ENGINEERING CONSTRUCTION CONTRACTING BUREAU
MONTANA DEPARTMENT OF TRANSPORTATION

As-Built Drawings

The following are as-built drawings for the structures. MDT provides them for informational purposes only. They do not include drawings for modifications to the structures, such as joint replacements and guardrail revisions and may not completely represent current conditions. Thus, some of the information contained in these documents may be out of date or not applicable with regard to the advertised project. The contractor should not rely solely on the as-built drawings provided for bidding purposes nor does any data in these files supersede the data in the contract documents.

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	B1

AS-BUILTS

MONTANA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT NO. NH-F 62-2(9)21 F P.E.
NH 62-2(17)27 F CONSTRUCTION

NORTHWEST OF SIDNEY - NORTH

RICHLAND COUNTY

MISCELLANEOUS WORK ~	1363 UNITS
BRIDGE SURVEY ~	1.0 L.SUM
MOBILIZATION ~	0.1 L.SUM
REMOVE STRUCTURE ~	0.6 L.SUM
TEMP. EROSION CONTROL ~	2 918 UNITS
TRAFFIC CONTROL DEVICES ~	1344 UNITS

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
B2	18304	GENERAL LAYOUT AT STA. 173 + 17.50
B3	18305	FOOTING PLAN
B4	18306	BENTS NO. 1 & NO. 2
B5	18307	BENTS NO. 1 & NO. 2 DETAILS
B6	18308	WINGWALL DETAILS
B7	18309	ERECTION PLAN & SLAB DETAILS
B8	MB-4 (Revised 3-5-01)	STANDARD PRESTRESSED CONCRETE BEAM TYPE IV
B9	MSL-6 (Revised 3-5-01)	STANDARD SLAB, RAIL, AND DIAPHRAGM DETAILS
B10	MSBR-T101 (Revised 3-5-01)	STANDARD BRIDGE RAIL - TYPE T101

ESTIMATED BRIDGE PLAN QUANTITIES

LOCATION P00062 027+0.276	LENGTH IN METERS	TYPE IV PRESTRESSED CONCRETE BEAMS (m)	CLASS DD CONCRETE (m^3)	SPECIAL DECK CONCRETE (m^3)	REINFORCING STEEL		BRIDGE RAIL T101 (m)	HP 360 X 132 STEEL PILES			STEEL TEST PILES (LUMP SUM)	TRANSVERSE DECK GROOVING (m^2)
					REGULAR (Kg)	EPOXY COATED (Kg)		FURNISH (m)	DRIVE (m)	PILE DRIVING POINTS (Each)	HP 360 X 132	
BENT NO. 1			32.7	1.0	1816	246		~~36.0~~ 36.4	~~34.8~~ 36.0	5	0.5	
BENT NO. 2			32.6	1.0	1816	246		~~42.5~~ 47.2	~~41.3~~ 46.9	5	0.5	
SUPERSTRUCTURE	32.0	160.0	4.3	84.1		~~9823~~ 10 219	74.4					~~369~~ 368.8
TOTAL	32.0	160.0	69.6	86.1	3632	~~10 315~~ 10 711	74.4	~~78.5~~ 83.6	~~76.1~~ 82.9	10	1.0	~~369~~ 368.8

MISTY MINER
1-05-2006

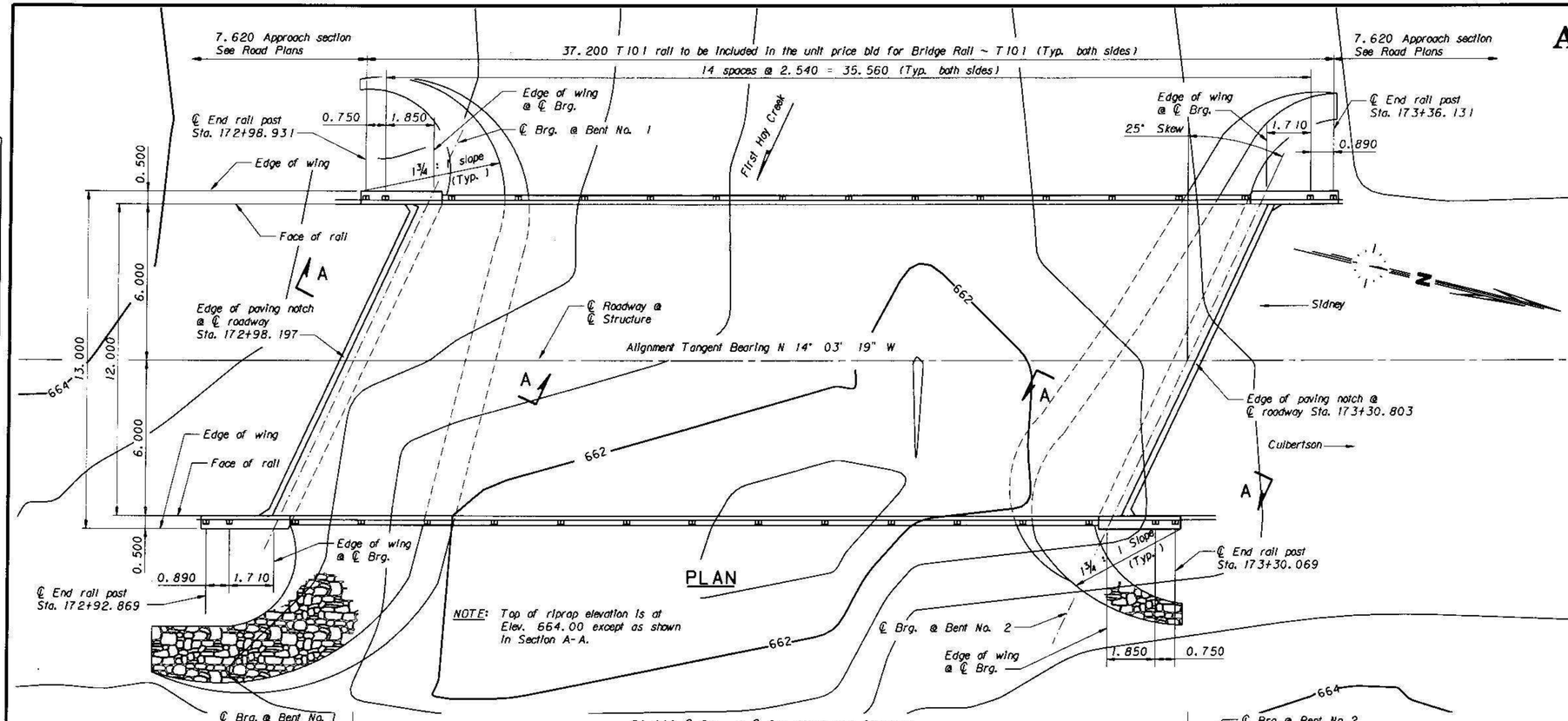
C:\dgn\104 1BR0SH001AB.DGN
7/21/2006
2:13:10 PM
u07.37

DRAWN BY: LMS 4-28-02
CHECKED BY: MJS 4-29-02

FILENAME: 104 1BR0SH001. DGN DRAWING NO. 183040

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	B2

AS-BUILTS



MISTY MINER
1-05-2006

NOTES

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

LIVE LOAD: Standard HL-93 loading.

SPECIFICATIONS: Montana Department of Transportation 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 LRFD Bridge Design Specifications, 1998 edition, and any amendments thereto.

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31M Grade 60 (420). Include all costs associated with furnishing and placing new reinforcing steel in the unit price bid for either Reinforcing Steel or Reinforcing Steel - Epoxy Coated.

CAST IN PLACE CONCRETE: Unless otherwise approved or specified, use Class DD for all substructure concrete and Class Special Deck for all superstructure concrete.

CONCRETE STRENGTH: Use f'c = 21 MPa for Class DD concrete. For structural design purposes only, use f'c = 28 MPa for Class Special Deck concrete. See Special Provisions for Special Deck mix design requirements.

STRUCTURE EXCAVATION: Include structure excavation in the unit price bid for Class DD concrete.

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

UTILITIES: Call 1-800-424-5555 for utility locates at least two working days prior to starting any construction activity that could disturb the utility.

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

DIMENSIONS: All dimensions shown on the General Layout are in meters. All other drawings are dimensioned in millimeters except as noted. Stations and elevations are expressed in meters.

STREAM DATA

Drift:	None
Contraction Scour (Q100):	0.16 m
Ice:	Moderate
Drainage Area:	75.1 sq. km
2-year Stage (Q2):	661.8
Base Flood Flow (Q100):	96.76 m³/sec
*Base Flood Stage:	663.74
Base Flood Velocity:	3.42 m/sec
Low Beam Elevation:	664.142

Also see Hydraulic Data Summary sheet.
*Base Flood Stage elevation includes backwater

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK
AT STA. 173 + 17.50
FEDERAL AID PROJECT NO. NH 62-2(17)27 F
RICHLAND COUNTY

