CODE REQUIREMENTS FOR PREFABRICATED WOOD I-JOISTS

Q: What do the 2024, 2021, 2018 and 2015 International Building Code (IBC) and International Residential Code (IRC) require for prefabricated wood I-joists?

A: IBC Section 2303.1.2 and **IRC** Section R502.1.2 give the code requirements:

> **IBC** **2303.1.2 Prefabricated wood I-joists.** Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with **ASTM D5055**. (emphasis added)
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> **IRC** **R502.1.2 Prefabricated wood I-joists.** Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with **ASTM D5055**. (emphasis added)

Q: What does ASTM D5055 require?

A: ASTM D5055 *Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists* includes requirements for: materials for flanges, webs, and adhesives; initial qualification; establishment of design values by testing and analysis; ongoing quality control and quality assurance; third-party oversight by a qualified agency; product identification; and qualifications for agencies providing third-party oversight. All of these requirements are interrelated and must be met to comply with the code:

> **ASTM D5055**
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> **6. Qualification**
> 6.1 *General*—This section describes procedures, both empirical and analytic, for initial qualification of the structural capacities of prefabricated wood I-joists.
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> **7. Design Values**
> 7.1 *Design Value Limited*—Design values are determined from the analysis and capacities as specified in this specification.
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> **8. Independent Inspection**
> 8.1 A qualified agency shall be employed by the manufacturer to audit the quality assurance program and inspect the production process of the plant without prior notification or with minimal prior notification. The audit and inspection shall include review and approval of the plant's quality assurance program and inspection of randomly selected products and QC data. When production is sporadic, the qualified agency shall communicate with the manufacturer to schedule inspections to coincide with production.
> 8.2 A qualified agency is defined as one that:
> 8.2.1 Has been accredited by an International Accreditation Forum (IAF) accreditor as meeting ISO/IEC 17020 requirements;
> 8.2.2 Has trained technical personnel to verify that the grading, measurement, species, construction, shaping, bonding, workmanship, and other characteristics of the products as determined by inspection, sampling, and testing comply with all applicable requirements specified herein;
> 8.2.3 Has procedures to be followed by its personnel in performance of the inspection and testing; and

8.2.4 Has no financial interest in, or is not financially dependent upon, any single company manufacturing the product being inspected or tested;
8.2.5 Is not owned, operated, or controlled by any such company.

9 In-House Quality Assurance
9.1 *Manufacturing Standard:*
9.1.1 A manufacturing standard shall be written and maintained for each product and each production facility and shall be the basis for the qualified agency's specific inspection at that location.

13. Identification
13.1 The product shall be clearly and properly identified by product name, company name or logo, plant location or number, qualified agency name or logo, and a means for establishing the date of manufacture.

Q: The IBC and IRC don't include design capacities for prefabricated wood I-joists – where can they be found?

A: Because prefabricated wood I-joists are proprietary products, each manufacturer has unique production processes and establishes design capacities separately. A manufacturer typically obtains a code evaluation report (or similar name) from a third-party certification agency accredited to ISO/IEC 17065 by an International Accreditation Forum (IAF) accreditor. The code evaluation report typically contains a description of the materials evaluated, design information, recommendations, and limitations regarding the use of the product. Design information typically includes general design guidance, joist capacities, and allowable hole size and placement. In addition, the code evaluation report may include information about use of the I-joists in certain applications such as rim joists, structural diaphragms, and fire-resistance-rated assemblies.

Q: How does the Building Official or Authority Having Jurisdiction (AHJ) determine compliance to the Code for a Prefabricated Wood I-Joist product?

A: ASTM D5055 specifically requires conforming I-joists to be, "clearly and properly identified by product name, company name or logo, plant location or number, qualified agency name or logo, and a means for establishing the date of manufacture." This information should be clearly marked on each joist. In addition, reference to the code evaluation report is typically marked on each conforming joist.

Q: What questions should be asked of your I-joist manufacturer?

A: 1) Do you have a code evaluation report from an ISO/IEC 17065 accredited agency?
2) Have your design values been established per ASTM D5055 by a Qualified Agency?
3) Who is the Qualified Agency overseeing the production of your I-joist?
4) Is your Qualified Agency name or logo clearly marked on your product?