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Index 521-509 Traffic Railing/Noise Wall (8'-0") - Bridge

Design Criteria

NCHRP Report 350 TL-4; ***NCHRP Report 663***; ***AASHTO LRFD Bridge Design Specifications***; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

The Traffic Railing / Noise Wall (8'-0")-Bridge is the basic non-proprietary crash tested traffic railing / noise wall combination for use on FDOT bridges and approach slabs. This railing is first and foremost a traffic railing that also serves as a noise wall/barrier. To preserve the crashworthiness of the design, this railing must be used in accordance with the requirements of ***SDG*** 6.7 for all applications.

For bridge applications, design bridge decks supporting Traffic Railing / Noise Walls (8'-0") in accordance with the requirements of ***SDG*** 4.2. For bridge decks up to a maximum thickness of 9", the two Bars 5S1 placed in the bridge deck may substitute for the longitudinal deck steel located within the limits of Bars 5V, provided that the total area of longitudinal deck steel beneath the railing, as required by calculation, is not reduced.

The tabulated values in the ***SDG*** 4.2.5 are based on ***LRFD*** A13.3.1 yield-line theory and are intended to prevent local failure of the structural components and allow the load to be supported by the length of the wall between expansion joints for stability.

Form liners providing a textured finish are permitted on the outside face of the Traffic Railing / Noise Wall (8'-0") with the following provisions: (1) The maximum amplitude of the form liner on the lower 3'-0" section shall be limited to ½ " depth; (2) Any form liner used above 3'-0", must provide a thickened concrete section to maintain 2" cover. Full details of this thickened section and the form liner shall be provided in the plans. Form liners complying with the requirements of SDG 6.7 are allowed on the upper vertical portion of the inside face of the Traffic Railing / Noise Wall but are not recommended.

When the Traffic Railing / Noise Wall (8'-0") terminates on the bridge, the End Taper shall be located at an open joint. When the Traffic Railing / Noise Wall (8'-0") terminates on the Approach Slab, the End Taper shall terminate at Begin or End Approach Slab as shown.

Indexes 400-509, 400-090 and 400-091 contain details for the use of Traffic Railing / Noise Walls (8'-0") on bridge decks and approach slabs.

The details shown for installing 2" diameter conduits and associated Embedded Junction Boxes (EJBs) in traffic railings have been determined to be crashworthy in accordance with the requirements of ***NCHRP Report 350***, ***AASHTO Manual for Assessing Safety Hardware (MASH)*** and the ***AASHTO LRFD Bridge Design Specifications***. To preserve the crashworthiness of Traffic Railing / Noise Walls, no more than three 2" diameter conduits and associated EJBs, as shown on Index 630-

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010, may be installed within the traffic railing portion (only) of the Traffic Railing / Noise Walls.

For treatment of Traffic Railing / Noise Walls (8'-0") on skewed bridges see Index 521-427.

Slip forming of the traffic railing portion is permitted with approved shop drawings. Lap splices must meet AASHTO criteria, and concrete cover must meet FDOT requirements (2½" for slip-forming and 2" for C-I-P).

Details are available for increasing the crashworthiness of this Traffic Railing / Noise Wall to ***NCHRP Report 350*** Test Level 5. Contact the Structures Design Office for more information.

Plan Content Requirements

In the Structures Plans:

In the Materials Note on the General Notes Sheet, specify the concrete class in accordance with the superstructure environment classification. See ***SDG*** 1.4.

Show and label, by name or Index number, the Traffic Railing / Noise Wall (8'-0") on the Plan and Elevation, Typical Section, Superstructure, Approach Slab and Finish Grade Elevations Cross Section sheets, Retaining Wall Control Drawings, and other sheets as required. Include cross references to ***Standard Plans*** Index 400-090 or 400-091 as appropriate.

When the Traffic Railing / Noise Wall (8'-0") ends on a bridge, provide an End Taper and terminate the low end of the End Taper at an open joint in the traffic railing, preferably at the end of a span. Continue the bridge mounted traffic railing along the remainder of the bridge.

When the Traffic Railing / Noise Wall (8'-0") ends on an Approach Slab, provide an End Taper and terminate the low end of the End Taper at Begin or End Approach Slab. Select the low end of the taper height to accommodate the height of the continuing Traffic Railing or Concrete Barrier, or if guardrail or crash cushions are required, include a Railing End Transition as shown in the Standard. On the Superstructure section sheets, show the two Bars 5S1 placed in the bridge deck within the Bars 5V along with the rest of the reinforcing.

All concrete and Bars 5R, 5S and 5V required to construct the Traffic Railing / Noise Wall are included in the Estimated Traffic Railing Quantities. Do not include Traffic Railing / Noise Wall concrete in the estimated concrete quantities, or Bars 5R, 5S and 5V in the reinforcing bar lists and estimated reinforcing steel quantities for supporting bridge decks or approach slabs.

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Item number	Item Description	Unit Measure
521-5-22	Concrete Traffic Railing/Noise Wall, Bridge, 8’ Height	LF
630- 2- 16	Conduit, Furnish & Install, Embedded	LF
635- 3-13	Junction Box, Furnish & Install, Embedded	EA