Chapter 3:
Provisions for All Compliance Methods

General Comments

This chapter contains the provisions that explain how the code is intended to be applied. In addition, this chapter provides the procedures for seismic design and evaluation that apply throughout the code. Finally, this chapter provides some general sections regarding the applicability of other codes, building materials, occupancy classification and accessibility.

Unique requirements for repairs (Chapter 4) and relocated buildings (Chapter 14) are seperated out into their own chapters.

In terms of the application of the code, this chapter explains the three main components of the code, which include the following:

- Prescriptive method.
- Work area method.
- Performance method.

It is intended that one method of compliance is chosen and applied in whole. The first of these methods is the prescriptive method, which is covered in Chapter 5. This chapter was originally excerpted from a portion of Chapter 34 of the *International Building Code*® (IBC®). Chapter 34 has been deleted from the IBC, and Section 101.4.7 of that code refers users to the *International Existing Building Code*® (IEBC®) for existing building issues. Chapter 5 addresses additions, alterations and change of occupancy in existing and historic buildings. The method of compliance is more simplistic and more administrative than the work area method. In addition, Section 504 covers where fire escapes are permitted. Section 505 deals with windows, including replacement, and where opening control devices and emergency escape openings are required.

The second core method introduced by the code is the work area method, which is addressed in Chapters 6 through 12. This concept was intended to provide more flexibility to encourage the reuse and continued use of existing buildings. More specifically, the provisions allow different levels of compliance based on the level of work occurring. Chapter 6 first classifies the type and level of work and then, based on that classification, specific provisions are applied. The various types and levels of work include the following:

- Alteration Level 1 (Chapter 7).
- Alteration Level 2 (Chapter 8).
- Alteration Level 3 (Chapter 9).
- Change of occupancy (Chapter 10).
- Additions (Chapter 11).
- Historic buildings (Chapter 12).

The final method provided in this code is the performance compliance method found in Chapter 13. Chapter 14 utilizes a scoring method to determine the overall safety level of a building. The main focus is on fire and life safety provisions, but base structural requirements are also addressed (Section 1401.4.1). The structural provisions are more basic than the prescriptive and work area method. The prescriptive and work area methods are more comprehensive and consistent with one another in terms of the structural requirements. The objective of this chapter is to provide an alternative compliance option that enables improvements to be made that will raise the score to a minimum level without strict compliance with the provisions of the IBC.

Section 302 addresses generally applicable provisions for the overall code. Section 302.1 explains the applicability of this section to all aspects of the code. Section 302.2 addresses dangerous conditions. Section 302.3 notes that applicable requirements for existing situations are addressed in various International Codes® (I-Codes®) and the *National Electrical Code*® (NFPA 70®). More specifically, codes such as the *International Plumbing Code*® (IPC®) have requirements for existing installations and how alterations or additions are addressed. Other important examples are the retroactive provisions of Chapter 11 of the *International Fire Code*® (IFC®). Those provisions are applicable at all times regardless of whether a repair or alteration is being undertaken. These provisions remain applicable when applying this code. Additionally, this section states that where a conflict occurs, this code takes precedence.

Section 303 also provides options related to seismic evaluation and design, which are intended to provide flexibility when addressing seismic design. These evaluation tools work with both the prescriptive and work area methods. The provisions help to determine which procedures and methods are to be applied when addressing seismic design in existing buildings. In some cases, the code requires compliance with the seismic design provisions of the IBC (see Section 303.3.1), while in other cases, reduced seismic design provisions are permitted (see Section 303.3.2 of this code). In both sections, specifics are provided regarding applicable procedures and methods. In large part, these provisions are intended to facilitate an overall increase in seismic performance in existing buildings. Typically, buildings with higher occupant loads and those with increased importance to the community will have more restrictive requirements.

Section 304 simply provides a pointer to the testing requirements for in-situ load tests that are in Section 1708 of the IBC.

Finally, Section 305 provides requirements for accessibility that are applicable to all existing buildings within the scope of this code.

