This document contains excerpts of the wind provisions from the 2015 edition of the IEBC.

2015 International Existing Building Code®
[A compilation of wind resistant provisions, prepared by FEMA]

Note to Reader: This document provides the wind resistant provisions of the 2015 International Existing Building Code and is not intended to be a compilation of all the related provisions of the IEBC. Where material that was not specific to wind was removed from a code section, "partial shown" is indicated. Where a "user note" or information that may be useful to the reader is provided, it is provided in blue text. A description of applicable figures to the wind resistant provisions are provided in italicized text and the figure can be seen in the full publication of the IEBC.

IEBC®
2015 International Existing Building Code

EFFECTIVE USE OF THE INTERNATIONAL EXISTING BUILDING CODE

The International Existing Building Code is a model code in the International Code family of codes intended to provide alternative approaches to repair, alteration, and additions to existing buildings. A large number of existing buildings and structures do not comply with the current building code requirements for new construction. Although many of these buildings are potentially salvageable, rehabilitation is often cost-prohibitive because compliance with all the requirements for new construction could require extensive changes that go well beyond the value of the building or the original scope of the alteration. At the same time, it is necessary to regulate construction in existing buildings that undergo additions, alterations, extensive repairs or change of occupancy. Such activity represents an opportunity to ensure that new construction complies with the current building codes and that existing conditions are maintained, at a minimum, to their current level of compliance or are improved as required to meet basic safety levels. To accomplish this objective, and to make the alteration process easier, this code allows for options for controlled departure from full compliance with the International Codes dealing with new construction, while maintaining basic levels for fire prevention, structural and life safety features of the rehabilitated building.

This code provides three main options for a designer in dealing with alterations of existing buildings. These are laid out in Section 301 of this code:

OPTION 1: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Prescriptive

Compliance Method given in Chapter 4. It should be noted that this method originates from the former Chapter 34 of the International Building Code (2012 and earlier editions).

OPTION 2: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Work Area Compliance Method given in Chapters 5 through 13.

OPTION 3: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Performance Compliance Method given in Chapter 14. It should be noted that this option was also provided in the former Chapter 34 of the International Building Code (2012 and earlier editions).

Under limited circumstances, a building alteration can be made to comply with the laws under which the building was originally built, as long as there has been no substantial structural damage and there will be limited structural alteration.

Arrangement and Format of the 2015 IEBC

Before applying the requirements of the IEBC it is beneficial to understand its arrangement and format. The IEBC, like other codes published by ICC, is arranged and organized to follow logical steps that generally occur during a plan review or inspection. The IEBC is divided as follows:

Chapters	Subjects
1-2	Administrative Requirements and Definitions
3	Compliance Methods
4	Prescriptive Compliance Method for Existing Buildings
5-13	Work Area Compliance Method for Existing Buildings
14	Performance Compliance Method for Existing Buildings
15	Construction Safeguards
16	Referenced Standards
Appendix A	Guidelines for Seismic Retrofit of Existing Buildings
Appendix B	Supplementary Accessibility Requirements for Existing Buildings
Appendix C	Guidelines for Wind Retrofit of Existing Buildings
Resource A	Guidelines on Fire Ratings of Archaic Materials and Assemblies

The following is a chapter-by-chapter synopsis of the scope and intent of the provisions of the International Existing Building Code:

User Note: The chapters shown below are those that are highlighted in this document and provide wind resistant provisions.

Chapter 1 Scope and Administration. This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. In addition to establishing the scope of the code, Chapter 1 identifies which buildings and structures come under its purview. *[partial shown]*

Chapter 2 Definitions. All defined terms in the code are provided in Chapter 2. *[partial shown]*

Chapter 4 Prescriptive Compliance Method. This chapter provides one of the three main options of compliance available in the IEBC for buildings and structures undergoing repair, alteration, addition or change in occupancy.

Chapter 6 Repairs. Chapter 6 governs the repair of existing buildings. The provisions define conditions under which repairs may be made using materials and methods like those of the original construction or the extent to which repairs must comply with requirements for new buildings.

