



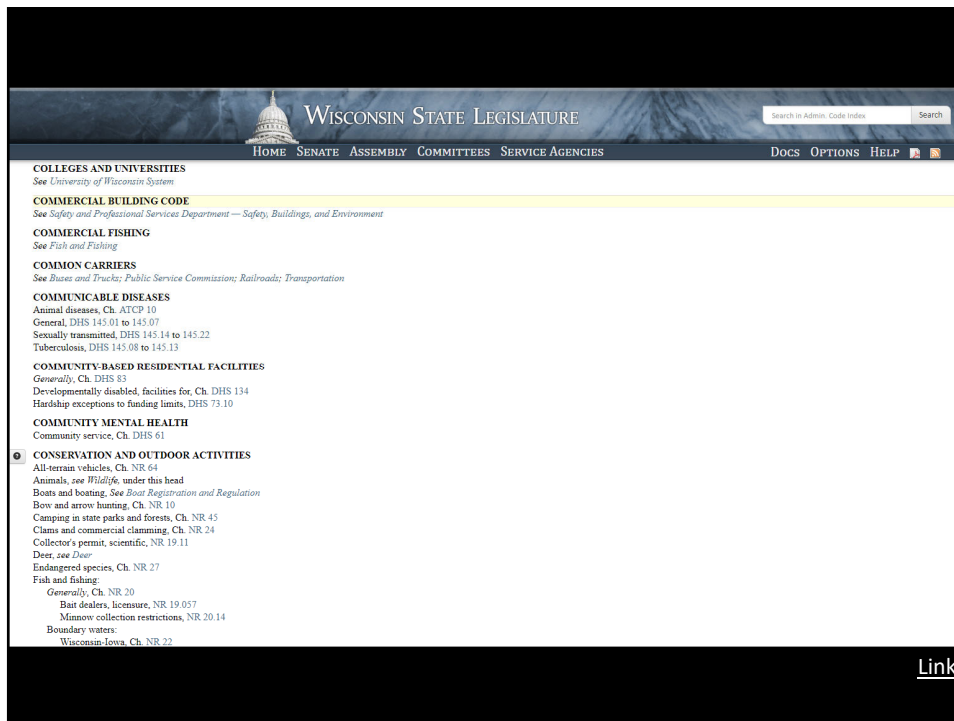
Membership Meeting – Nov. 2018
November 7, 2018
Milwaukee, Wisconsin

Wisconsin Roofing Contractors Association

Wisconsin Commercial Building Code Update

presented by

Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association (NRCA)



WISCONSIN STATE LEGISLATURE

HOME SENATE ASSEMBLY COMMITTEES SERVICE AGENCIES

COLLEGES AND UNIVERSITIES
See University of Wisconsin System

COMMERCIAL BUILDING CODE
See Safety and Professional Services Department – Safety, Buildings, and Environment

COMMERCIAL FISHING
See Fish and Fishing

COMMON CARRIERS
See Buses and Traces; Public Service Commission; Railroads; Transportation

COMMUNICABLE DISEASES
Animal diseases, Ch. ATCP 10
General, DHS 145.01 to 145.07
Sexually transmitted, DHS 145.14 to 145.22
Tuberculosis, DHS 145.08 to 145.13

COMMUNITY-BASED RESIDENTIAL FACILITIES
Generally, Ch. DHS 83
Developmentally disabled, facilities for, Ch. DHS 134
Hardship exceptions to funding limits, DHS 73.10

COMMUNITY MENTAL HEALTH
Community service, Ch. DHS 61

CONSERVATION AND OUTDOOR ACTIVITIES
All-terrain vehicles, Ch. NR 64
Animals, *see Wildlife*, under this head
Boats and boating, *See Boat Registration and Regulation*
Bow and arrow hunting, Ch. NR 10
Camping in state parks and forests, Ch. NR 45
Clams and commercial clamming, Ch. NR 24
Collector's permit, scientific, NR 19.11
Deer, *see Deer*
Endangered species, Ch. NR 27
Fish and fishing:
Generally, Ch. NR 20
Bait dealers, licensure, NR 19.057
Mammow collection restrictions, NR 20.14
Boundary waters:
Wisconsin-Iowa, Ch. NR 22

[Link](#)

