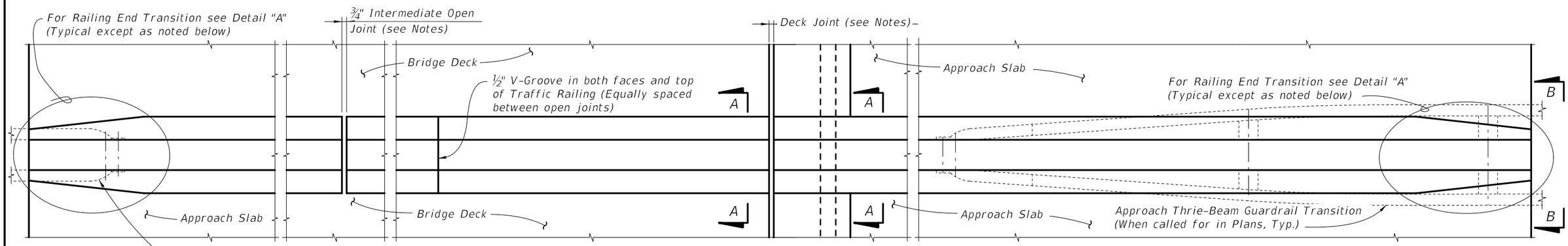
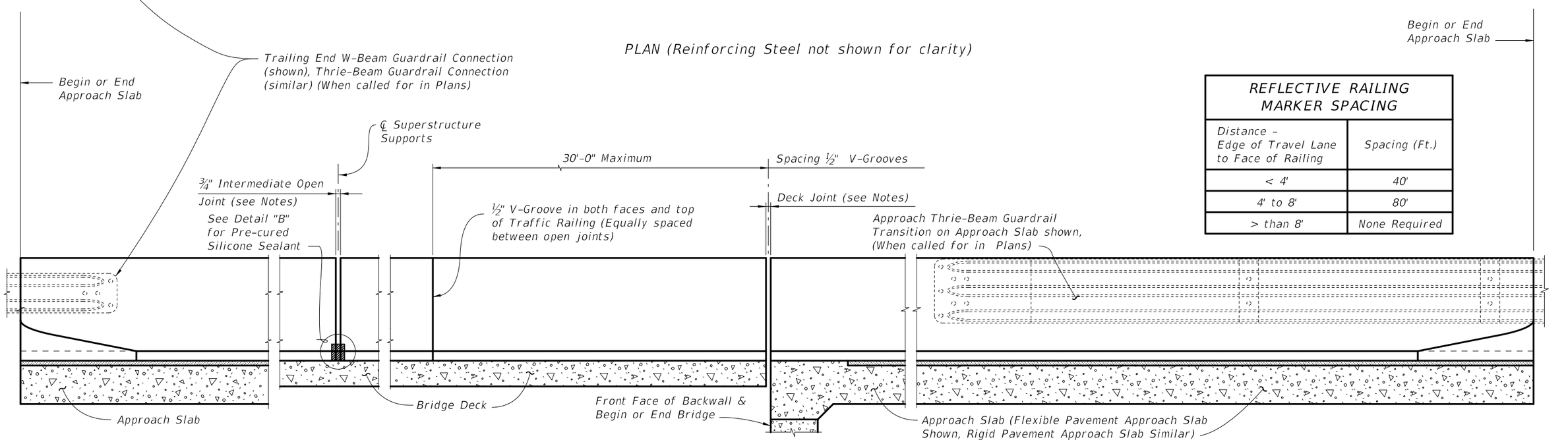



PLAN (Reinforcing Steel not shown for clarity)




ELEVATION
(Reinforcing Steel not shown for clarity)

| REFLECTIVE RAILING MARKER SPACING | |
|---|---|
| Distance – Edge of Travel Lane to Face of Railing | Spacing (Ft.) |
| < 4' | 40' |
| 4' to 8' | 80' |
| > than 8' | None Required |

CROSS REFERENCE:
For Section A-A, View B-B and Detail "A" see Sheet 2.

For Detail "B" see Sheet 3.

## 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.
REFLECTIVE RAILING MARKERS : Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing along the centerline at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing.

JOINTS : See Plans, Superstructure, Approach Slab and Retaining Walls Sheets for actual dimensions and joint orientation. Provide open Railing Joints at Deck Expansion Joint locations matching the dimensions of the Deck Joint. For treatment of Railings on skewed bridges see Sheet No. 3.