Purpose

The purpose of this chapter is to provide generally applicable minimum requirements for all existing buildings, to define define the types and levels of work applicable and to lay out to the methods to be used for seismic design and evaluation and accessibility used throughout the code.

SECTION 301
ADMINISTRATION

301.1 General. The *repair*, *alteration*, *change of occupancy*, *addition* or relocation of all *existing buildings* shall comply with Section 301.2, 301.3, or 301.4.

❖ This section establishes a roadmap for the application of this code to the different types of work addressed for existing buildings: repairs (see Section 301.2); alterations, additions or change of occupancy (see Section 301.3); relocated buildings (see Section 301.4); and accessibility (see Section 301.5)

301.2 Repairs. *Repairs* shall comply with the requirements of Chapter 4.

❖ Requirements for repairs, as defined in Chapter 2, are given in Chapter 4. See Chapter 4 for commentary regarding specific aspects of repairs.

301.3 Alteration, addition or change of occupancy. The *alteration*, *addition* or *change of occupancy* of all *existing buildings* shall comply with one of the methods listed in Section 301.3.1, 301.3.2 or 301.3.3 as selected by the applicant. Sections 301.3.1 through 301.3.3 shall not be applied in combination with each other.

Exception: Subject to the approval of the *code official*, *alterations* complying with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code. New structural members added as part of the *alteration* shall comply with the *International Building Code*. This exception shall not apply to alterations that constitute substantial improvement in *flood hazard areas*, which shall comply with Section 503.2, 701.3 or 1301.3.3. This exception shall not apply to the structural provisions of Chapter 5 or to the structural provisions of Sections 705, 806 and 906.

❖ This section explains the options available to a designer or owner where dealing with construction related to existing buildings: prescriptive compliance method (see Section 301.1.1), work area compliance method (see Section 301.1.2) and performance compliance method (see Section 301.1.3).

There is one alternative to using these three compliance methods that allows for compliance with the laws in existence at the time the structure was originally built, unless the building has sustained substantial structural damage or is undergoing more than a limited structural alteration. Repairs and alterations in flood hazard areas have additional requirements.

301.3.1 Prescriptive compliance method. *Alterations*, *additions* and *changes of occupancy* complying with Chapter 5 of this code in buildings complying with the *International Fire Code* shall be considered in compliance with the provisions of this code.

❖ This section allows compliance in accordance with Chapter 5 of the code, which is referred to as the prescriptive method. These provisions are intended to prescribe specific minimum requirements for construction related to existing buildings, including additions, alterations, fire escapes, glass replacement, change of occupancy and historic buildings.

301.3.2 Work area compliance method. *Alterations*, *additions* and changes of occupancy complying with the applicable requirements of Chapters 6 through 12 of this code shall be considered in compliance with the provisions of this code.

❖ This section allows compliance in accordance with Chapters 6 through 12 of the code, which is referred to as the work area method. These chapters contain provisions based on a proportional approach to compliance where upgrades are triggered by the type and extent of the work.

301.3.3 Performance compliance method. *Alterations*, *additions* and changes of occupancy complying with Chapter 13 of this code shall be considered in compliance with the provisions of this code.

❖ This section allows compliance for work involving alterations of any size, additions and changes of occupancy in accordance with Chapter 13 of the code, which is referred to as the performance method. This chapter provides a scoring method for evaluating a building based on fire safety, means of egress and general safety.

301.4 Relocated buildings. Relocated buildings shall comply with the requirements of Chapter 14.

❖ Relocated buildings are a unique type of work for existing buildings and are, therefore, addressed in a separate chapter of the code. For detailed commentary, see Chapter 14.

301.5 Compliance with accessibility. Accessibility requirements for *existing buildings* shall comply with the 2009 edition of ICC A117.1.

