STATE OF MONTANA

STATE HIGHWAY COMMISSION

BRIDGE PLANS & QUANTITIES

FED. AID SECONDARY PROJECT NO. S 401

(1) P.E.
(3) CONSTRUCTION

PLEVNA - WILLARD

FALLON COUNTY

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
1.	6443	GENERAL LAYOUT AT STA. 375+35.00
2.	6444	BENTS NO. 1 & NO. 3
3.	6445	BENT NO. 2
4.	6446	SLAB, CURB & DIAPHRAGM DETAILS
5.	6447	GENERAL LAYOUT AT STA. 421+16.00
6.	6448	BENTS NO. 1 & NO. 3
7.	6449	BENT NO. 2
8.	6450	SLAB, CURB & DIAPHRAGM DETAILS
9.	PRES. BEAM STD. NO. 2 TYPE-A (Rev. 8-24-62)	STANDARD PRE-TENSIONED & POST-TENSIONED PRESTRESSED CONCRETE BEAMS
10.	SBBR (Rev. 10-8-62)	STEEL BEAM BRIDGE RAIL AND DETAILS

ESTIMATED BRIDGE PLAN QUANTITIES

5% Swell in Class "A" Concrete
15% Swell in Structure Excavation

	LOCATION	LENGTH IN FEET	REINFORCING STEEL LBS.	CLASS "A" CONCRETE CU. YDS.	CLASS "AD" CONCRETE CU. YDS.	STEEL BEAM BRIDGE RAIL LIN. FT.	STRUCTURE EXCAVATION CU. YDS.	PRESTRESSED BEAMS TYPE "A" (EACH) 65'	TREATED TIMBER PILES FURNISHING LIN. FT.	TREATED TIMBER PILES DRIVING LIN. FT.	TREATED TIMBER TEST PILES LUMP SUM	PREBORE HOLES FOR PILES LIN. FT.
STA. 375+35.00	BENT NO. 1		1,934	10	8.8		15		270	261		
	BENT NO. 2		5,568	47			150				0.50 LUMP SUM	
	BENT NO. 3		1,934	10	8.8		10		270	261		113
	SUPERSTRUCTURE	131.50	18,876		103.8	267.08		10				
	SUB-TOTAL	131.50	28,312	67	121.4	267.08	175	10	540	522	0.50 LUMP SUM.	113
STA. 421+16.00	BENT NO. 1		1,843	9	8.2		10		270	261		107
	BENT NO. 2		5,259	46			160				0.50 LUMP SUM	
	BENT NO. 3		1,843	9	8.2		30		360	351		
	SUPERSTRUCTURE	131.50	18,428		103.4	267.08		10				
	SUB-TOTAL	131.50	27,373	64	119.8	267.08	200	10	630	612	0.50 LUMP SUM	107
	GRAND TOTAL	263.00	55,685	131	241.2	534.16	375	20	1,170	1,134	1.00 LUMP SUM	220

Drawn By: GCS 3-29-63 Checked By: DRS 6-5-63

JRR

DRAWING NO. 6443 Q

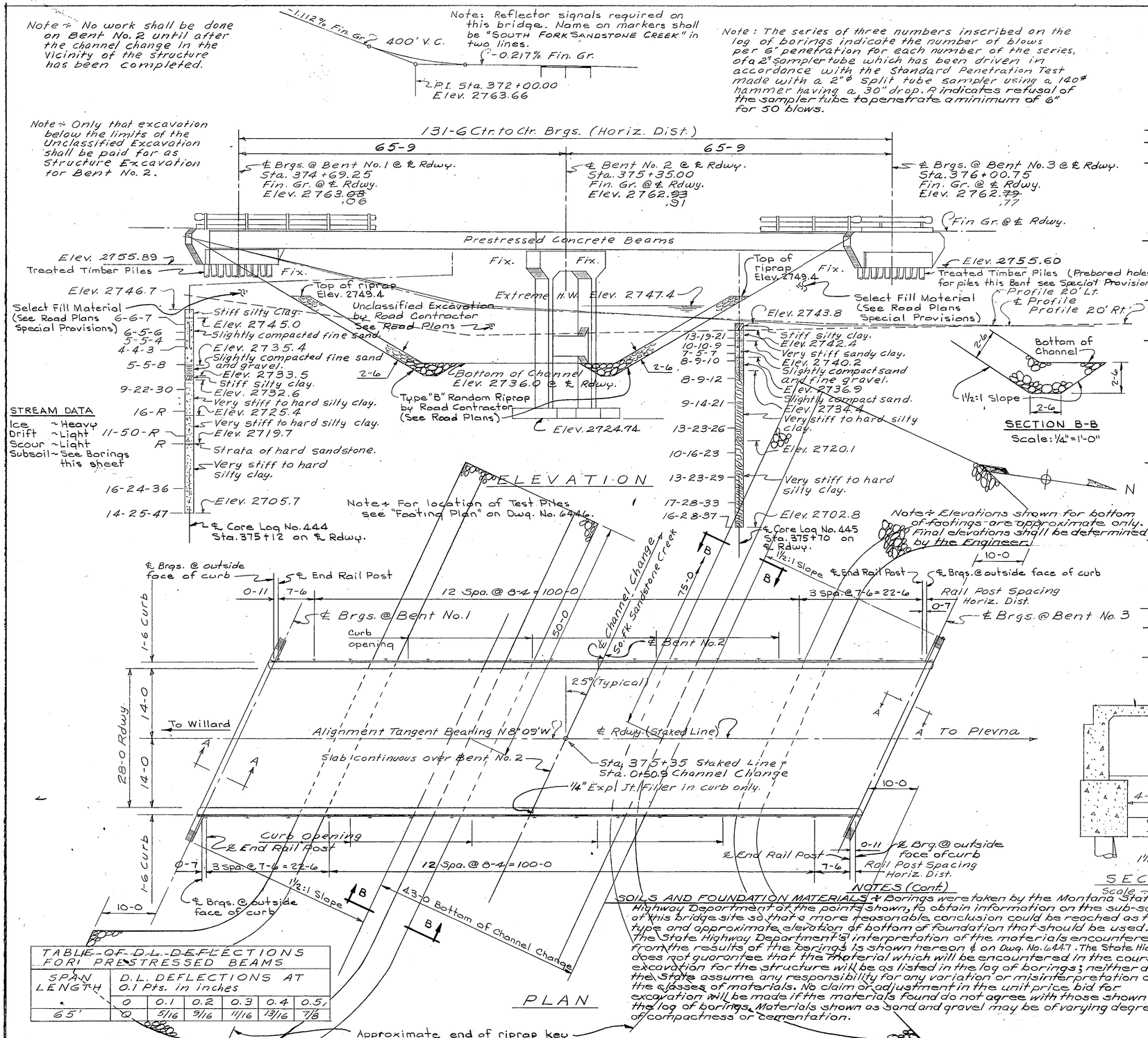
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	[redacted]		
		STPS 494-1(2)0	B2	

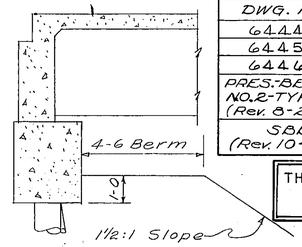
Note ÷ No work shall be done on Bent No. 2 until after the channel change in the vicinity of the structure has been completed.

Note: Reflector signals required on this bridge. Name on markers shall be "SOUTH FORK SANDSTONE CREEK" in two lines.

Note: The series of three numbers inscribed on the log of borings indicate the number of blows per 6" penetration for each number of the series, of a 2" sampler tube which has been driven in accordance with the Standard Penetration Test made with a 2" ϕ split tube sampler using a 140# hammer having a 30" drop. R indicates refusal of the sampler tube to penetrate a minimum of 6" for 50 blows.

Note ÷ Only that excavation below the limits of the Unclassified Excavation shall be paid for as Structure Excavation for Bent No. 2.





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

TABLE OF D.L. DEFLECTIONS FOR PRESTRESSED BEAMS						
SPAN LENGTH	D.L. DEFLECTIONS AT 0.1 Pts. in inches					
	0	0.1	0.2	0.3	0.4	0.5
65'	0	5/16	9/16	11/16	13/16	7/8

NOTES

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

LIVE LOAD ÷ Standard H15-S12 Loading.

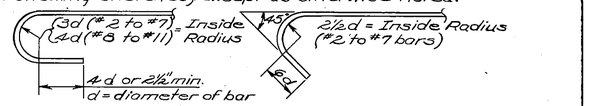
FINISHED GRADE ÷ Finished plan grade of bridge is same as profile grade shown on road plans.

CAST IN PLACE CONCRETE ÷ All cast in place concrete of superstructure and as noted on Bents No. 1 and No. 3 shall be Class "AD". All other concrete in Bents No. 1, No. 2 and No. 3 shall be Class "A". An "Air Entraining Agent" shall be added to all cast in place concrete. Chamfer all exposed edges of concrete ¾ inch and fillet entrant angles ¾ inch unless otherwise noted. Quantities of Class "AD" concrete have been computed using pre-tensioned beams. Quantities of Class "AD" concrete and reinforcing steel will vary slightly using post-tensioned beams.

PRECAST PRESTRESSED CONCRETE BEAMS ÷ All precast prestressed concrete shall have a minimum compressive strength of 5000 p.s.i. at the age of 28 days. (See Sub-Section 41.10 for Precast Prestressed Concrete Beams.) An "Air Entraining Agent" may be added to any precast prestressed concrete. Chamfer all exposed edges of concrete ¾ inch and do not fillet entrant angles unless otherwise noted.

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

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



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 or zinc chromate primer and two (2) field coats consisting of first field or primer coat and one (1) coat of aluminum paint as specified in the Standard Specifications, on all surfaces not in contact with the concrete, except as noted in the Standard Specifications.

STRUCTURAL STEEL ÷ (Method of Measurement & Payment) ÷ 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.

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

FOUNDATION PILES ÷ For bidding purposes only, pile lengths have been estimated as noted on the details of the bents. All piling shall be driven as set forth in the Special Provisions.

