

ARMA Spring Committees

Steep-Slope Committee March 25, 2009

Codes Steering Group Report

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Today's Discussion

Responsible Issue-Based Advocacy

- Code Development
 - ICC Model Code Procedures
 - Standards Development
 - ICC ES
 - ASCE
 - ASTM
 - ARMA Code and Regulatory Issues
 - Special Inspections in High Wind Regions
 - Impact Resistance and Recovering
 - Roof Attic Assembly Ventilation
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ICC Code Development

- ❑ Three-Year Code Cycle
- ❑ Supplemental Cycle Eliminated
- ❑ Procedural Changes
- ❑ ARMA Issues



Standards Development

- ICC ES
 - AC 10
 - ASCE 7
 - Loads on Structures: Wind Load
 - Recurrence and Building Importance Factors
 - Windborne Debris Regions
 - ASTM
 - Roof-mounted Photovoltaic Assemblies
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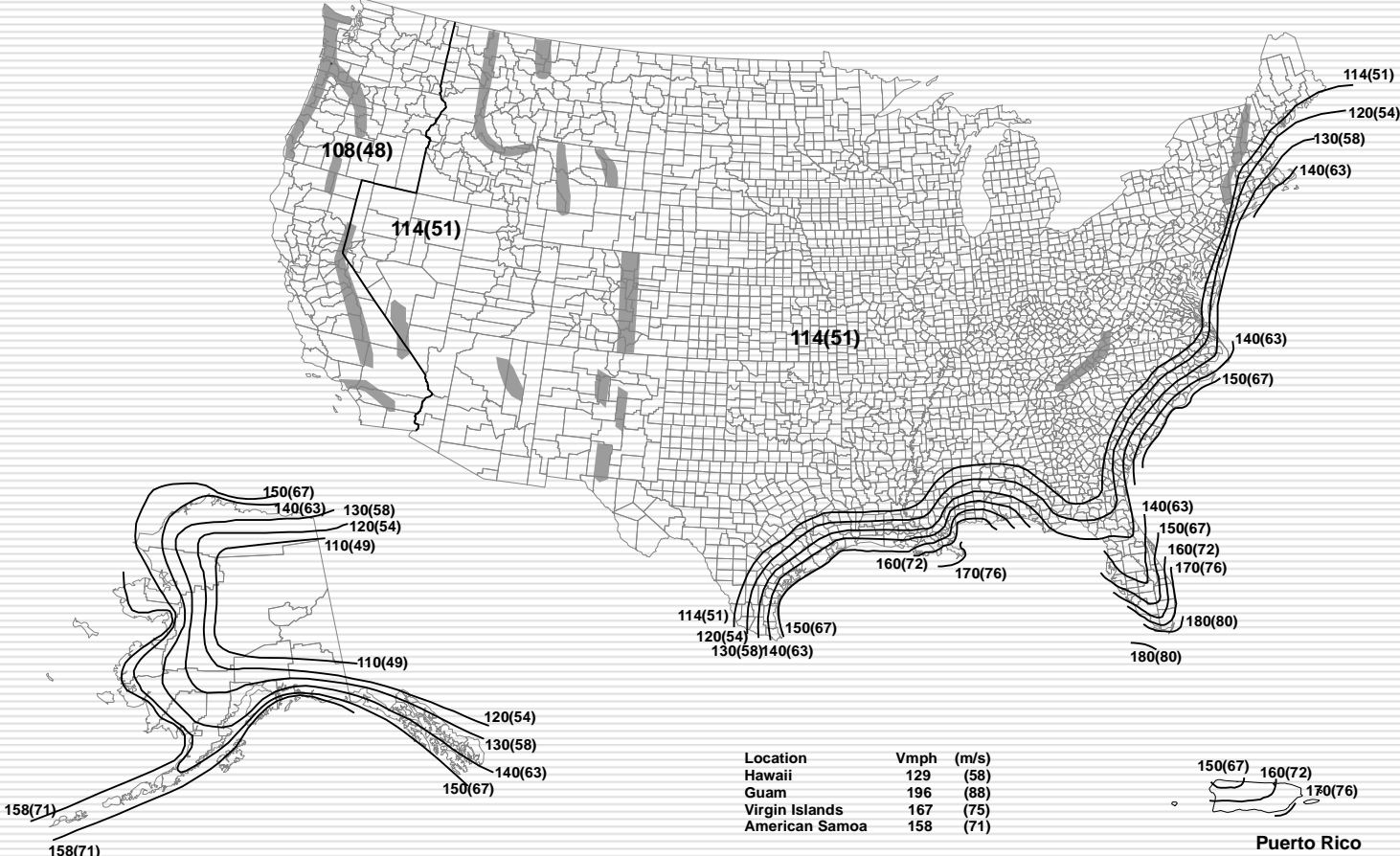
New Wind Speed Maps