The screenshot shows the Wisconsin State Legislature website. At the top, there is a search bar and navigation links for HOME, SENATE, ASSEMBLY, COMMITTEES, SERVICE AGENCIES, DOCS, OPTIONS, and HELP. A breadcrumb trail indicates the current location: Menu > Administrative Rules Related > Administrative Code > Department of Safety and Professional Services (SPS) > Chs. SPS 301- ; Safety, Buildings, and Environment > Chs. SPS 361-366; Commercial Building Code. A list of chapters is provided, including Chapter SPS 361 (Administration And Enforcement), Chapter SPS 362 (Buildings And Structures), Chapter SPS 363 (Energy Conservation), Chapter SPS 364 (Heating, Ventilating And Air Conditioning), Chapter SPS 365 (Fuel Gas Appliances), Chapter SPS 366 (Existing Buildings), and Chapter SPS 366 Appendix. A highlighted section titled "SPS 361.05 Adoption of the International Codes." contains five numbered items (1) through (5) detailing the adoption of the 2015 International Building Code, International Energy Conservation Code, International Mechanical Code, International Fuel Gas Code, and International Existing Building Code. A "Link" button is located at the bottom right of this section.

The document is titled "Wisconsin modifications to IBC 2015" in a large, bold, black font. Below the title, there are four numbered items (1) through (4) detailing specific modifications to the International Building Code (IBC) 2015. Each item includes a reference to the IBC section and a description of the modification. Item 1 refers to Secondary Roof drainage (IBC section 1503.4), Item 2 to Roof covering classification (IBC Table 1505.1), Item 3 to Roof covering materials (IBC section 1506.3), and Item 4 to Roof slope (IBC section 1507.12.1, 1507.13.1, 1507.14.1, and 1507.15.1). Each item also includes a "History" section with references to Wisconsin Statutes and Register entries.

Wisconsin modifications to IECC 2015

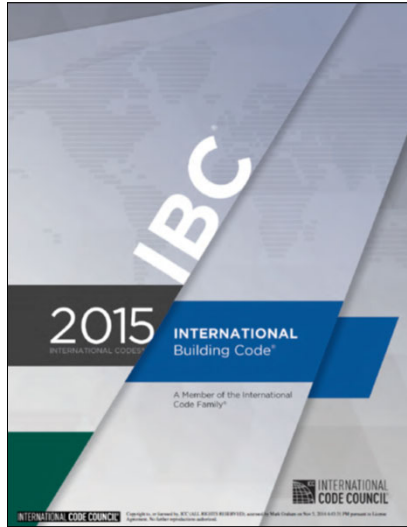
SPS 363.0402 Building envelope requirements.

- (1) OPAQUE ASSEMBLIES. Substitute 2009 IECC Table 502.2 (1) for 2015 IECC Table C402.1.3 and renumber Table C402.1.3.
- (2) OPAQUE ELEMENT MAXIMUM U-FACTORS. Substitute 2009 IECC Table 502.1.2 for 2015 IECC Table C402.1.4 and renumber Table C402.1.4.

History: CR 16-094; cr., Register April 2018 No. 748 eff. 5-1-18.



International Building Code, 2015 Edition



- Applicable to all buildings and structures, excepts those applicable to IRC (i.e., UDC).
- Roofing-related requirements:
 - Ch. 10-Means of egress
 - Ch. 12-Interior environment
 - Ch. 13-Energy efficiency
 - Ch. 15-Roof assemblies and rooftop structures
 - Ch. 16-Structural design
 - Ch. 20-Aluminum
 - Ch. 22-Steel
 - Ch. 24-Glass and glazing
 - Ch. 26-Plastic

IBC 2015 reroofing

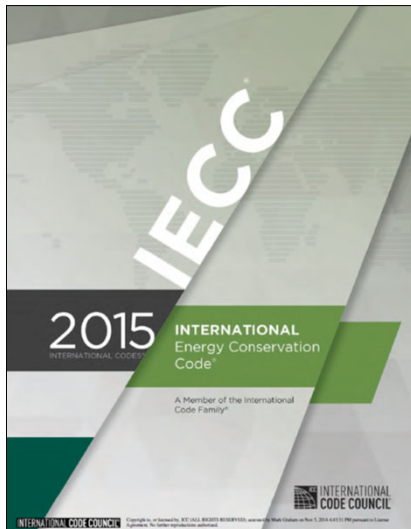
- Provisions of Ch. 15 apply
- Exceptions:
 - Positive drainage
 - Secondary drainage (when there is positive drainage)

It is unclear whether IBC Chapter 15 or IEBC Chapter 7 is intended to apply to reroofing

