9.7.1.5 DESIGN OF CANTILEVER SLABS

NCHRP-350 STANDARD RAILS

Bridge Section policy for the reinforcement of deck overhangs that support ITD 32" concrete parapet, 2 tube curb-mounted rail, and combination rail shall be the reinforcement for the empirical deck design requirements for the top mat (#5 rebar at 12") with the addition of #6 rebar spaced between the standard #5 bars. This reinforcement shall be considered adequate for those areas at least 8 feet from any joint or discontinuity in the parapet. For areas less than 8 feet from joints or discontinuities in the parapet two #6 bars shall be evenly spaced between the #5 bars. The length of the additional #6 rebar shall be such that the bar extends at least halfway between the exterior girder and the first interior girder. This policy only applies to 8 inch minimum thick decks with a minimum overhang of 24 inches from the centerline of the exterior girder to a maximum overhang of 72 inches.

MASH 42" STANDARD RAILS

Bridge Section policy for the reinforcement of deck overhangs that support ITD 42" single slope concrete parapet and 3-Tube Curb Mount Rail shall be the reinforcement for the empirical deck design requirements for the top mat (#5 rebar at 12") with the addition of 2 bundled #6 rebar spaced between the standard #5 bars. This reinforcement shall be considered adequate for entire length of the parapet including those areas at any joint or discontinuity in the parapet. The length of the additional #6 rebars shall be such that the bar extends at least halfway between the exterior girder and the first interior girder. This policy only applies to 8 inch minimum thick decks with a minimum overhang of 24 inches from the centerline of the exterior girder to a maximum overhang of 96 inches.

Commentary

The 42"single slope parapet was analyzed according to AASHTO Article A13.4 for TL-4 loads to insure the parapet would yield before the cantilever deck. An 8" cantilever deck with a top mat of transverse #5 bars @ 12" and 2-#6 bundled bars at 12" between the #5 bars (As = 1.19) would provide the moment capacity greater than the parapet for a TL-4 loading.

The crash test for the 3-Tube Curb Mount Rail provided #6 @ 6" = 0.88 in^2/*ft for the top mat of deck reinforcement. The reinforcement provided in the overhang in accordance with ITD standards is 1.19 in^2/ft.

Revisions:

June 2013	Article was renumbered from A13.4.1
Mar 2015	Revised article for change to #5 top mat reinforcement for the empirical design.
May 2018	Added design criteria for NCHRP-350 rails and MASH Rils. Revised commentary.
June 2022	Added 3-Tube Curb Mount Rail to MASH Standard rails. Added commentary for deck reinforcement for the 3-Tube Curb Mount Rail.