

STATE OF MONTANA

DEPARTMENT OF HIGHWAYS

BRIDGE PLANS & QUANTITIES

FEDERAL AID PROJECT NO. F 1-1(18)14 P.E.
RTF-BRF 1-1(3)14 CONST.

TROY-LIBBY WEST SECTION

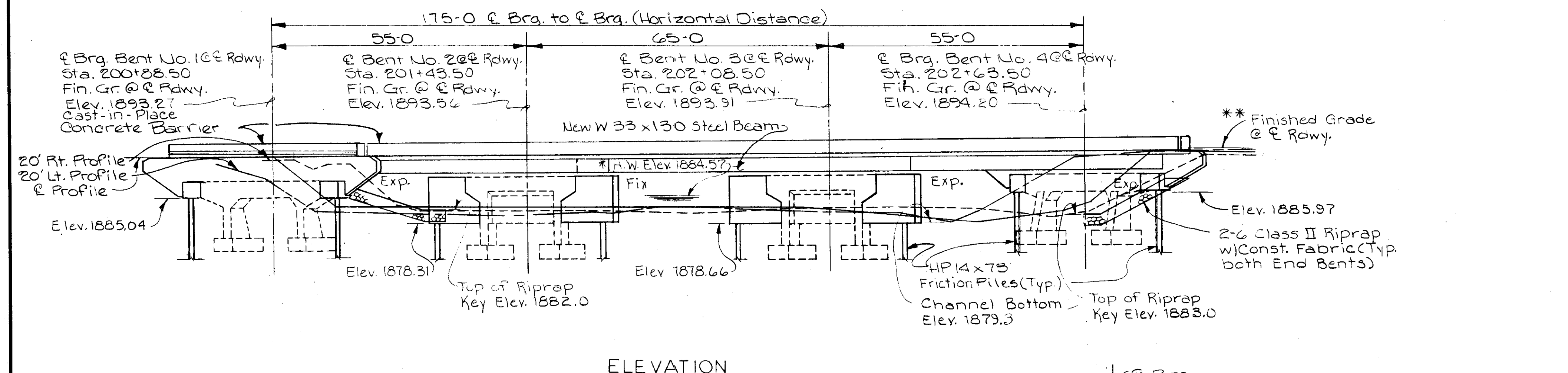
LINCOLN COUNTY

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE	SHEET NO.	DWG. NO.	TITLE
B2	14219	GENERAL LAYOUT AT STA. 161+89.25	BI2	14229	BENTS NO. 2 & NO. 3
B3	14220	FOOTING PLAN	BI3	14230	ERECTION PLAN
B4	14221	BENT NO. 1 & NO. 3 PHASE I	BI4	14231	GIRDER DETAILS
B5	14222	BENT NO. 1 & NO. 3 PHASE II	BI5	14232	END DIAPHRAGM DETAILS
B6	14223	BENT NO. 2	BI6	14233	INTERMEDIATE DIAPHRAGM DETAILS
B7	14224	ERECTION PLAN	BI7	14234	SHOE DETAILS
B8	14225	PEDESTRIAN RAIL & HANDRAIL DETAILS	BI8	14235	EXP. JOINT & END BARRIER DETAILS
B9	14226	GENERAL LAYOUT AT STA. 201+76.00	BI9	B-4 (REVISED 4-9-79)	STANDARD PRESTRESSED CONCRETE BEAM TYPE IV
BI0	14227	FOOTING PLAN & LOG OF BORINGS	B20	SL-5 (REVISED (6-19-81)	STANDARD SLAB, BARRIER & DIAPHRAGM DETAILS
BI1	14228	BENTS NO. 1 & NO. 4	B21-B26		DETAILS OF EXISTING LAKE CREEK STRUCTURE (FOR REFERENCE ONLY)

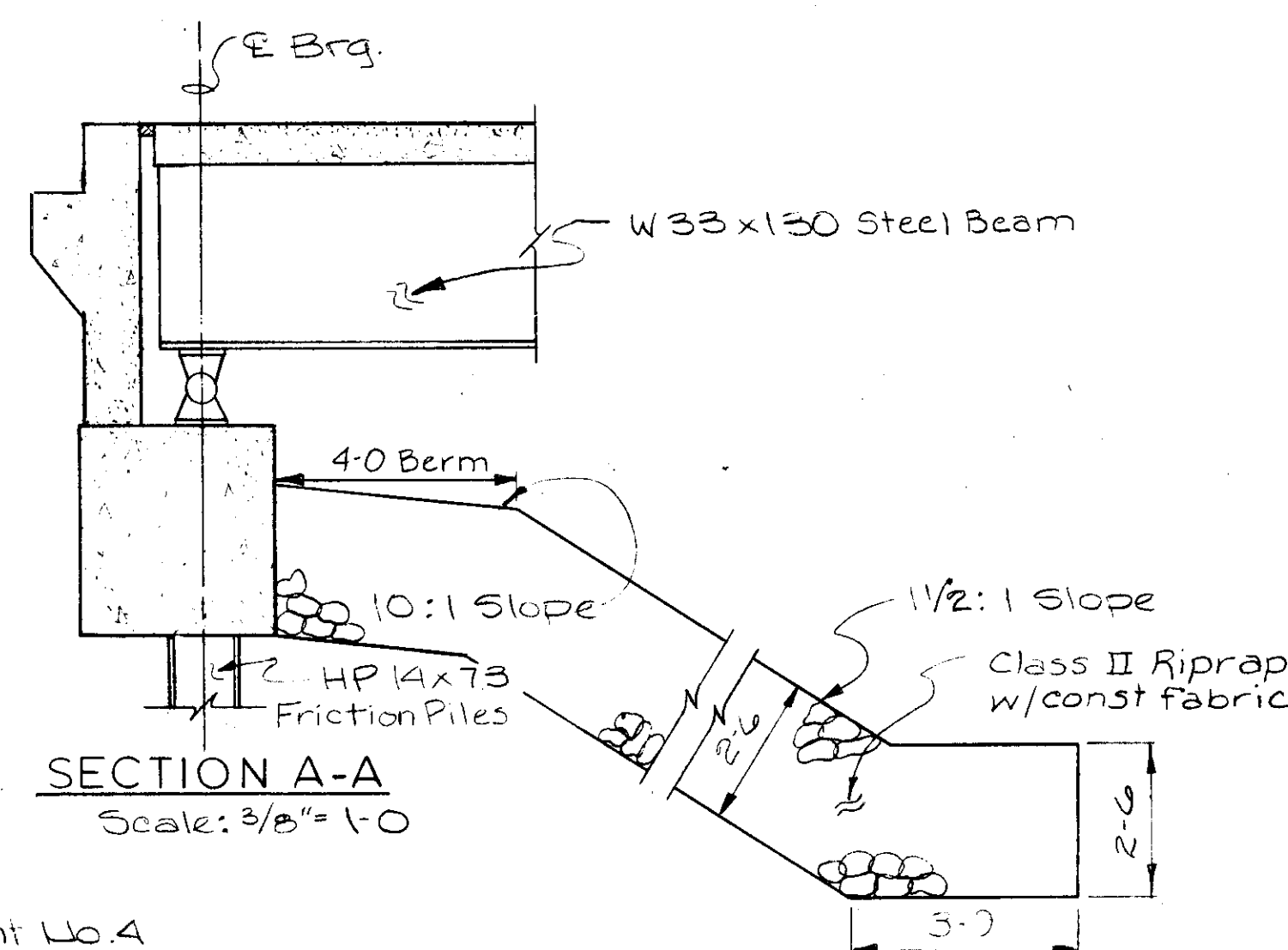
ESTIMATED BRIDGE PLAN QUANTITIES																						
LOCATION		LENGTH IN FEET	STRUCTURE EXCAVATION TYPE I(CU. YDS.)	STRUCTURAL STEEL (LUMP SUM)	PRESTRESSED CONC. BEAMS-TYPE IV (LIN. FT.)	HP 14X73 STEEL PILES (LIN. FT.)		REINFORCING STEEL			CLASS "AD" CONC.(CU. YDS.)		CLASS "BD MODIFIED" CONCRETE (CU. YDS.)	STEEL PIPE PILES 16"ØX1/2"THICK (LIN. FT.)		PED. RAIL (LIN. FT.)	HAND RAIL (LIN. FT.)	REMOVE DECK (L. SUM)	REVISE STRUCT. (L. SUM)	PAINT STRUCT. (L. SUM)	JT. SEALS POLYMER FOAM(LIN. FT.)	REMOVE STRUCT. (L. SUM)
						FURNISH	DRIVE	PH I (LBS.)	PH II(LBS.)	(LBS.)	PH I	PH II		FURNISH	DRIVE							
STRUCTURE AT STA. 161+89.25	BENT NO.1		25	.011		210	204	2574	154	516	35.5	2.6	1.6									
	PIER NO. 2								2448			18.8			450	400						
	BENT NO. 3		25			210	204	2574	154	516	35.5	2.6	1.6								1.0	
	SUPERSTRUCTURE	167.5		830					65794			261.4			164.67	164.67						
	SUBTOTAL	167.5	50	.011	830	420	408	7596	308	66826	89.8	5.2	264.6	450	400	164.67	164.67				1.0	
STRUCTURE AT STA. 201+76.00	BENT NO.1		15	.989		40	38	2087		358	24.3		.5									
	BENT NO. 2		15			102	87	1182			22.2											
	BENT NO. 3		20			102	87	1182			22.1											
	BENT NO. 4		15			44	42	2087		358	24.3		.5									
	SUPERSTRUCTURE	175.0					421		53987	8.2		199.1										
	SUBTOTAL	175.0	65	.989	288	254	6959		54703	101.1		200.1			1.0	1.0	1.0	116.0				
	TOTAL	342.5	115	1.0	830	708	662	14555	308	121529	190.9	5.2	464.7	450	400	164.67	164.67	1.0	1.0	1.0	116.0	

*Phase II applies to the Wingwall of the structure at Sta. 161+89.25
~See Dwg. No. 14222.

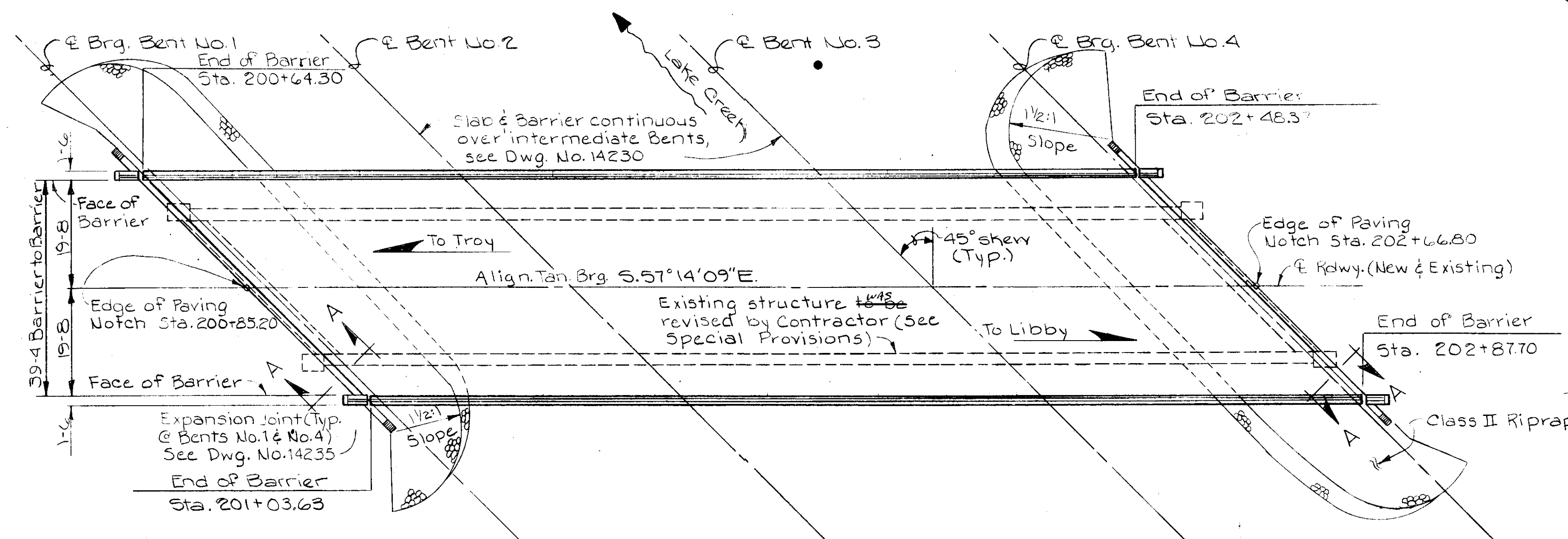


ELEVATION

* **STREAM DATA:**
ICE: Light
DRIFT: Medium
SCOUR: Light
* Stream Data was taken from original General Layout Dwg. No. 1786



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



PLAN

Note:
Dash lines indicate existing structure.
Solid lines indicate new structure.

NOTES
** **FINISHED GRADE:** Finished grade of bridge at E Roadway is .04' higher than Profile Grade shown on Road Plans. See "Special Provisions."
LIVE LOAD: Standard HS 20-44 loading.

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

REINFORCING STEEL: All reinforcing steel shall be of the deformed type and shall meet the requirements of ASTM Specifications A615, Grade 60 (AASHTO M-31).

CAST IN PLACE CONCRETE: Unless otherwise approved, all concrete in the slab and concrete barriers shall be Class "B0 Modified" and all other concrete shall be class "B0".

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

STRUCTURAL STEEL: All structural steel, shall be measured and paid for on the lump sum basis as set forth in the Standard Specifications. For Painting - see "Special Provisions".
Estimated Weight: 59254 lbs.

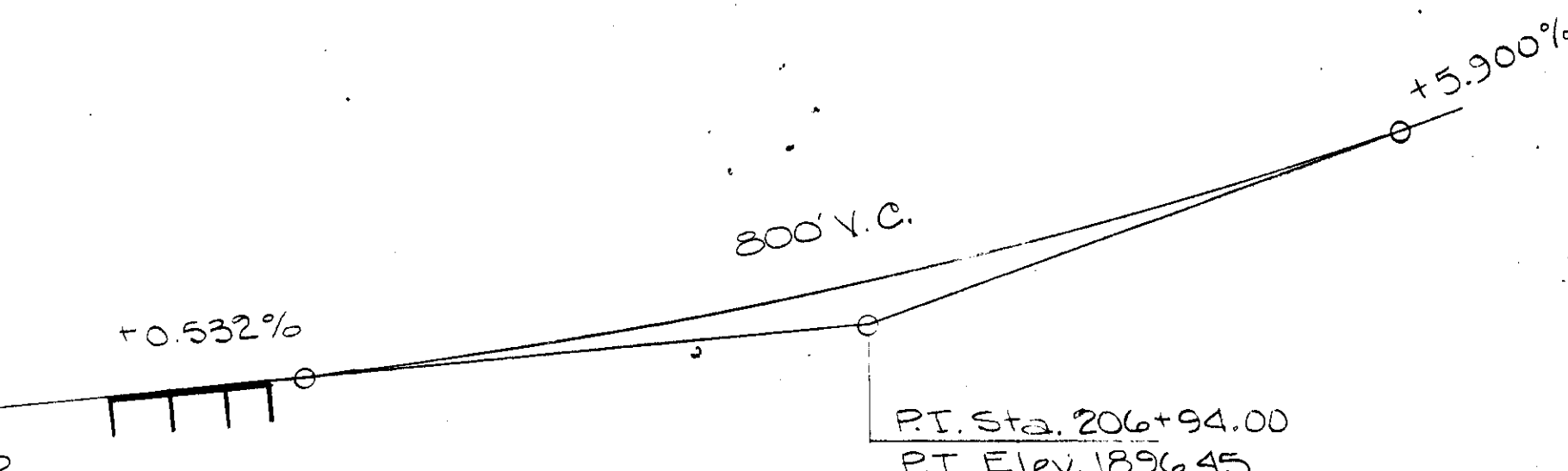
SPECIFICATIONS: Montana Department of Highways & Montana Highway Commission Standard Specifications for Road & Bridge Construction, 1987 Edition, & any amendments thereto, and Special Provisions shall govern unless otherwise noted. Design prepared in accordance with A.A.S.H.T.O. Specifications, 1983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

STRUCTURE EXCAVATION: Structure Excavation shall be measured from berm elevation.

RIPRAP: Riprap under the existing structure shall be placed while the existing slab is removed and prior to painting of the existing structural steel. Any damage caused by placing this riprap shall be repaired at the contractors expense.

DIMENSIONS: In cases the dimensions of the existing structure were not as shown on these drawings, construction may be varied to match the existing conditions. Any such variances shall be approved by the engineer. The contractor shall verify all dimensions of the existing structure in the field.

ELEVATIONS: BRIDGE DESIGNED FROM DIFFERENT ELEVATION DATUM THAN ROADWAY. LOWERED ALL ELEVATIONS 0.44' TO MATCH ROADWAY.



PROFILE GRADE
No Scale

**STATE OF MONTANA
DEPARTMENT OF HIGHWAYS**

BRIDGE OVER LAKE CREEK
STA. 201+76.00

FEDERAL AID PROJECT NO. RTF-BRF 1-1(31)14

LINCOLN COUNTY

GENERAL LAYOUT

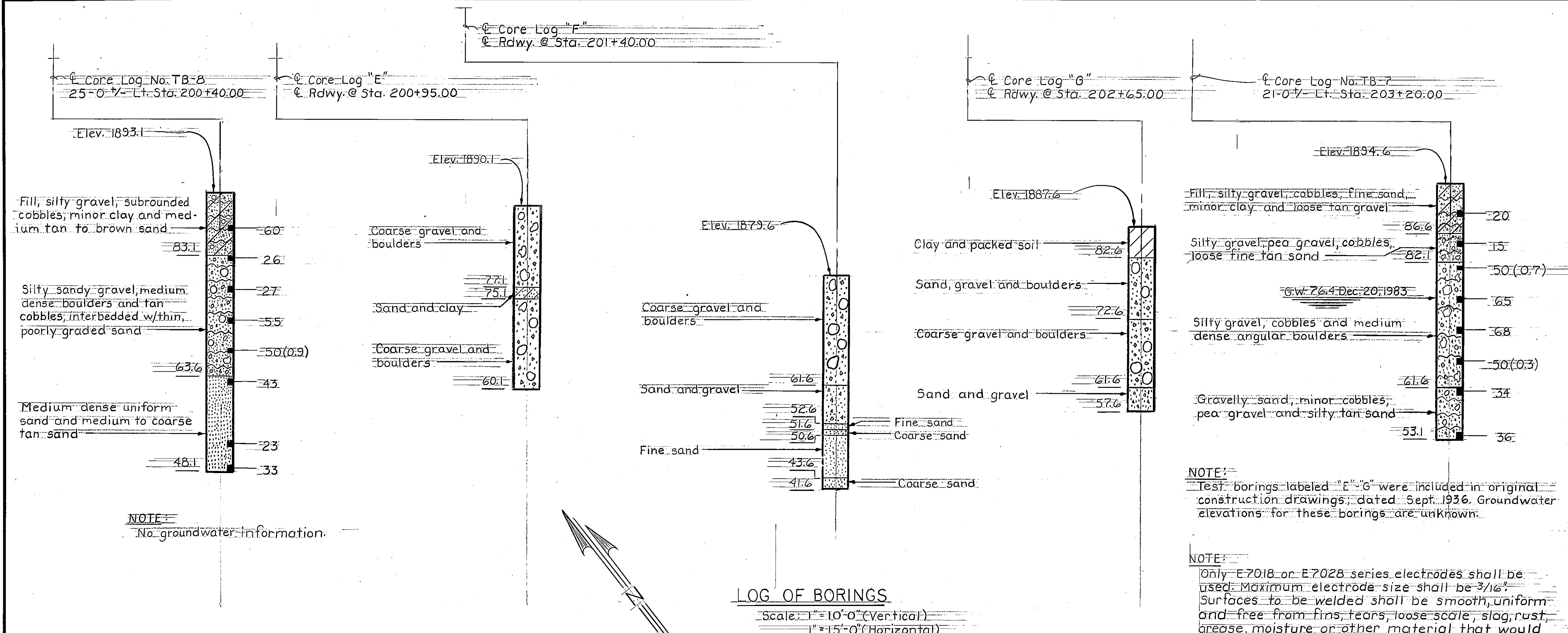
Scale: 1" = 15'-0" unless otherwise noted

DESIGNED	7-24-85	C.O.F.
DRAWN	8-19-85	T.L.M.
CHECKED	7-6-88	K.F.M.
APPROVED	7-22-88	J.C.H.
REVISED		
REVISED		

DRAWING NO. 14226

CORRECTED BY 2/8 6-27-92

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	RTF-BRF-1-(3)14	B10	

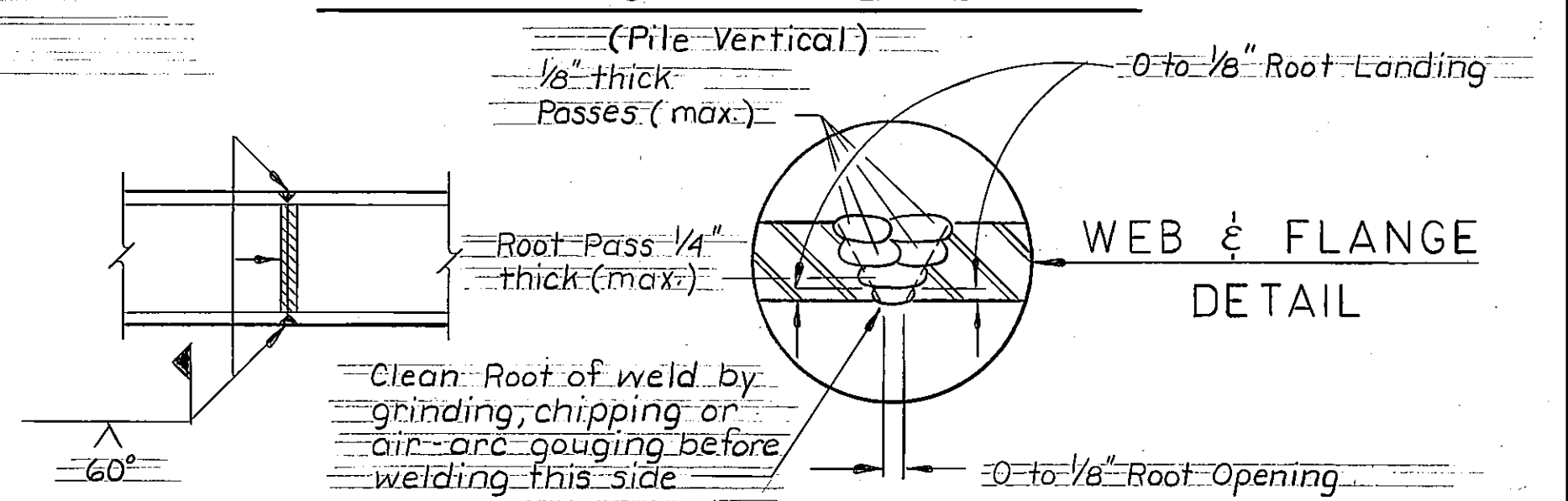
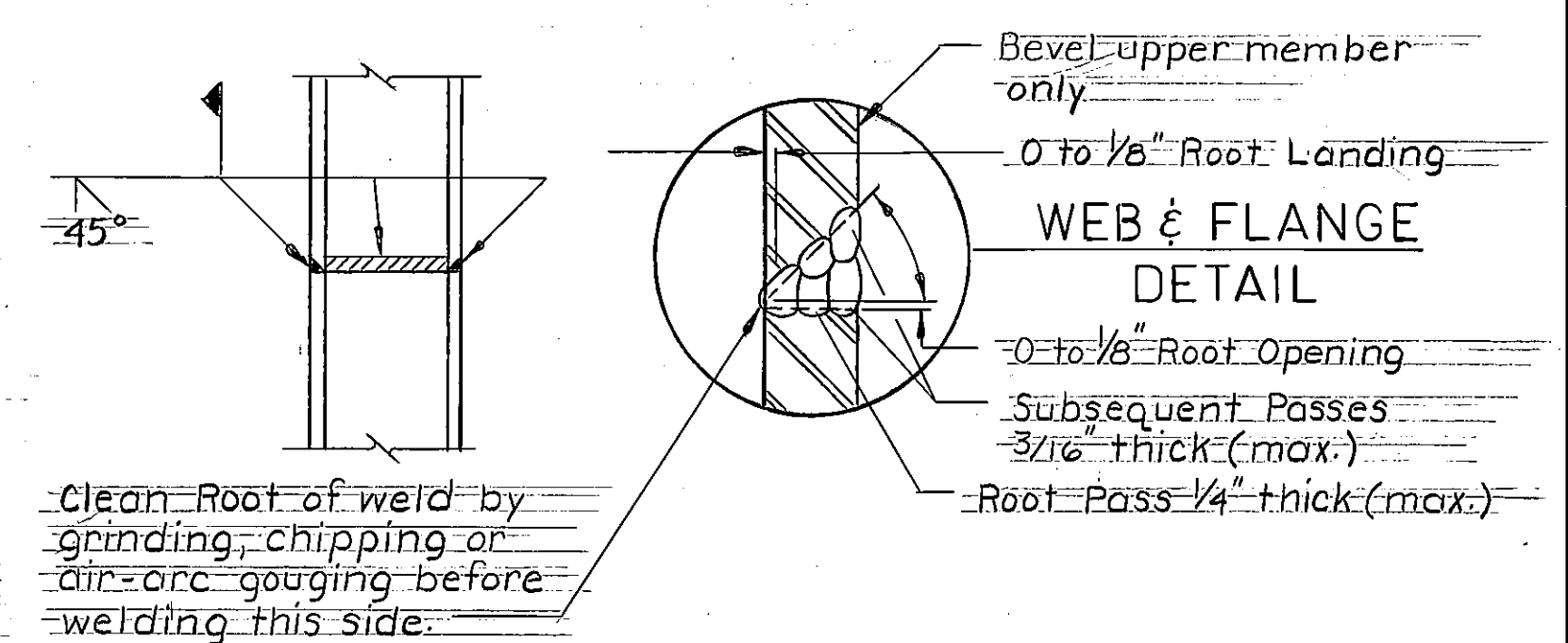


NOTES:

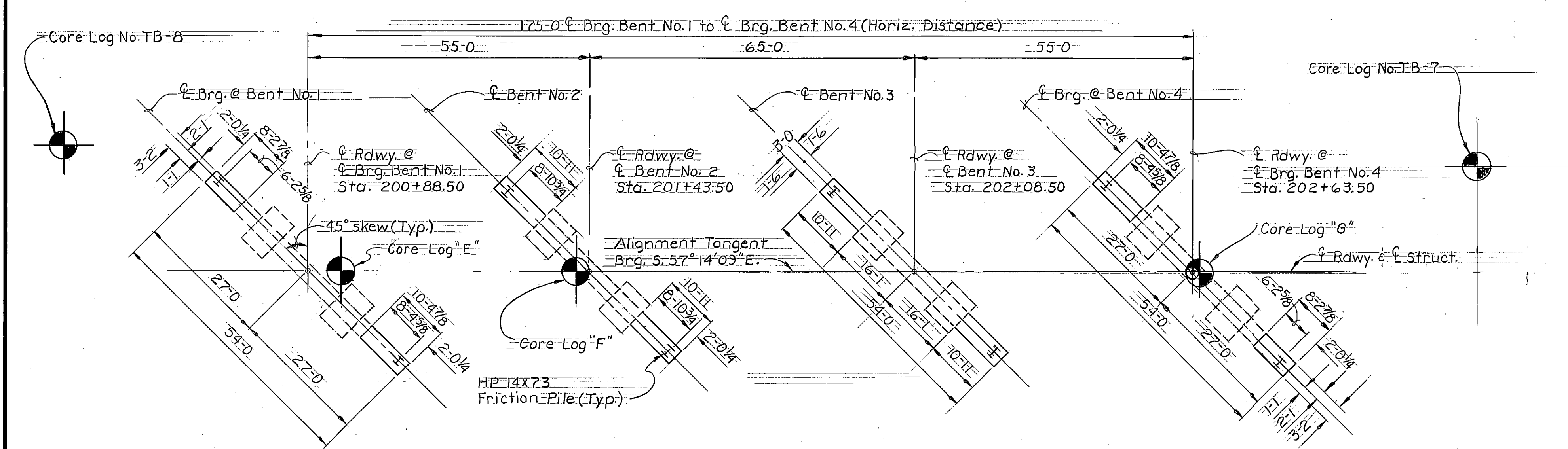
SOILS AND FOUNDATION MATERIALS: Borings were taken by Budinger and Associates at the points shown on the Footing Plan.

