AASHTO LRFD

# 2014 Interim Changes Related to Concrete Structures

by Dr. Dennis R. Mertz

The American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Bridges and Structures (SCOBS) convened their annual meeting in Portland, Ore., this past June. During the meeting hosted by the Oregon Department of Transportation, SCOBS considered and adopted five agenda items specifically related to concrete structures. After several years of development, Technical Committee T-10, Concrete Design, moved Agenda Items 6, 7, 9, 10, and 11 to subcommittee ballot in Portland. These agenda items represent revisions and additions to the *AASHTO LRFD Bridge Design Specifications*. This column reviews the 2013 concrete-structures agenda items, which are integrated into the 2014 seventh edition of the Specifications.

**Agenda Item 6** resolves conflicting requirements and terminology regarding the distribution of longitudinal torsion reinforcement in box girders as specified in Articles 5.8.3.6.3 and 5.8.6.4. It clarifies that the calculated value of reinforcement is the total area of reinforcement to be distributed around the outer-most webs and top and bottom slabs of the box girder. The American Segmental Bridge Institute (ASBI) assisted T-10 in developing this ballot item, although the provisions in Article 5.8.3 apply to all cellular concrete cross sections.

The minimum transverse reinforcement requirement for segmentally constructed post-tensioned box girders was unified with that of all other concrete cross sections of Article 5.8.2.5 in **Agenda Item 7**. Based upon new research, this agenda item removes the previous specified exemption for segmental post-tensioned boxes and increases the minimum reinforcement by making it a function of concrete strength.

**Agenda Item 9** addresses a desire to increase spacing of shear connectors to facilitate accelerated construction of concrete bridges with precast concrete deck panels. It revises Article 5.8.4.2 by increasing the maximum limit on the spacing of non-welded shear connectors to 48 in. or the depth of the member, whichever is smaller. However, an exception is made for cast-in-place box girders where the original limit of 24 in. is maintained. The revisions are based upon the findings reported in NCHRP Report 584, *Full-Depth Precast Concrete Bridge Deck Panel Systems*.

Article 5.8.6.5, which specifies the shear resistance of segmental concrete bridges, is revised by **Agenda Item 10** to allow Article 5.8.3—Sectional Design Model for shear resistance of concrete members to be applied to segmental concrete bridges. The traditional segmental concrete bridge shear-resistance provisions taken from the *AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges* continue to be an acceptable alternative. This revision increases the permitted load-carrying capacity of some segmental bridges; however the service limit-state check for shear in Article 5.8.5—Principal Stresses in Webs of Segmental Concrete Bridges, is retained as a check on serviceability.

**Agenda Item 11** primarily clarifies existing Article 5.10.9.3.4b, regarding crack control behind intermediate post-tensioning anchors through tieback reinforcement, with additional commentary including illustrative figures. Also, the required length of the tie-back reinforcement is shortened.

Interim revisions to the *AASHTO LRFD Bridge Design Specifications* are considered annually by SCOBS. Their next meeting is scheduled for June 22 through 26, 2014, in Columbus, Ohio. A

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EDITOR'S NOTE

*If you would like to have a specific provision of the* AASHTO LRFD Bridge Design Specifications *explained in this series of articles, please contact us at www.aspirebridge.org.*