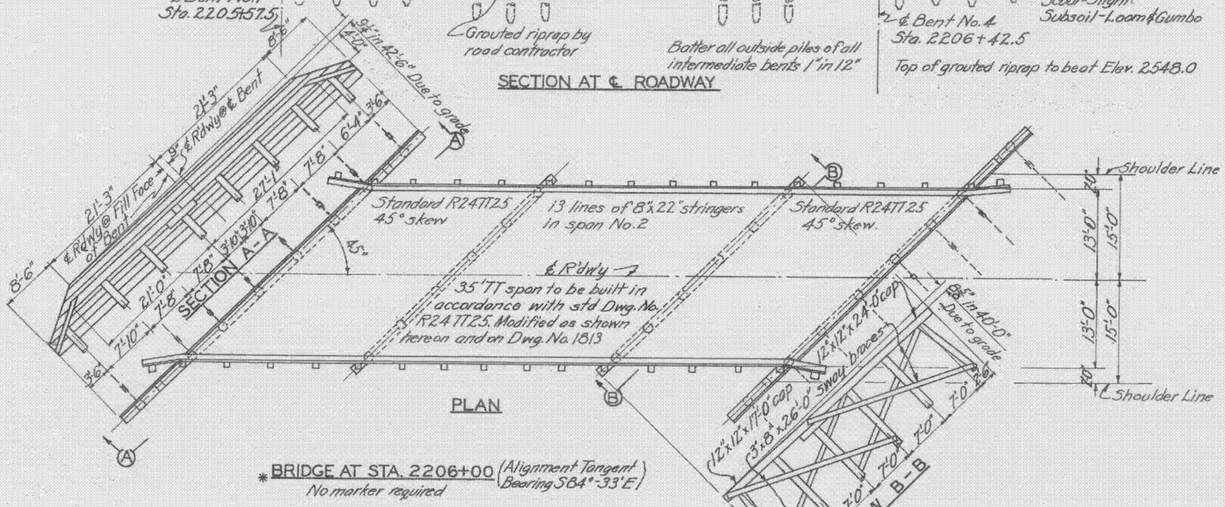
APPROVED BY: B.J. Oreskovich
BRIDGE DESIGNING ENGINEER

FILE NO. 755 DRAWING NO. 1813

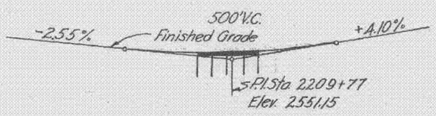
AS-BUILTS

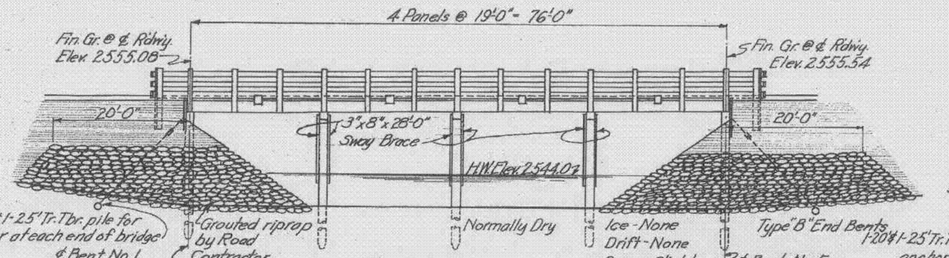
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)		B24	





* BRIDGE AT STA. 2206+00 (Alignment Tangent Bearing S84°-33'E)
No marker required



