

Variety Spices Architect's Life

Greenfield Architects' Frank Fox enjoys the diversity of projects the firm designs, often using precast concrete to help resolve challenges on a wide range of them

— Craig A. Shutt



Frank Fox, AIA, NCARB, LEED-AP

Frunk Fox knew for most of his life that he wanted to become an architect. It wasn't long after that dream became reality that he was introduced to the capabilities of precast concrete on some of his first projects. Today, as president of Greenfield Architects in Lancaster, Pa., he's become closely acquainted with those benefits on a variety of projects in diverse categories.

Fox has been interested in architecture since the sixth grade back in Schuylkill Haven, Pa. where he created one- and two-perspective drawings in class. "We were creating blocks of buildings and streets, and I realized I really liked architecture," he says. "I just kept with it after that."

He earned a five-year architecture degree from the Illinois Institute of Technology in Chicago, Ill., working for well-known architectural firm Bertrand Goldberg during his college years. "I did study models and whatever else I could do to learn more about the business." When he graduated in 1990, he went to work for McClier Architects & Engineers in Chicago, which has since been merged with AECOM Technology Corp.

"We had a lot of precast concrete



One of Frank Fox's first projects at Greenfield Architects involved designing a Sherwin-Williams distribution center, which featured architectural precast concrete panels with a variety of textures and details. Photo: CB Verlund Photography.

work at McClier, which gave me my first exposure to its capabilities. We had a lot of projects going on: offices, laboratories, newspaper buildings, and others." It was mostly being used as façade cladding.

In the 1990s, with his first of two children on the way, he and his wife Suzanne, a Chicago native, moved back to his home area, where he wound up holding three jobs in only a year. He worked at two smaller firms in the area, moving as it became apparent the fit wasn't right. The third time proved a charm, as he landed at Greenfield (where he been offered a job shortly after taking the offer from his second firm). He's been with the company for 21 years, beginning as a project architect.

Industrial Projects a Start

One of the first projects he undertook there was a large Sherwin-Williams distribution center on the East Coast, which featured

architectural precast concrete panels. "I was impressed by the various finishes and colors that could be provided by precast concrete," he says. "I'd been exposed to it at McClier, and I was excited to see the large palette of options that we had available with reveals, finishes, sandblasting, and exposed aggregates."

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He also worked on an office/manufacturing complex for Bosch Security Systems in Lancaster, Pa. The



The 146,000-square-foot Bosch Security System manufacturing building in Lancaster, Pa., features architectural precast concrete panels, while the 66,000-square-foot, two-story office building next door offers a mix of precast concrete and hand-laid brick. A glass corridor connects to two, allowing them to be separated when sold if needed. Photo: Terry Corbett Photography.

146,000-square-foot manufacturing building was clad with architectural precast concrete panels, while the 66,000-square-foot, two-story office building featured a mix of precast concrete and hand-laid brick. The two structures were connected by a glass corridor to promote communication and teamwork. "The company wanted the two functions separated, so our design allows the link to be removed

and the two buildings to operate separately, creating adaptability for future market conditions," Fox explains.

Precast concrete works well with industrial/manufacturing buildings, he says. "It provides durable exterior walls as well as interior ones, which can be washed easily, as opposed to a metal wall or, worse, exposed insulation. It also provides a simplified

wall and building structure, with the panels easily insulated within. We typically can span from foundation to roof, eliminating the need for steel girts or wind columns, and the panels can act as shear walls."

Precast concrete provides design flexibility for these structures, he adds. "If desired, the architect can add reveals and patterns to the panels to create a rhythm that repeats around the building. It also can speed up construction to meet tight deadlines."

He has worked with many different precast concrete enclosure systems including carbon-fiber reinforced wall panels. "The insulated panels provide great energy efficiency, but the real advantages of the carbon reinforcing come in taller projects, especially over about five stories, where the weight of typical panels start to add up." The carbon fiber reduces the panels' weight, making them easier to handle and requiring smaller foundations.

Diverse Building Types

Fox has used these components and precast concrete structural systems in a wide range of building categories over the years. That includes a variety of projects for universities, including work at Messiah College in Grantham, Pa., and Carin University in Philadelphia, Pa. "College and university projects are among my favorites," he says. "The mix of project types is so diverse: performing-arts facilities, student dormitories, classrooms, and laboratories. We have really gotten heavily into this market, which is varied and robust."



