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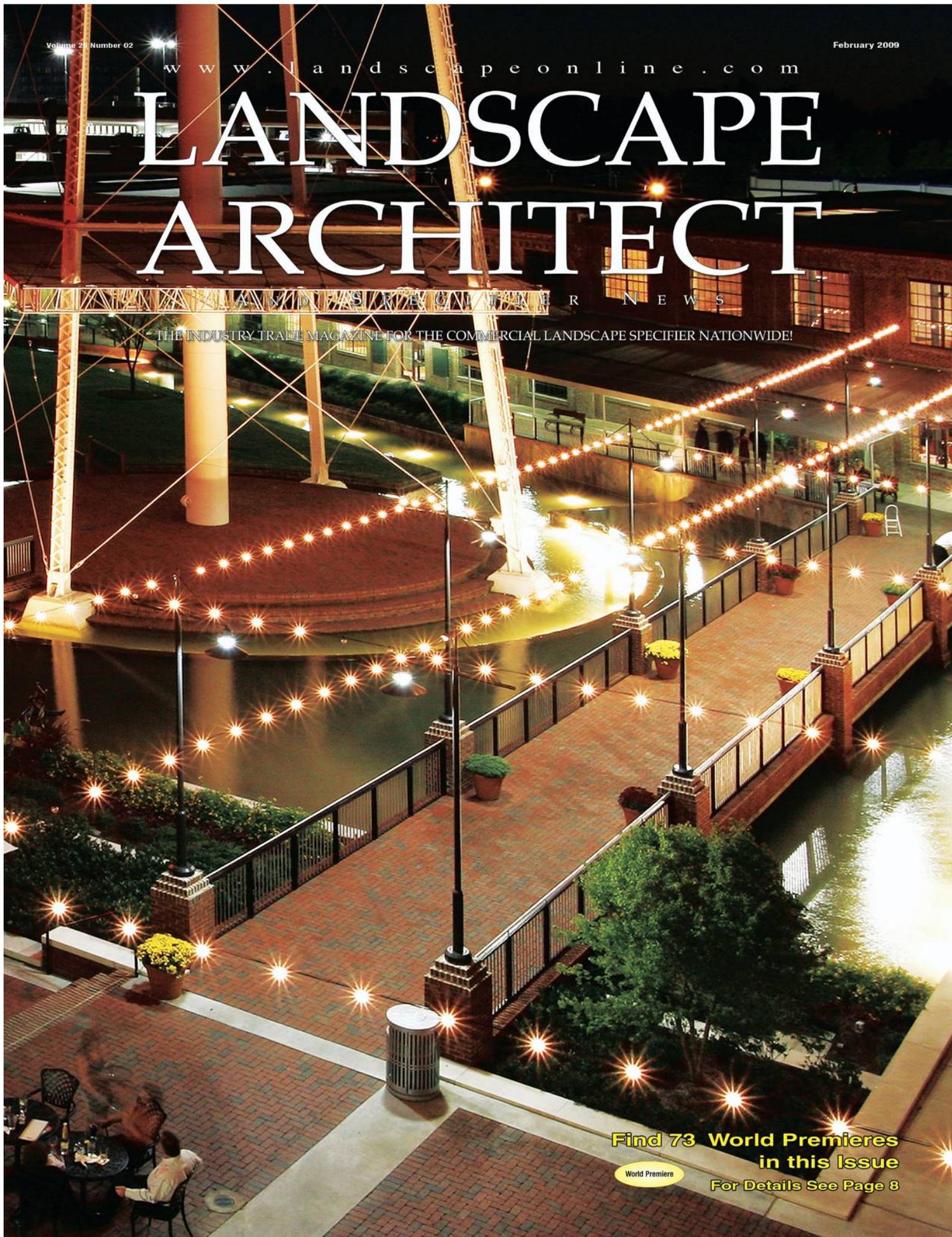
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# Buckingham Fountain Table Stays Pink While Going Green

By Brad Swanson, ASLA

**W**hen discussing Chicago parks, Grant Park is usually at the top of the list. Described as "Chicago's front yard," Grant Park is the multipurpose stage for some of Chicago's biggest events, including the Taste of Chicago, Lollapalooza, Blues Fest, the Chicago marathon and more. Most recently, Grant Park was the site of Barack Obama's acceptance speech as president elect.