Chapter 7 Alterations – Level 1. This chapter provides the technical requirements for those existing buildings that undergo Level 1 alterations as described in Section 503, which includes replacement or covering of existing materials, elements, equipment, or fixtures using new materials for the same purpose. *[partial shown]*

Chapter 8 Alterations – Level 2. Like Chapter 7, the purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system when a building is being altered. *[partial shown]*

Chapter 9 Alterations – Level 3. This chapter provides the technical requirements for those existing buildings that undergo Level 3 alterations. The purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system. *[partial shown]*

Chapter 10 Change of Occupancy. The purpose of this chapter is to provide regulations for the circumstances when an existing building is subject to a change in occupancy or a change in occupancy classification. A change of occupancy is not to be confused with a change of occupancy classification. *[partial shown]*

Chapter 11 Additions. Chapter 11 provides the requirements for additions, which correlate to the code requirements for new construction. *[partial shown]*

Chapter 13 Relocated or Moved Buildings. Chapter 13 is applicable to any building that is moved or relocated.

Appendix C Guidelines For Wind Retrofit Of Existing Buildings. This Appendix is intended to provide guidance for retrofitting existing structures to strengthen their resistance to wind forces. This appendix is similar in scope to Appendix A which addresses seismic retrofits for existing buildings except that the subject matter is related to wind retrofits. These retrofits are voluntary measures that serve to better protect the public and reduce damage from high wind events for existing buildings.

The purpose of the Appendix is to provide prescriptive alternatives for addressing retrofit of buildings in high wind areas. Currently there are two chapters which deal with the retrofit of gable ends and the fastening of roof decks, Appendix Chapters C1 and C2 respectively.

CHAPTER 1
SCOPE AND ADMINISTRATION

SECTION 106
CONSTRUCTION DOCUMENTS

[A][1] **106.2.4 Exterior wall envelope.** The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the wind and weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system that was tested, where applicable, as well as the test procedure used. *[partial shown]*

CHAPTER 2
DEFINITIONS

SECTION 201
GENERAL

[BS] [2] **SUBSTANTIAL DAMAGE.** For the purpose of determining compliance with the flood provisions of this code, damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

[BS] SUBSTANTIAL IMPROVEMENT. For the purpose of determining compliance with the flood provisions of this code, any repair, alteration, addition, or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure, before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

[1] The "[A]" indicates that the Administrative Code Development Committee is responsible for this portion of the code.

[2] The "[BS]" indicates that the Structural Code Development Committee is responsible for this portion of the code.

1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the code official and that is the minimum necessary to ensure safe living conditions; or

2. Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

[BS] SUBSTANTIAL STRUCTURAL DAMAGE. A condition where one or both of the following apply:

1. The vertical elements of the lateral force resisting system have suffered damage such that the lateral load-carrying capacity of any store in any horizontal direction has been reduced by more than 33 percent from its predamage condition.
2. The capacity of any vertical component carrying gravity load, or any group of such components, that supports more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its predamage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose, and location.

CHAPTER 4
PRESCRIPTIVE COMPLIANCE METHOD

SECTION 403
ALTERATIONS

[BS] 403.8 Roof diaphragms resisting wind loads in high-wind regions. Where the intended alteration requires a permit for reroofing and involves removal of roofing materials from more than 50 percent of the roof diaphragm of a building or section of a building located where the ultimate design wind speed is greater than 115 mph (51 m/s) in accordance with Figure 1609.3(1) of the International Building Code or in a special wind region as defined in Section 1609 of the International Building Code, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in Section1609 of the International Building Code, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in Section 1609 of the International Building Code.

SECTION 404
REPAIRS

[BS] 404.2 Substantial structural damage to vertical elements of the lateral force-resisting system. A building that has sustained substantial structural damage to the vertical elements of its lateral force-resisting system shall be evaluated and repaired in accordance with the applicable provisions of Sections 404.2.1 through 404.2.3. *[partial shown]*

[BS] 404.2.1 Evaluation. The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the building official. The evaluation shall establish whether the damaged building, if repaired to its pre-damage state, would comply with the provisions of the International Building Code for wind and earthquake loads.

