

Title: ICC/MBI 1200 - 2021

Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly

ICC/MBI Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly

FOREWORD

[The information contained in this foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to this standard.]

This Standard includes componentized, panelized and modularized elements and will not apply to HUD Manufactured Housing.

Introduction

In February of 2019 the International Code Council (ICC) and the Modular Building Institute (MBI) initiated a joint project to write standards for the planning, design, fabrication, assembly, inspection and regulatory compliance of off-site and modular construction. A standard development committee was created by the ICC Board of Directors in July 2019, and the first meeting of that committee was in October of 2019. The scope of this standard is to provide minimum requirements to safeguard the public health, safety, general welfare and address societal and industry challenges in multiple facets of the off-site construction process including: planning, designing, fabricating, transporting and assembling commercial and residential building elements.

Off-site construction techniques continue to gain favor among contractors as a departure from conventional construction processes. The off-site industry has evolved from a re-locatable modular manufacturing sector into more of a building delivery sector. In the simplest of terms, off-site (or modular) construction entails the planning, design, fabrication and assembly of building elements at a location other than the location where they were fabricated. Large components of a structure can be assembled in a factory-like setting and transported to the building site for final assembly. Subsequently, the finished construction is required to comply with the model building code adopted by the local authority having jurisdiction. This Standard provides planning and preparation requirements such as: the role of the architect/modular manufacturer/construction manager/general contractor, location of plant vs construction site, engagement early on in the process, material procurement and lead times, and change orders. This Standard also provides requirements for a controlled manufacturing environment, supply chain integration, structural modular vs non-structural modular (e.g. bathroom pods), the fabrication process and on-site assembly such as: staging area for construction materials, foundation, placing modules, structural connections, utilities (PMG), weather considerations and finishing mate lines.

The consensus process of ICC for promulgating standards is accredited by ANSI. The Off-Site and Modular Construction Standard Consensus Committee, identified as IS-OSMC, is a balanced committee formed and operated in accordance with ICC rules and procedures.

Development

This is the first edition of the International Code Council (ICC) and Modular Building Institute's (MBI) *Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly*. This standard was developed by the ICC/MBI Off-Site and Modular Construction Standard Consensus Committee (IS-OSMC) that operates under ANSI Approved ICC Consensus Procedures for the Development of ICC Standards. The consensus process of ICC for promulgating standards is accredited by ANSI. The Off-Site and Modular Construction Standard Consensus Committee, identified as IS-OSMC, is a balanced committee formed and operated in accordance with ICC rules and procedures.

The meetings of the ICC/MBI IS-OSMC Consensus Committee were open to the public and interested individuals and organizations from across the country participated. The technical content of currently published documents on off-site and modular construction, including documents of the National Institute of Building Sciences (NIBS) and American Institute of Architects (AIA) was reviewed and considered by the committee. The information from these documents helped form a basis for the regulations installed in this standard, but the exact provisions adopted by the committee were determined based upon the scope and intent of this standard. The requirements of ICC/MBI 1200 are based on the intent to establish provisions consistent with the scope of the ICC family of codes and standards that are written to adequately protect public health, safety, and welfare; provisions that do not necessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products, or methods of construction.

Adoption

ICC/MBI 1200 *Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly* is available for adoption and use by jurisdictions throughout the United States. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the jurisdiction.

Ordinance

The *I-Codes* are designed and promulgated to be adopted by reference by ordinance. Specific *ICC Standards* may also be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2021 edition of ICC/MBI 1200, *Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly* as an enforceable regulation governing structures and premises should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

**SAMPLE ORDINANCE FOR ADOPTION OF
ICC/MBI 1200, STANDARD FOR OFF-SITE CONSTRUCTION: PLANNING,
DESIGN, FABRICATION AND ASSEMBLY
ORDINANCE NO. _____**

An ordinance of the **[JURISDICTION]** adopting the 2021 edition of ICC 1200/MBI, *Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly*, regulating and governing the conditions and maintenance of off-site construction; by providing the standards for supplied utilities and facilities and other physical things and conditions essential to ensure that structures are safe, sanitary and fit for occupation and use; and the condemnation of buildings and structures unfit for human occupancy and use and the demolition of such structures in the **[JURISDICTION]**; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. _____ of the **[JURISDICTION]** and all other ordinances and parts of the ordinances in conflict therewith.

The **[GOVERNING BODY]** of the **[JURISDICTION]** does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the **[TITLE OF JURISDICTION'S KEEPER OF RECORDS]** of **[NAME OF JURISDICTION]**, being marked and designated as 2021 edition of ICC 1200, *Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly*, including any Appendix Chapters, **[FILL IN THE APPENDIX CHAPTERS BEING ADOPTED, IF ANY]**, as published by the International Code Council, be and is hereby adopted as Building Code of the **[JURISDICTION]**, in the State of **[STATE NAME]** for regulating and governing the conditions and maintenance of off-site construction by providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Building Code on file in the office of the **[JURISDICTION]** are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance.

