



**ENGINEERING CONSTRUCTION CONTRACTING SECTION
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 Thus, some of the information contained in these documents may be out of date or not applicable with regard to the advertised project.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 OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE PLANS & QUANTITIES
FEDERAL AID PROJECT NO. 1- IN 212(12)
WYOMING LINE-CROW AGENCY
BIG HORN COUNTY

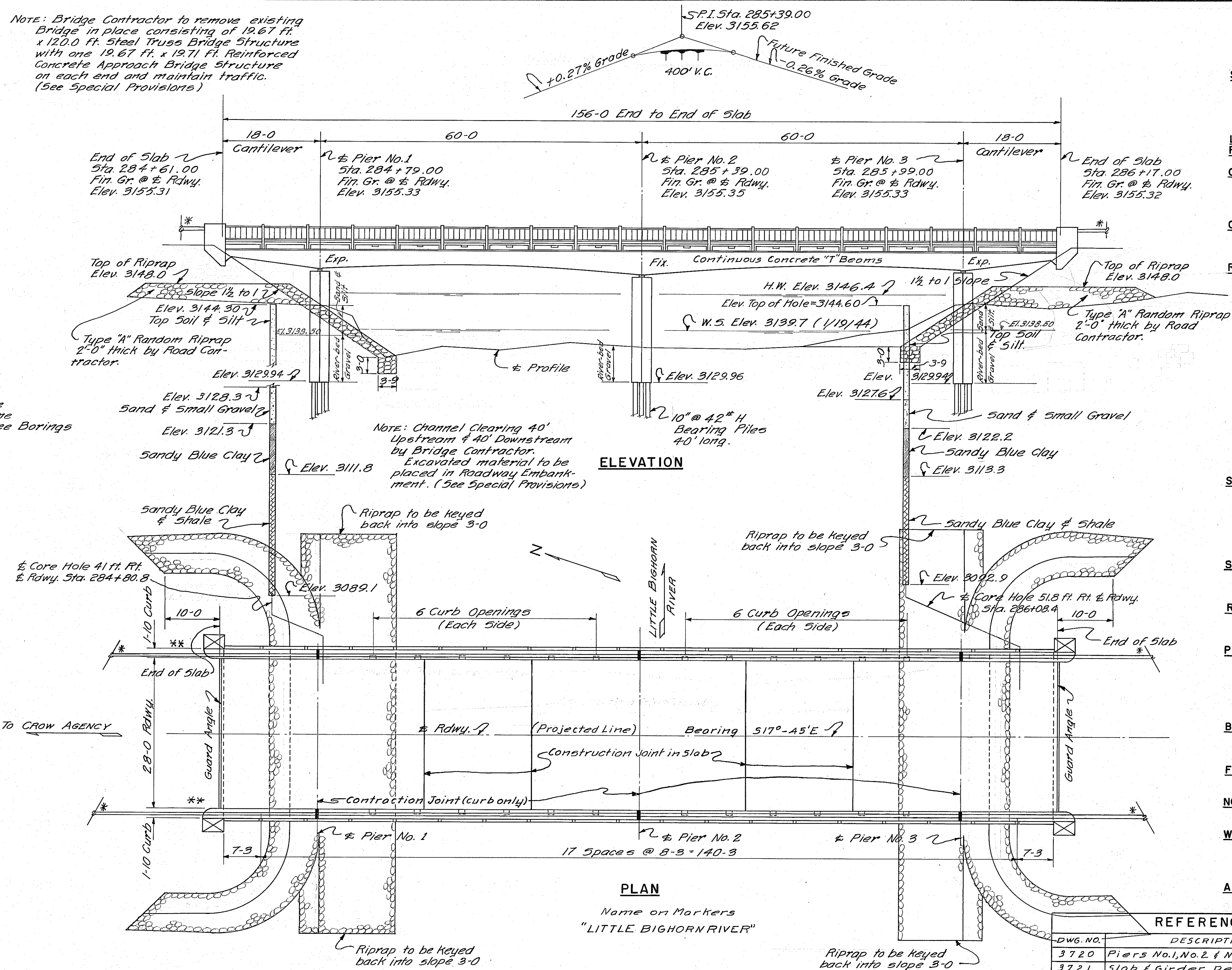
LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
1	3719	GENERAL LAYOUT
2	3720	PIERS NO.1, NO.2 & NO.3
3	3721	SLAB & GIRDER DETAILS
4	3722	BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE & SHOE DETAILS
5	SBR-T3	STANDARD STEEL BRIDGE RAIL-TYPE NO.3
6	390	DETAILS OF EXISTING STRUCTURE
7	365	" " " "
8	365A	" " " "

ESTIMATED BRIDGE PLAN QUANTITIES										5% Swell in Class "A" Concrete. 15% Swell in Structure & Unclassified Exca.
LOCATION	LENGTH IN FEET	REINFORCING STEEL LBS.	CLASS "A" CONCRETE CU. YDS.	CLASS "AD" CONCRETE CU. YDS.	STEEL BRIDGE RAIL LIN. FT.	STEEL BEARING PILES FURNISHING LBS.	DRIVING LIN. FT.	STRUCTURE EXCAV. CU. YDS.	UNCLASS. EXCAV. CU. YDS.	REMOVAL OF EXISTING STRUCTURE & MAINTAINING TRAFFIC
PIER NO.1		2,398	50			20,160	261	85	300	LUMP SUM
PIER NO.2		2,398	50			20,160	261	45		
PIER NO.3		2,398	50			20,160	261	85		
SUPERSTRUCTURE	156.0	69,547		254.2	309.5					
TOTAL	156.0	76,741	150	254.2	309.5	60,480	783	215	300	LUMP SUM

Made by E.R.T. 3-22-56 Checked by J.R.B. 3-26-56

NOTE: Bridge Contractor to remove existing Bridge in place consisting of 19.67 ft. x 120.0 ft. Steel Truss Bridge Structure with one 19.67 ft. x 19.71 ft. Reinforced Concrete Approach Bridge Structure on each end and maintain traffic. (See Special Provisions)



ELEVATION

PLAN

NOTES (Continued)

STRUCTURAL STEEL (Method of Measurement & Payment) - The structural steel shall be paid for at the unit price bid for Reinforcing Steel and the weight paid for shall be the computed weight as obtained in accordance with the rules and assumptions specified in the Standard Specifications. The computed weight of each shipping unit shall be shown on the shop drawings. This weight may or may not be checked at the time the details are checked.

FINISHING - Attention is directed particularly to the requirements of Paragraph 49.05 (m) (2) of the Standard Specifications for finishing of concrete floor slab.

OTHER NOTES - For other notes see Dwg. No. 3720.

NOTES

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

LIVE LOAD - Standard H20-S16 Special Loading.

FINISHED GRADE - Finished plan grade of bridge is same as future finished grade shown on Road Plans.

CONCRETE - All concrete in superstructure shall be Class "AD". All concrete in Piers shall be Class "A". An air-entraining agent shall be added to all concrete. Chomier all exposed edges of concrete $\frac{1}{4}$ " and fillet entrant angles, $\frac{1}{4}$ " unless otherwise noted.

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.

REINFORCING STEEL - All reinforcing bars shall be of intermediate grade billet steel. Deformations shall conform to A.S.T.M. Specification A305-50, except as otherwise approved. Slab bars shall be supported on steel chairs placed sufficiently close together to maintain bars in proper position. All other bars shall be supported on either steel chairs or pre-cast concrete blocks. The unit price bid for reinforcing steel shall include the cost of furnishing and placing chairs, pre-cast blocks and all other materials used to fasten reinforcing steel in place. Splicing of main reinforcing bars shall not be permitted except as shown on the plans. Bends in reinforcing bars shall be made to a radius of not less than four (4) diameters of the bar except for stirrups and tie bars, which shall be bent around a pin having a diameter of not less than two (2) bar diameters. Hooks shall conform to the dimensions shown in the following sketches.

STRUCTURAL STEEL - For requirements governing structural steels and their fabrication, see the Standard Specifications. To avoid oversight, these requirements shall be clearly noted on the shop drawings. Structural steel shall receive one (1) shop coat of red lead and two (2) field coats consisting of first field or primer coat and one (1) coat of aluminum paint as specified in the Standard Specifications, on all surfaces not in contact with concrete, except as noted under Paragraph 45.10 (d).

STRUCTURE EXCAVATION - The structure excavation shall be computed using the ground elevations that will exist after the channel clearing has been made.

REINFORCING COVERING - Minimum covering from surface of concrete to face of any reinforcing bar shall be 2 inches except in slabs, where the minimum covering shall be 1 inch.

PREFORMED EXPANSION JOINT FILLER - Preformed expansion joint fillers shall comply with the requirements set forth in A.A.S.H.O. Designation M-153, and, unless otherwise indicated on the plans, the contractor shall furnish material conforming to Type I or Type II. Cost of furnishing and placing shall be included in the unit price bid for Class "AD" concrete.

BACKFILL - Superstructure shall be in place before any approach fill is placed against the end bents. Fills at the two ends of the structure shall be kept at about the same elevation during the process of backfilling.

FORMS - All forms shall be made of tongue and groove matched lumber, surfaced inside or shall be lined with plywood. See Special Provisions.

NOSE ANGLES, GUARD ANGLES AND STEEL SHOES - Slab guard angles, pier nose angles and steel shoes shall be paid for at the unit price bid for Reinforcing Steel.

WELDS - All welds shall be continuous fillet shop welds unless otherwise noted. Welds shall be paid for at the unit price bid for Reinforcing Steel and the weights shall be computed in accordance with the following: $\frac{1}{8}$ " @ .072"/ft.; $\frac{1}{4}$ " @ .128"/ft.; $\frac{3}{8}$ " @ .287"/ft.

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

REFERENCES

DWG. NO.	DESCRIPTION
3720	Piers No. 1, No. 2 & No. 3
3721	Slab & Girder Details
3722	Bill of Reinforcing Steel for Superstructure and Shoe Details
SBR-T3	Standard Steel Bridge Rail-Type No. 3
390, 365 & 365A	Details of Existing Structure.

DESIGNED	R.D.K.	3-6-55
DRAWN	R.D.K.	3-31-55
TRACED	F.L.S.	6-7-55
CHECKED	H.E.S.	3-15-56
REVISOR	J.C.H.	11-28-79
REVISOR		

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER LITTLE BIGHORN RIVER
 AT STA. 285 + 39.00

FEDERAL AID PROJECT NO. I-I.N. 212 (12)
BIG HORN COUNTY

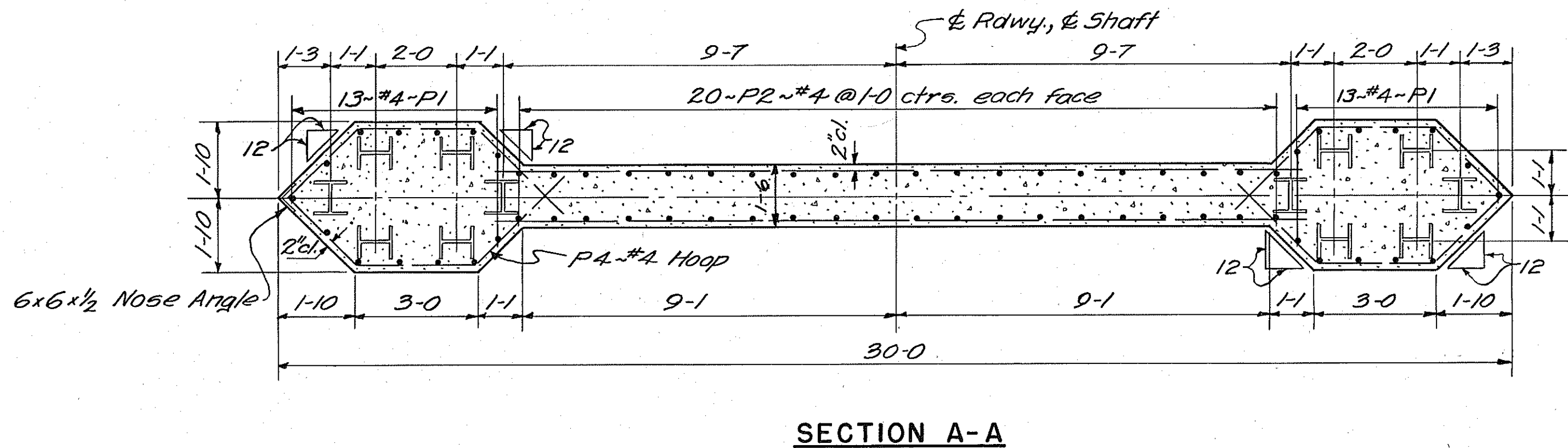
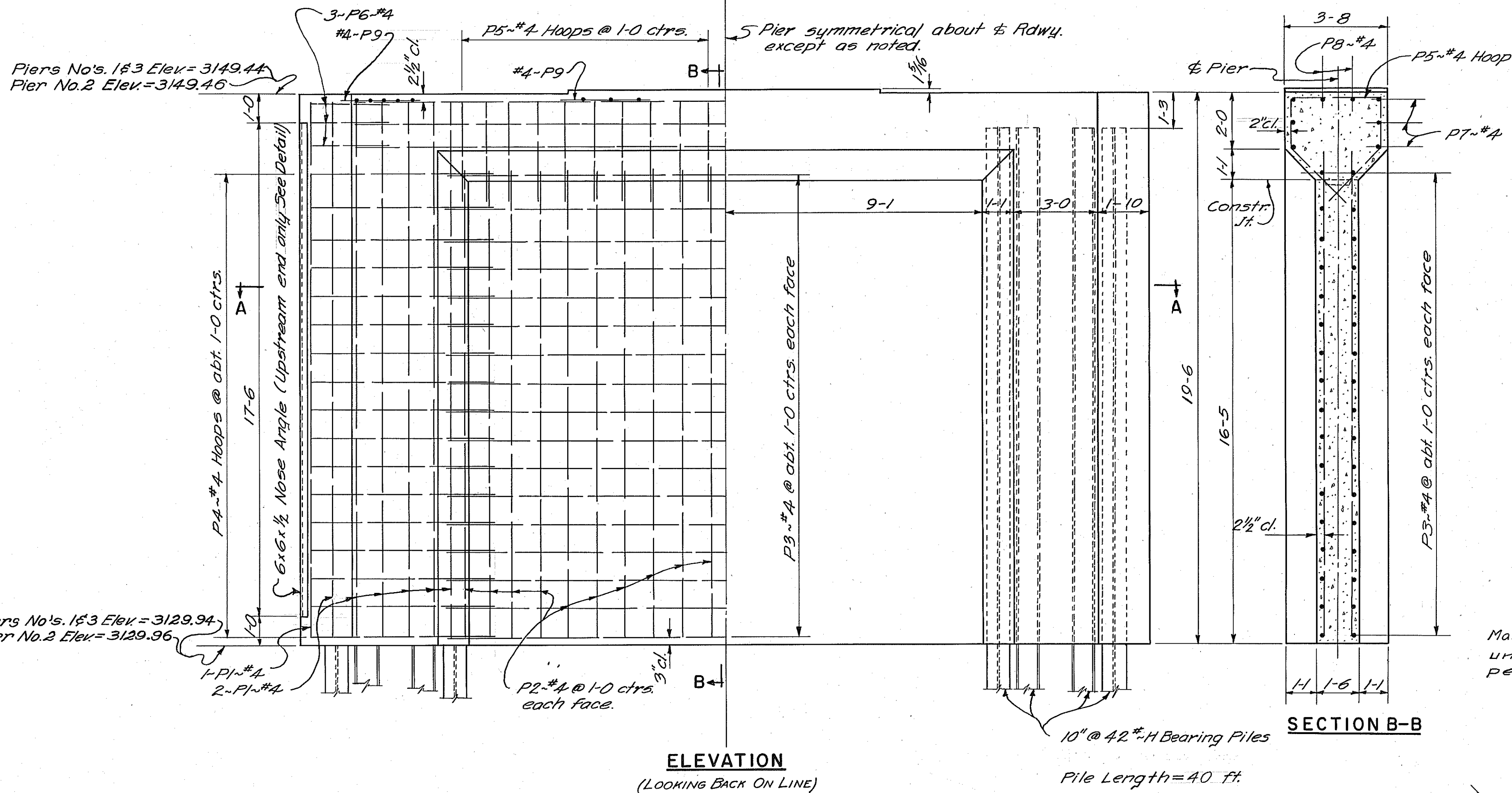
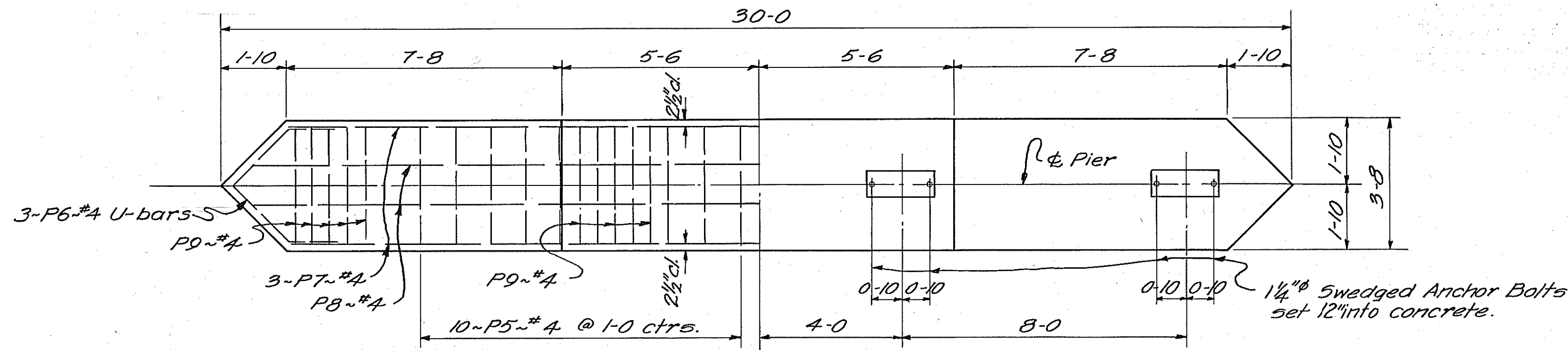
GENERAL LAYOUT
 Scale - 1" = 10'-0"

APPROVED BY: *[Signature]*
 BRIDGE ENGINEER

STATE PRECONST. NUMBER 1212-12
 DRAWING NO. 3719

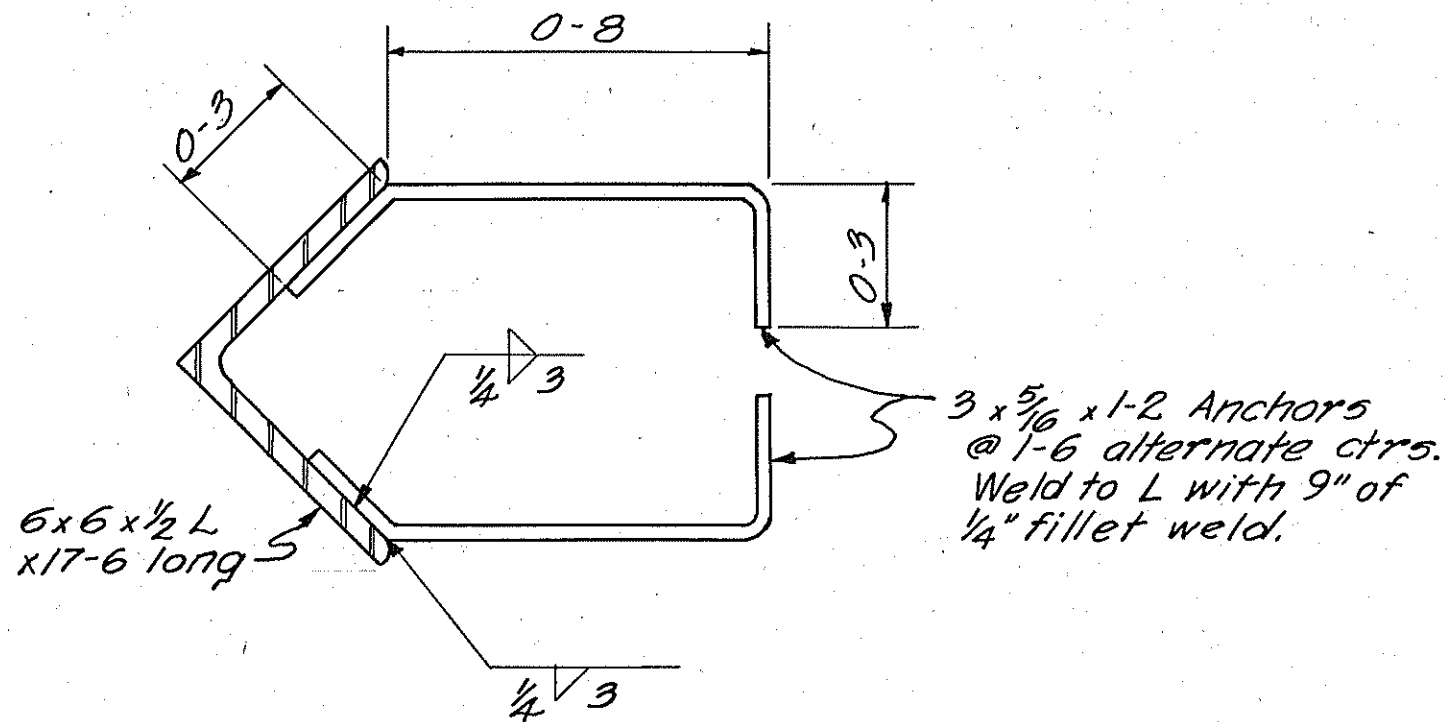
*Note: Bridge Rail revised in accordance with Details shown on Dwg. No. 12632, approach guard rail to be continuous with guard rail on bridge.

** NOTE: Bridge Approach Section updated. See details Dwg.



BILL OF REINFORCING STEEL (One Pier Only)															
				STRAIGHT BARS				BENT BARS (All Dimensions are Out to Out)							
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	LENGTH	A	B	C	D	E	F	G	H
P1	#4	26	19'-4"	P4	#4	34	16'-6"	2'-4"	2'-0"	3'-1"	3'-4"	1'-8"	2'-2"	2'-2"	6'-8"
P2	#4	40	16'-6"	P5	#4	20	12'-10"	3'-4"	1'-2"	3'-0"	2'-1"	2'-1 1/2"	3'-10"		
P3	#4	34	21'-0"	P6	#4	6	7'-4"	1'-4"	2'-4"	1'-8"	3'-4"	3'-0"			
P7	#4	6	26'-2"												
P8	#4	2	28'-5"												
P9	#4	16	3'-4"												

- NOTES**
- CHAMFER** ÷ Chamfer all exposed edges of concrete piers 1/2 inches, do not fillet entrant angles. Point exposed surfaces of pier nose angle with two field coats before erection.
- STEEL BEARING PILES** ÷ Steel bearing piles shall be of standard structural grade. Piles shall be driven to sustain safely a load of 32.5 tons per pile. Ordered length of piles shall be as shown on this sheet and will be paid for as steel bearing piles on the ordered weight. The driving and cutting off of piles shall be included in the unit price bid for "Driving Steel Bearing Piles." The quantity to be paid for under "Driving Steel Bearing Piles" shall be computed on the basis of the lineal feet of piling driven below the bottoms of the substructure units.
- SETTING OF MASONRY PLATES** ÷ Core shall be taken in placing reinforcing steel so as to clear anchor bolts. Contractor shall finish concrete under girder masonry plates slightly high and bush-hammer to exact elevation shown. Masonry plates shall be placed on three(3) layers of canvas thoroughly swabbed with red lead, as called for in the Standard Specifications.
- SOILS & FOUNDATION MATERIALS** ÷ Borings were taken by the Montana State Highway Department at the points shown, to obtain information on the subsoil at this bridge site so that a more reasonable conclusion could be reached as to the type and approximate elevation of bottom of foundation that should be used. The State Highway Department's interpretation of the materials encountered from the results of the borings is shown on the "General Layout." The State Highway Department does not guarantee that the material which will be encountered in the course of excavation for the structure will be as listed in the log of borings shown thereon; neither does the State assume any responsibility for any variation or misinterpretation of the closes of materials. No claim or adjustment in the unit price bid for excavation will be made if the materials found do not agree with those shown in the log of borings on the "General Layout." Materials shown as sand and gravel may be of varying degrees of compactness or cementation.
- SHAFTS** ÷ Shafts of piers shall be poured in not more than two continuous runs; other construction joints shall be made only as noted on the plans or as determined by the Engineer.
- CONSTRUCTION JOINTS** ÷ Construction joints shall be made on a true horizontal line at the surfaces of the piers and left rough in the interior with satisfactory shear keys.
- OTHER NOTES** ÷ For other notes see Dwg. No. 3719



STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285 + 39.00

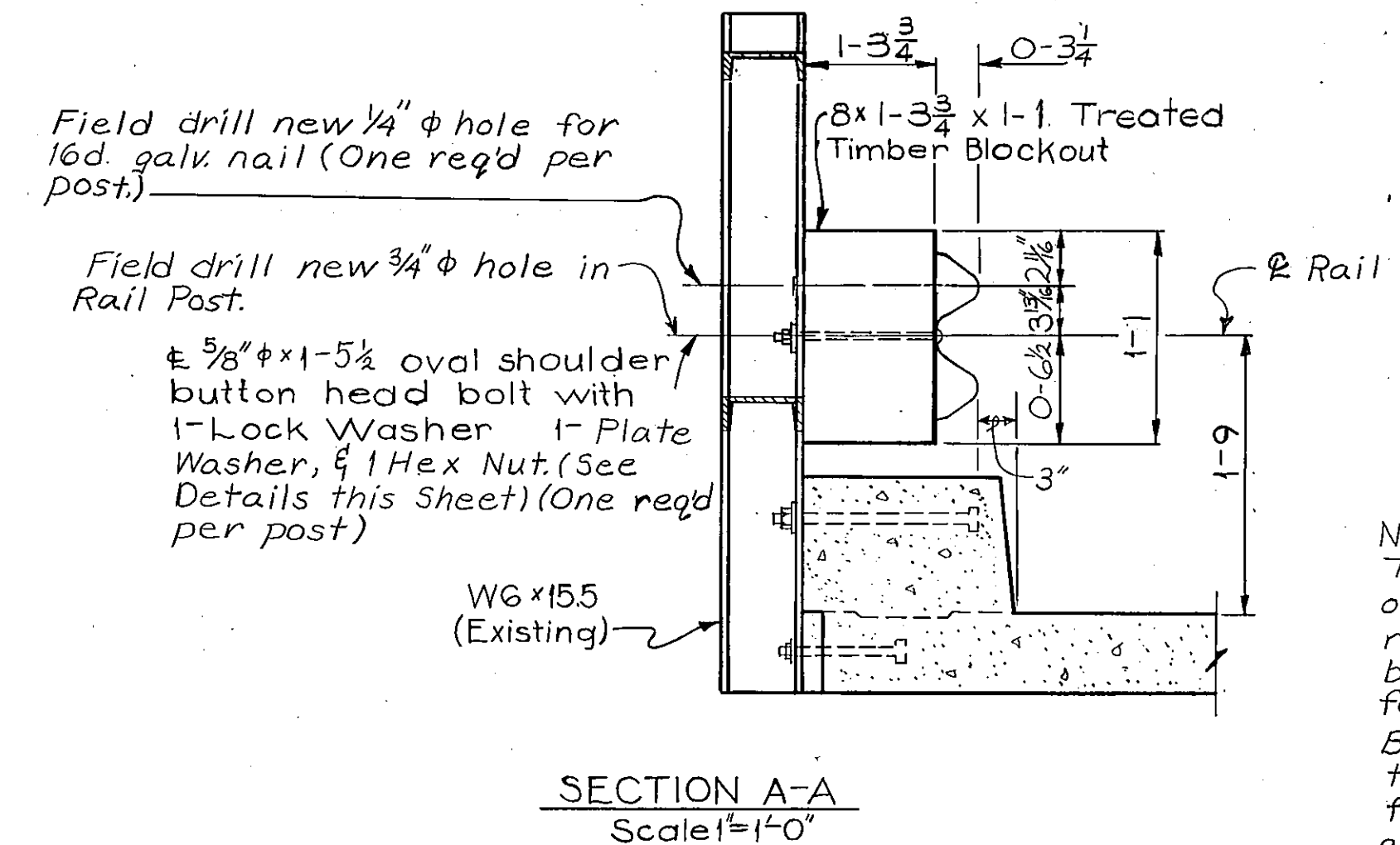
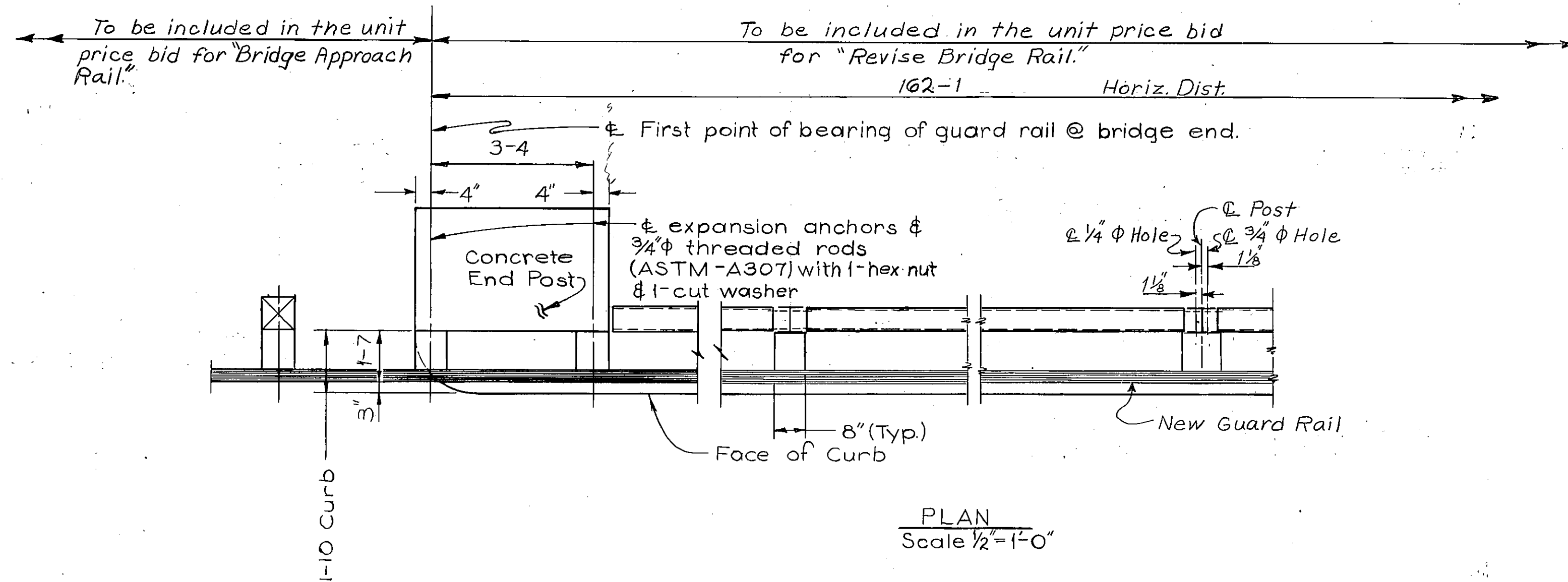
FEDERAL AID PROJECT NO. I-I.N. 212(12)
BIG HORN COUNTY

PIERS NO. 1, NO. 2 & NO. 3
Scale ~ 3/8" = 1'-0" & As Noted

DESIGNED	A.D.K.	5-4-55
DRAWN	A.D.K.	5-5-55
TRACED	F.L.S.	6-9-55
CHECKED	H.E.S.	3-13-56
REVISED		
REVISED		

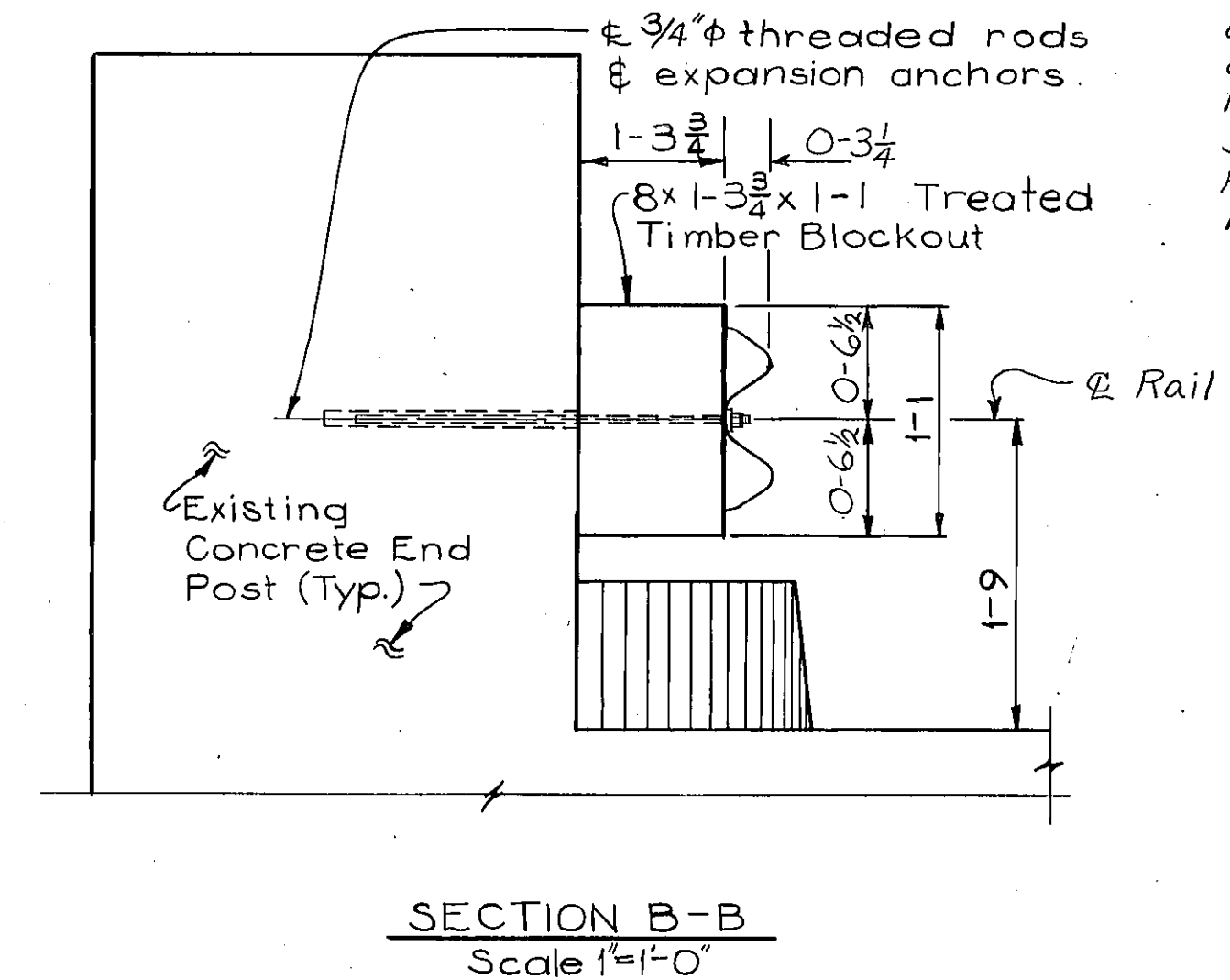
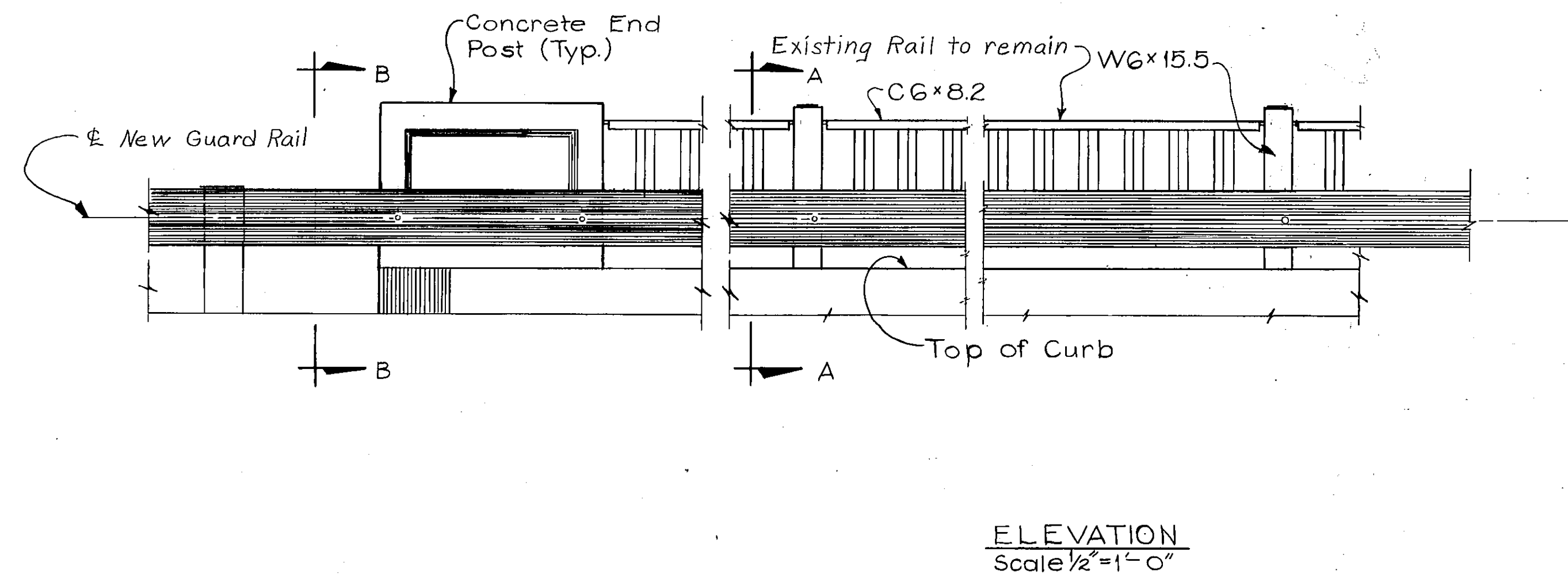
STATE PRECONST. NUMBER 1212-12

DRAWING NO. 3720

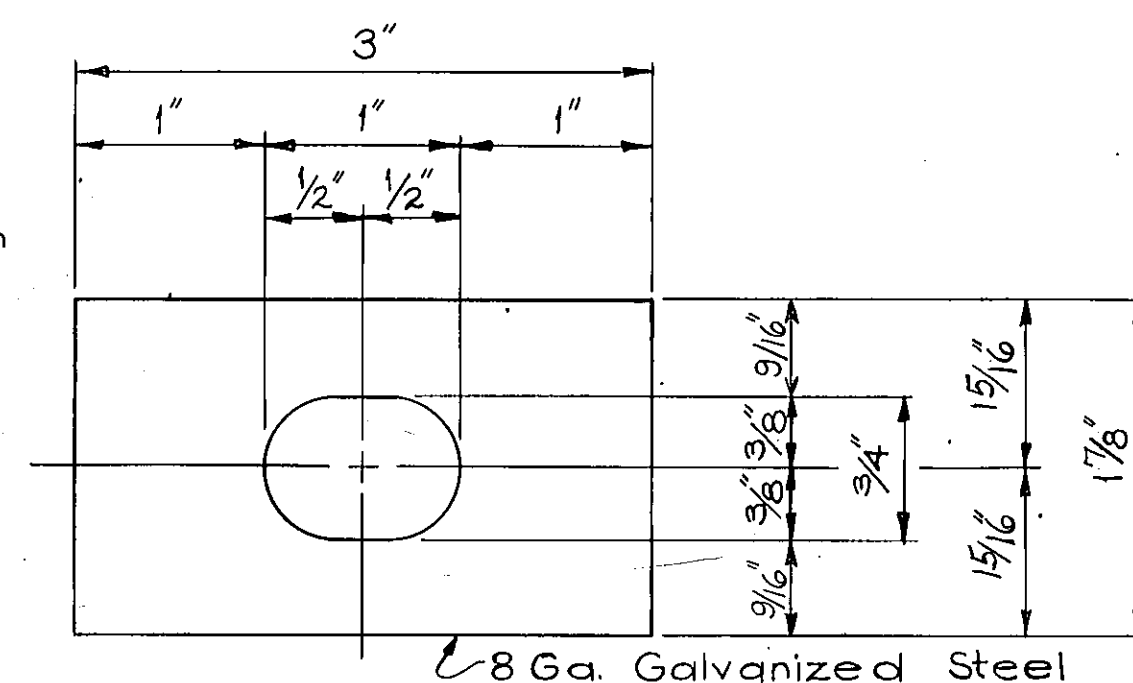


Notes:
The cost of furnishing and placing of timber blockouts, metal guard rail, bolts, nuts, and washers shall be included in the unit price bid for "Revise Bridge Rail." "Revise Bridge Rail" shall be paid for by the lineal foot which shall be full compensation for furnishing all materials, equipment and labor necessary to complete the item. The number of lineal feet for payment is the distance between centerlines of the end blockouts and is estimated as 162'-1" each side of bridge.

All wood blockouts shall be treated timber.
The contractor shall verify all dimensions in the field before ordering any materials for guard rail revisions on the existing structure.
Refer to Dwg. No. 3719 for General layout.

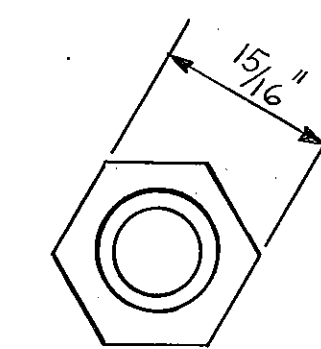
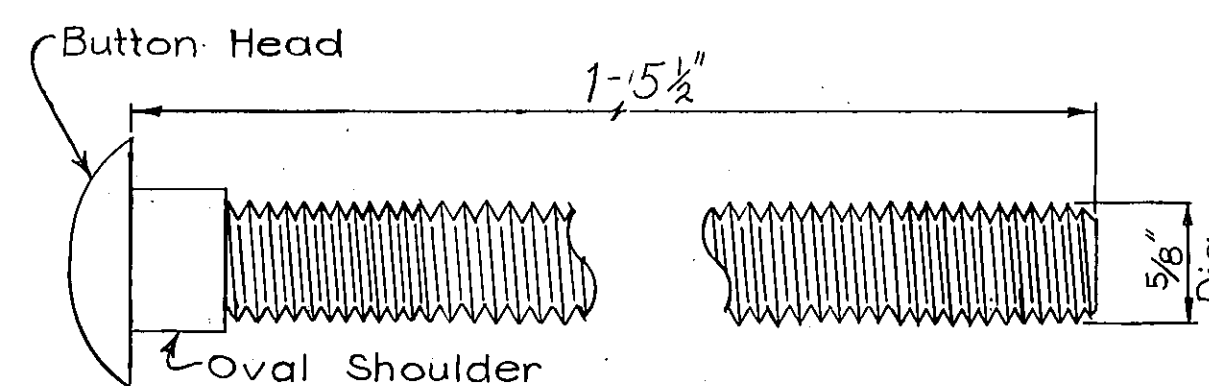


Note: Plate washer to be placed between rail & head of post bolt.



Note: Blockout new guard rail on both sides of bridge as shown on these details on this sheet for the entire length of the bridge. (See Dwg. No. 3719)

Note: Furnish & install bridge rail reflector washers at approximately 25' ctrs. (See Details Std. Dwg. No. 85) To be included in unit price bid for "Revise Bridge Rail."



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+39.00
FEDERAL AID PROJECT NO. I-90-9(33) 516

BIGHORN COUNTY
GUARD RAIL REVISION DETAILS
Scale as shown
DRAWING NO. 12632

DESIGNED	11-23-79	BDM.
DRAWN	9-7-73	AH
CHECKED	11-28-79	JCH.
REVISED		
REVISED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE PLANS & QUANTITIES

FEDERAL AID PROJECT NO. I 90-9(12)516 P.E.
I 90-9(33)516 CONSTRUCTION
LODGE GRASS-NORTH(NORTH SECTION)
BIG HORN COUNTY

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE	SHEET NO.	DWG. NO.	TITLE
1	III60	GENERAL LAYOUT @ STA.285+35.75	20	III79	GENERAL LAYOUT @ STA.605+00.00
2	III61	FOOTING PLAN W.B. RDWY. & WEST FRONTAGE ROAD	21	III80	FOOTING PLAN
3	III62	BENTS NO.1 & NO.3 - W.B. RDWY.	22	III81	ELEVATION KEY
4	III63	MISCELLANEOUS BENT DETAILS - W.B. RDWY.	23	III82	GENERAL LAYOUT @ STA.976+72.00
5	III64	PIER NO.2 -W.B. RDWY.	24	III83	FOOTING PLAN
6	III65	ERECTION PLAN AND SLAB DETAILS - W.B. RDWY.	25	III84	ABUTMENTS NO.1 & NO.2 E.B. & W.B. RDWYS.
7	III66	BENTS NO.1 & NO.3 - WEST FRONTAGE ROAD	26	III85	ABUTMENT DETAILS E.B. & W.B. RDWYS.
8	III67	MISCELLANEOUS BENT DETAILS - WEST FRONTAGE ROAD	27	III86	WINGWALL DETAILS
9	III68	PIER NO.2 - WEST FRONTAGE ROAD	28	III87	ERECTION PLAN AND SLAB DETAILS
10	III69	ERECTION PLAN AND SLAB DETAILS - WEST FRONTAGE ROAD	29	D-2 (APP 9-1-72)	STANDARD BRIDGE DRAIN DETAILS
11	III70	GENERAL LAYOUT @ STA.301+50.00	30	B-4 (APP 12-7-77)	STANDARD PRESTRESSED CONCRETE BEAM -TYPE IV
12	III71	FOOTING PLAN	31	SL-5 (REV. 2-3-78)	STANDARD SLAB, BARRIER & DIAPHRAGM DETAILS
13	III72	ABUTMENTS NO.1 & NO.2 E.B. & W.B. RDWYS.	32	SL-2 (APP 4-1-78)	STANDARD FLAT SLAB & BARRIER DETAILS (24'-30'-24' SPANS)
14	III73	WINGWALL DETAILS	33	FSB-30 (APP 4-1-78)	STANDARD INTERMEDIATE BENT - FLAT SLAB (24'-30'-24' SPANS)
15	III74	ELEVATIONS AND SLAB OFFSETS	34	FSA-10 (APP 4-1-78)	STANDARD ABUTMENT - FLAT SLAB (10-0 FT. WINGWALL)
16	III75	ERECTION PLAN AND SLAB DETAILS	35	FSA-15 (APP 4-1-78)	STANDARD ABUTMENT - FLAT SLAB (15-0 FT. WINGWALL)
17	III76	GENERAL LAYOUT @ STA.432+00.00			
18	III77	FOOTING PLAN			
19	III78	ELEVATION KEY			

* NOT INCLUDED IN THIS CONTRACT

Made By: C.J.M. 7-10-73
Checked By: L.R.P. 7-11-73

C.O. No. 11-ABUT WALL WEEP HOLE DRAIN (EACH)		C.O. No. 18-EMBANKMENT IN PLACE (CU. YDS.)	LOCATION	LENGTH IN FEET	STRUCTURAL STEEL (LUMP SUM)	REINFORCING STEEL (LBS)	*CLASS "A" CONCRETE (CU. YDS)	STRUCTURE EXC. (CU. YDS)		PRESTRESSED BEAMS TYPE IV - (EACH)		BRIDGE DRAINS (EACH)	STEEL BEARING PILES FURNISHING (LIN. FT.) DRIVING (LIN. FT.)		PROTECTIVE COATING (SQ. YDS)	SHORING AND CRIBS (LUMP SUM)	TREATED TIMBER PILES FURNISHING (LIN. FT.) DRIVING (LIN. FT.)	TREATED TIMBER TEST PILES (LUMP SUM)	CLASS BD CONCRETE (CU. YDS.)	WORK BRIDGE LUMP SUM			
								TYPE I	TYPE 2	80'	100'												
			STRUCTURES AT STA.	W.B. RDWY.	BENT NO. 1		2957 2954	31.3	273	21	4.35			304 266.2	296 258.2		0.55 LS= \$ 77,000.00			1.3 1.25	.50 LS= \$ 10,000.00		
					PIER NO. 2		0.18 LS=	3495 3143	137.8	23	105	103.55			272 234.9	256 218.9						1.3 1.25	
					BENT NO. 3		#1134.00	2957 2954	31.3	273	21	4.35			272 252.3	264 244.3						1.3 1.25	
					SUPERSTRUCTURE	161.50		56614		15.4	1078							872.2				198.564	
					SUB-TOTAL	161.50	0.18 LS=	66023 65665	215.8	447	42	20.95	103.55	10	4	848 753.4		816 721.4	872.2				201.1#082
																			0.55 LS=				
			285+35.75	WEST FRONTAGE RD.	BENT NO. 1		2272 2271	24.6	20	16	18.40			245 223.7	238 216.7		\$ 77,000.00			1.0 994	\$ 10,000.00		
					PIER NO. 2		0.16 LS=	2575 2302	100.3	282		87	86.11			210 189.8		196 175.8					
					BENT NO. 3		#11008.00	2272 2271	24.6	39	16	18.40			217 210.3	210 203.3						1.0 994	
					SUPERSTRUCTURE	161.50		44608		11.1	1053		8	4				691 690.9				160.718	
					SUB-TOTAL	161.50	0.16 LS=	51727 51452	160.6	594	32	36.20	87	86.11	8	4		672 623.8	644 595.8	691 690.9			162.706
																			0.45 LS=				
	116.66		STRUCTURES AT STA.	W.B. RDWY.	ABUT. NO. 1		9545 9539	75.3	414	147	128.96			840 833.1	820 813.1	14.8	\$ 63,000.00			4.4 4.253	\$ 10,000.00		
	112.95				ABUT. NO. 2		0.11 LS=	9545 9539	75.3	116	147	154.06			840 823.5	820 803.5		14.3				4.4 4.253	
					SUPERSTRUCTURE	100.00	#693.00	24186 25674	6.0	5.962			7					548 539.2				119.7402	
					SUB-TOTAL	100.00	0.11 LS=	43276 44752	156.8	492	294	303.02		7		1680 1656.6		1640 1616.6	576 567.8				128.5 127.908
	229.61				ABUT. NO. 1		#693.00	9545 9539	75.3	416	147	128.96			840 799.6	820 779.6		14.3				4.4 4.253	
	116.66				ABUT. NO. 2		0.11 LS=	9545 9539	75.3	105	147	154.06			840 789.5	820 769.5		14.3				4.4 4.253	
	112.95																						
			301+50.00	W.B. RDWY.	SUPERSTRUCTURE	100.00	#693.00	24186 25674	6.0	5.962		7				548 539.2			119.8402				
					SUB-TOTAL	100.00	0.11 LS=	43276 44752	156.8	483	294	303.02	</										

MOBILIZATION = 0.08 L.S. x 081 = \$13,600.00
0.08 L.S. x 281 = \$13,600.00
0.08 L.S. x 220 = \$13,600.00

COST OF TRAINING PROGRAM

X-081	102 HOURS
X-281	500 HOURS

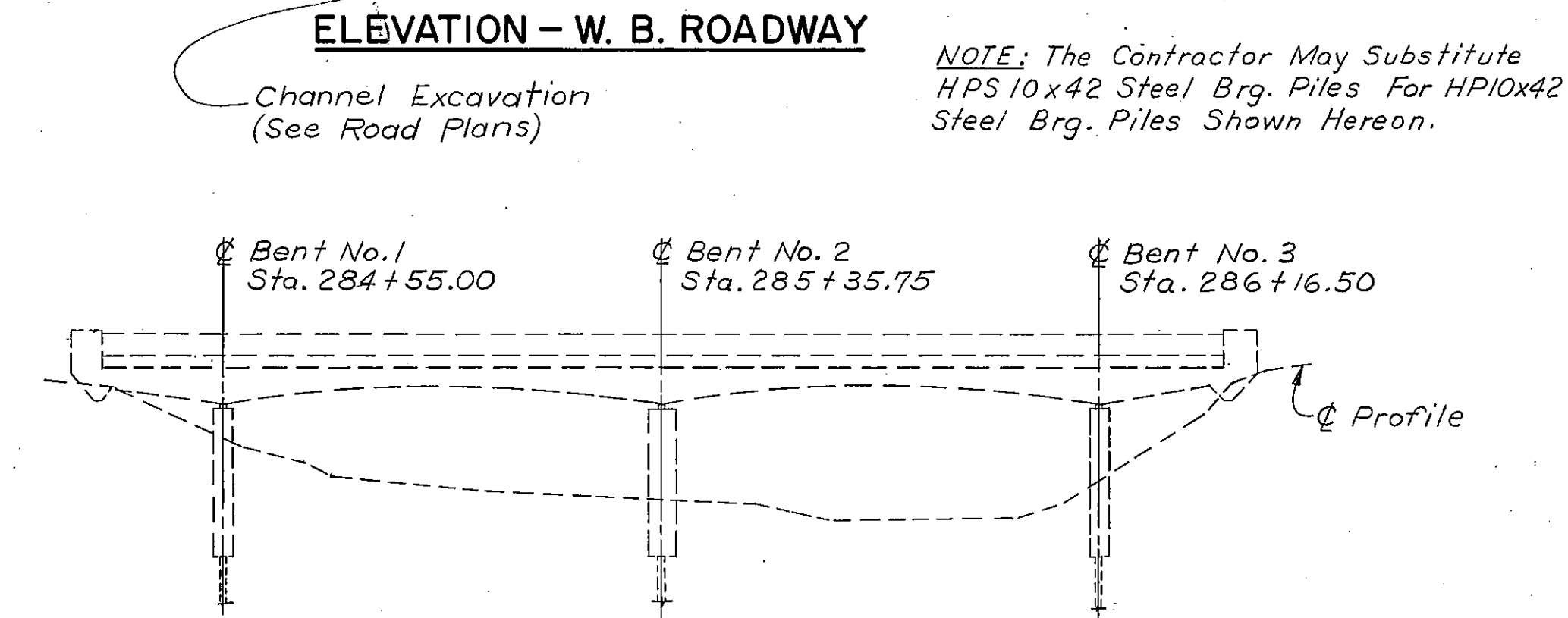
FINISHED GRADE: FINISHED PLAN GRADE
OF MAINLINE BRIDGE @ C ROADWAY
IS 0.32' ABOVE PROFILE GRADE
SHOWN ON ROAD PLANS. FINISHED
PLAN GRADE OF FRONTAGE ROAD
BRIDGE @ C ROADWAY IS SAME AS
PROFILE GRADE SHOWN ON ROAD
PLANS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 19 **76** 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, 19 **77** EDITION, AND ANY AMENDMENTS THERETO.

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS.
ESTIMATED WEIGHT = 2781 POUNDS.

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

REINFORCING STEEL: ALL REINFORCEMENT STEEL SHALL BE OF THE DEFORMED TYPE AND SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS A615, GRADE 60 (AASHTO M-31) EXCEPT FOR THE REBAR IN THE PRESTRESSED CONCRETE BEAMS WHICH MAY BE GRADE 40.



161'-6 Ctr. to Ctr. Brgs. of End Bents (Horiz. Dist.)

80'-9 80'-9

ing Notch
70

⊙ Brg. @ Bent No. 1 @ ⊙ Rdwy.
Sta. 284 + 67.35
Fin. Grade @ ⊙ Rdwy.
Elev. 3154.35

⊙ Pier No. 2 @ ⊙ Rdwy.
Sta. 285 + 48.10
Fin. Grade @ ⊙ Rdwy.
Elev. 3154.44

⊙ Brg. @ Bent No. 3
@ ⊙ Rdwy.
Sta. 286 + 28.85
Fin. Grade @ ⊙ Rdwy.
Elev. 3154.43

Concrete Barrier

Prestressed Concrete Beams (Type IV)

Fix. H.W. Elev. 3146.4

Fix. Water Elev. 3138.8
(12-2-71)

Fix. Elev. 3145.78

Elev. 3145.71

HP 10x42 Steel
Brg. Piles (Typ.)

2:1 Slope
And Varies
(Normal)

Top of Riprap
Elev. 3147.5 (Typ.)
(Both Ends)

Bottom of Channel
Elev. 3134.0

20' Lt. Profile

⊙ Profile

20' Rt. Profile

2-0 Thick Class 2
Random Riprap
(See Road Plans) (Typ.)

Elev. 3127.29

ELEVATION—WEST FRONTAGE ROAD

Channel Excavation
(See Road Plans)

Diagram illustrating a vertical curve with a 600' V.C. (Vertical Curve). The curve is defined by two grades: +0.63% and -0.54%. The curve length is 600' V.C. The diagram shows the curve profile and the grades.

Key data from the diagram:

- Grade 1: +0.63%
- Grade 2: -0.54%
- Curve Length: 600' V.C.
- Stationing: P.I. Sta. 285 + 50, Elev. 3155.61

WEST FRONTAGE ROAD
PROFILE GRADE
No Scale

DESIGNED	JFS	10-18-72
DRAWN	DLK	6-6-72
CHECKED	REW	7-12-73
APPROVED	HES.	7-18-77
REVISED		
REVISED		

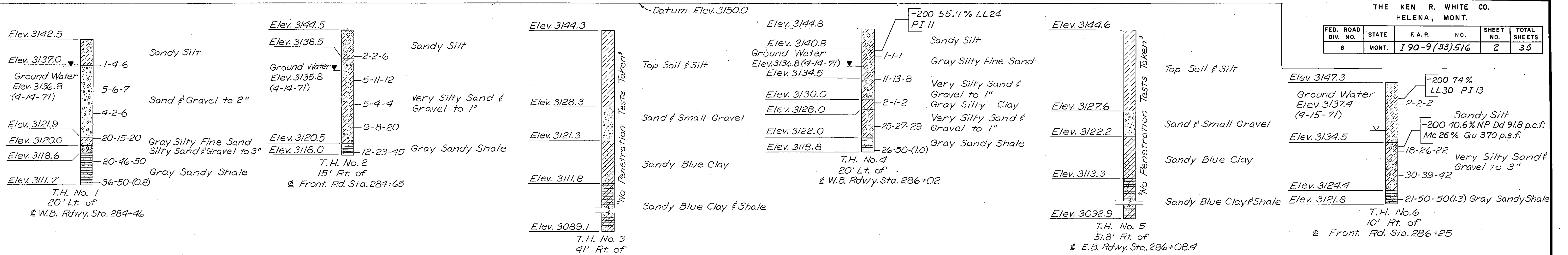
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
GENERAL LAYOUT

DRAWING NO. 11160

RIPRAP KEY
No Scale

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

THE KEN R. WHITE CO. HELENA, MONT.					
FED. ROAD DIV. NO.	STATE	F.A.P.	NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516		2	35



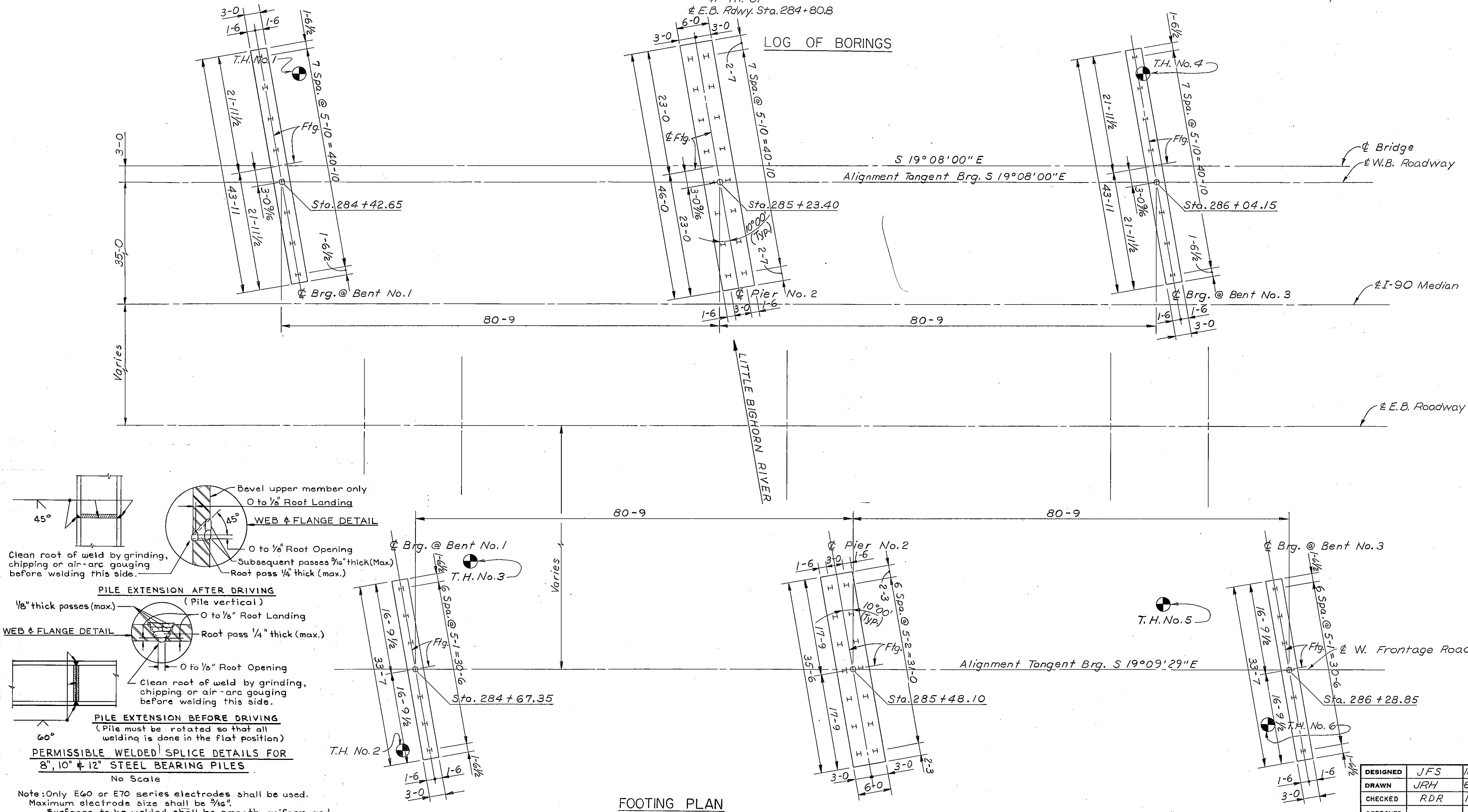
NOTES

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# 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 DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION 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, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE DETAILS.



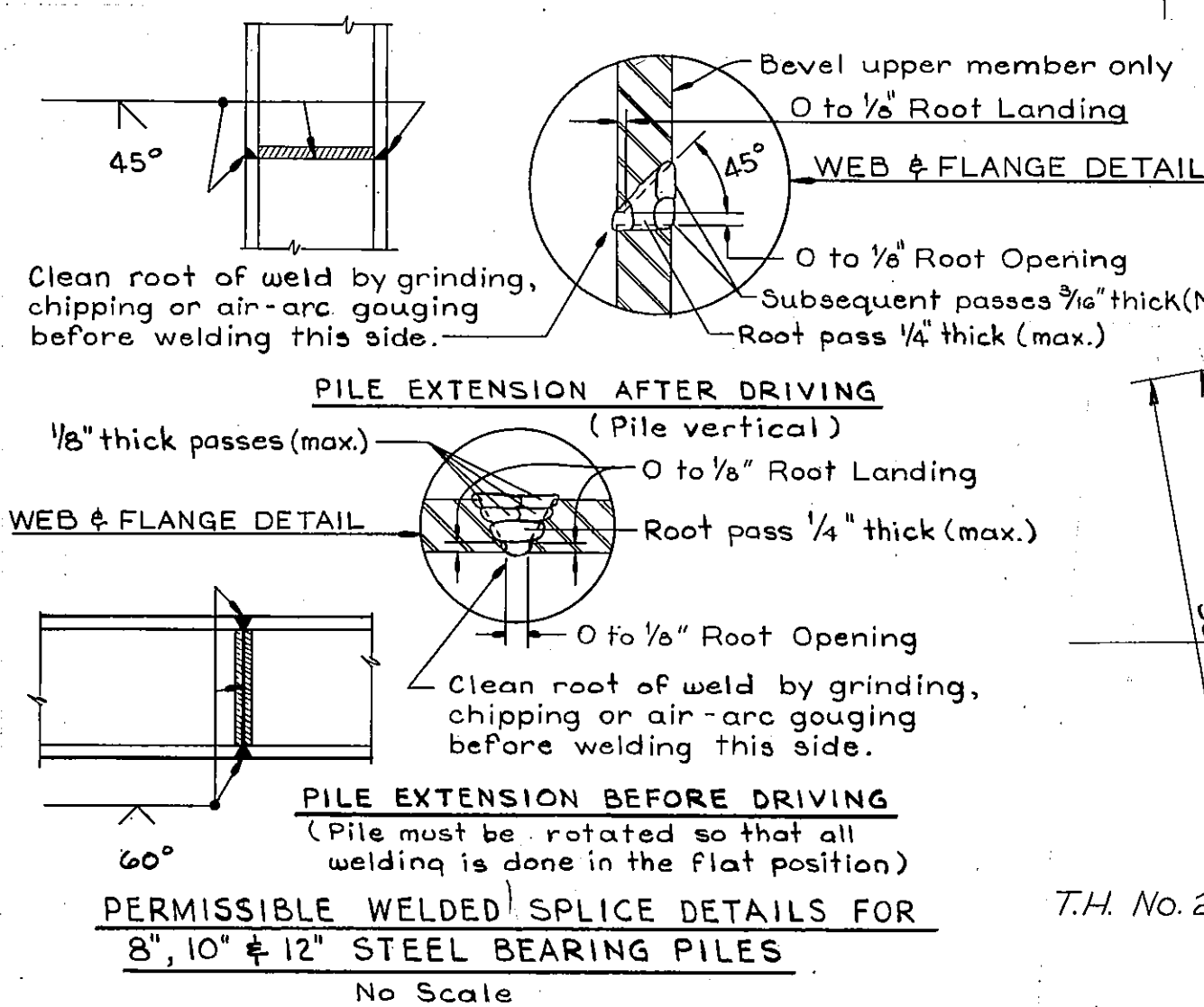
STATE OF MONTANA DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
FOOTING PLAN
W.B. RDWY. & WEST FRONTAGE ROAD

SCALE: 1"=10'-0" (EXCEPT AS NOTED)

DRAWING NO. 11161

DESIGNED	JFS	10-18-72
DRAWN	JRH	6-1-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		



Note: Only E60 or E70 series electrodes shall be used. Maximum 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.

For Elevations See Dwg. No. 11163.

For Section B-B
See Dwg. No. 11163

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

PLAN

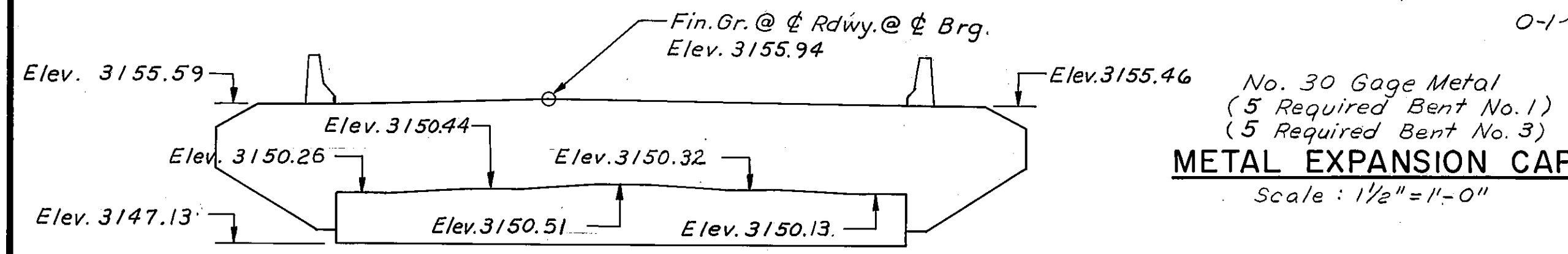
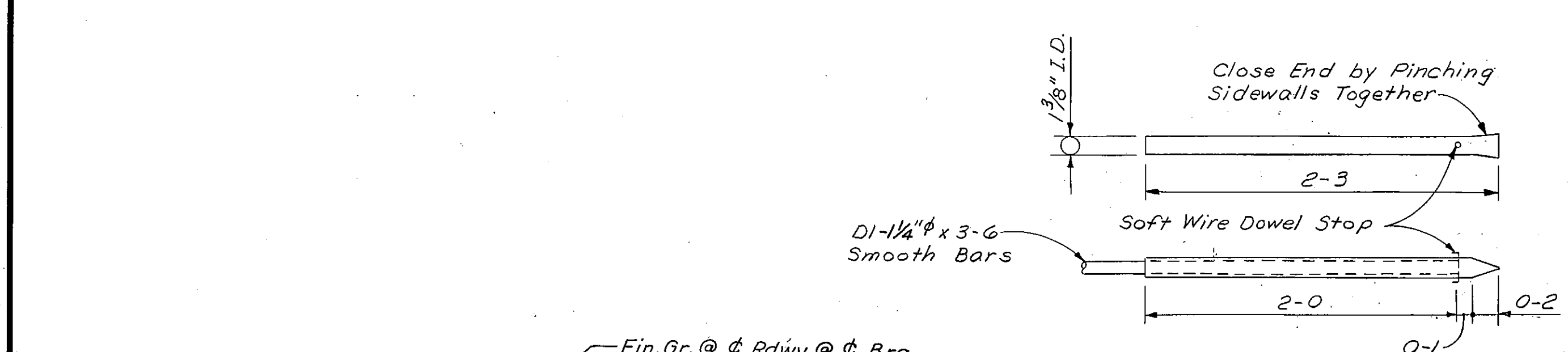
Bent is Symmetrical About
This Line Except As Noted

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

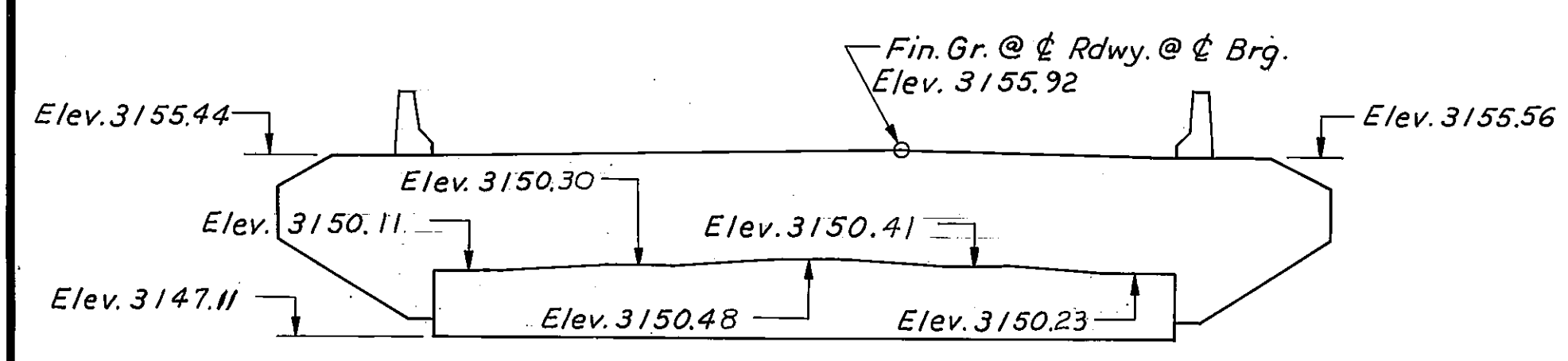
NOTE: Maximum Pile Pressure Under;
D.L. + L.L. = 43.2 Tons/Pile.

DESIGNED	JFS	10-13-72
DRAWN	DLK	11-3-72
CHECKED	RDR	11-27-72
APPROVED		
REVISED		
REVISED		

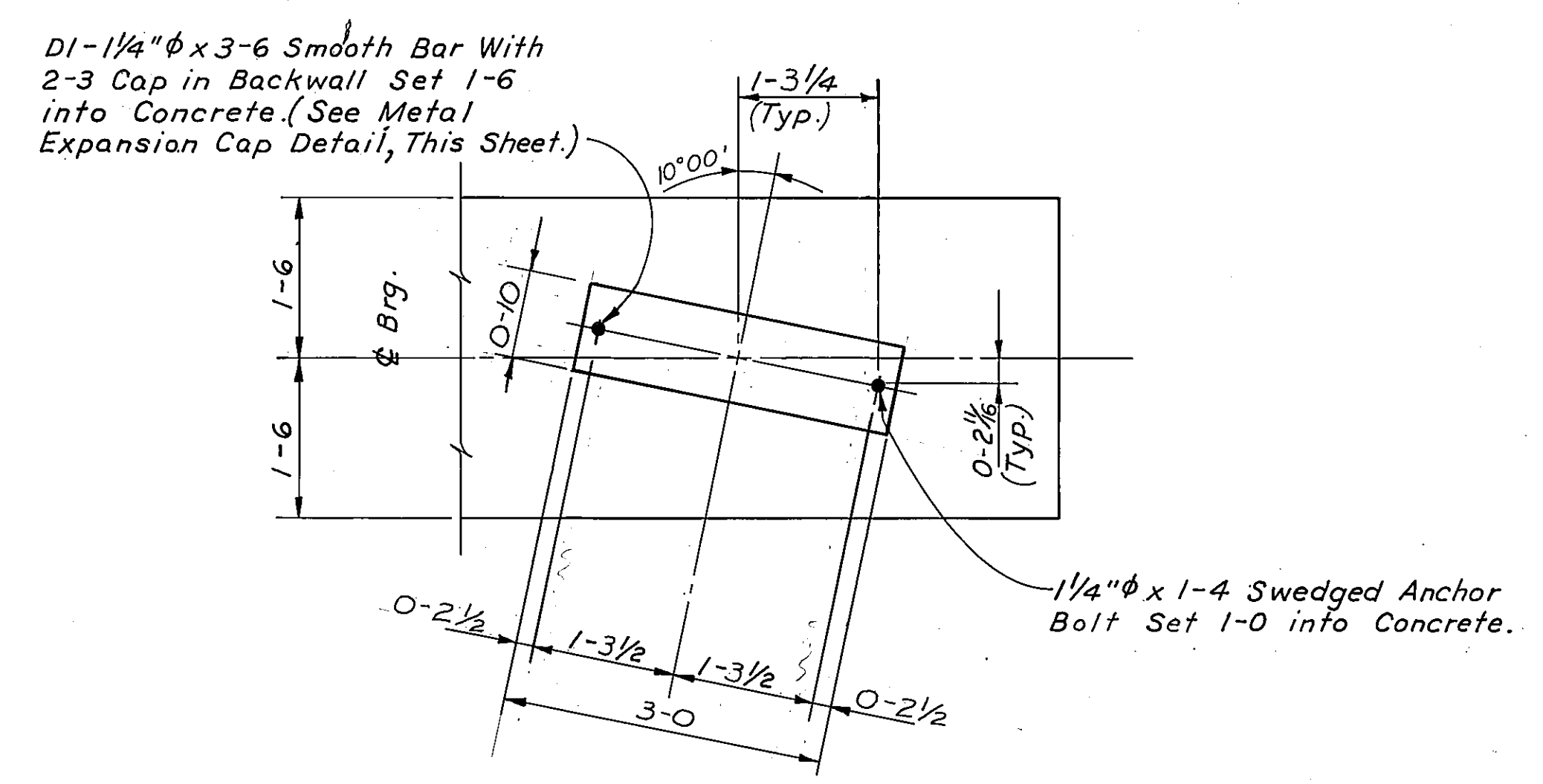
DRAWING NO. 11162



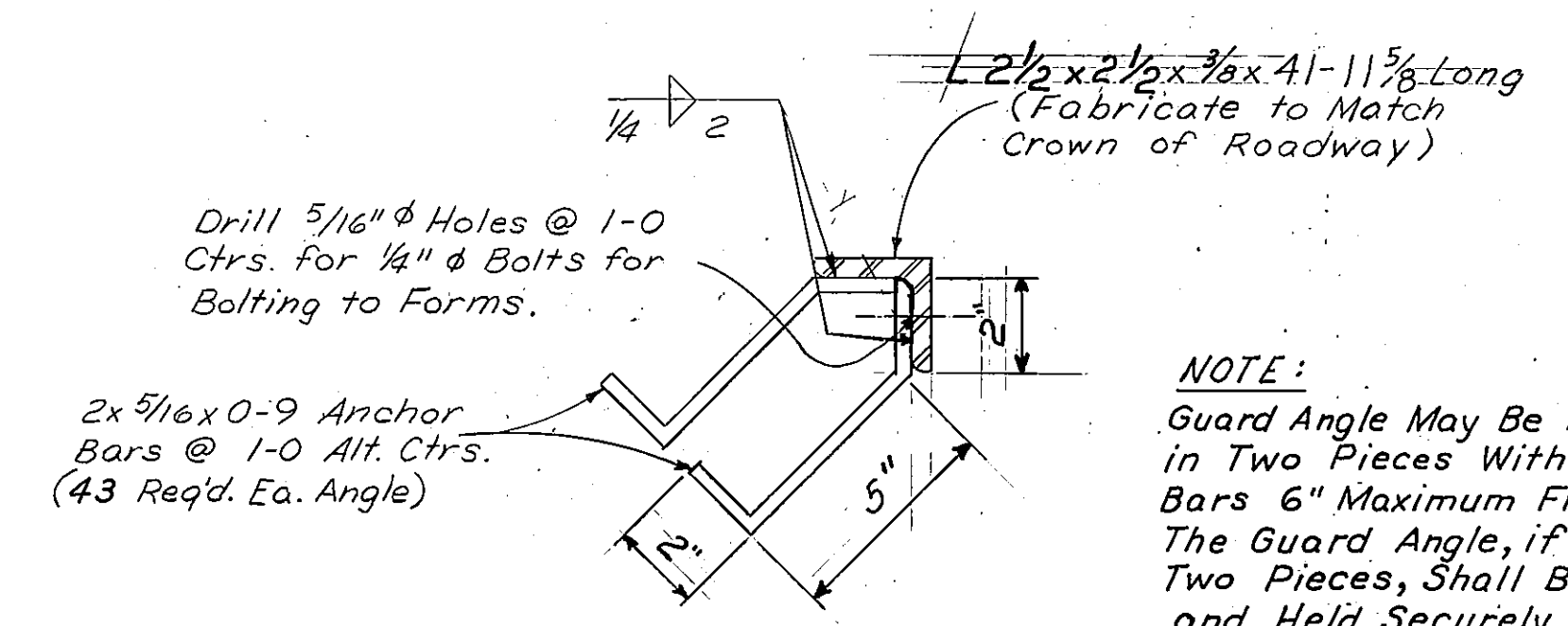
BENT NO. 1
(Back on Line)
(No Scale)



BENT NO. 3
(Ahead on Line)
(No Scale)

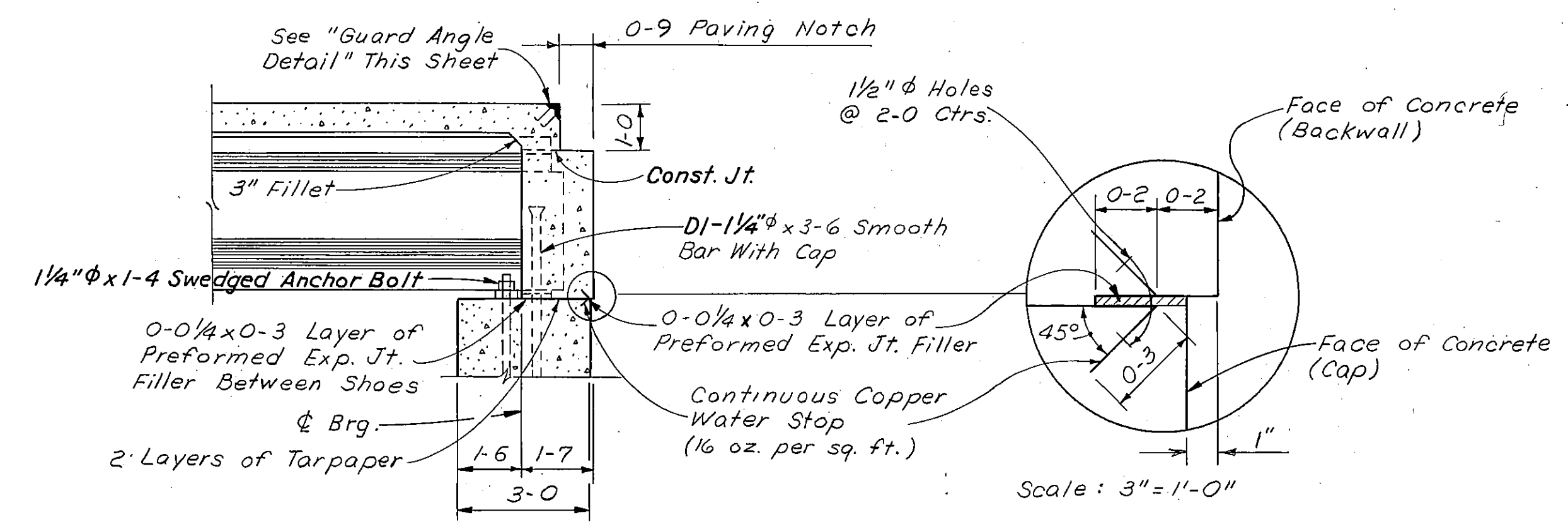


DETAIL A
Scale: 3/4" = 1'-0"



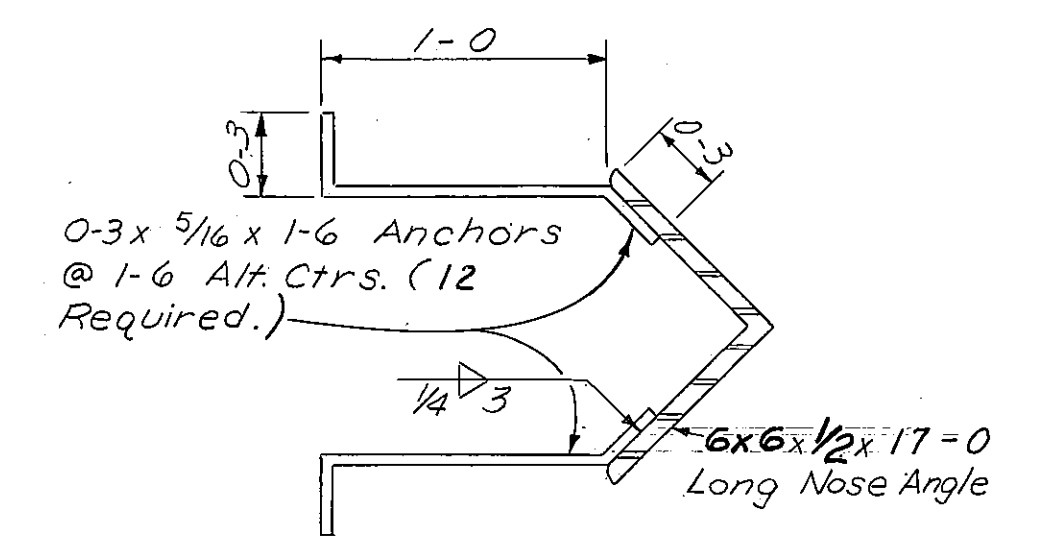
GUARD ANGLE DETAIL
Scale: 3" = 1'-0"

NOTE:
Guard Angle May Be Furnished in Two Pieces With End Anchor Bars 6" Maximum From Each End. The Guard Angle, if Furnished in Two Pieces, Shall Be Field Welded and Held Securely in Position While Concrete is Placed.



