Precast Offers New Options For College Residence Halls

From precast concrete hollowcore slabs to total modular systems, precasters are offering flexibility and new advantages to dormitory designers

As the echo from the baby boom generation gathers steam and higher-education enrollments grow, colleges and universities around the country are seeking new ways to provide living quarters for their resident students. Adding to their search is the knowledge that the old-style dormitory — a double-loaded central corridor with single or double rooms on each side — just doesn't cut it anymore for students' needs.

"Today, schools are looking beyond just a room where students can sleep," says Douglas B. Hyde, principal and senior designer for Einhorn Yaffee Prescott P.C. in Albany, N.Y. "The new trend is toward suites of rooms with common space, such as living rooms and even small kitchenettes. They're seeking both a living and a learning environment. Schools also have discovered that a residence hall that only houses students during the academic year and stands idle over the summer, or even just during break periods, can be put to better use at these times."

The growing solution to this changing need is being found by designing residence halls that feature not only rooms but academic space as well. These facilities may include conference rooms, common parlors, study space and even academic classrooms. As a result of the needs and space required of these new functions, architects and designers are looking at how they can alter their design concepts so they can incorporate other types of spaces within these residence halls.

"The market is changing rapidly," reports Harold Messenger, marketing manager for Rotondo Precast Co. in Rehoboth, Mass., and team leader for PCI's Dormitory market group. "College dormitories are being designed to resemble home environments more than ever before."

The finished dormitory at Curry College houses 148 students in a residential setting. Architect George Dakin notes that architectural panels could easily be combined with hollowcore floors and ceilings to fit into the context of surrounding buildings at a college or university.

Precast Aids New Designs

Those new needs play to precast concrete's advantages, he says. "Precast concrete hollowcore slabs have long been a staple in this type of construction, but designers also are beginning to take advantage of the potential in precast stairs, balconies, exterior walls and even completely modular units. Our ability to provide building components that are durable and fire-safe and produce them on a fast-track schedule invariably offers the designer advantages over competing products."

Precast concrete options also help provide the alternatives colleges are seeking on interior walls. "Drywall interiors give college maintenance crews a real problem at the end of the semester when students go home or graduate," he explains. When students take down their posters, the school maintenance crews must repair any holes in the wall — and there often are many. "One school told us that when they took down a poster that was left behind by students, they found a huge hole in the wall where somebody had put a fist through both sides. A concrete panel would have avoided that problem."

Although precast concrete architectural panels only now are gaining

Dominican College's new residence hall in Orangeburg, N.Y., which was designed by Einhorn Yaffee Prescott Inc. in Albany, N.Y., contains student housing for 215 people. It also points up the growing trend toward a softer, more homelike design for student housing. Project designer Douglas B. Hyde cites speed of construction, cost implications and fire and security concerns as factors impacting the use of precast concrete in building such structures.

attention for these projects, hollowcore slabs have long been a popular choice among university officials and designers of college residence halls. They understand the inherent advantages the products offer to this marketplace for a variety of reasons. For one, they top the list in fire safety and durability. Secondly, they offer an ideal design solution to the task of providing new housing quickly and inexpensively.

Hollowcore slabs also fit perfectly in formerly popular design styles that feature a double-loaded corridor, often saving the cost of the second side of supporting columns thanks to the long spans offered. They also provide a one-piece, thin ceiling/flooring unit that can be finished economically while also saving costs on creating suspended ceilings.

A New Approach

College dormitories that are privately owned and operated? An intriguing possibility, says Harold Messenger. "We are aware of several companies that are approaching college and universities with proposals to privately build residence halls." Under the proposals, the design-build firms offer schools the chance to house students without the investment in money and other resources.

"What these firms propose is building residences in close proximity to the campus that meet all the criteria as if the schools were building the new facilities themselves. In some cases, the companies offer to manage the units as if the schools were operating them — meeting disciplinary guidelines, monitoring student behavior, hiring residence hall monitors and the like."

Such firms are bringing the entire construction package to the table, including financing, land purchase, design and completion. While schools are slowly warming to the idea, the movement in this direction is just beginning. "As it gathers steam, as I think it must, we precasters are positioning ourselves to work with these private developers in producing precast components and systems that meet their needs on a design-build, fast-track basis."

'Precast warrants our consideration on every project of this nature.'

That attribute also lends itself to the newer design philosophy, architects say. Because of their clear spans, hollowcore slabs provide the opportunity to create a variety of spaces within the walls.

"Due to its economical advantages, fire-resistant nature and fast construction, precast plank lends itself beautifully to the design of college residence halls," says Arvind Tikku, senior associate and project manager for the Hillier Group of Princeton, N.J. "When we designed a new residence hall at Cornell University in Ithaca, N.Y., we choose concrete plank and masonry bearing walls for several reasons, not the least of which was that it was the most cost-efficient way to go. It also provided an advantage over steel framing. It was, quite simply, faster."

New Approaches Used

But Tikku, like Hyde, emphasized that schools are rethinking their residence halls, seeking ways to make them more flexible and useful. That affects how the designer plans the structural system and façade "Before deciding on a design concept, you have to ask what the college is trying to achieve — and that varies from university to university," Tikku says. "There's no doubt that for buildings with a simple rectangular plan, plank and bearing walls make the most sense."

Administrators also want to generate revenues through rental of space for such things as conferences during off-peak periods. "That means we have to look at a different set of design criteria than simply providing dormitory space," Tikku points out. "It means we have to consider how to provide large openings on the lower level to use as flexible conference rooms. The ground floor becomes a gathering place, while upper floors are dedicated to student comfort and welfare." Precast concrete's ability to span longer spaces and yet handle smaller spaces on upper floors make it a significant option in these situations.