OTHER NOTES ÷ For other notes see Dwg. No. 6445.

REFERENCES	
DWG. NO.	DESCRIPTION
6444	BENTS NO. 1 & NO. 3
6445	BENT NO. 2
6446	SLAB, CURB & DIAPHRAGM DETAILS
PRES.-BEAM STD. NO. 2-TYPE A (Rev. 8-24-62)	STANDARD PRE-TENSIONED & POST-TENSIONED PRESTRESSED CONCRETE BEAMS
SBBR (Rev. 10-8-62)	STEEL BEAM BRIDGE RAIL & DETAILS

THIS CONTRACT: STPS 494-1(2)0 *
Thrie beam and curb tapers added. See Dwg. No. 17612,

NOTES (Cont)

SOILS AND FOUNDATION MATERIALS ÷ Borings were taken by the Montana State Highway Department at the points shown, to obtain information on the sub-soil 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 hereon & on Dwg. No. 6447. 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; neither does the State assume any responsibility for any variation or misinterpretation of the classes of materials. No claim or adjustment in the unit price bid for excavation will be made if the materials found do not agree with those shown in the log of borings. Materials shown as sand and gravel may be of varying degrees of compactness or cementation.

DESIGNED		
DRAWN	J.D.S.	3-27-63
CHECKED	D.R.S.	5-13-63
* REVISED	L.M.S.	1-24-00
REVISED		

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SOUTH FORK SANDSTONE CREEK
AT STA. 375+35.00
FED. AID SECONDARY PROJ. NO. S 401(3)
FALLON COUNTY
GENERAL LAYOUT

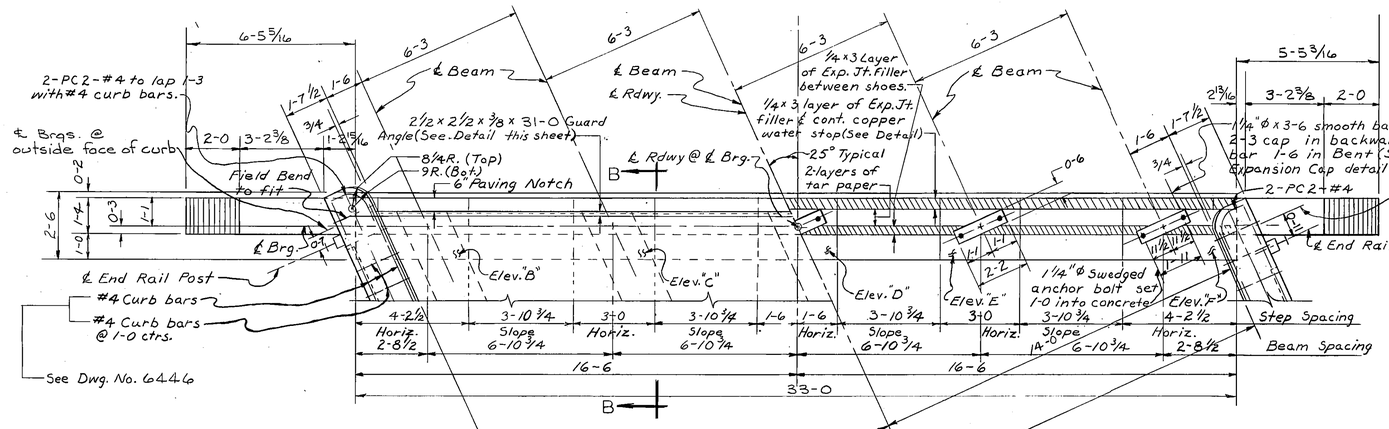
Scale ÷ 1" = 10'-0" Except As Noted

APPROVED BY _____ BRIDGE ENGINEER

DRAWING NO. 6443

Note: For Bridge Rail Details & Connections See Dwg. No. SBBR. For railpost locations, See the "General Layout".

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401(3)	2	10



PLAN

Note: Details of backwall are typical for Post-tensioned beams only. Details for Pretensioned beams are similar. Cost of furnishing & placing exp. jt. filler, tar paper & copper water stop to be included in the unit price bid for Class "AD" concrete.

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

Note: The areas shown as horiz. shall be finished level to the elevations shown in the "TABLE OF ELEVATIONS" this sheet. The areas between the beam seats shall be sloped uniformly as required.

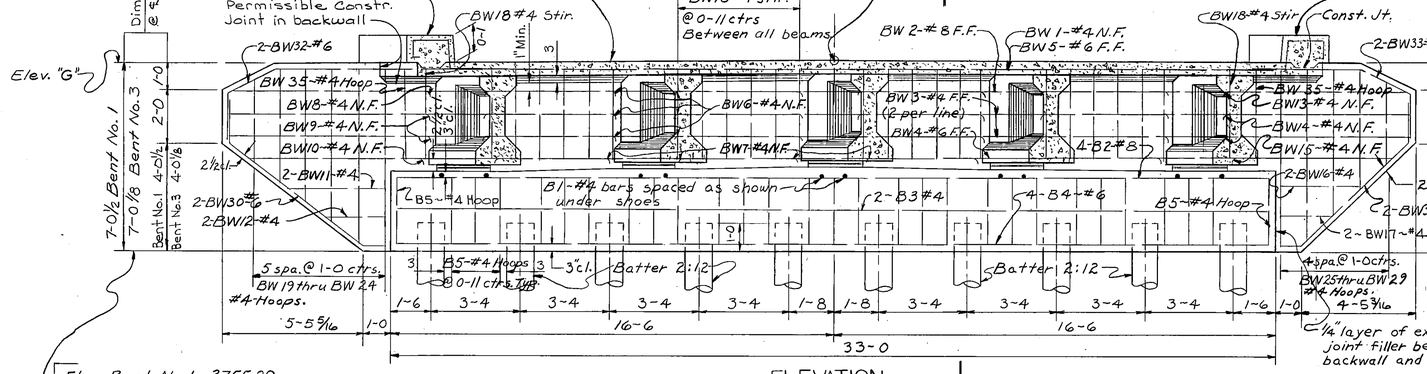
Note: Slab, Beam & Curb reinforcing & details omitted for clarity. See Dwg. No. PRES.- BEAM STD. No. 2-TYPE-A & Dwg. No. 6446.

2" Parabolic Crown in 28-0 Rdwy. See "Diagram of Crown of Rdwy." Dwg. No. 6446.

Finish top of curb parallel to Rdwy. grade

Permissible Constr. Joint in backwall

Fin. Gr. @ ℄ Rdwy. @ ℄ Brg. Elev. "A"



Elev. Bent No. 1 = 2755.89
Elev. Bent No. 3 = 2755.60

ELEVATION

(Bent No. 1 ~ Back on line)
(Bent No. 3 ~ Ahead on line)

Note: For location of Test Piles see "Footing Plan" Dwg. No. 6446.

Note: Max. Pile Pressure under D.L. + L.L. = 24.7 Tons per pile.

Note: Estimated Pile length 80 ft. for Bent No. 1 & No. 3

Slope ¼" in 1-6¾ down toward ℄ Rdwy.

Const. Jt.

Treated Timber Piles

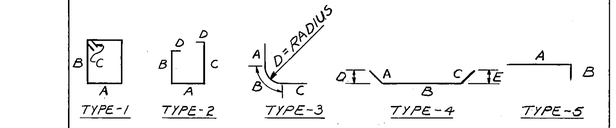
1¼" layer of expansion Joint filler between backwall and beam end.

TABLE OF ELEVATIONS

Elev.	Bent No. 1	Bent No. 3
"A"	2763.~~08~~06	2762.~~79~~77
"B"	2758.~~95~~96~~60~~	2758.6058
"C"	2759.~~01~~58.~~09~~	2758.~~71~~69
"D"	2759.~~04~~02	2758.~~75~~73
"E"	2759.~~00~~58.~~08~~	2758.~~72~~70
"F"	2758.~~89~~87	2758.6361
"G"	2762.~~93~~91	2762.~~67~~59
"H"	2762.~~90~~88	2762.~~64~~62

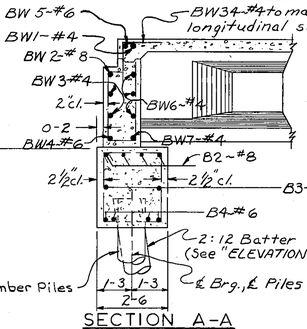
* Corrected Elevation

BILL OF REINFORCING STEEL (For One End 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
BW1	#4	1	33'-10"	BW18	#4	26	2	7'-10"	1'-0	2'-8	3'-8"	0'-3"	
2	8	1	44-6	19		1	1	9-1		3-2	0-4½		
3	4	4	22-11	20				11-3		4-3			
4	6	1	41-8	21				12-9		5-0			
5	6	1	33-10	22				14-3		5-9			
6	4	12	5~~6~~-2*	23				15-7		6-5			
7	4	4	4-11	24				16-1		6-8			
8	4	1	9-0	25				16-1		6-8			
9	4	2	9-0	26				15-7		6-5			
10	4	1	7-3	27				13-9		5-6			
11	4	2	3-5	28				11-11		4-7			
12	4	2	2-1	29		1		9-3		3-3			
13	4	1	7-6	BW35		2		10-1	1-0	3-8			
14	4	2	7-6	B5	4	29	1	10-1	2-1	2-7	0-4½		
15	4	1	5-10										
16	4	2	2-11	BW30	6	2	4	8-4	0-9	6-7	1-0	0-5½	0'-9½"
BW17	4	2	1-10	31	6	2	4	7-10	0-9	6-1	1-0	0-5½	0-9
				32	6	2	4	9-3	1-9	2-1	5-5	1-7	2-5
B1	4	10	2-2	33	6	2	4	8-0	1-9	2-1	4-2	1-7	1-11
B2	8	4	32-7	BW34	4	23	5	3-3	2-0	1-3			
B3	4	2	32-7										
B4	#6	4	32-7	PC 2	#4	4	3	2-10	0-9½	0-9½	1-3	0-6	
D1	1¼ ø Sm	5	3-6										

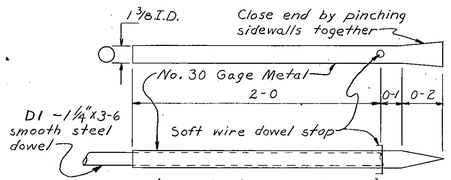
* Furnish 6'-2" bar, Cut off to 5'-2"



SECTION A-A

NOTES

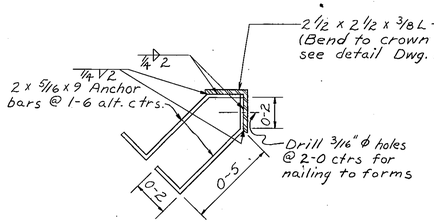
OTHER NOTES: For other notes see Dwgs. No. 6443 & No. 6445.



