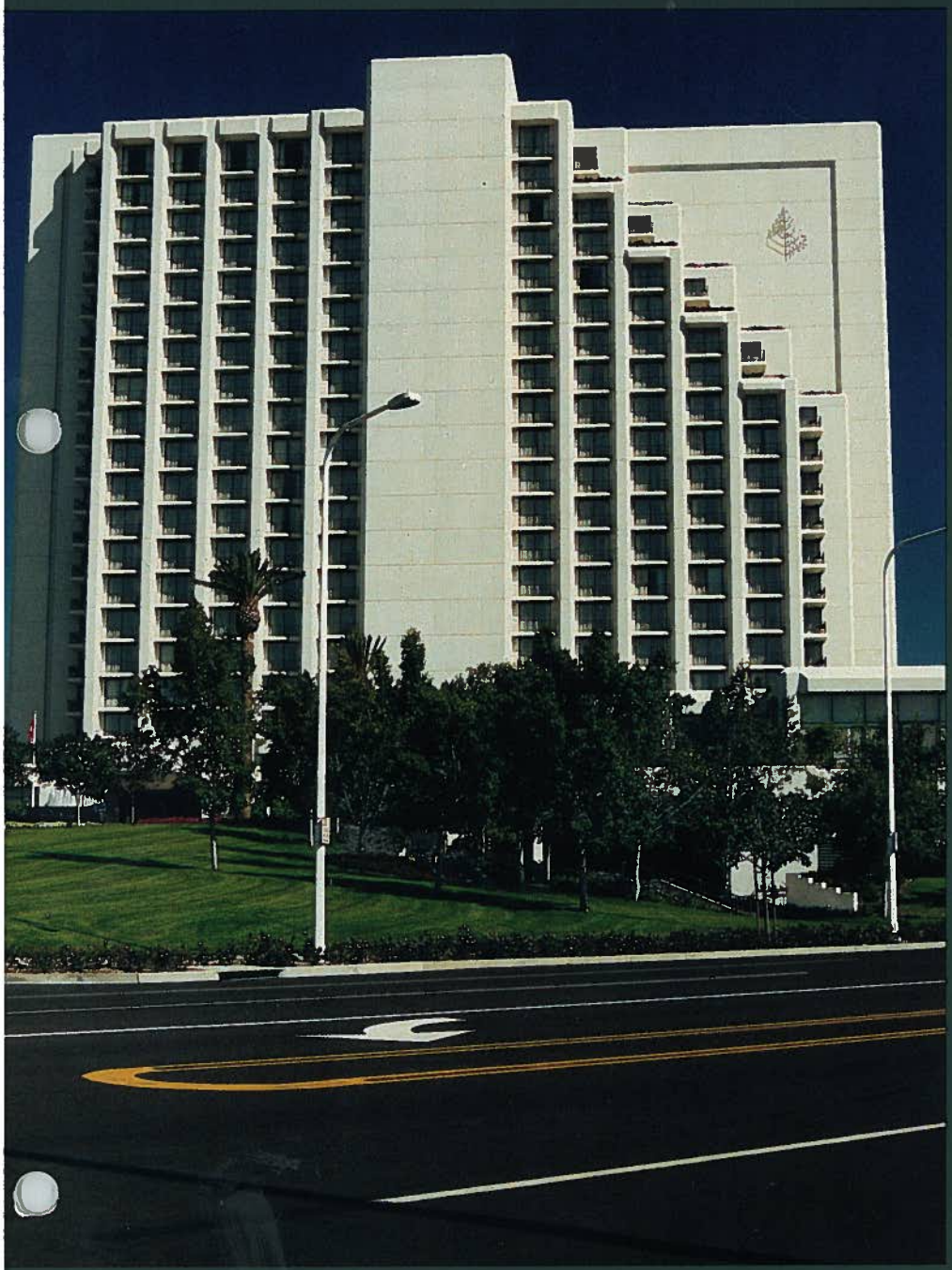
Published quarterly by the
Prestressed Concrete Institute

IDEAS Number 31

Precast, prestressed concrete reduces the cost of construction and maintaining hotels and motels yet provides superior aesthetics and design flexibility.



Four Seasons Hotel, Newport Beach, California (page 2)

IDEAS

"Precast concrete exterior provides reduced maintenance."

