

# Maximizing Benefits of Precast Concrete

Gensler's Rob Jernigan has studied precast concrete throughout his career, with the goal of maximizing its functionality and pushing its limits to achieve creative designs

— Craig A. Shutt



Rob Jernigan, FAIA

**R**ob Jernigan built his 36-year architectural career by fusing great design with technical excellence, including many designs utilizing precast concrete. He has worked with the material since his earliest days, exploiting its capabilities in many ways, on many building types in many cities. Through that experience, he has developed an appreciation for what it can achieve. That appreciation leads him to continue to push its limits and look to maximize the benefits it can provide.

"I'm an architect who has developed professionally with a very strong belief that buildings have to have great design, which means they have to be highly functional as well as aesthetically pleasing," he explains. "When we pick materials, we want them to meet our aesthetic-design requirements but do more than that, especially if they can provide some structural qualities. I look at precast concrete not just as a finish material but as a material that should be able to provide some structural functions to the building."

In his role as regional managing principal for the Southwest region at Gensler, Jernigan evaluates projects from a larger perspective. He



The 22-story tower on the Elihu M. Harris State Office Building in Oakland features inset windows framed by precast concrete pilasters to blend with the architectural character of the neighborhood. Upper stories are clad in textured precast concrete panels. Photo: Nick Merrick, Hedrich Blessing

reviews systems, independencies, and interconnectedness, considering budget needs, building performance, the environment, and other factors. He oversees an 812-person staff designing buildings across a wide range of environments, with offices in San Diego, Newport Beach, Los Angeles, Phoenix, Las Vegas, and Denver.

Throughout every project, he keeps in mind four key points: "I'm concerned with how the building looks, if its design maximizes its material

use, how well it functions for the clients' needs, and how it will look over the long term," he says. "We have to use materials in creative ways so they hold their value while maximizing their aesthetic and functional capabilities. I'm always striving to find fully integrated solutions."

## Started in Houston

Jernigan began his career in Skidmore, Owings & Merrill's Houston office in 1979 after graduating with



*Precast concrete components used on the East Campus Office Building on the campus of the University of California-San Diego helped reduce the budget by serving as both the cladding and the structure. Photo: Ryan Gobuty / Gensler.*

a five-year professional degree in architecture from the University of Tennessee. He'd hoped to land a job in his hometown of Atlanta, "but firms there weren't beating down our doors to get graduates at that time." Whereas Texas markets were so hot he received several offers in Houston and Dallas and selected SOM.

"Texas is concrete country, both cast-in-place and precast concrete," he says. "My introduction came via office buildings with parking structures galore. We did a lot of them at SOM using precast concrete." Finishes ranged from inset stone to exposed, sandblasted styles. "One benefit of precast concrete panels is that they can span column to column, so we were only load the columns and not the floor structure," he explains. "And it's such a plastic material that we can design any shape, texture, shade and shadow we wanted, creating many finishes from the same material."

In 1988, he moved to Los Angeles, along with 50 employees, when SOM closed its Houston office. Two years later, he opened his own firm, Keating Mann Jernigan Rottet (KMJR) in L.A. Ironically, its first two major commissions came from Houston: the British Petroleum Plaza and the BMC Software Software Headquarters. Both 20- to 25-story buildings were designed with architectural precast concrete panels on cast-in-place concrete frames with precast concrete parking structures. "Those were designed in similar ways, but they had very different looks," he explains. "They're an indication of the range of options available while using the same materials."

One of his first major projects to showcase the benefits of precast concrete was the British Petroleum Plaza, in which Jernigan designed 13'6" precast concrete panels with punched openings. "We popped aluminum-framed windows into those and they

were done," he explains. "That made me realize the potential for using precast concrete, and I began looking at facades and how they could work for clients."

A key reason he favors precast concrete, he notes, is the level of quality control. "It's a great material because you can control the aesthetics and be sure you'll get the quality you want," he explains. "If you cast a panel that doesn't turn out for some reason, you cast another. If you pour cast-in-place concrete on a day when something isn't right, you're stuck."