Using a blue chalk line, the contractor ensures the pattern is laid parallel to the north-south axis of the fountain. The fountain table is boasted as the world's largest decorative permeable paver project. PHOTO: UNILOCK

**Project location:**  
Grant Park between Columbus and Lakeshore Drives and Balbo and Jackson Streets

**Project size:**  
236,000 square feet (5.4 acres)

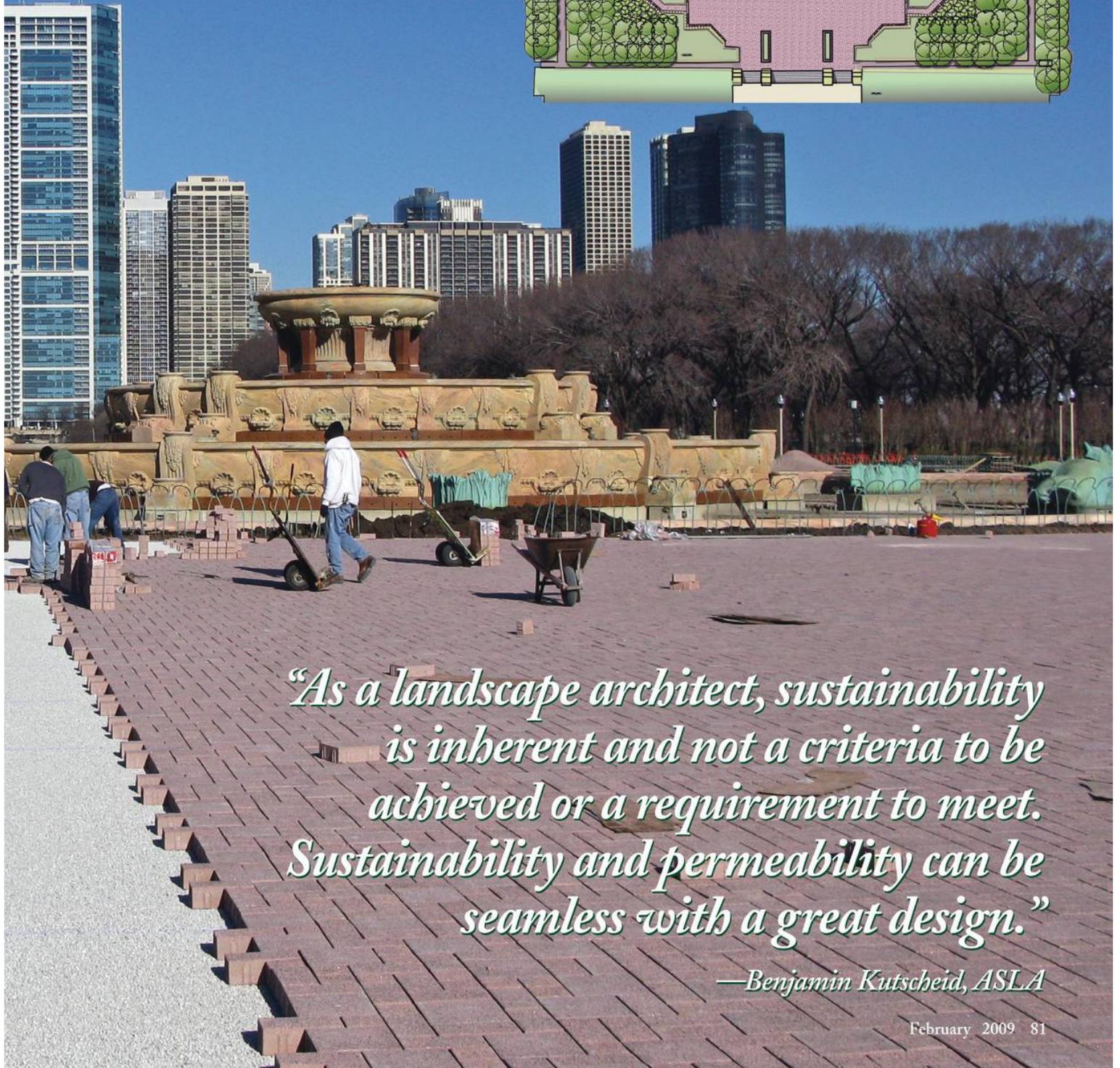
**Permeable paver:**  
Unilock Eco-Priora, three shapes (5"x5", 5"x10" and 10"x10")