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

NOTE: Pier Nose Angles Shall Be Paid For As Structural Steel. One (1) Shop Coat And Two (2) Field Coats Of Paint! As Specified For Structural Steel Shall Be Applied To Exposed Surfaces Of Nose Angles Before Erection.



NOSE ANGLE DETAIL
Scale: 1/2" = 1'-0"

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	
B1	#7	5	43'-7"	B4	#5	39	1	11'-5"	2'-8"	2'-7"	0'-5 1/2"			
B2	5	2	43-7	B5	4	6	2	4-7	2-7	1-0				
B3	8	4	43-7	B6	4	21	2	4-8	2-8	1-0				
B7	4	3	3-2											
BW1	6	2	45-8	BW12	4	36	4	10-10	1-3	5-0	4-0	0'-3 1/2"		
BW2	6	6	30-0	BW13	4	6	5	9-3	7-5	1-0	0-10	0'-11	0'-6"	
BW3	6	2	28-6	BW14	4	2	5	10-0	2-1	1-9	6-2	1-7	2-8 1/2	
BW4	6	2	27-1	BW15	4	1	5	10-3	2-1	1-9	6-5	1-7	2-10	
BW5	4	16	7-5	BW16	4	2	5	9-11	2-1	1-9	6-1	1-7	2-8	
BW6	4	4	7-0	BW17	4	1	5	9-8	2-1	1-9	5-10	1-7	2-6	
BW7	6	5	5-4	BW18	4	2	1	9-7	1-3	3-2	0-4 1/2			
BW8	4	6	9-0	BW19	4	2	1	11-5	1-3	4-1	0-4 1/2			
BW9	4	2	7-6	BW20	4	2	1	12-9	1-3	4-9	0-4 1/2			
BW10	4	2	6-0	BW21	4	2	1	14-3	1-3	5-6	0-4 1/2			
BW11	#4	4	2-6	BW22	4	2	1	15-7	1-3	6-2	0-4 1/2			
				BW23	4	2	1	17-1	1-3	6-11	0-4 1/2			
				BW24	4	2	1	17-7	1-3	7-2	0-4 1/2			
*DI	1/4" Sm	5	3-6	BW25	#4	31	3	4-0	2-0	2-0				

*DI-1/4" ϕ Smooth Bars Shall Conform To A.S.T.M. A36 Steel.

NOTES

- Cost of Furnishing and Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop and Metal Expansion Caps to be Included in the Unit Price Bid for Class AD Concrete.
- Beam Seat Areas Shall be Finished Level to the Elevations Shown. The Area Between Beam Seats to be Sloped Uniformly As Required.
- For Slab and Beam Reinforcing Steel See Std. Dwg. No. B-4 and SL-5 and Dwg. No. 11165.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
MISCELLANEOUS BENT
DETAILS - W.B. RDWY.

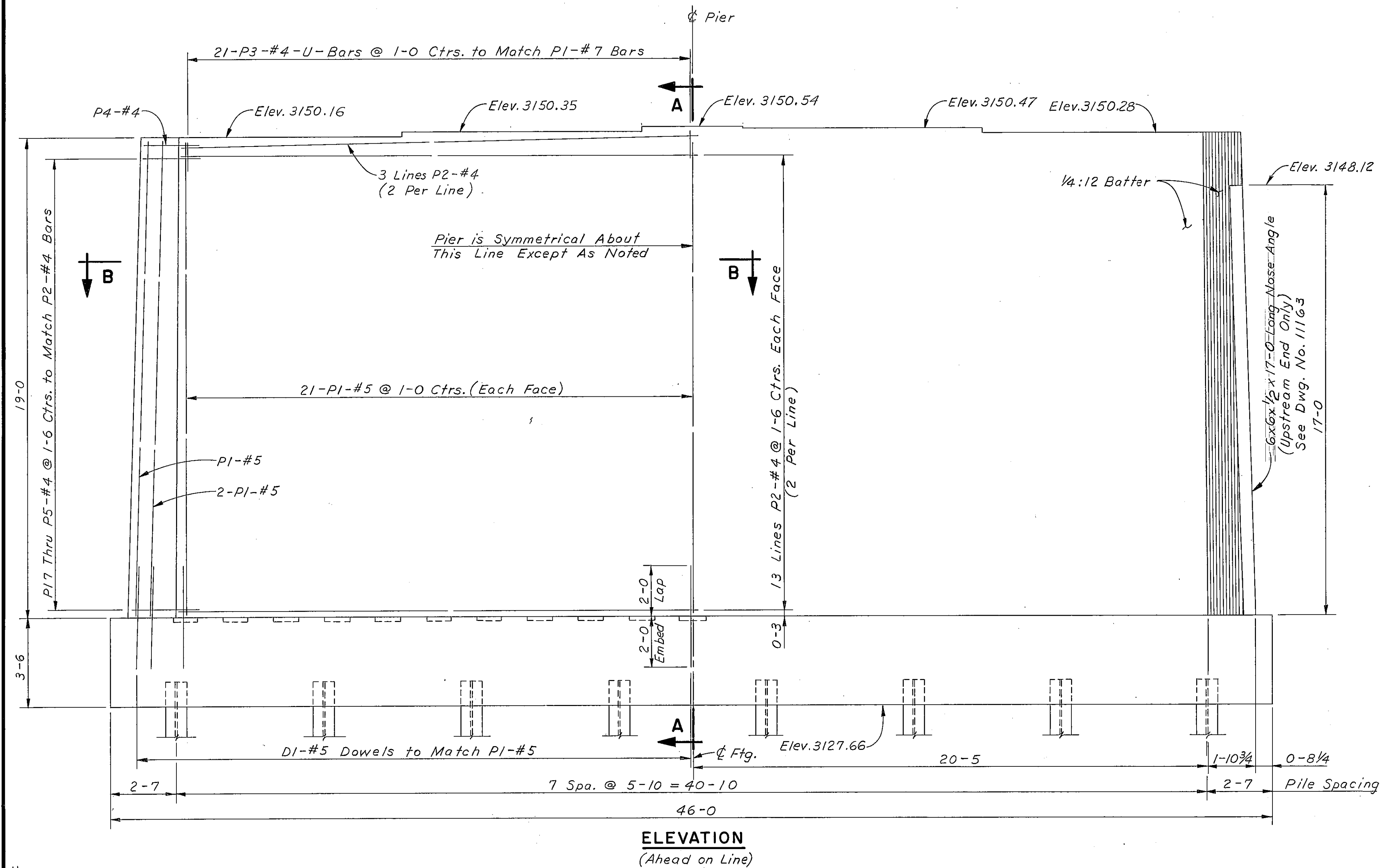
DESIGNED	J.F.S.	10-13-72
DRAWN	J.R.H.	4-4-72
CHECKED	R.D.R.	11-27-72
APPROVED		
REVISED		
REVISED		

SCALE: AS NOTED

DRAWING NO. 11163



HALF PLAN



@ Low Beam Elev. 3'-0"
1'-6" 1'-6"
 & Pier
 P3-#4-U-Bar
 P2-#4 (2 Per Line)
 1/4:12 Batter
 P1-#5
 3" Cl. 3" Cl.
 1-1/4" 1-10 3/4" 1-10 3/4" 1-1/4"
 13 Lines P2-#4 @ 1'-6" Ctrs. Each Face (2 Per Line)
 0'-3"
 0'-2 x 1'-0 x 2'-0 Shear Keys @ 2'-0 Ctrs.
 D1-#5 Dowels to Match P1-#5
 1'-0" Embed
 HP 10x42 Steel Bearing Piles
 1'-6" 1'-6" 1'-6" 1'-6"
 & Ftg. 3'-0" 3'-0"
6'-0"

1/4" ϕ x 1'-4" Anchor Bolt into Concrete (Typ.)
 & Pier
 0'-8" 0'-8" 0'-2"

DESIGNED	JFS	10-13-76
DRAWN	DLK	11-10-76
CHECKED	P.D.P.	11-27-76

SECTION A-A

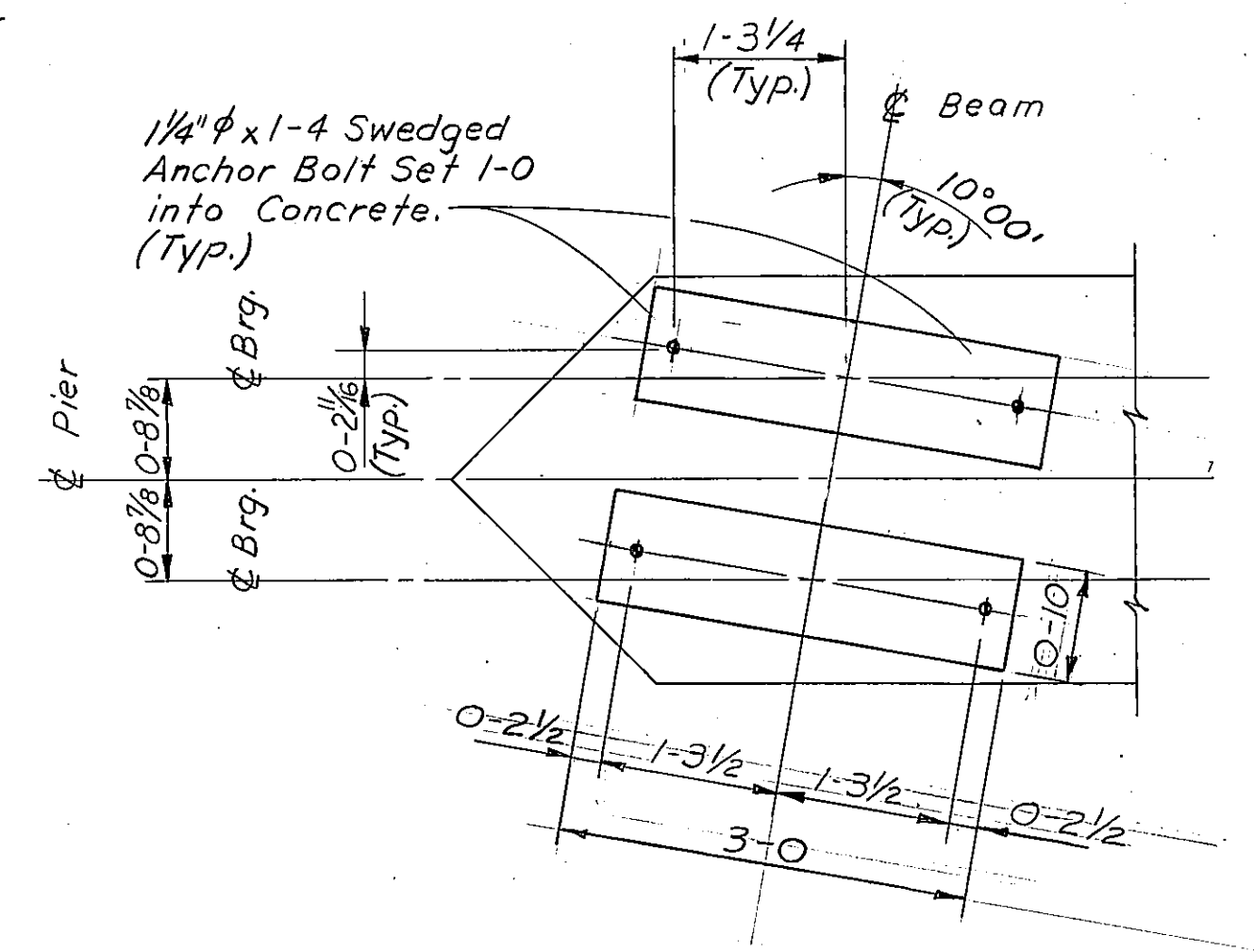
DESIGNED	JFS	10-13-76
DRAWN	DLK	11-10-76
CHECKED	RDR	11-27-76
APPROVED		
REVISED		
REVISED		

Diagram illustrating two types of rectangular ducts:

- TYPE 1:** A simple rectangle with dimensions A (width) and B (height).
- TYPE 2:** A rectangular duct with a pointed end, with dimensions A (width), B (height), and C (pointed end height), and a 45-degree angle indicated.

[illegible]

NOTE: Maximum Pile Pressure Under
D.L. + L.L. + E. + B = 48.0 Tons/Pile
Estimated Pile Length = 17-0



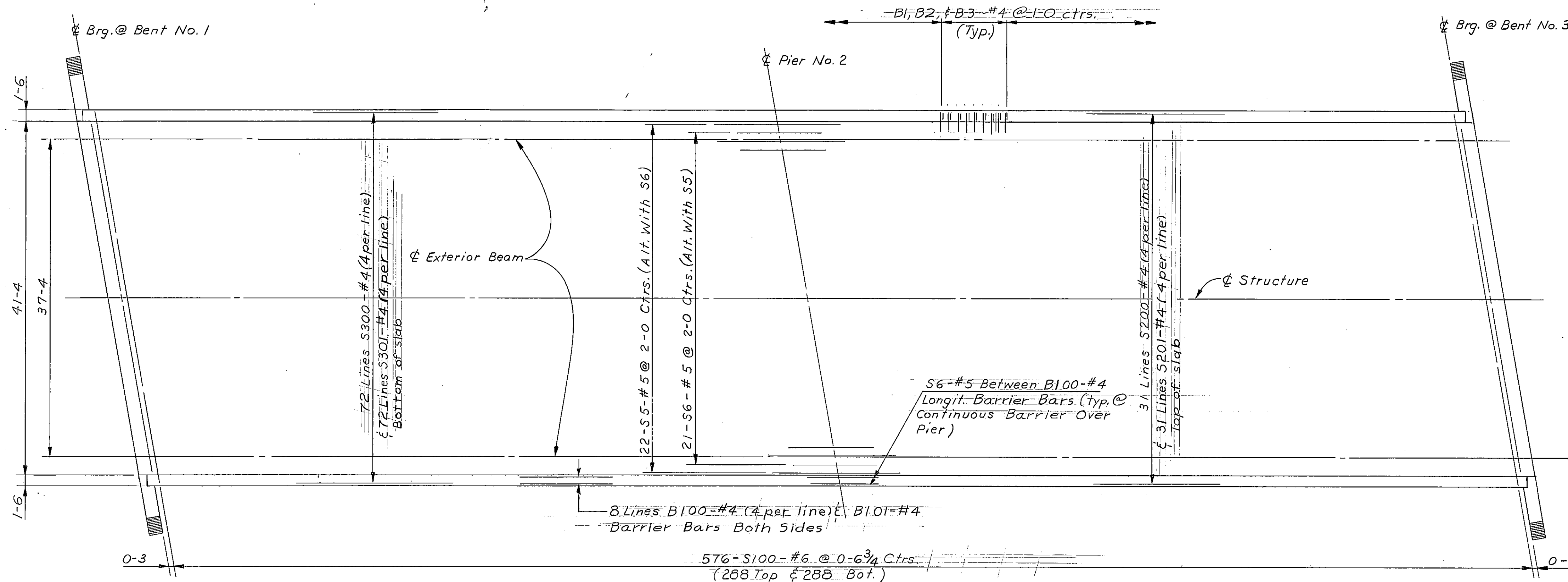
DETAIL B
Scale: $\frac{3}{4}" = 1'-0"$

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285 + 35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
PIER NO. 2 - W.B. RDWY.

SCALE: 3/8"=1'-0"(EXCEPT AS NOTED)

DRAWING NO. 11164



REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8" = 1'-0"

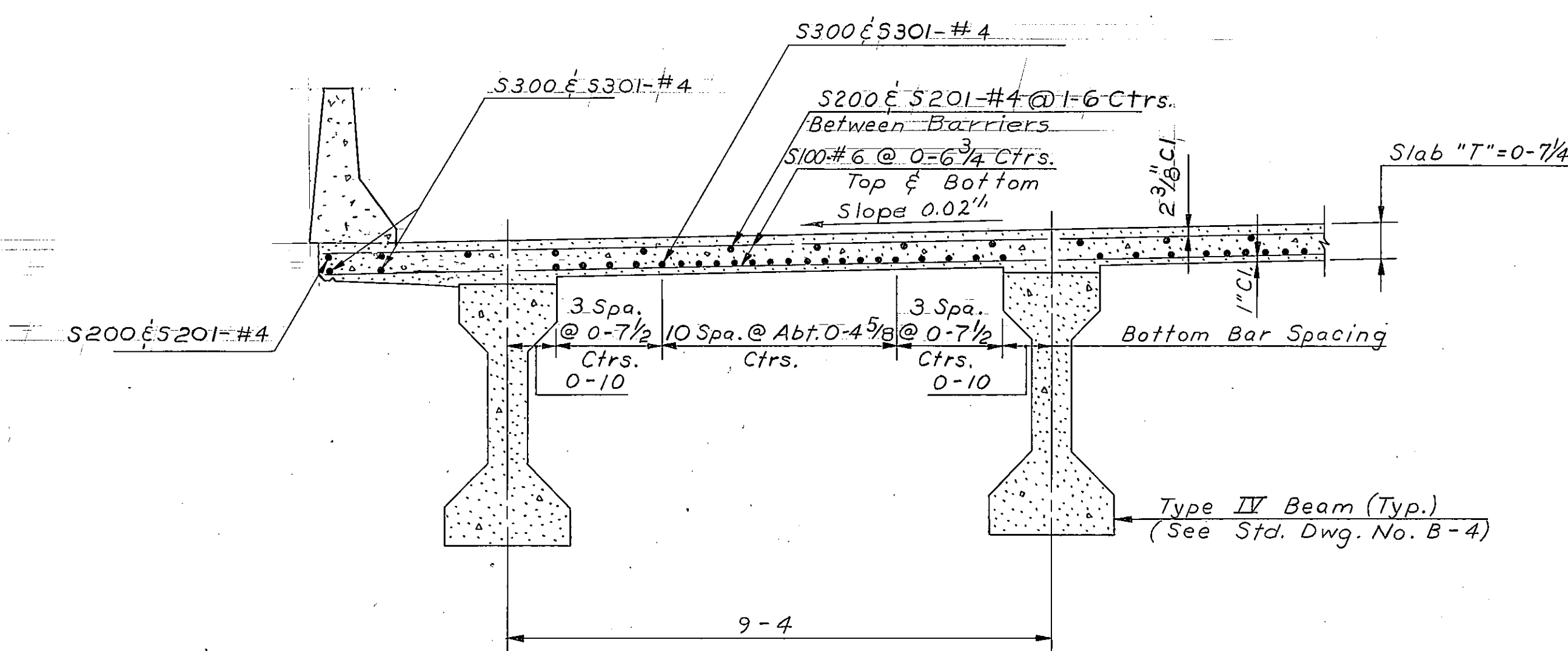
BILL OF REINFORCING STEEL

BENT BARS (All Dimensions Are Out to Out)				STRAIGHT BARS			
MARK	SIZE	NO.	TYPE LENGTH	MARK	SIZE	NO.	LENGTH
B1	#4	326	1 5'-1"	S100	#6	576	44'-2"
B2	#4	326	5 4'-6"	S200	#4	124	40'-0"
B3	#4	326	4 3'-0"	S201	#4	31	18'-2"
				S300	#4	288	40'-0"
				S301	#4	72	8'-2"
				S5	#5	22	15'-0"
				S6	#5	25	10'-0"
D4	#4	64	2 4'-8"				
D7	#4	128	3 7'-10"				
				B100	#4	64	40'-0"
				B101	#4	16	8'-0"
				D3	#6	16	7'-6"
				D5	#4	32	7'-6"
				D6	#6	32	7'-6"
				D8	#6	18	4'-6"

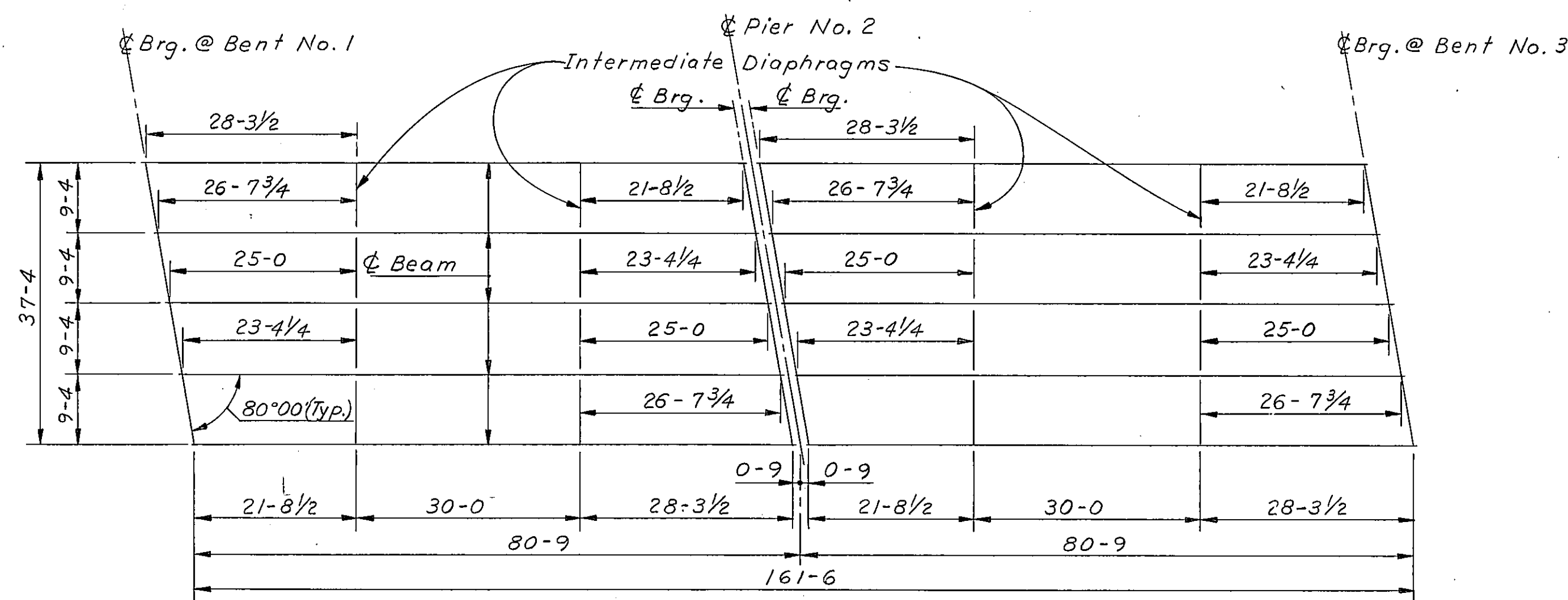
DL DEFLECTION TABLE

SPAN NO.	TENTH POINT				
	0.1	0.2	0.3	0.4	0.5
1 & 2	1/4	1/2	3/4	7/8	7/8

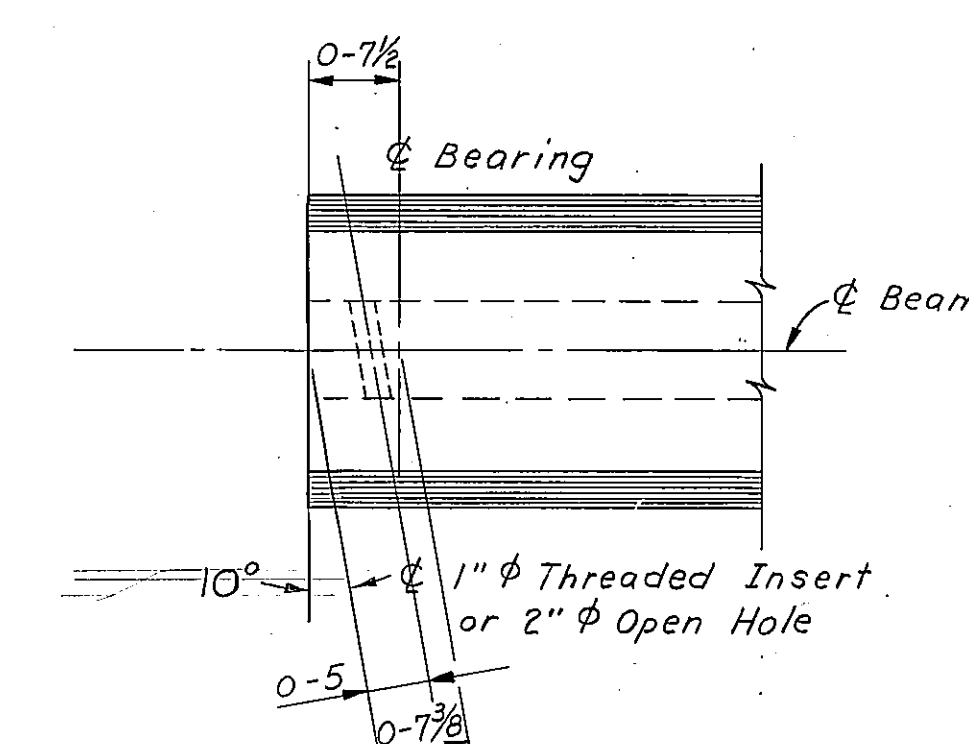
Deflections are symmetrical about C of span.



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



ERECTION PLAN
Scale: 1" = 15'-0"



MODIFIED BEAM END
Scale: 3/4" = 1'-0"

NOTE: For Additional Slab, Barrier, End Diaphragm, Intermediate Diaphragm, & Barrier End Details See Std. Dwg. No. SL-5.
NOTE: Lap all #4 bar 1'-4" minimum.

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated in Accordance With Std. Dwg. No. B-4 Except As Modified Hereon. Design Stresses (Before Prestress) Are As Follows:

Span No.	Beam Type	Beam Length Ctr. to Ctr. Brgs.	D.L. Beam Stress		D.L. + L.L. + I. Stress		Ultimate Design Moment 1.5 D.L. + 2.5 (L.L. + I.) Foot Kips
			f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	
1 & 2	IV	80'-0"	+886	-749	+2394	-2671	5256

Maximum f'c (Compressive Strength At 28 Days) For Design Shall Be 6000 P.S.I.

DESIGNED	JFS	10-13-72
DRAWN	DLK	11-13-72
CHECKED	RDR	11-27-72
APPROVED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
ERECTION PLAN AND
SLAB DETAILS - W. B. RDWY

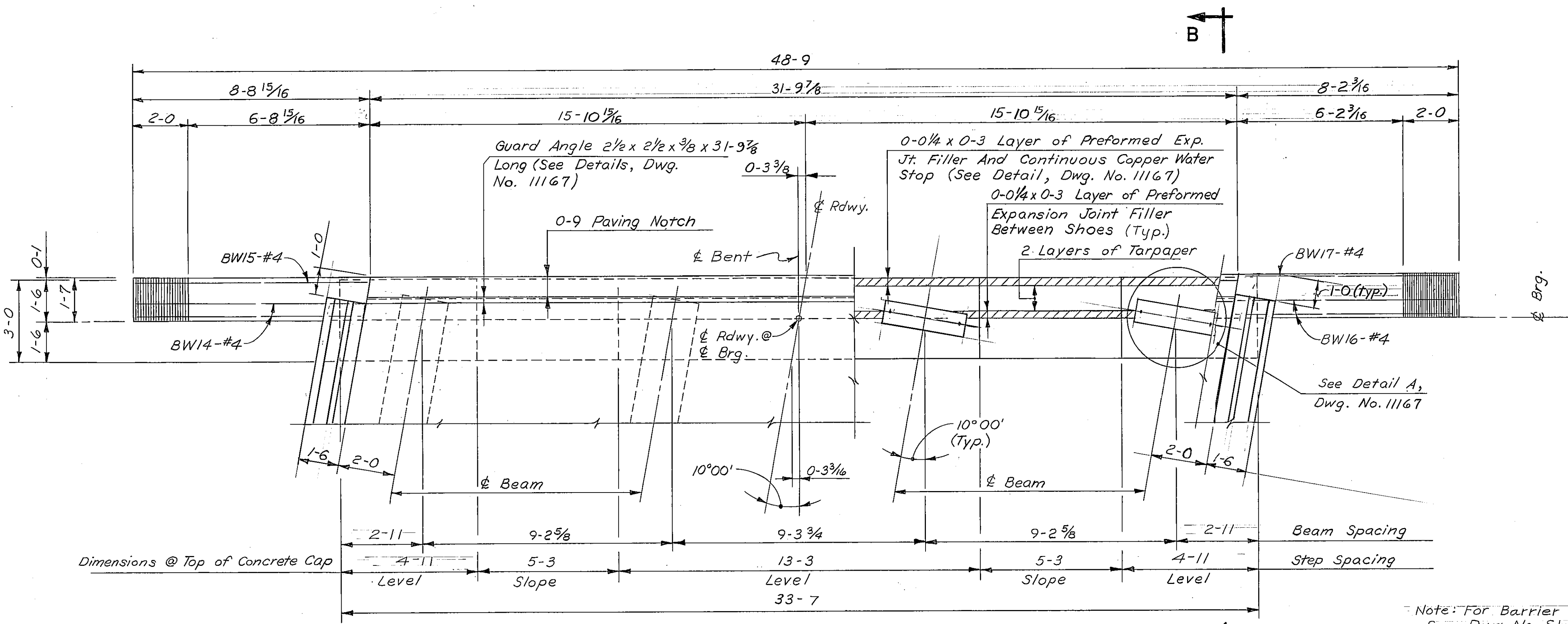
SCALE: AS NOTED
DRAWING NO. 11165

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9(33)516	7	35

NOTES: For Bill of Reinforcing Steel
See Dwg. No. 11167.

For Elevations See Dwg. No. 11167.

For Std. End Bent Notes See
Dwg. No. 11167.



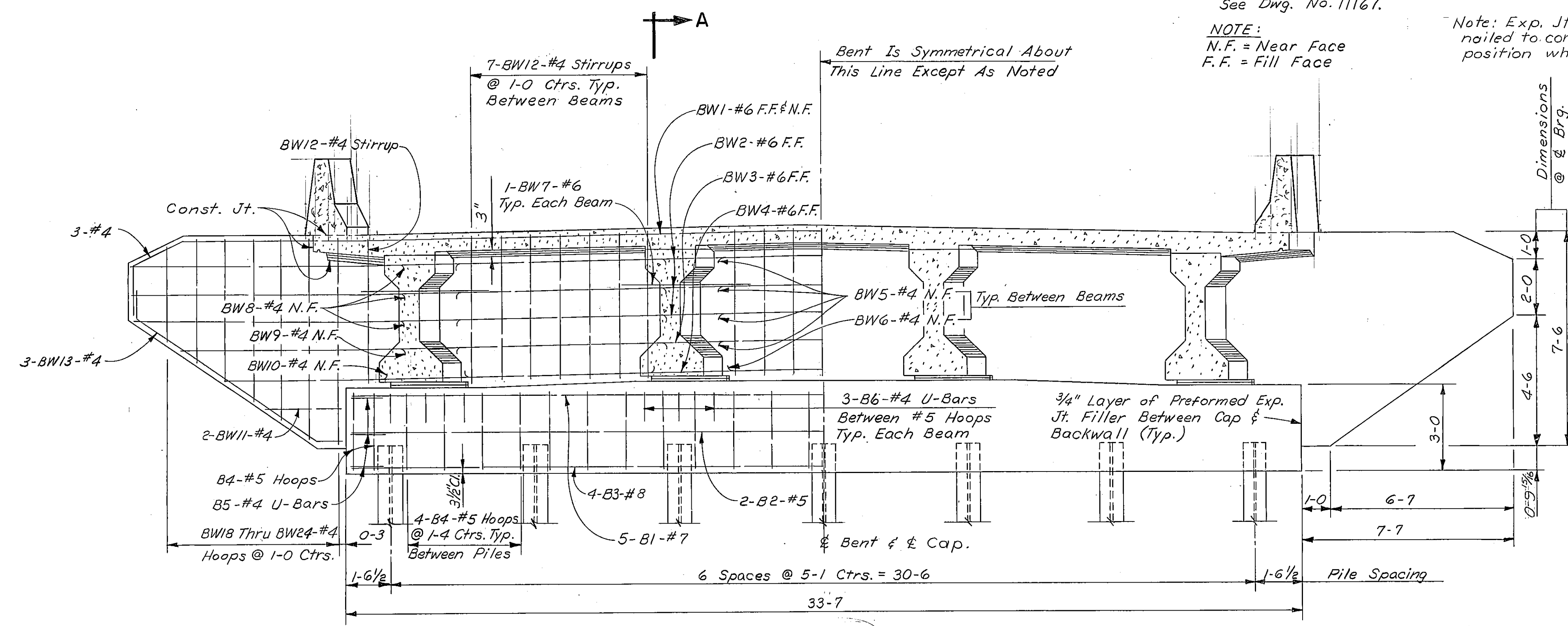
PLAN

For Section B-B
See Dwg. No. 11167.

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

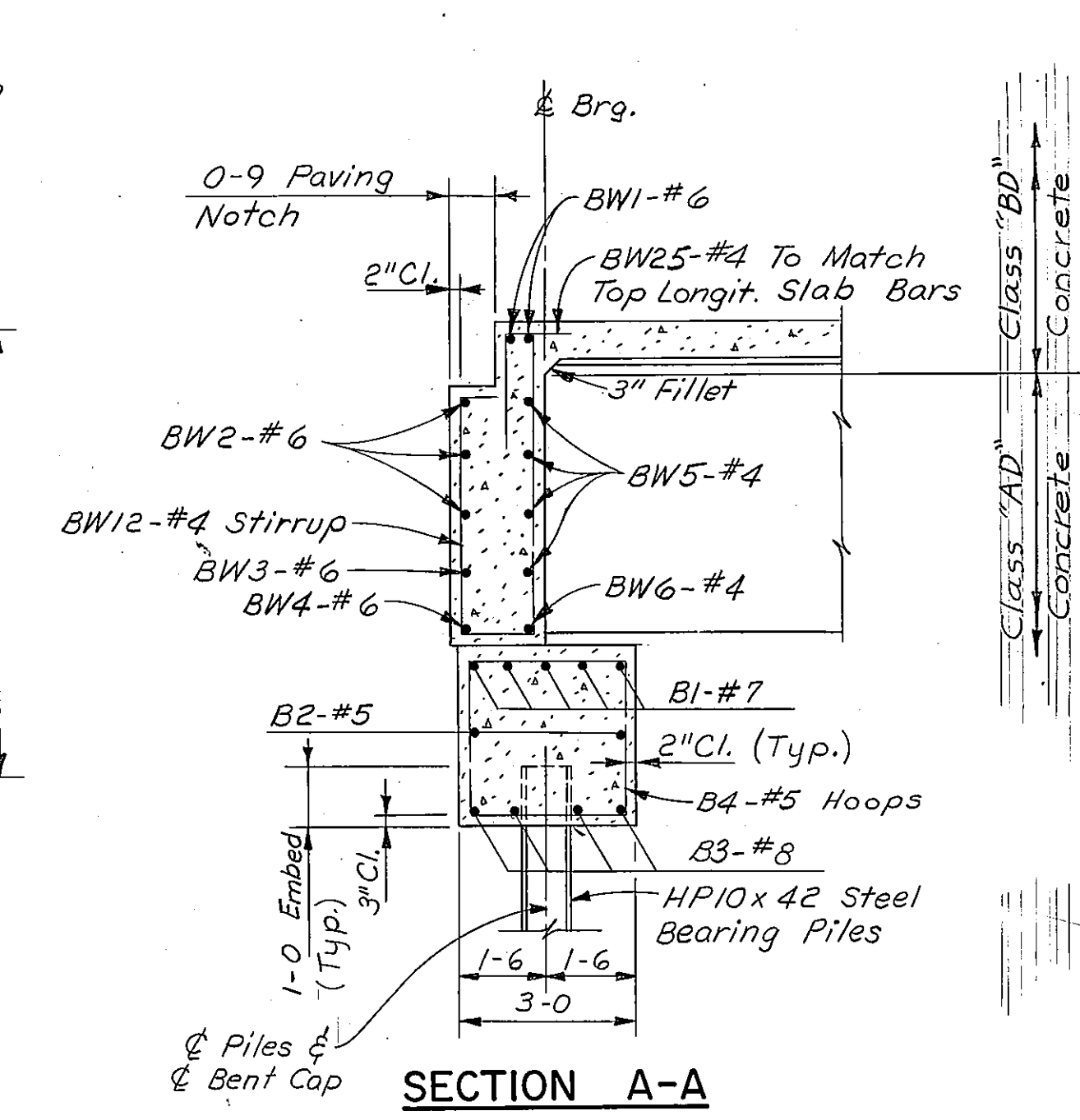
Note: For Barrier End Details
See Dwg. No. SL-5.

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



ELEVATION

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



SECTION A-A

NOTE:
Maximum Pile Pressure Under:
D.L. + L.L. = 42.2 Tons Per Pile.
Estimated Pile Length = 35-0 (Bent No. 1)
31-0 (Bent No. 3)

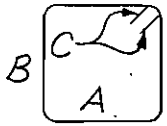
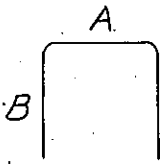
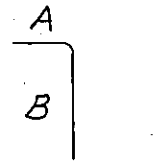
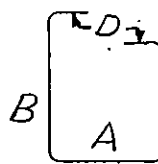
STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
BENTS NO. 1 & NO. 3 -
WEST FRONTAGE ROAD

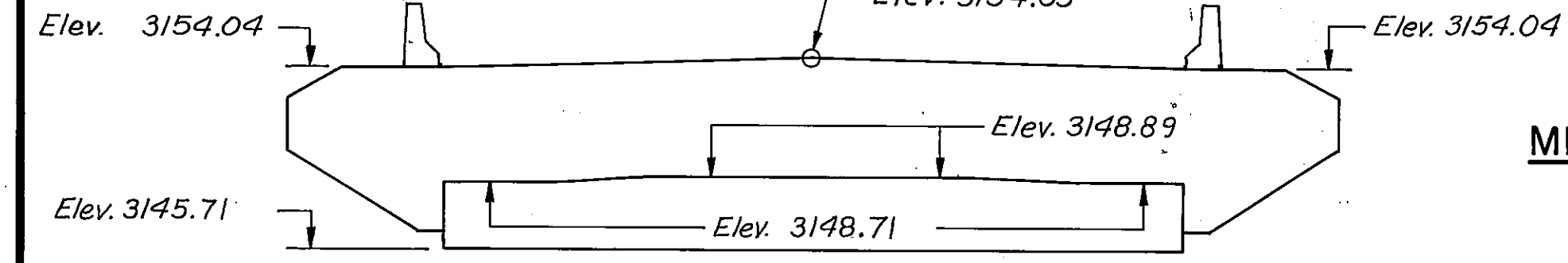
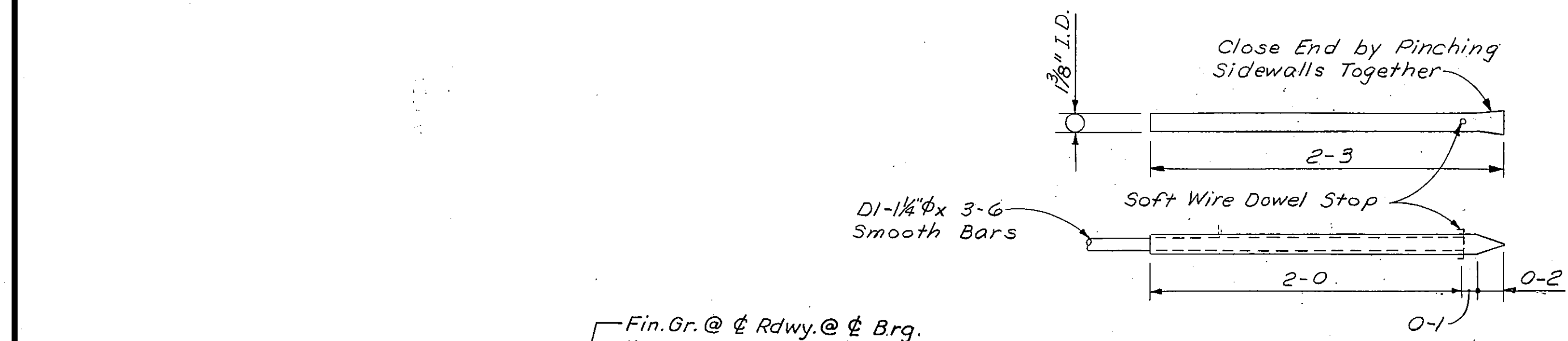
SCALE: 3/8" = 1'-0"

DRAWING NO. 11166

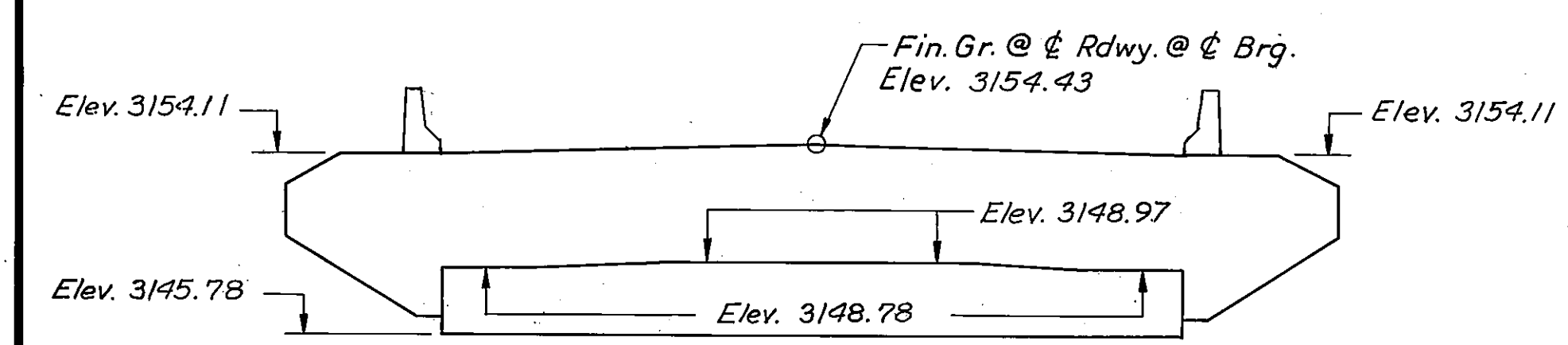
DESIGNED	J.F.S.	10-18-72
DRAWN	J.R.H.	11-7-72
CHECKED	R.D.R.	11-28-72
APPROVED		
REVISED		
REVISED		

BILL OF REINFORCING STEEL (One Bent Only)														
														
TYPE 1			TYPE 2			TYPE 3			TYPE 4			TYPE 5		
STRAIGHT BARS				BENT BARS (All Dimensions Are Out to Out)										
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D	E	F
B1	#7	5	33'-3"	B4	#5	28	1	11'-5"	2'-8"	2'-7"	0'-5 1/2"			
B2	5	2	33'-3"	B5	4	6	2	4'-7"	2'-7"	1'-0"				
B3	8	4	33'-3"	B6	4	12	2	4'-8"	2'-8"	1'-0"				
BW1	6	2	35'-6"	BW12	4	23	4	10'-10"	1'-3"	5'-0"	4'-0"	0'-3 1/2"		
BW2	6	3	48'-5"	BW13	4	6	5	9'-3"	7'-5"	1'-0"	0'-10"	0'-9"	0'-6"	
BW3	6	1	45'-0"	BW14	4	2	5	10'-0"	2'-1"	1'-9"	6'-2"	1'-7"	2'-8 1/2"	
BW4	6	1	42'-0"	BW15	4	1	5	10'-3"	2'-1"	1'-9"	6'-5"	1'-7"	2'-10"	
BW5	4	12	7'-3"	BW16	4	2	5	9'-11"	2'-1"	1'-9"	6'-1"	1'-7"	2'-8"	
BW6	4	3	6'-9"	BW17	4	1	5	9'-8"	2'-1"	1'-9"	5'-10"	1'-7"	2'-6"	
BW7	6	4	5'-4"	BW18	4	2	1	9'-7"	1'-3"	3'-2"	0'-4 1/2"			
BW8	4	6	9'-0"	BW19	4	2	1	11'-5"	1'-3"	4'-1"	0'-4 1/2"			
BW9	4	2	7'-6"	BW20	4	2	1	12'-9"	1'-3"	4'-9"	0'-4 1/2"			
BW10	4	2	6'-0"	BW21	4	2	1	14'-3"	1'-3"	5'-6"	0'-4 1/2"			
BW11	#4	4	2'-6"	BW22	4	2	1	15'-7"	1'-3"	6'-2"	0'-4 1/2"			
				BW23	4	2	1	17'-1"	1'-3"	6'-11"	0'-4 1/2"			
				BW24	4	2	1	17'-7"	1'-3"	7'-2"	0'-4 1/2"			
*D1	1/4" sm.	4	3'-6"	BW25	#4	24	3	4'-0"	2'-0"	2'-0"				
										</				

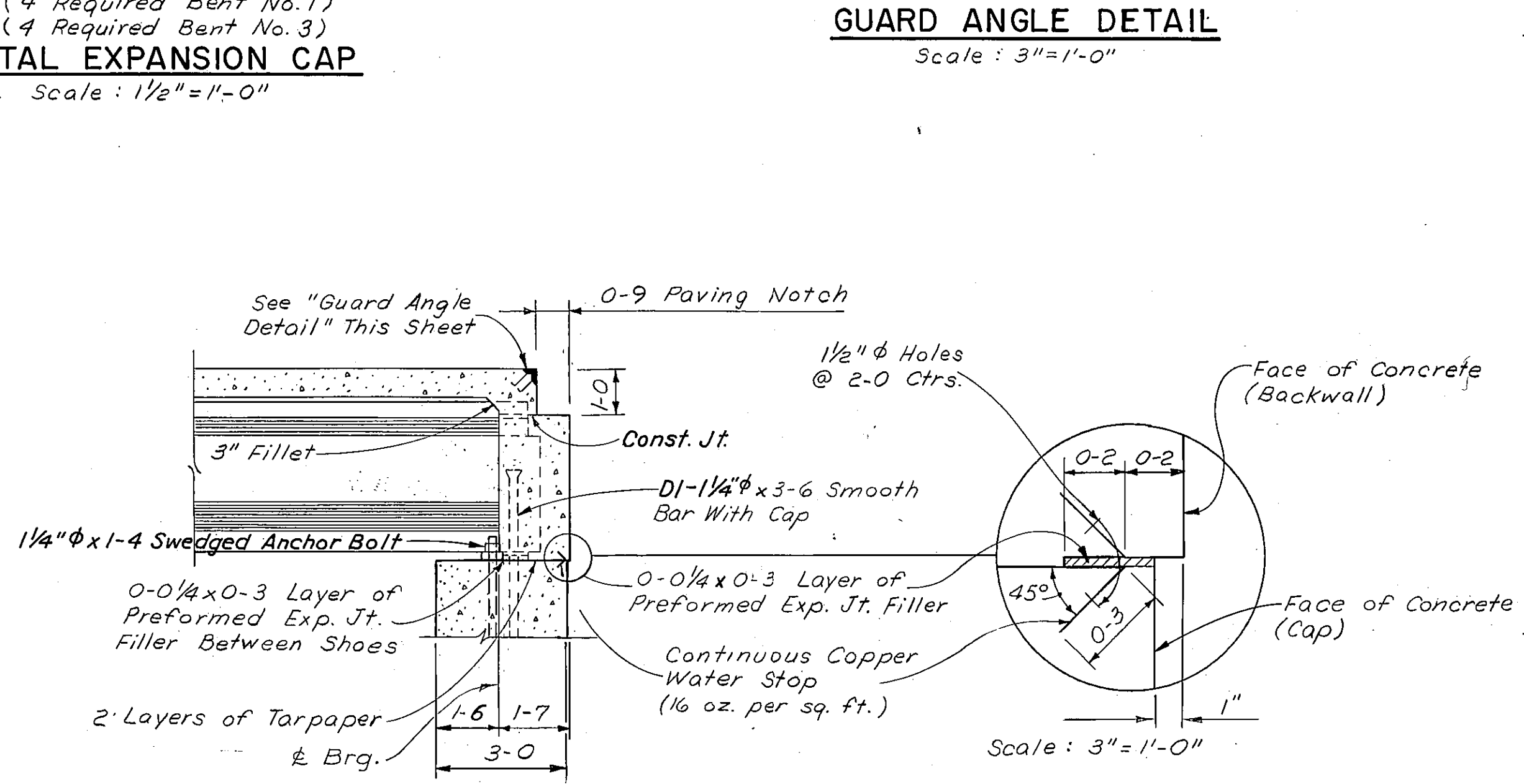
- * D1 1/4" Smooth Bars Shall Conform to A.S.T.M. A36 STEEL.
- NOTES**
- Cost of Furnishing and Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop and Metal Expansion Caps to be Included in the Unit Price Bid for Class AD Concrete.
 - Beam Seat Areas Shall be Finished Level to the Elevations Shown. The Area Between Beam Seats to be Sloped Uniformly As Required.
 - For Slab and Beam Reinforcing Steel See Std. Dwg. No. B-4 and SL-5 and Dwg. No. 11169.



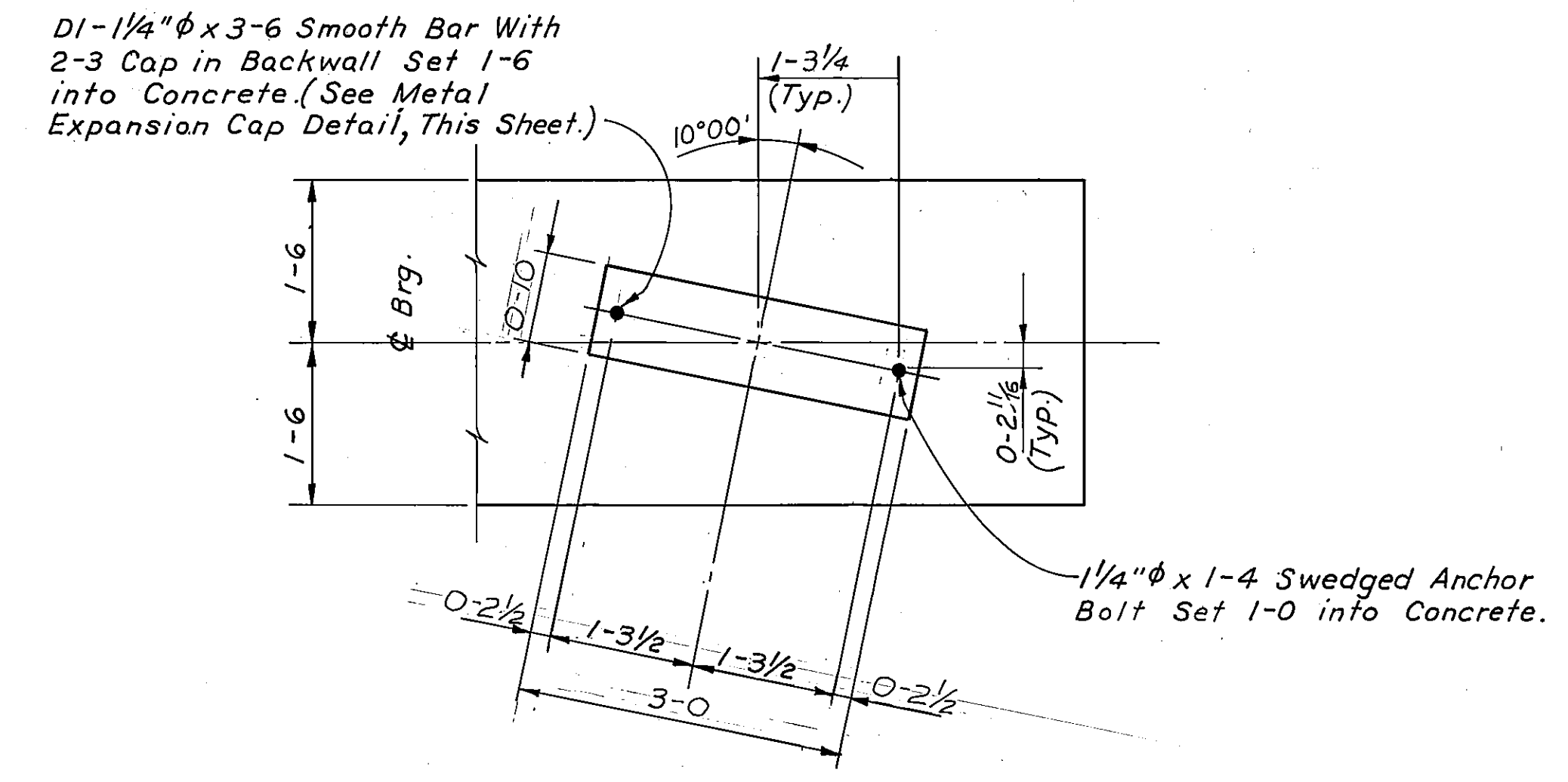
BENT NO. 1
(Back on Line)
(No Scale)



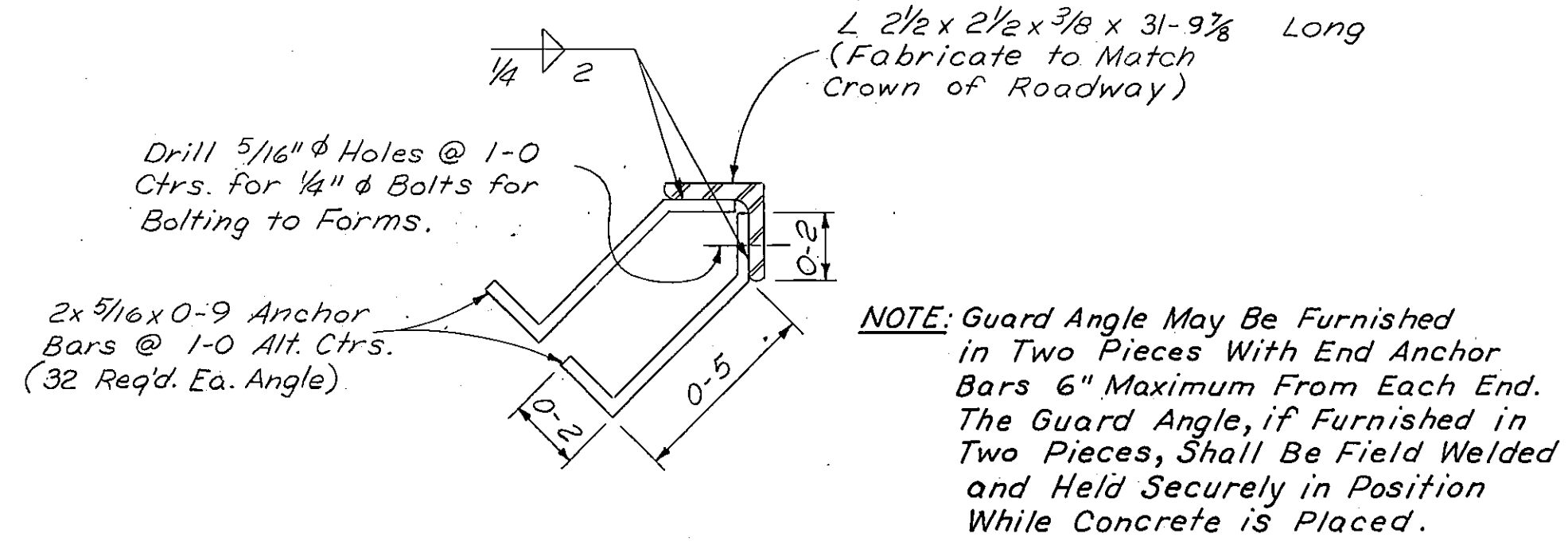
BENT NO. 3
(Ahead on Line)
(No Scale)



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

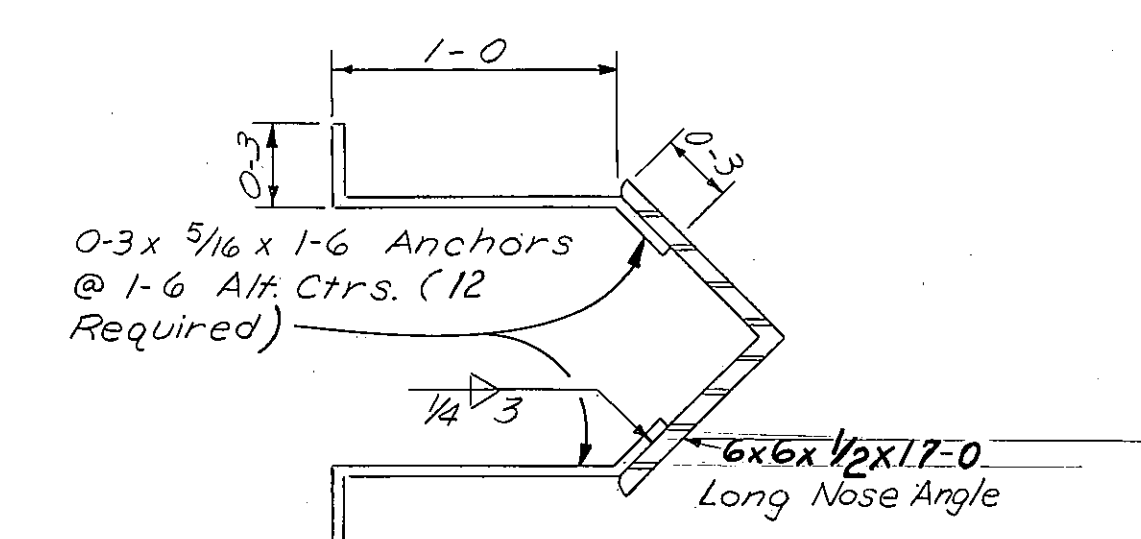


DETAIL A
Scale: 3/4" = 1'-0"



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

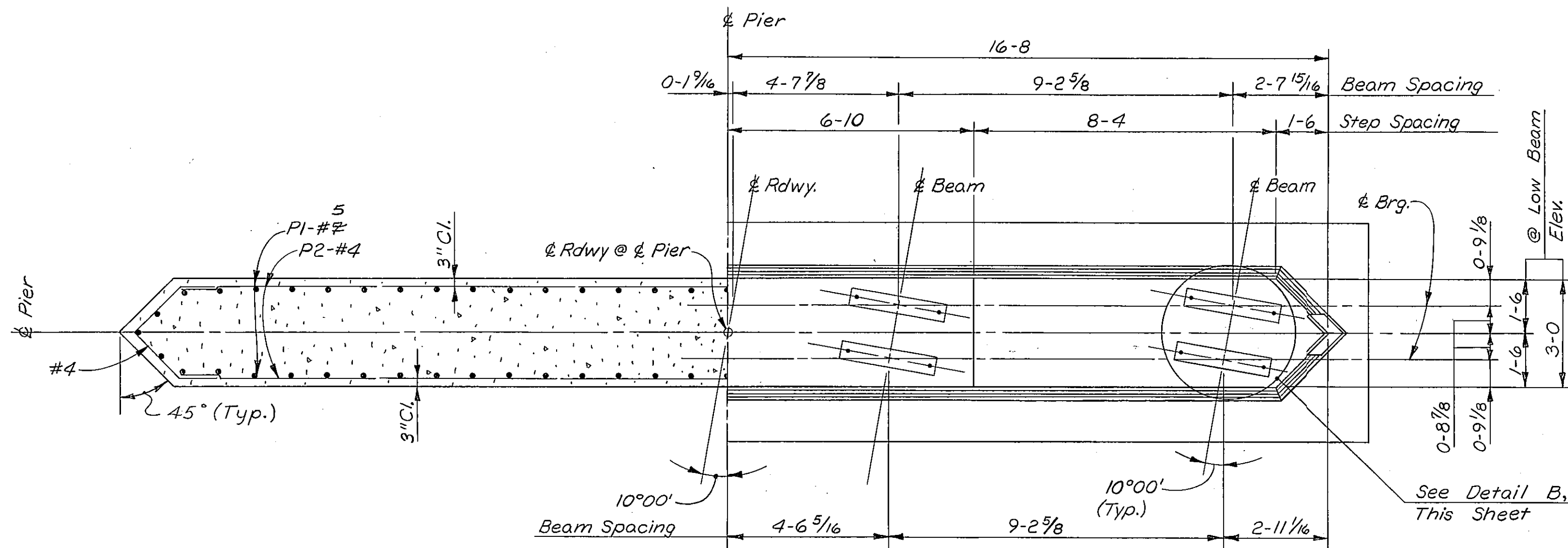
NOTE: Pier Nose Angles Shall Be Paid For As Structural Steel. One (1) Shop Coat And Two (2) Field Coats Of Paint As Specified For Structural Steel Shall Be Applied To Exposed Surfaces Of Nose Angles Before Erection.



NOSE ANGLE DETAIL
Scale: 1/2" = 1'-0"

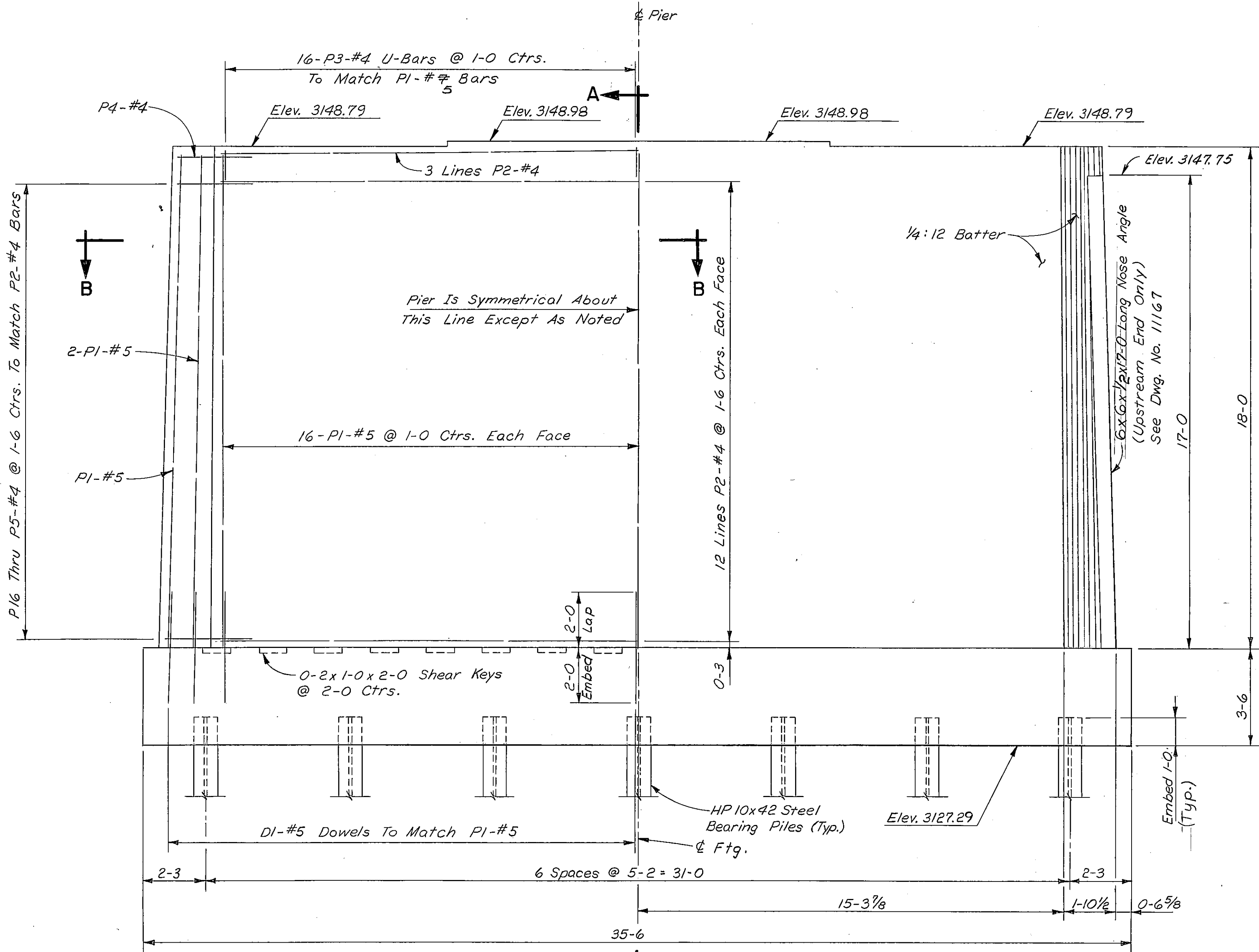
DESIGNED	JFS	10-18-72
DRAWN	J.R.H.	4-4-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
MISCELLANEOUS BENT DETAILS -
WEST FRONTAGE ROAD
SCALE: AS NOTED
DRAWING NO. 11167



SECTION B-B

HALF PLAN



ELEVATION
(Ahead On Line)

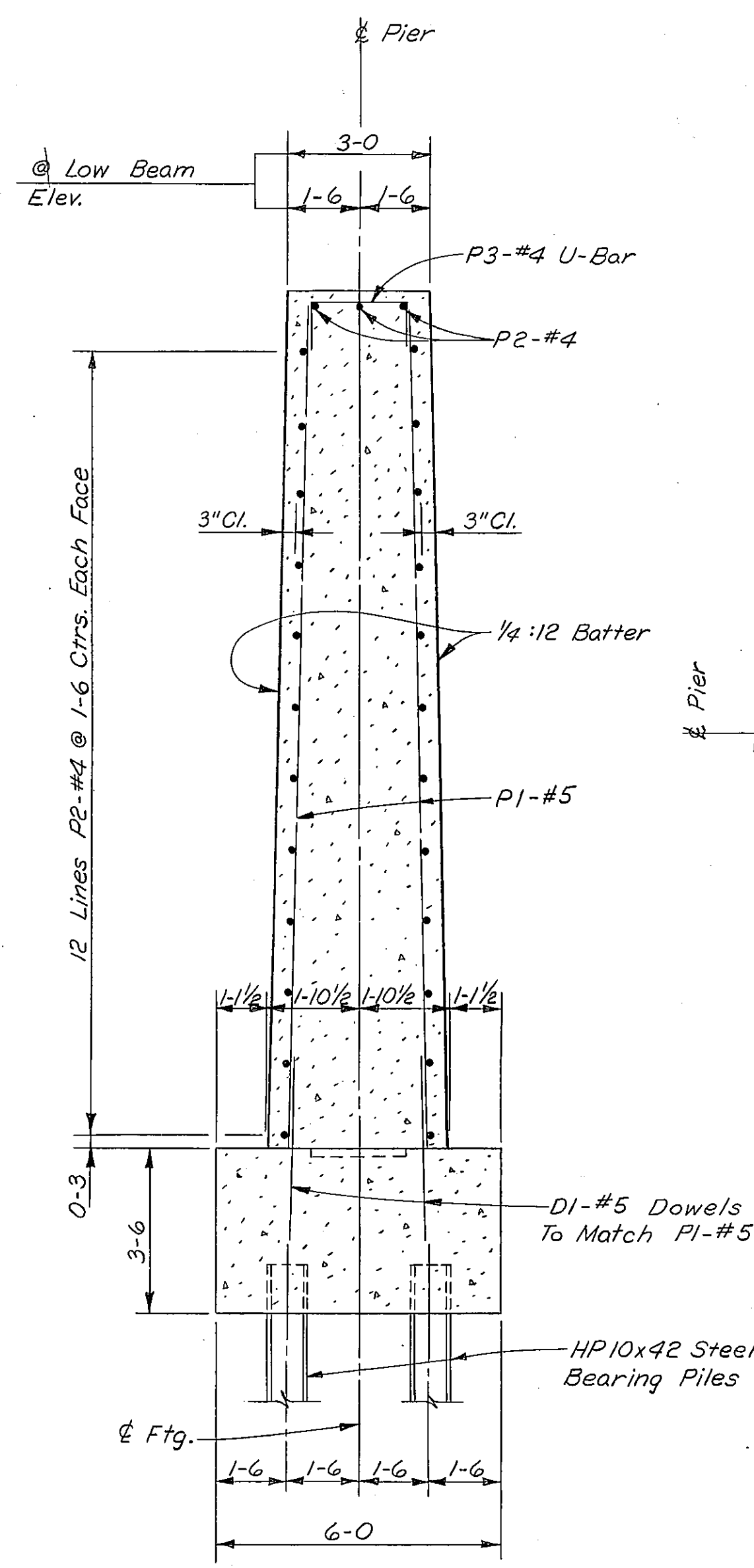
NOTE:
Maximum Pile Pressure Under:
D.L. + L.L. + E. + B. + L.F. + 3W + W.L. = 43.5 Tons/Pile
Estimated Pile Length = 15-0

BILL OF REINFORCING STEEL

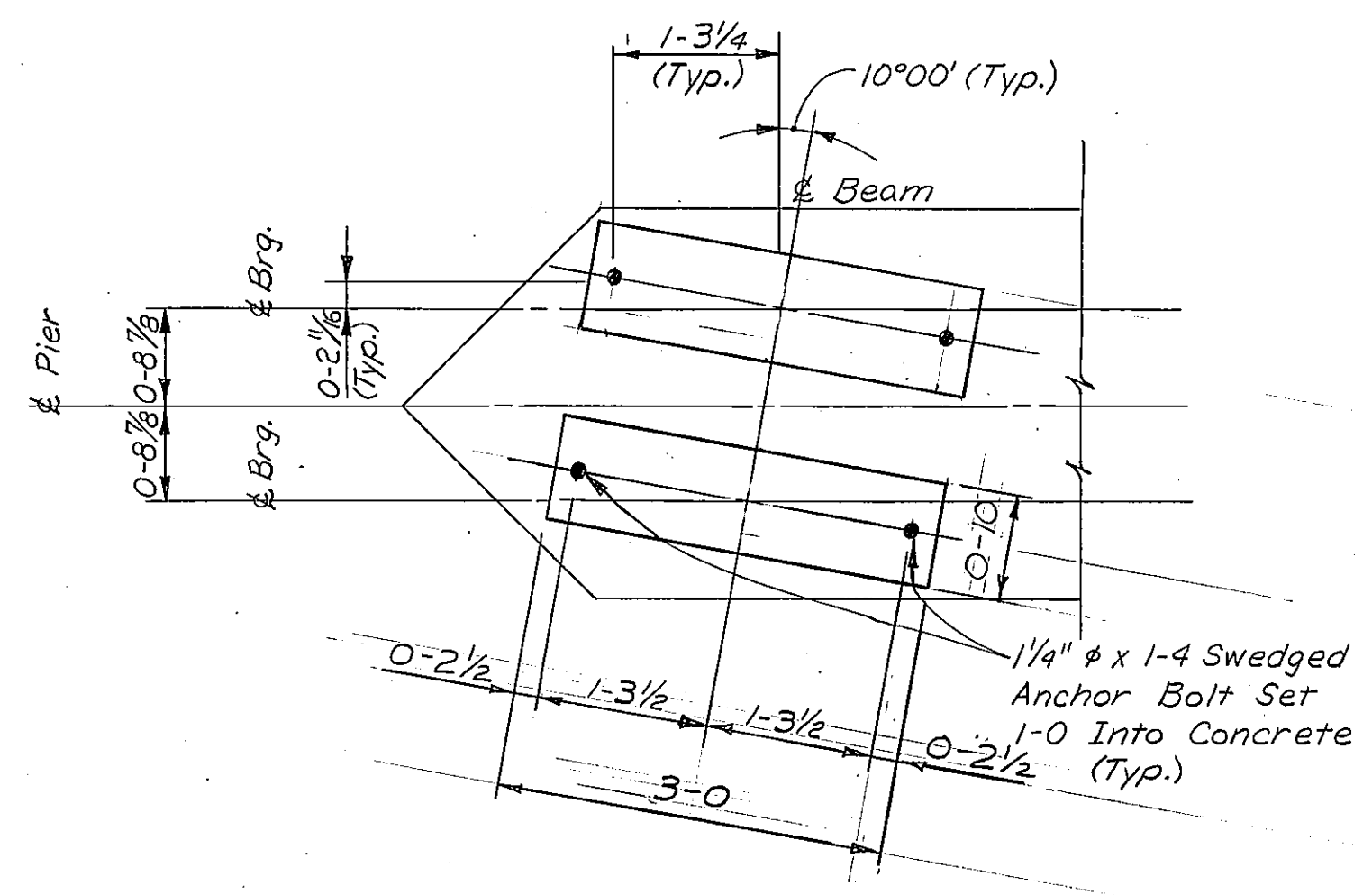
TYPE 1

TYPE 2

STRAIGHT BARS				BENT BARS(All Dimensions Are Out To Out)											
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	TYPE	LENGTH	A	B	C				
P1	#5	68	17'-10"	P3	#4	31	1	4'-5"	2'-5"	1'-0"					
P2	4	27	30'-4"	P4	4	2	2	6'-0	1'-3	1'-9	2'-6"				
				P5	4	2	2	6'-1	1'-3	1'-9½	2'-6½"				
				P6	4	2	2	6'-2	1'-3	1'-10	2'-7¼"				
D1	#5	68	4'-0"	P7	4	2	2	6'-4	1'-3½	1'-10½	2'-8"				
				P8	4	2	2	6'-5	1'-3½	1'-11	2'-8¾"				
				P9	4	2	2	6'-6	1'-3½	1'-11½	2'-9½"				
				P10	4	2	2	6'-8	1'-4	2'-0	2'-10½"				
				P11	4	2	2	6'-9	1'-4	2'-0½	2'-11"				
				P12	4	2	2	6'-10	1'-4	2'-1	2'-11¾"				
				P13	4	2	2	7'-0	1'-4½	2'-1½	3'-0½"				
				P14	4	2	2	7'-1	1'-4½	2'-2	3'-1¼"				
				P15	4	2	2	7'-2	1'-4½	2'-2½	3'-2"				
				P16	#4	21	2	7'-4	1'-5	2'-3	3'-2¾"				



SECTION A-A



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

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

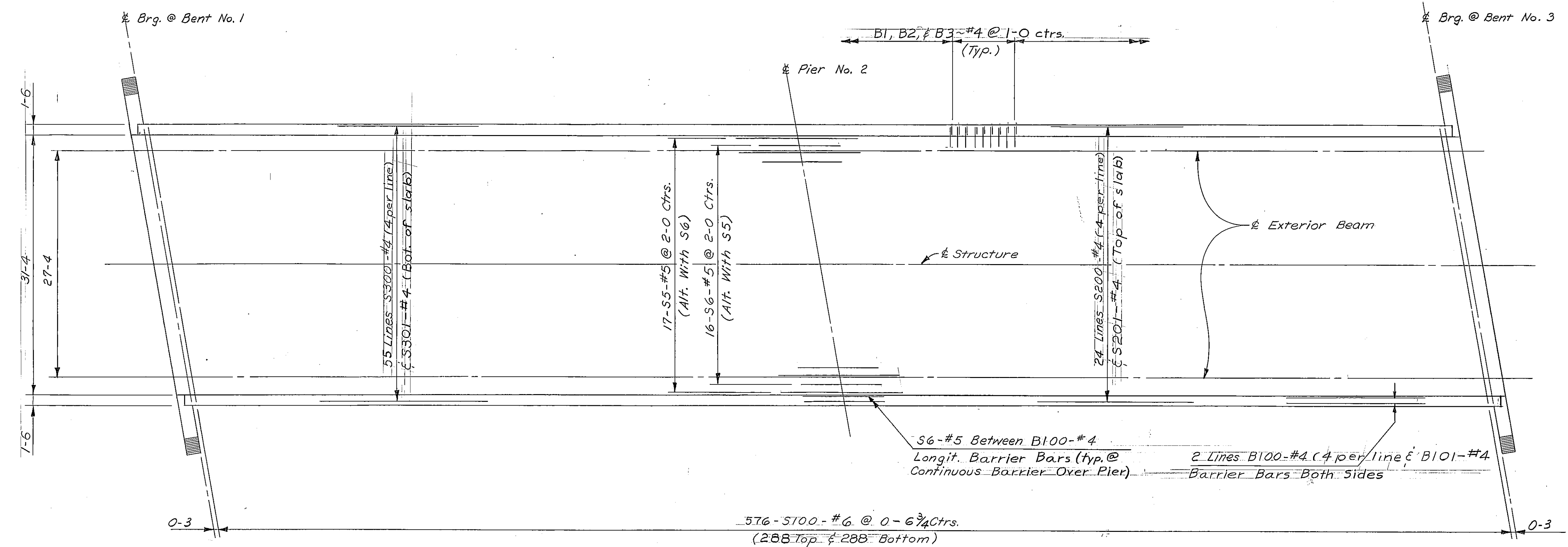
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
PIER NO. 2-
WEST FRONTAGE ROAD

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

DRAWING NO. 11168

DESIGNED	J.F.S.	10-18-72
DRAWN	J.R.H.	11-9-72
CHECKED	R.D.R.	11-28-72
APPROVED		
REVISED		
REVISED		

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
B	MONT.	190-9(33)516	10	35



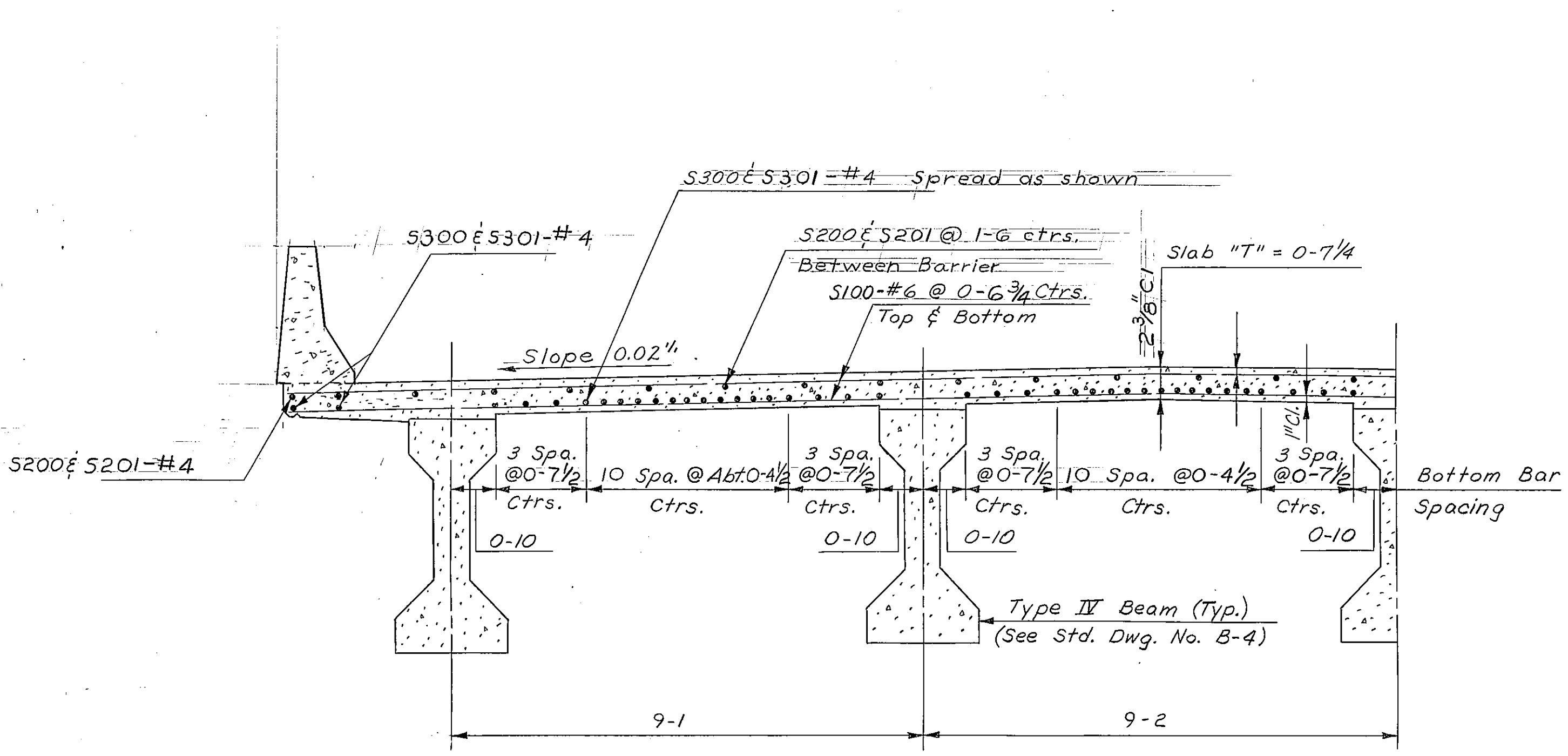
REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8" = 1'-0"

BILL OF REINFORCING STEEL

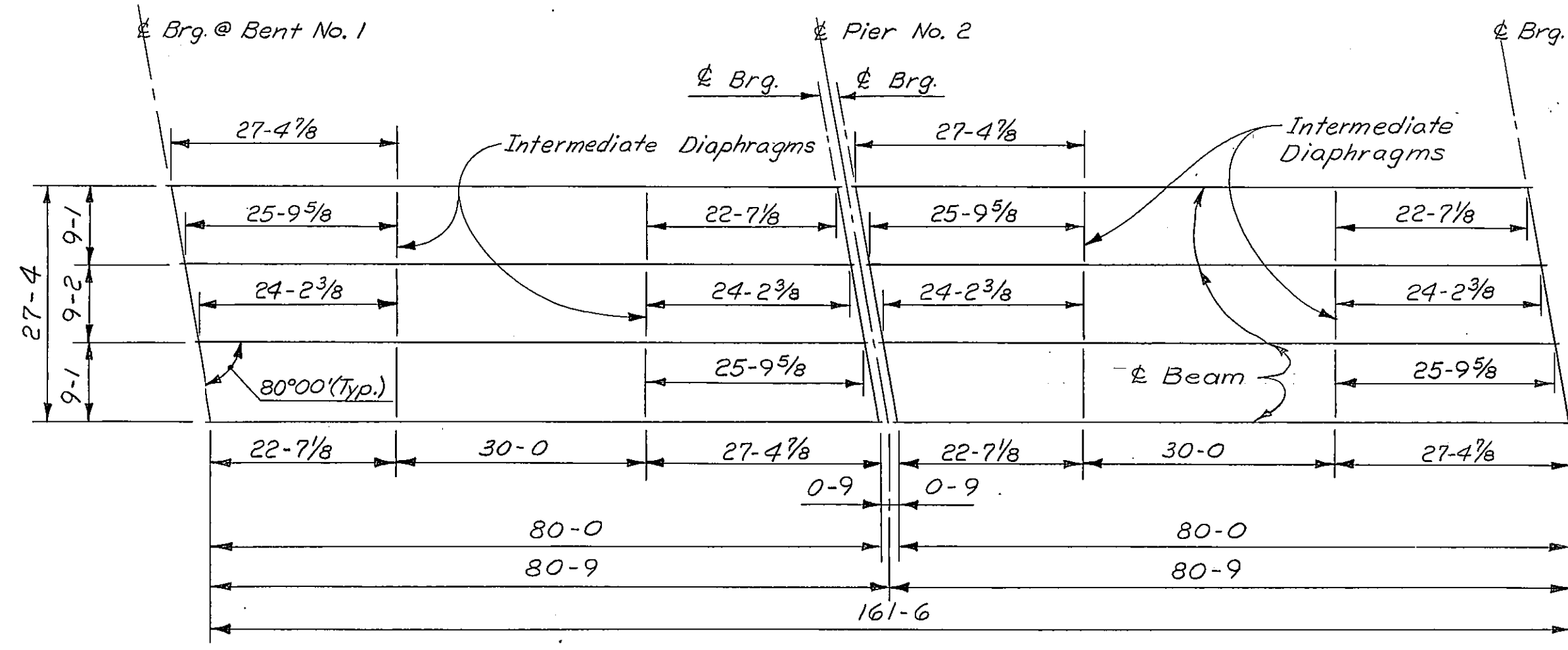
TYPE 1
TYPE 2
TYPE 3
TYPE 4
TYPE 5

BENT BARS (All Dimensions Are Out To Out)							
MARK	SIZE	NO.	TYPE	LENGTH	A	B	C
B1	#4	326	1	5'-1"	2'-4"	0'-5"	0'-9"
B2	#4	326	4	4'-6"	1'-9"	2'-9"	2'-5"
B3	#4	326	5	3'-0"	1'-10"	1'-2"	
D4	#4	48	2	4'-8"	0'-7"	1'-9"	0'-3 1/2"
D7	#4	96	3	7'-10"	0'-7"	3'-4"	0'-3 1/2"

STRAIGHT BARS			
MARK	SIZE	NO.	LENGTH
S100	#6	576	34'-1"
S200	#4	96	40'-0"
S201	#4	24	8'-2"
S300	#4	220	40'-0"
S301	#4	55	8'-2"
S5	#5	17	15'-0"
S6	#5	20	10'-0"
B100	#4	64	40'-0"
B101	#4	16	8'-0"
D3	#6	12	7'-2"
D5	#4	24	7'-2"
D6	#6	24	7'-2"
D8	#6	12	4'-6"



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

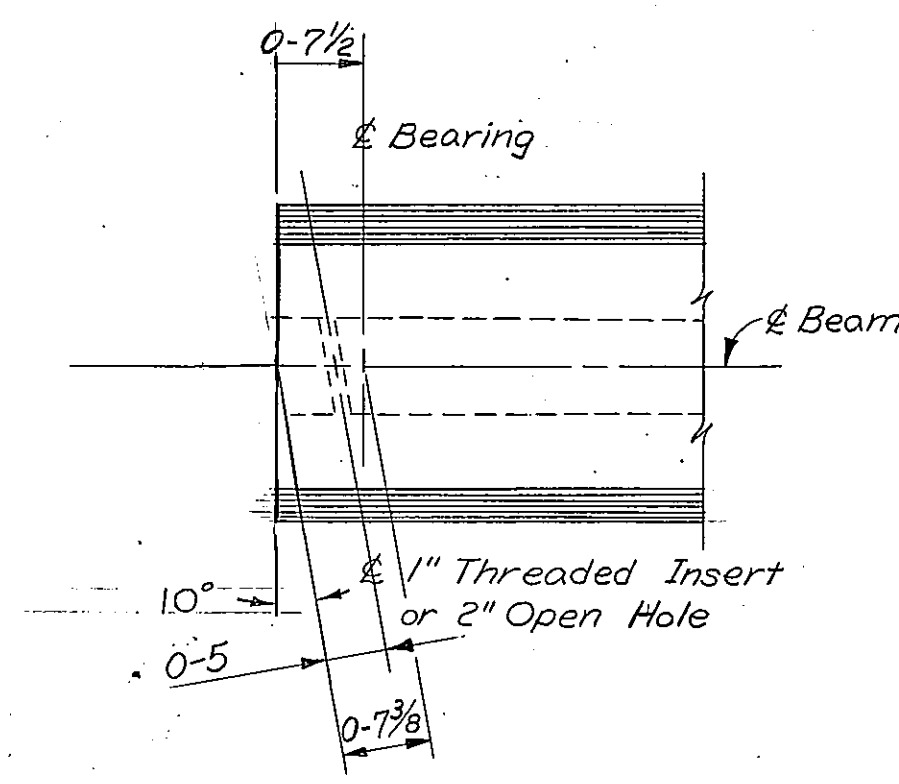


ERECTION PLAN
Scale: 1" = 15'-0"

DL DEFLECTION TABLE

SPAN NO.	TENTH POINT				
	0.1	0.2	0.3	0.4	0.5
1 & 2	1/4	1/2	1 1/6	1 3/6	7/6

Deflections are symmetrical about center span.



