

## Design Memorandum

TO: All Design Section Staff  
FROM: Bijan Khaleghi  
DATE: July 15, 2009  
SUBJECT: Skin Reinforcement Requirement

This design memorandum supersedes design memorandum issued on February 10, 2009 on skin reinforcement requirement for flexural members.

The requirement of the LRFD Section 5.7.3.4 “Control of Cracking by Distribution of Reinforcement” for skin reinforcement shall be modified as follows:

If the depth of non-prestressed or partially prestressed members,  $h$ , exceeds 3.0 ft., longitudinal skin reinforcement shall be uniformly distributed along both side faces of component for a distance  $d_t/2$  from the tension face. It shall be permitted to include such reinforcement in strength computations if a strain compatibility analysis is made to determine stress in the individual bars or strands. Equation 5.7.3.4-2 shall be revised as follows:

$$A_{sk} \geq 0.012(d_t - 30) \leq \frac{A_s + A_{ps}}{4}$$

Where:

$d_t$  = distance from extreme compression fiber to centroid of extreme tension steel (in.)

The total area of longitudinal skin reinforcement (per face) need not exceed one-fourth of the required flexural tensile reinforcement  $A_s + A_{ps}$ . The maximum spacing of skin reinforcement shall not exceed either  $d_t/6$  or 12 in.

### BACKGROUND

This revision is consistent with other revisions recently made to Articles 5.5.4.2.1 and 5.7.2.1.

The February 10, 2009 memorandum on skin reinforcement requirement was based on the AASHTO T-10 early approval of the ACI requirement for skin reinforcement. This was not approved for the 2009 final ballot items. The February 10, 2009 memorandum is withdrawn since the ACI requirement for skin reinforcement is less conservative than the current AASHTO LRFD requirement.

If you have any questions regarding this issue, please contact Bijan Khaleghi at 705-7181.

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