Hurricane Andrew prompted better building code requirements

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After Hurricane Andrew, building code requirements quickly changed for hurricane-prone parts of Florida and gradually spread throughout exposed regions of the United States.

Before Hurricane Andrew slammed into South Florida in 1992, resulting in the costliest natural disaster for insured losses in global history at that time, Miami-Dade and Broward counties had outdated building codes that lacked enforcement, experts say.

“In the Miami-Dade, Broward county areas, they had very good prescriptive requirements before Hurricane Andrew, but what we found out was that they weren't being enforced very well,” said Timothy Reinhold, Tampa, Fla.-based senior vice president of research and chief engineer at Insurance Institute for Business & Home Safety.

The Florida performance criteria for wind-load provisions was too low and the information used at the time was out of date, Mr. Reinhold said.

As a result of Hurricane Andrew, one of the first standards Florida adopted was the wind provisions from the the American Society of Civil Engineers' standards, which encompasses the national standard for wind requirements, he said.

The ASCE-7 code, which the International Code Council relies on for minimum design loads for buildings and structures, is used by all states prone to hurricanes to evaluate and design buildings in the insurance industry, said Dale Seemans, senior risk engineering consultant for Zurich Services Corp., based in Newark, Del.

One of the most important additions to the code was the requirement of missile-impact resisting glass, which can withstand high velocity impact from wind-borne debris during a hurricane, he said.

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“Our main goal in the insurance industry is to prevent water from getting into the building,” Mr. Seemans said, noting that once water gets into a structure, the building can lose power and mold can develop within 24 hours.

Another immediate change to building codes after Hurricane Andrew was the elimination of construction of “stick” frame houses in South Florida, said Scott Trethewey, executive vice president of Aon Risk Solutions' construction services group, based in Miami.

Most of the houses built in South Florida since Andrew are cinder block masonry construction reinforced with concrete pillars, hurricane-strapped roof tresses, and codes requirements for adhesives and types of roofing, Mr. Trethewey said.

While the southern region of the state quickly adopted strict building codes, other hurricane-exposed regions were slower on the uptake, Mr. Trethewey said.

“There has not been an urgency to adopt some of the more stringent standards for residential construction in the northern parts of the state because they haven't been affected by the level of storms as South Florida has been

affected," Mr. Trethewey said.

In states such as South Carolina, Alabama, Mississippi and Louisiana, which have had recent hurricanes, adoption of more stringent building codes has not been as swift as Florida since Hurricane Andrew, Mr. Trethewey said.

"Basically, whoever is using the international codes and series without adopting a bunch of weakening provisions is in pretty good shape," Mr. Reinhold said.

Areas that have a system that includes updated code adoption, code enforcement, inspector training and builder licensing are better prepared for hurricane risks, he said.

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"When you get into some of the other states, they may have a piece of that, but they haven't got the whole system," Mr. Reinhold said.

According to a December study published by the institute for business and home safety that examined states' building codes, Florida, Virginia and New Jersey were rated among the highest for code adoption and enforcement, certification and training and contractor licensing.

Texas, Delaware and Mississippi were rated among the lowest, as those states lacked a regulatory process for building codes, according to the study titled, "Rating the States: An Assessment of Residential Building Code and Enforcement Systems for Life Safety and Property Protection in Hurricane-Prone Regions."

While there have been gradual improvements among states with hurricane risks, one of the biggest strides is the reduction of wind-borne debris, said Richard Davis, assistant vice president and senior engineering technical specialist at FM Global in Norwood, Mass.

"More recently, one of the improvements of the international building code was that they restricted the use of roof gravel in hurricane-prone areas," he said, noting that gravel is a major source of window breakage.

It is important to note that many updated building standards and codes only apply to new construction, Mr. Davis said. "Older buildings are more or less grandfathered by the code and they still may very well be vulnerable to a hurricane event," he said.

Also, roof-mounted equipment, such as solar panels, still are a problem because often they are not anchored to a roof and have a large surface area, he said.

"The codes and standards community has been lagging behind the sales and installation of the solar panels," Mr. Davis said. "We do not have a published nationally recognized standard that properly addresses this issue."