GENERAL LAYOUT

Scale ~ 1 : 100 except as noted

DESIGNED	5-16-01	M. B. L.
DRAWN	9-22-01	KSTG
CHECKED	4-23-01	D. J. R.
APPROVED	5-2-02	J. P. K.
REVISED		
REVISED		

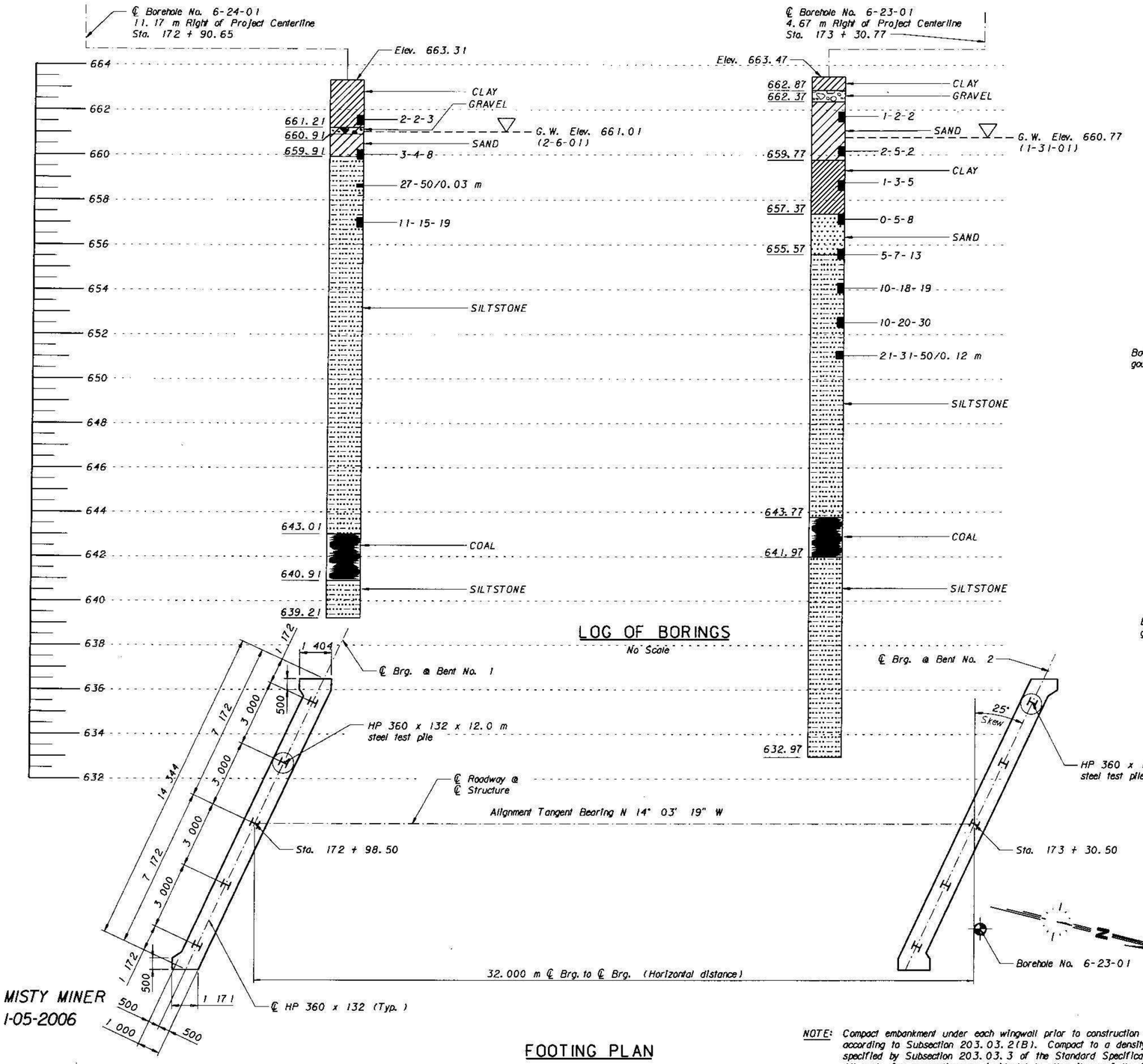
FILENAME: 104IBRGEN001.DGN DRAWING NO. 18304

C:\dgn\104IBRGEN001AB.DGN
7/21/2006
2:03:00 PM
v07.37

BRIDGE BUREAU

AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	83



LOG OF BORINGS

No Scale

FOOTING PLAN

NOTE: Dimensions shown for Bent No. 1 are similar for Bent No. 2

NOTE: Compact embankment under each wingwall prior to construction according to Subsection 203.03.2(B). Compact to a density specified by Subsection 203.03.3 of the Standard Specifications. All costs for compaction are incidental to other items of the Contract.

NOTES

SOILS AND FOUNDATION MATERIALS: The Footing Plan shows points where the State of Montana, Department of Transportation, drilled boreholes.

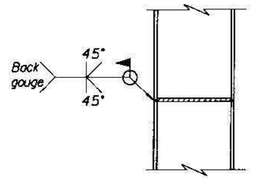
The series of numbers on the Log of Borings shows the number of blows from a 63.5 kg hammer with a 0.760 m drop required to drive a 51 mm split spoon sampler 0.150 m (Standard Penetration Test). The length of the split spoon sampler is 0.450 m. The sampler length is measured as three 0.150 m intervals. If the split spoon sampler did not penetrate 0.150 m after 50 blows, the Log of Borings shows the measured penetration within that particular interval.

The State of Montana, Department of Transportation, assumes no responsibility for any variation or misinterpretation of the classes of materials and will make no adjustment in bid prices if site conditions differ from the Log of Borings.

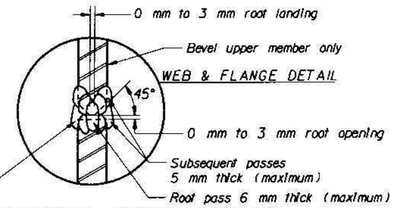
See the Special Provisions for original boring logs and additional subsurface information.

FOUNDATION PILES: Pile lengths shown have been estimated for bidding purposes only.

NOTE: Refer to AWS D1.5 for prequalified joint designation B-U5a.



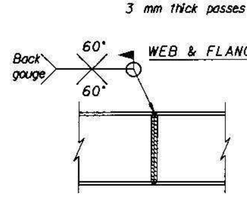
Clean root of weld by grinding or air-arc gouging. Remove to sound metal before welding this side



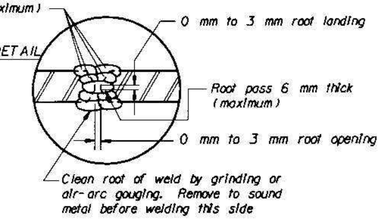
PILE EXTENSION AFTER DRIVING

(Pile Vertical)

NOTE: Refer to AWS D1.5 for prequalified joint designation B-U3b.



WEB & FLANGE DETAIL



Clean root of weld by grinding or air-arc gouging. Remove to sound metal before welding this side

PILE EXTENSION BEFORE DRIVING

(Rotate pile so that all welding is done in a flat position)

PERMISSIBLE WELDED SPLICE DETAILS FOR HP 360 X 132 STEEL PILES

No Scale

NOTE: Use only E7018 or E7028 series electrodes. Maximum electrode size is 5 mm. Prepare the weld surfaces to a smooth, uniform finish. Remove all fins, tears, loose scale, slag, rust, grease, moisture and other material that would prevent proper welding.

