

Standard Reinforcing Steel Details (do not show on title)

- Choose one of the 4 details for the top flange blockout detail.
- Blockout shall be dimensioned 1 1/2" from the inside face of the diaphragm.
- The maximum strand arrangement is shown in details including top straight strands. Remove unnecessary strands from the three details where shown. Give spacing of top straight strands if used.
- This detail only needs to be used if the structure is over water. For all other crossings remove this detail.
- Modify note as necessary. The 10 strands indicated is applicable for for NU 35, 43 & 53. Indicate two more strands for NU 63 & 70.
- Subtract or add B2 and D1 bars as required by design.

		NU 35	NU 43	NU 53	NU 63	NU 70
B1	NO. 4	4'-4"	5'-0"	5'-10"	6'-8"	7'-4"
	NO. 5	4'-4"	5'-0"	5'-10"	6'-8"	7'-3"
	NO. 6	4'-3"	4'-11"	5'-8"	6'-6"	7'-2"
B2	NO. 6	3'-8"	4'-4"	5'-1"	5'-11"	6'-7"

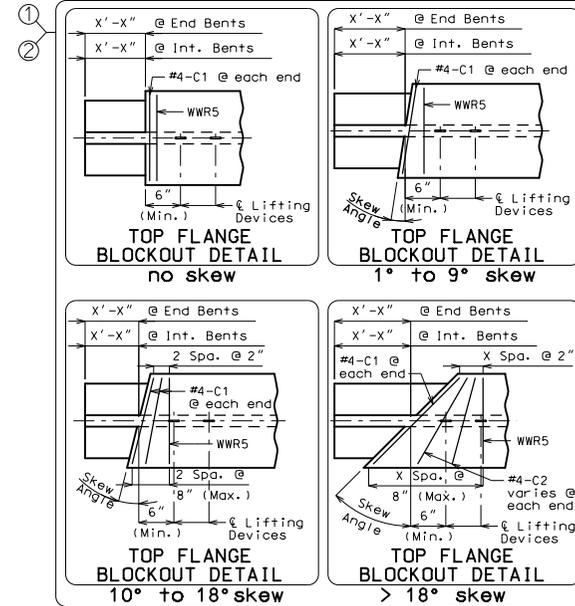
Use adjacent chart for the actual lengths of the B1 and B2 bars to be reported in the bill of reinforcing.

A1 reinforcement (temporary camber stresses) shall consist of the four 3/8" reinforcement support strands with deformed bars added only as needed. The WWR5 in the top flange shall not be used for A1 reinforcement because they are not spliced (and if spliced, insufficient concrete cover results from having to layer the mats.)

- Use for open diaphragms. Omit note about length of coil tie rods at exterior girders.
- Adjust dimension for modified flange thickness.
- Modify for CIP slabs.
- Substitute the following values into the drawing.

NU	a	b	c	d
35	20 1/16"	2'-11 7/16"	3'-3 7/8"	2'-9 3/8"
43	2'-4 9/16"	3'-7 5/16"	3'-11 3/4"	3'-5 1/4"
53	3'-2 13/32"	4'-5 5/32"	4'-9 5/8"	4'-3 1/8"
63	4'-0 1/4"	5'-3"	5'-7 1/2"	5'-1"
70	4'-8 1/8"	5'-10 7/8"	6'-3 3/8"	5'-8 7/8"

- Remove note for NU 53, 63 and 70.
- Remove notes for NU 35 and 43.
- Remove if #5-B1 bars are used.



SKIEW	NO. OF SPACES	NO. OF END BARS	REPORT "ACTUAL LENGTH" AS
1° to 9°	0	1	C1
10° to 18°	2	2	a
18° to 26°	3	3	a
26° to 33°	4	4	Varies
33° to 39°	5	5	Varies
39° to 45°	6	6	Varies

a =  $\frac{46.25}{\cos(\text{skew})}$

Adjusting skew direction in details is not necessary.

The blockout distance is along the girder and adjustment for girder tilt shall be considered.

NU\_Bars.dgn Effective: Sept. 2016 Supercedes: Nov. 2015

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

(+) indicates prestressing strand.