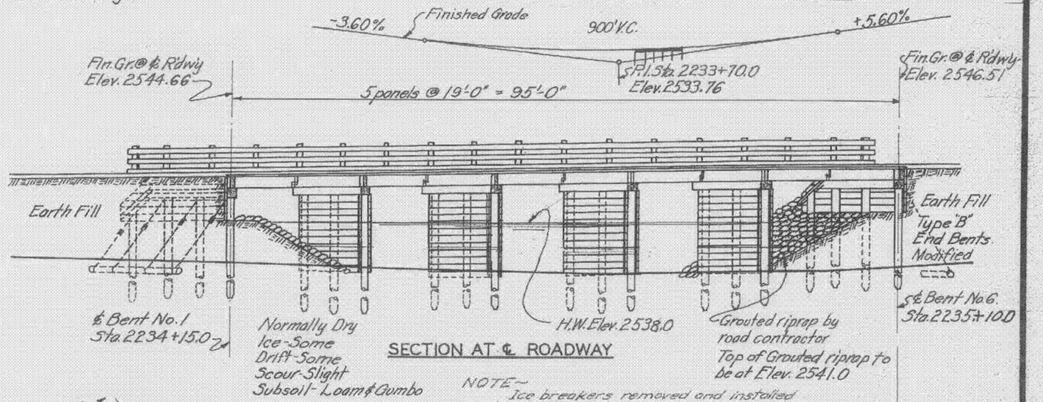


* BRIDGE AT STA. 2209+64.0
No markers required

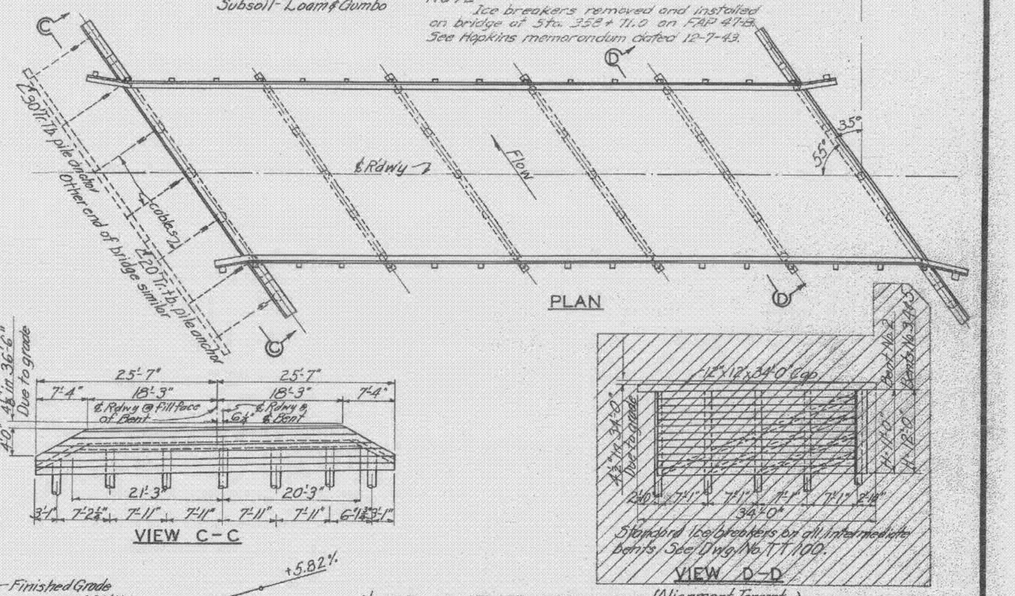
MISTY MINER
2-11-2005

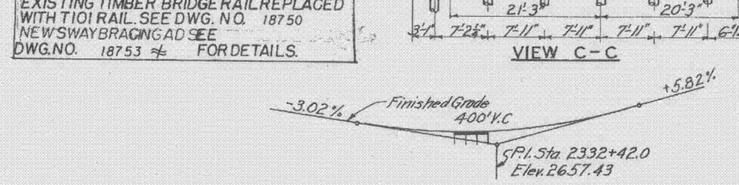
DESIGNED	BY	
DRAWN	BY	M.B. 4-29-39
TRACED	BY	D.W.B. 4-29-39
CHECKED	BY	A.L.H. 4-29-39
REVISED	BY	
REVISED	BY	