Architect:
Wimberly Whisenand Allison Tong & Goo Architects, Ltd.
Newport Beach, California

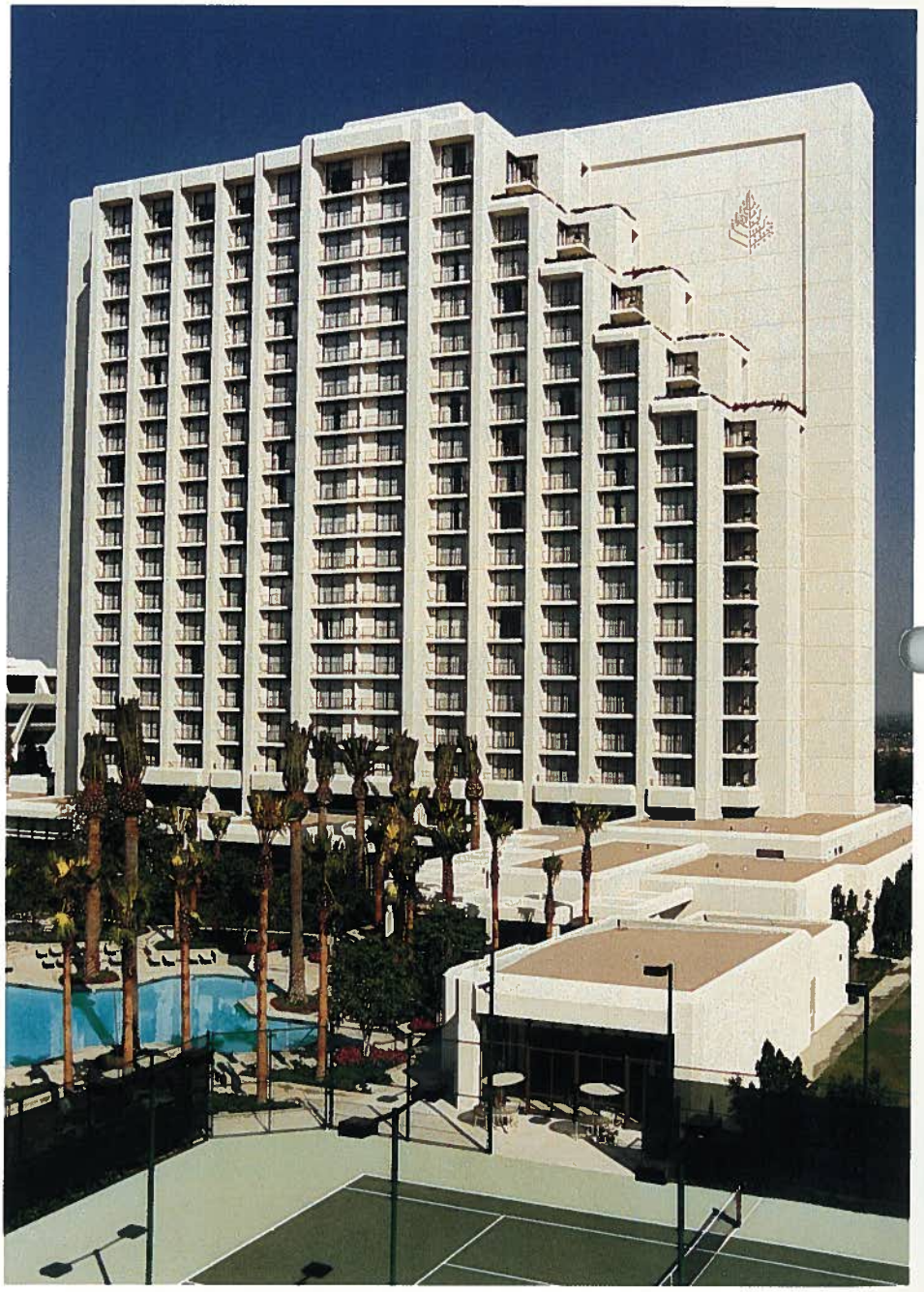
Engineer:
Robert Englekirk, Inc.
Newport Beach, California

Contractor:
Dinwiddie Construction Co.
Los Angeles, California

Owner:
The Irvine Company
Newport Beach, California

The flagship of the exclusive Four Seasons Chain, the Four Seasons Hotel in Newport Beach, California commands 19 stories of a rectangular tower with terraced elevations providing each guest room with a commanding view of either the Pacific Ocean or Newport Harbor.