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK

AT STA. 173 + 17.50

FEDERAL AID PROJECT NO. NH 62-2(17)27 F

RICHLAND COUNTY

FOOTING PLAN

Scale ~ 1 : 100 except as noted

FILENAME: 1041BRFPL001.DGN DRAWING NO. 18305

DESIGNED	2-21-02	L. M. S.
DRAWN	3-15-02	L. M. S.
CHECKED	4-22-02	D. J. R.
REVISED		
REVISED		
REVISED		

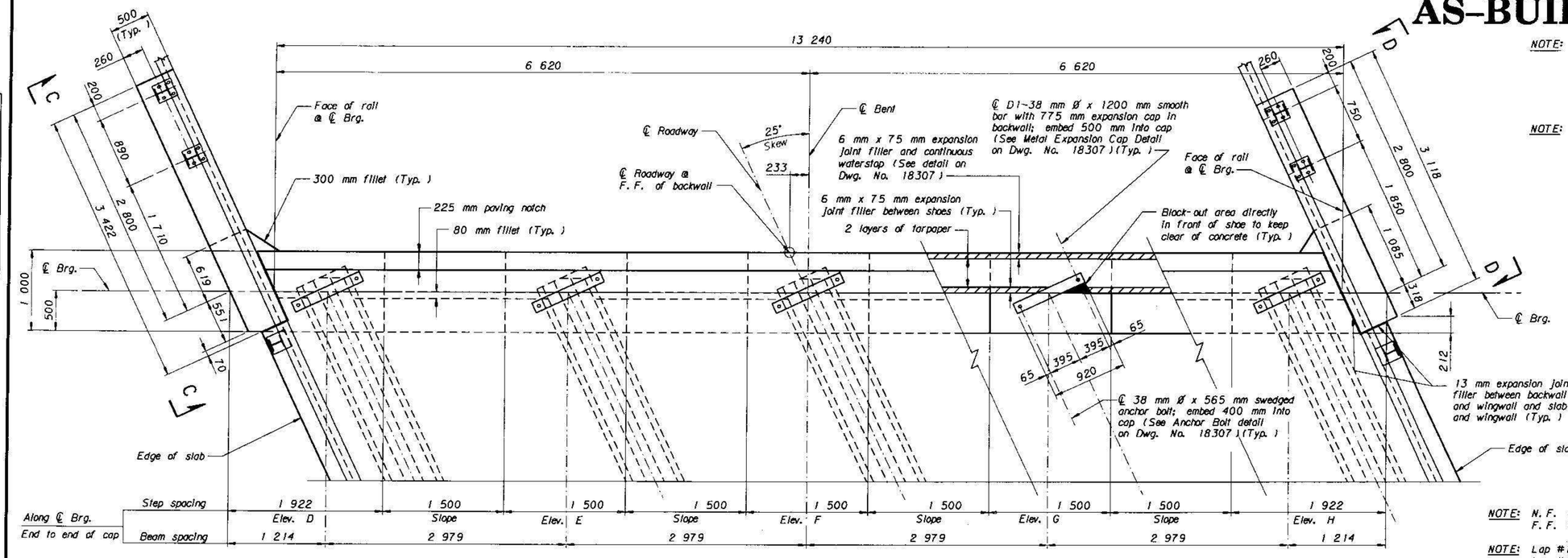
MISTY MINER
1-05-2006

C:\dgn\1041BRFPL001AB.DGN
7/21/2006
2:02:00 PM
u0737

BRIDGE BUREAU

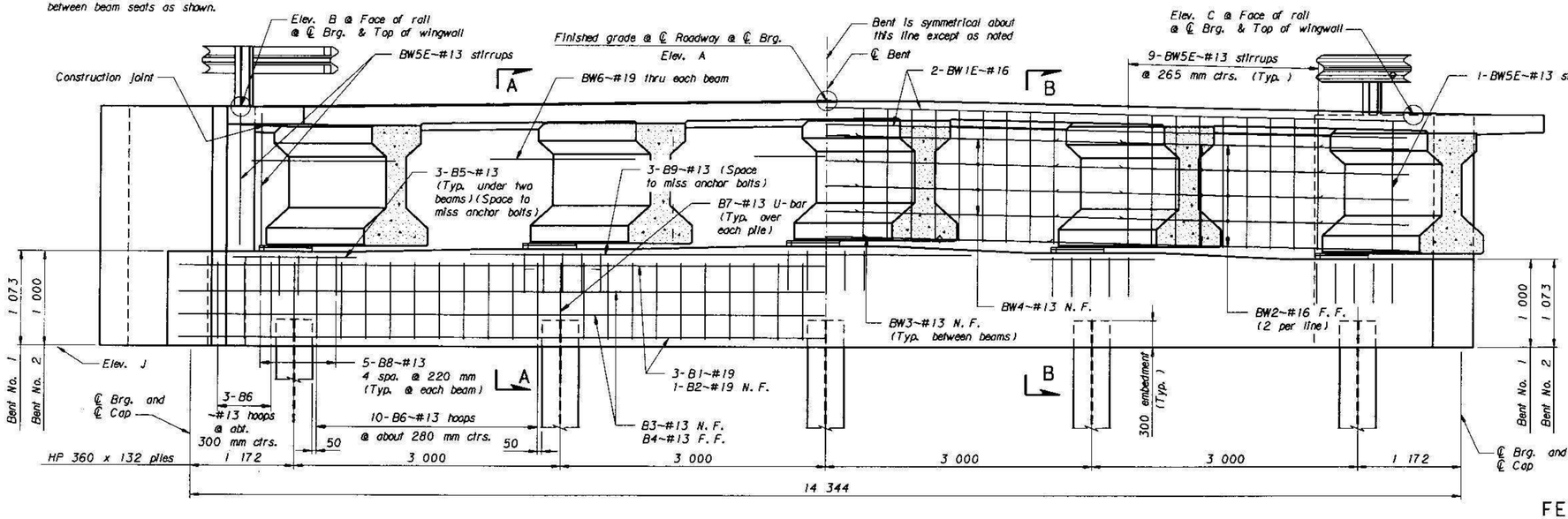
AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	84



PLAN

NOTE: Finish beam seats level to the elevations shown on this drawing. Slope areas between beam seats as shown.



ELEVATION

(Bent No. 1 ~ back on line)
(Bent No. 2 ~ ahead on line)

NOTE: Mount rail posts on wings with M20 x 350 mm galvanized high tensile strength stud bolts (ASTM F 568M Class 8.8) (50 mm of thread) embedded into the wingwall. Use Anchor Bolt Assembly for flat slab and U-type bent on Dwg. No. MSBR-T101. See General Layout Dwg. No. 18304 for additional rail post spacing.

NOTE: Design pile tip elevation:

Bent No. 1 = 654.8
Bent No. 2 = 652.7

Required allowable capacity during driving = 971 kN

Contact the MDT Geotechnical Section at (406)444-6280 if pile tip elevations deviate more than 300 mm from the elevation indicated

NOTE: N.F. denotes near face.
F.F. denotes fill face.

NOTE: Lap #13 bars 410 mm minimum.
Lap #16 bars 510 mm minimum.

NOTE: Slab and beam reinforcing steel is omitted for clarity. See Dwg. No. MSL-6 Dwg. No. MB-4, and Dwg. No. 18309 for details.

NOTE: See Dwg. No. 18307 for Section A-A and B-B and additional notes and details. See Dwg. No. 18308 for Views C-C and D-D.

TABLE OF ELEVATIONS

Elev.	Bent No. 1	Bent No. 2
A	666.347	665.884
B	666.267	665.724
C	666.186	665.805
D	664.613	664.078
E	664.649	664.150
F	664.685	664.222
G	664.613	664.186
H	664.540	664.151
J	663.540	663.078

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK
AT STA. 173 + 17.50
FEDERAL AID PROJECT NO. NH 62-2(17)27 F
RICHLAND COUNTY

BENTS NO. 1 & NO. 2

Scale ~ 1 : 30

FILENAME: 1041BRBNT001.DGN DRAWING NO. 18306

DESIGNED	3-14-02	L.M.S.
DRAWN	4-22-02	L.M.S.
CHECKED	4-23-02	D.J.R.
REVISED		
REVISED		
REVISED		

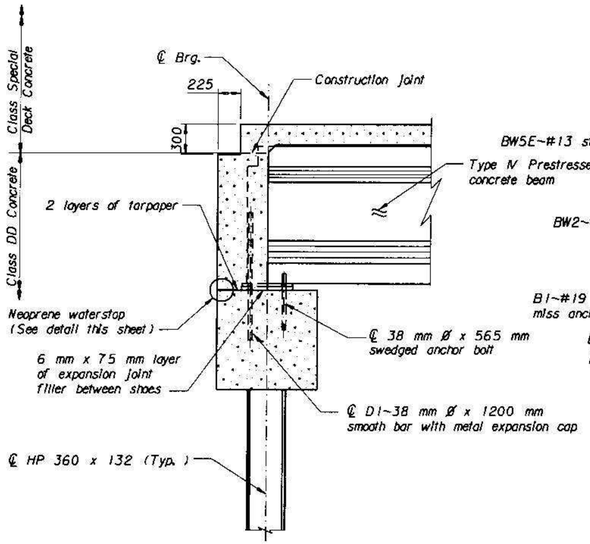
MISTY MINER
1-05-2006

C:\cgn\1041BRBNT001AB.DGN
7/21/2006
1:47:42 PM uo737

BRIDGE BUREAU

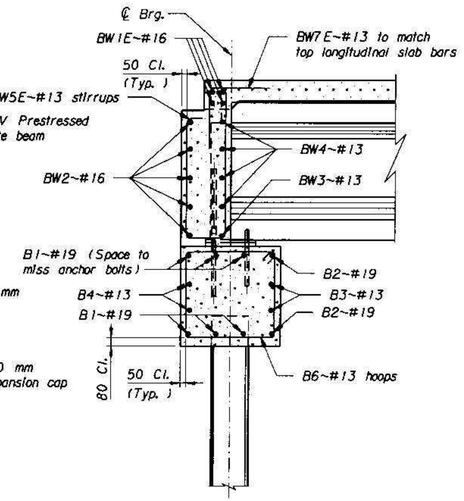
AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	85



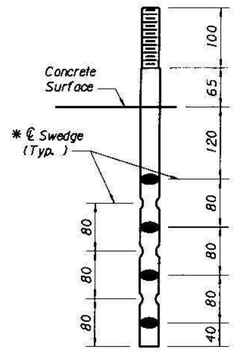
SECTION A-A

Scale ~ 1: 30



SECTION B-B

Scale ~ 1: 30



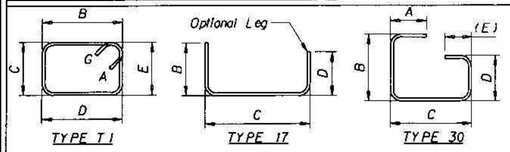
ANCHOR BOLT DETAIL

No Scale

*Make swedge deformations approximately 5 mm deep without removing metal.

BILL OF REINFORCING STEEL

(FOR ONE BENT ONLY) (All dimensions are out to out)



Mark	Size	No.	Type	Length	A	B	C	D	E	G
BW1E	#16	4	STR	13 100						
BW2	#16	10	STR	6 830						
BW3	#13	4	STR	2 130						
BW4	#13	16	STR	2 290						
BW5E	#13	39	30	3 460	160	1 520	400	1 220	160	
BW6	#19	5	STR	1 630						
BW7E	#13	30	17	1 220		610	610			
B1	#19	6	STR	14 230						
B2	#19	2	STR	13 840						
B3	#13	2	STR	13 830						
B4	#13	2	STR	14 230						
B5	#13	6	STR	1 400						
B6	#13	46	T1	3 780	120	900	870	900	870	120
B7	#13	5	17	2 640		870	900	870		
B8	#13	25	17	1 800		450	900	450		
B9	#13	3	STR	5 260						
D1 *	38 Ø	5	STR	1 200						

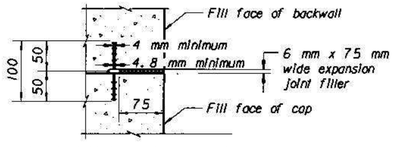
*NOTE: Use D1~38 mm Ø smooth bars meeting the requirements of AASHTO M 270M Grade 250.

NOTE: The suffix E denotes epoxy coated reinforcing steel.

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

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

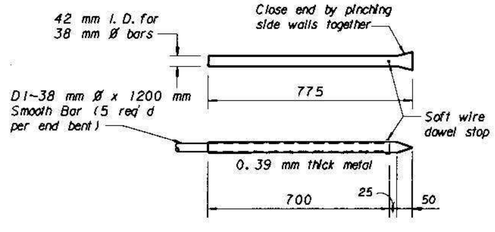
NOTE: See Dwg. No. 18306 for location of details on this sheet.



WATERSTOP DETAIL

No Scale

NOTE: Hold waterstop in accurate position while placing concrete.