Note: Provide "Provision Against Uplift" for this bridge

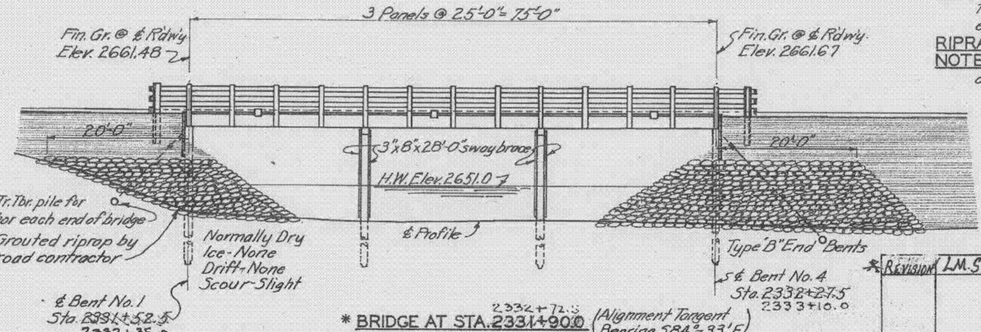


NOTE— Ice breakers removed and installed on bridge at Sta. 358+11.0 on FAP 47-B. See Hopkins memorandum dated 12-7-43.





* BRIDGE AT STA. 2234+62.5 (Alignment Tangent Bearing S84°-33'E)
No marker required.



* BRIDGE AT STA. 2331+90.0 (Alignment Tangent Bearing S84°-33'E)
No marker required

THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER BRIDGE RAIL REPLACED WITH T101 RAIL. SEE DWG. NO. 18750
NEW SWAY BRACING ADDED SEE DWG. NO. 18753 & FOR DETAILS.

NOTES

FINISHED GRADE:- Finished Grade of bridges shown on this sheet shall be on a straight line between elevations shown at center lines of end bents.

RIPRAP:- For riprap details see Dwg. No. 1812

NOTES & PILE LENGTHS:- For other notes and table of pile lengths, see Dwg. No. 1812.

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STAS. 2206+00.0, 2209+64.0, 2234+82.5, 2331+90.0, 2332+72.5

FED. AID PROJ. NO. 247 F(1) UNIT 2

McCONE COUNTY

GENERAL LAYOUT

Scale:- 1"=10'-0"