Wind loads for this evaluation shall be those prescribed in Section 1609 of the International Building Code. *[partial shown]*

[BS] 404.2.2 Extent of repair for compliant buildings. If the evaluation establishes compliance of the pre-damage building in accordance with Section 404.2.1, then repairs shall be permitted that restore the building to its pre-damage state.

[BS] 404.2.3 Extent of repair for noncompliant buildings. If the evaluation does not establish compliance of the pre-damage building in accordance with Section 404.2.1, then the building shall be rehabilitated to comply with applicable provisions of the International Building Code for load combinations that include wind or seismic loads. The wind loads for the repair shall be as required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be as required by the International Building Code. *[partial shown]* New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of the International Building Code for new buildings of similar structure, purpose, and location. *[partial shown]*

[BS] 404.3.1 Lateral force-resisting elements. Regardless of the level of damage to vertical elements of the lateral force-resisting system, if substantial structural damage to gravity load-carrying components was caused primarily by wind or earthquake effects, then the building shall be evaluated in accordance with Section404.2.1 and, if noncompliant, rehabilitated in accordance with Section 404.2.3. *[partial shown]*

[BS] 404.5 Flood hazard areas. For buildings and structures in flood hazard areas established in Section1612.3 of the International Building Code, or Section R322 of the International Residential Code, as applicable, any repair that constitutes substantial improvementor repair of substantial damage of the existing structure shall comply with the flood design requirements for new construction, and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

For buildings and structures in flood hazard areas established in Section 1612.3 of the International Building Code, or Section R322 of the International Residential Code, as applicable, any repairs that do not constitute substantial improvement or repair of substantial damage of the existing structure are not required to comply with the flood design requirements for new construction.

SECTION 406
GLASS REPLACEMENT AND REPLACEMENT WINDOWS

406.1 Replacement glass. The installation or replacement of glass shall be as required for new installations.

CHAPTER 6
REPAIRS

SECTION 606
STRUCTURAL

[BS] 606.1 General. Structural repairs shall be in compliance with this section and Section 601.2. Regardless of the extent of structural or nonstructural damage, dangerous conditions shall be eliminated. Regardless of the scope of repair, new structural members and connections used for repair or rehabilitation shall comply with the detailing provisions of the International Building Code for new buildings of similar structure, purpose and location.

[BS] 606.2 Repairs to damaged buildings. Repairs to damaged buildings shall comply with this section.

[BS] 606.2.1 Repairs for less than substantial structural damage. For damage less than substantial structural damage, the damaged elements shall be permitted to be restored to their pre-damage condition.

[BS] 606.2.2 Substantial structural damage to vertical elements of the lateral force-resisting system. A building that has sustained substantial structural damage to the vertical elements of its lateral force-resisting system shall be evaluated in accordance with Section 606.2.2.1, and either repaired in accordance with Section 606.2.2.2 or repaired and rehabilitated in accordance with Section 606.2.2.3, depending on the results of the evaluation. *[partial shown]*

[BS] 606.2.2.1 Evaluation. The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the code official. The evaluation shall establish whether the damaged building, if repaired to its pre-damage state, would comply with the provisions of the International Building Code for load combinations that include wind or earthquake effects, except that the seismic forces shall be the reduced International Building Code-level seismic forces.

[BS] 606.2.2.2 Extent of repair for compliant buildings. If the evaluation establishes that the building in its pre-damage condition complies with the provisions of Section 606.2.2.1, then the damaged elements shall be permitted to be restored to their pre-damage condition.

[BS] 606.2.2.3 Extent of repair for noncompliant buildings. If the evaluation does not establish that the building in its pre-damage condition complies with the provisions of Section 606.2.2.1, then the building shall be rehabilitated to comply with the provisions of this section. The wind loads for the repair and rehabilitation shall be those

required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be in accordance with the International Building Code. *[partial shown]*

[BS] 606.2.3.1 Lateral force-resisting elements. Regardless of the level of damage to gravity elements of the lateral force-resisting system, if substantial structural damage to gravity load-carrying components was caused primarily by wind or seismic effects, then the building shall be evaluated in accordance with Section 606.2.2.1 and, if noncompliant, rehabilitated in accordance with Section 606.2.2.3. *[partial shown]*

[BS] 606.2.4 Flood hazard areas. In flood hazard areas, buildings that have sustained substantial damage shall be brought into compliance with Section 1612 of the International Building Code, or Section R322 of the International Residential Code, as applicable.