METAL EXPANSION CAP DETAIL

No Scale

MISTY MINER
1-05-2006

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK

AT STA. 173 + 17.50

FEDERAL AID PROJECT NO. NH 62-2(17)27 F

RICHLAND COUNTY

BENTS NO. 1 & NO. 2 DETAILS

Scale ~ As Noted

FILENAME: 104 brbnt002. dgn DRAWING NO. 18307

DESIGNED	3-14-02	L. M. S.
DRAWN	4-22-02	L. M. S.
CHECKED	4-23-02	D. J. R.
REVISED		
REVISED		
REVISED		

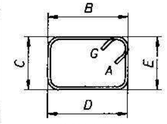
C:\dgn\104 BRBNT002AB. DGN
7/21/2006 1:59:38 PM u0737

BRIDGE BUREAU

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	86

AS-BUILTS

BILL OF REINFORCING STEEL (All dimensions are out to out)

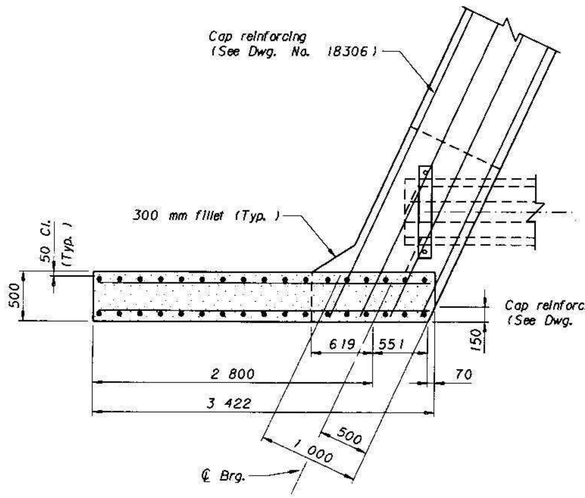


TYPE T1

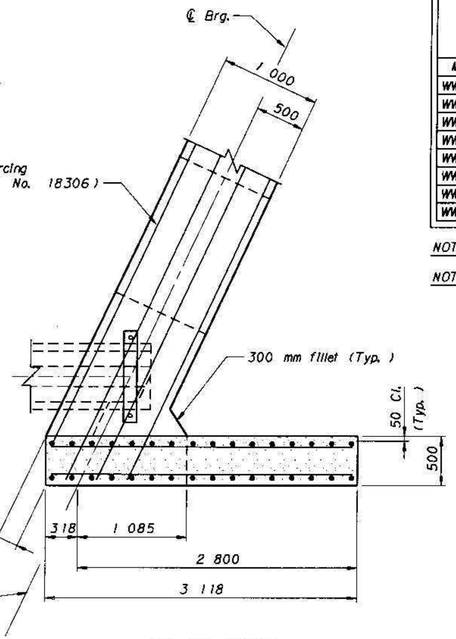
Mark	Size	No.	Type	Length	A	B	C	D	E	G
WW1	#19	11	T1	6 180	210	2 480	400	2 480	400	210
WW2	#19	13	T1	4 320	210	1 550	400	1 550	400	210
WW3	#19	13	T1	4 300	210	1 540	400	1 540	400	210
WW4	#19	9	T1	6 340	210	2 560	400	2 560	400	210
WW5	#19	9	T1	6 280	210	2 530	400	2 530	400	210
WW6	#19	11	T1	6 460	210	2 620	400	2 620	400	210
WW7	#22	66	STR	3 330						
WW8	#22	66	STR	3 020						

NOTE: See Dwg. No. 18306 for location of Views C-C and D-D.

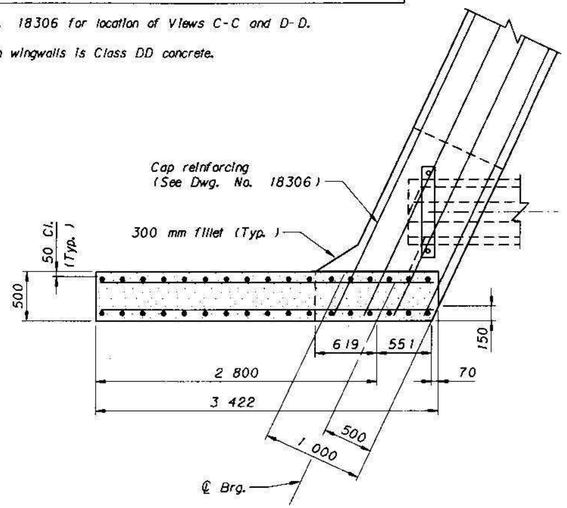
NOTE: All concrete in wingwalls is Class DD concrete.



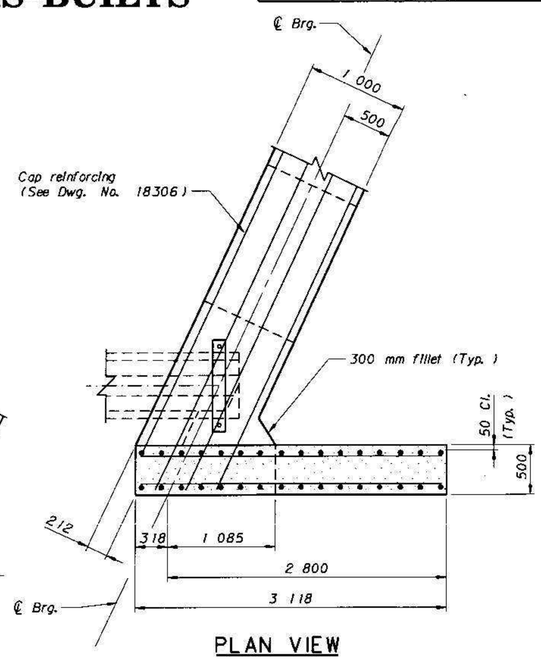
PLAN VIEW



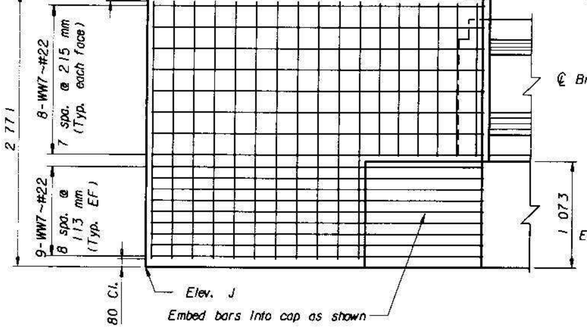
PLAN VIEW



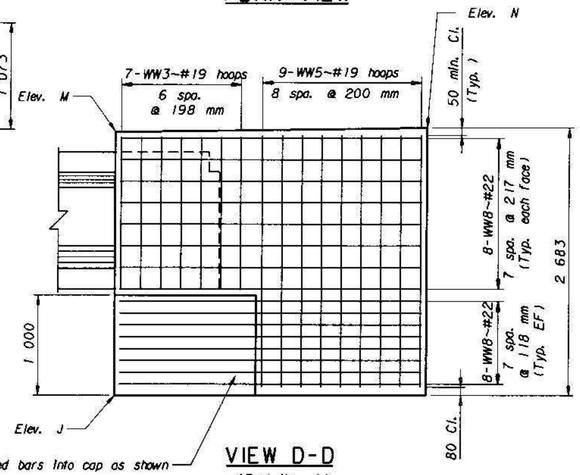
PLAN VIEW



PLAN VIEW



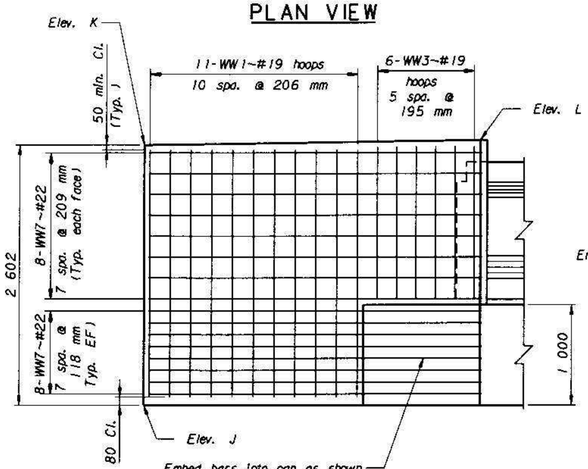
VIEW C-C
(Bent No. 1)



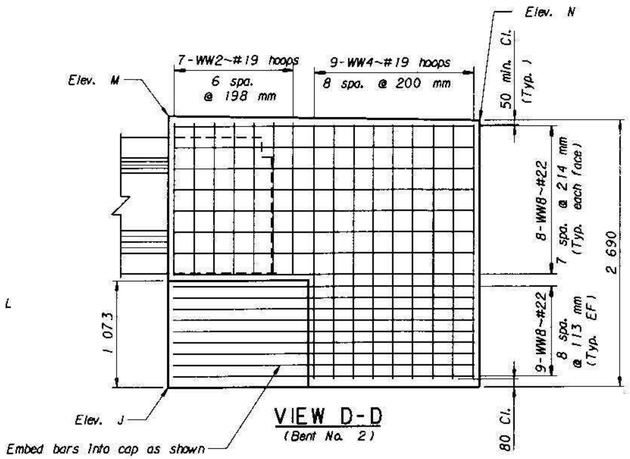
VIEW D-D
(Bent No. 1)

TABLE OF ELEVATIONS		
Elev.	Bent No. 1	Bent No. 2
J	663.540	663.078
K	666.311	665.679
L	666.262	665.728
M	666.178	665.812
N	666.223	665.767

NOTE: Compact embankment under each wingwall prior to construction according to Subsection 203.03.2(B). Compact to a density specified by Subsection 203.03.3 of the Standard Specifications. All costs for compaction are incidental to other items of the Contract.