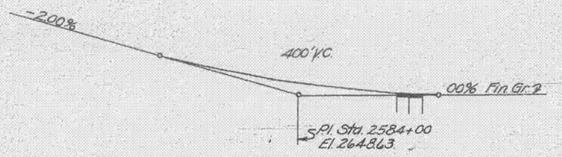
REVISION	J.M.S.	6-19-02

APPROVED BY B. J. Ombum
BRIDGE DESIGNING ENGINEER

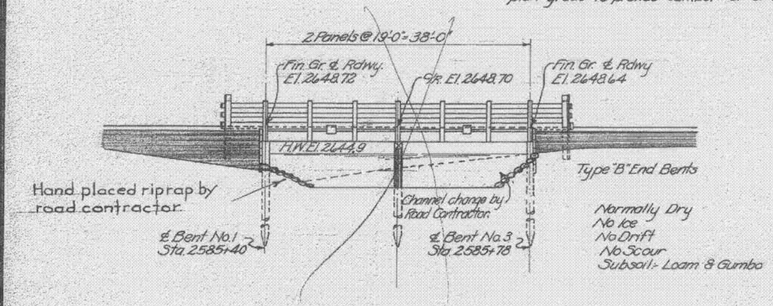
FILE NO. 755 DRAWING NO. 1813A

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)	B24A		

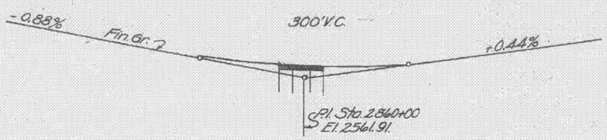
AS-BUILTS



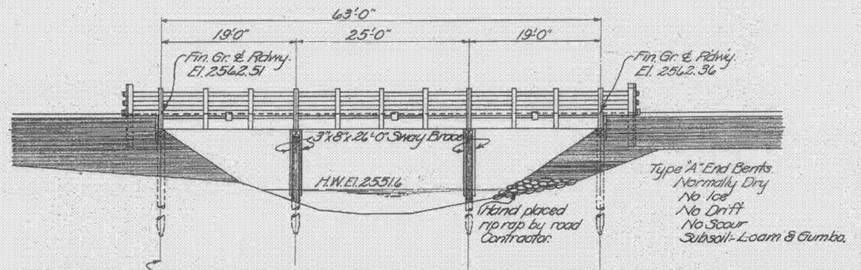
Note:- Finished grade elevation shown at centerline of roadway at intermediate bent varies from finished plan grade to provide camber of structure.



BRIDGE AT STA. 2585+59 Alignment Tangent Bearing S 84° 39' E
Name on marker- "Beauty Creek"



Note:- Finished grade of bridge shall be on a straight line between elevations shown at center lines of end bents.



BRIDGE AT STA. 2859+955 (Alignment Tangent Bearing N 89° 07' E)
Name on marker "Cotter Creek."

BRIDGE QUANTITIES

	STATION	LENGTH IN FEET	TREATED LUMBER M.F.B.M.	UNTREATED LUMBER M.F.B.M.	TREATED TIMBER PILES 20'	25'	30'	GRAVEL BALLAST CU.YDS.	STRUCTURE EXCAVATION CU.YDS.	REMOVAL OF EXISTING STRUCTURE	REMARKS
	MAJOR STRUCTURES										
	2585+59.0	38	12.86	1.21	19			10			
	2859+95.5	63	19.58	1.70		10	10	16			
	TOTAL MAJOR STRUCTURES	101	32.44	2.91	19	10	10	26			
	MINOR STRUCTURES										
*	2489+95	II H7-A28	6.86	0.26	16			4			
	2565+30	II H7-A28	6.86	0.26	16			4			
	TOTAL MINOR STRUCTURES	22	13.72	0.52	32			8			
	BOX CULVERTS										
	2566+13	4x5x32	6.40						46	1	FILL 0'-15' RD. APP. LT-SQ
	2731+80	4x5x48	8.65						34		FILL 0'-15' SQUARE
	TOTAL BOX CULVERTS		15.05						80	1	
	TOTAL ALL STRUCTURES	123	61.21	3.43	51	10	10	34	80	1	

* Box Culverts are not included.

REFERENCES	
DWG. NO.	DESCRIPTION
SP11A	Standard Stock Pass.
R23TT19	Standard Trestle
R23TT25	Standard Trestle.
TT Box Culv.	Standard Timber Culverts

SHEET PILING:- Sheet piling cut off wall shall be used at each end of box culvert as shown on Dwg. No. TT Box Culv. The piling shall be driven 4 ft. into undisturbed material.

* THIS CONTRACT, NHTSA 0002(393), EXISTING TIMBER RAIL REPLACED WITH T101 RAIL SEE DWG. NO. 18750

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, revised April 1935, Design Specifications for Highway Structures, revised July, 1935, and Special Provisions shall govern unless otherwise noted.
DETAILS:- Structures shown on this sheet shall be built in accordance with details shown on Dwgs. No. R23-TT19 and No. R23-TT25.
FINISHED GRADE:- Finished plan grade of bridges is 0.50 ft. above profile grade shown on road plans.
GRAVEL BALLAST:- Gravel ballast shall be placed by the bridge contractor. It shall meet requirements for top course gravel surfacing, except that crushing will not be required.
PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.
EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, blocking plank and bracing shall be included in the unit price bid for treated lumber. Excavation for the box culverts to be paid for as a separate item.
HAND RAIL:- All posts shall be set vertical and rails shall be parallel to grade.
STOCK PASS:- Standard Stock Passes at Sta. 2489+95 and Sta. 2565+30 shall be constructed in accordance with details shown on Dwg. No. SP11A.
RIPRAP:- At points where riprap is shown carried into channel changes, extend riprap to toes of slopes at sides, turn back and key 3 ft. into bank.
BOX CULVERT:- Box Culverts at Sta. 2566+13 and Sta. 2731+80 shall be constructed in accordance with details shown on D'wg. No. TT Box Culv.

