CONTRACT PLANS BUREAU
MONTANA DEPARTMENT OF TRANSPORTATION

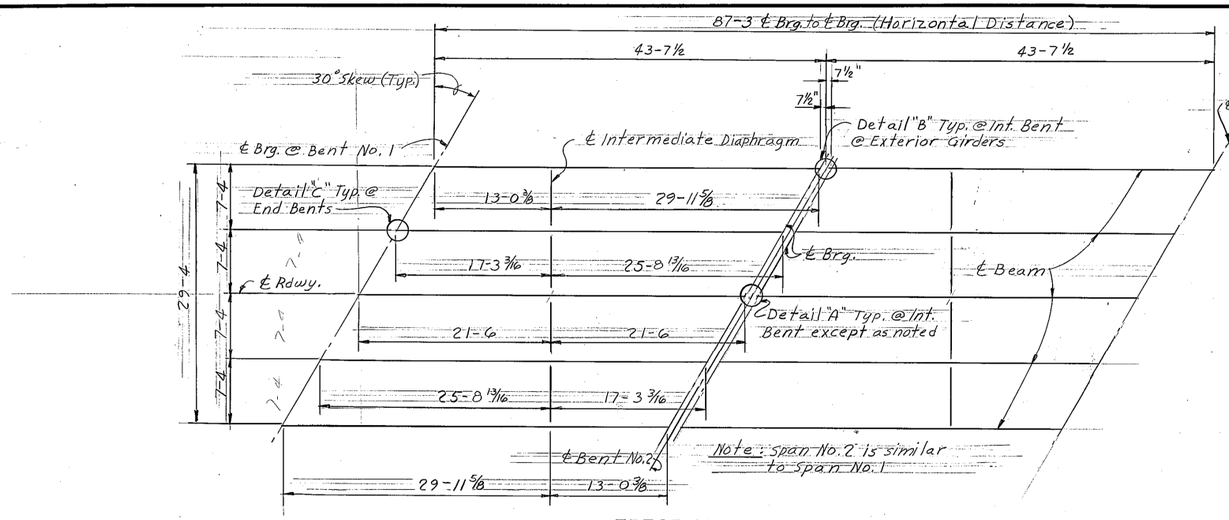
As-Built Drawings

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 Thus, some of the information contained in these documents may be out of date or not applicable with regard to the advertised project.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.

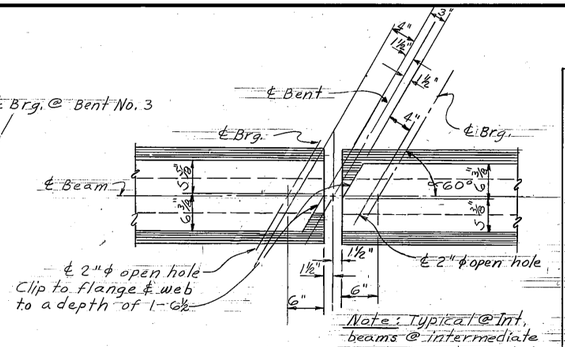
57851

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	86

87'-3" ℄ Brg. to ℄ Brg. (Horizontal Distance)

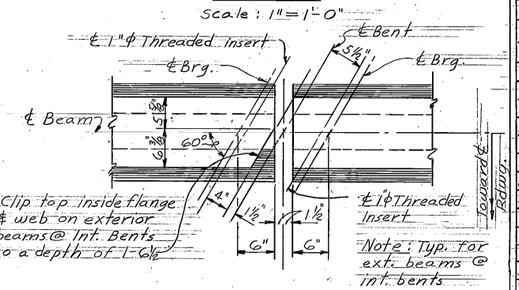


ERECTION PLAN



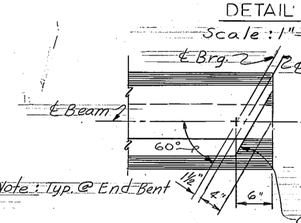
DETAIL "A"

Scale: 1"=1'-0"



DETAIL "B"

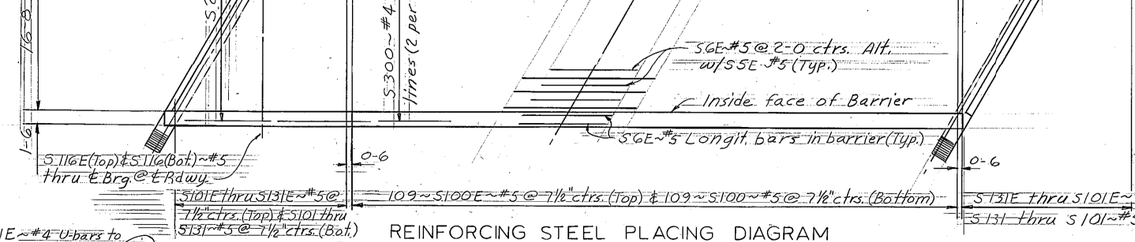
Scale: 1"=1'-0"



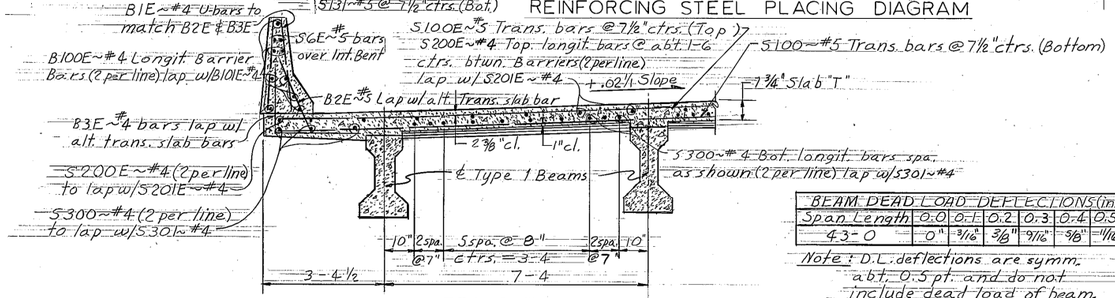
DETAIL "C"

Scale: 1"=1'-0"

MODIFIED BEAM END DETAILS



REINFORCING STEEL PLACING DIAGRAM



TRANSVERSE SECTION

Scale: ½"=1'-0"

BEAM DEAD LOAD DEFLECTIONS (in.)						
Span Length	0.0	0.1	0.2	0.3	0.4	0.5
43-0	0"	3/16"	3/8"	9/16"	5/8"	11/16"

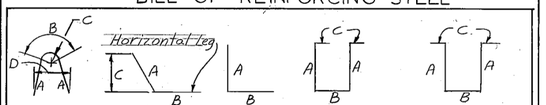
Note: D.L. deflections are symm. abt. 0.5 pt. and do not include dead load of beam.

PRESTRESSED CONCRETE BEAMS: Prestressed concrete beams shall be fabricated in accordance with Std. Dwg. No. B-1 except as modified hereon. Maximum f'c (compressive strength of concrete at 28 days) for design shall be 6000 p.s.i. Design stresses before prestress are as follows:

Span Length (℄ Brg. to ℄ Brg.)		43-0
Beam D.L. Stresses (p.s.i.) @ .5 pt.	F_b	+442
	F_f	-541
Total D.L. + L.L. Design Stresses (p.s.i.)	F_b	-3267
	F_f	2258
* Required Ultimate Moment Capacity (Ft.-Kips)	M_u	1476

* $M_u = 1.3[0.9 \cdot E(D.L. + \frac{5}{3}(L.L. + I))]$

BILL OF REINFORCING STEEL



STRAIGHT BARS

Mark	Size	No.	Length
B100E	#4	32	40'-0
B101E	4	16	11'-0
S200E	4	50	40'-0
S201E	4	25	11'-0
S300	4	92	40'-0
S301	4	46	11'-0
S5E	5	17	15'-0
S6E	5	21	10'-0
S100	5	109	35'-10
S101	5	2	2'-7
S102			3'-8
S103			4'-9
S104			5'-10
S105			7'-0
S106			8'-0
S107			9'-1
S108			10'-2
S109			11'-3
S110			12'-4
S111			13'-5
S112			14'-6
S113			15'-7
S114			16'-8
S115			17'-9
S116			18'-10
S117			19'-11
S118			21'-0
S119			22'-1
S120			23'-2
S121			24'-3
S122			25'-4
S123			26'-5
S124	#5	2	27'-6

BENT BARS (All dimensions are out to out)

Mark	Size	No.	Type	Length	A	B	C	D
B1E	#4	144	1	5'-1"	2'-4	0'-5	0-1¾	0'-9
B2E	5	144	2	4'-3	2'-6	1'-9	2'-2	
B3E	4	144	3	3'-0	1'-10	1'-2		
D4	4	48	4	5'-0	1'-9	0'-8	0'-5	
D7	4	48	5	4'-11	1'-9	0'-7	0'-5	

STRAIGHT BARS

Mark	Size	No.	Length
S125	#5	2	28'-7
S126			29'-8
S127			30'-9
S128			31'-10
S129			32'-11
S130			34'-0
S131	5	2	35'-1
S100E	5	109	35'-10
S101E		2	2'-7
S102E			3'-8
S103E			4'-9
S104E			5'-10
S105E			6'-11
S106E			8'-0
S107E			9'-1
S108E			10'-2
S109E			11'-3
S110E			12'-4
S111E			13'-5
S112E			14'-0
S113E			15'-7
S114E			16'-8
S115E	#5	2	17'-9"

STRAIGHT BARS

Mark	Size	No.	Length
S116E	#5	2	18'-10
S117E			19'-11
S118E			21'-0
S119E			22'-1
S120E			23'-2
S121E			24'-3
S122E			25'-4
S123E			26'-5
S124E			27'-6
S125E			28'-7
S126E			29'-8
S127E			30'-9
S128E			31'-10
S129E			32'-11
S130E			34'-0
S131E	5	2	35'-1
D3	6	16	7'-1
D5	4	16	6'-2
D6	6	16	6'-2
D8	#6	12	4'-0"

Note: All rebar designated with a suffix "E" to be Epoxy Coated.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER NEGRO COULEE

AT STA. 2390+74.13

FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39

DANIELS COUNTY

ERECTION PLAN

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

DRAWING NO. 13947

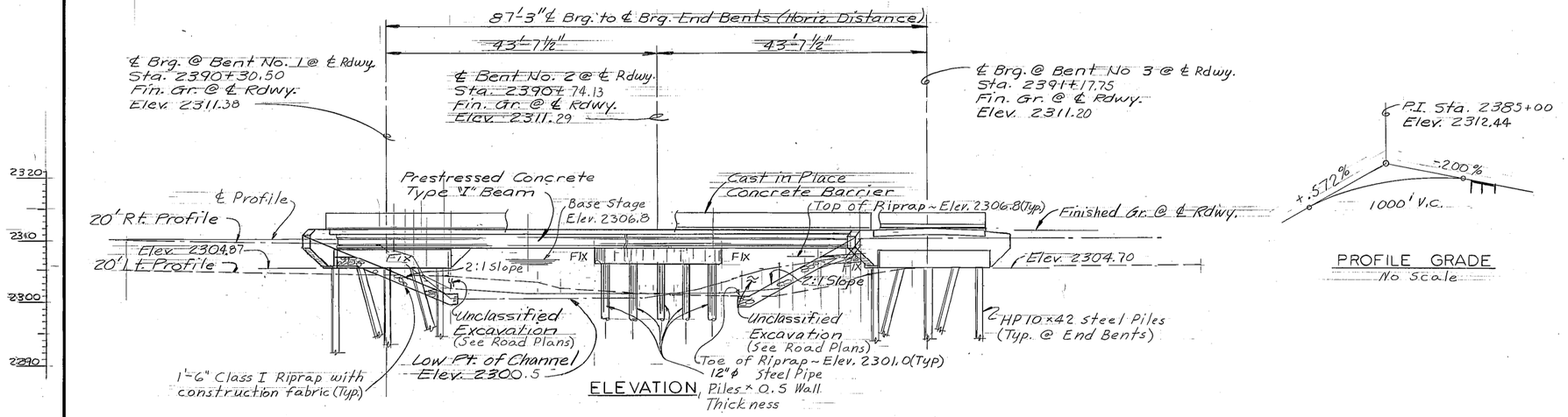
DESIGNED	2-28-86	K.F.M.
DRAWN	3-25-86	J.L.P.
CHECKED	7-1-86	S.D.K.
REVISED		
REVISED		
REVISED		

PLASTIC LEAD USED

K&E HERCULENE®

W = 11½"

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	82



ELEVATION

Note: Channel is normally dry

PROFILE GRADE
No Scale

NOTES

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

LIVE LOAD: Standard H520-44 loading

SPECIFICATIONS: Montana Department of Highways and the Montana Highway Commission Standard Spec's. for Road and Bridge Construction, 1981 edition, and any amendments thereto, and Special Provisions shall govern unless otherwise noted. Design prepared in accordance with A.A.S.H.T.O. Spec's., 1983 edition, and any amendments thereto.

CAST-IN-PLACE CONCRETE: Unless otherwise approved all concrete in the slab and concrete barriers shall be Class "BD" modified and all other concrete shall be Class "AD".

