Roofing and Reroofing Requirements in the 2018 I-Codes

ANTITRUST POLICY STATEMENT FOR SPRAY POLYURETHANE FOAM ALLIANCE MEETINGS

- It is and shall remain the policy of the Spray Polyurethane Foam Alliance ("SPFA"), and it is the continuing responsibility of every SPFA member company, SPFA meeting or event participant, as well as SPFA staff and leadership to comply in all respects with federal and state antitrust laws. No activity or discussion at any SPFA meeting or other function may be engaged in for the purpose of bringing about any understanding or agreement among members to (1) raise, lower or stabilize prices; (2) regulate production; (3) allocate markets; (4) encourage boycotts; (5) foster unfair or deceptive trade practices; (6) assist in monopolization; or (7) in any way violate or give the appearance of violating federal or state antitrust laws.
- Any concerns or questions regarding the meaning or applicability of this policy, as well as any concerns regarding activities or discussions at SPFA meetings should be promptly brought to the attention of SPFA's Executive Director and/or its legal counsel.

Michael Fischer, Kellen

Code Consultant to the

Center for the Polyurethanes Industry

If You Can Build It…

The ICC Will Write A Code For It… AND…

Guess Who Gets To Deal With It…?

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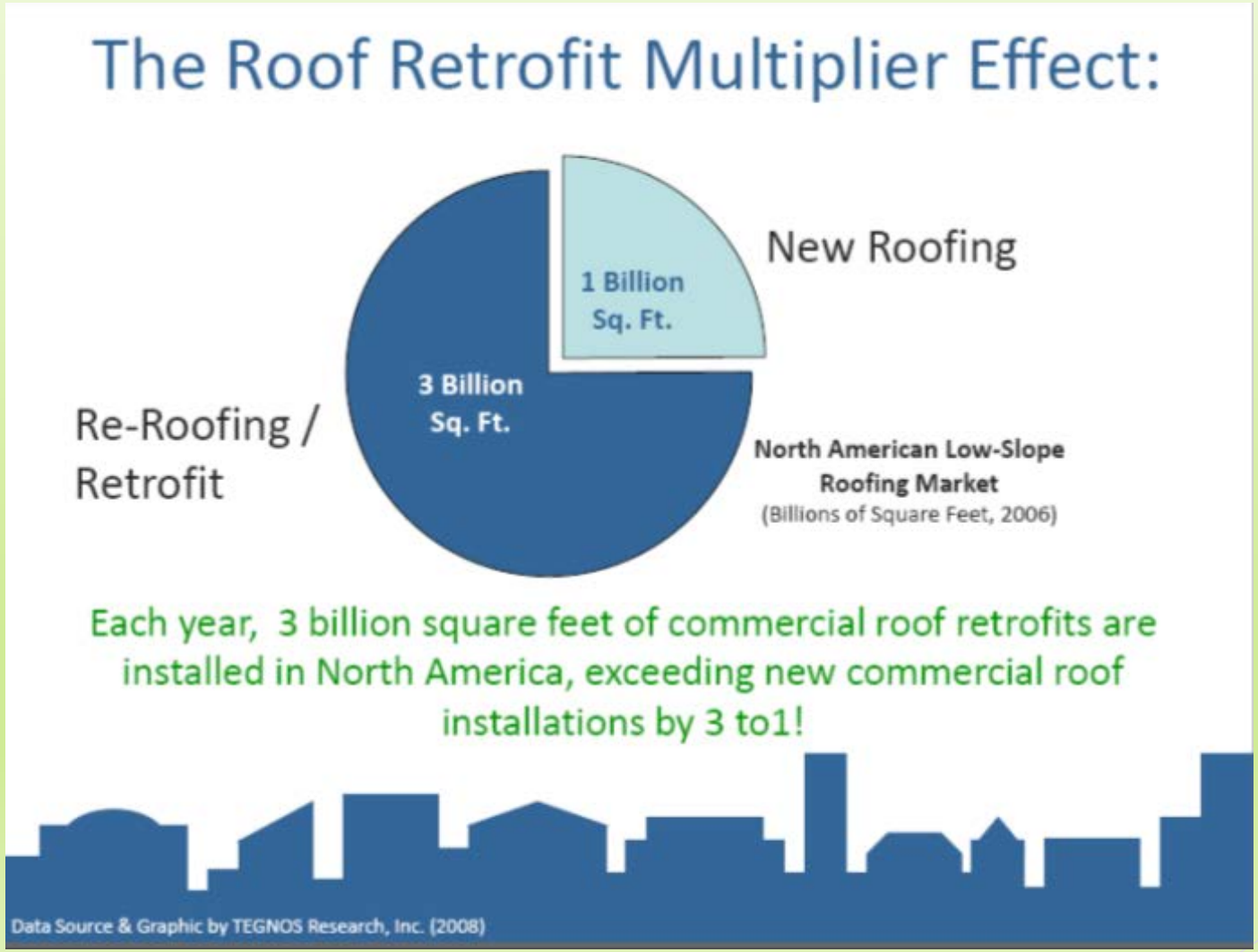
Reroofing is Important!