❖ This section is an unusual provision in that it references a specific edition of a referenced standard of ICC A117.1, *Accessible and Usable Building and Facilities*. Typically the edition of a standard is

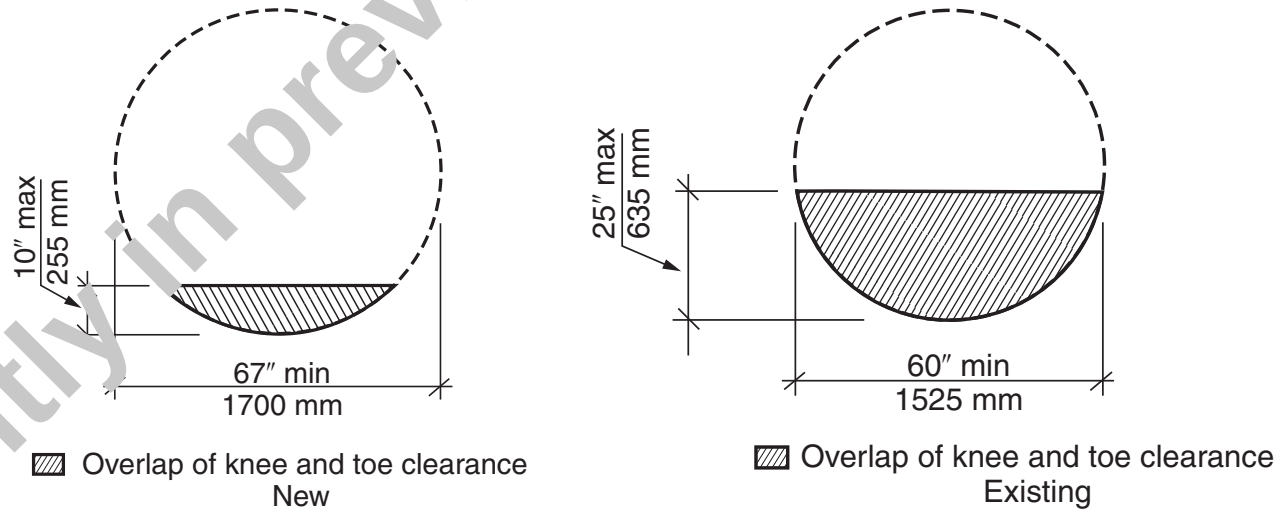
included in Chapter 16. The result is that existing buildings, when complying with the accessibility provisions in Section 305, can use the technical provisions found in the 2009 edition of ICC A117.1, including when other I-Codes reference later editions of the ICC A117.1. This includes spaces undergoing repair, any level of alteration and changes of occupancy. Additions have to comply with new construction requirements within the space (see Section 305.5), but if the accessible route (including bathrooms and drinking fountains) serving the addition are in the existing building, the accessible route requirements (see Section 305.7) can use the technical criteria in the 2009 ICC A117.1. This reference was put in place due to major changes to some of the building blocks for accessibility in the 2017 edition of ICC A117.1.

Examples of the changes in the building blocks for the 2017 ICC A117.1 are:

- A change in the clear floor space from 30 inches by 48 inches to 30 inches by 52 inches.
- An increase in the turning space sizes:
  - o The circle turn has increased from 60 inches to 67 inches and the amount that the circle can rely on for knee and toe clearance has been reduced from 25 inches to 10 inches maximum (see Commentary Figure 301.5).
  - o The T-turn now has three options: the overall depth is still 60 inches, but the overall width has increased to 64 inches and the leg and arms of the T have widened.
- There is a new requirement for 90-degree turns that will result in a 36-inch-wide accessible route to have a chamfered corner or turns into a wider route.

The revisions in the 2017 ICC A117.1 were based on a report, *Anthropometry of Wheeled Mobility Project*, conducted by the Center for Inclusive Design and Environmental Access (IDeA) at The State University of New York (SUNY) at Buffalo. This study looked at 500 persons who use manual and powered wheeled mobility devices (for example, manual wheelchairs, power wheelchairs or scooters); however, not every participant was included in all the different studies. The ICC A117.1 committee did not agree with all the information published in the study (for the final resolutions please see the 2017 ICC A117.1). In addition, while the U.S. Access Board did provide the funding for this survey, at the time of the writing of this commentary, there are no plans to revise the technical criteria in the *2010 ADA Standards for Accessible Design* or the *Fair Housing Accessibility Guidelines* (FHAG).

