

## DESIGNING THE NEW WHITNEY

By **SHIJIJEE PAIRAN, P.E., AND VICTORIA G. PONCE DE LEON, P.E.** ■ *Silva's structural engineering solutions for the new Whitney Museum of American Art, in New York City, supported the unusually shaped Rocco Pucci-designed building and in many cases have been left exposed to become part of the exhibited architecture.*

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## BLUE POWER

By **ROBERT L. REID** ■ *Only about 3 percent of the 80,000 dams in the United States are equipped to generate electricity. But the nation could increase its hydropower production by adding equipment to the unpowered dams and other water infrastructure, by upgrading the existing equipment at powered dams, and even by changing the rules under which dams operate.*

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## WATER FOR UTAH'S GREAT BASIN

By **MARK BREITENBACH, P.E., M.ASCE, NATHANIEL JONES, P.E., M.ASCE, AND ADAM MURDOCK, P.E., M.ASCE** ■ *The Central Utah Water Conservancy District has completed much of the Utah Lake System, an ambitious effort to convey water from western Utah to the major population centers in the state's northern and central regions. Successful completion of these projects has entailed overcoming design and construction challenges pertaining to seismic risks, landslides, cavitation control at high-head turbines, flow and pressure control between the upper and lower delivery systems, and the need to remove accumulated material from within the pipelines to maintain system capacities.*

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## SAVING A SANCTUARY

By **MICHAEL HORST, P.E., M.ASCE, AND BENJAMIN CLEMENS, P.E.** ■ *When a tornado struck Mobile, Alabama, on Christmas Day in 2012, a cherished timber church was badly damaged, and it seemed as though steel replacements would be required. But engineers with Wiss, Janney, Elstner Associates, Inc., carefully analyzed each damaged element and found ingenious ways to repair as many as possible, preserving the character of this historically important structure.*

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## ON THE COVER:

The new Whitney Museum of American Art, showing the High Line in the New York City borough of Manhattan, is an intriguing as it is inspiring. (Photograph © Nic Lefebvre. See page 50.)



# Engineering

## DEPARTMENTS

### Civil Engineering News - 20

#### ROCK SOLID REPLACEMENT

*The replacement Herbert C. Brown Bridge, along North Carolina's Outer Banks, has been designed for efficient and economical construction and a lifetime of 100 years, even if wear does its worst.*

#### RADICAL RIDE

*Lumber researchers have designed a high-tech wind-tunnel airplane that is wider than it is long and can seat 1,000.*

#### WETLANDS WORK

*Restoring wetlands throughout the Midwest could help to prevent the increasingly common floods that threaten the region's agriculture and communities.*

#### BAD VIBES

*Researchers have discovered the mechanism behind "long-runout" landslides, which traverse unusually long horizontal distances. Waves that decrease friction are the culprit.*

#### KLAMATH BARS TO GO

*A new dam has been reached to remove four aging dams on the Klamath River in southern Oregon and northern California, and in contrast to previous plans, this one may not be approved by Congress.*

#### BACK TO NATURE

*The Wallasea Island Wild Coast project, in the United Kingdom, is turning farmland back into coastal wetlands, creating wildlife and animal habitats while providing flood protection.*

#### NEW LIFE FOR OLD AQUIFERS

*Storing surface water in aquifers that have been drawn dry, rather than in*

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PHOTO COURTESY OF WATERSHED

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*open-air exercises and canals, is helping California and Arizona prepare for future droughts.*

## **President's Note • 12**

*In less than 10 years, millennials will make up roughly 44 percent of the workforce. How can members effectively engage with this large and committed generation?*

## **Policy Briefing • 14**

*The Senate Committee on Environment and Public Works met recently to discuss how to make drinking water and wastewater treatment infrastructures more affordable. Local governments and advocacy groups are requesting changes to our laws aimed at boosting investment in this infrastructure.*

## **Seven Questions • 16**

*An interview with Boris Silen, the founder of Silen Consult, LLC, on public speaking.*

## **Technology • 40**

*Researchers at Purdue University have developed a method for removing oil and contaminants from water that is simple, inexpensive, and effective.*

## **A Question of Ethics • 42**

*What are the circumstances under which marijuana use during working hours would violate ASCE's Code of Ethics?*





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## History Lesson • 44

*A hydroelectric plant more than a quarter of a mile long opened in Sandi Sta. Marie, Michigan, in 1902 as a symbol of the industrial aspirations of Michigan's Upper Peninsula.*

## Editor's Note • 49

*The power of water*

## Books • 80

*We review books on the life and work of architect Frank Gehry, the effort to make New York City's streets safer for pedestrians and bicyclists, the threat that earthquakes pose to populated areas around the world, and the professions and industries that are poised for growth in the years to come.*

## The Law • 88

*A letter of intent to enter into an agreement with a subcontractor is not the same thing as a legal contract and should not be relied upon to the same degree.*

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