Provide ¾" Intermediate Open Joints at :
(1) – Superstructure supports where slab is continuous.

REVISIONS

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|
| 07/01/10 | GJM | Changed Joints note. | | | |
| 01/01/11 | CMH | Changed JOINTS note reference from Index 490 for Skew Treatment to Sheet No. 3, and Mortar Plug to Pre-cured Silicone Sealant. | | | |

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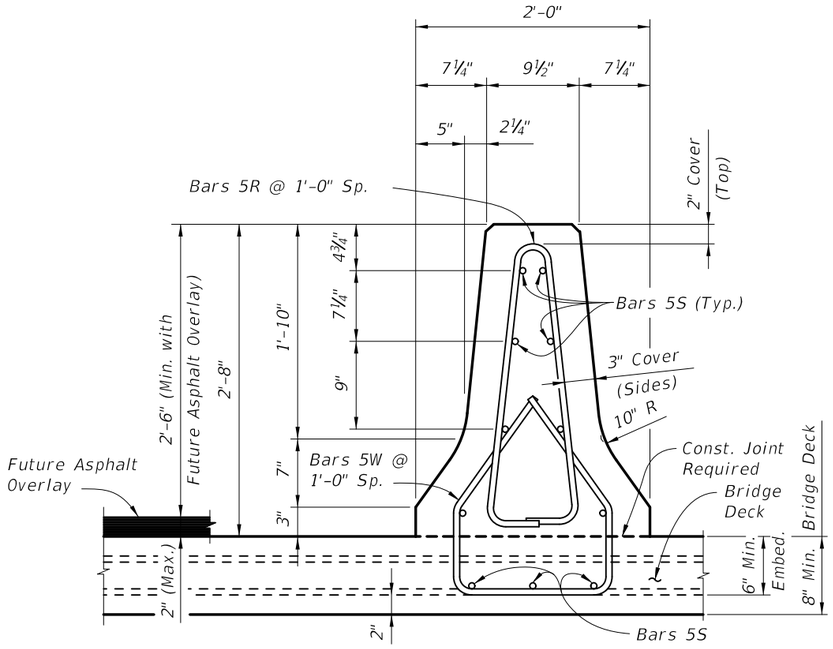
# TRAFFIC RAILING - (MEDIAN 32" F SHAPE)

