



Veranda Tower
Acapulco, Mex.
LBR&A, Mexico City

Architects find precast concrete unleashes their design fancy when creating multifamily housing projects of all shapes and sizes





Grant Park Tower
Minneapolis, Minn..
Opus Architects & Engineers, Minnetonka



The Gantry
Queens, N.Y.

*GKV (Gerner, Kronick & Valcarcel Architects),
New York City*

Creative Condos

— Wayne A. Endicott

Low-rise, mid-rise, or high-rise, architects are discovering that precast offers concrete answers to their design challenges for condominium projects. New residential structures across North America are expanding, and designers are looking for new techniques and images to make their projects stand out.

One reason precast concrete has been receiving more attention is due to its versatility. "You can shape it, mold it any way you want. You are limited only by your imagination," says David Hunt, senior project manager for Opus Northwest LLC in Minnetonka, Minnesota. Hunt has recently been involved with two distinctive condominium projects in his area: the 27-story Grant Park Tower in the historic Elliot Park neighborhood of Minneapolis and The Carlyle, an imposing 39-story project in the city's historic riverfront district.

"The ways you can shape precast are almost limitless," he says. He notes that different architects exploit that versatility in different ways. Some use it simply and elegantly, while others let their imaginations take flight. That variety had produced some exciting projects in recent years, especially with high-rise condominiums.

Such projects, most built with masonry enclosure systems, had become an endangered species in Minneapolis, Hunt says, because maintenance had become so difficult and the initial construction costs were higher.

"Within 10 years, water-penetration problems can occur. Masonry high-rise buildings have more pieces to maintain to keep them water tight. There are all kinds of horror stories of improperly built or maintained masonry-clad buildings." These horror stories from high-rise residential buildings with masonry enclosures, plus the higher cost of constructing with masonry, drove prospective developers and architects to consider other solutions.

Precast Offers Economics

The challenge for architects is to find techniques that take advantage of precast concrete's capabilities, Hunt says. "Precast has been used extensively on office buildings and other high-rise structures, and there's no reason it can't work as well for residential buildings. Precast has an inherent simplicity. It is easy to procure and install."

Designers who take the time to explore the possibilities find that it is more economical than masonry construction, less costly and quicker to erect, Hunt says. He points to his two Minneapolis projects as examples of the variety that can be achieved. Grant Park's design is traditional, replicating the look of a classical masonry structure. The Carlyle leans toward an Art Deco style, emulating a limestone structure. Yet both designs were produced through the same precast manufacturer.

Architect Randolph Gerner of the New York City firm of GKV Archi-

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itects, which designed New York City's The Gantry, agrees that precast concrete is a viable alternative for condominiums. "Precast offers several advantages, not the least of those being flexibility and timing."

The Gantry, which features precast concrete slabs supported by masonry bearing walls, needed to be built in a limited time frame. The precast concrete block bearing walls and precast concrete slabs allowed the architect to creatively achieve the design goal affordably and meet the construction schedule.

Designers south of the border also are seeing the benefits. Veranda Tower in Acapulco, Mexico, took advantage of precast concrete's speed of construction to help meet its critical goals.

"Time was the most important issue" for the beachfront building, says Benjamin Romano of LBR&A Architects of Mexico City, Mexico. Another key challenge that the precast concrete design helped meet concerned the building's location in a high-seismic zone, which required façade panels that could stand up to potential earthquakes as well as the area's strong winds.

In designing the property, the goal was to use the most advanced technology to provide quality as well as functionality while creating an elegant building. Precast concrete best met those design goals. "Precast provided the best solution to the design objectives," Romano says.

Each of these buildings offers an example of how precast concrete components give designers the flexibility to meet design goals. At the same time, they demonstrate the inherent cost advantages in precast concrete as well as its ability to meet time and site constraints.

Veranda Tower, Acapulco

Veranda Tower was constrained by the tightness of the site, as it butts against an adjacent building. To overcome this perceived disadvantage, the architect placed the building on the lot's edge, orienting views to allow residents to overlook the neighboring golf courses, lakes, beaches, and the nearby mountain range that protects the nearby crowded bay.

Complicating the design were the high seismic requirements and prevailing high winds. The chosen design features a free circular module intersected by three massive walls that support the building. The three walls generate the space, feature the structure and volume of the building, open it up to the surrounding area and provide the visual lines of the project. The

walls emerge at ground level from a large limestone platform.

The building is surrounded by curved, multisurfaced panels that give shape to the cylinder, which wraps the eight apartments contained in the low-rise project.

