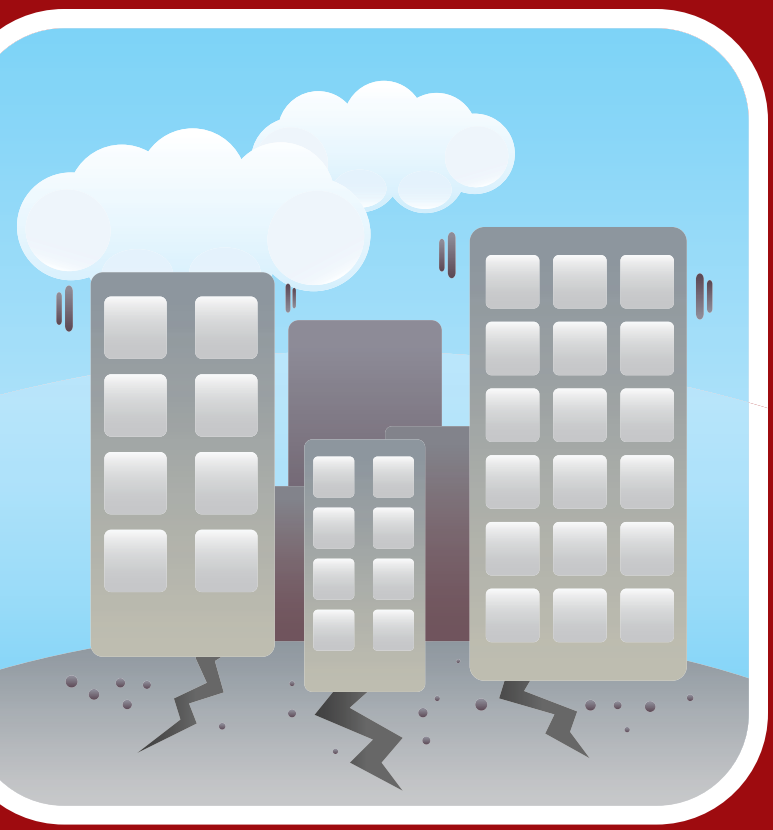
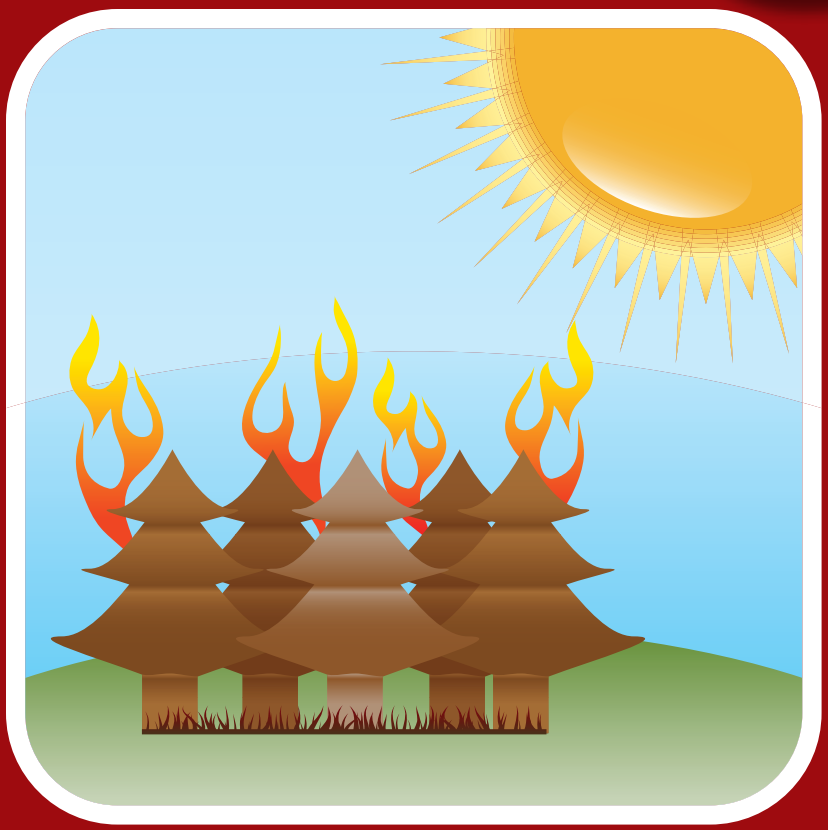
Planning





From natural disasters to criminal violence, facilities officers are often called on to address campus safety and security issues beyond their usual responsibilities.