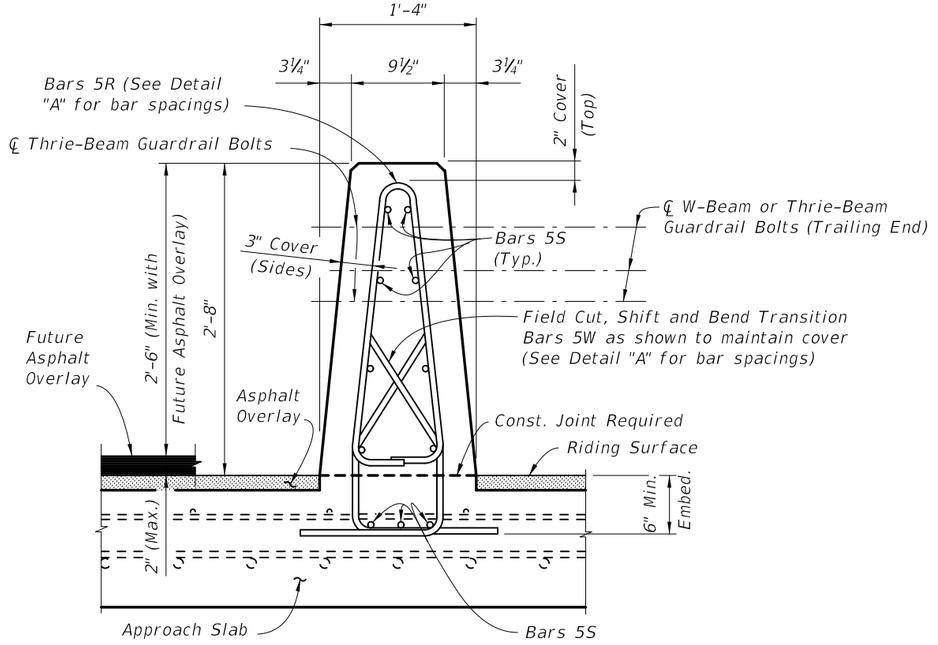
Interim Date 01/01/11

Sheet No. 1 of 4

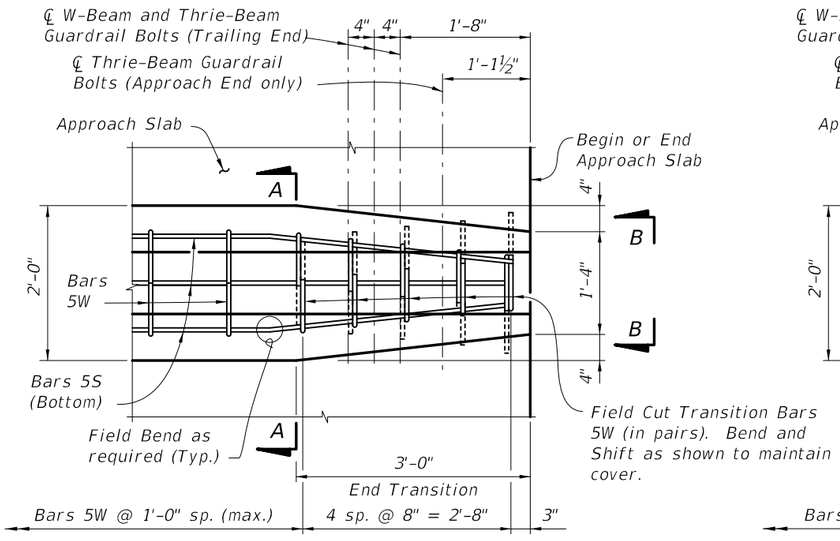
Index No. 421



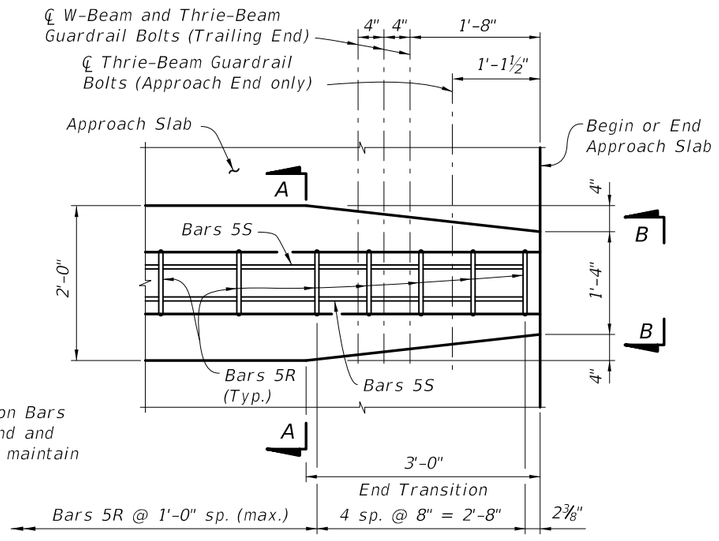

SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
(SECTION THRU BRIDGE DECK SHOWN -
SECTION THRU APPROACH SLAB SIMILAR)




VIEW B-B




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




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

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.

Omit Railing End Transition and Guardrail if Index 410 Concrete Barrier Wall is used beyond the Approach Slab. See Structures Plans, Plan and Elevation Sheet and Roadway Plans. If Railing End Transition is omitted, extend Typical Section to the end of Approach Slab and space Bars 5R and 5W at 1'-0" (Typ.)

DETAIL "A"

REVISIONS

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|
| 01/01/11 | GJM | Deleted "INSTRUCTION TO DESIGNERS" note. | | | |
| 01/01/11 | CMH | Change Sheet No. to "2 of 4" | | | |

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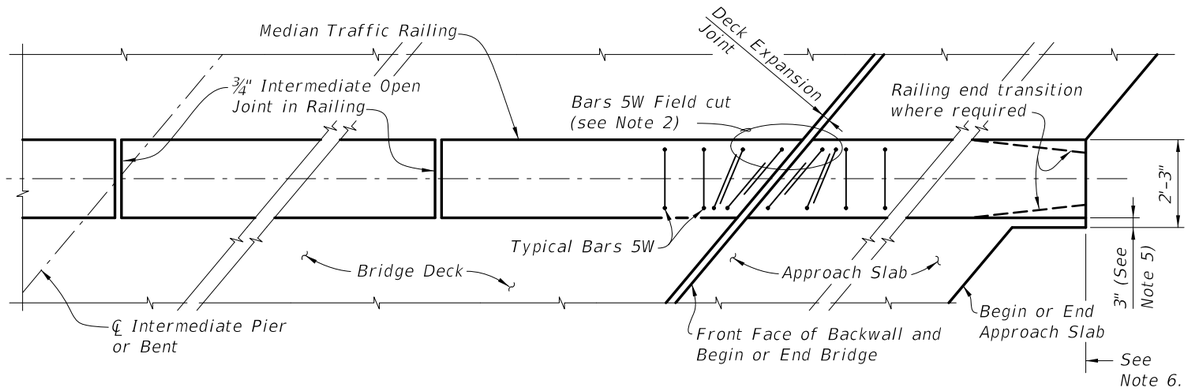
# TRAFFIC RAILING - (MEDIAN 32" F SHAPE)

