

Innovation in Action

Designers throughout North America display a variety of creative uses for precast concrete in winning PCI's Design Awards competition



Owners' needs have become more diverse as budgets tighten, schedules shrink, footprints become more constricted, and environmental concerns grow. With these pressures mounting, designers and engineers are finding more creative ways to use precast concrete to meet challenges and produce aesthetically pleasing designs for all types of structures.

A wide range of innovative approaches to using precast concrete's highly engineered benefits were highlighted by the winners in the 46th annual Design Awards Competition sponsored by the Precast/Prestressed Concrete Institute. Eighteen projects were singled out to receive awards by the buildings jury, and eight projects were honored by the special awards jury in categories for all-precast concrete solution, sustainable design, and innovation that advanced the industry.

The award-winning projects cover a wide array of building types, including subcategories in Best Office Building, Best Parking Structure, and Best Multifamily Building, where judges found the diversity and creativity too great to limit their selections to only one winner. Likewise, the Special Awards Jury presented Innovation Awards in the category of Best Sustainable Design category due to creative touches that significantly enhanced several project's environmental friendliness.

The judging panels also were impressed with the variety of ways precast concrete met challenges that included aesthetics, seismic needs, structural concerns, speed, economics, tight sites, and more, from a list that is growing every year.

The following pages showcase the projects selected by the bridges, buildings, and special awards juries. The honors will be presented to representatives of each project during PCI's 54th Annual Convention and Exhibition, at Rosen Shingle Creek Resort in Orlando, Fla.



Buildings jury

Front row (L-R)

Joann Gonchar, AIA

Senior Editor
Architectural Record
New York, N.Y.

Paule Boutin, FIRAC

First Vice President and President-Elect
Royal Architecture Institute of Canada
and Principal
Paule Boutin Architecte
Montreal, QC, Canada

Back row (L-R)

Neil Frankel, AIA

Principal
Frankel + Coleman Inc.
Chicago, Ill.

Mark Dewalt, AIA

Principal
Valerio Dewalt Train Associates
Palo Alto, Calif.

Lucien Lagrange, AIA

Principal
Lucien Lagrange Architects
Chicago, Ill.



Special awards jury (L-R)

Chris Kerksmar, P.E.

Vice President
Schwab Structural Engineering Inc.
New Braunfels, Tex.

Tom Brock

Founder
IIT Precast Studio
Illinois Institute of Technology
Chicago, Ill.

David Shepherd, AIA

Director of Sustainable Development
Portland Cement Association
Skokie, Ill.

Not pictured

Jim Schneider

Senior Editor
Eco-Structure magazine
Chicago, Ill.

46th Annual PCI Design Awards

Harry H. Edwards Industry Advancement Award

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SPECIAL AWARD

Harry H. Edwards Industry Advancement Award



Eagle Ridge Apartment-Style Condominiums, Fort Murray, AB, Canada

Owners of the Eagle Ridge residential development wanted to create a large-scale community where families could enjoy the benefits of safe, durable homes with all the amenities. But the remote location in Fort Murray, AB, Canada, limited options for both transporting materials and bringing in trades. Designers used a total-precast concrete system to produce cost-effective and attractive designs.

Using precast concrete components allowed most of the labor to be performed where more skilled labor was available, says Rick Lewis, project manager for Gibbs Gage Architects in Calgary, AB, Canada. It also allowed construction to efficiently progress year round, which would not have been possible with other construction methods.

The project was constructed in two phases, with phase one consisting of five six-story and four four-story buildings on two sites. Phase two features 13 buildings and is still being constructed. Each floor has an average of 18 units, ranging in size from studios to two-bedroom units, and features approximately 151 hollow-core slabs, 21 interior shear walls, 22 balcony slabs, six balcony privacy walls, four columns, four stair risers, and 48 exterior insulated wall panels.

“From an acoustic and quality perspective, [the developers] find that the public is more comfortable with concrete as the primary construction material,” says Lewis. The developers also took advantage of precast concrete’s thermal mass, using rigid insulation in sandwich wall panels to provide high energy efficiency.

Different stains were applied to the panels, covering only the brick textures, leaving the mortar joints concrete gray. “This process replicates an exterior brick wall almost perfectly.”

Judges' comments:

“A fairly conventional, market-driven housing solution with some great precast concrete innovations. We especially liked the balcony details, which were a great solution for assembly, moisture control, and a thermal break from the interior of the building. It fit together like a bookshelf in a rabbeted cabinet case—secure and simple.”

Architect: Gibbs Gage Architects, Calgary, AB, Canada

Engineer: TRL & Associates, Calgary

Owner/general contractor: Centron Residential Corp., Calgary

Precaster: LaFarge Canada Inc. (Precast), Edmonton, AB

Precast concrete specialty engineer: Kassian Dyck Associates, Calgary

Precast concrete components: 36,000 pieces (11,000 in phase one and 25,000 in phase two) including insulated wall panels, interior shear walls, hollow-core slabs, balcony slabs, balcony privacy walls, columns, and stair risers

Precast project cost: \$120 million (\$40 million in phase one, \$80 million in phase two)

[The developers] find that the public is more comfortable with concrete as the primary construction material.



Courtesy of Tucker Photography, copyright 2008.



Harry H. Edwards Industry Advancement Award



Courtesy of Rick Kinnell (Rich & Associates Inc.) and Norm Presello (National Precast).

Judges' comments:

"Although it is a fairly conventional parking garage in most respects, the helix ramp distinguished this project from its competitors. This project represents an innovative use of precast concrete components, and should be used as a model for helix ramp structures. The precast concrete spiral ramp could also dramatically reduce the environmental footprint of future projects because the formwork can be used over and over."

Architect/engineer: Rich & Associates Inc., Southfield, Mich.

Owner: Greektown Casino LLC, Detroit, Mich.

Construction manager: Jenkins Skanska LLC, Detroit, Mich.

Precaster: National Precast, Roseville, Mich.

Precast concrete specialty engineer: Integrated Engineering Solutions, Tecumseh, ON, Canada

Precast components: 3800 pieces, including 1180 structural components and 670 architectural pieces

Project cost: \$27 million

Greektown Casino Parking Structure, Detroit, Mich.

Designers of the new Greektown Casino parking structure in downtown Detroit, Mich., faced several key challenges, including fitting the project into a congested urban area and blending it with the surrounding architecture. Meeting all of the needs led to a total-precast concrete system, including an innovative precast concrete double-threaded helix ramp.

The 13-story structure provides 2681 spaces, with seven levels connecting to additional parking spaces inside the adjacent hotel. Designing an efficient structure required the double-helix ramp, and the precasters insisted that it could be fabricated from precast concrete components. It incorporates an upbound and a downbound ramp in a 96 ft diameter.

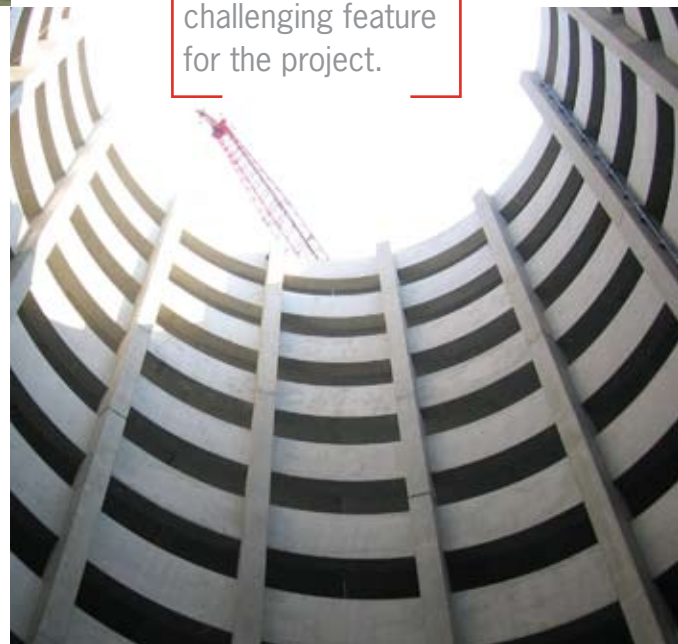
"The helical ramp was by far the most challenging feature for the project," says Matthew Jobin, project manager at Rich & Associates in Southfield, Mich. The original plan called for a cast-in-place, post-tensioned concrete design within the precast concrete structure. But the precasters warned that performing such work while precast concrete components were being erected would cause site congestion and slow down construction.