Their experiences in coping with events largely unanticipated have produced a catalogue of lessons learned that can help them and their peers at other institutions who might face the same types of situations in the future.

Many have to do with bad weather conditions that develop with little if any advance warning.

At Xavier University of Louisiana in New Orleans, in a region familiar with damaging hurricanes and flooding, facilities managers knew Hurricane Katrina was headed their way in August 2005 and "we did the normal things to prepare for it," said Marion Bracy, vice president of facilities planning and management. That meant "placing things high on desks, moving things away from windows, putting sandbags out and shutting down the Central Plant."

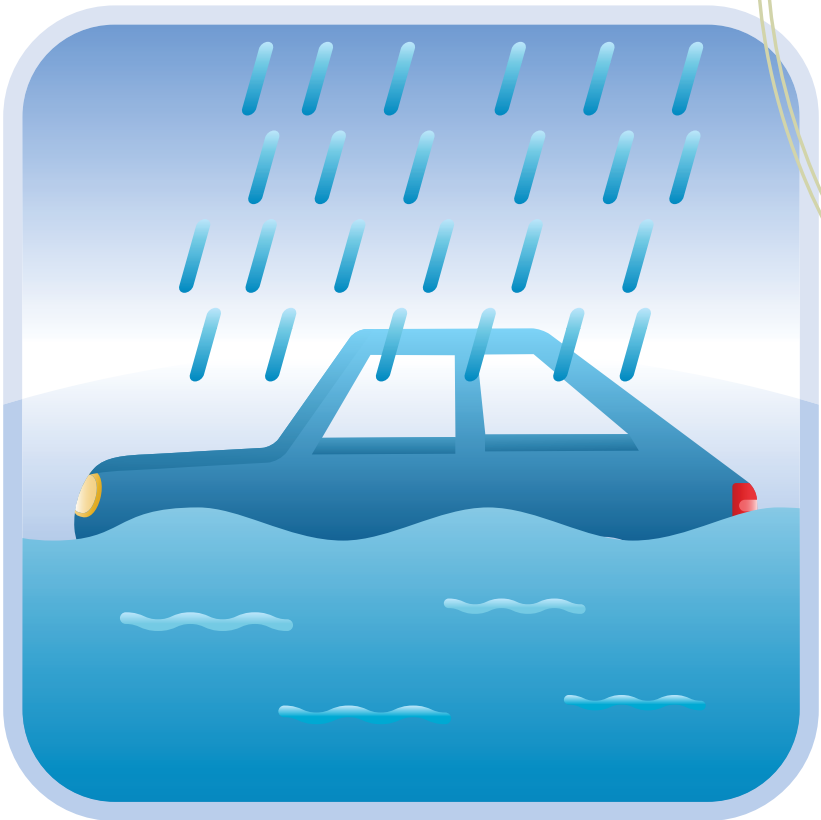
But Katrina was a particularly devastating storm, the costliest and one of the five deadliest ever in the United States. "A lot of the things we did went by the wayside. We had a tremendous amount of water and placing sandbags by the doors just blocked the doors. It didn't stop the water from coming in right over the sandbags," Bracy reported. For more than two weeks, floodwaters covered the entire campus with four feet of water. The Central Plant was totally destroyed.