- Roofing is One of the Most Common Renovation Projects.
- Most New Roofs are on EXISTING Buildings.
- Bringing Roof Assemblies up to Today's Code Standards- whether for Structural Performance, Energy Efficiency, or Fire Testing- is an Opportunity That is Found Once in Several Decades.

CEIR Retrofit Study



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Scope: Roofing

- Definitions
  - Let's Start at the Very Beginning!
- IBC Chapter 15
- IEBC Chapters 6 & 7
- IECC CE Requirements

Definitions

ROOF REPAIR. Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

REROOFING. The process of recovering or replacing an existing *roof covering*. See “Roof recover” and “Roof replacement.”

ROOF RECOVER. The process of installing an additional *roof covering* over a prepared existing *roof covering* without removing the existing *roof covering*.

ROOF REPLACEMENT. The process of removing the existing *roof covering*, repairing any damaged substrate and installing a new *roof covering*.

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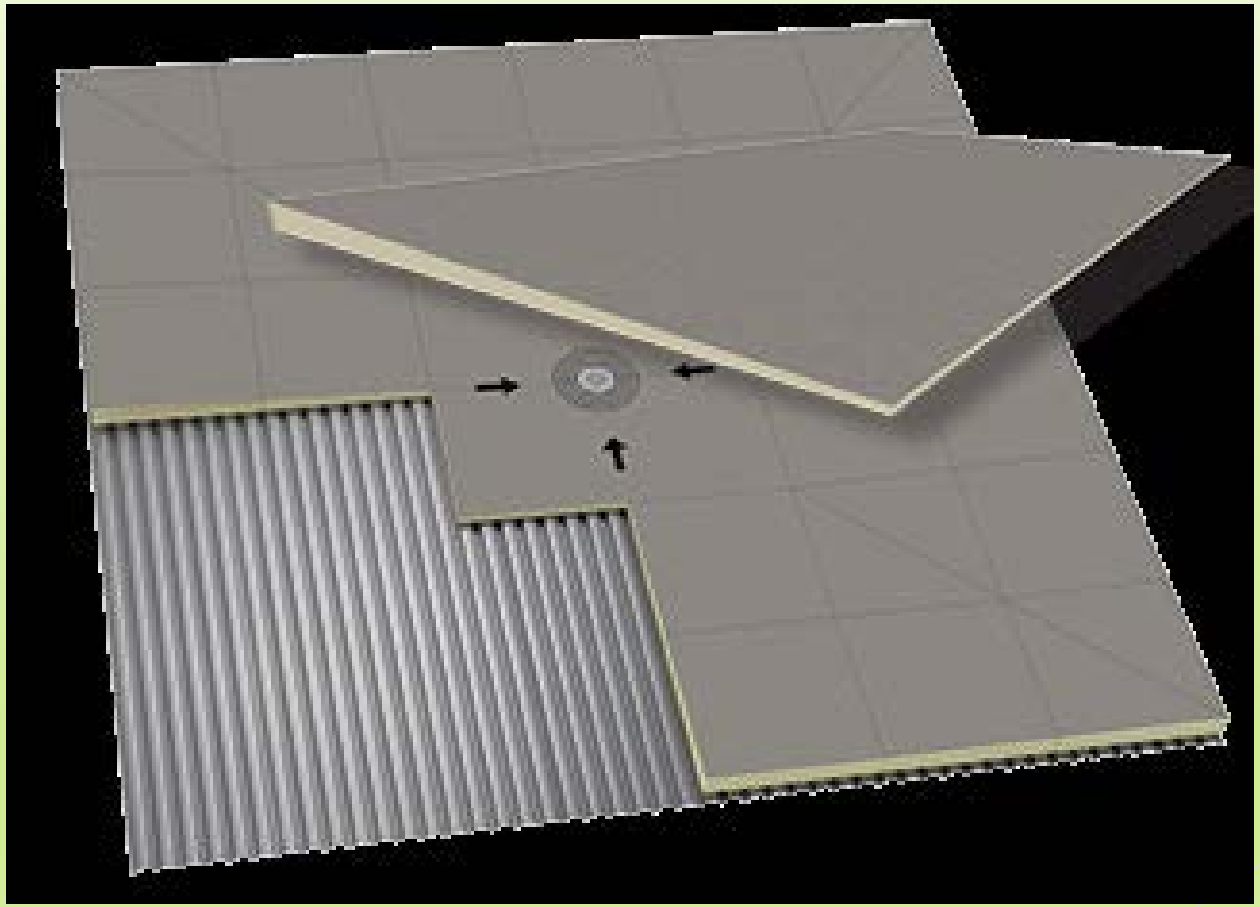
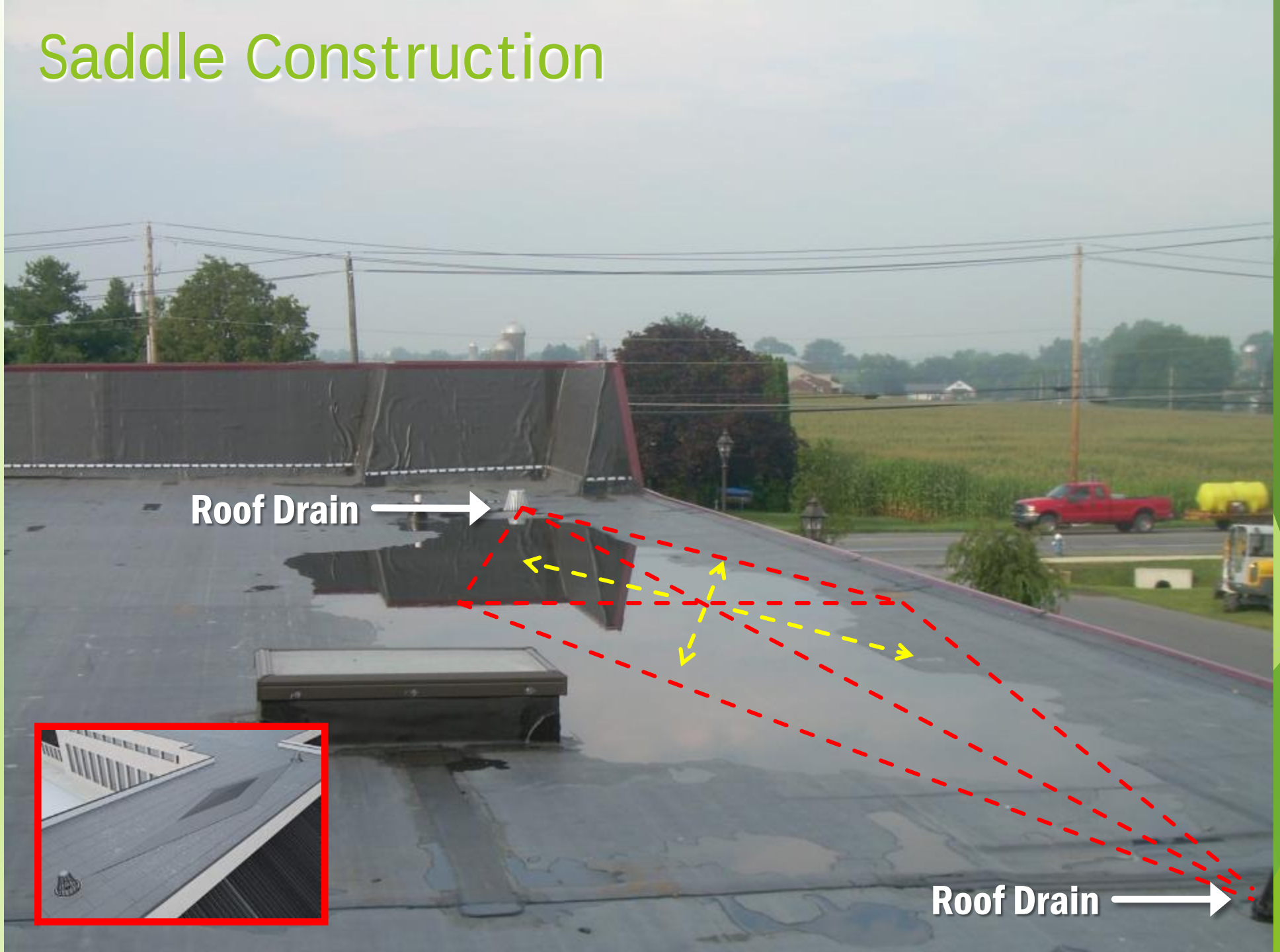
Insulation Types