The designers worked closely with engineers at National Precast in Roseville, Mich., to create a system of precast concrete columns, curved spandrels, and warped, curved precast concrete slabs with a cast-in-place topping. "This approach saved millions of dollars in construction costs and allowed the parking structure to be erected in sequence, saving the contractor significant time," he says.

The structure's facade features cast-in thin-brick articulated pilasters along the first four levels, humanizing the scale at street level and creating visual and textural architectural interest. Six and 12-ft-wide column covers over the structural columns help balance the perceived proportions of the building.

For more on this project, see the feature article in the Summer 2008 issue of *Ascent*.

The helical ramp was by far the most challenging feature for the project.



SPECIAL AWARD

All-Precast Concrete Solution Award

Educational/Administration Building and Research Building at the University of Hawaii's John A. Burns School of Medicine, Honolulu, Hawaii

The new medical facility at the University of Hawaii was charged with two goals: revitalize the school's medical program and serve as an economic engine. To help ensure that the two-building campus could achieve these heady goals, designers used precast, prestressed concrete components to house the educational and office/administrative functions, a medical library, a multimedia auditorium, research biosafety rooms, vibration-sensitive labs, and a café.

The precast concrete components, fabricated by GPRM Prestress in Kapolei, Hawaii, comprise architectural precast concrete load-bearing window box panels, double-tees, inverted-tee beams, columns, stairways, foundation piles, and soffit girders. These pieces worked together to create the exterior facade and structural systems for two four-story facilities: the two-wing education/administration building and the L-shaped research center.

The entire building exterior utilized architectural precast concrete load-bearing window box panels, which produced "one of the more distinguishable features of the project," says Kathleen Wong, project manager for SSFM International Inc. The panels feature colored concrete with embedded motif patterns reflecting the Kapa, or native Hawaiian, art of making cloth from tree bark that is dyed with various patterns and designs. The Kapa motif merges with DNA strands and ancient Hawaiian patterns of wind, rain, water, and cane. The panels along the first floor of the Research Building are cast with embedded images of the same native Hawaiian healing plants that are planted along the main courtyard fronting the building.

"The precast panels were planned to be an integral part of the main structural-framing system," she says. The panels provide bearing supports for the floor systems and were designed to be the primary lateral-load-resisting system for wind and earthquake needs.

For more information on this project, see the July-August 2007 issue of the *PCI Journal*.

The precast panels were planned and designed as an integral part of the main structural-framing system.



Courtesy of Ed Gross/The Image Group Inc., Honolulu, Hawaii.

Judges' comments:

"This building was chosen for its articulation and integration of the precast concrete components into the overall design. The composition of the building is beautifully executed and appropriate to its context and, consequently, holds together well while complementing its surroundings. The idiom is reinforced by the articulation of the exterior panels, which emphasize deep-set joints in the form liners and, thus, heavy shadows on the finished product. This project went the extra mile in terms of this articulation and the results are exemplary."

Architect: Architects Hawaii Ltd., Honolulu, Hawaii

Engineer: SSFM International Inc., Honolulu

Owner: University of Hawaii, Honolulu

General contractor: Hawaiian Dredging/Kajima Construction, Honolulu

Precaster: GPRM Prestress, Kapolei, Hawaii

Precast concrete components: Architectural precast load-bearing window box panels, double-tees, inverted-tee beams, columns, stairways, piles, and soffit girders

Project cost: \$150 million



SPECIAL AWARD

Best Sustainable Design



Proximity Hotel, Greensboro, N.C.

Designers of the Proximity Hotel evaluated thousands of building materials and systems to create one of the most sustainable and environmentally friendly hotels in America. They selected architectural precast concrete wall panels as the best cladding system to ensure that the hotel would achieve a platinum Leadership in Energy and Environmental Design (LEED) rating.

"The precast system offers a number of green benefits, including the use of recycled materials, minimal site disturbance, shorter transport to the construction site, and a superior building-envelope performance," says Tom Murphy, project manager for Centrepont Architecture in Raleigh, N.C.

The hotel's insulated wall panels were made from recycled and recyclable materials only 90 miles from the construction site at the Charlotte, N.C., plant of Metromont Corp. Forms used to create the components were reused, minimizing material needs. The precast concrete also incorporated 4% fly ash to add durability to the concrete.

The panels featured 3½ in. of continuous EPS insulation sandwiched between a 5½-in. and a 3½-in. wythe of concrete. In some locations, the panels were designed with 4½ in. of insulation sandwiched between two equal 2½-in.-thick wythes of concrete. Carbon-fiber trusses connected the inner and outer wythes, lowering thermal conductivity and preventing any hot or cold spots from forming. The hotel is projected to use 36.5% less energy than a conventional hotel. It will also require significantly lower maintenance costs.

"Precast concrete was a stellar choice for such an environmentally friendly building," Murphy says. "It also provided exceptional aesthetic beauty befitting such a landmark project."

Judges' comments:

"A handsome contemporary design that shows off some of the aesthetic possibilities of exposed interior precast. A great-looking potential LEED platinum structure says it all!"

Architect: Centrepont Architecture, Raleigh, N.C.

Engineer: Kaydos-Daniels Engineers, Raleigh

Owner: Quantance-Weaver Restaurants & Hotels, Greensboro, N.C.

General contractor: Weaver Cooke Construction LLC, Raleigh

Precaster: Metromont Corp., Charlotte, N.C.

Precast concrete components: 55,000 ft² of flat insulated sandwich wall panels

Project cost: \$27 million



Courtesy of Metromont Corporation. Photographer: Brian Erkens.



The R-14 insulated wall panels will help the hotel use 36.5% less energy than a conventional hotel.

SPECIAL AWARD

Best Sustainable Design, Innovation Award



Courtesy of Daniel Leonard, Westmar Consultants Inc.

The precast concrete skirt maximizes vertical and horizontal ecological connectivity.

Vancouver Convention Centre Expansion Project, Vancouver, BC, Canada

Judges selected this project to receive an Innovation Award for Sustainable Design due to the design, fabrication, and installation of the precast concrete fish-habitat skirt that was produced as part of an overall \$883 million expansion of the existing convention center. That project, adding 1.1 million ft² of floor space to the center, was designed to achieve a Leadership in Energy and Environmental Design gold rating—but the skirt is even more impressive.

The three offshore perimeter faces of the facility have been skirted by a bioengineered structure consisting of a series of stepped, precast concrete benches supported by precast concrete frames. The frames extend outward from the facility and down through the entire 17 ft tidal range, and are attached to specially designed cast-in-place concrete beams.

“The precast concrete skirt maximizes vertical and horizontal ecological connectivity, which will create habitats for a diverse mix of intertidal marine life,” says Daniel Leonard of Westmar Consultants Inc., the engineer responsible for the skirt.

Precast concrete was chosen for this aspect of the expansion project, he notes, because of its durability, ability to provide ideal growing conditions for marine life, and aesthetics. Surespan Structures Ltd. in Duncan, BC, Canada, fabricated and installed the components.

Judges' comments:

“The attention given to the preservation of the local ecosystem despite the large-scale intervention of the convention center was admirable and the solution was elegant. We were especially impressed with the involvement of wildlife experts and the willingness of the design team to reach across disciplines to ensure the success of the new habitat. No other product than precast concrete could have achieved this as well.”

Architect/engineer: Westmar Consultants Inc., North Vancouver, BC, Canada

Owner: B.C. Pavilion Corp., Vancouver

General contractor: PCL Constructors West Coast Inc., Vancouver

Precaster: Surespan Structures Ltd., Duncan, BC, Canada

Precast concrete components: 76 frames and 362 benches

Project cost: \$883 million



SPECIAL AWARD

Best Sustainable Design, Innovation Award



Courtesy of Mostue & Associates Architects Inc.

Judges' comments:

"Clever solution for upgrading existing facilities and adding onto public housing. Precast concrete modular kitchen and bathroom units were used for renovations and an expansion that completely changed the look and feel of the original buildings. The rapid construction possible with precast concrete minimized the duration of displacement for the existing tenants. These modules created value while minimizing the demolition, downtime, and waste. Reusing most of the existing project is an ultimate sustainable development solution."

Architect: Mostue & Associates Architects Inc./The Casali Group Inc., a joint venture, Somerville, Mass.

