



INTERNATIONAL
CODE
COUNCIL®

Facilitating Affordability, Sustainability Goals through Standards for Off-site Construction

With national housing costs rising 52 percent from 2017 to 2022, modular construction offers an affordable solution, capable of curbing construction timelines and reducing costs.¹ Off-site construction can deliver projects 20 to 50 percent faster than traditional methods, which can provide cost savings of up to 20 percent.²

Off-site construction includes a variety of processes including production of volumetric modules (fully enclosed rooms with six sides), wall panels with integrated insulation and building system components, bathroom or kitchen pods, pre-fabricated accessory dwelling units (ADUs), tiny homes, and shipping containers, that are fabricated in a factory. Doing so enables economies of scale, increases job site safety, can ensure greater and more consistent construction quality, and enhanced sustainability through reduced waste and product spoilage. Off-site construction processes vary from traditional construction such that traditional on-site inspection methods are not adequate to determine compliance with building codes.

Currently, a patchwork of compliance processes exist for off-site construction—hindering some of the efficiency gains that off-site construction can provide.

The Current Gap in Consistency of the Off-site Construction Process

Currently, 39 states, plus Washington, D.C., regulate off-site construction at the state level. State programs are responsible for plan review and inspection of off-site construction components. However, these programs vary significantly from state to state—some states allow third-party agencies (like ICC-NTA) to conduct both plan review and in-factory inspections whereas others only allow state employees to perform these functions. There is also inconsistency in the types of projects and components covered in each state—some only cover

1. S&P/Case-Shiller U.S. National Home Price Index (2017 to 2022). <https://fred.stlouisfed.org/series/CSUSHPISA>.

2. McKinsey & Company, Modular construction: From projects to products (June 2019); Galante, et. al., Building Affordability by Building Affordably: Exploring the Benefits, Barriers, and Breakthroughs Needed to Scale Off-Site Multifamily Construction, Turner Center for Innovative Housing at UC Berkeley (Mar. 2017).

residential construction and others just commercial, and some include closed panels where others only cover volumetric modules. Varying requirements increases costs for manufacturers and the resulting variation in construction practices can make code enforcement more difficult.

Where a state does not have a program, all requirements fall to the local authority having jurisdiction (AHJ) over building regulation—including plan review and in-factory inspection—which can present capacity and capability challenges for both local code officials and the project team.

Inspection and plan review of modular components requires both specialized expertise as well as the means to conduct inspections in factories which may be miles away from the final jobsite. Where a state or local government does not have the necessary expertise, staffing, or resources to facilitate these activities, off-site construction can be significantly stalled or prevented altogether. Third-party agencies can be leveraged to provide this expertise, often resulting in quicker turnaround times without impacting quality or department revenue. These third-party providers typically go through a registration process with the state to demonstrate competence—many states and the ICC/Modular Building Institute standards discussed below require accreditation to international standards.

The International Code Council recognized that standards were needed to help both jurisdictions and project teams best utilize off-site construction while assuring that these projects meet building code requirements.

ICC/MBI Off-site Construction Standards 1200-2021 and 1205-2021

The Code Council, in partnership with the Modular Building Institute (MBI), developed a coordinated set of standards that cover the entire off-site construction process, capturing best practices and supporting a consistent approach to verifying compliance. The standards apply to all componentized, panelized and modularized elements in both commercial and residential buildings, except manufactured housing.³

- [ICC/MBI Standard 1200-2021: Standard for Off-Site Construction: Planning, Design, Fabrication, and Assembly](#). Standard 1200 provides requirements for designers, manufacturers, transporters and assemblers to assure that off-site construction components are produced under a quality assurance/quality control process and that they can demonstrate compliance with building code requirements.
- [ICC/MBI Standard 1205-2021: Standard for Off-Site Construction: Inspection and Regulatory Compliance](#). Standard 1205 address the compliance verification process including permitting, in-plant and on-site final inspections, third party inspections, the role of Industrialized Building Departments, state modular programs and the AHJ.

The two standards provide an off-site construction specific mechanism to assure compliance with any edition of the codes. They do not provide alternatives to existing code provisions but rather a process for verifying compliance given that part of the construction process occurs in a factory and not at the final jobsite. Sample ordinance verbiage is provided in the Foreword of each standard to help in the adoption process.

The Standards were developed by a diverse committee of experts including state program administrators, manufacturers, third-party agencies, and designers. These standards are intended to sit alongside existing codes and standards to provide the process whereby off-site construction compliance with state or locally adopted building codes and standards is verified.

3. Manufactured housing is a form of off-site construction, but its design and assembly is regulated by the U.S. Department of Housing and Urban Development (HUD). Local code officials retain responsibility to site work, installation and accessory structures. ICC/MBI 1200 and 1205 do not apply to manufactured housing.

Benefits of Adopting ICC/MBI Standards for Off-site Construction

ICC/MBI Standards for Off-site Construction:

- Provide consistency in the regulation of off-site construction supporting efficiencies in the process, resulting in reduced project costs and enhanced affordability;
- Reduce the burden on local jurisdictions in states without state-wide programs—who often do not have the capacity or capability to manage off-site construction activities—by establishing a consistent mechanism to support projects in the jurisdiction which leverages expertise of third-party providers without having to address off-site construction on a case-by-case basis;
- Establishes a robust quality assurance/quality control program for factories, enforced by the AHJ; and
- Provides procedures for the use of ISO accredited third-party plan review and inspection agencies to support consistent timelines for project approvals and reduce burdens on government inspection agencies.

Supporting the Adoption and Use of the ICC/MBI Standards for Off-site Construction

Additional support for AHJs and the off-site construction industry is provided across the Code Council's Family of Solutions.

- The ICC Learning Center has developed a specialty catalogue of courses relevant to the off-site construction process. Current offerings include courses on an Introduction to Off-Site Construction and on Off-Site Construction Standards 1200 and 1205. This catalogue will expand as additional courses are developed.
- ICC-NTA provides third party plan review and inspection services to verify compliance with state and local requirements including certification and ongoing evaluation of factory quality assurance programs.
- The International Accreditation Service (IAS) provides accreditation for fabricators of certain off-site construction processes and for third-party agencies, providing assurance that quality practices are being followed.
- The ICC Evaluation Service (ICC-ES) provides product evaluations for some off-site construction components, delivering confidence that the components meet requirements of relevant codes and standards.

Learn more about how the Code Council is supporting the safe and efficient use of off-site construction at www.iccsafe.org/offsite.