Interim Date 01/01/11

Sheet No. 2 of 4

Index No. 421




*PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH MEDIAN TRAFFIC RAILING*

NOTES:

1) Median Traffic Railing reinforcement vertical Bars 5W may be shifted up to 1" (Max.) and rotated up to 10 degrees as required to allow proper placement.

2) Transition Stirrup Bars 5W shall be used as required at railing ends adjacent to expansion joints to facilitate placement of bars in acute corners. Place Transition Bars 5W in a fan pattern to maintain spacing. Rotate bars in 10° (Max.) increments as required.

3) Median Traffic Railing ends at deck expansion joints shall follow the deck joint with allowance for joint movement. See Structures Plans, Superstructure and Approach Slab Sheets for Details.

4) ¾" Intermediate Open Joints and " V-Grooves in railing shall be placed perpendicular or radial to the ℄ of the median railing. See Structures Plans, Superstructure and Approach Slab Sheets for locations.

5) At begin or end approach slab extend slab at the median railing ends 3" (open side) as shown to provide a base for casting of the railing.

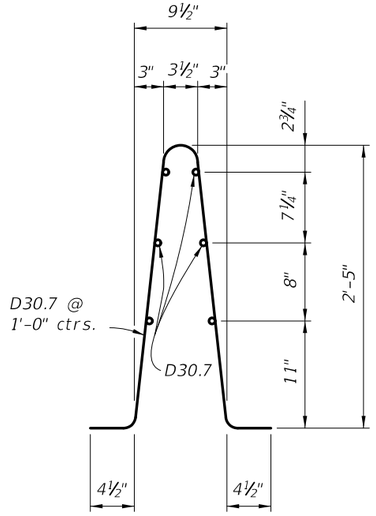
6) Work this Sheet with Approach Slab Indexes as applicable.

7) Deck Expansion Joint at begin or end bridge shown. Deck Expansion Joints at ℄ Pier or Intermediate Bents are similar.

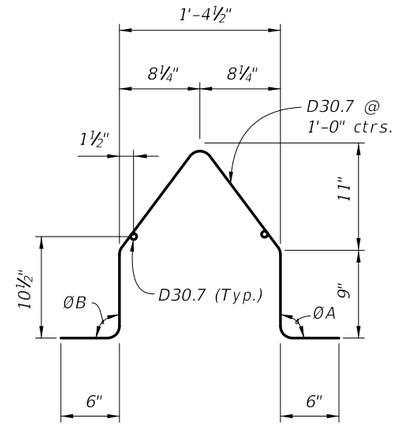
8) Partial Plan Views shown are intended as guides only. See Structures Plans, Superstructure and Approach Slab Sheets for skew angles, joint orientation, dimensions and details.

9) If Welded Wire Reinforcement is used in lieu of conventional reinforcement, placement of the WWR vertical elements shall be similar to those shown above. Clipping of horizontal elements to facilitate placement shall be minimized where possible. Where clipping is required, supplement horizontal elements by lap splicing deformed bars with an equivalent area of steel.

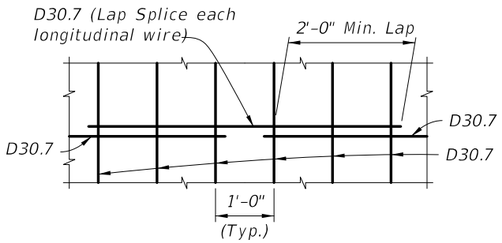
## ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS



