

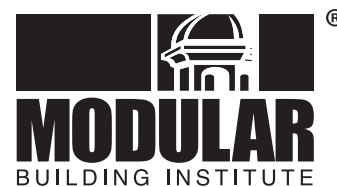
# ICC G5-2019

Guideline for the Safe Use of ISO Intermodal Shipping Containers Repurposed as Buildings and Building Components



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Shipping Containers Repurposed as Buildings and Building Components

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## Preface

### Introduction

The principal purpose of the ICC Guideline series is to provide a state-of-the-art volume of knowledge that will contribute to public health, safety and general welfare in the built environment. Guideline projects are established based on market relevancy, demand, and the realization that existing technical information, regulations or standards, if any, do not adequately address the subject or that such existing technical information needs to be enhanced, clarified and made more user friendly. ICC Guidelines are in-depth topic-specific technical publications that have global relevancy and may be used internationally. They are different from codes or standards in that they will generally use nonmandatory language.

### Development

Development of the ICC Guideline series was approved by the ICC Board of Directors in September 2008. ICC Policy GP33 *Guideline Development* governs the development of ICC Guidelines and can be viewed on the ICC website at [www.iccsafe.org](http://www.iccsafe.org). ICC Guidelines are developed with the establishment of a Guideline Development Committee (GDC). The GDC is made up of a diverse stakeholder population and the participants are focused on ensuring high-quality and timely technical information for the built environment's usage. Upon the GDC reaching consensus, the final draft is posted for a "Public Comment" period for 30 days. The GDC considers all public comments, revises the public comment draft as appropriate and sends its recommendations to ICC for publication.

### Maintenance

ICC Guidelines are not required to be updated on a specific cycle; however, they will be reviewed periodically and may be updated through a GDC-established process as needed based on changing trends, technology or relevant technical information.







## About This Guideline

### ICC G5-2019 Guideline for the Safe Use of ISO Intermodal Shipping Containers Repurposed as Buildings and Building Components

This ICC Guideline is intended to help state and local jurisdictions—as well as owners, architects, builders and engineers—in their assessment as to how to design, review and approve International Organization for Standardization (ISO) intermodal shipping containers as a building element.

### Benefits of This Guideline

Local jurisdictions and state administrative programs are reacting to the growing trend of shipping container repurposing but are behind in terms of regulations and compliance. A patchwork of regulations has emerged, creating potentially conflicting or duplicative requirements. This ICC Guideline is intended to provide guidance in this process.

The development of this ICC Guideline will greatly contribute to the health, safety and welfare of the built environment. Aside from the ICC-ES AC462 criteria, there are no current codes, guidance or references that exist to assist code officials and the business industry navigate this process in a predictable and safe manner. (See Appendix 3 for “New Provisions for Shipping Containers in the 2021 IBC”.)

Local authorities having jurisdiction (AHJ) need guidance on what to look for and how to address new or repurposed

containers that are being considered as a building element in their jurisdiction.

### About the International Code Council®

The International Code Council is a member-focused association. It is dedicated to developing model codes and standards used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures.

Most US communities and many global markets choose the I-Codes. ICC Evaluation Service (ICC-ES) is the industry leader in performing technical evaluations for code compliance fostering safe and sustainable design and construction.

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### About the Modular Building Institute

Founded in 1983, the Modular Building Institute (MBI) is the international non-profit trade association serving modular construction. Members are manufacturers, contractors and fleet owners in two distinct segments of the industry—permanent modular construction (PMC) and relocatable buildings (RB). Associate members are companies supplying build-





ing components, services and financing. MBI strives to keep up with the latest trends of the modular/offsite construction industry and has expanded its membership over the years to include architects, owner/developers and general contractors.

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### **Other Guidelines of the Series**

ICC G1-2010 Guideline for  
Replicable Buildings

ICC G2-2010 Guideline for Acoustics

ICC G3-2011 Global Guideline for  
Practical Public Toilet Design

ICC G4-2018 Guideline for  
Commissioning



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This is a preview of "ICC G5-2019". Click [here](#) to purchase the full version from the ANSI store.

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## Introduction

Over thirty million International Organization for Standardization (ISO) intermodal shipping containers (“containers”) are in use around the world today. These containers were built to ISO standards and maintained to standards defined by the International Maritime Organization’s (IMO) “Convention for Safe Containers”.

New or used, containers are being repurposed at a pace where container repurposing is now a multi-billion-dollar global industry. Containers are regularly repurposed and converted into *International Residential Code* (IRC) and *International Building Code* (IBC) occupancy uses. As a “building material”, the applications are widely diverse as is the extent to which the container is used as a structural building element.

For industry participants, the primary advantages of using containers are: availability, safety and security (extremely hard to damage), strength and durability, mobility, and speed of construction or installation. Containers are also manufactured to be stackable.

Well-intentioned design professionals, builders and owners attracted by the idea of repurposing containers have greatly publicized their use. The positive aspects of container conversion and public awareness for recycling and being eco-friendly has generated considerable attention.

These drivers and factors have created a broad array of applications and different industry segments. These emerging segments are categorized as follows:

- Single-unit versus multi-unit
- Temporary versus permanent

Due to benefits such as environmental friendliness, availability, strength, and speed of construction, containers are now regularly being repurposed. State and local jurisdictions are now reacting to

the growing trend and are lagging in terms of the appropriate regulations to apply and how best to achieve a reasonable level of code compliance. A patchwork of regulations has emerged, creating potentially conflicting and duplicative requirements. (See the section on Current Regulatory Environment and Appendix 3 for future provisions in the 2021 IBC.)

Despite inconsistencies at the state or local level, many design professionals, builders and owners have been able to demonstrate that projects utilizing containers comply with the general intent of model codes and can be approved by the authority having jurisdiction (AHJ).

## Scope

As with all ICC Guidelines, this guideline is not intended to be a regulatory document but rather a nonmandatory document that provides useful information for the industry, design professionals and code officials regarding containers that are repurposed for use as buildings or structures or as part of buildings or structures.

Many code officials, when presented with a request to use containers in their jurisdictions, are challenged by the process of determining what is in the best interest of their community. Notwithstanding zoning issues that focus on the arrangement of compatible buildings and land uses, in the interest of the social and economic welfare of their community, they also may encounter a lack of clear and concise permitting requirements and appropriate standards that apply to containers.

This guideline is intended to provide information and recommendations to those involved in the use of containers as buildings or structures in achieving a reasonable level of safety, public health and general welfare for the occupants.