Forty-five degree chamfers give the building a varying relief throughout the day. Also, white limestone aggregate along with other aggregate was used to give the impression of building texture changes depending on the location of the sun. The quality control provided by factory fabrication allowed each piece to have uniformity in color and texture.



Four Seasons Hotel, Newport Beach, California

Precast concrete panels provided a facade needing a minimum of maintenance. "Building with concrete requires less maintenance over time than using other materials. After 20 years of exposure, the panels will only need to be recaulked. Even glass requires a yearly maintenance," stated Greg Coghill, project manager, Wimberly Whisenand Allison Tong and Goo Architects, Ltd.

"The sound attenuation of precast concrete insulated the structure from the noise of a nearby airport and two freeways."

Architect:
Golemon & Rolfe Associates, Inc.
Houston, Texas

Structural Engineer:
CBM Engineers, Inc.
Houston, Texas

Owner:
Westin Hotel Company
Seattle, Washington

For the 550 room Westin Hotel O'Hare, Rosemont, Illinois, architectural precast concrete provided a high quality appearance, flexibility in design and excellent sound attenuation. This particular hotel was located right under the glide path of one of the approaches to the largest airport in the U.S. and at the junction of two major freeways. "Precast panels substantially eliminated noise from the rooms by virtue of the design in the precast portions of the work," stated L. David Godbey, principal, Goleman & Rolfe Associations, Inc. In addition, the stair tower on either side of this building are expressed externally in the use of curviliner precast concrete.

The precast panels used white cement with river gravel aggregate and sand. These panels had an exposed aggregate finish in order to give a very high quality textured appearance. This white color was specifically selected for this environment in order to stand out from surrounding buildings.

Westin Hotel O'Hare, Rosemont, Illinois

"The efficiency of precast, prestressed concrete provided an economy in construction that other materials could not match."

Architect, developer, owner:
ADH Systems, Inc.
Baton Rouge, Louisiana

Engineer:
Sepp Firnkas
Engineering, Inc
Boston, Massachusetts

Hilton Tower, Baton Rouge, Louisiana

The architects of the 325 Hilton Tower in Baton Rouge, Louisiana selected a precast concrete system after a steel frame structure (priced and bid) proved to be well above the budget limit. The flexibility of the proposed system together with the ease in obtaining previous and well tested assembled detailing, erection, and cost data of the selected system allowed a rapid redesign of the structure. In 3 weeks, reliable cost estimates (within the allowable budget) for the precast superstructure were obtained. Soon afterwards, the architectural and engineering design was completed and construction could proceed.

Although the substitution of one structural system with another does not necessarily produce the most desirable architectural or economical solution, the selected concrete cross bearing wall system was ideally suited in this case. The system, which was originally developed and used extensively for low, medium, and high rise apartment buildings can be easily adapted to most types of hotel and motel structures.

In this structure the following construction techniques were combined: Precast, prestressed hollow-core slabs for floors and roof, and large precast bearing and shear walls are connected and reinforced by high strength post-tensioning bars. This interaction creates a stable structure able to resist normal service loads as well as hurricane/wind loads.

"The fine detailing, articulation, and texturing in the facade necessitated using architectural precast concrete."

Architect and Structural Engineer:
Skidmore, Owings & Merrill
Los Angeles, California

Contractor:
Turner Construction Company
Los Angeles, California

Owner:
Real Property Management, Inc.
Marina del Rey, California

Marina Beach Hotel, Marina del Rey, California

A precast concrete exterior on the Marina Beach Hotel in Marina del Rey, California proved to be the most desirable solution in the design of the structure. The use of this material facilitated the gently-curved shape of the building, the sculpting of the facade through the use of different textures and precast details, and the attainment of overall project economy without a sacrifice of aesthetic quality.

The two long, parallel facades of the building are displaced along their length by an angled four-bay central building segment. The resulting complex geometry was easily accommodated by precast concrete column covers and curved spandrel panels which create the effect of a smooth-flowing shape. Adding to this visual flow are the horizontal bullnoses cast into the column covers which also act as receivers for aluminum tubular handrails. Spandrel panels are also textured with horizontal ribbing to further the horizontal emphasis of the building. Cone-shaped scuppers are punched into the spandrels, punctuating the rhythm of the facade.