STRUCTURAL STEEL: All structural steel shall be measured and paid for on the lump sum basis as set forth in the Standard Specifications. Estimated Wt. = 5.76 pounds

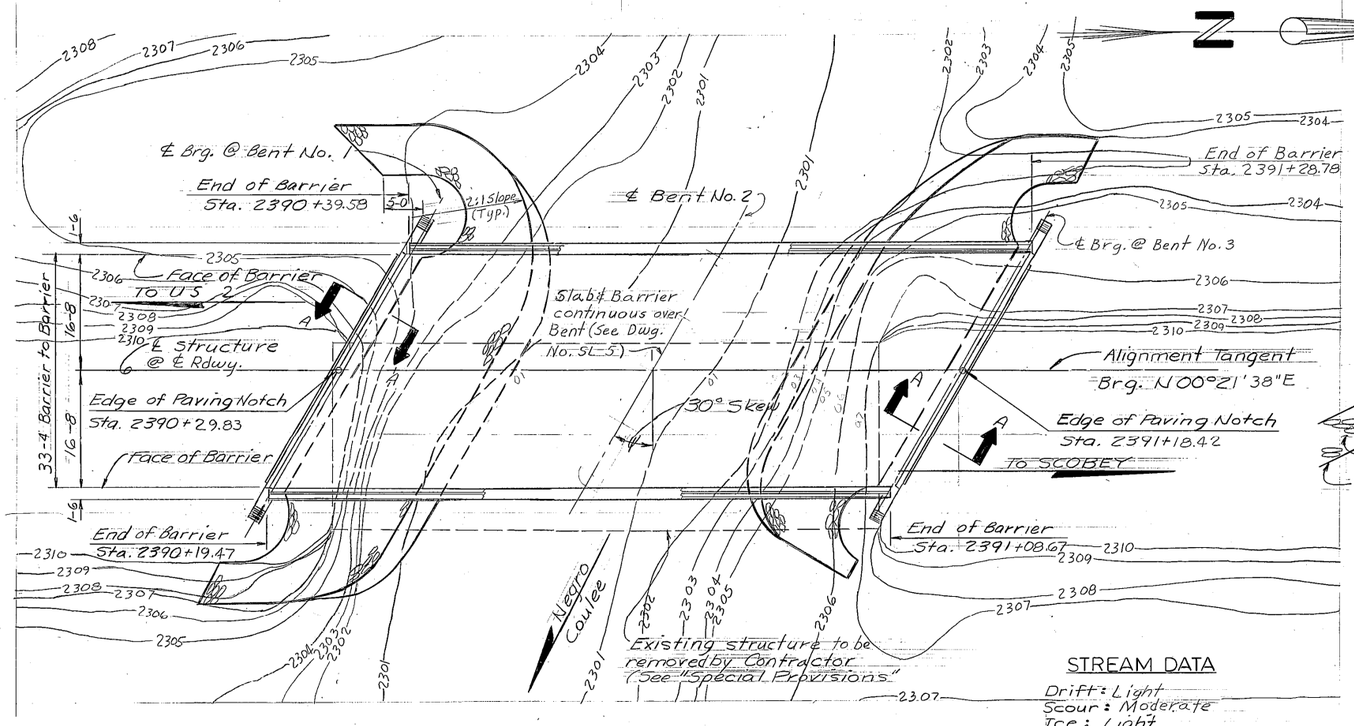
REINFORCING STEEL: All reinforcing steel shall be of the deformed type and shall meet the requirements of A.S.T.M. Specifications A615, Grade 60 (A.A.S.H.T.O. M-31) except for the rebar in the prestressed concrete beam which may be Grade 40.

UTILITIES: For location of utilities, see appropriate Road Plans sheet.

TRAFFIC CONTROL PLAN & SEQUENCE OF OPERATION: See "Special Provisions."

STRUCTURE EXCAVATION: See "Special Provisions".

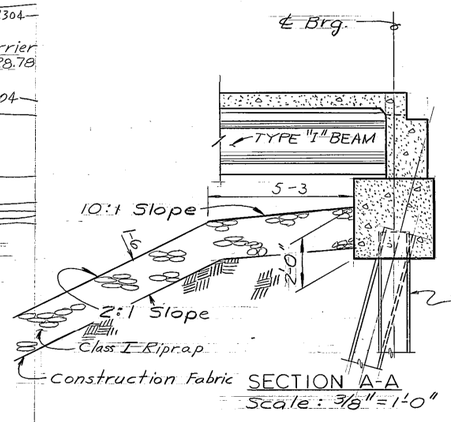
HP 10x42 STEEL PILES: HPS 10x42 Steel Piles may be substituted for HP 10x42 Steel Piles.



PLAN

STREAM DATA

Drift: Light
Scour: Moderate
Ice: Light
Drainage Area: 27.2 Sq. Mi.
Base Flood Flow (100 yr): 2100 c.f.s.
Base Flood Stage: 2306.8
Base Flood Velocity: 8.6 f.p.s.
Also see Hydraulic Data Summary Sheet



SECTION A-A
Scale: 3/8" = 1'-0"

CLASS OF CONCRETE	MINIMUM REQ'D. CYLINDER STRENGTH TO ACHIEVE A 1.0 PAY FACTOR (P.S.I.)#	STRENGTH FOR DESIGN PURPOSES (P.S.I.)
"AD"	3400	3000
"BD" Modified	3900	3500

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER NEGRO COULEE
AT STA. 2390+74.13

FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39

DANIELS COUNTY

GENERAL LAYOUT

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

DRAWING NO. 13943

DESIGNED	2-10-86	K.F.M.
DRAWN	4-2-86	D.W.C./J.L.P.
CHECKED	6-27-86	S.D.K.
APPROVED	7-28-86	N.H.R.
REVISED		
REVISED		

PLASTIC LEAD USED

K&E HERCULENE® DRAFTING FILM

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	B1

STATE OF MONTANA

DEPARTMENT OF HIGHWAYS

BRIDGE PLANS & QUANTITIES

FEDERAL AID PROJECT NO. RF 32 - 2(2) 39 P. E. F - BRF - HES 32 - 2(6) 39 CONST.

SCOBEY - SOUTH

DANIELS COUNTY

ALTERNATE A - 1

"AS BUILT"

LOCATION	BRIDGE SURVEY CONTROL
STRUCTURE AT STA. 2390 + 74.13	0.3 L. SUM
SUB-TOTAL	0.3 L.S. = $1590.00
STRUCTURE AT STA. 2473 + 27.00	0.7 L. SUM
SUB-TOTAL	0.7 L.S. = $3710.00
TOTAL	1.0 L.S. = $5300.00

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
B2	13943	GENERAL LAYOUT AT STA. 2390 + 74.13
B3	13944	FOOTING PLAN
B4	13945	BENTS NO. 1 & NO. 3
B5	13946	BENT NO. 2
B6	13947	ERECTION PLAN
B7	13948	GENERAL LAYOUT AT STA. 2473 + 27.00
B8	13949	FOOTING PLAN - ALTERNATE A
B9	13950	BENTS NO. 1 & NO. 4 - ALTERNATE A
B10	13951	PIERS NO. 2 & NO. 3 - ALTERNATE A
B11	13952	ERECTION PLAN - ALTERNATE A
B12	B-1 (REV. 4-9-79)	STANDARD PRESTRESSED CONCRETE BEAM TYPE - 1
B13	B-A (REV. 4-9-79)	STANDARD PRESTRESSED CONCRETE BEAM TYPE - A
B14	SL-5 (REV. 6-19-81)	STANDARD SLAB, BARRIER & DIAPHRAGM DETAILS

"AS BUILT"

~~ESTIMATED~~ BRIDGE PLAN QUANTITIES

LOCATION		LENGTH IN FEET		REINFORCING STEEL REGULAR (LBS.)	REINFORCING STEEL EPOXY-CTD. (LBS.)	CLASS "AD" CONCRETE (CU. YDS.)	CLASS "BD MOD." CONC. (CU. YDS.)	HP 10X42 STEEL PILES (LN. FT.) FURNISH	HP 10X42 STEEL PILES (LN. FT.) DRIVE	STEEL PIPE PILES 12" ø x 1/2" THICK (LIN. FT.) FURNISH	STEEL PIPE PILES 12" ø x 1/2" THICK (LIN. FT.) DRIVE	STRUCTURE EXC. TYPE I (CU. YDS.)	STRUCTURAL STEEL (LUMP SUM)	HP 12X53 STEEL PILES (LIN. FT.) FURNISH	HP 12X53 STEEL PILES (LIN. FT.) DRIVE	STRUCTURE EXC. TYPE II (CU. YDS.)	SHORING & CRIBS (L. SUM)	PRESTRESSED CONC. BEAMS-TYPE A (EA.) 60'	PRESTRESSED CONC. BEAMS-TYPE A (EA.) ~~60'-0"~~ 62-9⅛	PRESTRESSED CONC. BEAMS-TYPE A (EA.) ~~65'-0"~~ 62-2¼	"SEAL CONCRETE" (CU. YDS.)	PRESTRESSED CONC. BEAMS -TYPE I (EA.) * 45'-0"
STRUCTURE AT STA. 2390 + 74.13	BENT NO. 1			1465	157	20.6	1.1	~~225.0~~	~~220.0~~			~~20~~ 20.6										
	BENT NO. 2			1230		14.2		208.2	203.2	~~275.0~~ 194.3	~~242.5~~ 170.3		0.3 = $960.00									
	BENT NO. 3			1465	157	20.6	1.1	~~225.0~~	~~220.0~~			~~20~~ 20.7										
	SUPERSTRUCTURE	87.25		8862	9692	4.7	93.3	215.7	210.7													10
	SUB-TOTAL	87.25		13022	10006	60.1	95.5	~~450.0~~	~~440.0~~	~~275.0~~ 194.3	~~242.5~~ 170.3	~~40~~ 41.3	0.3 = $960.00									10
STRUCTURE AT STA. 2473 + 27.00	BENT NO. 1			1567	146	21.6	0.9	423.9	413.9			~~20~~ 19.0		~~+50~~ 199.4	~~+45~~ 194.4							
	PIER NO. 2			2840		93.7										~~230~~ 223.5	1.0 = $100,000					
	PIER NO. 3		3191	~~2840~~		~~93.7~~ 101.07							0.7 = $2240.00			~~+80~~ 207.7					67.6	
	BENT NO. 4			1567	146	21.6	0.9					~~20~~ 19.0									67.6	
	SUPERSTRUCTURE	188.0		18526	20513	9.5	201.5							~~+50~~ 225	~~+45~~ 220			~~10~~ 5	5	5		
	SUB-TOTAL	188.0	27691	~~27340~~	20805	~~240.1~~ 247.47	203.3					~~40~~ 38.0	0.7 or $2240.00	~~300~~ 424.4	~~290~~ 414.4	~~410~~ 431.2	1.0 = $100,000	~~10~~ 5	5	5	135.2	
TOTAL		275.25	40713	~~40362~~	30811	~~300.2~~ 307.57	298.8	~~450.0~~ 423.9	~~440.0~~ 413.9	~~275.0~~ 194.3	~~242.5~~ 170.3	~~80~~ 79.3	1.0 or $3200.00	~~300~~ 424.4	~~290~~ 414.4	~~410~~ 431.2	1.0 = $100,000	~~10~~ 5	5	5	135.2	10

* ACTUAL BEAM LENGTH = 43'-0" CENTERLINE BRG. TO CENTERLINE BRG.

PREPARED BY: KMR 1-29-87 CHECKED BY: RWM 02-02-87

DRAWING NO. 13943OA

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	B15

STATE OF MONTANA

DEPARTMENT OF HIGHWAYS

BRIDGE PLANS & QUANTITIES

FEDERAL AID PROJECT NO. RF 32 - 2(2) 39 P.E. F - BRF - HES 32 - 2(6) 39 CONST.

SCOBEY - SOUTH

DANIELS COUNTY

ALTERNATE A - 2

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
B16	13943	GENERAL LAYOUT AT STA. 2390 + 74.13
B17	13944	FOOTING PLAN
B18	13945	BENTS NO. 1 & NO. 3
B19	13946	BENT NO. 2
B20	13947	ERECTION PLAN
B21	13953	GENERAL LAYOUT AT STA. 2473 + 27.00
B22	13954	FOOTING PLAN - ALTERNATE B
B23	13955	BENTS NO. 1 & NO. 4 - ALTERNATE B
B24	13956	PIERS NO. 2 & NO. 3 - ALTERNATE B
B25	13957	ERECTION PLAN AND SLAB DETAILS - ALTERNATE B
B26	13958	GIRDER DETAILS - ALTERNATE B
B27	B-1 (REV. 4-9-79)	STANDARD PRESTRESSED CONCRETE BEAM TYPE - 1
B28	SL-5 (REV. 6-19-81)	STANDARD SLAB, BARRIER & DIAPHRAGM DETAILS

NOTE: The Prestressed Alternate A-1 was used by the Contractor.