Engineer: Simpson, Gumpertz & Heger, Waltham, Mass.

Owner: Somerville Housing Authority, Somerville

General contractor: Boston Building & Bridge Corp., Readville, Mass.

Precaster: Rotondo Weirich Enterprises Inc., Lederach, Pa.

Precast concrete components: 240 precast concrete modular additions (walls and floors) plus 80 roof/parapet caps

Project cost: \$27.16 million

Mystic River Modernization, Somerville, Mass.

Judges singled out this residential complex to receive an Innovation Award for Sustainable Design for the design and construction of precast concrete kitchen and bathroom modules to update 240 units of state-financed public housing in Somerville, Mass.

By adding precast concrete modules into existing spaces alongside each unit, the design maximized renovation benefits and durability, increased each home's square footage, and reduced disruptions to the residents. A dozen of the units also were outfitted to make them accessible for people with disabilities. Rotondo Weirich Enterprises in Lederach, Pa., created the modules.

"The modular solution allowed the precaster to cast and outfit the additions off site while site work was completed," says Brooks A. Mostue, principal at Mostue & Associates Architects Inc., which designed the project in a joint venture with The Casali Group Inc. "Besides being more efficiently built, the new apartment complex enhances its surroundings. The modules' forms take their inspiration from the three-decker housing of the neighborhood."

This prototype building can be used for more than 3000 similar affordable-housing units in developments across the state, he notes. "This effort upgrades living conditions and public opinion while completing construction activities within a partially occupied development."

The modular solution allowed the precaster to cast and outfit the additions off site while site work was completed.



SPECIAL AWARD

Best Elementary School

Best Sustainable Design, Innovation Award

Yeshiva Keter Torah, Mexico City, Mexico

Designers of a new temple facility in Mexico City, Mexico, wanted to create “a celebration of the industrial age and technology and acknowledge the rapidly changing trend toward a new age of information and ecology,” says Javier Franco, project manager. To achieve that, the designers clad the building with architectural precast concrete walls, most of which are finished on both sides, and included small circular openings that allow light to enter in decorative patterns.

“The school’s modern educational model had to be reflected in their new building, so the design had to account for youth education, surrounded by religious culture and ideals,” he says. The three-story building is about 35,000 ft², requiring a dramatic appearance to make it look larger than its size would seem.

Architectural precast and glass-fiber-reinforced concrete were used for walls, column covers, spandrels, a sculptured wall in the main temple, and the soffit panels, depending on structural and thickness needs. White marble aggregates and white cement were used in fabricating the panels, with the finish applied by pneumatic bush hammers.

“Each of the architectural components is part of an interrelated system that creates a solid yet translucent wall system that unifies the project, blending the interior and exterior looks and adding a unique ecological solution,” Franco says. “The building is small in size, but the use of translucent elements with precast concrete panels allowed us to provide an example of technology transformed into art.”

The precast concrete followed a precise molding-support system to secure cylinders in each panel in the needed position.



Courtesy of Pretecsa.

Judges' comments:

“We absolutely loved the innovative use of these ‘funnel lights’ to make the walls appear light. It’s a very fresh idea. The building creates a climate in which the outside and inside surfaces can be one and the same. That allowed them to take a heavy, opaque material and give it a lacy quality by infusing bits of light that stream through from the outside. It adds a layer of visual artistry. From the fabrication standpoint alone, this represents artistry by the fabricators, making precast concrete at a high level.”

Design-builder: Arquitectos Manuel Roditti and José Serur, Huixquilucan, Edo. de Mexico, Mexico

Contractor: Serur Arquitectos, Col. Lomas de Chapultepec, C.P., Mexico

Owner: Yeshiva Keter Torah, Mexico City, Mexico

Precaster: Pretecsa, Higuera, Atizapan de Zaragoza, Mexico

Precast concrete components: 450 architectural precast concrete wall panels, including 346 with both interior and exterior wall finishes

Project cost: \$4.7 million



CUSTOM SOLUTION

Best Custom Solution



Kaumalapau Harbor Breakwater Repair, Island of Lanai, Hawaii

A uniquely constructed precast concrete component was the key to restoring the Kaumalapau Harbor Breakwater that was severely damaged by hurricanes Iwa and Iniki in 1982 and 1992, respectively. The breakwater provided protection for the island of Lanai's only commercial harbor, making its repair a critical project. To achieve this, designers created three-dimensional jack-like shapes from precast concrete that fit together and offer not only a durable protector but one onto which marine life can grow.

A number of challenges in addition to finalizing a design shape had to be met, according to Scott Sullivan, vice president at Sea Engineering Inc., the principal engineer on the project. These included developing a precise placement plan for the large concrete armor units, essentially giving each unit a specific x,y,z coordinate where it was to be placed on the new structure. Other issues included the logistics of having to do the construction at a somewhat remote location with limited access, and even the need to work out offloading operations to ensure that the existing dock was not overstressed.

The resulting precast concrete units are the largest such components built to date. Very high strength concrete was specified, with a flexural strength of 700 psi at 28 days. Due to their size and the lack of conventional reinforcement, designers were required to restrict the maximum concrete temperature during casting and curing to 165 °F and the maximum differential temperature between the interior and exterior concrete during curing to 36 °F to minimize thermal microcracking, he explains.

The units were cast on the island of Oahu, Hawaii, and barged to the project site on Lanai, with each load then placed onto trucks and hauled to an inland storage area. The materials then were loaded back onto trucks and transported to the site as they were needed.

The precast concrete units were placed using GPS coordinates, some in depths of 44 ft of water. Video cameras and divers were used by the crane operator to place the units, averaging 35 tons and 12 ft in height, on the breakwater in sometimes turbulent water.

"The project-delivery team truly embraced teamwork, partnering, and integrated project management at all levels," Sullivan says.



Judges' comments:

"These precast concrete components are just such cool objects. They're heroic. They're huge, providing a scale that is simply incredible. They allow the breakwater to continue to accumulate marine life, producing an extremely organic form. They're going to grow and continue to be a participant under the water landscape. Whether future designs are this size or some variation, permanent or even temporary, it creates a terrific precedent for dealing with floodwater and other marine situations."

Design engineer: Sea Engineering Inc., Waimanalo, Hawaii

Owner: State Department of Transportation, Honolulu, Hawaii

General contractor: Traylor Pacific, Irvine, Calif.

Precaster: GPRM Prestress LLC, Kapolei, Hawaii

Precast concrete specialty engineer: Baird & Associates, Madison, Wis.

Precast concrete components: 819 Core-Loc brand components

Project cost: \$22.3 million

These precast concrete units are the largest such components built to date.



BUILDING

Best Justice Facility



Courtesy of John Swain Photography.



Alameda County Juvenile Justice Center, San Leandro, Calif.

Officials in Alameda County, Calif., wanted to create a healthy indoor environment, create a sustainable design, and produce a cost-effective design when creating their new juvenile justice center. To achieve these goals, architects created an energy-efficient building clad with architectural precast concrete panels that achieved a silver Leadership in Energy and Environmental Design (LEED) rating.

“Creating a healthy space with daylight and fresh air for facility youth and occupants was a top priority,” says Beverly Prior, principal in Beverly Prior Architects in San Francisco, Calif., which served as the associate architectural firm. “However, requirements and regulations for detention and court facilities made many typical green features inappropriate.” For example, security requirements limited material choices. “With no additional funding, green features had to be integrated into the overall design.”

The use of architectural precast concrete panels helped the building project a softer appearance to support the collaborative approach used with the residents, she notes.

The adjacent courthouse features architectural precast concrete panels on structural steel framing, blending the appearance of the two buildings. It features a two-tiered panel system, with an upper tier of panels with a smooth gray finish and a lower tier with an integral cream color and smooth finish, with a 3 ft rusticated base.

“The use of precast concrete contributed to the noninstitutional feeling of the design,” she says. “It also provided environmental benefits and contributed to the LEED credits.” These aids included the use of fly ash in the structural precast concrete mixture and producing the panels within 500 miles of the site.

“The speed and affordability of precast also contributed to completing the project on schedule and on budget,” she says. The exterior structural panels were fabricated in eight months and erected in five more. “That speed completed the shell in a time frame that allowed the interior trades to begin work sooner.” For more details on this project, see the article in the spring 2008 issue of *Ascent*.