The number shown on the Log of Borings indicates the combined number of blows for the last two 6" penetrations 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 and Budinger and Associates, 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.



PERMISSIBLE WELDED SPLICE DETAILS FOR HP 14x73 STEEL PILES
No Scale



NOTE:
Dimensions shown for Bents Nos. 2 & 3 are typical.

**STATE OF MONTANA
DEPARTMENT OF HIGHWAYS**

**BRIDGE OVER LAKE CREEK
AT STA. 201+76.00**

FEDERAL AID PROJECT NO. RTF-BRF-1-(3)14

LINCOLN COUNTY

FOOTING PLAN & LOG OF BORINGS
Scale: As Noted

DESIGNED	8-14-85	T.G.S.
DRAWN	7-6-88	K.F.M.
CHECKED		
REVIS		
REVIS		
REVIS		

DRAWING NO. 14227

The figure shows five types of bent bars with their dimensions and tables of standard sizes. Each type is illustrated with a diagram showing the bar's profile and dimensions.

TYPE 1: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TYPE 2: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TYPE 3: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TYPE 4: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TYPE 5: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TYPE 6: A bent bar with dimensions A, B, C, D, E, and F. The diagram shows a bar with a bend at angle C, with dimensions A, B, C, D, E, and F labeled.

TABLE 1: STRAIGHT BARS

Mark	Size	No.	Length
BW1E	#4	4	34'-0"
BW2	4	4	35'-11"
BW3	2	2	35'-5"
BW4	2	2	33'-8"
BW5	4	4	4'-0"
BW6	4	4	2'-2"
BW7	5	4	36'-2"
BW8	5	2	35'-7"
BW9	5	2	33'-10"
BW12	4	53	4'-2"
BW13	5	53	4'-2"
BW14	4	6	30'-4"
D11	4	53	2'-6"
D2	5	53	3'-1"
B4E	4	8	2'-2"
B5E	4	14	2'-8"
C1	6	9	11'-11"
C2	4	4	11'-3"
C3	6	9	9'-9"
C4	#4	4	9'-1"

TABLE 2: BENT BARS (All dimensions are out to out)

Mark	Size	No.	Type	Length	A	B	C	D	E	F
BW15	#4	2	1	8'-0"	2'-11"	0'-8"	0'-5"			
BW16				9'-10"	3'-10"					
BW17				11'-4"	4'-7"					
BW18				12'-8"	5'-3"					
BW19				14'-0"	5'-11"					
BW20				15'-4"	6'-7"					
BW21				16'-8"	7'-3"					
BW22	2	1	17'-0"	7'-5"	0'-8"	0'-5"				
BW23	4	2	5'-1"	1'-9"	1'-11"	1'-5"	1'-8"	0'-6"		
BW24	4	2	10'-11"	1'-4"	8'-10"	0'-9"	1'-1"	0'-5"		
BW25E	58	3	3'-7"	1'-4"	0'-11"					
BW26	4	58	4'-3"	0'-4"	1'-8"	0'-9"	1'-6"	7'-1"		
B4E	4	14	5	5'-1"	2'-4"	0'-5"	0'-13/4"	0'-9"		
B2E	4	8	6	6'-2"	1'-6"	1'-1"	1'-3"	2'-4"	0'-2"	7'-0"
B3E	4	4	1	4'-4"	0'-8"	7'-1"	0'-5"			
C5	4	8	1	12'-8"	3'-1"	2'-10"	0'-5"			
C6	#4	8	1	12'-4"	2'-11"	2'-10"	0'-5"			

Note: All "E" suffix bars to be epoxy coated.

$L = 2\frac{1}{2} \times 2\frac{1}{2} \times 3\frac{1}{8} \times 55'1"$

Guard Angle

BW12 ~ #4 (N.F.)	1'-0"
BW13 ~ #5 (E.F.)	1'-0"
BW25E ~ #4 U-Bars to match BW12 ~ #4	1'-0"
1/4 ~ #4 (2 per line)	1'-0"

Instruction Jt. w/ 2"x4"

Shear Key

Note:

1) D1 ~ #4 & D2 ~ #5 Dowel bars shall be drilled & epoxy grouted in place where connection to the existing structure is required.

Note:

Lap D1 ~ #4 Dowel bars 1'-4"

Lap D2 ~ #5 Dowel bars 1'-8"

Embed D1 ~ #4 Dowel bars 1'-0"

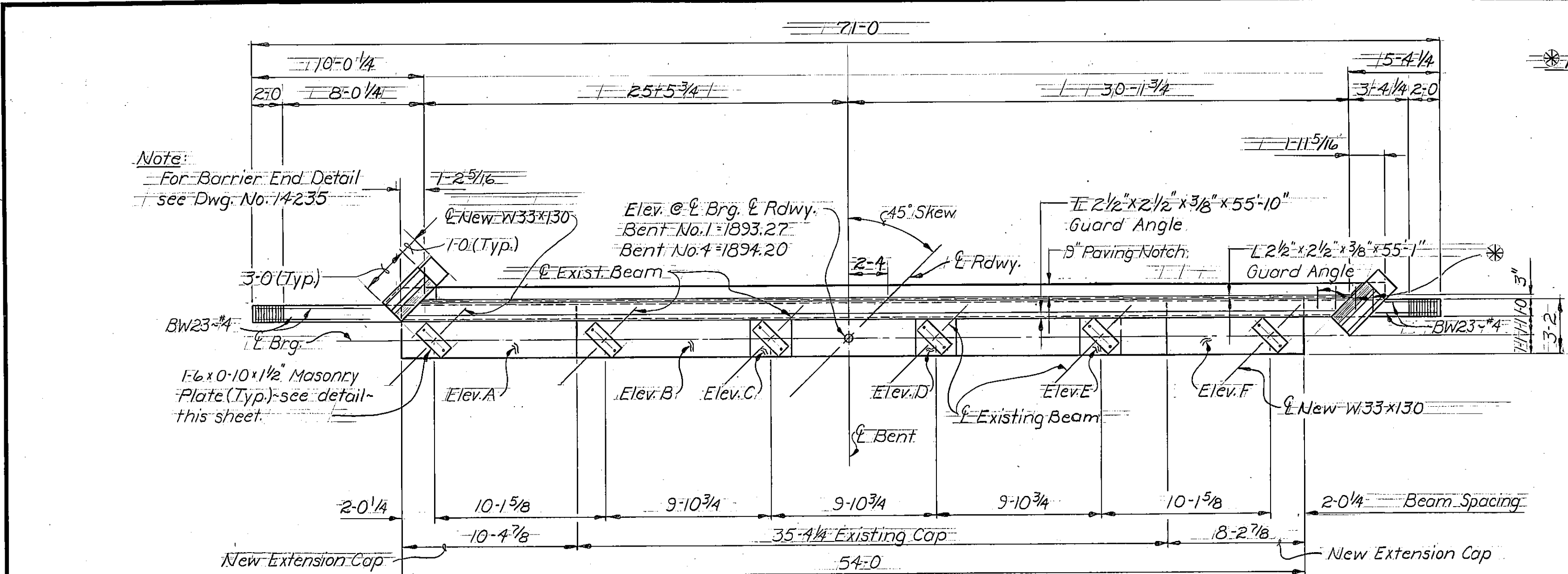
Embed D2 ~ #5 Dowel bars 1'-3"

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

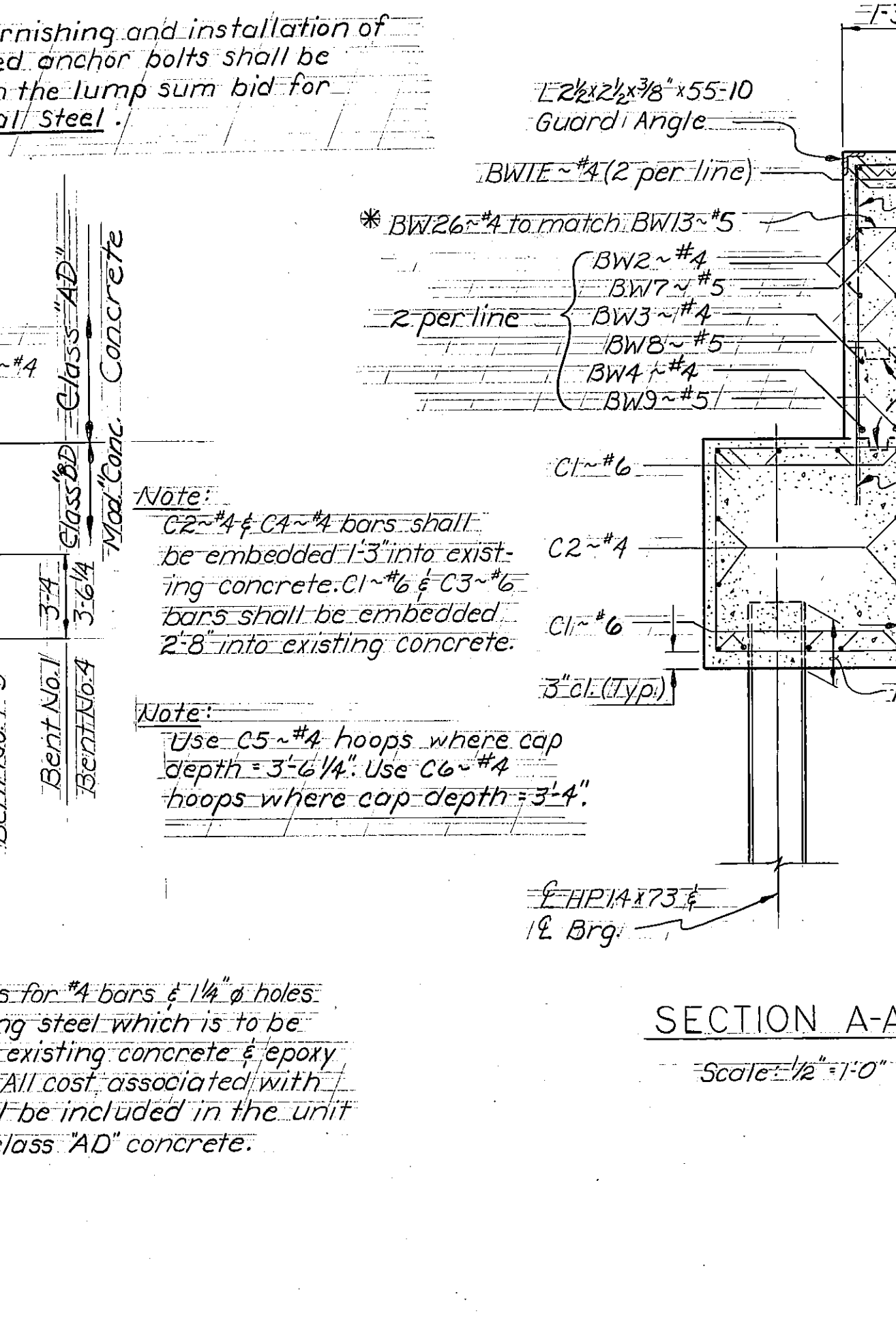
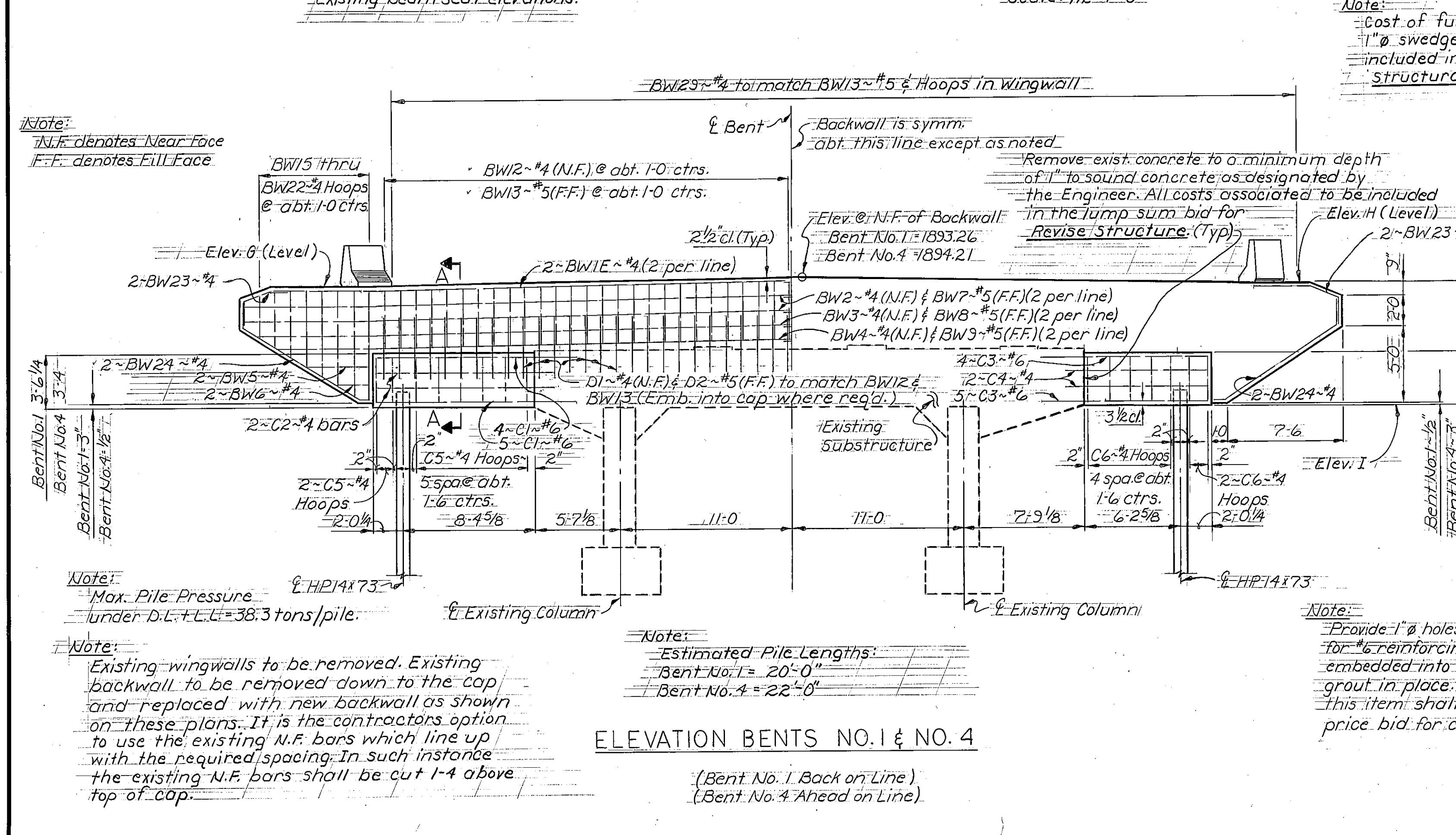
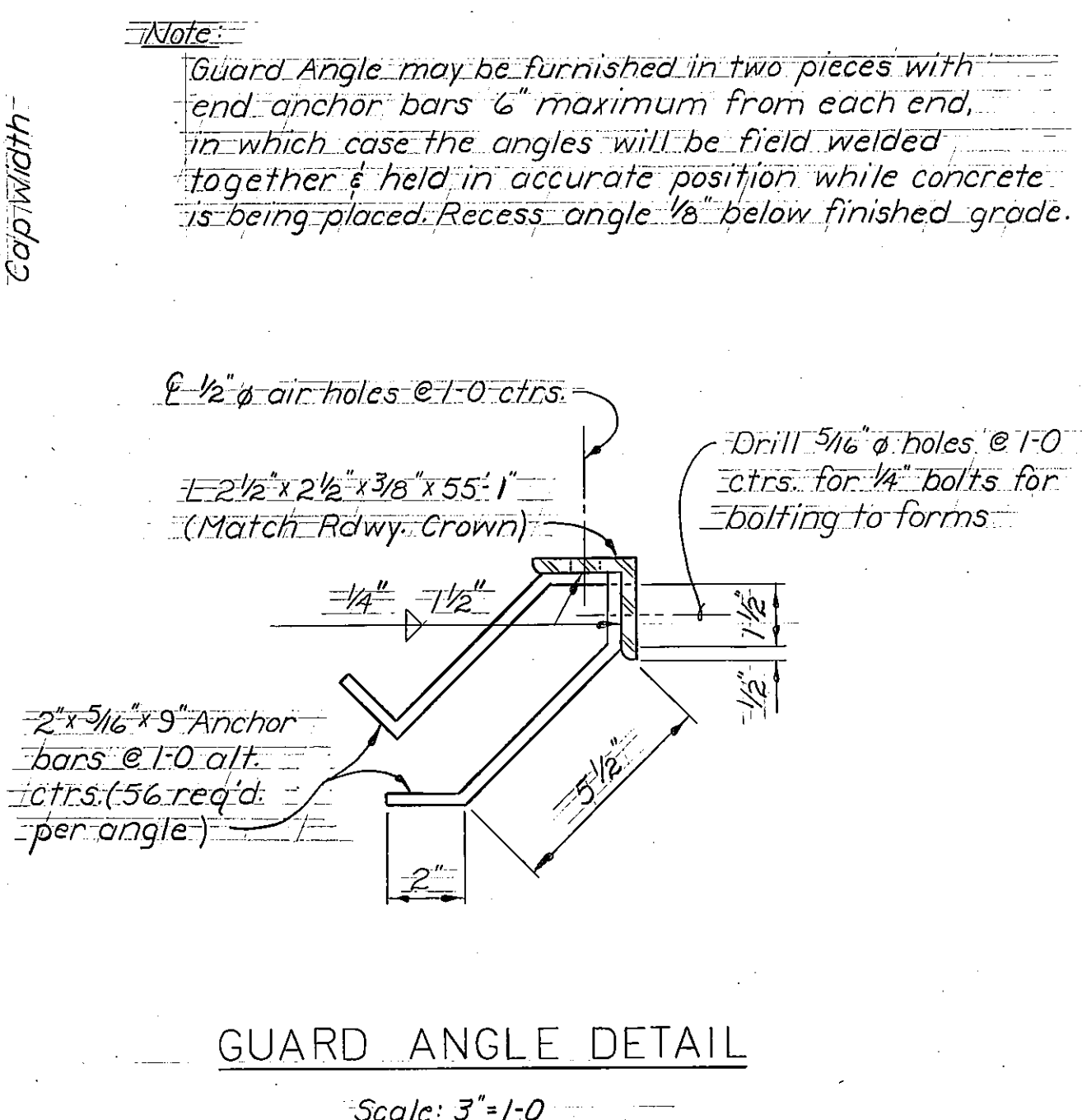
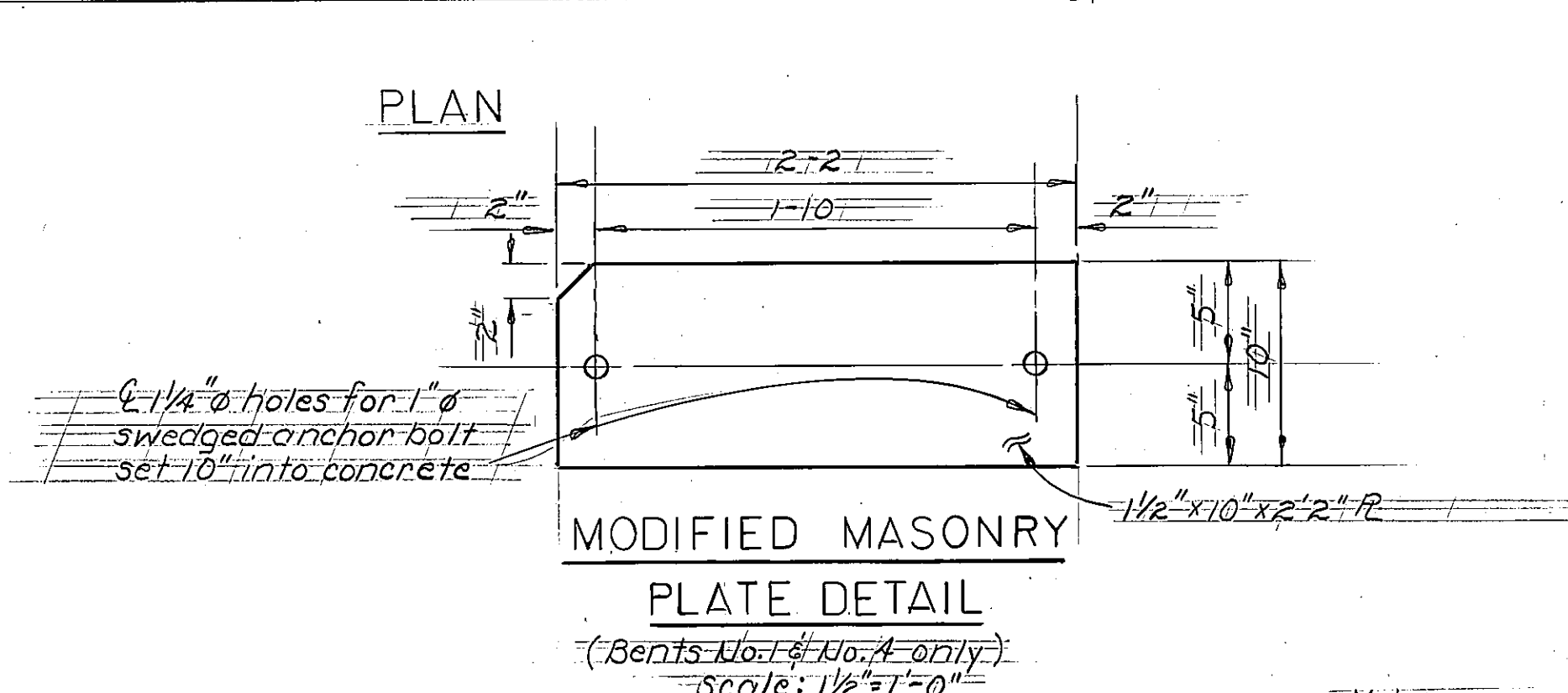
BRIDGE OVER LAKE CREEK
 AT STA. 201+76.00
 FEDERAL AID PROJECT NO. RTF-BRF 1-1(31)14
 LINCOLN COUNTY
 BENTS NO. 1 & 4