MODIFIED BEAM END
Scale: 3/4" = 1'-0"

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated In Accordance With Std. Dwg. No. B-4 Except As Modified Hereon. Design Stresses (Before Prestress) Are As Follows:

Span No.	Beam Type	Beam Length Ctr. to Ctr. Brgs.	D.L. Beam Stress		D.L. + L.L. + I. Stress		Ultimate Design Moment 1.5 D.L. + 2.5 (L.L. + I.) Foot Kips
			f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	
1 & 2	IV	80-0	+886	-749	+2367	-2642	5187

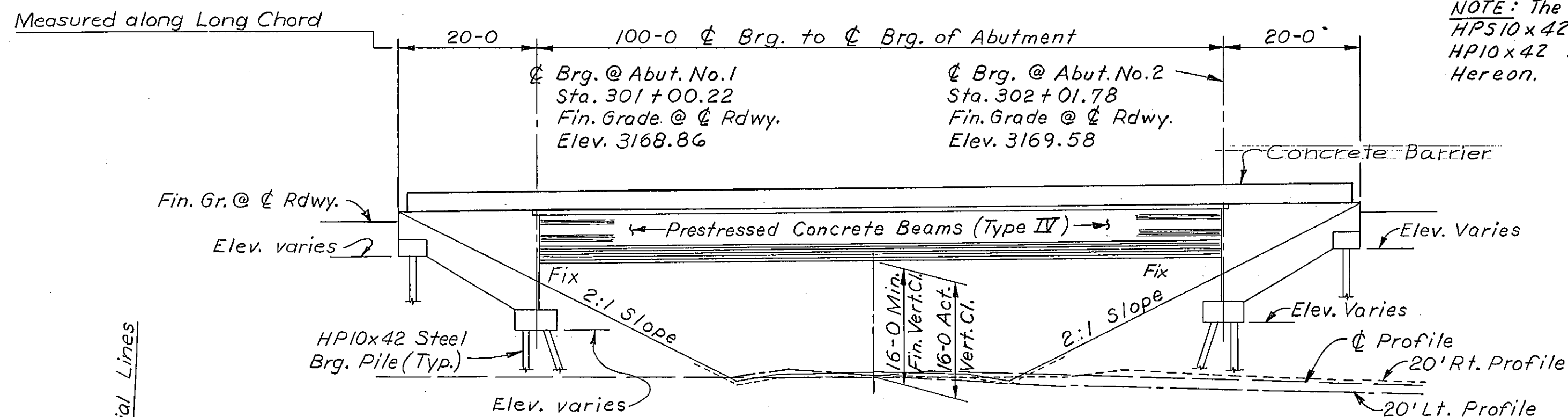
Maximum f'c (Compressive Strength At 28 Days) For Design Shall Be 6000 P.S.I.

Note: Lap #4 bars 1-4 min.
NOTE: For Additional Slab, Barrier, End Diaphragm, Intermediate Diaphragm & Barrier End Details, See Std. Dwg. No. SL-5.

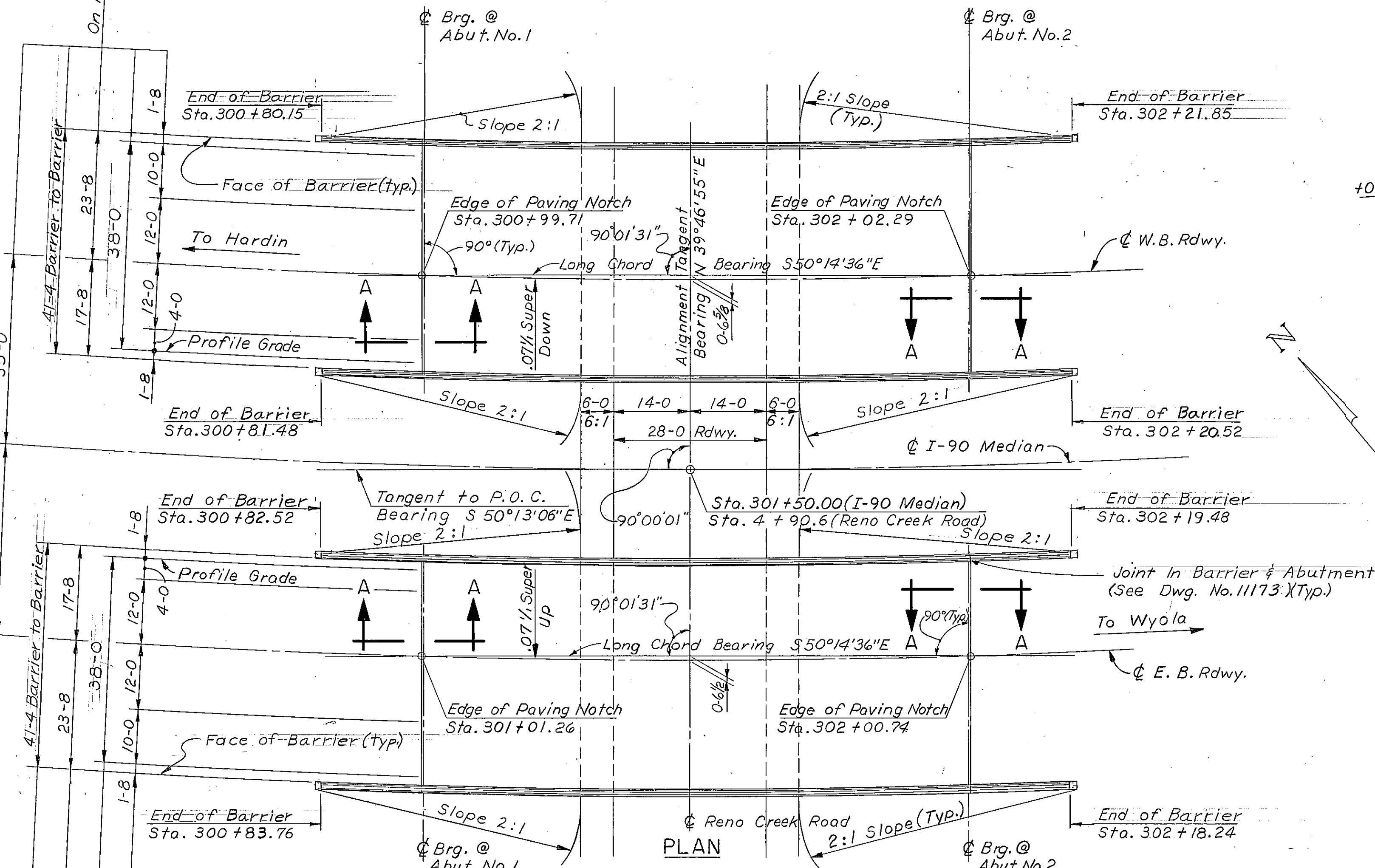
STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ERECTION PLAN AND
SLAB DETAILS - WEST FRONTAGE ROAD
SCALE: AS NOTED
DRAWING NO. 11169

DESIGNED	JFS	10-18-72
DRAWN	J.R.H.	11-10-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		

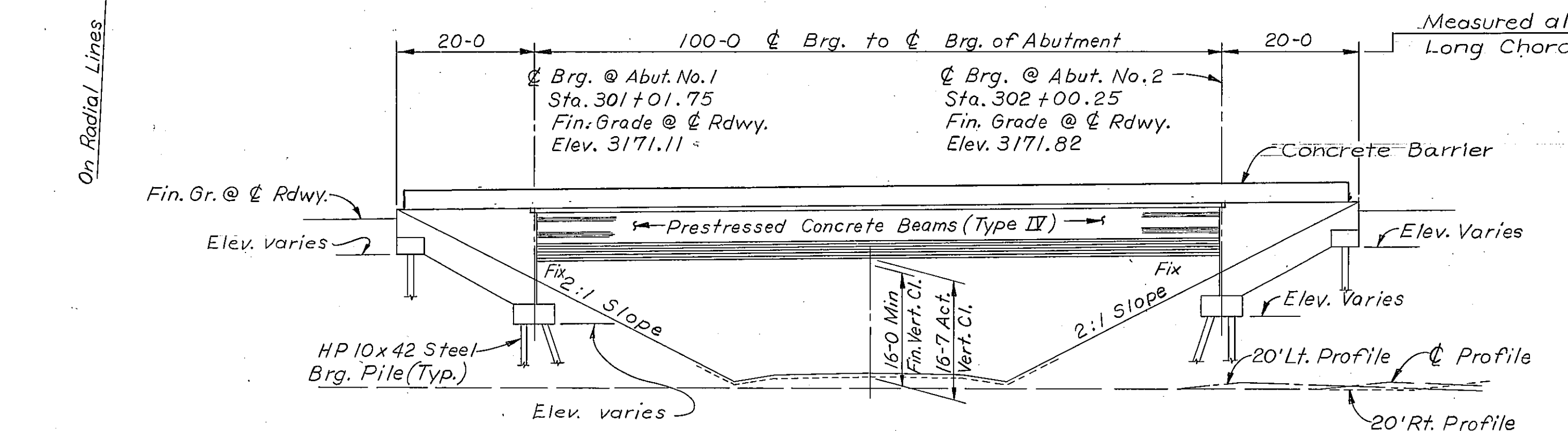
Measured along Long Chord



ELEVATION W. B. RDWY.

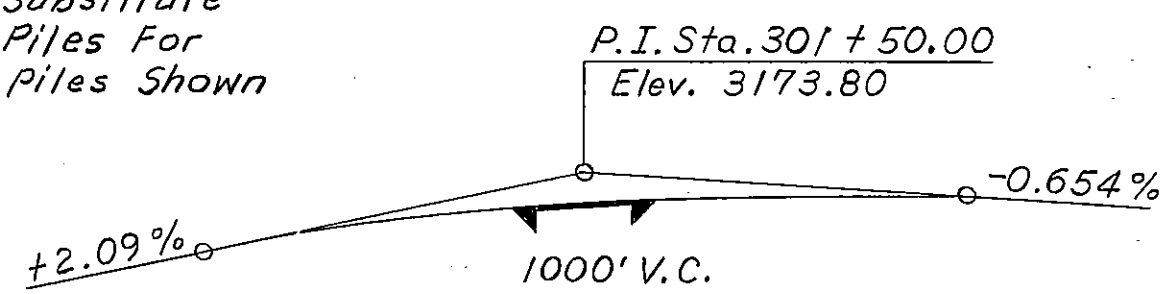


PLAN



ELEVATION E. B. RDWY.

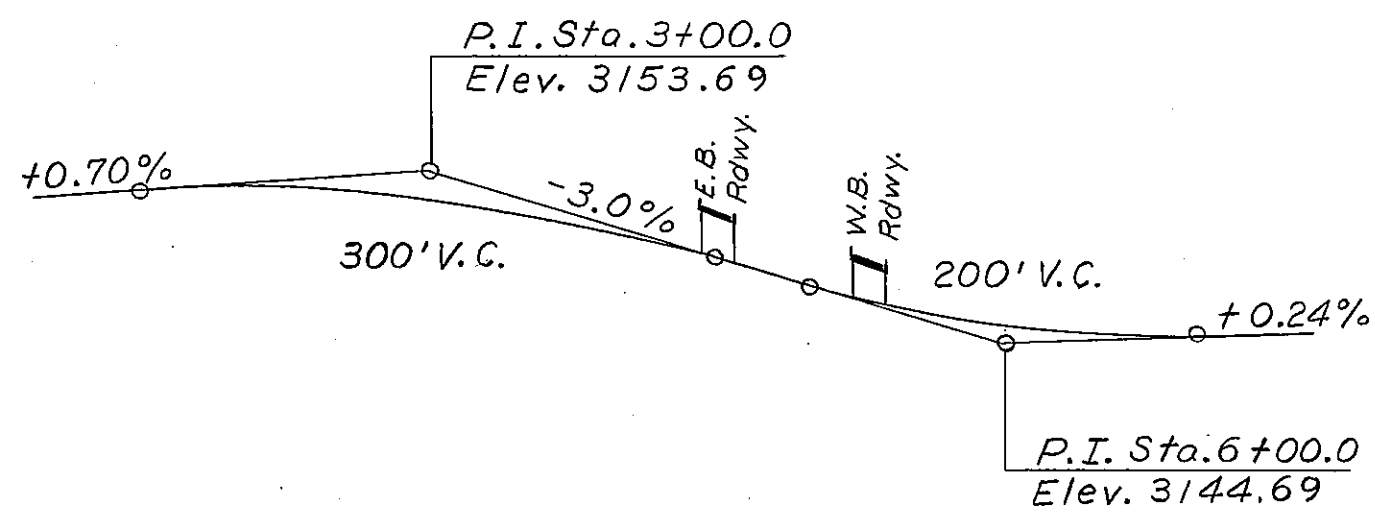
NOTE: The Contractor May Substitute HP510x42 Steel Bearing Piles For HP10x42 Steel Bearing Piles Shown Hereon.



I-90 MEDIAN PROFILE GRADE
No Scale

I-90 MEDIAN CURVE DATA

P.I. Sta. 298 + 10.1
 $\Delta = 43^{\circ}00'00''$ Lt.
 $\theta_s = 3^{\circ}45'$
 $L_s = 300.00'$
 $\Delta_c = 35^{\circ}30'00''$ Lt.
 $D_c = 2^{\circ}30'$
 $L_c = 1420.00'$
 $T_s = 1053.40'$
 $R = 2291.83'$
 $S = 0.071\%$



RENO CREEK ROAD
PROFILE GRADE
No Scale

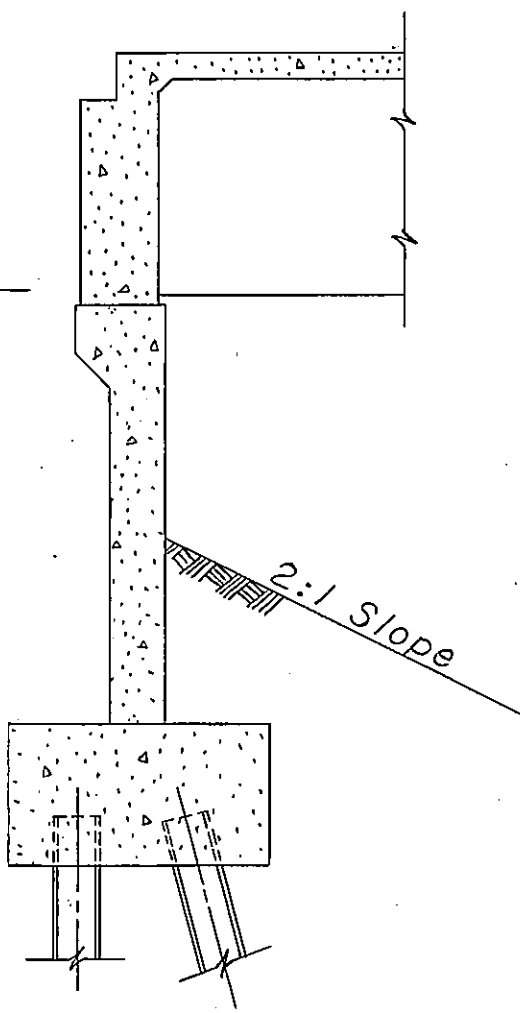
NOTES:

All Stations Shown Are $\pm$ I-90 Median Stations.

Barriers, slabs and abutment wingwalls are to be built on centerline of roadway curves parallel to centerline of roadway curves, long chords.

Structure Excavation for Abutments shall be computed from subgrade elevations.

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



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

THE KEN R. WHITE CO.
HELENA, MONT.

FED. ROAD DIV. NO.	STATE	F. A. P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	11	35

NOTES

LIVE LOAD: STANDARD HS20-44 LOADING OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 POUNDS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "B" AND ALL OTHER CONCRETE SHALL BE CLASS "A".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS.

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

REINFORCING STEEL: ALL REINFORCEMENT STEEL SHALL BE OF THE DEFORMED TYPE AND SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS A615, GRADE 60 (AASHTO M-31) EXCEPT FOR THE REBAR IN THE PRESTRESSED CONCRETE BEAMS WHICH MAY BE GRADE 40.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301 + 50.00

FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

GENERAL LAYOUT

SCALE: 1"=15'-0" (EXCEPT AS NOTED)

DESIGNED	RDR	11-9-72
DRAWN	DLK	12-17-71
CHECKED	REW	7-12-73
APPROVED	H.E.S.	7-18-77
REVISED		
REVISED		

DRAWING NO. 11170

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	12	35

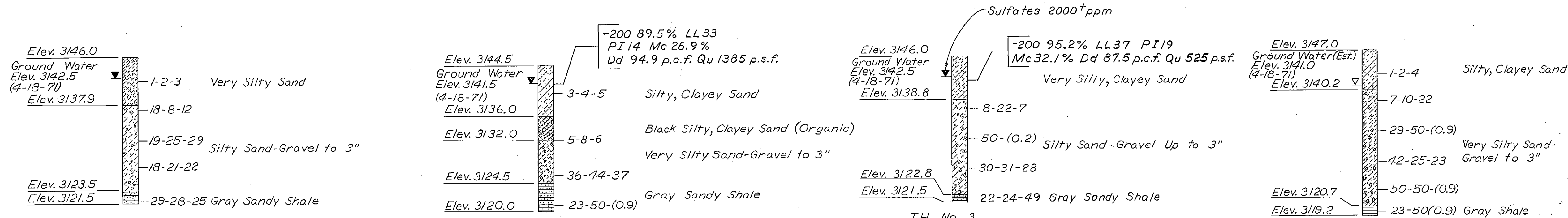
NOTES

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA, DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE GENERAL LAYOUT OR FOOTING PLAN.

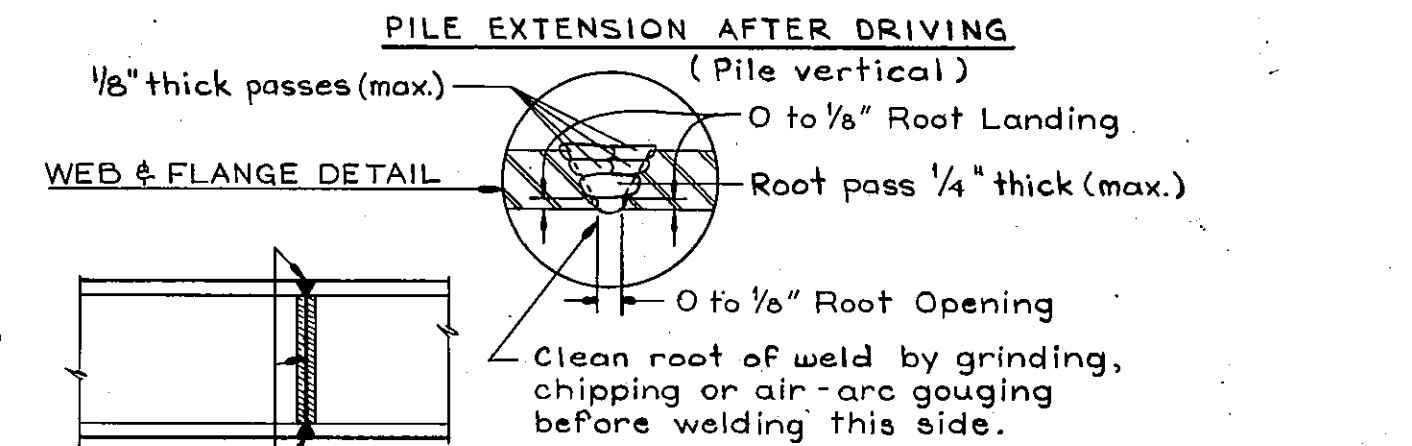
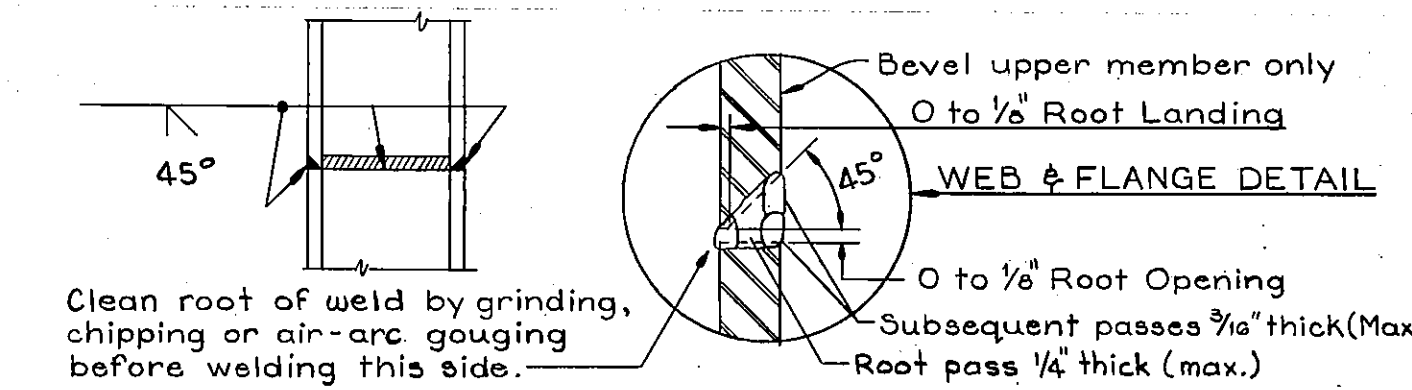
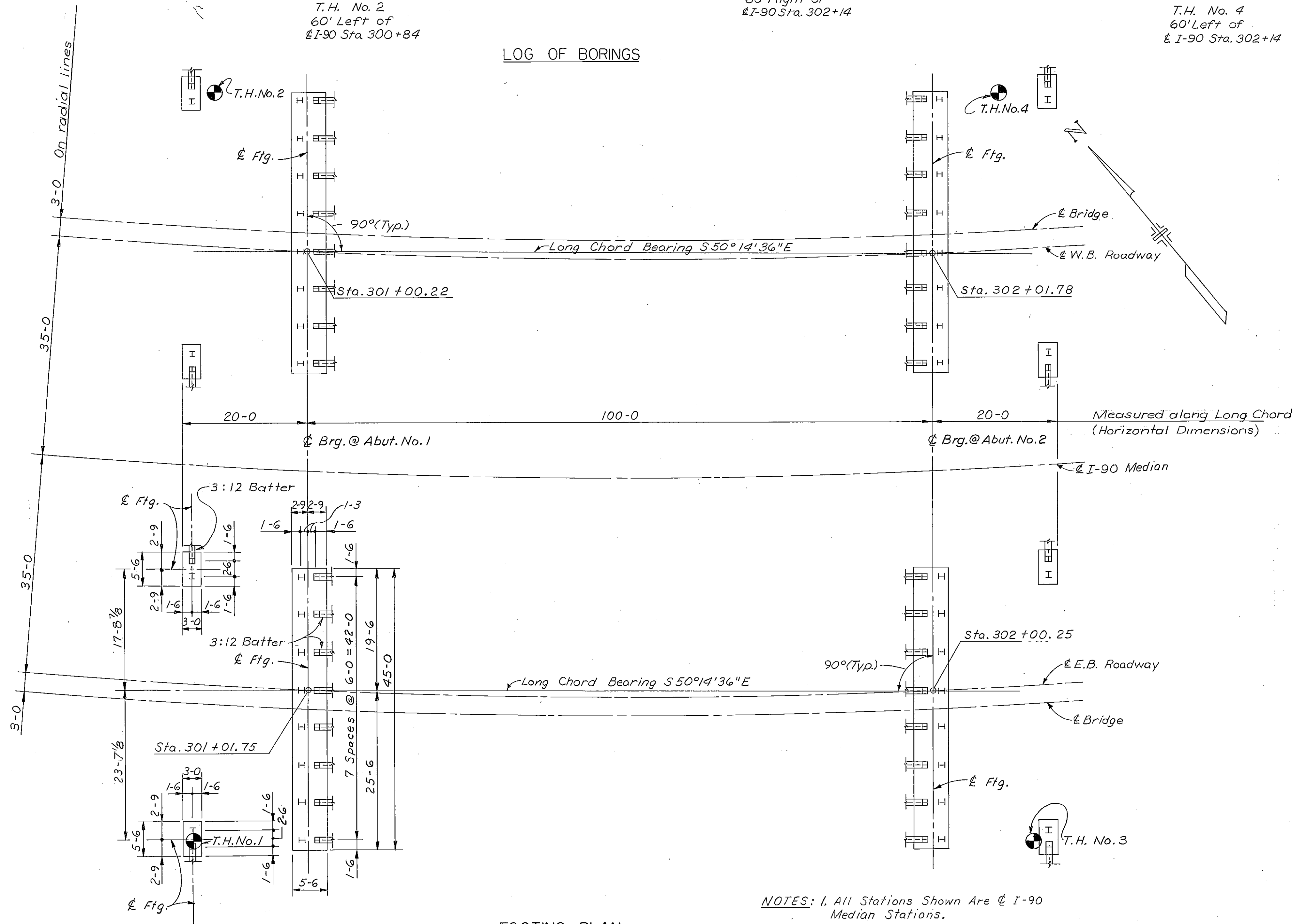
THE SERIES OF NUMBERS SHOWN ON THE LOG OF BORINGS INDICATES THE NUMBER OF BLOWS PER 6" PENETRATION FOR EACH NUMBER OF THE SERIES OF A 2" SAMPLE TUBE WHICH WAS DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140 POUND HAMMER HAVING A 30" DROP. THE TOTAL 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 DRAWINGS.



LOG OF BORINGS



PERMISSIBLE WELDED SPLICE DETAILS FOR 8\", 10\" & 12\" STEEL BEARING PILES

No Scale
Note: Only E60 or E70 series electrodes shall be used.
Maximum electrode size shall be 3/16\"/>

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
RENO CREEK ROAD SEPARATION
AT STA. 301+50.00
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
FOOTING PLAN

SCALE: 1\"/>

DRAWING NO. 11171

DESIGNED	RDR	11-9-72
DRAWN	JRH	12-22-71
CHECKED	JFS	11-22-72
APPROVED		
REVISED		
REVISED		

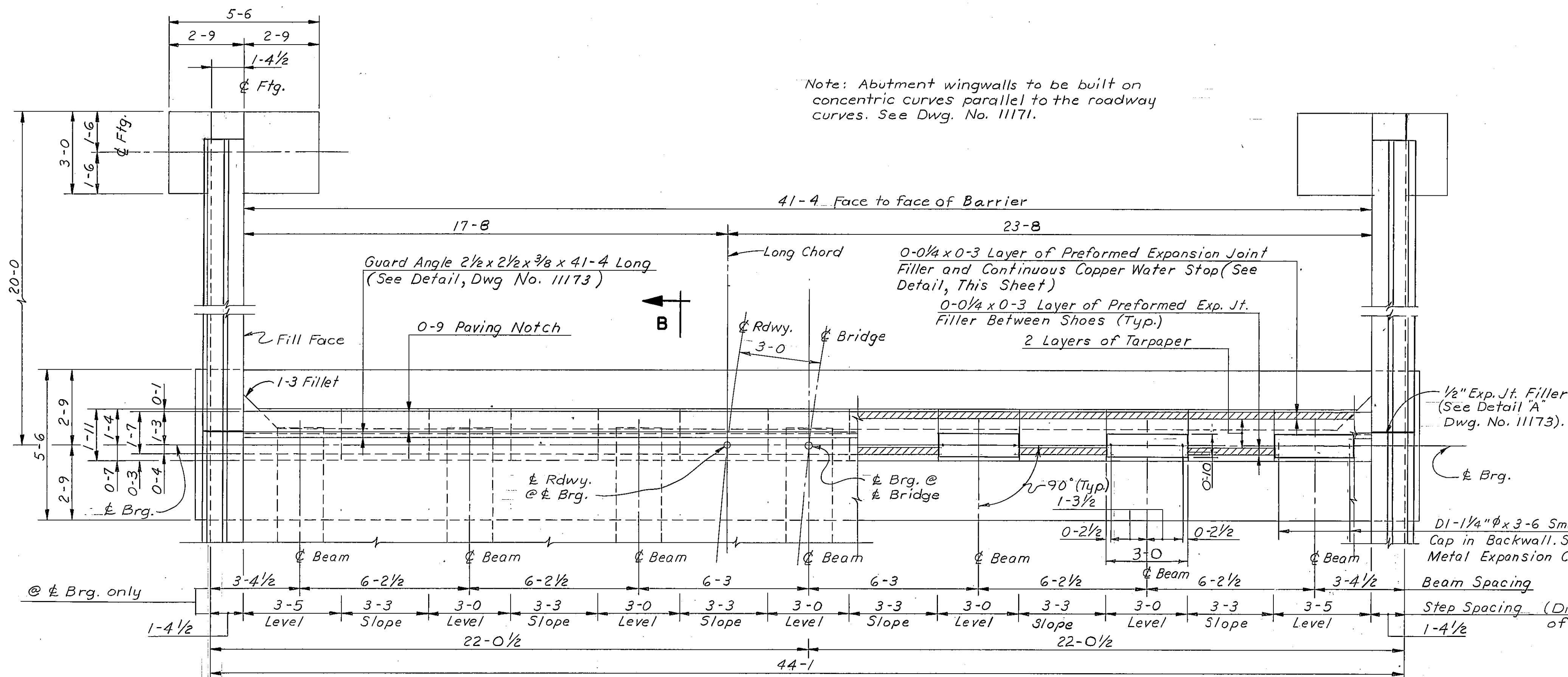
NOTES: 1. All Stations Shown Are @ I-90 Median Stations.

2. Footing Dimensions Shown For Abut. No. 1 Eastbound Roadway Are Typical For All Abutments.

FOOTING PLAN

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9(33)516	13	35

Note: Abutment wingwalls to be built on concentric curves parallel to the roadway curves. See Dwg. No. 11171.

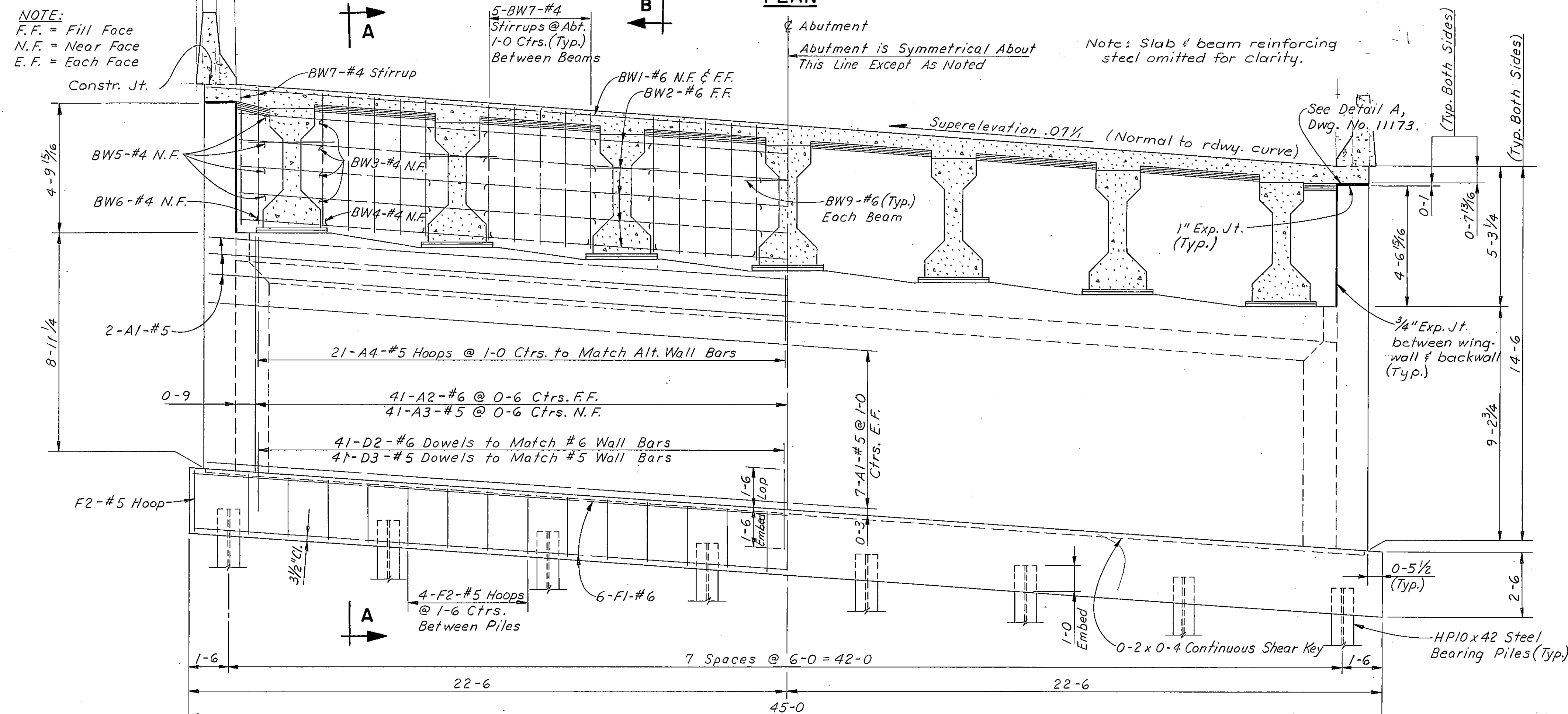


NOTE:
F.F. = Fill Face
N.F. = Near Face
E.F. = Each Face

PLAN

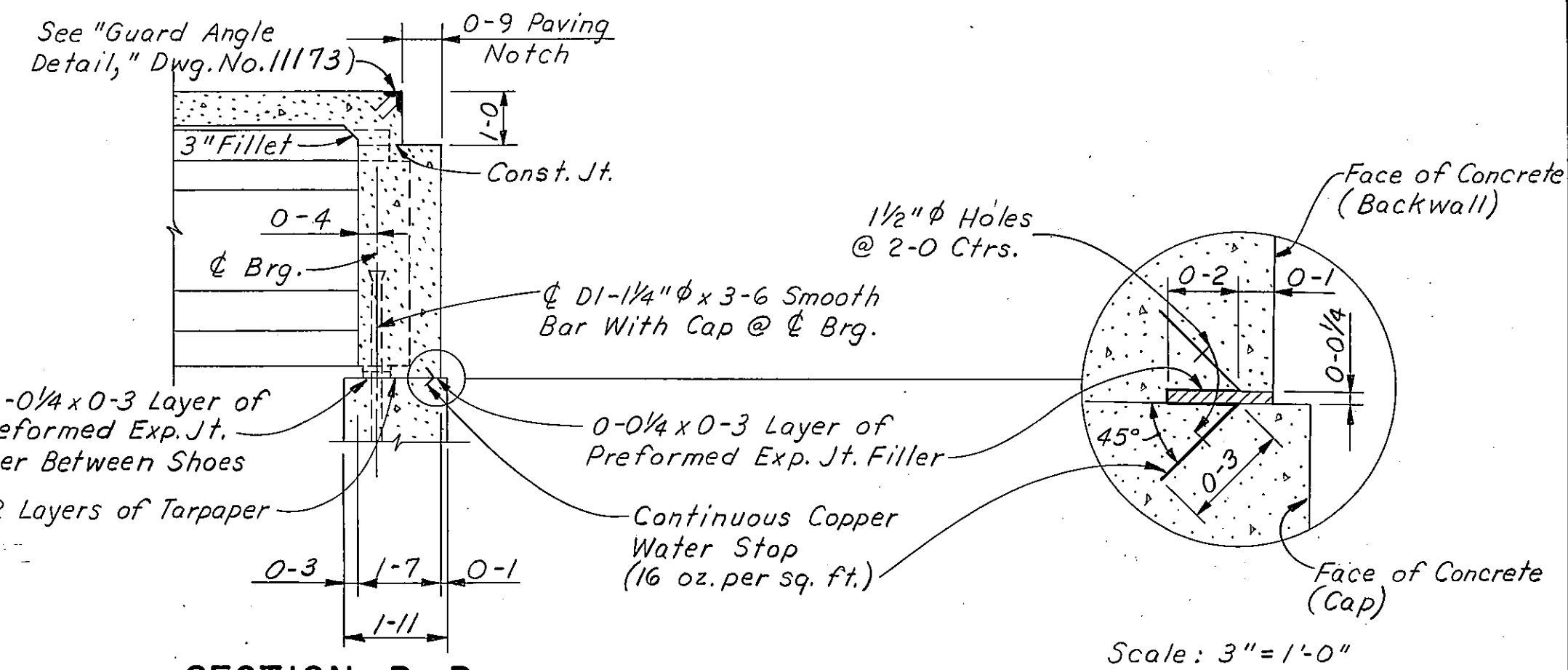
Abutment
Abutment is Symmetrical About This Line Except As Noted

Note: Slab & beam reinforcing steel omitted for clarity.



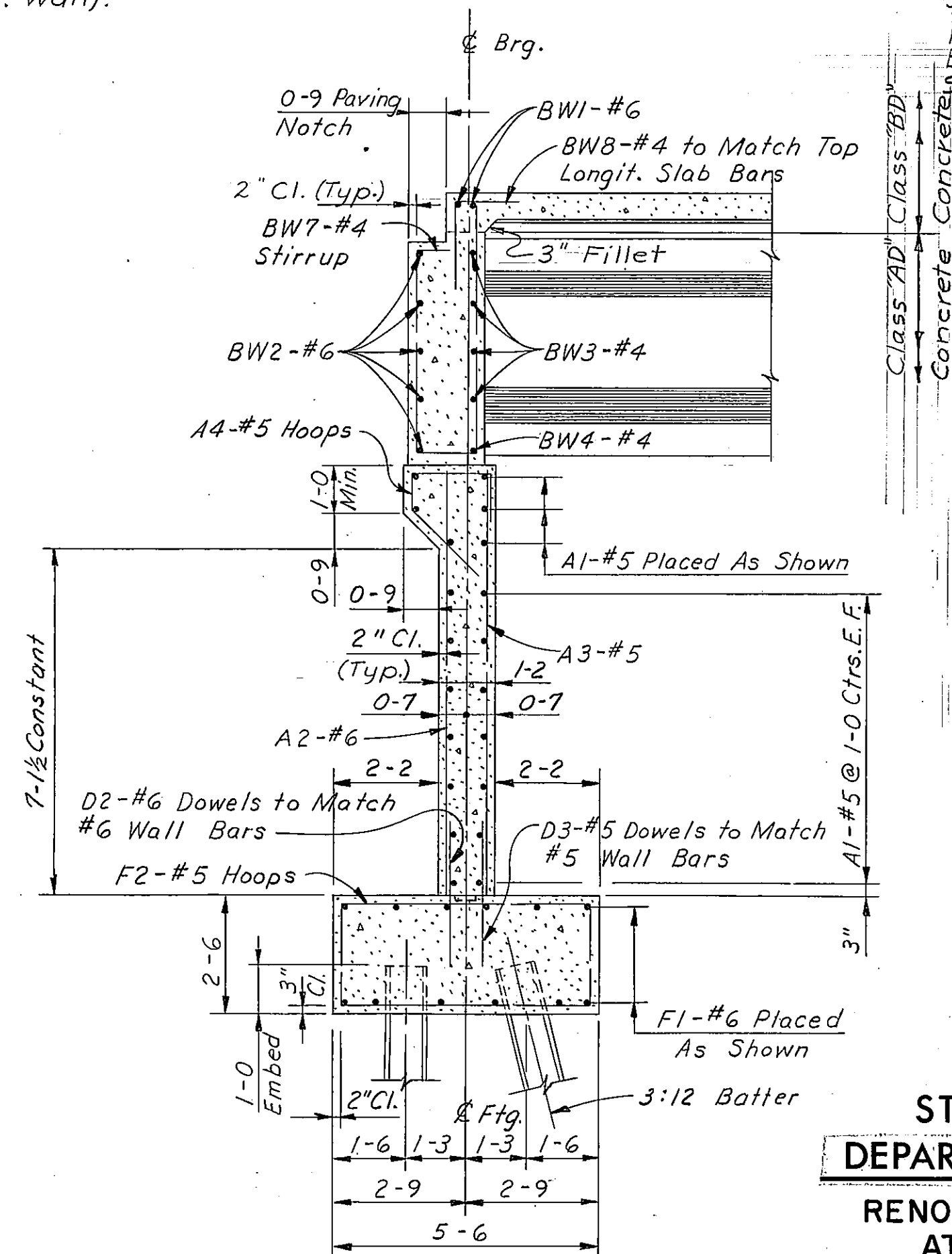
ELEVATION

Abutment No. 1 W.B. (Back on Line) (Shown)
Abutment No. 2 W.B., No. 1 E.B. & No. 2 E.B. (Similar)



SECTION B-B

NOTE: For Bill of Reinforcing Steel See Dwg. No. 11173.
For Wingwall Details See Dwg. No. 11173.
For Elevations & Additional Notes See Dwg. No. 11173 & No. 11174.
For Details of Slab, Beams, and Barriers see Dwg. No. B-4, SL-5, No. 11173 & No. 11175.



SECTION A-A

STATE OF MONTANA DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY

ABUTMENTS NO. 1 & NO. 2
E.B. & W.B. RDWS.

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

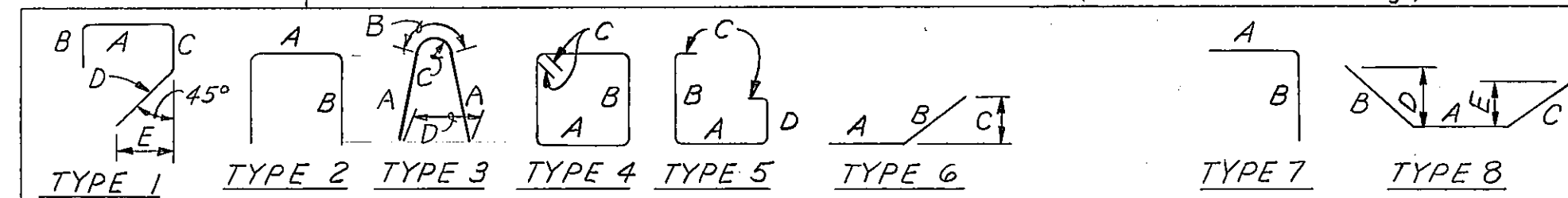
DRAWING NO. 11172

DESIGNED	RDR	11-9-72
DRAWN	DLK	11-30-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		
REVISED		

NOTE:
Maximum Pile Pressure Under D.L. + L.L. + T. = $\frac{68.6}{1.25} = 54.8$ Tons/Pile.
Estimated Pile Length: (Avg.)
Abutment Footing = 40-0, Wingwall Footing = 50-0

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	14	35

BILL OF REINFORCING STEEL (One Abutment Only)



STRAIGHT BARS

MARK	SIZE	NO.	LENGTH
A1	#5	20	43'-9"
A2	#6	81	8-8
A3	#5	81	8-8

BW1	#6	2	43-9
BW2	#6	5	41-0
BW3	#4	24	4-4
BW4	#4	6	3-10
BW5	#4	8	1-0
BW6	#4	2	0-9
BW9	#6	7	5-4

B100	#4	16	18-2
B1	#4	38	2-8
*D1	1/4" Sm.	14	3-6
D2	#6	81	3-0
D3	#5	93	3-0

F1	#6	12	44-8
F3	#4	22	2-8
F4	#4	12	5-2

WH1	#6	4	4-8
WH2	#6	4	6-0
WH3	#6	4	7-4
WH4	#6	4	8-8
WH5	#6	4	10-0
WH6	#6	4	11-4
WH7	#6	4	12-8
WH8	#6	4	14-0
WH9	#6	4	15-4
WH10	#6	4	16-8
WH11	#6	12	17-3
WH12	#6	16	20-3
WH13	#6	8	19-2

WV1	#5	4	13-7
WV2	#5	8	14-4
WV3	#5	4	14-2
WV4	#5	4	13-7
WV5	#5	4	13-0
WV6	#5	4	12-5
WV7	#5	4	11-11
WV8	#5	4	11-4
WV9	#5	4	10-9
WV10	#5	4	10-2
WV11	#5	4	9-7
WV12	#5	4	9-0
WV13	#5	4	8-5
WV14	#5	4	7-10
WV15	#5	4	7-4
WV16	#5	4	6-9
WV17	#5	4	6-2
WV18	#5	24	5-4

*D1-1/4" Sm. Bars Shall Conform To A.S.T.M. A36 Steel.

BENT BARS (All Dimensions Are Out To Out)	MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D	E
	A4	#5	41	1	5'-6"	1'-7"	1'-0"	0'-8"	2'-3"	1'-7"
	BW7	#4	34	5	10-10	1-3	5-0	0-3 1/2	4-0	
	BW8	#4	31	7	4-0	2-0	2-0			
	B2	#4	38	3	5-1	2-4	0-5	0-1 1/4	0-9	
	B3	#4	38	6	2-10	1-6	1-4	0-9		
	F2	#5	30	4	15-5	5-2	2-1	0-5 1/2		
	WH14	#6	22	8	7-2	4-2	1-6	1-6	1-0 3/4	1-0 3/4
	WH15	#4	12	2	3-10	0-10	1-6			
	WH16	#6	4	6	19'-3"	16'-1"	3'-2"	1'-7"		

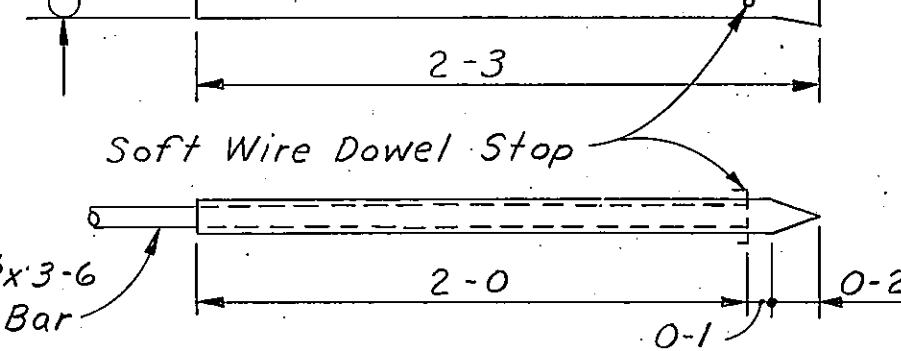
*D1-1/4" Sm. Bars Shall Conform To A.S.T.M. A36 Steel.

WV1	#5	4	13-7
WV2	#5	8	14-4
WV3	#5	4	14-2
WV4	#5	4	13-7
WV5	#5	4	13-0
WV6	#5	4	12-5
WV7	#5	4	11-11
WV8	#5	4	11-4
WV9	#5	4	10-9
WV10	#5	4	10-2
WV11	#5	4	9-7
WV12	#5	4	9-0
WV13	#5	4	8-5
WV14	#5	4	7-10
WV15	#5	4	7-4
WV16	#5	4	6-9
WV17	#5	4	6-2
WV18	#5	24	5-4

No. 30 Gage Metal
(14 Required Per Abutment)

METAL EXPANSION CAP

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



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

WINGWALL DETAILS

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

DESIGNED	RDR	11-9-72
DRAWN	DLK	12-1-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		
REVISED		

DRAWING NO. 11173

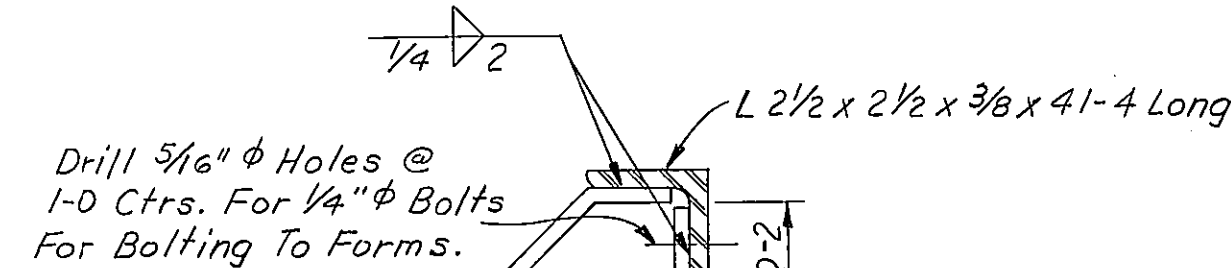
NOTES:

1. Beam Seat Areas Shall Be Finished Level To The Elevations Shown. The Area Between Beam Seats To Be Sloped Uniformly As Required.

2. Barrier on Wingwalls Shall Not Be Placed Until Backfill Has Been Placed To Subgrade Elevation And Curbs on Slab Span Are In Place.

3. Cost of Furnishing And Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop And Metal Expansion Caps To Be Included In The Unit Price Bid For Class AD Concrete.

Note: Guard Angle shall be set 1/8" below Finish Grade



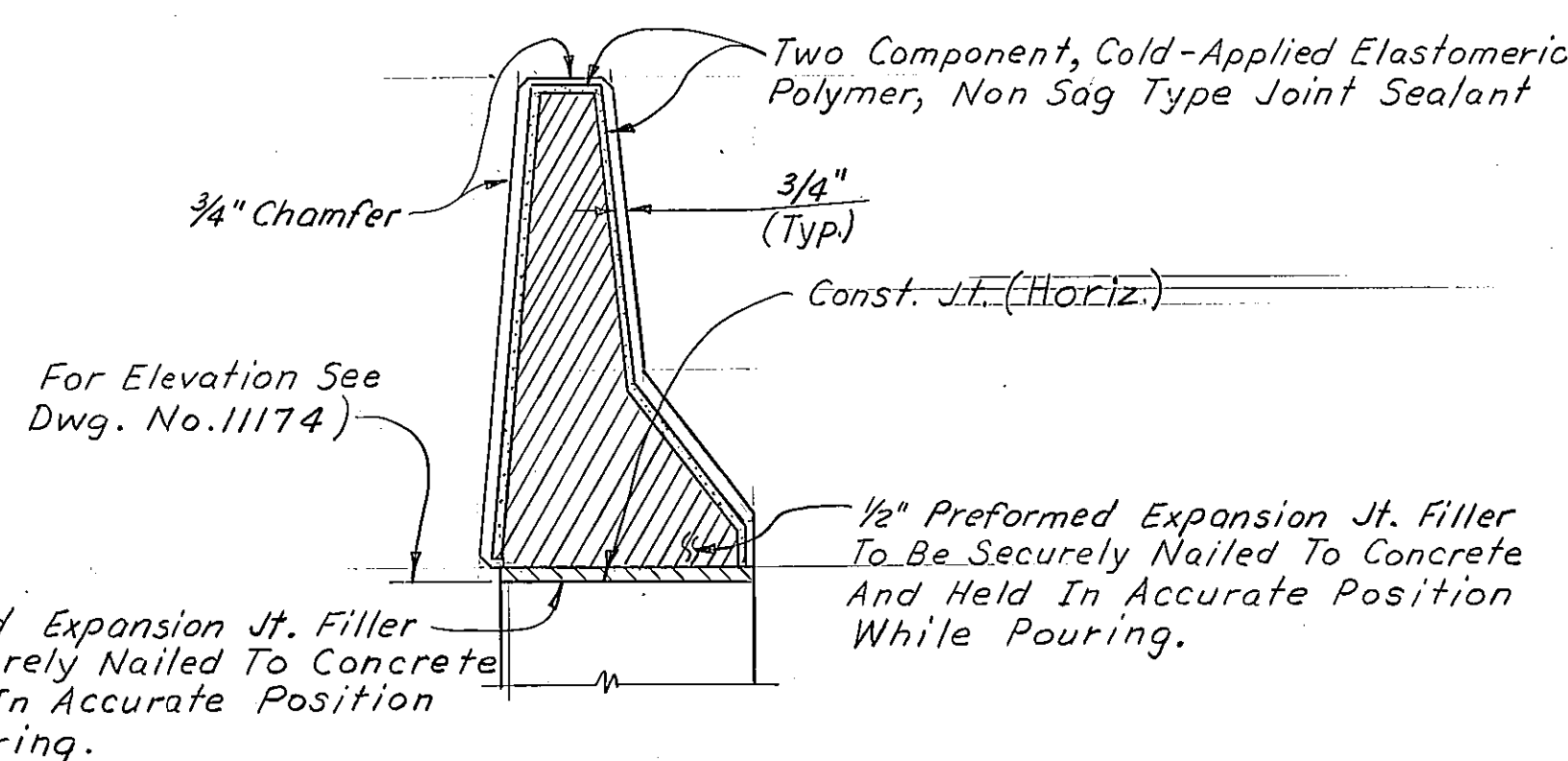
Drill 5/16" Holes @ 1-0 Ctrs. For 1/4" Bolt For Bolting To Forms.

2 x 5/16 x 0-9 Anchor Bars @ 1-0 Alt. Ctrs. (42 Req'd. Per Abut.)

NOTE: Guard Angle May Be Furnished In Two Pieces With End Anchor Bars 6" Maximum From Each End. The Guard Angle, If Furnished In Two Pieces, Shall Be Field Welded And Held Securely In Position While Concrete Is Placed.

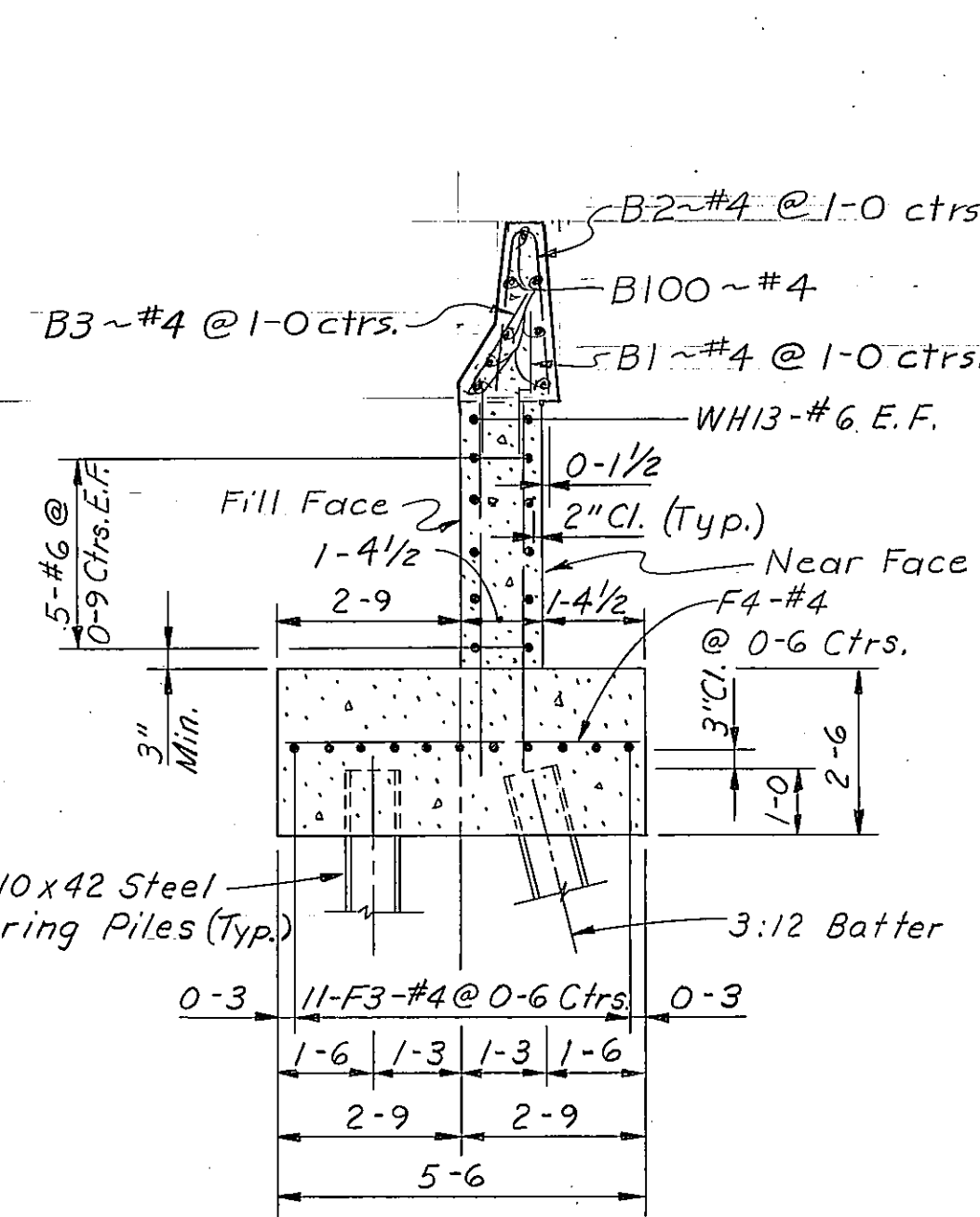
GUARD ANGLE DETAIL

Scale: 3" = 1'-0"

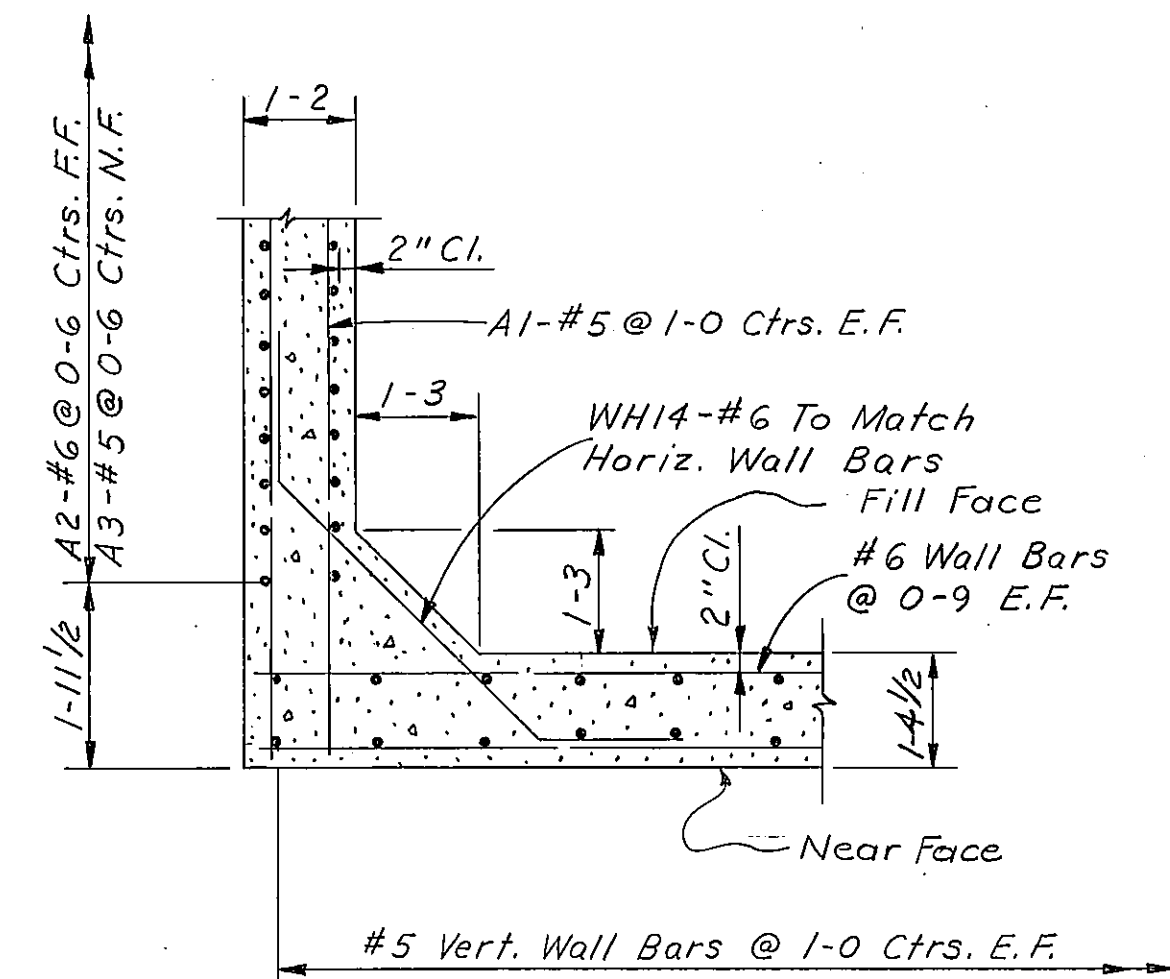


DETAIL A

Scale: 1" = 1'-0"



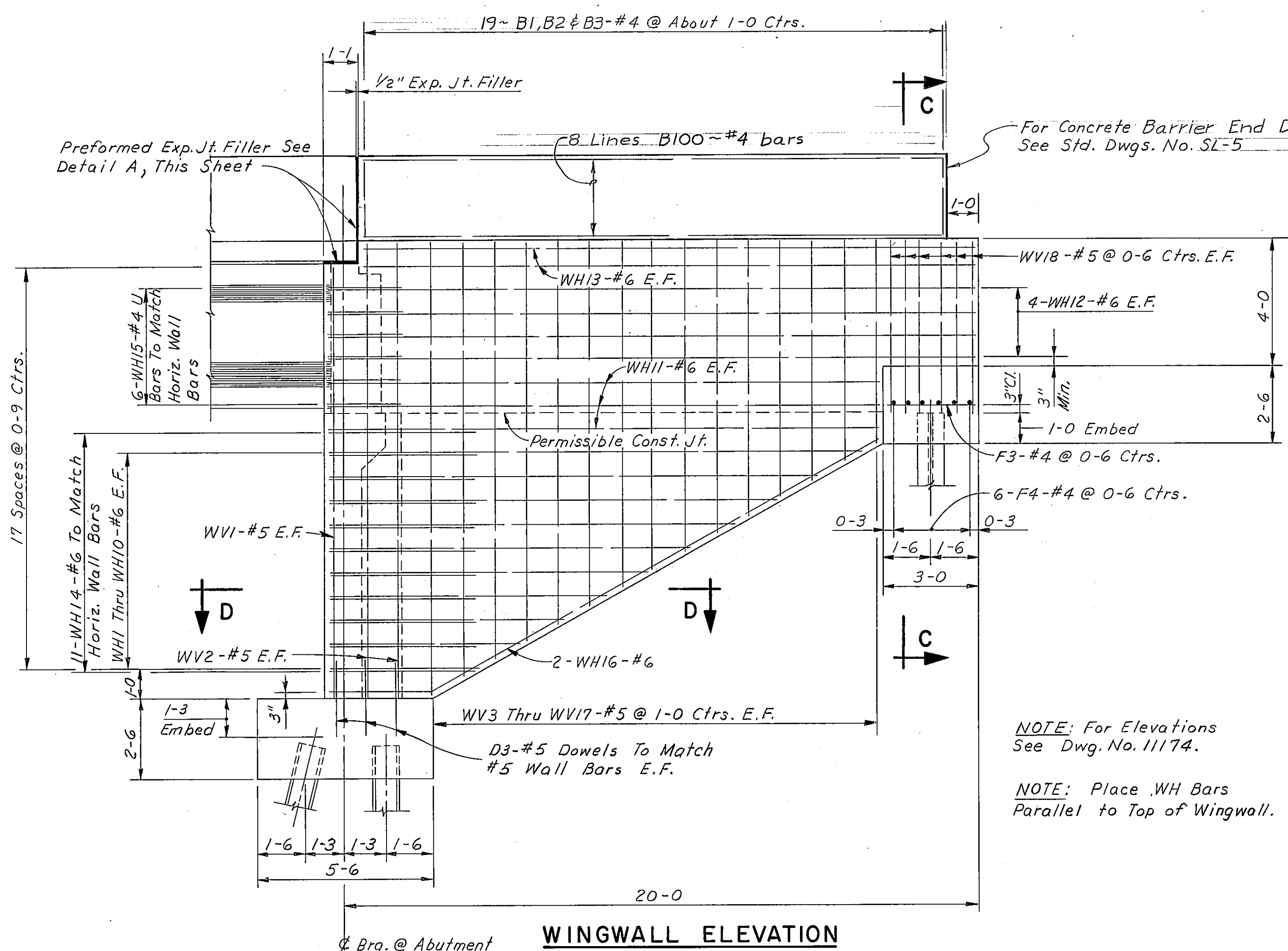
SECTION C-C



SECTION D-D

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

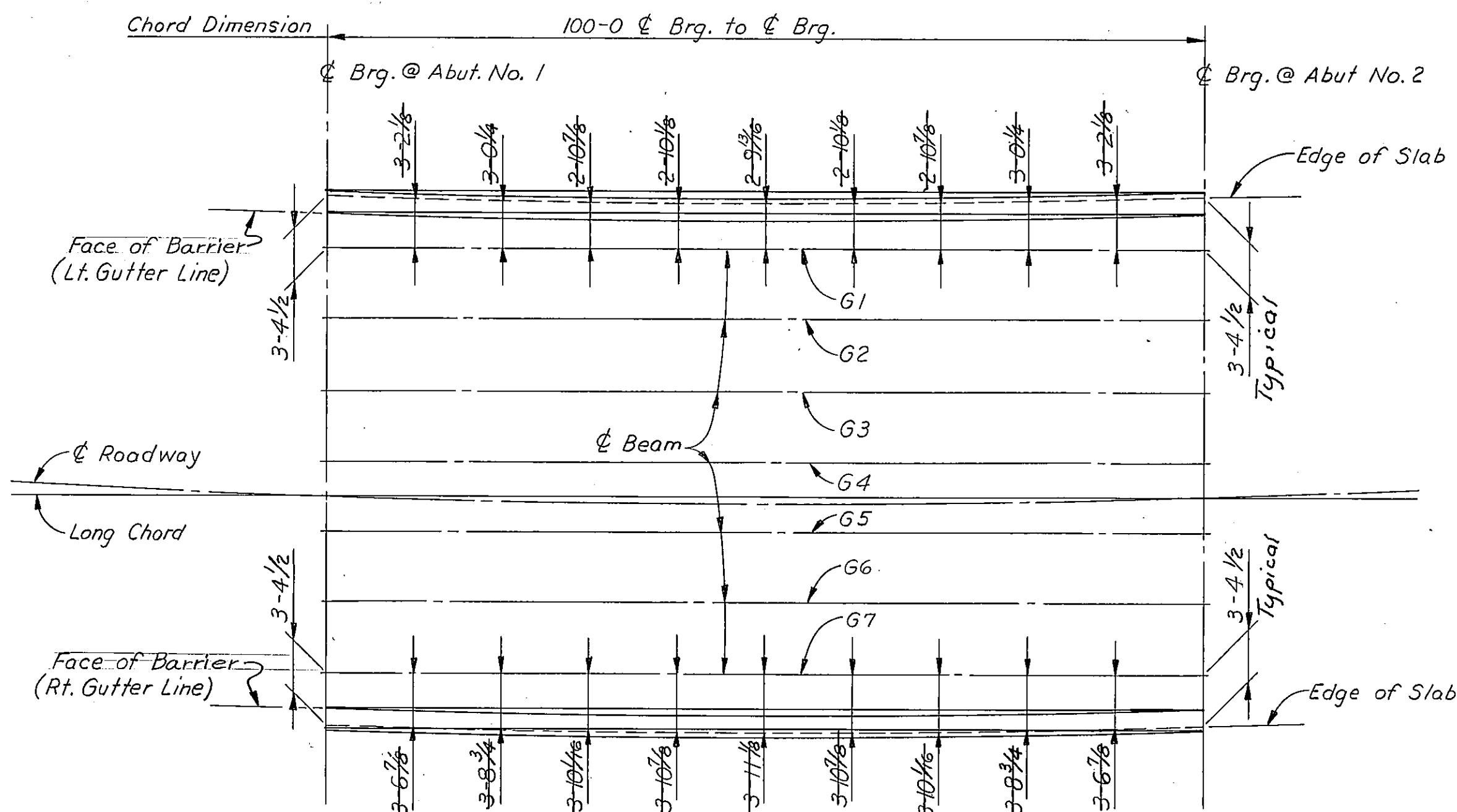
NOTE:
F.F. = Fill Face
N.F. = Near Face
E.F. = Each Face



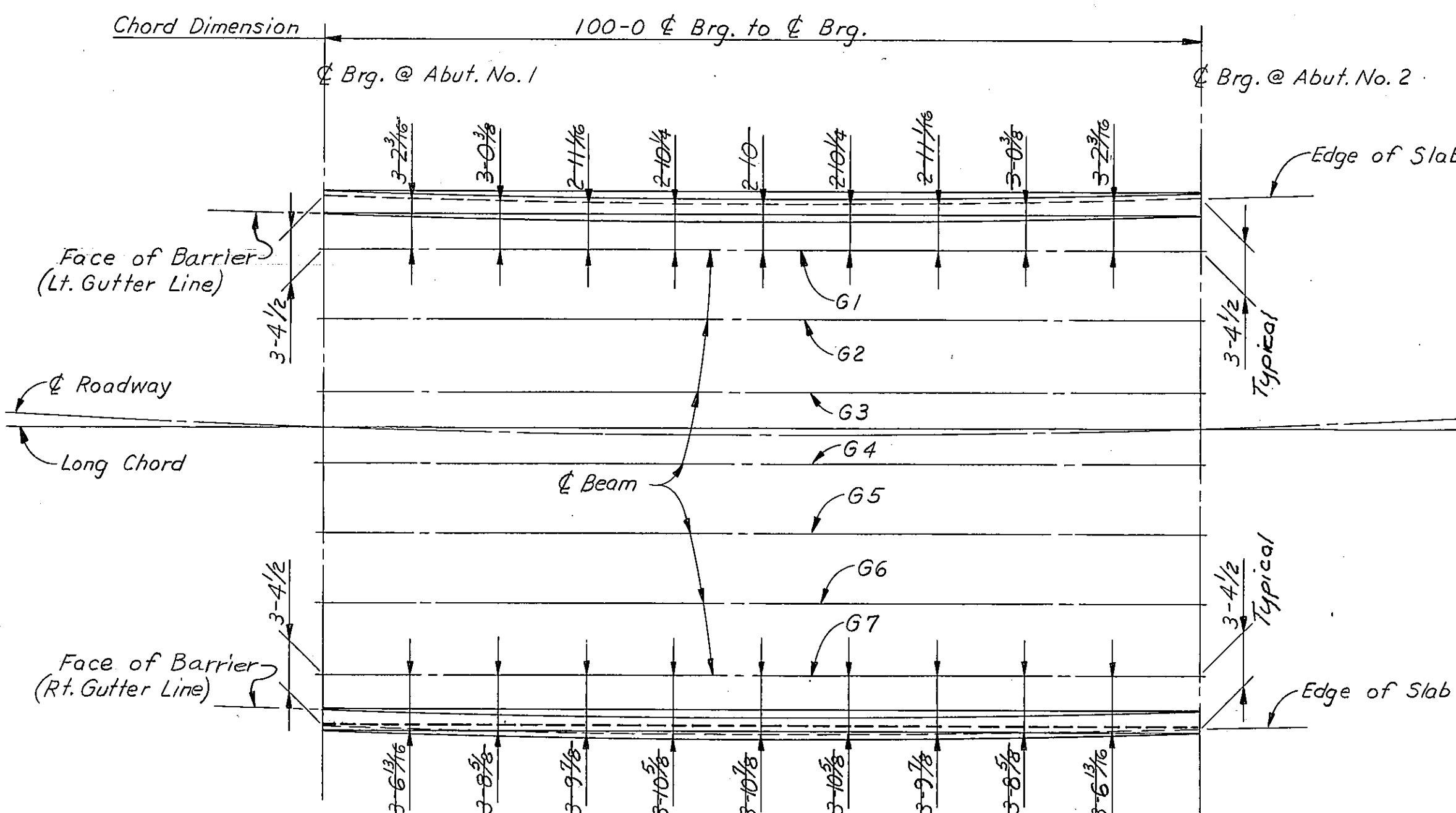
NOTE: For Elevations See Dwg. No. 11174.

NOTE: Place WH Bars Parallel to Top of Wingwall.

WINGWALL ELEVATION



WESTBOUND ROADWAY SLAB OFFSETS
No Scale



EASTBOUND ROADWAY SLAB OFFSETS
No Scale

NOTE: Deck offsets are taken at all 3'-4 1/2" points of span and at the bearing of exterior beam. Offsets are measured from the exterior beam to edge of deck. Structures were not built parallel to the curve. They were built parallel to the long chord to line up with the abutment wingwalls which were built parallel to the long chord in accordance with the plans, resulting in better visual alignment.