- Spray Polyurethane Foam
- Rigid Boards:
  - Polyisocyanurate
  - Expanded Polystyrene
  - Extruded Polystyrene
- Semi-Rigid:
  - Mineral Fiber



Saddle Construction



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What is this & what caused it to happen?

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IBC 1511: Reroofing

1511.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.

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 for roofs that provide positive roof drainage.

1511.2 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.

Roof Replacement

1511.3 Roof Replacement. *Roof replacement* shall include the removal of all existing layers of roof coverings down to the roof deck.

> **Exception:** Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.

Roof Recovering

- NOTE: New Language in 2015 IBC Clarifies that Roof Recover In Accordance With Approved Manufacturers Instructions Shall Be Permitted. This Provision Applies Only to IBC Chapter 15 Requirements.
- This is Important: Listings for Wind and Fire Performance of Roof Coverings are Based on Assembly Tests that Include Insulation, Decks, Cover Boards etc.

Roof Recover

1511.3.1 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.
2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.

Roof Recover

1511.3.1 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

3. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1511.4.

4. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear off of existing roof coverings.

2015 IEBC

The 2015 IEBC Includes Specific Detailed Reroofing Provisions; but also Does Cover Repairs to Existing Roofs in Chapter 6:

601.2 Conformance. The work shall not make the building less conforming than it was before the *repair* was undertaken.

602.1 Existing building 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 *code official* to render the building or structure unsafe or *dangerous* as defined in Chapter 2.

2018 IEBC

- 706 REROOFING
- Limits Recovering to TWO Layers
- Roof Replacement Requires Removal of Existing Roofing Materials to the Roof Deck

IEBC Reroofing Provisions

- Reference to IBC Chapter 15
  - Includes Section 1511
  - Redundant Reroofing Requirements
- Additional Seismic Provisions
  - Parapet Bracing
- High-Wind Retrofit Requirements
  - Hurricane-Prone Regions
- Energy Efficiency Scoping

IEBC Reroofing Provisions

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*.

IEBC Reroofing Provisions

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.

IEBC Reroofing Provisions

[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*.

IEBC Reroofing Provisions

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.

