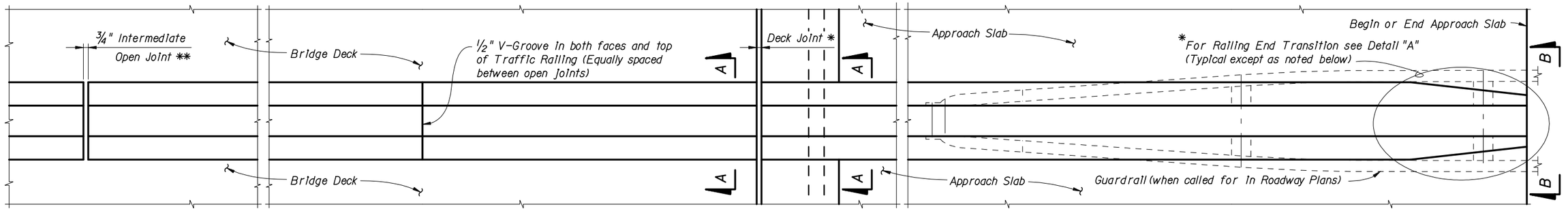
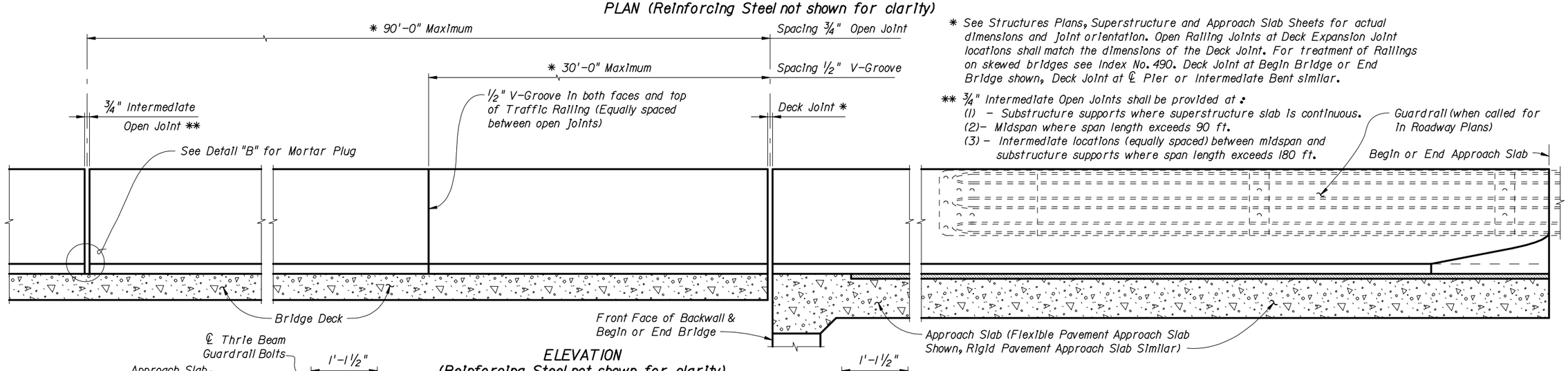


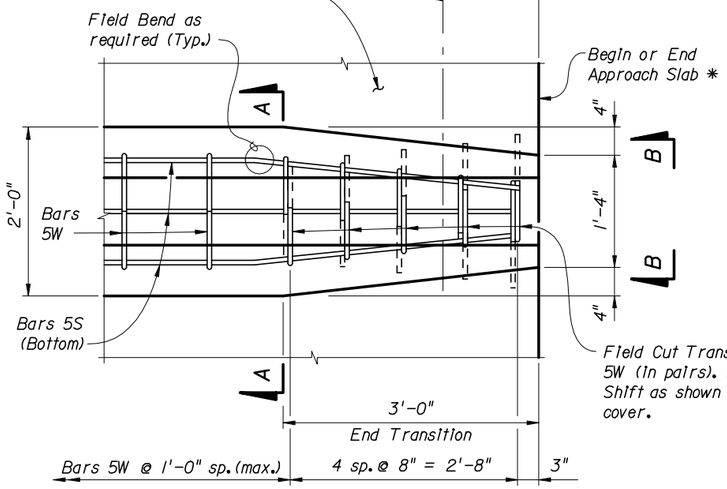
PLAN (Reinforcing Steel not shown for clarity)