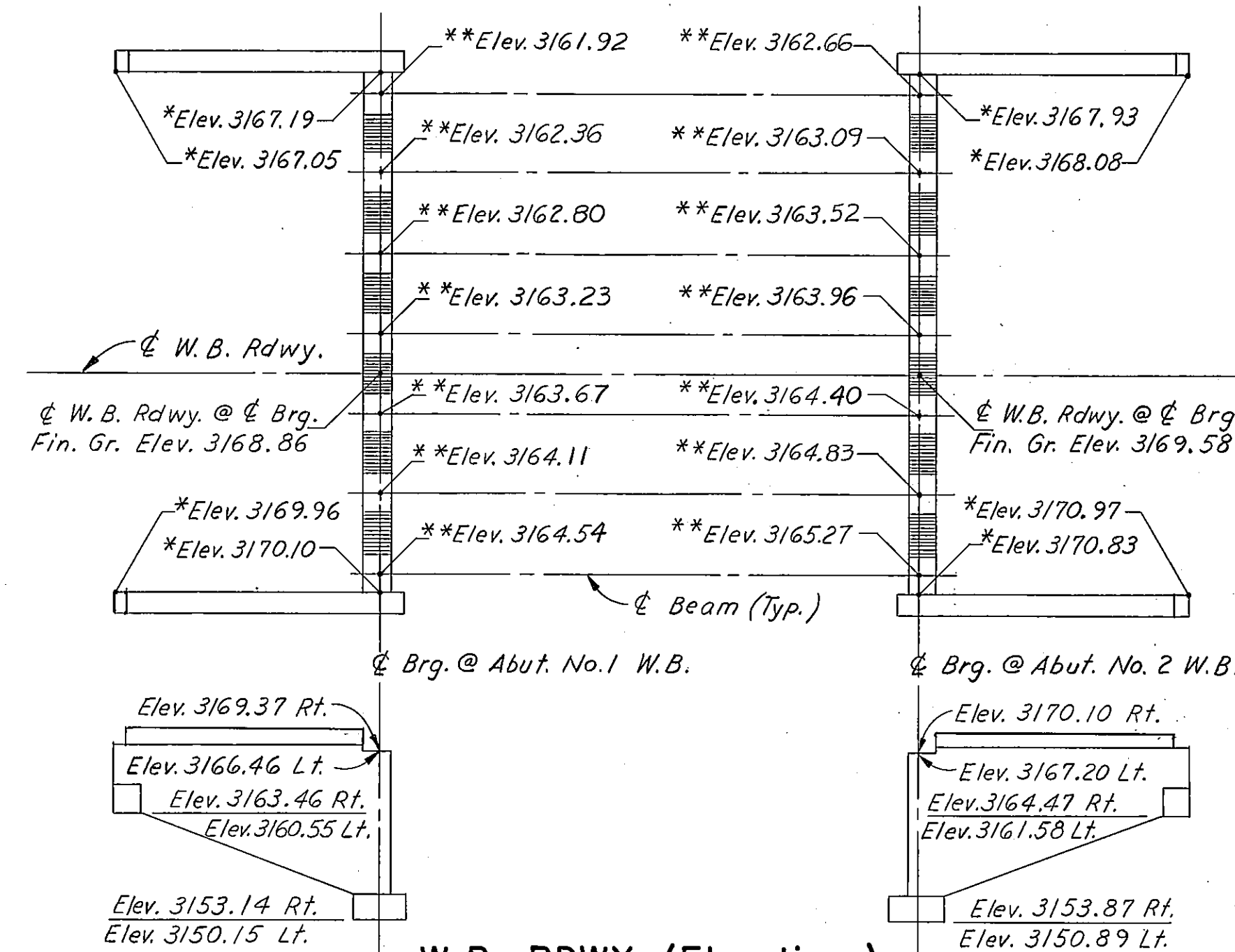
WESTBOUND ROADWAY ELEVATIONS # @ TOP OF SLAB											
Location	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Left Gutter Line	67.19	67.28	67.36	67.44	67.52	67.59	67.67	67.74	67.80	67.87	67.93
G1	67.34	67.41	67.48	67.56	67.63	67.70	67.78	67.85	67.92	68.00	68.07
G2	67.77	67.85	67.92	67.99	68.06	68.14	68.21	68.28	68.36	68.43	68.51
G3	68.21	68.28	68.35	68.43	68.50	68.57	68.64	68.72	68.79	68.86	68.94
G4	68.65	68.72	68.79	68.86	68.94	69.01	69.08	69.15	69.23	69.30	69.38
G5	69.09	69.16	69.23	69.30	69.37	69.45	69.52	69.59	69.66	69.74	69.81
G6	69.52	69.59	69.66	69.74	69.81	69.88	69.95	70.03	70.10	70.17	70.25
G7	69.96	70.03	70.10	70.17	70.24	70.32	70.39	70.46	70.53	70.61	70.68
Right Gutter Line	70.10	70.19	70.27	70.35	70.43	70.50	70.57	70.64	70.70	70.77	70.83
℄ Rdwy.	68.86	68.94	69.03	69.11	69.18	69.26	69.33	69.40	69.46	69.53	69.58

EASTBOUND ROADWAY ELEVATIONS # @ TOP OF SLAB											
Location	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Left Gutter Line	69.87	69.95	70.03	70.11	70.18	70.25	70.32	70.39	70.46	70.52	70.58
G1	70.01	70.08	70.15	70.22	70.29	70.36	70.43	70.51	70.58	70.65	70.72
G2	70.45	70.52	70.59	70.66	70.73	70.80	70.87	70.94	71.01	71.08	71.16
G3	70.88	70.95	71.02	71.09	71.16	71.23	71.30	71.37	71.45	71.52	71.59
G4	71.32	71.39	71.46	71.53	71.60	71.67	71.74	71.81	71.88	71.95	72.03
G5	71.76	71.83	71.90	71.97	72.04	72.11	72.18	72.25	72.32	72.39	72.46
G6	72.20	72.26	72.33	72.40	72.47	72.54	72.61	72.68	72.75	72.82	72.90
G7	72.63	72.70	72.77	72.84	72.91	72.98	73.05	73.12	73.19	73.26	73.33
Right Gutter Line	72.78	72.86	72.94	73.01	73.09	73.16	73.23	73.29	73.36	73.42	73.48
℄ Rdwy.	71.11	71.19	71.27	71.35	71.43	71.50	71.57	71.63	71.70	71.76	71.82

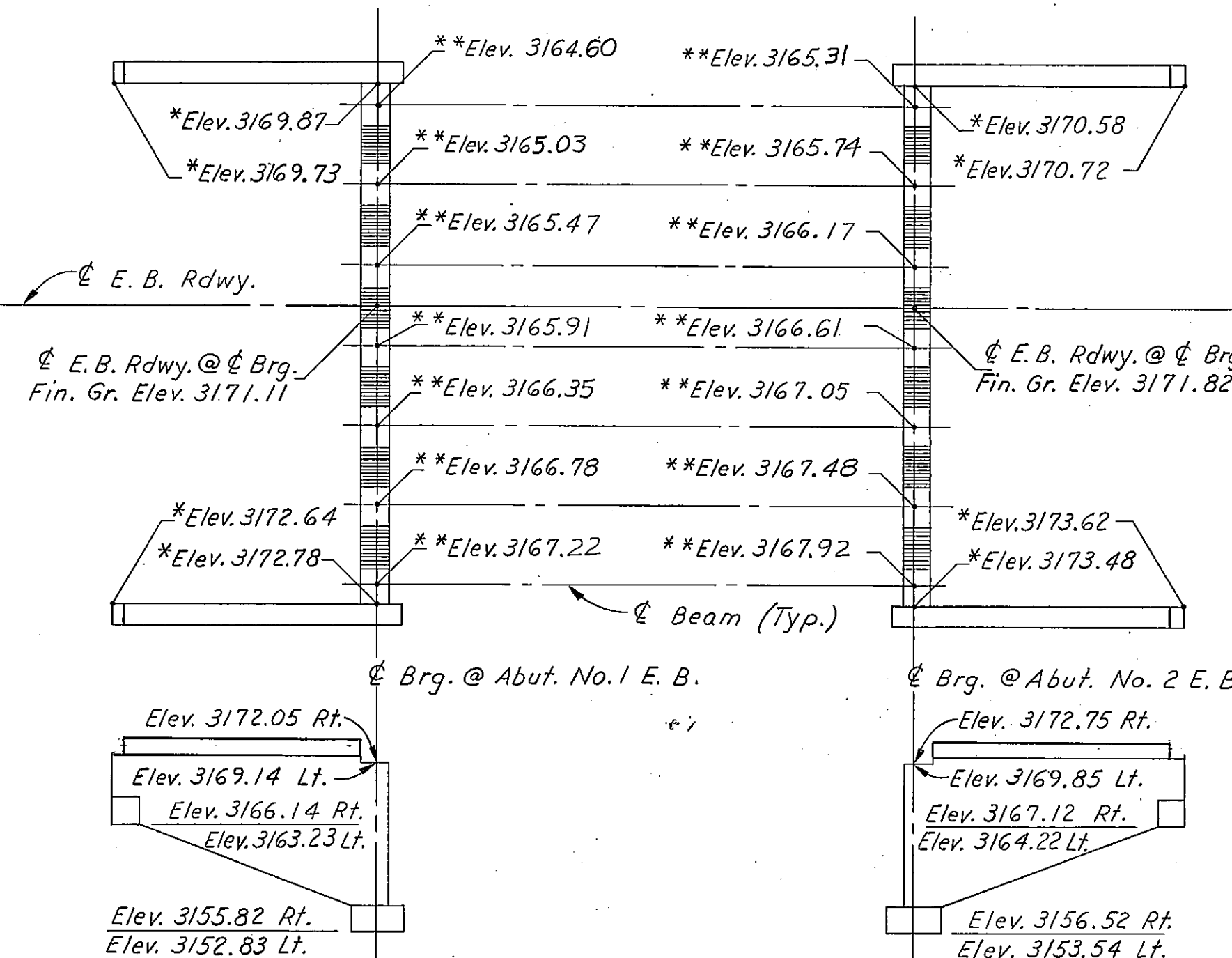
Add 3100.00 To Elevations Shown.

THE KEN R. WHITE CO. HELENA, MONT.					
FED. ROAD DIV. NO.	STATE	F. A. P. NO.	SHEET NO.	TOTAL SHEETS	
8	MONT.	190-9(33)516	15	35	

** Beam Seat Elevations
* Elevations @ Bottom of Barrier.



W.B. RDWY. (Elevations)
No Scale



E.B. RDWY. (Elevations)
No Scale

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ELEVATIONS AND
SLAB OFFSETS

SCALE: AS NOTED

DRAWING NO. 11174

DESIGNED	RDR	11-9-72
DRAWN	DLK	11-22-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		

NOTE: For Additional Slab, Barrier, Intermediate Diaphragm, Abutments, And Wingwall Details See Std. Dwg. No. SL-5 And Dwg. No. 11172 & 11173.
For Slab Elevations And Offsets See Dwg. No. 11174.

BILL OF REINFORCING STEEL

TYPE 1

TYPE 2

TYPE 3

TYPE 4

STRAIGHT BARS

MARK	SIZE	NO.	LENGTH
B100	#4	32	40'-0"
B101	4	16	23-4
S100	5	354	43-7
S200	4	62	40-0
S201	4	31	23-4
S300	4	116	40-0
S301	4	58	23-4
D5	4	24	4-4
D6	6	24	4-4
D8	#6	10	5-4

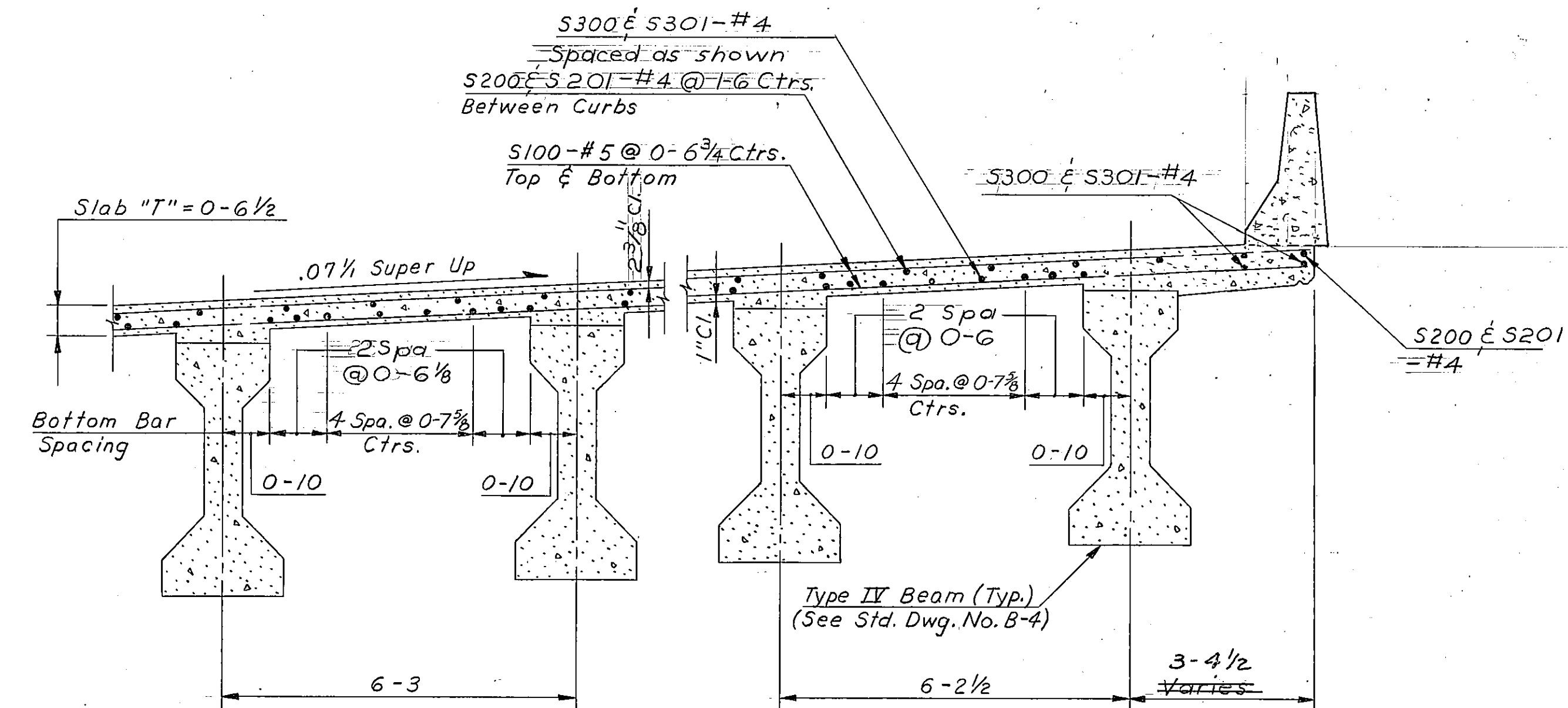
BENT BARS(All Dimensions Are Out to Out)

MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D
B1	#4	204	1	5'-1"	2'-4"	0'-5"	0'-1 3/4"	0'-9"
B2	4	204	3	4-6	2-9	1-9	2-5	
B3	4	204	2	3-0	1-10	1-2		
D7	#4	60	4	7'-10"	0'-7"	3'-4"	0'-3 1/2"	

D.L. DEFLECTION TABLE						
SPAN NO.	TENTH POINT					
	0.1	0.2	0.3	0.4	0.5	
1	1/16	7/8	13/16	17/16	1 1/2	

Deflections are symmetrical about $\frac{1}{2}$ of span.

NOTE: Concrete Barrier Shall Not Be Poured For At Least 72 Hours After Concrete In Slab Has Taken Set.



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

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

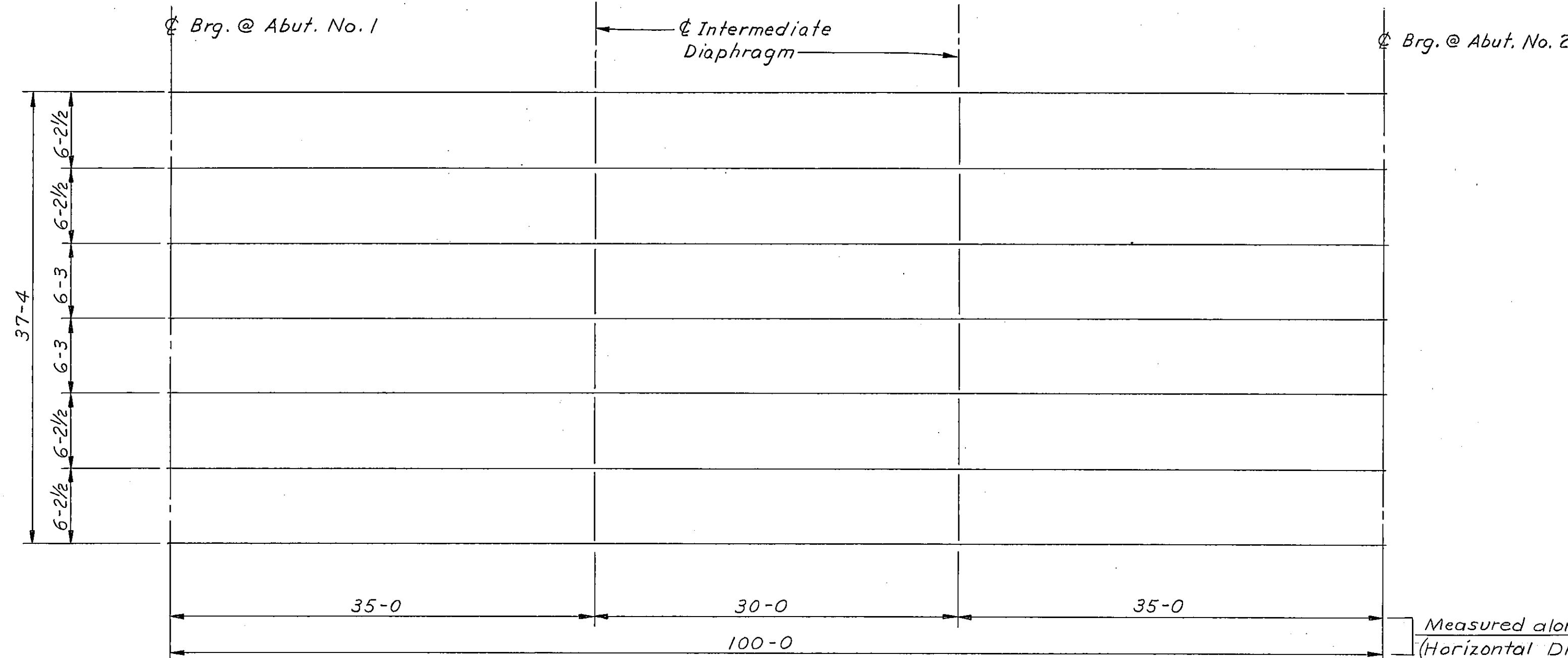
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
ERECTION PLAN
AND SLAB DETAILS

SCALE: AS NOTED

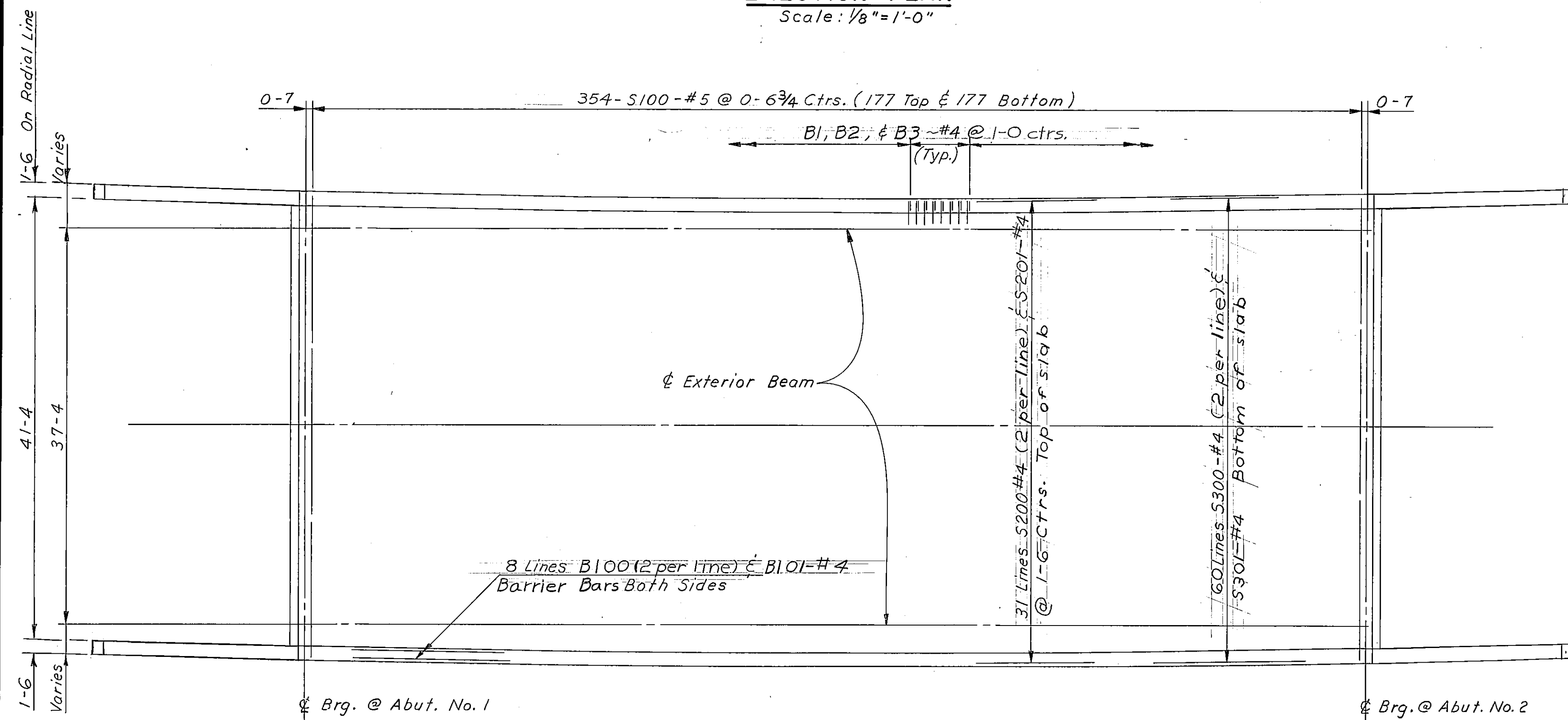
DRAWING NO. 11175

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated In Accordance With Std. Dwg. No. B-4. Maximum f'_c (Compressive Strength of Concrete At 28 Days) For Design Shall Be 6,000 p.s.i. Design Stresses (Before Prestress) Are As Follows:

Span Length		100'-0"
Beam D.L. Stresses (p.s.i.)	F_b	-1170
	F_t	+1384
Total D.L. + L.L. + I. Design Stresses (p.s.i.)	F_b	-2979
	F_t	+2888
Required Ultimate Moment Capacity (Foot Kips)	M	15380



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



REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8"=1'-0"

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	17	35

NOTES

LIVE LOAD: STANDARD HS20-44 OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 LBS.

FINISHED GRADE: FINISHED PLAN GRADE OF WESTBOUND BRIDGE @ ROADWAY IS 0.64' BELOW PROFILE GRADE SHOWN ON ROAD PLANS.

FINISHED PLAN GRADE OF EASTBOUND BRIDGE @ ROADWAY IS 0.64' ABOVE PROFILE GRADE SHOWN ON ROAD PLANS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "B9" AND ALL OTHER CONCRETE SHALL BE CLASS "A0".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS. ESTIMATED WEIGHT = 1257 POUNDS.

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

SECTION A-A

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

NOTE: The Contractor May Substitute HPS 10x42 Steel Bearing Piles For HP 10x42 Steel Bearing Piles Shown Hereon.

TABLE OF COLUMN HEIGHTS
(See Dwg. No. 11178 For Location)

	Bent No. 2		Bent No. 3	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
H1	17'-2 1/8"	16'-11 5/8"	17'-10 1/8"	17'-7 7/8"
H2	17'-10 1/8"	17'-8 1/8"	18'-7 7/8"	18'-3 1/2"
H3	18'-6 1/8"	18'-4 1/8"	19'-3 3/8"	19'-0 3/8"

Note: Structure Excavation shall be computed from subgrade elevations of the E.B. and W.B. Rdwys. and the Access Road for all bents and abutments, except as otherwise approved by the engineer.

Note: For Sequence of Work & Maintenance of Traffic see Special Provisions.

Reinforcing Steel: All reinforcing steel shall be of the deformed type and shall meet the requirements of ASTM specifications A 615, Grade 60 (A.A.S.H.T.O. M-31).

Note: All stations shown are @ I-90-Median stations. Curbs, wingwalls, & slabs to be built parallel to long chord

W. B. PROFILE GRADE

No Scale

I-90 MEDIAN CURVE DATA

P.I. Sta. 427+20.2
Δ = 25°20'00" Lt.
D = 1°00'
L = 2533.33'
T = 1287.71'
R = 5729.58'
S = 0.04 1/2

E. B. PROFILE GRADE

No Scale

ACCESS ROAD PROFILE GRADE

No Scale

STEEL BEARING PILES

LOCATION		NO.*	ESTIMATED LENGTH	
			E.B. Rdwy.	W.B. Rdwy.
Abutment No. 1	Wingwall Ftgs.	2	61'-0"	48'-0"
	Abutment Ftgs.	5	56'-0"	43'-0"
Bent No. 2		9	40'-0"	27'-0"
Bent No. 3		9	37'-0"	24'-0"
Abutment No. 4	Wingwall Ftgs.	2	55'-0"	41'-0"
	Abutment Ftgs.	5	50'-0"	36'-0"

* No. Shown Is For One Bridge Only

TABLE OF ELEVATIONS (See Dwg. No. 11178 For Location)

Loc.	Abutment No. 1		Bent No. 2		Bent No. 3		Abutment No. 4	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
A	3273.71	3276.30	3274.25	3276.79	3274.98	3277.45	3275.59	3278.01
B	3273.00	3275.35	3273.54	3275.84	3274.27	3276.50	3274.88	3277.06
C	3274.66	3277.01	3275.20	3277.50	3275.93	3278.16	3276.54	3278.72
D	3259.50	3261.85	3270.04	3272.34	3270.77	3273.00	3261.38	3263.56
E	3272.67	3275.06	3250.50	3253.00	3250.50	3253.00	3275.27	3277.42
F	3274.33	3276.72	3271.70	3274.00	3272.43	3274.66	3276.93	3279.08
G	3266.67	3269.06	3270.17	3272.47	3270.90	3273.13	3269.27	3271.42
H	3268.33	3270.72	3270.87	3273.17	3271.60	3273.83	3270.93	3273.08
U	3261.16	3263.51	3271.57	3273.87	3272.30	3274.53	3263.04	3265.22

Note: Footing alternate No. 2 shall be used for Bent No. 2 & Bent No. 3 Eastbound & Westbound (See Dwg. No. FSB 30 for details)

Note: Footing alternate No. 2 shall be used for Abut. 1 & Abut. No. 4 Eastbound & Westbound (See Dwg. FSA 15 for details)

DESIGNED	LRP	4-12-73
DRAWN	LSL	5-1-73
CHECKED	JFS	6-25-73
APPROVED	HES.	7-18-77
REVISED		
REVISED		

STATE OF MONTANA DEPARTMENT OF HIGHWAYS

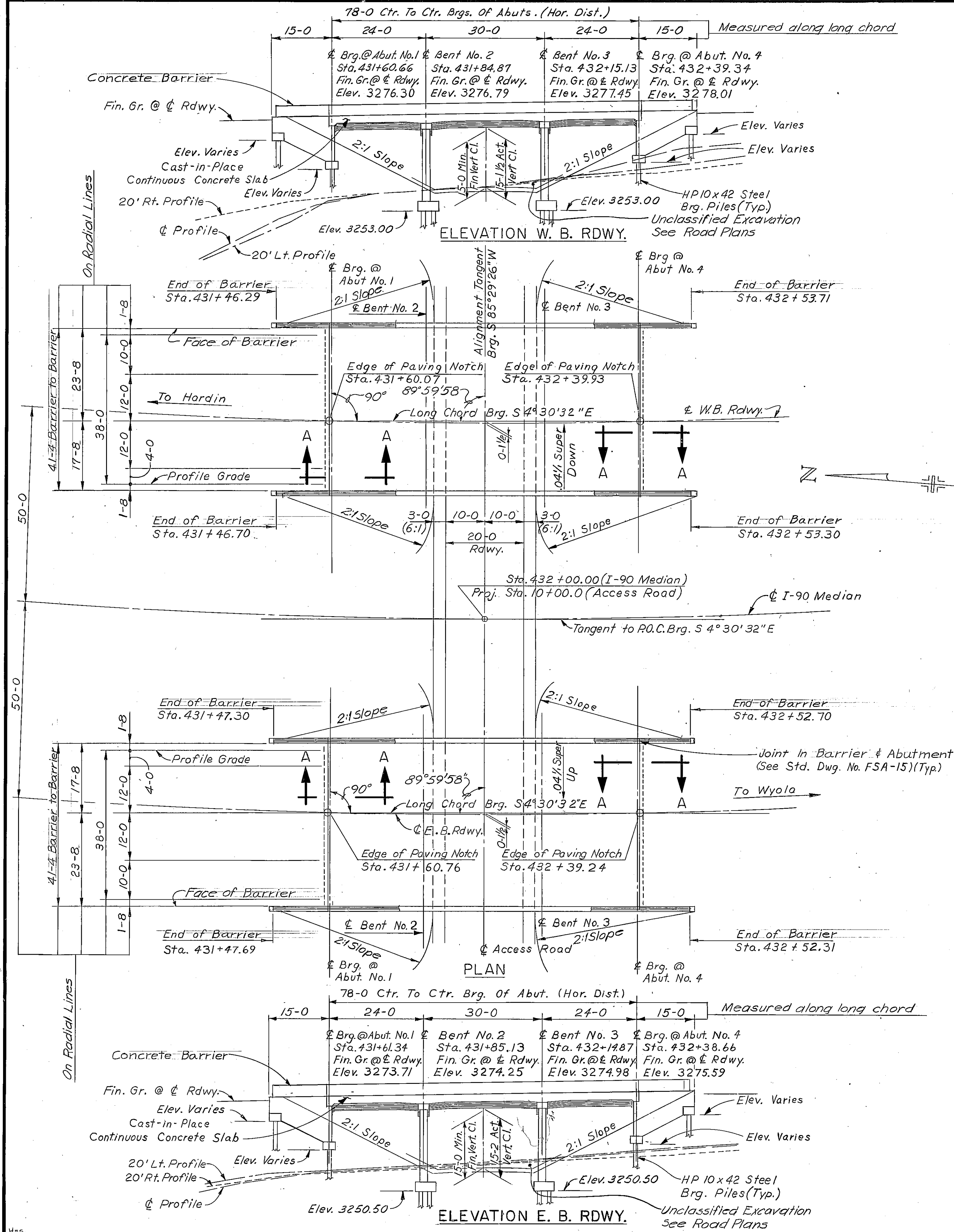
SEPARATION
AT STA. 432+00.00

FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

GENERAL LAYOUT

SCALE: 1" = 15'-0" (EXCEPT AS NOTED)

DRAWING NO. 11176



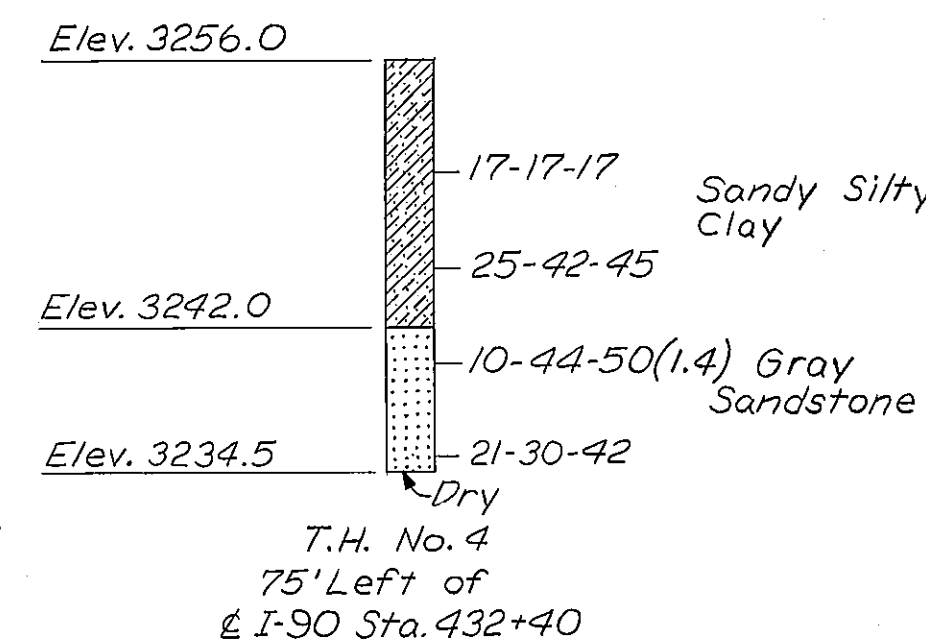
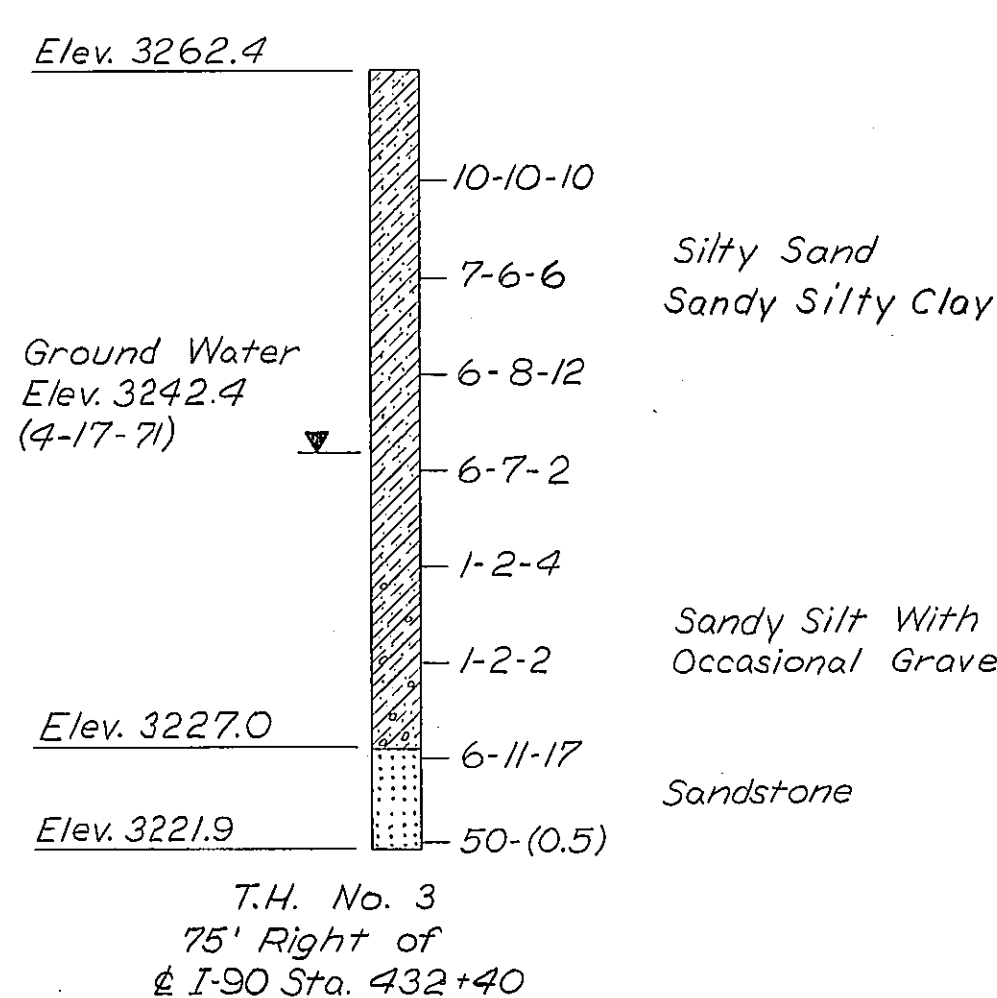
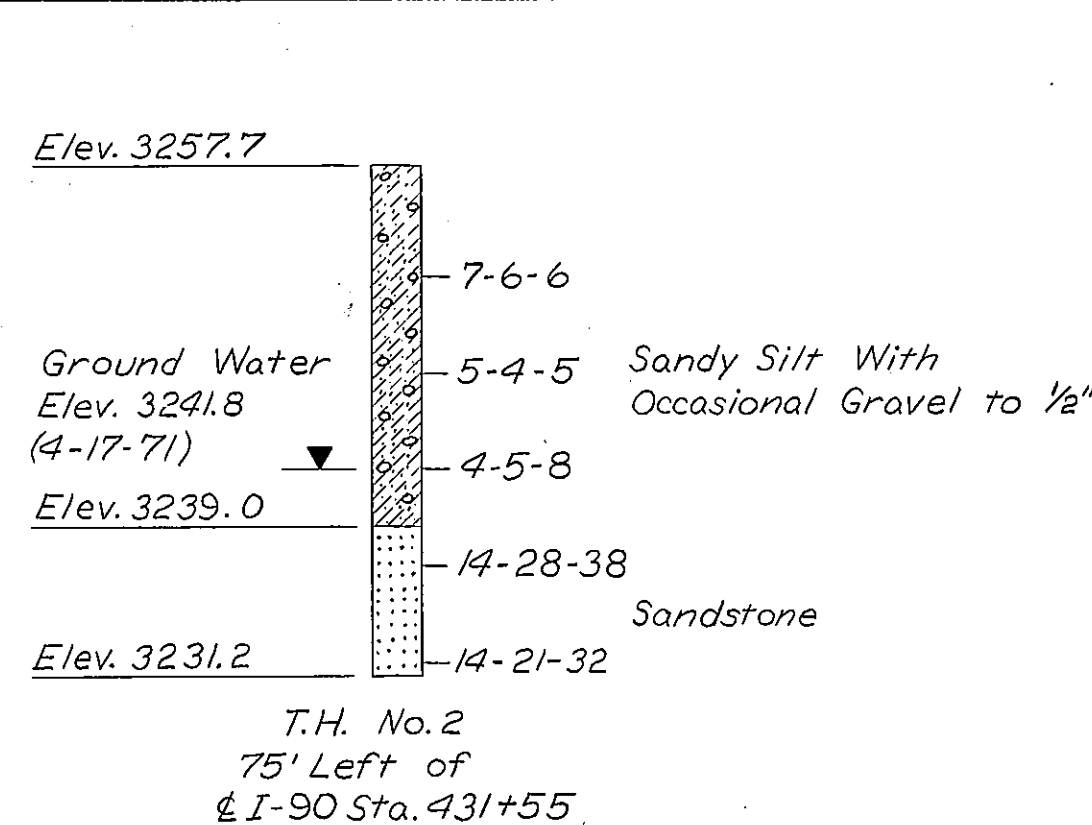
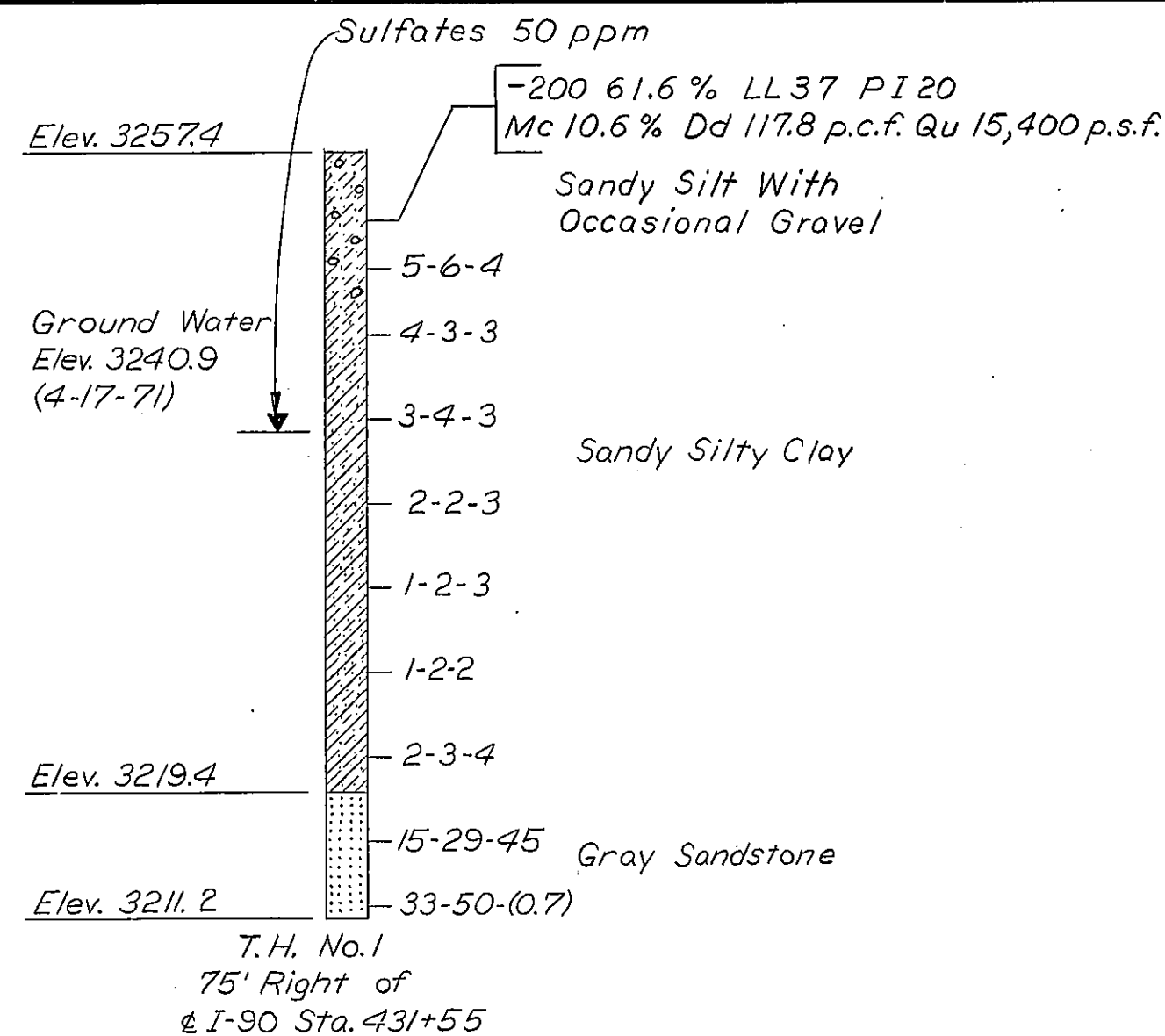
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9 (33) 516	18	35

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

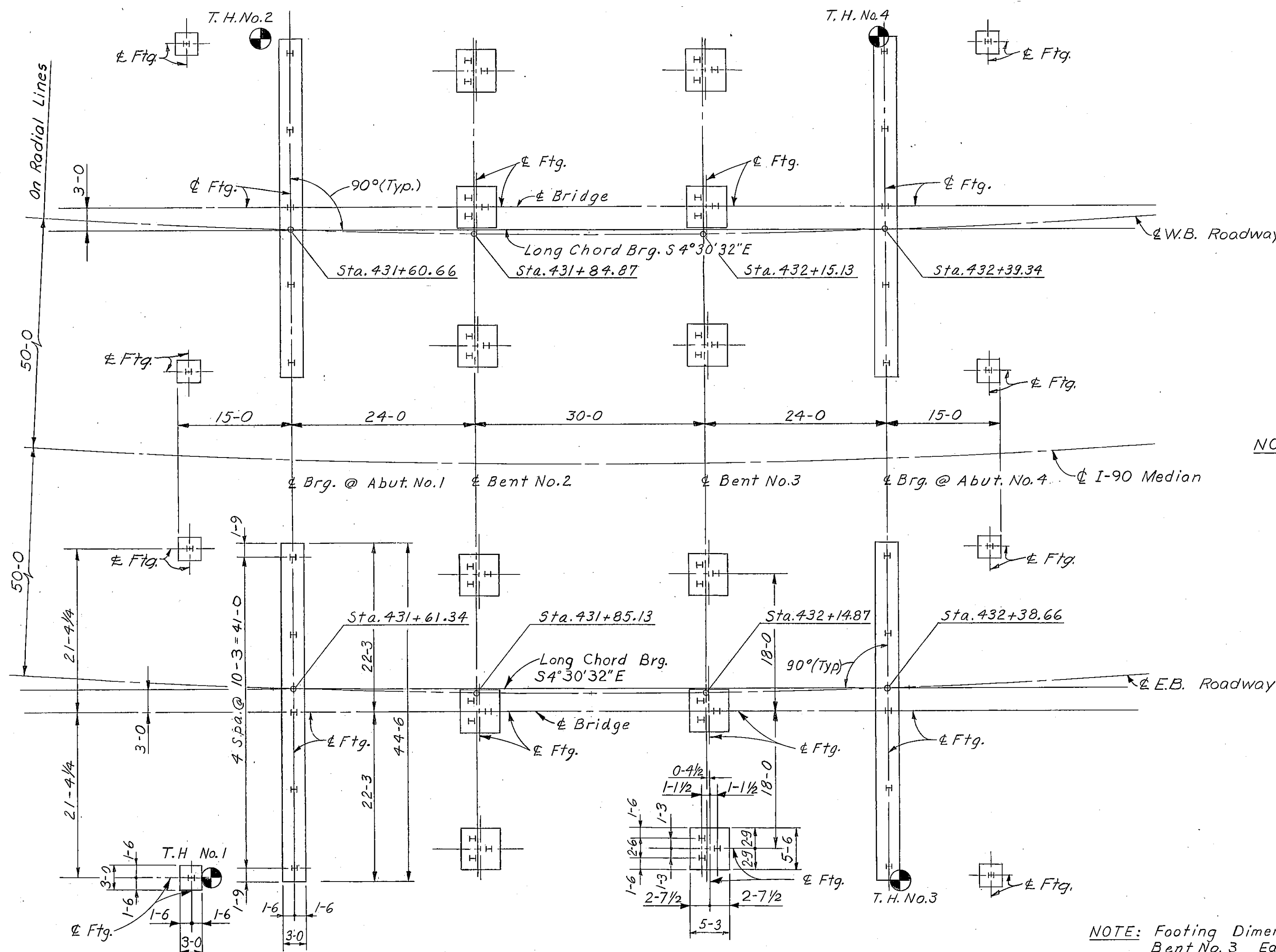
NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# HAMMER HAVING A 30" DROP. THE TOTAL PENETRATION OF THE SAMPLER TUBE IS INDICATED ON THE CORE LOGS AFTER EACH SERIES IF 6" PENETRATION WAS NOT ACHIEVED IN 50 BLOWS.

THE STATE DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION 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.

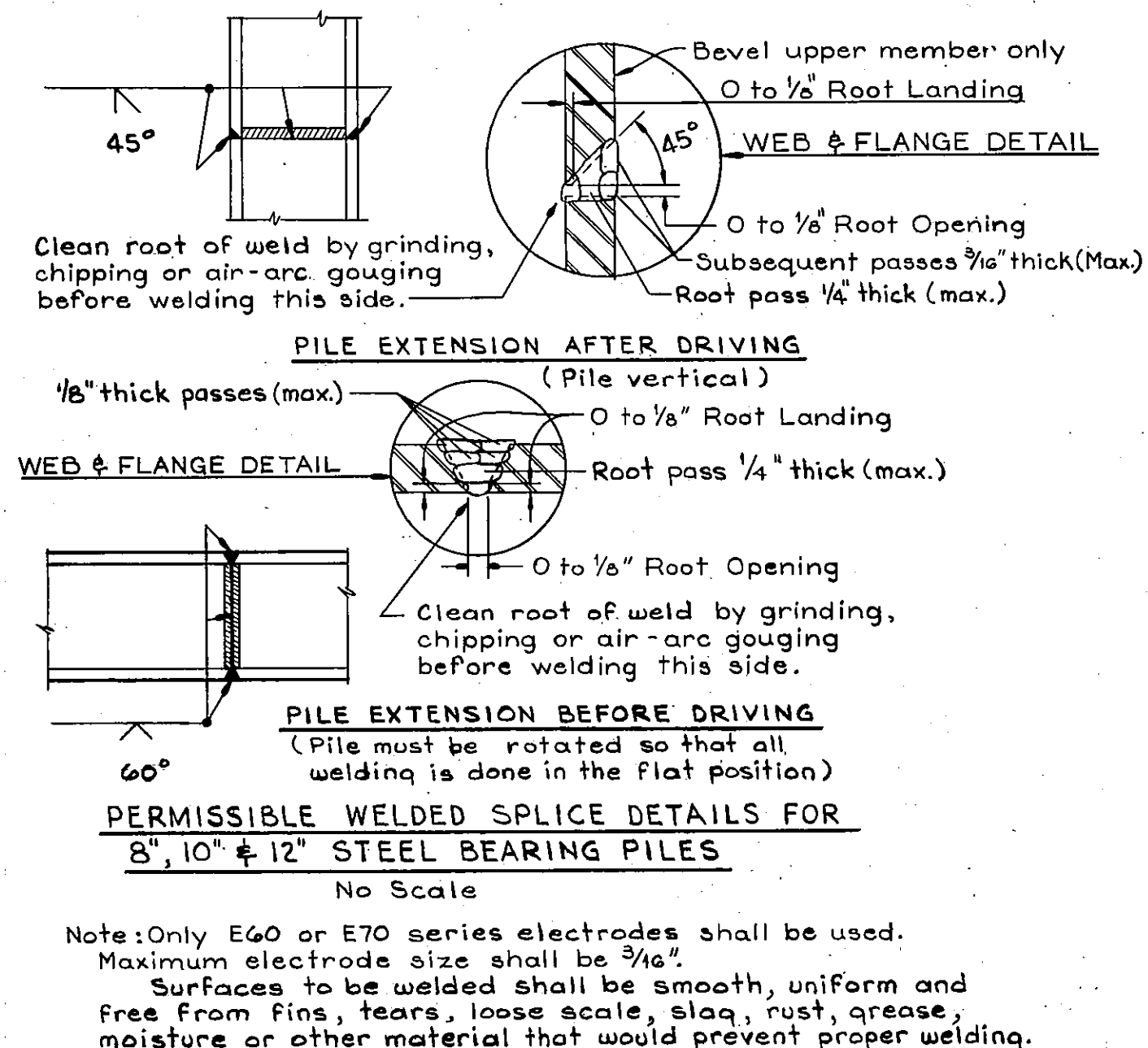
FOUNDATION PILES: FOR BIDDING PURPOSES ONLY, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE GENERAL LAYOUT.



LOG OF BORINGS



NOTE: All Stations Shown Are I-90 Median Stations.



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

SEPARATION
AT STA. 432+00.00
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
FOOTING PLAN

SCALE: 1"=10'-0" (EXCEPT AS NOTED)

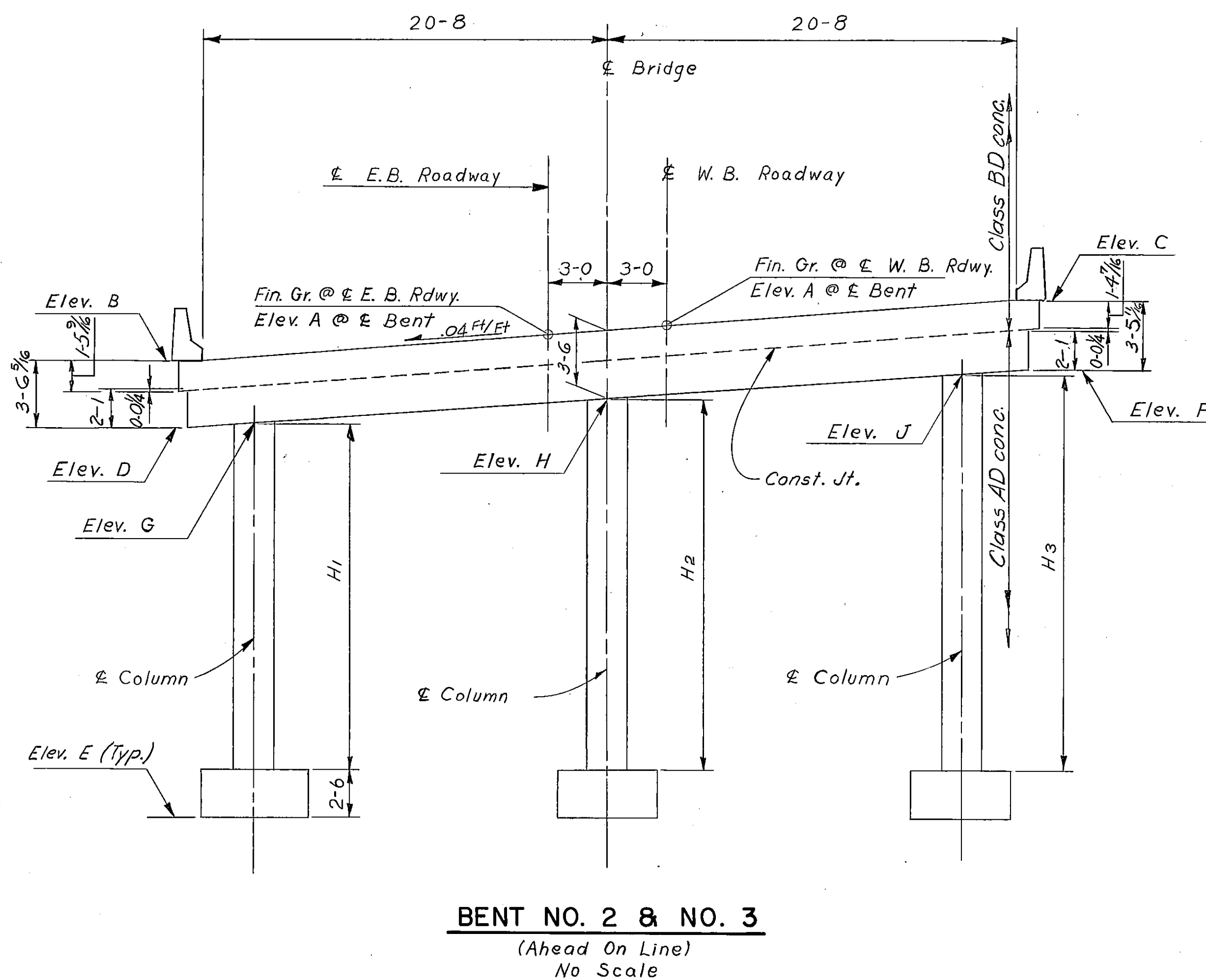
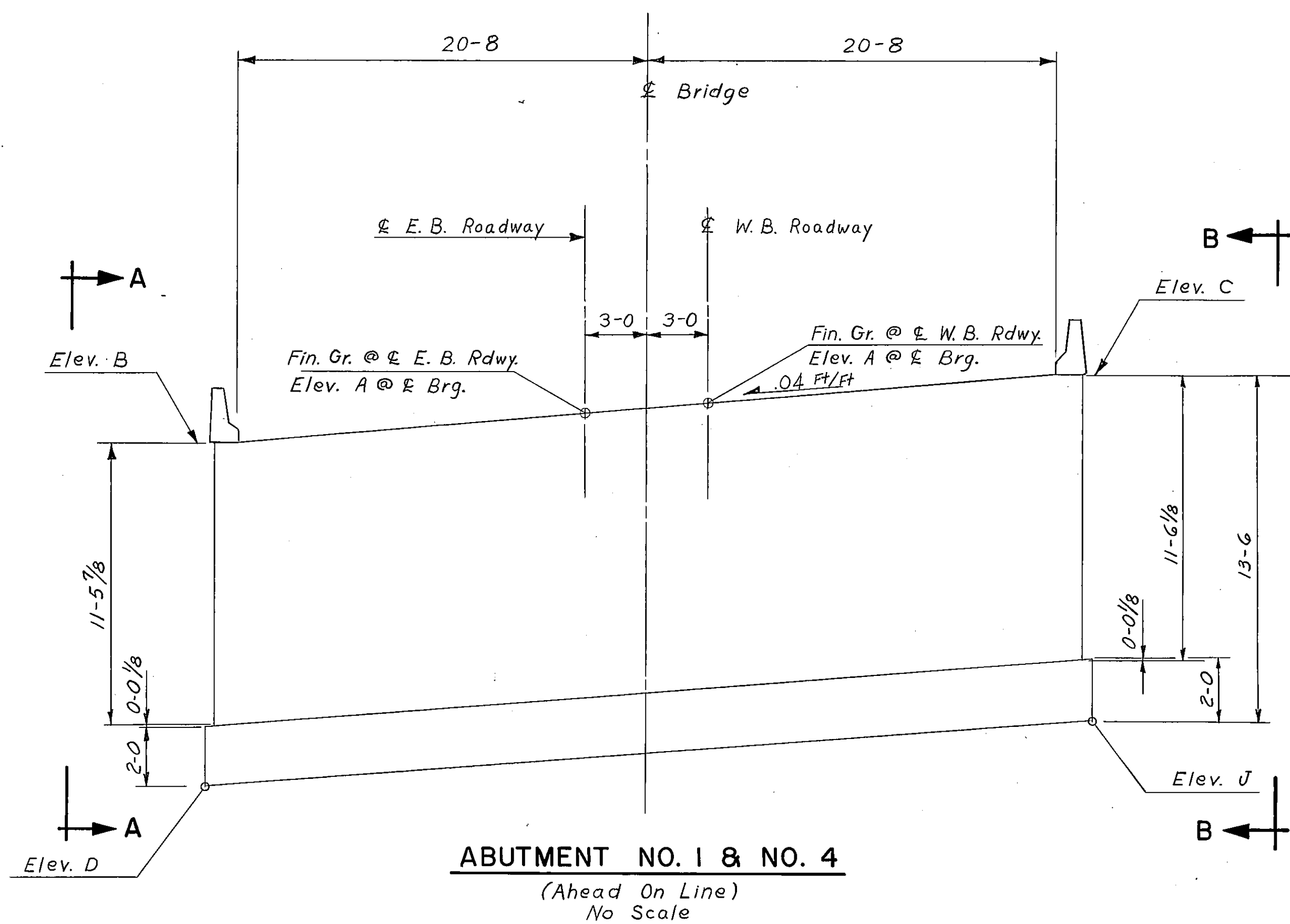
DRAWING NO. 11177

DESIGNED	LRP	4-12-73
DRAWN	RHP	4-16-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		
REVISED		

NOTE: Footing Dimensions Shown For Bent No. 3 Eastbound Roadway Are Typical For All Bents.

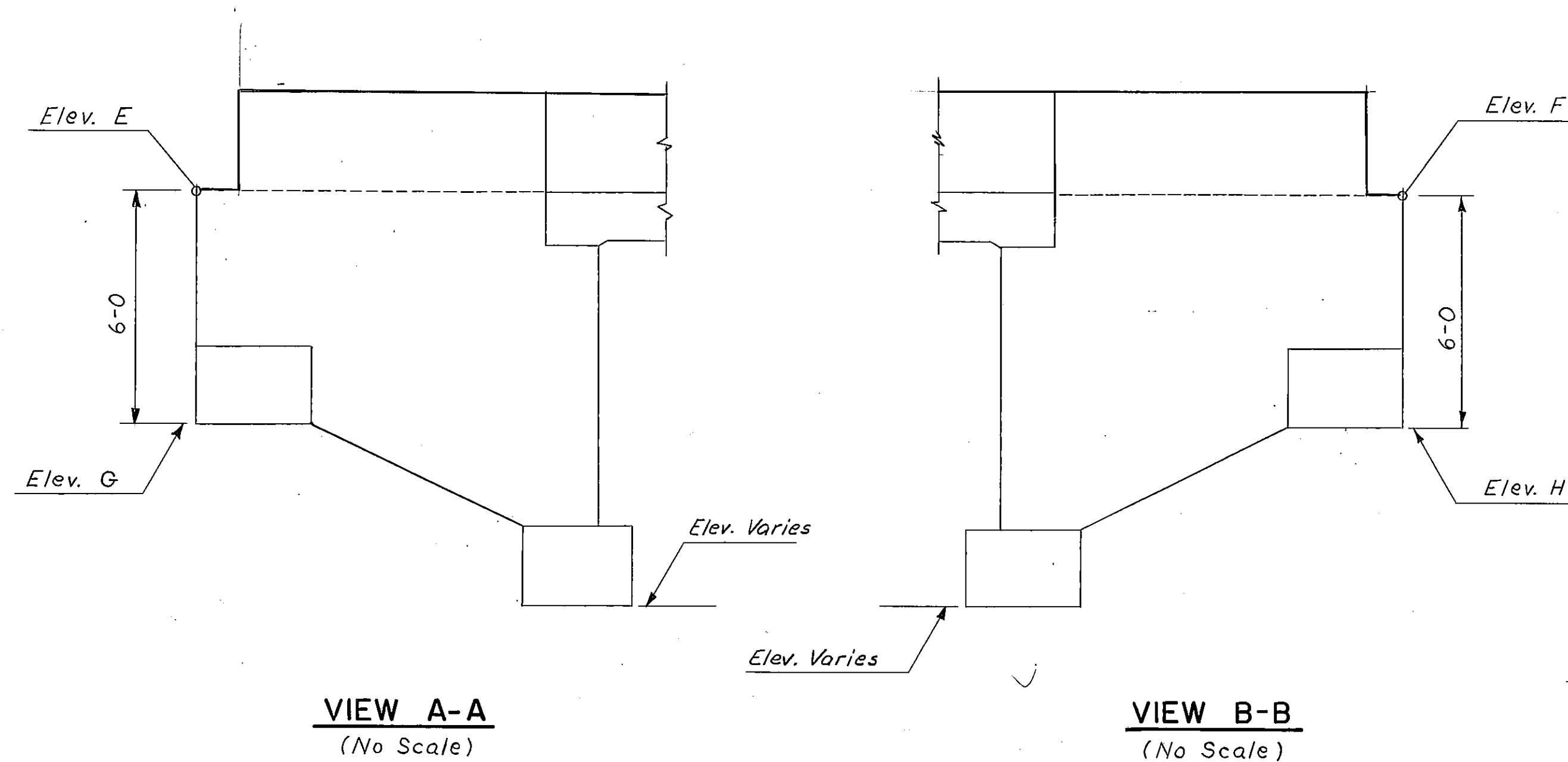
Footing Dimensions Shown For Abutment No. 1 Eastbound Roadway Are Typical For All Abutments.

FOOTING PLAN



NOTE: For Elevations and Column Heights
See Dwg. No. 11176.

Note: For Bill of Reinforcing Steel &
additional information see
Dwgs. No. FSA 15 & No. FSB 30



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
SEPARATION
AT STA. 432 + 00.00
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ELEVATION KEY

SCALE: AS NOTED

DESIGNED	LRP	4-12-73
DRAWN	LSL	4-27-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		
REVISED		

DRAWING NO. 11178

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	20	35

NOTES

LIVE LOAD: STANDARD HS20-44 OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 LBS.

FINISHED GRADE: FINISHED PLAN GRADE OF WESTBOUND BRIDGE & ROADWAY IS 0.32' ABOVE PROFILE GRADE SHOWN ON ROAD PLANS.

FINISHED PLAN GRADE OF EASTBOUND BRIDGE & ROADWAY IS 0.32' BELOW PROFILE GRADE SHOWN ON ROAD PLANS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "90" AND ALL OTHER CONCRETE SHALL BE CLASS "A0".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS. ESTIMATED WEIGHT = 1257 POUNDS.

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

W. B. PROFILE GRADE

No Scale

I-90 CURVE DATA

W.B. P.I. Sta. 604+59.4
Median P.I. Sta. 606+10.3
E.B. P.I. Sta. 607+61.2
 $\Delta = 09^{\circ}10'00''$
 $L = 00^{\circ}30'$
 $D = 1833.33'$
 $T = 918.63'$
 $R = 11459.16'$
 $S = 0.02\%$

NOTE:

& W.B. Roadway, & I-90 Median And & E.B. Roadway Are On Independent Alignments In This Location.

E. B. PROFILE GRADE

No Scale

"C" LINE PROFILE GRADE

No Scale

Note: Structure Excavation shall be computed from subgrade elevations of the E.B. & W.B. Rdwy's. & the "C" Line Rdwy. for all abutments & bents, except as otherwise approved by the engineer.

Note: For "Sequence of Work" & "Maintenance of Traffic" see Special Provisions.

TABLE OF COLUMN HEIGHTS (See Dwg. No. 11181 For Location)				
	Bent No. 2		Bent No. 3	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
H ₁	17-1 1/16	17-4 1/16	16-10 1/16	16-11 1/4
H ₂	16-9 1/2	16-11 7/8	16-6 1/4	16-7 1/16
H ₃	16-5 1/4	16-7 1/16	16-2 1/16	16-2 7/8

TABLE OF ELEVATIONS(See Dwg. No. 11181 For Location)

Loc.	Abutment No. 1		Bent No. 2		Bent No. 3		Abutment No. 4	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
A	3348.57	3350.76	3348.35	3350.43	3348.08	3350.03	3347.86	3349.71
B	3348.93	3351.24	3348.71	3350.91	3348.44	3350.51	3348.22	3350.19
C	3348.10	3350.41	3347.88	3350.08	3347.61	3349.68	3347.39	3349.36
D	3338.18	3340.49	3345.21	3347.41	3344.94	3347.01	3337.47	3339.44
E	3349.02	3351.24	3325.50	3327.50	3325.50	3327.50	3348.12	3350.06
F	3348.19	3350.55	3344.38	3346.58	3344.11	3346.18	3347.29	3349.23
G	3343.02	3345.24	3345.14	3347.34	3344.87	3346.94	3342.12	3344.06
H	3342.19	3344.55	3344.79	3346.99	3344.52	3346.59	3341.29	3343.23
J	3337.35	3339.66	3344.44	3346.64	3344.17	3346.24	3336.64	3338.61

STEEL BEARING PILES

LOCATION		NO.*	Estimated Length	
			E.B. Rdwy.	W.B. Rdwy.
Abutment No.1	WINGWALL FOOTINGS	2	19-0	25-0
	ABUTMENT FOOTINGS	5	14-0	20-0
BENT NO. 2		9	10-0	10-0
BENT NO. 3		9	10-0	10-0
Abutment No.4	WINGWALL FOOTINGS	2	30-0	30-0
	ABUTMENT FOOTINGS	5	26-0	26-0

*No. Shown Is For One Bridge Only.

DESIGNED	LRP	4-11-73
DRAWN	DLK	4-20-73
CHECKED	REW	7-12-73
APPROVED	Hes.	7-18-77
REVISED		

STATE OF MONTANA DEPARTMENT OF HIGHWAYS

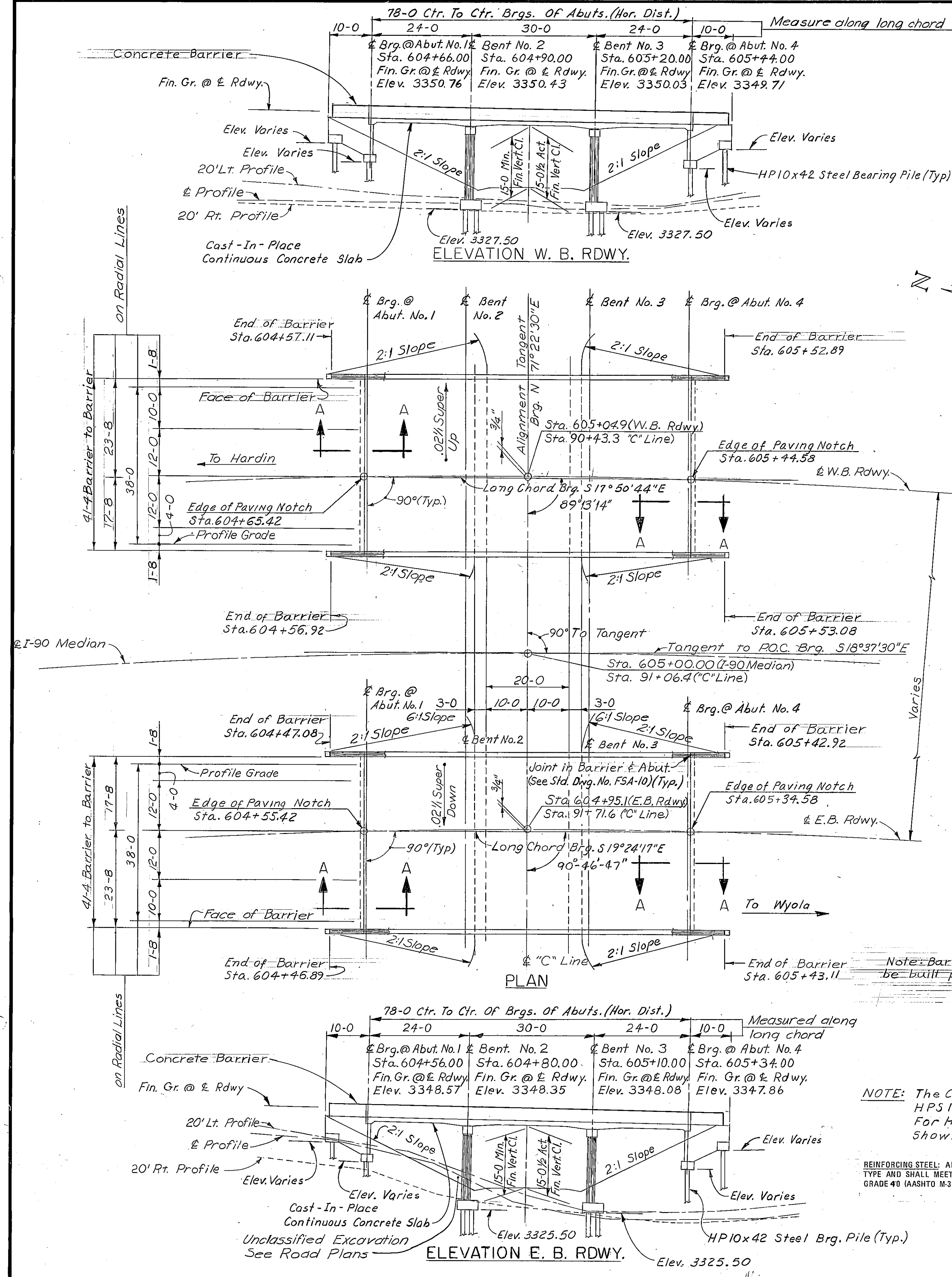
SEPARATION
AT STA. 605+00.00

FEDERAL AID PROJECT NO. I 90-9(33)516

BIG HORN COUNTY
GENERAL LAYOUT

SCALE: 1" = 15'-0" (EXCEPT AS NOTED)

DRAWING NO. 11179



Elev. 3341.7

Elev. 3336.6

Elev. 3334.0

Elev. 3326.7

Sandy Silty Clay

Weathered Sandy Shale

Gray Sandy Shale

Dry
T.H. No. 1
80' Right of
I-90 Sta. 604+61

Elev. 3332.7

Elev. 3328.3

Elev. 3325.7

Elev. 3317.2

T.H. No. 2
60' Left of
I-90 Sta. 604+61

Sandy Silty Clay

Weathered Sandy Shale

23-50-(0.9) Sandy Shale

50-(0.2)

Elev. 3326.5

Elev. 3324.0

Elev. 3321.5

Elev. 3311.3

Elev. 3310.5

T.H. No. 3
80' Right of
I-90 Sta. 605+39

Sandy Silty Clay
Weathered
Sandy Shale

28-50-(1.0)

29-50-(0.9) Gray Sandy Shale

45-50-(1.0) Sandstone

Ground Water
Elev. 3323.0
(4-17-71)

Elev. 3337.5

Elev. 3328.5

Elev. 3325.8

Elev. 3323.5

Elev. 3317.3

T.H. No. 4
80' Left of
I-90 Sta. 605+39

-200 96% LL64 PI44
Dd 117 p.c.f. Mc 17.3% Qu 2,600 p.s.f.
Soluble Sulfates 2,000 + p.p.m.

Sandy Silty Clay

6-10-13 Silty Sand

37-47-50 Weathered Sandy Shale

50-(0.2) Sandy Shale

THE KEN R. WHITE CO.
HELENA, MONT.

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	21	35

NOTES

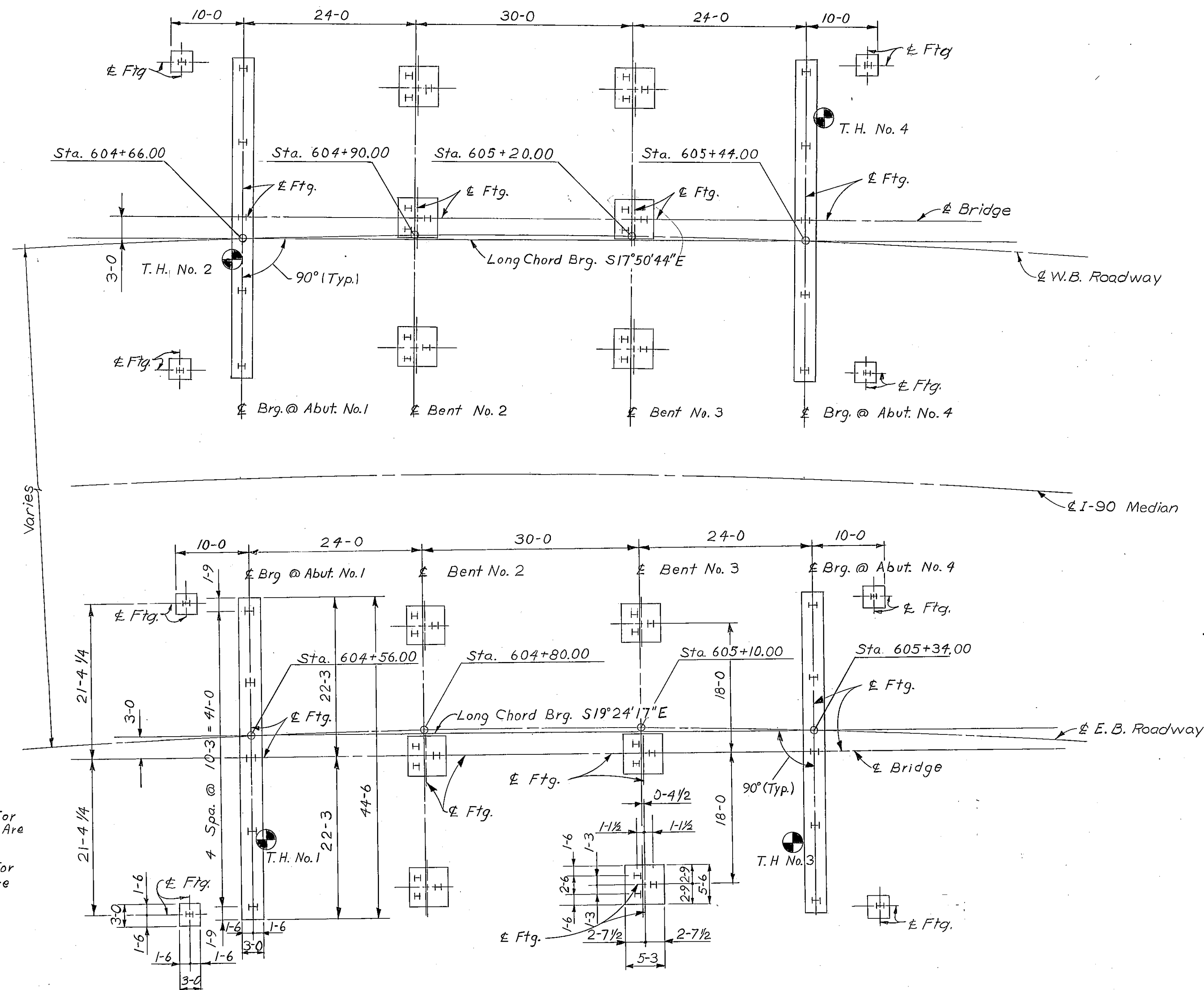
SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# 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 DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION OF THE CLASSES OF MATERIALS AND ADJUSTMENT IN BID PRICES WILL NOT BE MADE IF THE MATERIALS LOG DO NOT AGREE WITH THOSE SHOWN IN THE LOG OF BORINGS.

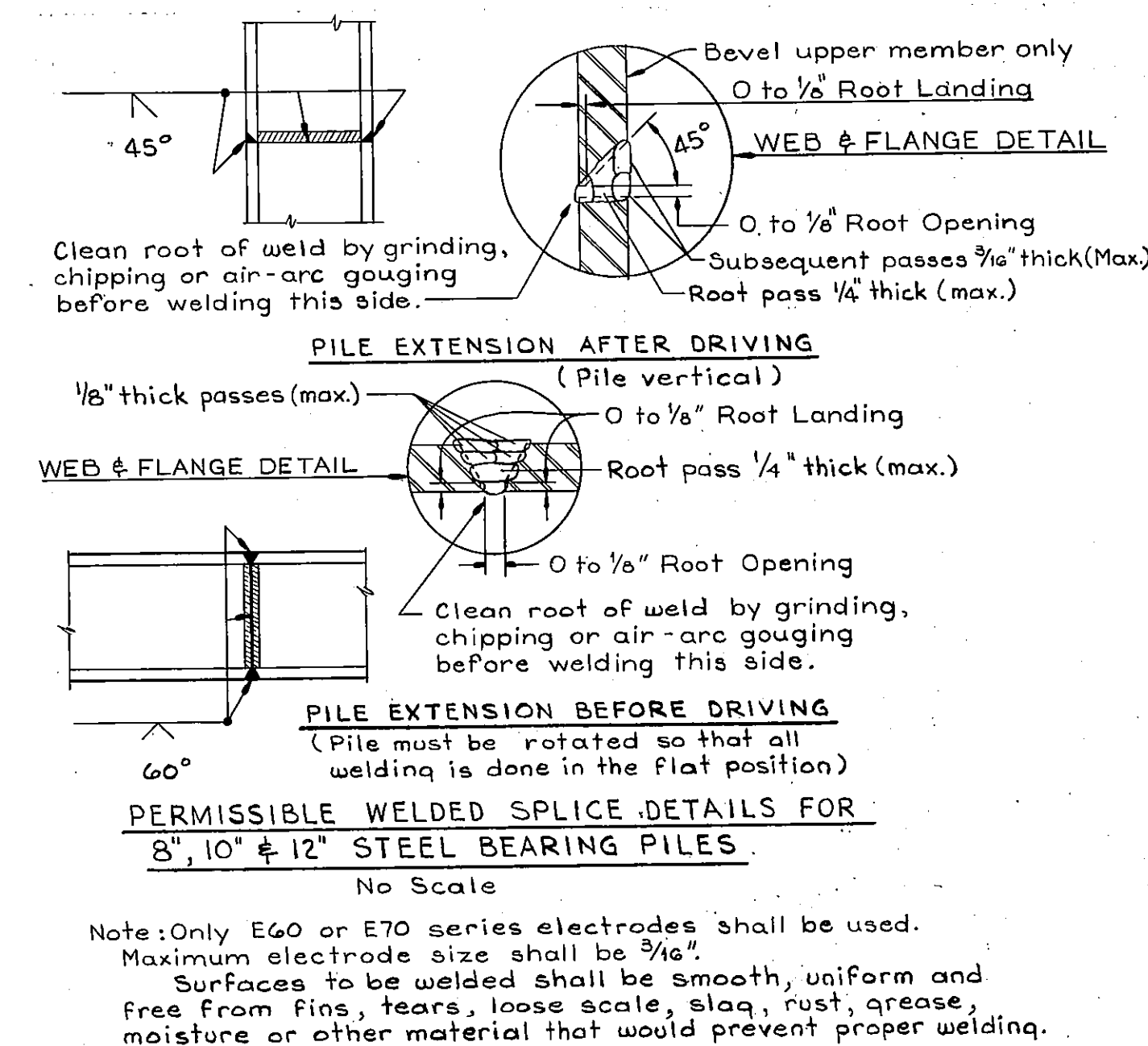
FOUNDATION PILES: FOR BIDDING PURPOSES ONLY, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE GENERAL LAYOUT.

LOG OF BORINGS



FOOTING PLAN

NOTE: Footing Dimensions Shown For Abutment No. 1 E.B. Roadway Are Typical For All Abutments.
Footing Dimensions Shown For Bent No. 3 E.B. Roadway Are Typical For All Bents.