IEBC Reroofing Provisions

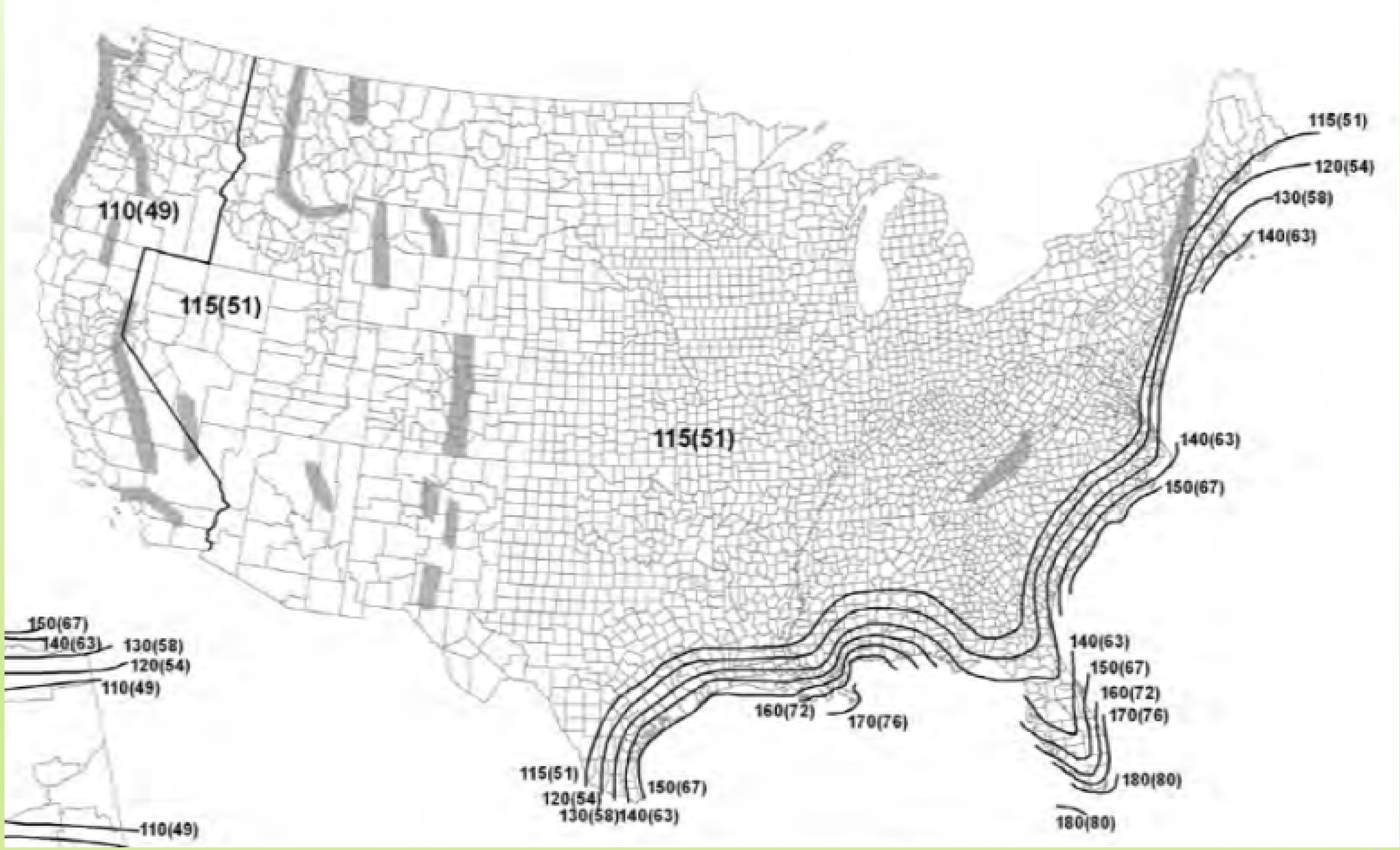
[BS] 707.3 Additional requirements for reroof permits. The requirements of this section shall apply to *alteration* work requiring reroof permits.

[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.