Steve Sobel, technical coordinator, Skidmore, Owings and Merrill, stated: "By standardizing as many pieces as possible, we were able to achieve an economy of scale which allowed for special sections giving the building its distinct character." Repetitive, two-foot returns on the spandrel and column covers made balconies possible, as well as deep relief of shade and shadow giving the facade a rich interplay of ever-changing light and dark. Precast fins provide the necessary visual separation between the rooms. At the base of the building special shapes were designed to both support and highlight the entrance canopy.

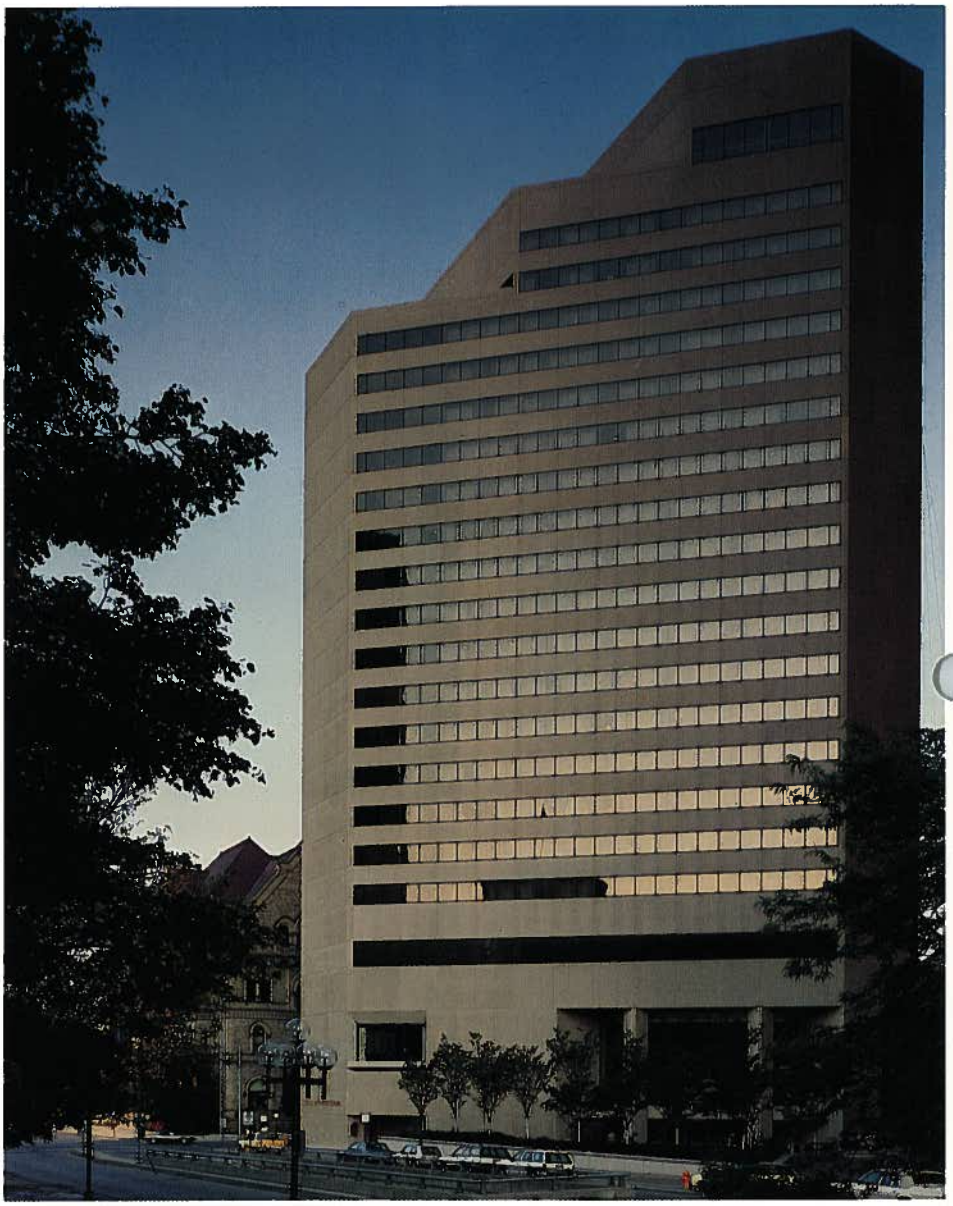
"Colorfast architectural precast provides longevity in a finish"