- ❑ It is primarily a design format change, and in this sense the calculated design load does not change.
 - ❑ The 1.6 wind load factor for LRFD or “strength” design is changed to 1.0, thus the 1.6 factor is incorporated into the mapped wind speeds which are essentially increased by a factor of 1.26 or $\sqrt{1.6}$.
 - ❑ For traditional allowable stress design, the wind load factor is changed from 1.0 to $1/1.6$
 - ❑ This approach does give more “precision” in consistently meeting safety objectives in varying wind hazard climates.
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What has changed?

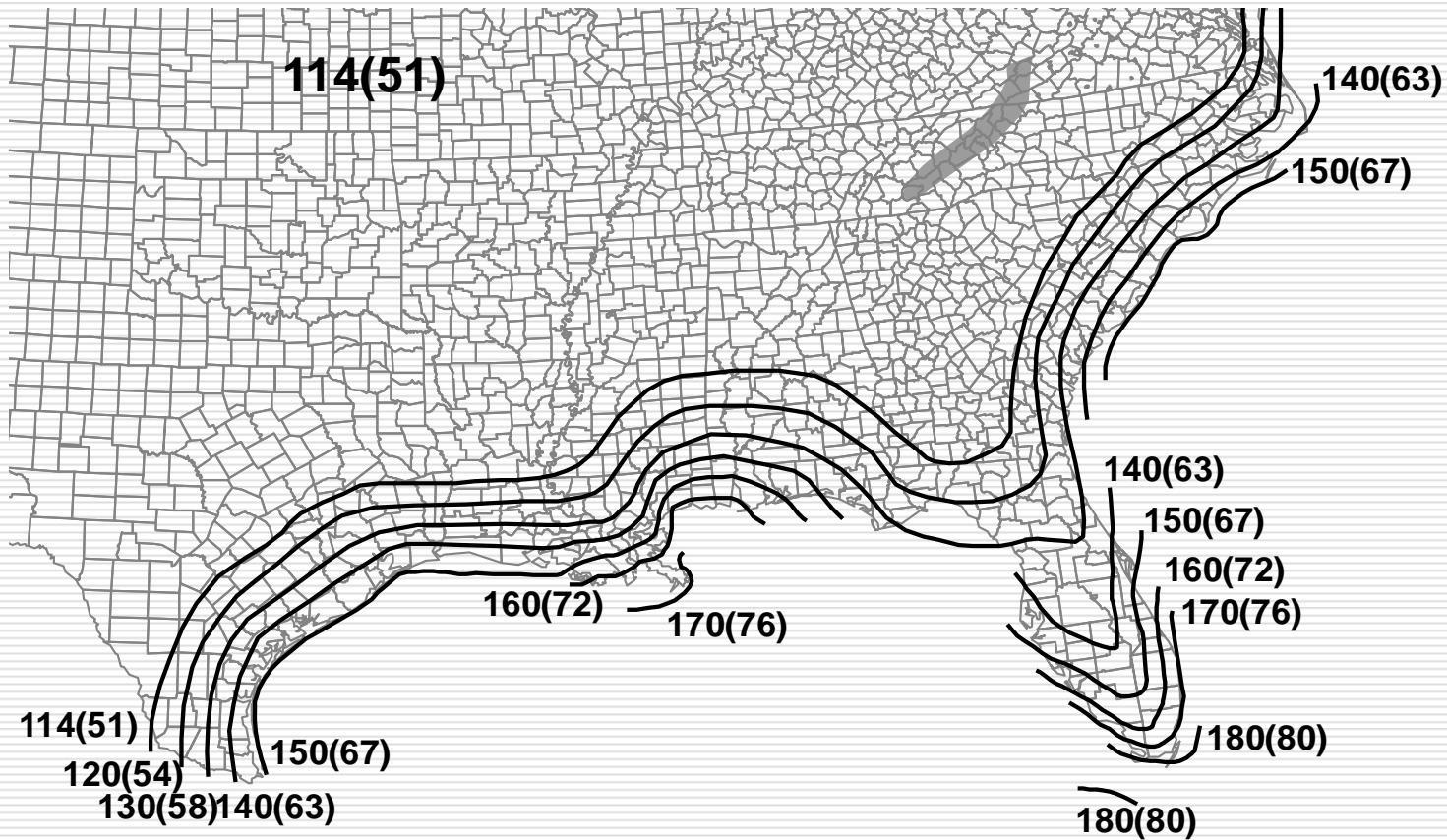
- ❑ The new maps also include new improved hurricane wind risk modeling which effectively lowers the hazard along most of the U.S. coastline (higher hazards are pushed closer to the coast)
 - ❑ The new maps also incorporate the “building importance factor”; thus there are three maps for Cat 1, Cat 2, and Cat 3&4
 - ❑ Thus, by incorporating the 1.6 load factor and the importance factors there are three maps representing 300-yr, 700-yr, and 1,700 yr return period wind speeds.
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New Wind Map for Category 2 Buildings (700-yr MRI)