Section 2. That Ordinance No. _____ of **[JURISDICTION]** entitled **[FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION]** and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 3. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The **[GOVERNING BODY]** hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 4. That nothing in this ordinance or in the standard hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

Section 5. That the **[JURISDICTION'S KEEPER OF RECORDS]** is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 6. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect **[TIME PERIOD]** from and after the date of its final passage and adoption.

Interpretations

Requests for Formal Interpretations on the provisions of ICC/MBI 1200-2021 should be addressed to: ICC, Central Regional Office, 4051 West Flossmoor Road, Country Club Hills, IL 60478.

Maintenance – Submittal of Proposals

All ICC standards are periodically updated as required by ANSI. Proposals for revising this edition are welcome. Please visit the ICC website at www.iccsafe.org for the official “Call for Proposals” announcement. A proposal form and instructions can also be downloaded from www.iccsafe.org.

ICC, its members and those participating in the development of ICC/MBI 1200-2021 do not accept any liability resulting from compliance or noncompliance with the provisions of 1200-2021. ICC does not have the power or authority to police or enforce compliance with the contents of this standard. Only the governmental body that enacts this standard into law has such authority.

International Code Council / Modular Building Institute Off-Site and Modular Construction Standard Consensus Committee (IS-OSMC)

Consensus Committee Scope: The ICC/MBI Off-Site and Modular Construction Standard Consensus Committee (IS-OSMC) shall have primary responsibility for minimum requirements to safeguard the public health, safety and general welfare through requirements for off-site and modular construction.

This standard was processed and approved for submittal to ANSI by the ICC/MBI Off-Site and Modular Construction Standard Consensus Committee (IS-OSMC). Committee approval of the standard does not necessarily imply that all committee members voted for its approval.

Representatives on the Consensus Committee are classified in one of nine voting interest categories. The committee has been formed to achieve consensus as required by ANSI Essential Requirements. At the time it approved this standard, the IS-OSMC Consensus Committee consisted of the following members:

Manufacturer (a) - Builder (b) - Standards Promulgator/Testing Laboratory (c) - User (d) - Utility (e) - Consumer (f) - Public Segment (g) - Government Regulator (h) - Insurance (I)

John Barrot, P.E., LEED AP [d], Arup, New York, NY

Kenneth Bland, P.E. [c], American Wood Council, Leesburg, VA

Jeffrey M. Brown, MCP [h], Virginia Dept of Housing and Community Development, Richmond, VA

Vaughan Buckley [b], Vaughan Buckley Construction, Philadelphia, PA

Jay K. Daniels [a], Sunbelt Modular, Phoenix, AZ

Tom Hardiman, CAE [d], Modular Building Institute, Charlottesville, VA

Christopher Jensen [c], Underwriters Laboratories LLC, Logan, UT

Kelly Kelly [h], TX Department of Licensing and Regulation, Austin, TX

Ryan McIntosh [a], Silver Creek Industries, Perris, CA

Nick Mosley [a], California Tiny House, Inc., Fresno, CA

Jonathon Paradine [h], State of Michigan/Bureau of Construction Codes, Lansing, MI

Dennis C. Pilarczyk, Jr., P.E., CWI [a], Nucor Corporation, Charlotte, NC

Ralph Tavares, P.E. [d], R&S Tavares Associates, Inc., San Diego, CA

David R. Tompos, P.E. [c], NTA Inc., Nappanee, IN

Norman C. Wang, R.A. [h], Maryland Department of Labor, Baltimore, MD

Committee Secretary, **Karl Aittaniemi, P.E.**, Director of Standards, Codes and Standards Development, International Code Council, Country Club Hills, IL

Voting Membership in Each Category

Category	Number
Manufacturer (a)	4
Builder (b)	1
Standards Promulgator / Testing Laboratory (c)	3
User (d)	3
Utility (e)	
Consumer (f)	
Public Segment (g)	
Government Regulator (h)	4
Insurance (l)	
TOTAL	15

Interest Categories

Manufacturer: Individuals assigned to the Manufacturer Interest category are those who represent the interests of an entity, including an association of such entities that produces an assembly or system subject to the provisions within the committee scope.

Builder: Individuals assigned to the Builder Interest category are those who represent the interests of an entity, including an association of such entities that builds, installs or maintains an assembly or system subject to the provisions within the committee scope.

Standards Promulgator/Testing Laboratory: Individuals assigned to the Standards Promulgator/Testing Laboratory Interest category are those who represent the interests of an entity, including an association of such entities that provides independent standards promulgation or laboratory testing of an assembly or system subject to the provisions within the committee scope.

User: Individuals assigned to the User Interest category are those who represent the interests of an entity, including an association of such entities, which is subject to the provisions or voluntarily utilize the provisions within the committee scope, including designers, architects, consultants and building owners.

Utility: Individuals assigned to the Utility category are those who represent the interests of an entity, including an association of such entities, which supplies power or water or accepts wastewater from an assembly or system subject to the provisions within the committee scope.

Consumer: Individuals assigned to the Consumer Interest category are those who represent the interests of an entity, including an association of such entities that represent the ultimate purchaser of the assembly or system subject to the provisions within the committee scope.