**Color/type:**  
Coral Gem crushed granite exposed aggregate

**Start date:**  
Sept. 2, 2008

**Completion date of phase one:**  
Dec. 31, 2008

RIGHT: The design view of Grant Park reveals the new permeable paver table and the revitalized Buckingham Fountain. The previous table was impervious, with a combination of bituminous asphalt covered with pink pea granite. Design elements include planters with boxwoods (tulips in the spring) and perennials and annuals the rest of the year. The design incorporates diagonal walkways in all four-corner quadrants and replicated, pink precast concrete stairways at the north and south ends. Adjacent to the staircases are accessible ramps. The east and west planters and diagonal walks removed in the 1980s have been restored. Along the diagonal walks, thornless 'Winter King' Hawthorns will be planted as backdrops to seating areas. PHOTO: UNILOCK



*“As a landscape architect, sustainability is inherent and not a criteria to be achieved or a requirement to meet. Sustainability and permeability can be seamless with a great design.”*

*—Benjamin Kutscheid, ASLA*



**LEFT:** The original copper and iron ornamental fence was restored. The fence top was leveled around the entire fountain as originally installed. PHOTO: UNILOCK

The centerpiece of Grant Park is the Clarence F. Buckingham Memorial Fountain. This focal point of the downtown lakefront is one of the most striking and recognized architectural features in the city. Since 1927, when Kate Buckingham dedicated it in memory of her late brother, the fountain has been the center of attention for Chicago tourists and residents. Located at the center point of Daniel Burnham's 1909 Plan of Chicago, its massive 280-foot diameter and 150-foot high geyser make the Buckingham Fountain a classic and symbolic structure.

When it was dedicated 82 years ago, it was the "largest decorative fountain in the world." Today, Buckingham Fountain can boast that it is the world's largest decorative permeable paver project. This is due to a major restoration implemented by the Chicago Park District (CPD) in 2008 to give the fountain a facelift and reintroduce original design elements.

### Buckingham Fountain Restoration

When the CPD and the Art Institute of Chicago decided the Buckingham Fountain needed comprehensive restoration, pavers or stormwater solutions were not part of the plan. Since the fountain has landmark status, most of the focus was on mechanical, electrical, plumbing and structural elements and preserving the decorative, Georgia pink marble elements.

CPD hired the landscape architectural and engineering firm—Thompson Dyke & Associates (TD&A)—to lead the restoration. TD&A put together a consulting team, including California-based fountain designer WET and Ohio-based restoration expert McKay Lodge Conservation Laboratory. The project grew into a comprehensive restoration of all fountain elements and site improvements: lighting, paving, ADA accessibility requirements and restoration of the copper and iron fence. Conservation of the marble, replacement of the deteriorated slab basin/fountain display improvements, internal pump house improvements and expansion to maintain the fountain's historic character and overall mechanical, electrical and plumbing upgrades became phase two elements and are expected to occur after Labor Day 2009.

