
SAMPLING, TESTING AND TAGGING OF REINFORCING BARS

IR 17-10

References:

California Code of Regulations (CCR), Title 24, Part 2: California Building Code (CBC)
2007 and 2010 CBC, Section 1916A.2, 2103A.13 (2103.13*)

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Discipline: Structural

This Interpretation of Regulations (IR) is intended for use by the Division of the State Architect (DSA) staff, and as a resource for design professionals, to promote more uniform statewide criteria for plan review and construction inspection of projects within the jurisdiction of DSA which includes State of California public elementary and secondary schools (grades K-12), community colleges, and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is reviewed on a regular basis and is subject to revision at any time. Please check the DSA web site for currently effective IRs. Only IRs listed in the document at <http://www.dgs.ca.gov/dsa/Resources/IRManual.aspx> at the time of plan submittal to DSA are considered applicable.

* Indicates alternative 2010 CBC sections that community colleges can use, per 2010 CBC Section 1.9.2.2.

Purpose: The purpose of this Interpretation of Regulations (IR) is to clarify the requirements for sampling and testing of reinforcing bars (rebar) used in structural concrete and masonry construction on projects under DSA jurisdiction. It is intended to outline material identification and required certificates, sampling, laboratory testing and tagging of fabricated material.

Scope: Section 1916A.2 of the California Building Code (CBC) requires sampling and physical testing of reinforcing bars used in concrete. It describes, in general, rebar sampling frequencies for identifiable material vs. unidentifiable material and the tests required. This IR is applicable to reinforcing bars having ASTM designations A 615 and A 706, used for either structural concrete or masonry construction.

Other types of rebar and mechanical couplers are outside the scope of this IR.

Waiver of Tests: Tests of reinforcing bars may be waived, per CBC Section 1916A.2 (1916.2*), by the design professional in responsible charge of the project and as approved by DSA for one-story light-frame buildings (including relocatable buildings).

Exceptions: Rebar testing may not be waived for Occupancy Category IV buildings, per CBC Table 1604A.5 (1604.5*).

Each shipment to the fabricator of reinforcing steel must also be accompanied by certified mill test reports to qualify for waiver.

1. Material Identification: Material identification (ID) of rebar shall be conducted by a qualified representative of a DSA approved testing laboratory at the place of fabrication (cutting and bending). A qualified individual shall possess basic knowledge of bar size, specification, grade, and manufacturer's identification markings.

Identified rebar shall be sampled and tested per Sections 2, 3.1, and 4 below.

In order to be considered identified, the laboratory representative must verify that reinforcing bars meet all of the criteria in Sections 1.1 through 1.4, otherwise they shall be

considered unidentifiable and shall be sampled and tested per Sections 2 and 3.2 and 4 below.

- 1.1 Reinforcing bars originate from whole, unbroken bundles or coils, wire wrapped by the manufacturer's mill.
 - 1.2 The manufacturer's ID tag is attached by wire to each bundle or coil. Tags shall be legible and complete, with the mill name, heat number, bar size, material grade, ASTM designation, and bundle or coil weight.
 - 1.3 The markings on a coil or each bar in a bundle shall match the affixed ID tags for mill, bar size, ASTM designation, and grade.
 - 1.4 Each bundle or coil is accompanied by the manufacturer's mill certification/material test report (MTR), which states that the material conforms to the appropriate ASTM designation as described in the project specifications.
- 2. Rebar Sampling:** All reinforcing bar samples shall be selected by a qualified representative of a DSA accepted testing laboratory. Each sample shall consist of two like bars, one for tension testing and one for bend testing. Specimen length shall be 28 in. \pm 2 in. for both test bars (#11 and smaller). Bend specimens for #14 and #18 should be 36 in. \pm 2 in. Bars pre-cut by the fabricator are not acceptable.

Each pair of sampled bars shall be wire tied together at the time of sampling, and accompanied by a copy of the applicable MTR.

Bend tests shall not be performed by the fabricator or on the project site. All tests shall be conducted in a DSA approved laboratory facility.

3. Frequency of Sampling: Reinforcing bars shall be sampled at the frequencies listed below unless specified differently by the DSA approved documents.

- 3.1 For reinforcing bars found to be identifiable in accordance with Section 1 above, sample two (2) bars from every ten tons (20,000 lbs.), or fraction thereof, for each size of rebar.
- 3.2 For unidentifiable reinforcing bars or job site sampling, sample two (2) bars from every two and one-half tons (5,000 lbs.), or fraction thereof, for each size of rebar.

4. Testing: Testing of reinforcing bars shall be conducted by a laboratory approved by DSA for this purpose. Each pair of bars sampled, as described in Section 2 above, shall be tested in accordance with ASTM Standard A 370 for the following:

- 4.1 Tensile, yield, and elongation requirements (1 each)
- 4.2 Bending requirements (1 each)

5. Tagging Fabricated Bars: Before reinforcing bars are shipped to the project site, they must meet the specific project requirements, as evidenced by sampling and testing in accordance with this IR. A qualified representative of a DSA approved laboratory shall attach an identifying tag to the rebar at the place of fabrication as follows:

- 5.1** Lab ID tags shall be attached to bundles of like fabricated bars representing the material sampled and tested (e.g.: mill, size and grade). A sufficient number of tags per load shall be attached for verification by the project inspector that each size was tested.
- 5.2** Lab ID tags shall be made of durable waterproof material, and shall include the project name, DSA file and application number, lab name, date, technician name, mill, heat number, bar size and material grade.
- 5.3** In the event that unidentified material is delivered to the project site, after the material has been appropriately sampled at the site, tagging it is not required.
- 6. Reporting:**
- 6.1** Test reports shall be in accordance with Title 24, Part 1, Sections 4-335(g) and (h), and DSA IR 17-5.