Public Segment: Individuals assigned to the Public Segment Interest category are those who represent the interests of an entity, including an association of such entities that represent a particular group of the public that benefits from the assembly or system subject to the provisions within the committee scope.

Government Regulator: Individuals assigned to the Government Regulator Interest category are those who represent the interests of an entity, including an association of such entities, representing the entities that promulgate or enforce the provisions within the committee scope.

Insurance: Individuals assigned to the Insurance Interest category are those who represent the interests of an entity, including an association of such entities, that insure subject to the provisions or voluntarily utilize the provisions within the committee scope, including insurance related inspection agencies.

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CHAPTER 1

APPLICATION AND ADMINISTRATION

SECTION 101 ADMINISTRATIVE PROVISIONS

101.1 Purpose. The purpose of this standard is to provide minimum requirements to safeguard public health, safety, general welfare and to address societal and industry challenges for the inspection and regulatory compliance of off-site construction. This standard is intended for adoption by government agencies and organizations for use in conjunction with model codes to achieve uniformity in the inspection and regulatory compliance of off-site construction.

101.2 Scope. The scope of this standard is to provide minimum requirements to safeguard the public health, safety, general welfare and address societal and industry challenges in multiple facets of the off-site construction process including: planning, designing, fabricating, transporting and assembling commercial and residential building elements.

101.3 Provisions for compliance. Where requirements are not provided by this standard, the applicable provisions of the construction codes adopted by the authority having jurisdiction shall apply to the off-site construction. Where these provisions are not applicable, methods and practices in accordance with the appropriate sections of the International Building Code, the International Residential Code or the applicable adopted codes as identified in the construction documents as applicable for the intended use of the structure shall be used.

101.4 Compliance alternative. Nothing in this standard is intended to prevent the use of designs, technologies or products including listed and labeled modular components as alternatives to any prescriptions in this standard, provided equivalence is demonstrated and approved by the authority having jurisdiction. Listed and labeled modular components shall be installed in accordance with its listing, the manufacturer's installation instructions, and the applicable requirements of the construction codes adopted by the authority having jurisdiction.

101.5 Referenced standards. The specific year, date and editions of the standards referenced by this standard are listed in Chapter 8.

SECTION 102 GENERAL REQUIREMENTS

102.1 General. Off-site construction shall comply with the general requirements of this chapter.

102.2 Planning considerations. Projects which include off-site construction shall identify and consider the following:

1. Entities of the AHJ at the manufacturing facility and the project's location.
2. The AHJ's specific requirements on review and approval of construction documents of off-site components.
3. The AHJ's specific requirements on inspections of off-site components.
4. Potential restrictions on a project due to manufacturing process of off-site components.
5. Restrictions due to transportation limitations of off-site components.
6. Impacts of sequencing of installation of off-site components at project site.
7. Restrictions at site on the use of cranes.
8. Responsibilities of entities involved, including registered design professionals, manufacturers, installers of off-site components, and general contractors.

102.3 Specific Requirements of Authorities Having Jurisdiction over off-site construction. The project shall comply with the requirements of the AHJ.

102.3.1 State-wide modular programs. Where there is an existing state-wide Modular (or Industrialized) Buildings Program, the project shall comply with both state and local jurisdiction's requirements for plan approval and inspections of off-site components in manufacturing plant and at project site. Where there is no existing state-wide Modular (or Industrialized) Buildings Program, the AHJ shall determine requirements for plan approval and inspections of off-site components in manufacturing plant and at project site.

102.4 Responsible parties. The authority having jurisdiction shall request identification of the responsible parties for the following:

1. Registered design professionals for onsite and off-site elements.
2. Manufacturer of off-site construction.

3. Onsite assembly of off-site elements, including volumetric modular units and panelized constructions.
4. Construction of site-built elements, including any items shipped loose to the site by the off-site manufacturer.

102.5 Qualifications. References to each chapter and section that has qualification requirements shall pertain to designers and constructors.

SECTION 103 SUBMITTAL DOCUMENTS

103.1 General requirements. The submittal documents shall be in accordance with IBC Section 107 - Submittal Documents or IRC Sections R105.3 and R106 where applicable, and the construction documents shall meet the following requirements:

1. The construction documents shall comply with the requirements of the AHJ regarding off-site components. The AHJ responsible for approval of submittal documents shall determine where separation of off-site components from site-built components in a set of construction documents is required.
2. Appropriate delineation of off-site and site-built components shall be achieved. Graphical representations on drawing sheets shall clearly distinguish the off-site components from the site-built components.
3. Where required by the AHJ for projects having multiple off-site volumetric units and/or panels, a Key Plan for off-site components shall be provided, and all such off-site components delivered to the site shall be identified with unique numbers.
4. Where required, mate lines shall be identified.
5. Specifications for off-site components shall be provided.

103.2 Additional requirements for non-site-specific buildings. A non-site-specific building shall be identified as not having an available address on construction documents. The construction documents for non-site-specific buildings shall meet with the requirements of AHJ.