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

SEPARATION

AT STA. 605+00.00

FEDERAL AID PROJECT NO. I 90-9(33)516

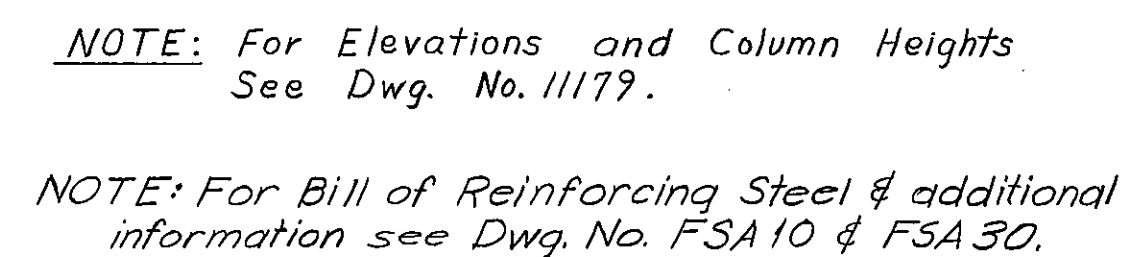
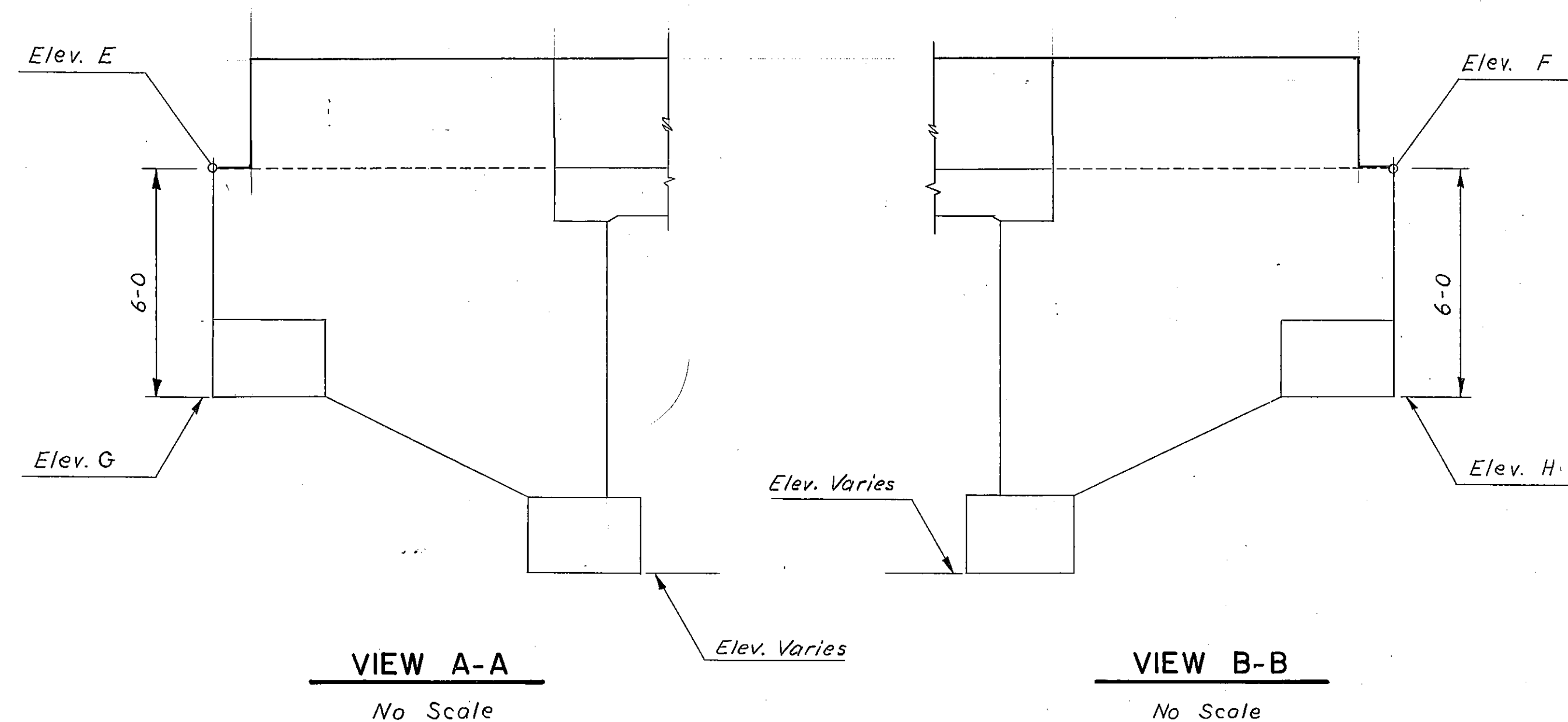
BIG HORN COUNTY

FOOTING PLAN

SCALE: 1"=10'-0" (EXCEPT AS NOTED)

DRAWING NO. 11180

DESIGNED	LRP	4-11-73
DRAWN	LSL	5-1-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		



DESIGNED	L P P	4-11-73
DRAWN	L S L	4-30-73
CHECKED	J F S	6-25-73
APPROVED		
REVISED		
REVISED		

DRAWING NO. 11181

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE PLANS & QUANTITIES

FEDERAL AID PROJECT NO. I 90-9(12)516 P.E.
I 90-9(33)516 CONSTRUCTION
LODGE GRASS-NORTH(NORTH SECTION)
BIG HORN COUNTY

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE	SHEET NO.	DWG. NO.	TITLE
1	III60	GENERAL LAYOUT @ STA.285+35.75	20	III79	GENERAL LAYOUT @ STA.605+00.00
2	III61	FOOTING PLAN W.B. RDWY. & WEST FRONTAGE ROAD	21	III80	FOOTING PLAN
3	III62	BENTS NO.1 & NO.3 - W.B. RDWY.	22	III81	ELEVATION KEY
4	III63	MISCELLANEOUS BENT DETAILS - W.B. RDWY.	23	III82	GENERAL LAYOUT @ STA.976+72.00
5	III64	PIER NO.2 -W.B. RDWY.	24	III83	FOOTING PLAN
6	III65	ERECTION PLAN AND SLAB DETAILS - W.B. RDWY.	25	III84	ABUTMENTS NO.1 & NO.2 E.B. & W.B. RDWYS.
7	III66	BENTS NO.1 & NO.3 - WEST FRONTAGE ROAD	26	III85	ABUTMENT DETAILS E.B. & W.B. RDWYS.
8	III67	MISCELLANEOUS BENT DETAILS - WEST FRONTAGE ROAD	27	III86	WINGWALL DETAILS
9	III68	PIER NO.2 - WEST FRONTAGE ROAD	28	III87	ERECTION PLAN AND SLAB DETAILS
10	III69	ERECTION PLAN AND SLAB DETAILS - WEST FRONTAGE ROAD	29	D-2 (APP 9-1-72)	STANDARD BRIDGE DRAIN DETAILS
11	III70	GENERAL LAYOUT @ STA.301+50.00	30	B-4 (APP 12-7-77)	STANDARD PRESTRESSED CONCRETE BEAM -TYPE IV
12	III71	FOOTING PLAN	31	SL-5 (REV. 2-3-78)	STANDARD SLAB, BARRIER & DIAPHRAGM DETAILS
13	III72	ABUTMENTS NO.1 & NO.2 E.B. & W.B. RDWYS.	32	SL-2 (APP 4-1-78)	STANDARD FLAT SLAB & BARRIER DETAILS (24'-30'-24' SPANS)
14	III73	WINGWALL DETAILS	33	FSB-30 (APP 4-1-78)	STANDARD INTERMEDIATE BENT - FLAT SLAB (24'-30'-24' SPANS)
15	III74	ELEVATIONS AND SLAB OFFSETS	34	FSA-10 (APP 4-1-78)	STANDARD ABUTMENT - FLAT SLAB (10-0 FT. WINGWALL)
16	III75	ERECTION PLAN AND SLAB DETAILS	35	FSA-15 (APP 4-1-78)	STANDARD ABUTMENT - FLAT SLAB (15-0 FT. WINGWALL)
17	III76	GENERAL LAYOUT @ STA.432+00.00			
18	III77	FOOTING PLAN			
19	III78	ELEVATION KEY			

* NOT INCLUDED IN THIS CONTRACT

Made By: C.J.M. 7-10-73
Checked By: L.R.P. 7-11-73

C.O. No. 11-ABUT. WALL WEEP HOLE DRAIN (EACH)		Co. No. 18- EMBANKMENT IN PLACE (CU. YDS)		FINAL ESTIMATED BRIDGE PLAN QUANTITIES																	
LOCATION				LENGTH IN FEET	STRUCTURAL STEEL (LUMP SUM)	REINFORCING STEEL (LBS)	CLASS "A" CONCRETE (CU. YDS)	STRUCTURE EXC. (CU. YDS)		PRESTRESSED BEAMS TYPE IV - (EACH)		BRIDGE DRAINS (EACH)	STEEL BEARING PILES		PROTECTIVE COATING (SQ. YDS)	SHORING AND CRIBS (LUMP SUM)	TREATED TIMBER PILES		TREATED TIMBER TEST PILES (LUMP SUM)	CLASS BD CONCRETE (CU. YDS)	WORK BRIDGE LUMP SUM
								TYPE 1	TYPE 2	80'	100'		FURNISHING (LIN. FT.)	DRIVING (LIN. FT.)			FURNISHING (LIN. FT.)	DRIVING (LIN. FT.)			
STRUCTURES AT STA. 285+35.75				BENT NO. 1		2957 2954	31.3 273	21	4.35				304 266.2	296 258.2		0.55 LS= \$ 77,000.00				1.3 1.25	.50 LS= \$ 10,000.00
				PIER NO. 2		3495 3143	137.8 23	105	103.55				272 234.9	256 218.9			1.3 1.25				
				BENT NO. 3		2957 2954	31.3 273	21	4.35				272 252.3	264 244.3			1.3 1.25				
				SUPERSTRUCTURE SUB-TOTAL	161.50	56614	15.4 078		10		4	872.2					198.564				
285+35.75				BENT NO. 1		2272 2271	24.6 20	16	18.40				245 223.7	238 216.7		0.55 LS= \$ 77,000.00				1.0 994	.50 LS= \$ 10,000.00
				PIER NO. 2		2575 2302	100.3 282		87	86.11							1.0 994				
				BENT NO. 3		2272 2271	24.6 39	16	18.40				210 189.8	196 175.8			1.0 994				
				SUPERSTRUCTURE SUB-TOTAL	161.50	44608	11.1 4053		8		4	691 690.9					160.718				
STRUCTURES AT STA. 301+50.00				ABUT. NO. 1		9545 9539	75.3 414	147	148.96				840 833.1	820 813.1	14.8	0.45 LS= \$ 63,000.00				4.4 4.253	.50 LS= \$ 10,000.00
				ABUT. NO. 2		9545 9539	75.3 116	147	154.06				840 823.5	820 803.5	14.3		4.4 4.253				
				SUPERSTRUCTURE SUB-TOTAL	100.00	24186 25674	6.0 5.962		7			548 539.2					119.7402				
				ABUT. NO. 1		9545 9539	75.3 416	147	148.96				840 823.5	820 803.5	14.3		4.4 4.253				
301+50.00				ABUT. NO. 2		9545 9539	75.3 105	147	154.06				840 823.5	820 803.5	14.3	0.45 LS= \$ 63,000.00				4.4 4.253	.50 LS= \$ 10,000.00
				SUPERSTRUCTURE SUB-TOTAL	100.00	24186 25674	6.0 5.962		7			548 539.2					119.7402				
				ABUT. NO. 1		9545 9539	75.3 416	147	148.96				840 823.5	820 803.5	14.3		4.4 4.253				
				SUPERSTRUCTURE SUB-TOTAL	100.00	24186 25674	6.0 5.962		7			548 539.2					119.7402				
STRUCTURES AT STA. 432+00.00				ABUT. NO. 1		5609	44.3 43.827	88	87.72				402 302.9	395 295.9	110.5	0.45 LS= \$ 63,000.00				1.28 6 127.908	.50 LS= \$ 10,000.00
				BENT NO. 2		3928	22.4 306	54	51.98				360 279.9	351 275.4			2.4 2.357				
				BENT NO. 3		3985	22.7 561	54	54.01				333 272.6	324 268.1			2.4 2.357				
				ABUT. NO. 4		5609	44.3 43.771	88	95.98				360 309.4	353 302.4	110.5		2.4 2.357				
432+00.00				SUPERSTRUCTURE SUB-TOTAL	78.00	26744	132.1 465								423 422.7				180.8 708		
				ABUT. NO. 1		5609	44.3 43.827	88	87.72				402 302.9	395 295.9	110.5	1.28 6 127.908					
				BENT NO. 2		3928	22.4 306	54	51.98				360 279.9	351 275.4		2.4 2.357					
				B																	

1.0 LUMP SUM = \$2,787.78

* Class DD concrete substituted for Class AD concrete as per Standard Specification.

X-281 500 HOURS

$$0.08 \text{ L.S.} \times 220 = \$13,600.00$$

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9(33)516	1	35

NOTES

FINISHED GRADE: FINISHED PLAN GRADE OF MAINLINE BRIDGE @ C ROADWAY IS 0.32' ABOVE PROFILE GRADE SHOWN ON ROAD PLANS. FINISHED PLAN GRADE OF FRONTAGE ROAD BRIDGE @ C ROADWAY IS SAME AS PROFILE GRADE SHOWN ON ROAD PLANS.

LIVE LOAD: STANDARD HS20-44 LOADING OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 POUNDS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "BD" 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 WEIGHT = 2781 POUNDS.

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

REINFORCING STEEL: ALL REINFORCEMENT STEEL SHALL BE OF THE DEFORMED TYPE AND SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS A615, GRADE 60 (AASHTO M-31) EXCEPT FOR THE REBAR IN THE PRESTRESSED CONCRETE BEAMS WHICH MAY BE GRADE 40.

STREAM DATA:

Drift : Some
Scour : Some
Ice : Light
Design Flow : 5900 c.f.s.
Design Velocity : 7.2 f.p.s.
Drainage Area : 1019 sq. mi.
Design Frequency : 50 yrs.

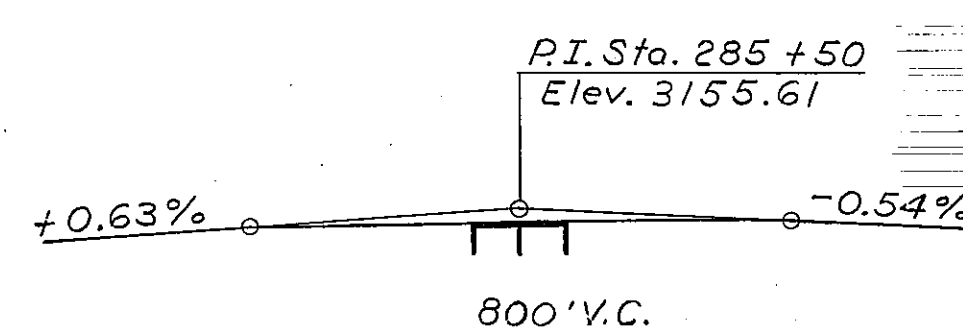
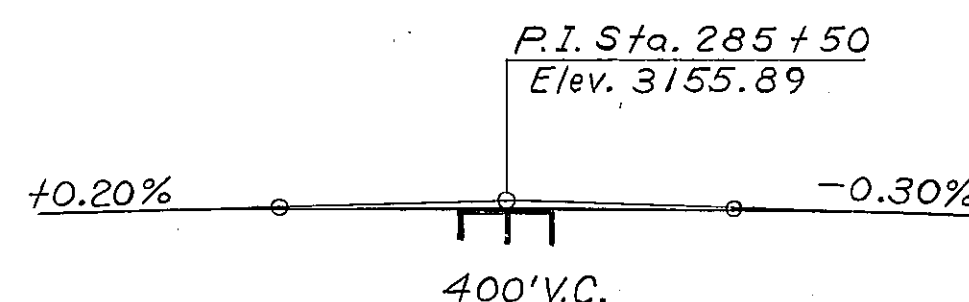
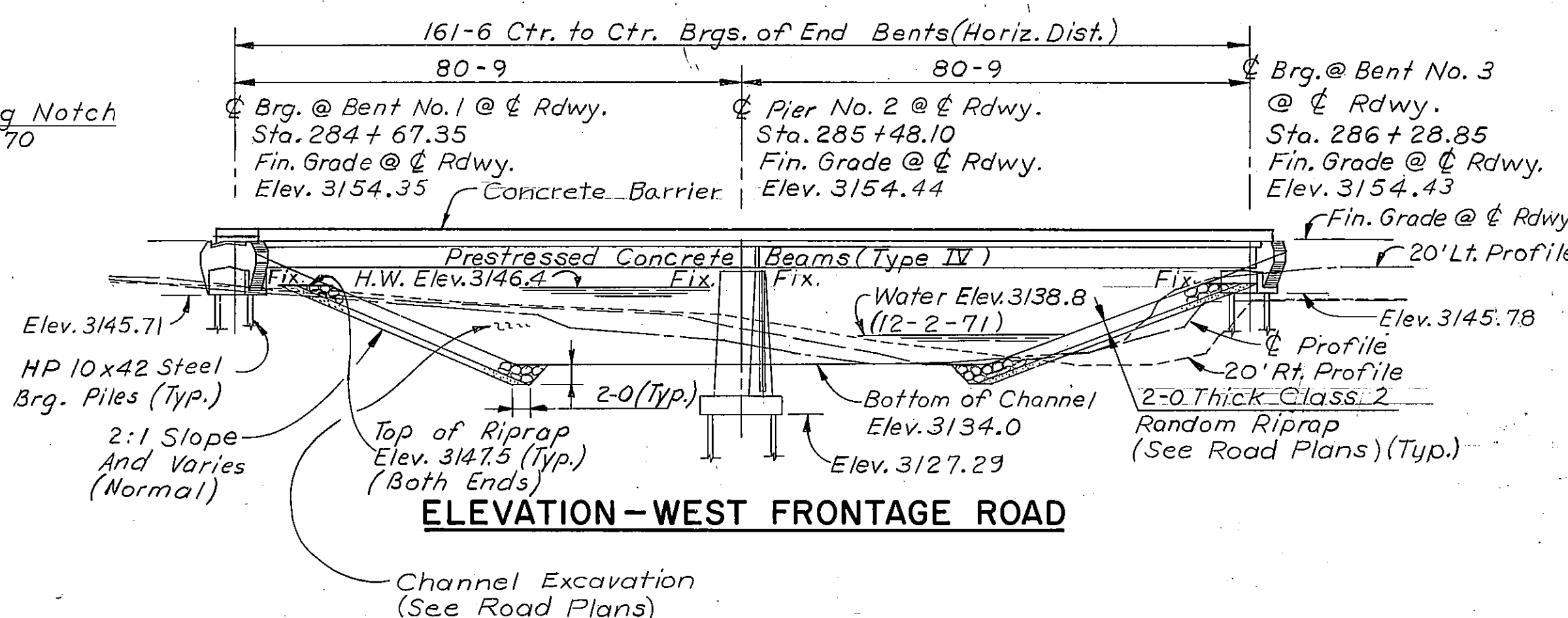
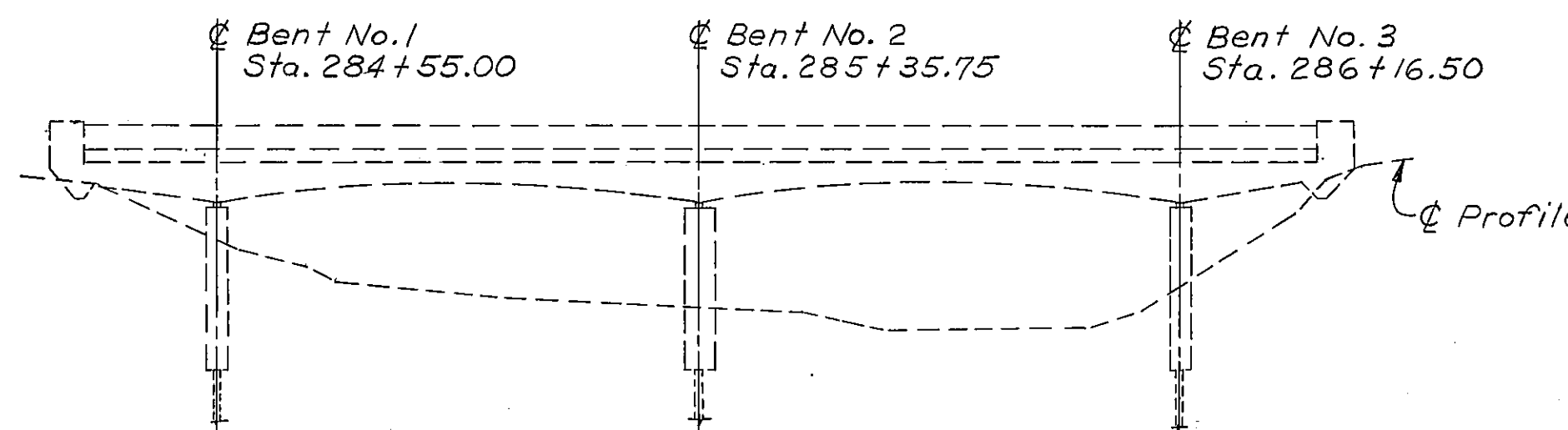
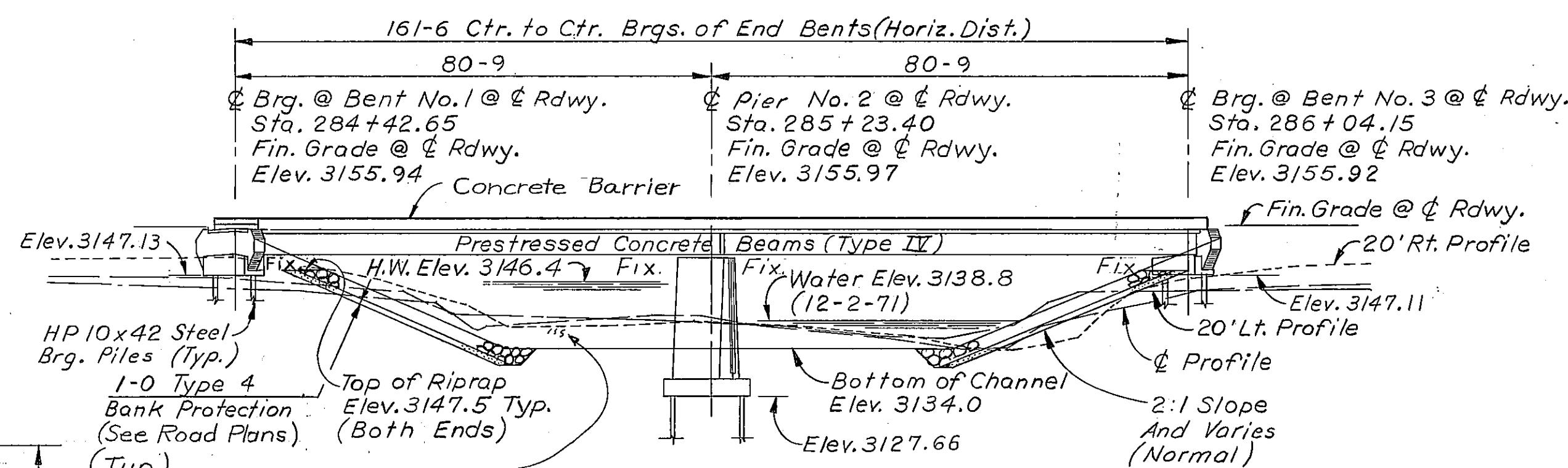
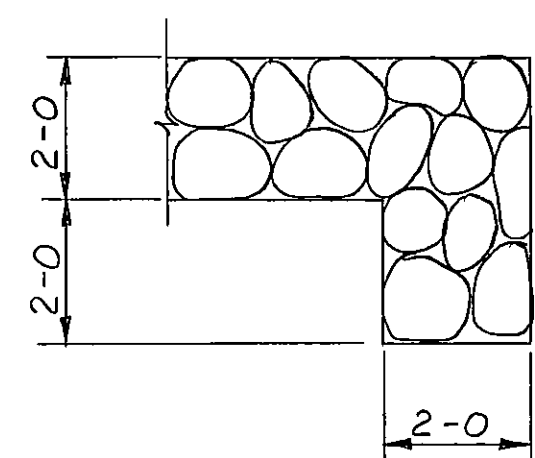
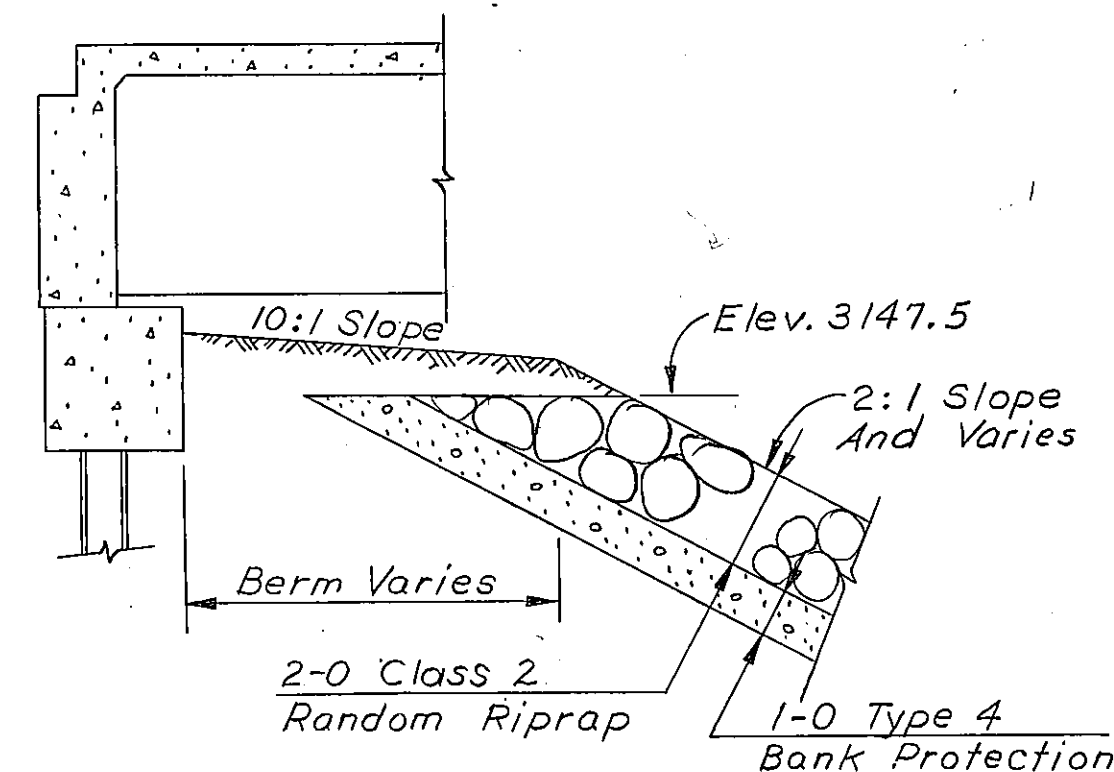
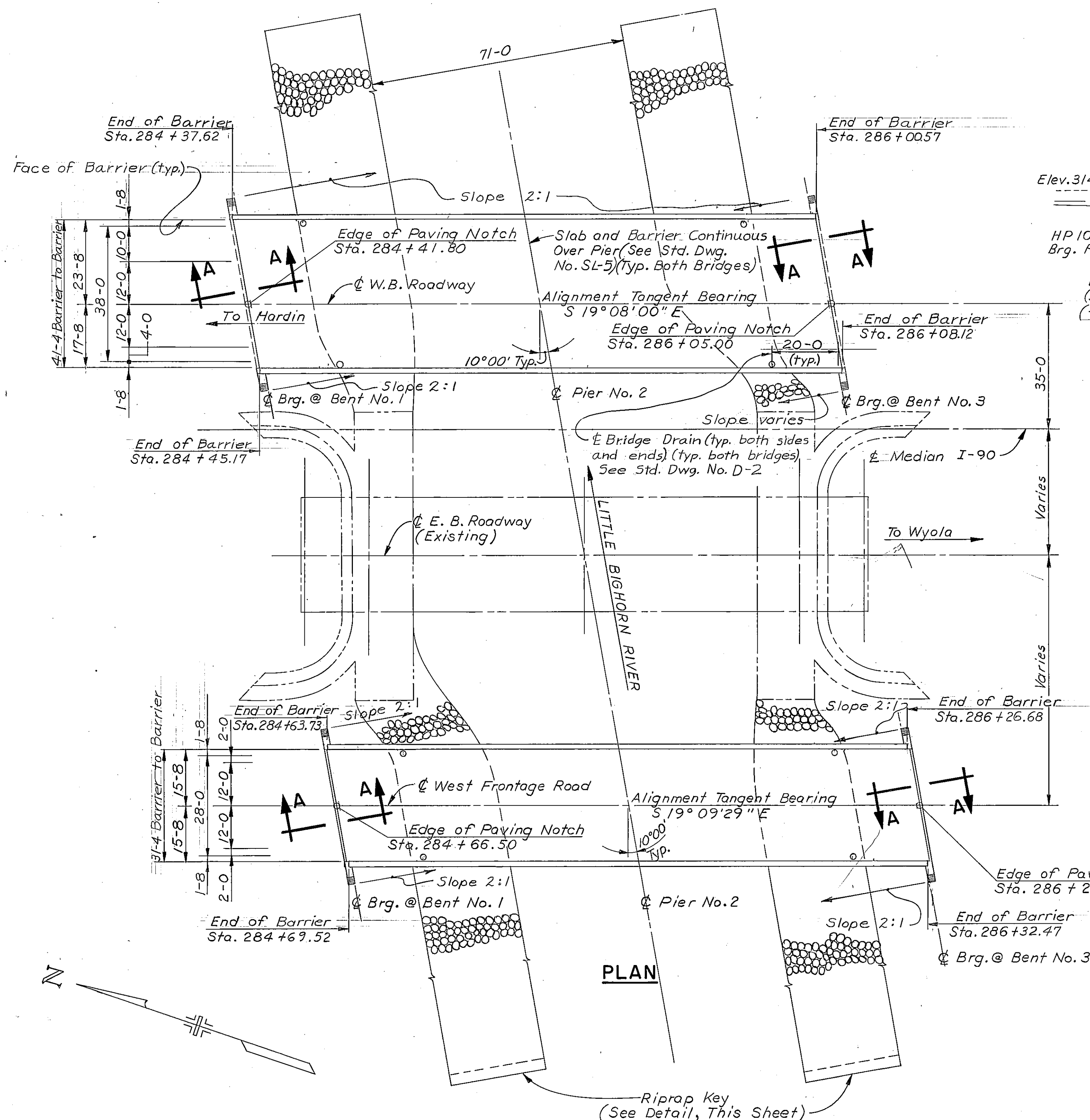
SUBSOIL: SEE LOG OF BORINGS, DMG. NO. 11161

STATE OF MONTANA DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
GENERAL LAYOUT

SCALE: 1"=20'-0" (EXCEPT AS NOTED)

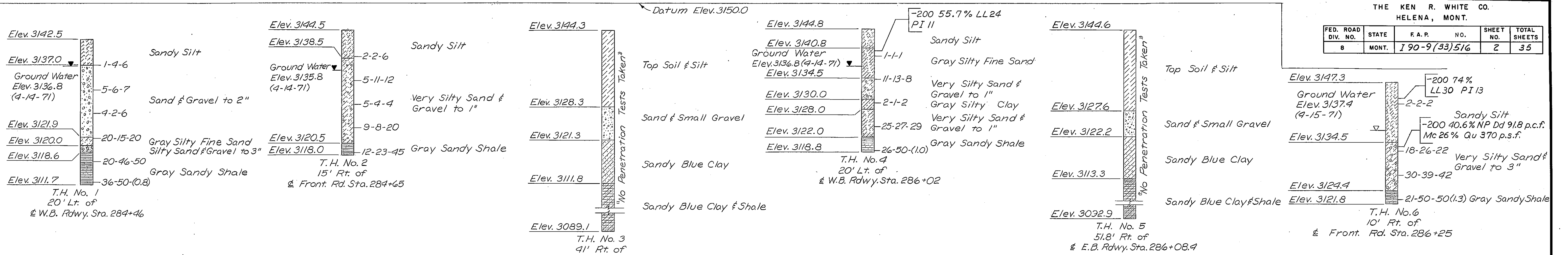
DRAWING NO. 11160



MAINTENANCE OF TRAFFIC: SEE SPECIAL PROVISIONS.
STRUCTURE EXCAVATION: SEE SPECIAL PROVISIONS.
SEQUENCE OF WORK: SEE SPECIAL PROVISIONS.

DESIGNED	JFS	10-18-72
DRAWN	DLK	6-6-72
CHECKED	REW	7-12-73
APPROVED	Hes.	7-18-77
REVISED		

THE KEN R. WHITE CO. HELENA, MONT.					
FED. ROAD DIV. NO.	STATE	F.A.P.	NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516		2	35



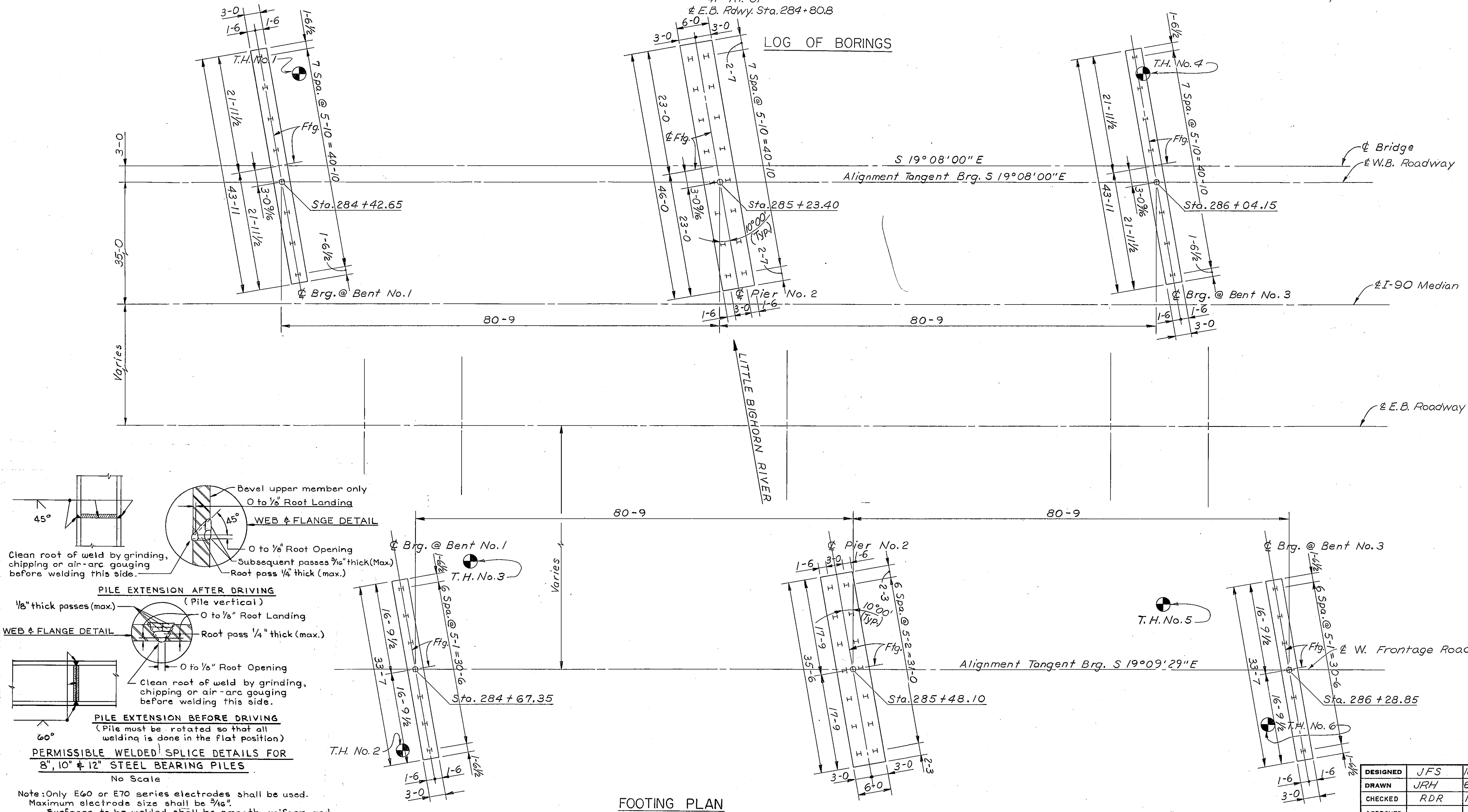
NOTES

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# 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 DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION 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, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE DETAILS.



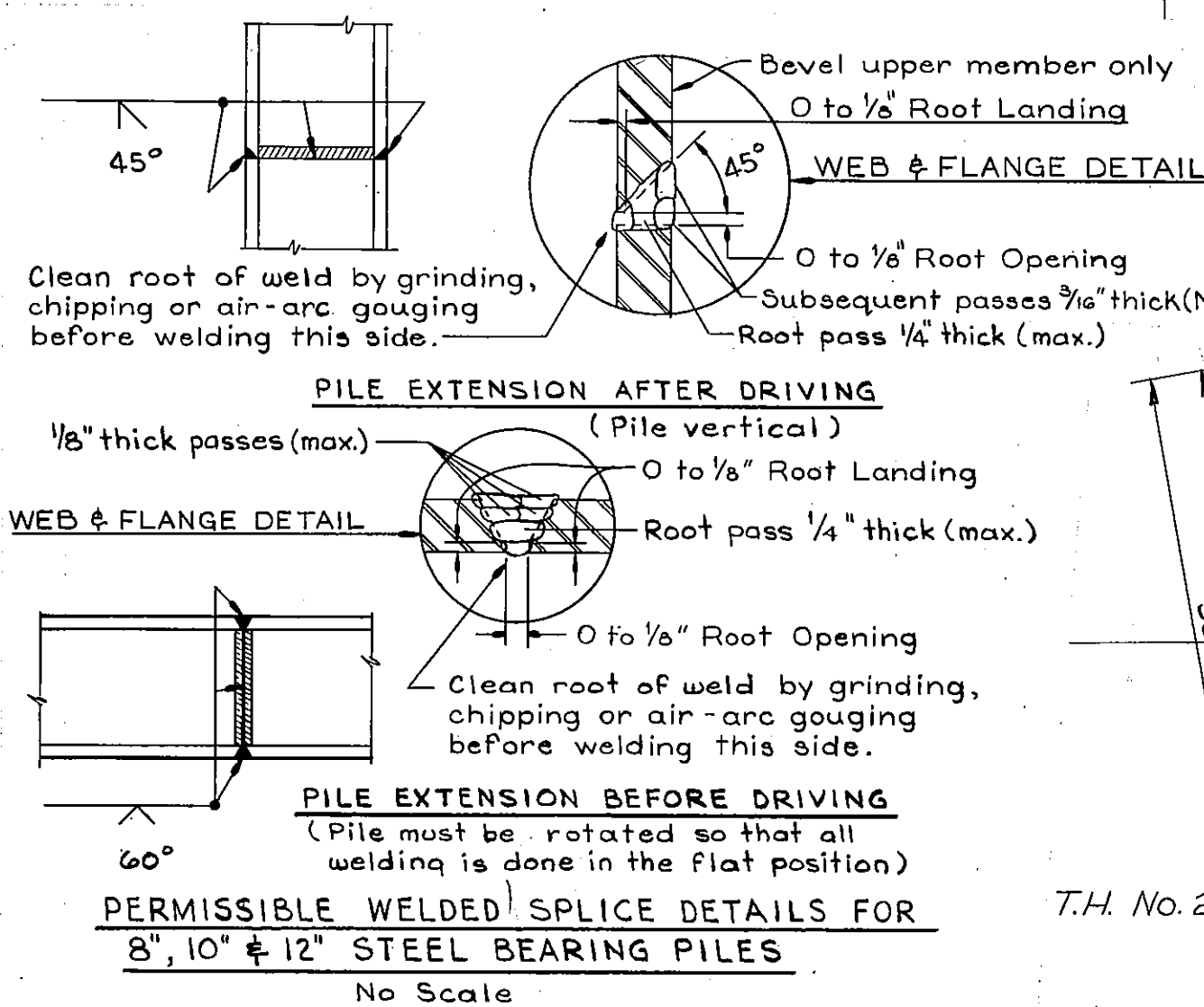
STATE OF MONTANA DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
FOOTING PLAN
W.B. RDWY. & WEST FRONTAGE ROAD

SCALE: 1"=10'-0" (EXCEPT AS NOTED)

DRAWING NO. 11161

DESIGNED	JFS	10-18-72
DRAWN	JRH	6-1-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		



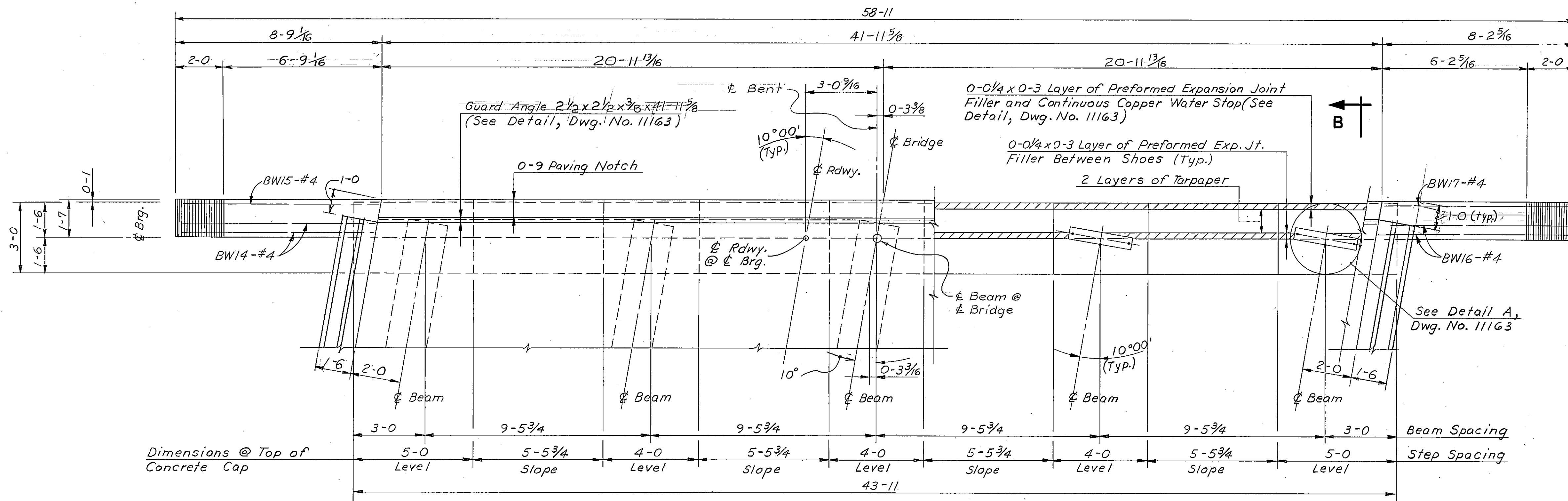
Note: Only E60 or E70 series electrodes shall be used. Maximum electrode size shall be 3/16". Surfaces to be welded shall be smooth, uniform and free from fins, tears, loose scale, slag, rust, grease, moisture or other material that would prevent proper welding.

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F. A. P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	3	35

NOTE: For Bill of Reinforcing Steel
See Dwg. No. 11163.

For Elevations See Dwg. No. 11163.

NOTE: For Std. End Bent Notes
See Dwg. No. 11163.



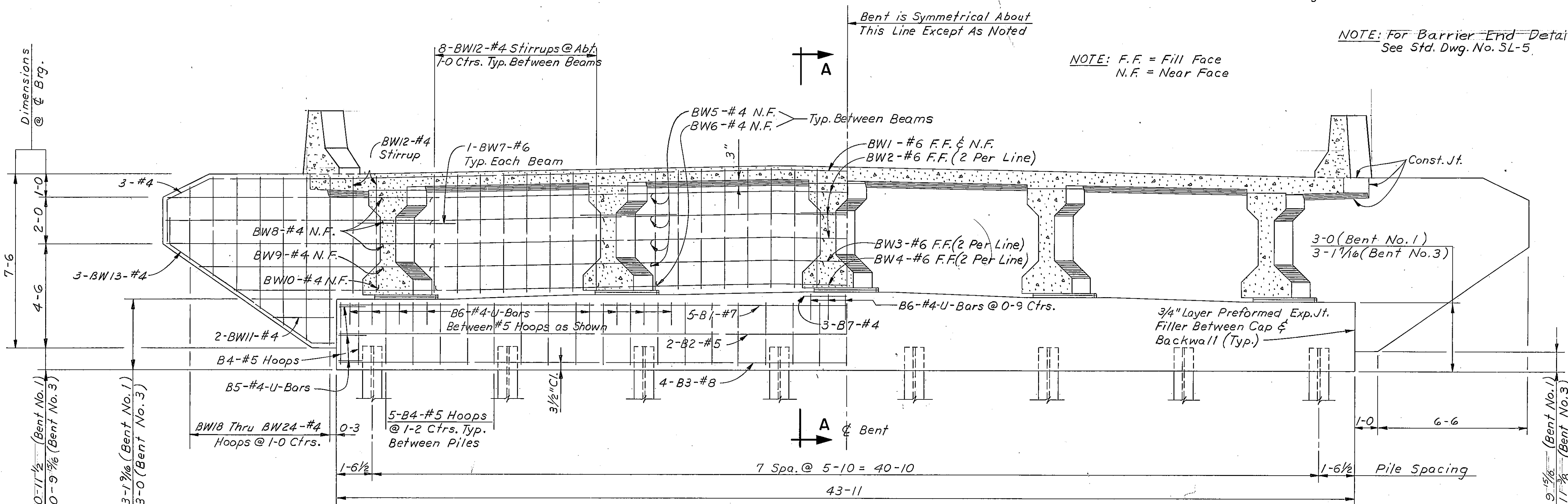
PLAN

For Section B-B
See Dwg. No. 11163

NOTE: For Barrier End Details
See Std. Dwg. No. SL-5.

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

Bent is Symmetrical About
This Line Except As Noted



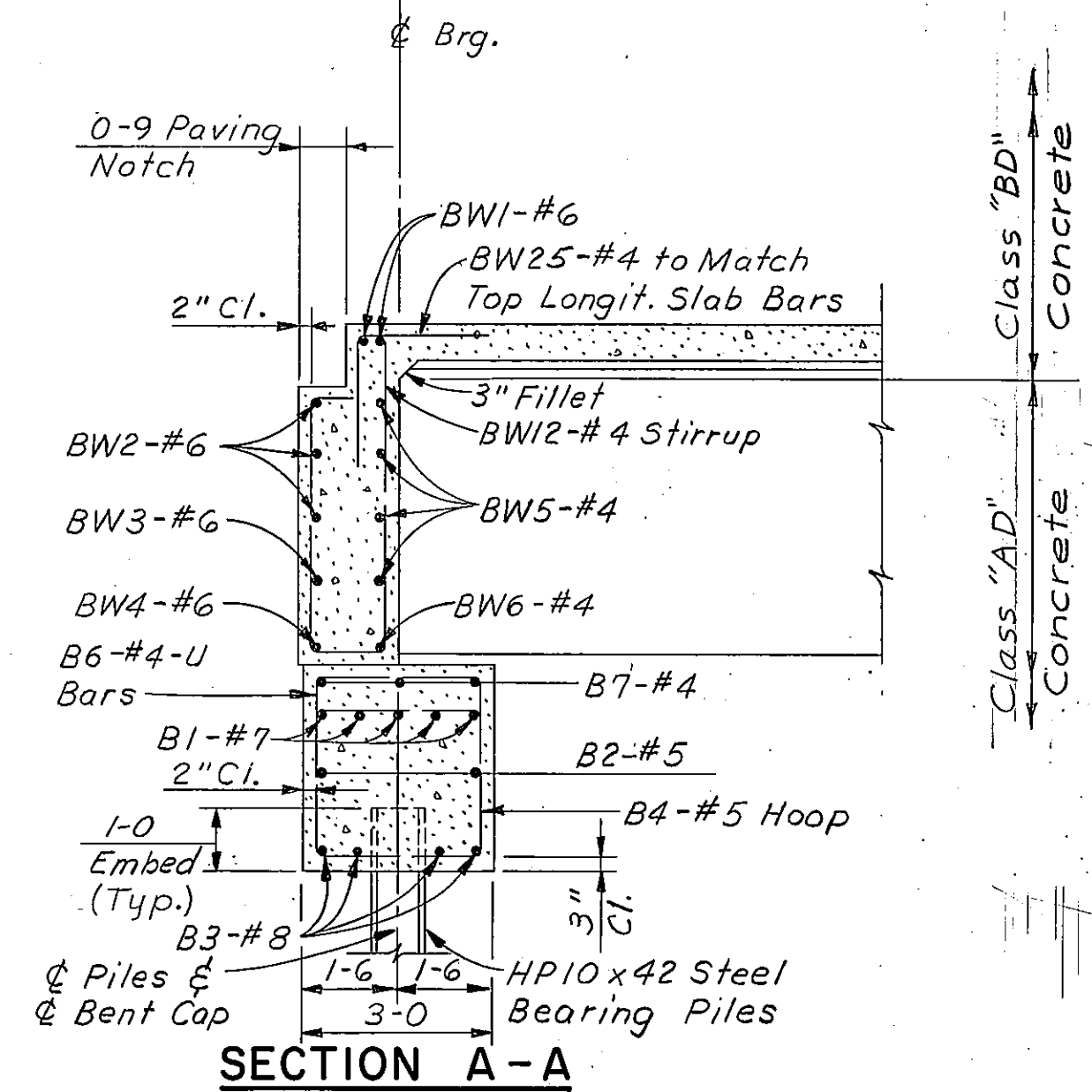
ELEVATION

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

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

NOTE: Maximum Pile Pressure Under:
D.L. + L.L. = 43.2 Tons/Pile.

Estimated Pile Length = 38'-0" (Bent No. 1)
34'-0" (Bent No. 3)



SECTION A-A

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
BENTS NO. 1 & NO. 3 - W.B. RDWY.

SCALE: 3/8" = 1'-0"

DRAWING NO. 11162

DESIGNED	JFS	10-13-72
DRAWN	DLK	11-3-72
CHECKED	RDR	11-27-72
APPROVED		
REVISED		

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	
B1	#7	5	43'-7"	B4	#5	39	1	11'-5"	2'-8"	2'-7"	0'-5 1/2"			
B2	5	2	43'-7"	B5	4	6	2	4'-7"	2'-7"	1'-0"				
B3	8	4	43'-7"	B6	4	21	2	4'-8"	2'-8"	1'-0"				
B7	4	3	3'-2"											
BW1	6	2	45'-8"	BW12	4	36	4	10'-10"	1'-3"	5'-0"	4'-0"	0'-3 1/2"		
BW2	6	6	30'-0"	BW13	4	6	5	9'-3"	7'-5"	1'-0"	0'-10"	0'-11"	0'-6"	
BW3	6	2	28'-6"	BW14	4	2	5	10'-0"	2'-1"	1'-9"	6'-2"	1'-7"	2'-8 1/2"	
BW4	6	2	27'-1"	BW15	4	1	5	10'-3"	2'-1"	1'-9"	6'-5"	1'-7"	2'-10"	
BW5	4	16	7'-5"	BW16	4	2	5	9'-11"	2'-1"	1'-9"	6'-1"	1'-7"	2'-8"	
BW6	4	4	7'-0"	BW17	4	1	5	9'-8"	2'-1"	1'-9"	5'-10"	1'-7"	2'-6"	
BW7	6	5	5'-4"	BW18	4	2	1	9'-7"	1'-3"	3'-2"	0'-4 1/2"			
BW8	4	6	9'-0"	BW19	4	2	1	11'-5"	1'-3"	4'-1"	0'-4 1/2"			
BW9	4	2	7'-6"	BW20	4	2	1	12'-9"	1'-3"	4'-9"	0'-4 1/2"			
BW10	4	2	6'-0"	BW21	4	2	1	14'-3"	1'-3"	5'-6"	0'-4 1/2"			
BW11	#4	4	2'-6"	BW22	4	2	1	15'-7"	1'-3"	6'-2"	0'-4 1/2"			
				BW23	4	2	1	17'-1"	1'-3"	6'-11"	0'-4 1/2"			
				BW24	4	2	1	17'-7"	1'-3"	7'-2"	0'-4 1/2"			
				BW25	#4	31	3	4'-0"	2'-0"	2'-0"				
*DI	1/4" Sm	5	3'-6"											

*DI-1/4" Smooth Bars Shall Conform To A.S.T.M. A36 Steel.

NOTES

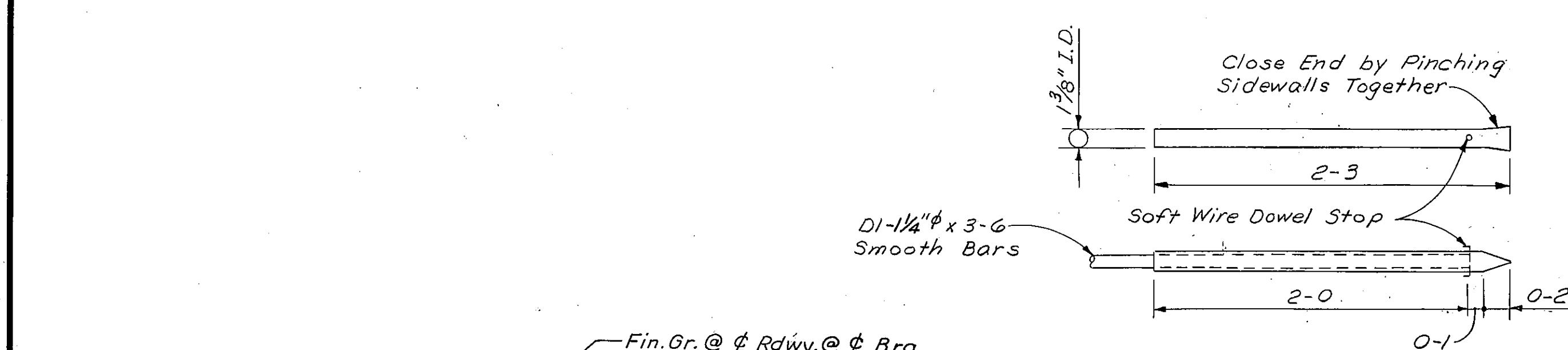
- Cost of Furnishing and Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop and Metal Expansion Caps to be Included in the Unit Price Bid for Class AD Concrete.
- Beam Seat Areas Shall be Finished Level to the Elevations Shown. The Area Between Beam Seats to be Sloped Uniformly As Required.
- For Slab and Beam Reinforcing Steel See Std. Dwg. No. B-4 and SL-5 and Dwg. No. 11165.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
MISCELLANEOUS BENT
DETAILS - W.B. RDWY.

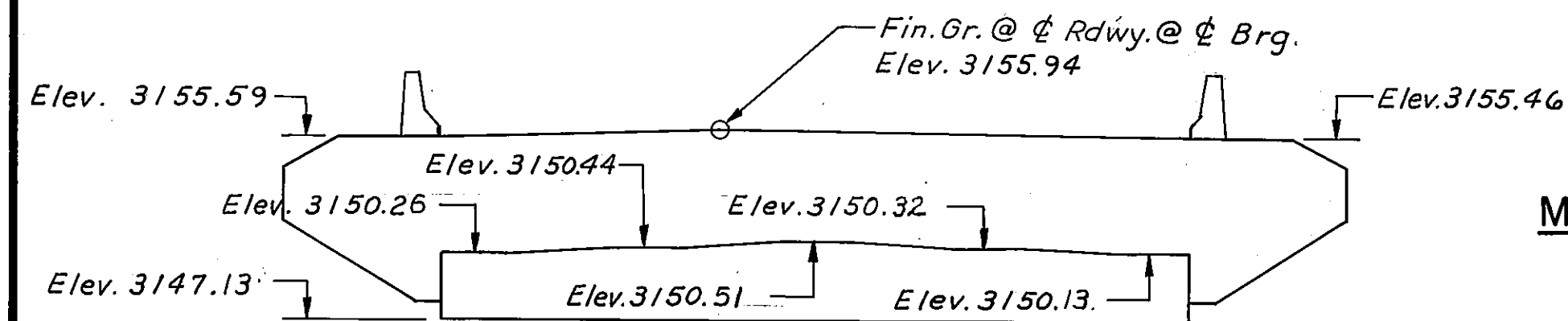
DESIGNED	J.F.S.	10-13-72
DRAWN	J.R.H.	4-4-72
CHECKED	R.D.R.	11-27-72
APPROVED		
REVISED		
REVISED		

SCALE: AS NOTED

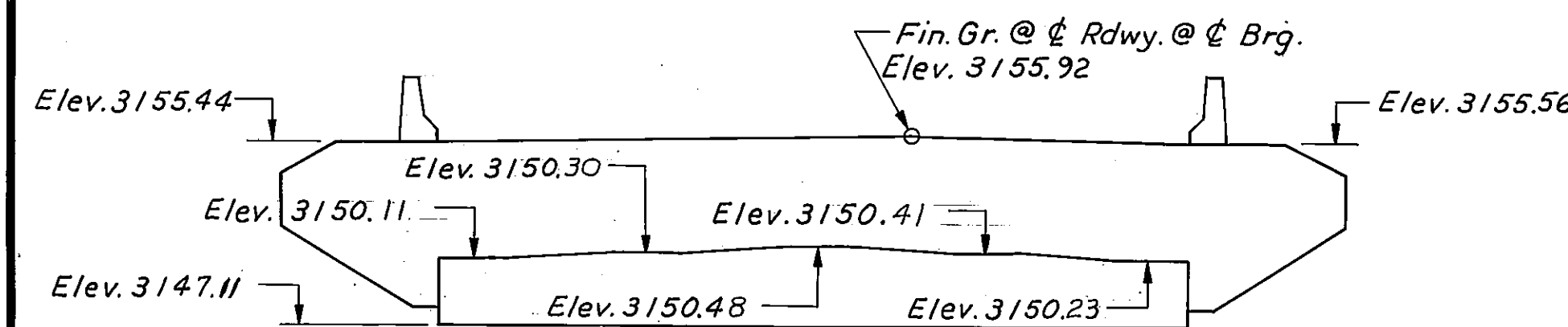
DRAWING NO. 11163



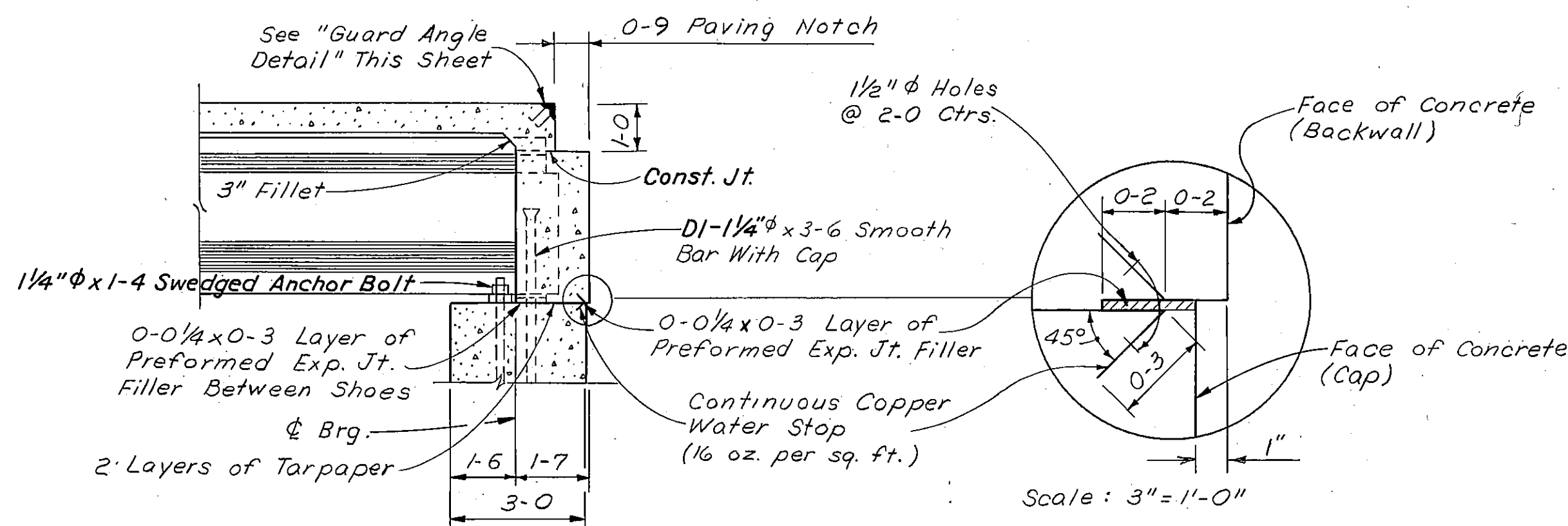
No. 30 Gage Metal
(5 Required Bent No. 1)
(5 Required Bent No. 3)
METAL EXPANSION CAP
Scale: 1/2" = 1'-0"



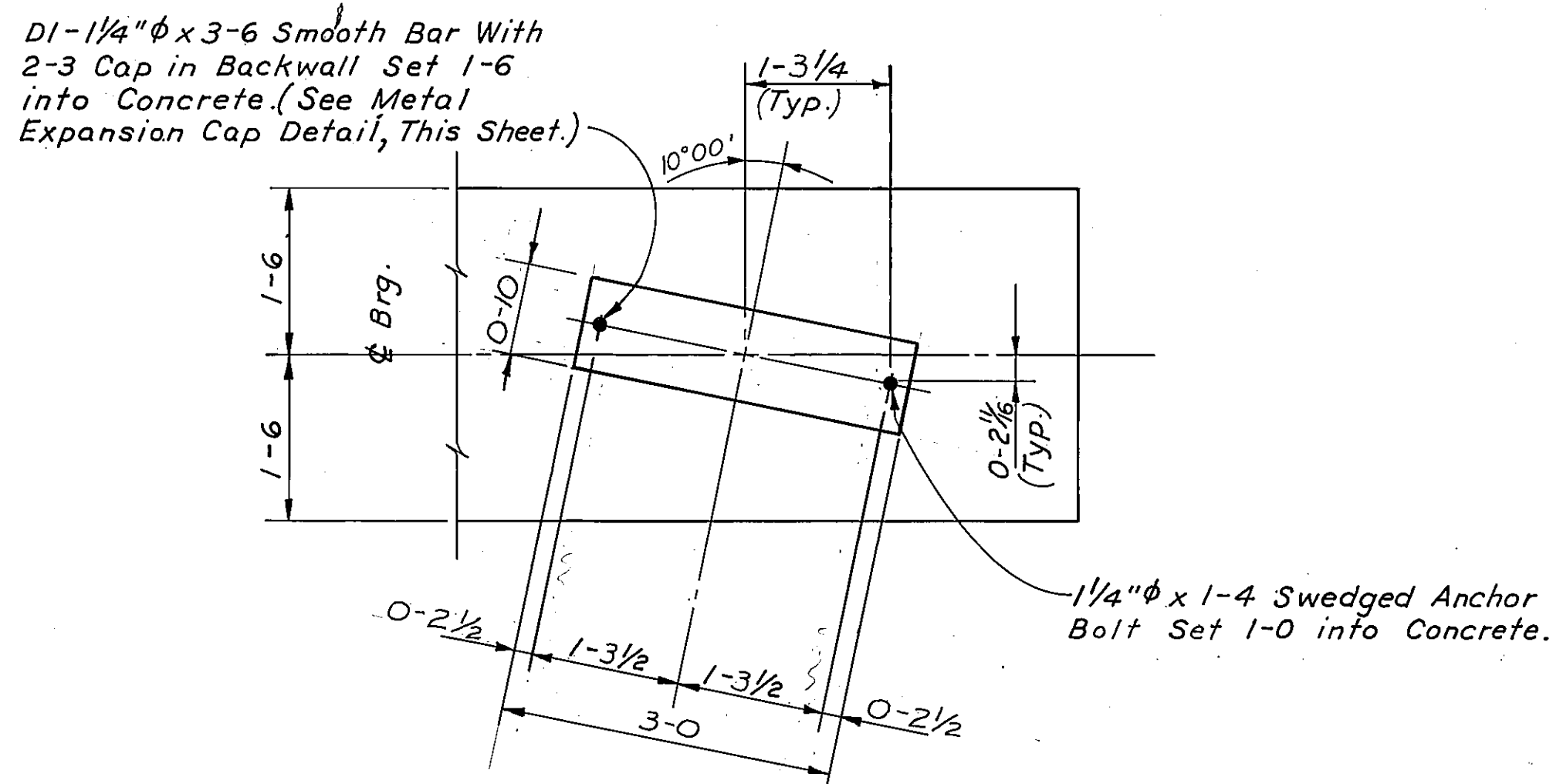
BENT NO. 1
(Back on Line)
(No Scale)



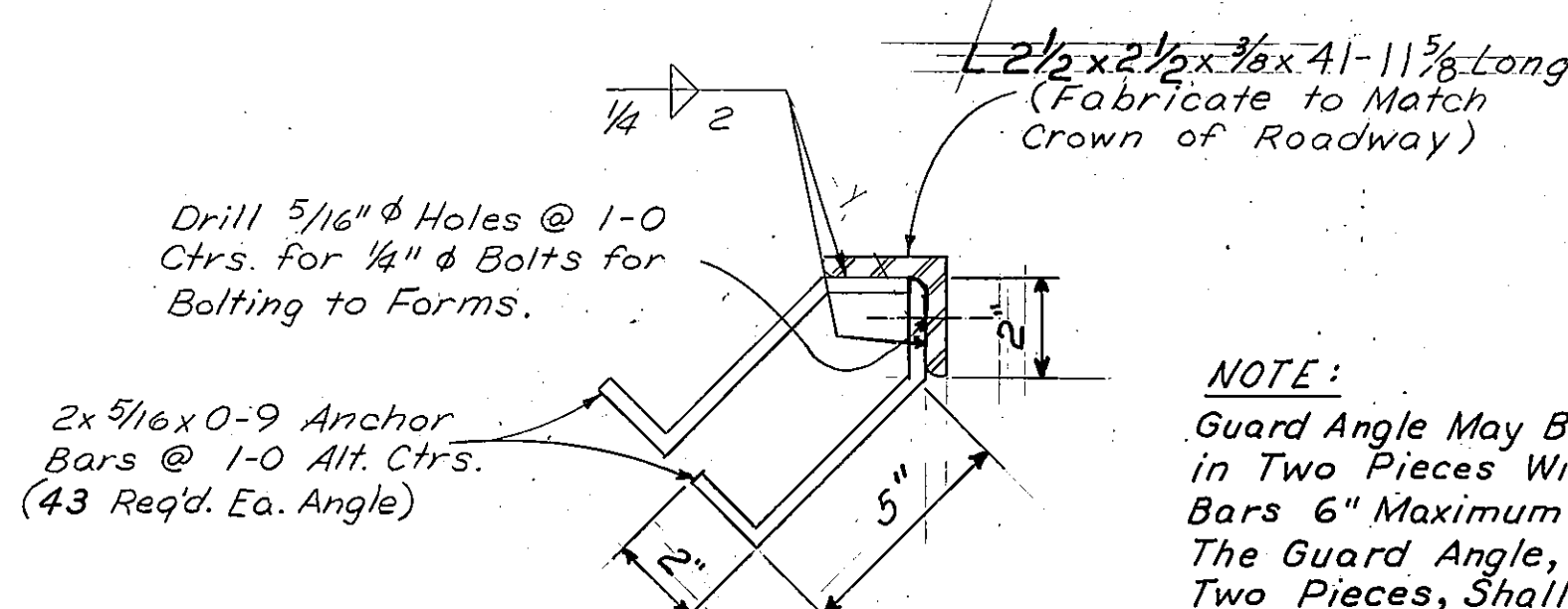
BENT NO. 3
(Ahead on Line)
(No Scale)



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



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

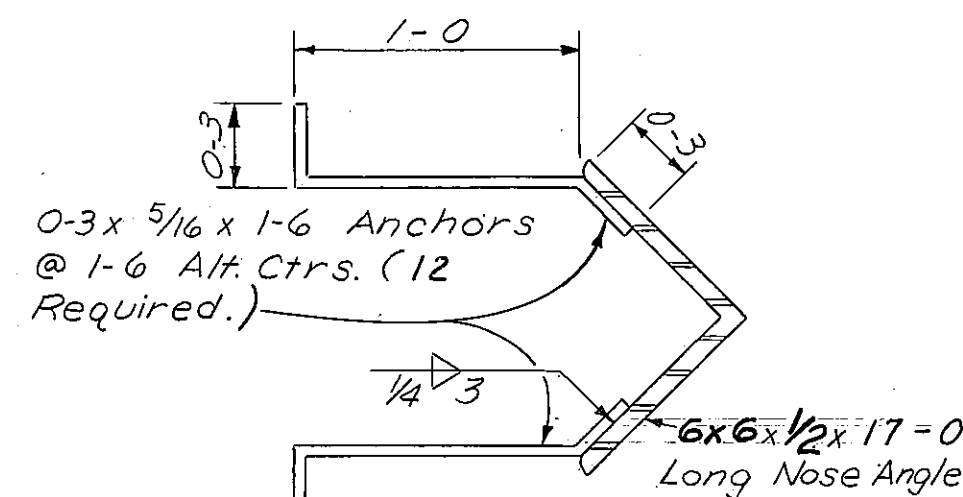


GUARD ANGLE DETAIL
Scale: 3" = 1'-0"

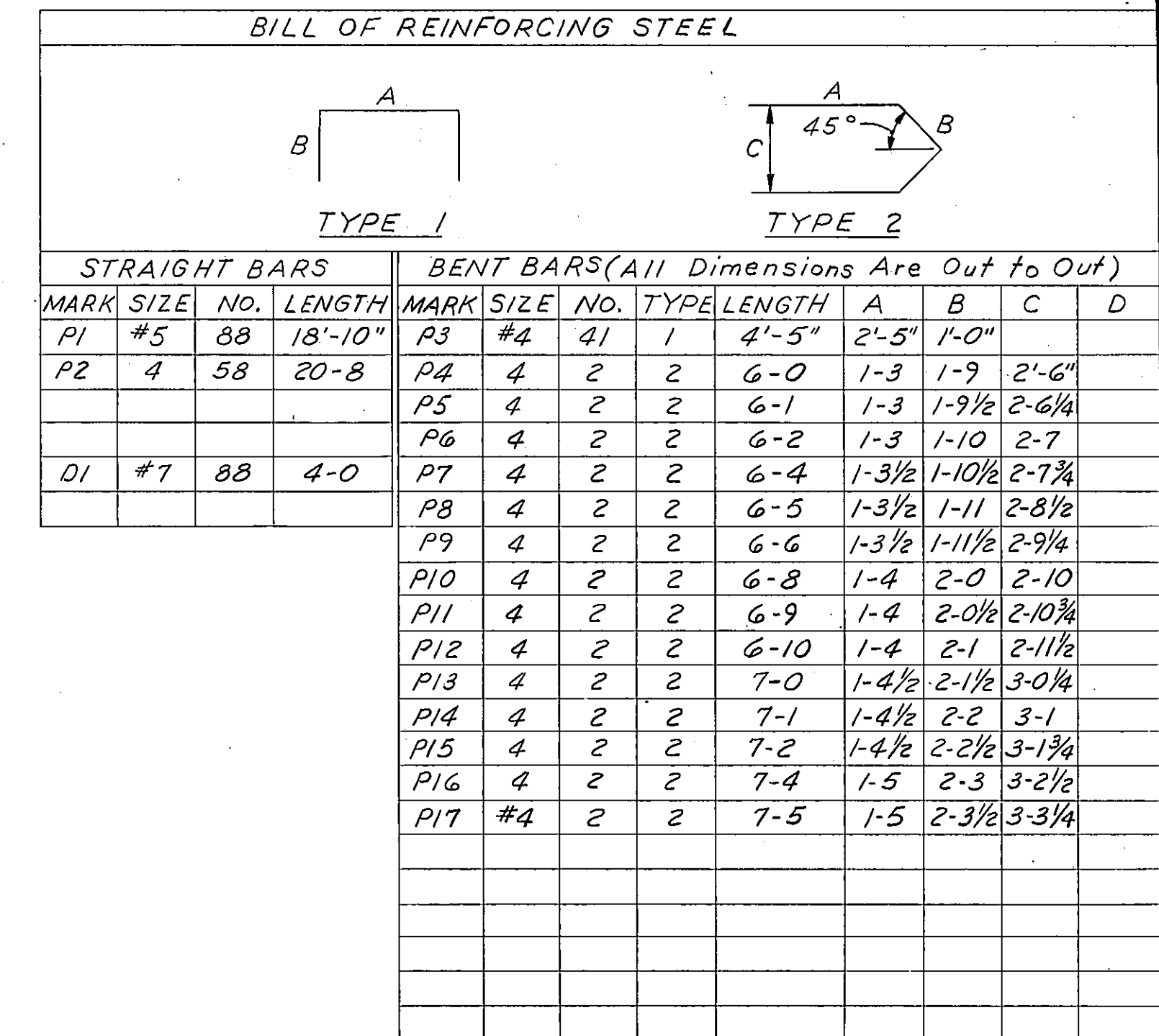
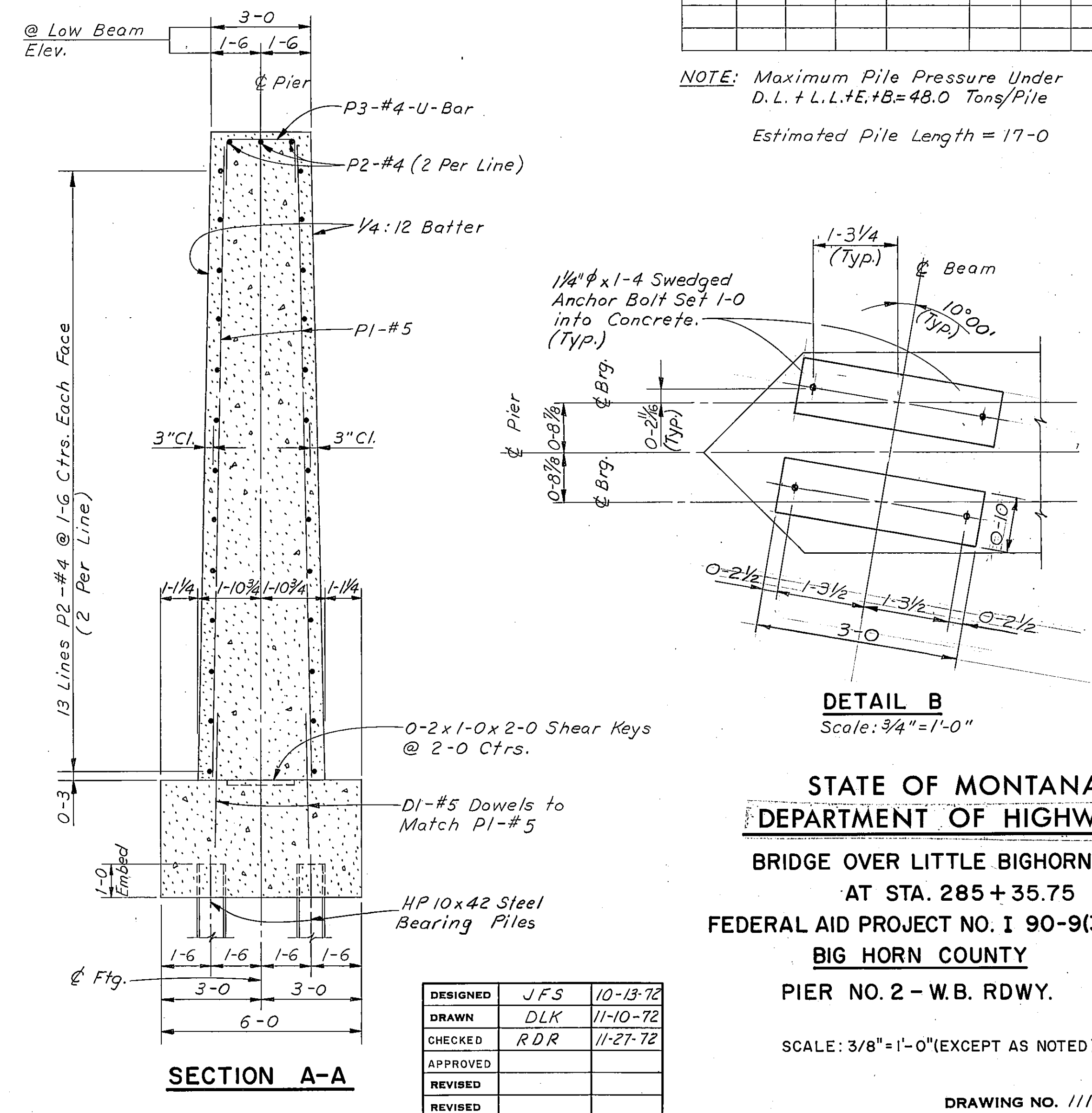
NOTE:

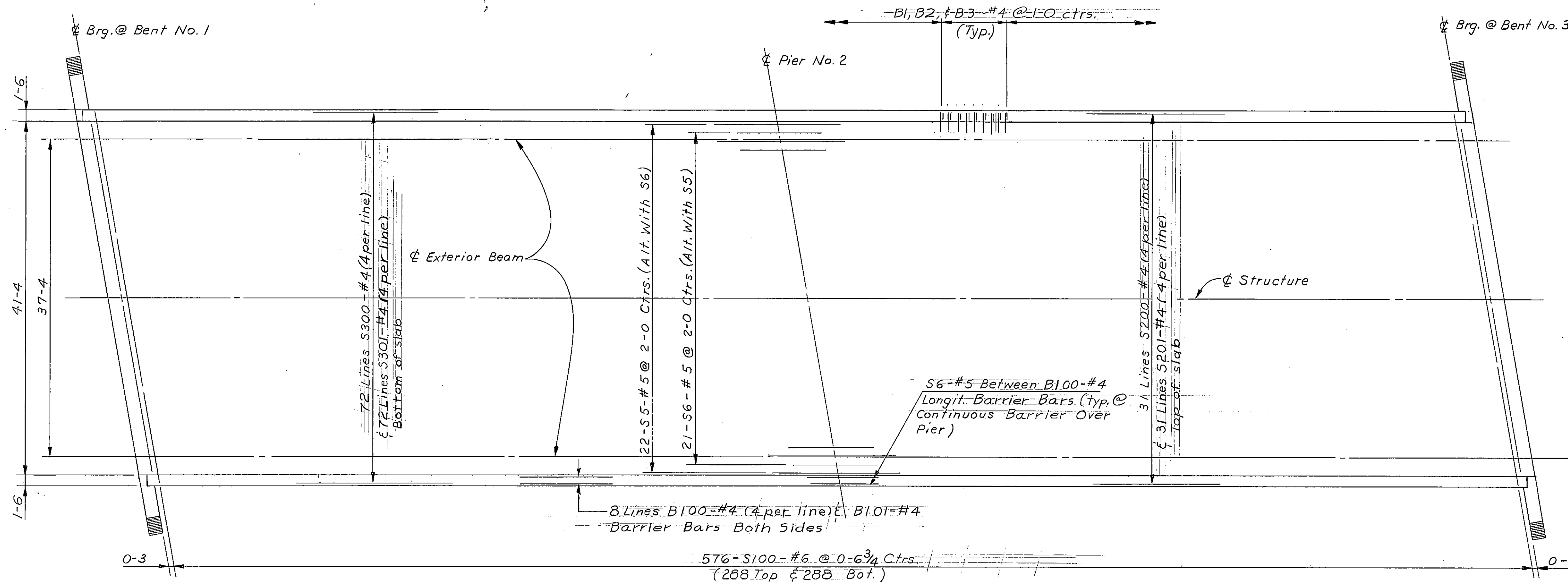
Guard Angle May Be Furnished in Two Pieces With End Anchor Bars 6" Maximum From Each End. The Guard Angle, if Furnished in Two Pieces, Shall Be Field Welded and Held Securely in Position While Concrete is Placed.

NOTE: Pier Nose Angles Shall Be Paid For As Structural Steel. One (1) Shop Coat And Two (2) Field Coats Of Paint As Specified For Structural Steel Shall Be Applied To Exposed Surfaces Of Nose Angles Before Erection.