ESTIMATED BRIDGE PLAN QUANTITIES

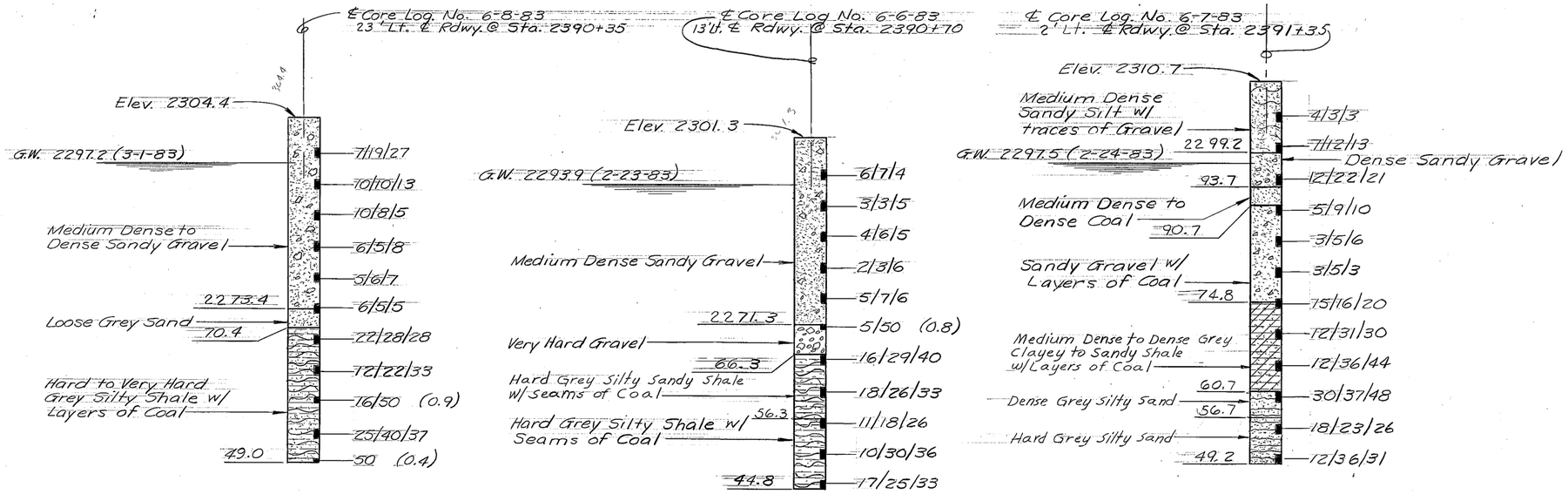
LOCATION		LENGTH IN FEET	REINFORCING STEEL REGULAR (LBS.)	REINFORCING STEEL EPOXY-CTD. (LBS.)	CLASS "AD" CONCRETE (CU. YDS.)	CLASS "BD MOD." CONC. (CU. YDS.)	HP 10X42 STEEL PILES (LN. FT.) FURNISH	HP 10X42 STEEL PILES (LN. FT.) DRIVE	STEEL PIPE PILES 12"ø x 1/2" THICK (LIN. FT.) FURNISH	STEEL PIPE PILES 12"ø x 1/2" THICK (LIN. FT.) DRIVE	STRUCTURE EXC. TYPE I (CU. YDS.)	STRUCTURAL STEEL (LUMP SUM)	HP 12X53 STEEL PILES (LIN. FT.) FURNISH	HP 12X53 STEEL PILES (LIN. FT.) DRIVE	STRUCTURE EXC. TYPE II (CU. YDS.)	SHORING & CRIBS (L. SUM)	PRESTRESSED CONC. BEAMS-TYPE I (EA.) * 45' - 0"	"SEAL CONCRETE" (CU. YDS.)
STRUCTURE AT STA. 2390 + 74.13	BENT NO. 1		1465	157	20.6	1.1	225.0	220.0			20							
	BENT NO. 2		1230		14.2				275.0	242.5		.004						
	BENT NO. 3		1465	157	20.6	1.1	225.0	220.0			20							
	SUPERSTRUCTURE	87.25	8862	9692	4.7	93.3											10	
	SUB-TOTAL	87.25	13022	10006	60.1	95.5	450.0	440.0	275.0	242.5	40	.004					10	
STRUCTURE AT STA. 2473 + 27.00	BENT NO. 1		1511	146	20.3	1.0					20		120.0	116.0				
	PIER NO. 2		2787		90.6										215			
	PIER NO. 3		2787		90.6							.996			185	1.0		67.6
	BENT NO. 4		1511	146	20.3	1.0					20							67.6
	SUPERSTRUCTURE	188.0	21016	28227		208.8							120.0	116.0				
	SUB-TOTAL	188.0	29612	28519	221.8	210.8					40	.996	240.0	232.0	400	1.0		135.2
TOTAL		275.25	42634	38525	281.9	304.3	450.0	440.0	275.0	242.5	80	1.0	240.0	232.0	400	1.0	10	135.2

* ACTUAL BEAM LENGTH = 43' - 0" CENTERLINE BRG. TO CENTERLINE BRG.

PREPARED BY: KMR 1-29-87 CHECKED BY: RWM 02-02-87

DRAWING NO. 13943OB

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	B3



LOG OF BORINGS
Vertical Scale: 1"=10'-0"

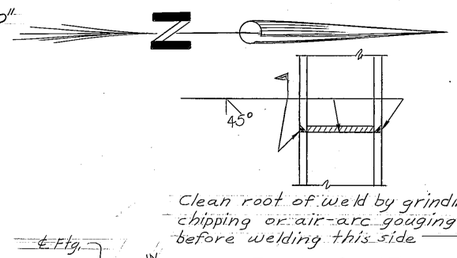
NOTES

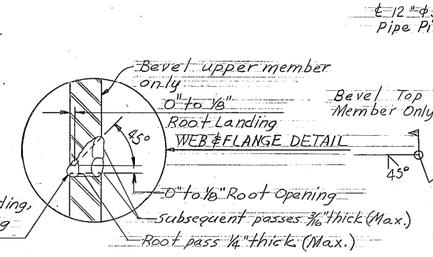
SOILS AND FOUNDATION MAT'L.: Borings were taken by the Montana, Department of Highways at the points shown on this drawing.

The series of numbers shown on the Log of Borings indicates the number of blows per 6" penetration for each number of the series of a 2" sample tube which was driven in accordance with the standard penetration test made with a 2" split tube sampler using a 140 pound hammer having a 30" drop. The total penetration of the sampler tube is indicated on the core logs after each series if 6" penetration was not achieved in 50 blows.

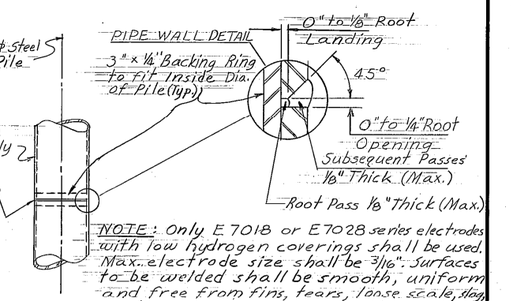
The State of Montana, Department of Highways, does not assume any responsibility for any variation or misinterpretation of the classes of materials, and adjustment in bid prices will not be made if the materials found do not agree with those shown in the Log of Borings.

FOUNDATION PILES: For bidding purposes only, pile lengths have been estimated as shown on the plans.

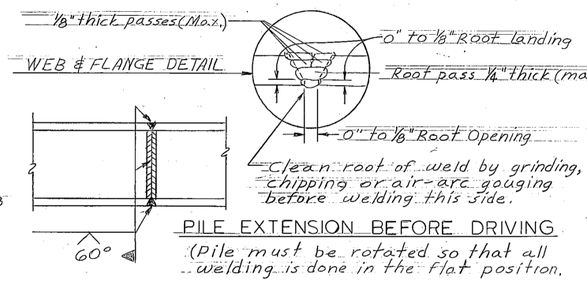




PILE EXTENSION AFTER DRIVING (VERTICAL)

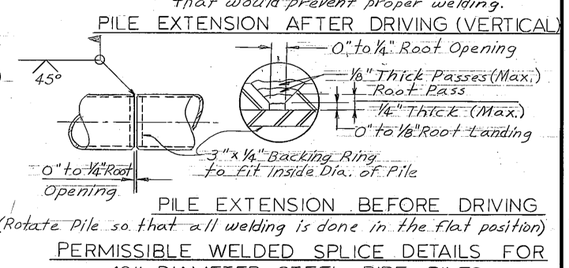


NOTE: Only E 7018 or E 7028 series electrodes with low hydrogen coverings shall be used. Max. electrode size shall be 3/16". Surfaces to be welded shall be smooth, uniform and free from fins, tears, loose scale, slag, rust, grease, moisture or other material that would prevent proper welding.



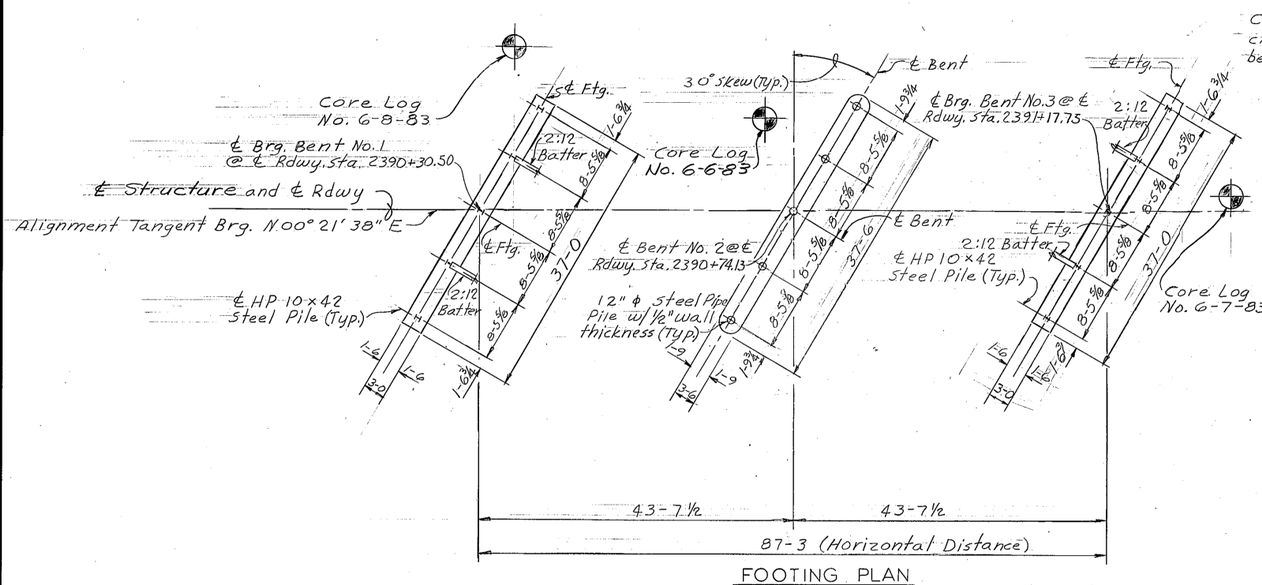
PILE EXTENSION BEFORE DRIVING
(Pile must be rotated so that all welding is done in the flat position.

PERMISSIBLE WELDED SPLICE DETAILS FOR 10" STEEL "H" PILES
No Scale



PILE EXTENSION BEFORE DRIVING
(Rotate Pile so that all welding is done in the flat position)

PERMISSIBLE WELDED SPLICE DETAILS FOR 12" DIAMETER STEEL PIPE PILES
No Scale



FOOTING PLAN

PLASTIC LEAD USED

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER NEGRO COULEE
AT STA. 2390+74.13

FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39

DANIELS COUNTY

FOOTING PLAN

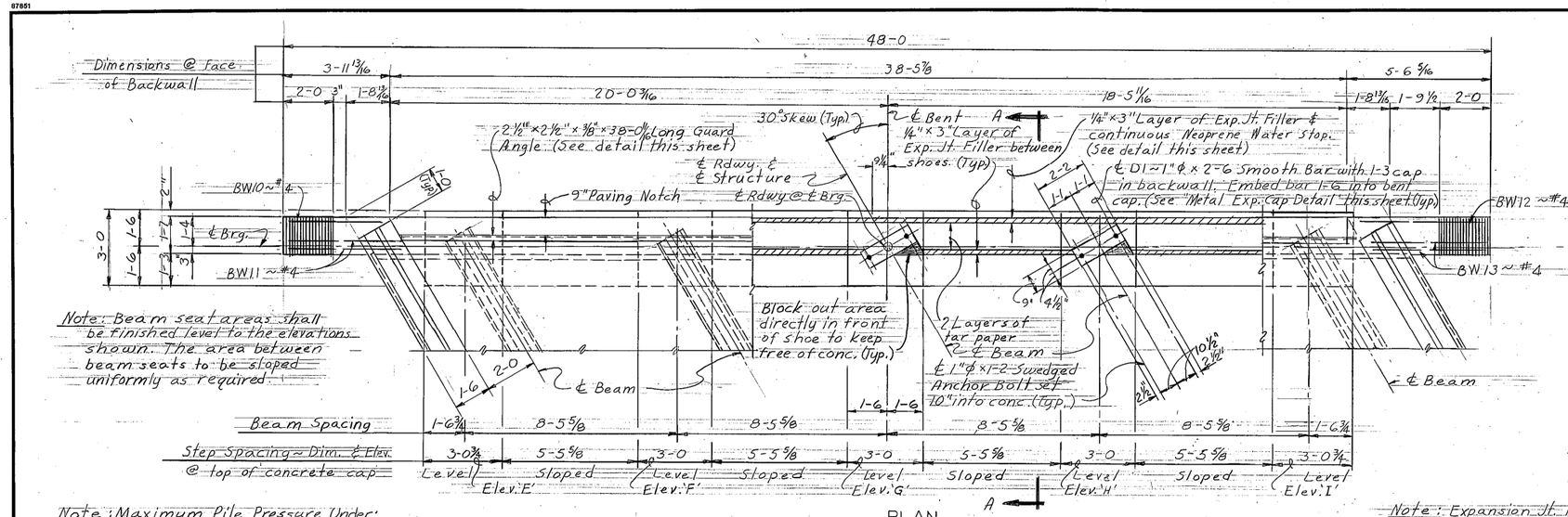
Scale: 1"=10'-0"