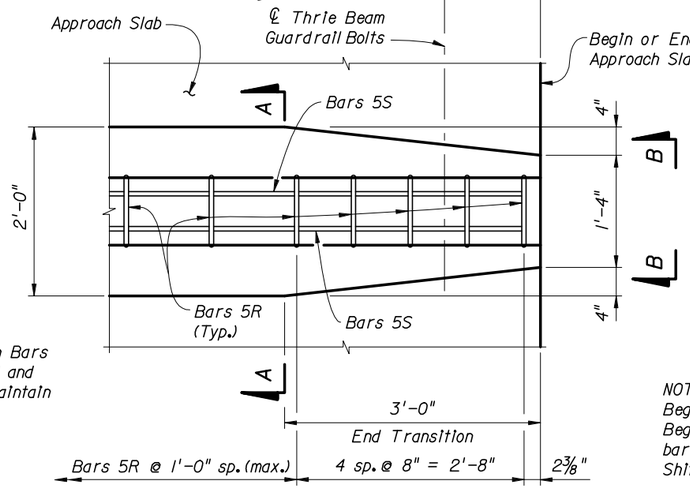
ELEVATION
(Reinforcing Steel not shown for clarity)

* See Structures Plans, Superstructure and Approach Slab Sheets for actual dimensions and joint orientation. Open Railing Joints at Deck Expansion Joint locations shall match the dimensions of the Deck Joint. For treatment of Railings on skewed bridges see Index No. 490. Deck Joint at Begin Bridge or End Bridge shown, Deck Joint at ℄ Pier or Intermediate Bent similar.

** ¾" Intermediate Open Joints shall be provided at :
(1) – Substructure supports where superstructure slab is continuous.
(2)– Midspan where span length exceeds 90 ft.
(3) – Intermediate locations (equally spaced) between midspan and substructure supports where span length exceeds 180 ft.



PLAN – Railing End Transition
(Showing Bars 5W and 5S)



PLAN – Railing End Transition
(Showing Bars 5R and 5S)

TRAFFIC RAILING NOTES

This railing has been structurally evaluated to be equivalent or greater in strength to other safety shape railings which have been crash tested to NCHRP Report 350 TL-4 criteria.

CONCRETE AND REINFORCING STEEL : See Structures Plans, General Notes.
GUARDRAIL : For Guardrail connection details see Index No. 400.
SUPERELEVATED BRIDGES : At the option of the Contractor the Traffic Railing on superelevated bridges may be constructed perpendicular to the roadway surface. The cost of all modifications will be at the Contractor's expense.

NOTE: Omit Railing End Transition and Guardrail if the Concrete Barrier Wall is used beyond the Approach Slab. See Structures Plans, Plan and Elevation Sheet and the Roadway Plans. If Railing End Transition is omitted, extend Typical Section to the end of the Approach Slab and space Bars 5R and 5W at 1'-0" (Typ.).

NOTE:
Begin placing Railing Bars 5R and 5W on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5R and 5W shall be made immediately adjacent to Begin or End Bridge. Shift and rotate Bars 5R and 5W as required to maintain cover in Railing End Transition.

CROSS REFERENCE:
For Section A-A, View B-B and Detail "B", see Index No. 421, Sheet 2 of 2.

DETAIL "A"

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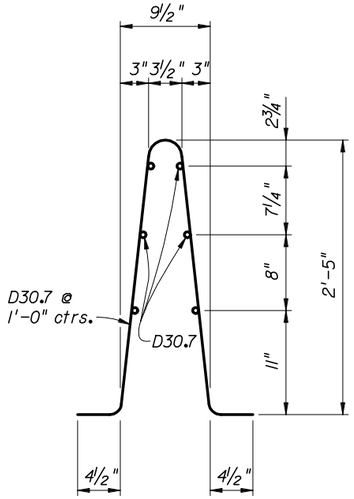
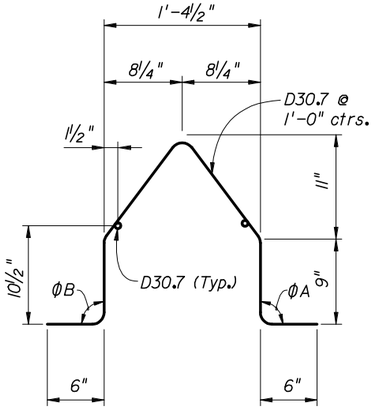
Index No. 421