Architect:
Patrick & Associates, Inc.
Columbus, Ohio

Engineer:
Paul J. Ford and Associates
Columbus, Ohio

General Contractor:
Turner Construction Company
Columbus, Ohio

Owner:
John W. Galbreath & Co.
Columbus, Ohio



Hyatt on Capitol Square, Columbus, Ohio

"Precast concrete was an economical way of achieving a distinctive exterior skin that is very durable and easy to erect. Using precast concrete aided in cutting construction time and the project was completed two months ahead of schedule," said Allen Patrick about the Hyatt on Capital Square, Columbus, Ohio, a medium-rise hotel of 371,475 sq. ft.

Special design features include the thin-ribbed face texture of the exterior panels, the jointing pattern and special detailing used in fitting the panels together, particularly at the lower two levels of the building. Unusual in typical precast concrete detailing and unique to this project are the 90 degree butt corner conditions and 45 degree wrapped corner conditions. This was done to give the building a solid appearance without open joints.

To achieve a uniform colorfast exterior, precast panels were used—made with a buff color cement with limestone aggregate.

The project had 300 spandrel panels, 400 wall panels, 240 interior panels and 250 lower building panels. They ranged in size from the 6′ x 8′ interior panels to the 28′ x 6′ spandrel panels.

"This versatile medium provides the architect flexibility in selecting patterns and textures."

Boston Copley Place Marriott Hotel, Boston, Massachusetts

Architect:
The Stubbins Associates, Inc.
Cambridge, Massachusetts

Structural Engineer:
Martin, Cagley & Associates
Rockville, Maryland

Construction Manager:
Morse/Diesel, Inc.
Boston, Massachusetts

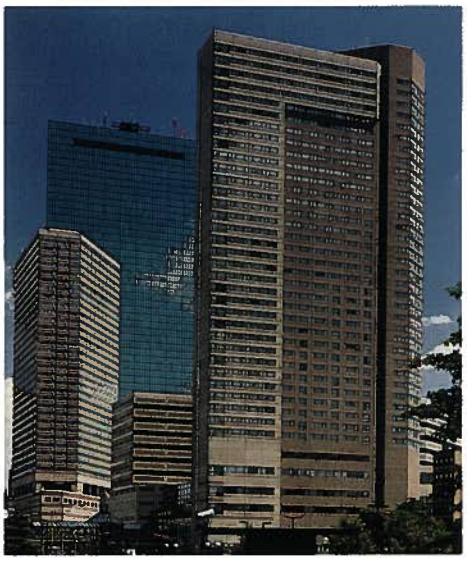
Owner:
Marriott Corporation
Washington, DC

Precast concete was selected for the Boston Copley Place Marriott Hotel, Boston, Massachusetts, since it harmonizes with all buildings of this 10-acre complex comprising office structures and another hotel.

"Using precast concrete gave us the flexibility in achieving a separate identity for the hotel," said Michael Kraus, vice president of The Stubbins Associates. The separate identity is distinctly expressed by the building form, fenestration, and special precast concrete finishes. A number of finishes were used to provide texture and color including lightly exposed aggregate or heavily exposed aggregate with multiple lightly-sand-cleaned rustications in each panel.

"Precast concrete creates a superior building appearance yet is economical," continued Mr. Kraus. "Because of the tight construction schedule the ease and speed of construction were also important in using this material."

The Hotel is a 38-story convention hotel with 1,444 guest rooms, a 25,000 sq. ft. ballroom, a 26,700 sq. ft. exhibit hall, a glassed-in swimming pool and gym facilities, and a five-story skylighted atrium. Immediately adjacent is a parking structure for 600 cars.



"Construction site restraints and tight schedule were easily met with precast and prestressed concrete."

Holiday Inn Townlake, Austin, Texas

Architect:
Fischer-Cordova-Prestidge, Inc.
El Paso, Texas

Consulting Engineer:
J.R. Spronken & Associates
Calgary, Alberta, Canada

General Contractor:
Jordon & Nobles
San Antonio, Texas

Owner:
Holiday Inns, Inc.
Memphis, Tennessee

Only the foundation and the retaining walls of the addition to the Holiday Inn-Townlake in Austin, Texas, do not use precast or prestressed concrete. These materials were used extensively inorder to preserve the surrounding park, lakefront area and old trees on the site plus meet the site constraints between the existing hotel and the nearby freeway. The addition included 132 rooms, a supported pool, plus a parking facility which supported the new rooms. Since the existing hotel remained open, erection of the eleven-story structure had to be completed in 15 weeks.