DESIGNED	K.F.M.	2-28-86
DRAWN	D.W.C./J.L.P.	3-20-86
CHECKED	S.D.K.	6-30-86
REVISED		
REVISED		
REVISED		

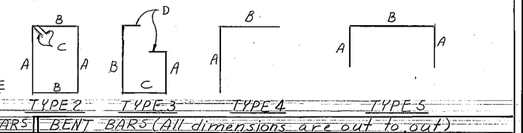
DRAWING NO. 13944

67851

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	84



BILL OF REINFORCING STEEL (One Bent Only)



STRAIGHT BARS				BENT BARS (All dimensions are out to out)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D	E
BW1E	#5	4	21'-7"	BW10	#4	1	1	5'-6"	1'-9"	1'-10"	1'-11"	1'-8"	0'-6"
" 2	" 5	6	24'-8"	" 11	"	2	1	6-3	1-9	1-10	2-8	1-8	0-8
" 3	" 4	8	6-11	" 12	"	1	1	7-0	1-9	1-10	3-5	1-8	0-10
" 4	" 4	4	6-7	" 13	"	2	1	6-5	1-9	1-10	2-10	1-8	0-8
" 5	" 4	4	6-2	" 14	"	6	1	7-7	1-4	5-6	0-9	1-1	0-6
" 6	" 2	6-0	" 15	"	2	2	9-0	2-10	1-3	0-5			
" 7	" 4	3-8	" 16	"	2	2	10-1	3-9	1-3	0-5			
" 8	" 4	2-2	" 17	"	2	2	12-8	4-8	1-3	0-5			
BW9	" 6	5	4-0	" 18	"	1	2	14-4	5-6	1-3	0-5		
				" 19	"	1	2	14-8	5-8	1-3	0-5		
				" 20	"	1	3	12-1	4-6	5-6	1-3	0-5	
				" 21	"	1	3	12-5	4-8	5-8	1-3	0-5	
				" 22	"	34	3	6-7	1-9	2-9	1-3	0-5	
B1	#6	8	36-8	BW23E	#4	25	4	4-0	2'-0	2'-0			
B2	" 4	4	36-9	B4	" 4	15	5	5-4	1-4	2-8			
B3	#4	3	2-4	B5	#4	36	2	11'-4"	2'-7"	2'-8"	0'-5"		
*D1	1"ϕsm.	5	2'-6"										

*D1 = 1" ϕ Smooth bars shall conform to A.S.T.M. designation for A-36 Steel.

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

Note: Maximum Pile Pressure Under:
D.L. + L.L. = 51.3 Tons/Pile

Note: Estimated Pile Length:
Bent No. 1 = 45'-0"
Bent No. 3 = 45'-0"

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

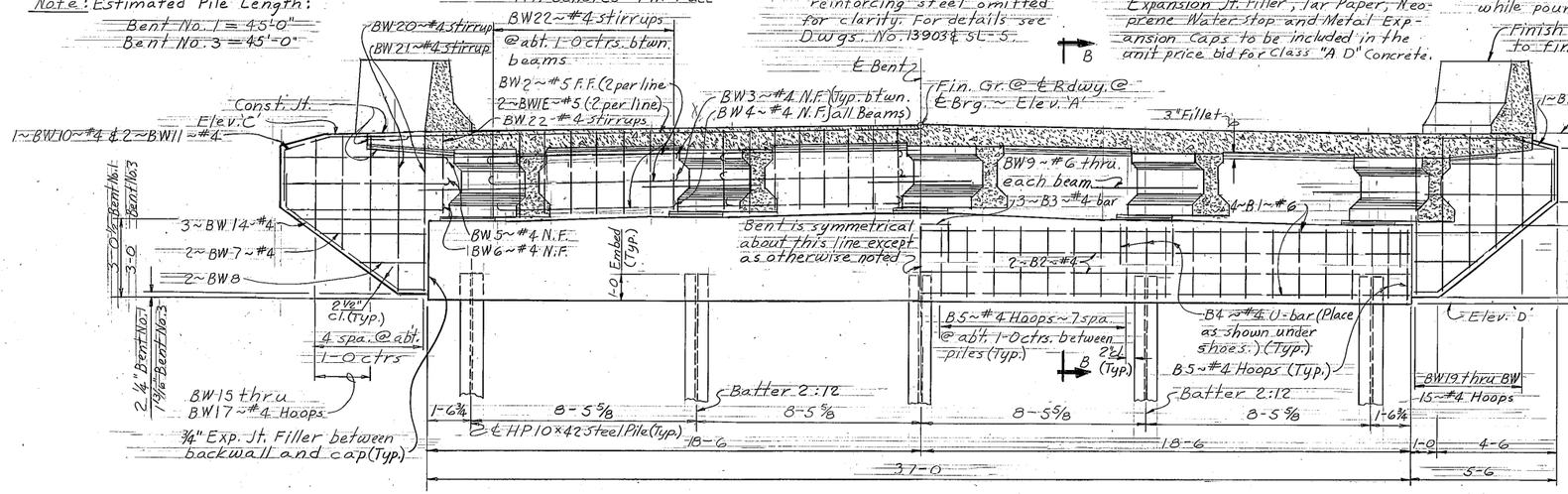
Note: Slab, beam & barrier reinforcing steel omitted for clarity. For details see Dwgs. No. 13903 & SL-5.

Note: Cost of furnishing and placing Expansion Jt. Filler, Tar Paper, Neoprene Water Stop and Metal Expansion Caps to be included in the unit price bid for Class "A D" Concrete.

Note: Expansion Jt. Filler to be securely nailed to concrete & held in accurate position while pouring concrete.

Note: All rebar designated with a suffix 'E' to be Epoxy Coated.

PLAN

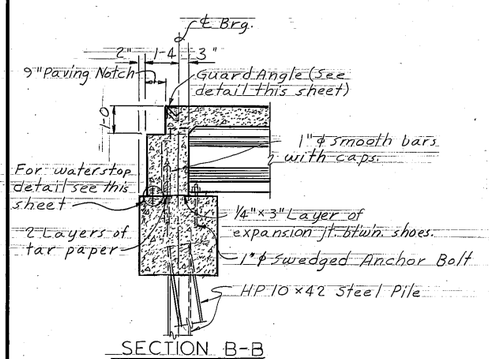


ELEVATION

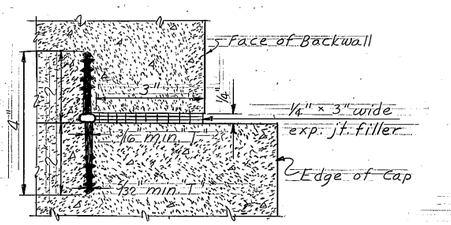
Bent No. 1 (Back on Line)
Bent No. 3 (Ahead on Line)

SECTION A-A

TABLE OF ELEVATIONS		
Elevation	Bent No. 1	Bent No. 3
A	2311.38	2311.20
B	2311.03	2310.89
C	2311.06	2310.85
D	2304.87	2304.70
E	2307.91	2307.70
F	2308.04	2307.85
G	2308.18	2308.01
H	2308.03	2307.87
J	2307.87	2307.73

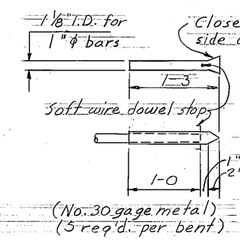


SECTION B-B



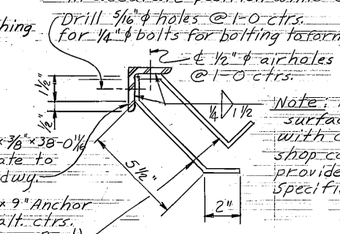
Note: Waterstop to be held in accurate position while concrete is placed.

WATERSTOP DETAIL
Scale: 1/2" = 1"



(No. 30 gage metal)
(5 req'd. per bent)

METAL EXPANSION CAP DETAIL
Scale: 1" = 1'-0"



Note: Paint all guard angle surfaces, not in contact with concrete, with one shop coat only of paint as provided in the Standard Specifications.

Note: Guard Angle may be furnished in two pieces with end anchor bars 6" max. from each end. The Guard Angle, if furnished in two pieces, shall be field welded. Set guard angle 1/8" low and hold in accurate position while concrete is placed.

GUARD ANGLE DETAIL
Scale: 3" = 1'-0"

PLASTIC LEAD USED

DESIGNED	2-28-85	K.F.M.
DRAWN	3-17-86	J.L.P.
CHECKED	6-30-86	S.D.K.
REVISED		
REVISED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER NEGRO COULEE

AT STA. 2390+74.13

FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39

DANIELS COUNTY

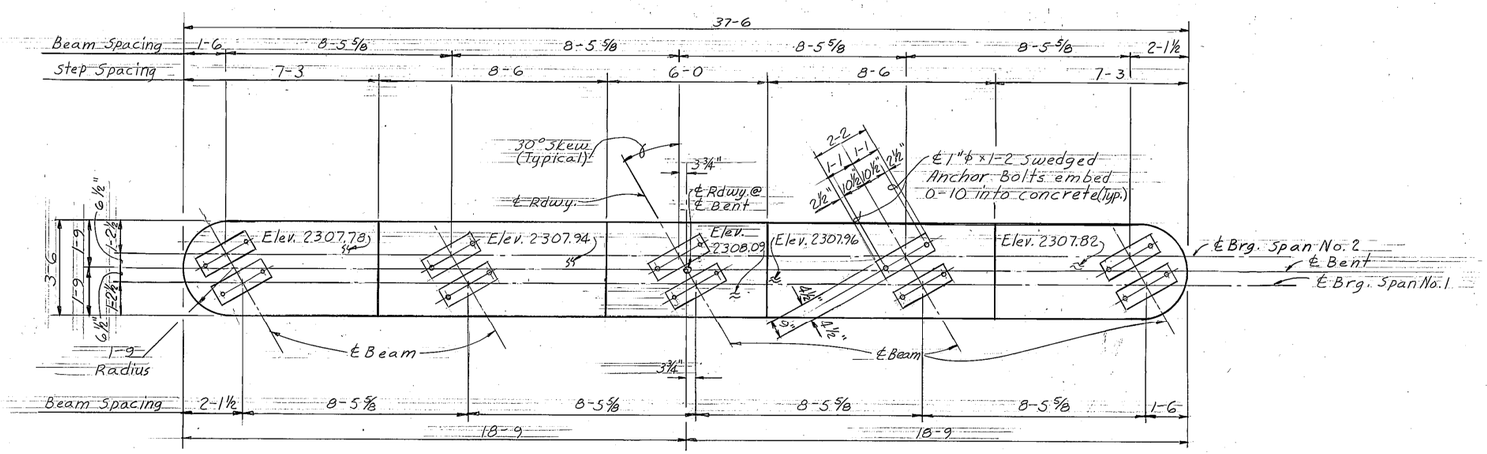
BENTS NO. 1 & NO. 3

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

DRAWING NO. 13945

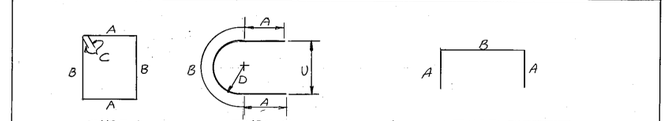
87851

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	
8	MONT.	F-BRF-HES 32-2(6)39	B5	

