

**Table Showing S2 Bar Lengths**

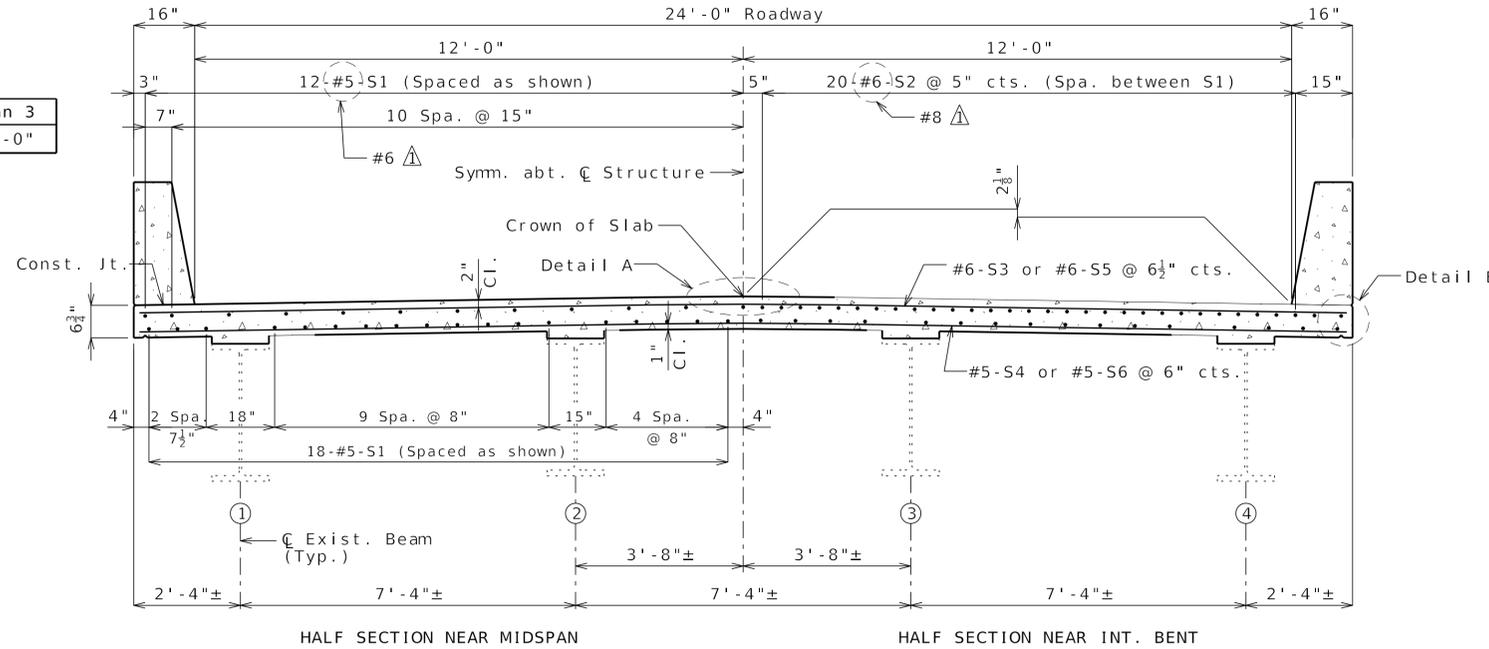
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
13'-0"	16'-0"	16'-0"	13'-0"

**Required Lap Length For Bar Splices \*\***

Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

\*\* Unless otherwise shown.

**U.I.P., REDECK AND MAKE COMPOSITE EXISTING (36' - 46' - 36') CONTINUOUS WIDE FLANGE BEAM SPANS (SKEW: 28 L.A.)**



TYPICAL SECTION THRU SLAB

**General Notes:**

**Design Specifications:**

2002 AASHTO LFD (17th Ed.) Standard Specifications  
Seismic Performance Category A

**Design Loading:**

HS15-44 (1961) (Existing)  
HS20-44 (New Construction)  
Earth - 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf  
Fatigue Stress - Case III

**Design Unit Stresses:**

Class B-1 Concrete (Barrier)  $f'c = 4,000$  psi  
Class B-2 Concrete (End Bents & Superstructure, except Barrier)  $f'c = 4,000$  psi  
Reinforcing Steel (ASTM A615 Grade 60)  $fy = 60,000$  psi

**Joint Filler:**

All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

**Reinforcing Steel:**

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

**Miscellaneous:**

Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before finalizing the shop drawings.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

Rubblized concrete from the existing bridge deck that qualifies as clean fill may be placed on spill slopes at end bents above ordinary high water line (Roadway item).

