

## Significant Technical Changes in the Hurricane Code Provisions of the 2012 IBC and IRC under Consideration for Adoption by the State Building Code Council

The present State Building Code is based on the 2006 International Building Code (IBC) and International Residential Code (IRC), with Hawaii amendments relating to hurricane effects in mandatory Appendices U and W. For the purposes of defining wind load requirements, the 2006 IBC in turn refers to the ASCE 7-05 Standard, Minimum Design Loads for Buildings and Other Structures. Therefore, Appendix W was based on the ASCE 7-05 Standard.

Rather than adopting the 2009 IBC and IRC, that State Building Code Council (SBCC) has set a direction to adopt the 2012 IBC and IRC; this decision was broadly supported by the design and construction industry. The ability of the SBCC to do this has been supported by changes incorporated in bill HB763\_CD1 recently passed by the Legislature. The wind and hurricane provisions of the IBC 2012 and IRC 2012 refer to the ASCE 7-10 Standard, which does contain updates to wind load and hurricane prone region requirements.

### IBC2012 (ASCE 7-10) Wind Design Revisions:

- ASCE 7-10 is based on an ultimate strength windspeed rather than the allowable stress windspeed. There are also maps for each Risk Category of building rather than a single map, so that facilities that are more critical in function can be more consistently design for greater reliability.
- Hawaii is a special wind region recognized by ASCE 7-2010, meaning that the topographic wind microzonation maps developed in Hawaii are recognized.
  - “Due to the complexity of mountainous terrain and valley gorges in Hawaii, there are topographic wind speed-up effects that cannot be addressed solely by Figure 26-8.1. In the Hawaii Special Wind Region, research and analysis have established that there are special  $K_{zt}$  topographic effect adjustments.” ASCE 7-10 Commentary
- However, the 2006 version of the Hawaii wind maps need to be converted to the new metric of calibration at the ultimate strength windspeed.
- IBC 2012 still designates Hawaii entirely as a windborne debris region. However, counties in Hawaii prefer a windspeed dependent requirement based on the Hawaii wind maps. Therefore, in this regard, the IBC 2012 and ASCE 7-2010 are somewhat more lenient but much more complex to enforce. More emphasis put on critical facilities rather than single family homes.
- 1507.8.1 High Wind Attachment: Roofing underlayment fastening upgraded where  $V_{eff}$  of ASCE 7-10 is greater than 155 mph.
- 1507.17.3 PV systems and PV roofing shall be tested for compliance with ASTM D3161, and per 1509.7.1 shall be designed for wind loads.
- Exposure D along the hurricane prone coastlines has been re-established that essentially creates a coastal wind hazard zone.

As a result, adoption of the 2012 IBC and IRC will require changes in the Hawaii State Building Code relating to the requirements in the Hawaii hurricane-prone region.