103.3 Additional requirements for construction documents for panelized systems. The construction documents for panel systems shall include:

1. Systems and components requiring special inspections.

2. Statement on the sequence of construction.
3. Details of connections for panels to the building structure.
4. Details of connections for panel-to-panel attachments.

SECTION 104 INSPECTIONS

104.1 General. Inspections shall include in-plant inspections and on-site inspections. Inspections shall be in accordance with the applicable building codes and standards including ICC 1205.

104.2 In-plant Inspections. In-plant inspections shall verify that constructions are in compliant with the approved construction documents.

104.3 On-site Inspections. On-site inspections of off-site components shall verify installation is compliant with approved manufacturer's installation instructions and connections performed on site are compliant with approved construction documents. When on-site inspections are conducted by AHJ, inspection procedures prescribed by the AHJ shall be followed. When on-site inspections are conducted by other than AHJ, scope of such inspections shall be consistent with section 102.4 *Responsible Parties*.

On-site connections which require inspections shall include:

1. Inter-connections between off-site components installed at site.
2. Connections between off-site components and adjoining site-built components, including the building structure.
3. Other connections involving off-site components which require inspections by AHJ.
4. Connections of "shipped loose off-site items" installed at site.

CHAPTER 2 DEFINITIONS

SECTION 201

GENERAL

201.1 General. For the purposes of this standard, the terms listed in Section 202 shall have the indicated meaning.

201.2 Undefined terms. The terms not specifically defined in this standard or in standards referenced herein shall have ordinarily accepted meanings such as the context implies.

SECTION 202

DEFINITIONS

Abbreviations. The following abbreviations, when used in this standard, shall have the following meanings, unless the context clearly indicates otherwise.

- (1) IBC – International Building Code.
- (2) ICC--International Code Council, Inc.
- (3) IRC – International Residential Code.
- (4) NFPA--National Fire Protection Association.

ALTERATION. Any construction, other than ordinary repairs of the house or building, to an existing modular building, modular component or panelized system after the manufacturer has attached the certification label. Industrialized housing or buildings that have not been maintained shall be considered altered.

APPLICABLE BUILDING CODE. The versions of the building code that have been adopted by the state or jurisdiction in which an industrialized house or building is to be constructed.

ASSEMBLY. A collection of modular components assembled into a whole or partial module or modular building.

AUTHORITY HAVING JURISDICTION (AHJ). Organization, political subdivision, office or individual charged with the responsibility of administering and enforcing the provisions of the applicable building code. The authority having jurisdiction shall include a state agency or local building department.

BUILDING SHELL. The structural framework, exterior walls and cladding that make up the building envelope, excluding the electrical, mechanical or plumbing systems.

CERTIFICATION LABEL. A decal, insignia, or alteration decal.

CONSTRUCTION DOCUMENTS. Designs, plans, and specifications, including written, graphic, and pictorial documents, prepared or assembled for describing the design, location and physical characteristics of the off-site construction necessary to show compliance with the applicable building codes.

DECAL. The approved form of certification issued by the authority having jurisdiction, to be permanently attached to the modular building, modular component or panelized system indicating that it has been constructed to meet or exceed the applicable building code requirements.

INDUSTRIALIZED HOUSING. A residential structure that is designed for the occupancy of one or more families, is constructed in one or more modules, or constructed using one or more modular components, built at a location other than the permanent site and is designed to be used as a permanent residential structure when the module or modular component is transported to the permanent site and erected or installed on a permanent foundation system.

INDUSTRIALIZED INSTALLER. An entity who:

(1) is engaged in or responsible for the assembly, connection, on-site construction and erection of modular buildings or modular components at the building site;

(2) who is engaged in, or responsible for, the alteration or recertification of modular buildings.

INDUSTRIALIZED RETAILER. An entity who sells, leases, or offers to sell or lease to the public modular buildings, panelized systems or modular components.

INSIGNIA. The approved form of certification issued by the authority having jurisdiction to the manufacturer to be attached to the modular building, modular component or panelized system indicating that it has been constructed to meet or exceed the applicable building code requirements.

INSTALLATION. The assembly of a modular building, modular component or panelized system on site and the process of affixing the modular building, modular component or panelized system to land, a foundation, footings or an existing building

INTEGRATION. Act or process of coordinating the independent work of two or more manufacturers to merge a building shell for a modular building with the electrical, mechanical, and plumbing systems and equipment prior to delivery to the installation site.

KEY PLAN. A building perimeter of the project, which shows the layout of the off-site volumetric units or panels with a unique identifier assigned to each of such units or panels.

MANUFACTURER. The entity responsible for the manufacturing of assemblies, panelized systems, modular buildings, or modular components.

MANUFACTURING PLANT. The location other than the building site, at which modular buildings, modular components, modules, or panels are assembled or manufactured prior to transport to the final construction site.

MANUFACTURING PLANT, PRIMARY. A facility that completes the construction or fabrication of a modular building, modular component, or module which was begun in the subsidiary manufacturing plant.

MANUFACTURING PLANT, SUBSIDIARY. A facility that constructs or fabricates portions of a modular building, modular component or module before it is moved to the primary manufacturing plant for completion.

