

Precast's aesthetic benefits and ability to merge with parking facilities make it a strong choice for designers of low-rise multifamily projects across the country

Architects who design low-rise multifamily structures such as apartment and condominium buildings have a clear idea of what owners and developers increasingly want — and don't want. In addition to fire confinement and noise control, curb appeal has become a key ingredient. Many designers are turning to precast concrete components to help achieve this desired look, gaining added benefits in the process.

Curb appeal often includes a secure look as a high priority. The building must be welcoming but also make tenants and visitors feel protected. That need is extending to parking provisions, as developers and designers increasingly are looking to blend these needs into the housing units' structure to avoid having residents park in a lot or on the street, which can obscure or detract from the building's appearance. It also can create a security problem between parking and reaching the safety of the residence.

Achieving attractive appearances is easier than ever due to the variety of building systems that are available, but the high costs of some systems can push the building's financial break-even point further into the future. The materials also can push final occupancy further out, which delays owners recouping their investment through rents or purchases.

Structural and architectural precast concrete building components are allowing designers to meet these increasingly demanding requirements. Several recently completed low-rise multifamily residential buildings around the country indicate the design flexibility and satisfaction that designers can deliver via a building system that incorporates parking within the building's design and constructs the project quickly through all seasons.

*The Woodlawns was the first foray into the low-rise multifamily residential market for Dukane Precast Inc., using its innovative double-wall system after previously using the system on a single-family home and an 86-unit assisted living facility.
Photo: Dukane Precast Inc.*



Below-Grade Parking Boosts Low-Rise Housing Designs

— Don Talend





Fact Sheet

Project Name: *The Woodlawns*

Type: *Multifamily residential*

Location: *Chicago*

Owner: *Crawford Development Partners LLC, Evanston, Ill.*

Architect: *Campbell Tiu Campbell, Chicago*

General contractor: *CDP Builders Inc., Evanston, Ill.*

Precaster/erector/precast specialty engineer: *Dukane Precast Inc., Naperville, Ill.*

Size: *Two three-story condominiums, 12 total living units, 20,000 total square feet*

Components: *Approximately 80 double-wall wall panels, 40 double-wall floor panels, four stairs and six balconies/landings per building*

Project construction cost: *Approximately \$2 million*

Overseas Innovations Pay Off

In pointing out that a planned 12-unit complex consisting of two three-story buildings on Chicago's Southeast side was originally specified with concrete masonry walls, Brian Bock, vice president of sales and marketing at Dukane Precast in Naperville, Ill., attributes the owner's and architect's switch to precast to plenty of open-mindedness about building systems.

Cliff Crawford of Crawford Development Partners LLC had been rehabbing a three-flat in a neighborhood that was undergoing a lot of revitalization, with the demolition of several older homes followed by rebuilds. Crawford was impressed enough with the neighborhood's recent real-estate appreciation to buy several lots for construction of condominiums. Having made fire protection a high priority and after considering masonry construction, he evaluated a new double-wall precast concrete system that Dukane has produced since 2001.

Dukane set up the system's first U.S. production facility after management toured facilities in Europe several times. With Dukane's automated process, concrete for a single-wythe wall is placed into a wall form, consolidated and cured in the plant's kiln overnight. The next day, the wythe is flipped over by an overhead device that secures the wythe with a vacuum and joins it to

a second wythe consisting of fresh, still-unconsolidated concrete with a void space between. The two-wythe component is cured in the kiln, and the wall cavity is filled with rigid polyurethane foam insulation. The result is a highly insulated, fire-safe wall that allows minimal sound infiltration and offers a smooth interior surface for finishing.

Crawford toured Dukane's facility to watch product being fabricated for other projects and was intrigued by the possibilities for the double wall, says Bock. "We were doing some residential work, a nine-story building that was using the double walls. Cliff had a series of meetings with the architect, and we were able to revise the floor-plan drawings to better suit precast, specifically to adjust the floor heights and the wall thicknesses and figure out what the necessary fire ratings were."

The architectural firm, Campbell Tiu Campbell of Chicago, had experience with precast exterior cladding systems but not with the integrated structural-architectural wall system that Dukane was producing. But designers quickly saw the benefits. Because the surrounding neighborhood is characterized by many brick buildings, the architect wanted to blend the new condominiums into that environment. The wall panels' capability to create a brick pattern on their face helped achieve that.