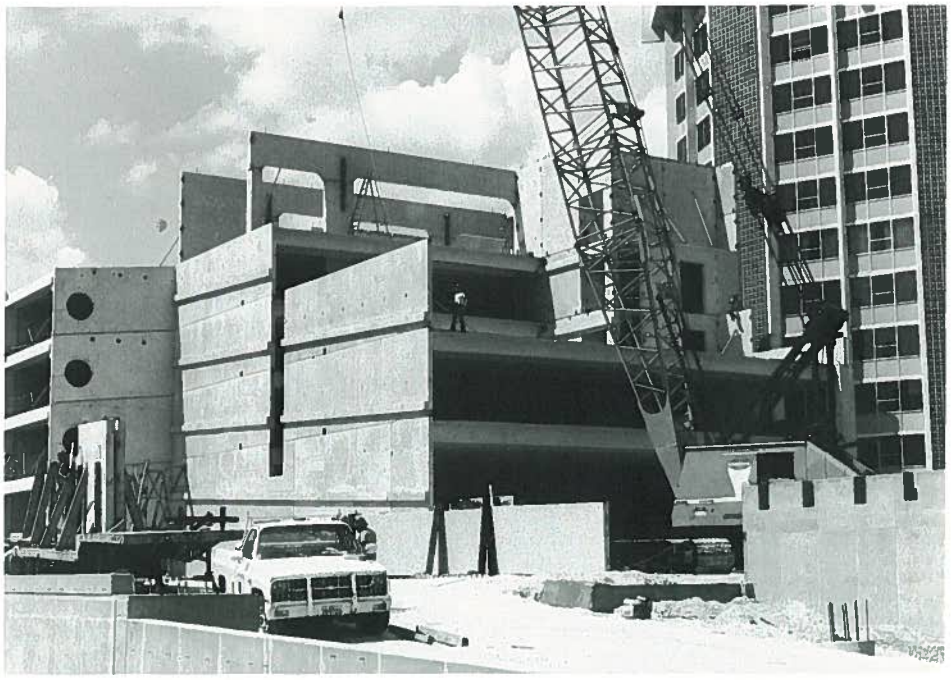
The tight site required construction in three phases:

First, the parking structure below the rooms was erected six floors high, bay by bay. A prestressed girder transferred the load from room floors and walls above to columns at the end of the parking stalls, providing an open, unobstructed parking area.

Second, prestressed slabs and walls for the new rooms were erected a floor at a time. Careful coordination allowed for grouting and welding time at each floor before the next floor placement. Precast stairs went in as the floors went up, allowing crews access to all areas. Other trades were allowed to start before this phase was complete, further improving schedules. Since most of the mechanical, electrical and plumbing blockouts were cast in, additional money and time was saved.

Third, the low-level parking area with its prestressed double tees, beams, columns and spandrels were erected as the crane pulled out of the site. The top pieces support a large pool deck which provides a pleasant view of the lake.

"Precast, prestressed concrete is far superior to any other construction material when it comes to saving time, money and operating under tight site considerations," said Tom Prestidge, vice president, Fischer,-Cordova-Prestidge, Inc. "Besides it's a great looking material."



"The composite systems utilized precast and prestressed concrete to provide savings in all phases of construction.

Architect:
CSO Architects, Inc.
Indianapolis, Indiana

Structural Engineer:
Walker, Inc.
Elgin, Illinois

Developer:
Melvin Simon & Associates, Inc.
Indianapolis, Indiana

Contractors/Construction Manager:
Geupal DeMars
Indianapolis, Indiana

Claypool Centre/Embassy Suites, Indianapolis, Indiana

By using a systems value engineering method to develop and lower the project costs, the architects selected the most efficient—precast/cast-in-place composite floors, loadbearing precast cavity walls, and architectural precast concrete exterior walls—to build the Claypool Centre/Embassy Suites of Indianapolis, Indiana.