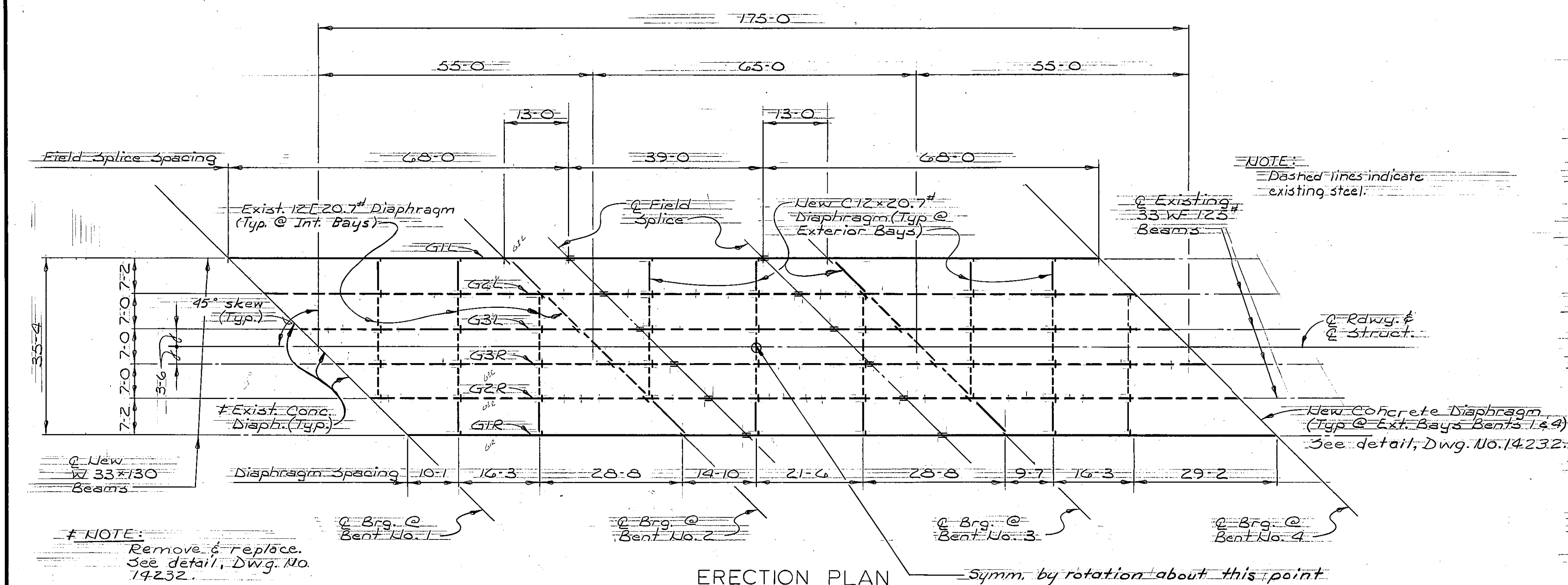
DESIGNED	7-12-85	COF
DRAWN	4-14-86	TGS
CHECKED	7-6-88	KFM
REVISED		
REVISED		
REVISED		

Scale: 3/16" = 1'-0" Except as noted **DRAWING NO. 14228**



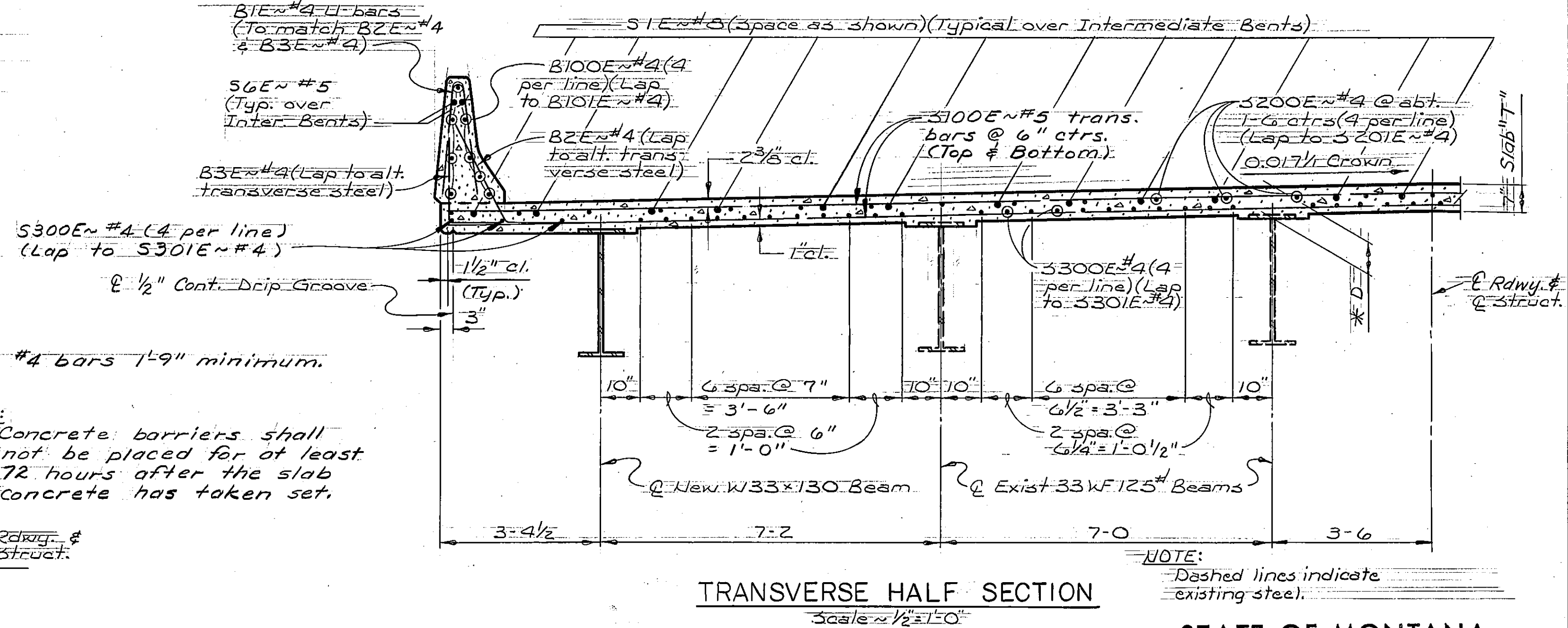
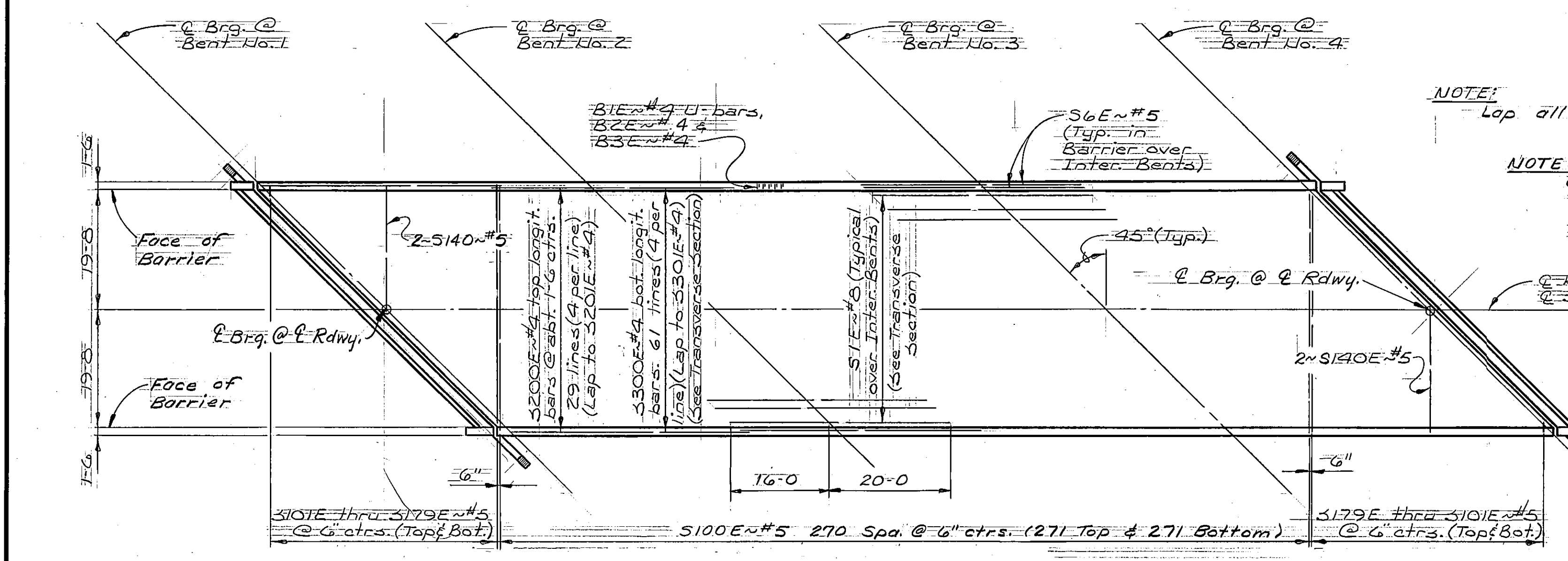
Location	Bent No.1	Bent No.4
A	1888.56	1889.30
B	1888.65	1889.47
C	1888.73	1889.62
D	1888.69	1889.66
E	1888.54	1889.58
F	1888.37	1889.49
G	1893.04	1893.76
H	1892.83	1893.97
I	1885.04	1885.97





STRAIGHT BARS				STRAIGHT BARS				STRAIGHT BARS			
Mark	Size	No.	Length	Mark	Size	No.	Length	Mark	Size	No.	Length
3100E	#5	542	41'-10"	3127E	#5	4	15'-4"	3159E	#5	4	28'-10"
3101	#5	4	2'-4"	3128	#5	4	15'-10"	3155	#5	4	29'-4"
3102	#5	4	2'-10"	3129	#5	4	16'-4"	3156	#5	4	29'-10"
3103	#5	4	3'-4"	3130	#5	4	16'-10"	3157	#5	4	30'-4"
3104	#5	4	3'-10"	3131	#5	4	17'-4"	3158	#5	4	30'-10"
3105	#5	4	4'-4"	3132	#5	4	17'-10"	3159	#5	4	31'-4"
3106	#5	4	4'-10"	3133	#5	4	18'-4"	3160	#5	4	31'-10"
3107	#5	4	5'-4"	3134	#5	4	18'-10"	3161	#5	4	32'-4"
3108	#5	4	5'-10"	3135	#5	4	19'-4"	3162	#5	4	32'-10"
3109	#5	4	6'-4"	3136	#5	4	19'-10"	3163	#5	4	33'-4"
3110	#5	4	6'-10"	3137	#5	4	20'-4"	3164	#5	4	33'-10"
3111	#5	4	7'-4"	3138	#5	4	20'-10"	3165	#5	4	34'-4"
3112	#5	4	7'-10"	3139	#5	4	21'-4"	3166	#5	4	34'-10"
3113	#5	4	8'-4"	3140	#5	4	21'-10"	3167	#5	4	35'-4"
3114	#5	4	8'-10"	3141	#5	4	22'-4"	3168	#5	4	35'-10"
3115	#5	4	9'-4"	3142	#5	4	22'-10"	3169	#5	4	36'-4"
3116	#5	4	9'-10"	3143	#5	4	23'-4"	3170	#5	4	36'-10"
3117	#5	4	10'-4"	3144	#5	4	23'-10"	3171	#5	4	37'-4"
3118	#5	4	10'-10"	3145	#5	4	24'-4"	3172	#5	4	37'-10"
3119	#5	4	11'-4"	3146	#5	4	24'-10"	3173	#5	4	38'-4"
3120	#5	4	11'-10"	3147	#5	4	25'-4"	3174	#5	4	38'-10"
3121	#5	4	12'-4"	3148	#5	4	25'-10"	3175	#5	4	39'-4"
3122	#5	4	12'-10"	3149	#5	4	26'-4"	3176	#5	4	39'-10"
3123	#5	4	13'-4"	3150	#5	4	26'-10"	3177	#5	4	40'-4"
3124	#5	4	13'-10"	3151	#5	4	27'-4"	3178	#5	4	40'-10"
3125	#5	4	14'-4"	3152	#5	4	27'-10"	3179E	#5	4	41'-4"
3126E	#5	4	14'-10"	3153E	#5	4	28'-4"				

DEAD LOAD DEFLECTIONS																																					
LOCATION	Span No. 1										Span No. 2										Span No. 3																
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0						
Diaph. & Girder Defl. (G1L & G1R)	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	0	0					
Total Deflection **	0	3/16	5/16	7/16	7/16	7/16	3/8	5/16	3/16	1/16	0	1/16	1/8	1/4	3/8	3/8	3/8	1/4	1/8	1/16	0	1/16	3/16	5/16	3/8	7/16	7/16	1/16	5/16	3/16	0						
Diaph. & Girder Defl. (G3L & G3R)	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0	0	0	0	1/16	1/16	1/16	1/16	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0						
Total Deflection **	0	3/16	5/16	7/16	7/16	7/16	3/8	5/16	3/16	1/16	0	1/16	1/8	1/4	5/16	3/8	5/16	1/4	1/8	0	0	1/16	3/16	5/16	3/8	7/16	7/16	1/16	5/16	3/16	0						
Diaph. & Girder Defl. (G2L & G2R)	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0	0	0	0	1/16	1/16	1/16	1/16	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0						
Total Deflection **	0	3/16	5/16	7/16	1/2	7/16	3/8	5/16	3/16	1/16	0	0	1/8	1/4	5/16	3/8	5/16	1/4	1/8	0	0	1/16	3/16	5/16	3/8	7/16	1/2	7/16	5/16	3/16	0						
NOTE: The field splices are located at points 2.2 and 2.8.																																					



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LAKE CREEK
AT STA. 201+76.00
FEDERAL AID PROJECT NO. RTF-BRF 1-1(31)14
LINCOLN COUNTY
ERECTION PLAN

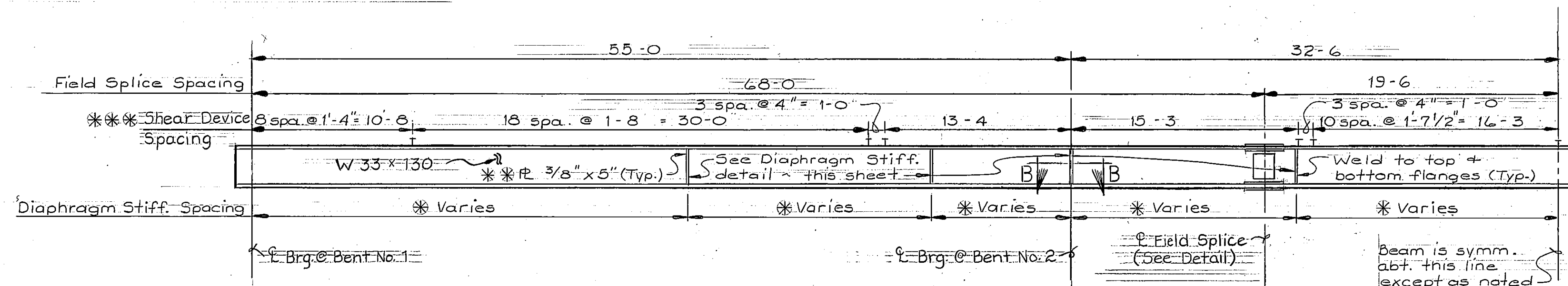
Scale: 1"=15'-0" (Except as noted)

DRAWING NO. 14230

DESIGNED	G-14-85	COF
DRAWN	1-10-86	POH
CHECKED	7-6-88	KFM
REVISED		
REVISED		
REVISED		

*** Note: -

Shear Devices also to be welded to existing beams. Use spacing shown on Beam Elevation ~ this sheet.

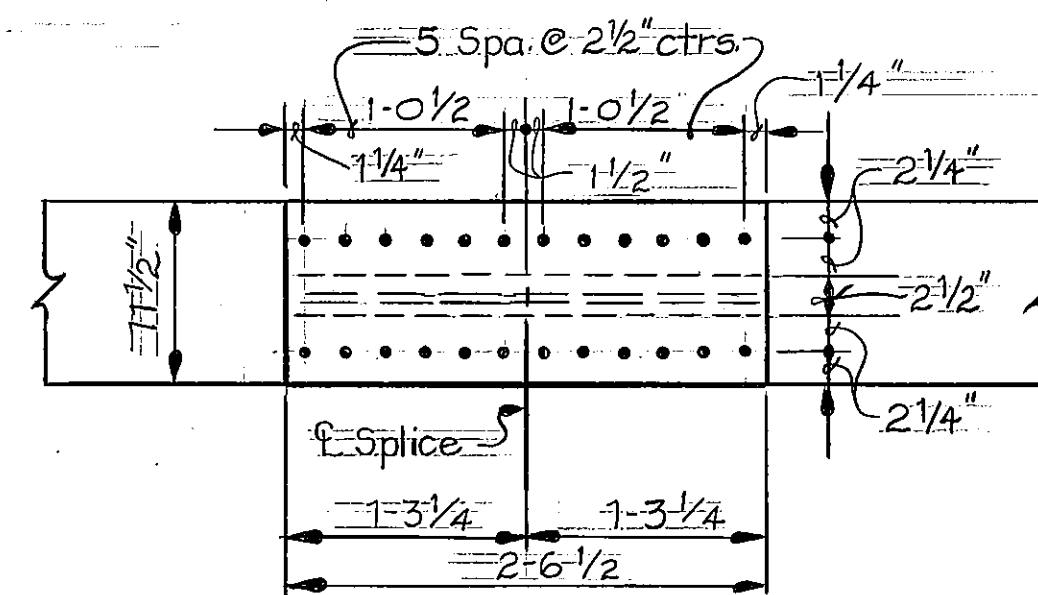


* Note: -

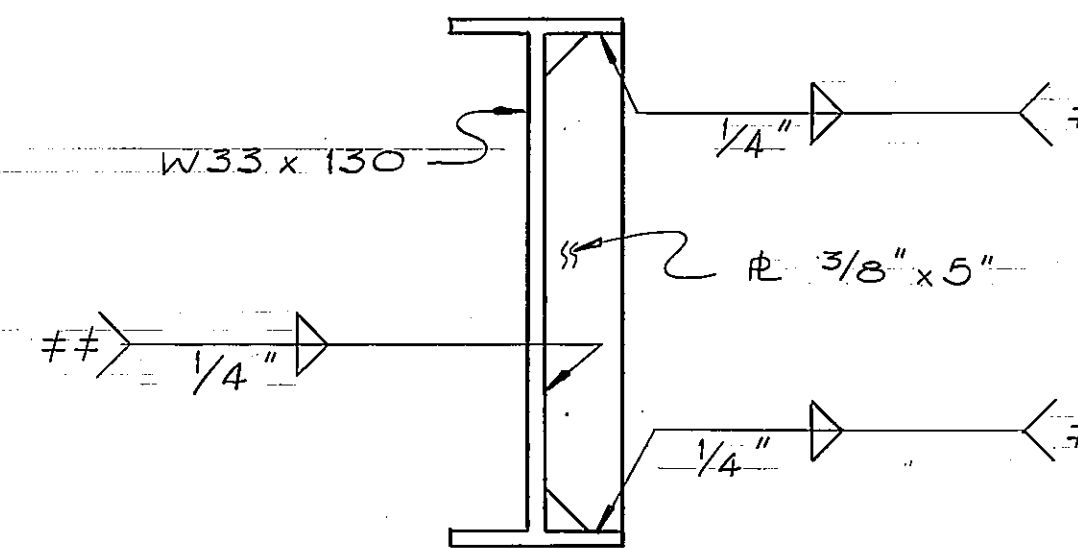
See Erection Plan ~ Dwg. No. 14230

*** Note: -

One plate required on inside of web only. See Erection Plan ~ Dwg. No. 14230



Begin weld 1/4" from miter and edge of stiffener.
 ## Begin weld 2 3/4" from flange

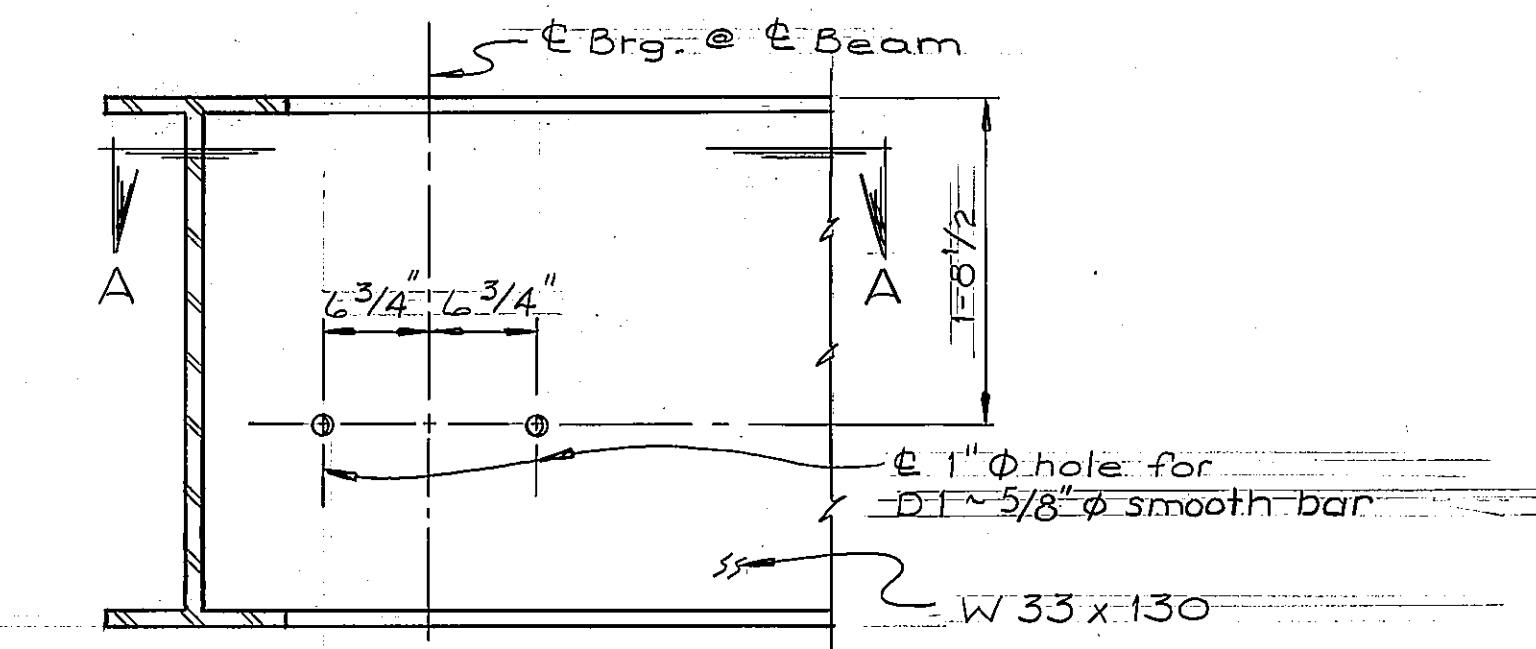
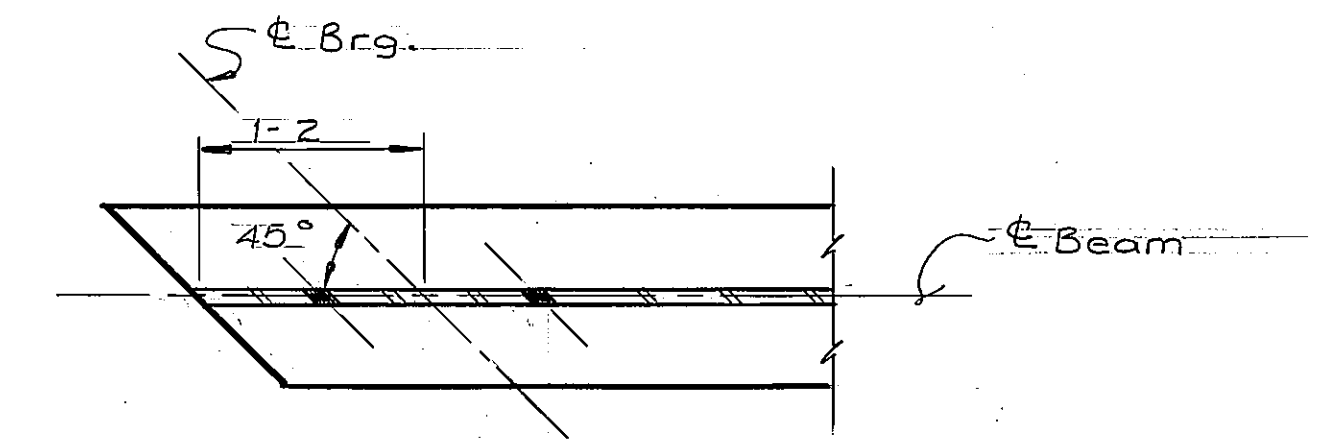
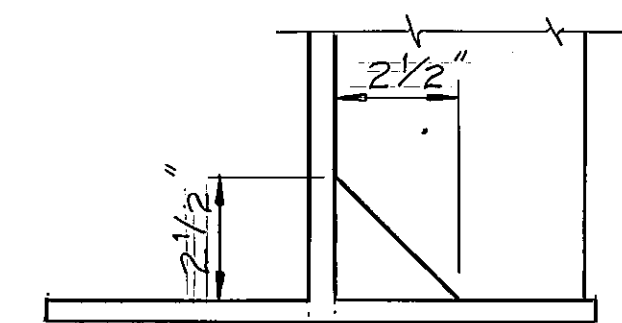


Note: -

All Structural Steel shall be A-36 except as noted.

