Index 521-427 Traffic Railing (36" Single-Slope)

Design Criteria

AASHTO Manual for Assessing Safety Hardware (MASH) Test Level 4 Criteria; ***AASHTO LRFD Bridge Design Specifications***; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

The 36" Single-Slope Traffic Railing is the new basic default traffic railing for use on FDOT bridges and retaining walls. Use this railing in accordance with the requirements of ***SDG*** 6.7.

The details as 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 ***AASHTO Manual for Assessing Safety Hardware (MASH)*** and the ***AASHTO LRFD Bridge Design Specifications***. To preserve the crashworthiness of traffic railings, no more than three 2" diameter conduits and associated EJBs, as shown on Index 630-010, may be installed within a traffic railing or concrete barrier/noise wall.

When required to move water from travel lanes to sidewalks to reduce shoulder spread or to remove water from sidewalk to drainage structures, drainage slots 2” or 3” high and less than or equal to 6” or between 6 and 12” in length may be added to the base of the traffic railing. Work with the Drainage Engineer for size and spacing requirements; see spacing limits and details in the Index. Note: the 3” height will allow bottles and cans to pass through the slot. Reinforcing cover for Traffic Railings is shown as 2½", which accommodates new slip forming tolerances. For modified designs 2" minimum cover is usually adequate for stationary form construction.

Form liners providing a textured finish are permitted on the outside face of the Traffic Railing with the following provisions: (1) The amplitude of the form liner for the standards is limited to ½ " depth; (2) Form liners with an amplitude greater than 1/2” must provide a thickened concrete section (to maintain a 2" cover) and full details of the form liner and the thickened section provided in the plans.

Design bridge decks supporting 36" Single-Slope Traffic Railings in accordance with the requirements of ***SDG*** 4.2. For bridge decks up to a maximum thickness of 9", the two Bars 4S placed in the bridge deck may substitute for the longitudinal deck steel located within the limits of Bars 4V, provided that the total area of longitudinal deck steel beneath the railing, as required by calculation, is not reduced.

See ***SDM 15.3*** when inverted T bent caps are utilized.

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.***

Include the following Bridge Name Note on the General Notes Sheet:

Place the following bridge name on the traffic railing in accordance with the Traffic Railing Standard Plans:

[Use the name of the bridge or non-roadway facility crossed, or include the name of both facilities for roadway crossings, e.g.:

THOMASVILLE ROAD FLYOVER
TOMOKA RIVER
CSX RAILROAD
US 19 OVER EAST BAY DR

For multiple bridges, identify the associated bridge number, e.g.:

Bridge No.	Name
600103	CHOCTAWHATCHEE BAY
600104	CHOCTAWHATCHEE BAY RELIEF]

Show and label, by name or Index number, the 36" Single-Slope Traffic Railing and which reinforcement option to use: TYPE CS (Conventional Steel), TYPE SS (Stainless Steel), or TYPE F (BFRP/GFRP) 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. Indicate the number of conduits to be installed in each railing. Show limiting stations when transitioning to another type of traffic railing.

On the Superstructure section sheets, show the two Bars 4S placed in the bridge deck within the Bars 4V along with the rest of the deck steel.

When drainage slots are required, include drainage slot size (height and length) and slot locations in the plans.

For approach or trailing end traffic railing or barrier transitions not shown in the Index, provide special end transition details to match the adjacent profile and height at the end of the Approach Slab. Special transitions should be made over a 10'-0" length for the face profile and at 1:8 maximum slope for the height transition. To avoid widening the approach slab behind the transition, 2" concrete cover may be used.

All concrete and Bars 4P, 4S and 4V required to construct the traffic railing are included in the Estimated Traffic Railing Quantities. Do not include traffic railing concrete in the estimated concrete quantities, or Bars 4P, 4S and 4V in the reinforcing bar lists and estimated reinforcing steel quantities for supporting bridge decks, approach slabs or retaining walls.

Commentary: *With the implementation of MASH criteria, the minimum height for traffic railings/concrete barriers is 36". Roadway policy is to use a standard 38-inch height to allow for 2" of future asphalt overlay while still maintaining 36" from the riding surface. Index 521-610 series addresses this transition. To assist with the transitions from the bridge to roadway barriers, a Height Transition Detail is included in the Standard. The current detail shows the top of the approach slab coping increasing by 2"- to avoid*

double construction joints and works well for the transition to roadway barriers. Another option is to maintain the top of approach slab height and increase the traffic railing height over the same distance. Index 521-610 shows that as an option. Note: the guardrail attachment height does not consider the future asphalt overlay and is always 2'-8" from the constructed riding surface.

Payment

Commentary: *Conduit and EJB's are no longer included in the cost of the Traffic Railing or Concrete Barrier. Do*

Item number	Item Description	Unit Measure
521-5-13	Concrete Traffic Railing, Bridge, 36" Single-Slope	LF
630-2-16	Conduit, Furnish & Install, Embedded	LF
635-3-13	Junction Box, Furnish & Install, Embedded	EA