Seeking quality as well as functionality, the architect turned to precaster Pretecsa of Mexico City for architectural precast concrete panels. The complexity of design, floor plans, floating structures, curved planes, and location made the use of repetitive precast architectural panels a strong choice, the architect says. Cast-in-place concrete panels would have been more costly and time consuming, he adds. The detailed precision of plant-manufactured panels drove the choice as well.



FACT SHEET

Veranda Tower

Location: Acapulco, Mexico

Architect: LBR&A, Mexico City

Engineer/General Contractor: IAEL, S.A. de C.V., Acapulco, Mexico

Precaster: Pretecsa, Mexico City

Project Size: Eight apartments and 15 parking spaces totaling more than 40,000 sq ft of apartment area in an eight-story building.

Precast Components: 87 pieces totaling 5,780 sq ft

Project Cost: \$12.5 million

Pneumatic hand chiseling of the concrete panels gave each panel section an individual look without losing the overall uniformity.

FACT SHEET

The Gantry

Location: Long Island City, Queens, N.Y.

Developers: DevCon Partners LLC and the Milestone Group, both of New York City

Architect: GKV (Gerner, Kronick & Valcarcel Architects), New York City

Structural Engineer: Rodney D. Gibble Consulting Engineers, New York City

Contractor: Hudson Meridian Construction Group, New York City

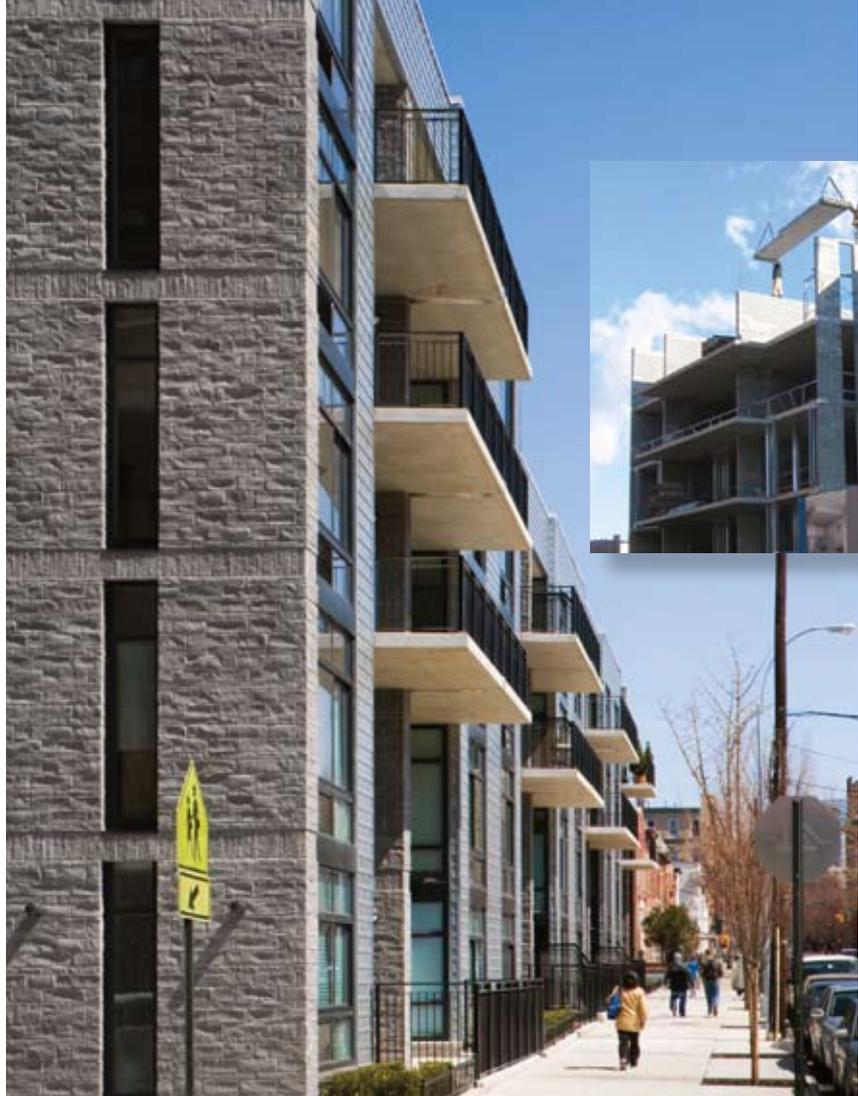
Precaster (hollow-core slabs): Oldcastle Precast Building Systems Division, Morrisville, Pa.