The new system creates two-sided insulated precast walls quickly and efficiently.

Brick pattern-imprinted and painted double walls produced by Naperville, Ill.-based Dukane Precast Inc. helped the Woodlawns condominium complex in Chicago blend with the surrounding neighborhood of brick exteriors. Photo: Dukane Precast Inc.



The G&A Residences at Spaulding on Chicago's Northwest Side use Dukane Precast's double-wall system. The panels on the sides and rear of the building have cast-in brick reveals that are painted.

*The G&A Residences at Spaulding use Dukane Precast's 8-inch double walls for the exterior walls and 10-inch double walls for flooring, providing high insulation, soundproofing and fire resistance.
Photos: Dukane Precast Inc.*

Fact Sheet

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Type: Multifamily residential

Location: Chicago

Owner: G&A Construction & Development Inc., Chicago

Architect: Campbell Tiu Campbell, Chicago

General contractor: Skender Construction Co., Palos Hills, Ill.

Precaster/erector/precast specialty engineer: Dukane Precast Inc., Naperville, Ill.

Size: Approximately 68,000 square feet

Components: Over 460 pieces of precast, including 10- and 12-inch conventional prestressed wall and floor panels, 8-inch double-wall panels for walls, 10-inch double-wall floor panels, double-tees for parking level and beams & columns

Project construction cost: \$9 million

The panels were imprinted with a brick pattern and given two coats of brushed-on, anti-carbonation elastomeric paint. Then the surface of the brick units received a rolled-on final coat of paint simulating red brick.

"You're not in an area where you want to do laid-up brick, because of the added cost," says Bock, noting that the units sell for about \$250,000. "By painting them with the elastomeric paint, you can achieve a brick appearance, and it's a very good look. The alternative is to inlay thin brick, and that will cost a little more, and to lay up brick will cost even more."

Joining Rental Units And Parking

Dukane also supplied the double walls to the recently completed five-story, 36-unit G&A Residences at Spaulding, an apartment building on Chicago's Northwest side. The project serves as a prime example of a mixed-use rental property in the average price range that still incorporates a parking facility.

A unique aspect of the building can be seen on its first level, which has painted precast walls that enclose

office space, the building's mechanical equipment, elevator and parking. Residents drive their cars into either of two garages accessible from the alley. Deep recesses on both sides of the building make it appear as though there are two buildings.

"Part of the reason for the recesses was that we had to value-engineer the project and cut down on floor space," notes Azalynn May of Campbell Tiu Campbell, who was the lead designer for the building. As with the earlier condominium building, this project relied heavily on precast concrete components, especially Dukane's double-wall panels, which were used for both the walls and floors.

Value engineering also took place for the painted back and side walls, which are precast concrete with cast-in reveals. The front features brick masonry connected to a Dukane double wall. The cost of this precast/masonry configuration was offset by the speed of precast erection, says May. "We were sold on the speed of erection of the precast — it went up very fast. And since the panels come with insulation, you don't have to take time to provide insulation on the inside of the walls."

Precast Offers Fast Pace

On the higher end of the multifamily construction spectrum, precast was the structural and architectural system of choice for a new condominium project in a young community in Hoboken, N.J. Equus Design Group in Belmont, Mass., designed the architectural precast panels for the two four-story, 64-unit structures to incorporate on-site parking without making the presence of a garage

obvious. Equus also emphasized sound attenuation and a distinctive front appearance that Principal Michael Smith says is unique.

Perhaps nothing demonstrates the versatility of precast more than the fact that Equus Design Group was involved in the first correctional facility in the Northeast to use precast cells years ago and has moved onto using some of the same techniques for multifamily housing projects.

“Our work started with the very first precast concrete correctional cell in the Northeast, which was done by Rotondo Precast,” says Smith. “We designed it and developed a lot of correctional facilities with that system. Then we evolved into other markets with Oldcastle [which purchased Rotondo], including dormitories, schools, parking, office and residential. Right now, we are focused on the office and residential markets.”

The building’s inset thin-brick façade uses varying colors of brick to express motion, a key attribute of the structure’s clientele, Smith notes. “It is one of the most gentrified areas of New Jersey,” he says. “Homeowners typically are young, dynamic working couples with no kids and two cars in the parking garage. Hoboken is a very chic place to be these days.”