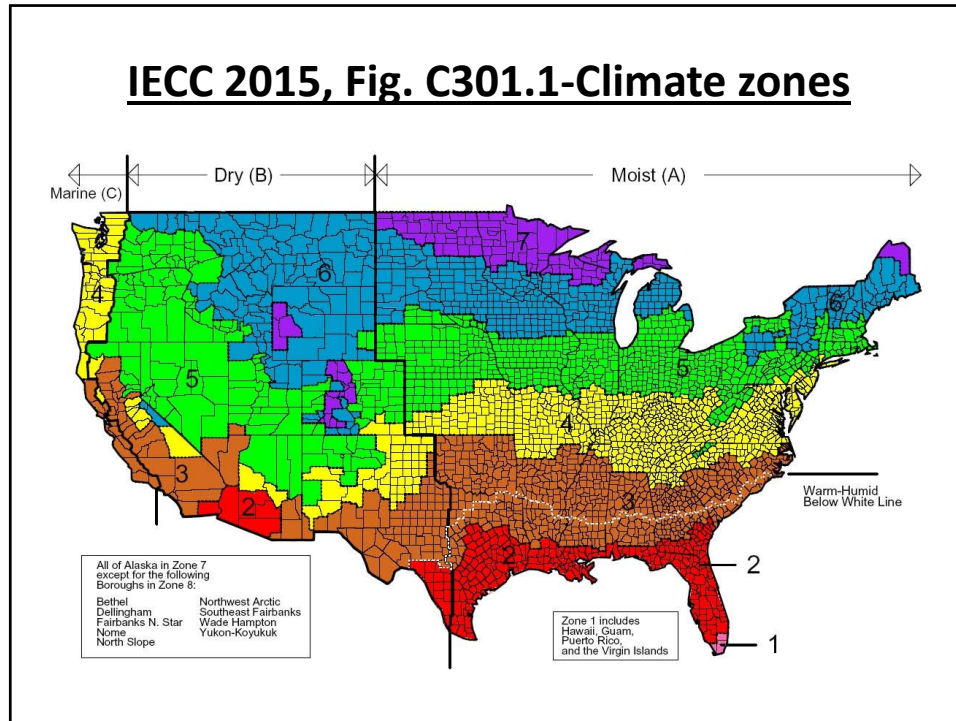
IBC 2015 roofing-related requirements

- Fire resistance (external fire)
 - Class A, B or C
- Wind resistance (ASCE 7-10)
 - Membrane roof systems: FM 1-60, etc.
 - Asphalt shingles: Class G or H
- Material requirements:
 - Applicable product standards (e.g., ASTM)
- Installation requirements:
 - Manufacturer’s installation instructions
 - Prescriptive requirements

International Energy Conservation Code, 2015 Edition



- Applicable to all buildings, including existing buildings (reroofing)
- Format:
 - Commercial provisions (C) vs. Residential provisions (R)
 - Ch. 1-Scope and Admin.
 - Ch. 2-Definitions
 - Ch. 3-General requirements
 - Ch. 4-Energy efficiency
 - Ch. 5-Existing buildings
 - Ch. 6-Reference standards



IECC 2015 roofing-related requirements

- Applies to new construction and roof replacement
- R-value
- Roof reflectivity (Climate Zones 1-3 only)
- Air barriers (All Climate Zones except 2B)

Comparison of IECC's various editions

Commercial Buildings (Insulation component R-value-based method)

Climate Zone	IECC 2003	IECC 2006	IECC 2009	IECC 2012*	IECC 2015*	IECC 2018*	
1	R-12 ci	R-15 ci	R-15 ci	R-20 ci	R-20 ci	R-20 ci	
2	R-14 ci		R-20 ci		R-25 ci	R-25 ci	R-25 ci
3	R-10 ci						
4	R-12 ci	R-20 ci	R-20 ci	R-25 ci	R-30 ci	R-30 ci	
5	R-15 ci						
6	R-11 ci	R-25 ci	R-25 ci	R-30 ci	R-35 ci	R-35 ci	
7	R-15 ci						
8	R-15 ci	R-25 ci	R-25 ci	R-30 ci	R-35 ci	R-35 ci	