Judges' comments:

“The justice facility and courthouse take advantage of precast concrete’s ability to be used as unitized components to facilitate construction. The project adapts a design style typically used for warehouses and distribution centers to a different type of architecture. It’s a very clear use of this technique that meets all of the building’s specialized needs.”

Architect of record: Hellmuth, Obata+Kassabaum (HOK), San Francisco, Calif.

Associate architect: Beverly Prior Architects, San Francisco

Engineer: The KPA Group, Oakland, Calif.

Owner: Alameda County General Services Agency, Oakland

Construction manager: Vanir Construction Management Inc., Sacramento, Calif.

Design-build contractor: Hensel Phelps Construction Co., San Jose, Calif.

Precaster (structural components): Mid-State Precast LP, Corcoran, Calif.

Precaster (architectural panels): Willis Construction Co., San Juan Bautista, Calif.

Precast concrete components: 488 structural panels, 112 architectural panels, 271 slabs

Project cost: \$176 million

The use of precast concrete contributed to the noninstitutional feeling of the design and contributed to the LEED credits.

Best Manufacturing Facility



Mott Haven Substation, Bronx, N.Y.

Building a new electric substation in a dense urban environment on a tight schedule can be challenging enough. Ensuring that such a massive structure fits into its neighborhood adds an extra layer to such a project. A total-precast concrete structure allowed Consolidated Edison to meet all of those needs.

The two-story, 125,000 ft² building features a combination of precast concrete structural and architectural elements. The building is clad with precast concrete panels that have 2 in. of insulation where they are adjacent to interior spaces. Inside, the facility contains transformer vaults (with high precast concrete screen walls), offices, and industrial space. Outside, perimeter fencing features a precast concrete base, and a 1000 gal. storm-water retention tank was constructed with precast concrete components. The company's engineers worked with designers from The Switzer Group Inc. in New York, N.Y., to develop a vocabulary of architectural elements common to the area, explains Michael Corcoran, senior architect for Con Edison. "We needed to break down the scale of the building to present a believable residential presence," he says.

The design team segmented the nearly 600-ft-long expanse into alternating brick patterns on every three precast concrete panels. They also changed the fenestration pattern to provide the appearance of a classic New York City rowhouse street, and added door and window details made with glass-fiber-reinforced concrete.

The company chose precast concrete components for a variety of reasons, Corcoran says. "Speed of construction was the most significant factor in deciding to use total-precast concrete construction."

The economics also favored this system, he says, over such materials as masonry walls with steel frame or cast-in-place concrete. The precast concrete system also eased sequencing challenges. Fire separations and durability also favored the precast option, he says.

Fire separations and durability also favored the precast option, he says. When combined with Commonwealth Edison's past experience with the material in a smaller substation in Westchester, N.Y., it was an easy decision. "We could rely on the good experiences from the project to guide us through this much larger, more complex project."

Judges' comments:

"This project used precast concrete to create a design and scale that accommodate the residential community surrounding the power station. There is a high level of detail, such as above the doors and windows, and the only way to achieve that detail on a tight budget is with precast concrete. It's a huge building, and the precast concrete design brings a sense of scale back to it."

Architect: The Switzer Group Inc., New York, N.Y.

Engineer/owner: Consolidated Edison Co. of New York, New York

General contractor: D'Onofrio General Contractors Corp., Brooklyn, N.Y.

Precaster: Coreslab Structures (CONN) Inc., Thomaston, Conn. (with subcontracting precasters J. P. Carrara & Sons, Middlebury, Vt., and William E. Daily Precast LLC, Shaftsbury, Vt.)

Precast concrete specialty engineer: LEAP Associates International Inc., Tampa, Fla.

Precast concrete components: 1150 components, including wall panels, prestressed double-tees, beams, columns, and fence posts.

Project cost: N/A

Courtesy of Consolidated Edison of New York.



We needed to break down the scale of the building to present a believable residential presence.



BUILDING

Best Multifamily Building



101 Eola, Orlando, Fla.

The new condominium building at 101 Eola in Orlando, Fla., adds to a revitalized downtown neighborhood that has become a fashionable place to live.

"The construction team decided that the most practical and cost-effective way to achieve the developer's desired vision was with precast concrete construction," says Mike Houseman, AIA, principal for Baker Barrios Architects Inc. in Orlando. The designers created a total-precast concrete system, including walls, double-tees and other spanning beams, elevator/stair units, shear walls, and slabs.

The 12-story, 301,453 ft² building includes 146 living units, a fitness center, a swimming pool and clubhouse, 13,250 ft² of restaurant and retail space, and a 280-car parking garage. The building's exterior features a texture-coated finish over precast concrete panels. Cantilevered precast concrete balconies and roof overhangs add interest and amenities.

"The process of creating the desired look with precast concrete was made possible due to creative architectural design in collaboration with the expertise of the structural and precast engineers," he says. "Efficient construction methods aided the success of the project."

"Our entire A/E and construction team was pleased with the benefits of a precast concrete system," Houseman says. "The structural strength and high quality of the material were advantageous to the architectural-design objectives." By phasing the concrete erection, various trades could start work sooner than with cast-in-place construction, he says. "The contractor was able to generate savings due to the speedy and repetitive construction of the precast."

Precast concrete's fire-resistive properties also worked well for the project, and its long-span capabilities aided interior-design flexibility. "The owner and all involved felt good knowing that precast construction utilizes environmentally-friendly materials," Houseman says.

Judges' comments:

"We were taken by the thinness of the proportion of the slabs and the mass of the elements, in comparison to the glass. It has a very light appearance, with a light, ethereal quality to it, given the bulk of the building. The building's high level of transparency no doubt produces a very interesting structure at night."

Architect: Baker Barrios Architects Inc., Orlando, Fla.

Engineer: Finrock Design-Manufacture-Construct, Orlando

Owner: Real Estate Inverlad, Orlando

General contractor: Jack Jennings & Sons, Orlando

Precaster: Finrock Industries Inc., Orlando

Precast concrete components: 2644 pieces, including double-tees, single-tees, inverted-tee beams, hollow-core slabs, spandrels, stair/elevator walls, shear walls, truss beams, column covers, and wall panels

Project cost: \$36 million

Courtesy of Raymond Martinot.

Our entire A/E and construction team was pleased with the advantages of a precast concrete system.



BUILDING

Best High-Rise Multifamily Building



Westhaven Park, Chicago, Ill.

The nine-story, 113-unit Westhaven Park in Chicago, Ill., was designed as the city's first mixed-use market-rate/affordable midrise project to replace existing public housing. Part of a comprehensive redevelopment of an urban neighborhood, it was created using a total-precast concrete system that offered a variety of advantages.

The project was originally planned with a conventional masonry design. But when it costed out \$2 million higher than the budget allowed, the project was value-engineered to the precast concrete option.

"Rethinking the design using precast concrete cladding and structure allowed us to greatly improve design and construction quality while meeting stringent budget requirements for affordable housing," says John Clark, principal in Cordogan Clark & Associates, the architectural firm. The use of precast concrete also sped construction, which aided the budget, he says. "Precast structural elements and floor planks allowed immediate access to each floor as it was erected, speeding construction time," he says. Face brick was cast into the panels at the plant, providing the elevations with a variety of colors and textures. Its use eliminated the need for scaffolded masonry construction at the site and cut construction time.

"The design prominently features green architecture, first among those elements being the precast concrete components themselves," he says. Other green features include a dramatic planted cornice overhang at the entrance and trellises above upper balconies.

Abstracted, green-stained precast concrete, loosely inspired by the ornamental terra cotta designed by Frank Lloyd Wright, flanks the entrance and invokes the spirit of wall ivy (until real ivy can take its place).

"This project represents an innovative design that enhances people's lives and the surrounding neighborhood fabric," Clark says. "It represents the highest-quality affordable-housing design."

Judges' comments:

"This design created affordable housing that is not the typical approach that involves brutal and stripped-down structures. This building has a lot of quality to it, and there's a lot of detail that raises the bar. The material allowed for variations in the scale, reacting to the neighborhood around it. It provides a strong choice for this urban context."

Architect/engineer: Cordogan Clark & Associates Inc., Chicago, Ill.

Owner: Chicago Housing Authority, Chicago

General contractor: McShane Construction Co., Rosemont, Ill.

Precaster: ATMI Precast, Aurora, Ill.

