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Lighting up a landmark

Arizona's London Bridge shines brightly after bulb replacement.

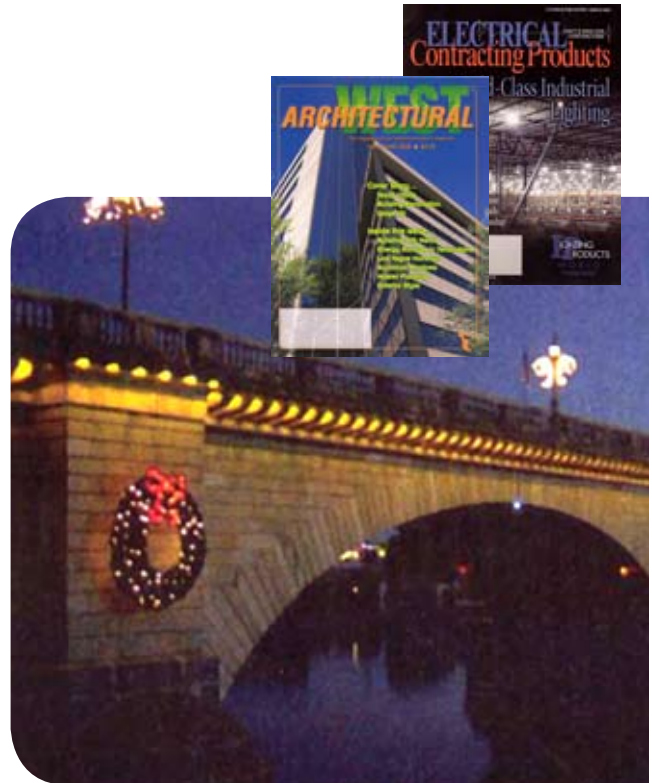
Lighting London Bridge is no small task. That's what Lake Havasu City, Ariz., leaders discovered after they purchased the famed bridge that once spanned England's Thames River and reassembled it as a tourist attraction back home. To eliminate some of the bridge's maintenance costs, last summer, the city upgraded the lights on the bridge and subsequently cut its energy costs.

In 1962, London officials decided to sell the bridge because it was sinking into the clay riverbed and no longer could handle the traffic flow. Robert McCulloch, the founder of Lake Havasu City, seized the opportunity to buy it for more than \$2 million. Three years later, the bridge was disassembled and reconstructed in Arizona. Because a natural waterway did not exist, McCulloch proposed constructing the bridge over dry land and dredging out a channel crossing a peninsula of land to form the London Bridge channel and island. In October 1971, before a crowd of 100,000 people, the landmark was officially dedicated.

To enhance the historic beauty of the bridge, a lighting feature was designed and constructed after it was reassembled. The original light bulbs were incandescent medium-based 130 volt, amber-colored 65-watt floodlights, with a 5,000-hour rated life. They were programmed to turn on at sunset and turn off at sunrise, averaging approximately 12 hours a night and 4,300 hours per year. Although the lights were initially successful, they began failing less than eight months after installation, with as many as 30 percent failing after one year. The high failure rate was attributed to the light bulbs' exposure to the weather and the vibration from heavy traffic crossing the bridge.

Annual bulb replacement required the city to use a specially constructed truck-mounted bridge crane borrowed from a company in New Jersey. Workers parked it on the road deck and used a crane to reach the light bulbs. All total, every time the bulbs were replaced, it cost the city \$20,000. "Given [the company's] location, scheduling is often difficult, plus the charge for bringing the equipment to Arizona is quite costly," says Butch Wood, water supervisor.

To reduce maintenance cost and time, city officials began looking for a longer-lasting light. "We were very interested in LED lights, because if they would work, the life expectancy would be approximately 15 to 20 years," Wood says. "However, after testing them, they just did not throw the light down the face of the bridge to achieve the lighting effect we wanted." City officials contacted Aurora, Ohio-based Technical



Lake Havasu City, Ariz., replaced the 700 incandescent amber colored light bulbs on the London Bridge with fluorescent versions, which have a longer life expectancy and use less energy.

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Consumer Products to design an amber-colored, compact fluorescent lamp that is enclosed in a floodlight fixture. The life expectancy is approximately 15,000 hours, and the light intensity matches that of the original 65-watt floodlights, while only using 16 watts.

The new light bulbs were installed in August 2004, and Lake Havasu City is already seeing results. Although it was not a primary reason for improving the lighting source, the electricity costs and kilowatt usage for the London Bridge were reduced by 57 percent during the first six months.

In addition, the new compact fluorescent floodlights are projected to last an average four to five years, versus 18 months with the previous lighting system. That will reduce the amount of routine maintenance required as well as the annual costs of bulb replacement. ■