DESIGNED BY	T.M.K.	11-24-36
DRAWN BY	T.M.K.	12-18-36
TRACED BY	J.T.C.R.	12-18-36
CHECKED BY	W.	12-22-36
REVISED BY	A.W.J.	4-24-37
REVISED BY		

MISTY MINER
2-11-2005

* REVISION	L. M. S.	6-19-03

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STAS. {2585+590 / 2859+955
STOCKPASSES AT STAS. {2489+930 / 2565+300
FED. AID PROJ. NO. 247 D UNIT 2
McCONE COUNTY
GENERAL LAYOUTS
Scale:- 1/4"=10'-0"

APPROVED BY R. J. Cunburn
BRIDGE DESIGNING ENGINEER

FILE NO. 755 DRAWING NO. 1814

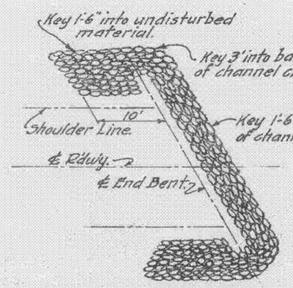
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	WHTSA 0002(393)	B25		

AS-BUILTS

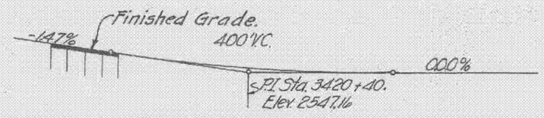
REFERENCES	
DWG. NO.	DESCRIPTION
R26-TT(90)	Standard Timber Trestles
R26-TTDets.(1)	" Trestle Details
R24-TT(90)	" Timber Trestles
R24-TT25(1)	" " "
R24-TTDet (1)	" Trestle Details
TT-100(1)	" Ice Breakers

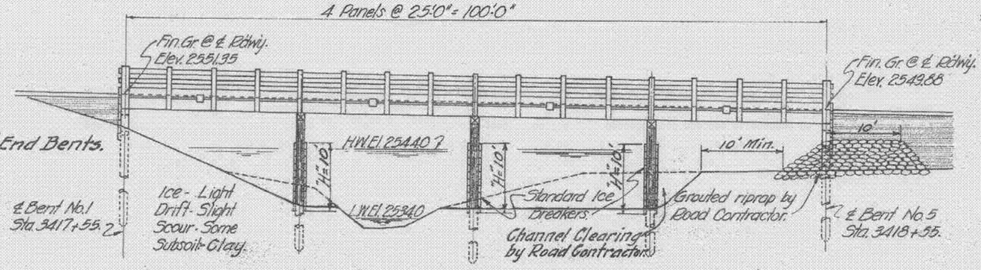
PILING					
STATION	20'	25'	30'	35'	40'
3418+05.0			7	12	10
3554+08.0	12				
3576+00.0		7	17		
3589+21.8				12	17
TOTAL	12	7	24	24	27