* Applies to roof replacement projects
ci = continuous insulation

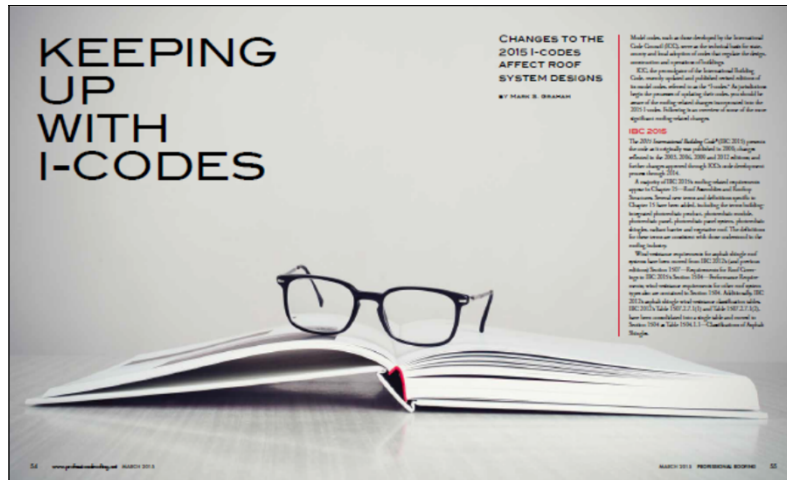
Guidelines for Air Retarders in Roof Assemblies

- Ch. 1: IECC and ASHRAE
- Ch. 2: Industry research
- Ch. 3: Recommendations

[Link](#)

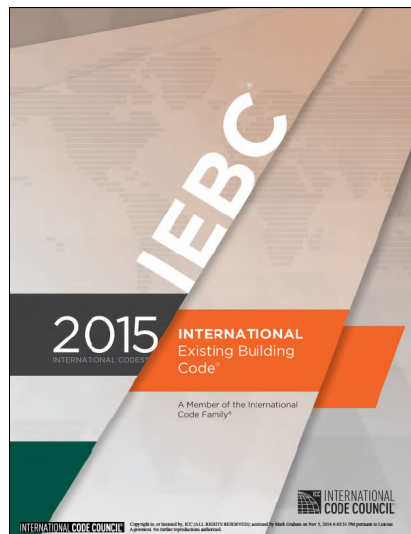
Professional Roofing, March 2015

Pages 54-60



[Link](#)

Int'l. Existing Building Code, 2015 Edition



- Applicable to existing buildings (e.g., reroofing)
- Format:
 - Ch. 1: Scope
 - Ch. 2: Definitions
 - Ch. 3: All methods
 - Ch. 4: Prescriptive method
 - Ch. 5: Classification of work
 - Ch. 6: Repairs
 - Ch. 7: Level 1 (Reroofing)
 - Ch. 8: Level 2
 - Ch. 9: Level 3
 - Etc.

International Existing Building Code, 2015 Edition

Chapter 7-Alterations-Level I

SECTION 706 REROOFING

[BS] 706.1 **General.** Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15 of the *International Building Code*.

Exception: Reroofing shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 of the *International Building Code* for roofs that provide positive roof drainage.

[BS] 706.2 **Structural and construction loads.** Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.

[Continued...]

*IEBC 2015 Sec. 706-Reroofing is similar to
IBC 2012, Section 1510-Reroofing*

International Existing Building Code, 2015 Edition

Chapter 7-Alterations-Level I

SECTION 707 STRUCTURAL

[BS] 707.1 **General.** Where *alteration* work includes replacement of equipment that is supported by the building or where a reroofing permit is required, the provisions of this section shall apply.

[BS] 707.2 **Addition or replacement of roofing or replacement of equipment.** Where addition or replacement of roofing or replacement of equipment results in additional dead loads, structural components supporting such reroofing or equipment shall comply with the gravity load requirements of the *International Building Code*.

Exceptions:

1. Structural elements where the additional dead load from the roofing or equipment does not increase the force in the element by more than 5 percent.
2. Buildings constructed in accordance with the *International Residential Code* or the conventional light-frame construction methods of the *International Building Code* and where the dead load from the roofing or equipment is not increased by more than 5 percent.
3. Addition of a second layer of roof covering weighing 3 pounds per square foot (0.1437 kN/m²) or less over an existing, single layer of roof covering.

International Existing Building Code, 2015 Edition

Chapter 7-Alterations-Level I


[BS] 707.3 Additional requirements for reroof permits.
The requirements of this section shall apply to *alteration* work requiring reroof permits.

[BS] 707.3.1 Bracing for unreinforced masonry bearing wall parapets. Where a permit is issued for reroofing for more than 25 percent of the roof area of a building assigned to Seismic Design Category D, E or F that has parapets constructed of unreinforced masonry, the work shall include installation of parapet bracing to resist the reduced *International Building Code* level seismic forces as specified in Section 301.1.4.2 of this code, unless an evaluation demonstrates compliance of such items.

International Existing Building Code, 2015 Edition

Chapter 7-Alterations-Level I

[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*.



New roofing rules

IEBC 2015 presents challenges when reroofing

by Mark S. Graham

Where adopted: IEBC 2015's structural reroofing requirements may be more stringent

Additional requirements: IEBC 2015's scope indicates a "... shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings..."

