

BULLETIN: ACI MODIFICATIONS TO REINFORCING STEEL SPECIFICATIONS

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PURPOSE

This bulletin alerts design professionals, project inspectors and testing laboratories of recent manufacturing and fabrication practices that are not aligned with the reinforcing steel ASTM International (ASTM) referenced standards adopted by the 2019 and 2022 California Building Codes (CBC), which has resulted in material test reports identifying nonconforming materials. This bulletin provides direction to stakeholders on methods acceptable to DSA to demonstrate compliance with the noted CBC editions and is effective with the date of issuance.

BACKGROUND

The 2022 CBC adopted the American Concrete Institute 318-19: Building Code Requirements for Structural Concrete (ACI 318) as a referenced standard. ACI 318 modified steel reinforcement material requirements in advance of those requirements being incorporated into the ASTM standards. These changes affected ASTM A615-18e1: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement (ASTM A615) and ASTM A706-16: Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement (ASTM A706).

The modifications by ACI 318 to the material standards require design professionals to account for those modifications in their design and also specify material, testing and inspection requirements which differ from those identified in the ASTM referenced standards. While steel mills typically manufacture reinforcing steel in accordance with the latest ASTM versions, the Laboratory of Record (LOR), which is responsible for the verification of material, will perform tests and inspections in accordance with the referenced standards noted on the DSA-approved construction documents or CBC Chapter 35 where not otherwise specified. The ASTM referenced standard versions for reinforcing steel listed in CBC Chapter 35 predate the ACI 318 modifications.

BULLETIN

The modifications by ACI 318 to material specified to referenced standards ASTM A615 and ASTM A706 have an impact on design, testing and inspection as summarized below.

1. SIGNIFICANT CHANGES BY ACI 318 FOR MATERIAL SPECIFIED TO ASTM A615 AND ASTM A706

1.1 The minimum required tensile strength of ASTM A615 Grade 60 and Grade 80 reinforcing was reduced from 90 kips per square inch (ksi) to 80 ksi and from 105 ksi to 100 ksi, respectively.

1.2 New ductility requirements were added to material specified to both ASTM A615 and ASTM A706.

1.3 Reinforcing bar deformation requirements were added to material specified to ASTM A706.

2. REQUIREMENTS FOR PLANS AND SPECIFICATIONS SUBMITTED BY DESIGN PROFESSIONALS FOR DSA APPROVAL

2.1 Where reinforcing steel must comply with Chapter 20 of ACI 318 (e.g., Section 20.2.2.4, 20.2.2.5, etc.), the responsible design professional shall do one of the following:

ACI MODIFICATIONS TO REINFORCING STEEL SPECIFICATIONS

2.1.1 Specify the required ACI 318 modifications to the material reinforcing steel with the corresponding referenced specifications, ASTM A615 and ASTM A706.

2.1.2 Specify ASTM A706-22a, with Supplementary Requirement S1, and ASTM A615-22. The design professional shall ensure the materials, as specified, comply with the design requirements of the CBC version under which the project is submitted.

3. REQUIREMENTS FOR DESIGN PROFESSIONALS DURING CONSTRUCTION

3.1 Projects submitted and approved under the 2019 CBC were based on reference standard ACI 318-14 and the respective referenced ASTM specifications. Reinforcing steel from steel mills rolling to newer ASTM material specifications may not meet the minimum tensile requirements of the previous ASTMs (see Section 1.1 above). Projects submitted and approved under the 2022 CBC prior to publication of this bulletin may not have specified reinforcing steel in accordance with Section 2 above. Design professionals are advised to monitor the LOR's reinforcing steel test reports to verify the reinforcing steel meets the design requirements and the DSA-approved construction documents.

3.2 When the LOR issues a nonconforming reinforcing steel test report, in accordance with Section 4 below, the design professional shall do one of the following:

3.2.1 Issue a formal rejection of the material, thereby disallowing its use on the project.

3.2.2 Submit to DSA a Construction Change Document (CCD) for review and approval, in accordance with *IR A-6: Construction Change Document Submittal and Approval Process*, to resolve the nonconforming report. DSA approval of the CCD is required prior to covering the nonconforming reinforcing steel.

4. REQUIREMENTS FOR TESTING AND INSPECTION OF REINFORCEMENT

4.1 The LOR will test the reinforcing steel in accordance with CBC Chapter 35 referenced standards (see *IR 17-10: Sampling, Testing and Tagging of Reinforcing Bars*) in either of the following conditions.

4.1.1 The project submitted and approved under the 2019 CBC does not specify the ASTM version.

4.1.2 The project submitted and approved under the 2022 CBC does not specify the requirements for reinforcing steel in accordance with Section 2 above.

4.2 Where the DSA-approved construction documents specify reinforcing steel in accordance with Section 2 above, the LOR shall provide the necessary testing and reporting, such as uniform elongation, when applicable, per IR 17-10.

4.3 If the reinforcing steel does not comply with the specified standards, the LOR shall issue a test report indicating nonconforming reinforcing steel.

4.3.1 The project inspector (PI) shall issue a deviation notice in accordance with *Procedure (PR) 13-01: Construction Oversight Process* and verify nonconforming reinforcing steel is not covered with subsequent construction prior to DSA approval of the CCD.

4.4 Failure of the LOR or PI to perform requirements specified in this bulletin and the applicable regulations may be cause for DSA to take adverse action against the LOR or PI in accordance with the California Administrative Code.

REFERENCES:

2019 and 2022 California Code of Regulations (CCR) Title 24
Part 1: California Administrative Code (CAC), Sections 4-341, 4-342
Part 2: California Building Code (CBC), Sections 1902A, 1910A, Chapter 35

A DSA Bulletin is a notification to its stakeholders regarding any issue intended to be directed to a broad group of external stakeholders as well as DSA staff.