To indicate the fast pace of neighborhood life, the project was given the name “Velocity.” That aspect was emphasized by the use of nine different colors for various segments of the buildings, creating a shift from light to dark across the façade that implied movement. Equus and the architectural precast producer, Oldcastle/Chase Precast of North Brookfield, Mass., worked on the colors with Scott Systems, a thin-brick supplier. The precaster used a self-consolidating concrete with a stone-like formliner on the wall panels that resulted in a deep, rich gray to complement the masonry for a traditional architectural appearance for the Northeast.

A high priority in the Velocity project’s dense, urban neighborhood was reducing noise from within and outside of the building, says Smith. The precast walls and floor planks provide the hardworking professional residents with peace and quiet at the end of a long, hard day.

Smith proudly notes that the first-floor parking garage, into which residents pull their cars from either end, is undetectable from the front of the building. “It’s not readily apparent where the parking is — and that was our intent.” Smith adds that he has noticed an increasing demand from developers for parking facilities that are integrated into multifamily buildings. “They demand structured parking in a luxury condominium,” he says.

“One, it’s just much more convenient and two, it’s much easier on their cars. It’s quite an inconvenience if you park outside in snow-driven areas. Ensuring a feeling of safety in the neighborhood is important, and to be able to park inside the building is simply a safer route than coming off the street.”



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Fact Sheet

Project Name: *Velocity*

Type: *Multifamily residential*

Location: *Hoboken, N.J.*

Owner: *Kawoz LLC, Hoboken, N.J.*

Architects: *Equus Design Group, Belmont, Mass. (precast concrete design architect); Bodnar Architects & Associates, Long Valley, N.J. (local architect of record)*

General Contractor: *Ashley REMI Inc., Hoboken, N.J.*

Structural precaster/precast specialty engineer: *Oldcastle Precast Building Systems Division, Towson, Md.*

Architectural precaster: *Oldcastle/Chase Precast, North Brookfield, Mass.*

Precast erector: *J.L. Erectors, Blackwood, N.J.*

Size: *201,000 square feet*

Components: *696 8-foot-wide planks, 72 columns, 40 beams, 244 7- and 8-inch interior walls, 48 stairs, 48 landings and 408 exterior walls for a total of 1,624 precast pieces*

Project construction cost: *\$50 million*



*Using a new two-story foundation wall from Molin Concrete Products Co. for an apartment building at 808 Berry Place in St. Paul, Minn., designers value-engineered the foundation from masonry to precast, worked through the coldest winter months at a lower cost, and reduced construction time by eight weeks.
Photos: Molin Concrete Products Co.*



Limited Use Adds Value

Though it was built to serve the rental market, integrated parking facilities were no less important for a four-story, 267-unit apartment building in St. Paul, Minn., that includes a two-story underground parking area featuring precast foundation walls. Unlike the other projects noted, the apartments at 808 Berry Place do not use above-grade precast walls, but they work in conjunction with above-grade wood framing and masonry walls. What prompted a switch from masonry to precast for the foundation walls on this building, constructed in an old industrial area, was a key factor in Minnesota's rough winters: speed of construction.

The schematics showed masonry, but executives at general contractor Weis Builders Inc. knew that approach would cause problems for winter construction, explains John Saccoman, vice president at Molin Concrete Products Co. in Lino Lakes, Minn., which supplied two-story foundation walls. "They asked us to come onto the project early to determine how precast would work versus masonry or poured in place. We worked up a layout and gave them prices, and precast wound up saving them money and time." The project marked the first two-story foundation wall the company had produced.

Molin provided the owner, St. Paul Leased Housing Association 1, with a solution featuring hollowcore planks, including 16-inch planks between the top parking level and the first floor. "We had five stories of wood coming down on the center core of the plank, so we used a 16-inch plank instead of a 12-inch," Saccoman notes.

The precast foundation walls

provided a major advantage for constructing the building in December 2004 and January 2005. "Weis told us we saved them eight weeks of construction time — that's eight weeks of quicker revenue," says Saccoman. He added that using masonry or cast-in-place concrete construction instead would have increased costs at the job site. "They didn't have to put up tents to heat the panels at the site. If they have to add heat, precast becomes even more economical."

Both Saccoman and Brian Lubben, principal at Minneapolis-based architect Walsh Bishop Associates, have noted a trend toward below-grade on-site parking facilities using a combination of precast foundation walls with wood framing and masonry for the above-grade walls.

