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# Index 521-423 Traffic Railing (32" Vertical Shape)

## Design Criteria

***NCHRP Report 350*** Test Level 4 Criteria; ***AASHTO LRFD Bridge Design Specifications***; ***Structures Design Guidelines (SDG)***

## Design Assumptions and Limitations

The 32" Vertical Shape Traffic Railing is intended for use on bridges and retaining walls with raised sidewalks and design speed ≤ 45 mph. Use this railing in accordance with the requirements of ***SDG*** 6.7.

The details as shown for installing for 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 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 traffic railing/noise wall.

Reinforcing cover for Traffic Railings is shown as a minimum of 2½”, which accommodates slip forming tolerances. For modified designs 2" minimum cover is usually adequate for stationary form construction.

Design bridge decks supporting 32" Vertical Shape Traffic Railings in accordance with the requirements of ***SDG*** 4.2. For bridge decks up to a maximum thickness of 9", the two Bars 5S placed in the bridge deck may substitute for the longitudinal deck steel located within the limits of Bars 5T, provided that the total area of longitudinal deck steel beneath the railing, as required by calculation, is not reduced.

Indexes 400-090, 400-091 and 521-600 Series contain details for the use of 32" Vertical Shape Traffic Railings on retaining walls and approach slabs.

For treatment of 32" Vertical Shape Traffic Railings on skewed bridges see Index 521-427.

The standard height railing is the Pedestrian / Bicycle Railing (42” height). The Special Height Bicycle Railing (48” height) should only be used where warranted by ***LRFD*** [C13.9.2].

## 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.

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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 32" Vertical Shape Traffic Railing on the Plan and Elevation, Typical Section, Superstructure, Approach Slab and Finish Grade Elevations Cross Section sheets, and other sheets as required.

On the Superstructure section sheets, show the two Bars 5S placed in the bridge deck within the Bars 5T along with the rest of the deck steel.

In the Roadway Plans when the 32" Vertical Shape Traffic Railing is used on retaining walls:

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

Show and label, by name or Index number, the 32" Vertical Shape Traffic Railing on the Retaining Wall Control Drawings, and other sheets as required. Include cross references to ***Standard Plans*** Index 521-600 Series as appropriate.

All concrete and Bars 5S, 5T and 5X 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 5S, 5T and 5X in the reinforcing bar lists and estimated reinforcing steel quantities for supporting bridge decks, approach slabs or retaining walls.

## Payment

***Commentary:*** *For consistency, Conduit and EJB's are no longer included in the cost of the Traffic Railing.*

| Item number | Item Description | Unit Measure |
|---|---|---|
| 521-5-4 | Concrete Traffic Railing, Bridge, 32" Vertical Face | LF |
| 630-2-16 | Conduit, Furnish & Install, Embedded | LF |

| # | | |
|---|---|---|
| 635-3-13 | Junction Box, Furnish & Install, Embedded | EA |