VIEW C-C
(Bent No. 2)



VIEW D-D
(Bent No. 2)

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK

AT STA. 173 + 17.50

FEDERAL AID PROJECT NO. NH 62-2(17)27 F

RICHLAND COUNTY

WINGWALL DETAILS

Scale ~ 1 : 30

DESIGNED	3-14-02	LMS/DJR
DRAWN	4-22-02	L. M. S.
CHECKED	4-23-02	D. J. R.
REVISED		
REVISED		
REVISED		

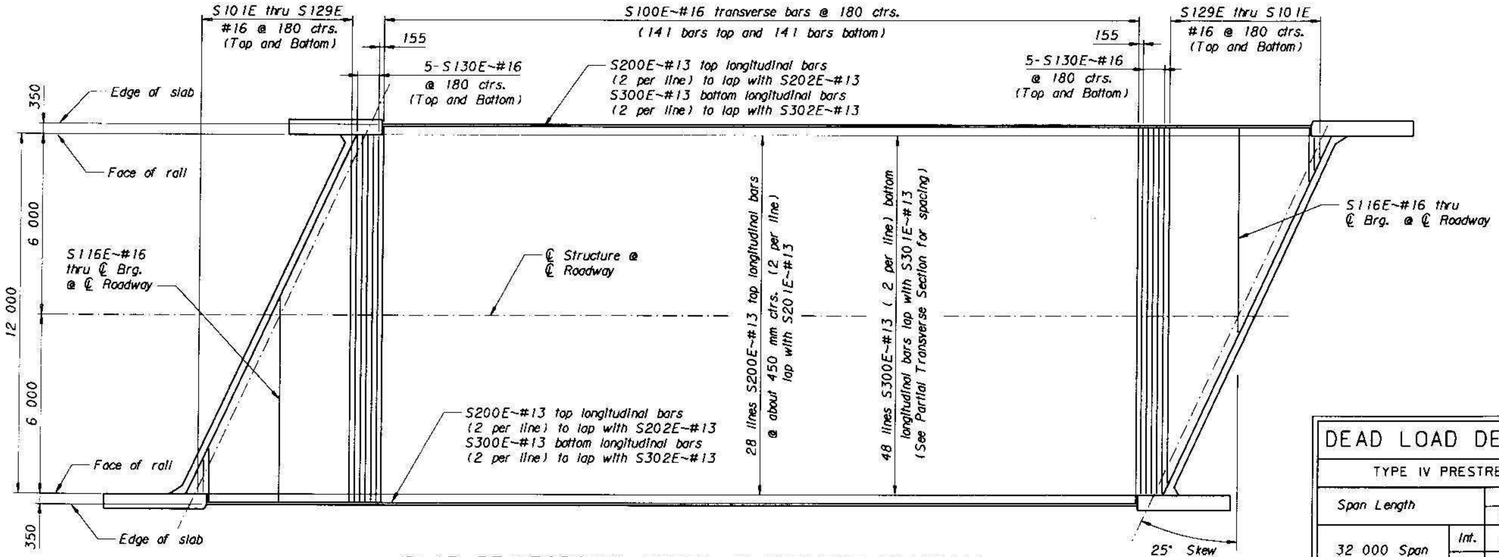
FILENAME: 1041BRWWD001. DGN DRAWING NO. 18308

MISTY MINER
1-05-2006

C:\dgn\1041BRWWD001AB. DGN
7/21/2006
2:16:31 PM u07.37

AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	87



SLAB REINFORCING STEEL PLACEMENT DIAGRAM

Scale ~ 1: 100

BILL OF REINFORCING STEEL



STRAIGHT BARS				BENT BARS (All dimensions are out to out)					
Mark	Size	No.	Length	Mark	Size	No.	Type	A	B	C
S100E	#16	282	12 550	S7E	#16	52	2	1520	610	300	
S101E	↑	4	700								
S102E	↑	↑	1080	D7E	13	64	1	2530	1060	170	120
S103E	↑	↑	1800								
S104E	↑	↑	2180								
S105E	↑	↑	2570								
S106E	↑	↑	2960	STRAIGHT BARS				STRAIGHT BARS			
S107E	↑	↑	3340	Mark	Size	No.	Length	Mark	Size	No.	Length
S108E	↑	↑	3730	D5E	13	16	2150	D8E	#19	6	1630
S109E	↑	↑	4110	D6E	19	16	2150				
S110E	↑	↑	4500					S129E	16	4	11 830
S111E	↑	↑	4890	S120E	16	4	8360	S130E	16	4	12 230
S112E	↑	↑	5270	S121E	16	↑	8750				
S113E	↑	↑	5660	S122E	16	↑	9130	S200E	13	60	12 190
S114E	↑	↑	6040	S123E	16	↑	9520	S201E	13	28	9460
S115E	↑	↑	6430	S124E	16	↑	9900	S202E	13	2	7900
S116E	↑	↑	6820	S125E	16	↑	10 290				
S117E	↑	↑	7200	S126E	16	↑	10 680	S300E	13	100	12 190
S118E	↓	↓	7590	S127E	16	↓	11 060	S301E	13	48	9460
S119E	#16	4	7970	S128E	#16	4	11 450	S302E	#13	2	7900

NOTE: The suffix E denotes epoxy coated reinforcing.

NOTE: Lap #13 bars 610 mm minimum.

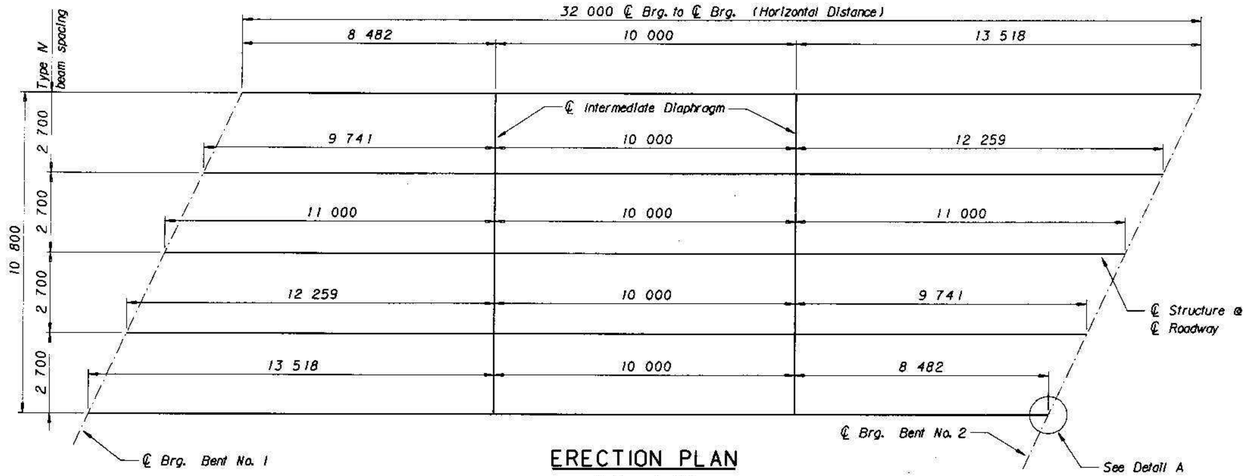
NOTE: See Std. Dwg. No. MSL-6 for additional slab and rail details.

DEAD LOAD DEFLECTION TABLE

TYPE IV PRESTRESSED CONCRETE BEAM

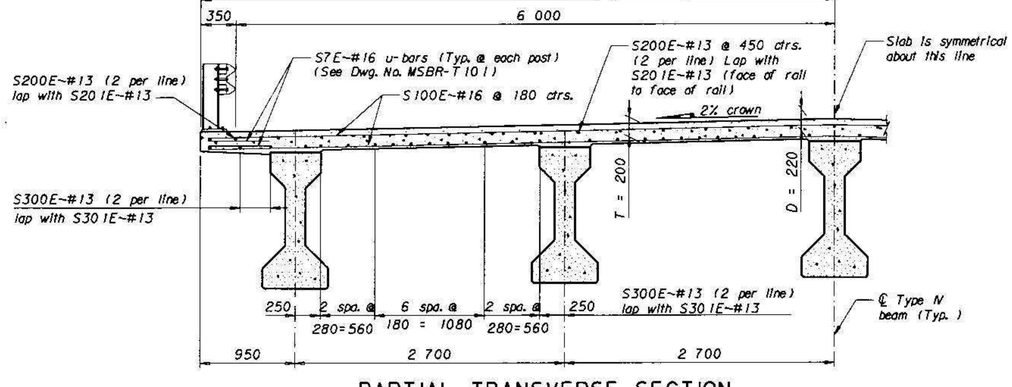
Span Length		Tenth Point				
		0.1	0.2	0.3	0.4	0.5
32 000 Span	Int.	19	36	49	58	60
	Ext.	16	31	42	49	51

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



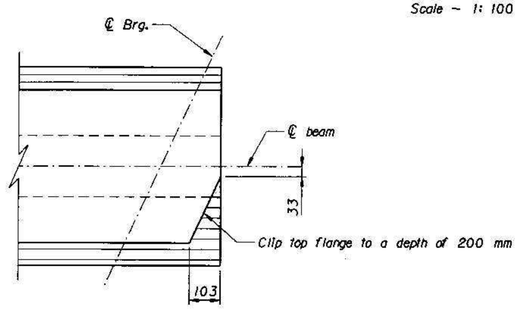
ERECTION PLAN

Scale ~ 1: 100



PARTIAL TRANSVERSE SECTION

Scale ~ 1: 30



DETAIL A

Scale ~ 1: 10

PRESTRESSED CONCRETE BEAMS: Fabricate the prestressed concrete beams in accordance with Dwg. No. MB-4 except as indicated on this drawing. Maximum f'c (Compressive strength of concrete in 28 days) for design is 48 MPa. Design stresses without prestress are as shown in the table below.

*NOTE: The nominal moment strength of the section (Mn) must be greater than or equal to Mu/Ø where Ø = 1.0.

BEAM DESIGN STRESSES

Beam Length (℄ Brg. to ℄ Brg.) (Horizontal Distance)		32 000
Beam D.L. Stresses (MPa @ .5 pt.)	F_t	10.52
	F_b	-8.89
Total D.L. + L.L. + I. Design Stresses (MPa)	F_t	27.79
	F_b	-31.17
Compression Zone ~ Full D.L. (MPa)	F_t	23.20
Compression Zone ~ 0.5 D.L. + L.L. + I. (MPa)	F_t	16.19
Factored Moment @ Section (kN-m)	$*M_u$	9585

$*M_u$ = 1.0 [1.25 D.C. + 1.50 D.W. + 1.75 (L.L. + I.)]