* THIS CONTRACT: NHTSA 0002(393)
EXISTING TIMBER RAIL REPLACE WITH T101 RAIL SEE DWG. NO 18750

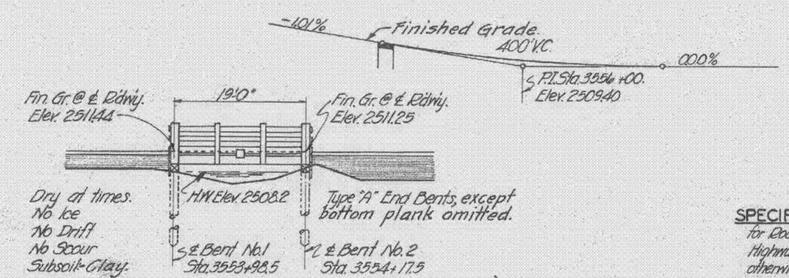


TYPICAL RIPRAP DETAIL
Bridge At Sta. 3589+21.8

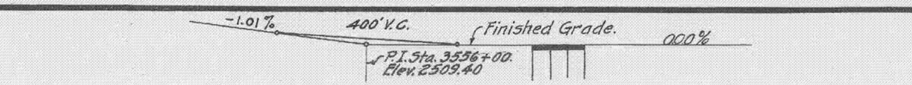


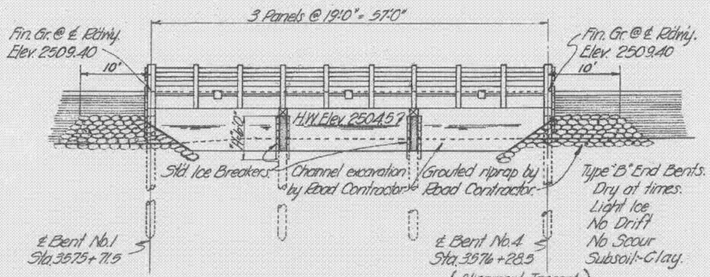


* BRIDGE AT STA. 3418+05.0 (Alignment Tangent. Bearing, N.35°-21'E.)
Name on markers:- BIG WARM CREEK.

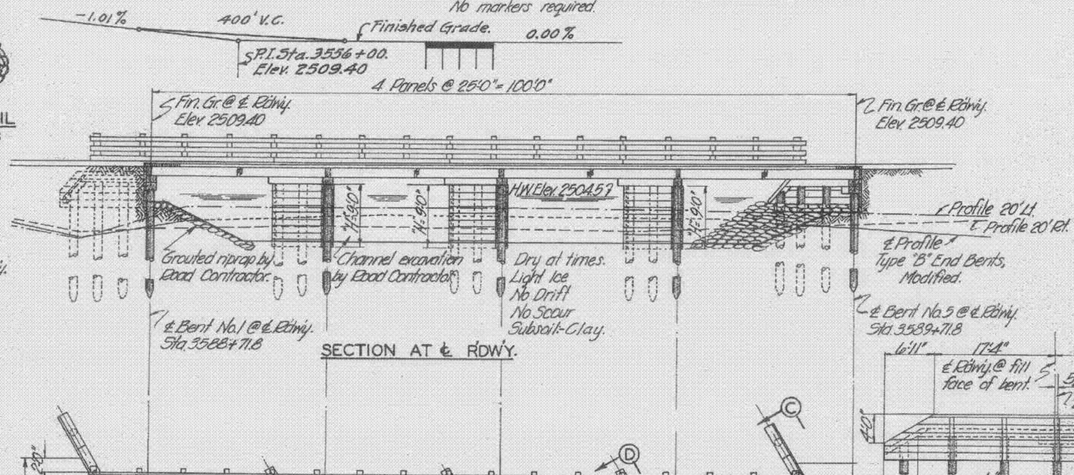


BRIDGE AT STA. 3554+08.0 (Alignment Tangent. Bearing, N.21°-27'E.)
No markers required.