(5 required per end bent) Caps shall be paid for at the unit price bid for reinforcing steel.

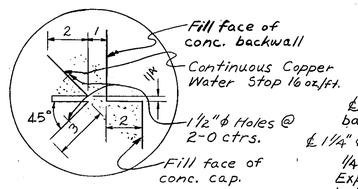
METAL EXPANSION CAP

No Scale



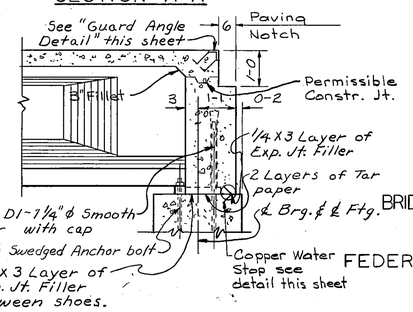
GUARD ANGLE DETAIL

Scale: 3" = 1'-0"



COPPER WATER STOP

Scale: 3" = 1'-0"



SECTION B-B

Scale: ½" = 1'-0"

DESIGNED	J.D.S.	3-25-63
DRAWN	W.L.B	4-29-63
CHECKED	D.R.S.	5-15-63
REVISED		
REVISED		

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SOUTH FORK SANDSTONE CREEK AT STA. 375+35.00

FEDERAL AID SECONDARY PROJ. NO. S401(3)

FALLON COUNTY

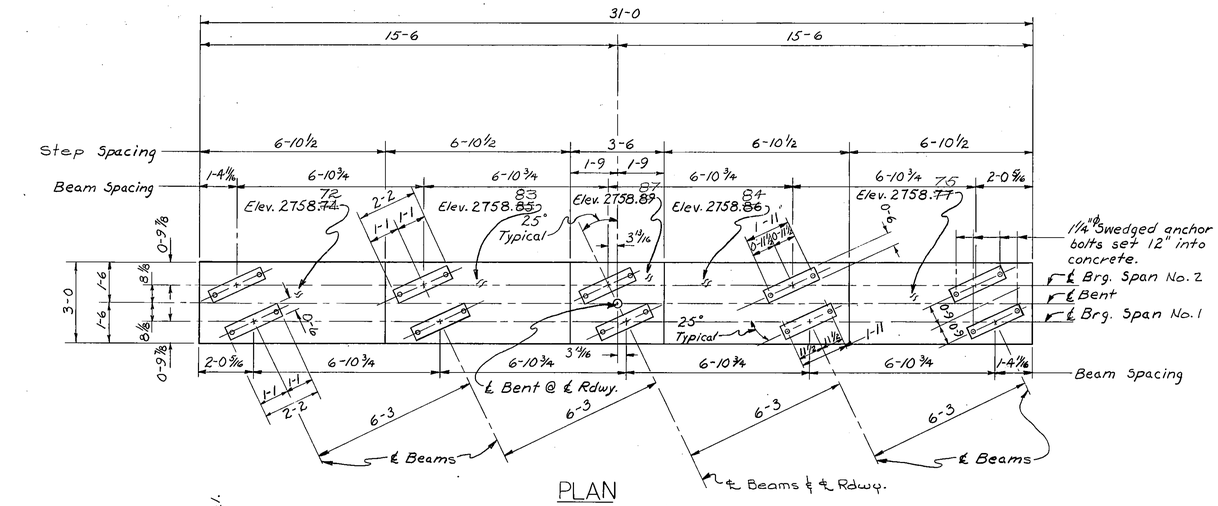
BENTS NO. 1 & NO. 3

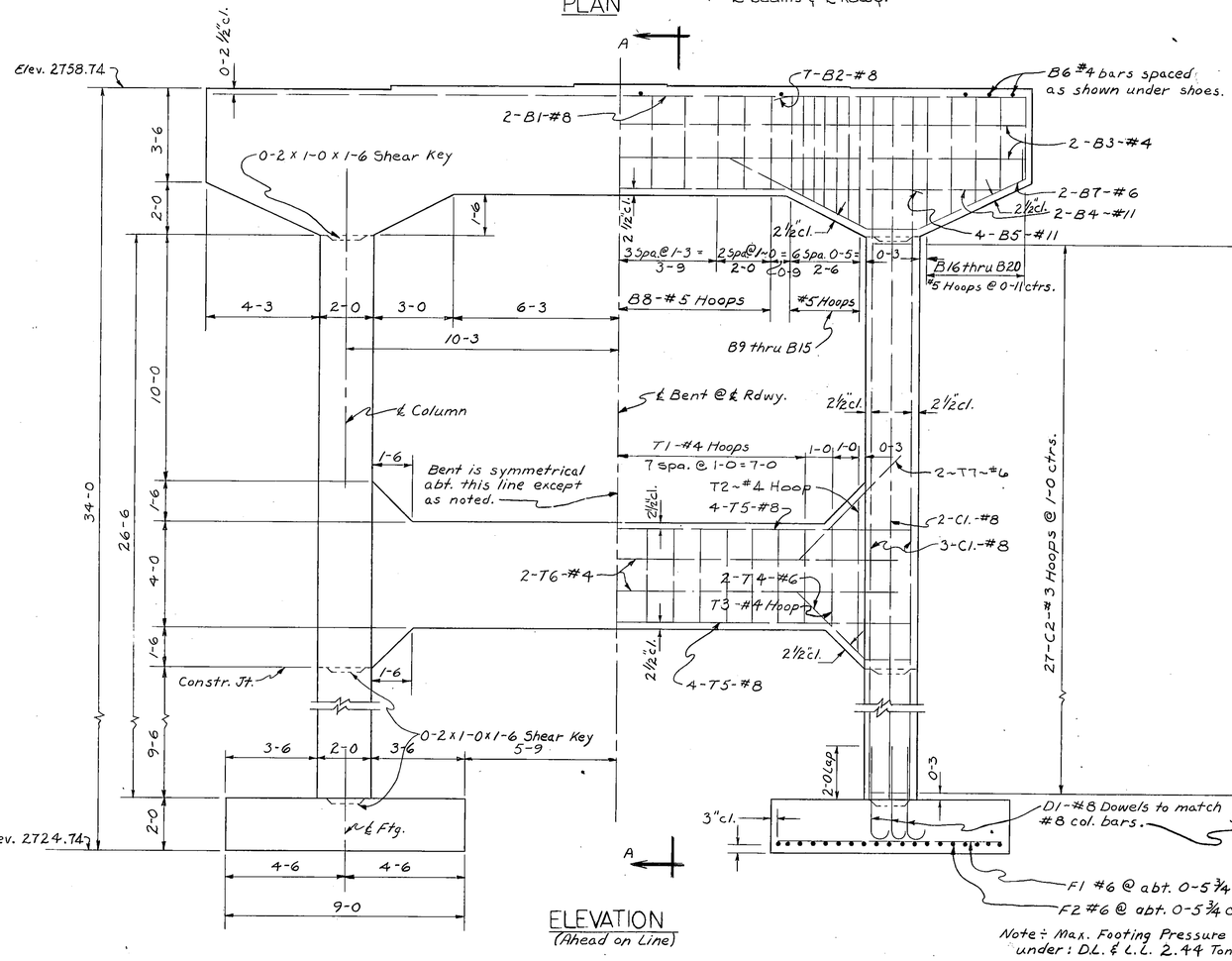
Scale: ⅜ = 1'-0" (Except as noted)

DRAWING NO. 6444

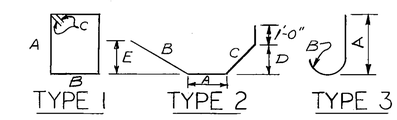
J.R.B

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401(3)	3	10





BILL OF REINFORCING STEEL



STRAIGHT BARS				BENT BARS (All dimensions are out to out.)								
Mark	Size	No.	Length	Mark	Size	No.	Type	Length	A	B	C	D	E
B1	#8	2	30'8"	B7	#6	4	2	12'-4"	1'-11"	4'-9"	4'6"	2'-1"	2'-2"
B2	8	14	9'-7	B8	5	11	1	13'-6	3'-8	2'-8	0'-5		
B3	4	4	30'-8	B9	↑	2	1	13'-9	3'-9½	↑	↑		
B4	11	2	28'-2	B10		↑	↑	14'-2	4'-0				
B5	11	4	22'-6	B11				14'-7	4'-2½				
B6	4	10	2'-8	B12				15'-0	4'-5				
				B13				15'-5	4'-7½				
				B14				15'-10	4'-10				
C1	8	16	31'-10	B15				16'-3	5'-0½				
				B16				16'-3	5'-0½				
				B17				15'-4	4'-7				
				B18				14'-6	4'-2				
F1	6	42	8'-6	B19	↓	↓	↓	13'-7	3'-8½	↓	↓		
F2	6	38	9'-6	B20	5	2	1	12'-8	3'-3	2'-8	0'-5		
T5	8	8	22'-2	C2	3	54	1	9'-4	2'-8	1'-8	0'-4		
T6	4	4	21'-0										
T7	#6	4	5'-6	D1	8	16	3	4'-10	3'-9	1'-1			
				T1	4	15	1	10'-5	1'-2	3'-8	0'-4½		
				T2	4	2	1	15'-5	1'-2	6'-2	0'-4½		
				T3	4	2	1	11'-5	1'-2	4'-2	0'-4½		
				T4	#6	4	2	5'-6	1'-9	3'-9			2'-8

NOTES

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

SETTING OF MASONRY PLATES ÷ Care shall be taken in placing reinforcing steel so as to clear anchor bolts. Contractor shall finish concrete under beam 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.