CHAPTER 7
ALTERATIONS - LEVEL 1

SECTION 701
GENERAL

701.1 Scope. Level 1 alterations as described in Section503 shall comply with the requirements of this chapter. Level 1 alterations to historic buildings shall comply with this chapter, except as modified in Chapter 12.

701.2 Conformance. An existing building or portion thereof shall not be altered such that the building becomes less safe than its existing condition.

> **Exception:** Where the current level of safety or sanitation is proposed to be reduced, the portion altered shall conform to the requirements of the International Building Code.

[BS] 707.3.2 Roof diaphragms resisting wind loads in high-wind regions. Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building located where the ultimate design wind speed, V_{ult}, determined in accordance with Figure 1609.3(1) of the *International Building Code,* is greater than 115 mph (51 m/s) or in a special wind region, as defined in Section 1609 of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *International Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code.*

CHAPTER 8
ALTERATIONS - LEVEL 2

SECTION 801
GENERAL

801.1 Scope. Level 2 alterations as described in Section 504 shall comply with the requirements of this chapter.

> **Exception:** Buildings in which the reconfiguration is exclusively the result of compliance with the accessibility requirements of Section 705.2 shall be permitted to comply with Chapter 7.

801.2 Alteration Level 1 compliance. In addition to the requirements of this chapter, all work shall comply with the requirements of Chapter 7.

801.3 Compliance. All new construction elements, components, systems, and spaces shall comply with the requirements of the International Building Code.

SECTION 807
STRUCTURAL

[BS] 807.1 General. Structural elements and systems within buildings undergoing Level 2 alterations shall comply with this section.

[BS] 807.5 Existing structural elements resisting lateral loads. Except as permitted by Section 807.6, where the alteration increases design lateral loads, or where the alteration results in prohibited structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the wind and seismic provisions of the International Building Code. *[partial shown]*

> **Exception:** Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is not more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with International Building Code Sections 1609 and 1613. *[partial shown]* For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

[BS] 807.6 Voluntary lateral force-resisting system alterations. Alterations of existing structural elements and additions of new structural elements that are initiated for the purpose of increasing the lateral force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces conforming to the International Building Code, provided that an engineering analysis is submitted to show that:

1. The capacity of existing structural elements required to resist forces is not reduced;

2. The lateral loading to existing structural elements is not increased either beyond its capacity or more than 10 percent;

3. New structural elements are detailed and connected to the existing structural elements as required by the International Building Code;

4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the International Building Code; and

5. A dangerous condition as defined in this code is not created. Voluntary alterations to lateral force-resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.

CHAPTER 9
ALTERATIONS – LEVEL 3

SECTION 901
GENERAL

901.1 Scope. Level 3 alterations as described in Section 505 shall comply with the requirements of this chapter.

901.2 Compliance. In addition to the provisions of this chapter, work shall comply with all of the requirements of Chapters 7 and 8. The requirements of Sections 803, 804 and 805 shall apply within all work areas whether or not they include exits and corridors shared by more than one tenant and regardless of the occupant load. *[partial shown]*

SECTION 907
STRUCTURAL

[BS] 907.1 General. Where buildings are undergoing Level 3 alterations including structural alterations, the provisions of this section shall apply.

[BS] 907.2 New structural elements. New structural elements shall comply with Section 807.2.

[BS] 907.4 Existing structural elements resisting lateral loads. All existing elements of the lateral force-resisting system shall comply with this section. *[partial shown]*

[BS] 907.4.2 Substantial structural alteration. Where more than 30 percent of the total floor and roof areas of the building or structure have been or are proposed to be involved in structural alteration within a 5-year period, the evaluation and analysis shall demonstrate that the lateral load-resisting system of the altered building or structure complies with the International Building Code for wind loading and with reduced International Building Code-level seismic forces in accordance with Section 301.1.4.2. The areas to be counted toward the 30 percent shall be those areas tributary to the vertical load-carrying components, such as joists, beams, columns, walls, and other

structural components that have been or will be removed, added or altered, as well as areas such as mezzanines, penthouses, roof structures and in-filled courts and shafts.

