2008 Interim Changes Part 1

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At their 2007 annual meeting in Wilmington, Delaware, the AASHTO Subcommittee on Bridges and Structures (SCOBS) considered and adopted six agenda items related to concrete structures. Technical Committee T-10, Concrete Design, developed Agenda Items 32 through 37 over the past several years and moved them to the subcommittee ballot this year. The agenda items represent revisions and additions to the AASHTO *LRFD Bridge Design Specifications* or the AASHTO *LRFD Bridge Construction Specifications*. These agenda items along with the complete agenda for the recent SCOBS meeting are available at http://bridges.transportation.org/?siteid=34&pageid=27. The 2007 concrete structures agenda items will become the 2008 interim changes. Agenda Items 32 through 34 are reviewed in this article.

Agenda Item 32 adds a new article and revises existing articles of the *LRFD Bridge Construction Specifications* allowing the use of low-carbon, chromium steel reinforcing bars. In 2004, ASTM published A 1035/A 1035M, *Standard Specification for Deformed and Plain, Low-carbon, Chromium Steel Bars for Concrete Reinforcement*. This reinforcement offers the potential for enhanced corrosion resistance and is suitable for use in bridge structures. Article 9.2.4 was added allowing the use of these bars through a reference to the ASTM designation. A revision to Article 9.7.3 prohibits welded splices for these bars. Article 5.11.5.2.3 of the *LRFD Bridge Design Specifications* currently prohibits the use of welded splices in bridge decks, thus this revision.

Revisions to Article 5.10.10.1 of the *LRFD Bridge Design Specifications* and its commentary comprise Agenda Item 33 and relate to the requirements for reinforcement near the ends of pretensioned beams. The terminology is changed to reflect practice. The current term "bursting" is changed to "splitting" because "splitting" is generally used for pretensioned members as considered in this article, whereas "bursting" is a term used more frequently for post-tensioned members. The existing specification wording defines reinforcement requirements for pretensioned members with vertical webs. However, splitting reinforcement is required in other pretensioned members such as precast slabs, multi-stemmed beams, U-beams, and box girders, where the primary splitting reinforcement may not be vertical. The additions to Article 5.10.10.1 and its commentary clarify the application of these requirements to members without vertical webs.

A new general procedure to allow the direct calculation of β and θ in shear strength calculation is introduced.

Agenda Item 34 is a product of National Cooperative Highway Research Program (NCHRP) Project 12-61, *Simplified Shear Design of Structural Concrete Members*. The results of this study are presented in NCHRP Report 549 of the same name, which can be viewed and downloaded at http://trb.org/news/blurb_detail.asp?id=5799. This research has already spawned the addition of another acceptable shear-resistance model to the *LRFD Bridge Design Specifications* last year in the form of 2006 Agenda Item 10 discussed in the Summer 2007 edition of *ASPIRE*.™

This agenda item introduces a new general procedure utilizing equations that allow the direct solution of β, the factor indicating the ability of diagonally cracked concrete to transmit tension and shear, and θ, the angle of inclination of diagonal compressive stresses. These equations are derived from the modified compression field theory (MCFT) of existing Article 5.8.3.4.2. Similar direct-solution equations are included in the shear-design provisions of the Canadian Standards Association (CSA) A23.3-04, *Design of Concrete Structures*. A further change is to make the design process noniterative by assuming that θ is equal to 30° for evaluating the demands of shear on longitudinal reinforcement. This simplification was also made in CSA A23.3-04. As a part of this agenda item, the existing methods for calculating shear resistance including Tables 5.8.3.4.2-1 and 5.8.3.4.2-2, will be retained as Appendix B to Section 5.

The additions and revisions represented by Agenda Items 35 through 37 will be reviewed and discussed in a future article.