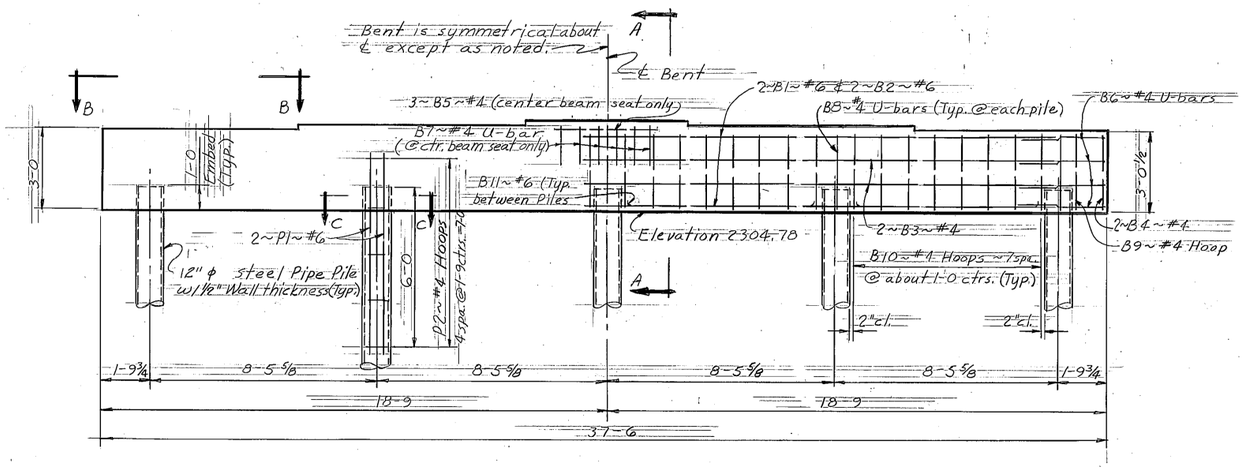


PLAN

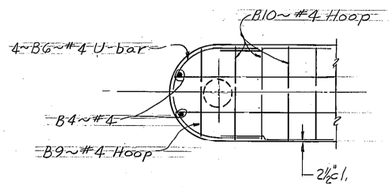
BILL OF REINFORCING STEEL



STRAIGHT BAR				BENT BAR (All dimensions are out to out)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D
B1	#6	4	34-0	B6	#4	8	2	7'-6"	1'-4"	4'-10"	3'-1"	1'-6½"
B2	6	4	36-11	B7	4	6	3	5-10	1-4	3-2		
B3	4	4	34-0	B8	4	5	3	8-6	2-8	3-2		
B4	4	4	2-8	B9	4	2	1	11-10	2-10	2-8	0-5	
B5	4	3	3-9	B10	4	32	1	12-6	3-2	2-8	0-5	
B11	6	4	7-2									
P1	6	20	7-8	P2	#4	25	1	3'-0"	0'-6½"	0'-6½"	0'-5"	



ELEVATION
(Ahead on Line)



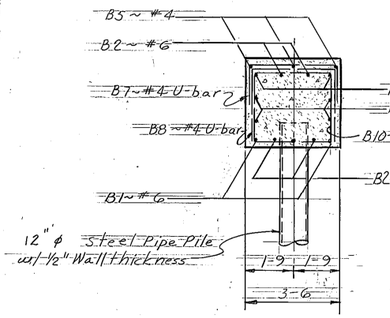
VIEW B-B



SECTION C-C
Scale: 1½" = 1'-0"

Note: Maximum Pile Pressure Under: D.L. + L.L. = 60.6 tons/pile

Note: Estimated Pile Length = 55'-0"



SECTION A-A

Note: Steel Pipe Piles are to be filled from the natural ground line to the elevation of the bottom of the cap with Class "AD" Concrete. The contractor shall wait a minimum of one day before placing bent cap concrete. The cost of the concrete fill in the steel pipe piles shall be included in the Unit Price bid for "Steel Pipe Piles - Drive".

Note: Steel pipe piles are to be painted in accordance with Article 559.08(R) in the Standard Specifications. All costs associated with the painting of the pipe piles are to be included in the unit price bid for "Furnish Steel Pipe Piles".

Note: The allowed variation of direction of the piles for the Intermediate Bents shall be 1/16 in. per foot of pile length. The contractor shall provide adequate templates or other means to hold the exposed length of the pile within this tolerance.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER NEGRO COULEE

AT STA. 2390 + 74.13

FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39

DANIELS COUNTY

BENT NO. 2

Scale: ⅜" = 1'-0"

DRAWING NO. 13946

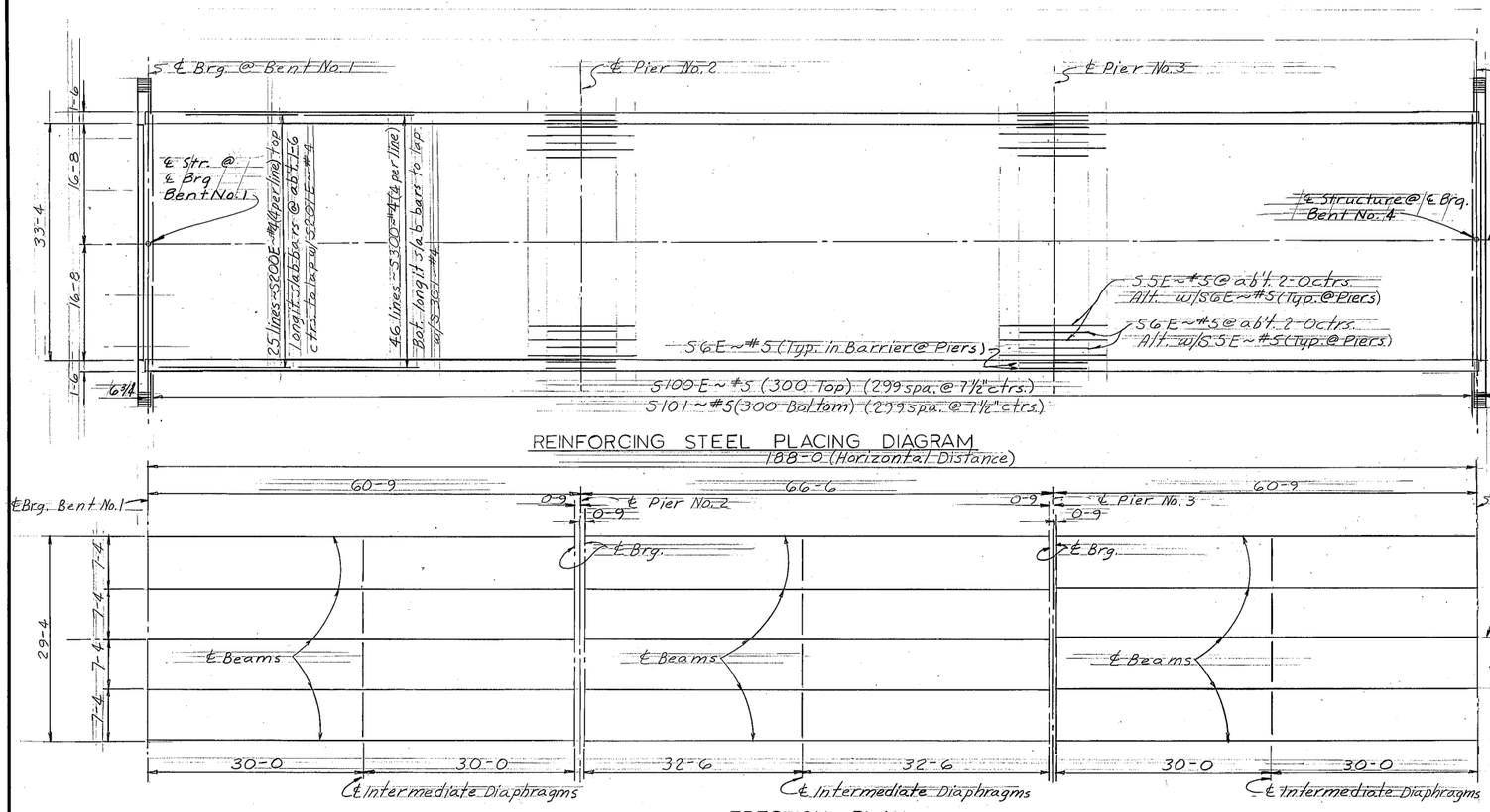
DESIGNED	2-27-86	K.F.M.
DRAWN	3-19-86	J.C.P.
CHECKED	6-30-86	S.D.K.
REVISED		
REVISED		
REVISED		

PLASTIC LEAD USED

K&E HERCULENE®

67851

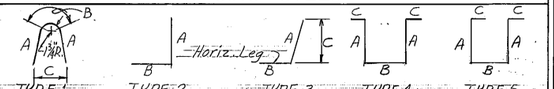
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	B11



REINFORCING STEEL PLACING DIAGRAM
188'-0 (Horizontal Distance)

ERECTION PLAN

BILL OF REINFORCING STEEL



STRAIGHT BARS

Mark	Size	No.	Length
S100E	#5	300	35'-10"
S101	5	300	35'-10"
S200E	4	100	40'-0"
S201E	4	25	34'-1"
S300	4	184	40'-0"
S301	4	46	34'-1"
B100E	4	64	40'-0"
B101E	4	16	33'-6"
S5E	5	36	15'-0"
S6E	5	44	10'-0"
D3	6	32	5'-10"
D5	4	24	5'-10"
D6	6	24	5'-10"
D8	#6	21	4'-6"

BENT BARS (All dimensions are out to out)

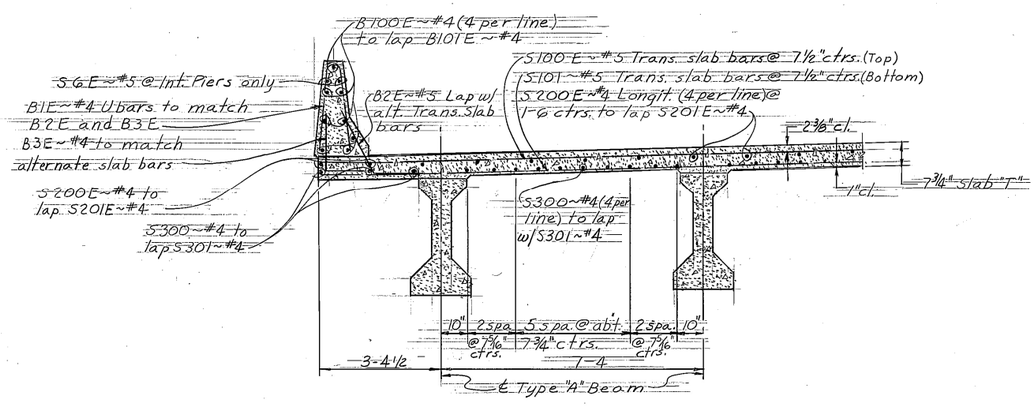
Mark	Size	No.	Type	Length	A	B	C	D	E
B1E	#4	302	1	5'-1"	2'-4	0'-5	0'-9		
B2E	5	302	3	4'-3	2'-6	1'-9	2'-2		
B3E	4	302	2	3'-0	1'-10	1'-2			
D4	4	96	5	4'-11"	1'-9	0'-7	0'-5		
D7	#4	72	4	6'-5"	2'-6	0'-7	0'-5"		

Note: All reinforcing steel designated with a suffix "E" to be Epoxy Coated.

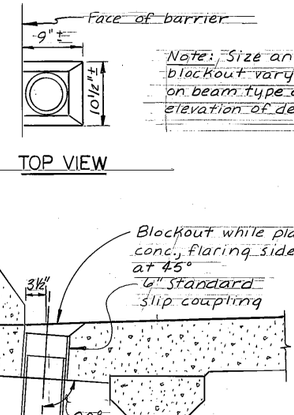
Note: Dead Load deflections symmetrical abt. 0.5 point and do not include dead load of beam.

DEAD LOAD DEFLECTION TABLE (Type "A")

Tenth Point	0.0	0.1	0.2	0.3	0.4	0.5
Span No. 1	0	1/4"	7/16"	5/8"	11/16"	3/4"
Span No. 2	0	5/16"	5/8"	13/16"	15/16"	1"
Span No. 3	0	1/4"	7/16"	5/8"	11/16"	3/4"



TRANSVERSE SECTION THRU SPANS NO. 1, NO. 2 & NO. 3
Scale: 1/2" = 1'-0"



Note: Size and depth of blockout vary depending on beam type and super. elevation of deck.

Note: Joints shall be solvent cemented.

DRAIN DETAILS
Scale: 1" = 1'-0"

PRESTRESSED CONCRETE BEAMS: Prestressed concrete beams shall be fabricated in accordance with Dwg. No. B-A except as modified hereon. Max. f'c (Compressive strength at 28 days) for design shall be 6,000 p.s.i. Design stresses before prestress are as follows:

SPAN LENGTH		60'-0"	65'-0"
Beam D.L. Stresses (p.s.i.)	ft	684	803
	fb	554	650
Total D.L. + L.L. Design Stresses (p.s.i.)	ft	1247	1605
	fb	2773	3171
*Req'd Ultimate Moment Capacity (Ft. Kips)	Mu	2592	2925

*$Mu = 1.3/9 [D.L. + 5/3 (L.L. + I)]$

Rigid Plastic Pipe: The 6" nominal dia. pipe shall have a 6.625" O.D. x .280" min. wall thickness. The pipe shall be poly-vinyl chloride sewer pipe set perpendicular to the bottom of the deck and shall conform to the requirements set forth in the Standard Specifications Section 708.50. The cost of furnishing all materials, equipment, and labor necessary and incidental to the installation of the rigid plastic drains shall be included in the unit price bid for "BD" modified concrete.