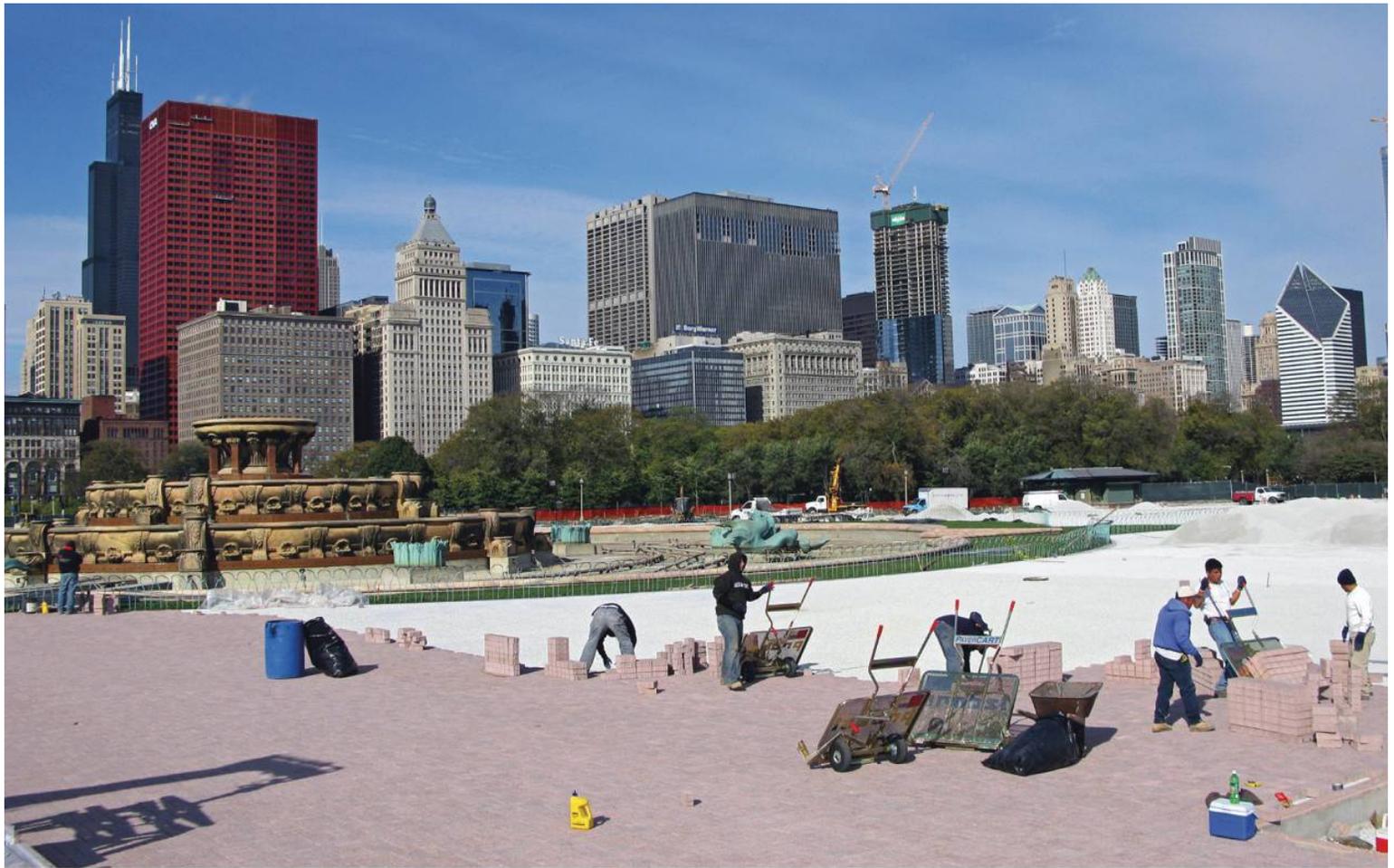
Construction on historic landmarks can often be difficult. In this case, however, it presented numerous opportunities to reintroduce significant site elements that were removed from the original installation or subsequently replaced or eliminated over the years.

**LEFT, TOP:** The original site included "paths of pinkish gravel." This was an important detail for restoration of the fountain table and thus the use of 'Coral Gem' exposed aggregate paver surface that sparkles.

**LEFT, MIDDLE:** Chicago requires stormwater detention for site improvements over 15,000 square feet. Initially, only a percentage of the fountain deck was envisioned for permeable pavers, but the entire deck is now permeable pavers. The pattern derives from three paver sizes—5x5-inch, 5x10-inch and 10x10-inch.

**LEFT, BOTTOM:** Open-graded aggregate is used for the permeable pavers. The top two-inch layer (1/4 to 3/8-inch chip aggregate, Illinois DOT CA-16, ASTM No. 8) acts as a setting bed and is screened similar to sand above a larger 3/4-inch open-graded aggregate (Illinois DOT CA-7, ASTM No. 57). A minor underdrain system prevents any subsurface drainage problems. PHOTOS: UNILOCK





**ABOVE:** During the first day of installation the contractor laid approximately 1,000 square feet. At peak installation over 5,000 square feet of pavers were hand installed per day. The face mix-pavers use a special two-step process where the top 1/4 to 1/2 inch have a finish material that eliminates the appearance of fading. A face mix can be applied to almost any paver, permeable or otherwise.

**RIGHT:** 'Eco-Priora' permeable pavers (Unilock) are set on open-graded aggregate setting bed, base and subbase to allow for faster infiltration rates. Sand was not used as a setting bed, as its density would slow infiltration rates by half and increase maintenance needs significantly. PHOTO: UNILOCK

“Great effort was taken by the design team and CPD staff to respect and restore Buckingham Fountain as originally designed and intended,” said project director Peter Dyke, AICP, of Thompson Dyke & Associates. “Historical photographs from the 1930s were used to reconstruct the landscape and site features.”

The project included several noticeable reintroductions of original site elements, including planter areas in the table, diagonal walkways in all four-corner quadrants and replicated, pink precast concrete stairways at the north and south ends. Adjacent to the staircases are accessible ramps to match the material used on the other site features. The east and west planters and diagonal walks that were removed in the 1980s have now been restored in their original locations. The planter areas will be lined with boxwood and filled with tulips in the spring and with perennials and annuals the rest of the year. Along the diagonal walks, Thornless ‘Winter King’ Hawthorns are incorporated as backdrops to seating areas.

