Hurricanes Irma and Maria in Puerto Rico Mitigation Assessment Team Report 50% Draft, Recovery Advisories, and Code Update Tasks

IX Reunión Cumbre Consejo de Cambio Climático PR

June 8, 2018

DR-4336 (Irma) and DR-4339 (Maria)
MAT Timeline for PR – Added Elements

Hurricanes Irma and Maria in Puerto Rico Mitigation Assessment Team Report

- Products include MAT Report, Recovery Advisories, Fact Sheets, Training and Analysis
- Actionable recommendations for a more resilient Puerto Rico
- Periodic briefings and requests for comments to key stakeholders throughout the process
- MAT Report Publication & Outreach on September 20th
- Integrated with ongoing HMGP Post-Disaster Code Adoption and Enforcement Mission
- New design wind maps based on Puerto Rico topography
- Residential Prescriptive Design Plans based on PR Building Code update (2018 I-Codes) to help address informal construction
Puerto Rico Recovery Advisories

Hurricanes Irma and Maria in Puerto Rico Mitigation Assessment Team Report

- **RA-1** Rooftop Equipment Maintenance and Attachment in High-Wind Regions
- **RA-2** Siting, Design, and Construction in Coastal Flood Zones
- **RA-3** Safe Rooms and Storm Shelters for Life Safety Protection from Hurricanes
- **RA-4** Best Practices for Minimizing Flood Damage to Existing Structures
- **RA-5** Protecting Window and Openings in Buildings
- **RA-6** Repair and Replacement of Wood Residential Roof Covering Systems
Key Recommendations of the PR MAT

- Adopt the latest building code from ICC and update regularly.
- Publish prescriptive residential designs.
- Require construction documents to list critical parameters and load path connections.
- Perform vulnerability assessments for public buildings and critical facilities.
- Require design professionals and contractors to be licensed and registered.
- Develop hazard-resistant design guidance for alternative energy systems.
- Improve/construct life-safety hurricane shelter facilities (P-361/ICC 500).
Collaborative effort with local, regional and national stakeholders
Puerto Rico Fact Sheets – Changes in the Hazard Provisions

- **Flood Provisions** of the IBC & IRC (2009-2018)

- **Wind Provisions** of the IBC & IRC (2009-2018)

- **Seismic Provisions** of the IBC & IRC (2009-2018)
Submitted 6 code change proposals:
• PRBC update based on the latest I-Codes and consensus standards during 3-year cycle.
• Corrosion protection requirement for entire Territory.
• (2) Proposals requiring SFHA documentation in replicable building code review as outlined in Appendix N.
• 423.3 for storm shelters in critical facilities
• 423.4 for Group E Occupancies.

Additional code change proposals being monitored:
• Design roof coverings to withstand wind loads of 150 MPH
• Design roof decks and roof coverings using a wind speed of 155 PMH
• Preserve the wind pressures in the 2011 PRBC
• Recommend maintaining the wind provisions in the 2018 IBC/IRC and compliance with ASCE 7-16.
SME Tasks

Microzoning - Topographic Considerations
• Develop new design guidance for wind speed-up in Puerto Rico
  – Determine new wind speeds to incorporate effects of wind speed up
  – Based on 2018 I-Codes including ASCE 7-16
  – Simplifies procedure for Design Professionals and Building Code Officials

Cost and Constructability Analysis
• Compare 2011 PRBC and flood, wind and seismic provisions in the 2018 IRC with known local amendments
• Document differences and potential increased costs
• Support from Institute for Business & Home Safety (IBHS)

Ex: Microzoning for Hawaiian Islands (ASCE 7-16)
Prescriptive Design Guide for Residential Structures as Permitted by the PR Building Code

Hurricanes Irma and Maria in Puerto Rico Mitigation Assessment Team Report

- Workgroup
  - Up to 6 local design and construction stakeholders
    - Local officials, engineers, architects, design professionals, home builders, and members of regulatory bodies
- 7 prescriptive residential design sheets using 2018 I-Codes
  - 4 for each of the 3 home geometries identified:
    - 1-story house
    - 2-story house
    - Elevated house

Gable End Framing Detail

Typical Masonry Wall Construction
### Key Dates – PR MAT Report & Training

#### Hurricanes Irma and Maria in Puerto Rico Mitigation Assessment Team Report

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>50% Draft of MAT report to FEMA for comments</td>
<td>April 20, 2018</td>
</tr>
<tr>
<td>90% draft MAT report to FEMA for comments</td>
<td>July 17, 2018</td>
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<tr>
<td>Final MAT report review</td>
<td>August 31, 2018</td>
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<tr>
<td>Final English GPO document published</td>
<td>September 20, 2018</td>
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<tr>
<td>Final Spanish GPO document published</td>
<td>October, 2018</td>
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### Building Science Training Courses

- **Coastal Construction Manual (FEMA P-55)**
  - 2-Day Course
    - June 12 – 13
    - June 19 - 20

- **Homeowner's Guide to Retrofitting (FEMA P-312)**
  - 4-Day Course
    - July 16 – 19