



## 10-20 DECK AND SOFFIT SLAB

### Introduction

This Memo to Designers (MTD) provides deck and soffit slab details for bridges designed using the AASHTO Load and Resistance Factor Bridge Design Specifications (LRFD-BDS), Caltrans Amendments to LRFD-BDS and additional Caltrans considerations.

Deck and soffit slab details shown in Bridge Design Details 8-30 are applicable when using Caltrans Load Factor Design Bridge Design Specifications (LFD-BDS) only.

### Reinforced Concrete Deck Slabs

The Reinforced Concrete (RC) deck slab reinforcement details (Attachment 1) and the deck slab thickness and reinforcement schedule (Attachment 2) shown in this MTD should be considered as a lower bound for a given span length.

In addition to AASHTO LRFD-BDS, the following factors have also been considered in developing the deck design charts:

1. **Deck Service Life:** In general, RC bridge decks designed using Caltrans LFD-BDS have been observed to have a satisfactory service life of at least 40 years. This service life has been extended through maintenance repairs.
2. **Fatigue:** One of the factors that affects bridge deck life is its capacity under fatigue loading. Research (Gongkang Fu *et al*, June 2000) has shown that the deck thickness has a significant influence on its fatigue life. Hence any reduction in deck thickness from that used in the past may adversely affect deck fatigue life.
3. **Deck flexibility:** Thinner decks are more prone to load related cracking than thicker decks over the same girder spacing.

This MTD does not apply to the design of prestressed deck slabs and deck slabs subjected to special vehicular loads such as material hauling equipment loads. The design criteria for these deck slabs should be developed and approved through the Type Selection process.



## Reinforced Concrete Soffit Slabs

The soffit slab details shown in Table 10-20.2 (Attachment 3) conform to LRFD-BDS specifications and also to established Caltrans practice. While LRFD Specifications permit soffit slabs in prestressed concrete box girders to be thinner than those previously designed per Caltrans LFD-BDS, additional studies need to be conducted to ascertain both the strength and long-term service performance of box girders with thinner soffits. Until such time, the soffit details shown in Table 10-20.2 should be adopted.

## Policy

Design Engineers should incorporate the deck and soffit slab details as shown in this MTD. Project specific design exceptions may be pursued per MTD 1-1.

## References

1. AASHTO, LRFD Bridge Design Specifications.
2. CALTRANS, Amendments to AASHTO LRFD-BDS.
3. CALTRANS, Bridge Memo to Designers 1-1.
4. Gongkang Fu *et al*, June 2000, "Effect of Truck Weight on Bridge Network Costs", NCHRP. Report 495, Transportation Research Board, Washington DC.

## Attachments

Originally signed by Kevin Thompson

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