AASHTO T-14
2015 Agenda Items
Proposed Revisions to LRFD BDS Section 6

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Agenda Item 13
Articles 6.3, 6.4.1, and 6.12.2.2.2

• Description of Proposed Revision:
  • Article 6.4.1:
    ➢ Add the recently adopted ASTM A 1085 Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS) to the approved list of materials for structural tubing in the AASHTO BDS.

• Background:
  • A 1085 is more suitable for dynamically loaded structures; specifies a minimum CVN value of 25 ft-lbs at 70°F (Zone 2).
  • Tighter material tolerances result in more area available for design; full nominal wall thickness may be used for design and need not be reduced by a factor of 0.93 (Article 6.12.2.2.2).
  • Specified minimum yield stress of 50 ksi; specified maximum yield stress of 70 ksi (reduces capacity design requirements for seismic design).
Agenda Item 15
Tables 6.13.2.4.2-1 & 6.13.2.6.6-1, and Article C6.13.2.6.5

• Description of Proposed Revision:
  • Table 6.13.2.4.2-1:
    ➢ Increases maximum hole size for bolts greater than or equal to 1” in diameter to the nominal diameter of the bolt plus 1/8”.

• Background:
  • Eliminates the need to field ream holes to fit large-diameter hot forged bolts, which have a longitudinal forging seam that interferes with holes 1/16” larger than the bolt diameter.
  • Similar revision scheduled to appear in 2016 AISC Specification & a similar approach is taken in Europe.
  • RECOMMEND WITHDRAW at this time to better sync with the AISC Specification and the LRFD Bridge Construction Specifications.
Agenda Item 15
Tables 6.13.2.4.2-1 & 6.13.2.6.6-1, and Article C6.13.2.6.5 (cont.)

• Description of Proposed Revision:
  • Table 6.13.2.6.6-1:
    ➢ Current minimum edge and end distance requirements for bolt holes adjacent to rolled or gas cut edges are retained and applied to all types of edges.
    ➢ Exception: requirement for bolts over 1-1/4“ in diameter taken from 2010 AISC Specification – minimum distance equal to 1-1/4 x d.

• Background:
  • Removes separate minimum edge and end distance requirements for bolt holes adjacent to sheared edges. Requirements would be equivalent to those given in the 2010 AISC Specification.

• Description of Proposed Revision:
  • New Article C6.13.2.6.5:
    ➢ Adds a new Commentary article on minimum edge and end distance requirements.
Agenda Item 15
Tables 6.13.2.4.2-1 & 6.13.2.6.6-1, and Article C6.13.2.6.5 (cont.)

• Background (cont.):
  • New Article C6.13.2.6.5 (cont.):
     Indicates that edge and end distance requirements are based on standard fabrication practices and workmanship tolerances.
     Indicates that provisions of Article 6.13.2.9 related to bearing resistance of bolt holes must be satisfied. Ensures that sufficient end distances are provided such that bearing and tear-out limits are not exceeded for holes adjacent to all types of edges.
     Recommends that edge and end distances larger than the specified minimum distances be permitted, but not larger than the maximum specified edge and end distances. Helps to ensure that the specified minimum distances are not violated during fabrication after allowing for unavoidable workmanship tolerances.
ASTM

Combined Structural Bolt Specification

F3125-15 Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions

Slides courtesy of:

Chad Larson
President - LeJeune Bolt Company
Producer Vice Chair - ASTM F16 Fastener Committee
Chair - ASTM Subcommittee F16.02 on Steel Bolts, Nuts, Rivets and Washers
What is F3125?

- **ASTM F3125-15** was approved by the ASTM F16 Fastener Committee and cleared for publication by ASTM on **January 1st, 2015**. F3125 is a new structural bolt specification **replacing six existing ASTM specifications; A325, A325M, A490, A490M, F1852 and F2280**.

- **This new specification is the culmination of a significant amount of work by the volunteer task group and the F16.02 subcommittee. The change was made possible with the support of ASTM F16 executive leadership and association members from AISC, RCSC and FHWA.**
Why

• The intent of the new specification is to streamline and unify language and requirements for structural bolts and to simplify specification maintenance moving forward.

• F3125 contains nearly all of the previous technical requirements, but adds numerous needed changes and improvements, and does so in a very efficient manner. Some highlights of the new standard include;
A few of the 100+ changes

- **Reduction in the total page count from 45 pages down to 13 pages**
- **Reduction in the number of tables from 54 tables down to 7 tables**
- **More specific requirements for lot traceability**
- **Increase in minimum tensile strength, proof load and hardness of 1-1/8" and larger A325 bolts, from 105 ksi to 120 ksi**
- **Creation of a coatings Annex and nut over-tap guidance for recently added fastener coatings**
- **Addition of rotational capacity test as an Annex – defined as a supplementary requirement, if desired**
Moving Forward

• **Grades within F3125 will continue to be called names we are all familiar with.** For example, an A325 bolt will be designated as "Grade A325", it will simply reside within the combined specification.

• **In the future the F16 committee will ballot removal of the six previous specifications,** eliminating the requirements of each, but leaving a note that the standard has been superseded, sending users to F3125.
What Now?

• What does this mean for existing inventory, projects underway, and future structures which will end up with bolts made to both the new specification and the previous specifications? *In short, nothing.*

• There will be a difference in how the fasteners are called out, and in some cases minor differences in technical requirements, but no changes resulting in the need for connection design or code changes. *Users must simply understand that the grades they are familiar with now reside under a parent document.*

• *No changes to existing nut and washer specifications.*
Future AASHTO Actions...

• LRFD Bridge Design Specifications
  • 19 instances “A325”
  • 16 instances “A490”

• LRFD Bridge Construction Specifications
  • 39 instances “A325”
  • 26 instances “A490”

• Manual for Bridge Evaluation
  • 4 instances “A325”
  • 2 instances “A490”

However, old designations have to continue for MBE
?? QUESTIONS ??