Reorganization of Section 5

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Since the adoption of the first edition of the American Association of State Highway and Transportation Officials' *AASHTO LRFD Bridge Design Specifications* in 1994, yearly interim revisions have been written to Section 5, Concrete Structures, by members of the AASHTO technical committee T-10, Concrete Design; researchers; or other friends of the committee. Much care was taken by the original National Cooperative Highway Research Program (NCHRP) Project 12-33 team to maintain organizational, philosophical, and technical consistency throughout the specifications. The yearly interim revisions since 1994, while well meaning, have not always maintained this consistency. Section 5 is also ready to be reorganized after these many years of interim revisions.

Transportation Pool-Funded Study TPF-5(271) began in January 2013 to develop the reorganization. Led by the Kansas Department of Transportation, 16 states and the Federal Highway Administration (FHWA) are funding the study. Modjeski and Masters Inc. is facilitating the reorganization for AASHTO T-10 with technical assistance from the American Segmental Bridge Institute (ASBI) and the Precast/Prestressed Concrete Institute (PCI). As part of this work

- stakeholders were surveyed regarding needs for reorganization or clarification,
- interim changes since 1994 were reviewed for consistency, and
- an annotated outline for the new section was developed prior to beginning the reorganization itself.

The reorganization is centered on distinguishing the design of B- (beam or Bernoulli) Regions or D- (disturbed or discontinuity) Regions. B-Regions are regions of concrete members in which Bernoulli's hypothesis of straight-line strain profiles—linear for bending and uniform for shear—applies. D-Regions are regions of concrete members encompassing abrupt changes in geometry or concentrated forces in which strain profiles more complex than straight lines exist. In addition to the reorganization and rewriting to reestablish consistency, certain design provisions are being enhanced including: the strut-and-tie method (STM), harmonized segmental design and non-segmental design, anchorage to concrete, improved distinction between pretensioned and post-tensioned provisions, and expanded durability provisions.

Article 5.13, Anchors, of the proposed reorganized Section 5 of the AASHTO LRFD Specifications has adopted by reference Chapter 17 of ACI 318-14 as the procedures to design, detail, and install anchors with amendments as appropriate for application to highway bridges. Thus, wholesale reproduction of the voluminous ACI provisions are avoided. Professor Ron Cook of the University of Florida, the primary author of ACI Chapter 17, assisted with the development of proposed LRFD Article 5.13.

The reorganized Section 5 is nearing completion after 15 drafts, as of this writing. AASHTO T-10 will make the final draft available to the Subcommittee on Bridges and Structures (SCOBS) for review in the fall of 2015. This huge proposed agenda item is on schedule for consideration by SCOBS at their summer 2016 meeting in Minneapolis, Minn. If adopted at that time, it would become a part of the next edition of the AASHTO LRFD specifications in 2017. AASHTO T-10 is also preparing an accompanying table cross-referencing the articles in the new reorganized Section 5 with the current section to assist with transitioning to the new format.