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# Delivering Disaster Recovery and Resilience Through Offsite Construction

Across the country communities are struggling with the availability of housing, especially in those communities impacted by disaster events that have decimated their existing housing stock. In response, offsite construction has been identified as a solution for disaster recovery and resilience in impacted communities. Offsite construction can deliver projects 20 to 50 percent faster than traditional methods, which can provide cost savings of up to 20 percent and deliver quicker and more efficient recovery.<sup>1</sup> These savings are a result of reductions in construction time and costs, economies of scale in material use, and procurement savings.<sup>2</sup>

Offsite 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. These processes enable economies of scale, can ensure greater resilience through more consistent construction quality, create safer and less disruptive jobsites and enhance sustainability through reduced waste and product spoilage. Offsite construction provides communities a pathway to reduced disaster recovery timelines and an opportunity to leverage solutions from outside their jurisdiction during times of need.

## Navigating the Offsite Construction Process

Offsite construction projects comply with the same building codes as site-built projects but are built in a factory. However, offsite construction processes vary from traditional construction such that traditional on-site inspection methods are not adequate to determine compliance with building codes.

Currently, 39 states, plus Washington, D.C., [regulate offsite construction](#) at the state level. 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.

Third-party agencies can be leveraged to provide this expertise, often resulting in quicker turnaround times without impacting quality or department revenue. Communities can leverage these external partnerships with manufacturers and third-party providers to support project approvals while significantly reducing the burden on the jurisdiction's inspection agency.

<sup>1</sup> 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 Berkley (Mar. 2017).

<sup>2</sup> *Exploring the Benefits, Barriers, and Breakthroughs Needed to Scale Off-Site Multifamily Construction*, Turner Center for Innovative Housing at UC Berkley (Mar. 2017)

These third-party providers are recognized by the state and must demonstrate their competence—typically through accreditation and other criteria. ICC NTA is an example of a third-party plan review and inspection agency accredited to ISO/IEC 17020 and ISO/IEC 17065. The International Accreditation Service (IAS) is an example of a body that accredits third-party providers under the auspices of the International Organization for Standardization (ISO).

## ICC/MBI Offsite Construction Standards 1200-2021 and 1205-2021

The International Code Council (ICC), in partnership with the Modular Building Institute (MBI), developed a coordinated set of standards that cover the entire offsite construction process, capturing best practices and supporting a consistent approach to verifying compliance. Adoption of ICC/MBI Standards 1200 and 1205 in jurisdictions without statewide programs can help avoid the need for revisiting the approval of the use of offsite construction processes with each new project. The standards promote uniform consistency in the project approvals process allowing for a greater number of manufacturers familiar with the approvals process in time of need.

- [ICC/MBI Standard 1200-2021: Standard for Offsite Construction: Planning, Design, Fabrication, and Assembly](#). Standard 1200 provides requirements for designers, manufacturers, transporters and assemblers to assure that offsite 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 Offsite 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 offsite construction specific mechanism to assure compliance with any edition of the building 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 offsite construction compliance with state or locally adopted building codes and standards is verified.

## Benefits of Adopting ICC/MBI Standards for Offsite Construction

- Provide consistency in the regulation of offsite construction supporting efficiencies in the process, resulting in quicker project delivery to support recovery efforts, reduced project costs and enhanced availability and affordability;
- Reduce the burden on local jurisdictions in states without state-wide programs—who often do not have the capacity or capability to manage offsite construction activities—by establishing a consistent mechanism to support projects in the jurisdiction which leverages expertise of third-party providers without having to address offsite 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.

[Learn more at iccsafe.org/offsite](https://iccsafe.org/offsite)