MONTANA DEPARTMENT OF TRANSPORTATION

BRIDGE OVER FIRST HAY CREEK

AT STA. 173 + 17.50

FEDERAL AID PROJECT NO. NH 62-2(17)27 F

RICHLAND COUNTY

ERECTION PLAN & SLAB DETAILS

Scale ~ As shown

FILENAME: 1041BREPL001.DGN DRAWING NO. 18309

DESIGNED	5-15-01	M.B.L.
DRAWN	10-31-01	KSTG
CHECKED	4-22-02	D.J.R.
REVISED		
REVISED		
REVISED		

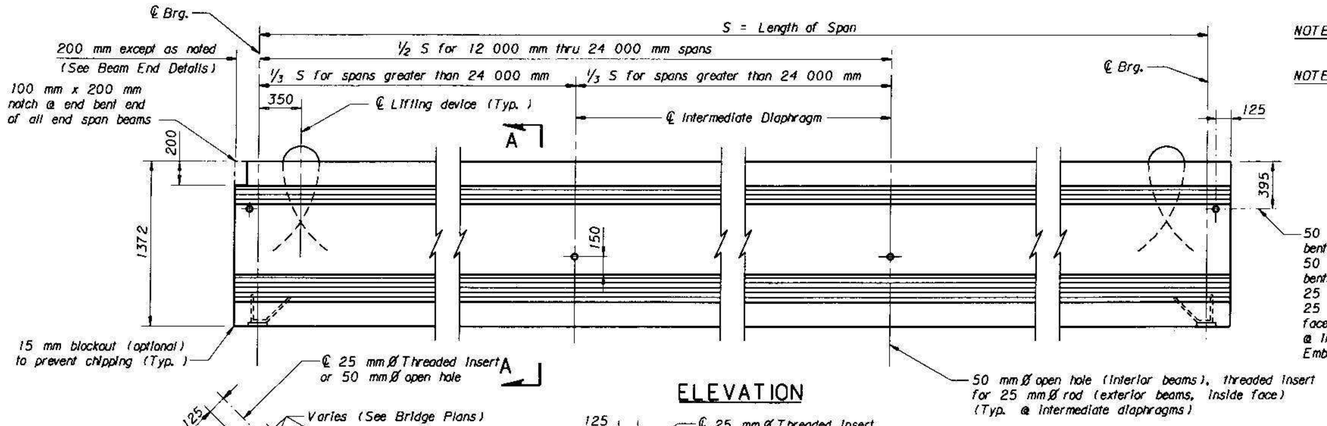
MISTY MINER
1-05-2006

C:\dgn\1041BREPL001AB.DGN
7/21/2006 2:00:52 PM u0737

BRIDGE BUREAU

AS-BUILTS

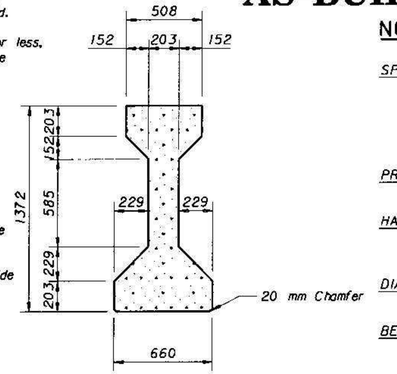
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	88



ELEVATION

NOTE: Beam is symmetrical about ℄ of span except as noted.

NOTE: For spans 12 000 mm or less, intermediate diaphragms are not required.



SECTION A-A

NOTES

SPECIFICATIONS: For design specifications, see General Layout. Design and fabricate the beam to support the dead load and live load stresses and provide a minimum ultimate moment capacity shown on the Erection Plan. Show stresses in the beam under each loading condition that is anticipated in the manufacture, handling and service life of the beam.

PRESTRESSING STEEL: Use 12.7 mm diameter, 7 wire strand prestressing steel.

HARDWARE: Threaded inserts, hold down devices, lifting devices and any other hardware which is to be incorporated in the beam will be approved by the Engineer before fabrication is begun.

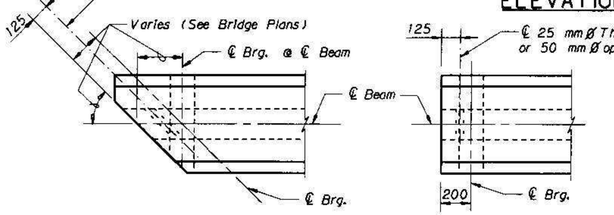
DIAPHRAGMS: See Erection Plan for location of diaphragms when structure is skewed.

BEAM LENGTH: Increase the overall length of the beam 0.60 mm per meter of length to allow for elastic shortening, shrinkage and creep.

SHOES: If expansion shoes are required, see details on Bridge Plans. For type of shoes required see General Layout.

REINFORCING STEEL: See General Layout.

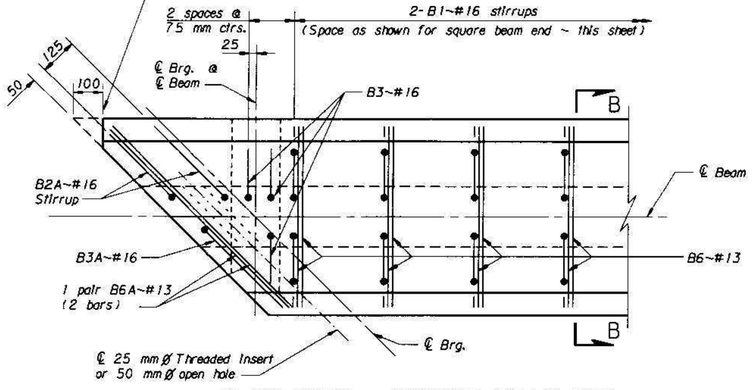
DIMENSIONS: All dimensions are in millimeters.



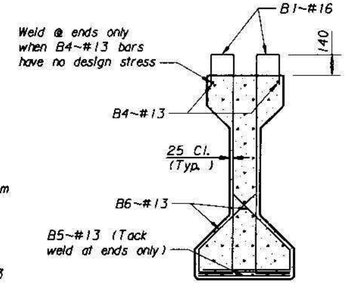
SKEWED BRIDGE

SQUARE BRIDGE

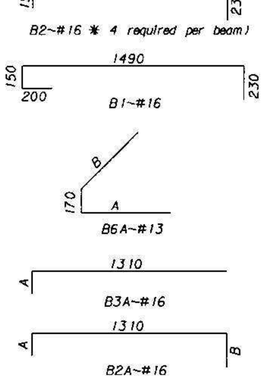
BEAM END DETAILS

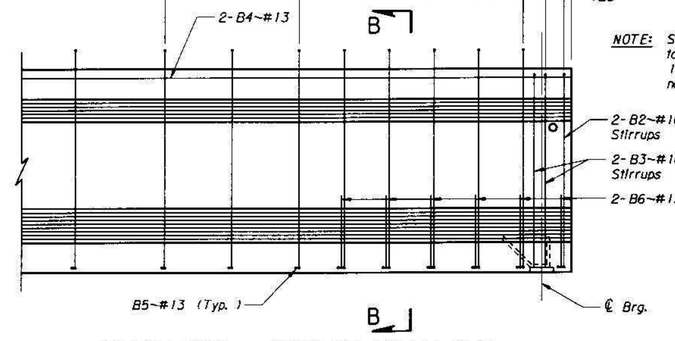


PLAN VIEW ~ SKEWED BEAM END



SECTION B-B



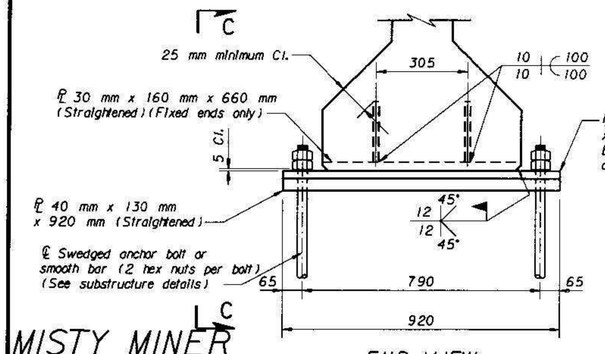


ELEVATION ~ SQUARE BEAM END

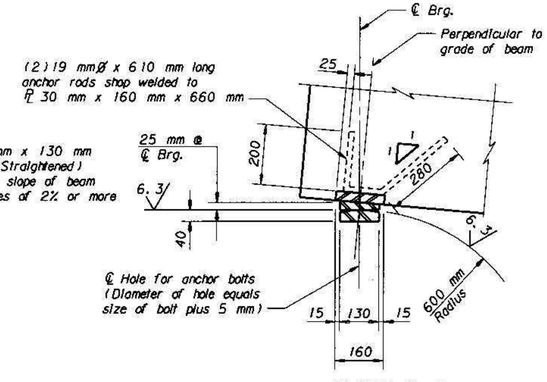
NOTE: Standard reinforcing steel to be modified to clear 100 mm x 200 mm notch as required.

NOTE: For the number of B1~#16 stirrups required per beam, use the following equation:
N = ((S - 5050)/600 + 15) x 2

If the result of the equation is an odd number, round to the next largest even whole number.



END VIEW



VIEW C-C

FIXED SHOE DETAILS

*NOTE: Number shown is for square beam ends. Number required for skewed beam ends varies.

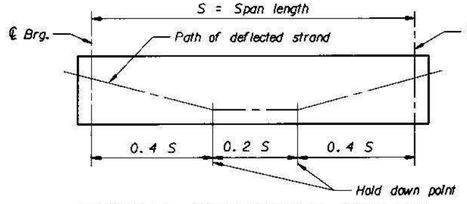
NOTE: The number of B2A~#16 stirrups required per beam varies due to varying skew.

NOTE: Length of A and B varies due to varying skew.

NOTE: Include all costs to furnish and install anchor bolts, nuts, shoes and embedded plates in the unit price bid for Prestressed Beams ~ Type IV.