MODULAR BUILDING. Industrialized housing and buildings.

MODULAR COMPONENT. A sub-assembly, subsystem, or combination of elements, including panelized systems, building shells or bathroom pods, for use as a part of a modular building that is not structurally independent, but is a part of structural, plumbing, mechanical, electrical, fire protection, or other systems affecting life safety.

MODULE. A three-dimensional, volumetric section of a modular building designed and approved to be transported as a single section independent of other sections, to a site for on-site construction.

NON-SITE-SPECIFIC BUILDING. A building for which the permanent site location is unknown at the time of construction.

OFF-SITE CONSTRUCTION. A modular building, modular component or panelized system which is designed and constructed in compliance with this standard and is wholly or in substantial part fabricated or assembled in manufacturing plants for installation - or assembly and installation - on a separate building site and has been manufactured in such a manner that all parts or processes cannot be inspected at the installation site without disassembly, damage to, or destruction thereof.

ON-SITE CONSTRUCTION. Preparation of the site, foundation construction, construction of the supporting structure, assembly and connection of off-site or open construction elements and completion of site-related construction in accordance with the construction documents and details.

OPEN CONSTRUCTION. A modular building, modular component or panelized system manufactured in such a manner that all portions can be readily inspected at the building site without disassembly, damage or destruction thereof.

ORDINARY REPAIRS. The removal and replacement of existing materials, elements, equipment, or fixtures using like or the same new materials, elements, equipment, or fixtures that serve the same purpose.

PANEL. A distinct, sectional element in a panelized system.

PANELIZED SYSTEM. Wall, roof or floor components that are constructed at a location other than the building site in a manner that prevents the construction from being inspected at the building site without disassembly, damage or destruction thereof.

PERMANENT FOUNDATION SYSTEM. A foundation system for modular buildings designed to meet the applicable building code. In a permanent foundation system, anchorage of the building to the foundation is provided to resist the uplift and sliding forces that result from the application of the prescribed loads. The use of ground anchors or earth augers to resist uplift or sliding forces is not considered a permanent foundation.

PERSON. An individual, partnership, company, corporation, association, or any other legal entity, however organized.

PUBLIC. The people of the state, including individuals, companies, corporations, associations or other groups, however organized, and governmental agencies.

REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

THIRD-PARTY INSPECTION AGENCY. An approved person or entity determined by this standard or applicable states statutory requirements to be qualified by reason of facilities, personnel, experience, demonstrated reliability, and independence of judgment to inspect industrialized housing, buildings, and portions thereof for compliance with the construction documents, compliance control program, and applicable codes.

THIRD-PARTY INSPECTOR. An approved person determined by applicable statutory requirements to be qualified by reason of experience, demonstrated reliability, and independence of judgment to inspect modular buildings, and portions thereof, for compliance with the construction documents, compliance control program, and applicable building code. A third-party inspector works under the direction of a third-party inspection agency.

THIRD-PARTY SITE INSPECTOR. An approved person determined by applicable statutory requirements to be qualified by reason of experience, demonstrated reliability, and independence of judgment to inspect construction of the foundation and installation of modular buildings, and portions thereof, for compliance with the construction documents and the applicable code.

UNIQUE ON-SITE CONSTRUCTION DETAILS. Construction details that are not part of, or that differ from, the manufacturer's approved on-site construction details. Unique on-site construction details include additions that affect the code compliance of the house or building such as car ports, garages, porches, decks, and stairs.

CHAPTER 3
DESIGN

SECTION 301
GENERAL

301.1 Application. Design of off-site construction shall be in accordance with the provisions of the applicable codes and standards adopted by the authority having jurisdiction. The requirements in this standard shall be in addition to the requirements of the applicable codes and standards.

301.2 Alternative materials, design and methods of construction and equipment. The provisions of this standard are not intended to prevent the use of alternate materials and methods permitted by Section 104.11 of the IBC.

301.3 Transportation. Transportation considerations shall be in accordance with Chapter 7.

301.4 Use of Shipping Containers Repurposed as Buildings and Building Components. A structure incorporating shipping containers shall be designed and constructed to comply with International Building Code Chapter 16 and ICC Guideline G5, *Guideline for the Safe Use of ISO Intermodal Shipping Containers Repurposed as Buildings and Building Components*.

SECTION 302 FIRE AND SMOKE PROTECTION FEATURES

302.1 Scope. The provisions of this chapter shall govern the materials, systems and assemblies used for structural fire-resistance and fire-resistance rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings for offsite construction.

302.2 Application. Design and installation of fire and smoke protection features shall be in accordance with the provisions of the applicable codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

302.3 Construction Documents. Construction documents shall be submitted to the Authority Having Jurisdiction, and shall include:

302.3.1 All building elements shall be classified as primary structural frame or secondary members.

302.3.2 The construction documents shall include whether primary structural frame elements require individual encasement protection or are permitted to have membrane protection.

302.3.3 The construction documents shall provide details demonstrating that columns, where provided, are protected on all sides for the full column height, including connections to other structural members. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

302.3.4 The construction documents shall show in sufficient detail that fire walls, where provided, have been designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions, or have been designed and constructed in accordance with NFPA 221.

