

# Civil Engineering

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ASCE

## AQUATIC SENSATION

**ALSO:**  
**BRIDGE  
RESTORATION**  
.....  
**SEWER RENEWAL**  
.....  
**LANDSLIDE MITIGATION**



## Noted

### Use the Force ... or a Wheel Loader!

AS IF THE evil Galactic Emperor and his Imperial Storm Troopers, the vicious Sand People, and assorted alien creatures weren't bad enough, now the sand itself is threatening the area in which young Anakin Skywalker grew up before turning to the dark side as Darth Vader. That site, as any fan of the Star Wars movies would know, is the desert planet of Tatooine—in reality an abandoned movie set in southwestern Tunisia at which scenes from *Star Wars Episode I: The Phantom Men-*

*ace*, released in 1999, were filmed. Called Mos Espa in the movie, the set is located in the Sahara approximately 17 km from the tourist town of Tozeur.

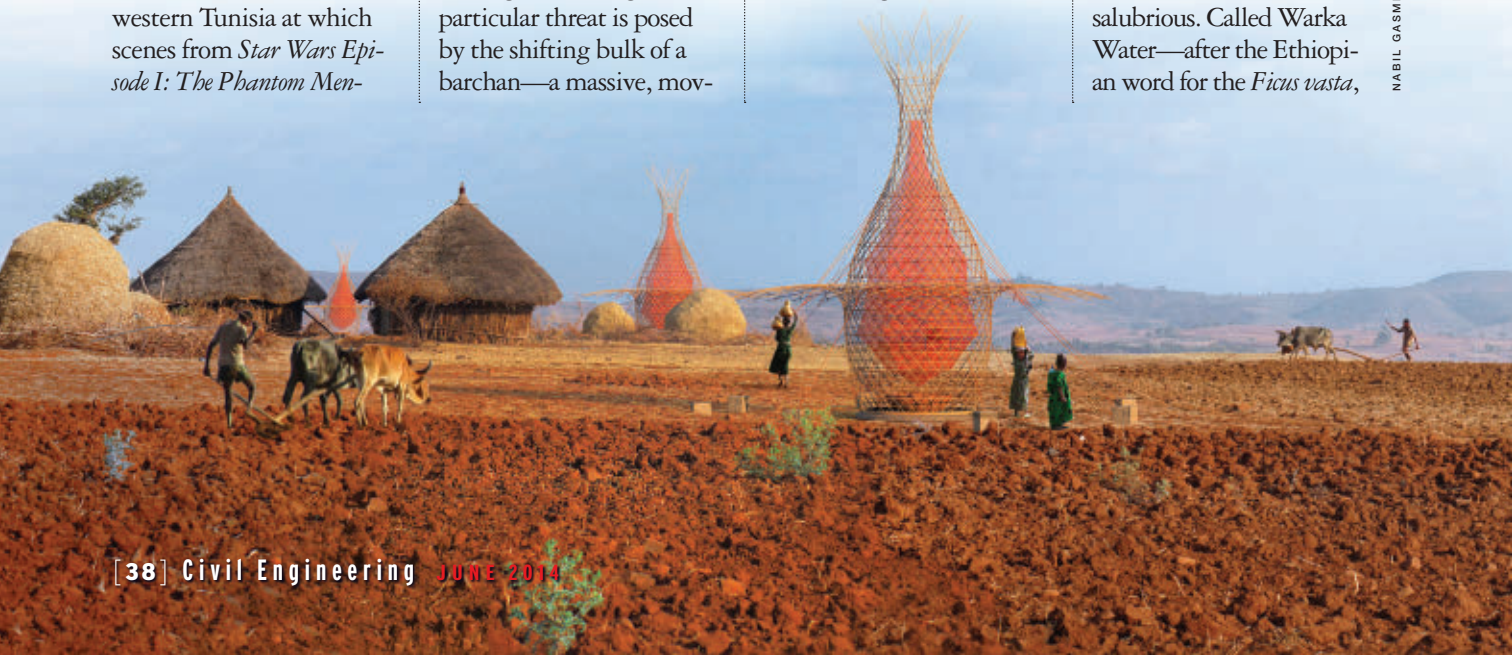
A popular destination for Star Wars fans from around the world, Mos Espa still features roughly 20 flat and domelike structures that for the most part are made of wood and gypsum, along with other set pieces that cover an area of roughly 110 by 120 m, explains Nabil Gasmi, Ph.D., a geographer and geomorphologist at Tunisia's Université de Sousse. But the desert is encroaching and threatening to bury the fragile buildings. A particular threat is posed by the shifting bulk of a barchan—a massive, mov-

ing sand dune—this one of approximately 30,000 m<sup>3</sup>, Gasmi explains. Recently, a heroic effort—what else would the Star Wars saga require?—involving construction equipment managed to move the dune to another sector about 500 m from the site of Mos Espa, safeguarding the area for the next few years. But some of the sets were damaged and will now have to be repaired, explains SaveMos-Espa.org, a website and blog launched by Tunisia's Chamber for Development of Oasis and Sahara Tourism to raise funds for the preservation and restoration of the site. Among the chamber's

goals are the establishment of an ecological museum at the site and, eventually, a hotel and facilities for events and entertainment.