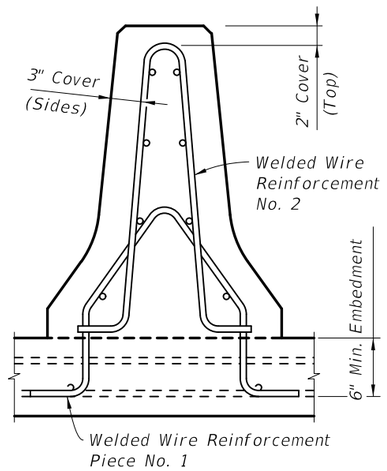

Welded Wire Reinforcement (WWR)
Piece No. 2




Welded Wire Reinforcement (WWR)
Piece No. 1




SPLICE DETAIL
(Between WWR Sections)




WELDED WIRE REINFORCEMENT NOTES:

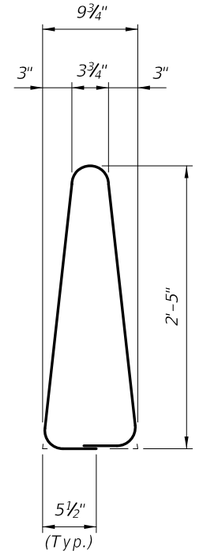
1. At the option of the Contractor Welded Wire Reinforcement may be utilized in lieu of all Bars 5R, 5S and 5W. Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded Wire Reinforcement at Railing End Transition shall be field bent inward as required (Pieces 1 & 2) to maintain cover. The top of Piece 1 shall be cut to allow overlap.
3. Place WWR 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

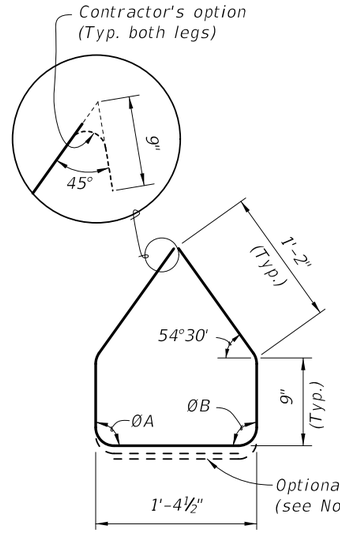
| ROADWAY CROSS-SLOPE | ON SLOPE | | AT CROWN | |
|---|---|---|---|---|
| | ØA | ØB | ØA | ØB |
| 0% to 2% | 90° | 90° | 90° | 90° |
| 2% to 6% | 93° | 87° | 90° | 90° |
| 6% to 10% | 96° | 84° | 90° | 90° |

ØA and ØB shall be 90° if Contractor elects to place railing perpendicular to the deck, and approach slabs.

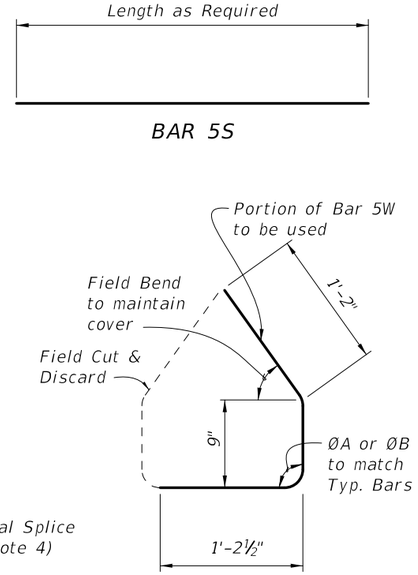
| BILL OF REINFORCING STEEL | | |
|---|---|---|
| MARK | SIZE | LENGTH |
| R | 5 | 6'-1" |
| S | 5 | As Reqd. |
| W | 5 | 5'-3" |




STIRRUP BAR 5R




STIRRUP BAR 5W



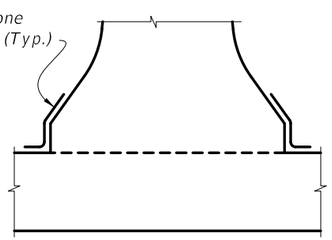

BAR 5S




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.




DETAIL "B" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Section 932 of the Specifications.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.

| ESTIMATED TRAFFIC RAILING QUANTITIES | | |
|---|---|---|
| ITEM | UNIT | QUANTITY |
| Concrete | CY/LF | 0.120 |
| Reinforcing Steel | LB/LF | 23.29 |

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

REVISIONS

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|
| 01/01/11 | CMH | Changed Sheet No. to "4 of 4", and DETAIL "B" to Pre-cured Silicone Sealant. | | | |

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# TRAFFIC RAILING - (MEDIAN 32" F SHAPE)

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