- Notes:**
1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
 2. Linear interpolation between contours is permitted.
 3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
 4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

New Wind Map for Category 2 Buildings (700-yr MRI)



Code Change Implications

- ❑ Where wind speed values are used in IBC and IRC to regulate construction, they will need to be converted (1.26 conversion factor, i.e., 100 mph in current code = 126 mph in 2012 code)
 - ❑ ASCE 7 committee has formed a task force to coordinate conversions of IRC and IBC.
 - ❑ For new proposals, two proposals may be needed for current and future wind maps
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Practical Implications

- ❑ **Wind borne Debris** – the wind borne debris region triggers change to 130 mph within 1 mile of coast or anywhere with 140 mph or greater on the new maps
 - ❑ A direct conversion using the 1.26 factor would have resulted in 140 mph and 150 mph triggers – ASCE 7 WSC felt this was too unconservative for WBD region and too drastic a relaxation of current WBD region.
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Practical Implications

- Because the high hazard (hurricane-prone) wind contours are now closer to the coast:
 - Limits of IRC and IBC conventional construction extended closer to the coast (to 130 mph contour and potentially to the 140 mph contour)
 - Non-hurricane prone wind speed areas extend closer to the coast (e.g., 115 mph wind contour on new Cat 2 map which is equivalent to the 90 mph wind contour on the current map)
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ICC Code Development Issues

- IBC Requirements for Special Inspections in High Wind Regions
 - Inspection
 - Reporting
 - Connections
 - Labeled Products
 - Stakeholder Issues
 - ASCE-7 and Wind Standards
 - ASTM D3161 & D7158
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ICC Code Development Issues