At the time of the code change proposals for the IEBC, it was not yet decided if the 2017 ICC A117.1 would be referenced in the other 2018 I-Codes. For application in the IEBC, there was concern that while these changes could be complied with in new construction, asking for these new sizes in existing buildings, especially in small stores or restaurants, would have a significant impact and require alterations to spaces that had been built complaint with the 2010 ADA and the 2009 ICC A117.1. The final resolution for the code changes was that all 2018 I-Codes will reference the 2009 edition of ICC A117.1.



Commentary Figure 301.5
COMPARISON OF TURNING SPACE REQUIREMENTS FOR NEW AND EXISTING BUILDINGS

SECTION 302
GENERAL PROVISIONS

302.1 Applicability. The provisions of Section 302 apply to all *alterations*, *repairs*, *additions*, relocations of structures and *changes of occupancy* regardless of compliance method.

❖ This code contains three possible compliance paths: prescriptive (Chapter 5), work area (Chapters 6 through 12) and performance (Chapter 13). For any of these paths, the requirements in Section 302 apply.

302.2 Dangerous conditions. The *code official* shall have the authority to require the elimination of conditions deemed *dangerous*.

❖ This section enables the code official to address dangerous conditions for any type of situation that may arise during renovations to existing buildings. "Dangerous" is specially defined in Chapter 2 and is related to structural stability. "Unsafe" is more general and is also specially defined in Chapter 2. Provisions for unsafe buildings are located in Section 115.

302.3 Additional codes. *Alterations, repairs, additions* and *changes of occupancy* to, or relocation of, *existing buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and *changes of occupancy* or relocation, respectively, in this code and the *International Energy Conservation Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *International Plumbing Code*, *International Private Sewage Disposal Code*, *International Property Maintenance Code*, *International Residential Code* and NFPA 70. Where provisions of the other codes conflict with provisions of this code, the provisions of this code shall take precedence.

❖ This section clarifies the relationship between this code and the existing building provisions found in other I-Codes and NFPA 70. Where alterations and repairs are made to existing mechanical and plumbing systems, the provisions of the I-Codes and NFPA 70 for alterations and repairs must be followed. Those codes indicate the extent to which existing systems must comply with the stated requirements. Where portions of existing building systems, such as plumbing, mechanical and electrical systems, are not being altered or repaired, those systems may continue to exist without being upgraded as long as they are not hazardous or unsafe to the building occupants.

Another important element of this section is that this code will take precedence if a conflict occurs between one of the listed codes and this code. This is only as it concerns requirements for alteration, repairs, additions and change of occupancy; however, this would not address a situation where another code, such as the IFC, retroactively required changes to a building regardless if any repairs, alterations, additions or changes of occupancy were occurring.

302.4 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe.

❖ If a material or system had been approved before the code took effect, it can continue to be used as long as the material or system is not detrimental to the health or safety of the building occupants or the public. Specifically, a material or system cannot be "unsafe" as defined in Chapter 2 and as addressed by Section 115. In this regard, the code is not intended to be retroactive.

302.5 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs* and *alterations*, provided that unsafe conditions are not created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

❖ There are two options for materials used in repairs to an existing building. Generally, the materials used for repairs should be those that are presently required or permitted for new construction in accordance with the I-Codes. It is also acceptable to use materials consistent with those that are already present, except where those materials pose a hazard. This allowance follows the general concept that any repair should not make a building more hazardous than it was prior to the repair. It is generally possible to repair a structure, its components and its systems with materials consistent with those materials that were used previously; however, where materials that are now deemed hazardous are involved in the repair work, they may no longer be used. For example, the code identifies asbestos and lead-based paint as two common hazardous materials that cannot be used in the repair process. Certain materials previously considered acceptable for building construction are now known to be threats to the health of occupants.

[BS] 302.5.1 New structural members and connections. New structural members and connections shall comply with the detailing provisions of the *International Building Code* for new buildings of similar structure, purpose and location.

