5.7.3.5.2 DEFLECTION and CAMBER

The ultimate purpose in computing deflections due to prestressing and dead load is to produce a structure which will conform with the profile grade after the effects of immediate dead load deflection and prestressing and subsequent deflection due to creep have taken place.

In prestressed, precast girders the pretensioned steel strands induce upward deflection or camber. This camber is lessened by the weight of the girder, but not negated. Since concrete is subject to creep, the camber increases with time.

The camber strip is the relatively thin layer of concrete between the underside of the bridge deck and the top of the girder. The purpose of the camber strip is to compensate for the difference between the profile of the underside of the deck along the girder line and the girder itself. The camber strip shall be of sufficient thickness so that the top of the girder does not protrude into the slab.

The thickness of the deck at centerline of bearing shall be shown on the plans. The thickness shall include the following:

- Basic deck thickness
- Camber strip thickness
- Superelevation allowance
- Vertical curve effects
- Horizontal curve effects
- Fabrication/Construction tolerances

Deflections and camber are assumed to be parabolic curves and shall be computed according to ITD Research Report 98-16-01, Camber Growth In Prestressed Concrete Bridge Girders. The design procedure is outlined in Appendix A, Article A5.6.

Deck Forms
At the time of setting deck forms, the primary concern is that the tops of the girders not extend into the deck and interfere with the reinforcing steel.

After the girders are set, the tops of the girders are profiled. Finish grades for the top of the deck are generated by adding the correction for the slab dead load deflection. The bottom of deck form elevation is computed by subtracting the deck thickness. The top of girder profile should be lower than the bottom of deck form elevation. If not, the profile grade may require adjustment.

Revisions:

Oct 2017	Renumbered article from 5.7.3.6.2 to 5.7.3.5.2 to conform to the 8th Edition of the AASHTO LRFD Bridge Design Specifications.