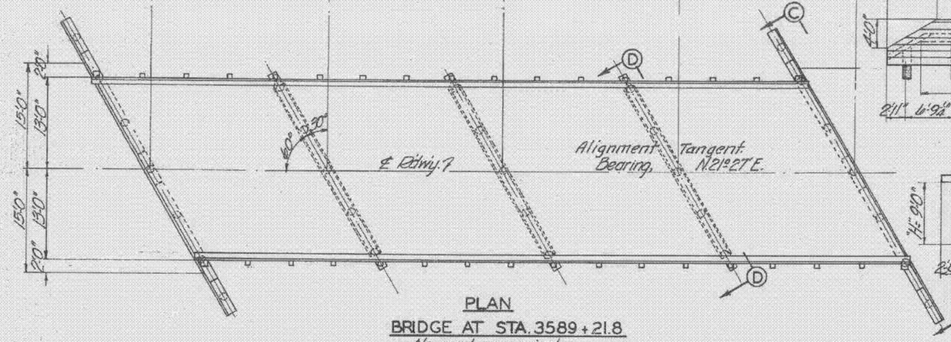




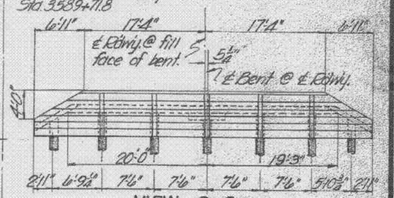
* BRIDGE AT STA. 3576+00.0 (Alignment Tangent. Bearing, N21°-27'E.)
No markers required.



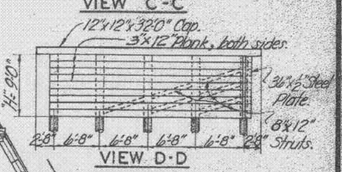
SECTION AT ℄ RDWY.



PLAN
BRIDGE AT STA. 3589+21.8
No markers required.



VIEW C-C



VIEW D-D

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, adopted January 1, 1940; Design Specifications for Highway Structures, revised July, 1935; and Special Provisions shall govern unless otherwise noted.

DETAILS:- Structure at Sta. 3554+08. shall be built in accordance with details shown on Dwgs. No. R26-TT(90), and No. R26-TT Details(1) with modifications as called for. Other structures shall be built in accordance with details shown on Dwgs. No. R24-TT(90), No. R24-TT25(1), and No. R24-TT Details(1), with modifications shown hereon. Ice breakers shall be built in accordance with details shown on Dwg. No. TT-100(1).

GRAVEL BALLAST:- Gravel ballast shall be placed by Bridge Contractor before traffic is permitted. It shall meet requirements for top course gravel surfacing except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the Contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 feet deep and strike the piles with the pile hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, bracing plank, bracing and ice breakers shall be included in the unit price bid for treated lumber.

FINISHED GRADE:- Finished plan grade of bridges is 0.4 ft above profile grade shown on road plans. Finished grade of bridges shall be on a straight line between elevations shown at center lines of end bents.

DESIGNED BY	H.W.K.	7-20-39	
DRAWN BY	T.C.B.	8-16-40	
TRACED BY	MM	8-29-40	
CHECKED BY			
REVISED BY			
REVISED BY			

MISTY MINER
2-11-2005

* REVISED	L.M.S.	6-19-03

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGES AT STA'S. 3418+05.0, 3554+08.0, 3576+00.0, 3589+21.8

FED. AID PROJ. NO. 333D(1) UNIT 2
PHILLIPS COUNTY

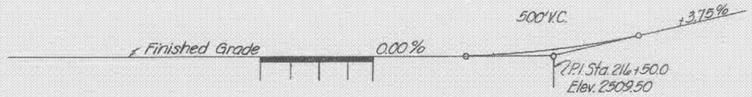
GENERAL LAYOUTS
Scale: 1"=10'-0"