Project Size: Six floors, 47 units, 73,000 sq ft including 13,000 sq ft of parking

Precast Components: 72,200 sq ft of 8- by 48-in. hollow-core slabs, 37 7¹/₄- to 9-in.-thick precast balconies, 21 precast stairs, 20 precast landings, and five 8-in. solid precast slabs. Architectural precast components included 111,000 sq ft of chapel stone masonry in random lengths.

Project Cost: \$12.5 million

Precast hollow-core planks used for the structural floors of the building are cantilevered to create balconies. Photos: GKV (Gerner, Kronick & Valcarcel Architects)



The entire building is modular and repetitive, Romano explains. The speed of manufacture and delivery of the precast elements significantly cut the time schedule at the site. At the same time, the unique ability to shape the precast concrete allowed the architect to play with different surface inclinations and textures.

All of the prefabricated architectural concrete walls and the glass panels in the building had to be assembled quickly and with great care. Complicating the task were high winds that constantly blew sand at the site, as well as temperatures that rarely fell below 70° F. and frequently approached 90° F. The prefabricated façade system allowed for a distinctive look without restricting the open areas of the building, allowing visibility between columns and unobstructed views of the Caribbean.

As the architect plotted out the building, it became obvious that his vision would require a variety of depths and finishes. To meet those

goals, artistic three-dimensional surfaces, prominent and recessed areas, and three different surface finishes were incorporated into the panels. The precaster used complex molds and handcrafted finishing techniques to achieve the desired appearances. The panels were cast with a 1½-in.-thick face mix backed with gray structural concrete.

Face finishes were designed to imitate three different textured stones and were crafted using hand-chisel hammers. The hand-made chiseling gave each panel individuality without destroying the overall uniformity of the panels, Romano explains.

Seismic needs required special panel connections, with a 1¹/₄-in. gap needed between panels to allow differential movement. This was accomplished by attaching movable bolts and neoprene threaded rod anchors. The panels were erected by a combination of truck cranes and electric hoists.

The Gantry, New York

The Gantry in New York, is a 47-unit, six-story mid-rise condominium featuring precast concrete slabs on concrete block-bearing walls. Built in a redeveloping zone formerly zoned for light manufacturing, the area has been rezoned to allow mid-rise multifamily housing.

Precast concrete slabs from Oldcastle Precast Building Systems Division in Morrisville, Pennsylvania, are supported by masonry-bearing walls. The slabs form the structure's floors and balconies. Floor-to-ceiling windows between the precast wall components and the concrete slabs extend beyond the walls to form cantilevered balconies.

The masonry exterior wall cladding is reminiscent of the rusticated stone frequently used in churches and cathedrals, points out Gerner. To achieve that effect, the blocks were specified in a blended color and laid in bands of alternating depths to

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Grant Park

Location: Minneapolis, Minn.

Developer: Urban Condos LLC, Minnetonka, Minn. (a joint venture of Opus Northwest LLC and Apex Asset Management)

Design Build Architect: Opus Architects & Engineers, Minnetonka

Design Architect: Humphreys & Partners Architects, Dallas

Engineer/General Contractor: Opus Northwest, Minnetonka

Precast Specialty Engineer and Precaster (tower): Gage Brothers, Sioux Falls, S.D.

Project Size: 27-story building comprising 288 condos and four townhouse buildings comprising 30 units

Precast Components: 6,077 precast pieces totaling 130,724 sq ft

Project Cost: \$100 million



The Grant Park condominium building features textured precast concrete with some stone accents, particularly at the base and the cap of the 27-story structure. Photos: Opus Architects & Engineers.

37 pieces of 7¹/₄- by 9-in.-thick precast balconies with 1¹/₄-in. -12 pitch, and flat curbs to match the brick coursing. Also included in the precast package from Oldcastle were 21 pieces of precast stairs, 20 pieces of precast landings and five 8-in. solid precast slabs to support offset bearing walls at the fifth floor and the roof.

Balconies, terraces, and gardens allow interaction with the surrounding outdoors, while townhouse units on the ground floor access a shared lobby. At-grade parking is at the rear of the building. The Gantry sits among historic low-rise single-family townhouses, townhouses, loft buildings and much taller residential towers. Its location serves to join those diverse neighborhood elements.

create movement and rhythm over the completed walls.

