## **Rebuilding after Hurricane Sandy**

PDCA members pitch in to restore the New Jersey shore to its former glory, but a lot of work still remains

By Heather Hudson

hen Hurricane Sandy came screeching onto the shores of the northeastern United States last October, it left nothing less than devastation in its wake.

The second costliest storm in U.S. history caused some \$50 billion in damage and killed 159 people. And if this vengeful storm had a target, it seemed as though the New Jersey shoreline was the bull's eye.

Dozens of beachfront communities were ravaged by high winds and flooding that severely damaged or utterly destroyed everything from highways to single family homes to businesses to the world-famous Jersey Shore, which boasts an estimated \$40 billion tourism industry.

But clearly the "Superstorm" didn't know what it was dealing with.

The resilient people of this tenacious state rose up and immediately began the tough business of rebuilding – stronger than ever.

When summer was officially kicked off Memorial Day weekend in May 2013, many of the most popular amenities at the Shore were up and running, including those iconic boardwalks. And the pile driving industry had a lot to do with that.

R. Kremer & Son Marine Contractors, LLC was one of the businesses both affected by and called to respond to the monu-

mental damage. Erich Kremer says his staff was heavily involved in cleanup and emergency response after the storm hit and followed up by working on the repair and rebuilding of some of those very public institutions.

"We did six marina projects this year [to prepare for the tourism season]. Everything, from floating dock systems to electric to plumbing to parking lots, were completely ripped up by debris and boats," he said.

Time and insurance money ran out for some of the projects, but Kremer expects to get back at it when more federal funding and insurance disaster money is reallocated.

"There's still a lot of work to be done on the Jersey Shore. A lot of the [projects] have been band-aided enough to operate and then we'll probably start back at construction in the fall. I've got two marinas already on the books and I'd like to think I'll get a couple more," said Kremer.

In the meantime, projects like bulkhead repair and reconstruction are keeping them busy. "When the ocean breached over the top of the barrier islands, it basically clobbered them and washed away bulkheads and drainage systems. We've got 30 locations to do pipes, paving and that kind of stuff.

"Our guys have been working 60-70 hours a week to get things



"There's still a lot of work to be done on the Jersey Shore. A lot of the [projects] have been band-aided enough to operate and then we'll probably start back at construction in the fall."

– Erich Kremer, R. Kremer & Son Marine Contractors

.....



Superstorm Sandy devastated the New Jersey shoreline but rebuilding efforts are in full swing, including the help from several PDCA members

done and I expect it'll be like this for the next three to five years."

Kremer says adjustments are being made to the way they've been installing piles in the wake of the superstorm to be sure that kind of damage won't happen again.

"A typical floating dock system rides up and down on piling,

but the tide came eight feet above any tide anyone ever saw, so we're using heavier duty pilings to support floating docks and leaving them a lot higher."

They're also using stronger materials, going deeper into the ground and higher out of the ground to fortify the area.

Another PDCA member, Cox Industries, Inc., has also been very active in the aftermath of

Hurricane Sandy. They supplied all of the timber piling to rebuild many of the old boardwalks, including Seaside Heights, Ortley Beach, Point Pleasant Beach, Island Beach State Park and others.

"We supplied tens of thousands of timber piles in a very short period of time for the reconstruction effort," said Randy Kelly, vicepresident of construction products.

The boardwalks were back but not complete until one important feature at Seaside Heights lined them: the "swing back" benches on the two-mile stretch. The benches allow visitors to choose to gaze at the ocean or take in the sights of the shops, restaurants and games.

The North American Wholesale Lumber Association and Cox Industries worked together to donate more than 12,000 board feet of pressure-treated lumber to make 275 benches.

"Cox Industries has a long history of philanthropic endeavors. There's a culture here of running a prudent and successful business but recognizing places to give back when we can," said Kelly.

## Residential areas still waiting

While the New Jersey shoreline is taking shape once again, there are hundreds of thousands of residences and businesses quietly awaiting attention.

And while the pile driving industry – and particularly PDCA members like R. Kremer & Son and Cox Industries, Inc. - has been there from day one to offer their services, the industry will continue to be needed in the months and years ahead.

Dr. Thomas Herrington, research associate professor at the

"Cox Industries has a long history of philanthropic endeavors. There's a culture here of running a prudent and successful business but recognizing places to give back when we can."

- Randy Kelly, Cox Industries, Inc.

were the ones you saw on TV, pushed off their foundations and collapsed. A thousand structures were lost because the loads on them were much higher than they were designed for," he said.