For the first time, the International Existing Building Code, 2015 Edition (IEBC 2015) includes specific code requirements applicable to reroofing. IEBC 2015 also provides additional and sometimes more complex code requirements than those contained in the International Building Code (IBC) and International Residential Code (IRC).

Reroofing requirements: IEBC and IRC were developed and are maintained with the primary intent of applying to new construction. Our exception in both codes also address reroofing—re-covering and replacing existing roof coverings on existing buildings.

For example, in IEBC 2015, reroofing is addressed in Chapter 15—Roof Assemblies and Roofing Systems, Section 1511—Reroofing. Similar requirements are included in IEBC's Chapter 9—Roof Assemblies where Section 909B—Reroofing specifically addresses re-covering and replacing existing roof coverings.

IEBC 2015's scope indicates a "... shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings..."

New definitions have been added in IEBC 2015 for reroofing, roof re-cover, roof repair and roof replacement. The terms and their definitions are the same as those in IEBC.

IEBC 2015 classified work on existing buildings into three categories: Level 1, Level 2 and Level 3.

Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment or fixtures using new materials, elements, equipment or fixtures that serve the same purpose. Reroofing projects are considered Level 1 alterations.

Level 2 and Level 3 alterations are larger in scope. For example, Level 3 alterations apply when the work area exceeds 50 percent of the building floor area.

IEBC 2015's Chapter 7—Alterations—Level 1 includes a new section, Section 706—Reroofing, that was not included in IEBC's previous edition. This section's requirements are identical to those of IEBC 2012's Section 1510—Reroofing.

IEBC 2015's Section 707—Structural includes some additional requirements applicable to reroofing.

Section 707.2—Addition or Replacement of Roofing or Replacement of Equipment indicates when roof system replacement results in additional dead load, structural components supporting the new roofing materials need to comply with IEBC. Exceptions to this requirement include when the dead load does not increase due to forces by more than 5 percent; buildings designed in accordance with IEBC's conventional light-frame construction methods in IEBC; or when the new second layer weighs less than 3 pounds per square foot.

Section 707.3—Additional Requirements for Reroof Permits provides additional structural requirements for projects where the authority having jurisdiction (AHJ) requires reroofing permits.

Section 707.3.1 requires unannounced

manory purposes for buildings where more than 25 percent of the roof area is being reroofed in Seismic Design Category D, E or F to have new proper bracing installed to meet IEBC's seismic forces.

Section 707.3.2 requires buildings located in high-wind regions (V_w greater than 115 mph or in special wind regions) that are designed with roof diaphragms (roof decks) to be evaluated for structural adequacy. This requirement applies when more than 50 percent of the diaphragm is replaced during roof system replacement. The roof diaphragms, connections of the roof diaphragms to roof framing members and roof-to-wall connections are required to be evaluated using the current code's wind loads. If the diaphragms and connections are not capable of resisting 75 percent of the current code's wind loads, they must be strengthened or replaced according to IEBC's requirements.

Being knowledgeable: When adopted, IEBC 2015's structural reroofing requirements may be more stringent than IEBC's and IEBC's reroofing provisions. Designers should determine whether IEBC 2015 is applicable and clearly indicate any additional work that is required for compliance in the construction documents.

IEBC 2015 is applicable and clearly indicates any additional work that is required for compliance in the construction documents.

The International Code Council, publisher of IEBC 2015, indicates the code currently applies in California and Colorado and in specific jurisdictions in Massachusetts, Minnesota, Oklahoma, Washington, West Virginia and Wyoming. Local AHJ's can verify whether IEBC 2015 applies. ■■■

MARK S. GRAHAM is IEBC's vice president of technical services.

Professional Roofing,

September 2016

[Link](#)

Consider joining ICC



People Helping People Build a Safer World™

Membership categories:

- Corporate member: \$450 (complete collection)
- Building safety professional member: \$170 (1 code)

<http://www.iccsafe.org/Membership/Pages/join.aspx>



April 3-4, 2019
Hyatt Regency Washington on Capitol Hill
Washington, DC



Recognition of expertise level of field workers

Launch in December 2018

www.nrca.net/NRCA-ProCertification



Mark S. Graham

Vice President, Technical Services
National Roofing Contractors Association
10255 West Higgins Road, 600
Rosemont, Illinois 60018-5607

(847) 299-9070
mgraham@nrca.net
www.nrca.net

Twitter: @MarkGrahamNRCA
Personal website: www.MarkGrahamNRCA.com