DESIGNED	10-18-84	S.M.W.
DRAWN	12-20-85	J.L.P.
CHECKED	8-7-86	R.W.M.
REVISED		
REVISED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER POPLAR RIVER
AT STA. 2473+27.00
FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39
DANIELS COUNTY

ERECTION PLAN
ALTERNATE A-1
Scale: 1" = 10'-0" (Except as Noted)

DRAWING NO. 13952

PERSTIC LEAD USED

MoS HERCULENE®

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	
8	MONT.	F-BRF-HES 32-2(6)39	B7	

188'-0" ℄ Brg. to ℄ Brg. End Bents (Horizontal Distance)

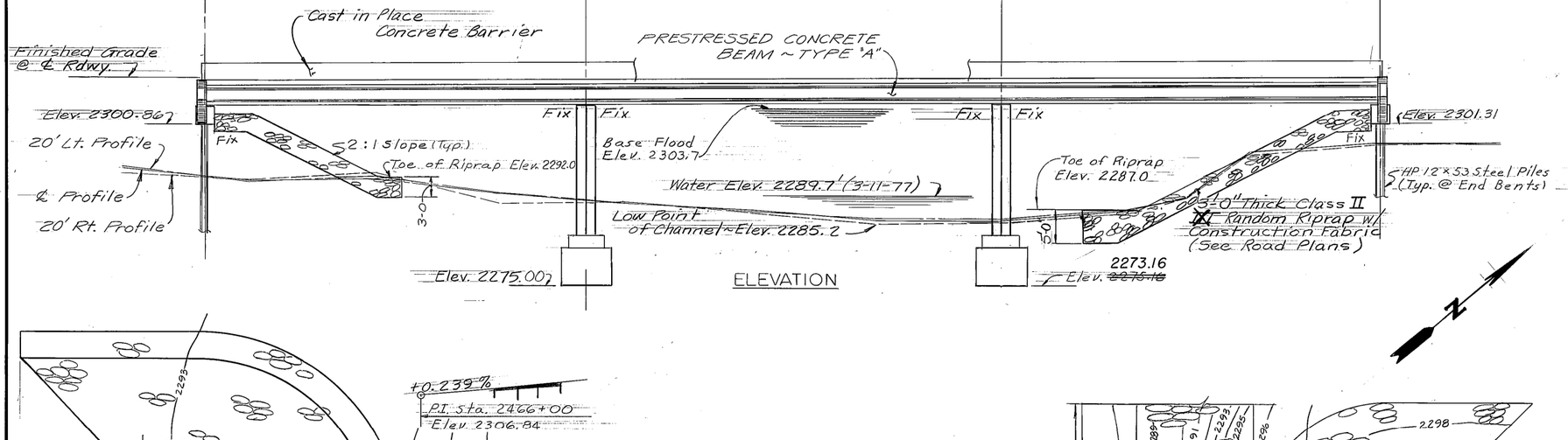
60'-9" ~~66'-6"~~ 63-8 1/4 ~~60'-9"~~ 63-6 7/8

℄ Brg. @ Bent No. 1
Sta. 2472+33.00
Finished Gr. @ ℄ Rdwy.
Elev. 2308.35

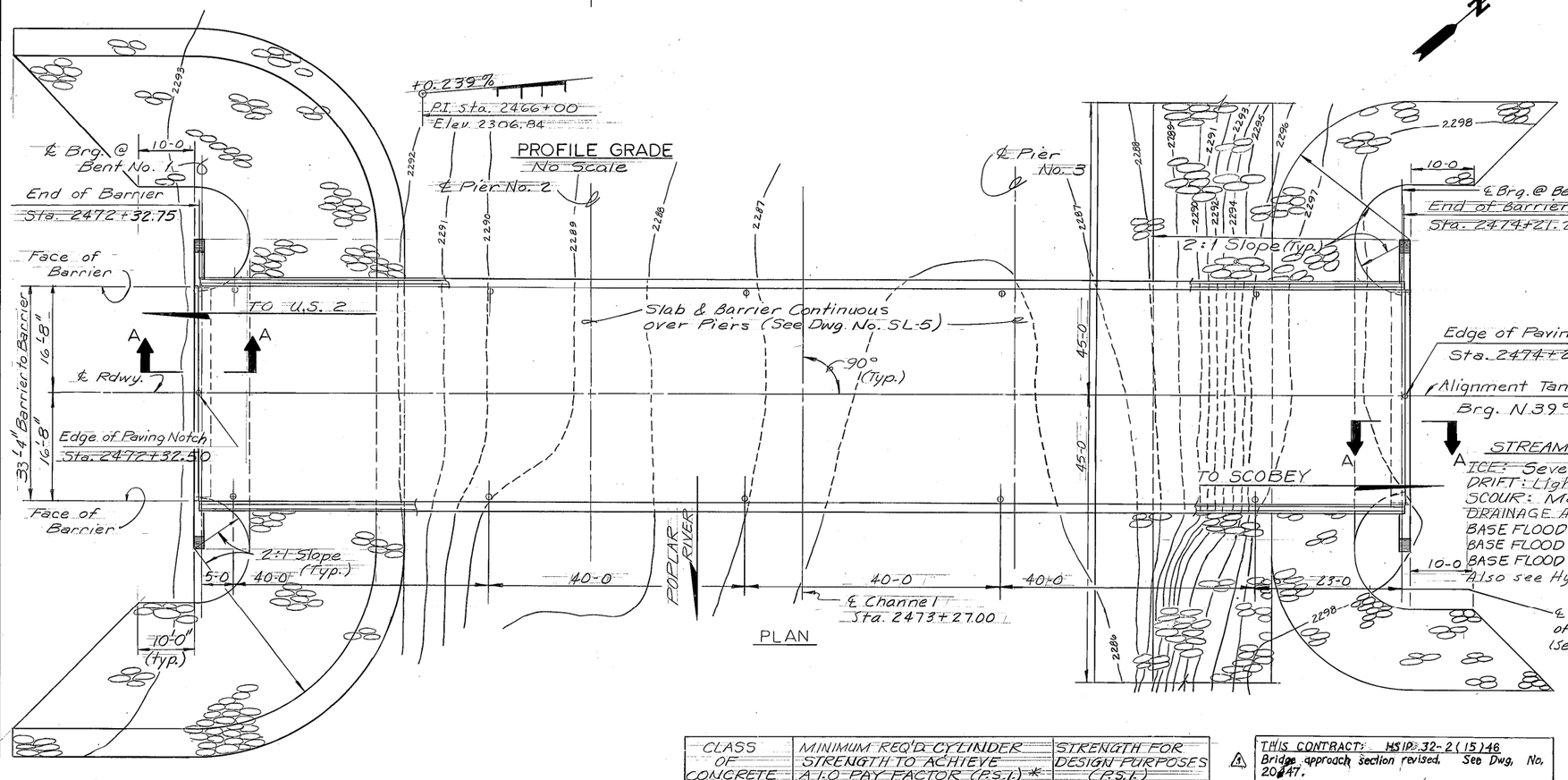
℄ Pier No. 2
Sta. 2472+93.75
Finished Gr. @ ℄ Rdwy.
Elev. 2308.50

℄ Pier No. 3
Sta. 2473+60.25
Finished Gr. @ ℄ Rdwy.
Elev. 2308.66

℄ Brg. @ Bent No. 4
Sta. 2474+21.00
Finished Gr. @ ℄ Rdwy.
Elev. 2308.80



ELEVATION



PLAN

NOTES

FINISHED GRADE : Finished grade of bridge @ ℄ roadway is the same as profile grade shown on Road Plans.

LIVE LOAD : Standard HS20-44 loading.

SPECIFICATIONS : Montana Department of Highways and the Montana Highway Commission Standard Specification for Road and Bridge Construction, 1987 edition, and any amendments thereto, and Special Provisions shall govern unless otherwise noted. Design prepared in accordance with A.A.S.H.T.O. Specifications 1983 edition and any amendments thereto.

CAST IN PLACE CONCRETE : Unless otherwise approved, all concrete in the slab and concrete barriers shall be Class "BD" Modified and all other concrete shall be Class "AD".

STRUCTURAL STEEL : All structural steel shall be measured and paid for on the lump sum basis as set forth in the Standard Specifications. Estimated Wt. = 13.58 Lbs.

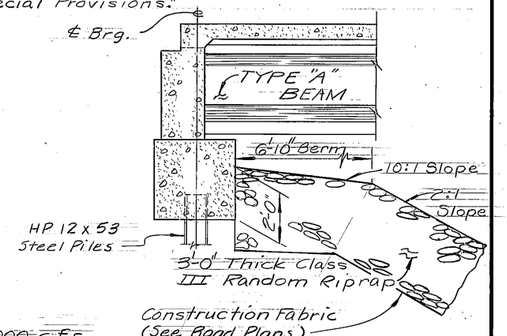
REINFORCING STEEL : All reinforcing steel shall be of the deformed type and shall meet the requirements of A.S.T.M. Specifications A615, Grade 60 (AASHTO. M-31) except for reinforcment in the prestressed concrete beam which may be Grade 40.

UTILITIES : For location of utilities, see appropriate Road Plans sheet.

STRUCTURE EXCAVATION : See "Special Provisions"

TRAFFIC CONTROL PLAN & SEQUENCE OF OPERATIONS : See "Special Provisions."

STREAM DATA
ICE: Severe
DRIFT: Light
SCOUR: Moderate
DRAINAGE AREA : 1584 Sq. Mi.
BASE FLOOD FLOW (100 Yr.) = 34,000 c.f.s.
BASE FLOOD STAGE : 2303.7
BASE FLOOD VELOCITY = 13.8 f.p.s.
Also see Hydraulic Data Summary Sheet



SECTION A-A
Scale : 3/8" = 1'-0"

CLASS OF CONCRETE	MINIMUM REQ'D CYLINDER STRENGTH TO ACHIEVE A.T.O PAY FACTOR (P.S.I.) *	STRENGTH FOR DESIGN PURPOSES (P.S.I.)
"AD"	3400	3000
"BD" Modified	3900	3500

⚠ THIS CONTRACT: HSIP 32-2(15)46
Bridge approach section revised. See Dwg. No. 20247.

"AS BUILT"

DESIGNED	S.D.K.	6/2/82
DRAWN	D.W.C.	10/27/82
CHECKED	R.W.M.	8/5/86
APPROVED	N.H.R.	10/6/86
⚠ REVISED	L.D.C.	7/2/09
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER POPLAR RIVER
AT STA. 2473+27.00
FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39
DANIELS COUNTY

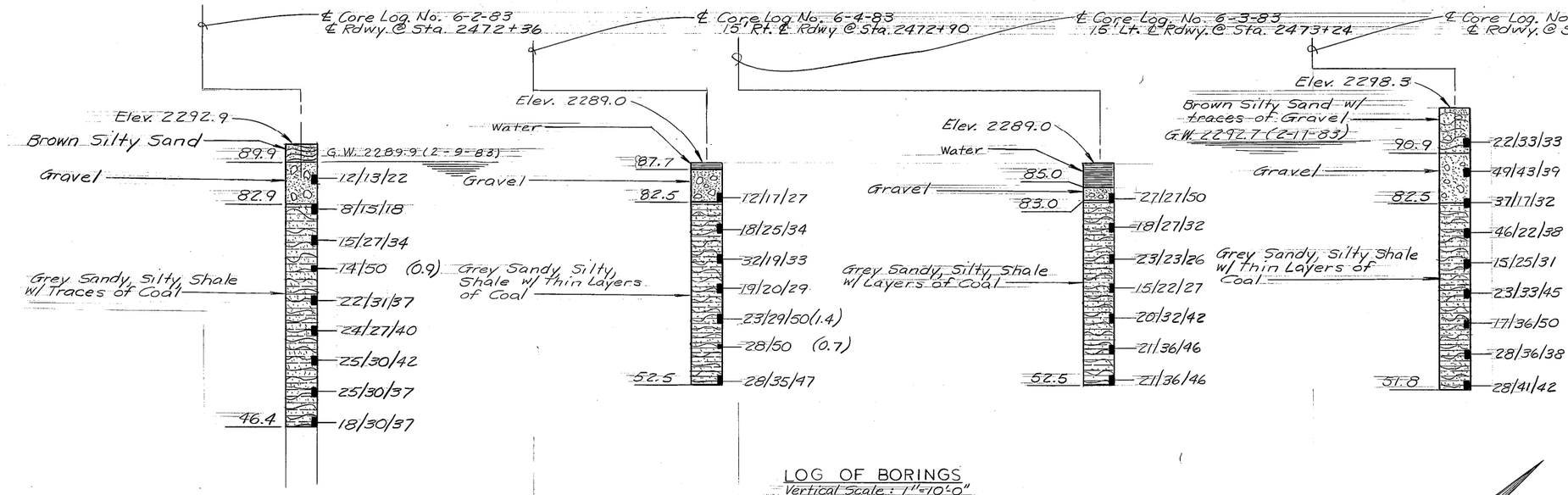
GENERAL LAYOUT
ALTERNATE A-1

Scale : 1" = 10'-0" (Except as shown)
DRAWING NO. 13948

PLASTIC LEAD USED

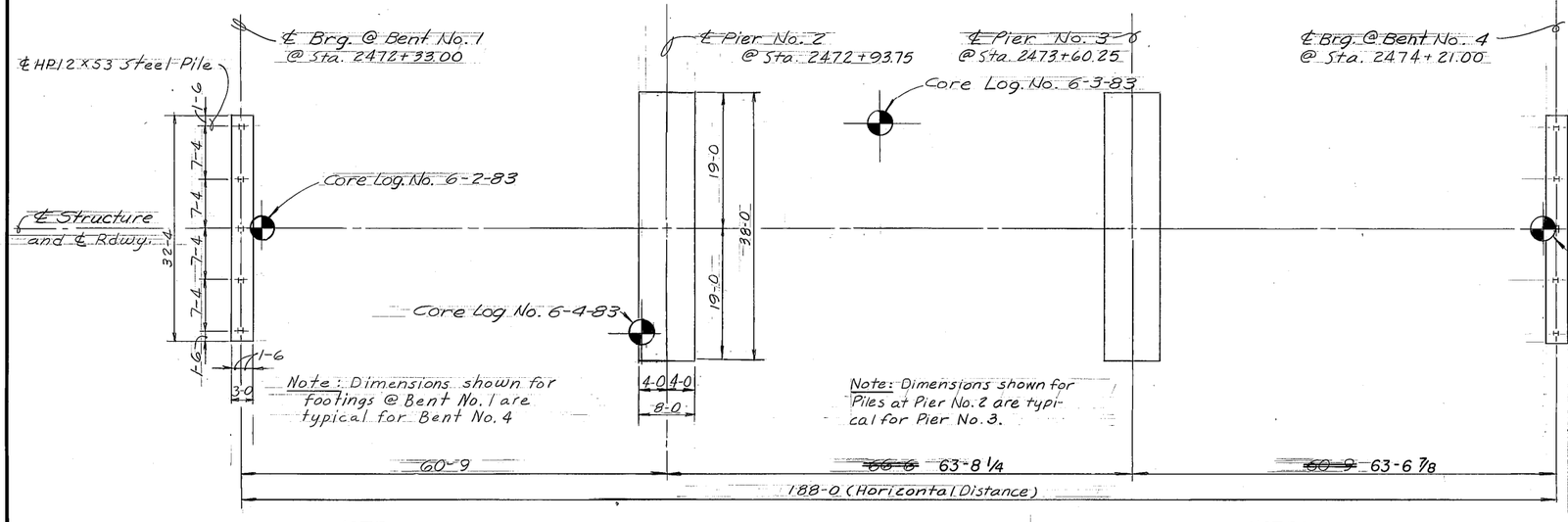
K&E HERCULENE® 4944 FILM

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	
8	MONT.	F-BRF-HES 32-2(6)39	B8	



LOG OF BORINGS
Vertical Scale: 1"=10'-0"

NOTE: See appropriate BR-10A forms in project correspondence file for Log of Materials encountered during excavation.



