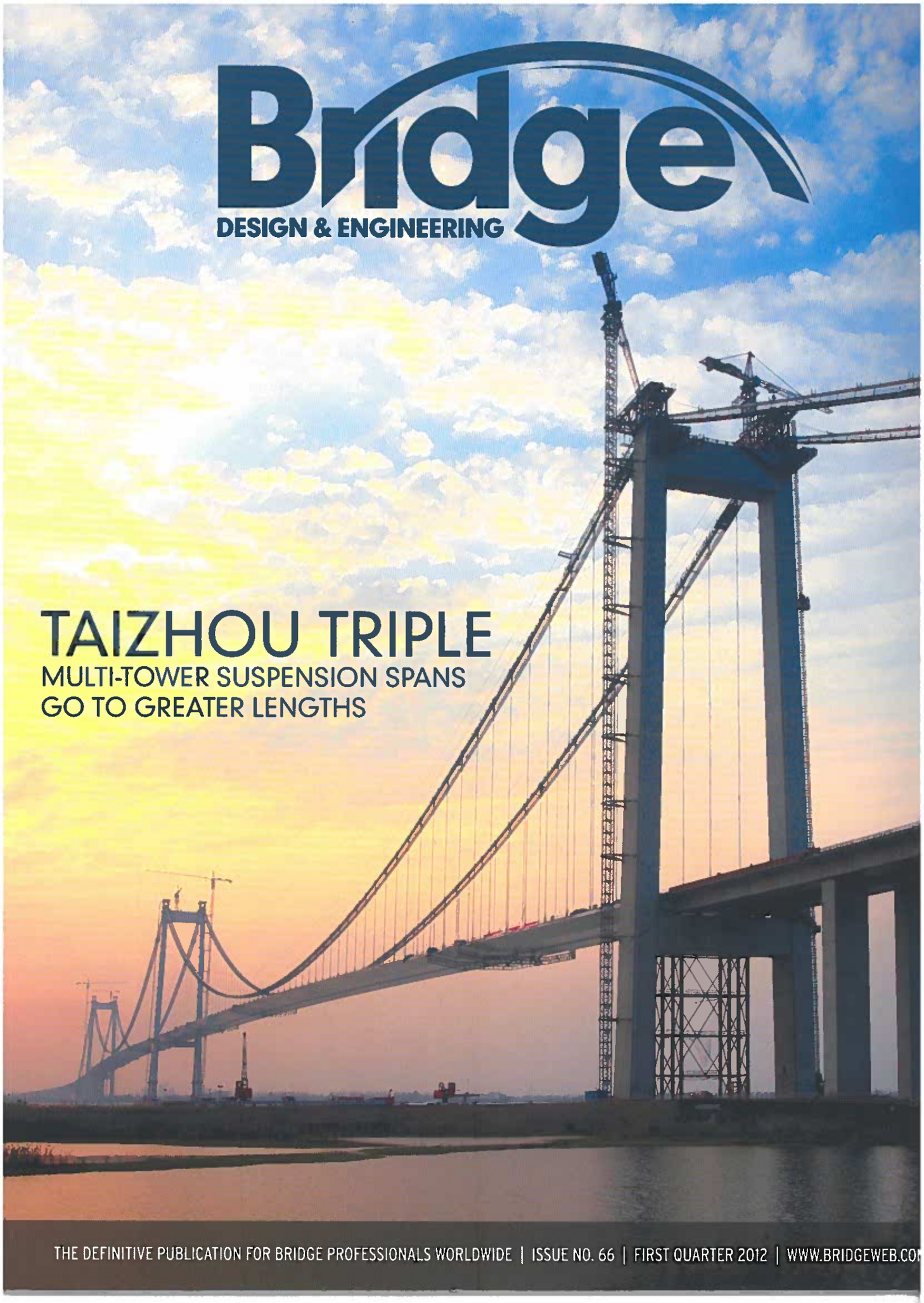
Bridge
DESIGN & ENGINEERING

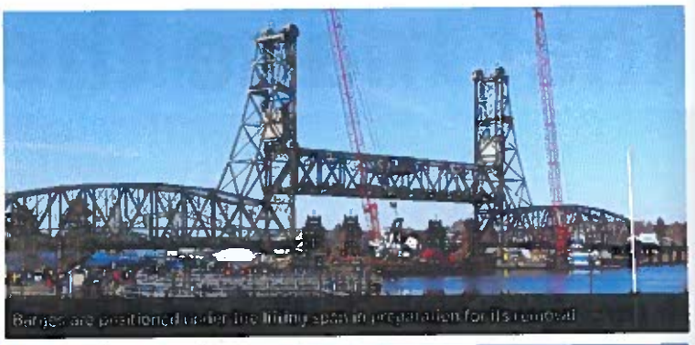


TAIZHOU TRIPLE

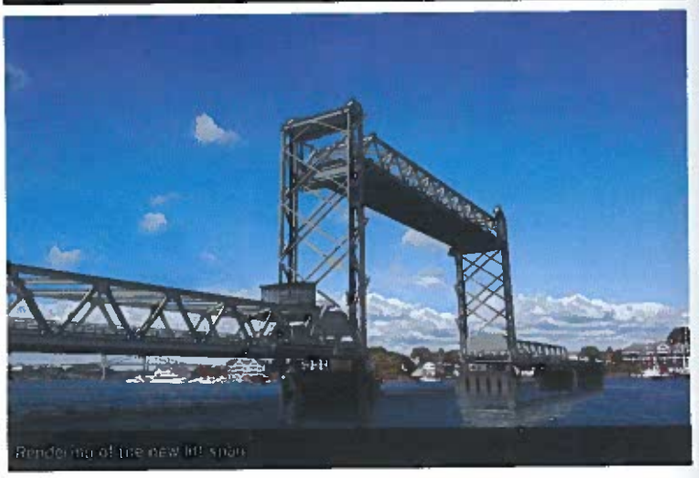
MULTI-TOWER SUSPENSION SPANS GO TO GREATER LENGTHS

THE DEFINITIVE PUBLICATION FOR BRIDGE PROFESSIONALS WORLDWIDE | ISSUE NO. 66 | FIRST QUARTER 2012 | WWW.BRIDGEWEB.COM

Historic span floated out as Memorial Bridge replacement gets under way



Barges are positioned under the lifting span in preparation for its removal



Rendering of the new lift span

The lifting span of the Memorial Bridge over the Piscataqua River between New Hampshire and Maine was floated out by barge this month *(February)* in the first stage of demolition of the historic structure. The through truss lift bridge with a main span of 91.5m, was opened to traffic in 1923 and is one of three bridges linking the cities of Portsmouth in New Hampshire and Kittery in Maine.

The operation by main contractor Archer Western was timed to coincide with high tide on 8 February. A barge was positioned under the lifting span and supports for the counterweights of the bridge were put into place before the cables were cut to disconnect them from the span.

It was then cut free from the bridge and floated out of the navigation channel on the barge, which was moored on the New Hampshire shoreline overnight before being floated downriver.

A detailed inspection of the Memorial Bridge in 2010 established that the existing bridge had deteriorated so much that the capital cost to rehabilitate it was estimated at US$140 million. Additionally the 100-year life-cycle cost of rehabilitation was anticipated to be more than US$510 million.

This cost related to the riveted gusset plates that connect the members of the old bridge, which are known to be susceptible to pack rust and prone to deterioration. Major rehabilitation projects would be required every 25 years if the bridge were to be retained, due to the continued deterioration of these connections.

As a result of this study, the New Hampshire and Maine DOTs took the decision to replace the Memorial Bridge, as the estimated cost of a new bridge was lower than the cost of retaining it. Modern materials and connection designs will reduce the potential for corrosion, says the DOT. The new materials will be higher strength and will have coatings to protect members from corrosion. The life expectancy of the replacement bridge is anticipated to be at least 100 years.

Design-build consortium Archer Western Contractors and HNTB was awarded the US$81.4 million contract for the new bridge at the end of last year.