- Impact Resistance and Hail Hazard
 - Map
 - Hazard Zone Definitions
 - Roof Recovering
 - Hail Hazard
 - Roof Covering Layers
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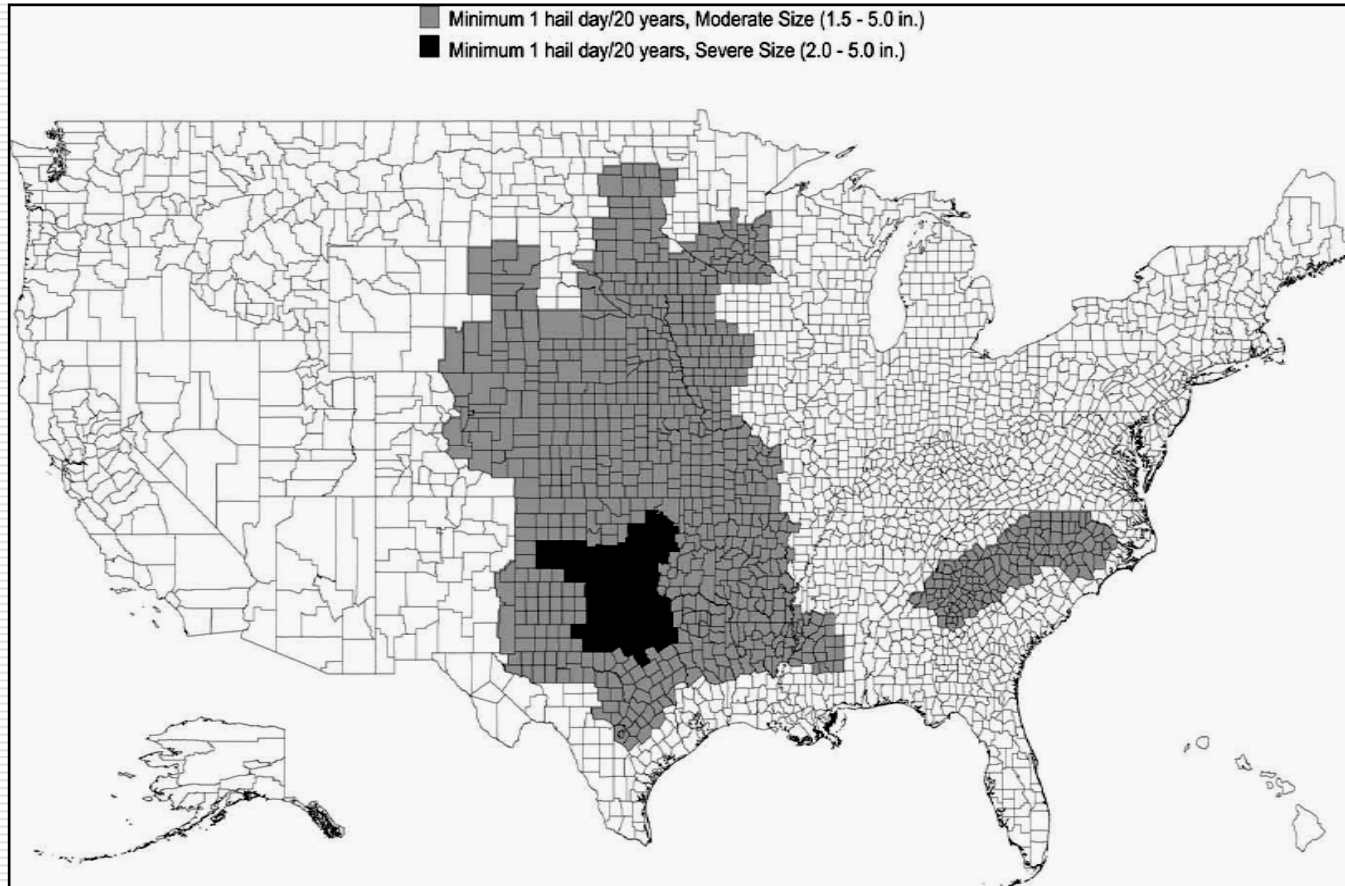
Hail Exposure

R903.5 Hail exposure. Hail exposure, as specified in Sections R903.5.1 and R903.5.2, shall be determined using Figure R903.5.

R903.5.1 Moderate hail exposure. One or more hail days with hail diameters larger than 1.5 inches (38 mm) in a 20-year period.

R903.5.2 Severe hail exposure. One or more hail days with hail diameters larger than or equal to 2.0 inches (51 mm) in a 20-year period.

Hail Hazard Map



Recovering Limitations

- R907.3 Re-covering versus replacement.** New roof coverings shall not be installed without first removing existing roof coverings where any of the following conditions occur:
1. Where the existing roof or roof covering is water-soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
 2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
 3. Where the existing roof has two or more applications of any type of roof covering.
 4. For asphalt shingles, when the building is located in an area subject to moderate or severe hail exposure according to Figure R903.5.
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ICC Code Development Issues

- IRC-IBC Roof Attic Assemblies
 - Ventilation Area Requirements
 - Intake-Outflow Prescriptions
 - Installation Clearance Issues
 - Secondary Water Barrier Issues
 - RAV Coalition
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Questions?



Thank You
For Your
Steadfast
Attention