Much like Kremer's marina work, plans for rebuilding the hardest hit homes along the coast will include raised piles so they won't be flooded or directly attacked by waves should another storm come along.

In an ironic twist, prior to Hurricane Sandy, the Federal Emergency Management Agency (FEMA) was in the process of remapping and recategorizing the flood hazards in New Jersey, a precaution designed for just such a disaster. However, one of the things that has slowed the recovery process is the time it's taking to finalize the mapping.

"FEMA has been doing modeling and analysis techniques to come up with a new base flood elevation: the elevation a home needs to be raised above so it doesn't experience flooding during a 1-in-100-year storm event. Because it's been about 25-30 years since they last mapped the floodplain, those elevations are changing significantly.

"People who were previously mapped at seven feet above ground are now being remapped into 12 feet above ground. These are significant changes."

Stevens Institute of Technology

in Hoboken, N.J., says the real

work has yet to even begin in

the densely populated area where

many residential and commercial

structures were damaged. Some

of these buildings date back to the

1940s and 50s and were built on

"Most of the newer foundations are built on piles, but the ones that weren't designed so well

block foundations.

After Hurricane Sandy hit, FEMA released a series of advisory maps that indicated where the changes would be made.

The new maps shocked everyone in terms of the cost to rebuild, says Herrington.

"A lot of people are hesitant to invest in construction until they know exactly how high they need to build. Some will err on the side of caution and build even higher than they have to. In some cases, you're looking at the difference between a \$60,000-\$80,000 repair or one that could run up to \$200,000," he explained.

The final report was expected to be released by the end of summer 2013.

## A sea of work

While the wait for the new base elevation has been excruciating for displaced home and business owners, when it does come and insurance funding is released, the floodgates will open for those in the piling industry who will be called in to install pilings in floodravaged structures.

But it won't be an easy job, says Herrington.

"A lot of homes were flooded but not knocked off their foundations. If a homeowner wants to elevate a home without tearing it down, that's a real challenge for the [piling] industry. How do you lift a home in a densely developed area?"

The traditional method of lifting a home, moving it to an empty lot, putting in the piles and popping the home on top won't work.

"You can use micropiles or section piles and work underneath a house jacked up on cribbing, but there are certainly opportunities and challenges with that kind of construction," said Herrington.

One of the solutions includes the use of concrete piles that are



Geotechnical Engineering Soil and Rock Mechanics Shoring and Underpinning Design Pile Load Testing and Inspection Vibration Monitoring Construction Materials Testing Third Party Inspections Survey Layout

TECTONIC

70 Pleasant Hill Road, Mountainville, NY 10953 1-800-829-6531 www.tectonicengineering.com



Piles supplied by PDCA member Cox Industries Inc. are installed at Seaside Heights, N.J.

connected together with joints. This would allow construction to be done in sections.

"In the design sense, those ideas are great, but you may need to include a grade beam or put a pile cap on it. The pile is cantilevered 10 to 15 feet, which is a huge lateral load. You have to remember the piles need to be able to deflect. If they're stiff or have inner joints, it's important to understand how they can withstand sheer loads. The stiffer and more connections you have the more difficult it can be."

Herrington says the piling industry will be called upon to devise innovative, cost-effective solutions to these rebuilding challenges.

"The industry has come up with techniques to address complex issues in the past – everything from micro piles to auger piles and things that are quite innovative. I think they'll come up with a solution here, too. I'm interested to see what they do."

## More work than pile drivers?

The innovative minds in the pile driving industry will undoubtedly sort out a solution, but the question remains: are there enough pile drivers to get the jobs done? Every house that requires new piles will need at least a week or two for completion and there are hundreds and hundreds of them that await work.

"I don't think our residents can not have a home for two years. Once these almost final maps come out, people will make the decision to build or not rebuild and I would suspect in the fall and winter there will be a lot of construction," said Herrington.

This creates almost endless possibilities for pile drivers from across the country to get involved. Herrington says that companies that have the capacity would be well advised to be a presence in the area and get to know the major players so they're known as a credible option when people start to make decisions.

The complicated work of processing insurance payouts is also in progress. Affected homeowners are eligible for low interest loans from FEMA to renovate to the new standards. They can reach \$150,000. The banking industry is also poised to offer mortgages or refinancing while ensuring homeowners are rebuilding to the right standard.

It's clear there's a tough job ahead as the New Jersey shoreline continues to transform from rubble to its former glory. Fortunately, the pile driving industry is up to the job.  $\checkmark$ 

122 | QUARTER 3 2013