The new crossing, which will carry motor traffic, pedestrians and cyclists, is due for completion in July 2013.

Structal-Bridges has signed a contract worth almost US$12 million to supply the replacement steel structure. The project, which was awarded to Structal-Bridges by Archer Western Contractors, calls for the fabrication of three through truss spans, each measuring 91.4m long, and two 49.7m-tall towers for the moveable section of the bridge. Structal-Bridges will also supply the steel structure to replace the approaches to the main bridge. The components required for the Memorial Bridge project will be fabricated at the Canam Group plant in Claremont, New Hampshire. Deliveries will begin in September this year and be completed by February 2013.

Arab Bank commits to fund two African bridge projects

Ivory Coast's government has secured finance for the construction of a toll bridge linking the economic capital Abidjan with the fishing port and seaside resort of Jacqueville in Lagunes region.

The Arab Bank for Economic Development in Africa has extended a US$6million loan for the 547m-long Jacqueville toll bridge which is to be built over Ebrié Lagoon. "The loan is to be reimbursed over a period of 30 years and includes a grace period of 10 years, with an annual interest rate of 1%," said the bank's board of directors in a statement.

The bridge project is expected to cost some US$21 million in total. Additional financing is expected from the government of Ivory Coast, OPEC Fund and the West African Development Bank. The dual two-lane reinforced concrete bridge will be 7.5m wide and will have two shoulders of 1.25m each. It will replace the ageing ferry service that vehicles currently have to use to cross the 100km-long lagoon that separates the coastal area from the mainland. Egyptian company Arab Contractors was awarded the contract for the construction of the bridge in 2009, but political instability and civil unrest have held back the project. Once completed the bridge will reduce the travelling time between Jacqueville and the mainland to just 10 minutes, from more than an hour at present. It will also offer access to markets on the mainland for Jacqueville farmers.

Meanwhile the bank has extended a US$10.4 million loan to Benin for the construction of a second bridge over the Mono River. This bridge will also eliminate the need for ferries between Benin and Togo; it will have eight, 30m-long spans and a dual carriageway 10m wide.

Shem Oirere