302.3.5 Drawing details demonstrating that fire barriers, where required, extend from the top of the foundation or floor/ceiling assembly below to the under-side of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such fire barriers shall be continuous through concealed space, such as the space above a suspended ceiling.

302.3.6 Drawing details demonstrating that smoke barriers, where required, extend from the top of the foundation or floor/ceiling assembly below to the under-side of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such smoke barriers shall be continuous through concealed space, such as the space above a suspended ceiling.

302.3.7 The construction documents shall include how continuity of horizontal assemblies are provided, where required by applicable codes and standards.

302.3.8 The construction documents shall include how vertical continuity of shaft enclosures and other vertical openings are being provided, where required by applicable codes and standards.

302.3.9 The construction documents shall provide a schedule or drawings of fire-resistant joint systems, where required by applicable codes and standards.

302.3.10 The construction documents shall include how fireblocking is provided, where required by applicable codes and standards.

302.3.11 The construction documents shall include how draftstopping is provided, where required by applicable codes and standards.

302.3.12 Off-site and on-site portions of structural fire resistance and fire-resistance-rated construction shall be delineated on the construction documents.

302.4 Inspections. Inspections shall be in accordance with applicable codes and standards including ICC 1205.

302.4.1 Special Inspections. Where special inspections are required for sprayed fire-resistant materials or mastic fire-resistant coatings and intumescent fire-resistant coatings, the method of inspection for off-site and on-site elements shall be described.

302.5 Secondary Attachments to Structural Members. Where primary and secondary members require fire protection, secondary attachments to those structural members shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches, or shall be applied to the entire length when the attachment is less than 12 inches long. When an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow attachment.

Exceptions:

1. Secondary attachments that are protected by different materials or thicknesses to the structural member shall be approved by the Authority Having Jurisdiction.

SECTION 303 MECHANICAL

303.1 Scope. The provisions of this section shall govern the design and installation of mechanical and fuel gas systems for off-site construction.

303.2 Application. Design and installation of mechanical and fuel gas systems shall be in accordance with the provisions of the mechanical and fuel gas codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

303.3 Construction Documents. The design documentation shall describe and delineate the portions of the systems that are to be constructed off-site from those that are to be constructed on-site and identify the registered design professional responsible for off-site and on-site elements.

SECTION 304 ELECTRICAL

304.1 Scope. The provisions of this section shall govern the design and installation of electrical systems for off-site construction.

304.2 Application. Design and installation of electrical systems shall be in accordance with the provisions of the electrical codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

304.3 Construction Documents. The design documentation shall describe and delineate the portions of the systems that are to be constructed off-site from those that are to be constructed on-site and identify the registered design professional responsible for off-site and on-site elements

SECTION 305 PLUMBING

305.1 Scope. The provisions of this section shall govern the design and installation of plumbing systems for offsite construction.

305.2 Application. Design and installation of plumbing systems shall be in accordance with the provisions of the plumbing codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

305.3 Construction documents. The design documentation shall describe and delineate the portions of the systems that are to be constructed off-site from those that are to be constructed on-site and identify the registered design professional responsible for off-site and on-site elements.

**SECTION 306
FIRE PROTECTION AND LIFE SAFETY SYSTEMS**

306.1 Scope. The provisions of this section shall govern the design, installation and operation of fire protection systems for offsite construction.

306.2 Application. Design and installation of fire protection systems shall be in accordance with the provisions of the fire protection codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

306.3 Construction Documents. The design documentation shall describe and delineate the portions of the systems that are to be constructed off-site from those that are to be constructed on-site and identify the registered design professional responsible for off-site and on-site elements.

**SECTION 307
EXTERIOR WALLS**

307.1 Scope. The provisions of this chapter shall govern the minimum requirements for exterior walls; exterior wall coverings; exterior wall openings; exterior windows and doors; and architectural trim.

307.2 Application. The requirements for exterior walls shall be in accordance with the provisions of the codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

307.3 Exterior walls. Exterior walls shall comply with requirements for system continuity.

307.3.1 Fire-resistance of systems. Walls shall be properly constructed or sealed to ensure continuity of fire-resistive construction.

307.3.2 Control layers. Where applicable, air, vapor and weather barrier systems shall be designed and installed to provide continuity of the barrier.

307.3.3. Continuity of exterior insulation. Exterior insulation systems shall be designed and installed to provide continuity of the insulation.

**SECTION 308
STRUCTURAL DESIGN**

308.1 Scope. The provisions of this chapter shall govern the minimum requirements for structural design.

308.2 Application. Structural design shall be in accordance with the provisions of the codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

308.3 Special requirements for modules. Modules shall comply with the requirements of Section 402.

308.4 Tolerances for panelized system construction. Tolerances for the attachment of panelized systems to other systems and interfacing construction shall be as established by the manufacturer of the attachment device.