Exception: Where alternative design criteria are specifically permitted.

❖ Regardless of the scope of work, new connections and new structural members must be in compliance with the current provisions of the IBC. This is consistent with the general philosophy of this code for any new construction. There is an exception, however, to allow for alternative design criteria. Specifically, the performance-based seismic criteria in ASCE 41 and the reduced seismic criteria referenced in numerous places in this code would not meet the current provisions of the IBC for strength, stiffness or detailing. This exception, therefore, is needed to allow those alternatives to be applied.

302.6 Occupancy and use. Where determining the appropriate application of the referenced sections of this code, the occupancy and use of a building shall be determined in accordance with Chapter 3 of the *International Building Code*.

❖ This section provides a link to the occupancy classifications in the IBC. Any time a provision is based on occupancy classification, that classification is determined through IBC requirements, not from codes under which the building was originally built. Occupancy classifications have changed over the years and varied as to how they were named in previous codes.

In the early years of the last century, the essence of regulatory safeguards from fire was to provide a reasonable level of protection to property. The idea was that if property was adequately protected from fire, then the building occupants would also be protected.

From this outlook on fire safety, the concept of equivalent risk has evolved in the code. This concept maintains that, in part, an acceptable level of risk against the damages of fire, respective to a particular occupancy type (group), can be achieved by limiting the height and area of buildings containing such occupancies, according to the building's construction type (in other words, its relative fire endurance).

The concept of equivalent risk involves three interdependent considerations:

1. The level of fire hazard associated with the specific occupancy of the facility.
2. The reduction of fire hazard by limiting the floor area(s) and the height of the building based on the fuel load (combustible contents and combustible building components).
3. The level of overall fire resistance provided by the type of construction used for the building.

The interdependence of these fire safety considerations can be seen by first looking at Tables 601 and 602 of the IBC, which show the fire-resistance ratings of the principal structural elements composing a building in relation to the five classifications for types of construction. Type I construction is the classification that generally requires the highest fire-resistance ratings for structural elements, whereas Type V construction, which is designated as a combustible type of construction, generally requires the least amount of fire-resistance-rated structural elements. If one then looks at Tables 504.3, 504.4 and 504.5 of the IBC, the relationship among group classification, allowable heights and areas and types of construction becomes apparent. Respective to each group classification, the greater the fire-resistance rating of structural elements, as represented by the type of construction, the greater the floor area and height allowances. The greater the potential fire hazards indicated as a function of the group, the lesser the height and area allowances for a particular construction type.

As a result of extensive research and advancements in fire technology, today's building codes are more comprehensive and complex regulatory instruments than they were in the earlier years of code development. While the principle of equivalent risk remains an important component in building codes, perspectives have changed and life safety is now the paramount fire issue. Even so, occupancy classification still plays a key part in organizing and prescribing the appropriate protection measures. As such, threshold requirements for fire protection and means of egress systems are based on occupancy classification (see Chapters 9 and 10 of the IBC).

SECTION 303
STRUCTURAL DESIGN LOADS AND EVALUATION AND DESIGN PROCEDURES

[BS] 303.1 Live loads. Where an *addition* or *alteration* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads *approved* prior to the *addition* or *alteration*. If the *approved* live load is less than that required by Section 1607 of the *International Building Code*, the area designated for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Where the *addition* or *alteration* results in increased design live load, the live load required by Section 1607 of the *International Building Code* shall be used.

❖ Where an existing building is undergoing alterations requiring changes to the structural loading, the applicable minimum design loads are those required by the code at the time of the original construction. It is not uncommon for the design live load requirements to change from the time a building is originally designed to when it undergoes a renovation. The live loads used in the original design may have been adequate for the building's initial use and may have been in compliance with all the code requirements that were in effect at that time. Many years and many code changes can impact the structural design parameters and code requirements, which does not mean the existing structural system is inadequate and cannot be used when the building is renovated. It just means that when the live loads used for the design of the existing building are lower than those required by current standards, the design live loads used for the original design must be posted. If the design live loads of the alteration are greater than those used for the existing building, then Section 1607 of the IBC applies just as it would for new construction.