Note: Dimensions shown for footings @ Bent No. 1 are typical for Bent No. 4

Note: Dimensions shown for Piles at Pier No. 2 are typical for Pier No. 3.

FOOTING PLAN

NOTES

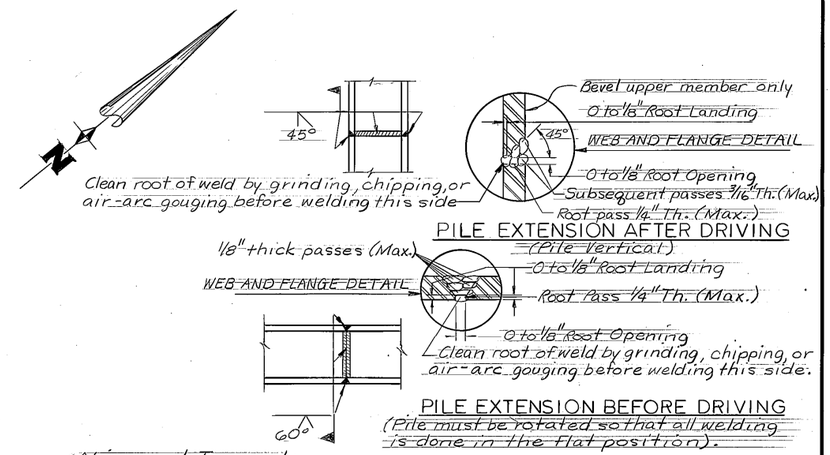
SOILS AND FOUNDATION MATERIALS: Borings were taken by the state of Montana, Department of Highways at the points shown on the Footing Plan.

The State of Montana, Department of Highways, does not assume any responsibility for any variation or misinterpretation of the classes of materials, and adjustment in bid prices will not be made if the materials found do not agree with those shown in the Log of Borings.

NOTES

The series of numbers shown on the Log of Borings indicates the number of blows per 6" penetration for each number of the series of a 2" sample tube which was driven in accordance with the Standard Penetration Test made with a 2" split tube sampler using a 140 pound hammer having a 30" drop. The total penetration of the sampler tube is indicated on the core logs after each series if 6" penetration was not achieved in 50 blows.

FOUNDATION PILES: For Bidding Purposes only, Pile lengths have been estimated as shown on drawings.



PERMISSIBLE WELDED SPLICE DETAILS FOR 12" STEEL PILES
No Scale

Only E7018 or E7028 series electrodes shall be used for pile splices. Max. electrode size shall be 5/16".
Surfaces to be welded shall be smooth, uniform, and free from fins, tears, loose scale, slag, rust, grease, moisture or other material that would prevent proper welding.

PLASTIC LEAD USED

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER POPLAR RIVER
AT STA. 2473+27.00
FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39
DANIELS COUNTY
FOOTING PLAN - ALT. A-1
Scale: 1"=10'-0" except as noted

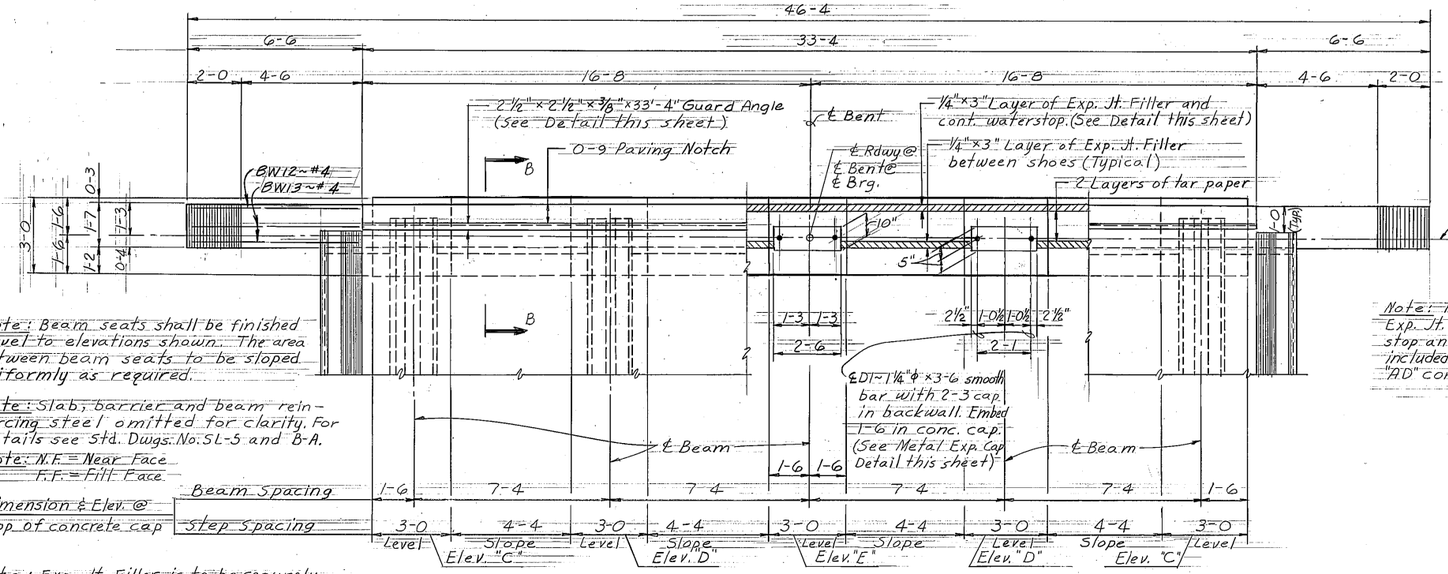
"AS BUILT"

DESIGNED	S.D.K.	6/2/82
DRAWN	D.W.C./J.L.P.	7/14/86
CHECKED	R.W.M.	8/7/86
REVISED		
REVISED		
REVISED		

DRAWING NO. 13949

87851

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	89



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

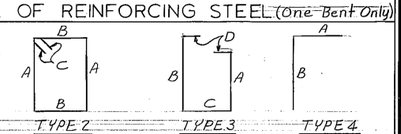
Note: Slab, barrier and beam reinforcing steel omitted for clarity. For Details see Std. Dwgs. No. SL-5 and B-A.

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

Note: Exp. Jt. Filler is to be securely nailed to concrete and held in accurate position while placing concrete.

Note: The cost of furnishing and placing Exp. Jt. Filler, tarpaper, Neoprene waterstop and metal expansion caps to be included in the unit price bid for Class "AD" concrete.

BILL OF REINFORCING STEEL (One Bent Only)



TYPE 1 TYPE 2 TYPE 3 TYPE 4

STRAIGHT BARS			
Mark	Size	No.	Length
B1	#6	8	31'-0"
B2	4	4	32'-0"
BW1F	5	4	18-11
BW2	5	6	23-10
BW3	5	2	22-3
BW4	4	12	5'-8"
BW5	4	4	5'-4"
BW6	4	4	3'-7"
BW7	4	4	2'-2"
BW8	4	2	5'-10"
BW9	4	6	7'-6"
BW10	#6	5	4'-6"
* D1	1¼"ϕ	10	3'-6"

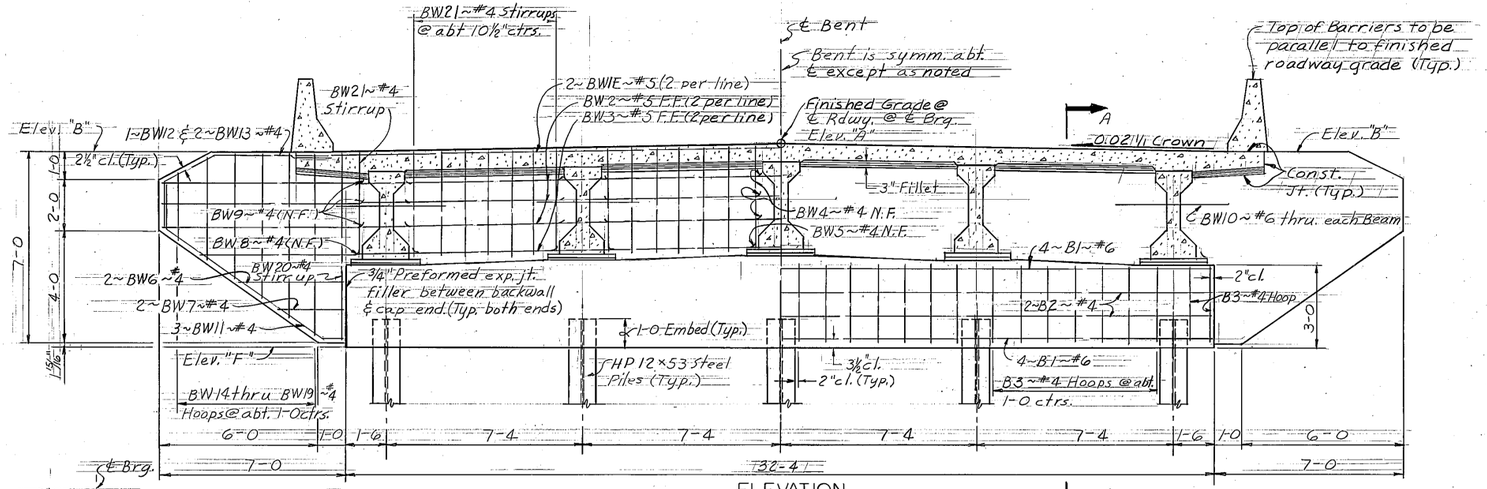
BENT BARS (All dimensions are out to out)									
Mark	Size	No.	Type	Length	A	B	C	D	E
B3	#4	32	2	11'-4	2'-7	2'-8	0'-5"		
BW11	4	6	1	9'-1	1'-4	7'-0	0'-9	1'-1"	0'-5"
BW12		2	1	8'-2	1'-9	2'-1	4'-4	1'-7	1'-11
BW13		4	1	8'-4	1'-9	2'-1	4'-6	1'-7	2'-0"
BW14		2	2	9'-2	2'-11	1'-3	0'-5		
BW15		2	2	11'-4	4'-0				
BW16		2	2	12'-8	4'-8				
BW17		2	2	13'-10	5'-3				
BW18		2	2	15'-2	5'-11				
BW19		2	2	16'-6	6'-7	1'-3	0'-5		
BW20		2	3	14'-5	5'-8	6'-8	1'-3	0'-3	
BW21		30	3	8'-7	2'-9	3'-9	1'-3	0'-5	
BW22E	#4	23	4	4'-0"	2'-0	2'-0			

* D1 ~ 1¼"ϕ smooth bar shall conform to A.S.T.M. stl. designation A-36

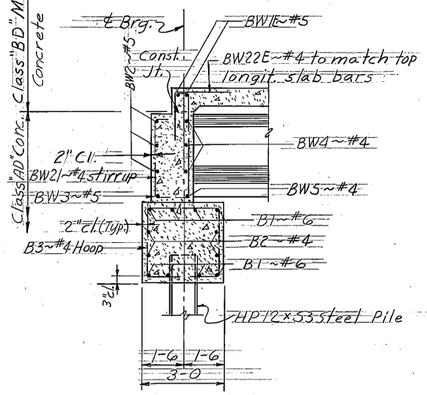
Note: All rebar designated with a suffix 'E' shall be Epoxy Coated.

