FEMA Building Science Branch Updates

ASFPM Annual Conference
Cleveland, OH – May 21, 2019
### Bipartisan Budget Act (BBA) of 2018 (signed 2/9/18)

**BBA Sec. 20606**
- Amended Stafford Act Sec. 406(b)
- **Incentivizes code adoption/enforcement** by allowing the President to increase the minimum Federal share on PA grants to 85 percent
- Guidance due in 2019
- Report to Congress due in 2020

### Disaster Recovery Reform Act (DRRA) of 2018 (signed 10/5/18)

- DRRA Sec. 1235(b): *Public Assistance Codes and Standards*
- Amended Stafford Act Sec. 406(e): *Eligible Cost*
- Authorizes FEMA to provide Public Assistance funding to replace and restore disaster-damaged facilities to the **latest published editions** of codes/standards
Disaster Recovery Reform Act (DRRA) of 2018

- DRRA Sec. 1234: Building Resilient Infrastructure and Communities (BRIC)

- Amended Stafford Act Sec. 203: Pre-disaster Hazard Mitigation
  - Assistance to State/local governments may be used to establish and carry out code enforcement activities and implement the latest published editions of codes/standards
  - In determining whether to provide technical and financial assistance to a State/local government, the President shall take into account the extent to which the SLTT has facilitated the adoption and enforcement of the latest published editions of codes/standards (including amendments)
  - The term “latest published editions” defined as the 2 most recently published editions.
DRRA Section 1206

- DRRA Section 1206 is authorized under Sections 402 and 406 of the Stafford Act and is being implemented by FEMA’s Public Assistance (PA) grant program with the advice and support of the Flood Insurance and Mitigation Administration.

- Section 1206 authorizes FEMA to:
  - “provide assistance to state and local governments for building code and floodplain management ordinance administration and enforcement, including substantial damage compliance”, and
  - “base and overtime wages for extra hires to facilitate the implementation and enforcement of adopted building codes for a period of not more than 180 days after the major disaster is declared.”

- Final policy publication will be late 2019 to early 2020.
- Until the policy is final, potential applicants are advised to document all costs and follow Federal procurement requirements.
Nationwide Adoption of Hazard-Resistant Building Codes

U.S. Hazard Risk
Counties in the BCEGS Database that Have Adopted Hazard-Resistant Building Codes and Participate in the NFIP
April 1, 2019

Hazard Resistance For At Risk Counties
- Counties In Which 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes and Participate in the NFIP
- Counties In Which Less Than 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes
- Counties In Which Less Than 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes and/or do not Participate in the NFIP
- Reporting Counties that Have Not Adopted Hazard-Resistant Building Codes
- Reporting Counties that Have Not Adopted Hazard-Resistant Building Codes and/or do not Participate in the NFIP

Based on BCEGS data provided by Insurance Services Office (ISO), December 21, 2018 or other research groups

Pre-decisional
Building Science Comments on Section 1206

Steps Forward

Connections need to be made between building and code professional member associations & state/local EOCs about pre and post-disaster code administration and enforcement capabilities.

- National level
- State level

Eligible applicants should consider what planning they may need to do to best take advantage of the new assistance mechanism. Communities may need inter-community agreements, coordinate with state professional associations or work with State officials to discuss accessing out-of-state resources via the Emergency Management Assistance Compact (EMAC).
## Current NFIP Technical Bulletins

<table>
<thead>
<tr>
<th>TB No.</th>
<th>Title (Date)</th>
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<tbody>
<tr>
<td>1</td>
<td>Openings in Foundation Walls and Walls of Enclosures (2008)</td>
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<tr>
<td>2</td>
<td>Flood Damage-Resistant Materials Requirements (2008)</td>
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<tr>
<td>3</td>
<td>Non-Residential Floodproofing – Requirements and Certification (1993)</td>
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<td>4</td>
<td>Elevator Installation for Buildings (2010)</td>
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<tr>
<td>5</td>
<td>Free-of-Obstruction Requirements (2008)</td>
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<td>6</td>
<td>Below-Grade Parking Requirements (1993)</td>
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<td>7</td>
<td>Wet Floodproofing Requirements (2003)</td>
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<tr>
<td>8</td>
<td>Corrosion Protection for Metal Connectors in Coastal Areas (1996)</td>
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<tr>
<td>10</td>
<td>Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe From Flooding (2001)</td>
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<tr>
<td>11</td>
<td>Crawlspace Construction for Buildings Located in Special Flood Hazard Areas (2001)</td>
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Updating the Technical Bulletins

• Ongoing effort to update all TBs
• Update of TBs 0, 4, and 8 scheduled for release in mid-2019 followed by TBs 1, 5 and 10
• Update of others underway with update of TBs 2, 7 and 11 TBD
• Coordinating with Floodplain Management, Risk Insurance, with input from numerous stakeholders
• Schedule subject to change
Updating the Technical Bulletins

• To improve the **usability**, **credibility**, and **content** of the NFIP Technical Bulletins, the updates will include:
  