Precast concrete specialty engineer: J. W. Peters, Waukesha, Wis.

Precast concrete components: 2189 pieces, including interior, exterior, and garage walls; double-tees; balconies; and hollow-core slabs

Project cost: \$24 million



Courtesy of Steinkamp Photography.

Rethinking the design allowed us to greatly improve design and construction quality while meeting stringent budget requirements.



BUILDING

Best Low-Rise Multifamily Building



Residencial Lomas del Pedregal, Mexico City, Mexico

Seven buildings, each seven stories tall, were combined into one multifamily project to create Lomas Del Pedregal in Mexico City, Mexico. Designers used a total-precast concrete system that included a unique connection system that left a gap in each column for insertion of the precast concrete beam.

"This structure challenges the concept that prevails in Mexico regarding precast concrete structures, adapting itself to forms and lines that satisfy the more and more demanding contemporary architecture," says Germán González Soto, CEO of Industrial Prefabricadora in Mexico City. "We wanted this project to contribute to breaking the mold by demonstrating the material's versatility with any architectural concept."

The building features precast concrete beams and columns, spanned by double-tee beams to create open spaces below. The precast concrete design sped construction and allowed the project to be completed earlier than other formats would have allowed. "A key challenge was creating double-tee elements that could span 49 ft while only offering a 19.7-in. depth section," González says. The shallow depth allowed the building to meet height requirements while providing the durability and strength required.

The precasters also created a distinctive connection approach, with a gap created in the columns so the beams could be fit into them, rather than adding a haunch that would project into the space. The space around the inset piece was then grouted with concrete to secure it in place.

"This project is, for us, a symbol of consolidation and confidence gained from working with precast concrete," says Carlos Araujo, projects director for Industrial Prefabricadora. "We worked closely with the entire construction team and the owner to achieve the best solution for a building that encompasses beauty and functionality."



Courtesy of Inpresa.

This structure challenges the concept that prevails in Mexico regarding precast concrete structures.



Judges' comments:

"The articulated volumes in this design break down the building's mass, using slender slits to create visual interest. The structural system is also interesting, using precast concrete columns with gaps into which the beams are inserted, casting a concrete 'knuckle' to bring it together. It produced a very slim structural system without having the haunches that a precast concrete structure typically includes. The precast design produced very sleek, clean lines and a very contemporary look."

Architect: Taller Aragones/Gutierrez Arquitectos, Mexico City, Mexico

Engineer: Industrial Prefabricadora S.A. de C.V., Mexico City

Owner/general contractor: Geo D.F., Mexico City

Precaster: Inpresa, Mexico City

Precast concrete components: 1235 pieces including columns, beams, and architectural panels

Project cost: \$4.6 million



BUILDING

Best Office Building



Copyright 2007 Brian Dressler/dresslerphoto.com.



The concrete cladding system blends seamlessly with other components and finishes.

Hubbell Lighting Inc. Corporate Headquarters, Greenville, S.C.

Executives at Hubbell Lighting presented designers at the architectural firm of McMillan Smith & Partners Architects with a host of challenges when they decided to consolidate a variety of divisions from around the country into one corporate headquarters. Two key ingredients were the need to reflect the company's lean manufacturing process and the desire to create a strong presence as the first structure in a new private research and development park.

The designers produced a four-story, 185,000 ft² structure that met Leadership in Energy and Environmental Design silver certification requirements while also meeting a compressed timetable and an aggressive budget allowance. A major element of that program was the use of architectural precast concrete wall panels to clad the building. The combination of materials provides texture and interest while meeting the environmental goals.

The panels include reveals and horizontal bands that allow for the integration and continuation of horizontal mullions in the curtain-wall glazing system. The precast concrete mixture comprised white cement, Fletcher granite, and Lilesville sand.

"The concrete cladding system blends seamlessly with other components and finishes," says K. J. Jacobs, project manager for McMillan Smith. "From daylight to dusk, the materials respond in a unique way to the variety of lighting techniques applied to the facades and interior of the structure, complementing the stately structure."

An illuminated entry rotunda provides the building's signature architectural element and marks the entry into the facility's Lighting Solutions Center. Punched-window openings on the south elevation and an expansive curtain wall on the north side provide dramatic views, while high-performing glazing reduces intrusive heat and harmful UV rays.

"The use of architectural precast concrete supported goals for an economical facility with an aggressive schedule and strengthened sustainability initiatives, which were achieved through careful planning and execution," Jacobs says. "Specifying precast concrete supported the desire to use regional materials and recycled content, including its steel reinforcement. And, because the precast concrete components were fabricated off site, construction waste was minimized and contributed to lowering site disturbance and noise pollution."

Judges' comments:

"Within a single structure, the variation of forms, textures, surfaces, and scale is intriguing. The overall composition of these elements provided visual interest and certainly will aid future applications. They varied the fenestration patterns on each side, going against the traditional thinking that every building has to be the same all the way around. It is an admirable approach."

Architect/engineer: McMillan Smith & Partners Architects, Spartanburg, S.C.

Owner: Hubbell Lighting Inc., Greenville, S.C.

General contractor: The Harper Corp., Greenville

Precaster: Metromont Corp., Greenville

Precast concrete components: 36,363 ft² of architectural precast concrete wall panels

Project cost: \$41 million



BUILDING

Best High-Rise Office Building



Courtesy of Carpenter Sellers Architects and Bill Timmerman.

University of Phoenix Riverpoint Center, Phoenix, Ariz.

In addition to providing strong aesthetics, the designers of the new University of Phoenix office building focused on achieving a variety of sustainable-design concepts that will help reduce costs and lower maintenance needs through the structure's service life.

"The owners weren't looking to achieve LEED [Leadership in Energy and Environmental Design] certification, but they did want a project that was sustainable and environmentally friendly," says Stacey Howell at Carpenter Sellers Architects, which worked on the project in conjunction with SmithGroup. "The owners asked for a design that responded to the region and was easily maintainable." To achieve that, the designers used precast concrete structural elements and spandrel panels in conjunction with a cast-in-place concrete structure.

The projects feature precast concrete double-tees for flooring units, along with precast concrete columns, beams, and shear walls. Each structure uses precast concrete spandrels to achieve a distinctive look that blends the three buildings without allowing them to overwhelm the space. Glazing was maximized on the southern exposure but was completed with horizontal shading devices that protect against high summer sun while allowing low winter sun to heat the building.

"The advantage to using precast concrete was the thermal mass that was provided on the east and west exposures, where we used small, narrow windows," Howell says. The panels feature integral color that, combined with the material's durability, will eliminate the need to repaint or stain the facade. Locally manufacturing the components also helped minimize transportation energy while aiding the local community, she notes.

An under-floor air-distribution system allows each occupant to control thermal comfort. The under-floor plenum significantly reduces the amount of ductwork that was needed, and it also was used to run line and low-voltage cabling, reducing conduit. The elimination of ductwork also reduced floor-to-floor height requirements, minimizing the materials needed for construction.

Concrete has a quality to it that other materials don't.

Judges' comments:

"The overall composition of the different volumes, treated in different ways, created an outstanding appearance. The use of precast concrete was thoughtfully and simply detailed, and yet there is a lot of artistic quality. The rustication joints and the arrangement of the windows capture interest and differentiate it from other buildings in this context."

Architect: Carpenter Sellers Architects, Las Vegas, Nev., in association with SmithGroup, Phoenix, Ariz.

Engineer: Caruso Turbey Scott, Tempe, Ariz.

Owner: Apollo Group, Phoenix

General contractor: Sundt Construction, Tempe

Precaster: Tpac-a Division of Kiewit Western Co., Phoenix

Precast concrete components: 160 components, comprising double tees, beams, columns, shear walls, and spandrel panels

Project Cost: N/A



Best Low-Rise Office Building



Courtesy of Ament Commercial Photography.

The Golden 1 Credit Union Corporate Headquarters, Sacramento, Calif.

Designers on the Golden 1 Credit Union building faced a major hurdle in meeting a tight construction deadline, calling for an 18-month time frame from groundbreaking to client move-in. To meet that goal while providing a variety of programmatic and aesthetic needs, they specified architectural precast concrete panels for the building's cladding, which was erected on a steel moment frame.

The six-story building was erected on a 33,000 ft² footprint, providing 200,000 ft² of office space. The precast concrete cladding comprised 65 types of panels, averaging about 47 ft² apiece. The components included roof spandrels, beam covers, column covers (some two stories high), trellis column covers, wall panels, and penthouse panels.

