

DESIGN ASSUMPTIONS:

1. The required overhang reinforcement demand was checked based on the requirements of Appendix A13 of the AASHTO LRFD Bridge Design Specifications. Three (3) design cases as described in Article A13.4.1 were considered.
2. The flexural resistance of the concrete barriers (CF-PL2, CF-PL3, CP-PL2, and CT-TL2) at their base was used as the overhang design collision moment as per AASHTO-LRFD Article A13.4.2. The flexural resistance of the post was used to compute the design collision moment for post-and-beam (S3-TL4) railing.
3. The required reinforcement was computed based on the maximum overhang length, which was defined for each barrier/railing type as follows:
 - 3'-0" – for steel stringer superstructures, measured from the centerline of the fascia stringer to the edge of deck;
 - 2'-6" – for prestressed concrete box superstructures, measured from the outside face of the fascia beam to the edge of deck;
 - 2'-0" – for NEBT beam superstructures, measured from the outside edge of the top flange of the fascia beam to the edge of deck.
4. The wheel load of the HL-93 design truck was assumed to be located 1 ft away from the face of the barrier/railing as per on AASHTO-LRFD Article 3.6.1.3. and it was distributed over the width of the equivalent strip of a deck as per AASHTO-LRFD Article 4.6.2.1.3.
5. The top flange of the steel stringers was assumed to be 16" wide.
6. The thickness of the overhang for decks supported by the steel stringers was assumed to be equal to the regular deck thickness plus $1\frac{1}{2}$ ". For deck supported by the prestressed concrete box beams and NEBT's, the overhang thickness was taken as the regular deck thickness plus $2\frac{1}{2}$ ".
7. The clear cover of the additional deck reinforcement at the top of the deck was assumed to be equal to 2 inches as for the regular deck top reinforcement.
8. Concrete Strength:
 - CIP deck and overhangs: $f'_c = 4$ ksi;
 - CIP barriers: $f'_c = 5$ ksi;Reinforcing Steel Yield Strength: $f_y = 60$ ksi.