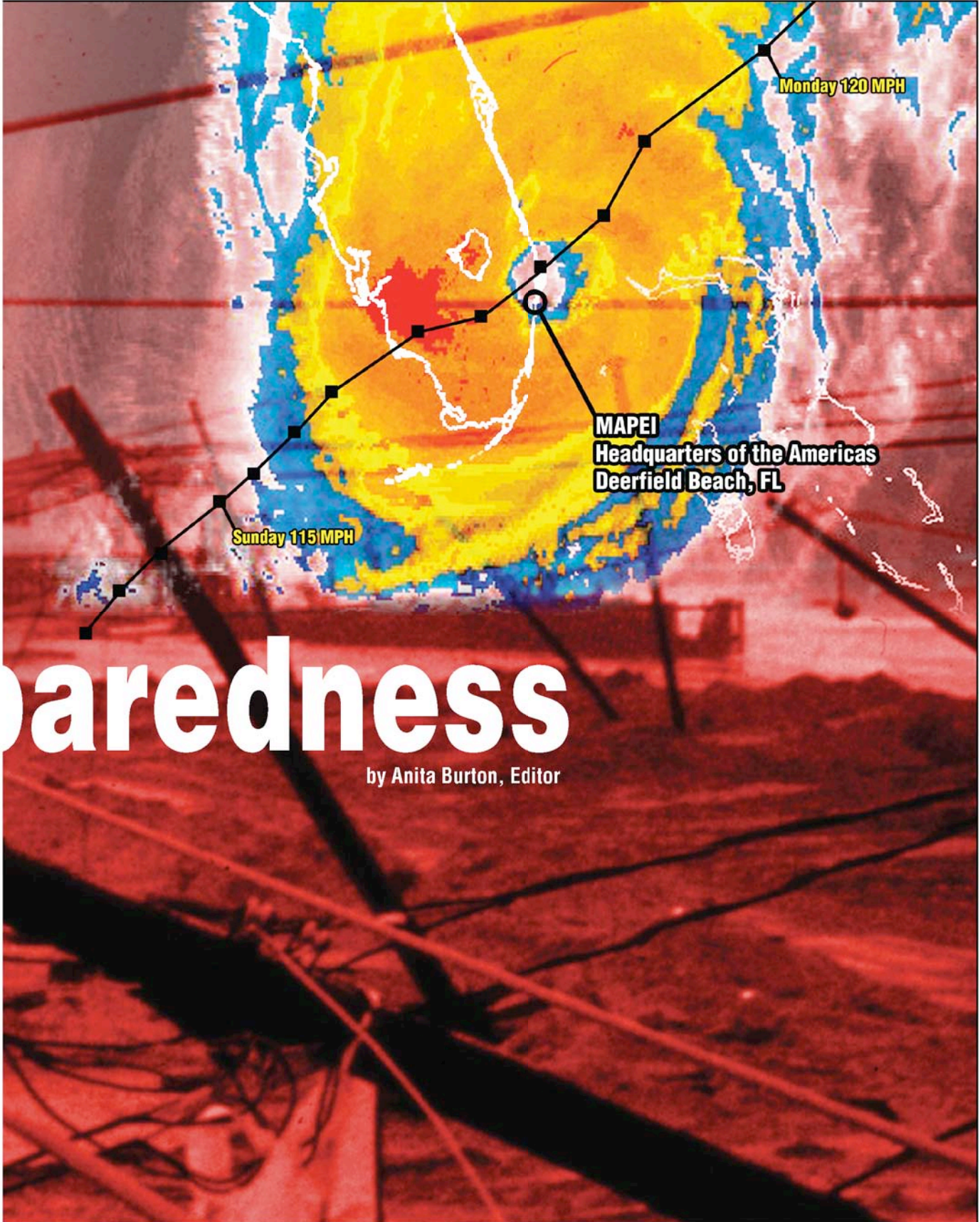


MAPEI: A Role Model for Emergency Prep

In late fall of 2005, MAPEI's headquarters for its U.S. operations experienced firsthand the devastation that a natural disaster can bring. Rebuilding efforts to mend the Deerfield Beach office have finally come to a close after Hurricane Wilma's winds of more than 100 mph (161 km/h) tore through South Florida. Here we share