The panels were colored and textured to create high visual interest while also serving functional needs. "Precast concrete allowed for a unique look and feel that could not be achieved with other types of materials. It met our program requirements for design and aesthetics, durability and longevity, ease of maintenance, and budget," says Alvin Wong, studio manager, commercial architecture, for the architectural firm of Ware Malcomb. "It gave the building a sense of permanence and timelessness, qualities any financial institution would be proud of."

The owners were eager to gain access to the building after outgrowing their previous office space. This new building would give them the space and functionality necessary to continue the growth of their company. "The architectural precast concrete allowed for greater ease of accelerating construction because the pieces were delivered from a local fabricator who could supply the large variety of sizes that were needed. Another benefit is that since the architectural precast concrete panels were manufactured in a controlled environment, there was an assurance of quality in the product," Wong says.

Judges' comments:

"The way the material was used achieved a very crisp building. The design stands out because, rather than providing punched windows, the precast concrete is integrated into the glass curtain wall very seamlessly. It all works together to create a taut skin that's very reflective and smooth. It demonstrates the ability of designers to adjust scale and shift pattern from what's usually expected."

Architect: Ware Malcomb, West Sacramento, Calif.

Engineer: Miyamoto, West Sacramento

Owner: The Golden 1 Credit Union, Sacramento, Calif.

General contractor: McCarthy Building Cos., San Francisco, Calif.

Precaster: Clark Pacific, West Sacramento

Precast concrete components: 293 architectural precast concrete wall panels

Project Cost: N/A



The architectural precast concrete allowed for greater ease of accelerating construction.



BUILDING

Best Public Building



The precast panels with in-laid brick eliminated time in the critical path to enclose this building.

Judges' comments:

"The traditional design and classicism of this project really stood out, because it is not a characteristic typically identified with precast concrete. It is very well proportioned and well done. There is a high degree of three-dimensionality, with a lot of overhangs and recesses that avoid normal, flat walls. It shows precast concrete's capabilities for molding to create columns and cornices, which allowed them to deliver, within budget, an iconic example of a historic type of architecture without trying to replicate stone."

Architect/engineer: Spillis Candela DMJM, Coral Gables, Fla.

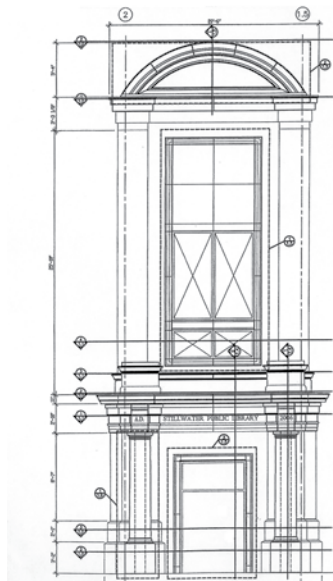
Owner: Clay County Board of County Commissioners, Green Cove Springs, Fla.

General contractor: Elkins Constructors, Jacksonville, Fla.

Precaster: Gate Precast Co., Monroeville, Ala.

Precast components: 552 pieces of architectural precast concrete wall panels

Project cost: \$25.4 million



Clay County Courthouse, Green Cove Springs, Fla.

The Clay County Board of County Commissioners wanted to convey a powerful image for the expansion and renovation of their county courthouse, which was built in the 1970s. To achieve that goal, designers added a new wing and clad both buildings with architectural precast concrete wall panels embedded with thin brick to provide a distinctive, classic look.

The building's symbolic clock tower and projecting entry pavilion serve as unifying elements for the new and old wings. The vertical piers and new brick cladding balance the monumental Tuscan order colonnade of the new wing.

The new four-story wing includes eight courtrooms, holding cells, eight judicial chambers, and consolidated offices for the clerk of court and support services. The renovated existing spaces include redesigned offices for the state attorney, public defender, and court support spaces that allow the public to seamlessly access various services. Spaces were designed to complement the traditional exterior look.

"The new image for the courthouse was specifically intended to capture the strength and dignity of the classic pre-war American courthouse, with its brick facades and neo-classical vocabulary," says Enrique J. Maciá, project manager for architectural firm Spillis Candela DMJM in Coral Gables, Fla. "The new courthouse takes full advantage of state-of-the-art construction techniques to reinterpret traditional design elements."

These techniques included the use of clay-brick infill on the architectural precast concrete panels, which facilitated construction and reduced the overall schedule for applying stone elements. "The use of the clay-brick infill provides a richly textured and marked contrast to the smooth, white precast panels and trim, giving the courthouse an extremely dynamic facade expression," he says.

The precast concrete panels, fabricated by Gate Precast Co. in Monroeville, Ala., saved approximately two months of construction time, allowing the project to be complete in only 20 months, he notes. "The precast panels with in-laid brick eliminated time in the critical path to enclose this building over what would have been needed with traditional cast-in-place concrete column-and-beam structure, with back-up masonry block-and-brick cladding."

Copyright Mike Butler/Spillis Candela DMJM.



Best Institutional Building



Courtesy of Coreslab Structures Inc.

Structural steel was erected inside the precast concrete shell, attaching it to the concrete.

Congregation Beth El Sanctuary, La Jolla, Calif.

From the inception of their project, the members of the Congregation Beth El Sanctuary set out to create a new sanctuary that would serve as a focal point and landmark building for the existing campus. To achieve that, the building committee invited the precast concrete fabricator and the general contractor to participate in the early design-development phase with architect Stanley Saitowitz/Natoma Architects Inc. The resulting design uses architectural precast concrete wall panels to balance the look of a massive facade while maintaining an openness that allows light to reach the building's interior.

The design combines staggered architectural precast concrete panels and a glass wall system throughout the exterior elevations. These are enhanced with imposing precast concrete colonnades flanking the north and south elevations. The colonnades use precast concrete sunshades to tie the inner and outer walls together at both the mezzanine and roof levels.

The designers visited the precasting plant to review options before deciding on a mixture of white cement and color to simulate limestone. The panels' surface had a light sandblast finish with form-cast and hand-set reveals added on both sides to create a large block pattern. Finishing on all four sides included knife-edge corners. "These were a critical element to achieving the desired appearance," says Michael Luke, project manager for Stanley Saitowitz/Natoma Architects Inc.

The site's 100 ft change in elevation between the street and the back of the site created access challenges for cranes and panel delivery. Construction began by pouring the panel footings and placing the panels onto dowels, with reinforcing bar extended from the footings. The crane was carefully maneuvered onto the site to the center of where the sanctuary would be constructed. It then worked in a circular pattern, erecting panels with bracing to hold both the wall panel and colonnade panels until the precast concrete sunshade was added to complete the designed support system.

With three sides completed, the crane was backed out and the final panels were erected. With the last panels aligned and welded, the structural steel was erected inside the precast concrete shell, attaching it to the concrete. Then the rest of the structure was built inside.

Judges' comments:

"The use of the material not only for the exterior cladding but also inside the building created continuity. It shows that precast concrete can be used on contemporary designs as well as on more traditional appearances. It uses precast concrete as a total component throughout the entire building in a very honest use of materials. Through its simplicity, it creates a high level of design that stands out."

Architect: Stanley Saitowitz/Natoma Architects Inc., San Francisco, Calif.

Engineer: KPFF Consulting Engineers, San Francisco

Owner: Congregation Beth El, La Jolla, Calif.

General contractor: DPR Construction Inc., San Diego, Calif.

Precaster: Coreslab Structures (L.A.) Inc., Perris, Calif.

Precast concrete components: 90 pieces of architectural precast concrete wall panels

Project cost: \$9.5 million



PARKING

Best Parking Structure



Courtesy of Carolina Photo Group, Charlotte, N.C.

Judges' comments:

"This mega-project used such an interesting design approach. Raising the level of the perceived street and connecting into the city grid produced an efficient, effective option. It allows 7000 cars to basically disappear off the street, so the buildings can offer a smaller scale and create a more enjoyable streetscape. The long spans were made possible with the use of precast concrete components, producing a project on a grandiose scale that serves a distinctive urban-design purpose. It's a natural material for this application."

Architect/engineer: Carl Walker Inc., Atlanta, Ga.