"It seems with all the redevelopment sites, the push is to get a lot of development and density on a site," says Lubben. "Generally, owners are pushing more and more surface lots below grade. We've got a lot of projects with multiple levels of parking under the building. It seems that as land gets more expensive and these redevelopment sites become smaller and more difficult to work in, this kind of system is going to be a real plus."

"We're doing it all the time," Saccoman says of supplying precast for below-grade parking areas for low-rise multifamily buildings. "It's an economical way to use the space. In Minnesota and the upper Midwest in general, it's common because land is so expensive. These are apartments and condos that sell for \$110,000 to \$500,000, depending on what level they're on. They're not necessarily high-end apartments — it's just that land is too expensive just for parking. Security also is an issue." The harsh weather, which can require ice scraping and dead batteries, also makes protected parking a key marketing point.

Designing attractive, peaceful surroundings for residents that can quickly become a reality while providing safe and convenient enclosed parking is increasing in demand. And as with so many other niches in which precast has met owners' needs, this building system is gaining critical mass. ■

For more information on this or other projects visit www.pci.org/ascent.

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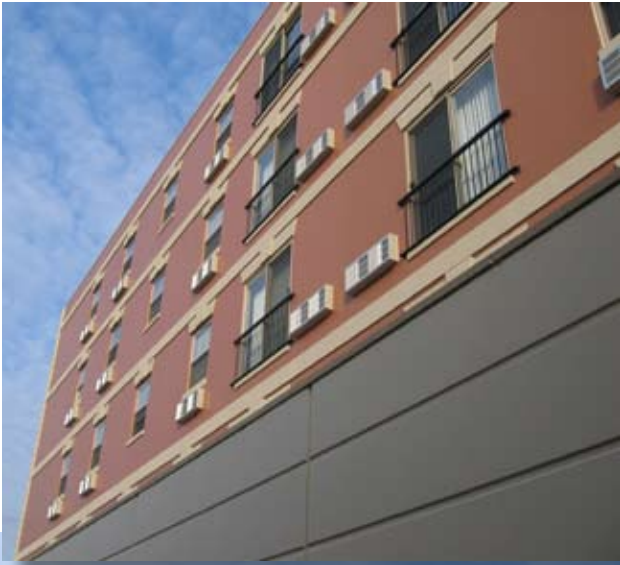
The Woodlawns was the first foray into the low-rise multifamily residential market for Dukane Precast Inc. using its innovative double-wall system after previously using the system on a single-family home and an 86-unit assisted living facility. Photo: Dukane Precast Inc.





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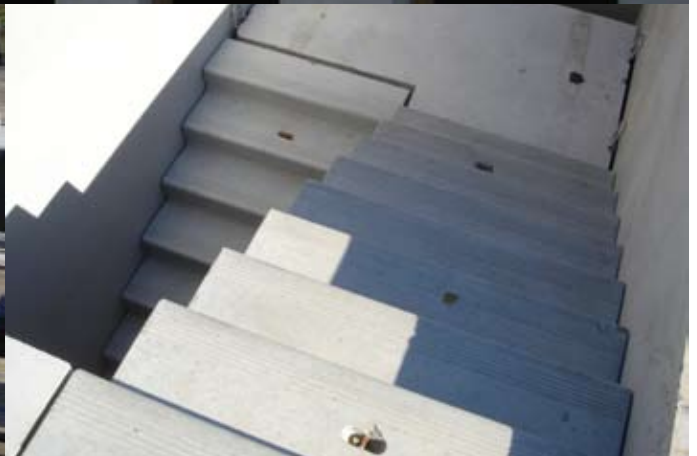
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Nine colors shift from light to dark across the building's façade, emphasizing the project's name, Velocity.



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Photos: Molin Concrete Products



Fact Sheet

Project Name: 808 Berry Place

Type: Multifamily residential

Location: St. Paul, Minn.

Owner: St. Paul Leased Housing Association 1

Architect: Walsh Bishop Associates Inc., Minneapolis

General contractor: Weis Builders Inc., Minneapolis

Precaster/precast erector/precast specialty engineer: Molin Concrete Products Co., Lino Lakes, Minn.

Size: 511,500 square feet

Components: 3,000 pieces hollowcore planks, 268 prestressed beams, 125 columns, 362 two-story prestressed foundation walls

Project construction cost: \$30 million