TABLE OF ELEVATIONS		
Location	Bent No. 1	Bent No. 4
A	2308.35	2308.80
B	2308.02	2308.47
C	2303.86	2304.31
D	2304.01	2304.45
E	2304.15	2304.60
F	2300.86	2301.31

PLAN

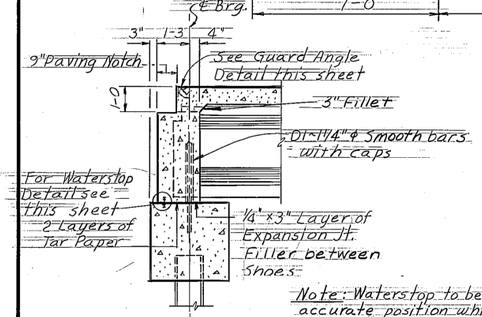


ELEVATION
Bent No. 1 (Back on line)
Bent No. 4 (Ahead on line)

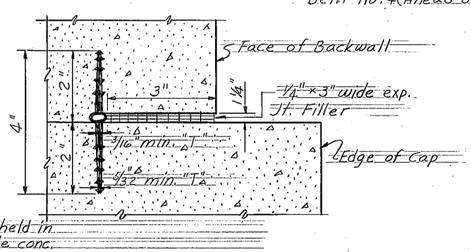


SECTION A-A

Note: Maximum Pile Pressure under D.L. + L.L. = 61.4 Tons/Pile
Estimated Pile Length: Bent No. 1 = 30-0
Bent No. 4 = 30-0

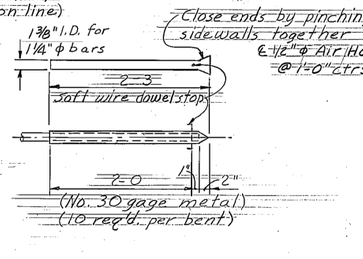


SECTION B-B

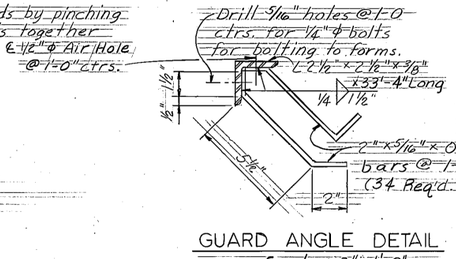


Note: Waterstop to be held in accurate position while conc. is placed.

WATERSTOP DETAIL
Scale: ½"=1"



METAL EXPANSION CAP DETAIL
Scale: 1"=1'-0"



GUARD ANGLE DETAIL
Scale: 3"=1'-0"

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

Note: Set Guard Angle ½" below concrete surface.

DESIGNED	8-9-83	S.M.W.
DRAWN	10-30-85	J.L.P.
CHECKED	8-12-86	R.W.M.
REVISED		
REVISED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER POPLAR RIVER
AT STA. 2473+27.00
FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39
DANIELS COUNTY
BENTS NO. 1 & NO. 4
ALTERNATE A-1

Scale: ⅜"=1'-0" (Except as Noted)

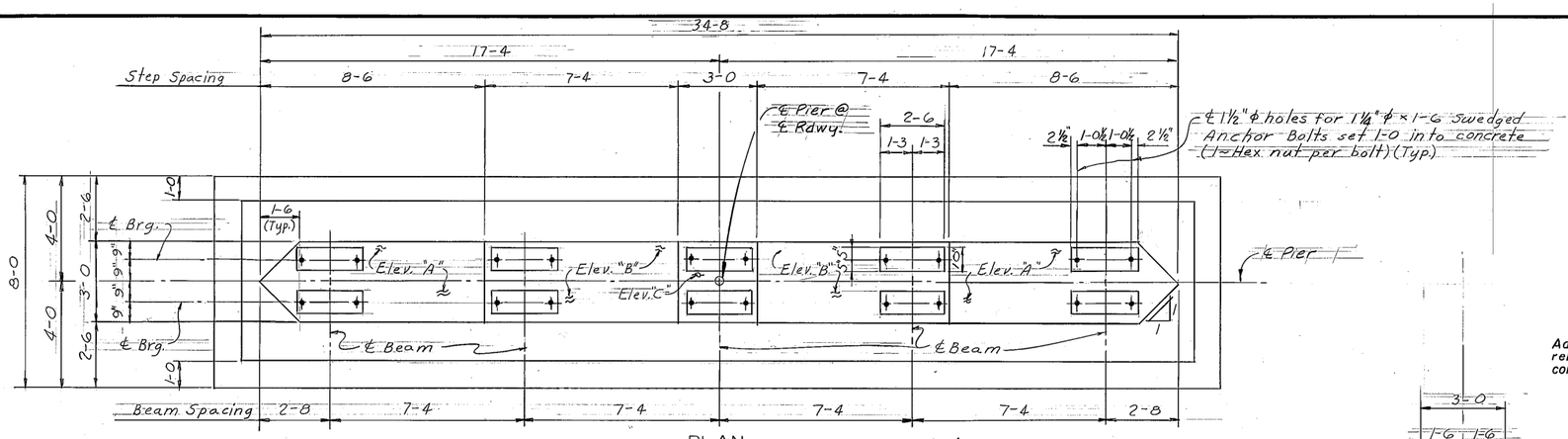
DRAWING NO. 13950

PLASTIC LEAD USED

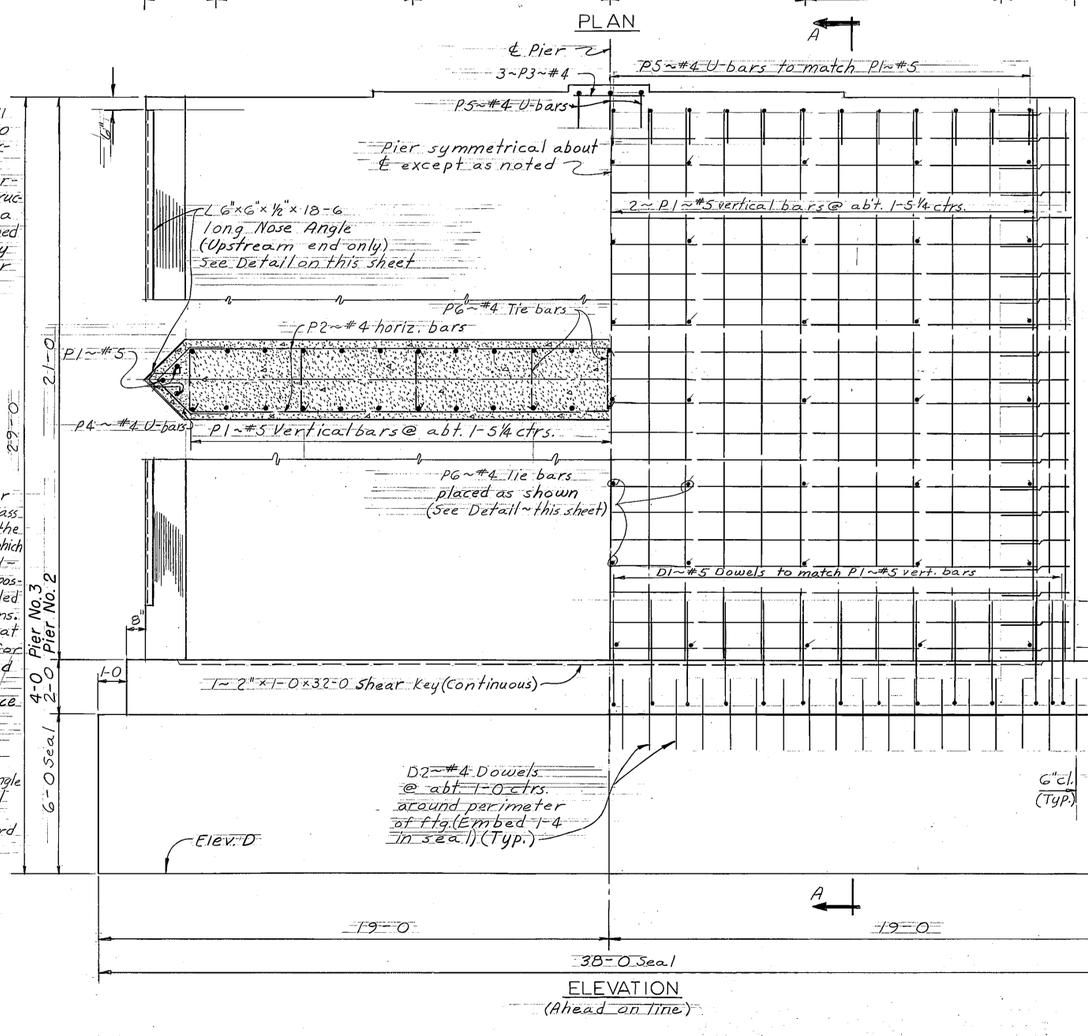
K&E HERCULENE®

87851

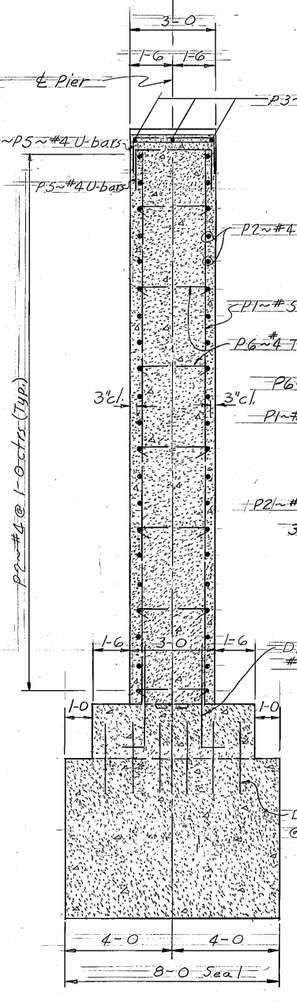
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
8	MONT.	F-BRF-HES 32-2(6)39	810



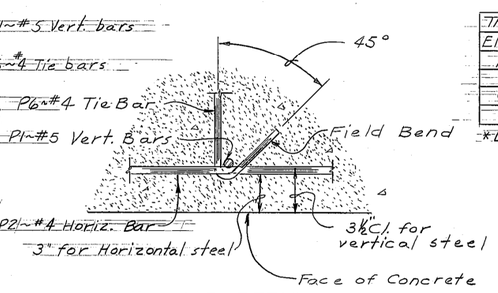
PLAN



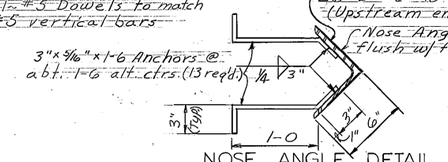
ELEVATION
(Ahead on line)



SECTION A-A



TIE BAR DETAIL
Scale: None



NOSE ANGLE DETAIL
Scale: 1½"=1-0

BILL OF REINFORCING STEEL (ONE PIER ONLY)



STRAIGHT BARS				Bent Bars (All dimensions are out to out)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D	E
P1	#5	52	20-9"	P4	#4	42	4	6-2"	1-4	1-9	2-6		
P2	4	42	31-4	P5	4	26	1	5-2	1-4	2-6			
P3	4	3	2-8	P6	4	63	3	4-2	3-8	0-6			
D2	#4	78	2'-8"	D1	#5	52	2	4-8"	3-10	0-10			
P1	5	52	4-2	P4	4	4	4	6-2					
P2	4	4	31-4	P6	4	9	3	4-2					

Additional rebar during construction (+ +)

Note: Maximum Footing Pressure Under:
(D.L. + E. + B. + S.F. + W. + Ice) = 4.0 / 1.5 = 2.7 T.S.F.

TABLE OF ELEVATIONS		
Elev.	Bent No. 2	Bent No. 3
A	*2304.00	*2304.16
B	2304.15	2304.31
C	2304.30	2304.46
D	2275.00	~~2275.16~~

*Low Beam Seat 2273.16

NOTE:
PIER SHAFT: Shaft of pier shall be poured in not more than two continuous pours. Other construction joints shall be made as noted on the plans or as determined by the Engineer. Construction joints shall be placed on a horizontal plane, left unfinished and provided with a shear key the same size as the shear key at the junction of the footing and pier shaft.

NOTE:
SEAL CONCRETE: The contractor will be permitted to deposit Class "AS" concrete in that portion of the pier footings shown as seal in which case it shall be placed in accordance with the requirements for Depositing Concrete Under Water" as called for in the Standard Specifications. Concrete placed outside of the neat lines shown on the plans will be for the contractor's convenience and all costs connected therewith shall be included in the unit price bid for "Seal Concrete".

NOTE:
PIER NOSE ANGLE: Pier nose angle shall be paid for as structural steel and shall be painted in accordance with the standard Specifications.

PLASTIC LEAD USED

K&E HERCULENE® DRAFTING FILM

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER POPLAR RIVER
AT STA. 2473+27.00
FEDERAL AID PROJECT NO. F-BRF-HES 32-2(6)39
DANIELS COUNTY
PIERS NO. 2 & NO. 3
ALTERNATE A-1
Scale: 3/8"=1-0 (Except as noted)
DRAWING NO. 13951

"AS BUILT"

DESIGNED	6-24-86	K.F.M.
DRAWN	7-4-86	J.L.P.
CHECKED	8-8-86	R.W.M.
REVISED		
REVISED		
REVISED		

1986 13450 { Br. over Gallatin River DWG NO 13768 BRF 89-4 (4)28