CHAPTER 4 SPECIAL REQUIREMENTS BASED ON PRODUCT TYPE

SECTION 401 GENERAL

401.1 Scope. The provisions of this chapter shall govern special building construction.

SECTION 402 MODULES

402.1 Special requirements for structural design. The following information shall be applicable to construction for the structural design.

402.1.1 Stiffness. Modules shall incorporate stiffness to limit deflections, lateral drift where applicable, vibration, or any other deformations that adversely affect the intended use and performance of the module or building. Modules shall have strength and stiffness for both temporary conditions such as transportation, hoisting and erection and permanent conditions.

402.1.2 Unit to unit interconnection. The interconnection points of modules to one another shall have strength to transfer the necessary design forces and stiffness to enable the collection of modules to behave as a complete building structure.

402.1.3 Unit to site-built connection. The connection of modules to site-built components shall have strength to transfer the necessary design forces.

402.1.4 Diaphragm and shear walls. Analysis and design of the completed building shall account for the effect of discontinuities in the diaphragm and shear walls between modules.

CHAPTER 5 MANUFACTURING PLANT

SECTION 501 GENERAL

501.1 General. Off-site construction and manufacturing plants shall comply with the provisions of this chapter.

SECTION 502 LOCATION

502.1 Location. Where facilities used to manufacture or construct modules or modular components in accordance with this standard are located directly upon the work site where the proposed modules, panelized systems or modular components are to be installed, they shall not be considered off-site construction and this standard shall not apply.

502.2 On-site panelized system fabrication. Where an operation specifically intended for the fabrication of panelized systems is not located separately from the structure under construction, the operation shall not be considered off-site construction and this standard shall not apply.

Exception: Where the proposed modules, panelized system or modular components are utilized as a portion of the manufacturing plant.

SECTION 503 QA/QC PLAN

503.1 QA/QC Plan Requirement. Each manufacturing plant shall have an approved QA/QC plan in accordance with Chapter 5 of ICC 1205 prior to commencing fabrication or construction activities.

503.2 QA/QC Plan Availability. Each manufacturing plant shall have a printed copy of the approved QA/QC plan available for inspection at reasonable times without prior announcement.

SECTION 504 QA/QC PROCESS

504.1 QA/QC personnel. Each manufacturing plant shall identify a responsible party that shall implement the QA/QC processes within the facility. The person responsible for the quality program shall have the authority necessary to ensure compliance with this Standard. Quality program personnel shall demonstrate to the inspection agency that they have adequate knowledge of the product, factory operations, and the codes and standards to which the product is being manufactured and shall also demonstrate the ability to perform their required duties.

504.2 QA/QC Frequency. Observation of the manufacturing and construction activities shall be performed as often as is necessary to ensure compliance with the QA/QC plan.

504.3 QA/QC Records. The QA/QC records shall comply with the requirements of this section.

504.3.1 Documentation Preparation. The party responsible for implementing the QA/QC plan shall prepare verification documents in accordance with the approved QA/QC plan.

504.3.2 Documentation Availability. All documentation required by the QA/QC plan shall be made available to the AHJ upon request.

504.3.3 Documentation Retention. All documentation required by the QA/QC plan shall be retained by the manufacturer for not less than 12 months after the delivery of the module, panel or component.

Exception: Where the approved QA/QC plan indicates a document retention duration more than 12 months.

SECTION 505 INSPECTION

505.1 Availability. The manufacturing facility shall not restrict access by the AHJ, or their authorized representative, at any time when manufacturing or construction activities are occurring.

505.2 Notification. The manufacturing facility shall notify the AHJ, or their authorized representative, prior to the commencement of fabrication or construction projects in accordance with the approved QA/QC plan.

SECTION 506 SUSTAINABILITY

506.1 Materials Protection. All building materials shall be protected from weather, moisture and contaminate sources in accordance with the material manufacturer's recommendations.

CHAPTER 6 FABRICATION

SECTION 601 GENERAL

601.1 General. Off-site construction and manufacturing of modules, panelized systems or modular components shall be in accordance with the approved plans and provisions of the applicable codes and standards adopted by the authority having jurisdiction. The requirements in this section shall be in addition to the requirements of the applicable codes and standards.

SECTION 602 VOLUMETRIC CONSTRUCTION

602.1 Volumetric modular construction. Each modular building or module shall be identified where individually or in combination form structural components. Attention to the connections and erection of the unit or sections that form the structure as well as the Lateral Force Resistance System shall be identified in addition to the connections to the foundation.

SECTION 603 DEFORMATION COMPATIBILITY

603.1 Deformation compatibility. Materials expected to be subjected to deformation during the fabrication process shall comply with requirements of this section.

603.2 Design. Buildings and components shall be designed and detailed for deformation compatibility where required by ASCE 07. These shall include Interior and Exterior Non-bearing, Non-shear Walls, Structural Separation Walls, Interconnected Modules – Diaphragms, Chords, and Collectors.

SECTION 604 TEMPORARY SUPPORTS AND SHORING

604.1 Temporary supports and shoring. Where required by the AHJ, the designer shall provide the details where required to retain the same vertical support arrangement throughout and preserve the integrity of the structure during manufacture, transportation, on-site storage.