The composite floor systems used, allowed reduced floor-to-floor height and therefore savings in all phases of construction, from the structural frame and precast concrete building skin to electrical and mechanical systems. This unique structural system also enabled construction to be completed several months earlier than any other systems investigated.

The precast lightweight concrete cavity walls, with embedded electrical components, also serve as shear walls. They divided 348 suites in the hotel, and allowed each level of the hotel to be placed in four days. Two tower cranes, one exterior to the building and one through the building's atrium, were used to place precast concrete. The limited construction site, bound on two sides by existing buildings and on the other two sides by major downtown Indianapolis thoroughfares, required careful planning and scheduling by the construction manager.

The building facade is a combination of precast panels and glass designed to blend with and complement adjacent historic buildings. The precast panels were cast with a smooth exterior to accept a field applied custom color stain. The high quality of concrete finish, highlighted by horizontal joints and strip windows, resulted in a unique yet complementary landmark hotel.

"Stone faced precast concrete maintains design integrity yet achieves architectural distinction."

Architect:
Kohn Pedersen Fox Associates
New York, New York

Engineer:
Irwin G. Cantor
New York, New York

Construction Manager:
Turner Construction Company
Philadelphia, Pennsylvania

Owner:
One Logan Square Associates
Philadelphia, Pennsylvania

One Logan Square Four Seasons Hotel, Philadelphia, Pennsylvania

The One Logan Square Four Season Hotel, Philadelphia, Pennsylvania, was constructed at a fraction of the cost of a conventional granite structure by using granite-veneer precast concrete wall panels. Rockville Pink flame-cut granite was used for the 8-story "world-class" hotel. The adjacent 30-story office building was similarly clad using precast concrete with polished granite facing.

The granite pieces were anchored to the precast panels with stainless steel dowels that were epoxied into pre-drilled holes in the backs of the granite pieces. After the joints between pieces were prepared in the form, a sheet of polyethylene foam was placed over the back of the granite to act as a bond breaker between the granite and the back-up concrete. This was done to allow for expansion and contraction of the two different materials.

By using precast concrete components up to 11 ft. 8 in. by 30 ft., the architects "retained the dimensional profile necessary for the architectural effect yet maintained the structural integrity needed for the elements to sustain themselves." Design features such as columns, lintels and beams were resolved by using precast members to achieve a successful architectural treatment.

Architectural precast concrete panels enabled the structure to be enclosed quicker than by installing conventional stone cladding. Also, the primary wall function of water barrier was successfully achieved.

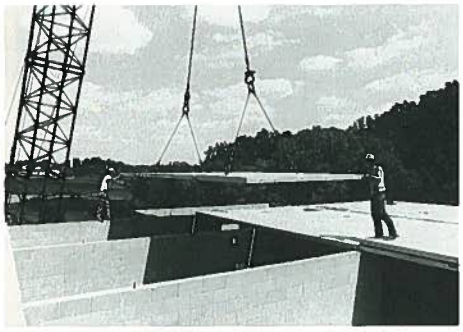
"Precast, prestressed floor slabs provided speed of construction plus economy during severe winter weather."

Architect:
Richard E. Hardy
Springfield, Missouri

General Contractor:
Williams Construction Co.
Branson, Missouri

Owner:
J.T. Investments
Branson, Missouri

Dogwood Park Motel, Branson, Missouri



In January, the Ozark mountains experience severe winter weather, which made construction difficult on the Dogwood Park Motel in Branson, Missouri. Using precast, prestressed concrete slab decking enabled the men to work during severe winter weather. Construction was of mortarless block walls with 4 in. solid, flat precast, prestressed slab decking. Construction time averaged one level of block and deck per week after the construction site was prepared. Twelve weeks after the job was started, the hotel opened.

Richard E. Hardy, architect, stated: "The speed of construction and economy were greater than with any other method used under these conditions." To further increase speed of construction, the floor slabs were designed and carefully manufactured to enable direct placement of carpet, tile and ceiling material.

IDEAS Number 31/Editor: Dawn J. Myers 5.87

pci
prestressed concrete institute
175 WEST JACKSON BOULEVARD/CHICAGO, ILLINOIS 60604

For additional information, contact your local PCI producer:

ROCKWIN CORPORATION
13440 E. IMPERIAL HWY., SANTA FE SPRINGS, CA 90670
(213) 921-3561