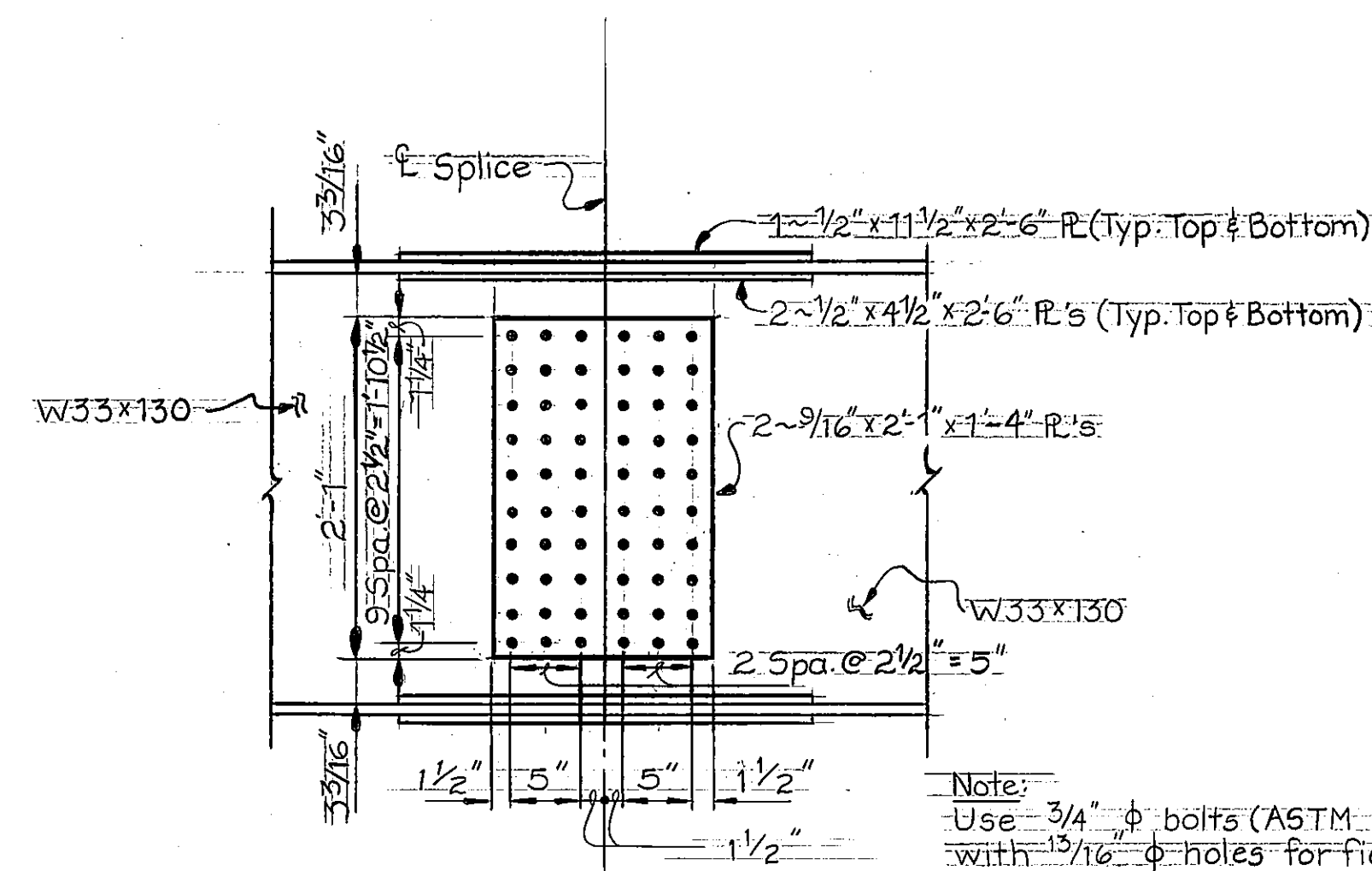
Note: -

All Diaphragm Stiffeners shall be perpendicular to the steel beam flanges.

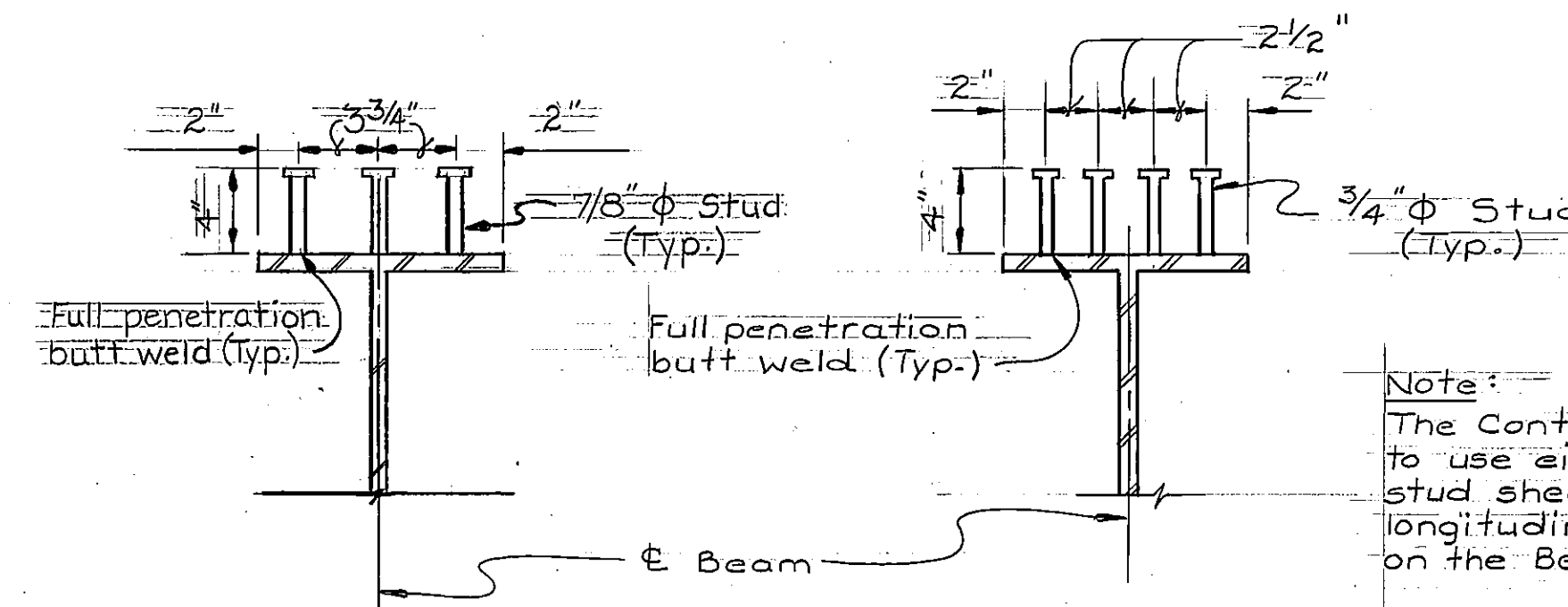


Note: -

All new shear studs added to the existing beams shall be field welded and the cost of furnishing and placing the studs to be included in the lump sum bid for Structural Steel.



Note: -
 Use 3/4" φ bolts (ASTM A-325) with 13/16" φ holes for field splice.



Note: -

The Contractor will be permitted to use either 4 x 3/4" φ or 3 x 7/8" φ stud shear devices at the same longitudinal spacing as shown on the Beam Elevation.

STATE OF MONTANA
 DEPARTMENT OF HIGHWAYS

BRIDGE OVER LAKE CREEK

AT STA. 201+76.00

FEDERAL AID PROJECT NO. RTF-BRF 1-1(31)14

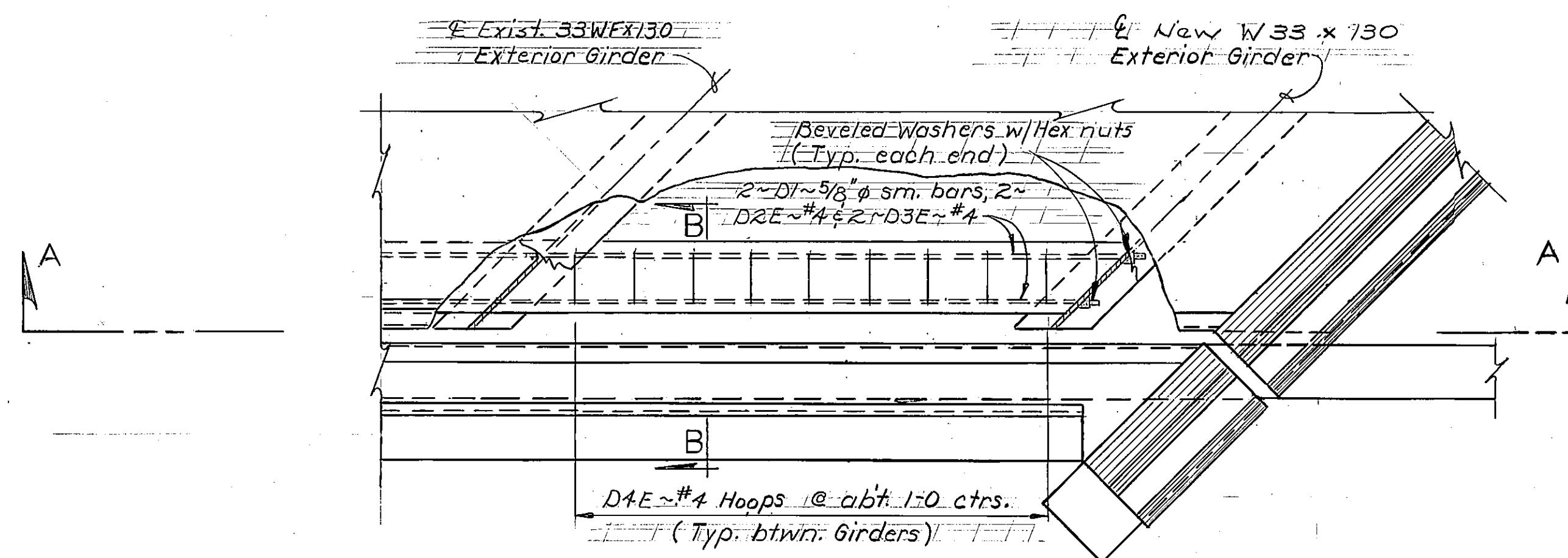
LINCOLN COUNTY

GIRDER DETAILS

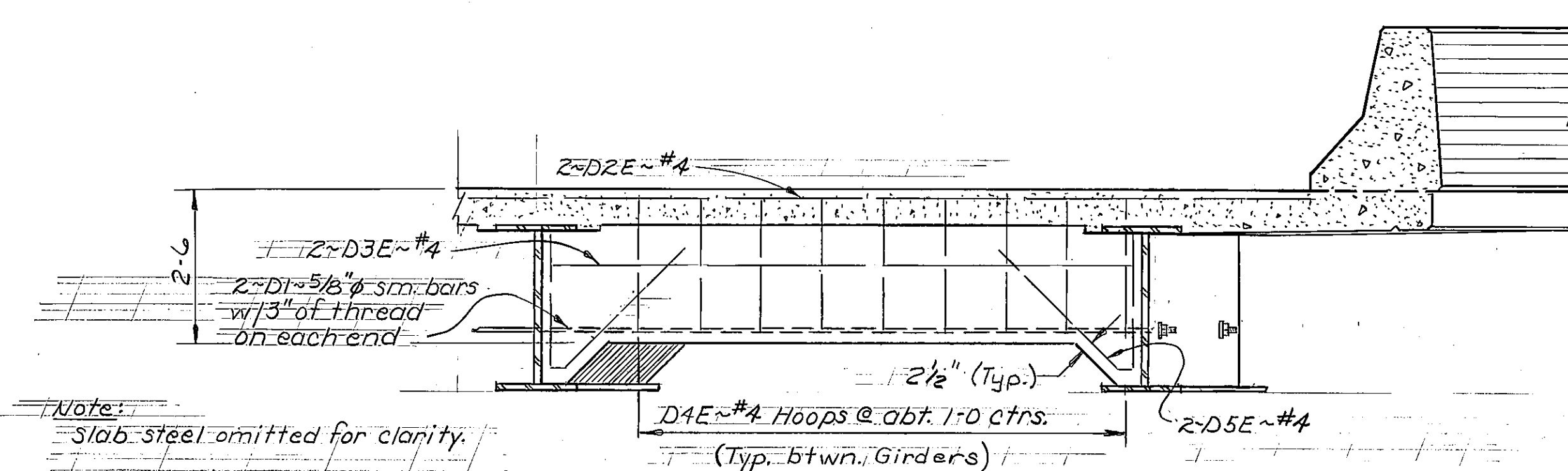
Scale: As noted

DESIGNED	6-25-85	COF
DRAWN	9-18-85	TGS
CHECKED	7-6-88	KFM
REVISED		
REVISED		
REVISED		

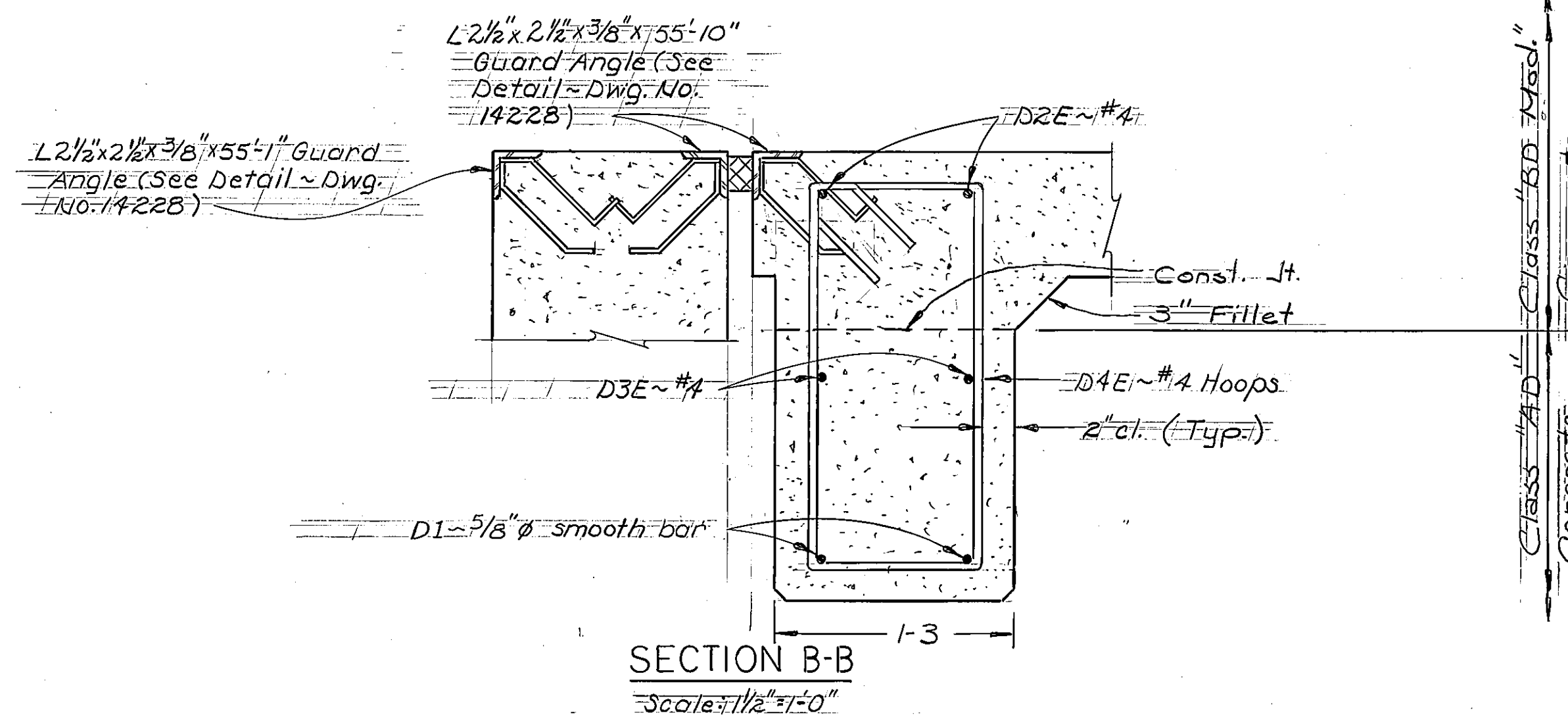
DRAWING NO. 14231



PARTIAL PLAN BENTS NO.1 & NO.4



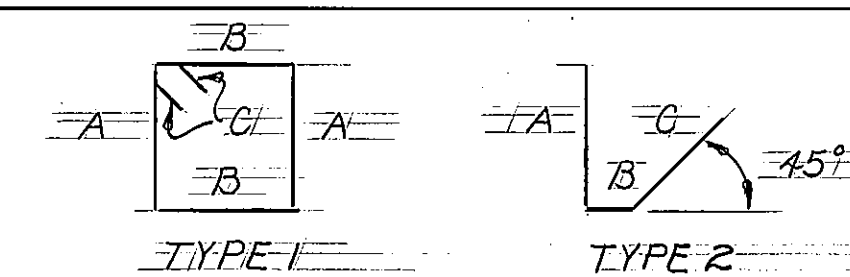
SECTION A-A



SECTION B-B

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

BILL OF REINFORCING STEEL



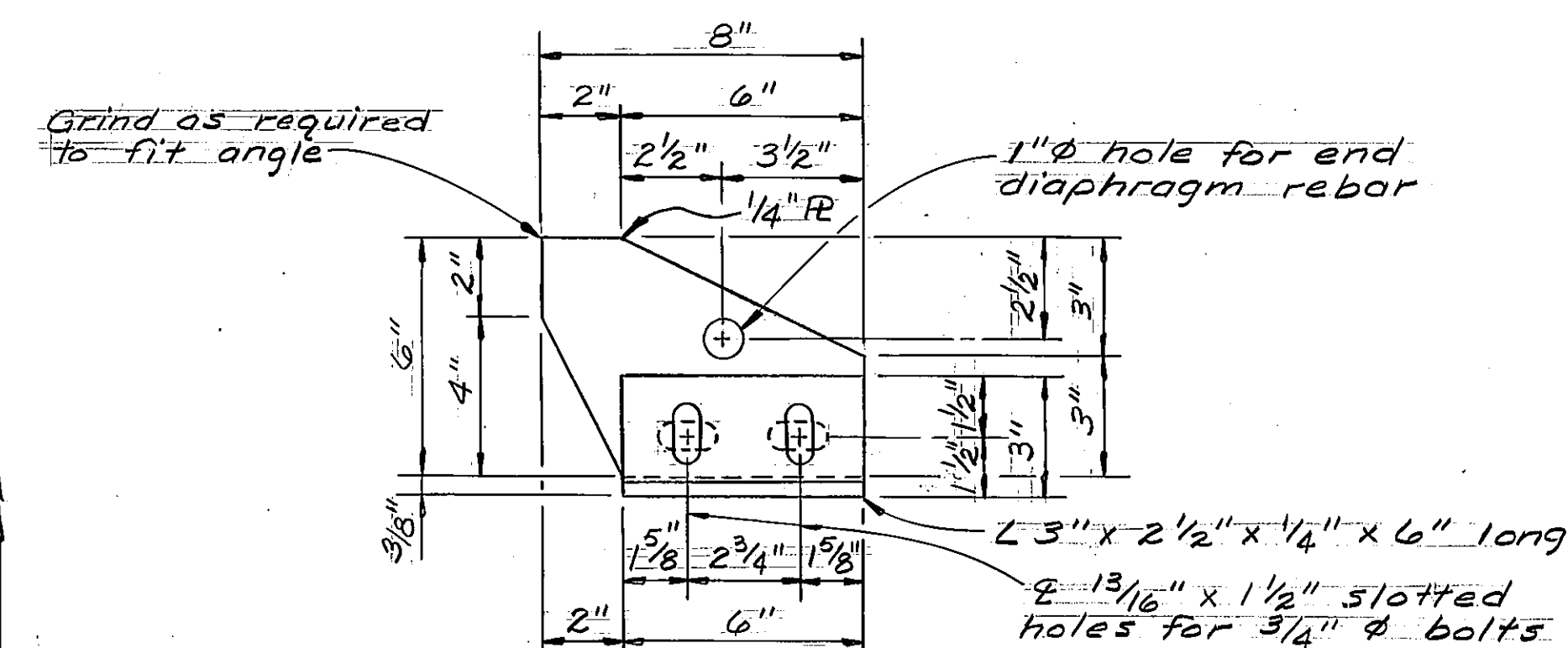
STRAIGHT BARS					BENT BARS (All dimensions are out to out)									
Mark	Size	No.	Length		Mark	Size	No.	Type	Length	A	B	C	D	E
D1	#5/8	4	50'-6"		D4E	#4	90	1	6'-10"	2'-1"	0'-11"	0'-5"		
D2E	#4	8	30'-4"		D5E	#4	40	2	5'-5"	2'-3"	0'-4"	2'-10"		
D3E	#4	20	3'-7"											

Note: The suffix "E" denotes epoxy coated reinforcing steel.

*Note: D1-5/8" φ smooth bar shall conform to A.S.T.M. designation A36 steel.

Note: Existing concrete end diaphragms to be removed and replaced. All costs associated with the removal and disposal of existing concrete and rebar shall be included in the lump sum bid for "Remove Deck."

Note: The cost of furnishing the beveled washers and hex nuts shall be included in the unit price bid for reinforcing steel.



CLIP DETAIL - BENTS NO.1 & NO.4

(6 required per bent)

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LAKE CREEK

AT STA. 201+76.00

FEDERAL AID PROJECT NO. RTF-BRF 1-I(31)14

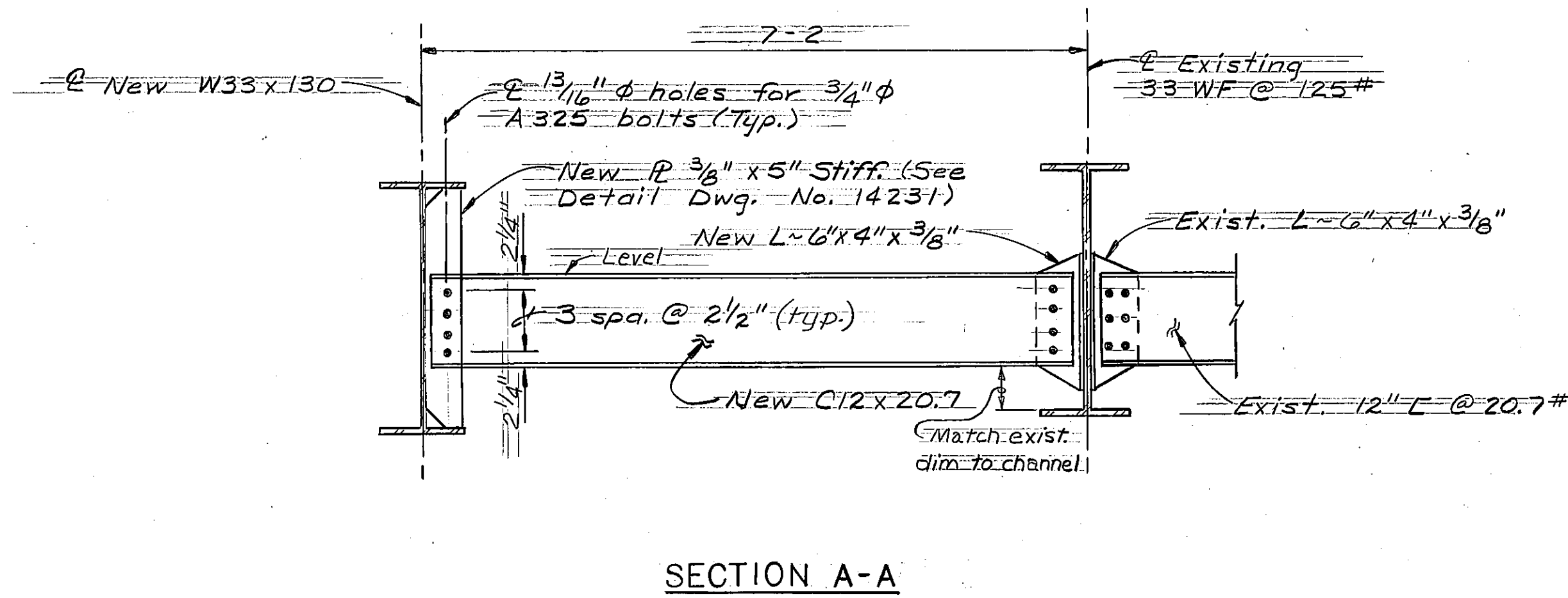
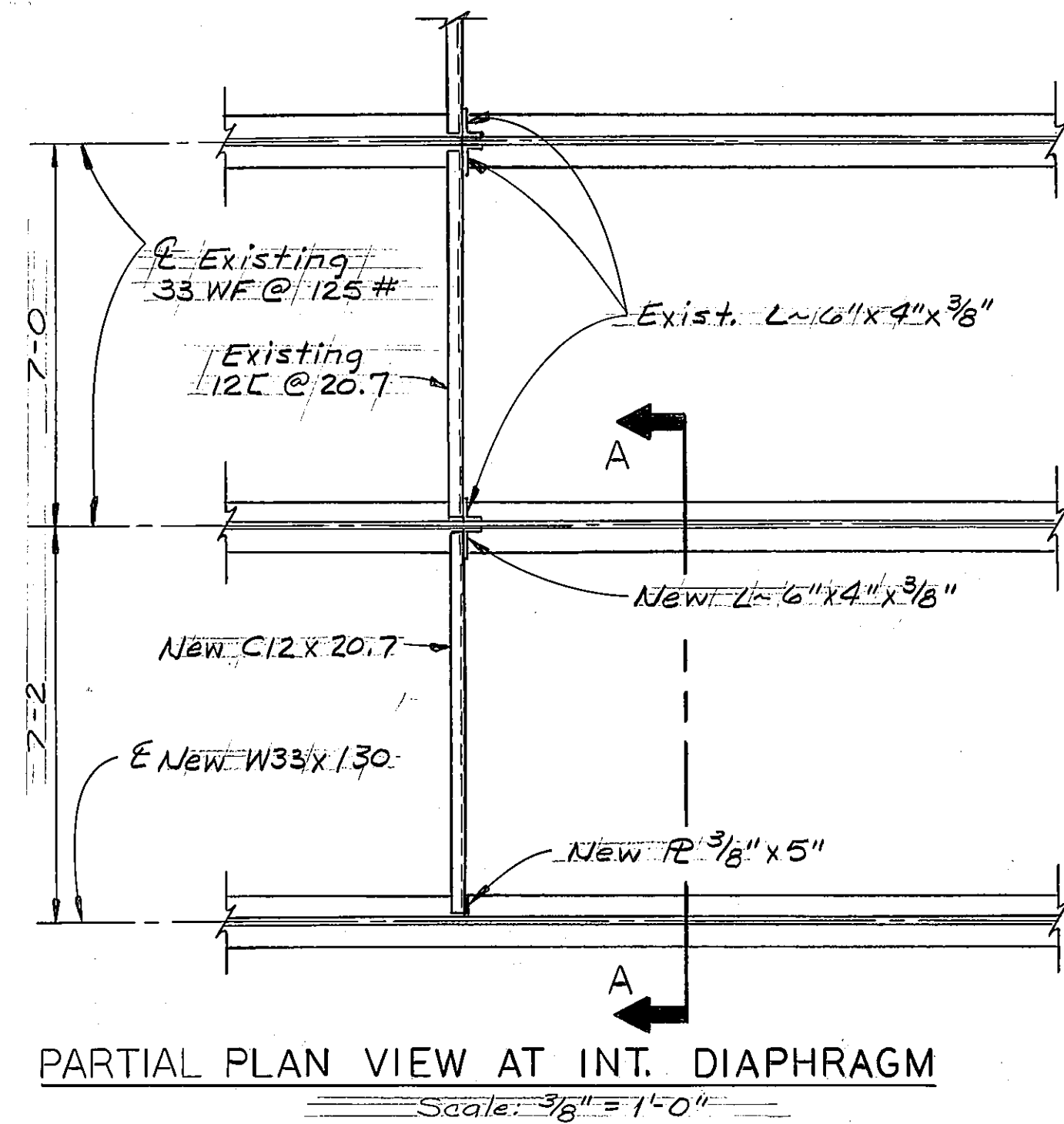
LINCOLN COUNTY