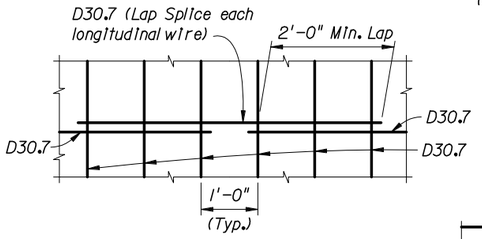
ALTERNATE REINFORCING STEEL (WELDED WIRE FABRIC) DETAILS



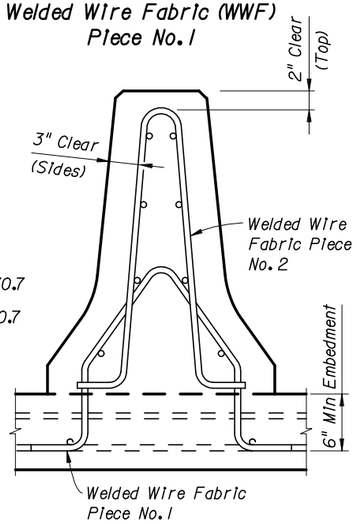
Welded Wire Fabric (WWF) Piece No. 2



Welded Wire Fabric (WWF) Piece No. 1



SPLICE DETAIL
(Between WWF Sections)



WELDED WIRE FABRIC NOTES:

1. At the option of the Contractor Welded Wire Fabric may be utilized in lieu of all Bars 5R, 5S and 5W. Welded Wire Fabric shall conform to ASTM A497.
2. Welded Wire at Railing End Transition shall be field bent inward as required (Pieces 1 & 2) to maintain cover. The top of Piece 1 shall be cut to allow overlap.
3. Place WWF panels so as to minimize the end overhang of longitudinal wires at Railing Ends and Open Joints. Overhangs greater than 6" are not permitted.

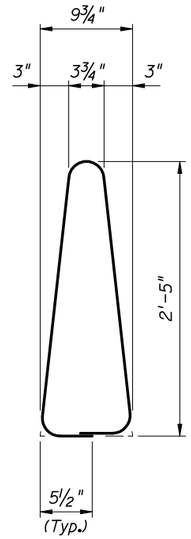
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

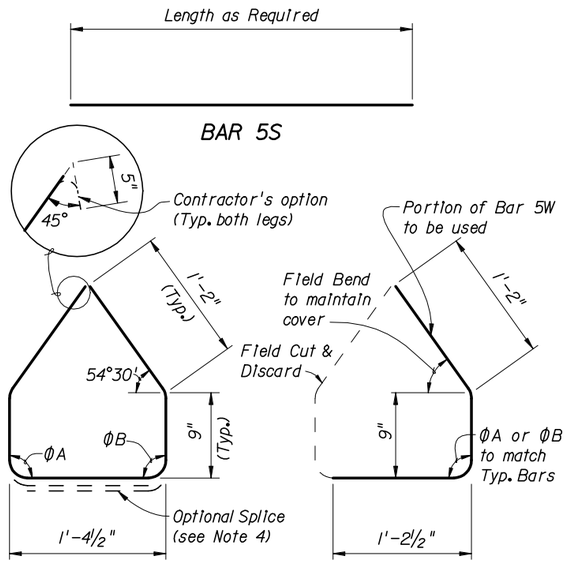
MARK	SIZE	LENGTH
R	5	6'-1"
S	5	AS REQ'D
W	5	5'-3"

ROADWAY CROSS-SLOPE	ON SLOPE ΦA	ON SLOPE ΦB	AT CROWN ΦA	AT CROWN ΦB
0% to 2%	90°	90°	90°	90°
2% to 6%	93°	87°	90°	90°
6% to 10%	96°	84°	90°	90°

ΦA and ΦB shall be 90° if Contractor elects to place Railing perpendicular to the Deck.