CHAMFER ÷ Chamfer all exposed corners with enclosed angle less than 120°, ¾ inch and fillet all entrant angles ¾ inch except as otherwise noted.

GUARD ANGLES ÷ Slab guard angles 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:
¼" at 0.160 lbs. per ft.

TEST PILES ÷ For Test Pile requirements see Special Provisions.

OTHER NOTES ÷ For other notes see Dwg No. 6443

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SOUTH FORK SANDSTONE CREEK
AT STA. 375+35.00
FED. AID SECONDARY PROJ. NO. S 401 (3)
FALLON COUNTY
BENT NO. 2

Scale ÷ ⅜" = 1'-0" (Except as noted.)

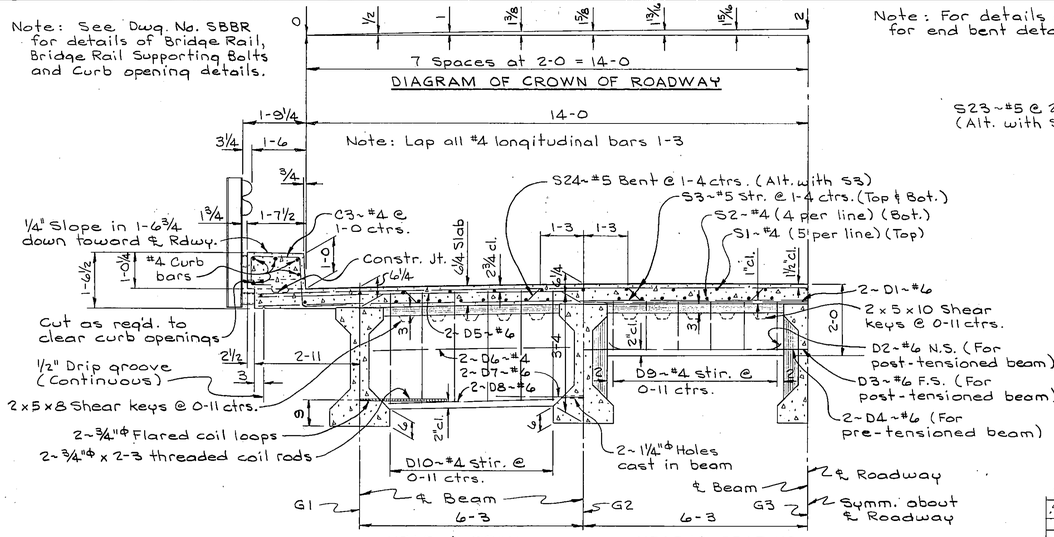
DESIGNED	J.D.S.	3-22-63
DRAWN	W.L.B.	4-10-63
CHECKED	D.R.S.	5-21-63
REVISED		
REVISED		

DRAWING NO. 6445

J.R.B.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401 (3)	4	10

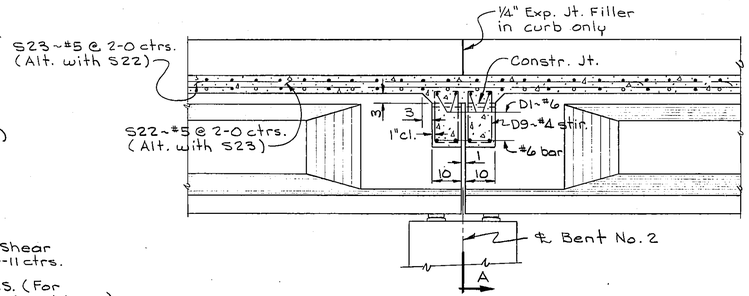
Note: See Dwg. No. SBBR for details of Bridge Rail, Bridge Rail Supporting Bolts and Curb opening details.



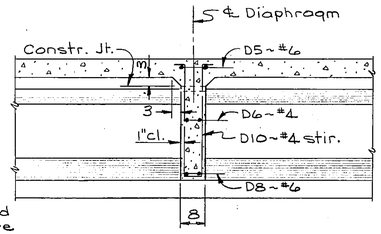
TYPICAL ROADWAY SECTION
Scale: 1/2" = 1'-0"

Note: N.S. = Near Side
F.S. = For Side

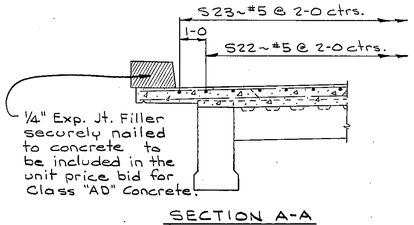
Note: For details of curb at end bent & for end bent details see Dwg. No. 6444.



SECTION THRU END DIAPHRAGMS
(Normal to ℄ Bent No. 2)
Scale: 1/2" = 1'-0"

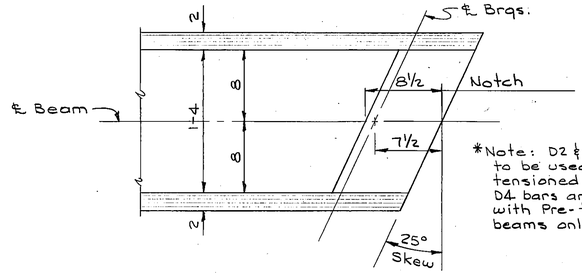


SECTION THRU INTERMEDIATE DIAPHRAGM
(Cast in place)
Scale: 1/2" = 1'-0"



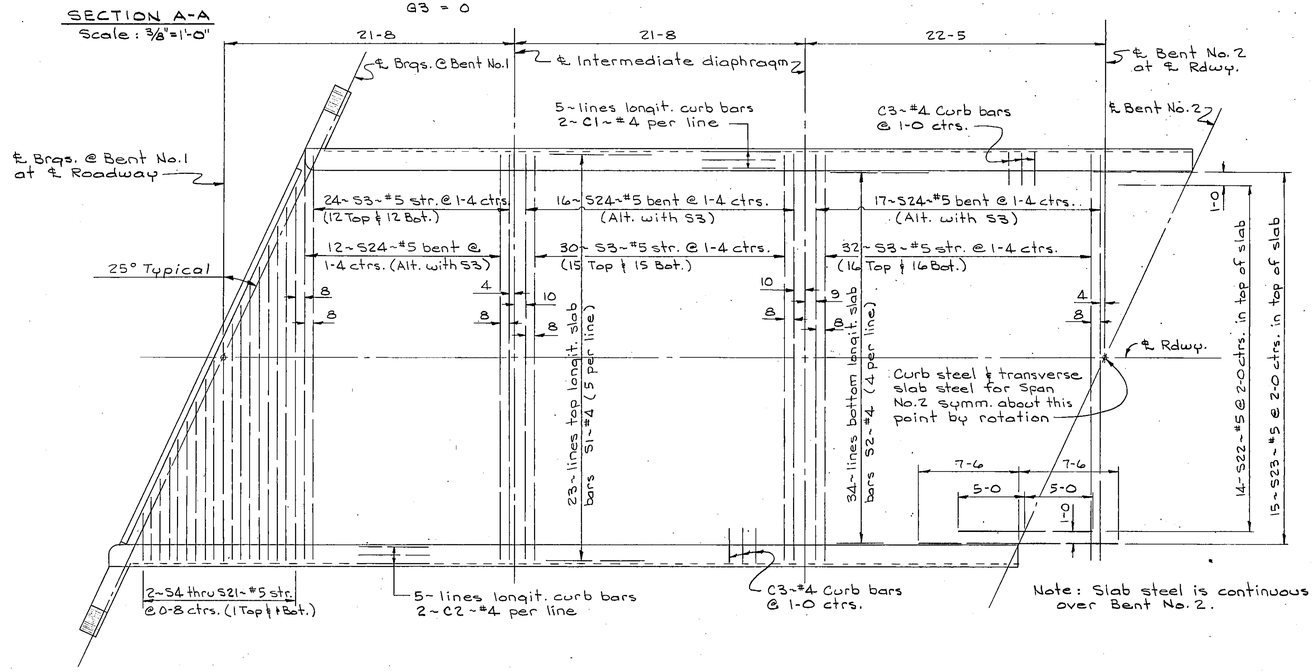
SECTION A-A
Scale: 3/8" = 1'-0"

Note: Beams shall be fabricated as shown on Dwg. No. PRES.-BEAM STD. NO. 2 TYPE-A except as follows:
Ends of pre-tensioned beams for each span shall be modified as detailed hereon. Ends of post-tensioned beams may require similar modification for the skew.
Location of 1 1/4"Φ holes & 3/4"Φ coil loops shall be offset from the 1/3 points of the beam as listed below for the skew. Offsets for Span No.1 & No.2 are the same.
G1 = 5-10
G2 = 2-11
G3 = 0

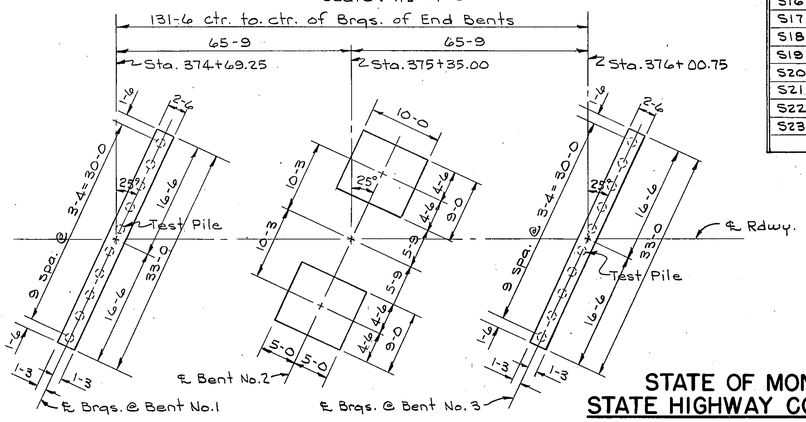


*Note: D2 & D3 bars are to be used with Post-tensioned beams only. D4 bars are to be used with Pre-tensioned beams only.