END DIAPHRAGM DETAILS

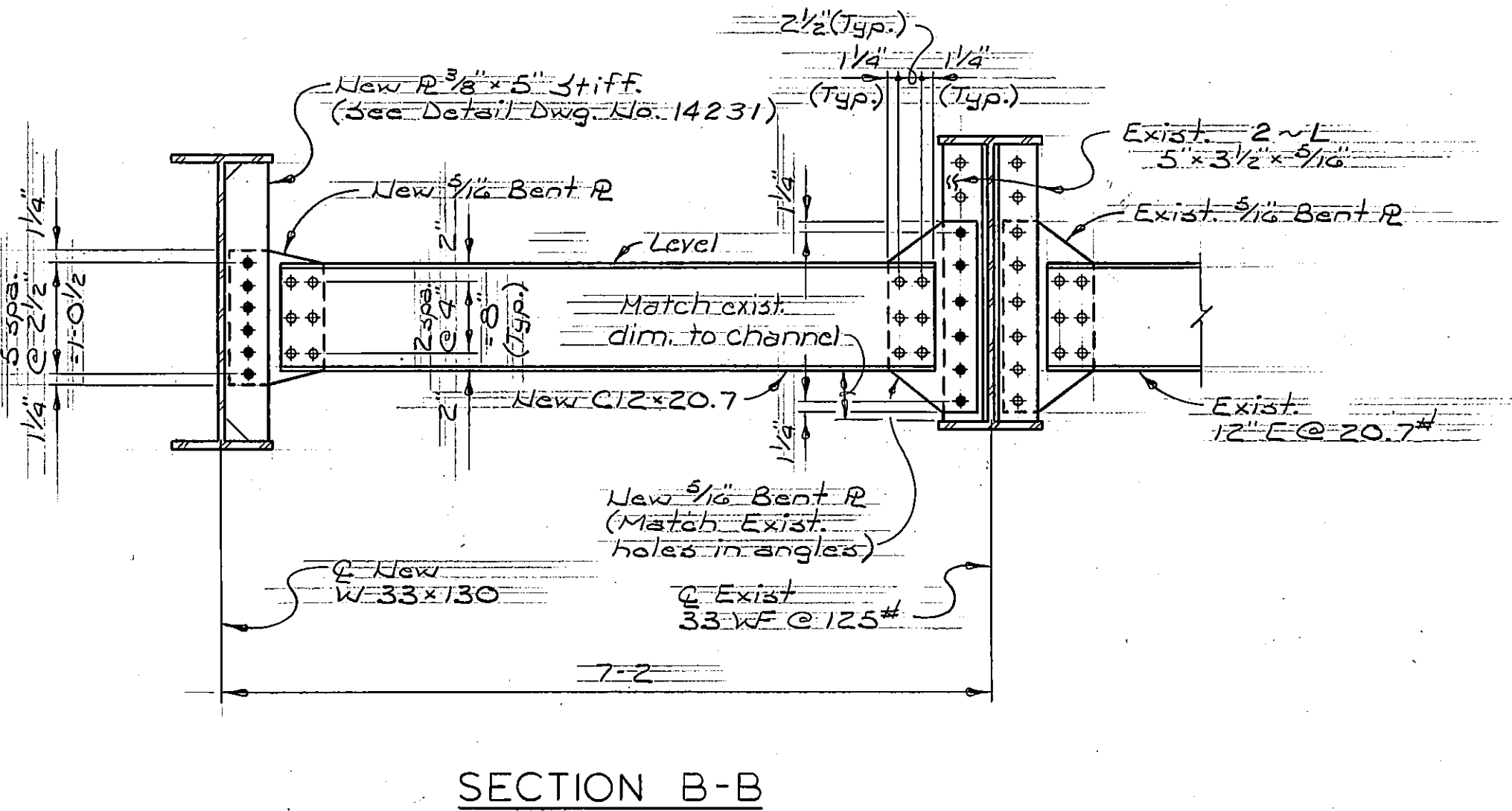
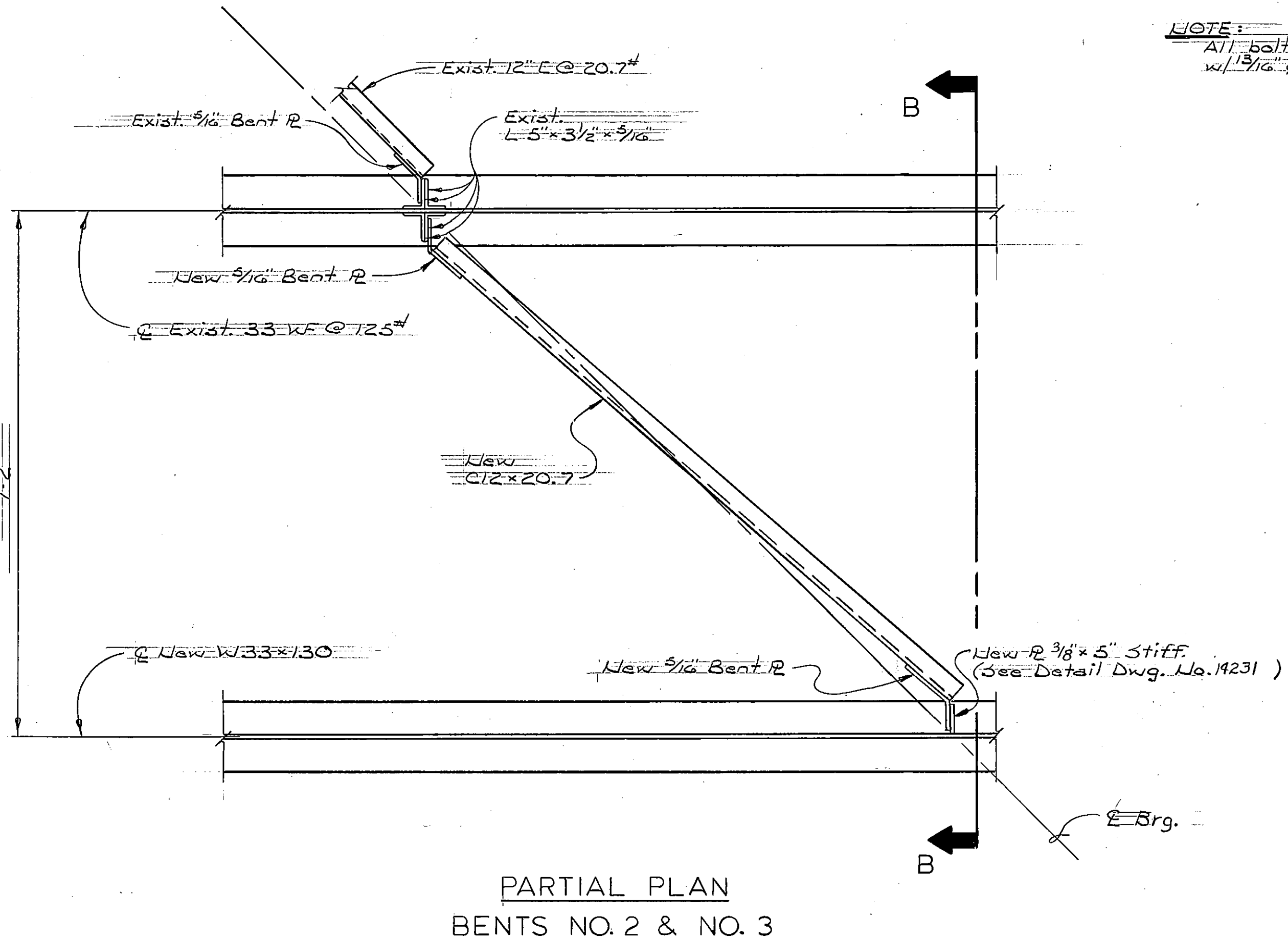
Scale: 1/2" = 1'-0" Except as noted.

DRAWING NO. 14232

DESIGNED	6-1-88	N.N.M.
DRAWN	6-15-88	T.G.S.
CHECKED	7-6-88	K.F.M.
REVISED		
REVISED		
REVISED		



NOTE:
All bolts shall be 3/4" A325
w/ 13/16" holes drilled for the 3/4" bolts.



NOTE:
All structural steel shall be A.S.T.M. A-36 except as noted.

NOTE:
Remove existing 3/4" rivets, where required to attach new R's or angles, and replace with 3/4" A325 H.S. bolts. All costs associated with removal of the existing rivets and installation of the H.S. bolts shall be included in the lump sum bid for Structural Steel.

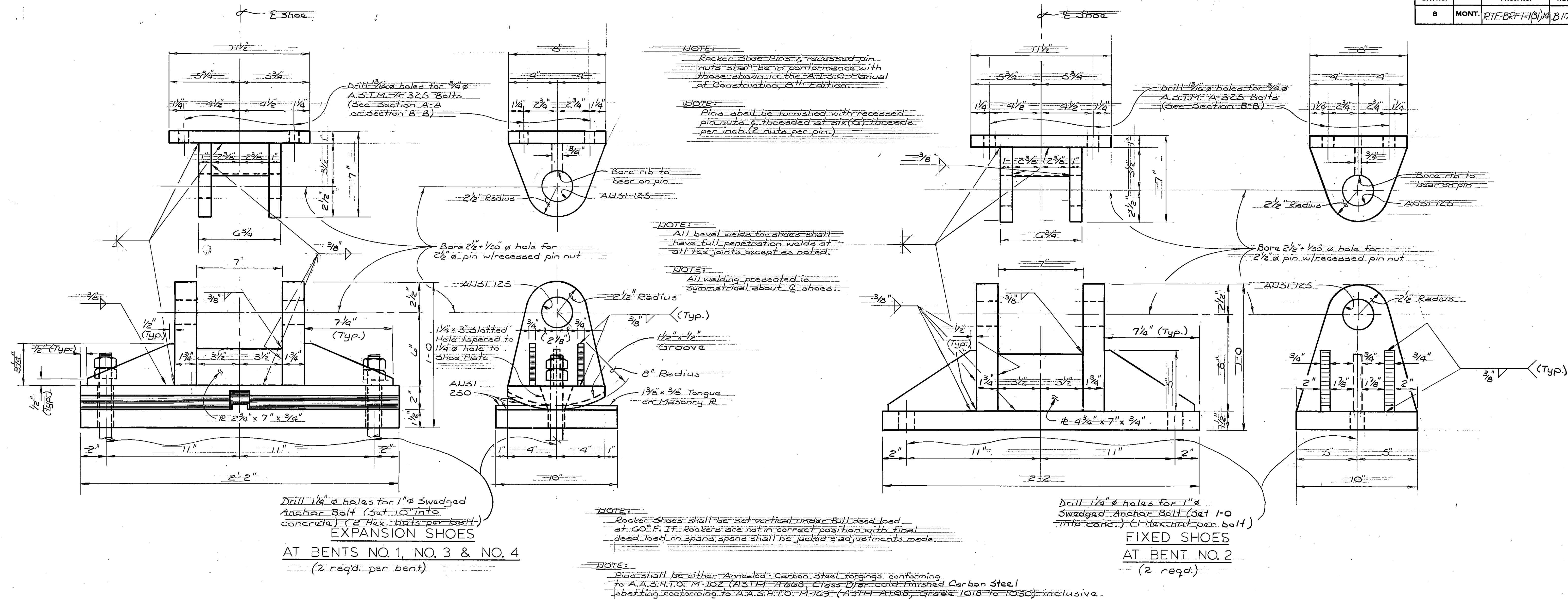
STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LAKE CREEK
AT STA. 201+76.00
FEDERAL AID PROJECT NO. RTF BRF 1-1(31)14

LINCOLN COUNTY
INTERMEDIATE
DIAPHRAGM DETAILS

DESIGNED	7-1-85	COF
DRAWN	8-20-86	POH
CHECKED	7-6-88	KEM
REVISED		
REVISED		
REVISED		

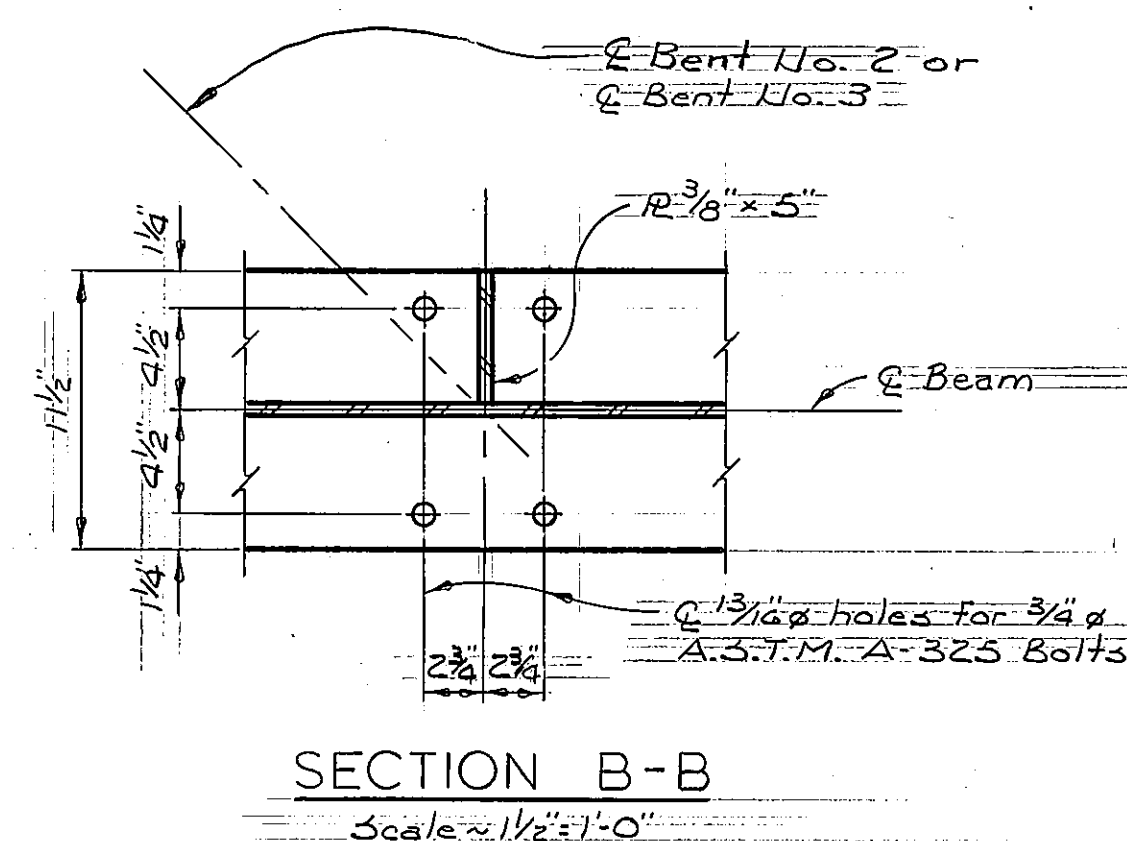
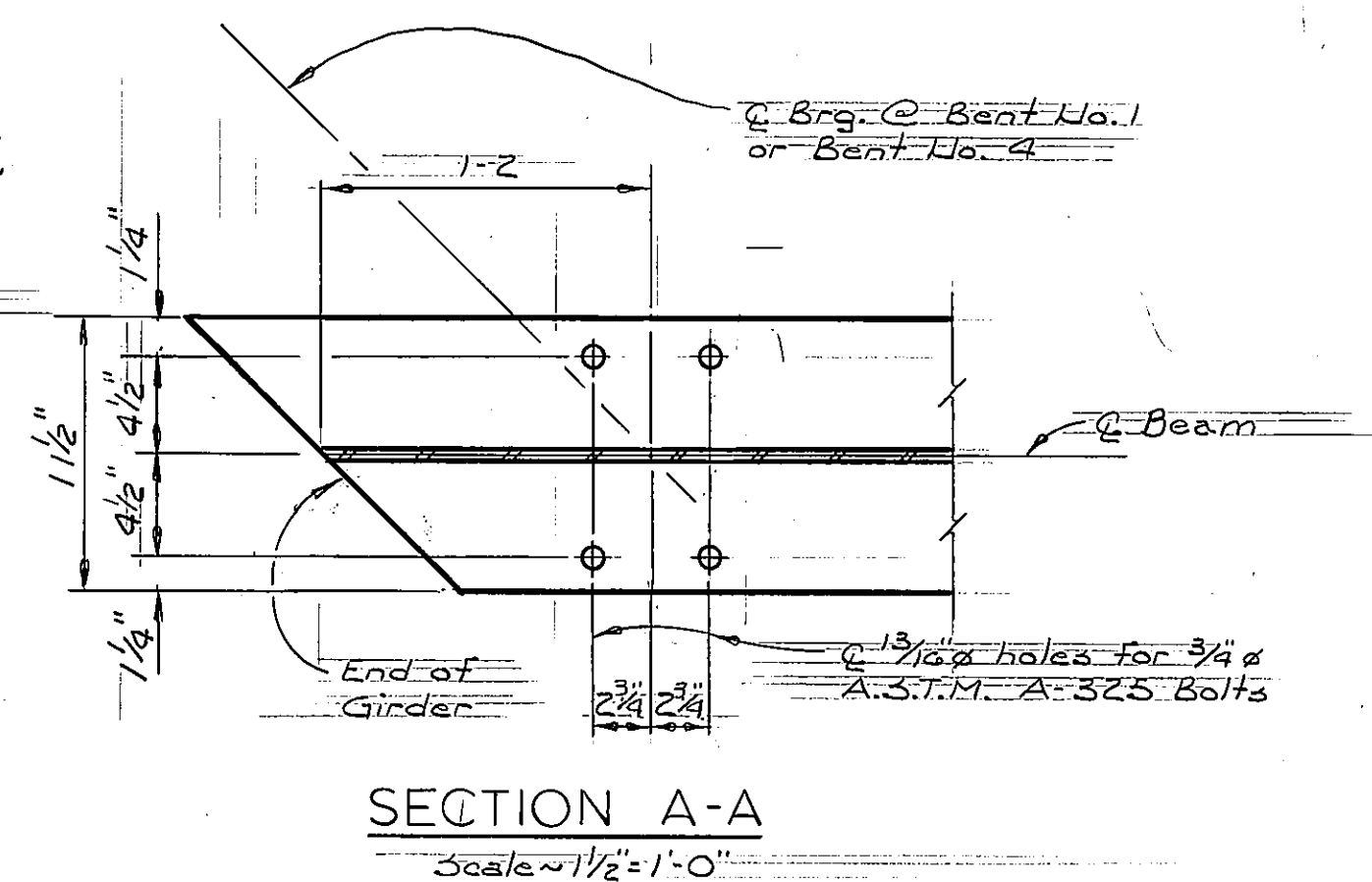
Scale: 3/4"=1'-0" except as noted
DRAWING NO. 14233



SETTING OF MASONRY PLATES: Care shall be taken in placing reinforcing steel so as to clear anchor bolts. Masonry Plates shall be placed on a neoprene membrane, to be approved by the Engineer.
The Contractor shall finish concrete under the Masonry Plates to the exact elevation shown. Bush hammering will be permitted & used only as a means of leveling the concrete surface to assure full & level bearing & to remove laitance, loose & foreign materials. Steel shims shall be used to bring the Masonry Plates up to grade if necessary. Steel shims shall be the same size except for thickness as the Masonry Plate. Minimum thickness of any shim shall be 1/8". The cost of bush hammering & shims if any, shall be included in the Unit Price Bid for Class "AD" Concrete.

NOTE:
For locations of Section A-A & Section B-B refer to DWG. No. 14231

NOTE:
Except as noted, all steel for the shoes shall be A.S.T.M. A-36.