For adjusted girder deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.

**Traffic Handling:**

Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.

Estimated Quantities		
Item		Total
Removal of Existing Bridge Deck	sq. foot	3359
Bridge Approach Slab (Minor)	sq. yard	110
Slab on Steel	sq. yard	361
Type H Barrier	linear foot	242
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Shear Connectors	each	2976
Strengthening Existing Beams	lump sum	1
Non-Destructive Testing	linear foot	80
Reset Existing Bearings	each	8
Fabricated Structural Carbon Steel (misc.)	pound	3290

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	83
Reinforcing Steel (Epoxy Coated)	pound	36,930

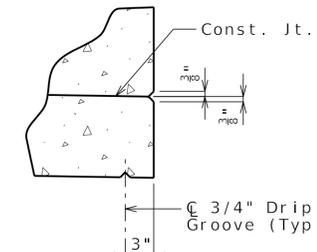
The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for stay-in-place corrugated steel forms, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness Class SC 4 and a finish Type I, II or III.

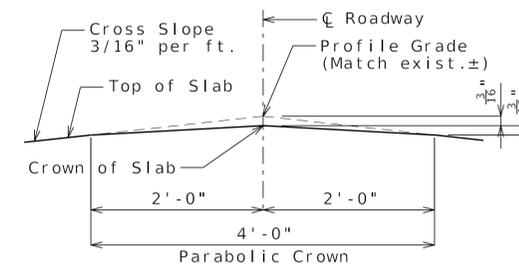
Slab shall be cast-in-place with conventional forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

For Optional Stay-In-Place Form Details, see Sheet No. 2.

Bridge deck surface may be finished with a vibratory screed.



DETAIL B

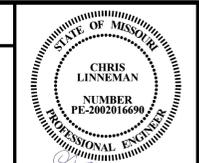


DETAIL A

REVIS 3-4-2026

**REPAIRS TO BRIDGE:  
ROUTE W OVER ASHLEY BRANCH**

ROUTE W FROM ROUTE N TO BRIDLE SPUR ROAD  
ABOUT 0.2 MILES SOUTH OF ROUTE N  
BEGINNING STATION 9+82.70± (MATCH EXISTING)



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Chris Linneman - Civil  
MO PE-200216690

DATE PREPARED  
3/4/2026

ROUTE W STATE MO  
DISTRICT BR SHEET NO. 1

COUNTY WASHINGTON

JOB NO. JCD0032

CONTRACT ID.

PROJECT NO.

BRIDGE NO. R04421

DATE	DESCRIPTION
3/4/26	REVISED REINFORCING STEEL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**EFK Moen**  
Civil Engineering Design  
13523 Barrett Parkway Dr  
Suite 250  
St. Louis, MO 63021  
Phone 314-394-3100  
Fax 314-394-3199  
Missouri Certificate of Authority: 001578



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Chris Linneman - Civil  
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ROUTE STATE  
W MO

DISTRICT SHEET NO.  
BR 5A

COUNTY  
WASHINGTON

JOB NO.  
JCD0032

CONTRACT ID.