MODIFIED END OF PRE-TENSIONED BEAM
Scale: 1 1/2" = 1'-0"



REINFORCING STEEL PLACING DIAGRAM
FOR SLAB & CURB OF SPAN NO.1
Span No.2 Similar
Scale: 3/16" = 1'-0"



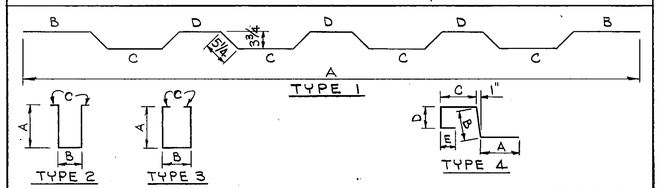
FOOTING PLAN
Vert. Scale: 1" = 10'-0"
Horiz. Scale: 1" = 20'-0"

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

NOTES

OTHER NOTES: For other notes see Dwgs. No. 6443 & No. 6445.

BILL OF REINFORCING STEEL (For Both Spans)



BENT BARS (All dimensions are out to out)

Mark	Size	No.	Type	Length	A	B	C	D	E
S24	#5	90	1	31'-6"	30'-6"	4'-0"	3'-1 1/2"	2'-6"	
D9	4	48	3	4-0	1-5	0-8	0-3		
D10	4	96	2	7-3	3-1 1/2	0-6	0-3		
C3	#4	268	4	5-3	1-3	1-4	1-3 1/2	0-9	0'-8"

STRAIGHT BARS

Mark	Size	No.	Length
C1	#4	20	33'-7"
C2	4	20	34-3
D1	6	4	32-4
D2 *	6	8	30-6
D3 *	6	8	28-8
D4 *	6	4	28-8
D5	6	8	30-6
D6	4	32	5-7
D7	6	24	4-10
D8	6	32	4-9
S1	4	115	27-7
S2	4	136	34-1
S3	5	172	30-6
S4	"	4	3-4
S5	"	"	4-9
S6	"	"	6-2
S7	"	"	7-7
S8	"	"	9-0
S9	"	"	10-5
S10	"	"	11-10
S11	"	"	13-3
S12	"	"	14-8
S13	"	"	16-2
S14	"	"	17-7
S15	"	"	19-0
S16	"	"	20-5
S17	"	"	21-10
S18	"	"	23-3
S19	"	"	24-8
S20	"	"	26-1
S21	"	4	27-6
S22	"	14	10-0
S23	#5	15	15-0

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SOUTH FORK SANDSTONE CREEK
AT STA. 375+35.00
FED. AID SECONDARY PROJ. NO. S 401(3)
FALLON COUNTY
SLAB, CURB & DIAPHRAGM DETAILS
Scale: As Noted

DESIGNED		
DRAWN	K.P.	4-29-63
CHECKED	D.R.S.	5-21-63
REVISED		
REVISED		

DRAWING NO. 6446

J.R.B.

FED. ROAD DIV. NO.	STATE	FEDRAL AID PROJECT NO.	SHEET NO.	TOTAL SHEET
8	MONT.	[redacted]		
		STPS 494-1(2)0	B3	

NOTE ÷ Finished plan grade of bridge is same as profile grade shown on road plans.

NOTE ÷ No work shall be done on Bent No. 2 until after the channel change in the vicinity of the structure has been completed.

NOTE ÷ Elevations shown for bottom of footings are approximate only. Final elevations shall be determined by the Engineer.

Note ÷ Name on Markers shall be "Sandstone Creek" in one line. Reflector signals required on this bridge.

400' V.C. +0.71% +0.039

P.I. Sta. 427+50.00 Elev. 2747.85

131-6 ctr. to ctn. Brgs. of End Bents (Horiz. Dist.)

65-9 65-9

℄ Brg. @ ℄ Rdwy. @ Bent No. 1 Sta. 420+50.25 Fin. Gr. @ ℄ Rdwy. Elev. 2747.58

℄ Bent No. 2 @ ℄ Rdwy. Sta. 421+16.00 Fin. Gr. @ ℄ Rdwy. Elev. 2747.60

℄ Brg. @ ℄ Rdwy. @ Bent No. 3 Sta. 421+81.75 Fin. Gr. @ ℄ Rdwy. Elev. 2747.63

℄ Core Log No. 443 20' Rt. of ℄ Rdwy. Sta. 420+50.00

℄ Core Log No. 442 ℄ Rdwy. Sta. 421+66.00

Select Fill Material (See Road Plans Special Provisions)

Top of Riprap Elev. 2742.4

PRESTRESSED CONCRETE BEAMS

Fin. Gr. @ ℄ Rdwy.

Elev. 2740.40 Fix. Extreme H.W. Elev. 2740.4 Fix. Fix. Fix. Elev. 2740.45

Treated Timber Piles (Prebored Holes for piles this Bent see Special Provisions)

Treated Timber Piles

Elev. 2738.5

Profile 20' Rt. — ℄ Profile — Profile 20' Lt.

Elev. 2733.3 Silty clay 6-8-8

Elev. 2731.6 Slightly compact sand to stiff sandy clay to loose sand 7-7-10 6-5-4

Unclassified Excavation By Road Contractor See Road Plans

2-6

Soft silty clay 6-8-9

Elev. 2737.1

12-15-20

Compact sand with clay

Stiff clay with sand

Elev. 2733.0

Elev. 2727.4 Soft clay 2-2-2

Elev. 2721.4 Stiff silty clay & gravel 2-2-2

Stiff silty clay 15-10-14 11-12-15

Elev. 2728.7

13-11-9

Slightly compact sand

11-9-10

Elev. 2718.9

STREAM DATA

Ice ~ Heavy

Drift ~ Light

Scour ~ Light

Subsoil ~ See Borings this sheet

Elev. 2718.7 Loose sand 5-7-11

TYPE "B" Random Riprap By Road Contractor (See Road Plans)

Bottom of channel Elev. 2721.4 @ ℄ Rdwy.

9-5-5

Loose sand

Elev. 2714.7

6-8-12 Stiff to hard silty clay

13-7-8 Stiff silty clay with gravel

Elev. 2711.5

9-12-15

Elev. 2709.42

Elev. 2704.4 Stiff sandy clay with thin coal seams 13-19-24

Elev. 2699.9 Hard silty clay with thin coal seams. 11-13-14

8-15-20

Stiff to hard silty clay

Elev. 2694.7 Stiff to hard sandy clay 12-21-32

24-29-24

Elev. 2695.3

15-28-37

Stiff sandy clay with thin coal seams

Elev. 2691.1

Elev. 2687.3 19-34-39

14-19-27 Stiff silty clay with thin coal seams

Elev. 2687.5

ELEVATION

Note ÷ For location of Test Piles see "Footing Plan" hereon.

NOTE ÷ The series of three numbers inscribed on the log of borings indicate the number of blows per 6" penetration for each number of the series, of a 2" sampler tube which has been driven in accordance with the Standard Penetration Test made with a 2" ø split tube sampler using a 140# hammer having a 30" drop. R indicates refusal of the sampler tube to penetrate a minimum of 6" for 50 blows.

NOTE: Only that excavation below the limits of the Unclassified Excavation shall be paid for as Structure Excavation for Bent No. 2.

℄ Channel Change

SANDSTONE CREEK

65-0

50-0

1½:1 Slope

℄ Brg. @ Bent No. 1

℄ Bent No. 2

℄ Brg. @ Bent No. 3

1-6 Curb

Curb Opening

18° (Typical)

Slab continuous over Bent No. 2

28-0 Roadway 14-0 14-0

To Willard

Alignment Tangent Brg. N 0°23'00" E ℄ Roadway

Sta. 421+16.00 Staked Line = Sta. 0+88.00 Channel Change Staked Line

To PLEVNA

30-0

¼" Exp. Jt. Filler in curb only.

1-6 Curb

Curb Opening

10-0 0-9 1-6

℄ Brg. @ outside face of curb

℄ End Rail Post

Key Riprap

12 Spa. @ 8.4 = 100-0

3 Spa. @ 7-6 = 22-6

Rail Post Spacing (Both Sides) Horiz. Dist.

0-9

℄ Brg. @ outside face of curb

1½:1 Slope

℄ End Rail Post

Key Riprap

PLAN

51-0 Bottom Channel Change

55-0

TYPE "B" Random Riprap By Road Contractor (See Road Plans)

SECTION C-C (Typical at upstream end of riprap) Scale: ¼" = 1'-0"

SECTION B-B (Typical at toe of riprap) Scale: ¼" = 1'-0"

Bottom of Channel 2-0 2-6 1½:1 Slope

SECTION A-A Scale ÷ ⅜" = 1'-0"

℄ Cap @ ℄ Rdwy. Test Pile 4-6 Berm 1-0 1½:1 Slope

NOTES

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

LIVE LOAD ÷ Standard H15-S12 Loading

OTHER NOTES ÷ For other notes see Dwgs. No. 6443 & No. 6445

TABLE OF D.L. DEFLECTIONS FOR PRESTRESSED BEAMS

SPAN LENGTH	D.L. DEFLECTIONS AT 0.1 Pts. in inches.					
	0	0.1	0.2	0.3	0.4	0.5
65'	0	5/16	9/16	11/16	13/16	7/8

REFERENCES	
DWG. NO.	DESCRIPTION
6448	BENTS NO. 1 & NO. 3
6449	BENT NO. 2
6450	SLAB, CURB & DIAPHRAGM DETAILS
PRES. BEAM STD. NO. 2-TYPE A (REV. 8-24-62)	STANDARD PRE-TENSIONED & POST-TENSIONED PRESTRESSED CONCRETE BEAMS.
SBBR (REV. 10-8-62)	STEEL BEAM BRIDGE RAIL & DETAILS.

THIS CONTRACT: STPS 494-1(2)0 *
Thrie beam and curb tapers added. See Dwg. No. 17612.