**STATE OF MONTANA
DEPARTMENT OF HIGHWAYS**

BRIDGE OVER LAKE CREEK

AT STA. 201+76.00

FEDERAL AID PROJECT NO. RTF-BRF-1-(3)14

LINCOLN COUNTY

SHOE DETAILS

Scale 3/4"=1'-0" (Except as noted)

DESIGNED	7-1-83	COF
DRAWN	2-28-86	POH
CHECKED	7-6-88	KFM
REVISED		
REVISED		
REVISED		

DRAWING NO. 14234

NOTES

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

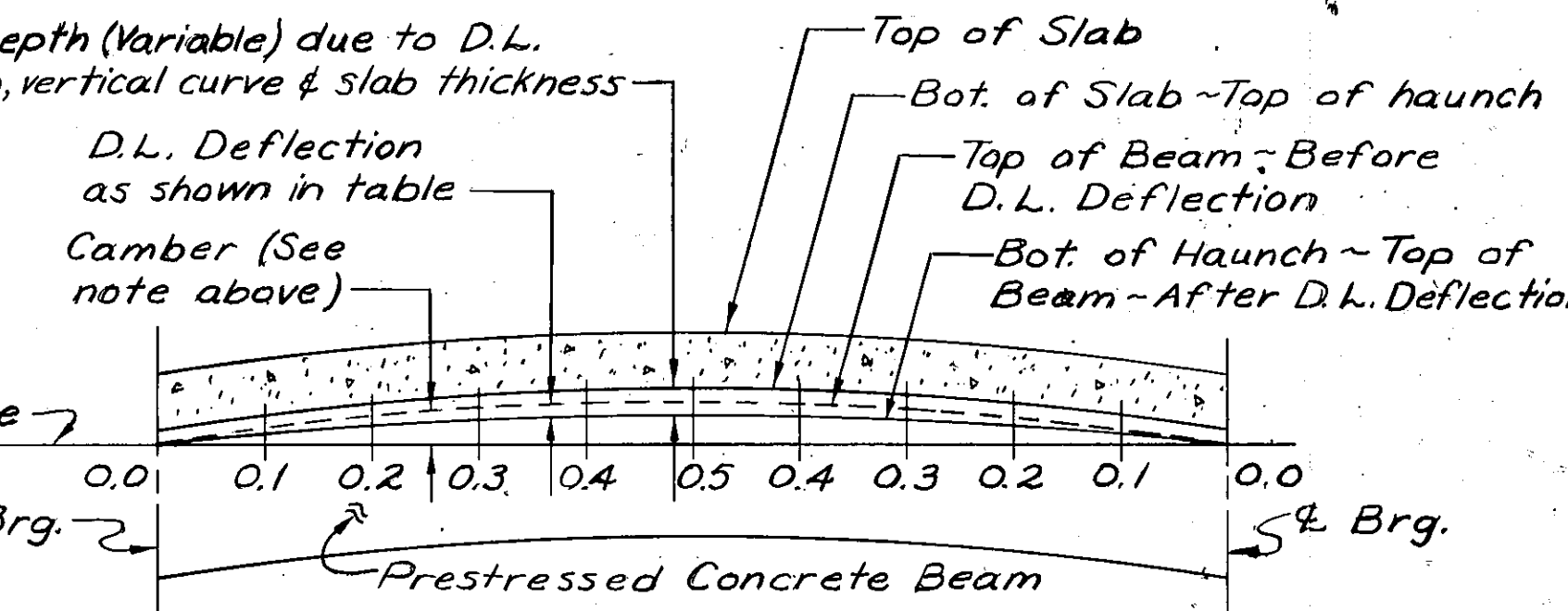
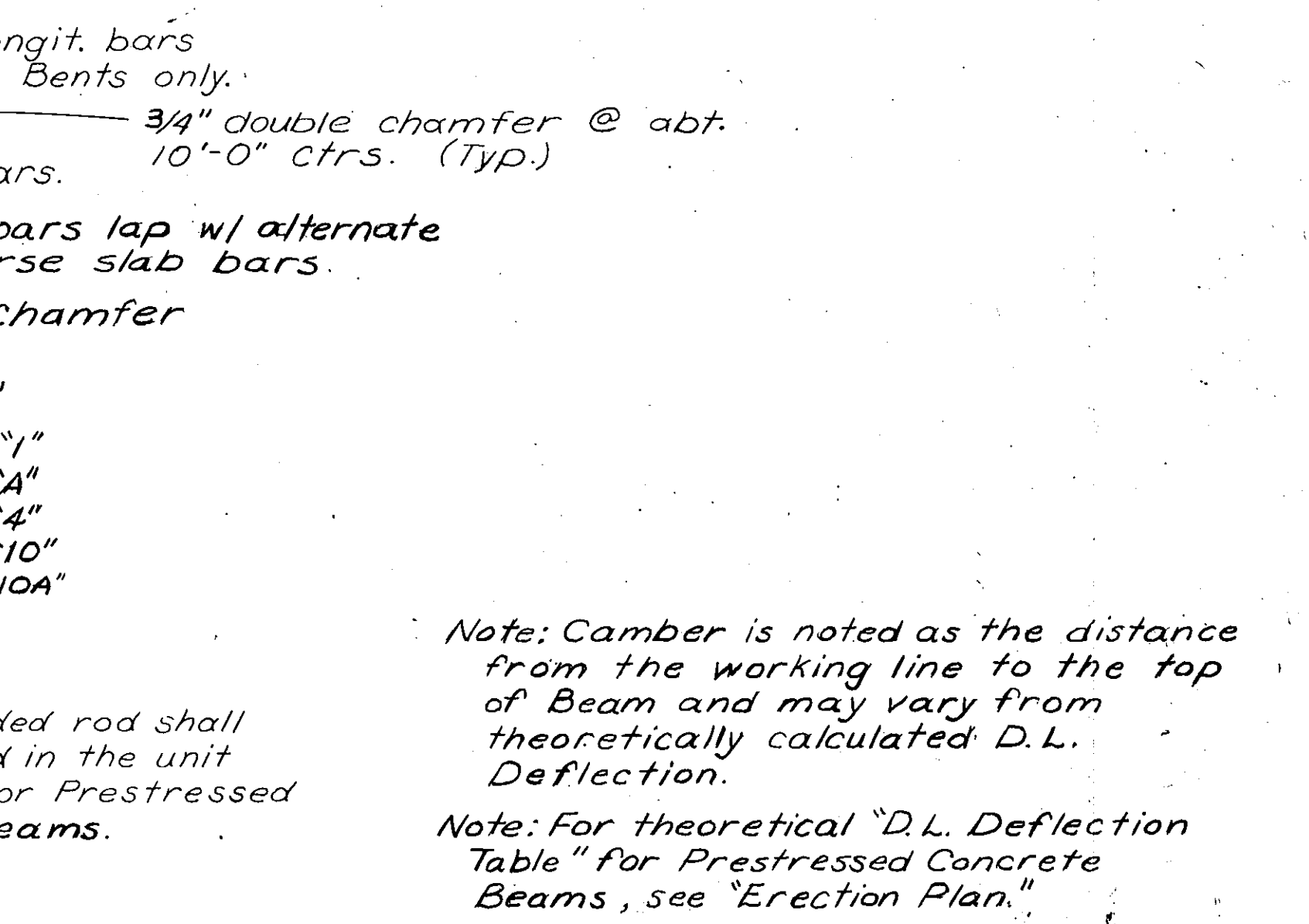
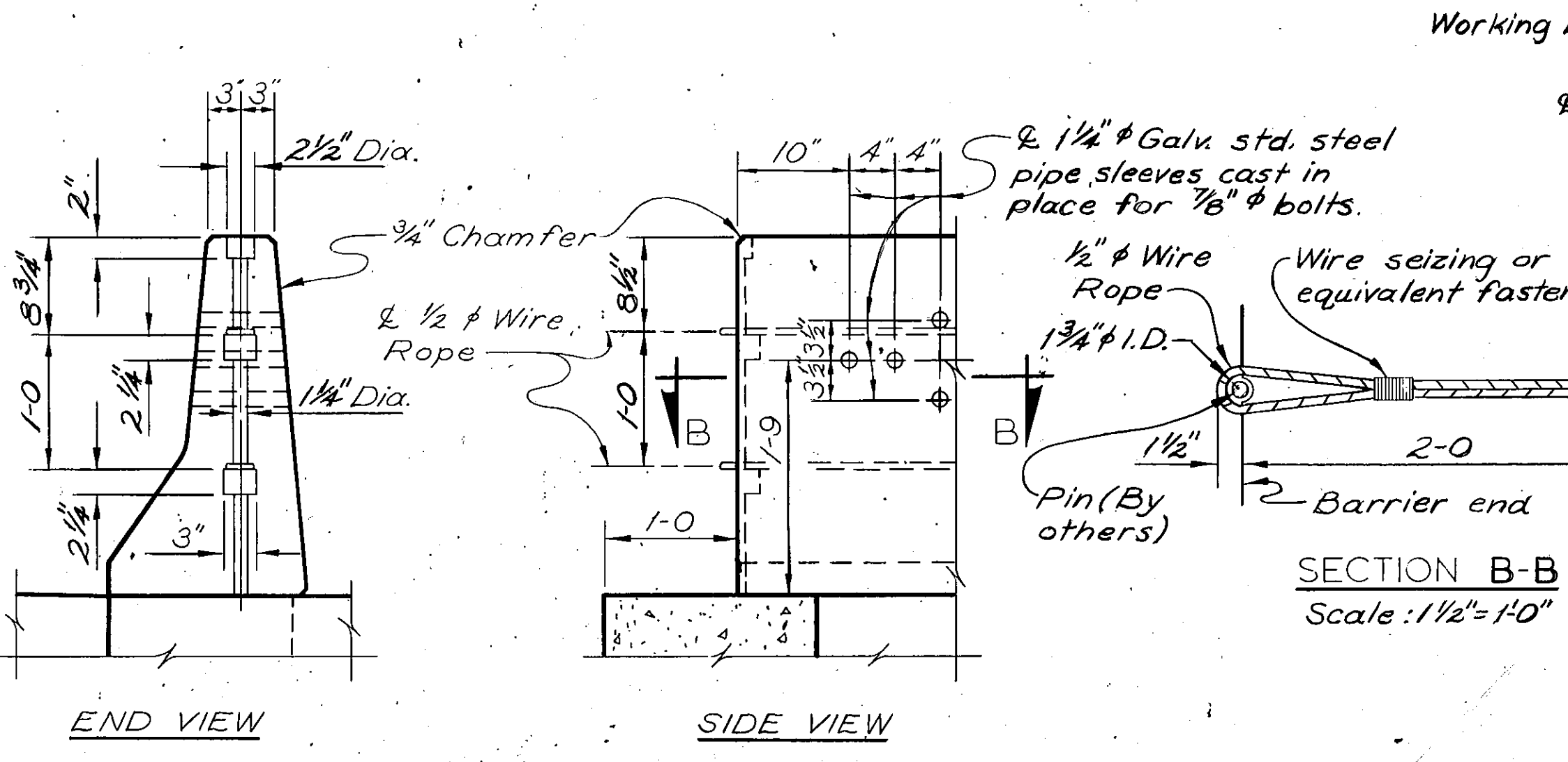
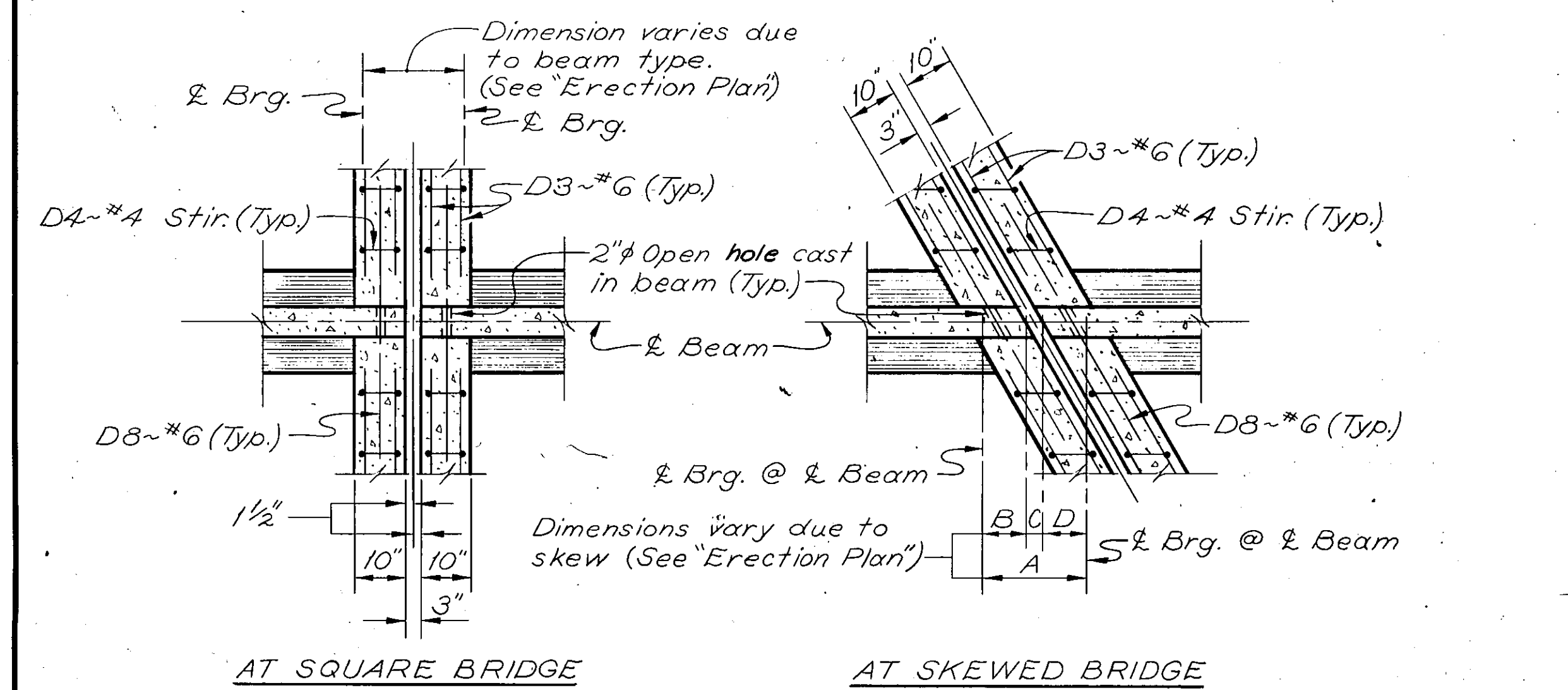
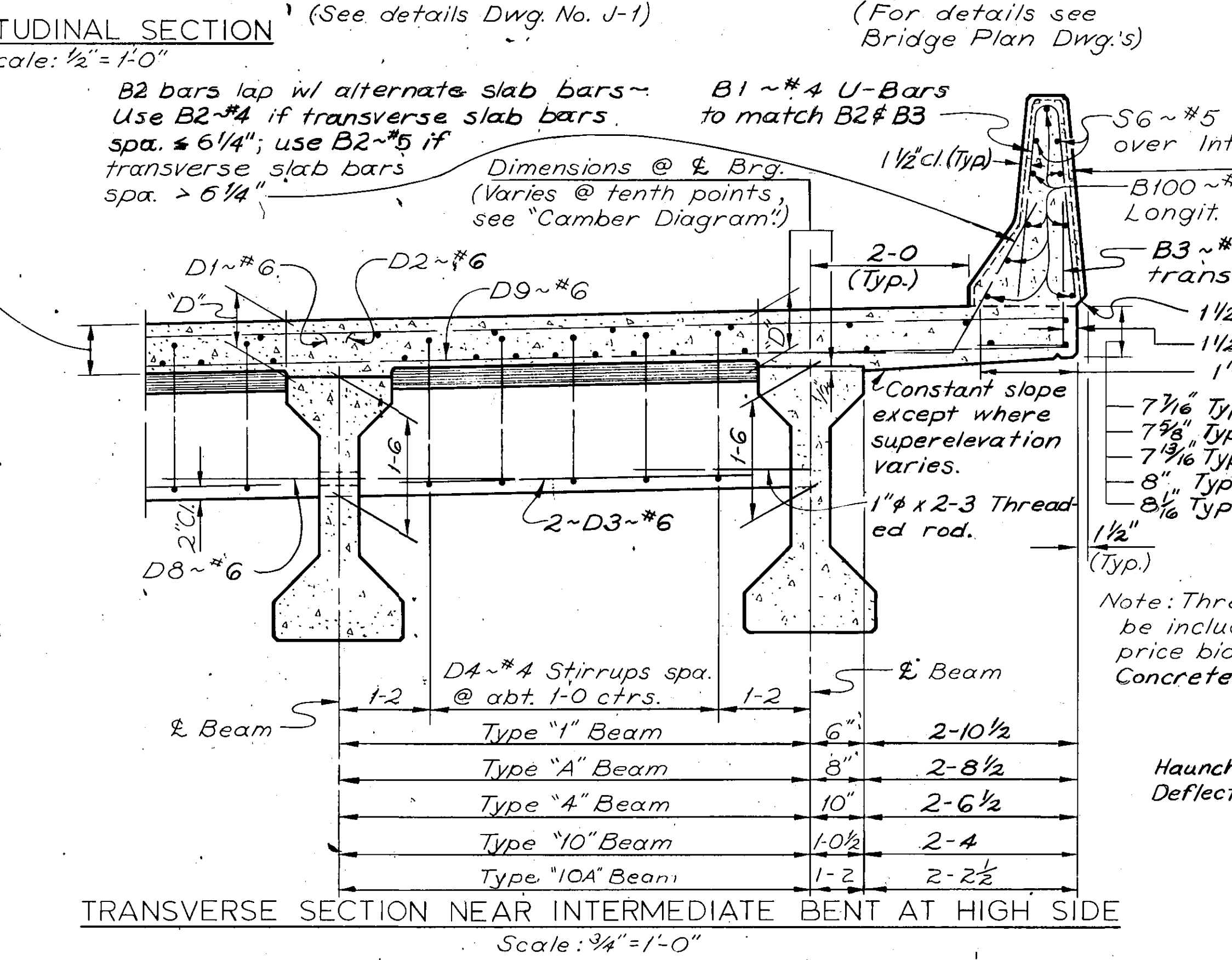
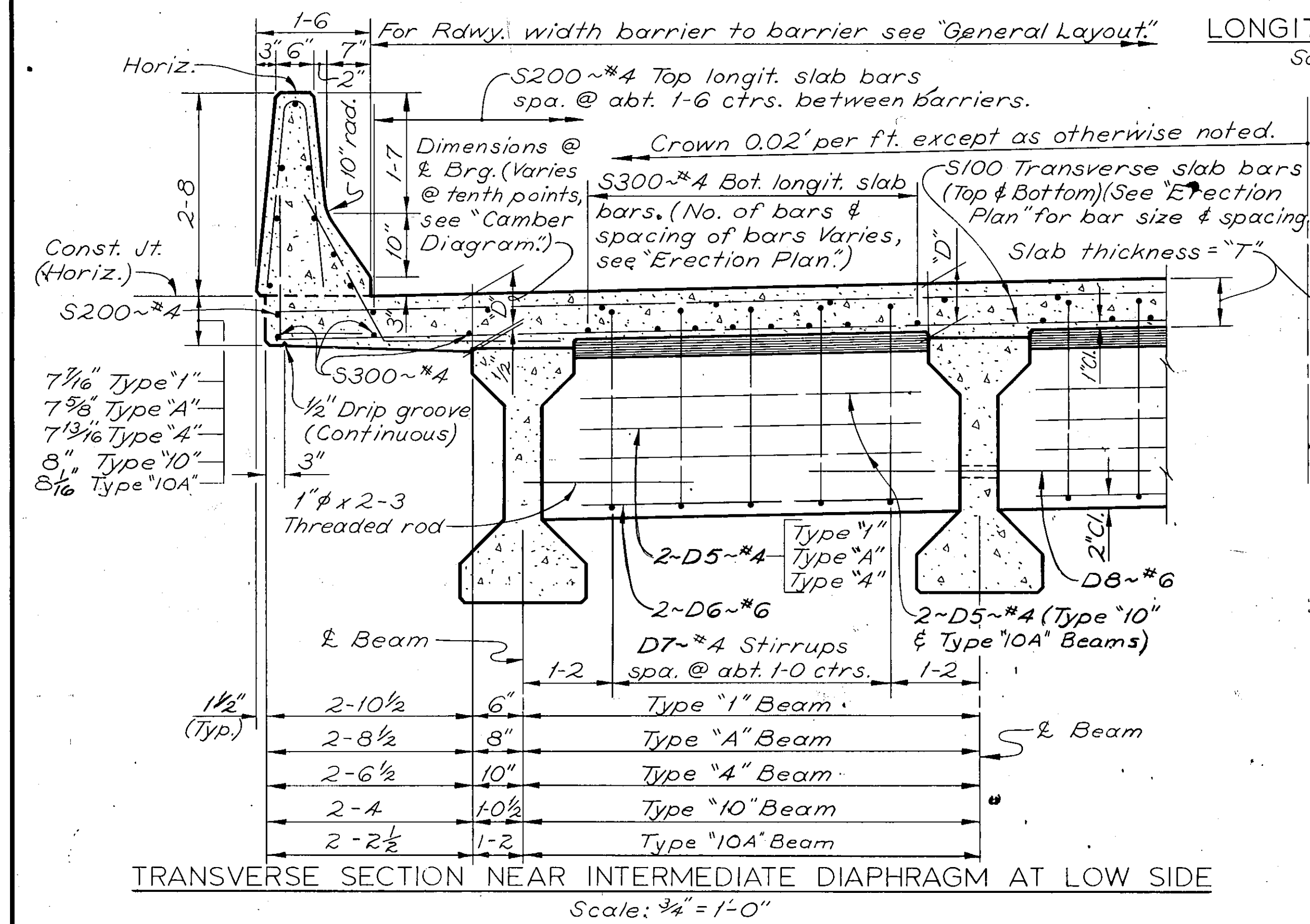
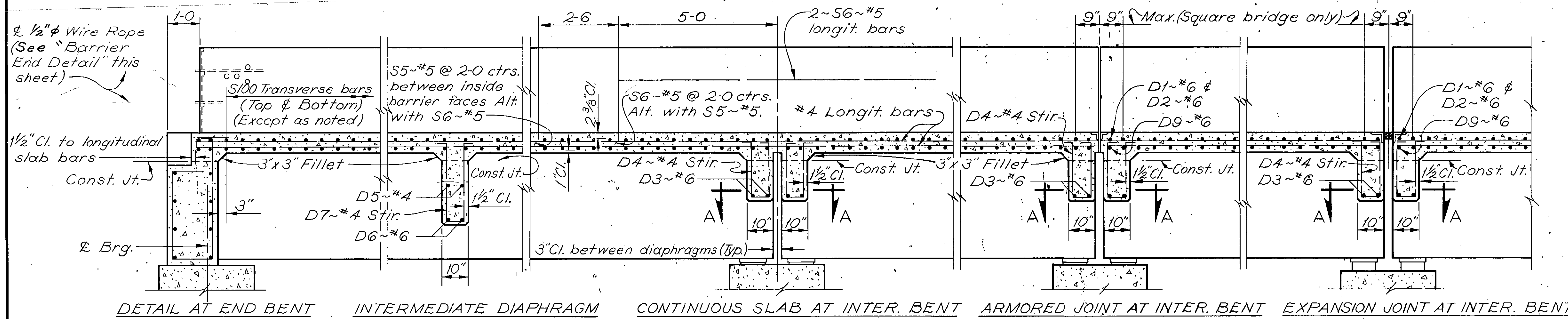
When adjoining spans have a different number of longitudinal slab bars, the longitudinal bars of the shorter are continuous over the bent and extend 3'-0" into the longer span.

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

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

Wire Rope shall be zinc-coated steel wire (7) strand utilities grade with a minimum breaking strength of 25000 Lbs. And shall conform to ASTM A-475.

Galvanized pipe sleeves and wire rope shall be included in the unit price bid for class "BD" concrete.



DESIGNED	9/16/77	LCP
DRAWN	9/21/77	CDP
CHECKED	10/6/77	NHR
APPROVED	12/7/77	Hes
REVISED	2/3/78	NHR
REVISED	11/12/80	JCH

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

STANDARD SLAB, BARRIER
& DIAPHRAGM DETAILS

Scale: As Noted

STATE OF MONTANA
STATE HIGHWAY COMMISSION

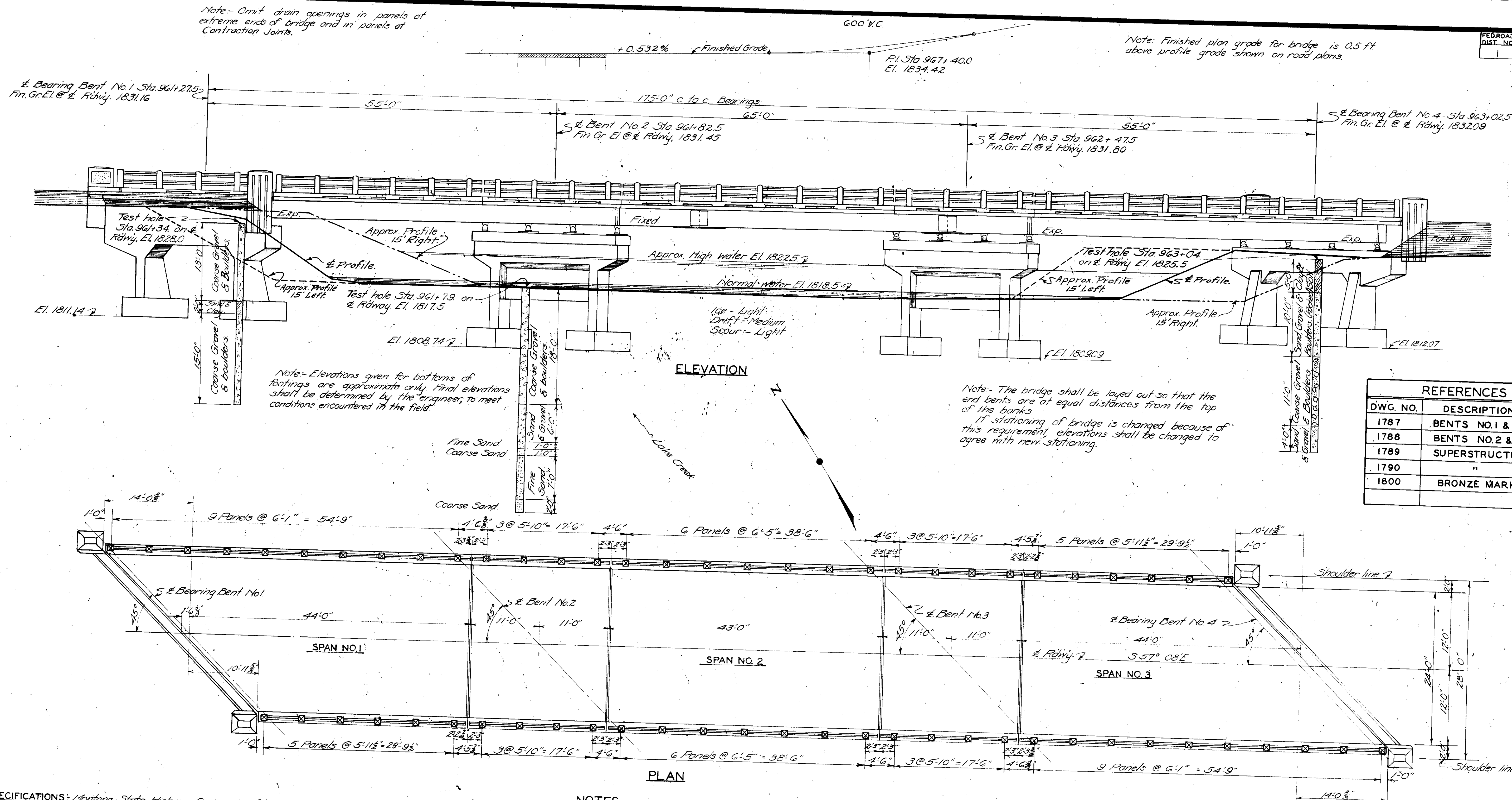
BRIDGE PLANS & QUANTITIES
FEDERAL AID PROJECT NO. 250D UNIT 2
LIBBY-TROY HIGHWAY

LINCOLN COUNTY

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
1	1779	GENERAL LAYOUT CALLAHAN CREEK
2	1780	BENTS NO. 1 & NO. 4 " "
3	1781	BENTS NO. 2 & NO. 3 " "
4	1782	SPANS NO. 1 & NO. 3 " "
5	1783	FLOOR JOINTS & SHOES-SPAN NO. 2 " "
6	1784	SIDEWALK TRUSS " "
7	1785	LIGHT TRUSS " "
8	1786	GENERAL LAYOUT LAKE CREEK
9	1787	BENTS NO. 1 & NO. 4 " "
10	1788	BENTS NO. 2 & NO. 3 " "
11	1789	SUPERSTRUCTURE " "
12	1790	SUPERSTRUCTURE " "
13	1800	BRONZE MARKER

BRIDGE QUANTITIES (ESTIMATED PLAN QUANTITIES)											
LOCATION	STRUCTURAL STEEL LBS.	REINFORCING STEEL LBS.	CAST STEEL LBS.	CLASS "A" CONCRETE CU. YDS.	CLASS "D" CONCRETE CU. YDS.	CONCRETE CURB & RAIL LIN. FT.	STEEL HANDRAIL LIN. FT.	CONCRETE HANDRAIL LIN. FT.	UNTREATED TIMBER PILING LIN. FT.	STRUCTURE EXCAVATION CU. YDS.	REMOVAL OF EXISTING STRUCTURES
BRIDGE OVER CALLAHAN CREEK											
BENT NO. 1	665	4480		55.0					360	144	
BENT NO. 2		4020		63.5					560	178	
BENT NO. 3		4020		63.5					560	106	
BENT NO. 4	665	4480		55.0					360	168	
SPAN NO. 1	28940	7710			41.7			91.5			
SPAN NO. 2	130950	14440	1830		75.0		105.33				
SPAN NO. 3	20180	5450			32.2			71.0			
TOTAL	181400	44600	1830	237.0	148.9		105.33	162.5	1840	596	1
BRIDGE OVER LAKE CREEK											
BENT NO. 1	780	4600		52.0						165	
BENT NO. 2		3800		40.0						69	
BENT NO. 3		3500		39.0						64	
BENT NO. 4	780	4600		52.0						126	
SPANS 1-2-3	111340	24700	6030		115.6	354.7					
TOTAL	112900	41200	6030	183.0	115.6	354.7				424	
TOTAL ALL STRUCTURES	294300	85800	7860	420.0	264.5	354.7	105.33	162.5	1840	1020	1



REFERENCES	
DWG. NO.	DESCRIPTION
1787	BENTS NO.1 & NO.4
1788	BENTS NO.2 & NO.3
1789	SUPERSTRUCTURE
1790	"
1800	BRONZE MARKER

DESIGNED BY	H.C.M.	Spd. 36
DRAWN BY	A.L.H.	9.9.62
TRACED BY	H.T.C.R.	9.17.36
CHECKED BY	N.B.	9.28.36
REVISED BY		
REVISED BY		

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

CONCRETE: All concrete in super-structure including curbs and handrails shall be class "D". All other concrete shall be class "A" except as noted.