our story of survival, outlining the steps we took to overcome a natural disaster, while continuing to put our customers' needs first. We follow with invaluable suggestions as to how your company can prevent potential loss of business by putting an emergency preparedness plan in place, to help endure whatever natural disasters may come your way.

Photo courtesy of NOAA



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by Anita Burton, Editor

Product Challenge

Little did we know that at her peak, Wilma would go on to earn the rating for most intense tropical cyclone ever recorded in the Atlantic basin. Even after witnessing the devastation from hurricanes Rita and Katrina a few months earlier, most Floridians doubted that more disaster would come. The common belief was that Wilma would slow to a crawl after crossing the land mass of South Florida. Showing obvious signs of hurricane fatigue by underestimating the intensity of this hurricane, many Floridians failed to prepare for the worst.

The path of Wilma

After wreaking havoc on Mexico's Yucatan Peninsula as a devastating Category 5 hurricane with winds of 185 mph (298 km/h), Wilma entered the Gulf of Mexico headed for Florida. Wilma awakened Florida's southwest coast as a Category 3, with sustained winds of at least 125 mph (201 km/h). She slammed the lower Florida Keys, destroying tens of thousands of vehicles and flooding many Key West homes under 3 to 6 feet (0,91 to 1,83 m) of seawater.

In its diagonal swath, Wilma cut across South Florida, battering several metropolitan areas with intense wind and rain, including Palm Beach, Fort Lauderdale and Miami. Wilma pounded Florida with torrential rain and destructive winds for six hours before exiting into the Atlantic Ocean. In her wake she left widespread flooding to homes, as well as extensive damage to high-rise condominiums, office buildings and airports ranging from blown-in windows to near building collapse. Roof damage to homes and businesses was widespread, in addition to complete destruction of pool screens and fences.

South Florida unplugged

Hurricane Wilma caused sweeping destruction to Florida's critical infrastructure, including power, water



Hurricane winds and rain damaged 1/3 of the building's roof along with several air-conditioner units (left), allowing water, wind and heat to penetrate the building's core.

and sewer systems. Florida Power & Light Company, the state's largest electricity utility, reported that more than 3.2-million customers (equivalent to 6-million people) had no power – many for three weeks or more. Communication problems mounted as landlines and cellular towers were damaged or overloaded in capacity. For up to two months, cable television, Internet and cellular services were completely unavailable to some.

Power outages compounded transportation difficulties faced by Floridians following Wilma. Traffic lights that weren't blown down dangled lifelessly, resulting in traffic woes galore. Cars and generators created a high demand for gasoline, yet the commodity was hard to come by even if the supply was there: Few gas stations had the generators necessary for gasoline to be pumped.

Wilma made several landfalls, with the most destructive effects felt in Mexico's Yucatan Peninsula, Cuba and Florida. Estimates of total damage range between \$16 and \$20 billion, ranking Wilma among the 10 costliest hurricanes ever recorded in

the Atlantic and as the sixth costliest storm in U.S. history.

The aftermath

Having known for days that Wilma was on its way, MAPEI took precautions to evacuate staff at its two-story corporate office. When Wilma hit, her winds and rain managed to peel off about one-third of the building's roof, allowing water and wind to penetrate the building core.

Wilma reigns as a record-setter

Hurricane Wilma set numerous records for both strength and seasonal activity: Wilma affected 11 countries with winds and/or rainfall, more than any other hurricane in recent history. Wilma was the 21st named storm, 13th hurricane, 6th major hurricane and 3rd Category 5 hurricane of the record-breaking 2005 Atlantic season. This was the first time on record that three Category 5 hurricanes (Katrina, Rita and Wilma) had formed in the Atlantic basin in a year.