FOOTING PLAN

Scale ÷ Station 1" = 20'-0" Footing 1" = 10'-0"

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SANDSTONE CREEK AT STA. 421+16.00

FED. AID SECONDARY PROJECT NO. S 401 (3)

FALLON COUNTY

GENERAL LAYOUT

Scale ÷ 1" = 10'-0" Except as Noted

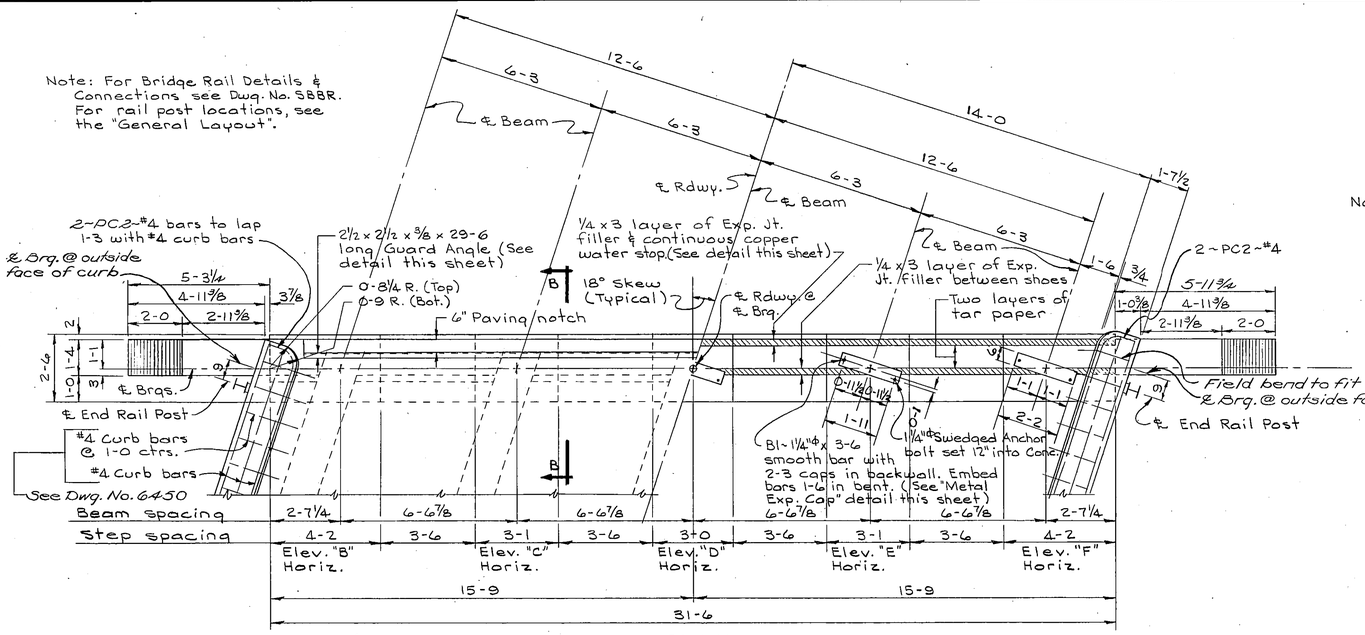
DESIGNED	K.G.R.	
DRAWN	K.G.R.	326-63
CKECKED	D.R.S.	5-13-63
REVISED	L.M.S.	1-24-00 *
REVISED		

APPROVED BY _____ BRIDGE ENGINEER

DRAWING NO. 6447

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401(3).	6	10

Note: For Bridge Rail Details & Connections see Dwg. No. SBBR. For rail post locations, see the "General Layout".



PLAN

TABLE OF ELEVATIONS		
ELEV.	BENT NO. 1	BENT NO. 3
"A"	2747.58	2747.63
"B"	2743.40	2743.45
"C"	2743.51	2743.56
"D"	2743.54	2743.59
"E"	2743.51	2743.56
"F"	2743.40	2743.45

Note: Details of backwall are typical for post-tensioned beams only. Details for pre-tensioned beams are similar. Cost of furnishing and placing exp. jt. filler, tar paper and copper water stop to be included in the unit price bid for Class "AD" concrete.

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

Note: Slab & curb reinforcing & prestressed beam details omitted for clarity. See Dwg. No. PRES.-BEAM STD. NO. 2 TYPE-A & Dwg. No. 6450.

Note: F.F. indicates fill face
N.F. indicates near face

BW16~#4 Stir. @ 0-10½ ctrs. between beams in backwall

Slope curb ¼" in 1-6¾ down toward ℄ Rdwy.

Constr. Jt.

BW1~#6 F.F.
BW5~#4 N.F.

Finished Grade at ℄ Rdwy. at ℄ Brg. Elev. "A" (See "Table of Elevations" this sheet)

2" Parabolic Crown in 28-0 Rdwy. See "Diagram of Crown of Rdwy." Dwg. No. 6450.

Finish top of curb parallel to Rdwy. Grade

Permissible Constr. Jt. in backwall.

2~BW28~#6
BW8~#4 N.F.
BW6~#4 N.F.
BW16~#4 stir.
BW9~#4 N.F.
BW7~#4 N.F.
2½" cl.
2~BW29~#6
2~BW10~#4
2~BW11~#4
B6~#4 Hoop
BW2~#8 F.F.
BW3~#4 F.F. (2 per line)
BW4~#4 F.F.
4~B3~#8
2~B5~#4
4~B4~#6
B2~#4 bars spaced as shown under shoes
2~BW30~#6
BW12~#4 N.F.
BW16~#4 stir.
BW13~#4 N.F.
2~BW31~#6
2~BW14~#4
2~BW15~#4
B6~#4 Hoop
7-0⅛
4-0⅛
BW17 thru BW21~#4 Hoops @ 1-0 ctrs.
B6~#4 Hoops @ abt. 0-10 ctrs. between piles
Batter 2:12
BW22 thru BW27 #4 Hoops @ abt. 0-11 ctrs.
½" Layer of expansion joint filler between backwall and end of cap.
1-6
3-2
1-7
31-6
4-3¼
4-11¾

Elev. Bent No. 1 = 2740.40
Elev. Bent No. 3 = 2740.45

ELEVATION
(Bent No. 1 ~ Back on line)
(Bent No. 3 ~ Ahead on line)

Note: Max. Pile Pressure under:
D.L. + L.L. = 24.2 Tons per pile.

Note: For location of Test Piles see "Footing Plan" on Dwg. No. 6447.

Note: Estimated Pile Length:
30 ft. Bent No. 1
40 ft. Bent No. 3

Guard Angle not shown (See detail this sheet)
BW32~#4 bars to match top longit. slab bars
BW5~#4
BW1~#6
BW6~#4
BW16~#4 stir.
BW7~#4
BW2~#8
BW3~#4
2" cl.
BW4~#6
Class "AD" Concrete
Class "A" Concrete
2½" cl.
B6~#4 Hoops
B3~#8
B5~#4
B4~#6
℄ Brgs. & ℄ Piles @ ℄ Stub Footing
Treated Timber Piles
2:12 Batter see "Elevation" this sheet
1-3
2-6

SECTION A-A
Scale: ½"=1'-0"

See "Guard Angle Detail" this sheet
3" Fillet
1¼"ϕ Smooth bar with 2-3 cap
1¼"ϕ swedged anchor bolt
¼ x 3 Layer exp. jt. filler between shoes
℄ Brgs. & ℄ Piles @ ℄ Stub Footing
¼ x 3 Layer of exp. jt. filler
2 Layers of tar paper

SECTION B-B
Scale: ½"=1'-0"

Fill face of concrete backwall
1½"ϕ Holes @ 2-0 ctrs.
45°
Fill face of concrete cap
Continuous Copper Water Stop 16 oz./ft.

COPPER WATER STOP
Scale: 3"=1'-0"

1⅜ I.D.
Close end by pinching side walls together
2-3
Soft wire dowel stop
No. 30 gage metal
2-0
B1~1¼"ϕ x 3-6 smooth bar
(5 Required per end bent)
Caps shall be paid for at the unit price bid for reinforcing steel.

METAL EXPANSION CAP
Scale: 3"=1'-0"

2½ x 2½ x ⅜ ∠ x 29-6 long (Bend to crown of Rdwy. See detail Dwg. No. 6450.
2 x ⅝ x 9 Anchor bars @ 1-6 alt. ctrs.
Drill ⅜"ϕ holes @ 2-0 ctrs. for nailing to forms.

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

BILL OF REINFORCING STEEL (For One End 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	1¼"ϕ sm.	5	3'-6"	B6	#4	29	1	10'-1"	2'-7"	2'-1"	0'-4½"		
B2	#4	4	2-0										
B3	8	4	31-0										
B4	6	4	31-0	BW16	4	28	2	7-10	2-8	1-0	3-8	0'-3"	
B5	4	2	31-0	BW17	↑	1	1	8-11	3-1	↑	0-4½		
				BW18		↑	↑	11-9	4-6		↑		
				BW19				13-7	5-5				
				BW20				15-6	6-4½				
BW1	6	1	32-3	BW21				16-1	6-8				
BW2	8	1	42-5	BW22				16-1	6-8				
BW3	4	4	21-10	BW23				15-8	6-5½				
BW4	6	1	40-4	BW24				14-3	5-9				
BW5	4	1	32-3	BW25				12-9	5-0				
BW6	↑	12	5-0	BW26	↓	↓	↓	11-2	4-2½	↓	↓		
BW7		4	4-8	BW27	4	1	1	8-9	3-0	1-0	0-4½		
BW8		3	6-11	BW28	6	2	5	8-1	1-9	2-1	4-3	1-6¾	1'-11"
BW9		1	5-9	BW29	6	2	5	7-6	1-0	5-9	0-9	0-7½	0-6¼
BW10		2	2-11	BW30	6	2	5	8-5	4-7	2-1	1-9	2-7	1-7
BW11		2	1-10	BW31	6	2	5	8-0	0-9	6-3	1-0	0-5¾	0-9½
BW12		3	7-10	BW32	4	23	3	3-3	1-3	2-0			
BW13		1	6-7										
BW14	↓	2	3-3										
BW15	#4	2	2-0	PC2	#4	4	4	2-10	0-9½	0-9½	1-3	0-6	