Chamfer all exposed edges of concrete $\frac{1}{2}$ inches, and fillet all entrant angles $\frac{1}{2}$ inches unless otherwise noted.

REINFORCING STEEL: All reinforcing bars shall be of intermediate grade billet steel. They shall be of approved deformed section except as noted.

Slab bars shall be supported on steel chairs placed sufficiently close together to maintain bars in proper position. All other bars shall be supported as with the slab bars.

on either steel chairs or precast concrete blocks. All other bars shall be supported reinforcing steel shall include the cost of furnishing and placing chairs.

Splicing of main reinforcing bars shall not be permitted.

Bends in reinforcing bars shall be made to a radius of not less than 2

diameters of the bar hooks shall conform to the dimensions shown in the following sketches:-




$d = \text{diameter of bar}$

STRUCTURAL STEEL: For requirements governing structural steels and their fabrication, see the Standard Specifications. To avoid oversight these requirements

7-30-36

NOTES

NOTES

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 concrete, except as noted in paragraph 5.3.8 of the Standard Specifications.

Shop Coat: Lead paint as described in Section 5.3 of the Standard Specifications.

First Field Coat: Primer coat for aluminum paint as described in Section 5.4 of the Standard Specifications.

Second Field Coat: Aluminum paint as described in Section 5.4 of the Standard Specifications.

CONCRETE CURB & HANDRAIL: The price bid for concrete curb and rail shall be payment for curbs and handrails on the spans, complete in place except for reinforcing bars therein, which shall be paid for as reinforcing steel.

FINISHING: Attention is directed particularly to the requirements of paragraph 26.5 (m)(2) of the Standard Specifications for the finishing of concrete floor slabs.

ENFORCING COVERING: Minimum covering from surface of concrete to face of any reinforcing bar shall not be less than 2 inches except in slabs, where the minimum covering shall be 1 inch. In footings and piers the minimum covering shall be 3 inches.

CONSTRUCTION JOINTS: Construction joints shall be made only at locations shown on the plans or as approved by the engineer. Adequate keys shall be provided at all construction joints as noted on the plans or determined by the engineer.

PILLS AND FOUNDATION MATERIAL: Borings were taken by the State Highway Commission at the points shown, to obtain information on the soils at this bridge site so that a more reasonable conclusion could be reached as to the type and approximate elevation of the bottom of the foundation that should be used. The State Highway Commission's interpretation of the materials encountered from the results of the borings is shown on this sheet.

The State Highway Commission does not guarantee that the material which will be actually encountered in the course of excavation for the structure will be as listed in the log of borings shown hereon, neither does the State assume any responsibility for any variation or misinterpretation of the classes of materials.

No claim or adjustment in the unit price bid for excavation will be made if the materials found in the course of excavation do not agree with those shown on this sheet in the log of borings.

Materials shown as Sand and gravel (Sand, gravel and boulders) may be of varying degrees of compactness and cementation.

MASTIC MATERIAL - The cost of furnishing and placing the mastic material called for on these plans shall be included in the unit price bid for class "D" concrete and for handrail. The material shall be Carey Elashite or an approved equal.

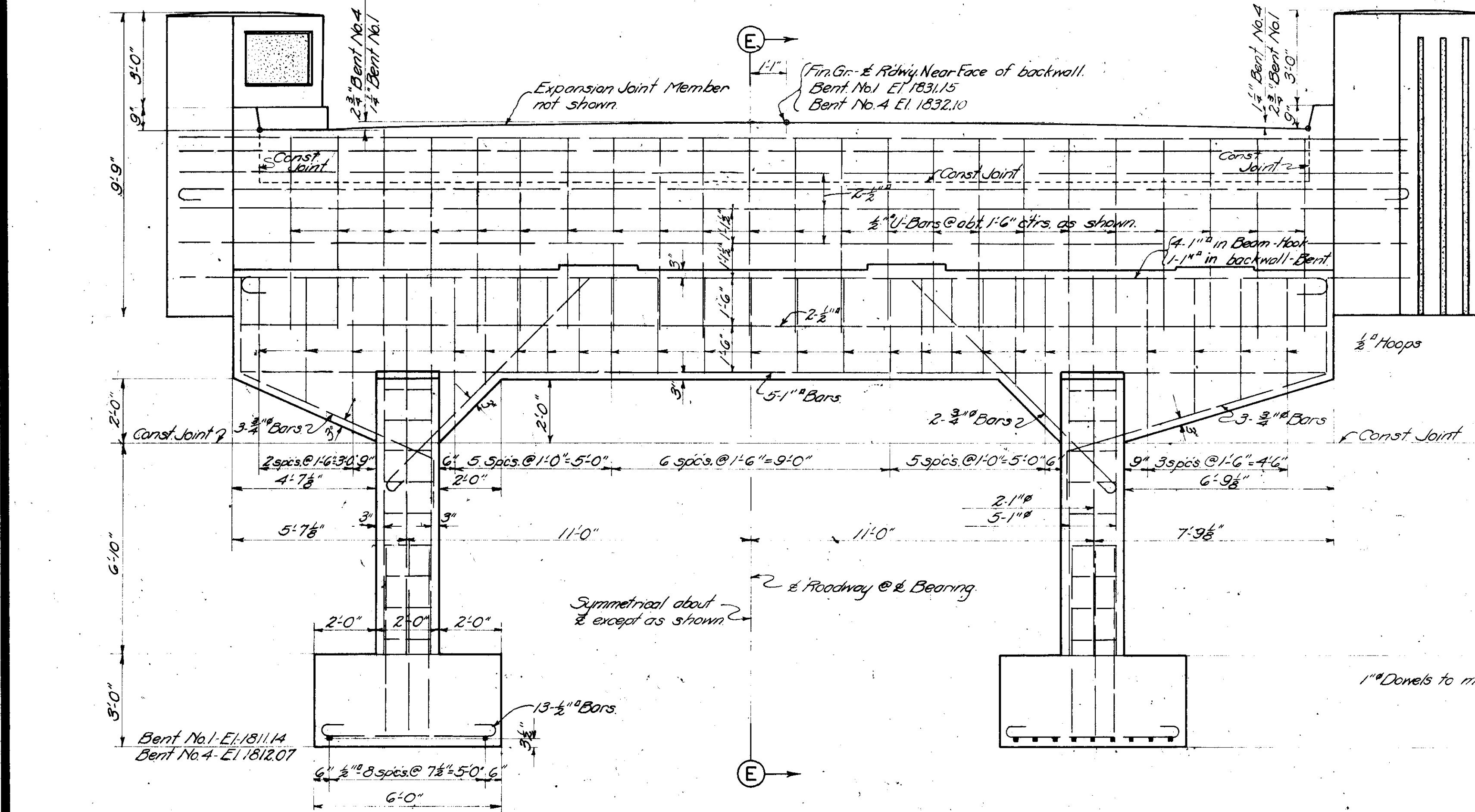
STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER LAKE CREEK
NEAR TROY
E.A.P. NO. 250 D UNIT 2
LINCOLN COUNTY
GENERAL LAYOUT

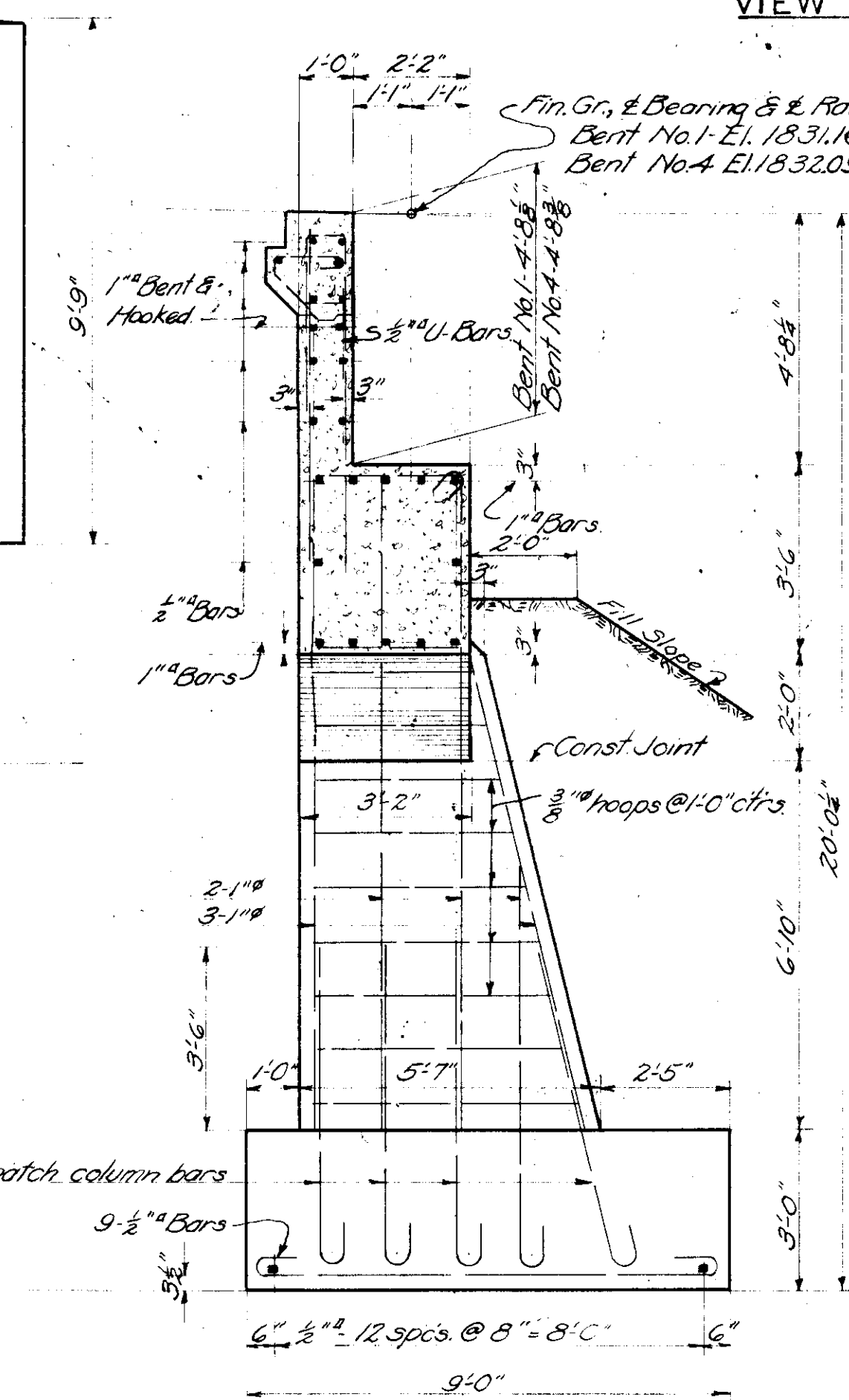
APPROVED BY B. J. Omburn
BRIDGE DESIGNING ENGINEER

FILE NO. 763 DRAWING NO. 1786

PEDESTAL HEIGHTS		
PED.	BENT 1	BENT 4
A	$1\frac{5}{16}"$	None
B	$2\frac{1}{4}"$	$1\frac{13}{16}"$
C	$1\frac{13}{16}"$	$2\frac{1}{4}"$
D	None	$1\frac{5}{16}"$



Max. foundation pressure
4.3 tons per sq. ft.



SETTING OF SHOES: See note on Dwg. No. 178B.
BACKFILL: Backfill at end berms may be complete up to the bottoms of the cross beams before super structure is in place. The backfill against the cross beams shall not be placed until after the concrete roadway slab has been placed.
PAINTING OF MARKER: Before paint is applied, plates shall be cleaned with gasoline. One coat of white enamel shall then be applied over entire surface of plate. Lettering and borders shall be put on with signwriters lettering block. After marker is complete it shall be given one coat of clear spar varnish.
OTHER NOTES: For other notes see Dwg's No. 178G & 178B.

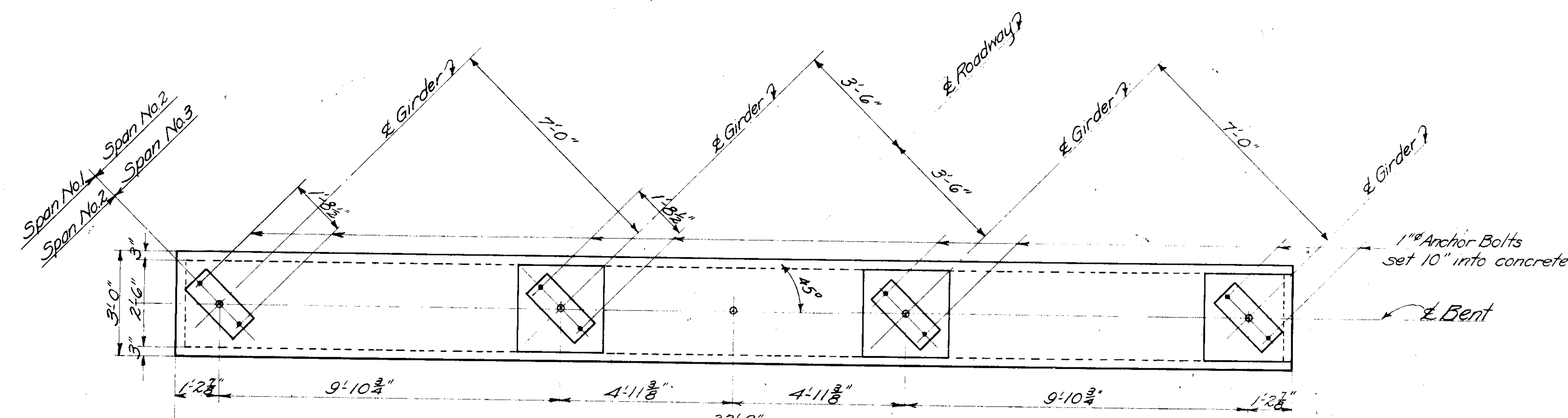
SETTING OF SHOES: See note on Dwg. No. 178B.
BACKFILL: Backfill at end berms may be complete up to the bottoms of the cross beams before super structure is in place. The backfill against the cross beams shall not be placed until after the concrete roadway slab has been placed.
PAINTING OF MARKER: Before paint is applied, plates shall be cleaned with gasoline. One coat of white enamel shall then be applied over entire surface of plate. Lettering and borders shall be put on with signwriters lettering block. After marker is complete it shall be given one coat of clear spar varnish.
OTHER NOTES: For other notes see Dwg's No. 178G & 178B.



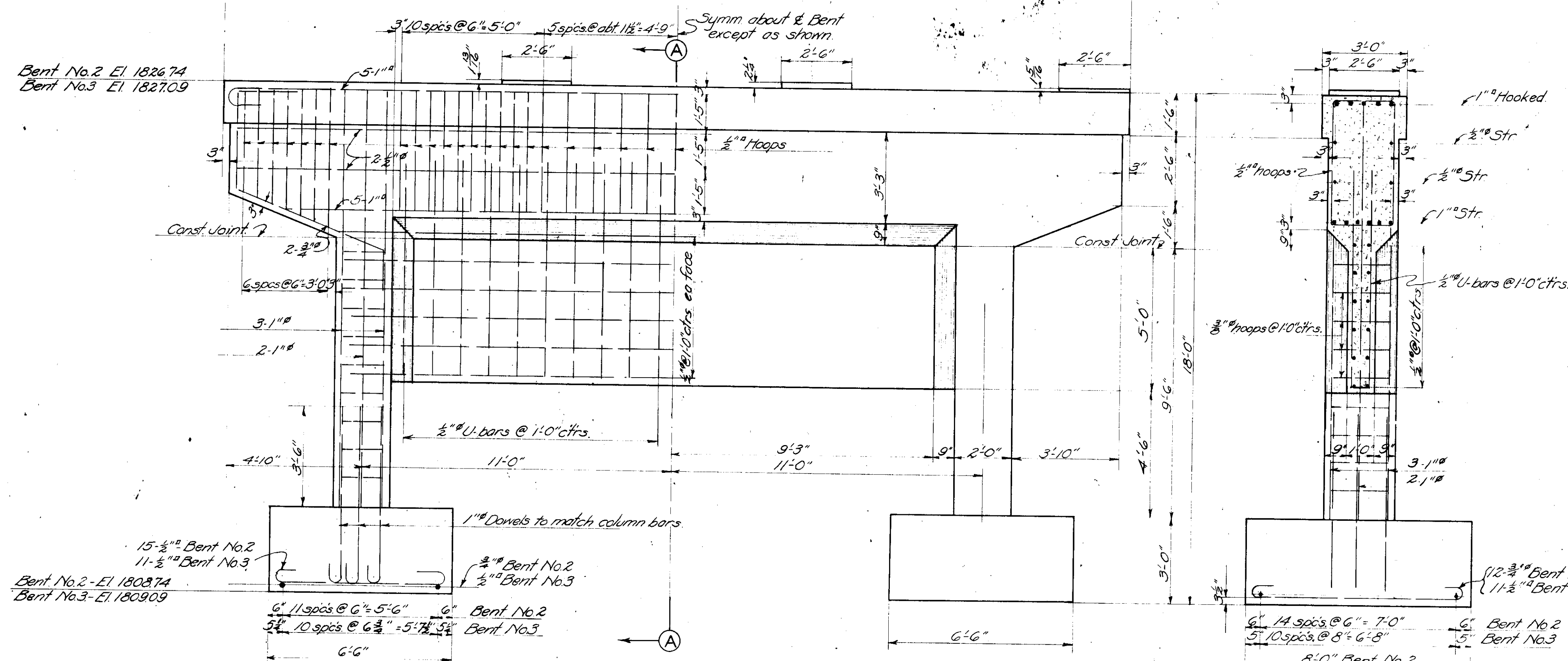
DETAIL OF MARKER
Scale: $1\frac{1}{2}" = 1'-0"$

BRIDGE OVER LAKE CREEK
NEAR TROY
F.A.P. NO. 250D UNIT 2
LINCOLN COUNTY
BENTS NO. 1 & NO. 4
Scale: $\frac{3}{4}$ " = 1'-0" except as noted

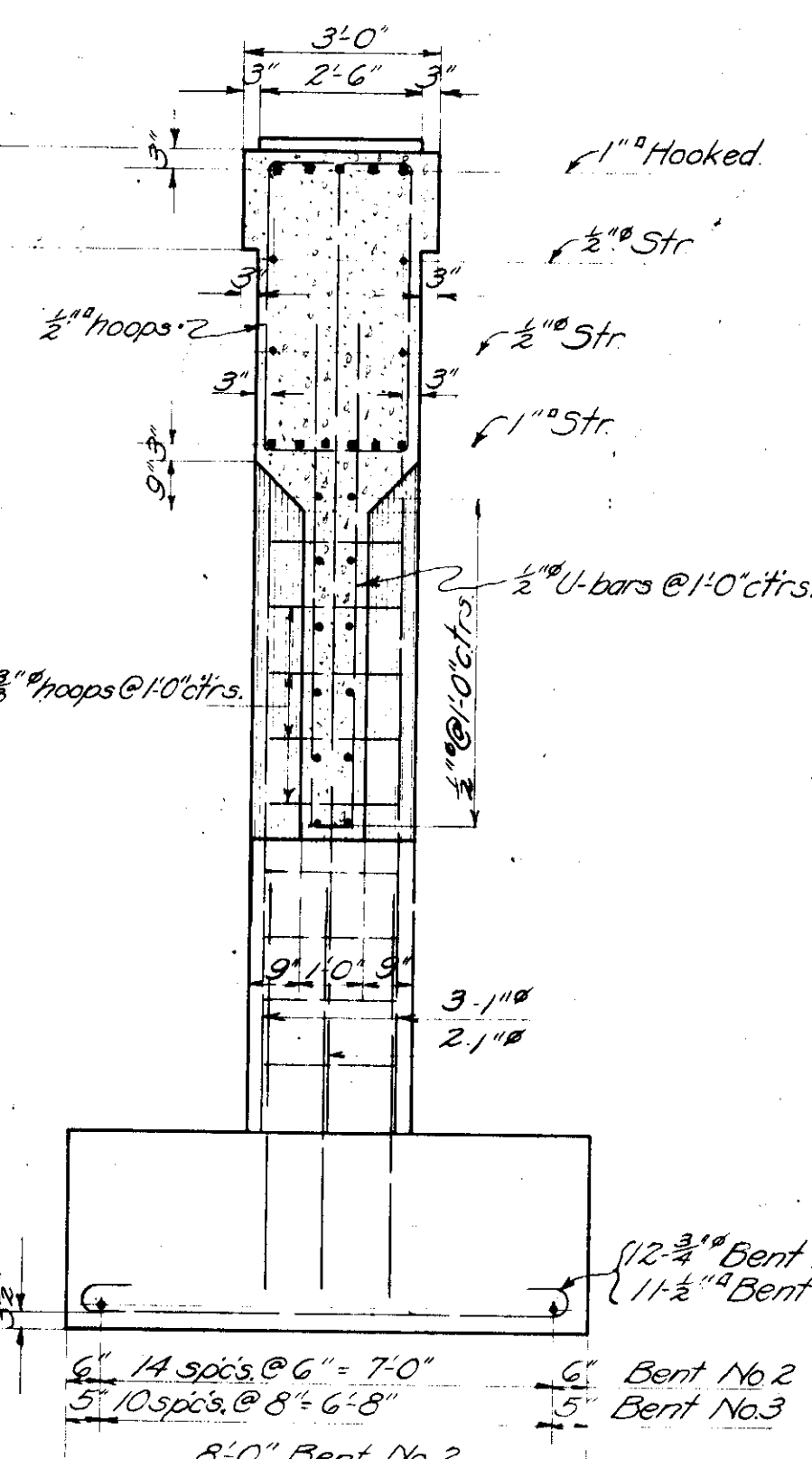
FILE NO. 763 DRAWING NO. 1787



TOP PLAN



ELEVATION BENTS NO. 2 & NO. 3



SECTION A-A

NOTES

SETTING OF SHOES: Care shall be taken in placing reinforcing steel so as to clear anchor bolts. Contractor shall finish concrete under shoes slightly high and bush hammer to exact elevations shown. Shoes shall be placed on 3 layers of canvas thoroughly swabbed with red lead as called for in the specifications.

CONCRETE: All concrete in bents shall be class "A" except that if the contractor desires to deposit the footings under water, he shall use class "S". Such concrete, deposited under water shall be carefully placed in the space where it is to remain in a compact mass by means of a tremie, bottom dump bucket or other method approved by the engineer that does not permit the concrete to fall through the water without adequate protection. Payment for class "S" concrete shall be made at the unit price bid for class "A" concrete.

OTHER NOTES: For other notes see Divs No 1706 & 1707.

Maximum Foundation Pressure
Bent No. 2 - 4.4 Tons per sq. ft.
Bent No. 3 - 3.2 Tons per sq. ft.