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

NOTE: Use structural steel meeting the requirements of AASHTO M 270M Grade 250 for embedded plates and shoes. Use structural steel meeting the requirements of AASHTO M 314M Grade 248 for anchor bolts.



TYPICAL DEFLECTED STRAND FOR PRE-TENSIONING SYSTEM

MONTANA DEPARTMENT OF TRANSPORTATION

STANDARD PRESTRESSED CONCRETE BEAM TYPE IV

No Scale

CONVERTED	10-23-95	L. M. S.
DRAWN	10-23-95	L. M. S.
CHECKED	3-1-96	B. G. N.
APPROVED	2-14-97	J. P. K.
REVISED	2-20-97	L. M. S.
REVISED	3-5-01	L. M. S.

FILENAME: mb4rv301.std DRAWING NO. MB-4

MISTY MINER
1-05-2006

BRIDGE BUREAU

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)27 F	89

NOTES AS-BUILTS

Use details shown on this sheet only as they apply to the subject project. Beam spacing, slab thickness, size and spacing of S100 bars, number and spacing of S200 and S300~#13 bars, deck joint arrangement, rail length, rail post spacing, bill of reinforcing steel and roadway width are shown on the General Layout or Erection Plan.

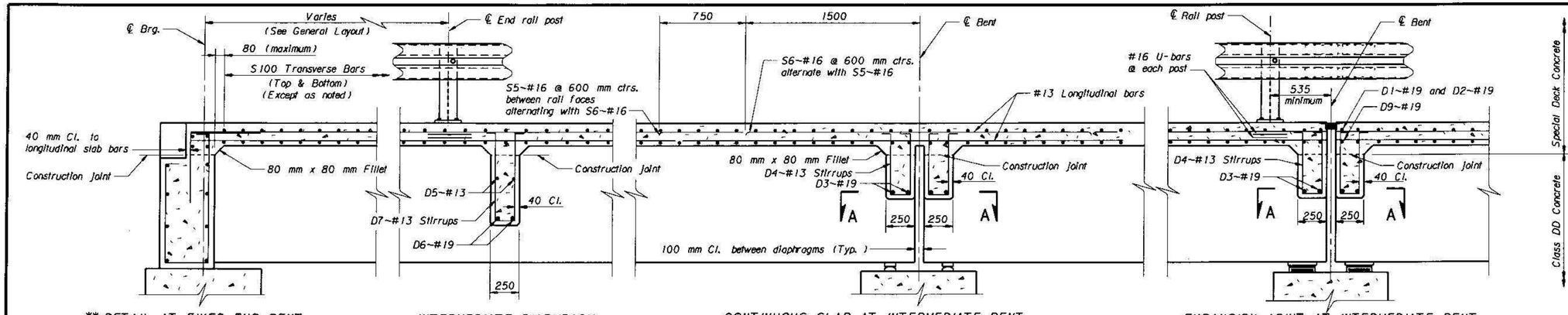
When adjoining spans have a different number of longitudinal slab bars, the longitudinal bars of the shorter span are continuous over the bent and extend 900 mm into the longer span.

If the bridge is skewed, place the transverse slab reinforcing steel as shown on the Erection Plan.

See Standard Bridge Rail Type T101 drawing for rail details.

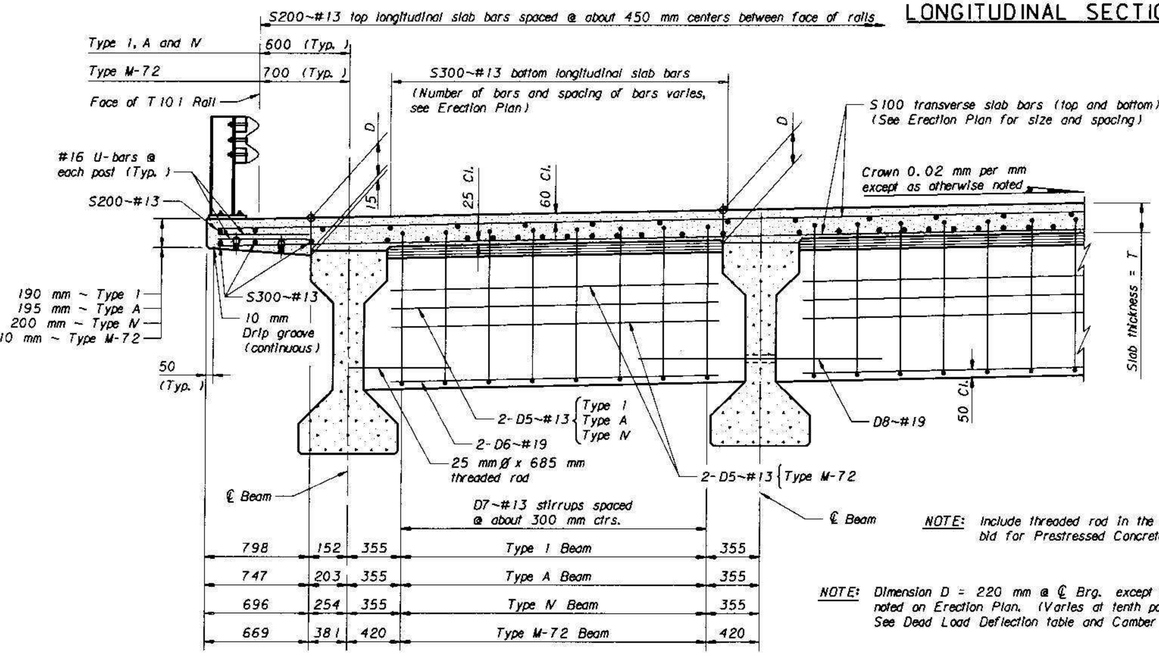
All dimensions are in millimeters.

** NOTE: The detail for end bents with expansion joints is similar to the detail for an expansion joint at an intermediate bent.



** DETAIL AT FIXED END BENT — INTERMEDIATE DIAPHRAGM — CONTINUOUS SLAB AT INTERMEDIATE BENT — EXPANSION JOINT AT INTERMEDIATE BENT

LONGITUDINAL SECTION



NOTE: Include threaded rod in the unit price bid for Prestressed Concrete Beams.

NOTE: Dimension D = 220 mm @ ℄ Brg. except as otherwise noted on Erection Plan. (Varies at tenth points) See Dead Load Deflection table and Camber Diagram.

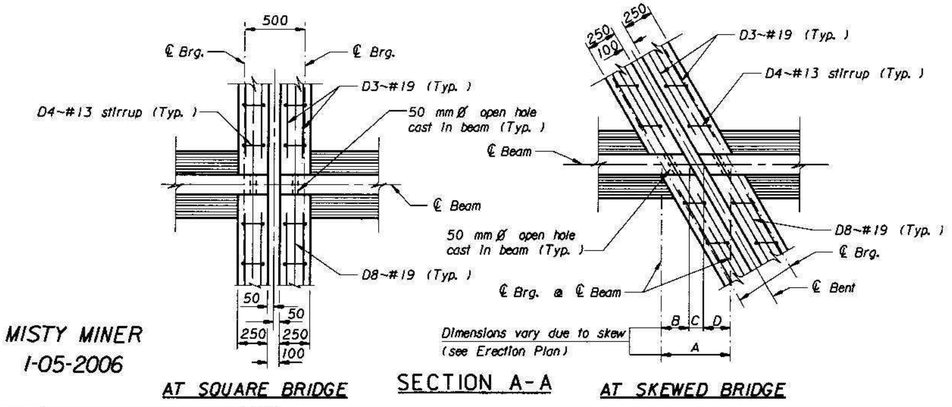
798	152	355	Type 1 Beam	355
747	203	355	Type A Beam	355
696	254	355	Type IV Beam	355
669	381	420	Type M-72 Beam	420

355	Type 1 Beam	355	152	798
355	Type A Beam	355	203	747
355	Type IV Beam	355	254	696
420	Type M-72 Beam	420	381	669

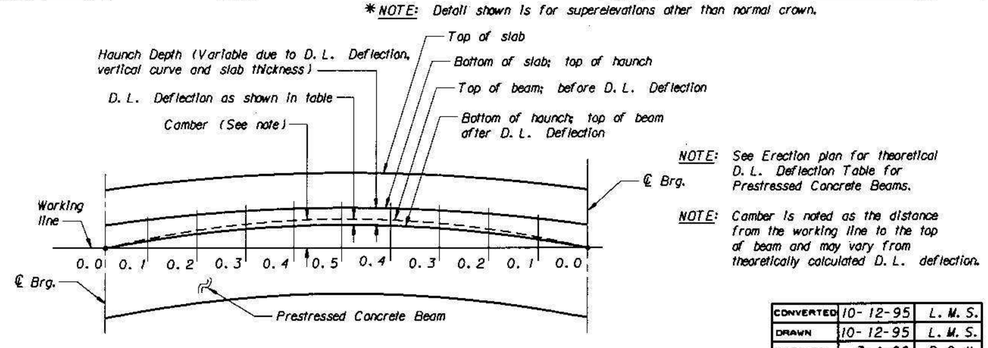
TRANSVERSE SECTION NEAR INTERMEDIATE DIAPHRAGM AT LOW SIDE

TRANSVERSE SECTION NEAR INTERMEDIATE BENT AT HIGH SIDE

* NOTE: Detail shown is for superelevations other than normal crown.



AT SQUARE BRIDGE — SECTION A-A — AT SKEWED BRIDGE



NOTE: See Erection plan for theoretical D.L. Deflection Table for Prestressed Concrete Beams.