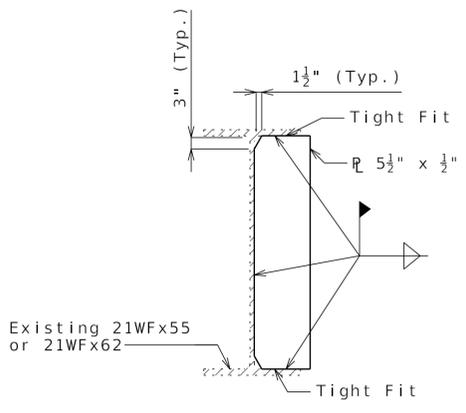
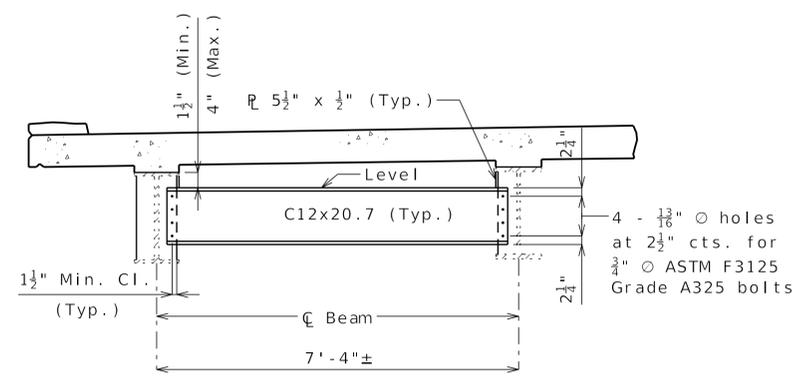
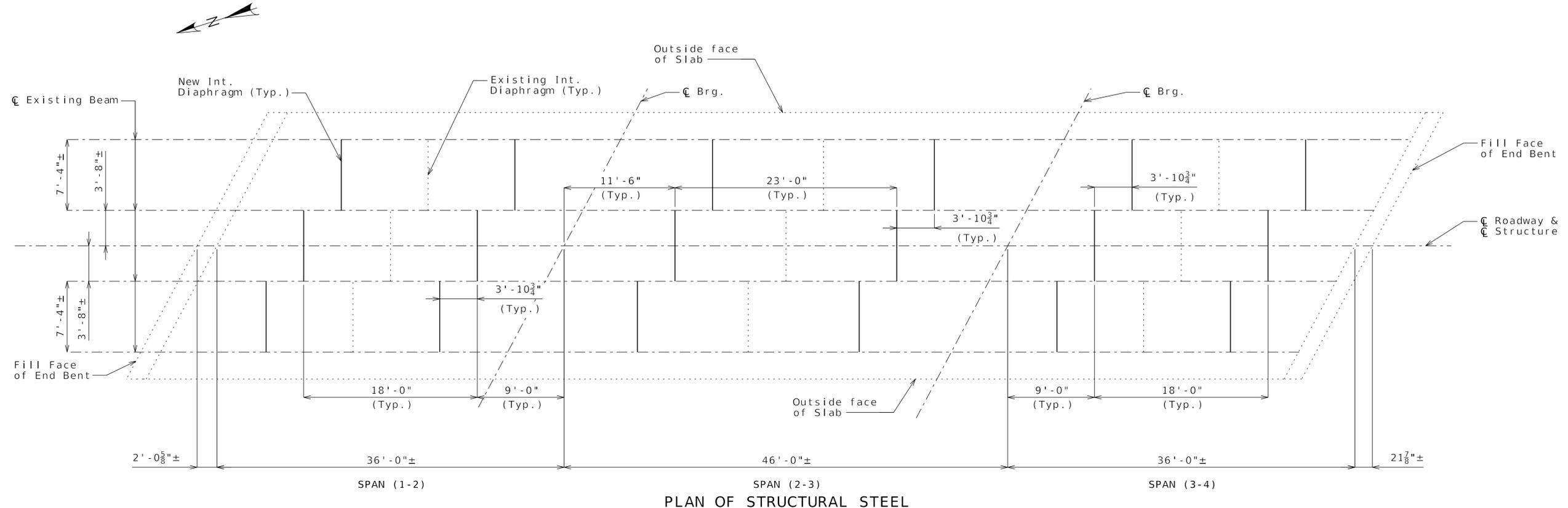
PROJECT NO.

BRIDGE NO.  
R04421

DATE	DESCRIPTION
3-4-26	SHEET ADDED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
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105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

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**Steel Diaphragm Notes:**

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Fabricated Structural Carbon Steel (Misc.).

**Structural Steel Protective Coating:**  
Protective Coating: System G in accordance with Sec 1081.

**Prime Coat (New Steel):** The cost of the Inorganic zinc prime coat will be considered completely covered by the contract unit price for the fabricated structural steel.