TD&A began with a detailed analysis and evaluation of several different surface types that would accomplish the CPD goals of





**ABOVE:** After replacement of the leaky outer basin and other renovations on Buckingham Fountain are complete, the Chicago landmark (circa 1927) in Grant Park can return to its glory days and nights. When the sun goes down, lights and music enhance the fountain experience. The fountain was modeled after Versailles' Latona Fountain. The old center jet propelled water 150 feet into the air. The new plumbing will bring greater water pressure and shoot waters to even greater heights. The new permeable pavers and fountain restoration are part of Chicago's efforts to entice the International Olympic Committee to select the city as the site of the 2016 Olympic Games. PHOTO: A LATE EVENING PHOTO OF BUCKINGHAM FOUNTAIN AND CHICAGO SKYLINE, AUG. 14, 2004 BY BENJAMIN MILLER. CREATIVE COMMONS ATTRIBUTION SHAREALIKE 2.5 LICENSE.

accessibility, durability and historical character. The CPD required the ability to remove sections of the selected hardscape, if necessary, and replace those units without a patchwork look. Concrete pavers best met that need. The designers learned from a 1927 article the original site included "paths of pinkish gravel" and began searching materials to match the pink gravel. Unilock Chicago manufactures exposed granite aggregate and black speckled pavers that are almost an exact match to the original surface color. As a side benefit, this color has a solar reflectance index of 41, which meets the USGBC LEED credit SS 7.1 heat island effect (nonroof) criteria.