[BS] 303.2 Snow loads on adjacent buildings. Where an *alteration* or *addition* changes the potential snow drift effects on an adjacent building, the *code official* is authorized to enforce Section 7.12 of ASCE 7.

❖ This section addresses an important condition covered in ASCE 7. All of Chapter 7 of ASCE is already

invoked by Section 1608 of the IBC. Section 7.12 of ASCE 7 reads, "Existing roofs shall be evaluated for increased snow loads caused by additions or alterations. Owners or agents for owners of an existing lower roof shall be advised of the potential for increased snow loads where a higher roof is constructed within 20 ft (6.1 m)." This section addresses the second sentence (the first sentence is understood to refer to the building with the addition or alteration and is already covered by Sections 502.4, 706.2 and 806.1. The details of enforcement and coordination between owners of adjacent buildings may be left to the discretion of the code official, so that all that is needed is the explicit reference to Section 7.12 of ASCE 7.

[BS] 303.3 Seismic evaluation and design procedures. Where required, seismic evaluation or design shall be based on the procedures and criteria in this section, regardless of which compliance method is used.

❖ This section lists the documents that contain the provisions to be used for the seismic evaluation of an existing building as well as the design of any needed repairs. Since the scope of these documents varies considerably, brief descriptions are given below.

***International Building Code*® (IBC®)**

The IBC is a comprehensive model building code with seismic provisions that are based, for the most part, on ASCE 7 as well as the National Earthquake Hazards Reduction Program (NEHRP) *Recommended Provisions for Seismic Regulations for New Buildings and Other Structures*. The requirements are intended to minimize the hazard to life for all buildings, increase the expected performance of higher occupancy buildings as compared to ordinary buildings and improve the capability of essential facilities to function during and after an earthquake. In addition to minimum seismic loading criteria, the earthquake design provisions include requirements for special inspection and testing as well as material-specific design requirements. Achieving the intended performance depends on a number of factors, including, for example, the structural framing type, configuration and construction materials.

The significant earthquake load concepts include the following:

1. The ground motions are based on a risk-targeted maximum considered earthquake (MCE_R) from ground motion response acceleration maps [Figures 1613.2.1(1) through 1613.2.1(8) of the IBC], which provide spectral response accelerations at short periods (S_S) and at a one-second period (S_1). These levels of ground motion are also used in ASCE 41.
2. Considering the margin of safety inherent in seismic design practice, this achieves collapse prevention under MCE_R level ground motions. It is also intended that damage from the "design earthquake" ground motion would be repairable. For essential facilities (Risk Category IV), it is intended that damage from the "design earthquake" ground motion would be relatively minor and continued occupancy and function of the facility is allowed. For higher ground motions, the intent is that there will be a low probability of structural collapse.
3. The IBC assigns buildings to one of the four risk categories summarized in Commentary Figure 303.3(1). The intent is to provide increasingly higher performance as the risk category increases from I through IV. This is achieved in part by applying an importance factor in determining the design load. The importance factor specified in the load provisions of ASCE 7 directly impacts the calculation of seismic (as well as wind and snow) loads. The magnitude of the design load varies in proportion to the importance factor and a higher value is assigned to buildings with an occupancy that warrants a higher level of performance.
4. Nonlinear seismic behavior is accounted for through use of equivalent lateral forces that are reduced by a response modification factor (R). This approximates the internal forces under the design earthquake. The corresponding building displacements, however, must be increased by

RISK CATEGORIES	NATURE OF OCCUPANCY	SEISMIC IMPORTANCE FACTOR FROM ASCE 7
I	Buildings and other structures that represent a low hazard to human life in the event of failure	1.0
II	Buildings and other structures except those listed in Categories I, III and IV	1.0
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure	1.25
IV	Buildings and other structures designated as essential facilities	1.5

Commentary Figure 303.3(1)
RISK CATEGORIES AND IMPORTANCE FACTORS