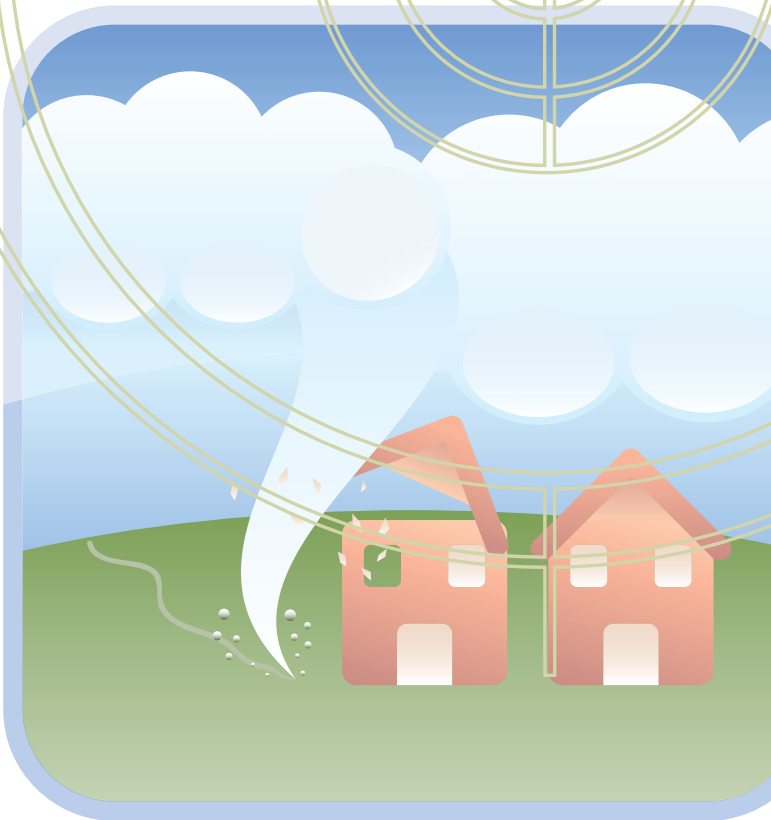
When the facilities staff returned to campus three weeks after Katrina struck, they "pushed out all the water" but faced other issues. "We didn't have any air going into the buildings. We couldn't introduce any electrical to the buildings," said Bracy. Overall, Katrina caused about $90 million in physical damage to Xavier and the university didn't reopen until January 2006.

BY ALAN DESSOFF

FOR

Campus Safety





In April 2006, a group of senior university executives, including Bracy, was created to prepare a new Hurricane Emergency Plan for the university that became effective three months later. Bracy's department also developed its own plan and has taken a number of steps since Katrina to improve the security and safety of campus facilities.

"We've never been hit as hard as we were by Katrina," Bracy said. "It challenged us to think differently about a number of things we were doing that we just took for granted. We have learned a lot since then."

Some of it is "simple common sense," he said, like gassing up the trucks and moving university-owned vehicles and equipment to higher ground if a damaging hurricane seems likely.

In more complicated moves, the facilities staff has raised all electrical transformers on campus at least three feet above ground level. "That would never have happened before Katrina," Bracy said. "Most of what we're doing is trying to get equipment off the first floor of buildings." In new construction, "absolutely no laboratories" that are difficult and expensive to replace are put on the first floor.

Other steps include moving computers away from walls and being sure to shut computers down completely when hurricanes are threatened because "when the power comes back up there could be a surge that could create a great deal of damage," Bracy said. In addition, all buildings are getting lightning protection.

Some protective planning required special considerations. In an historic old building on campus, Bracy would like to install double-plated windows to help keep out the water. But "they don't want us to replace the existing windows for fear it will tamper with the historic integrity of the building," he said. "So we're talking about putting in a separate second window—a backup window; two windows in the same seal."

