



Joplin Tornado Offers Lessons for Texas Cities

New Hospital to have Masonry Exterior for Safety and Appearance

With tornado season not far off, Missouri health care executive John Farnen has two words of advice: harden exteriors.

Farnen speaks from experience. On May 22, 2011, one of the most powerful tornadoes ever recorded ripped through Joplin, MO, killing 162 people, including one visitor and five critical-care patients at St. John's Regional Medical Center. The hospital's structural skeleton remained standing after the storm but the rest of it was ripped to shreds. The facility was a total loss.

As executive director of strategic projects for Mercy Health Systems, owner of the hospital and the sixth largest Catholic health system in America, Farnen has the job of analyzing the catastrophe and applying the lessons learned to the construction of the new \$350-million replacement hospital, renamed Mercy Hospital Joplin.

During the tornado, the building's exterior covering and windows failed to withstand the wind and debris of the tornado. The hospital's exterior at that time was mostly glass, some metal panels, with precast concrete on the main hospital with some exterior insulation finishing system (EIFS), a lightweight synthetic cladding meant to look like stucco. There was also EIFS on the adjacent office buildings. EIFS was popular in Texas until problems with black mold started showing up.

"When you walked around the areas of the hospital that used EIFS, you could see glass shards stuck in it and pieces of two-by-fours that had penetrated it," Farnen said. "Some debris can go right through it."

Lesson Learned: Harden the Building's Exterior Covering. "The new facility will not be covered with EIFS in any of the patient care areas," Farnen said. "Building exteriors in those areas will either be reinforced concrete, stone and brick, or precast concrete. The entire exterior skin will be made of a harder material, which will prevent the kind of exterior damage we saw at the old hospital and help prevent the kind of serious interior damage that led to chaos and injuries."

Farnen said the first and second floors of the new 900,000-sq-ft, nine-story structure will have exteriors of hand-laid brick. Above those levels the exterior will be precast concrete with brick veneer. He said they would have used hand-laid brick for the upper levels, too, but had to use precast concrete in order to meet the project's compressed timetable. It's now scheduled to open in early 2015.

"Brick and stone is just a lot better look," he said. "Not only does it hold up better in severe weather, but you just can't beat the look of brick and stone. So, you get a great look and better protection."

Another lesson learned was to harden and protect back up power sources, and masonry plays a key role in that, too.



“Losing power created a lot of problems for us,” Farnen said. “When the tornado hit, the transformers that provide normal power to the facility were lost almost immediately... So, there was no power of any kind inside the hospital, not even for critical-care areas.

“The new facility will have a separate central utility plant that will be housed in a hardened structure with storm doors. That structure will be partially buried, and mainly built with reinforced masonry block and brick.”

Farnen also noted that the hardened exterior was no budget buster. It added only 2-3 percent to the construction cost. Going forward, he added, Mercy will apply the lessons learned in Joplin to all the new facilities it builds in its four-state service area. Indeed, near the new Mercy Hospital Joplin, the health system plans to break ground next year for a separate behavioral health hospital and a rehabilitation hospital, and these also will have the same tornado-resistant features, he said.

Rudy Garza, executive vice president of the Texas Masonry Council, said a growing number of Texas communities would agree with the Missouri health care executive. About 200 Texas cities have adopted minimum requirements for masonry on the exteriors of new construction. A new interactive map at www.masonryordinance.com shows the locations of many of these cities.

“The Joplin tornado was a historic natural disaster, and every city should look closely at the lessons learned in that event,” Garza said. “The hospital’s experience is an important example and has implications for residential, as well as commercial structures.”

He added that, “Often, Texas municipal leaders cite appearance, community image, sustainability, and safety as the main reasons for requiring masonry as the primary exterior material.”

One such community is the fast-growing city of Frisco, north of Dallas. Frisco Mayor Maher Maso, an information technology entrepreneur, says Frisco always has excelled at long-term planning and policies that support sustainability. That mindset led officials to consider and ultimately adopt masonry planning.

In focusing on sustainability, Frisco officials saw it as a proverbial three-legged stool with legs of safety, durability, and aesthetics. The Frisco Fire Department, which is ISO 1 certified, emphasized the safety benefits of masonry construction. Officials also were swayed by the durability, low-maintenance, and aesthetic characteristics of masonry.

Frisco planners and elected officials recognized that many new buildings look good for a while, but the real test is how they will look in 10, 20, or 30 years.

“As neighborhoods age,” Maso said, “what’s the best material to withstand the test of time? What requires the least maintenance? All the signs pointed to masonry... Just about everything we’ve built has had sustainability in mind.”



Garza said, “Texas has a rich history of building with long-lasting masonry products. Masonry is part of the Texas heritage, and by embracing masonry planning, local officials and civic leaders, such as those in Frisco, are helping to build a strong legacy for their communities.”

Research has shown that masonry (brick, stone, concrete block) provides greater protection against fire, and windstorms, such as tornadoes and hurricanes, than non-masonry siding products.

In addition, other research has shown that masonry requirements result in: 1) higher overall property values; 2) growth in the tax base, lessening the tax burden on residents; 3) continued population and housing growth, and 4) no significant impact on affordability for either renters or buyers of housing.

To find out if your city is protected from storms and fire by a masonry ordinance visit the map at www.masonryordinance.com. If your city is not protected, e-mail Rudy Garza at rudy@masonryordinance.com.