Index 460-490 Traffic Railing - (Rectangular Tube Retrofit)

Design Criteria

MASH, Test Level 4; ***AASHTO LRFD Bridge Design Specifications***, 7th Edition, Section 13; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

The Traffic Railing (Rectangular Tube Retrofit), Index 460-490, is applicable for retrofitting existing bridge, approach slab and retaining wall mounted 32" F-Shape, 32" New Jersey Shape and 32" Corral Shape traffic railings, and 34" Vertical Face traffic railing retrofits in accordance with the requirements of ***SDG*** 6.7.4. Index 460-490 provides a more economical solution for upgrading these obsolete traffic railings when compared with replacing the obsolete traffic railings and portions of the bridge decks, approach slabs and/or retaining walls that support them. No portions of the existing traffic railing types listed are required to be removed in order to construct the Rectangular Tube Retrofit.

Determine the applicability of the Rectangular Tube Retrofit to a particular bridge, approach slab or retaining wall mounted traffic railing based on the requirements of ***SDG*** 6.7.4, a review of the Load Rating of the existing bridge (if applicable), and a comparison of the existing railing geometry and reinforcing to those shown on the obsolete standard drawings for each railing. See ***SPI*** 536-002 for information about existing 32" F-Shape (older versions) and 32" New Jersey Shape traffic railings. See the FY 2017-18 ***Design Standards*** for information about existing 32" F-Shape and 32" Corral Shape traffic railings and 34" Vertical Shape traffic railing retrofits. The average weight per linear foot of the Rectangular Tube Retrofit = 30 lb/ft.

Determine the limiting stations for the Rectangular Tube Retrofit as follows:

For installations on existing New Jersey Shape and F-Shape traffic railings listed in ***SPI*** 536-002, begin or end the Rectangular Tube Retrofit 3'-0" from the open joint at Begin or End Bridge if the wingwall is less than 18'-0" long. If the wingwall is 18'-0" long or longer, begin or end the Rectangular Tube Retrofit 3'-0" from the beginning or end of the wingwall away from the bridge.

For installations on existing Vertical Face Traffic Railing Retrofits, ***Design Standards*** Index 480 Series, and 1987 thru 2000 ***Roadway and Traffic Design Standards*** Index 401 Schemes 1 and 19, begin or end the Rectangular Tube Retrofit 3'-0" from the open joint at Begin or End Bridge.

For installations on existing F-Shape Traffic Railings, ***Design Standards*** Index 420, and Corral Shape Traffic Railings, ***Design Standards*** Index 424, begin or end the Rectangular Tube Retrofit 3'-0" from Begin or End Approach Slab away from the bridge.

For the bridge mounted traffic railings listed above, if the traffic railing continues beyond the approach slab and/or wingwall as a retaining wall mounted traffic railing,

continue the Rectangular Tube Retrofit along the retaining wall and show the limiting station 3’-0” from Begin or End Traffic Railing on the retaining wall away from the bridge.

For installations on existing retaining wall mounted F-Shape Traffic Railings, ***Design Standards*** Index 420, and Corral Shape Traffic Railings, ***Design Standards*** Index 424, that are not associated with a bridge, begin or end the Rectangular Tube Retrofit 3’-0” from Begin or End Traffic Railing on the retaining wall.

The following existing items (if present) may be left in place unless otherwise required to meet project specific needs:

- Existing light poles (pedestal mounted per ***Design Standards*** Index 21200 or top mounted)
- Sign supports for sign trusses, ***Design Standards*** Indexes 11310 and 11320
- Bridge Fencing, ***Design Standards*** Indexes 810 and 812
- Single Post Bridge Mounted Sign Supports, ***Design Standards*** Index 11870

All other existing items that are attached to the top of the existing traffic railing including but not limited to fences, glare screens, pedestrian railings, noise walls and single post sign supports must be removed to allow for installation of the Rectangular Tube Retrofit. See ***FDM*** 215 for additional information.

Traffic control plans are required for the construction of the Rectangular Tube Retrofit.

Plan Content Requirements

For retrofits constructed on bridge and/or approach slab mounted traffic railings:

Develop control drawings showing the horizontal alignment of the retrofit along the bridge and/or approach slab. Include the control drawings and existing bridge and/or approach slab plans in the Structures Component Plans. Complete Plan and Elevation sheets and Superstructure sheets are generally not required.

For retrofits constructed on bridge, approach slab and retaining wall mounted traffic railings:

Develop control drawings showing the horizontal alignment of the retrofit along the bridge, approach slab and retaining wall. Include the control drawings and existing bridge and/or approach slab plans in the Structures Component Plans. Complete bridge Plan and Elevation sheets and Superstructure sheets are generally not required.

For retrofits constructed on retaining wall mounted traffic railings with no Structures Component Plan set in the project:

Show the locations of the retrofit on the Plan and Profile sheets or develop control drawings similar to those used for installations on bridges and approach slabs. Include the Plan and Profile sheets or control drawings in the Roadway Component Plans.

On the control drawings or Plan and Profile sheets, identify the construction of the Rectangular Tube Retrofit, define its limiting stations, and identify the existing traffic railing type as follows:

> [Select one: Begin, End] Construction Traffic Railing (Rectangular Tube Retrofit), Index 460-490, on existing [select one: F-Shape, Corral Shape, New Jersey Shape or Vertical Face Retrofit] Traffic Railing, Sta. XX+XX.XX
>
> Completed example callout:
>
> Begin Construction Traffic Railing (Rectangular Tube Retrofit), Index 460-490, on existing New Jersey Shape Traffic Railing, Sta. 12+34.56

Clearly indicate any existing items that must be removed from the existing traffic railing to allow for installation of the Rectangular Tube Retrofit, e.g. existing top mounted fences and single post sign supports as listed in the Design Assumptions and Limitations above.

Prepare the Traffic Control Plans for the construction of the retrofit in accordance with ***Standard Plans*** Index 102-600 Series.

Payment

Item number	Item Description	Unit Measure
460-71-4	Traffic Railing (Rectangular Tube Retrofit)	LF

Include this pay item and the estimated quantity with the Structures Pay Items if Structures Component Plans are used. Include this pay item and the estimated quantity with the Roadway Pay Items if Roadway Component Plans are used.