FLOODING IN IOWA

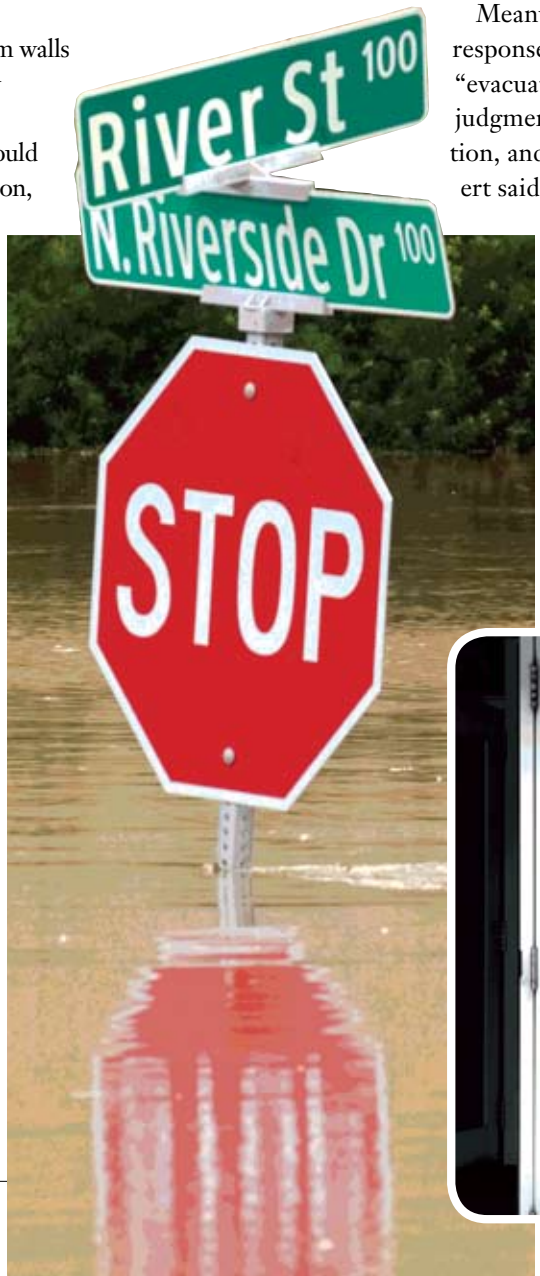
Sometimes even the best planning turns out to be not good enough. The University of Iowa had a flood emergency response plan based on experiences from a flood in 1993, the worst the institution had experienced until then. The new plan was designed to cover the worst flood that facilities officers could imagine would happen in the next 100 years.

When a flood that ultimately would devastate more than 80 counties in the state began last summer, "we went into red alert and executed our plan," said Don Guckert, associate vice president and director of the facilities services group at Iowa. That meant building sandbag dikes around the campus at sites and elevations specified in the plan.

Then problems developed. "If we had only experienced a 100-year flood, which would have been no small matter in itself, we would have been successful. But when it became a 500-year flood, it overtook us," said Guckert.

As the water kept rising, "we got to the point where we couldn't build sandbag dikes high enough because we couldn't find enough sandbags. So we had to throw away the plan and go into a different mode," Guckert said. "We reengineered the dikes and put in jersey barriers about three feet high and wrapped them in plastic and anchored them with sandbags."

But they didn't work, either, as the water level rose even higher. "So we had to take those out and use hesco barriers"—four-foot-tall baskets filled with stone and lined with plastic, said Guckert.



Meanwhile, the 100-year flood response plan did not contain an "evacuation trigger" and "it was left to a judgment call of the facilities organization, and we made a good call," Guckert said. The facilities staff moved an art collection that alone was worth "more than everything that was damaged" to a secure location. Then it removed books from the library. "We started to evacuate before we knew we really had to and we saved millions of dollars in assets," he said.

As he began to attack the flood following the 100-year

plan, Guckert thought his 670-person facilities organization would be able to do the job alone. "We were well prepared," he said. But as the scope of the disaster grew and "got beyond our ability to respond," he called on contractors and "an enormous volunteer turnout" for assistance.

About a sixth of the 17 million-square-foot campus was lost to the flood, which peaked in mid-June. By mid-August, the facilities staff was able to reopen three classroom buildings, a library, and a residence hall. But campus cleanup, repairs, and restoration were continuing late in the year.

