PURPOSE: This Interpretation of Regulations (IR) provides clarification of the specific Code requirements relating to the requirements for sampling and testing of reinforcing bars (rebar) used in structural concrete and masonry construction on projects under the Division of the State Architect (DSA) jurisdiction.

SCOPE: The scope of this IR is outlined as follows:

- Material identification including the use of the manufacturer’s documentation.
- Material sampling.
- Laboratory testing.
- Tagging of fabricated material.

The California Building Code (CBC) requires sampling and physical testing of reinforcing bars used in concrete and (under certain circumstances) masonry construction. It describes, in general, rebar sampling frequencies for identifiable material vs. unidentifiable material and the tests required. This IR is only applicable to reinforcing bars meeting the requirements of ASTM standard A 615 and A 706, used for either structural concrete or masonry construction.

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

1. WAIVER OF TESTS: Reinforcing bar testing may be waived by the design professional in responsible charge of the project with the approval of DSA, in accordance with CBC Section 1910A.2 (1909.2.4*). Each shipment of reinforcing steel to the fabricator must also be accompanied by certified mill test reports to qualify for waiver.

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

2. MATERIAL IDENTIFICATION: Unless waived as per Section 1, material identification (ID) of rebar shall be conducted by a qualified representative of the Laboratory of Record (LOR) 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 3, 4.1, and 5 below.

   In order to be considered identified, the laboratory representative must verify that reinforcing bars meet all of the criteria in Sections 2.1 through 2.4; otherwise, they shall be considered unidentifiable and shall be sampled and tested per Sections 3, 4.2, and 5 below.

   2.1 Reinforcing bars originate from whole, unbroken bundles or coils, wire wrapped by the manufacturer’s mill.

   2.2 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.

   2.3 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.
2.4 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.

3. **REBAR SAMPLING:** All reinforcing bar samples shall be selected by permitted individuals identified in CAC 4-335(c). Each sample shall consist of two like bars, one for tension testing and one for bend testing. Specimen length shall be 28 in. ± 2 in. for both test bars (#11 and smaller). Bend specimens for #14 and #18 should be 36 in. ± 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 if identifiable, shall be accompanied by documentation in accordance with CBC Section 1910A.2 (1909.2.4*).

   Bend tests shall not be performed by the fabricator or on the project site. All tests shall be conducted in the LOR facility.

4. **FREQUENCY OF SAMPLING:** Reinforcing bars shall be sampled at the frequencies listed below unless specified differently by the DSA approved construction documents.

   4.1 **Concrete Construction**
   - For reinforcing bars found to be identifiable in accordance with Section 2 above, sample two (2) bars from every ten tons (20,000 lbs.), or fraction thereof, for each size of rebar.
   - 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.

   4.2 **Masonry Construction**
   - For reinforcing bars found to be unidentifiable in accordance with Section 1 above, sampling shall be in accordance with CBC Section 2103A.4 (2103.4*). Alternatively, the frequency of sampling for unidentifiable reinforcing bar specified in Section 4.1 can be used.
   - For reinforcing bars found to be identifiable in accordance with Section 2 above, no sampling for testing is required.

5. **TESTING:** Testing of reinforcing bars shall be conducted by a laboratory accepted by DSA for this purpose (refer to DSA’s [webpage listing accepted laboratories](#)). Each pair of companion test bars sampled, as described in Section 3 above, shall be tested by the LOR in accordance with ASTM Standard A 370 for the following:

   5.1 Tensile strength, yield strength, and elongation requirements (1 each)
   5.2 Bend requirements (1 each)

   All reinforcing bars received by the laboratory for testing shall receive a distinguishing mark (stamp) or tag adequate to remain affixed and legible through the tension or bend test process. Tested tension and bend bars shall be wire tied together and remain clearly identifiable until removed from the test lab premises.

6. **TAGGING OF 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 LOR shall attach an identifying tag to the rebar at the place of fabrication as follows:
6.1 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.

6.2 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.

6.3 In the event that unidentified material is delivered to the project site, the material shall be sampled and tested as unidentifiable material. Tagging of this material is not required.

7. REPORTING: Test reports shall be in accordance with Title 24, Part 1, Sections 4-335(d) and (e).

REFERENCES:
California Code of Regulations (CCR) Title 24
   Part 1: California Administrative Code (CAC), Section 4-335(d) and (e)
   Part 2: California Building Code (CBC), Sections 1910A.2 (1909.2.4*), 2103A.4 (2103.4*)

This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (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 subject to revision at any time. Please check DSA’s website for currently effective IRs. Only IRs listed on the webpage at www.dgs.ca.gov/dsa/publications at the time of plan submittal to DSA are considered applicable.

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