NOTES

OTHER NOTES: For other notes see Dwgs. No. 6443 & No. 6445

STATE OF MONTANA
STATE HIGHWAY COMMISSION

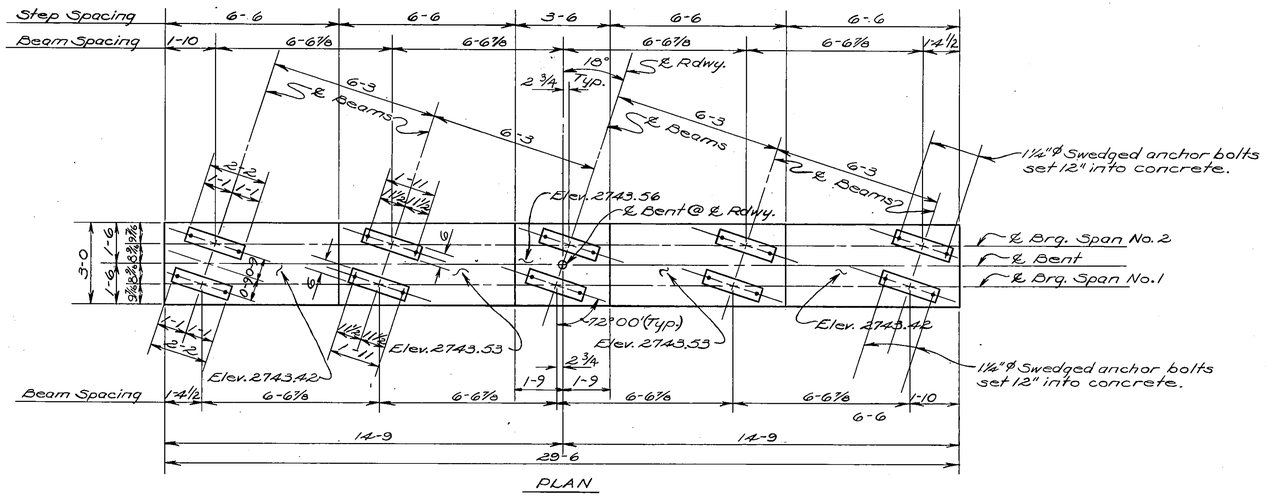
BRIDGE OVER SANDSTONE CREEK
AT STA. 421+16.00
FED. AID SECONDARY PROJECT NO. S 401 (3)
FALLON COUNTY
BENTS NO. 1 & NO. 3
Scale: ⅜"=1'-0" Except As Noted

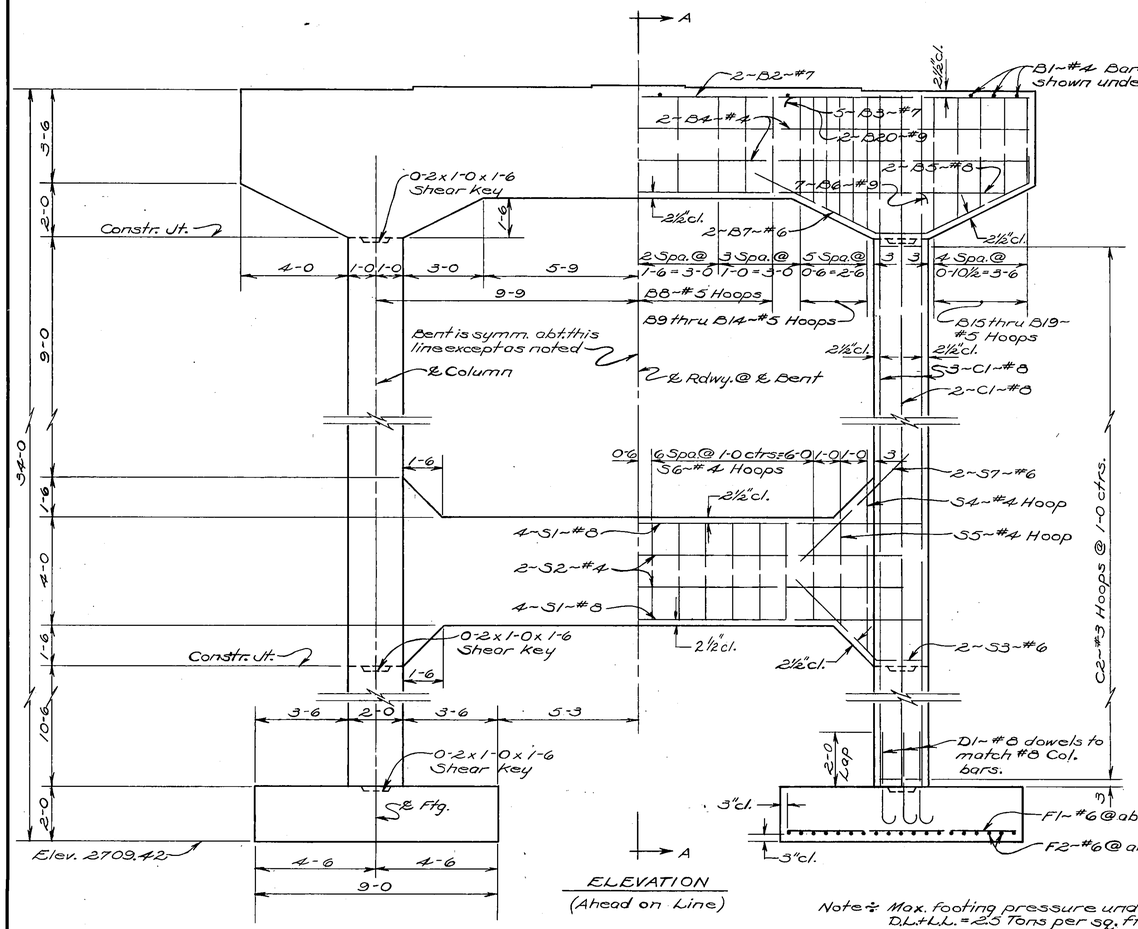
DESIGNED	K.G.R.	3-22-63
DRAWN	K.P.	4-22-63
CHECKED	D.R.S.	5-13-63
REVISED		
REVISED		

DRAWING NO. 6448

V.R.B.

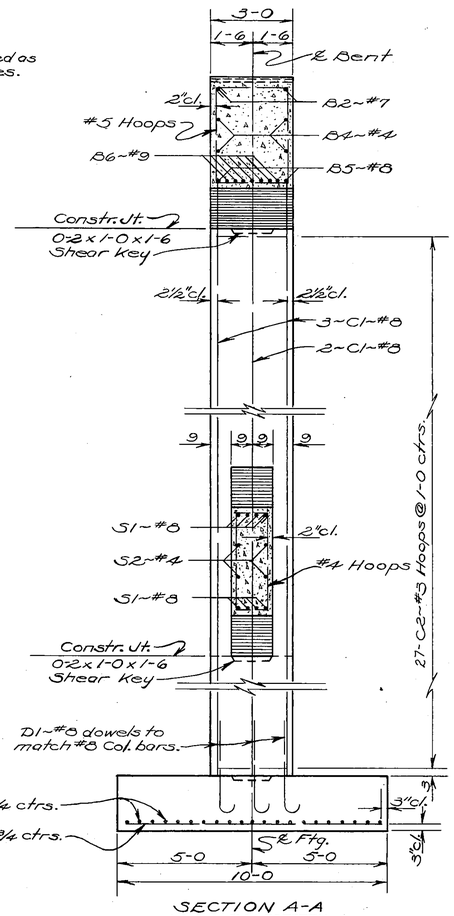
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401(3)	7	10





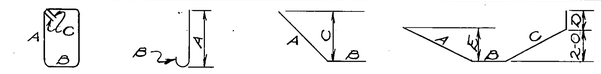
ELEVATION
(Ahead on Line)

Note ÷ Max. footing pressure under : D.L.+L.L. = 2.5 Tons per sq. ft.



SECTION A-A

BILL OF REINFORCING STEEL



STRAIGHT BARS				BENT BARS (All dimensions are out to out)									
MARK	SIZE	No.	LENGTH	MARK	SIZE	No.	TYPE	LENGTH	A	B	C	D	E
B1	#4	10	2'-8"	B7	#6	4	4	12'-0"	4'-9"	1'-11"	4'-4"	1'-0"	2'-11½"
B2	7	2	29-2	B8	5	9	1	13-6	3-8	2-8	0-5		
B3	7	10	9-1	B9		2		13-9	3-9½				
B4	4	4	29-2	B10				14-3	4-0½				
B5	8	2	27-4	B11				14-9	4-3½				
B6	9	7	21-6	B12				15-3	4-6½				
B20	9	4	9-1	B13				15-9	4-9½				
C1	8	16	31-10	B14				16-3	5-0½				
				B15				16-3	5-0½				
F1	6	42	8-6	B16				15-4	4-7				
F2	6	38	9-6	B17				14-6	4-2				
				B18				13-8	3-9				
S1	8	8	21-2	B19	5	2	1	12-9	3-3½	2-8	0-5		
S2	4	4	20-0										
S7	#6	4	5-6	C2	3	54	1	9-4	2-8	1-8	0-4		
				D1	8	16	2	4-10	3-9	1-1			
				S3	6	4	3	5-6	3-9	1-9	2-8		
				S4	4	2	1	15-5	6-2	1-2	0-4½		
				S5	4	2	1	11-5	4-2	1-2	0-4½		
				S6	#4	14	1	10-5	3-8	1-2	0-4½		

NOTES

OTHER NOTES: For other notes see Dwgs. No. 6443 & No. 6445

STATE OF MONTANA
STATE HIGHWAY COMMISSION

BRIDGE OVER SANDSTONE CREEK
AT STA. 421+16.00
FED. AID SECONDARY PROJECT NO. S401(3)
FALLON COUNTY
BENT NO. 2

Scale ÷ 3/8" = 1'-0"

DESIGNED	K.G.R.	3-22-63
DRAWN	G.C.S.	4-16-63
CHECKED	D.R.S.	5-21-63
REVISED		
REVISED		

DRAWING NO. 6449

J.R.B.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	S 401 (3)	8	10

Note÷ See Dwg. No. SBBR for details of Bridge Rail, supporting bolts & curb opening details.