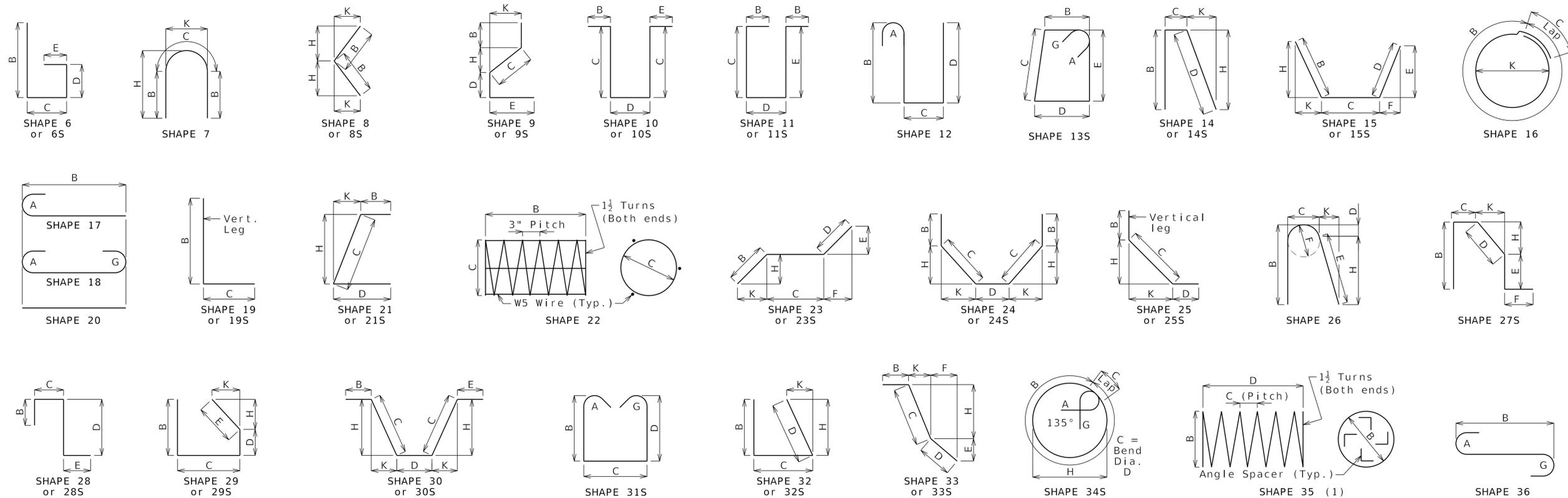
**Field Coats:** The color of the field coats shall be Gray (Federal Standard #26373). The cost of the intermediate system field coat will be considered completely covered by the contract unit price for the fabricated structural steel.

At the option of the contractor, the intermediate field coat may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, erection, and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating system as required by the engineer.

Detailed Nov. 2025  
Checked Nov. 2025

Note: This drawing is not to scale. Follow dimensions. Sheet No. 5A of 10

△ SHEET ADDED 3-4-2026



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Chris Linneman - Civil  
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ROUTE STATE  
W MO  
DISTRICT SHEET NO.  
BR 9

COUNTY  
WASHINGTON

JOB NO.  
JCD0032

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
R04421

DATE	DESCRIPTION	REVISED REINFORCING STEEL TOTALS
3/4/26		

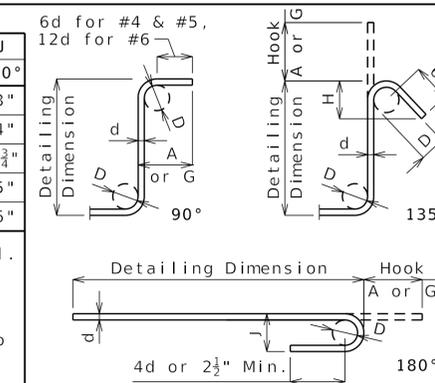
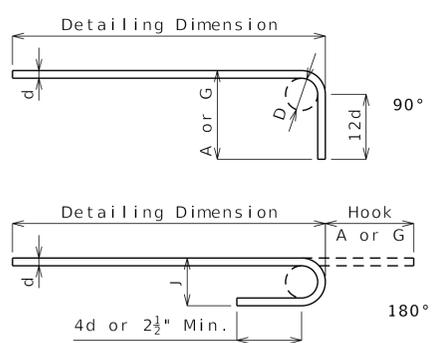
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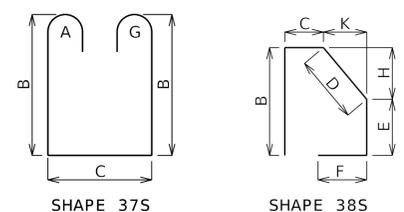
**Finished Bend Diameters D and Hook Dimensions**

Standard Pin Bend Shapes					
Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3 3/4"	10"	7"	5"
#6	1	4 1/2"	12"	8 1/2"	6"
	2	5 1/4"	14"	9 3/4"	7"
#7	2	6"	15"	11 1/2"	8 3/4"
	3	7"	17"	13 1/4"	10"
#8	1	8"	19 1/2"	15 1/2"	11 3/4"
#9	1	9 1/2"	22"	17 1/2"	13 1/4"
#10	1	10 3/4"	24 1/2"	19 1/2"	14 7/8"
#11	1	12"	31 1/4"	27 1/2"	21 5/8"
#14	1	18 1/4"	41 1/2"	36 1/4"	28 1/2"
#18	1	24"			

Stirrup Pin Bend Shapes (S)							
Size	Case	D	A or G		H	J	
			90°	135°	180°	135°	180°
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"	3"
	3	3"	5"	5 1/4"	6"	3"	4"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/8"	3 3/4"
	3	3 3/4"	6 1/4"	6 1/4"	7"	3 3/8"	5"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 7/8"	6"



Applicable for all grades of steel.  
Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.