The new addition to the Messiah College Performing Arts Center in Mechanicsburg, Pa., was clad with precast concrete panels faced with cast-stone pieces. The project was complicated by its steeply sloping site and the need to maintain occupancy of the existing building during construction. Photo: Nathan Cox Photography.



A historic-like appearance was created for the architectural precast concrete panels cladding the 151,200-square-foot Lancaster Newspaper Parking Garage in Lancaster, Pa. The look had to be approved by the city's Historical Architectural Review Board. The structure consists of a total-precast concrete structural framing system. Photo: Nathan Cox Photography.

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An example is the Messiah College Performing Arts Center in Mechanicsburg, Pa., which received an addition designed to unify the college's arts program in one facility, Fox explains. The 83,957-square-foot addition was clad with precast concrete units which created a differentiating base element, with sign features, as well as integration of units as accent bands within the brick masonry. The project was complicated by its steeply sloping site, physical connections to the existing building, coupled with the need to maintain occupancy of the existing building during construction.

Fox also enjoys the range of office projects the firm has completed. "Precast concrete really works well with office projects because it allows you to create such a rich façade," he says. "It's good at creating different looks, especially when combined with glass or brick. It's exciting to deal with all the combinations that are possible and come up with just the right one for that building's needs."

Precast Structural Systems

Precast concrete structural systems (sometimes referred to as total-precast concrete structures) also get used regularly, especially for parking structures. "We often clad the structures with architectural precast concrete spandrels and use total-precast concrete structural systems whenever we can," he says. "The total-precast design is a win-win situation, because we can combine architectural and structural needs in one component, saving time and material."

An example is the 151,200-square-foot Lancaster Newspaper Parking Garage in Lancaster, an addition to the company's existing garage. The precast concrete addition features an applied "historical" façade that blends with other structures in the downtown area and had to be approved by the city's Historical Architectural Review Board. The architectural spandrels feature embedded thin brick in a 40-40-20 mix of red shades with black ironspot stippling. Windows have simulated keystones and aluminum-framed windows to disguise the building's true function.

Using precast concrete on a parking structure, he says, "is a no-brainer, really. It provides a high fire rating, efficiency in design, long spans, efficient bays, and combines structural elements with architectural ones that create cost efficiencies."

Owners are becoming aware of the benefits, especially for specialized buildings such as warehouses and food-processing plants. An example is the work underway for Citterio USA Corp. in Freeland, Pa., to construct an 86,000-square-foot processing plant for prosciutto. The building, now being erected, features a total-precast concrete structural system of columns, girders, load-bearing wall panels and double tees for the roofing.

The design approach was set by the client, he notes. "It's unusual for the owner to be so specific coming into the process, but they knew what was best for them in that processing environment for their needs."

Precast concrete aids with a variety of food-processing requirements, including the ability to meet government regulations for providing an environment in which dust and dirt cannot accumulate. It can easily provide controlled-atmosphere or freezer areas for storing food, and it offers flexibility in creating wide-open spaces for specialized equipment. Wall panels can stand up to harsh chemical cleanings, too. Benefits similar to those on other types of industrial/warehouse facilities also apply (see the article in this issue).

BIM is the Future

Greenfield designers used its BIM programs, which they've been working with since 2003, to design

the building, a trend Fox sees growing. "The use of BIM is a major trend that benefits owners in many ways," he says. "It's the wave of future for this industry for sure." The best part, he notes, is that its efficiencies grow as designers become more familiar with it and use it in more and better ways. "Its parametric ability, to update every drawing whenever a change is made, and its capability to autofill schedules, saves an enormous amount of time and eliminates mistakes that can cause issues. As you get more sophisticated and learn to do more, it can help with construction estimating and other processes."

Owners also gain benefits long-term. "With a sophisticated owner, BIM can be invaluable," he says. "They can open a model and see what maintenance is needed for various materials and what impact that will have on the project long term. There's a lot of information that can be embedded in the drawings. It's really going to help with life-cycle analyses that will benefit the owner in getting a good long-range cost perspective on the operation of the building."



The owners of the new prosciutto-processing plant in Freeland, Pa., requested a total-precast concrete structural system for the project from the beginning, recognizing the benefits that the system can provide to specialized food-processing facilities. Photo: Greenfield Architects.

BIM ensured the Citterio project moved smoothly, especially in designing and erecting the precast concrete structure and panels. "We used BIM models to design the project, and there were no problems in erecting it—and that's the beauty of precast concrete and one of the

keys to using it. Once the pieces are erected, you know that there will be no unexpected headaches. ▲

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