NOSE ANGLE DETAIL
Scale: 1/2" = 1'-0"

[illegible]



REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8" = 1'-0"

BILL OF REINFORCING STEEL

TYPE 1

TYPE 2

TYPE 3

TYPE 4

TYPE 5

BENT BARS (All Dimensions Are Out to Out)

STRAIGHT BARS

MARK	SIZE	NO.	TYPE	LENGTH	A	B	C
B1	#4	326	1	5'-1"	2'-4"	0'-5"	0'-9"
B2	#4	326	5	4'-6"	2'-9"	1'-9"	2'-5"
B3	#4	326	4	3'-0"	1'-10"	1'-2"	
D4	#4	64	2	4'-8"	0'-7"	1'-9"	0'-3 1/2"
D7	#4	128	3	7'-10"	0'-7"	3'-4"	0'-3 1/2"

MARK	SIZE	NO.	LENGTH
S100	#6	576	44'-2"
S200	#4	124	40'-0"
S201	#4	31	18'-2"
S300	#4	288	40'-0"
S301	#4	72	8'-2"
S5	#5	22	15'-0"
S6	#5	25	10'-0"

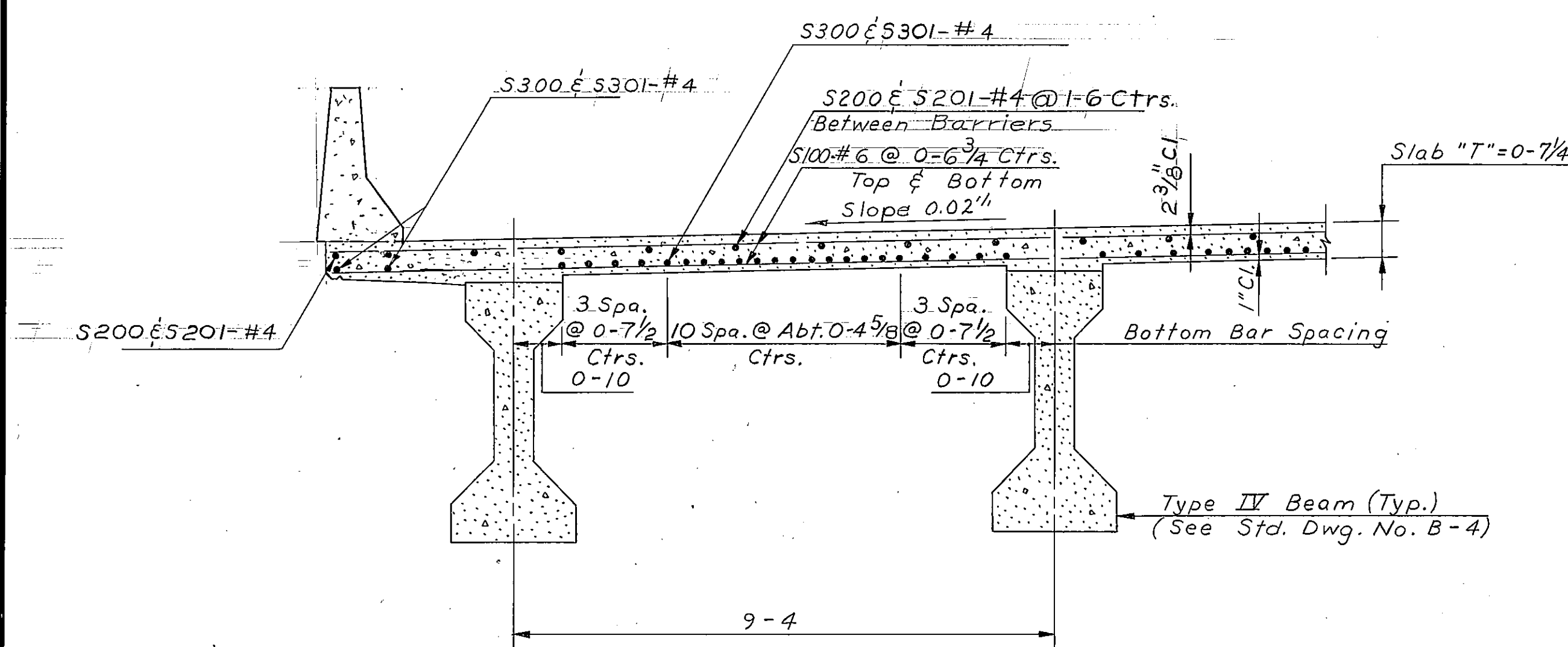
B100	#4	64	40'-0"
B101	#4	16	8'-0"

D3	#6	16	7'-6"
D5	#4	32	7'-6"
D6	#6	32	7'-6"
D8	#6	18	4'-6"

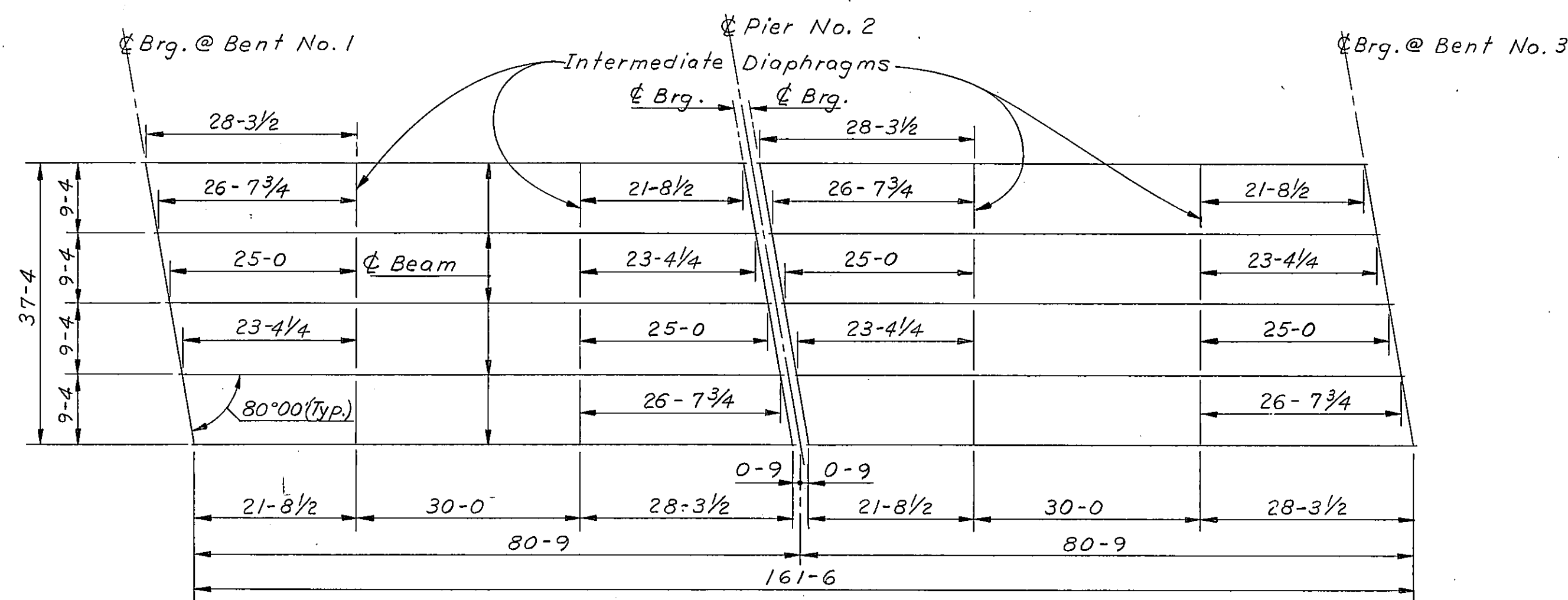
DL DEFLECTION TABLE

SPAN NO.	TENTH POINT				
	0.1	0.2	0.3	0.4	0.5
1 & 2	1/4	1/2	3/4	1 1/8	7/8

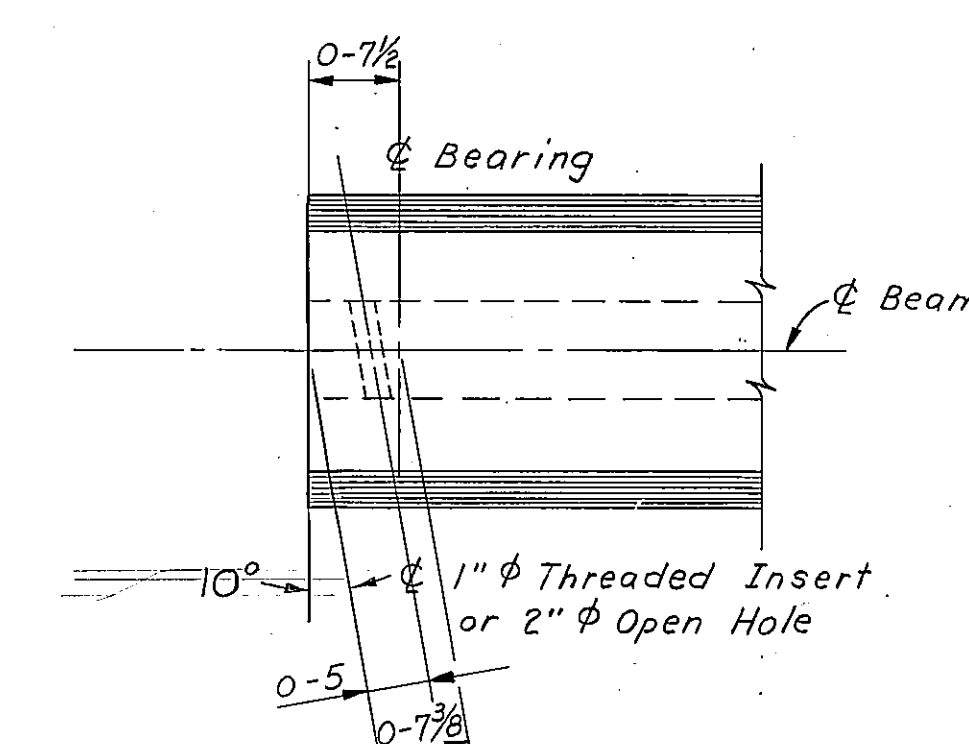
Deflections are symmetrical about C of span.



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



ERECTION PLAN
Scale: 1" = 15'-0"



MODIFIED BEAM END
Scale: 3/4" = 1'-0"

NOTE: For Additional Slab, Barrier, End Diaphragm, Intermediate Diaphragm, & Barrier End Details See Std. Dwg. No. SL-5.

NOTE: Lap all #4 bar 1'-4" minimum.

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated in Accordance With Std. Dwg. No. B-4 Except As Modified Hereon. Design Stresses (Before Prestress) Are As Follows:

Span No.	Beam Type	Beam Length Ctr. to Ctr. Brgs.	D.L. Beam Stress		D.L. + L.L. + I. Stress		Ultimate Design Moment 1.5 D.L. + 2.5 (L.L. + I.) Foot Kips
			f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	
1 & 2	IV	80-0	+886	-749	+2394	-2671	5256

Maximum f'c (Compressive Strength At 28 Days) For Design Shall Be 6000 P.S.I.

DESIGNED	JFS	10-13-72
DRAWN	DLK	11-13-72
CHECKED	RDR	11-27-72
APPROVED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

ERECTION PLAN AND
SLAB DETAILS - W. B. RDWY

SCALE: AS NOTED
DRAWING NO. 11165

Technical drawing of a bridge deck cross-section, showing dimensions, reinforcement, and materials. The drawing includes a north arrow pointing up and slightly to the right.

Dimensions (Top of Concrete Cap):

- Overall width: 48-9
- Left side segments: 8-8 ¹⁵/₁₆, 2-0, 6-8 ¹³/₁₆, 15-10 ¹⁵/₁₆, 31-9 ⁷/₈, 15-10 ¹⁵/₁₆, 8-2 ³/₁₆, 6-2 ³/₁₆, 2-0
- Right side segments: 8-2 ³/₁₆, 6-2 ³/₁₆, 2-0

Reinforcement and Materials:

- Guard Angle 2 1/2 x 2 1/2 x 3/8 x 31-9 7/8 Long (See Details, Dwg. No. 11167)
- 0-3 3/8
- 0-0 1/4 x 0-3 Layer of Preformed Exp. Jt. Filler And Continuous Copper Water Stop (See Detail, Dwg. No. 11167)
- 0-0 1/4 x 0-3 Layer of Preformed Expansion Joint Filler Between Shoes (Typ.)
- 2 Layers of Tarpaper
- Bent
- Rdwy. (Reinforcing Dowel)
- Rdwy. @ Brg. (Reinforcing Dowel at Bridge)
- 10°00' (Typ.)
- 10°00'
- 0-3 3/8
- Beam Spacing
- Step Spacing

Dimensions @ Top of Concrete Cap:

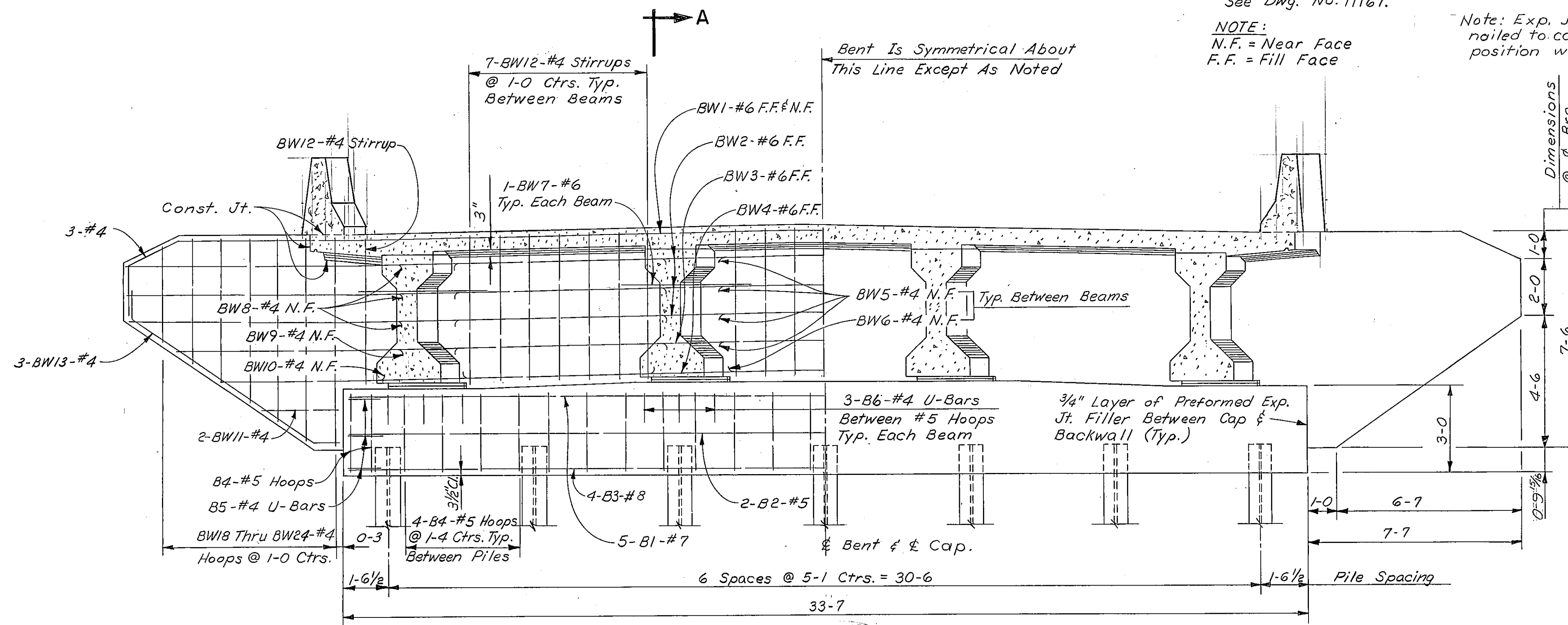
- Level: 4-11
- Slope: 5-3
- Level: 13-3
- Slope: 5-3
- Level: 4-11
- Beam Spacing: 2-11
- Step Spacing: 2-11
- Overall width: 33-7

Notes:

- See Detail A, Dwg. No. 11167
- Note: For Barri...


For Section B-B
See Dwg. No. 11167.

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



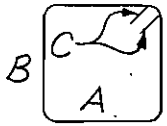
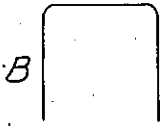
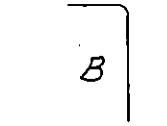
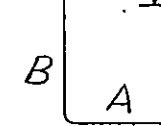
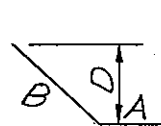
Hand-drawn cross-section diagram of a pile cap and pile connection. The diagram shows a central pile with various reinforcement bars (BW1-#6, BW2-#6, BW12-#4 stirrup, BW3-#6, BW4-#6, BW5-#4, BW6-#4, B1-#7, B2-#5, B3-#8, B4-#5 hoops) and dimensions (2" Cl., 3" Fillet, 1-0 Embed (Typ), 3" Cl., 1-6, 1-6, 3-0). The pile is labeled "Piles & Bent Cap" and the section is labeled "SECTION A-A".

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

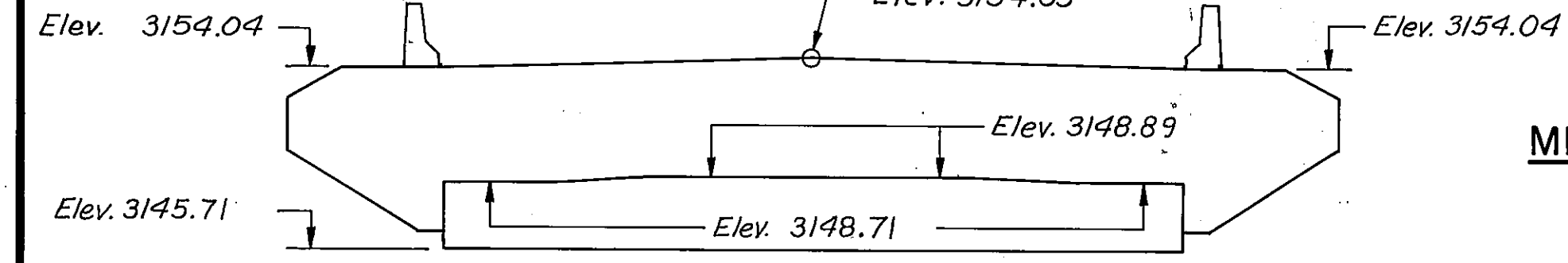
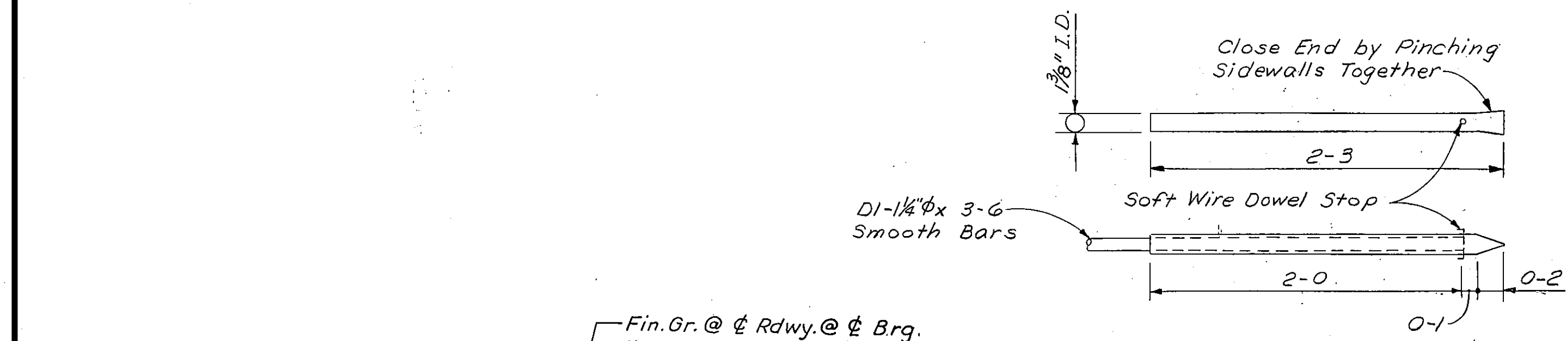
DRAWING NO. 11166

NOTE:
Maximum Pile Pressure Under:
D.L. + L. L. = 42.2 Tons Per Pile.
Estimated Pile Length = 35-0 (Bent No. 1)
31-0 (Bent No. 3)

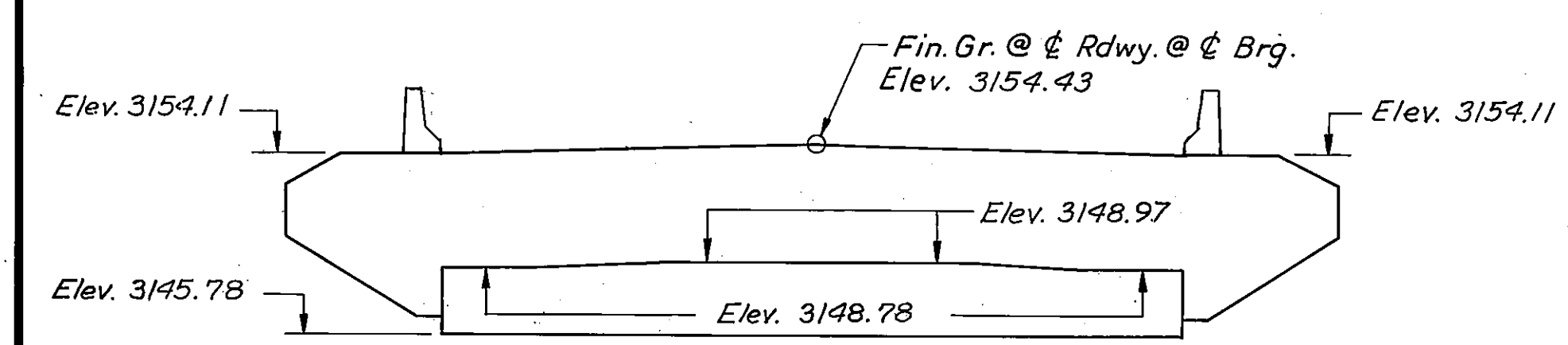
DESIGNED	<i>JFS</i>	<i>10-18-71</i>
DRAWN	<i>J.R.H.</i>	<i>11-7-71</i>
CHECKED	<i>RDR</i>	<i>11-28-71</i>
APPROVED		
REVISED		
REVISED		

BILL OF REINFORCING STEEL (One Bent Only)														
														
TYPE 1			TYPE 2			TYPE 3			TYPE 4			TYPE 5		
STRAIGHT BARS				BENT BARS (All Dimensions Are Out to Out)										
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D	E	
B1	#7	5	33'-3"	B4	#5	28	1	11'-5"	2'-8"	2'-7"	0'-5 1/2"			
B2	5	2	33'-3"	B5	4	6	2	4'-7"	2'-7"	1'-0"				
B3	8	4	33'-3"	B6	4	12	2	4'-8"	2'-8"	1'-0"				
BW1	6	2	35'-6"	BW12	4	23	4	10'-10"	1'-3"	5'-0"	4'-0"	0'-3 1/2"		
BW2	6	3	48'-5"	BW13	4	6	5	9'-3"	7'-5"	1'-0"	0'-10"	0'-9"	0'-6"	
BW3	6	1	45'-0"	BW14	4	2	5	10'-0"	2'-1"	1'-9"	6'-2"	1'-7"	2'-8 1/2"	
BW4	6	1	42'-0"	BW15	4	1	5	10'-3"	2'-1"	1'-9"	6'-5"	1'-7"	2'-10"	
BW5	4	12	7'-3"	BW16	4	2	5	9'-11"	2'-1"	1'-9"	6'-1"	1'-7"	2'-8"	
BW6	4	3	6'-9"	BW17	4	1	5	9'-8"	2'-1"	1'-9"	5'-10"	1'-7"	2'-6"	
BW7	6	4	5'-4"	BW18	4	2	1	9'-7"	1'-3"	3'-2"	0'-4 1/2"			
BW8	4	6	9'-0"	BW19	4	2	1	11'-5"	1'-3"	4'-1"	0'-4 1/2"			
BW9	4	2	7'-6"	BW20	4	2	1	12'-9"	1'-3"	4'-9"	0'-4 1/2"			
BW10	4	2	6'-0"	BW21	4	2	1	14'-3"	1'-3"	5'-6"	0'-4 1/2"			
BW11	#4	4	2'-6"	BW22	4	2	1	15'-7"	1'-3"	6'-2"	0'-4 1/2"			
				BW23	4	2	1	17'-1"	1'-3"	6'-11"	0'-4 1/2"			
				BW24	4	2	1	17'-7"	1'-3"	7'-2"	0'-4 1/2"			
*D1	1/4" sm.	4	3'-6"	BW25	#4	24	3	4'-0"	2'-0"	2'-0"				

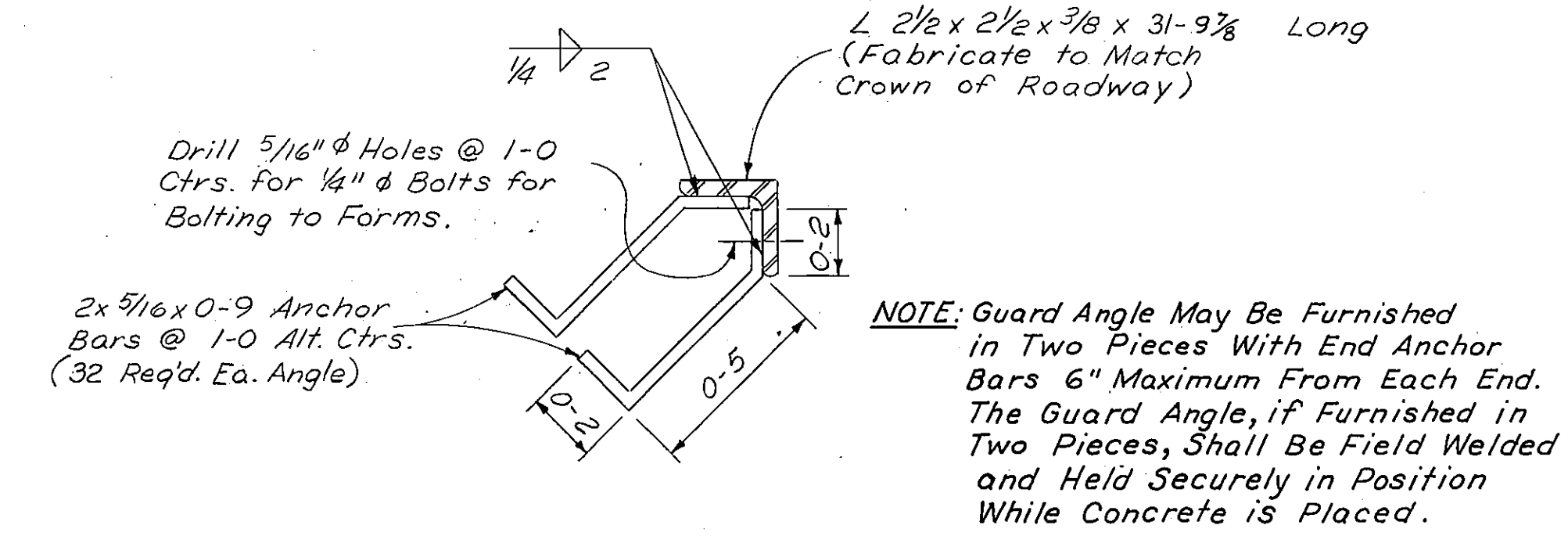
- * D1 1/4" Smooth Bars Shall Conform to A.S.T.M. A36 STEEL.
- NOTES**
- Cost of Furnishing and Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop and Metal Expansion Caps to be Included in the Unit Price Bid for Class AD Concrete.
 - Beam Seat Areas Shall be Finished Level to the Elevations Shown. The Area Between Beam Seats to be Sloped Uniformly As Required.
 - For Slab and Beam Reinforcing Steel See Std. Dwg. No. B-4 and SL-5 and Dwg. No. 11169.



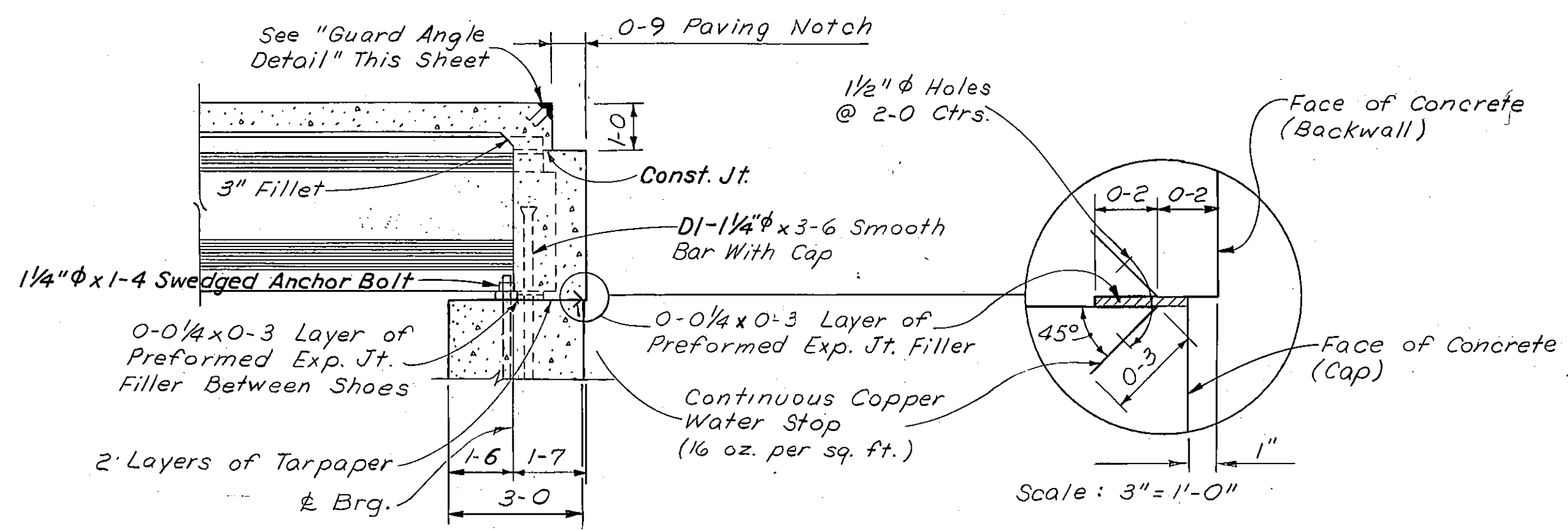
BENT NO. 1
(Back on Line)
(No Scale)



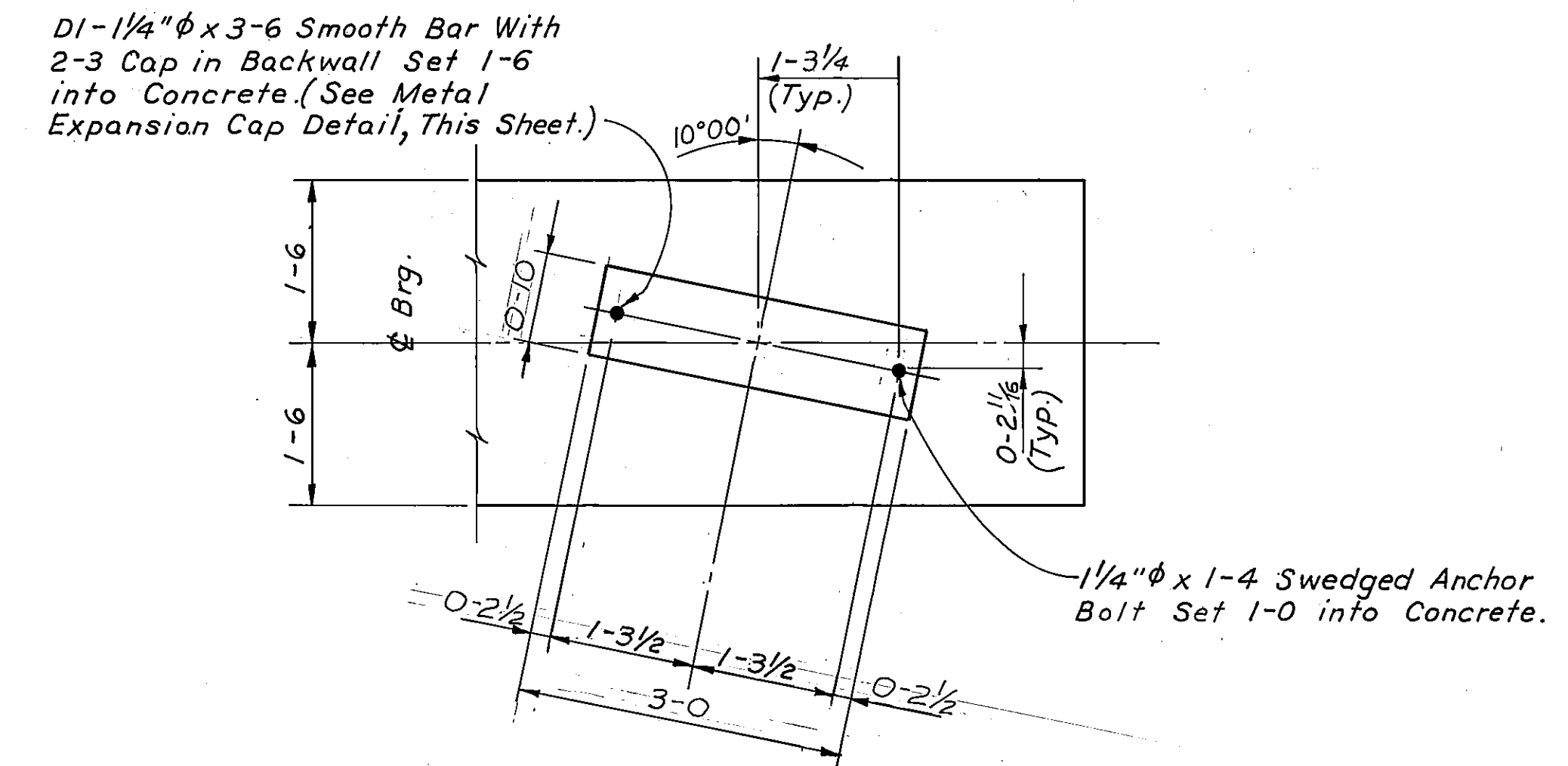
BENT NO. 3
(Ahead on Line)
(No Scale)



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

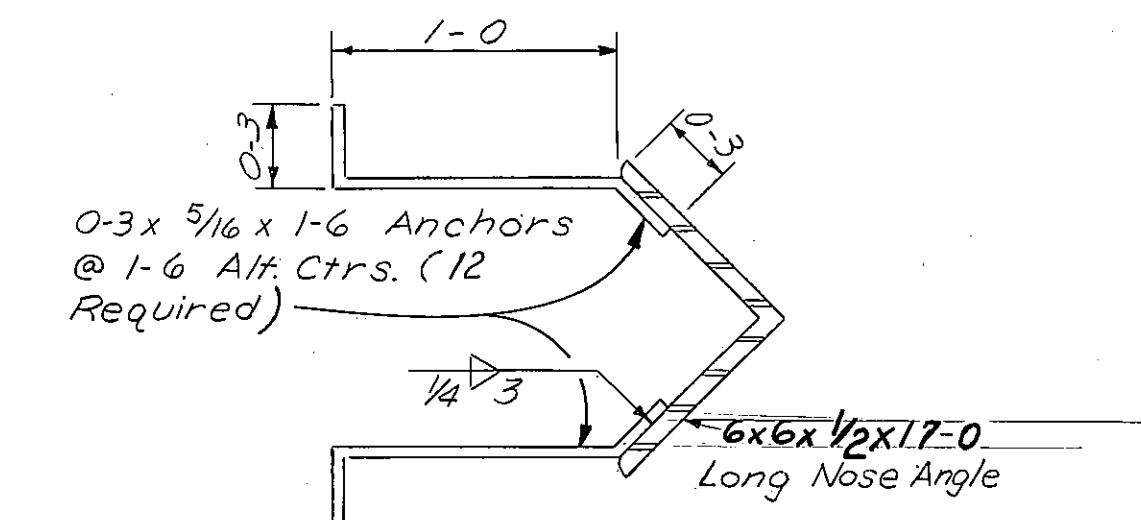


SECTION B-B
Scale: 3/8"=1'-0"



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

NOTE: Pier Nose Angles Shall Be Paid For As Structural Steel. One (1) Shop Coat And Two (2) Field Coats Of Paint As Specified For Structural Steel Shall Be Applied To Exposed Surfaces Of Nose Angles Before Erection.



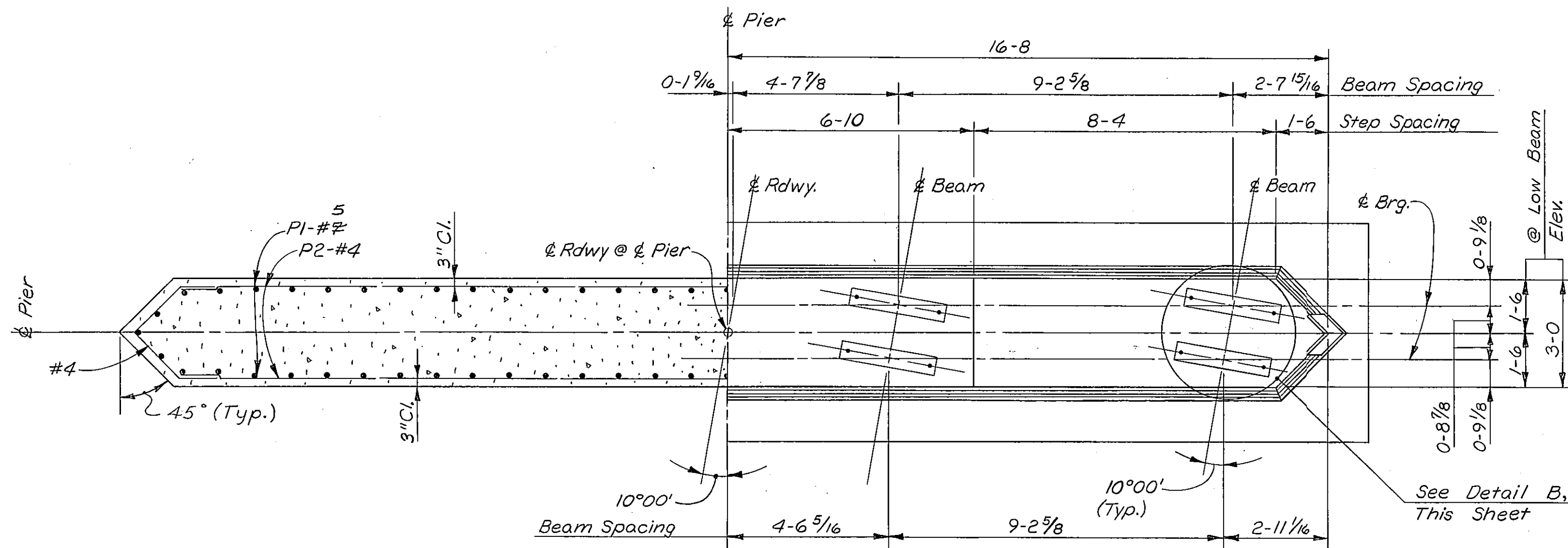
NOSE ANGLE DETAIL
Scale: 1/2"=1'-0"

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
MISCELLANEOUS BENT DETAILS -
WEST FRONTAGE ROAD

DESIGNED	JFS	10-18-72
DRAWN	J.R.H.	4-4-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		

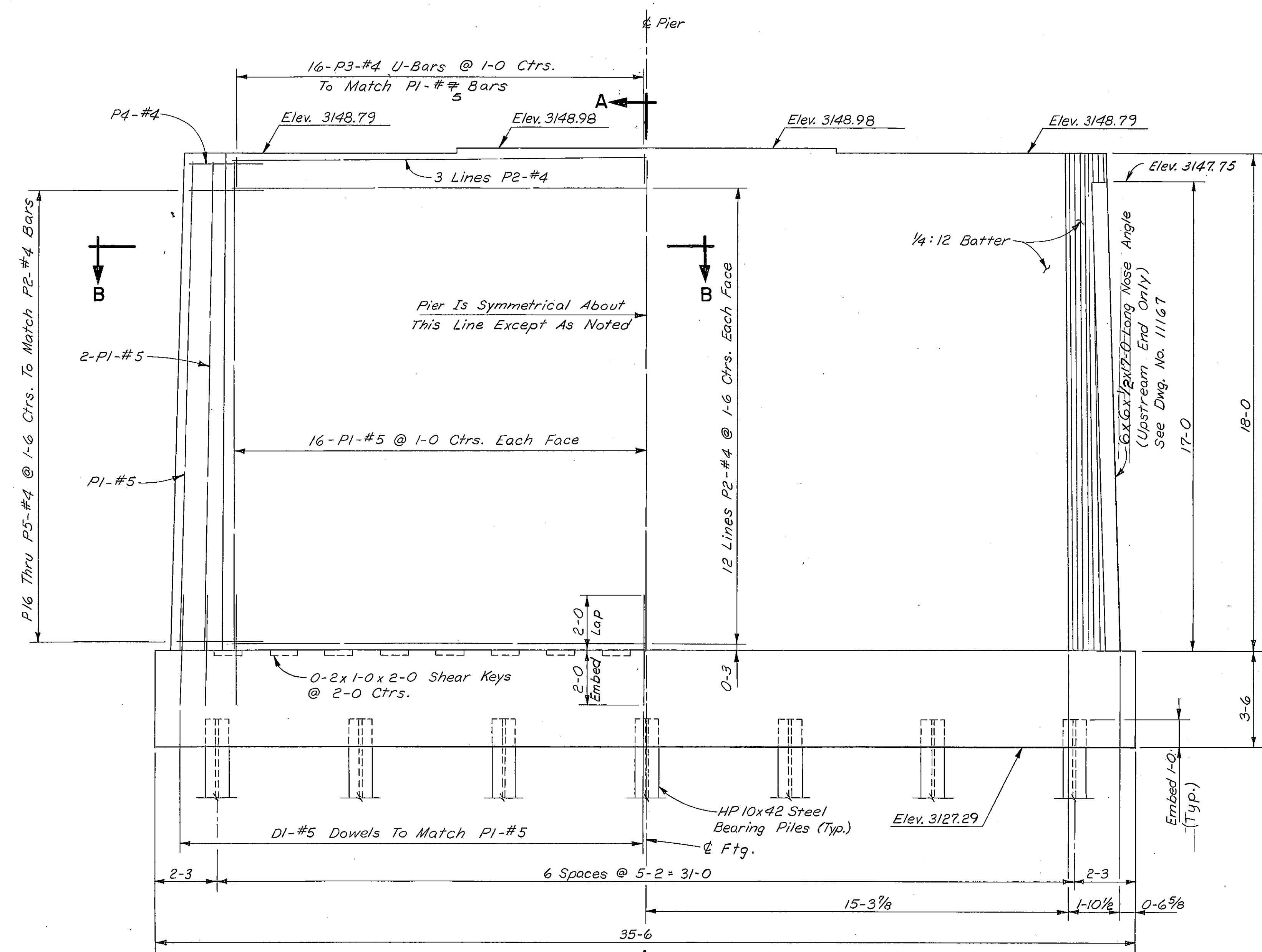
SCALE: AS NOTED

DRAWING NO. 11167



SECTION B-B

HALF PLAN



ELEVATION
(Ahead On Line)

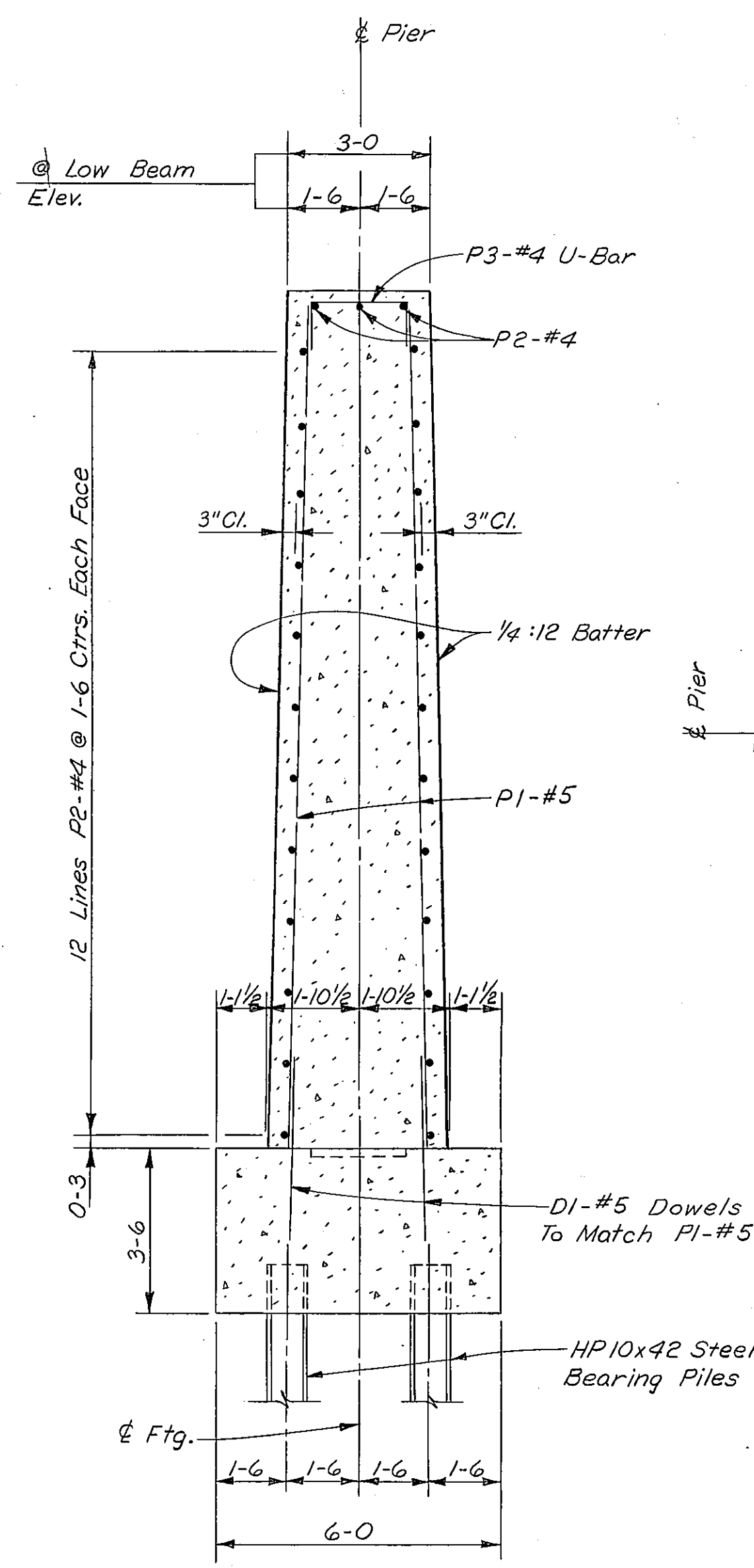
NOTE:
Maximum Pile Pressure Under:
D.L. + L.L. + E. + B. + L.F. + 3W + W.L. = 43.5 Tons/Pile
Estimated Pile Length = 15-0

BILL OF REINFORCING STEEL

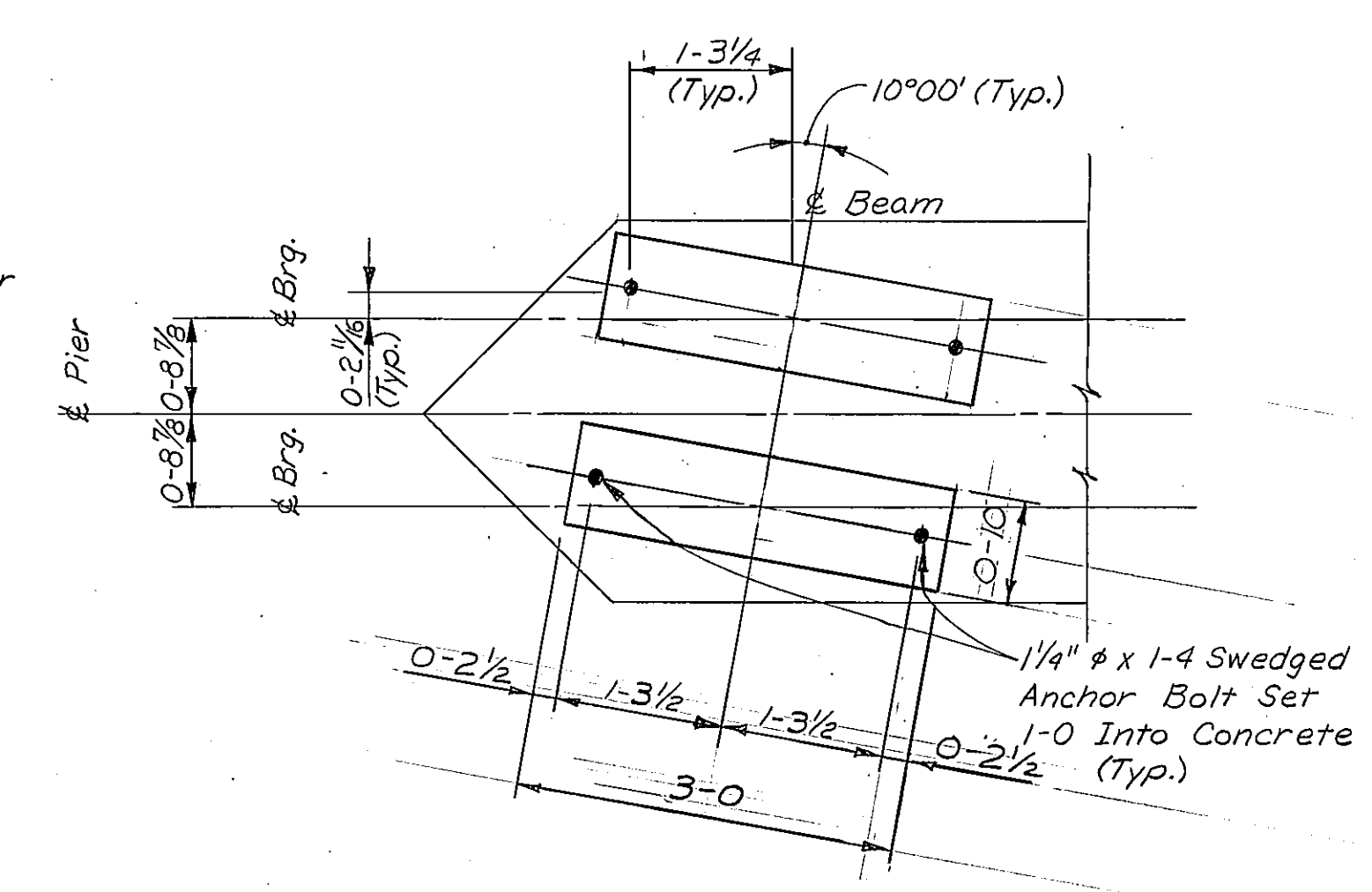
TYPE 1

TYPE 2

STRAIGHT BARS				BENT BARS(All Dimensions Are Out To Out)							
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	TYPE	LENGTH	A	B	C
P1	#5	68	17'-10"	P3	#4	31	1	4'-5"	2'-5"	1'-0"	
P2	4	27	30'-4"	P4	4	2	2	6'-0	1'-3	1'-9	2'-6"
				P5	4	2	2	6'-1	1'-3	1'-9½	2'-6½"
				P6	4	2	2	6'-2	1'-3	1'-10	2'-7¼"
D1	#5	68	4'-0	P7	4	2	2	6'-4	1'-3½	1'-10½	2'-8"
				P8	4	2	2	6'-5	1'-3½	1'-11	2'-8¾"
				P9	4	2	2	6'-6	1'-3½	1'-11½	2'-9½"
				P10	4	2	2	6'-8	1'-4	2'-0	2'-10¼"
				P11	4	2	2	6'-9	1'-4	2'-0½	2'-11"
				P12	4	2	2	6'-10	1'-4	2'-1	2'-11¾"
				P13	4	2	2	7'-0	1'-4½	2'-1½	3'-0½"
				P14	4	2	2	7'-1	1'-4½	2'-2	3'-1¼"
				P15	4	2	2	7'-2	1'-4½	2'-2½	3'-2"
				P16	#4	2	2	7'-4	1'-5	2'-3	3'-2¾"



SECTION A-A



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

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

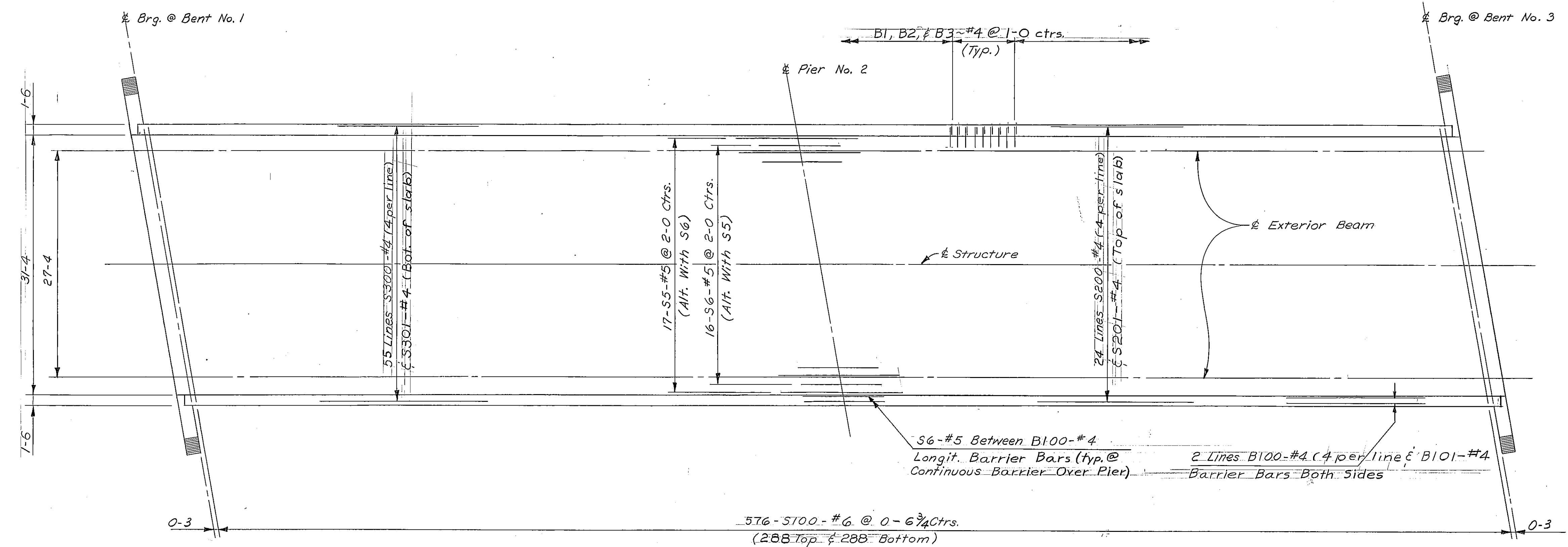
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
PIER NO. 2-
WEST FRONTAGE ROAD

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

DRAWING NO. 11168

DESIGNED	J.F.S.	10-18-72
DRAWN	J.R.H.	11-9-72
CHECKED	R.D.R.	11-28-72
APPROVED		
REVISED		
REVISED		

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
B	MONT.	190-9(33)516	10	35

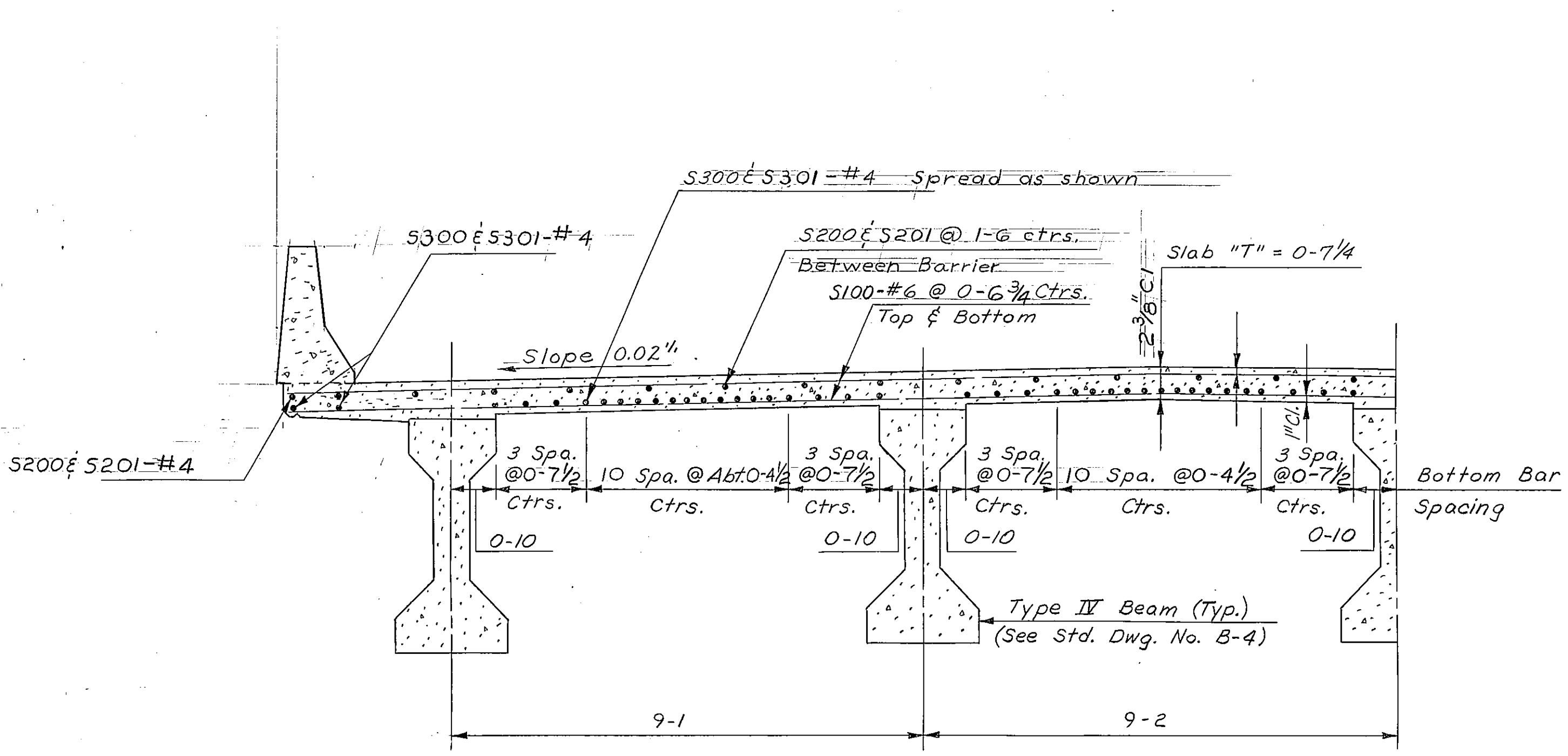


REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8" = 1'-0"

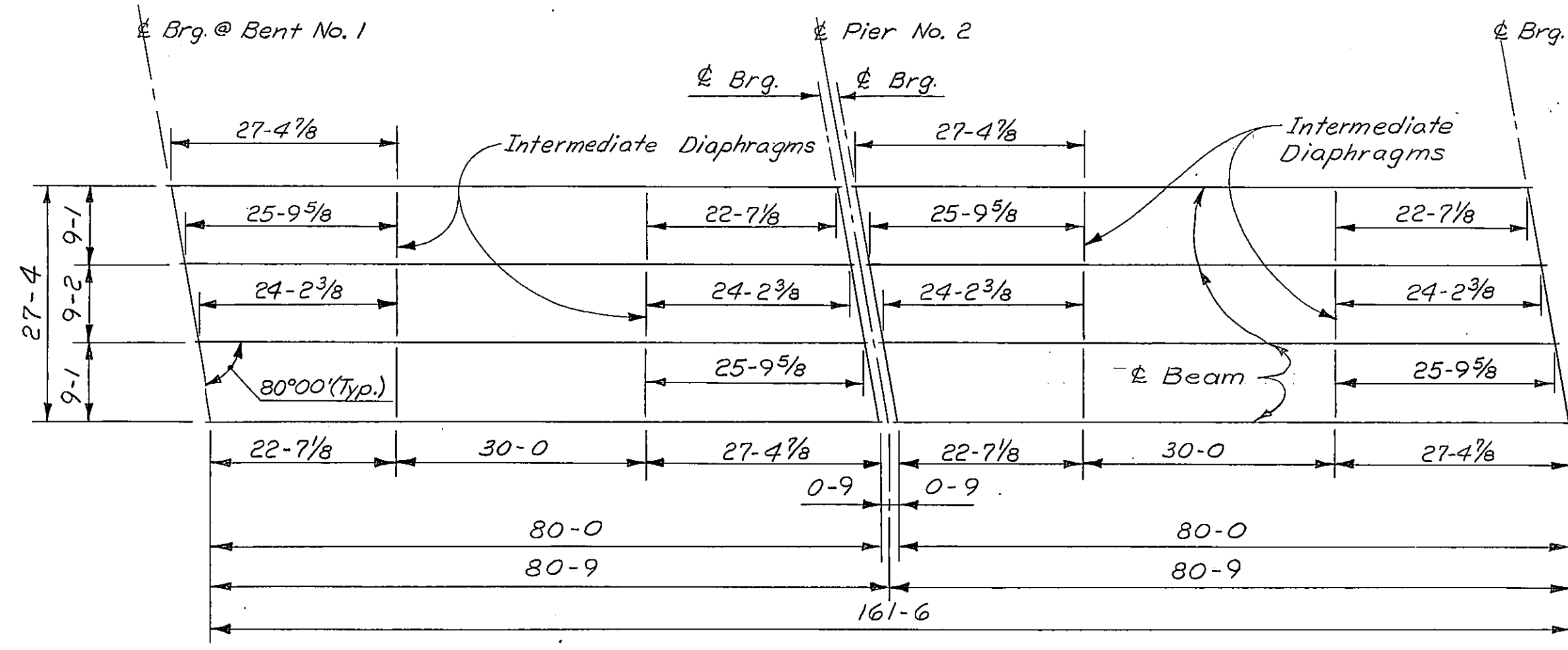
BILL OF REINFORCING STEEL

TYPE 1
TYPE 2
TYPE 3
TYPE 4
TYPE 5

BENT BARS (All Dimensions Are Out To Out)							
MARK	SIZE	NO.	TYPE	LENGTH	A	B	C
B1	#4	326	1	5'-1"	2'-4"	0'-5"	0'-9"
B2	#4	326	4	4'-6"	1'-9"	2'-9"	2'-5"
B3	#4	326	5	3'-0"	1'-10"	1'-2"	



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

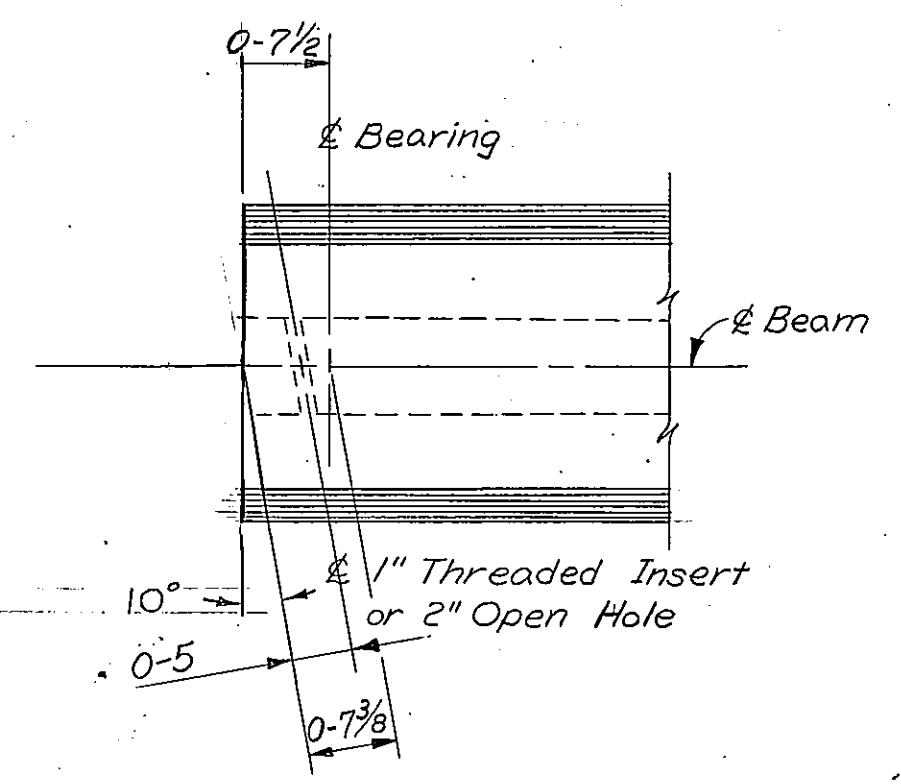


ERECTION PLAN
Scale: 1" = 15'-0"

DL DEFLECTION TABLE

SPAN NO.	TENTH POINT				
	0.1	0.2	0.3	0.4	0.5
1 & 2	1/4	1/2	1 1/6	1 3/6	7/8

Deflections are symmetrical about center span.



MODIFIED BEAM END
Scale: 3/4" = 1'-0"

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated In Accordance With Std. Dwg. No. B-4 Except As Modified Hereon. Design Stresses (Before Prestress) Are As Follows:

Span No.	Beam Type	Beam Length Ctr. to Ctr. Brgs.	D.L. Beam Stress		D.L. + L.L. + I. Stress		Ultimate Design Moment 1.5 D.L. + 2.5 (L.L. + I.) Foot Kips
			f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	f Top Comp. P.S.I.	f Bottom Ten. P.S.I.	
1 & 2	IV	80'-0"	+886	-749	+2367	-2642	5187

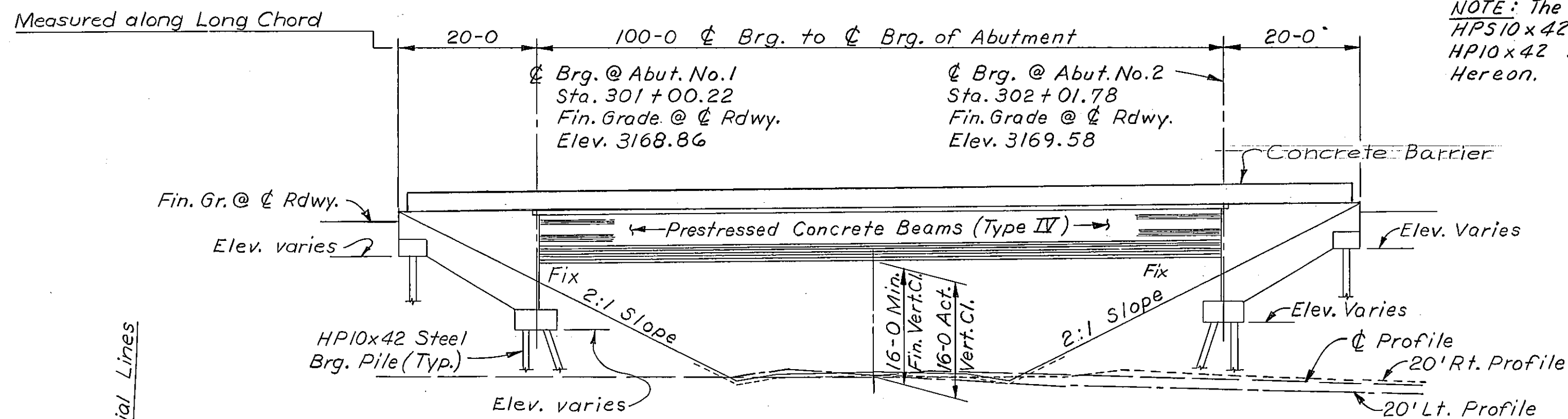
Maximum f'c (Compressive Strength At 28 Days) For Design Shall Be 6000 P.S.I.

Note: Lap #4 bars 1'-4 min.
NOTE: For Additional Slab, Barrier, End Diaphragm, Intermediate Diaphragm & Barrier End Details, See Std. Dwg. No. SL-5.

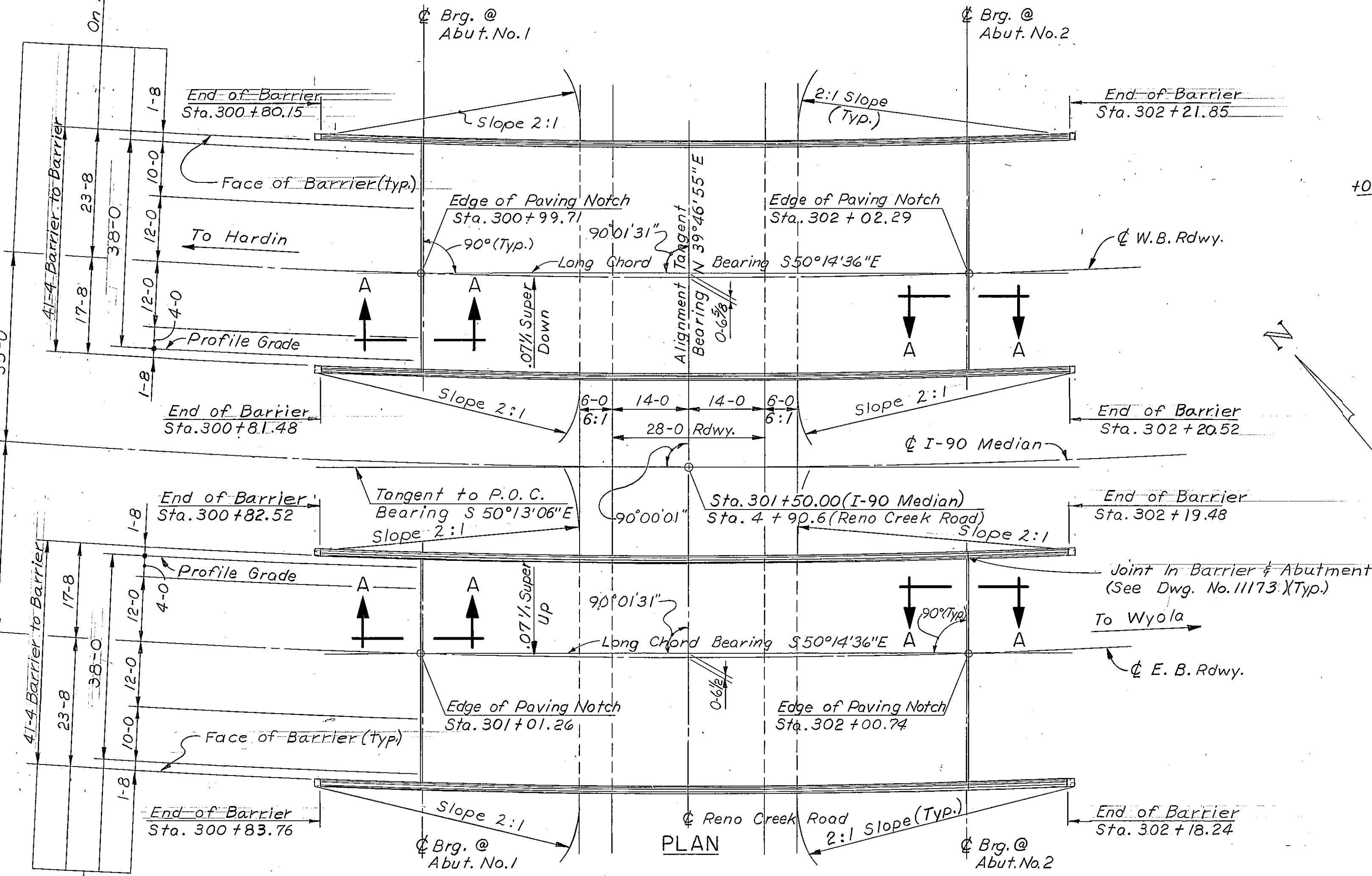
STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE OVER LITTLE BIGHORN RIVER
AT STA. 285+35.75
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ERECTION PLAN AND
SLAB DETAILS - WEST FRONTAGE ROAD
SCALE: AS NOTED
DRAWING NO. 11169

DESIGNED	JFS	10-18-72
DRAWN	J.R.H.	11-10-72
CHECKED	RDR	11-28-72
APPROVED		
REVISED		

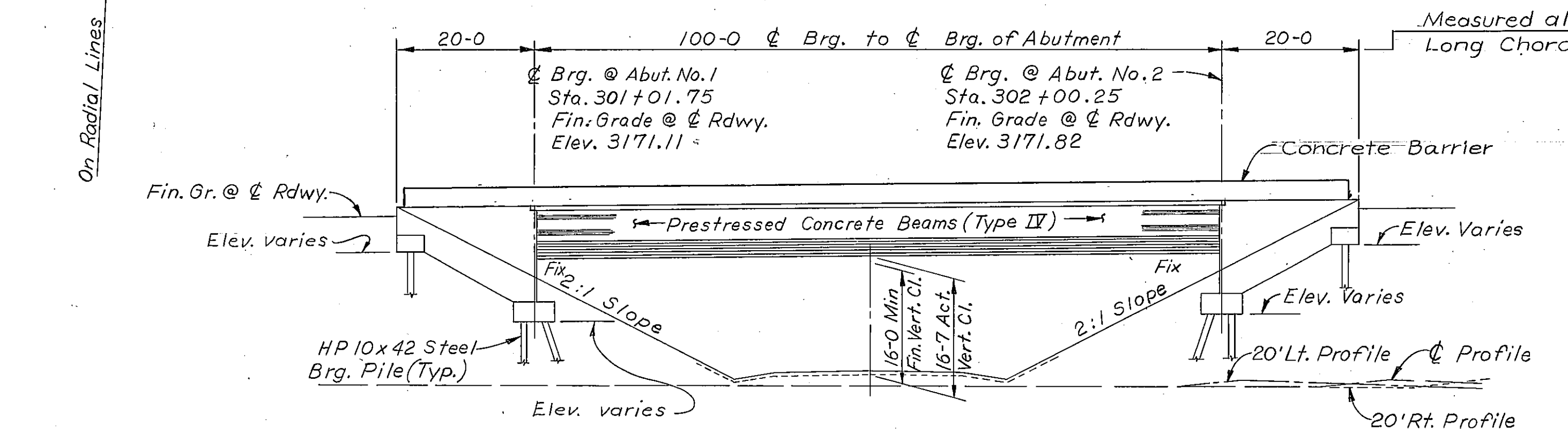
Measured along Long Chord



ELEVATION W. B. RDWY.

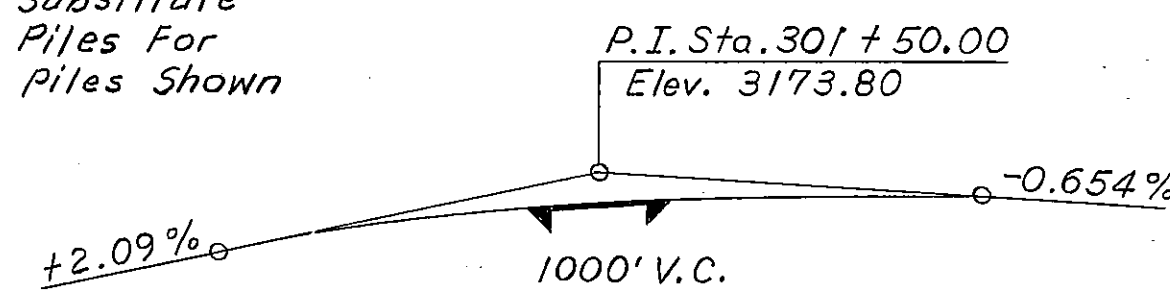


PLAN



ELEVATION E. B. RDWY.

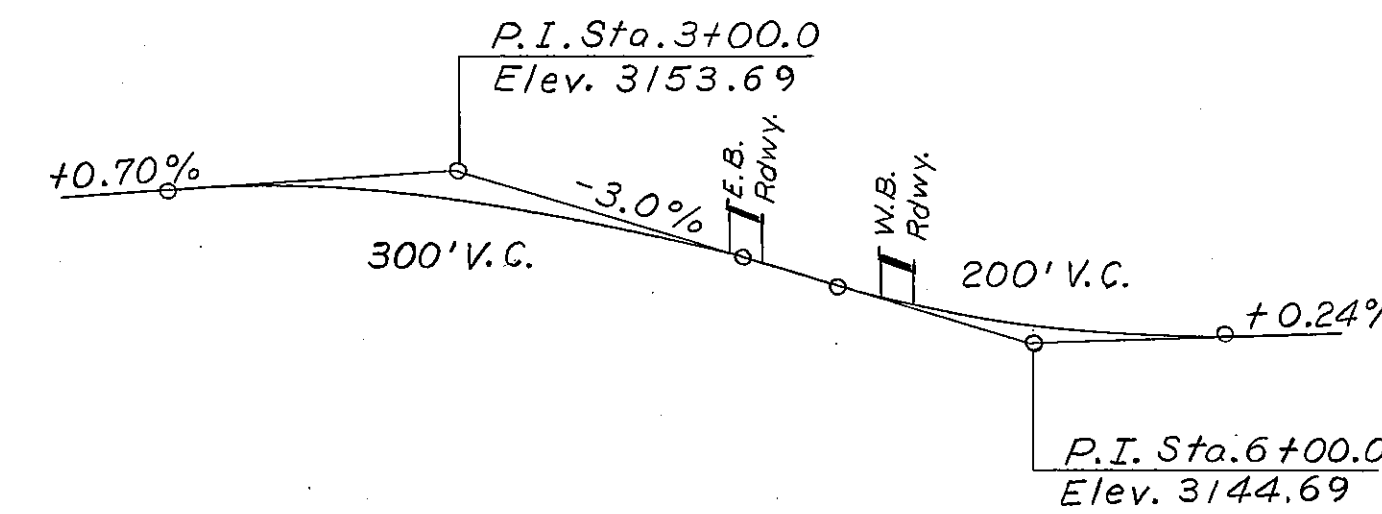
NOTE: The Contractor May Substitute HP510x42 Steel Bearing Piles For HP10x42 Steel Bearing Piles Shown Hereon.



I-90 MEDIAN PROFILE GRADE
No Scale

I-90 MEDIAN CURVE DATA

P.I. Sta. 298 + 10.1
 $\Delta = 43^{\circ}00'00''$ Lt.
 $\theta_s = 3^{\circ}45'$
 $L_s = 300.00'$
 $\Delta_c = 35^{\circ}30'00''$ Lt.
 $D_c = 2^{\circ}30'$
 $L_c = 1420.00'$
 $T_s = 1053.40'$
 $R = 2291.83'$
 $S = 0.071\%$



RENO CREEK ROAD
PROFILE GRADE
No Scale

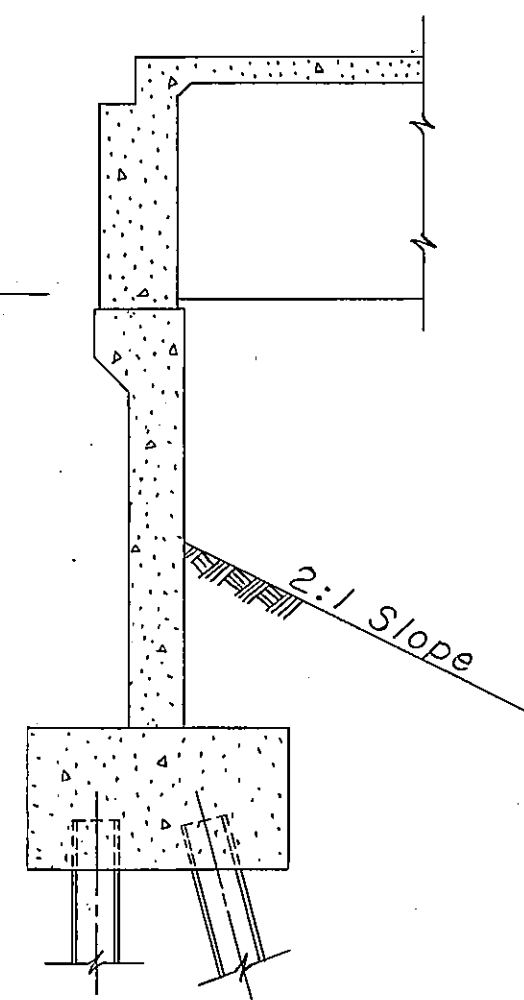
NOTES:

All Stations Shown Are $\pm$ I-90 Median Stations.

Barriers, slabs and abutment wingwalls are to be built on centerline of roadway curves parallel to centerline of roadway curves long chords.

Structure Excavation for Abutments shall be computed from subgrade elevations.

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



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

THE KEN R. WHITE CO.
HELENA, MONT.

FED. ROAD DIV. NO.	STATE	F. A. P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	11	35

NOTES

LIVE LOAD: STANDARD HS20-44 LOADING OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 POUNDS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "B" AND ALL OTHER CONCRETE SHALL BE CLASS "A".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS.

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

REINFORCING STEEL: ALL REINFORCEMENT STEEL SHALL BE OF THE DEFORMED TYPE AND SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS A615, GRADE 60 (AASHTO M-31) EXCEPT FOR THE REBAR IN THE PRESTRESSED CONCRETE BEAMS WHICH MAY BE GRADE 40.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301 + 50.00

FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

GENERAL LAYOUT

SCALE: 1"=15'-0" (EXCEPT AS NOTED)

DESIGNED	RDR	11-9-72
DRAWN	DLK	12-17-71
CHECKED	REW	7-12-73
APPROVED	H.E.S.	7-18-77
REVISED		
REVISED		

DRAWING NO. 11170

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	12	35

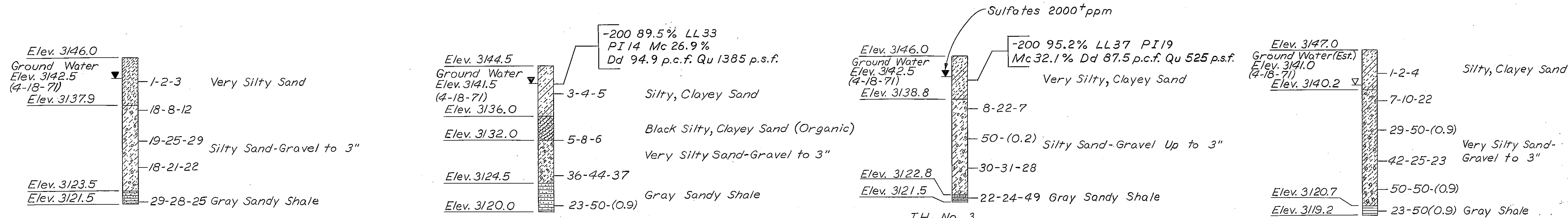
NOTES

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA, DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE GENERAL LAYOUT OR FOOTING PLAN.