SECTION 605 OFF-SITE STORAGE

605.1 Stacking. The manufacturer shall provide details to consider additional vertical or horizontal loading on modules while stacked in temporary storage. These details shall include measures prescribing maximum stacking of modules.

605.2 Weather Protection. The manufacturer shall take precautions to protect stacked and stored modules from weather events.

CHAPTER 7
TRANSPORTATION AND STORAGE

**SECTION 701
GENERAL**

701.1 General. Transportation of units which have been manufactured or constructed off-site shall comply with the provisions of this chapter. The manufacturer shall provide, with each set of units that is to be installed in the same manner, instructions that include, transport, lifting and placement procedures where applicable.

**SECTION 702
TRANSPORTATION PERMITTING**

702.1 Transportation Permitting. Transportation of modules, panelized systems or modular components which have been manufactured or constructed off-site shall be in accordance with the applicable transportation permitting requirements for each jurisdiction which the shipment will enter.

702.2 Transportation Route. The route used to transport modules, panelized systems or modular components which have been manufactured or constructed off-site shall be of a width and height to accommodate the load and the transportation vehicle.

702.3 Transportation Weight. The gross weight of the modules, panelized systems or modular components to be transported and the transportation vehicle shall not exceed the permitted requirements for each jurisdiction which the shipment will enter.

**SECTION 703
METHODS OF TRANSPORT**

703.1 Methods of Transport. Modules panelized systems or modular components which have been manufactured or constructed off-site shall be transported using one or more of the following methods:

1. An integrated chassis with axels and wheels suitable to support the weight and size of the object being transported.
2. A separate trailer suitable to support the weight and size of the object being transported.
3. Other transportation systems which are accepted by the applicable jurisdictions and are suitable to support the weight and size of the object being transported.

**SECTION 704
LOAD AND UNLOADING**

704.1 Loading and Unloading. The manufacturer shall create with the erector a schedule that limits the need for storage, and a loading and unloading manifest that protects the modules from stress and mechanical damage. The logistics, for unloading the staging processes, and the type of crane required for lifting the elements or modules are to be detailed by the erecting contractor.

SECTION 705 ON-SITE STORAGE OF MODULES

705.1 On-Site Storage. To minimize the number of modules to be stored the erection contractor shall designate a staging area on-site.

705.2 Stacking. The erection contractor shall utilize stacking details provided by the manufacturer to counter additional vertical or horizontal loading on the modules while stacked in temporary storage. These details shall limit the maximum stacking of modules.

705.3 Weather and Mechanical Protection. The erection contractor shall take all steps to protect stacked and stored modules from weather events as well as mechanical damage.

705.4 Staging. The length of time any modules are staged shall be scheduled to minimize the length of time they are on-site.

CHAPTER 8 ON-SITE INSTALLATION

SECTION 801 GENERAL

801.1 General. The manufacturer shall provide instructions that include installation procedures and layout information.

SECTION 802 FOUNDATION

802.1 Foundation. A separate plan, prepared where required by a registered design professional, shall be submitted for permit.

802.2 Loads. The foundation shall be designed to support the building, all live and dead loads, and all construction loads. The foundation shall be designed to consider all geotechnical limits places on the building and foundation at the site.

SECTION 803 INSTALLATION TOLERANCES

803.1 Installation Tolerances. The registered design professional shall detail in the construction documents the required construction tolerances for fitting each module to each module and to the foundation. Terms shall be as defined in ISO 6707-1:2020.

SECTION 804 CONNECTIONS

804.1 Manufacturer instructions. The manufacturer shall provide instructions that describe the details for:

1. Connecting the modules or panelized systems to provide the required structural strength and rigidity.
2. Maintaining the integrity of the air barrier system, vapor barrier, insulation, sheathing membrane, cladding, roofing and flashing at the joints between each module or panelized system.
3. Connecting ducting, piping and wiring, and maintaining the integrity of sealing and insulation.
4. Maintaining the integrity of fire separations and providing fire blocking between modules where required.
5. Foundation loads, anchorage details and required capacity of anchorage devices.
6. Maximum foundation support, spacings, and any additional information necessary for the proper support of the modular building.

7. Information on the connection of services.
8. Installation of all other items to be installed or completed on site.

CHAPTER 9 REFERENCED STANDARDS

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This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard.

Promulgating Agency And Standard Reference Number	Title	Referenced in code section number
ASCE 07 – 2016 with Supplement 1	Minimum Design Loads and Associated Criteria for Buildings and Other Structures	603.2
IBC - 2021	International Building Code	101.3, 103.1, 301.2
IRC - 2021	International Residential Code	101.3, 202
ICC G5-2019	Guideline for the Safe Use of ISO Intermodal Shipping Containers Repurposed as Buildings and Building Components	301.5
ICC 1205 -2021	Standard for Off-Site Construction: Inspection and Regulatory Compliance	104.1, 302.4, 503.1
ISO 6707-1:2020	Buildings and Civil Engineering Works - Vocabulary	803.1
NFPA 221 - 2018	Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls	302.3.5