IEBC Reroofing Provisions

[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.*

IEBC Reroofing Provisions



IEBC SECTION 908
ENERGY CONSERVATION

908.1 Minimum requirements. Level 3 *alterations* to *existing buildings* or structures are permitted without requiring the entire building or structure to comply with the energy requirements of the *International Energy Conservation Code* or *International Residential Code*. The *alterations* shall conform to the energy requirements of the *International Energy Conservation Code* or *International Residential Code* as they relate to new construction only.

2012 IECC

C101.4.3 Additions, alterations, renovations or repairs.

Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

2012 IECC

The 2012 IECC States the following is exempt from the energy code provisions (Exceptions to C101.4.3):

5. Reroofing for roofs where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

Caveat:

PROVIDED the Energy Use of the Building is Not Increased

IECC 2015-2018: Clarifications

- Reroofing
  - Definitions from building codes carried over to the IECC as a basis for *Roof Replacement* clarifications on insulation requirements.
  - *Roof Repair* and *Roof Recover* are exempt from the envelope requirements- provided the modification does not increase the energy use of the building.
  - *Roof Recover* and *Roof Replacement* are exempt from air barrier requirements.

2015-2018 IECC Clarification

C503.3.1 Roof replacement.

Roof replacements shall comply with Table C402.1.3 or C402.1.4 where the existing roof assembly is part of the *building thermal envelope* and contains insulation entirely above the roof deck.

Envelope Requirements

ASHRAE 90.1-2013 & 2015 IECC

OPAQUE THERMAL ENVELOPE ASSEMBLY REQUIREMENTS FOR ROOFING SYSTEMS

Climate Zone	1		2		3		4		5		6		7		8	
Occupancy	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R
Roofs: Insulation Entirely Above Deck																
R-Value	R-20ci	R-25ci	R-25ci	R-25ci	R-25ci	R-25ci	R-30ci	R-30ci	R-30ci	R-30ci	R-30ci	R-30ci	R-35ci	R-35ci	R-35ci	R-35ci
U-Factor	U- .048	U- .039	U- .039	U- .039	U- .039	U- .039	U- .032	U- .032	U- .032	U- .032	U- .032	U- .032	U- .028	U- .028	U- .028	U- .028

What About ASHRAE?

- Three Compliance Options Under the IECC Commercial Provisions:
  - ASHRAE 90.1
  - IECC Prescriptive Path
  - IECC Performance Path

IECC Scope

C401.1 Scope. The provisions in this chapter are applicable to commercial *buildings* and their *building sites*.

C401.2 Application. Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1.

2. The requirements of Sections C402 through C405. In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1.

3. The requirements of Sections C402.5, C403.2, C404, C405.2, C405.3, C405.4, C405.6 and C407. The building energy cost shall be equal to or less than 85 percent of the standard reference design building.

ASHRAE 90.1

- ASHRAE 90.1 Also Contains Definitions and Provisions For Reroofing
- ASHRAE 90.1 Requires Insulation Compliance For Roof Replacement Projects With Above-Deck Insulation
- ASHRAE 90.1 Is Not Directly Correlated to the IBC or IEBC

Reroofing Summary

- Repairs Are Exempt From Most New Building Provisions Provided the Repair Does Not Diminish Life Safety
- Roof Replacements Where Insulation is Beneath The Roof Deck or in the Attic Cavity are Not Required to Meet New Insulation Requirements IF the Cavity is Not Exposed During the Project

Reroofing Summary

- New Roof Coverings Must Meet Code Requirements for Structural (Wind), Fire, and Weather Protection
- New Roof Coverings Must Not Increase the Energy Use of the Building
- Roof Replacements Where the Insulation and/or Roof Deck are Exposed Shall Meet Insulation Requirements

Reroofing is Important!

- Roofing is One of the Most Common Renovation Projects.
- Most New Roofs (Around 75%) Are on EXISTING Buildings.
- Bringing Roof Assemblies up to Today's Code Standards- whether for Structural Performance, Energy Efficiency, or Fire Testing- is an Opportunity That is Found Once in Several Decades.

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Q&A

Thanks For Your Attention!

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