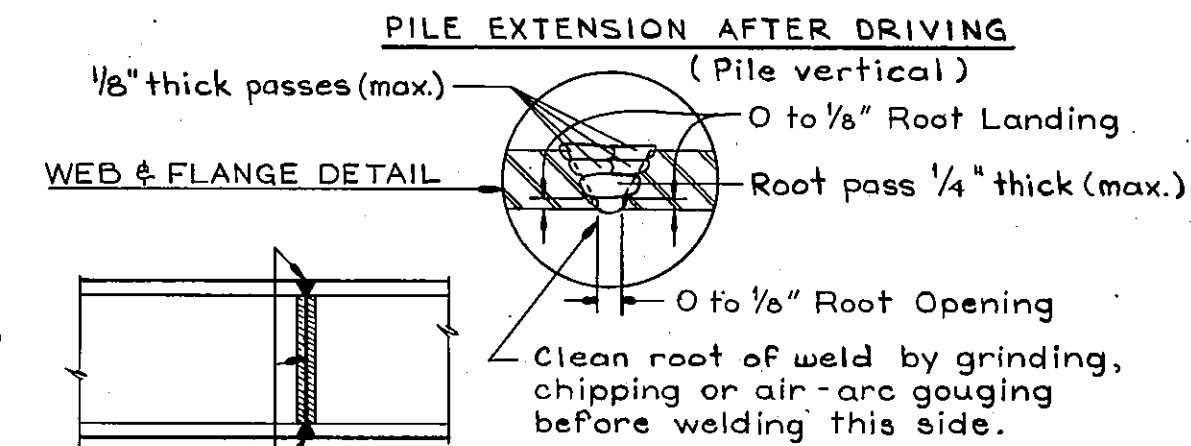
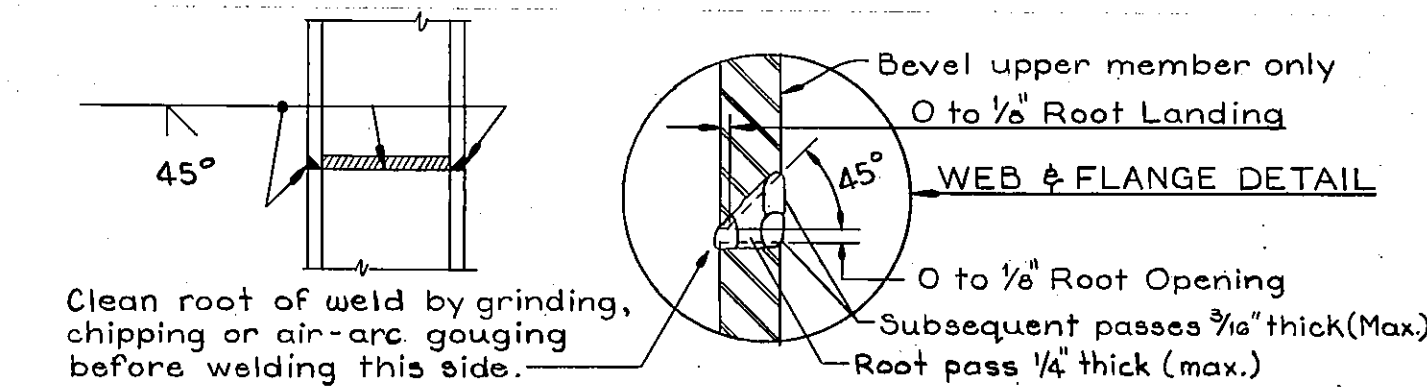
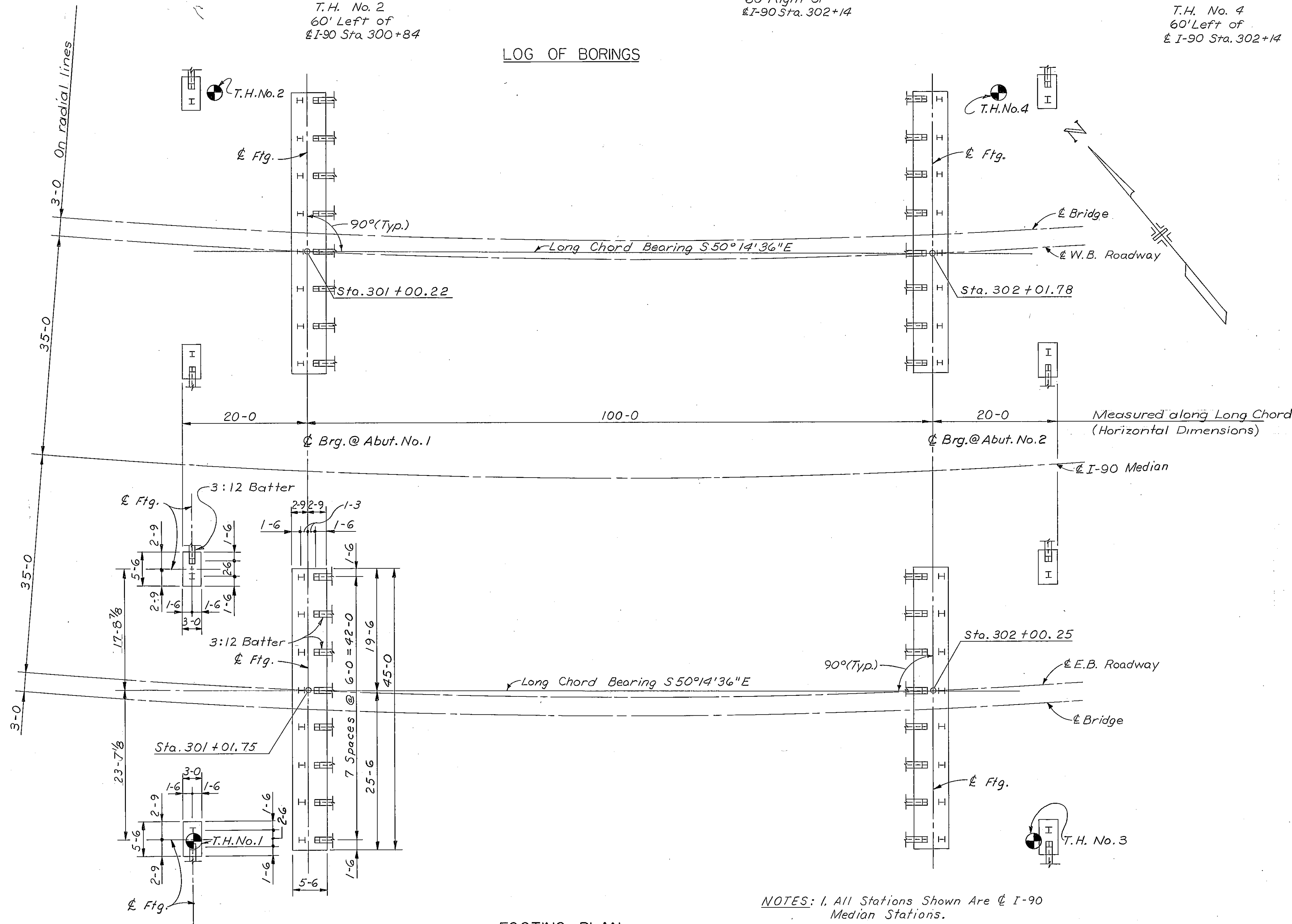
THE SERIES OF NUMBERS SHOWN ON THE LOG OF BORINGS INDICATES THE NUMBER OF BLOWS PER 6" PENETRATION FOR EACH NUMBER OF THE SERIES OF A 2" SAMPLE TUBE WHICH WAS DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140 POUND HAMMER HAVING A 30" DROP. THE TOTAL 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 DRAWINGS.



LOG OF BORINGS



PERMISSIBLE WELDED SPLICE DETAILS FOR 8\", 10\" & 12\" STEEL BEARING PILES

No Scale
Note: Only E60 or E70 series electrodes shall be used. Maximum electrode size shall be 3/16\"/>

STATE OF MONTANA DEPARTMENT OF HIGHWAYS RENO CREEK ROAD SEPARATION AT STA. 301+50.00 FEDERAL AID PROJECT NO. I 90-9(33)516 BIG HORN COUNTY FOOTING PLAN

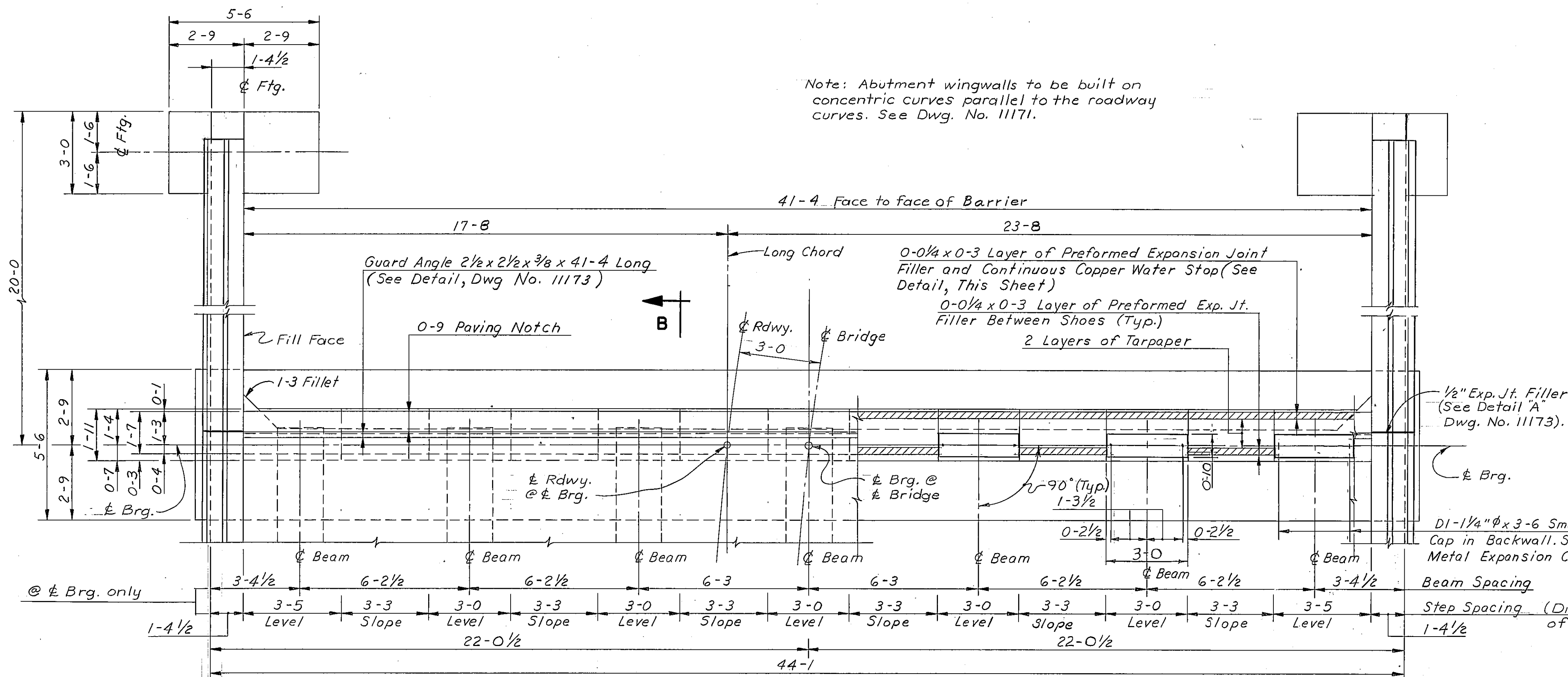
DESIGNED	RDR	11-9-72
DRAWN	JRH	12-22-71
CHECKED	JFS	11-22-72
APPROVED		
REVISED		
REVISED		

SCALE: 1\"/>

DRAWING NO. 11171

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9(33)516	13	35

Note: Abutment wingwalls to be built on concentric curves parallel to the roadway curves. See Dwg. No. 11171.

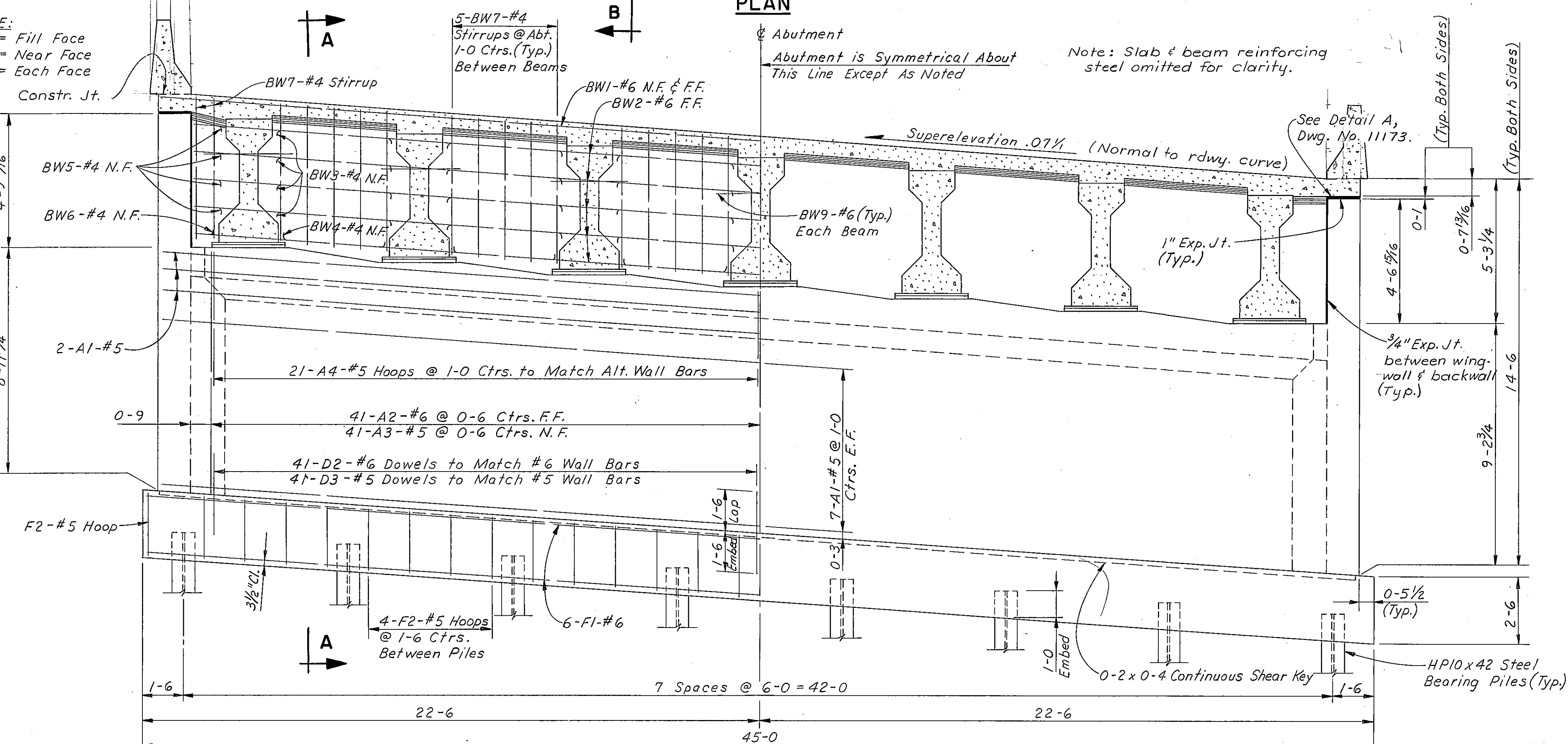


PLAN

NOTE:
F.F. = Fill Face
N.F. = Near Face
E.F. = Each Face

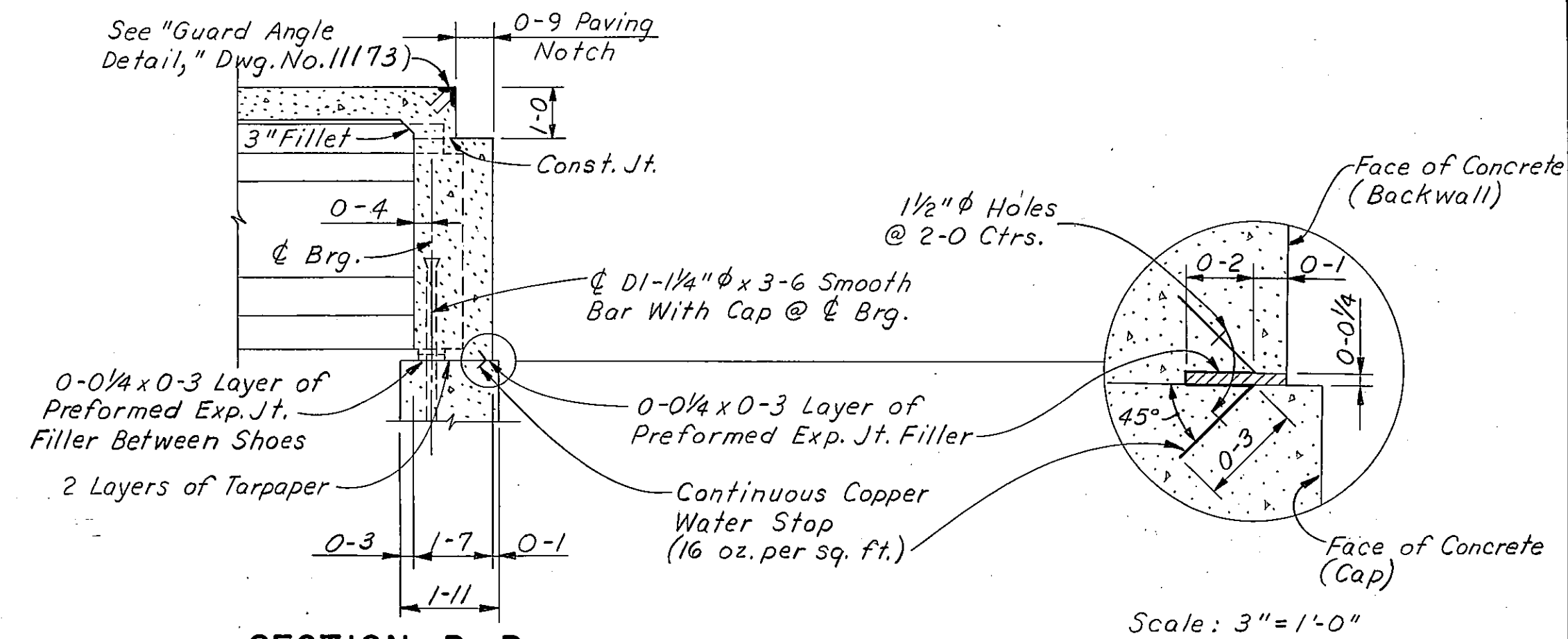
Abutment is Symmetrical About This Line Except As Noted

Note: Slab & beam reinforcing steel omitted for clarity.



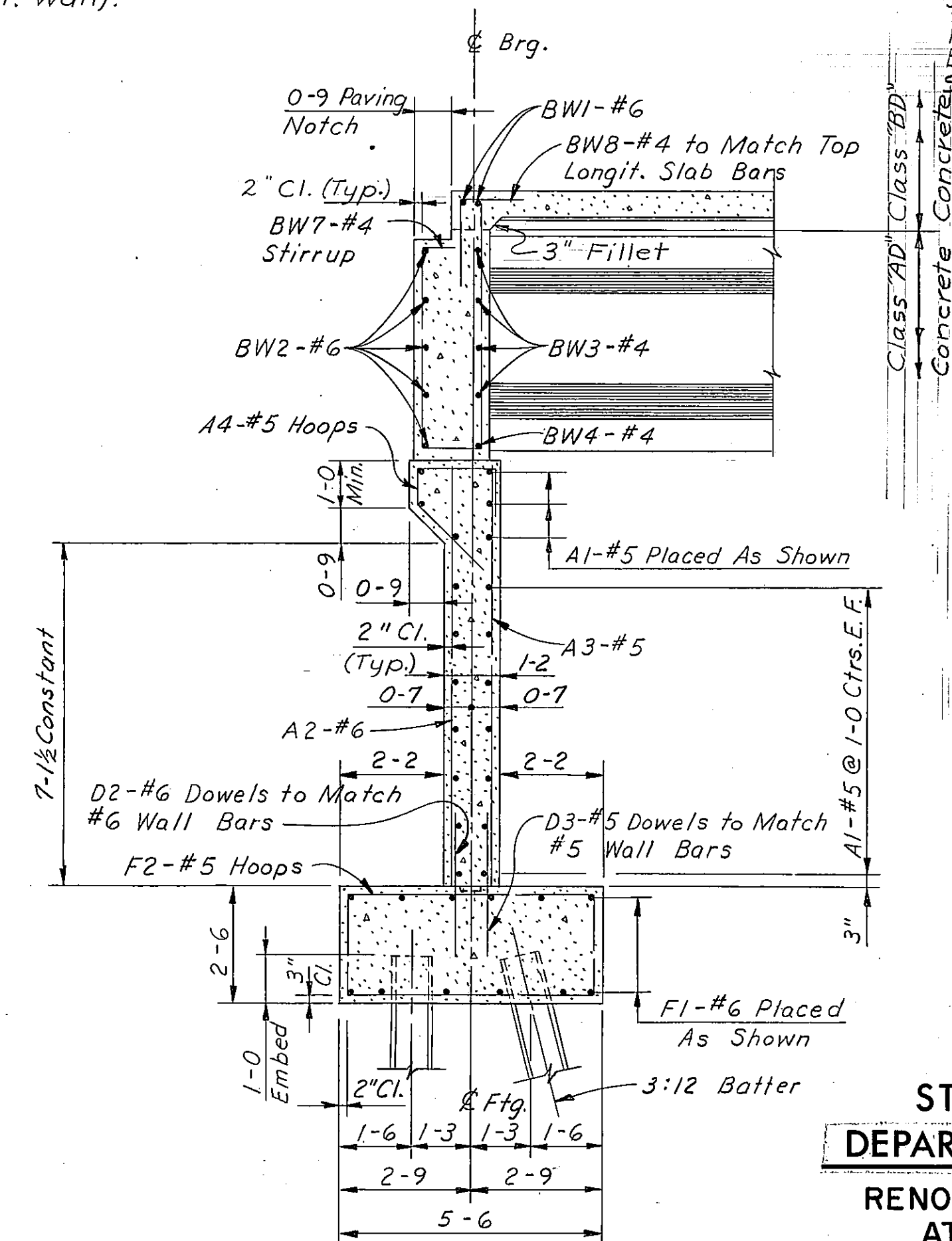
ELEVATION

Abutment No. 1 W.B. (Back on Line) (Shown)
Abutment No. 2 W.B., No. 1 E.B. & No. 2 E.B. (Similar)



SECTION B-B

NOTE: For Bill of Reinforcing Steel See Dwg. No. 11173.
For Wingwall Details See Dwg. No. 11173.
For Elevations & Additional Notes See Dwg. No. 11173 & No. 11174.
For Details of Slab, Beams, and Barriers see Dwg. No. B-4, SL-5, No. 11173 & No. 11175.



SECTION A-A

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY

ABUTMENTS NO. 1 & NO. 2
E.B. & W.B. RDWS.

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

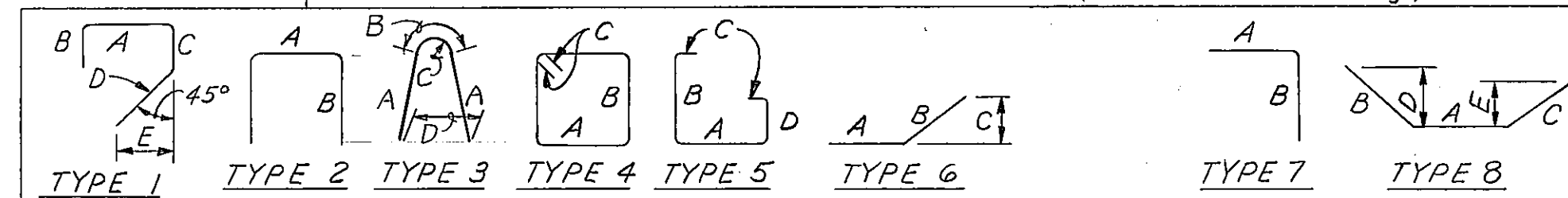
DRAWING NO. 11172

DESIGNED	RDR	11-9-72
DRAWN	DLK	11-30-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		

NOTE:
Maximum Pile Pressure Under D.L. + L.L. + T. = 68.6 = 54.8 Tons/Pile.
Estimated Pile Length: (Avg.)
Abutment Footing = 40'-0", Wingwall Footing = 50'-0"

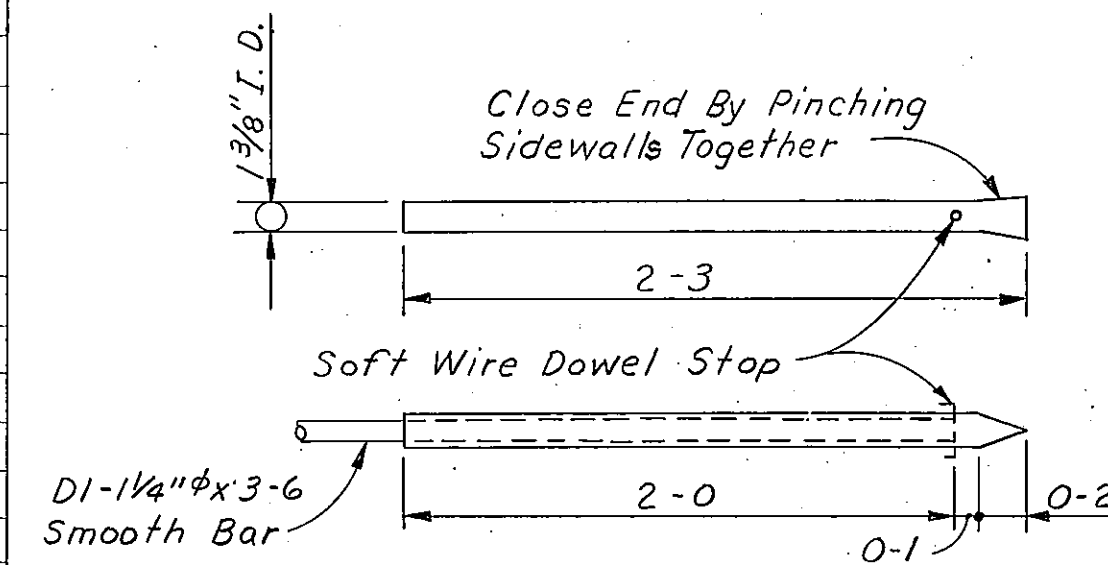
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	14	35

BILL OF REINFORCING STEEL (One Abutment 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
A1	#5	20	43'-9"		A4	#5	41	1	5'-6"	1'-7"	1'-0"	0'-8"	2'-3"	1'-7"
A2	#6	81	8-8		BW7	#4	34	5	10-10	1-3	5-0	0-3 1/2	4-0	
A3	#5	81	8-8		BW8	#4	31	7	4-0	2-0	2-0			
BW1	#6	2	43-9		B2	#4	38	3	5-1	2-4	0-5	0-1 1/4	0-9	
BW2	#6	5	41-0		B3	#4	38	6	2-10	1-6	1-4	0-9		
BW3	#4	24	4-4											
BW4	#4	6	3-10											
BW5	#4	8	1-0											
BW6	#4	2	0-9		F2	#5	30	4	15-5	5-2	2-1	0-5 1/2		
BW9	#6	7	5-4											
B100	#4	16	18-2		WH14	#6	22	8	7-2	4-2	1-6	1-6	1-0 3/4	1-0 3/4
B1	#4	38	2-8		WH15	#4	12	2	3-10	0-10	1-6			
*D1	1/4" Sm.	14	3-6		WH16	#6	4	6	19'-3"	16'-1"	3'-2"	1'-7"		
D2	#6	81	3-0											
D3	#5	93	3-0											
F1	#6	12	44-8											
F3	#4	22	2-8											
F4	#4	12	5-2											
WH1	#6	4	4-8											
WH2	#6	4	6-0											
WH3	#6	4	7-4											
WH4	#6	4	8-8											
WH5	#6	4	10-0											
WH6	#6	4	11-4											
WH7	#6	4	12-8											
WH8	#6	4	14-0											
WH9	#6	4	15-4											
WH10	#6	4	16-8											
WH11	#6	12	17-3											
WH12	#6	16	20-3											
WH13	#6	8	19-2											
WV1	#5	4	13-7											
WV2	#5	8	14-4											
WV3	#5	4	14-2											
WV4	#5	4	13-7											
WV5	#5	4	13-0											
WV6	#5	4	12-5											
WV7	#5	4	11-11											
WV8	#5	4	11-4											
WV9	#5	4	10-9											
WV10	#5	4	10-2											
WV11	#5	4	9-7											
WV12	#5	4	9-0											
WV13	#5	4	8-5											
WV14	#5	4	7-10											
WV15	#5	4	7-4											
WV16	#5	4	6-9											
WV17	#5	4	6-2											
WV18	#5	24	5-4											

* D1-1/4" Sm. Bars Shall Conform To A.S.T.M. A36 Steel.



No. 30 Gage Metal
(14 Required Per Abutment)
METAL EXPANSION CAP
Scale: 1/2" = 1'-0"

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
WINGWALL DETAILS

SCALE: 3/8" = 1'-0" (EXCEPT AS NOTED)

DRAWING NO. 11173

DESIGNED	RDR	11-9-72
DRAWN	DLK	12-1-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		
REVISED		

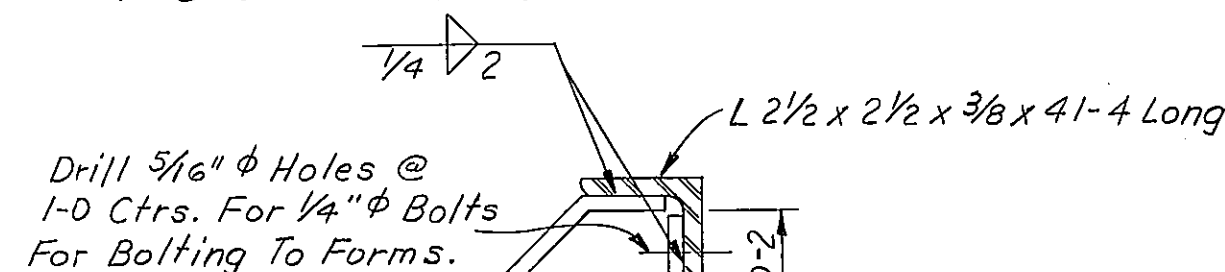
NOTES:

1. Beam Seat Areas Shall Be Finished Level To The Elevations Shown. The Area Between Beam Seats To Be Sloped Uniformly As Required.

2. Barrier on Wingwalls Shall Not Be Placed Until Backfill Has Been Placed To Subgrade Elevation And Curbs on Slab Span Are In Place.

3. Cost of Furnishing And Placing Preformed Expansion Joint Filler, Tarpaper, Copper Water Stop And Metal Expansion Caps To Be Included In The Unit Price Bid For Class AD Concrete.

Note: Guard Angle shall be set 1/8" below Finish Grade



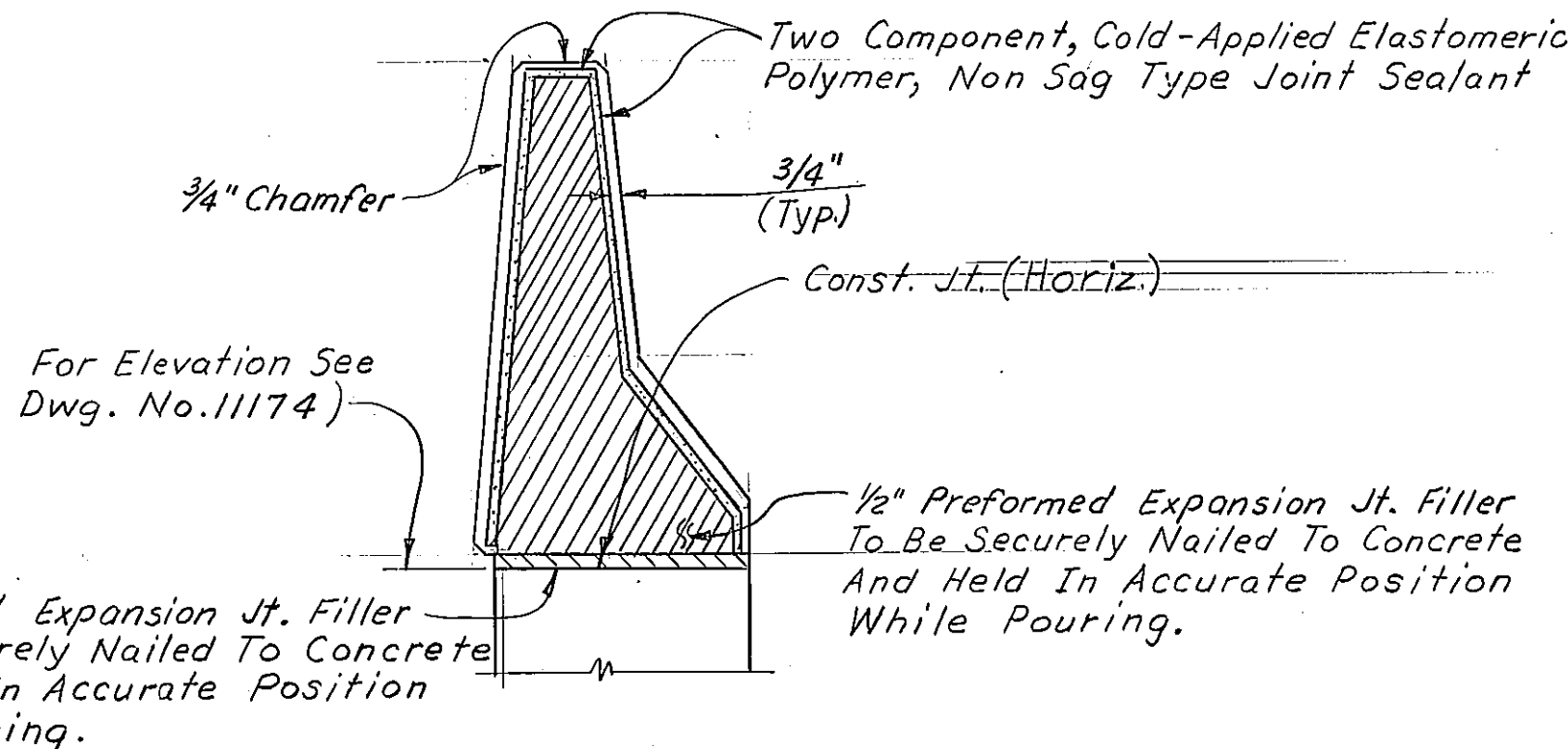
Drill 5/16" Holes @ 1-0 Ctrs. For 1/4" Bolt For Bolting To Forms.

2 x 5/16 x 0-9 Anchor Bars @ 1-0 Alt. Ctrs. (42 Req'd. Per Abut.)

NOTE: Guard Angle May Be Furnished In Two Pieces With End Anchor Bars 6" Maximum From Each End. The Guard Angle, If Furnished In Two Pieces, Shall Be Field Welded And Held Securely In Position While Concrete Is Placed.

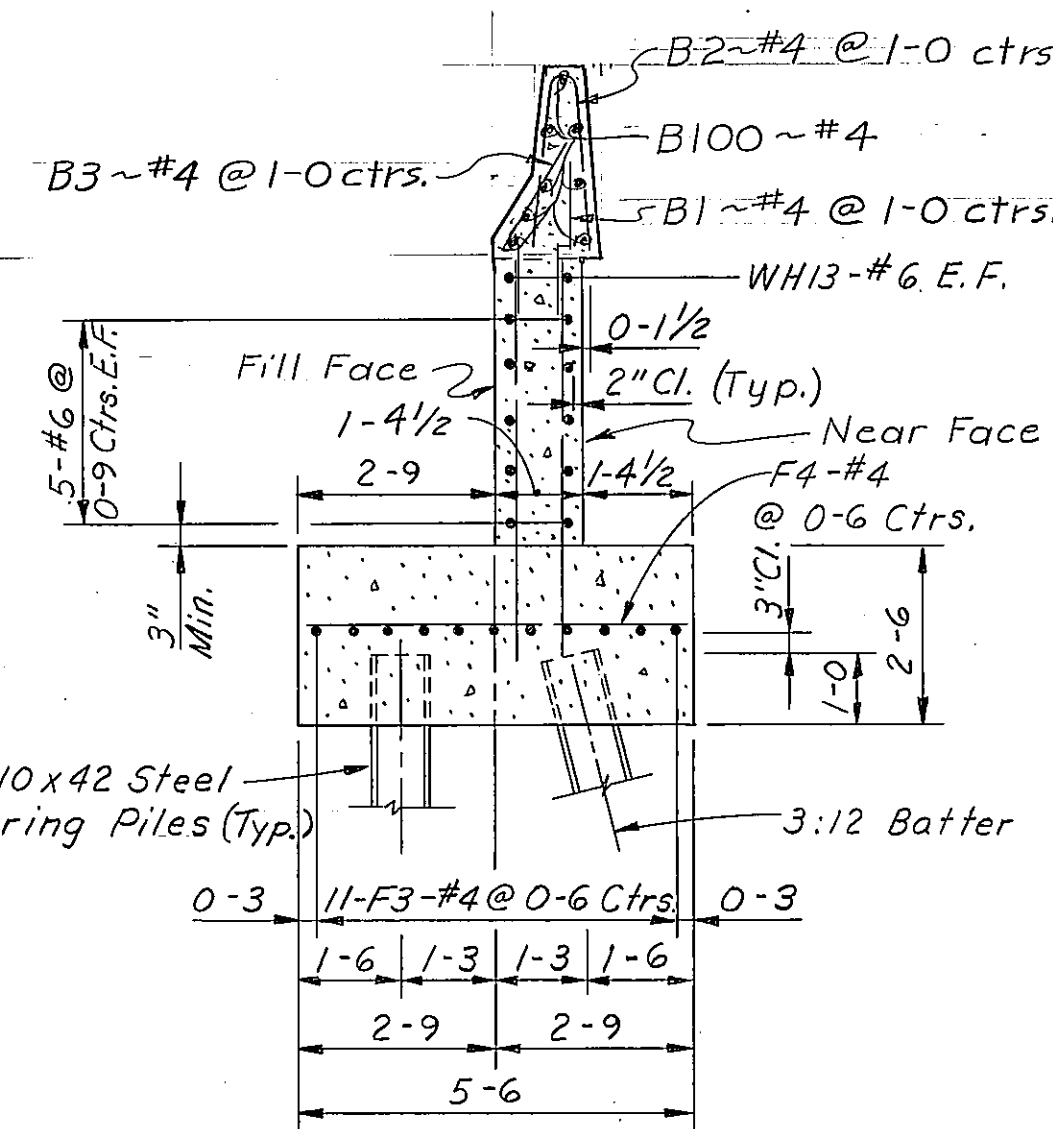
GUARD ANGLE DETAIL

Scale: 3" = 1'-0"

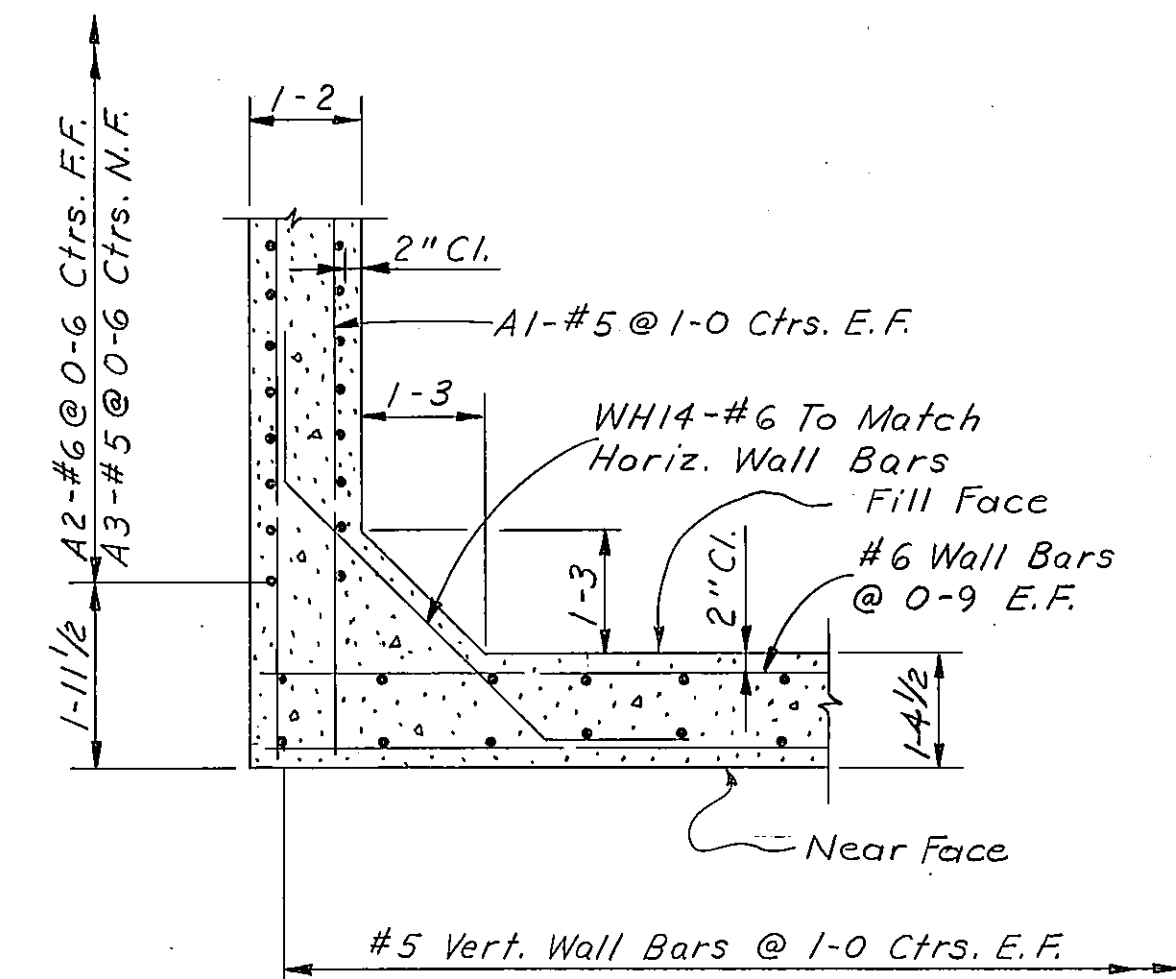


DETAIL A

Scale: 1" = 1'-0"



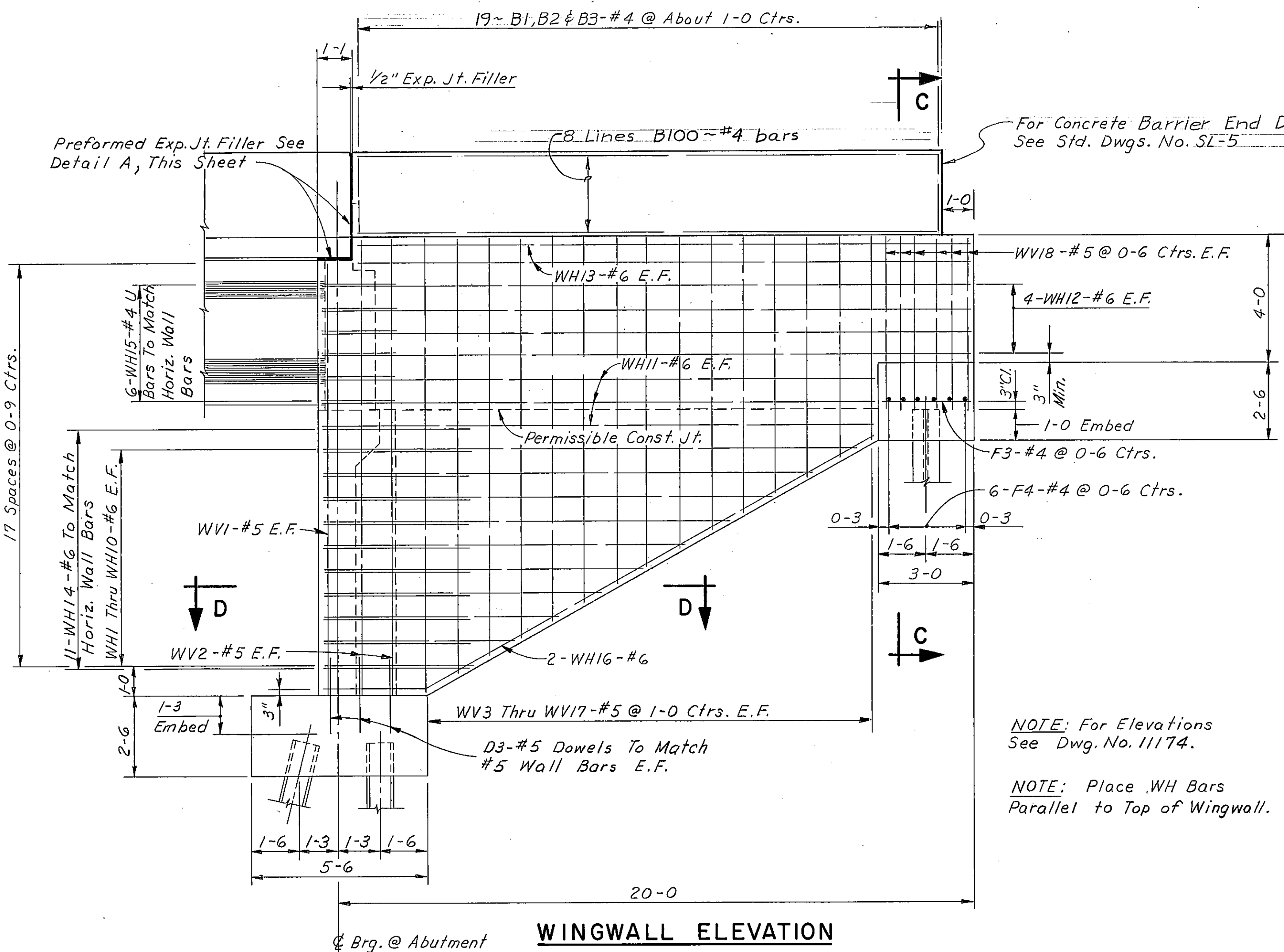
SECTION C-C



SECTION D-D

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

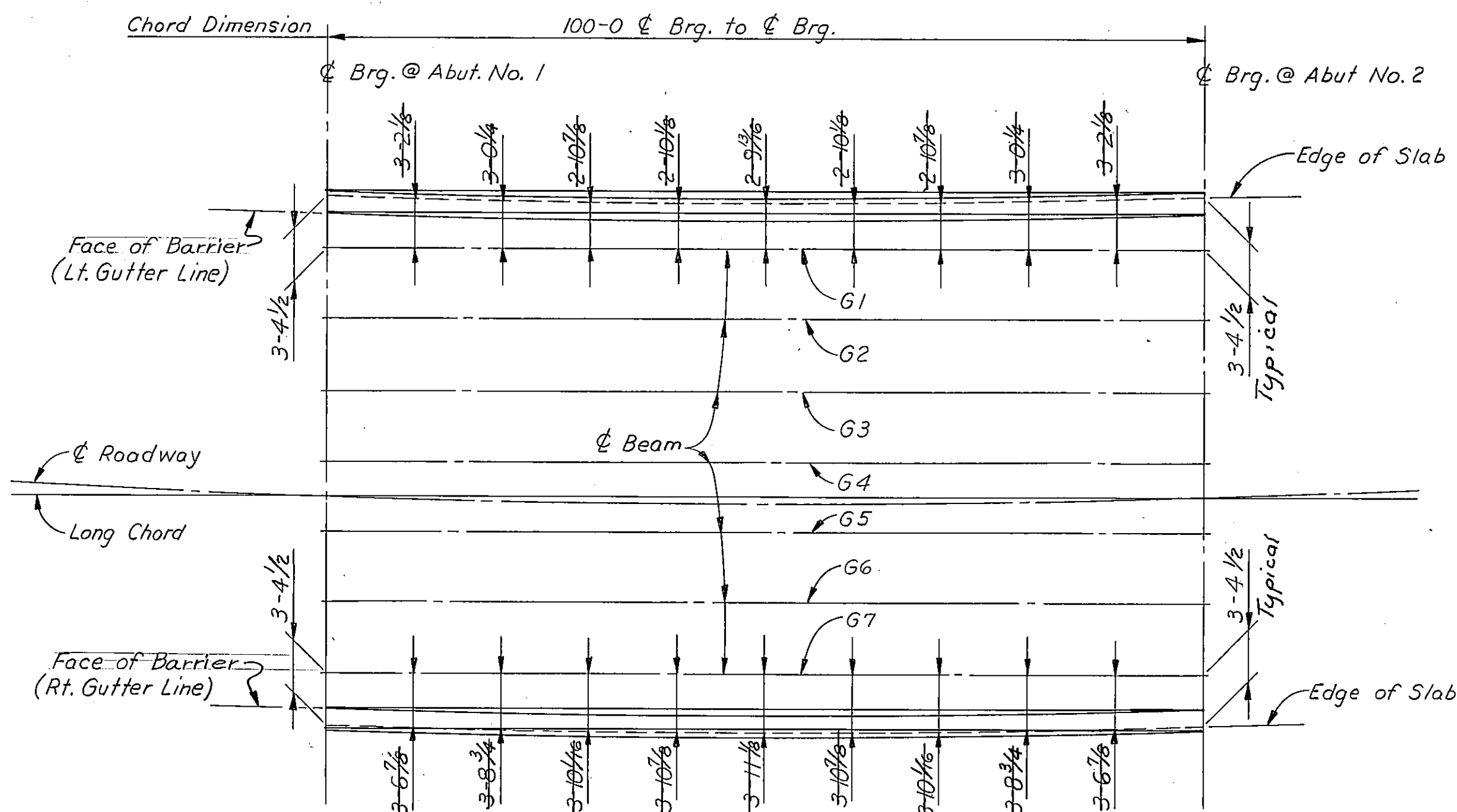
NOTE:
F.F. = Fill Face
N.F. = Near Face
E.F. = Each Face



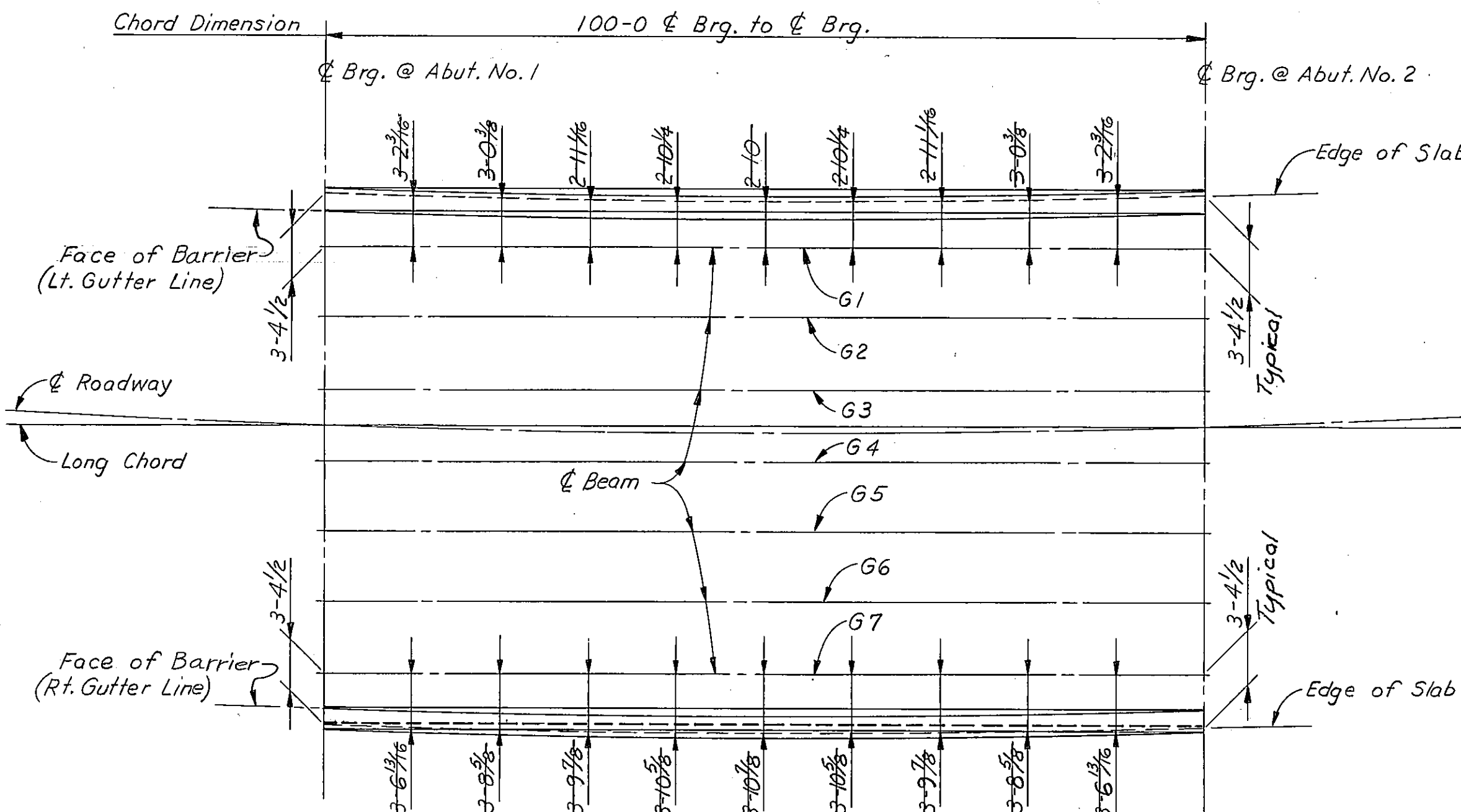
NOTE: For Elevations See Dwg. No. 11174.

NOTE: Place WH Bars Parallel to Top of Wingwall.

WINGWALL ELEVATION



WESTBOUND ROADWAY SLAB OFFSETS
No Scale



EASTBOUND ROADWAY SLAB OFFSETS
No Scale

NOTE: Deck offsets are taken at all 3'-4 1/2" points of span and at the bearing of exterior beam. Offsets are measured from the exterior beam to edge of deck. Structures were not built parallel to the curve. They were built parallel to the long chord to line up with the abutment wingwalls which were built parallel to the long chord in accordance with the plans, resulting in better visual alignment.

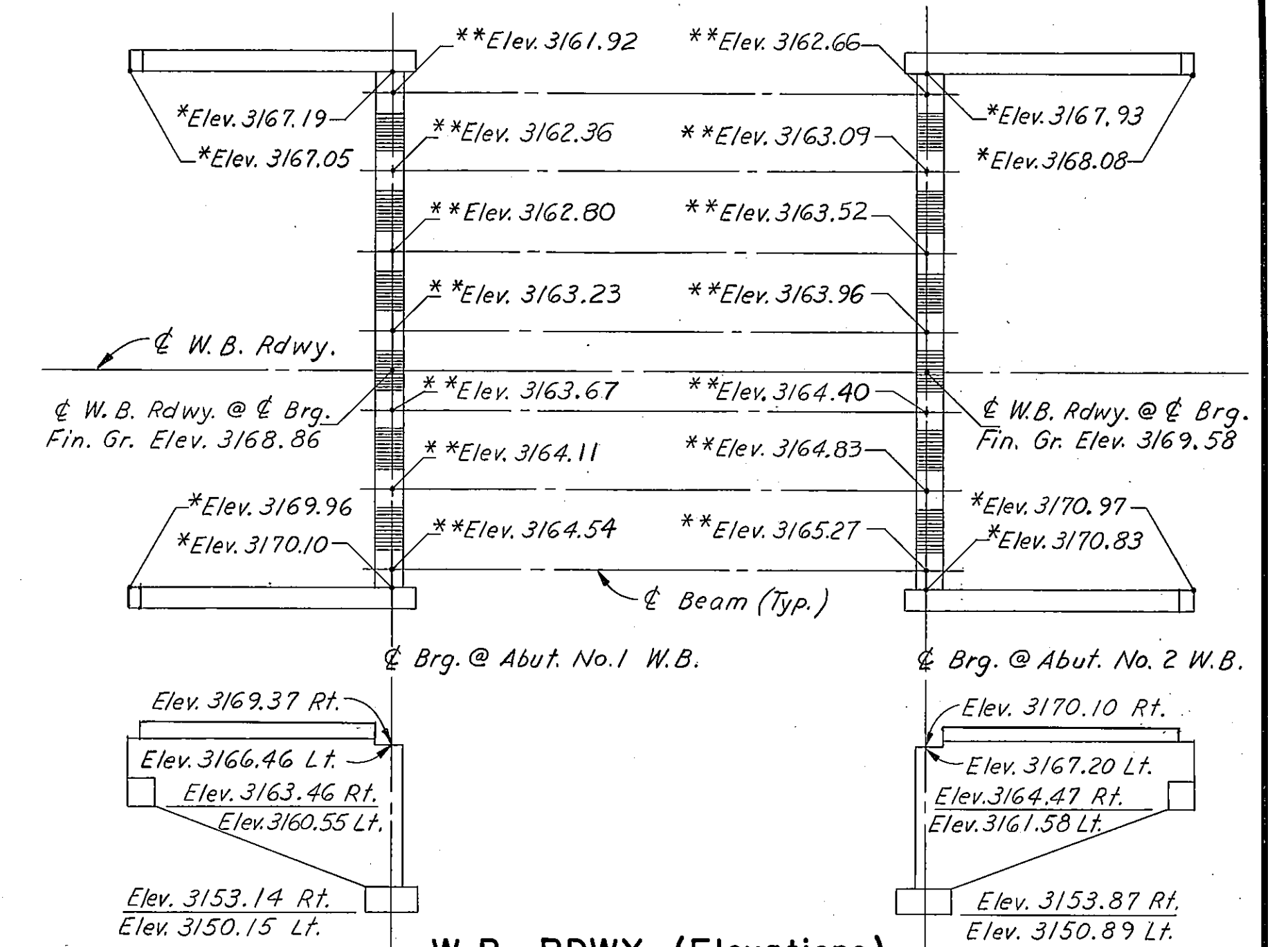
WESTBOUND ROADWAY ELEVATIONS # @ TOP OF SLAB											
Location	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Left Gutter Line	67.19	67.28	67.36	67.44	67.52	67.59	67.67	67.74	67.80	67.87	67.93
G1	67.34	67.41	67.48	67.56	67.63	67.70	67.78	67.85	67.92	68.00	68.07
G2	67.77	67.85	67.92	67.99	68.06	68.14	68.21	68.28	68.36	68.43	68.51
G3	68.21	68.28	68.35	68.43	68.50	68.57	68.64	68.72	68.79	68.86	68.94
G4	68.65	68.72	68.79	68.86	68.94	69.01	69.08	69.15	69.23	69.30	69.38
G5	69.09	69.16	69.23	69.30	69.37	69.45	69.52	69.59	69.66	69.74	69.81
G6	69.52	69.59	69.66	69.74	69.81	69.88	69.95	70.03	70.10	70.17	70.25
G7	69.96	70.03	70.10	70.17	70.24	70.32	70.39	70.46	70.53	70.61	70.68
Right Gutter Line	70.10	70.19	70.27	70.35	70.43	70.50	70.57	70.64	70.70	70.77	70.83
℄ Rdwy.	68.86	68.94	69.03	69.11	69.18	69.26	69.33	69.40	69.46	69.53	69.58

EASTBOUND ROADWAY ELEVATIONS # @ TOP OF SLAB											
Location	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Left Gutter Line	69.87	69.95	70.03	70.11	70.18	70.25	70.32	70.39	70.46	70.52	70.58
G1	70.01	70.08	70.15	70.22	70.29	70.36	70.43	70.51	70.58	70.65	70.72
G2	70.45	70.52	70.59	70.66	70.73	70.80	70.87	70.94	71.01	71.08	71.16
G3	70.88	70.95	71.02	71.09	71.16	71.23	71.30	71.37	71.45	71.52	71.59
G4	71.32	71.39	71.46	71.53	71.60	71.67	71.74	71.81	71.88	71.95	72.03
G5	71.76	71.83	71.90	71.97	72.04	72.11	72.18	72.25	72.32	72.39	72.46
G6	72.20	72.26	72.33	72.40	72.47	72.54	72.61	72.68	72.75	72.82	72.90
G7	72.63	72.70	72.77	72.84	72.91	72.98	73.05	73.12	73.19	73.26	73.33
Right Gutter Line	72.78	72.86	72.94	73.01	73.09	73.16	73.23	73.29	73.36	73.42	73.48
℄ Rdwy.	71.11	71.19	71.27	71.35	71.43	71.50	71.57	71.63	71.70	71.76	71.82

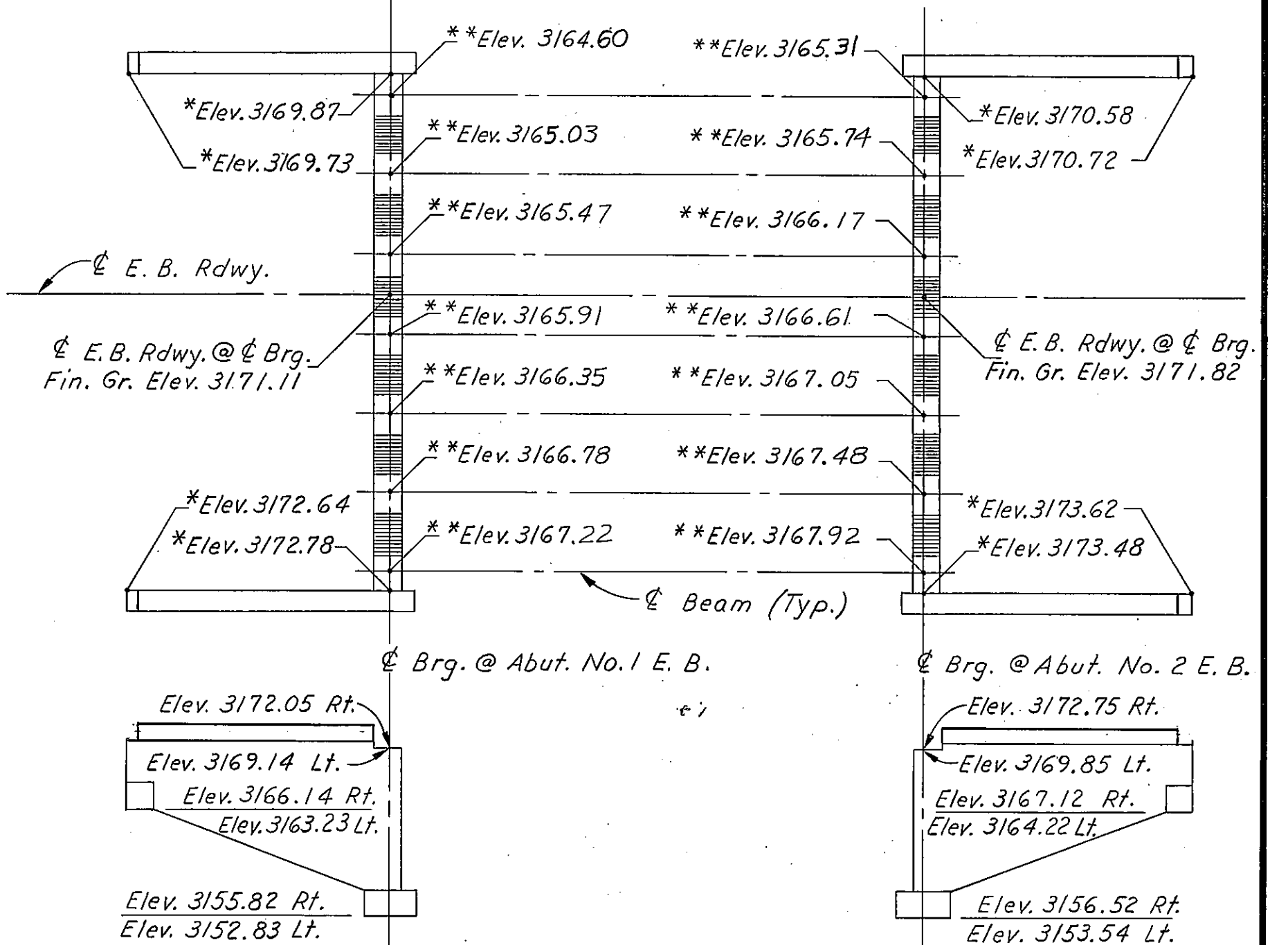
Add 3100.00 To Elevations Shown.

THE KEN R. WHITE CO. HELENA, MONT.					
FED. ROAD DIV. NO.	STATE	F. A. P. NO.	SHEET NO.	TOTAL SHEETS	
8	MONT.	190-9(33)516	15	35	

** Beam Seat Elevations
* Elevations @ Bottom of Barrier.



W.B. RDWY. (Elevations)
No Scale



E.B. RDWY. (Elevations)
No Scale

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ELEVATIONS AND
SLAB OFFSETS

SCALE: AS NOTED

DRAWING NO. 11174

DESIGNED	RDR	11-9-72
DRAWN	DLK	11-22-72
CHECKED	JFS	11-22-72
APPROVED		
REVISED		

NOTE: For Additional Slab, Barrier, Intermediate Diaphragm, Abutments, And Wingwall Details See Std. Dwg. No. SL-5 And Dwg. No. 11172 & 11173.
For Slab Elevations And Offsets See Dwg. No. 11174.

BILL OF REINFORCING STEEL

TYPE 1

TYPE 2

TYPE 3

TYPE 4

STRAIGHT BARS

MARK	SIZE	NO.	LENGTH
B100	#4	32	40'-0"
B101	4	16	23-4
S100	5	354	43-7
S200	4	62	40-0
S201	4	31	23-4
S300	4	116	40-0
S301	4	58	23-4
D5	4	24	4-4
D6	6	24	4-4
D8	#6	10	5-4

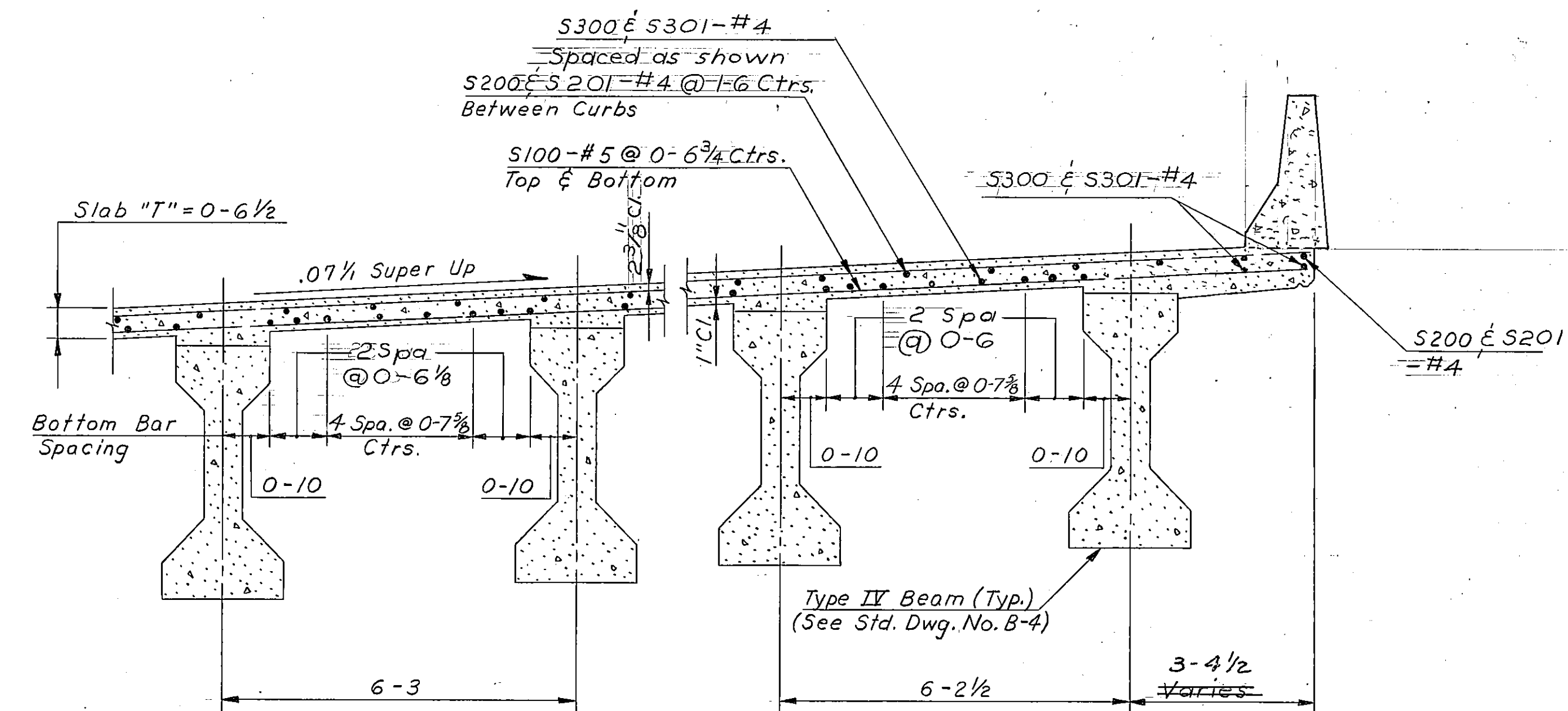
BENT BARS(All Dimensions Are Out to Out)

MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D
B1	#4	204	1	5'-1"	2'-4"	0'-5"	0'-1 1/4"	0'-9"
B2	4	204	3	4-6	2-9	1-9	2-5	
B3	4	204	2	3-0	1-10	1-2		
D7	#4	60	4	7'-10"	0'-7"	3'-4"	0'-3 1/2"	

D.L. DEFLECTION TABLE						
SPAN NO.	TENTH POINT					
	0.1	0.2	0.3	0.4	0.5	
1	1/16	7/8	13/16	17/16	1 1/2	

Deflections are symmetrical about $\frac{1}{2}$ of span.

NOTE: Concrete Barrier Shall Not Be Poured For At Least 72 Hours After Concrete In Slab Has Taken Set.



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

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

RENO CREEK ROAD SEPARATION
AT STA. 301+50.00

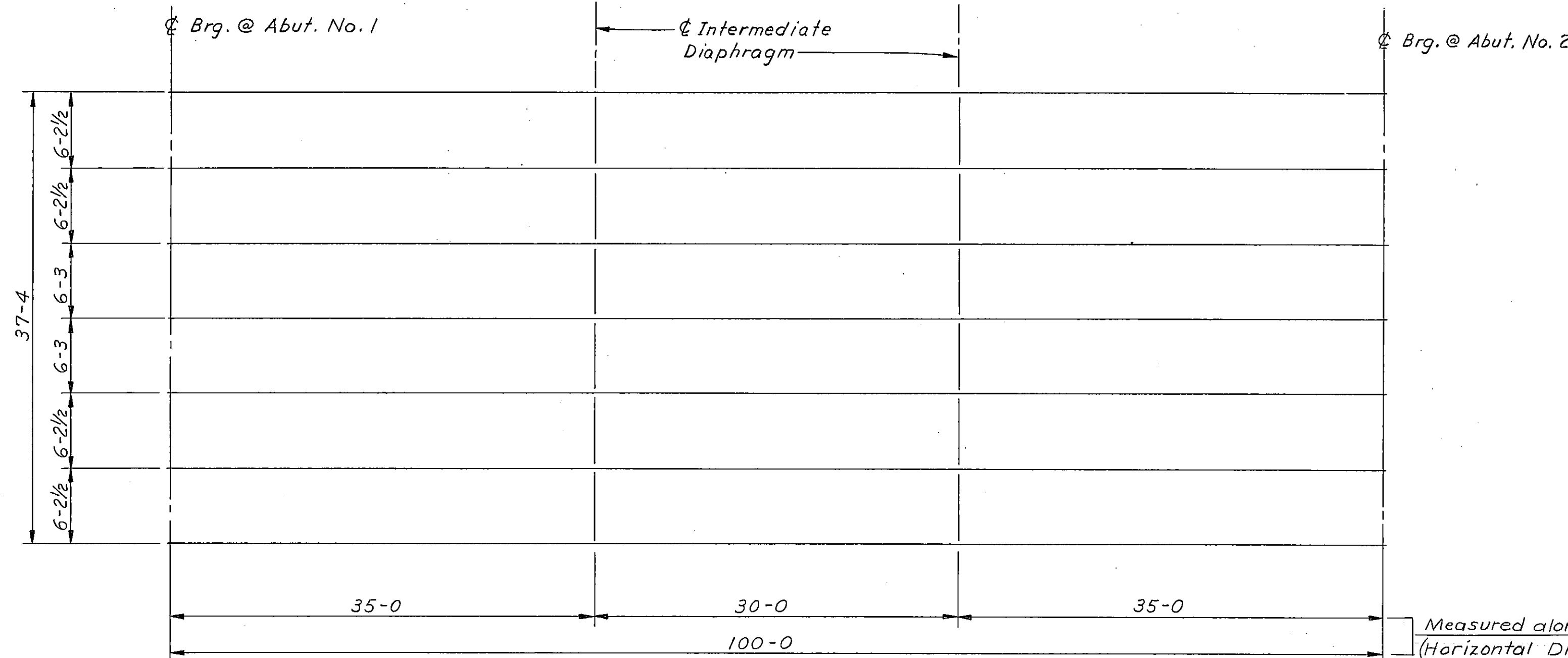
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
ERECTION PLAN
AND SLAB DETAILS

SCALE: AS NOTED

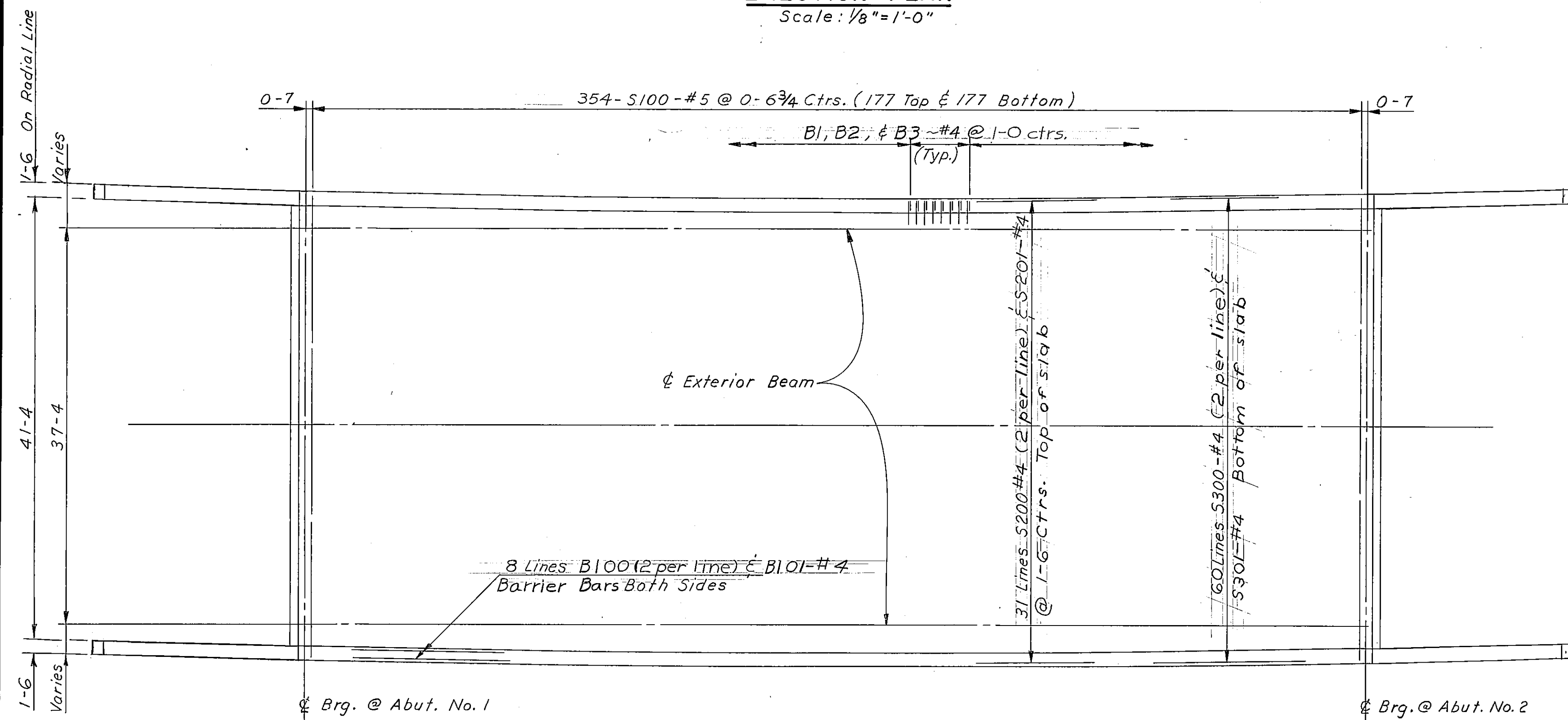
DRAWING NO. 11175

NOTE
PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams Shall Be Fabricated In Accordance With Std. Dwg. No. B-4. Maximum f'_c (Compressive Strength of Concrete At 28 Days) For Design Shall Be 6,000 p.s.i. Design Stresses (Before Prestress) Are As Follows:

Span Length		100'-0"
Beam D.L. Stresses (p.s.i.)	F_b	-1170
	F_t	+1384
Total D.L. + L.L. + I. Design Stresses (p.s.i.)	F_b	-2979
	F_t	+2888
Required Ultimate Moment Capacity (Foot Kips)	M	15380



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



REINFORCING STEEL PLACING DIAGRAM
Scale: 1/8"=1'-0"

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	17	35

NOTES

LIVE LOAD: STANDARD HS20-44 OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 LBS.

FINISHED GRADE: FINISHED PLAN GRADE OF WESTBOUND BRIDGE @ E. ROADWAY IS 0.64' BELOW PROFILE GRADE SHOWN ON ROAD PLANS.

FINISHED PLAN GRADE OF EASTBOUND BRIDGE @ E. ROADWAY IS 0.64' ABOVE PROFILE GRADE SHOWN ON ROAD PLANS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "B9" AND ALL OTHER CONCRETE SHALL BE CLASS "A0".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS. ESTIMATED WEIGHT = 1257 POUNDS.

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

SECTION A-A

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

NOTE: The Contractor May Substitute HPS 10x42 Steel Bearing Piles For HP 10x42 Steel Bearing Piles Shown Hereon.

TABLE OF COLUMN HEIGHTS
(See Dwg. No. 11178 For Location)

	Bent No. 2		Bent No. 3	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
H1	17'-2 1/16	16'-11 5/8	17'-10 3/16	17'-7 7/16
H2	17'-10 7/16	17'-8 1/16	18'-7 7/16	18'-3 1/16
H3	18'-6 1/16	18'-4 1/16	19'-3 3/8	19'-0 3/8

Note: Structure Excavation shall be computed from subgrade elevations of the E.B. and W.B. Rdways and the Access Road for all bents and abutments, except as otherwise approved by the engineer.

Note: For Sequence of Work & Maintenance of Traffic see Special Provisions.

Reinforcing Steel: All reinforcing steel shall be of the deformed type and shall meet the requirements of ASTM specifications A 615, Grade 60 (A.A.S.H.T.O. M-31).