APPROVED BY: B.J. Orsburn
BRIDGE DESIGNING ENGINEER

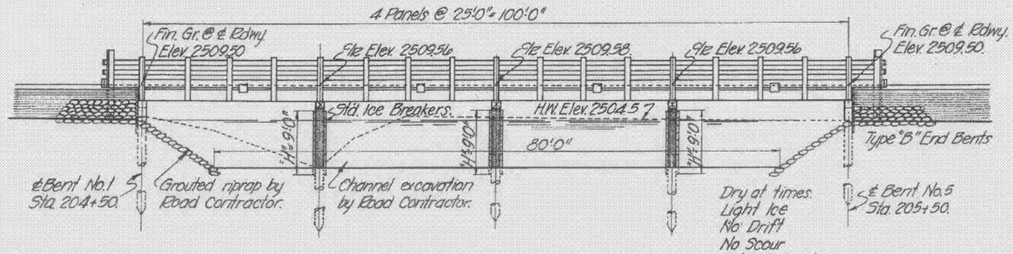
FILE NO. 889 DRAWING NO. 2280

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	NHTSA 0002(393)	B26		

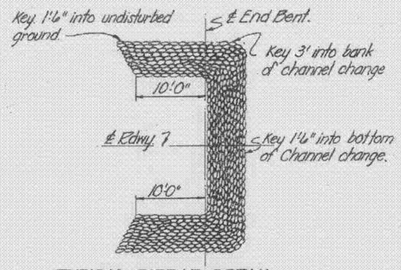
AS-BUILTS



Note:- Elevations shown for center lines of intermediate bents vary from finished plan grade to provide camber of structure.



BRIDGE AT STA. 205+00.0 (Alignment Tangent Bearing N 21° 27' E.)
Name on markers WILD HORSE CREEK.



TYPICAL RIPRAP DETAIL

NOTES

SPECIFICATIONS:- Montana State Highway Commission Standard Specifications for Road and Bridge Construction, revised April, 1935; Design Specifications for Highway Structures, revised July, 1935; and Special Provisions shall govern unless otherwise noted.

DETAILS:- Structures shown on these sheets shall be built in accordance with details shown on Dwgs: No. 1224-T 78, No. 1224-T 125, No. 1224-T Det. (1939) and No. T 1100 (1939) with modifications shown hereon.

FINISHED GRADE:- Finished plan grade of bridges is 0.5 ft. above profile grade shown on road plans.

GRAVEL BALLAST:- Gravel ballast shall be placed by Bridge Contractor. It shall meet requirements for top course gravel surfacing except that crushing will not be required.

PILE PENETRATION:- In case 8 ft. of pile penetration cannot be obtained by ordinary driving, the contractor shall do the necessary shooting to obtain the required penetration, or he shall excavate and set the piles 6 ft. deep and strike the piles with the pile-hammer to bring them to a firm bearing. No additional compensation shall be allowed for such work.

EXCAVATION:- Payment for all excavation necessary to the driving and cutting off of piles and to the placing of caps, stringers, backing plank, bracing and ice-breakers shall be included in the unit price bid for treated lumber.

* THIS CONTRACT; NHTSA 0002(393) EXISTING TIMBER RAIL REPLACED WITH T 101 RAIL. SEE DWG. NO. 18750

DESIGNED	BY		
DRAWN	BY	MMK	7-20-39
TRACED	BY	TCB	8-28-39
CHECKED	BY	MF	Aug 39
REVISED	BY		
REVISED	BY		

PILING				
STATION	20'	25'	30'	35'
205+00.0		14	15	
301+30.0				19
363+40.0		14	10	
379+90.0			16	12
536+00.0		16	18	
567+20.0	2	16	10	
678+20.0	2	16	15	
Total	4	76	84	31

REFERENCES	
DWG. NO.	DESCRIPTION
2178	Other Bridges
2179	Other Bridges
R24-T119	Standard Timber Trestle
R24-T125	Standard Timber Trestle
R24-T Det (1939)	Standard Trestle Details
T7-100 (1939)	Standard Ice-Breaker.

* REVISED L.M.S 6-19-03

MISTY MINER
2-11-2005

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE AT STA. 205+00.0

FED. AID PROJ. NO. 333C(1) UNIT 2
PHILLIPS COUNTY

GENERAL LAYOUT
Scale: 1" = 10'0"

APPROVED BY B. J. Ombum
BRIDGE DESIGNING ENGINEER

FILE NO. 843 DRAWING NO. 2177