DESIGNED BY	WCH	Sept 30
DRAWN BY	LGH	9-9-36
TRACED BY	TCF	9-16-36
CHECKED BY	WCH	9-20-36
REVISED BY		
REVISED BY		

STATE OF MONTANA STATE HIGHWAY COMMISSION

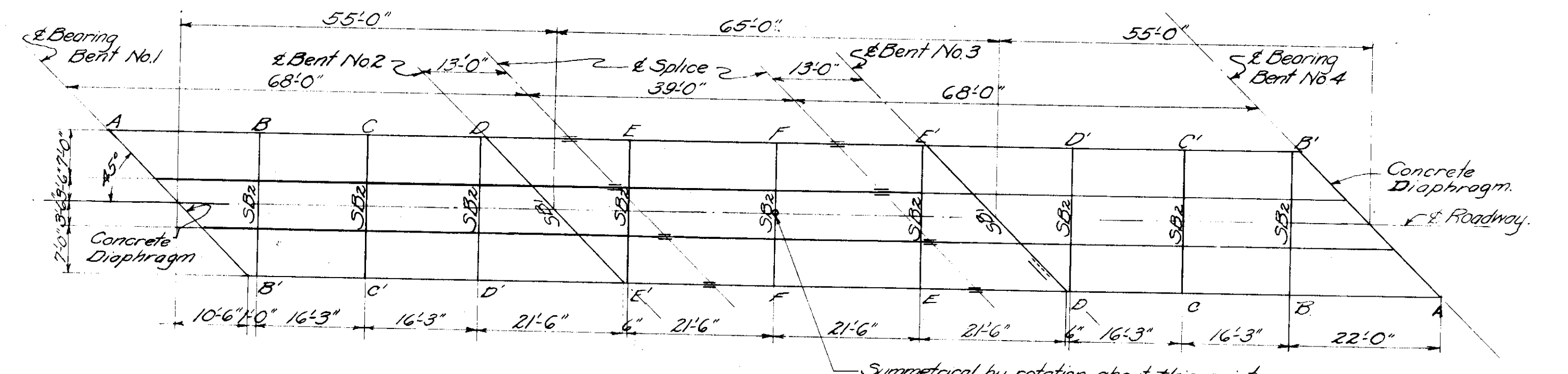
BRIDGE OVER LAKE CREEK
NEAR TROY
F.A.P. NO. 250D UNIT 2
LINCOLN COUNTY

BENTS NO. 2 & NO. 3

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

APPROVED BY *[Signature]*
BRIDGE DESIGNING ENGINEER

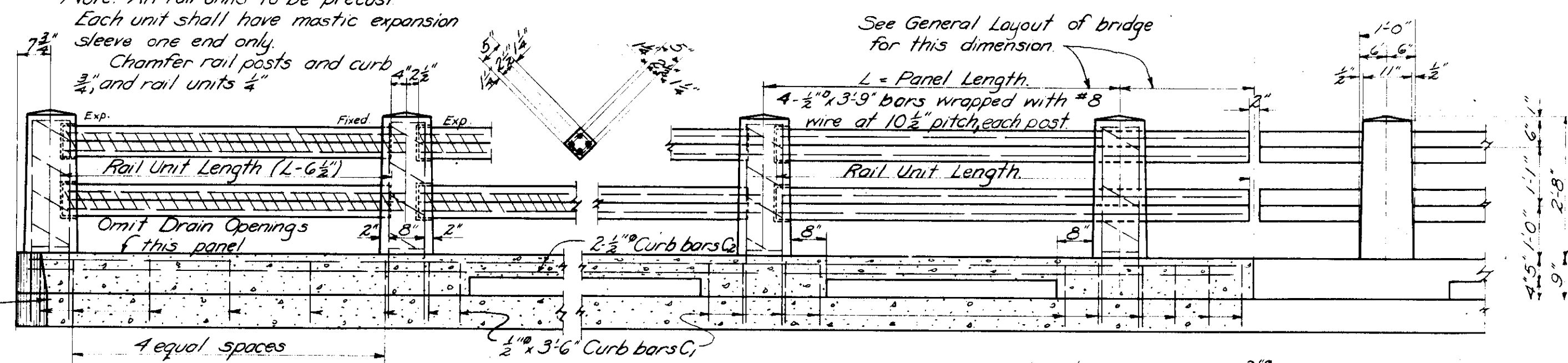
FILE NO. 763 DRAWING NO. 1788



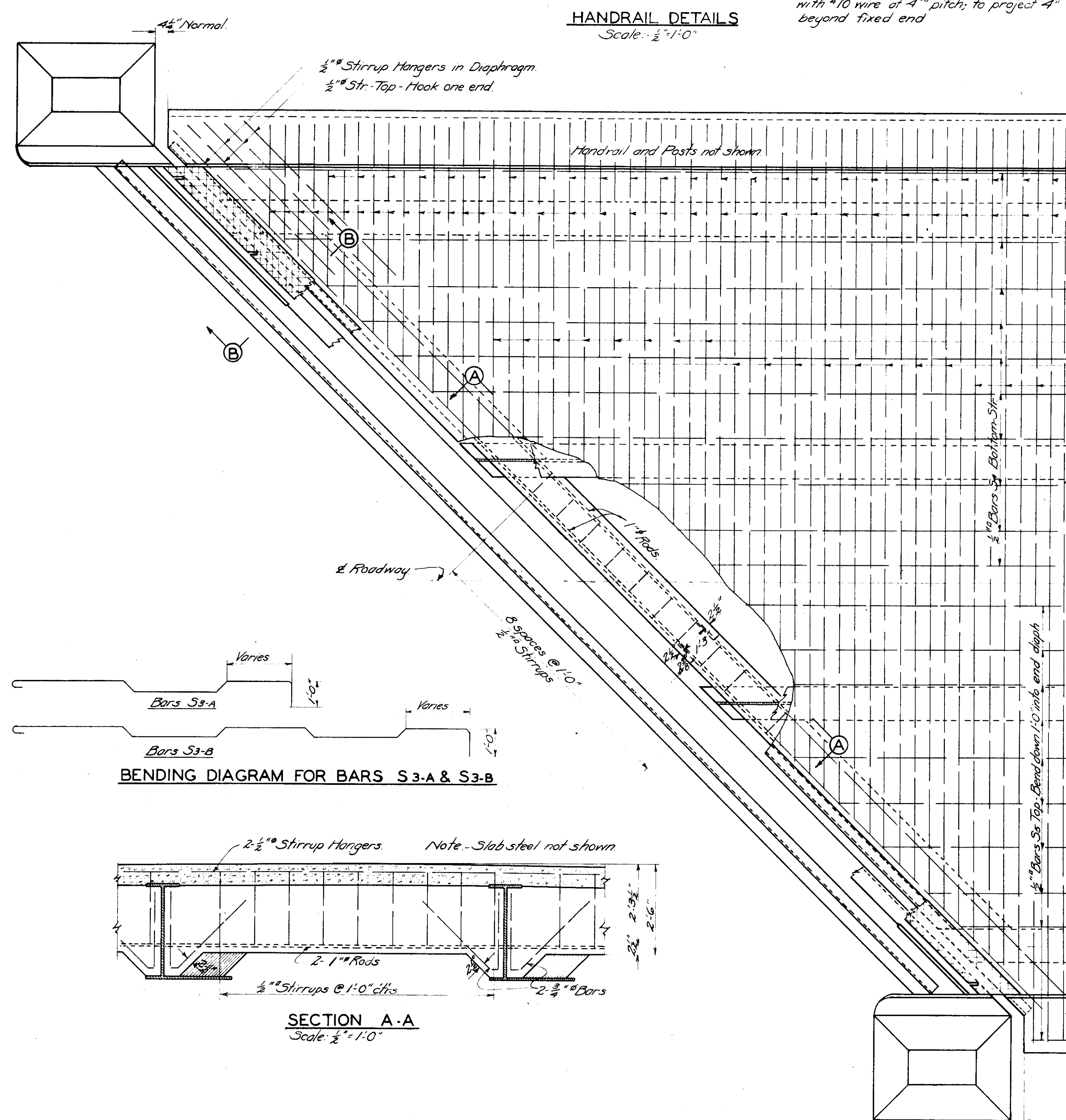
ERECTION DIAGRAM

FILE NO. 763 DRAWING NO. 1789

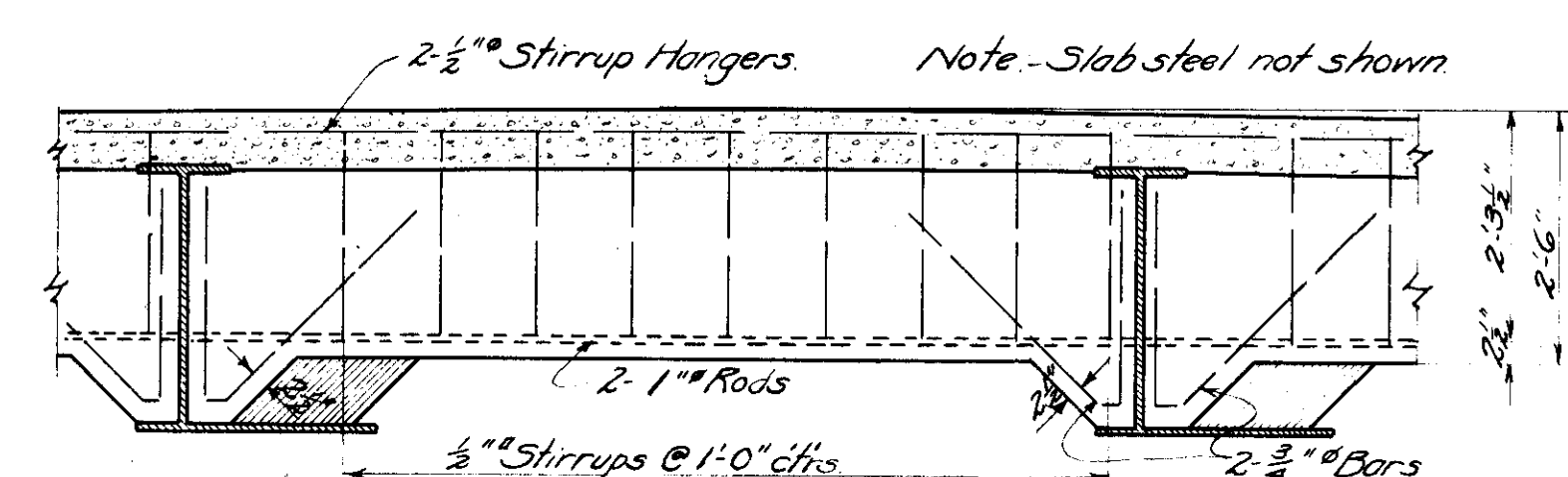
Note: All rail units to be precast. Each unit shall have mastic expansion sleeve one end only. Chamfer rail posts and curb $\frac{1}{4}$ " and rail units $\frac{1}{4}$ ".



HANDRAIL DETAILS
Scale: $\frac{1}{2}$ " = 1'-0"



BENDING DIAGRAM FOR BARS S3-A & S3-B



SECTION A-A
Scale: $\frac{1}{2}$ " = 1'-0"

PLAN AT BENTS NO. 1 & NO. 4
Scale: $\frac{1}{2}$ " = 1'-0"

$\frac{3}{8}$ " x 28" Slotted holes @ 3'-0" c'trs., parallel to & Rdwy. in floor plate. Tapped holes for $\frac{1}{2}$ " x $\frac{1}{2}$ " cap screws in 6" x 4" L. Provide 4" washers with cap screws. Remove cap screws immediately after concrete in vent is poured.

Minimum +120°F
Normal +60°F
Maximum -40°F

Bent No. 1

Minimum +120°F
Normal +60°F
Maximum -40°F

Bent No. 4

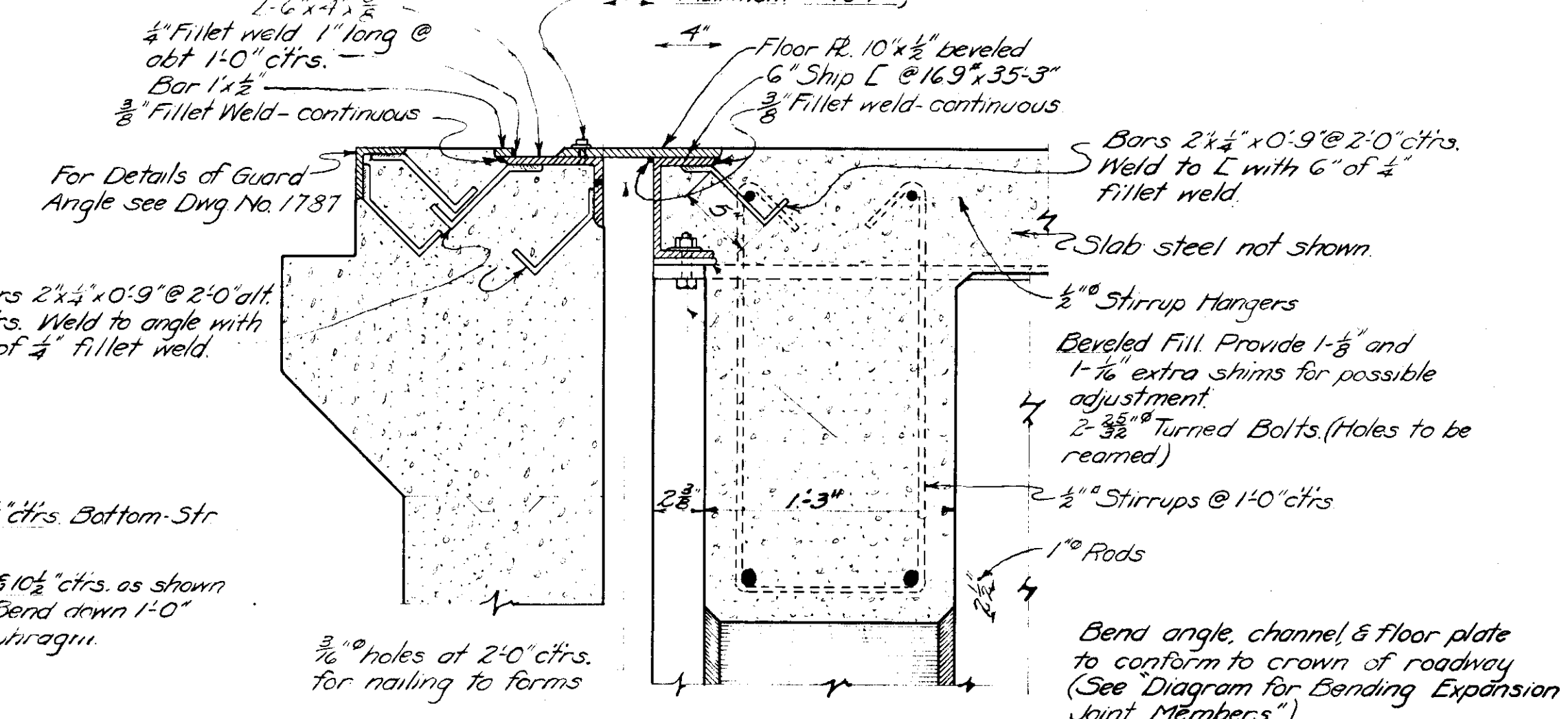
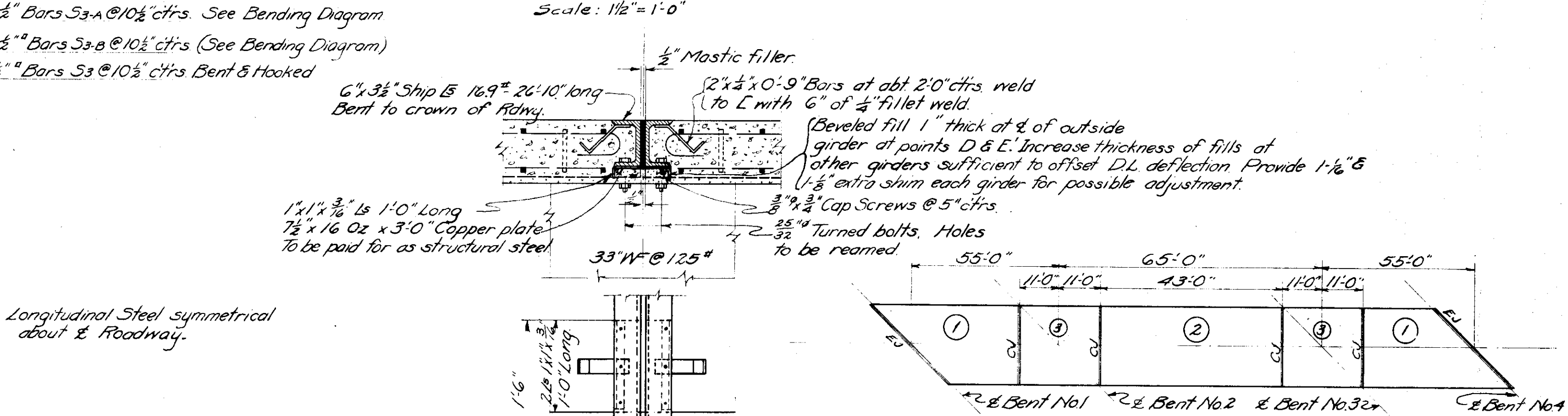
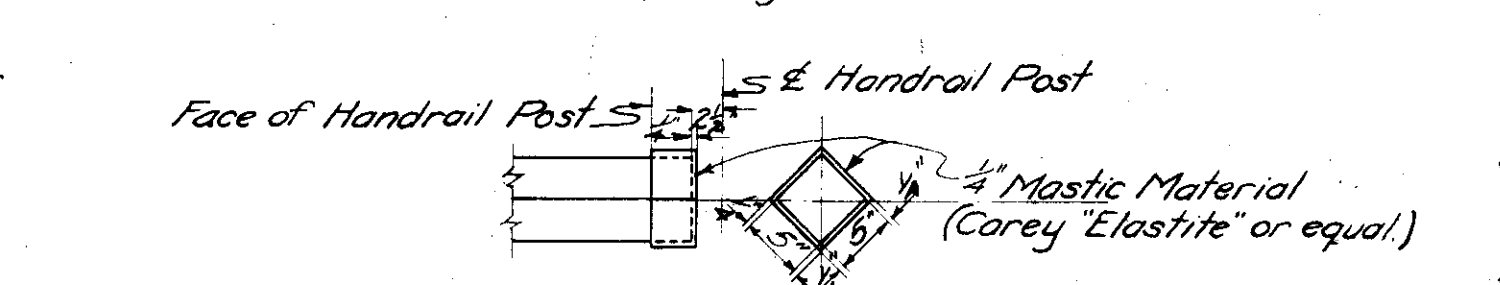


DIAGRAM FOR BENDING EXPANSION JOINT MEMBERS

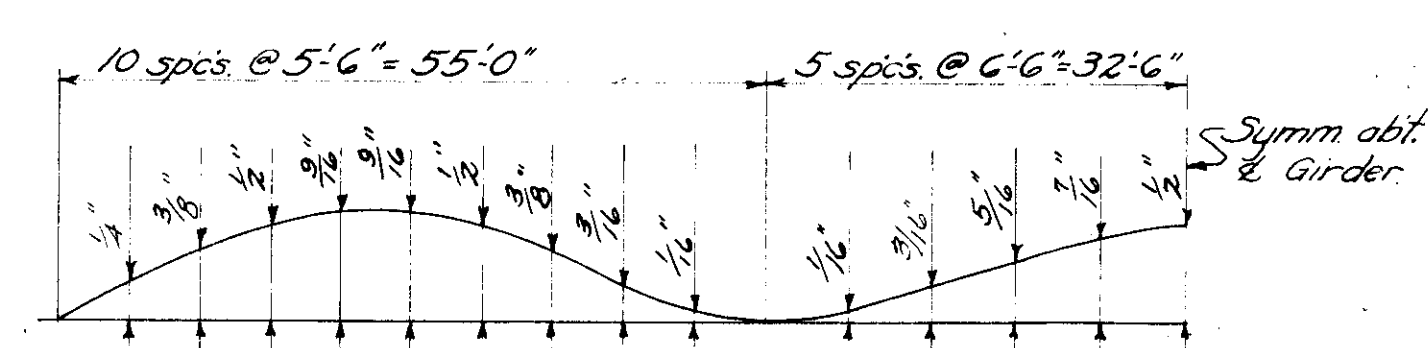
SECTION B-B
EXPANSION JOINT AT BENTS NO. 1 & NO. 4
Scale: $1\frac{1}{2}$ " = 1'-0"



POURING DIAGRAM, DECK SLAB
See note, Drawg. No. 1789

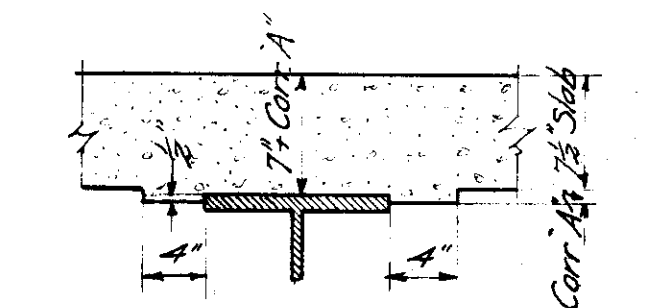


CONTRACTION JOINTS AT D-D' & E-E' (See Erection Diagram)
Scale: 1" = 1'-0"



CORRECTION 'A' FOR DEAD LOAD DEFLECTIONS

FLANGE EMBEDMENT DETAIL



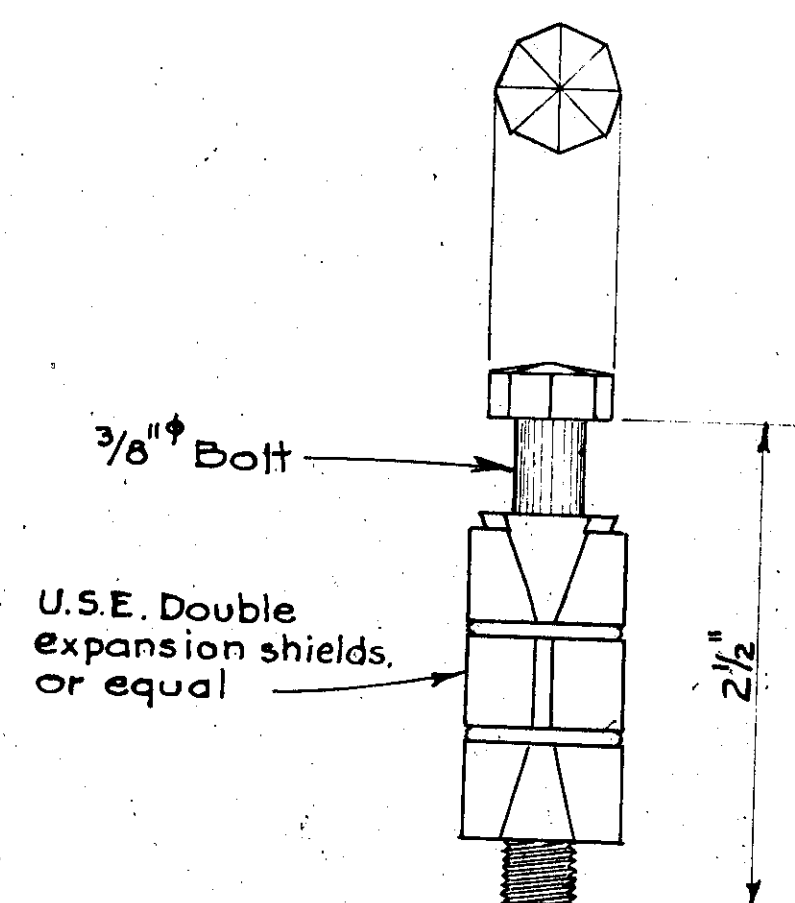
STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER LAKE CREEK
NEAR TROY
F.A.P. NO. 250 D UNIT 2
LINCOLN COUNTY
SPANS NO. 1 & NO. 4
Scales as noted.

APPROVED BY: *B. J. Osburn*
BRIDGE DESIGNING ENGINEER
FILE NO. 763 DRAWING NO. 1790

SIGNED	BY	H.C.M.	Scale
DRAWN	BY	L.G.H.	9-5-36
TRACED	BY	T.C.F.	9-11-36
CHECKED	BY	W.F.	9-28-36
REVISED	BY		
REVISED	BY		

SIGNED	BY				
UNAWN	BY	HE	S-9-36		
TRACED	BY				
CHECKED	BY				
REVISED	BY				
REVISED	BY				



Contractor may if he desires, use three inch bolts set in handrail before concrete is poured instead of drilling and using expansion shields and stud bolts. Rosette nuts are to be used if the alternate method is adopted.

Two bronze tablets required for each bridge.
Location of tablets to be determined by the engineer.
Bronze tablets shall be furnished and installed by the contractor. All cost incurred due to furnishing and installing the tablets shall be included in the unit bid price for class "D" concrete.

The lettering shall be of a type and size similar to that shown on the sketch.

The letters and border shall be finished and polished, the back ground shall be sand blast finished.

The date 1936 shall be revised if necessary to show the actual year the structure was completed.

Bronze Casting shall be made from re-melted ingots of a homogeneous alloy composed as follows.

- 83% to 85% copper.
- 4% to 10% tin.
- Up to 6% lead.
- 2% to 6% Zinc.

Not over 5% of 1% impurities.

Bronze shall not contain more than 5% of 1% sulphur.

Workmanship: Casting shall be boldly filled at angles and the araises shall be sharp and perfect. Casting shall be true to pattern in form and dimension and shall be free from inclusion of foreign material, casting faults, injurious blow holes, or other defects rendering them unsuitable for the service intended. Casting shall be machined and finished as specified above.

STANDARD
BRONZE TABLET
Scale: Full size

APPROVED BY: *B. J. Ombrian*
 BRIDGE DESIGNING ENGINEER
 FILE No.
 DRAWING No. 1800