### Water, Water—From the Air

IT MAY NOT be indoor plumbing, but a proposed towering framework of bamboo and a perforated fabric promises to harvest potable water directly from the air via condensation, potentially sparing villagers in mountainous regions of Ethiopia the need to trudge several hours each day to collect water from sources that in some cases are less than salubrious. Called Warka Water—after the Ethiopian word for the *Ficus vasta*,



NABIL GASMI, ABOVE; ARCHITECTURE AND VISION, BELOW

a large fig tree critical to the country's ecosystem but now disappearing—the tower was designed by Architecture and Vision, an international design firm based in Bomarzo, Italy. Reaching a height of 12 m but weighing as little as 80 kg, the bamboo structure, when folded, could easily be transported by animal to remote village sites in Ethiopia and other developing countries and within a few hours could be assembled by inhabitants there using only hand tools, according to information from Architecture and Vision. A net of tensioning cables will stabilize the tower against strong winds.

In addition to bamboo, the lattice-work tower could be constructed from rope, wire, or other local materials. Its triangular, doubly curving form was inspired by the traditional Ethiopian crafts-

manship seen in basket weaving. The fabric within the structure could collect as much as 100 L of water a day from the fog that forms in mountainous regions, which means a single Warka Water tower could meet the drinking water needs of about 30 people, explains Arturo Vittori, the director of Architecture and Vision.

Six prototypes of the Warka Water tower have been constructed. The project has been developed in collaboration with the Ethiopian Institute of Architecture, Building Construction, and City Development; Addis Ababa University; and other organizations. Architecture and Vision is refining the design, Vittori notes, and a larger version has been developed in collaboration with the Holy Spirit University of Kaslik, in Lebanon.

## News Bites

■ All aboard! According to a May 8 report from ChinaDaily.com, China plans to build a high-speed railway to the United States. The proposed route would start in China's northeast region. It would cross Siberia and the Bering Strait to Alaska, and from there it would enter Canada and then the United States. The project also proposes a 200 km undersea tunnel. According to ChinaDaily.com, however, the details of the project are yet to be finalized.

■ Here comes the sun! Imagine a world devoid of cloudy, dreary days. Thanks to technology developed by Paolo di Trapani, Ph.D., an associate professor of optics and experimental physics at Italy's Università degli Studi dell'Insubria, it will take just the flick of a switch to obtain natural daylight. The technology uses white light-emitting diodes, which shine through a clear plas-

tic panel. Nanoparticles attached to this panel scatter light in much the same way that the earth's atmosphere scatters sunlight. The primary objective of the technology is to brighten road tunnels, malls, hotels, hospitals, et cetera. The panels will be marketed through CoeLux, a Università degli Studi dell'Insubria spin-off.

■ Good news on the job front: civil engineering ranks fifth among science and engineering occupations slated for growth over the 10-year period from 2012 to 2022, according to a new report from the U.S. Bureau of Labor Statistics, *The U.S. Science and Engineering Workforce: Recent, Current, and Projected Employment, Wages, and Unemployment* ([www.fas.org/sgrp/crs/misc/R43061.pdf](http://www.fas.org/sgrp/crs/misc/R43061.pdf)). The report reveals that an average of 12,010 jobs for civil engineers will become available each year, 5,370 of them from growth in the profession and the remainder from replacements.

 To read more, visit [www.asce.org/cemagazine](http://www.asce.org/cemagazine).

## Quoted

**WHEN WE THINK about threats to the environment, we tend to picture cars and smokestacks, not dinner. But the truth is, our need for food poses one of the biggest dangers to the planet.**

—JONATHAN FOLEY  
“A Five-Step Plan to Feed the World”  
*National Geographic*  
May 2014

**THE WORLD'S PROBLEMS are never tidily confined to the laboratory or spreadsheet. From climate change to poverty to disease, the challenges of our age are unwaveringly human in nature and scale, and engineering and science issues are always embedded in broader human realities, from deeply felt cultural traditions to building codes to political tensions. So our students also need an in-depth understanding of human complexities—the political, cultural, and economic realities that shape our existence—as well as fluency in the powerful forms of thinking and creativity cultivated by the humanities, arts, and social sciences.**

—DEBORAH K. FITZGERALD  
Professor of the History of Technology and Kenan Sahin Dean of the School of Humanities, Arts, and Social Sciences at the Massachusetts Institute of Technology  
Opinion (“At MIT, the Humanities Are Just as Important as STEM”)  
*The Boston Globe*  
April 30, 2014