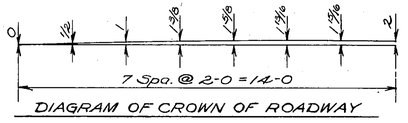
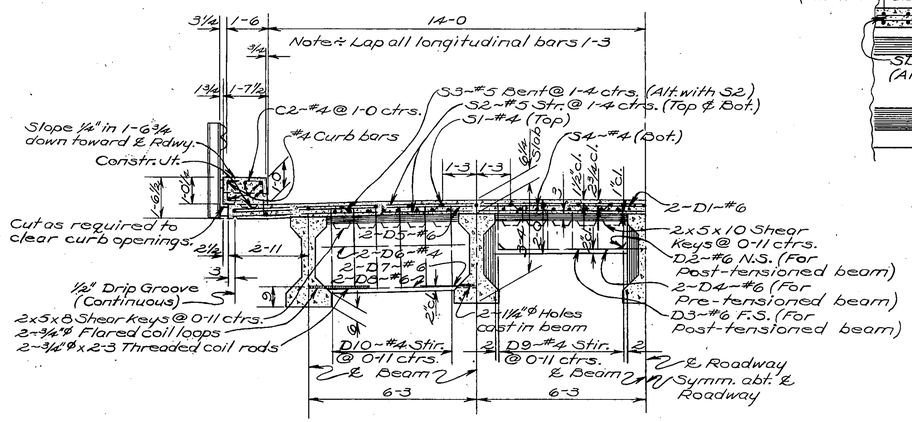
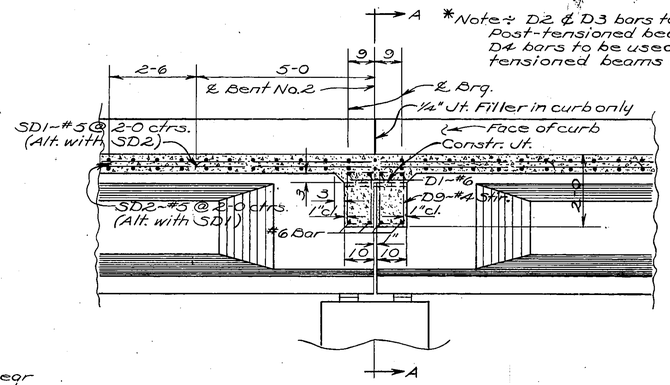


DIAGRAM OF CROWN OF ROADWAY



NEAR ℄ SPAN NEAR ℄ BEARING

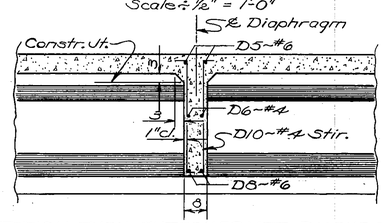
ROADWAY SECTION SPAN NO. 1 & SPAN NO. 2



SECTION THRU END DIAPHRAGM

(Normal to ℄ Bent No. 2)

Scale÷ ½" = 1'-0"



SECTION THRU INTERMEDIATE DIAPHRAGM

(Cast in place)

Scale÷ ½" = 1'-0"

Note÷ For detail of curb at end bent & for end bent details see Dwg. No. 6448.

Note÷ Beams shall be fabricated as shown on Dwg. No. PRES.-BEAM STD. NO. 2 TYPE-A except as follows: Ends of pre-tensioned beams for each span shall be modified as detailed hereon. Ends of post-tensioned beams may require similar modification for the skew. Location of 1½"ø holes & ¾"ø coil loops shall be offset from the ⅓ points of the beam as listed below for the skew. Offsets for Span No. 1 & No. 2 are the same.

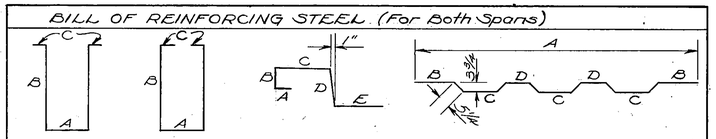
G1 = 4-0¾

G2 = 2-0⅞

G3 = 0

Note÷ Concrete curb shall not be poured for at least 72 hours after concrete has taken initial set.

BILL OF REINFORCING STEEL (For Both Spans)



BENT BARS (All dimensions are out to out)

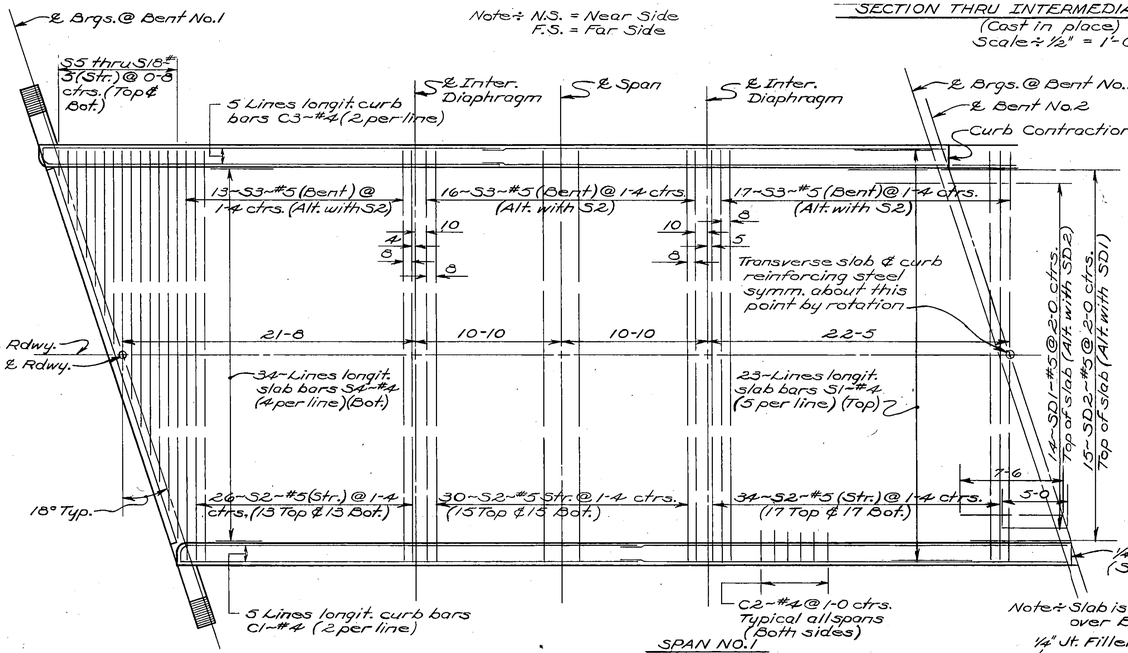
MARK	SIZE	No.	TYPE	LENGTH	A	B	C	D	E
C2	#4	260	3	3'-3"	0'-8"	0'-9"	1'-3½"	1'-4"	1'-3"
D9	4	48	2	4'-0	0-8	1-3	0-3		
D10	4	96	1	7-3	0-6	3-1½	0-3		
S3	#5	91	4	31-6	30-6	4-0	3-1½	2-6	

STRAIGHT BARS

MARK	SIZE	No.	LENGTH
C1	#4	20	33'-7"
C3	4	20	34'-2
D1	6	4	30-10
*D2	6	3	5-4
*D3	6	2	5-4
*D4	6	4	27-4
D5	6	8	30-6
D6	4	32	5'-7
D7	6	24	4'-10
D8	6	32	4'-9
S1	4	113	27-6
S2	5	180	30-6
S4	4	136	34'-0
S5	5	#4	2'-2
S6			4'-3
S7			6'-4
S8			8'-5
S9			10'-5
S10			12'-6
S11			14'-6
S12			16'-7
S13			18'-8
S14			20'-8
S15			22'-9
S16			24'-9
S17			26'-10
S18	5	#4	28'-10
SD1	5	14	10'-0
SD2	#5	15	15'-0

NOTES

OTHER NOTES.÷ For other notes see Dwgs. No. 6443 & No. 6445.



Note÷ N.S. = Near Side
F.S. = Far Side

SPAN NO. 1

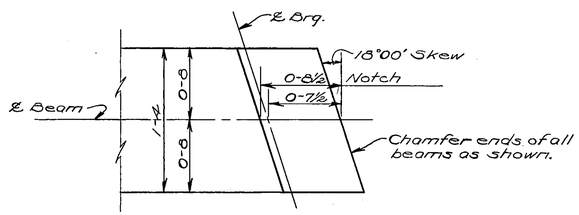
REINFORCING STEEL PLACING DIAGRAM FOR SLAB & CURB

Scale÷ 3/16" = 1'-0"

Span No. 2 Similar

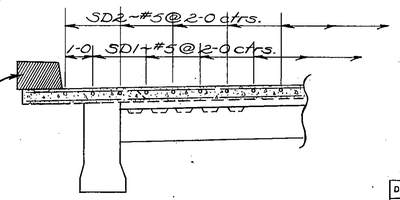
Note÷ Slab is continuous over Bent No. 2

¼" Jt. Filler nailed securely to concrete to be included in the unit price bid for Class "AD" concrete.



MODIFIED END OF PRE-TENSIONED BEAM

Scale÷ 1½" = 1'-0"



SECTION A-A

Scale÷ ⅜ = 1'-0"

STATE OF MONTANA

STATE HIGHWAY COMMISSION

BRIDGE OVER SANDSTONE CREEK

AT STA. 421+16.00

FED. AID SECONDARY PROJECT NO. S 401 (3)

FALLON COUNTY

SLAB, CURB & DIAPHRAGM DETAILS

Scale As Noted

DESIGNED		
DRAWN	G.C.S.	4-25-63
CHECKED	D.R.S.	5-21-63
* REVISED	E.O.K.	8-16-63
REVISED		

DRAWING NO. 6450

J.A.B.