### **Seismic Challenges**

In Los Angeles, he found new design challenges. "The high seismic zone creates issues that caused us to use steel versus concrete for the primary structure frame. We try to design precast panels so they can be utilized in the lateral frame of the primary structure."



*The Broad contemporary art museum in Los Angeles features a complex GFRG latticework. It was designed by Diller Scofidio + Renfro in collaboration with Gensler, under the oversight of Jernigan. The material allowed for great variation in pieces without the weight that other options would have required. Photo: Iwan Baan.*

He continues to evaluate ways to maximize precast concrete's use in seismic situations, he notes. "I desire to get double duty out of any material. By using precast concrete, we are able to get both, an exterior skin and a lateral frame that is required in higher seismic zones."

In 1994, KMJR was acquired by DMJM/AECOM, and Jernigan ran the architectural division at its Los Angeles office. During that time, he was involved in the design of the 22-story Elihu M. Harris State Office building in Oakland, which features precast concrete architectural panels. "It's a very prominent use of the material that worked effectively for a state government building because it is very durable and requires minimal maintenance."

Jernigan joined Gensler four years later, where he created and led the Buildings & Campuses design studio. He later became the leader of the L.A. office before being named regional managing principal. Throughout this time, he says, one of his goals has been to find new opportunities to utilize precast concrete in innovative ways: "I keep exploring how to gain more function from precast concrete than just dead load."

One recent example was the University of California at San Diego East Campus Office building, where the precast concrete panels helped to reduce the budget by serving as both the cladding and the structure. "We were able to reduce the

amount of glass or skin on the building because the precast structure is exposed and is 40% of the exterior."

### **Geography Impacts Design**

In his regional position, Jernigan sees the diverse styles that geography, environment, architectural history, and other factors play in a project's design. Phoenix's desert climate, for instance, plays well to precast concrete's strengths. "Precast concrete's thermal mass can absorb the heat in Phoenix during the day and radiate it at night, cutting energy needs." The same goes for Denver, except it has wider mid-range temperatures, including freeze-thaw cycles that must be handled. "Regardless of how harsh the climate is, we find that precast concrete stands up well over time."

In California, Jernigan's attention has turned to the benefits offered by glass-fiber reinforced concrete (GFRG), due to the capabilities for dimensional depth and plasticity with less weight. "By providing a shaped back rather than filling it with concrete, the pieces provide the versatility of precast concrete's aesthetics and can provide dimensional relief and shape while also being substantially lighter. It gives us more flexibility in creating forms, geometry and shape."

His studies led to the oversight of the design of the GFRG latticework on The Broad in L.A. "We originally looked at using reinforced concrete on the façade that would also support the roof," he notes. "But the amount of penetration that could be structur-

## **Gensler's gServe Aids Community**

Among Jernigan's favorite duties is leadership of the firm's gServe program, short for Gensler Service. It encourages employees to volunteer for community-service efforts ranging from pro bono project design to volunteering at local organizations and litter clearing.


"We as architects have to be an important part of our community, and that goes beyond design," he says. "We believe we improve the world through design, but being in the community just as a designer isn't enough."

Fortunately, the program receives a great response at Gensler. "The new generation coming up is very service-minded, and they're committed to giving back."

ally allowed onto the frame proved to be much too small. Then we looked at traditional precast concrete panels, but they would have been limited in size, which would have boosted the number of forms required due to the volume of pieces we needed to cast. GFRG allowed us to create more variation in pieces without the weight from the precast concrete."

The use of GFRG will grow especially in high seismic zones, he predicts. "Due to the increased use of 3D modeling in our design process we're seeing the ability to complete complex structures, as a result that's reflected in the designs. For that reason GFRG is a great material – it's lightweight, plastic and can form to any shape."

Owners are an easy sell on the use of precast concrete, he adds. "Owners love precast concrete. They understand its versatility and how it can create a design is durable and relatively maintenance free when compared to other building cladding materials."

Precast concrete's flexibility means Jernigan expects to be designing with it throughout his career. "The beauty of precast concrete is its versatility. And the best thing about it is, if you're clever with how you design, you can achieve two things with it. You can get a very strong, time-tested material as well as a material that has some structural qualities." 

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