At the same time, Wilma's winds tore the side panels from 20 rooftop air-conditioning units, causing massive heat infiltration and significant damage to MAPEI's computer server (the heat buildup actually melted two hard drives!).

Because of the roof damage, water saturated the entire upper floor, drowning 20,000 sq. ft. (2,323 m²) of insulation and acoustical ceiling tiles. After becoming wet, acoustical tiles became the weight and consistency of oatmeal, causing the ceiling to buckle, fall, and then coat and ruin computers, office furniture and personal valuables. Water damage shorted out ceiling cable wires throughout the building, knocking out phone and computer accessibility, requiring IT to completely rewire the internal system. Water that saturated and ruined carpeting on the upper floor eventually leaked through to similarly damage the lower floor's acoustical ceiling tiles and carpet.

To top off the damage, the hurricane winds blew in two upper-floor windows, devastating both offices. In the parking lot below, all canopies and supports were blown away, and most trees were knocked down, creating an obstacle course for the bravest of drivers.

How MAPEI repaired and remodeled itself

After every natural disaster, it helps to have a solid plan of action. Before renovation at MAPEI Corporation's headquarters could begin, several preliminary steps helped turn crisis into calm:

- 1 A task-force "recovery team" was established representing Operations, Administration, Technical Services, R&D, IT, Product Management, Marketing, Accounting and Customer Services. The team devised a corporate plan of action to address the lack of electrical power at the Deerfield Beach corporate office and the

Ft. Lauderdale manufacturing plant. The recovery team met twice daily to discuss primary needs and prioritize shared assignments.

- 2 MAPEI's insurance company brought in Disaster Services Incorporated to address such immediate remediation needs as removing wet and damaged carpet, ceiling tiles and insulation.
- 3 Walls were tested for moisture to avoid the potential of mold. Tests revealed that moisture was present from ground level up to 18 inches (46 cm) on one side of the building. Wherever moisture was found, the drywall was cut out 4 feet (1,23 m) high. Once the drywall and carpets were removed, a bleach solution was sprayed to help prevent mold.
- 4 An electrical contractor was hired to help stabilize and recover electrical power throughout corporate building.

- 5 Two hot-air generators were set up to pump generous loads of hot air through polyethylene tubes into the building's walls, to dry out the remainder of the building and prevent mold development.
- 6 Once the building was dry, a mold-testing company was hired to test for mold in the areas where moisture was previously discovered. Thanks to the quick reaction, final results revealed no presence of mold.

The silver lining: A fresh look

When your own building needs a facelift, it helps if you're a player in the construction industry. Specialized contractors were called in to deal with critical roofing repairs, electrical wiring, gutting and reconstruction of several offices, yet much of MAPEI's efforts centered on reconstructing the upper- and lower-level flooring surfaces.

With one plant down, MAPEI kept production a priority

While the hurricane left only minor structural damage at MAPEI's plant in Ft. Lauderdale, it was the total loss of electrical power in South Florida that created enormous challenges for this key manufacturing facility. Operations worked closely with MAPEI's manufacturing plants in Virginia, Illinois and Texas, which supported Ft. Lauderdale's production needs for two weeks until public power could be fully restored. Having 14 strategically located plants throughout the Americas paid off for MAPEI during this challenging time.

In the meantime, a diesel generator was trucked in from Mississippi, to power the Ft. Lauderdale plant, allowing it to become operational after only five days following the hurricane! Broward Oil Company supplied the plant with 1,500 gallons (5,678 L) per day of needed fuel, and an additional 200 gallons (757 L) per day to power the corporate building's existing emergency



diesel generator for a week.