The texture of the concrete blocks provides a striking interplay, with the light machine-like, zinc-coated aluminum shingles providing infill adjacent to the block. The shingles are fabricated using 95% recycled material. "The contrast places a historic look next to one suggesting modern technology to create an interesting contrast," Gerner says. "This is the first time we have used chapel stone in this context. Usually, we have employed it in smaller walls."

The project included nearly 11,000 sq ft of chapel stone manufactured in random lengths and two heights of 2¹³/₁₆ in. and 5⁵/₈ in. The blocks feature a custom gray blend, and each stone is faced with a rough finish to create a rustic appearance. The faced pieces were installed in a mix with those with no facing, creating a more natural effect. By alternating bands of the two heights and mixing the random lengths, the exterior takes on the appearance of natural stone. Adding a row of soldier course at each floor organizes the walls and adds a decorative touch.

The hollow-core slabs included 72,200 sq ft of 8- by 48-in. planks,

Grant Park Tower, Minneapolis

The Grant Park Tower in Minneapolis represents a rebirth of the high-rise "masonry-look" condominium buildings in that city.

"Developers in this area have been hesitant to build residential masonry towers because of their inherent maintenance problems," Hunt says. "The concerns revolve mainly around water penetration that occurs as the buildings age and any one of the many parts of the masonry-enclosure system fails. Meanwhile, many office high-rises have been completed using precast concrete."

If office buildings can be built using precast, why not residential structures as well, reasoned Opus and its design partner, Humphreys & Partners Architects of Dallas and Opus Architects & Engineers in Minneapolis. "Precast architectural concrete is virtually unlimited in the face it can present," says Hunt. Since most of the buildings that surround the Grant Park site are faced in brick and stone, the design team determined that the new 27-story, 288-unit condominium project and its six-level, 500-car parking structure should mirror that traditional look.



In addition to the main 27-story tower at Grant Park, the project included 30 street-facing, four-story townhouses. Also included in the project is a six-level, 500-car parking structure.

To meet that design goal, the design team worked closely with precaster Gage Brothers Concrete Products Inc. in Sioux Falls, South Dakota. The team developed a design that replicated brick in large precast concrete panels. Not only was the material adaptable to the design criteria, but it could be employed affordably and provide durability as well. "There is no reason this building cannot last for 100 years."

The key was to make the precast concrete simulate the color and look of brick to blend with and complement nearby structures. To achieve the desired effect, the precaster blended two colored concrete mixes, which were then placed on a rubber brick formliner. To match the look of surrounding brick buildings, the precaster collected samples from those buildings and then matched the colors. Two of those colors were selected for the final casting. The simulated brick pattern repeats itself for the 16 center floors of the building.

The base and cap of the tower consist of narrow-width vertical panels. Within those panels, the color changes to highlight the boundaries surrounding the windows. The design sought to create the impression of a traditional brick building with stone accents.

The building features approximately 1,200 precast wall panels, cornices, balcony units, and other exterior components. Wall panels are 10' 8" in height and vary in width from 10 to 35 ft. Also included are 5,000 balcony infills measuring 18 by 18 in. installed under the balconies.

Other highlights of the design include a half-dozen cornice-type features throughout the entire building and 16 Juliet balconies. The balconies were fabricated in a three-set casting with the ends and slabs cast separately and then cold jointed together with the balustrades. The large, self-supporting entrance canopy and a highly articulated column water table feature also were constructed from precast concrete components.

"At the outset, the developers were reluctant to employ precast for their building," Hunt says. "But we convinced them that not only was it feasible to do so, it would actually be more economical and

The success of the Grant Park project led to the development of a second high-rise condominium in downtown Minneapolis. The 39-story Carlyle project features a limestone look-alike exterior instead of the brick pattern employed for Grant Park.



go up more quickly than a masonry building. It also would be less prone to leaks, which plagued many of the older high-rise residential towers in town." The developers were pleased with the resulting turn-of-the-century appearance, which feels right at home in the historic district.

The \$55-million structure reflects a great deal of teamwork between the design-build team and the precaster, Hunt notes. The precaster was manufacturing the components for the building in tandem with the structural work, which included a cast-in-place, post-tensioned concrete frame on which the architectural panels were hung. That frame was constructed over a year-long timetable. Erection of the precast wall panels followed the structural construction by eight to 10 floors and took approximately eight months to complete.