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

CAMBER DIAGRAM

MONTANA DEPARTMENT OF TRANSPORTATION

STANDARD SLAB, RAIL AND DIAPHRAGM DETAILS

No Scale

MISTY MINER
1-05-2006

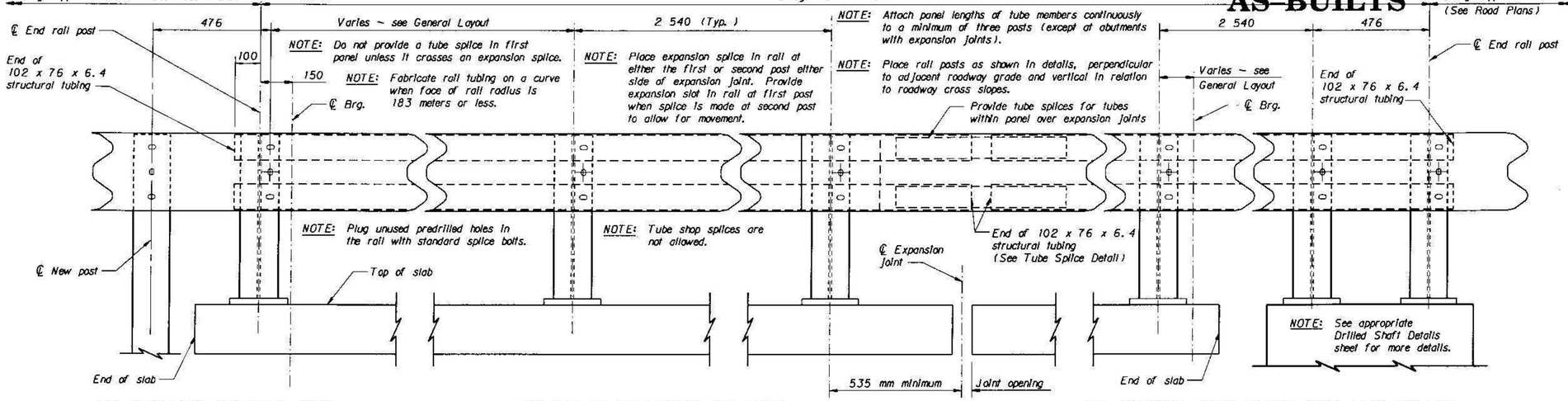
CONVERTED	10-12-95	L.M.S.
DRAWN	10-12-95	L.M.S.
CHECKED	3-1-96	B.G.N.
APPROVED	12-16-96	J.P.K.
REVISED	1-9-97	B.G.N.
REVISED	2-20-97	L.M.S.
REVISED	3-5-01	L.M.S.

FILENAME: MSL6301.STD DRAWING NO. MSL-6

AS-BUILTS

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 62-2(17)127 F	810

BRIDGE BUREAU



AT SQUARE BRIDGE END

INSIDE ELEVATION OF RAIL

AT BRIDGE END WITH DRILLED SHAFT

NOTES

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

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. 606-05 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 Bridge Rail ~ T101.

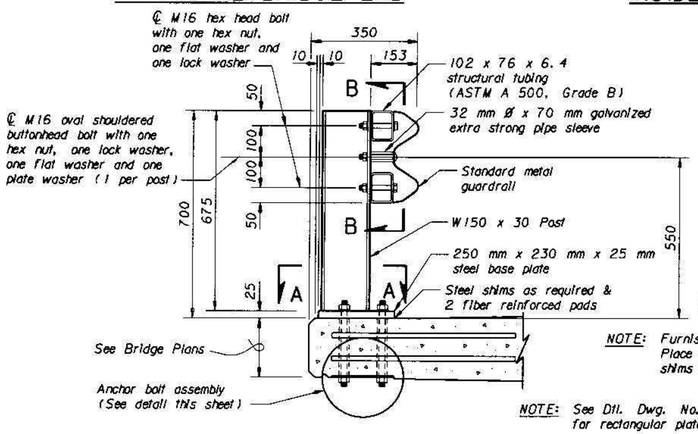
PAYMENT: Bridge Rail ~ T101 is paid for by the linear meter which is full compensation for all resources necessary to complete the item. The number of linear meters of Bridge Rail ~ T101 for payment is shown on the General Layout. Use posts and plates conforming to AASHTO M 270M Grade 250T3. Use metal guardrail conforming to AASHTO M 180 and lap in direction of traffic.

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

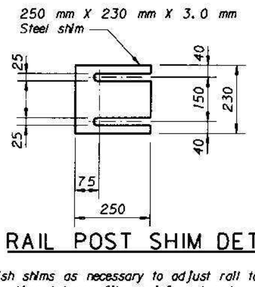
PAINTING: Paint all posts, structural tubing and plates (except as noted) in accordance with the Standard Specifications. Galvanizing the posts, structural tubing and plates in accordance with AASHTO M 111M will be allowed.

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

DIMENSIONS: All dimensions are in millimeters except as noted.



RAIL POST DETAIL



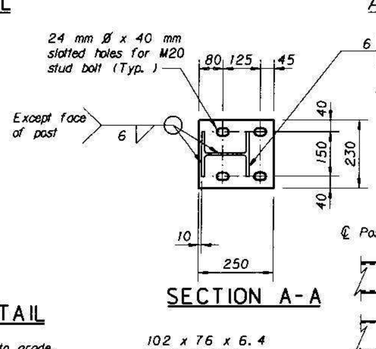
RAIL POST SHIM DETAIL

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

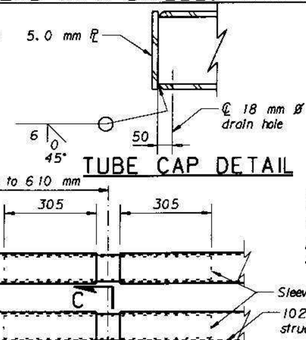
NOTE: See Dtl. Dwg. No. 606-84 for rectangular plate washer detail.

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

NOTE: Use fiber reinforced pads meeting the requirements of subsection 711.16 of the Standard Specifications. Size and position the pads 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.

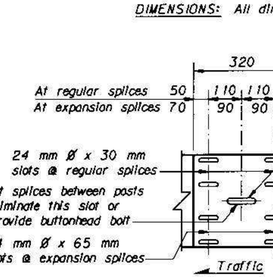


SECTION A-A



TUBE CAP DETAIL

TUBE SPLICE DETAIL

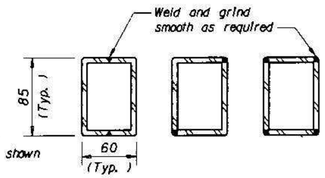


RAIL SPLICE

POST CONNECTION

NOTE: At expansion slots in W-beam, tighten bolts snugly.

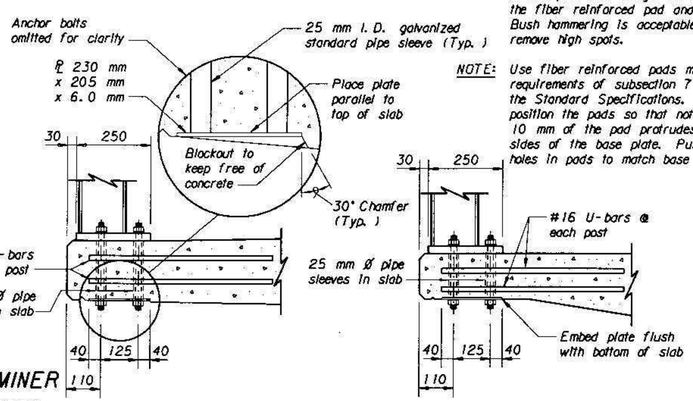
NOTE: Provide M16 oval shouldered buttonhead bolts with hex nuts at all splice slots.



SLEEVE FABRICATION OPTIONS

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

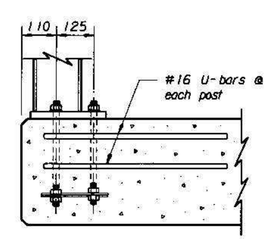
NOTE: See appropriate T beam or slab drawing for dimensions of #16 U-bar at each post.



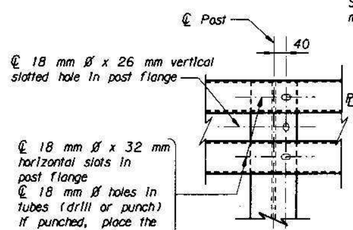
STANDARD SLAB

BULB T BEAM

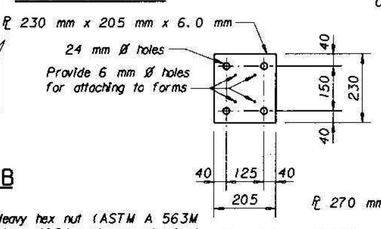
POST MOUNTING DETAILS



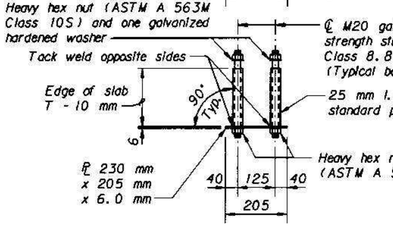
FLAT SLAB AND U-TYPE BENT



SECTION C-C

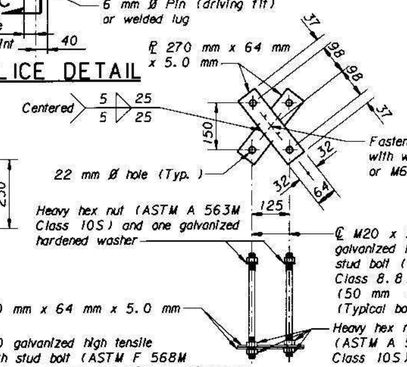


SECTION B-B



ANCHOR BOLT ASSEMBLY DETAIL

(For typical slab)



ANCHOR BOLT ASSEMBLY DETAIL

(Typical for flat slab and U-type bent)

MONTANA DEPARTMENT OF TRANSPORTATION

STANDARD BRIDGE RAIL

TYPE T101

MISTY MINER
1-05-2006

CONVERTED	11-8-95	L. M. S.
DRAWN	11-8-95	L. M. S.
CHECKED	3-1-96	B. G. N.
APPROVED	8-6-96	J. P. K.
REVISED	2-20-97	L. M. S.
REVISED	3-5-01	L. M. S.
REVISED	3-4-03	L. M. S.

FILENAME: MT 10 1303. STD

DRAWING NO. MSBR-T 101