Note: All stations shown are @ I-90-Median stations. Curbs, wingwalls, & slabs to be built parallel to long chord

W. B. PROFILE GRADE

No Scale

I-90 MEDIAN CURVE DATA

P.I. Sta. 427+20.2
Δ = 25°20'00" Lt.
D = 1°00'
L = 2533.33'
T = 1287.71'
R = 5729.58'
S = 0.04 1/2

E. B. PROFILE GRADE

No Scale

ACCESS ROAD PROFILE GRADE

No Scale

STEEL BEARING PILES

LOCATION		NO.*	ESTIMATED LENGTH	
			E.B. Rdwy.	W.B. Rdwy.
Abutment No. 1	Wingwall Ftgs.	2	61'-0	48'-0
	Abutment Ftgs.	5	56'-0	43'-0
Bent No. 2		9	40'-0	27'-0
Bent No. 3		9	37'-0	24'-0
Abutment No. 4	Wingwall Ftgs.	2	55'-0	41'-0
	Abutment Ftgs.	5	50'-0	36'-0

* No. Shown Is For One Bridge Only

TABLE OF ELEVATIONS (See Dwg. No. 11178 For Location)

Loc.	Abutment No. 1		Bent No. 2		Bent No. 3		Abutment No. 4	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
A	3273.71	3276.30	3274.25	3276.79	3274.98	3277.45	3275.59	3278.01
B	3273.00	3275.35	3273.54	3275.84	3274.27	3276.50	3274.88	3277.06
C	3274.66	3277.01	3275.20	3277.50	3275.93	3278.16	3276.54	3278.72
D	3259.50	3261.85	3270.04	3272.34	3270.77	3273.00	3261.38	3263.56
E	3272.67	3275.06	3250.50	3253.00	3250.50	3253.00	3275.27	3277.42
F	3274.33	3276.72	3271.70	3274.00	3272.43	3274.66	3276.93	3279.08
G	3266.67	3269.06	3270.17	3272.47	3270.90	3273.13	3269.27	3271.42
H	3268.33	3270.72	3270.87	3273.17	3271.60	3273.83	3270.93	3273.08
U	3261.16	3263.51	3271.57	3273.87	3272.30	3274.53	3263.04	3265.22

Note: Footing alternate No. 2 shall be used for Bent No. 2 & Bent No. 3 Eastbound & Westbound (See Dwg. No. FSB 30 for details)

Note: Footing alternate No. 2 shall be used for Abut. 1 & Abut. No. 4 Eastbound & Westbound (See Dwg. FSA 15 for details)

DESIGNED	LRP	4-12-73
DRAWN	LSL	5-1-73
CHECKED	JFS	6-25-73
APPROVED	HES.	7-18-77
REVISED		
REVISED		

STATE OF MONTANA DEPARTMENT OF HIGHWAYS

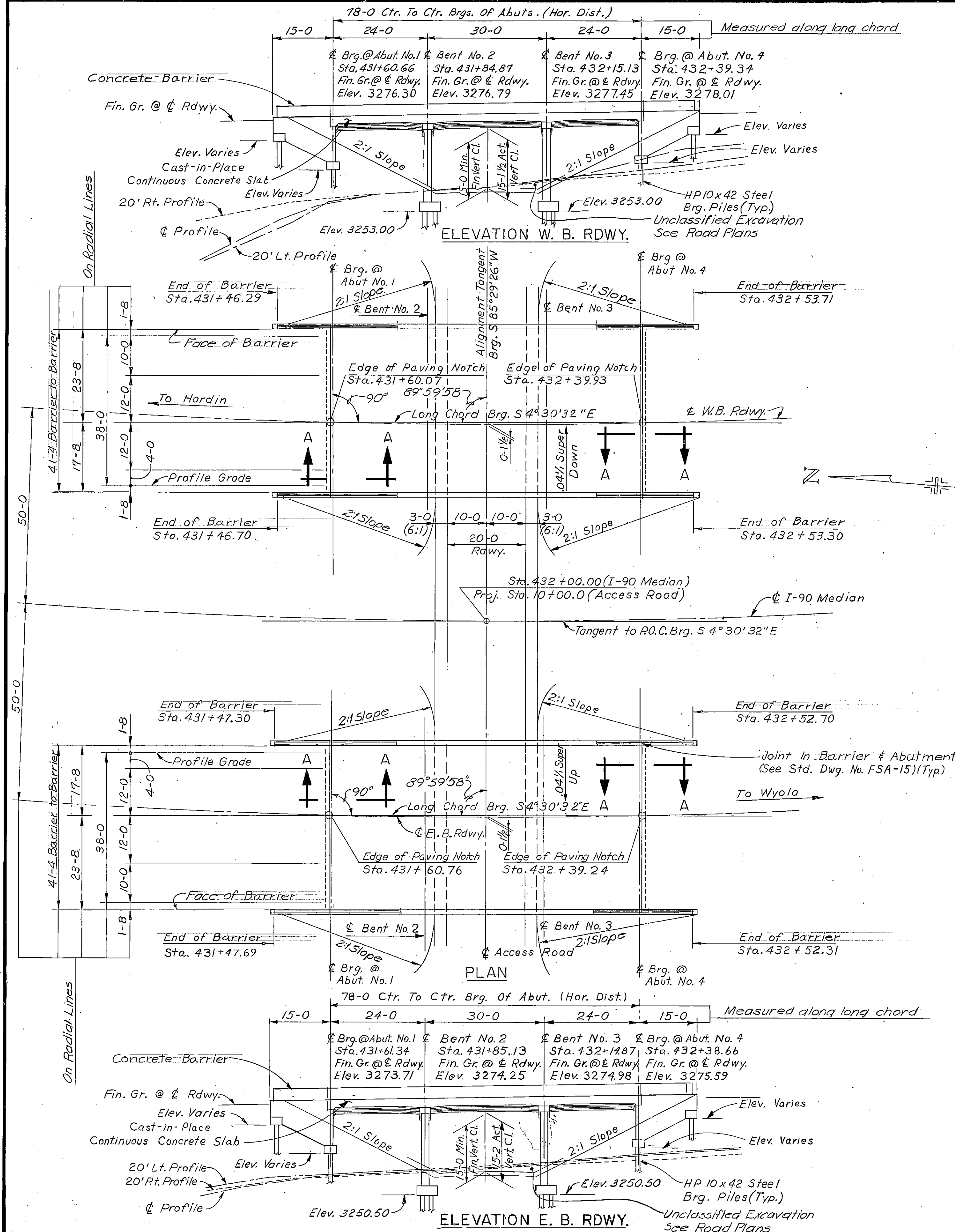
SEPARATION
AT STA. 432+00.00

FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY

GENERAL LAYOUT

SCALE: 1" = 15'-0" (EXCEPT AS NOTED)

DRAWING NO. 11176



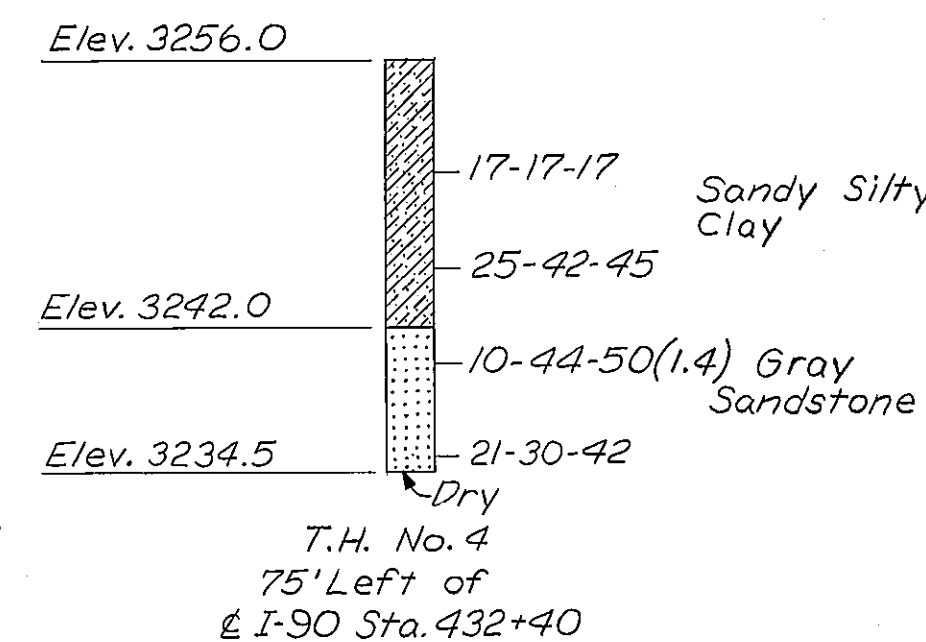
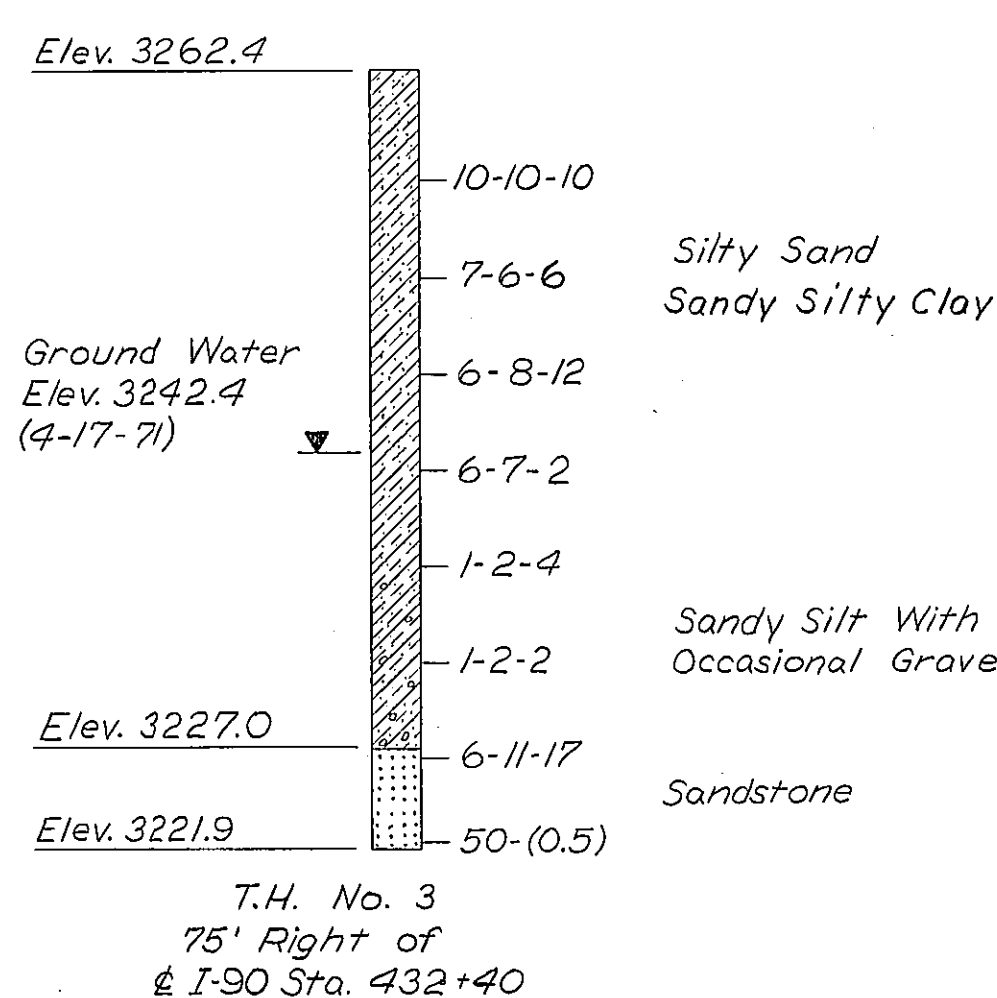
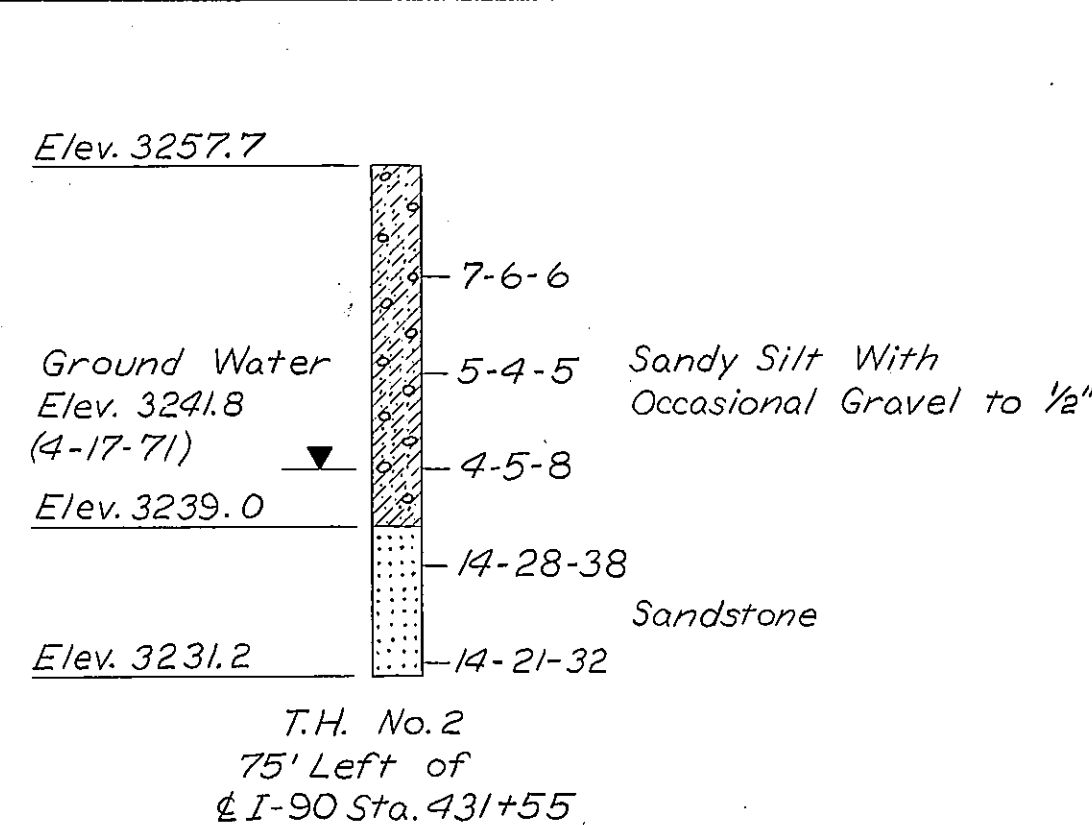
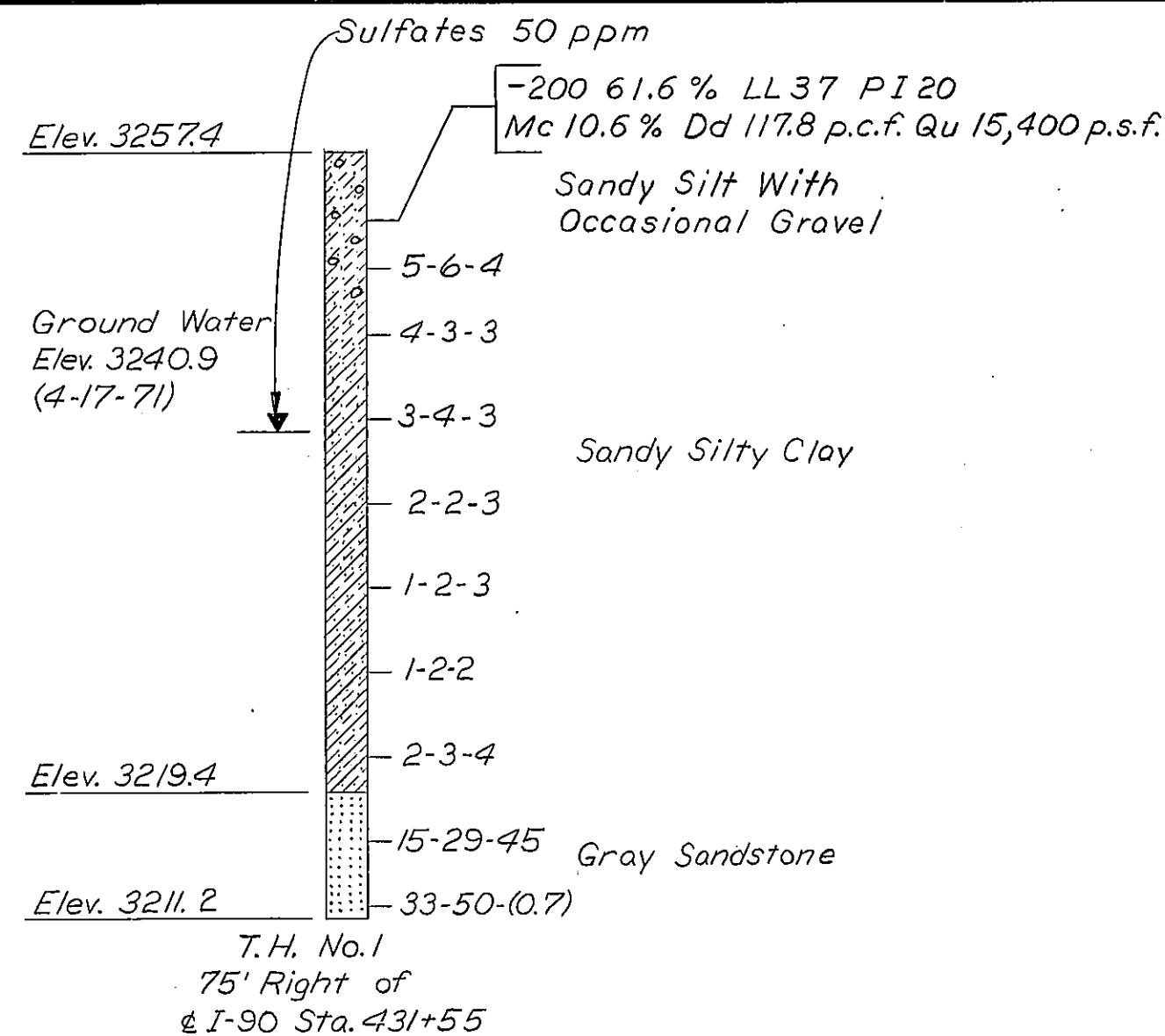
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	190-9 (33) 516	18	35

SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

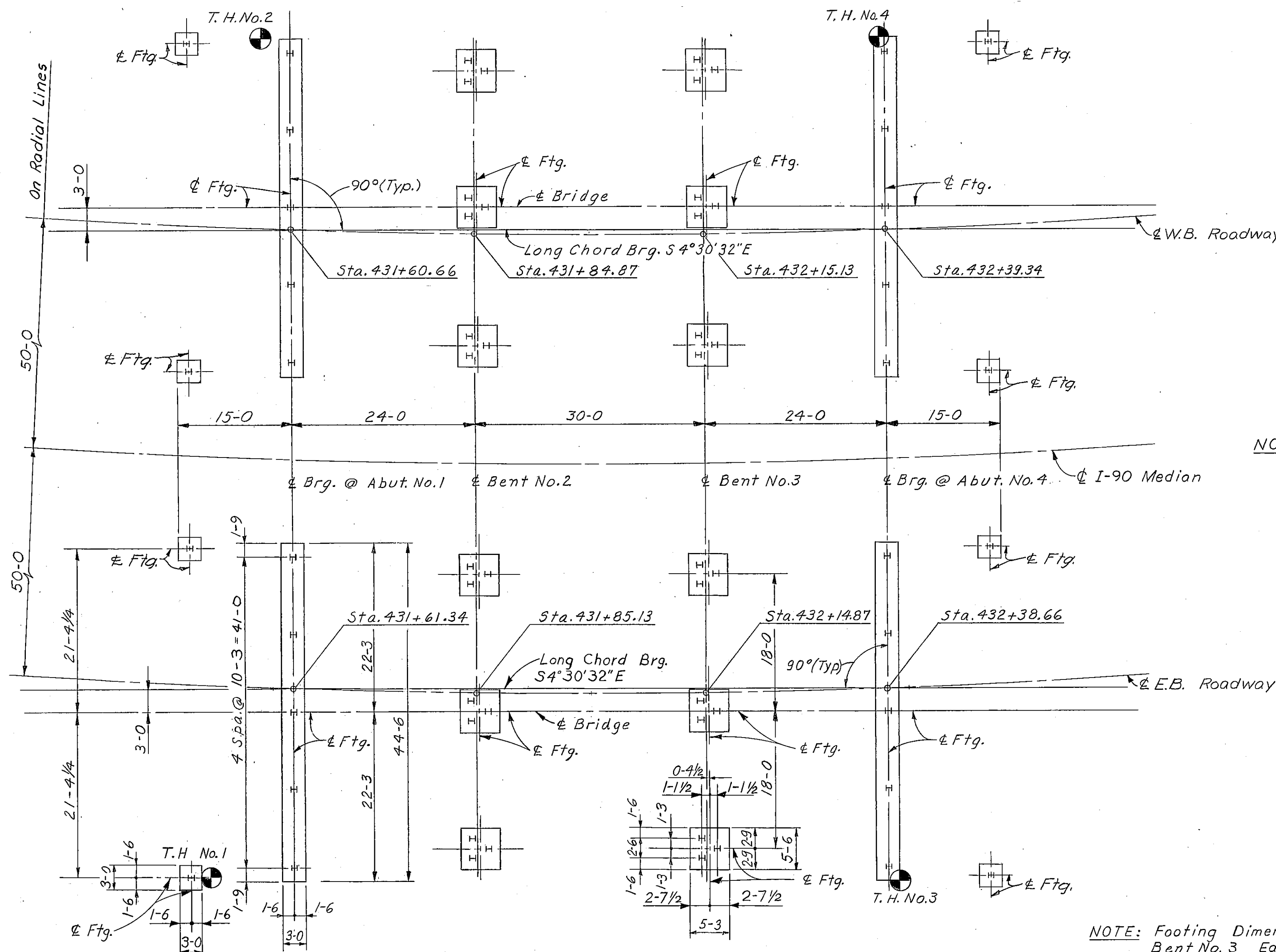
NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# HAMMER HAVING A 30" DROP. THE TOTAL PENETRATION OF THE SAMPLER TUBE IS INDICATED ON THE CORE LOGS AFTER EACH SERIES IF 6" PENETRATION WAS NOT ACHIEVED IN 50 BLOWS.

THE STATE DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION 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.

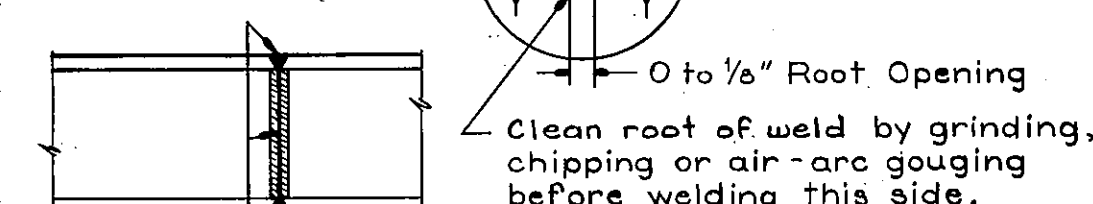
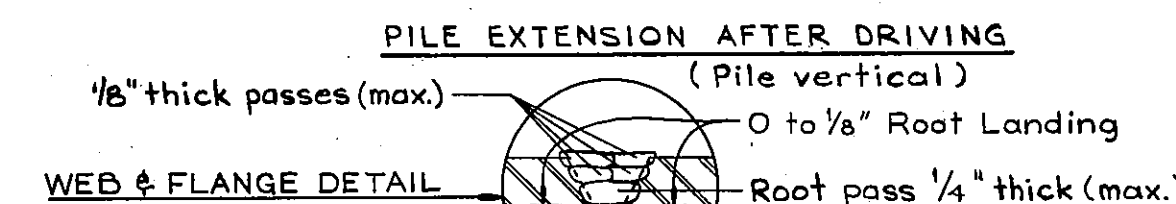
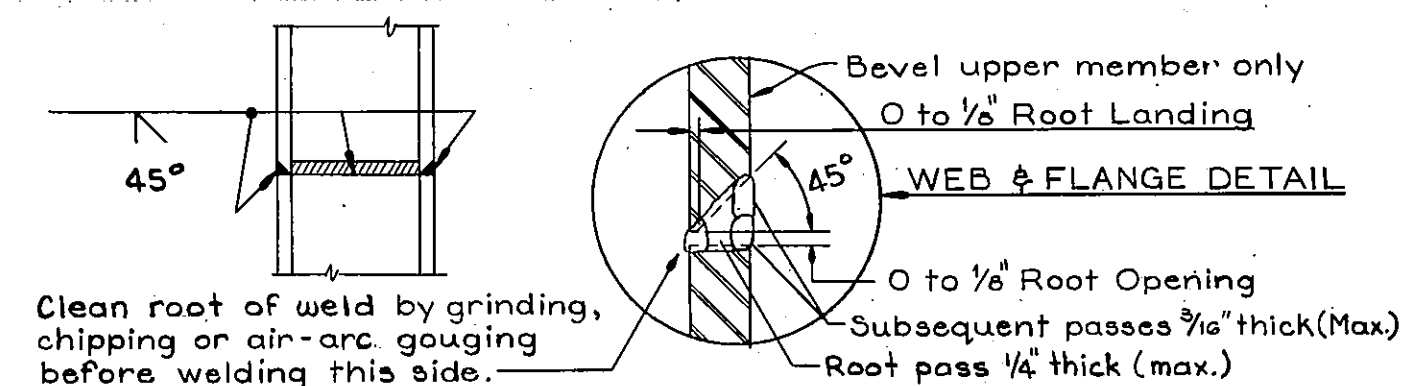
FOUNDATION PILES: FOR BIDDING PURPOSES ONLY, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE GENERAL LAYOUT.



LOG OF BORINGS



FOOTING PLAN



PERMISSIBLE WELDED SPLICE DETAILS FOR 8", 10" & 12" STEEL BEARING PILES
No Scale

Note: Only E60 or E70 series electrodes shall be used. Maximum 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.

NOTE: All Stations Shown Are Relative to I-90 Median Stations.

NOTE: Footing Dimensions Shown For Bent No. 3 Eastbound Roadway Are Typical For All Bents.

Footing Dimensions Shown For Abutment No. 1 Eastbound Roadway Are Typical For All Abutments.

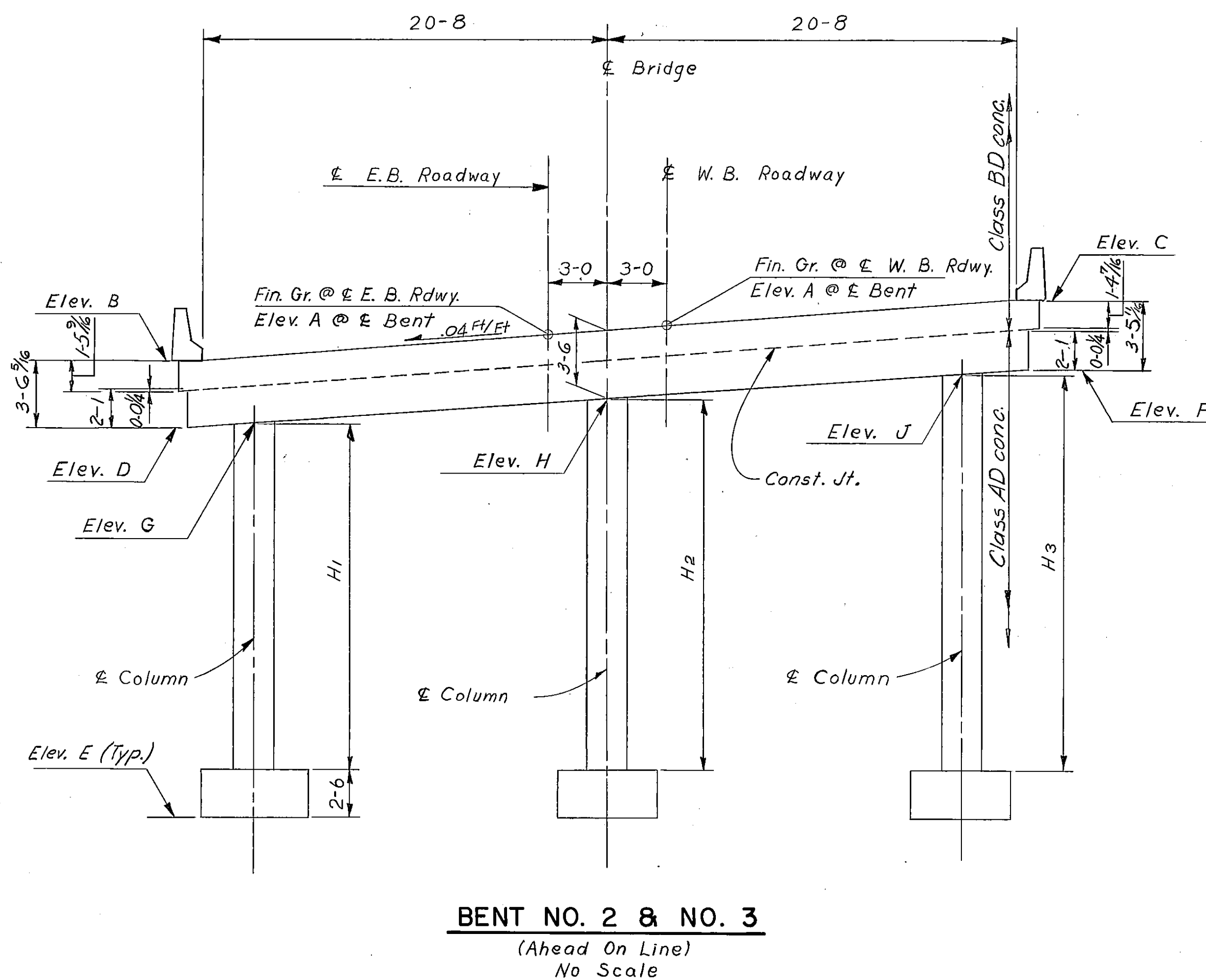
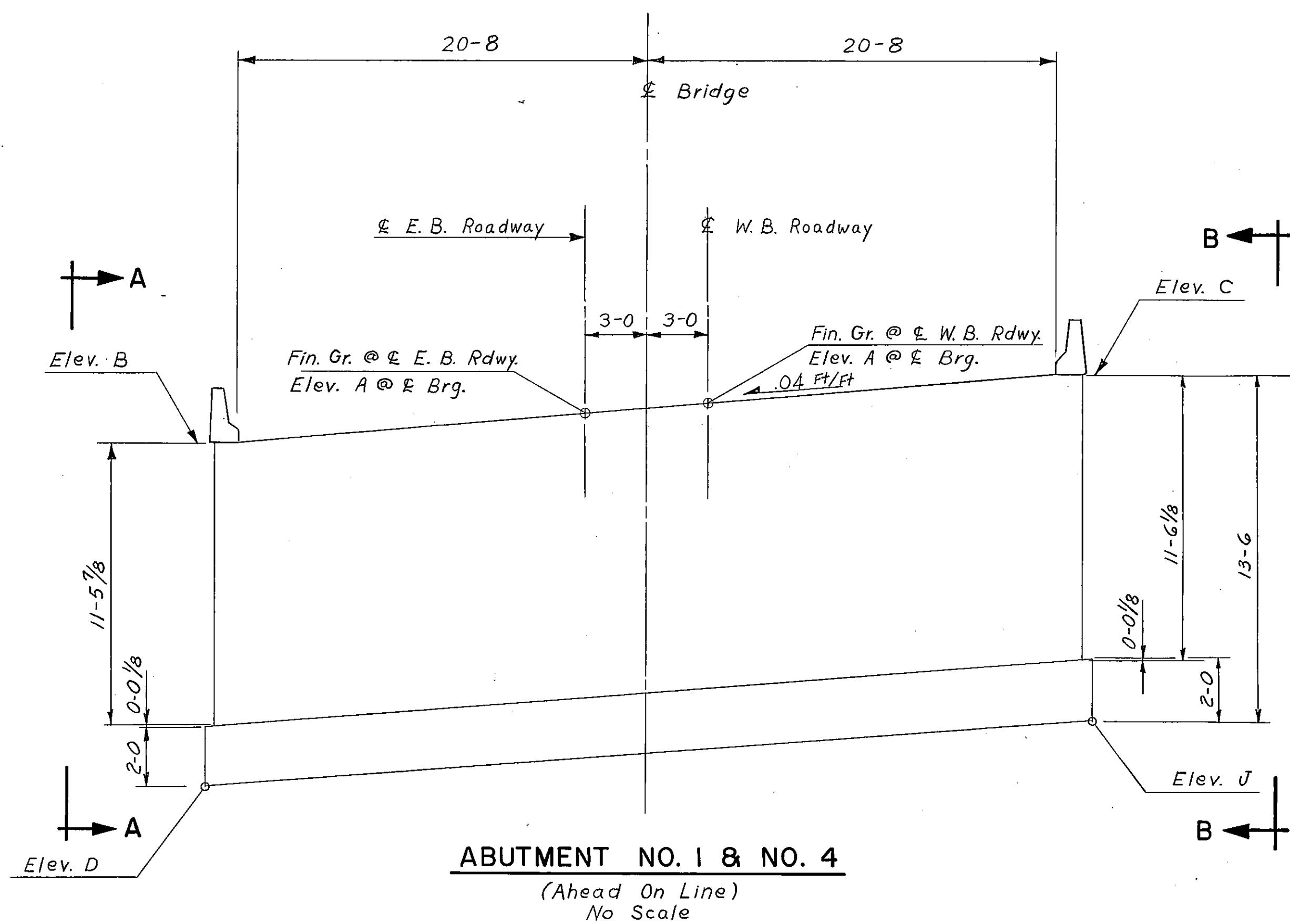
DESIGNED	LRP	4-12-73
DRAWN	RHP	4-16-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		
REVISED		

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

SEPARATION
AT STA. 432+00.00
FEDERAL AID PROJECT NO. I 90-9(33)516
BIG HORN COUNTY
FOOTING PLAN

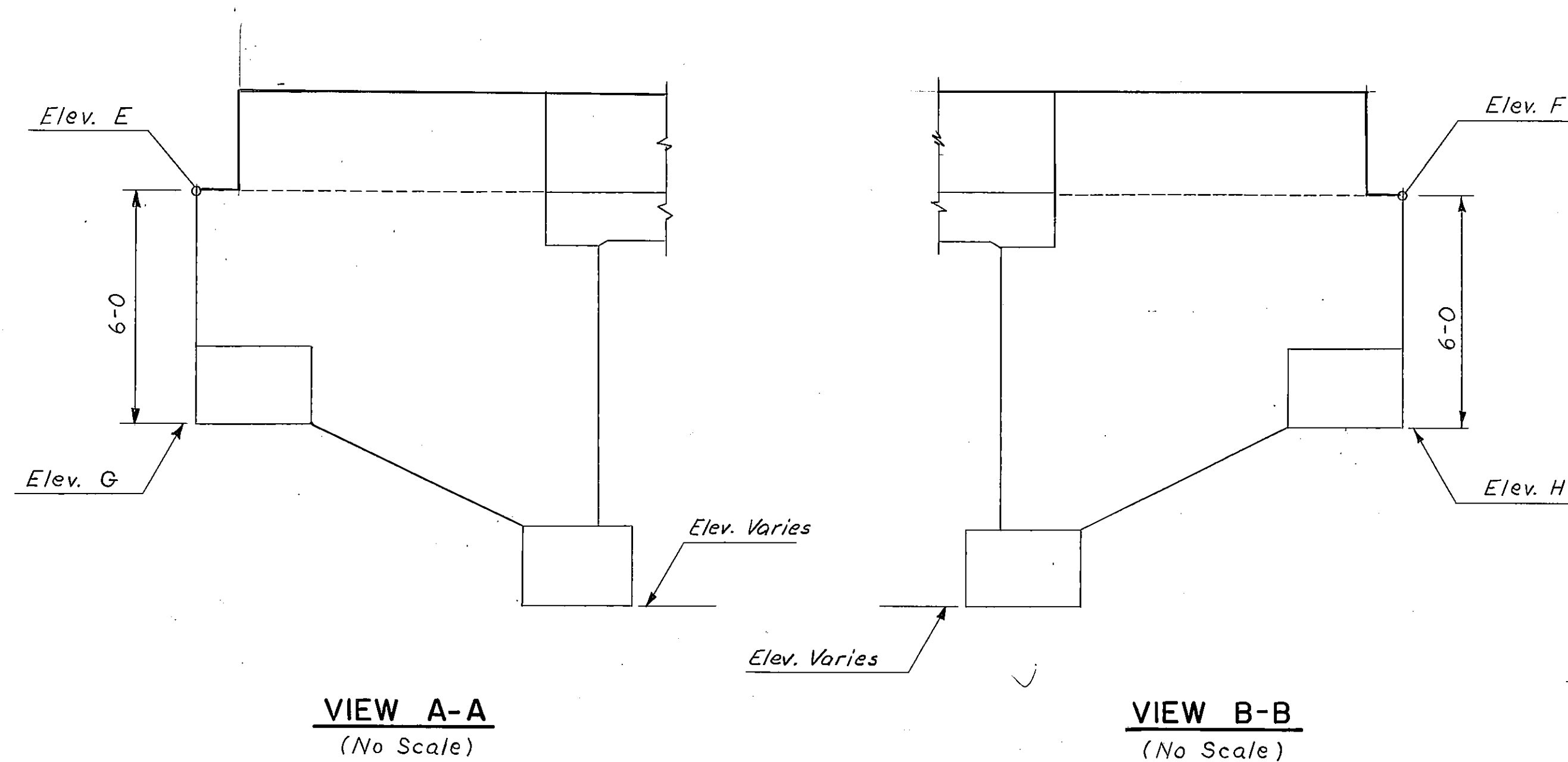
SCALE: 1"=10'-0" (EXCEPT AS NOTED)

DRAWING NO. 11177



NOTE: For Elevations and Column Heights
See Dwg. No. 11176.

Note: For Bill of Reinforcing Steel &
additional information see
Dwgs. No. FSA 15 & No. FSB 30



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
SEPARATION
AT STA. 432 + 00.00
FEDERAL AID PROJECT NO. 190-9(33)516
BIG HORN COUNTY
ELEVATION KEY

SCALE: AS NOTED

DESIGNED	LRP	4-12-73
DRAWN	LSL	4-27-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		
REVISED		

DRAWING NO. 11178

THE KEN R. WHITE CO. HELENA, MONT.				
FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	20	35

NOTES

LIVE LOAD: STANDARD HS20-44 OR ALTERNATE LOADING. ALTERNATE LOADING FOR BRIDGES AND FLOOR SYSTEMS WITH SPANS UNDER 40 FEET CONSISTS OF TWO AXLES FOUR FEET APART WITH EACH AXLE WEIGHING 24,000 LBS.

FINISHED GRADE: FINISHED PLAN GRADE OF WESTBOUND BRIDGE & ROADWAY IS 0.32' ABOVE PROFILE GRADE SHOWN ON ROAD PLANS.

FINISHED PLAN GRADE OF EASTBOUND BRIDGE & ROADWAY IS 0.32' BELOW PROFILE GRADE SHOWN ON ROAD PLANS.

SPECIFICATIONS: MONTANA DEPARTMENT OF HIGHWAYS AND THE MONTANA HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976 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, 1977 EDITION, AND ANY AMENDMENTS THERETO.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE IN THE SLAB AND CONCRETE BARRIERS SHALL BE CLASS "B" AND ALL OTHER CONCRETE SHALL BE CLASS "A".

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS. ESTIMATED WEIGHT = 1257 POUNDS.

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

W. B. PROFILE GRADE

No Scale

P.I. Sta. 586+00.00
Elev. 3365.91
-0.97%

E. B. PROFILE GRADE

No Scale

P.I. Sta. 89+50.00
Elev. 3335.35
-7.50%
100' V.C.
-1.60%

"C" LINE PROFILE GRADE

No Scale

Note: Structure Excavation shall be computed from subgrade elevations of the E.B. & W.B. Rdwy's. & the "C" Line Rdwy. for all abutments & bents, except as otherwise approved by the engineer.

Note: For "Sequence of Work" & "Maintenance of Traffic" see Special Provisions.

TABLE OF COLUMN HEIGHTS (See Dwg. No. 11181 For Location)				
	Bent No. 2		Bent No. 3	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
H ₁	17-1 1/16	17-4 1/16	16-10 1/16	16-11 1/4
H ₂	16-9 1/2	16-11 7/8	16-6 1/4	16-7 1/16
H ₃	16-5 1/4	16-7 1/16	16-2 1/16	16-2 7/8

TABLE OF ELEVATIONS(See Dwg. No. 11181 For Location)

Loc.	Abutment No. 1		Bent No. 2		Bent No. 3		Abutment No. 4	
	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.	E.B. Rdwy.	W.B. Rdwy.
A	3348.57	3350.76	3348.35	3350.43	3348.08	3350.03	3347.86	3349.71
B	3348.93	3351.24	3348.71	3350.91	3348.44	3350.51	3348.22	3350.19
C	3348.10	3350.41	3347.88	3350.08	3347.61	3349.68	3347.39	3349.36
D	3338.18	3340.49	3345.21	3347.41	3344.94	3347.01	3337.47	3339.44
E	3349.02	3351.24	3325.50	3327.50	3325.50	3327.50	3348.12	3350.06
F	3348.19	3350.55	3344.38	3346.58	3344.11	3346.18	3347.29	3349.23
G	3343.02	3345.24	3345.14	3347.34	3344.87	3346.94	3342.12	3344.06
H	3342.19	3344.55	3344.79	3346.99	3344.52	3346.59	3341.29	3343.23
J	3337.35	3339.66	3344.44	3346.64	3344.17	3346.24	3336.64	3338.61

STEEL BEARING PILES

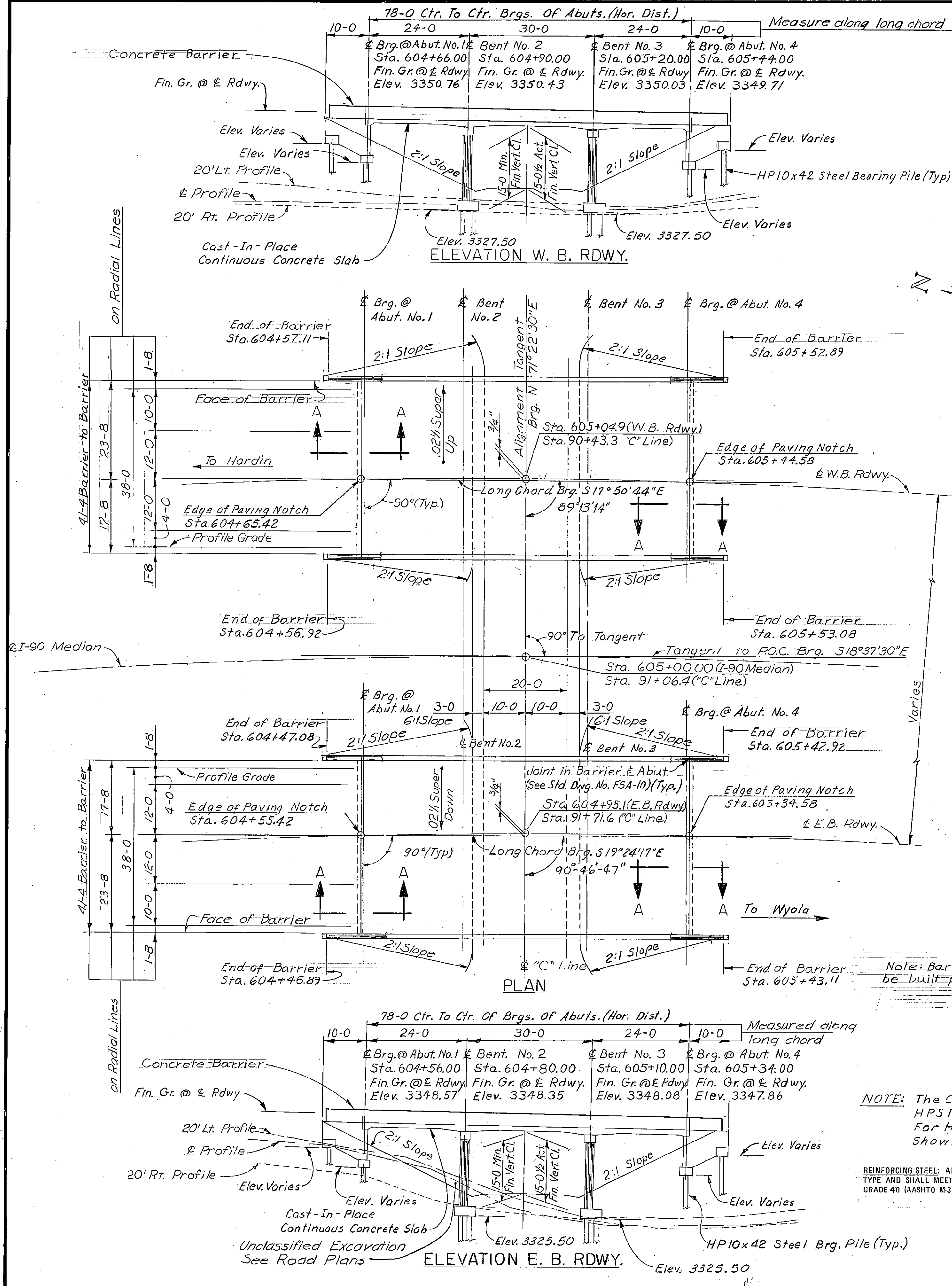
LOCATION		NO*	Estimated Length	
			E.B. Rdwy.	W.B. Rdwy.
Abutment No.1	WINGWALL FOOTINGS	2	19-0	25-0
	ABUTMENT FOOTINGS	5	14-0	20-0
BENT NO. 2		9	10-0	10-0
BENT NO. 3		9	10-0	10-0
Abutment No. 4	WINGWALL FOOTINGS	2	30-0	30-0
	ABUTMENT FOOTINGS	5	26-0	26-0

*No. Shown Is For One Bridge Only.

DESIGNED	LRP	4-11-73
DRAWN	DLK	4-20-73
CHECKED	REW	7-12-73
APPROVED	Hes.	7-12-77
REVISED		

SCALE: 1" = 15'-0" (EXCEPT AS NOTED)

DRAWING NO. 11179



Elev. 3341.7

Elev. 3336.6

Elev. 3334.0

Elev. 3326.7

Sandy Silty Clay

Weathered Sandy Shale

Gray Sandy Shale

Dry
T.H. No. 1
80' Right of
I-90 Sta. 604+61

Elev. 3332.7

Elev. 3328.3

Elev. 3325.7

Elev. 3317.2

Sandy Silty Clay

Weathered Sandy Shale

23-50-(0.9) Sandy Shale

50-(0.2)

T.H. No. 2
60' Left of
I-90 Sta. 604+61

Elev. 3326.5

Elev. 3324.0

Elev. 3321.5

Elev. 3311.3

Elev. 3310.5

Sandy Silty Clay

Weathered Sandy Shale

29-50-(0.9) Gray Sandy Shale

45-50-(1.0) Sandstone

T.H. No. 3
80' Right of
I-90 Sta. 605+39

Elev. 3337.5

Elev. 3328.5

Elev. 3325.8

Elev. 3323.5

Elev. 3317.3

-200 96% LL64 PI44
Dd 117 p.c.f. Mc 17.3% Qu 2,600 p.s.f.
Soluble Sulfates 2,000 + p.p.m.

Sandy Silty Clay

6-10-13 Silty Sand

Weathered Sandy Shale

37-47-50 Sandy Shale

50-(0.2)

T.H. No. 4
80' Left of
I-90 Sta. 605+39

THE KEN R. WHITE CO.
HELENA, MONT.

FED. ROAD DIV. NO.	STATE	F.A.P. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	I 90-9(33)516	21	35

NOTES

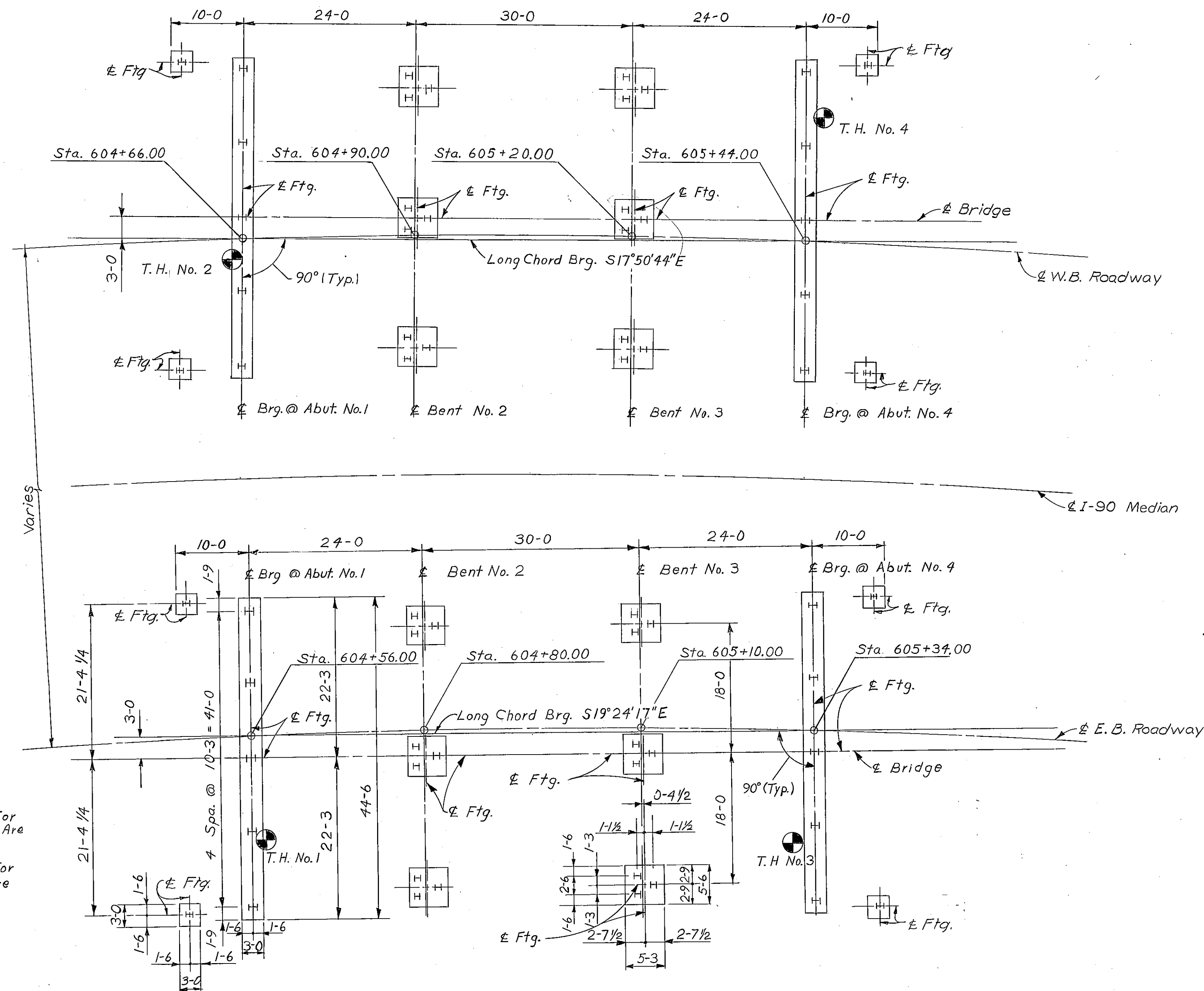
SOILS AND FOUNDATION MATERIALS: BORINGS WERE TAKEN BY THE STATE OF MONTANA DEPARTMENT OF HIGHWAYS AT THE POINTS SHOWN ON THE FOOTING PLAN.

NUMBERS SHOWN ON THE LOG OF BORINGS INDICATE THE NUMBER OF BLOWS PER 6" PENETRATION FOR A 2" SAMPLE TUBE WHICH HAS BEEN DRIVEN IN ACCORDANCE WITH THE STANDARD PENETRATION TEST MADE WITH A 2" SPLIT TUBE SAMPLER USING A 140# 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 DEPARTMENT OF HIGHWAYS DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY VARIATION OR MIS-INTERPRETATION OF THE CLASSES OF MATERIALS AND ADJUSTMENT IN BID PRICES WILL NOT BE MADE IF THE MATERIALS LOG DO NOT AGREE WITH THOSE SHOWN IN THE LOG OF BORINGS.

FOUNDATION PILES: FOR BIDDING PURPOSES ONLY, THE PILE LENGTHS HAVE BEEN ESTIMATED AS NOTED ON THE GENERAL LAYOUT.

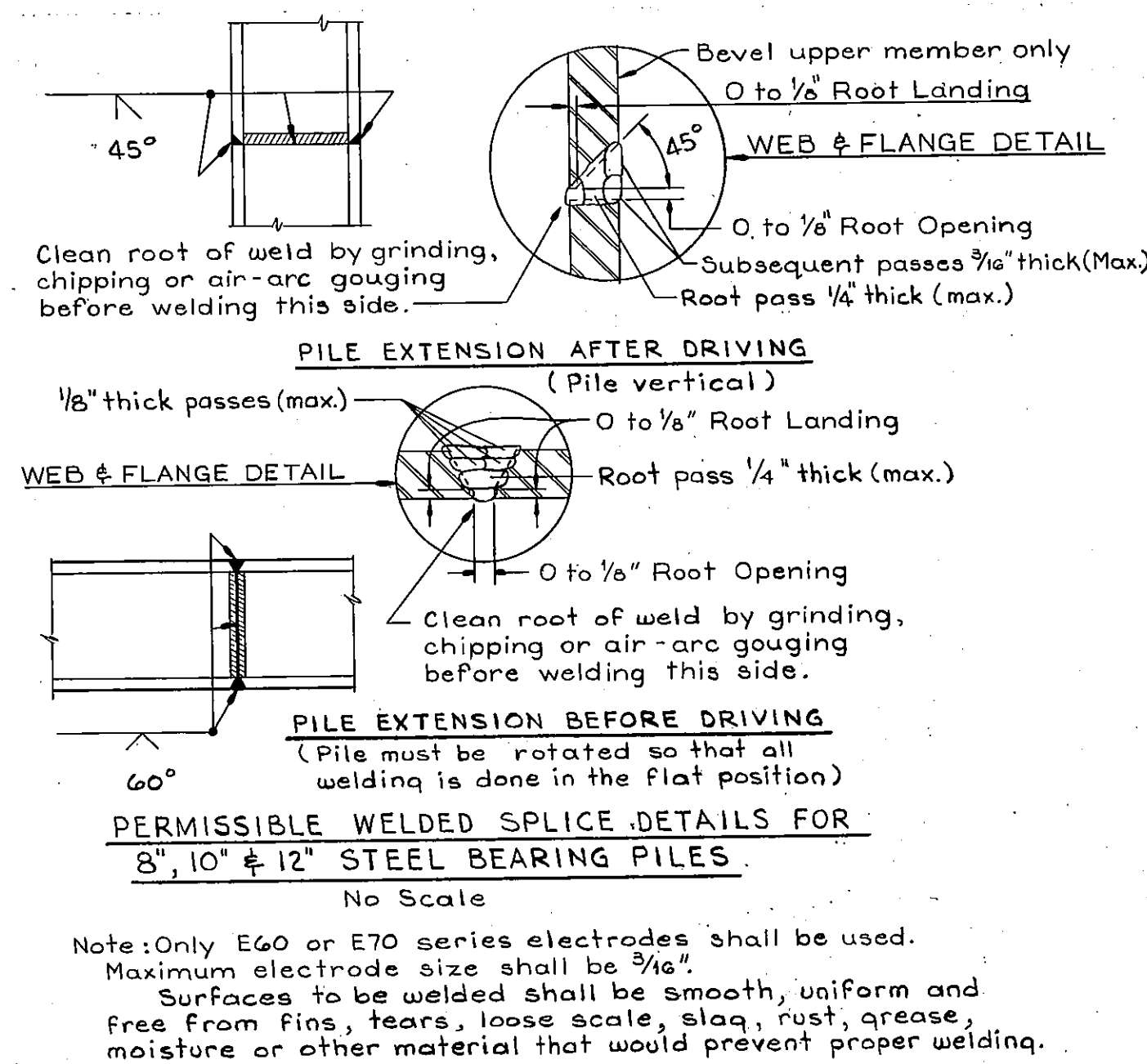
LOG OF BORINGS



FOOTING PLAN

NOTE: Footing Dimensions Shown For Abutment No. 1 E.B. Roadway Are Typical For All Abutments.

Footing Dimensions Shown For Bent No. 3 E.B. Roadway Are Typical For All Bents.



STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

SEPARATION

AT STA. 605+00.00

FEDERAL AID PROJECT NO. I 90-9(33)516

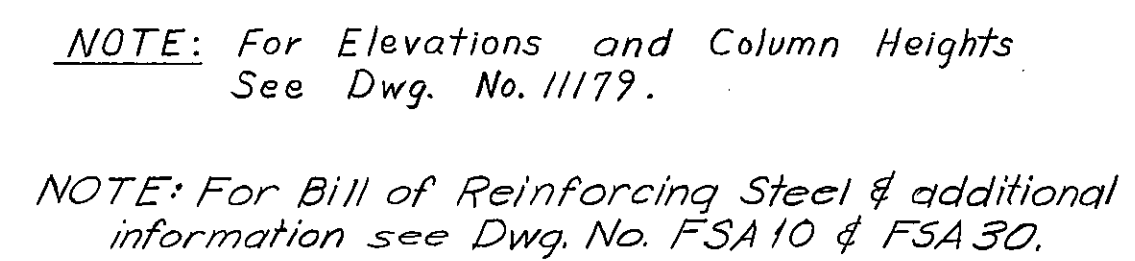
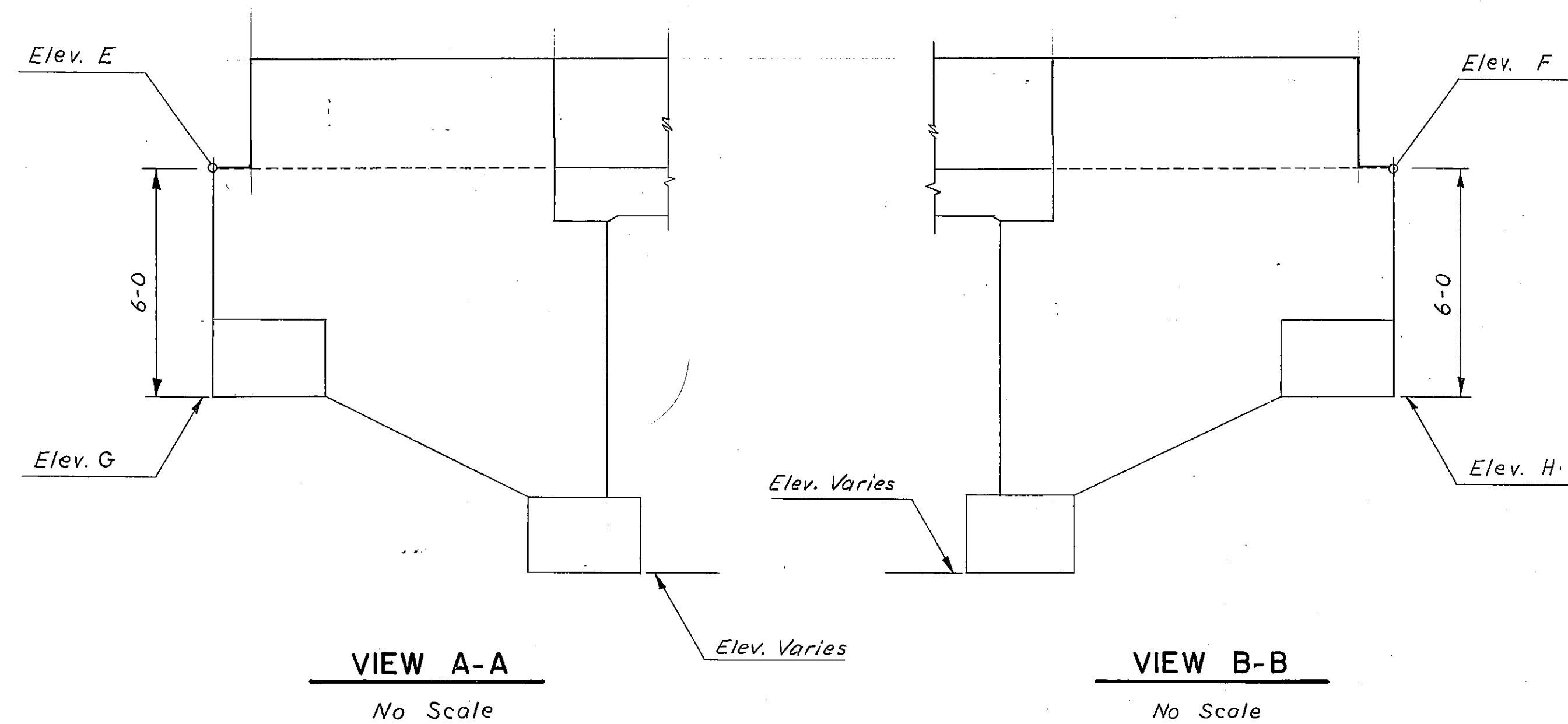
BIG HORN COUNTY

FOOTING PLAN

SCALE: 1"=10'-0" (EXCEPT AS NOTED)

DRAWING NO. 11180

DESIGNED	LRP	4-11-73
DRAWN	LSL	5-1-73
CHECKED	JFS	6-25-73
APPROVED		
REVISED		



DESIGNED	L P P	4-11-73
DRAWN	L S L	4-30-73
CHECKED	J F S	6-25-73
APPROVED		
REVISED		
REVISED		

DRAWING NO. 11181

MONTANA

DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT NO. IM 90-9(95)510 P.E.
IM 90-9(100)517 CONST.

GARRYOWEN - SOUTH

BIG HORN COUNTY

LIST OF DRAWINGS

<u>SHEET NO.</u>	<u>DWG. NO.</u>	<u>TITLE</u>
B1.....	20192.A.....	BRIDGE RAIL SUMMARY AND NOTES
B2.....	20192.B.....	RAIL END MODIFICATIONS
B3.....	20192.C.....	RAIL END MODIFICATIONS
B4.....	20193.A.....	BARRIER END MODIFICATIONS
B5.....	20193.B.....	BARRIER END MODIFICATIONS

SUMMARY TABLE						
FEATURE CROSSED	BRIDGE IDENTIFICATION NO.	RTE	GENERAL LAYOUT Dwg. No.	SIDE	BRIDGE APPROACH SECTION TYPE	REVISED BARRIER END STATION(S) (m)
LITTLE BIG HORN RIVER	100090517+05021	E. B.	3719	BOTH	3	86+73.786
	100090517+05022	W. B.	11160	LEFT	1	87+17.759
				RIGHT	1	87+20.060
SEPARATION RENO CR. RD.	100090517+08091	E. B.	11170	LEFT	1	91+68.847
	100090517+08092	W. B.		RIGHT	1	91+69.225
				LEFT	1	92+11.925
				RIGHT	1	92+11.519
SEPARATION COUNTY RD.	100090520+03611	E. B.	11176	LEFT	1	131+50.992
	100090520+03612	W. B.		RIGHT	1	131+51.111
				LEFT	1	131+84.036
				RIGHT	1	131+83.911
SEPARATION COUNTY RD.	100090523+06361	E. B.	11179	LEFT	1	184+23.965
	100090523+06362	W. B.		RIGHT	1	184+23.907
				LEFT	1	184+56.826
				RIGHT	1	184+56.884

GENERAL NOTES:

GENERAL: Plans were prepared from original drawings and as-built drawings. No additional survey information was procured for this project. Existing structure dimensions may vary from those shown on the drawings. Verify all dimensions necessary to complete the work.

SPECIFICATIONS: Montana Department of Transportation and the Montana Transportation Commission Standard Specifications for Road and Bridge Construction, 2006 edition, and any amendments thereto, and special provisions govern unless otherwise noted. Design was prepared in accordance with AASHTO Standard Specifications for Highway Bridges, 17th edition - 2002, and any amendments thereto.

DIMENSIONS: All dimensions are in millimeters except as noted. Verify all necessary dimensions of the existing structures in the field before ordering materials. If the dimensions and details of the existing structure are not as shown on the plans, vary construction as necessary to best suit existing conditions and the nature of the intended work.

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31 Grade 60. Include all costs in the unit price bid for Guard Rail-Std/Br Appr-Ty 1 or Ty 3.

GALVANIZING: Galvanize all bolts, nuts, washers and pipe sleeves in accordance with AASHTO M 232M.

General Layout Drawings are available from the MDT Bridge Bureau.



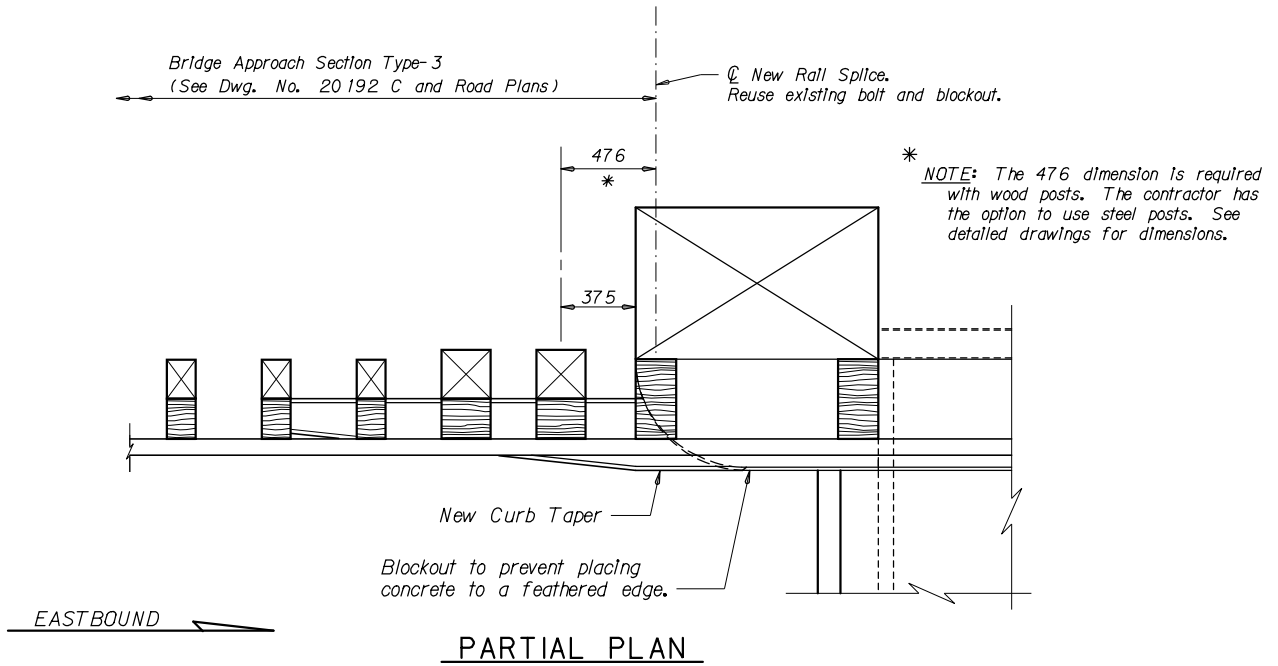
GARRYOWEN - SOUTH

FEDERAL AID PROJECT NO. IM 90-9(100)517

BIG HORN COUNTY

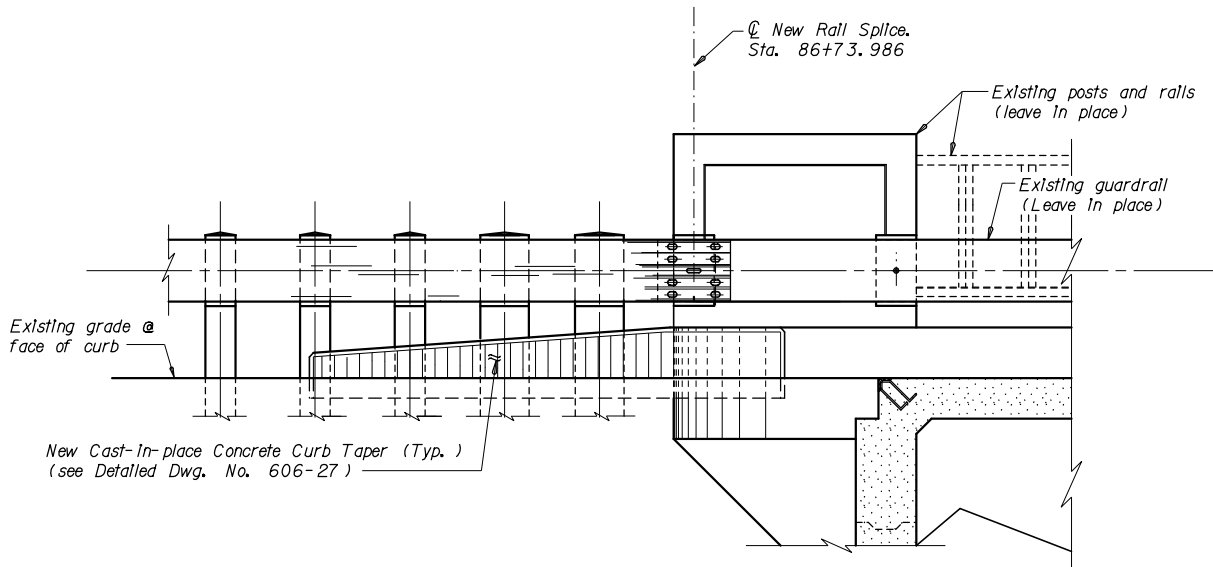
BRIDGE RAIL SUMMARY AND NOTES

DESIGNED	11-17-06	D. W. C.
DRAWN	11-20-06	D. W. C.
CHECKED	5-19-08	J. S. O.
APPROVED		
REVISED		
REVISED		



NOTE: Lap new guardrail in the direction of traffic.

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



(Approach end only. Left side shown, right side similar)

NOTES:

REFLECTORS: Place a reflector on each rail post and at approximately equal spacing (every third rail post but not to exceed 7 620 mm) between end rail posts. Mount reflectors with reflectorized face toward oncoming traffic. See Detailed Dwg. No. 606-05 B for reflector detail. Include the cost of the reflector in the unit price bid for Guard Rail - Stl/Br Appr - Ty 3.

PAYMENT: Include all resources necessary to modify bridge rail ends in the unit price bid for Guard Rail - Stl/Br Appr - Ty 3.



GARRYOWEN - SOUTH

FEDERAL AID PROJECT NO. IM 90-9(100)517

BIG HORN COUNTY

RAIL END MODIFICATIONS

LITTLE BIG HORN RIVER

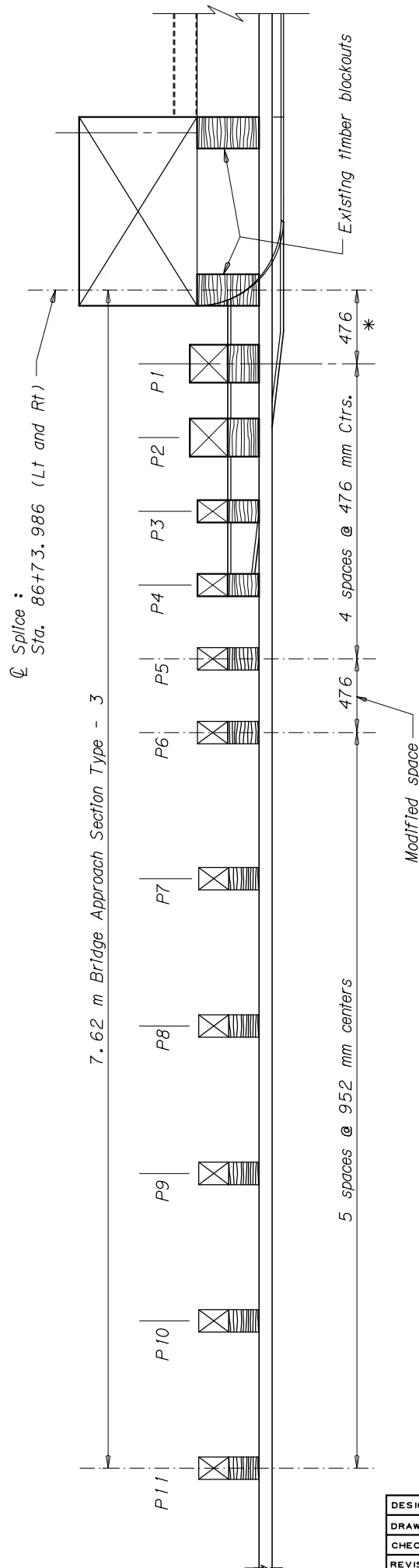
(R.P. 517.502 - E.B.)

SCALE: NO SCALE

FILENAME: 5177BRVP012.DGN DRAWING NO. 20192 B

DESIGNED	11-17-06	D. W. C.
DRAWN	11-20-06	D. W. C.
CHECKED	5-20-08	J. S. O.
REVISED		
REVISED		

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	IM 90-9(100)517	B3



REVISED TYPE 3 BRIDGE APPROACH SECTION

* **NOTE:** The 476 dimension is required with wood posts. The contractor has the option to use steel posts. See detailed drawings for dimensions.

* **NOTE:** For additional details, see Det. Dwg. No. 606-24.



GARRYOWEN - SOUTH
 FEDERAL AID PROJECT NO. IM 90-9(100)517
 BIG HORN COUNTY
 RAIL END MODIFICATIONS
 LITTLE BIG HORN RIVER
 (R.P. 517.502 - E.B.)

DESIGNED	12-8-06	D. W. C.
DRAWN	12-11-06	D. W. C.
CHECKED	5-20-08	J. S. O.
REVISED		
REVISED		
REVISED		

SCALE: NO SCALE

NOTES:

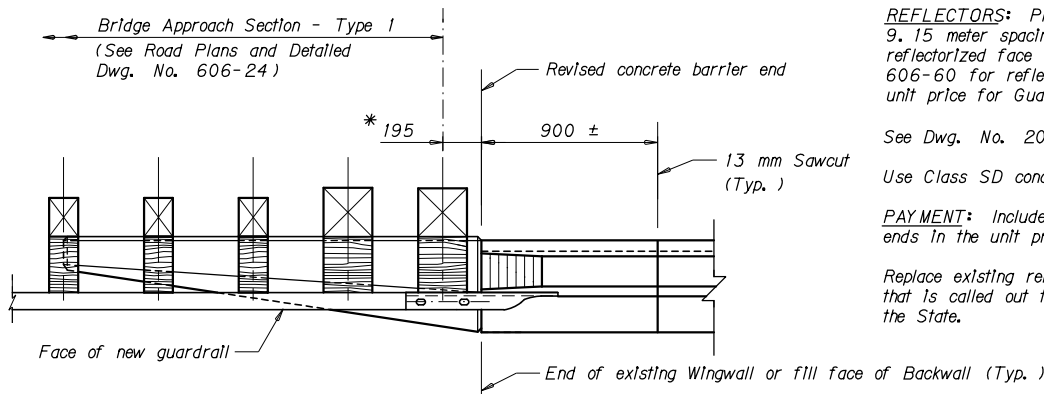
REFLECTORS: Place a white reflector on top of concrete barrier @ 9.15 meter spacing between ends of barrier. Mount reflectors with reflectorized face toward oncoming traffic. See Dtl. Dwg. No. 606-60 for reflector detail. Include the cost of reflectors in the unit price for Guard Rail - St/Br Appr - Ty 1.

See Dwg. No. 20193 B for more information.

Use Class SD concrete in barriers.

PAYMENT: Include all resources necessary to modify Barrier ends in the unit price bld for Guard Rail - St/Br Appr - Ty 1.

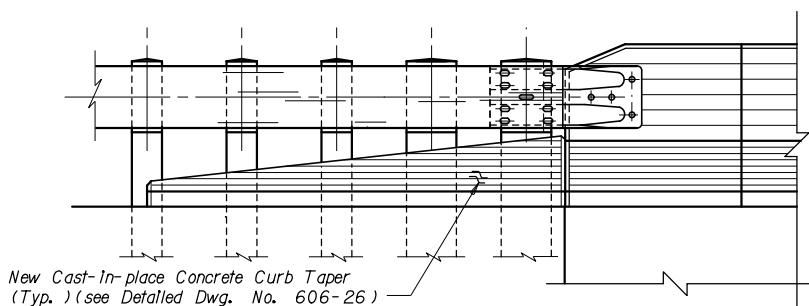
Replace existing reinforcing steel damaged during construction that is called out to remain in place at no additional cost to the State.



PARTIAL PLAN VIEW

Scale ~ 1:20

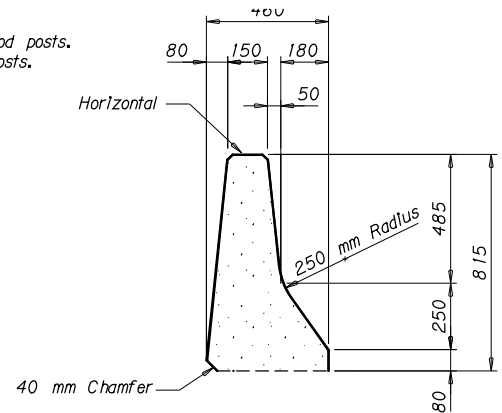
* **NOTE:** The 195 mm dimension is required with wood posts. The contractor has the option to use steel posts. See Detailed Drawings for dimensions.



PARTIAL ELEVATION VIEW

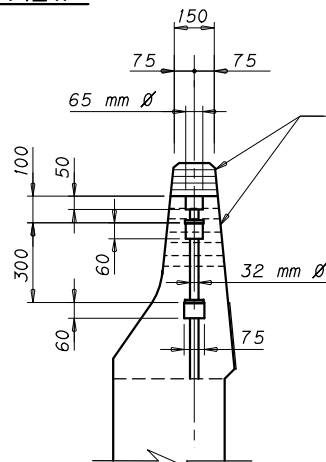
(Approach End Only)

Scale ~ 1:20

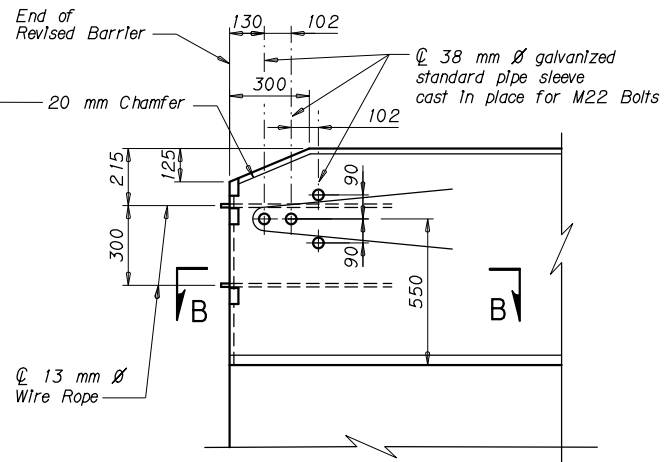


BARRIER DETAIL

Scale ~ 1:15



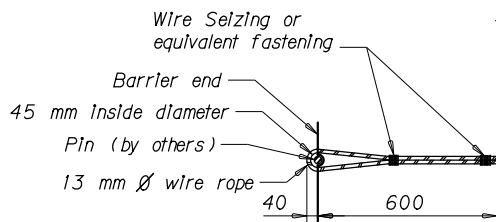
END VIEW



SIDE VIEW

BARRIER END DETAILS

Scale ~ 1:15



SECTION B-B

Scale ~ 1:25

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

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

NOTE: Include galvanized pipe sleeves and wire rope in the unit price bld for Guard Rail - St/Br Appr - Ty 1.

DESIGNED	11-1-06	D. W. C.
DRAWN	11-3-06	D. W. C.
CHECKED	5-20-08	J. S. O.
REVISED		
REVISED		
REVISED		



GARRYOWEN - SOUTH

FEDERAL AID PROJECT NO. IM 90-9(100)517

BIG HORN COUNTY

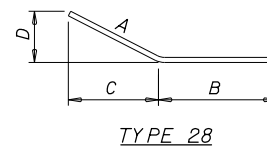
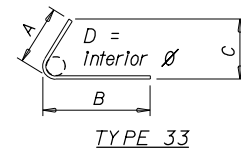
BARRIER END MODIFICATIONS

MULTIPLE LOCATIONS

SCALE: AS NOTED

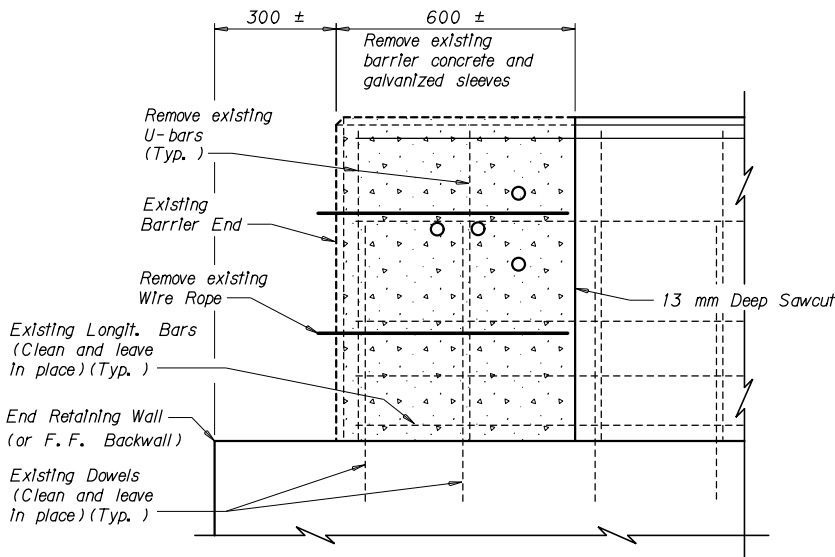
FILENAME: 5177BRVP011.DGN DRAWING NO. 20193 A

BILL OF REINFORCING STEEL (FOR INFORMATION ONLY) (PER BARRIER END)



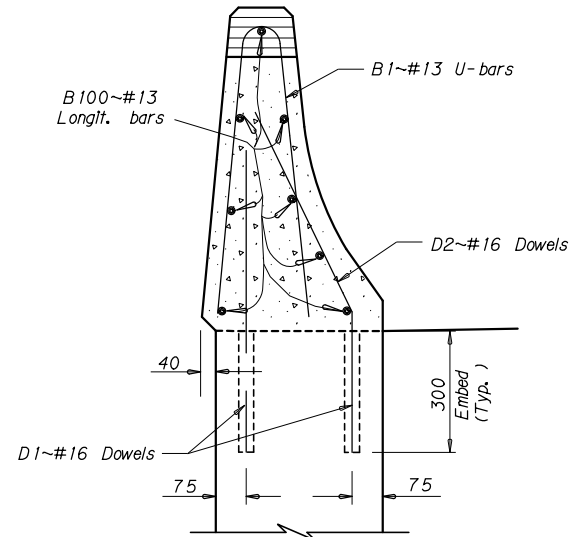
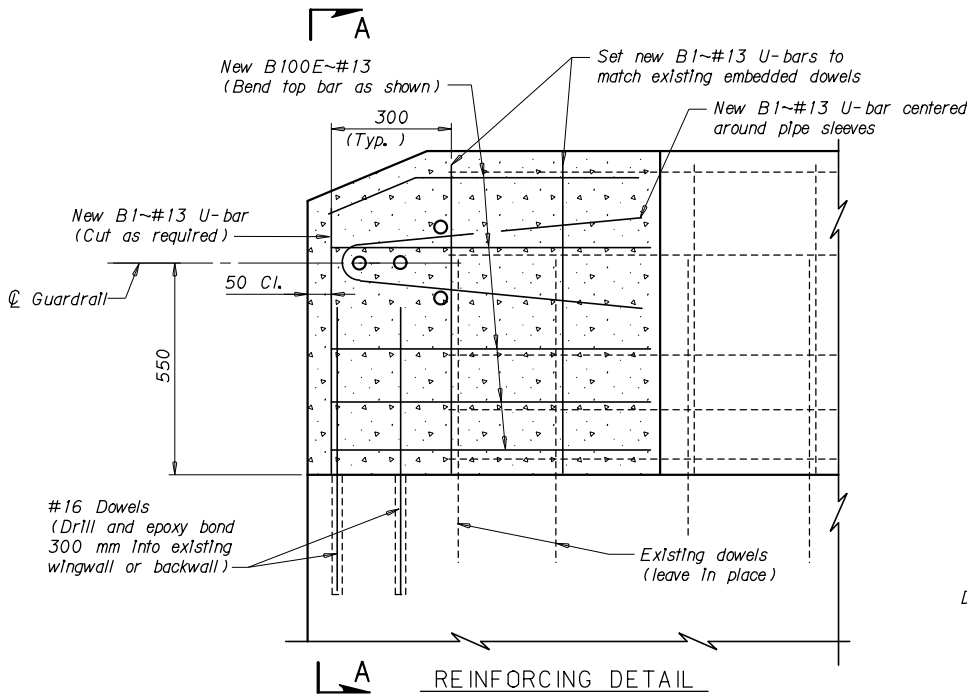
STRAIGHT BARS			
Mark	Size	No.	Length
B100	#13	8	800
D1	#16	2	750

BENT BARS (All dimensions are out to out)								
Mark	Size	No.	Type	Length	A	B	C	D
B1	#13	4	33	1 580	770	770	230	60
D2	#16	2	28	910	560	350	500	240



EXISTING BARRIER END - ELEVATION

Scale ~ 1:10



MODIFIED BARRIER DETAIL

Scale ~ 1:10



GARRYOWEN - SOUTH
FEDERAL AID PROJECT NO. IM 90-9(100)517
BIG HORN COUNTY

BARRIER END MODIFICATIONS

MULTIPLE LOCATIONS

SCALE: AS NOTED

DESIGNED	10-23-06	D. W. C.
DRAWN	11-13-06	D. W. C.
CHECKED	5-20-08	J. S. O.
REVISED		
REVISED		
REVISED		