EMBRY-RIDDLE TORNADO

Embry-Riddle Aeronautical University in Daytona Beach, Florida was largely deserted on Christmas Day 2006 when two tornadoes with winds of about 120 mph tore through the area, cutting a 100-foot-wide swath through the center of the campus. Although there were no injuries, the maintenance hangar was destroyed and there was substantial damage to several other structures, including the administration building and Student Center.

Daniel F. Young, the institution's director of facilities management, was in Ohio for the holidays but quickly learned of the disaster. "I had a phone call from one of the security guards who was hunkered down in a restroom," he recounted. "I wondered if it was a prank call and he said, 'For sure, Dan, this has happened. You'd better get down here.'" Within a half hour, Young said, he was on his way back to Florida.

At 7:00 the next morning, Young and his staff met to evaluate what they faced. "We started to look at cleanup first, and whether or not we had safety issues, what areas we could get back into, and where we needed outside help. We were pretty much in position to start engineering evaluations," he said.

"Meanwhile, our grounds and maintenance crew had issues they had to take care of—electrical issues, HVAC issues, checking equipment that was damaged. We tried to get back to the mechanical contractors who had installed it to get replacements."

On the third day, said Young, "We had our financial people on site," checking on insurance coverage for equipment replacements and ensuring that they were "one-for-one" replacements.

By the end of the day, "we had the campus pretty well cleaned up and had identified what needed to be replaced and what didn't," Young said. His 50-person facilities team worked 12-15 hour days "to make sure we got everything back together" and he also brought in a roofing contractor and a general contractor.

The 2006 tornadoes were not the first natural disasters to strike Embry-Riddle. Three hurricanes in five weeks in 2004 destroyed building extensions, canopies, "things like that, but nothing major," said Young.

"We're fortunate because our main product here is flight and we have a weather station with meteorologists who are here during the academic periods, so we have a good idea of what the weather looks like," Young said.

But since the 2006 tornadoes, "we have done a structural evaluation of all our buildings" to determine the ones that "can be considered ultimately safe," Young stated. Also now, after a structural engineer completes the initial design for a new building, "we have a different structural engineer come in and look at developing a safety cell within that building."

CALIFORNIA EARTHQUAKES

When Southern California officials organized a mock earthquake drill last November involving 5 million people, participants included facilities staff members from California State University, Northridge. "It was a short 'duck, cover, and hold on' exercise for most people. It was more of a reminder to the public at large that they should be prepared and understand that it could happen again," said Tom Brown, executive director of facilities management at the institution.

"It" was the earthquake with a magnitude of 6.7 that rocked the Los Angeles area in 1994, with its epicenter a little more than a mile from Cal State Northridge. Although the region is vulnerable to earthquakes and has experienced many shakes and shocks since then, they "pale in comparison" to the 1994 event that required the institution to spend about $450 million over ten years in recovery, including major building repairs and renovations, Brown said.

The mock regional drill in November 2007 notwithstanding, Cal State Northridge now conducts its own more extensive drills annually when "we run through major scenarios," said Brown.

The 1994 disaster also taught lessons in building design, construction, and maintenance that are being followed today. Brown cites steel moment frame buildings that initially were designed "to move and sway with the earthquake without catastrophic failure" but did not perform that way in 1994. Experts who examined structural damages on the Cal State Northridge campus found that steel moment frame buildings "did not move and flex as much as they thought they would and there actually were structural member failures."

New designs include a determined "failure point," he said. "You'll see what looks like a dog bone in an I-beam. That's where you want it to fail if the stresses go beyond the movement and flex in a building."

Studies after the 1994 earthquake also revealed electrical problems with high-voltage power distribution feeders. "The ground movement caused failures as a result of underground cables not having enough flex in them," Brown explained. "Now we ensure that whenever we pull cables, particularly our high-voltage infrastructure cables, from underground conduits, we put in a loop so they will never be stressing the connectors and failing."