A strong proponent of precast concrete is George P. Dakin, project architect for Whitney Atwood Norcross Inc. in Boston, designers of a 148-student residence hall at Curry College in Milton, Mass. "Precast products warrant our consideration on every project of this nature," says Dakin. "We've used precast plank extensively, because it lends itself to a number of factors we look for: durability, speed of construction and cost considerations." Dakin in some instances also has used precast components for lintels, sills and other components as accents where they otherwise would have used limestone.

Precast concrete offers a more cost-effective solution in these applications.

Precast Offers DURABILITY

Talk to an architect about the advantages of precast in college residence hall construction and that designer is likely to mention a variety of factors. Fire safety looms large in the equation. So, too, do speed of construction and cost considerations.

Inevitably, however, the discussion comes around to durability. One pundit remarked, only slightly with tongue in cheek, "Precast concrete works well in prisons, and college dormitories take an even greater beating. If you can meet the durability issues in prisons, you're a lock to do the same in residence halls."

There are a couple of reasons why architects look first to precast concrete when designing this type of structure, says George Dakin, project architect for Whitney Atwood Norcross Inc. in Boston. "But always at the head of the list is durability."

Douglas Hyde concurs. "Durability is a major factor, and I don't see that changing. Precast concrete has a great potential market here, because it is an extremely busy one, and we see it remaining so for quite a while. Where repetition is a factor, precast makes increasing sense. And its durability will always be a strong selling point."

"Curry College is a particularly good example of why we turn to precast," he says. "This was a very fast-track job, and precast can be delivered faster than most other materials." The components also should be given strong consideration for applications beyond floors and ceilings, he stresses. "There's no reason it can't be used for vertical panels as well, although the majority of projects that we see, particularly in the East, tend toward masonry load-bearing walls."

Fitting The Campus

As with Tikku and Hyde, Dakin pointed to the need for designers to fit new residence halls into the campuses on which they are built. "It's strictly a matter of aesthetics," Dakin says. "In many college settings, there is a small prejudice in favor of brick." But he points out that producers of architectural panels that replicate brick, limestone and granite have the opportunity to change those prejudices. "Many of these buildings are going up on a very fast-track basis. When producers reach the specifiers and show how they can meet the aesthetic requirements, I think they have an edge because they can deliver on a very tight schedule."

Hyde also suggested the importance of blending new buildings on a college campus with older, traditionally-clad structures makes precast concrete elements a strong choice. "If a designer can embrace the existing context with precast concrete components, I see no reason why they shouldn't be considered," Hyde says. "I can certainly see a market for products that replicate such things as granite rubble and limestone."

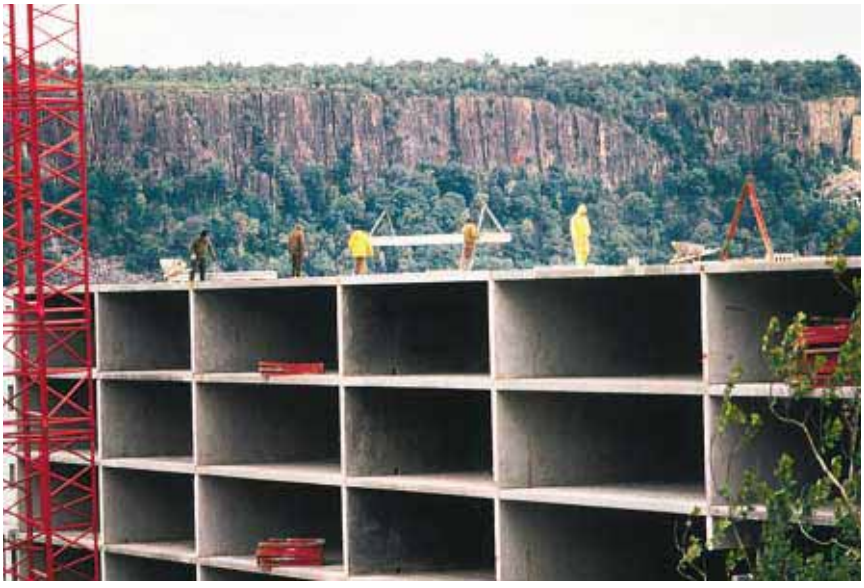
Messenger agrees that precast components can help blend with other university buildings at a better budget cost than stone or masonry can. "Precasters offer a unique opportunity with predesigned and pre-engineered components that meet a wide variety of design choices. There is no reason why we can't fit into any college design environment. Just look at the precast office buildings, hotels, even parking structures that fit into everything from an inner-city urban environment to college campus-like industrial parks."

Precast has the ability to supply cast-in thin brick to match older edifices or simulate cut-stone, sandstone or other masonry via form liners and aggregates. "These are undetectable from the real materials and often at a major cost savings," Messenger stresses. "And we can offer a speed and flexibility in delivering these pieces that other systems can't match."

Designers are taking advantage of the potential in precast stairs, balconies, exterior walls and modular units.

As precasters spread the word and additional colleges use these approaches, more and more designers will realize there are great alternatives in precast concrete options. "We have the ability, as an industry, to offer the complete package for dormitory designers," he says. "We always have enjoyed a strong competitive position with hollowcore slabs, and we also can provide wall panels, stairs, even complete modules. With design-build formats growing and the move to fast-track schedules continuing, we think precast concrete will be able to meet their needs better than any other construction system." ■

— Wayne A. Endicott



New residence hall under construction at the University of Wisconsin in LaCrosse, Wis., features precast concrete hollowcore slabs in its design.