The Carlyle, Minneapolis

The success of the Grant Park project has inspired another, even more ambitious precast concrete condominium building in Minneapolis, Hunt adds. Working again with Apex Asset Management as development partner, Opus once again turned to Gage Brothers to build the 39-story The Carlyle.

The Carlyle proves the versatility of precast concrete, says Hunt. "While Grant Park is traditional in feel, The Carlyle evokes the feel of an Art Deco project." Instead of the faux brick of Grant Park, The Carlyle features a façade that replicates limestone. "That's the beauty of precast concrete. It is versatile and can be whatever you want it to be. It just takes a little imagination for an architect to create his vision." ■

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



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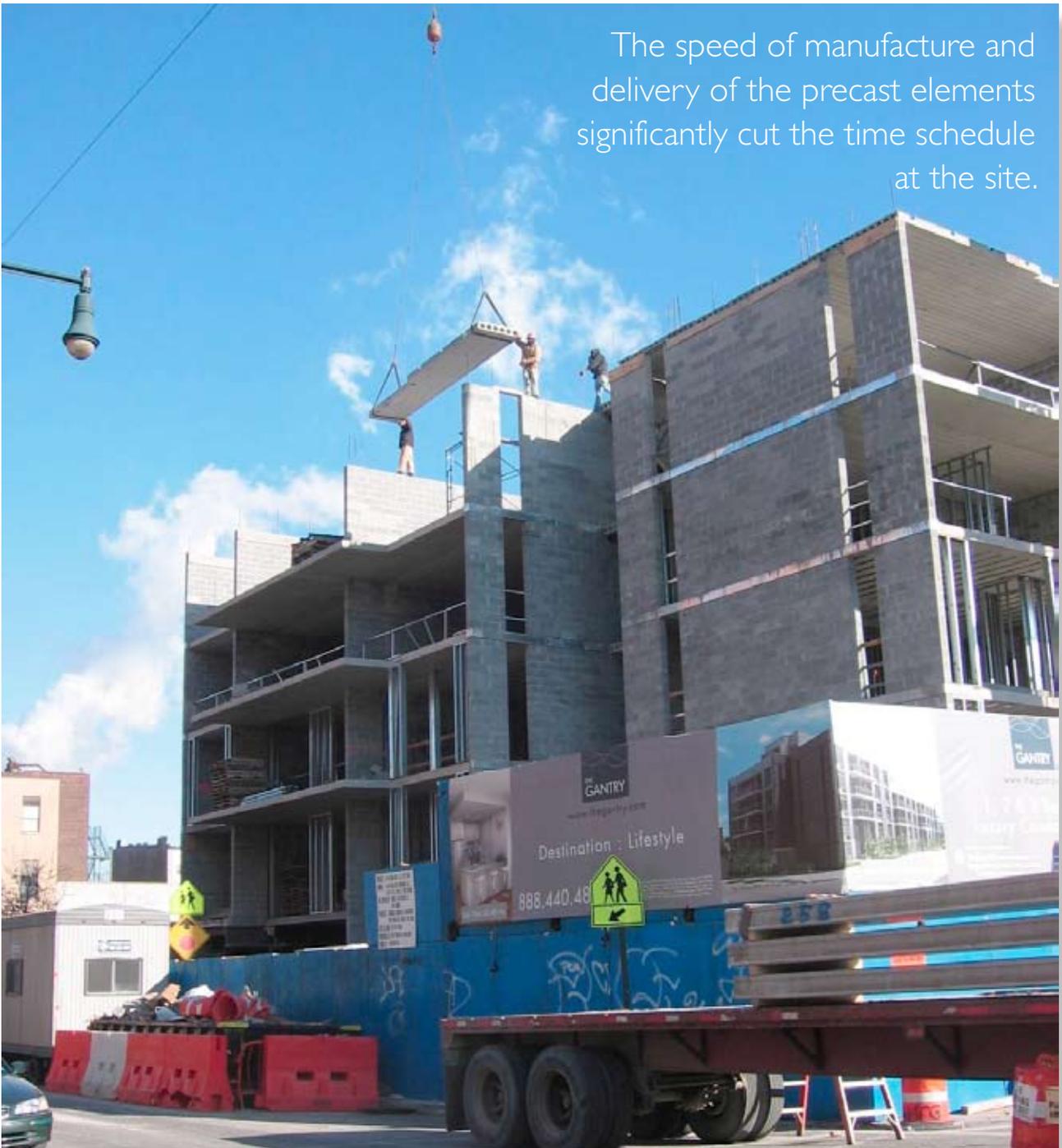
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