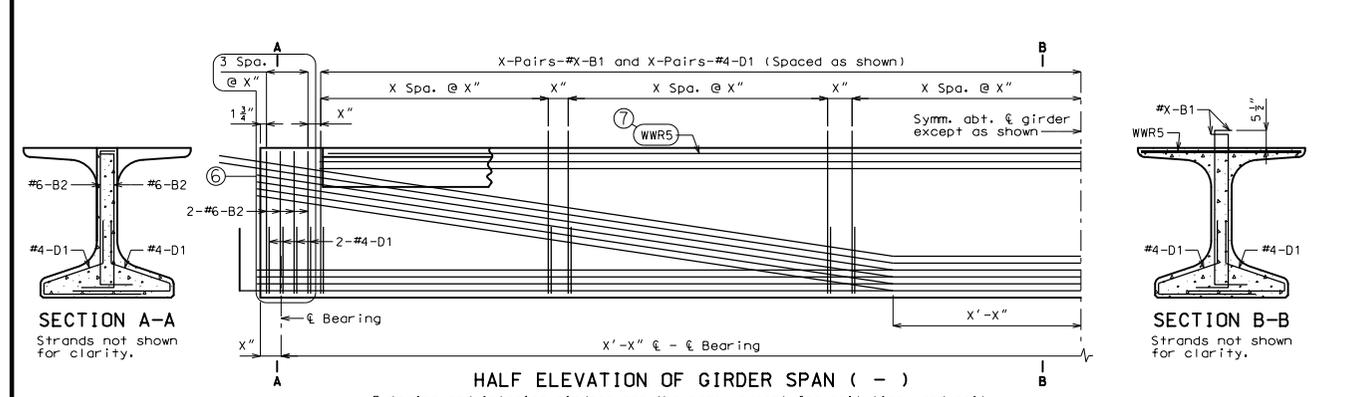
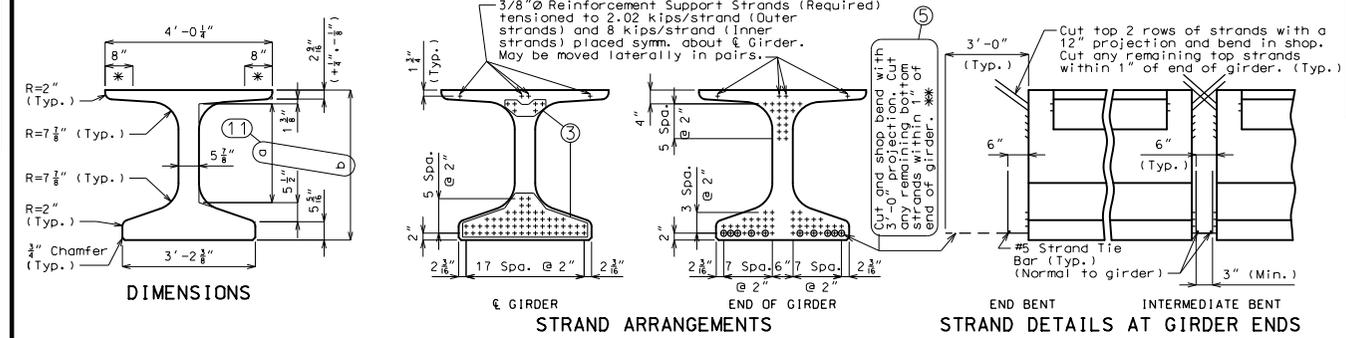
Use strands with an initial prestress force of kips.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

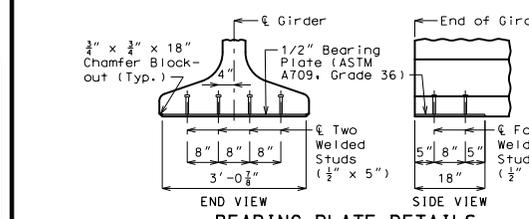
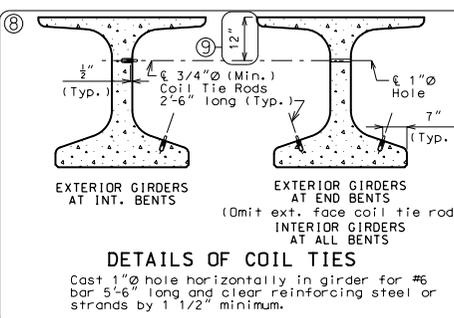
Fabricator shall be responsible for location and design of lifting devices.

\* Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.

\*\* At the contractor's option the location for bent-up strands may be varied from that shown for fully bonded strands only. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

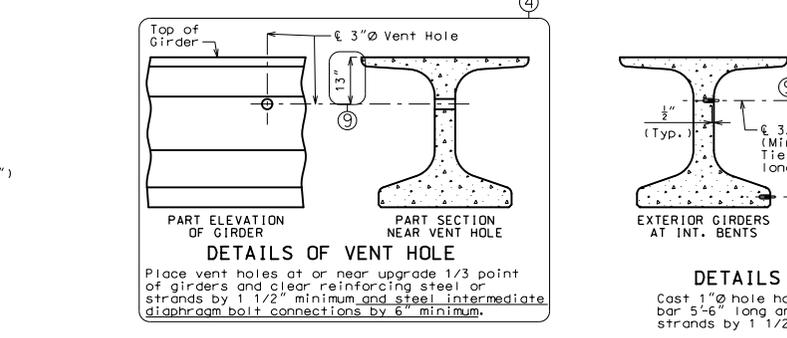


Exterior and interior girders are the same, except for coil ties, and coil inserts for slab drains. Reinforcement support strands not shown for clarity.



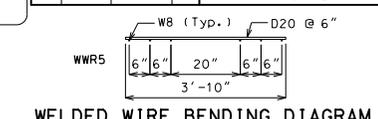
Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.



\*\* Length of coil tie rods at exterior girders at end bents = 2".

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
XXX	X B1	X'-X"	11
XXX	6 B2	X'-X"	11
XXX	4 C1	X'-X"	20
XXX	4 C2	Varies	20
XXX	4 D1	4'-0"	9



WELDED WIRE BENDING DIAGRAM

General Notes:

- Reinforcing Steel:  
All dimensions are out to out.  
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.  
Actual bar lengths are measured along centerline of bar to the nearest inch.  
Minimum clearance to reinforcing shall be 1".  
All bar reinforcement shall be Grade 60.  
Welded Wire Reinforcement (WWR) shall be in accordance with AASHTO M 221.  
The two D1 bars may be furnished as one bar at the fabricator's option.  
All B1 bars shall be epoxy coated.
- Miscellaneous:  
Cost of 3/4" coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.  
Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until girders are erected, then replaced by coil tie rods.  
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength.  
Contractor shall not drill holes in the girders. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.
- For location of coil inserts at slab drains, see Sheet No. .  
For location of coil ties and #6 bars, see Sheets No. & .  
The 1 1/2" holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed.  
For details of diaphragms, see Sheet No. .  
For Girder Camber Diagram, see Sheet No. .  
Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 11/15/2016

ROUTE: MD STATE

DISTRICT: BR

COUNTY: \*

JOB NO: \*

CONTRACT ID: \*

PROJECT NO: \*

BRIDGE NO: NU BARS

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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