Owner: Jacoby Development, Atlanta

General contractor: Vratsinas, Atlanta

Precaster: Metromont Corp., Hiram, Ga.

Precast concrete specialty engineer: PTAC, Pensacola, Fla.

Precast concrete components: 4592 pieces, including double-tees, columns, girders, shear walls, wall panels, and spandrels

Project cost: \$2 billion



Atlantic Station Parking Structure, Atlanta, Ga.

A precast, prestressed concrete superstructure and parking system lies at the heart—or perhaps at the feet—of a redevelopment project in Atlanta, Ga. The project was designed to reclaim acreage previously used by a former steel mill, creating 15 million ft² of retail, office, residential, and hotel space plus several acres of public parks. Parking for more than 7000 vehicles was provided underground in the \$2 billion project.

More than 3 million ft² of precast concrete superstructure and parking were created to support the new facilities. The street-level roadways feature 47-in.-deep double-tees cut down to 10 ft wide with an 8-in.-thick cast-in-place concrete composite slab.

The use of double-tees for roadways was a first-time application in the state, requiring Department of Transportation approval and a sign-off by the governor, says Derrick Bridges, structural engineer and managing principal for Carl Walker Inc. in Atlanta. The cast-in-place concrete roadway base and asphalt were installed over the precast concrete structure providing drainage contours for the roads, he notes.

An extensive expansion-joint system was created to accommodate the large surface areas. In general, building footprints were segregated from the parking levels and roadway structures. As a result, the structural framework directly below the buildings required a system of precast concrete column, shear-wall and shear-frame components to support each building.

This structure provided the base for 10 cast-in-place concrete buildings that rise above street level to anchor the redevelopment district. The typical 30 ft x 60 ft bay spacing of the precast concrete structure below was maintained in the buildings' framing system above, he says. Some of the buildings and precast concrete structures were designed with vertical expansion in mind as well.

"All of this was accomplished with the integration of precast, prestressed concrete; clever engineering; and a brave owner," he says. "The property and project serve as a national model for smart growth and new urbanism." For more on this project, see the article in the Winter 2007 issue of *Ascent*.

The use of the large parking plate provided substantial economic impact to the municipal tax base.



PARKING

Best Large Parking Structure (More Than 1000 Vehicles)



West General Robinson Street Garage, Pittsburgh, Pa.

The West General Robinson Street parking structure has a dual personality, serving two distinct markets from one location, depending on the day. To meet all of these needs on a site ringed by infrastructure, designers used a total-precast concrete system to create a double-thread helix ramp that coordinates with entrances on three streets.

On a daily basis, the 10-story, 1233-car garage serves commuters working in the developing neighborhood and downtown areas. At other times, it is used by patrons of the nearby stadium complex. Two ramps were created so that one helix thread can serve event patrons coming from the north, while the other serves those coming from other directions. Speed ramps on the north side allow rapid egress.

"Precast concrete was chosen because it offered the shortest erection time and the lowest cost," says Kevin Wagstaff, principal with the architectural firm of Perfidio Weiskopf Wagstaff+Goettel. It also offered the built-in fire rating required of a 10-story parking structure. "We could integrate architectural and structural components to maximize efficiency."

Precast concrete components were used for the entire structure, setting it on cast-in-place concrete foundation elements with cast-in-place concrete speed ramps.

At the perimeter, decks were wrapped with a skin of architectural precast concrete bearing-wall panels. "This treatment gives the structure a more monolithic and enclosed character than is typical of parking structures while also concealing the sloped parking decks," he says. Integral color pigments with gray cement and granulated blast-furnace slag give the concrete an earth-tone color that complements the brick and stone of the nearby stadiums.

Judges' comments:

"This is a very large building that uses precast concrete in a simple but interesting way that keeps it from being relentless. By pulling the concrete away at the corners and exposing areas, while detailing the vertical circulation access points to a really high level, the building produces contrasts that work well for such a large mass. It creates a very unified and dignified application of the material."

Architect/engineer joint venture: Perfidio Weiskopf Wagstaff+Goettel, Pittsburgh, Pa., and Walker Parking Consultants, Kalamazoo, Mich.

Owner: Sports & Exhibition Authority, Pittsburgh

General contractor: Mascaro Construction Co., Pittsburgh

Precaster: Sidley Precast Group, Thompson, Ohio

Precast concrete components: 1292 pieces, including double-tees; inverted tees; walkway, floor, and wall slabs; wall panels; lite walls; shear walls; ledge and curved beams; and stair units

Project cost: \$23.2 million

Precast concrete was chosen because it offered the shortest erection time and the lowest cost.

Courtesy of Perfidio Weiskopf Wagstaff+Goettel/Walker Parking Consultants joint venture. Copyright Ed Massery.



PARKING

Best Small Parking Structure (Fewer Than 1000 Vehicles)



Rockyview General Hospital Parkade, Calgary, AB, Canada

An integral part of the Rockyview General Hospital Expansion Project, the new East Parkade sits prominently in front of the hospital along a busy street in Calgary, AB, Canada.


Designers had to account for future plans for the parking structure, which includes a two-story clinic addition on top and another potential addition to be built to the side. "Knowing the future addition would enlarge the building's mass and make the front elevation's aesthetics more important, design attention focused on carefully detailing the precast concrete structure," says Doug Little, engineer for Read Jones Christoffersen Ltd. in Calgary.

Precast concrete beams, slabs, and walls were integrated and recessed within the footprint of the parking floor to keep the building within the property boundaries and out of the plenum areas around the perimeter. "Due to the precision found in the precast shop drawings, it was simple to accommodate the tolerances for elevator recesses, embed plates, and expansion-joint assemblies," Little says.

The efficiency of the precast concrete end-to-end helix-ramping system, enhanced with a simple, repetitive interior layout, offset the cost premium for having to add cast-in-place retaining walls behind the structure, where it fits into a hillside. The decks were constructed with precast concrete double-tees and beams with high-coulomb-rating concrete containing silica fume and a chloride-inhibiting admixture.

To accommodate the future addition, the precast concrete structure was designed to withstand the seismic forces generated from the mass of the parking structure and the future steel two-story clinic addition on top and the future parking structure extension. "Precast concrete shear walls proved the most effective means to handle the additional lateral loads, and it allowed the erection to flow continuously. Mixing cast-in-place concrete or steel lateral systems would not have allowed that flow."

The precast concrete will provide durability as well as flexibility. "Precast was an economical solution that also allowed for a quick erection process, which was critical for this fast-tracked project."



Design attention focused on carefully detailing the precast concrete structure.

Judges' comments:

"This structure has a totally different function from the hospital it serves, but it succeeds as a companion that fits well with the total complex. The use of the precast concrete cladding to serve as a background for the colorful glazing and aluminum provided a creative appearance. It compositionally supports the design and elevates the entire quality of the building. It's straightforward, honest, and simple, but it works very well."

Architect: Stantec Architecture, Calgary, AB, Canada

Engineer: Read Jones Christoffersen Ltd., Calgary

Owner: Calgary Health Region, Calgary

General contractor: CANA Construction Ltd., Calgary

Precaster: Con-Force Structures, Calgary

Precast concrete components: 637 pieces, including columns, beams, spandrels, double-tees, reinforced beams, architectural and structural panels, and exterior walkway slabs

Project cost: \$21 million



Courtesy of Roy Ooms/Lightworks Photography.



Best Retail Store



Whole Foods Market, Oakland, Calif.

Rehabilitating any older building can be challenging, but designers faced significant obstacles in creating a new Whole Foods Market retail store in Oakland, Calif. Their commission was to turn an abandoned auto dealership—which had been neglected for 20 years—into the first major supermarket to be built in the city in 25 years. To achieve that, they used long-span precast concrete double-tees and other structural components that produced an open, inviting design.

The precaster's involvement allowed the company to advise on design issues and provide early planning for the design and production of the structural members. "Overall, the precaster's early involvement was an important part of the project's progress and success," says Ken Lowney, principal at the architectural firm of Lowney Architecture in Oakland.

The owners wanted to maintain the look and feel of the original building, in keeping with Whole Foods' commitment to sustainability and conservation, while ensuring that they had appropriate retail space as well as parking for 200 cars.

The precast concrete structural components acted as the new roof for the structure's expansion, adding to the "industrial loft aesthetic" of the space, Lowney says. The double-tees provided a dual purpose, he notes, in creating open, column-free space in the retail store while offering open spaces for the added parking area.