One of the most interesting challenges for MAPEI's Ft. Lauderdale plant staff had to do with its corporate neighbor. In order to gain safe vehicle access to the Ft. Lauderdale plant after the hurricane, MAPEI's plant and engineering staff worked delicately to cut off several hundred feet of its neighbor's metal roof, which was literally peeled back and covering adjacent power lines, telephone lines and the narrow roadway leading to the plant. Due to the massive volume of power outages throughout South Florida, it took several days for the power company to arrive and finish the job.

Product Challenge

Following Wilma's wrath, MAPEI seized the opportunity to replace its existing damaged carpet with contemporary, large-format porcelain tile. MAPEI's corporate office has grown from 55 to more than 135 employees in just six years, creating a need for a durable flooring product with a long established lifecycle that is both fashionable and practical.

The challenge was to replace 35,000 sq. ft. (3,252 m²) of soggy, damaged carpet on two levels of the building with large-format, porcelain tile. Here is how MAPEI's Technical Services staff worked with flooring contractors to meet the challenge:

A) Challenge: To accommodate upper-floor, heavy foot traffic in a building subfloor originally designed for carpet installation, as well as provide both levels with crack-suppression capabilities.

Solution: Install the *Mapelastic™ SM Primer* liquid latex priming system, before applying *Mapelastic SM* crack-isolation and sound-reduction "peel-and-stick" sheet membrane.

B) Challenge: To install 15,000 sq. ft. (1,394 m²) of porcelain tile over an uneven concrete slab on the lower level of the building.

Solution: Accommodate unevenness of slab by installing porcelain tile on the building's lower level with *Ultralite Mortar™* lightweight, polymer-modified wall and floor mortar (ideal for both thin-set and medium-bed applications).

C) Challenge: To install 20,000 sq. ft. (1,858 m²) of porcelain tile on the upper level of the building requiring a fast-track, flexible, rapid-curing mortar system.

Solution: Install tile using MAPEI's *Granirapid®* premium rapid-setting, flexible polymer-modified mortar system developed with High-Hydrated Cement Technology (HCT™) to build high, early mechanical strength. *Granirapid* is formulated from a shrinkage-compensated technology that allows medium-bed, high-build capacity for large-format tile.

D) Challenge: To install a grout that meets durability requirements of the



Granirapid flexible mortar system was used to install 20,000 sq. ft. (1,858 m²) of porcelain tile on the building's upper level.

upper floor while providing chemical and stain resistance to the research and development offices on the lower floor.

Solution: Grout 35,000 sq. ft. (3,252 m²) of porcelain tile using *Kerapoxy®* chemical and stain-resistant 100%-solids epoxy mortar and grout. Ideal for fast-track installations, *Kerapoxy's* easy water cleanup and fast-setting properties allow foot traffic within 24 hours.

E) Challenge: To remove damaged carpet in upper-floor gym and replace with large-format rubber tile.



Kerapoxy chemical and stain-resistant grout was used to grout 35,000 sq. ft. (3,252 m²) of porcelain tile throughout the building.

Solution: Use *Ultrabond® G21* solvent-free polyurethane adhesive, designed for extreme indoor and outdoor installations. *Ultrabond G21* aggressively adheres all types of floor coverings and many difficult-to-bond-to substrates. MAPEI's fitness enthusiasts can now enjoy exercising in a more durable and contemporary-looking environment. 🏋️



Ultrabond G21 polyurethane-based adhesive was used to install large-format rubber tile in MAPEI's employee gym.

Hurricane Wilma: Vital Stats

Number of homes and businesses without power	3.2 million
Number of people affected by power loss	6 million
Number of shelters set up across state	124
Number of people staying in shelters across state.....	36,000
Number of airports closed	19
Number of flights disrupted/cancelled	2,000
Number of National Guardsmen mobilized	3,000
Number of Wilma-related fatalities in Florida	35
Estimated total cost of damage in Florida	\$10 billion

MAPEI's continued operation after Wilma

Priceless