CAMPUS SHOOTINGS IN ARKANSAS

Sometimes, events caused by humans, not the weather, require emergency responses. At the University of Central Arkansas in Conway, Arkansas, the facilities team is part of a campus emergency preparedness plan that outlines, among other things, "who is going to be contacted, how they are going to be contacted, and what role they will play," said Larry Lawrence, director of physical plant.

His team was contacted and had a role to play in a shooting incident in October 2008 that claimed the lives of two students. But before they could respond, they waited until campus and local police had secured the safety of the campus. "We don't want to send our people into a police setting where there is gunfire until we know there is an all-clear," said Lawrence.

Once they received the all-clear, the facilities staff set up barricades to help university police block off certain streets and lock-down the campus. They also helped direct the media to a designated location. "Our grounds superintendent was there and he spoke with university police about where to put the media, directing them to an area and holding them there," Lawrence said.

Further, he added, "There were some students in the library and they had concerns about walking back to their residence hall, so we provided a vehicle and driver who shuttled them back there."

There was no damage to campus buildings and university police were in charge of the response to the shootings. "Our role was small, a supporting role. We asked the police, 'What can we do to help you?'" Lawrence said.

Facilities officers who have had to deal with harrowing unanticipated events agree that a key lesson learned from their experiences is to train and prepare staff members to respond to just about anything.

LESSONS LEARNED

"I'm a firm believer that the most important preparation for your response to emergencies is on your staff side," said Brown. "It's the planning, the exercises, the training. Ongoing staff development is critical to provide the resources you will need immediately."

Facilities officers who have had to deal with harrowing unanticipated events agree that a key lesson learned from their experiences is to train and prepare staff members to respond to just about anything.

Young credits the "professionalism" of his facilities team in coping with the disasters that struck his campus, but says it took the experience of early hurricanes to "get them focused." With many maintenance people, he explained, "when you give them a scenario of the possibilities, they always take the positive side and say 'it hasn't happened here in 30 years, it won't happen again.' But after the second hurricane, I had their attention, and after that, when they had to respond, they were there."

Similarly, at Iowa, the experience of "many on our staff who have been around a long time" proved to be both an asset and a liability, said Guckert. Facilities employees who experienced the 1993 flood were an asset because "they had been through this drill before and knew where the points of vulnerability were,"

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he said. "The liability was that they had a mental block that we could get something a lot worse than 1993."

Emergency plans on paper are valuable tools "but rarely anything goes according to plan in an emergency," declared Brown. "People who think they have a plan to respond to something extraordinary and that it's going to go just like that are in for a rude awakening. The planning is really practice, and the practice gets your people ready for the extraordinary. You can always be assured that extraordinary things are going to happen."

"Never assume that the disaster you just had is the worst that can happen to you," agreed Guckert. "We are studying now what we should do to protect our facilities in the future and we are not assuming we have seen the worst that we will ever see in our lives."

"It's 'what do you do if…?'" said Bracy. "You never know what's going to happen."

But Guckert suggests that even the worst disasters provide a positive opportunity for facilities officers. The Iowa flood "gave us a showcase opportunity to show the institution what we were made of," he said.

As conditions worsened, daily meetings that began "modestly" with attendance by campus officers from different facilities began also drawing in the university president, vice presidents, and senior staff in communications, public relations, and other operations. "We were the organization in charge of protecting the campus and all institutional eyes were on us and how we were responding," Guckert said.

"…planning is really practice, and the practice gets your people ready for the extraordinary. You can always be assured that extraordinary things are going to happen."—Tom Brown

"It was an opportunity for people to see what we were capable of doing; how we could marshal our staff and redirect it and effectively deal with all the challenges we were facing. People realized how systems and the buildings they long took for granted —and now were losing — were so vital to the operation of the campus. It gave the institution an enormous appreciation of the complexities of higher education facilities and what it really takes to keep a campus up and running."

Alan Dessoff is a freelance writer based in Bethesda, MD, and a frequent contributor to *Facilities Manager*. He can be reached at *adedit@verizon.net*.