[BS] 907.4.4 Limited structural alteration. Where the work does not involve a substantial structural alteration and the building is not assigned to Seismic Design Category F, the existing elements of the lateral load-resisting system shall comply with Section 807.5.

CHAPTER 10
CHANGE OF OCCUPANCY

SECTION 1007
STRUCTURAL

[BS] 1007.2 Snow and wind loads. Buildings and structures subject to a change of occupancy where such change in the nature of occupancy results in higher wind or snow risk categories based on Table 1604.5 of the International Building Code shall be analyzed and shall comply with the applicable wind or snow load provisions of the International Building Code.

Exception: Where the new occupancy with a higher risk category is less than or equal to 10 percent of the total building floor area. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.

CHAPTER 11
ADDITIONS

SECTION 1103
STRUCTURAL

[BS] 1103.1 Compliance with the International Building Code. Additions to existing buildings or structures are new construction and shall comply with the International Building Code.

[BS] 1103.3 Lateral force-resisting system. The lateral force-resisting system of existing buildings to which additions are made shall comply with Sections 1103.3.1, 1103.3.2 and 1103.3.3.

Exceptions:

1. Buildings of Group R occupancy with no more than five dwelling or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods of the International Building Code or the provisions of the International Residential Code.

2. Any existing lateral load-carrying structural element whose demand-capacity ratio with the addition considered is not more than 10 percent greater than its demand-capacity ratio with the addition ignored shall be permitted to remain unaltered. For purposes of this exception, comparisons of demand-capacity ratios and

calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction. *[partial shown]*

[BS] 1103.3.1 Vertical addition. Any element of the lateral force-resisting system of an existing building subjected to an increase in vertical or lateral loads from the vertical addition shall comply with the International Building Code wind provisions and the International Building Code-level seismic forces specified in Section 301.1.4.1 of this code.

[BS] 1103.3.2 Horizontal addition. Where horizontal additions are structurally connected to an existing structure, all lateral force-resisting elements of the existing structure affected by such addition shall comply with the International Building Code wind provisions and the IBC-level seismic forces specified in Section 301.1.4.1 of this code.

[BS] 1103.3.3 Voluntary addition of structural elements to improve the lateral force-resisting system. Voluntary addition of structural elements to improve the lateral force-resisting system of an existing building shall comply with Section 807.6.

CHAPTER 13
RELOCATED OR MOVED BUILDINGS

SECTION 1302
REQUIREMENTS

[BS] 1302.3 Wind loads. Buildings shall comply with International Building Code or International Residential Code wind provisions as applicable.

Exceptions:

1. Detached one- and two-family dwellings and Group U occupancies where wind loads at the new location are not higher than those at the previous location.
2. Structural elements whose stress is not increased by more than 10 percent.

APPENDIX C:
GUIDELINES FOR THE WIND RETROFIT OF EXISTING BUILDINGS

CHAPTER C1
GABLE END RETROFIT FOR HIGH-WIND AREAS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C101
GENERAL

[BS] C101.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase its resistance to out-of-plane wind loads. It is

intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances. *[partial shown]*

CHAPTER C2
ROOF DECK FASTENING FOR HIGH-WIND AREAS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C201
GENERAL

[BS] C201.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase its resistance to wind loads. It is intended for voluntary use where the ultimate design wind speed, V_{ult}, determined in accordance with Figure 1609.3(1) of the International Building Code exceeds 130 mph (58 m/s) and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

[BS] C201.2 Eligible conditions. The provisions of this chapter are applicable only to buildings that meet the following eligibility requirements:

1. Buildings assigned to Risk Category I or II in accordance with International Building Code Table 1604.5; or
2. Buildings within the scope of the International Residential Code.

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