

SPECIAL SECTION: CONSTRUCTION TECHNOLOGY

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THE ART OF MASONRY

ALSO:
100 YEARS OF CONCRETE

AAC/BLOCK INSTALLATION
Archi-Tectonics, 2003

Based on the graphic patterns of varying sound waves, architect Winka Dubbeldam's installation sculpts AAC (autoclaved aerated concrete) block into a sinuous, visual expression of aural experiences.



TERRAZZO/TILE INSTALLATION

Koning Eizenberg
Architecture, 2003

Architect Julie Eizenberg transforms terrazzo/tile from a highly polished smoothness to an increasingly rugged texture as it undulates and rises from the gallery floor of her installation.

BRICK, STONE, TERRAZZO AND BLOCK—the world's oldest building materials—have received an extreme makeover. And, according to the National Building Museum's latest exhibition, the future of masonry includes some jaw-dropping possibilities.

Swinging, floating, rotating brick.

Hanging, twisting, translucent stone.

A waterfall of cresting slate.

Lightweight concrete that promotes improved hearing.

No longer just for 5,000-year-old pyramids and colonial taverns, these materials are beginning to reinvent themselves for more modern uses. You might call it an architect's dream come true, but the "new stone" also will serve to boost the much beleaguered masonry industry. The industry has experienced a downward trend in recruitment and training of masons for the last 15 years. While the industry employs more than 300,000 masons of all types today, some predict that without a boost, masons and their extraordinary art will move toward extinction.

"It's hard to attract anyone to the profession," confirms Fred Day, director of craft training and apprenticeship at Associated Builders and Contractors, Arlington, Va. "It's labor-intensive, dirty work...and technology has found a way to omit brick in the design of buildings."

Add that to the rising costs of installing these materials, and masonry is a suffering breed.

Still, the industry should take note of the potential as seen through the National Building Museum's "Masonry Innovations" exhibition, showing through mid-April in Washington, D.C. Working with the International Masonry Institute and several masonry trade groups, the museum commissioned four teams of architects and craftworkers to design and build four projects showcasing the unique possibilities of stone, tile, brick and autoclaved aerated concrete (AAC).

According to museum Chief Curator Howard Decker, also an architect, "We wanted to show that the oldest building materials can be handled in unexpected ways...masonry still has a future."

THE ART OF MASONRY

Computers play a key role in transforming these terrestrial materials into something more aesthetic, according to Decker. That is no more evident than in New York City-based Archi-Tectonics' AAC project. For the museum, the architect and cement masons used the extremely light and newest of masonry materials to display the materials' unique acoustic properties. Using advanced 3-D, computerized renderings, the project group created a twisting flow of porous concrete capable of promoting better sound in any room.

As the master craftsman of the AAC project, Robert Mion, Jr., put it: "I think this project will be an eye-opener for the industry, even though AAC has been around for a while, it's young in this country. People may look at this as a sculpture, but also see that it has implications that can be used for building."

MAKING DREAMS A REALITY

But do the ideas showcased at the museum have any real world value? According to Jerry Painter, owner of Painter Masonry, Gainesville, Fla., "It's all about economics." Painter, who was "wowed" by the masonry exhibit, is a third-generation bricklayer. In 1999, he was named *Masonry Construction* magazine's first Industry Leader of the Year. Painter Masonry focuses on commercial and institutional projects, with much of its work on the University of Florida campus.

Painter says building owners who can afford it are asking architects to tap into the artistic possibilities associated with stone, brick and concrete. He already sees brick sculptures in some of the university projects the company has completed. "Architects are getting away from the clean crisp aluminum look and are doing things with brick," he says. "We see a blending of brick, stone and a mixture of colors and textures."



Manufacturers and suppliers are eager to thrust an array of new products on masonry contractors, such as an abundance of different types of anchors and insulation. "But you need people who know how to install these things," Painter points out.

And, therein lies the challenge.

Painter has spent the last decade of his working career preaching a need for more skilled masonry workers, and encouraging both contractors and educators alike to better promote the advantages of working in the construction industry. As an active member of the Masonry Association of Florida's apprenticeship and education forum, among other groups, he takes part in career awareness programs and events, like SkillsUSA-VICA, throughout the nation.

"The industry needs to take responsibility for our lack of masons, for the lack of all skilled workers," he says. "We focused on building in the 1990s and forgot to train."

But after years of work, it appears the industry is on the brink of change. Painter expects the number of masonry apprentices in Florida to double next year. He hopes high school and college students will grasp the beauty and art of the masonry career.

And, if the *Masonry Variations* exhibit isn't proof enough, masons are artists. "We're still installing one piece at a time, using our eye and hand coordination," Painter says. "We take someone's idea and turn it into a three-dimensional item. That's the art of masonry."

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4 PROJECT POSSIBILITIES

The National Building Museum, the only one of its kind in North America, challenged four architects from Chicago, New York City, Houston and Santa Monica, Calif., to explore each material and find ways to move them from being merely a compression device to ways that function under tension. For example, Studio Gang Architects took stone, which is perfectly comfortable being stacked one piece atop another in compression, and instead hung one piece from another, putting in tension. The result is a translucent marble curtain, weighing more than 5,000 pounds, hanging from the ceiling.

Jeanne Gang, lead architect, says it was the glue that made all the difference. "Glue and fiber in composite materials play a major role in highly advanced technologies...thinness is achieved not only by the cutting tools, but also by the increased composite strength imparted by gluing or laminating a backing material to the stone."

According to Decker, there's no current data on stone or tension, and how it works in collaboration, "so it helps to realize that it's still possible to pioneer."

Also key to improving the art is improving architect/craftworker collaboration, Decker says. That's why the architects partnered with some of the best masons in the United States to produce the exhibit.



STONE INSTALLATION

Studio Gang Architects, 2003

Architect Jeanne Gang's translucent marble curtain is made of interlocking puzzle-shaped pieces cut from a new composite substance — a translucent blend of stone, woven glass fiber and resin — that hangs in tension from the vaulted gallery ceiling.

The Future of BRICK, STONE, TILE and CONCRETE

As to the future of the materials used by masons, architects at the National Building Museum predict the following:

Stone: "Architects and craftworkers will increasingly need to consider the energy required to extract and transport stone as they seek to build in a sustainable manner. The tendency will be toward thinness and lightness as stone finally leaves behind its role as a load-bearing element and becomes a skin."

Brick: "Its simplicity guarantees its persistence in the future of building, as a low-tech material in a high-tech world. Terra cotta has found a new application as "rain screen," an elegant type of cladding often used by Italian architect Renzo Piano."

Tile: "Tile has a future in applications far outside of building. The belly of the space shuttle is coated with specially engineered tiles, and the science of ceramics is the cutting edge of materials research. Tiles made of recycled glass and terrazzo with scrap material set in the matrix, transform what has been waste into products of utility and beauty."

ACC: "The future of concrete, in both concrete masonry units and AAC will not only be formal, exploring new geometries, but chemical as well. New possibilities lie in the variety of admixtures."

In the brick display, Carlos Jimenez Studio worked with masons to "free" the brick, if only temporarily, from the bounds of gravity and stability. They installed the brick to a steel armature that rotates and showed how it could be porous and perforated, expressing brick's thickness.

"Designers have tools now that they never had before," Decker says, "but in the end, it was all made possible by hand."

The two other displays included Koning Eizenberg Architecture, Santa Monica, Calif., working with terrazzo workers to challenge the traditional techniques of terrazzo, a hybrid of liquid and solid materials. Their hundreds of slate pieces flowed like a waterfall display, alternately smooth and jagged.