BENDING DIAGRAMS

All dimensions are out to out. (1) Shall be a deformed or plain spiral bar or wire.  
Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.  
Unless otherwise noted, finished bending diameter D is the same for all bends of a shape.  
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

Reinforcing Steel Totals (Pounds)							
Size	Substructure		Superstructure			Entire Bridge	
	Plain	Epoxy	Slab	Barrier	Slip Form	Plain	Epoxy
W5	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	15530	5470	401	21401
7	0	0	0	15033	0	0	15033
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
By Type	0	0	0	30563	5470	401	36434

All superstructure reinforcing steel shall be epoxy coated unless otherwise specified.

**BENDING DIAGRAMS AND REINFORCING STEEL TOTALS**

REVISD 3-4-2026

Bill of Reinforcing Steel																	
No. Req.	Size/ Mark	Location	Codes			Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb		
			C	SH	V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.					
SUPERSTRUCTURE																	
END BENT 1 & 4																	
20	6 H1	DIAPHRAGM	E	20		30	0.000							30	0 30	0	901
12	6 H2	DIAPHRAGM	E	10	S		2	0.000	13.000					5	14	9	86
58	5 H3	APPROACH NOTCH	E	19		2	0.000	15.000						3	3	1	187
SLAB																	
180	5 S1	SLAB	E	20		42	8.000							42	8 42	8	8010
80	6 S2	SLAB	E	20		29	0.000							29	0 29	0	3485
213	6 S3	SLAB	E	20		26	4.000							26	4 26	4	8425
213	5 S4	SLAB	E	20		26	4.000							26	4 26	4	5850
54	6 S5	SLAB	E	20	2	26	4.000							26	4 26	4	2136
		INCR=11 1/8 IN				2	2.000										
54	5 S6	SLAB	E	20	2	26	4.000							26	4 26	4	1483
		INCR=11 1/8 IN				2	2.000										
BARRIER																	
20	5 K1	BARRIER	E	27	S		20.750	9.250	5.375	15.000	12.000	5.250	1.000	5	2 4	11	103
28	5 K2	BARRIER	E	27	S		20.750	9.250	17.375	3.250		17.000	3.250	4	3 4	0	117
48	5 K3	BARRIER	E	19	S	2	5.000	10.000						3	3	2	159
20	5 K4	BARRIER	E	38	S			19.250	9.500	8.250	18.750	4.250	3	12	11	61	
28	5 K5	BARRIER	E	21	S	2	4.875	10.000			2	4.250	6.000	3	3	2	92
56	5 K6	BARRIER	E	20		5	6.000							5	6 5	6	321
228	5 R1	BARRIER	E	14		2	5.000	6.500	2	5.500		2	5.000	5	5 5	2	1229
228	5 R2	BARRIER	E	19	S		18.750	9.500						2	4 2	3	535
228	5 R3	BARRIER	E	27	S		9.500	15.250	3.250	12.000	15.000	3.000	3	4 3	2	753	
16	5 R4	BARRIER	E	20		11	8.000							11	8 11	8	195
32	5 R5	BARRIER	E	20		31	4.000							31	4 31	4	1046
16	5 R6	BARRIER	E	20		21	7.000							21	7 21	7	360
16	5 R7	BARRIER	E	20		29	11.000							29	11 29	11	499
SLIP FORM																	
32	5 C1	SLIP FORM	E	20		12	0.000							12	0 12	0	401

Bill of Reinforcing Steel																	
No. Req.	Size/ Mark	Location	Codes			Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb		
			C	SH	V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.					
177	6 S1	SLAB	E	20		43	1.000							43	1 43	1	11454
80	8 S2	SLAB	E	20		30	0.000							30	0 30	0	6408

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

For bending diagrams and steel reinforcing totals, see Sheet No. 8.

Detailed Nov. 2025  
Checked Nov. 2025

Note: This drawing is not to scale. Follow dimensions.

### BILL OF REINFORCING STEEL

Sheet No. 10 of 10

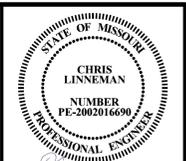
All bars shall be ASTM A615 Grade 60.

REVISED 3-4-2026

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.



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3/4/2026

ROUTE STATE  
W MO

DISTRICT SHEET NO.  
BR 10

COUNTY  
WASHINGTON

JOB NO.  
JCD0032

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
R04421

DATE	DESCRIPTION
3/4/26	REVISED SLAB BARS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
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Missouri Certificate of Authority: 001578

REV.