

The two, 30-ft.-high gateway sculptures were precast using TX Active, a self-cleaning cement that removes pollutants from the air. The elements, marking the crossing of the Mississippi River, were inspired by the universal symbol for water.



## Photocatalytic cement helps sculptures wave off pollutants

The mid-September dedication of Minnesota's new I-35 West Bridge over the Mississippi River was doubly symbolic for construction types: besides segmental concrete replacing dated structural steel methods, it saw the unveiling of an architectural element never before used on such a high-profile structure.

Italcementi Group and its North American subsidiary, Essroc Cement, made their contribution to the project through two white concrete gateway elements—installed in the median, one at each end of the bridge—cast with TX Active, a photocatalytic, pollution-reducing cement. The sculptures were fabricated by Elk River, Minn.-based Stoneworks Architectural Precast from concrete produced by Cemstone Products Co., which held the main supply contract for the bridge (note page 22 of this month's cover story, "Minnesota Marquee.")

The twin, 30-ft.-tall sculptures, each comprising three wavy columns representing a vertical interpretation of the international cartographic symbol for water, were designed to serve as a reminder of the previous bridge that collapsed in August 2007. They also serve as markers that signal to travelers they are crossing the Mississippi River, a fact that was not evident on the previous bridge.

Developed by the design team of Figg Engineering, which also designed the bridge; the Minneapolis offices of architects Oslund and Associates; and Stoneworks, the sculptures are the highest-profile North American application of TX Active to date.

The design team worked with the Visual Quality Advisory Group set up by Minnesota Department of Transportation to include community and park representatives. Opened to traffic on September 18—11 months from notice to proceed, with the design and construction finished just 13 months after the collapse of the bridge—the project was completed well ahead of schedule.

"Concrete has many environmental benefits as a sustainable building material, and this form takes environmental stewardship to another level," affirms Cemstone President Thor Becken. "Not only are these monuments beautiful, but they also will help clean the air we breathe for years to come."

In use for more than a decade in Europe, TX Active cement was formulated to be self-cleaning and effective in destroying atmospheric pollutants, according to Essroc. Finished concrete uses ultraviolet sunlight to promote and accelerate oxidation at the surface of the structure. In addition to keeping the sculptures a bright white color, the cement allows for the conversion of smog-causing gases—such as CO, nitrous oxides, and SO<sub>2</sub>—to higher oxidized states, using a process much like a catalytic converter in automobiles.

The product has been used in such landmark European architecture as Rome's Dives in Misericordia Church, designed by American architect Richard Meier; and Air France headquarters at Charles de Gaulle International Airport in Paris.

—by Steven Prokopy



PHOTOS: Courtesy of FIGG; Photographer Tim Davis