  • Incorporation of and reference to the latest Codes, Standards, and Policies
  
  • Updated guidance and best practices from post-disaster assessments
  
  • Addressing issues identified by users and other stakeholders
  
  • New introductory text and updated color images and graphics produced in a modern searchable PDF format
• 2017

• 16 Recovery Advisories and 4 MAT Reports (FEMA P-2020 through 2023)

• Support in USVI and PR with adoption of latest building code
  • Cost & Constructability Analysis
  • Prescriptive residential designs
  • Microzoning Maps

• Quick Reference Guide - Comparison of Select NFIP and 2018 I-Code Requirements for Special Flood Hazard Areas

• Building Science training activities for designers, contractors, and local officials
• Puerto Rico Special Wind Region Incorporates Topographic Wind Speed-Up using Microzones.

2018 PRBC – 167 mph (w/Topo)
ASCE 7-16 – 167 mph (+ Topo)
ASCE 7-05* – 145mph (+ Topo)

2018 PRBC – 181 mph (w/Topo)
ASCE 7-16 – 167 mph (+ Topo)
ASCE 7-05* – 145mph (+ Topo)

*2011 PRBC was based on ASCE 7-05
2017 & 2018 Hurricane Mitigation Assessment Teams

- Perform a flood vulnerability assessment
  - Comprehensive investigation of building to identify all potential paths water can enter a building
2017 & 2018 Hurricane Mitigation Assessment Teams

- 2018
  - Research continues...ongoing Hurricane Michael MAT Report
  - Best Available Refuge Area for Hurricane Shelters Job Aid
  - Guidelines for Wind Vulnerabilities Assessments for Critical Facilities
  - 2017 MAT Report Compendium
  - Outreach Continues
2017 Hurricane MAT Themes

• Building codes work! AND hazard mitigation too!
• Codes and standards are the minimum requirement – performance reflects that
• A thorough vulnerability assessment is critical
• Redundancy, freeboard, additional level of protection is key
• Code officials expressed a need to reduce workload post-disaster
• Education of microzoning/topography and landslides into building code and guidance
• Performance of ‘homemade’ versus ‘tested’ (ASTM, ANSI, etc.) products
• Overestimating resources/implementation capacity
• Continued need to spread awareness of best practices
• Updated FEMA Building Science Resources with the 2018 I-Codes: **Summary of Changes to Flood Provisions**
  - Require new essential electrical systems to be located in accordance with ASCE 24
  - Expands list of record keeping documentation requirements

• Collaborated with ICC and updated the **Flood Code Master** to reflect 2018 IBC and IRC

• Updated Flood Code Provisions Training Material

• Currently updating **Reducing Flood Losses through the International Codes**
- Building Code Adoption Tracking (BCATS), 2nd Quarter 2019:
  - Flood 34% (Shown on Map), Hurricane 56%, Earthquake 56%, Multi-Hazard 32%
  - 7,711 communities with freeboard requirements
Codes and Standards Engagement

- 2021 IRC and IBC Code change proposals
  - Of 15 FEMA flood/wind proposals: 13 approved, 2 disapproved.
- ASCE 7 and 24
- ICC-500

The adoption and enforcement of strong building codes and standards reduces damages
ASTM Flood Resistant Material Standard

- **E3075 - Standard Test Method** for Water immersion and Drying for Evaluation of Flood Damage Resistance (revised Nov. 2018)—establishes procedures

- **Standard Practice** for Determining the Flood Damage Resistance Rating of Materials and Assemblies—includes valuation criteria. Relies on the manufacturers (and their industries) to establish the benchmarks for each criterion.

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<tr>
<th>Date</th>
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<tbody>
<tr>
<td>Dec. 2016</td>
<td>Test Method published by ASTM (E3075)</td>
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<tr>
<td>Feb. 2018</td>
<td>Standard Specification (WK62276) proposed on ballot E06.25 (18-01)</td>
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<tr>
<td>Nov. 2018</td>
<td>Test Method revised by ASTM (E3075)</td>
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<td>Oct. 2019</td>
<td>Committee Week in Houston, TX</td>
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<td>April 2020</td>
<td>Anticipated publication of standard spec.</td>
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National Building Code Losses Avoided Study

• Relative impact to States for adopting model building code
  • What might it save us nationally?
  • FEMA previously completed Regional pilot – now combining and analyzing ALL the states

• Risk
  • Actual building stock
  • Hazard
  • Impact or Consequence
  • Building code adoption and enforcement

• Estimate annual losses avoided

Phase 3 National Methodology and Phase 2 Regional Study
Losses Avoided as a Result of Adopting and Enforcing Hazard-Resistant Building Codes

September 2014

Federal Emergency Management Agency
Department of Homeland Security
500 C Street, SW
Washington, DC 20472
Education & Outreach

• EMI Curriculum – NEW Advanced Building Science Series Course!
• Building Science Helpline
• Workshops and Conferences
• Building Safety Month
  • Be Code Confident
Risk Management Directorate, Building Science Branch

[Website Link]

[FEMA Email]

[Phone Number]