STIRRUP BAR 5R

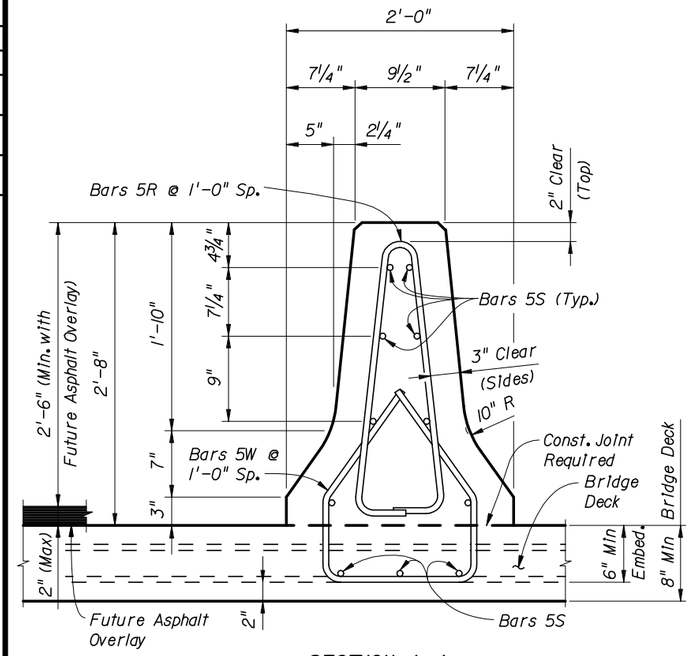


STIRRUP BAR 5W

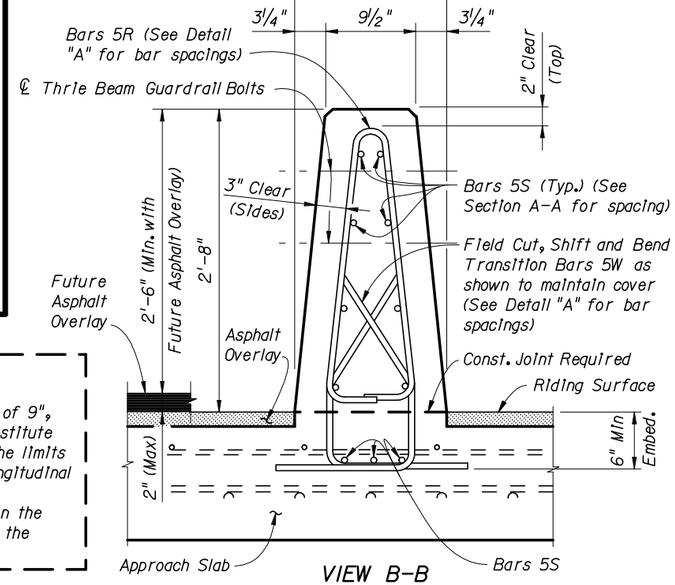
TRANSITION STIRRUP BAR 5W
To Be Field Cut and Bent
(10 required per Railing End Transition)

REINFORCING STEEL NOTES:

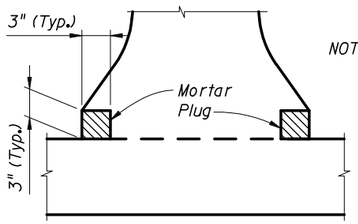
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-0".
4. At the Contractor's option, Bars 5W may be fabricated as a two piece bar with a 1'-2" lap splice of the bottom legs.



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
(SECTION THRU BRIDGE DECK SHOWN -
SECTION THRU APPROACH SLAB SIMILAR)



VIEW B-B



DETAIL "B" - SECTION
AT INTERMEDIATE OPEN JOINT

NOTE: At intermediate Open Joints, the lower 3" portion of the open joint shall be plugged by filling it with mortar in accordance with Section 400 of the Specifications.

ESTIMATED TRAFFIC RAILING QUANTITIES

ITEM	UNIT	QUANTITY
Concrete	C.Y./FT.	0.120
Reinforcing Steel	LB./FT.	23.29

(The above quantities are based on a crowned roadway, with a 2% cross slope)

CROSS REFERENCE:
For Detail "A" and locations of Section A-A, View B-B and Detail "B" location, see Index No. 421, Sheet 1 of 2.

INSTRUCTIONS TO DESIGNER:

For Bridge Decks up to a maximum thickness of 9", the three Bars 5S placed in the deck may substitute for the longitudinal deck steel located within the limits of Bars 5W, provided that the total area of longitudinal deck steel beneath the railing, as required by calculation, is not reduced. Show these bars on the Structures Plans, Superstructure Sheets with the deck steel.

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