A total-precast solution also mitigated the challenge of a tight urban infill site. "The project site was sandwiched in tight between a hillside and the historic structure, leaving no proper lay down area," says Scott Anderson, project executive of Charles Pankow Builders Inc. in Oakland. "Through design-build, we were able plan early for and mitigate the site constraints through the use of precast and its ease of erection."

The precast concrete components speeded up construction by beginning the casting process while site preparation work was under way. Prep work included extensive environmental clean-up, as well as extensive brace supporting and retrofitting. "Precast's speed of erection helped to mitigate the schedule challenges that we faced," Lowney says.

Judges' comments:

"This project provides a great use of precast concrete to create long spans with minimal columns and a high ceiling, which are great benefits in a retail space. It also offered a great solution by adapting an existing building with an entirely different original function. It encourages us to think about precast concrete in renovation and adaptive reuse projects, in addition to the inclination about it being appropriate to ground-up new construction."

Architect: Lowney Architecture, Oakland, Calif.

Engineer: KPFF Consulting Engineers, San Francisco, Calif.

Owner: Bond Cos., Los Angeles, Calif.

General contractor: Charles Pankow Builders Inc., Oakland

Precaster: Mid-State Precast, Corcoran, Calif.

Precast concrete components: 215 pieces, including columns, beams, double-tees, spandrels

Project cost: \$20 million (core and shell)

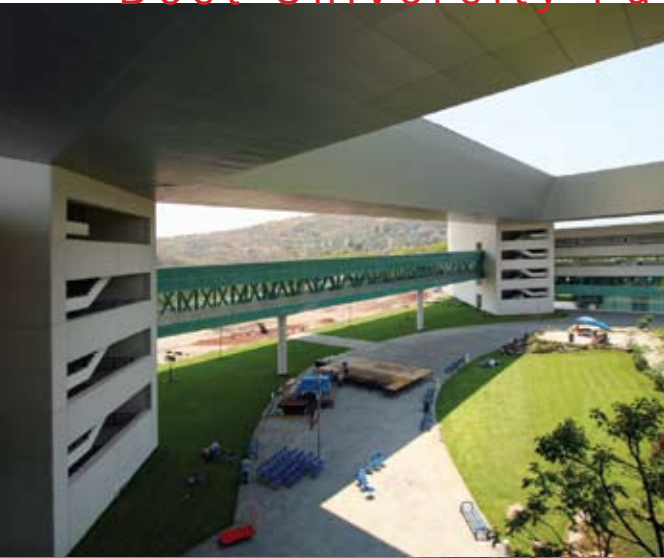
Courtesy of Hixson Photography and Mid-State Precast LP.



The precaster's early involvement was an important part of the project's progress and success.

BUILDING

Best University Facility



ITESM International Cuernavaca Campus, Xochitepec, Morelos, Mexico

Designing the main building for the new international campus of the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) required meeting a host of programmatic needs, creating a dramatic presence, and handling a variety of site restraints. Designers created a complex of several buildings clad in architectural precast concrete panels that unify the structures and project a distinctive image.

The project is located on 81.5 acres in Xochitepec, with its magnificent landscapes, in a volcanic zone. A key ingredient was respecting the environment of the area, says architect Juan Carlos Perez of JCP&A in Monterrey, Nuevo León, Mexico. "The architecture reflects a sustainable project that respects the local nature and uses last generation's materials and construction procedures. The monumental dimensions provide a scale and vision that settles the project to its roots and points to innovations in the future."

Unifying the project are 833 architectural precast concrete panels, which feature 3 in. ribbed reveals and a white chisel-hammered finish. Flat panels clad the entire complex, with returns used in hallways and emergency-stair areas. Producing the panels took 19 weeks, and they were erected in 17 weeks by Pretecsa in Atizapán de Zaragoza, Edo. de Mexico, Mexico.

With a wide expanse of open space surrounding the complex, the structures can be seen from a long distance, making it the focal point for the area. "It serves the urban territory as a landmark, and from the sky can be seen as a monumental piece of reference for the landscape," Perez says.

Judges' comments:

"Bold, relentless, uncompromising...powerful. This project is both bold and monumental, yet it remains people friendly. The program is very apparent from the outside of the building, with a lot of clarity at the pedestrian level. There's no subtlety in this building whatsoever, but it's very sophisticated in the detail. The precast concrete pieces are very crisp and tightly joined in the detail, which adds scale."

Architect/engineer: JCP&A, Monterrey, Nuevo León, Mexico

Owner: ITESM International Cuernavaca Campus, Xochitepec, Morelos, Mexico

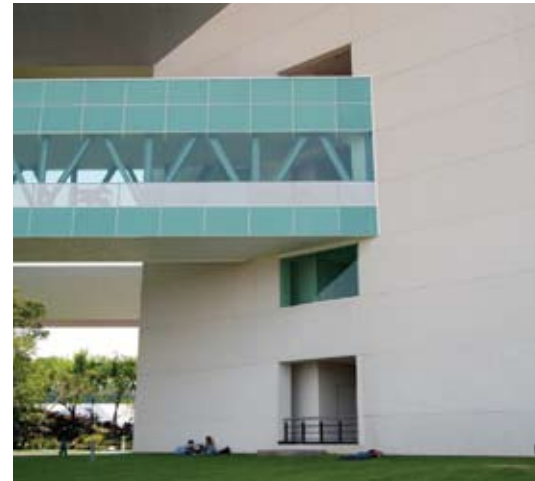
General contractor: Dirección Profesional de Proyectos Darqtec, S.A. de C.V., San Pedro Garza Garcia, Nuevo León

Precaster: Pretecsa, Atizapán de Zaragoza, Edo. de Mexico, Mexico

Precast concrete components: 833 architectural precast concrete panels

Project cost: \$40 million

Courtesy of Pretecsa.



The architecture reflects a sustainable project that respects the local nature.

Best Warehouse

PEI Genesis, South Bend, Ind.

Executives at PEI-Genesis wanted more than simply a plant where the company's employees could assemble and sell electronic wiring connectors. "The owner wanted the building to make a bold statement about PEI-Genesis's place in the global interconnect business," says architect Philip Panzica, principal in Panzica Building Corp. in South Bend, Ind. "We were charged with creating not only an efficient, clean, secure, and affordable environment but to do so with a head-turning design that transcends a big shoebox."

They succeeded, thanks in part to the use of precast concrete insulated wall panels, plus hollow-core deck slabs for the mezzanine. The components provided the optimum marriage of speed of erection, economy, durability, and flexibility, Panzica says.

The building's design stresses movement, Panzica says. "Our vision was for something that looks like it's moving yet standing still, evoking a sense of how PEI's electronic connectors are incorporated into various dynamic platforms." Executives also wanted the building to integrate principles of energy efficiency and sustainable design.

To achieve those goals, the building's plan was expressed as an arrangement of cubes, angles, and stepped-curve or scalloped walls, he says. These variations created openings and slots for glass to add a rhythm to the graceful structure while ensuring that ample daylight poured into areas where miniature components are assembled by hand and also by means of industrial robots. The massing was organized into blocks that were arranged in a logical plan segregating warehouse/shipping, assembly, and office functions while optimizing flow.

The ability to cast and erect precast concrete components in any weather provided a significant boost to the schedule, he notes, as the schedule required construction to continue through a harsh northern Indiana winter. The precast concrete design saved at least four to six weeks plus tens of thousands of dollars that would have been needed for tenting and heating costs.

Judges' comments:

"This design took what is basically a big box and broke it into pieces and reassembled those pieces. It has wings as well as some energy and texture. It obviously is a huge improvement over the standard big box with 30 ft clear spans. It is a building type that can easily become boring because it never gets architectural attention. It's amazing how just a little architectural attention can produce a standout structure."

Architect/contractor: Panzica Building Corp., South Bend, Ind.

Engineer: AJ & Associates PC, Carmel, Ind.

Owner: PEI-Genesis, Philadelphia, Pa.

Precaster (panels): ATMI-Indy LLC, Greenfield, Ind.

Precaster (hollow-core): StresCore Inc., South Bend

Precast concrete components: 105 insulated wall/spandrel panels, hollow-core panels

Project cost: \$7.1 million

We were charged with creating . . . a head-turning design that transcends a big shoebox.

Courtesy of Hilliard Photographs and Panzica Building Corp.