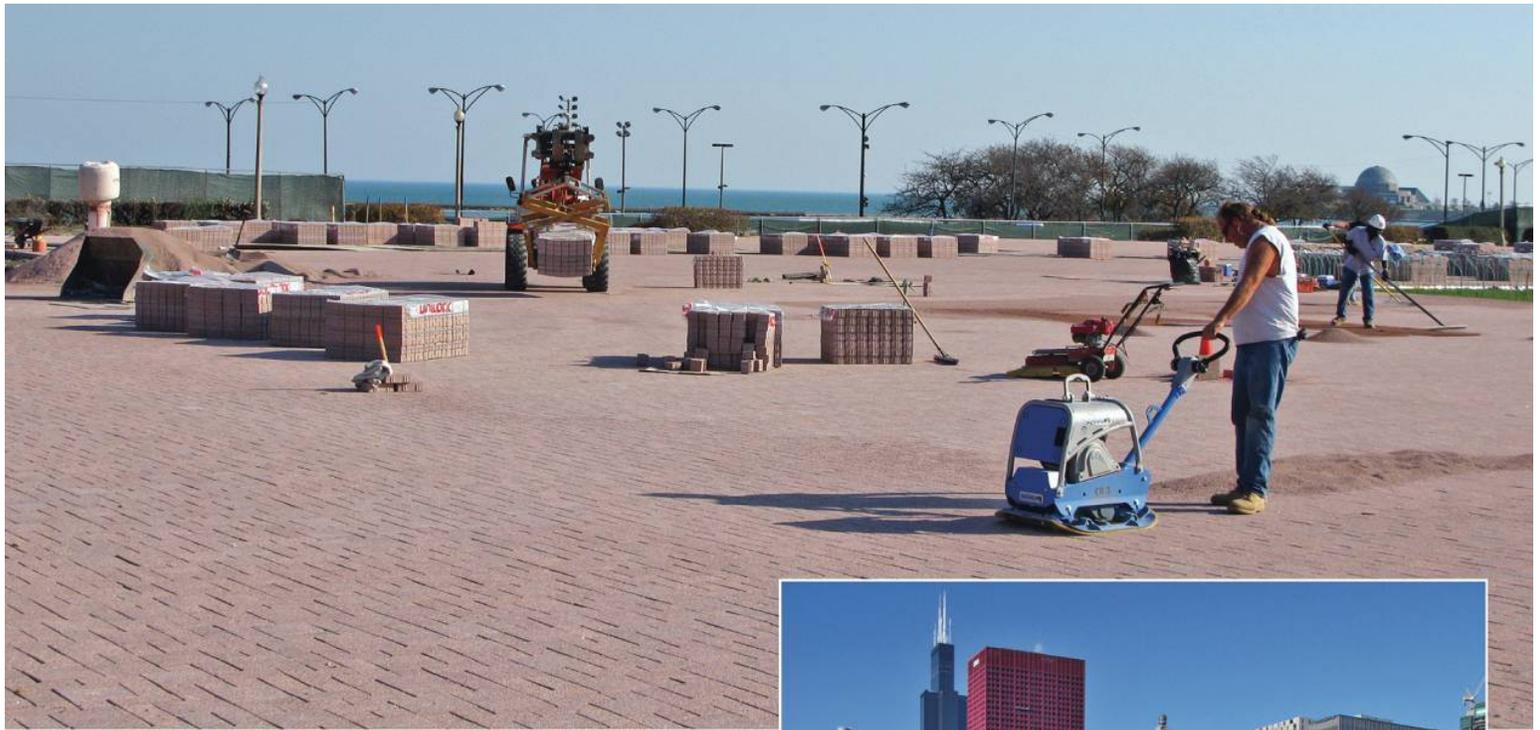
### Paving the Way to Sustainability

"Some people expressed concerns about concrete products having surfaces that fade over time and lose color quality," said Benjamin Kutscheid, ASLA, TD&A vice president. Pour-in-place concrete and some concrete pavers will fade in a few years as the color wears away from the aggregates in the concrete mix. But face mix-pavers, such as those selected for

Buckingham Fountain, use a special two-step process where the top 1/4 to 1/2 inch have a finish material that eliminates the appearance of fading. A face mix can be applied to almost any paver, permeable or otherwise.

After resolving the color wearing concern, there was attention paid to patterning. "The CPD and the Landmarks Commission wanted to maintain the same uniform and harmonious feel to the fountain table as the existing surface," said Jim Gamble, ASLA, TD&A vice president.

TD&A created several different laying patterns of various sizes and shapes to ensure the final installation would not reveal a detectable pattern. The firm started with five paver sizes ranging from 5x10-inch and up to 15x20-inches." TD&A revised the pattern with three smaller paver sizes more conducive for heavy loading. They proposed a mixed-laying pattern for a uniform, monolithic and harmonious feel. An open-graded crushed granite joint material matching the 'Coral Gem' pavers was selected to further minimize any visible patterning.



**ABOVE:** A compactor “locked” the pavers into the bedding aggregate, with a minimal 7-millimeter joint between the pavers. An open-graded crushed granite joint material matching the ‘Coral Gem’ color was selected to further minimize any visible patterning. PHOTOS: UNILOCK

**LEFT:** Paver bundles await installation. Over 1,600 bundles were necessary to cover the fountain table. The Chicago Park District required the ability to remove areas of the deck and replace the surfacing without any visible signs of change. Pavers best met this project need.

While the fountain deck is all permeable pavers, initially, only 25 percent of the hardscape was projected to have permeable pavers, as a means to meet Chicago’s stormwater detention requirements for site improvements over 15,000 square feet. TD&A recommended locating permeable pavers in the four corner quadrants, which would allow for rapid infiltration into open-graded base material. Runoff from the fountain table could then be captured and detained or infiltrated into the subgrade if the proper soils existed. A minor underdrain system was included to prevent any subsurface drainage problems. The previous table surface was completely impervious, with a combination of bituminous asphalt covered with pink pea granite.

Permeable paving was a meaningful idea conceived by Kutscheid, the project landscape architect. “As a landscape architect, sustainability is inherent and not a criteria to be achieved or a requirement to meet,” he said.

Using permeable pavers was in keeping with sustainable design and the strong “green” movement in Chicago.

When completed, the Buckingham Fountain area will meet the Chicago Department of Water Management’s requirements for stormwater detention. Permeable pavers are included in the ordinance as a BMP. The CPD is committed to implementing BMPs and improving ADA accessibility. Using a typical permeable paver base combination of open-graded aggregates 12 inches thick, the storage capacity is over 700,000 gallons or 94,000 cubic feet. A one-inch rainfall, for example, would only account for 21 percent of the capacity.

“The CPD approved permeable pavers for Buckingham Fountain primarily because they meet three critical requirements: the



pavers satisfy federal guidelines for ADA accessibility guidelines, they match the original fountain paving color and appearance, and they satisfy stormwater management requirements without the need for additional water storage in surface basins or underground chambers” said Michael Fus, preservation architect for the CPD. “Additionally, the permeable pavers have the added benefits of proven durability, minimal maintenance, ready availability and invisible repairs. They also demonstrate the use of best management practices regarding sustainability and environmental sensitivity.”

*About the author: Brad Swanson, ASLA, CSI, CDT, is a commercial product representative at Unilock Chicago and registered landscape architect in the states of Indiana, Illinois and California.*