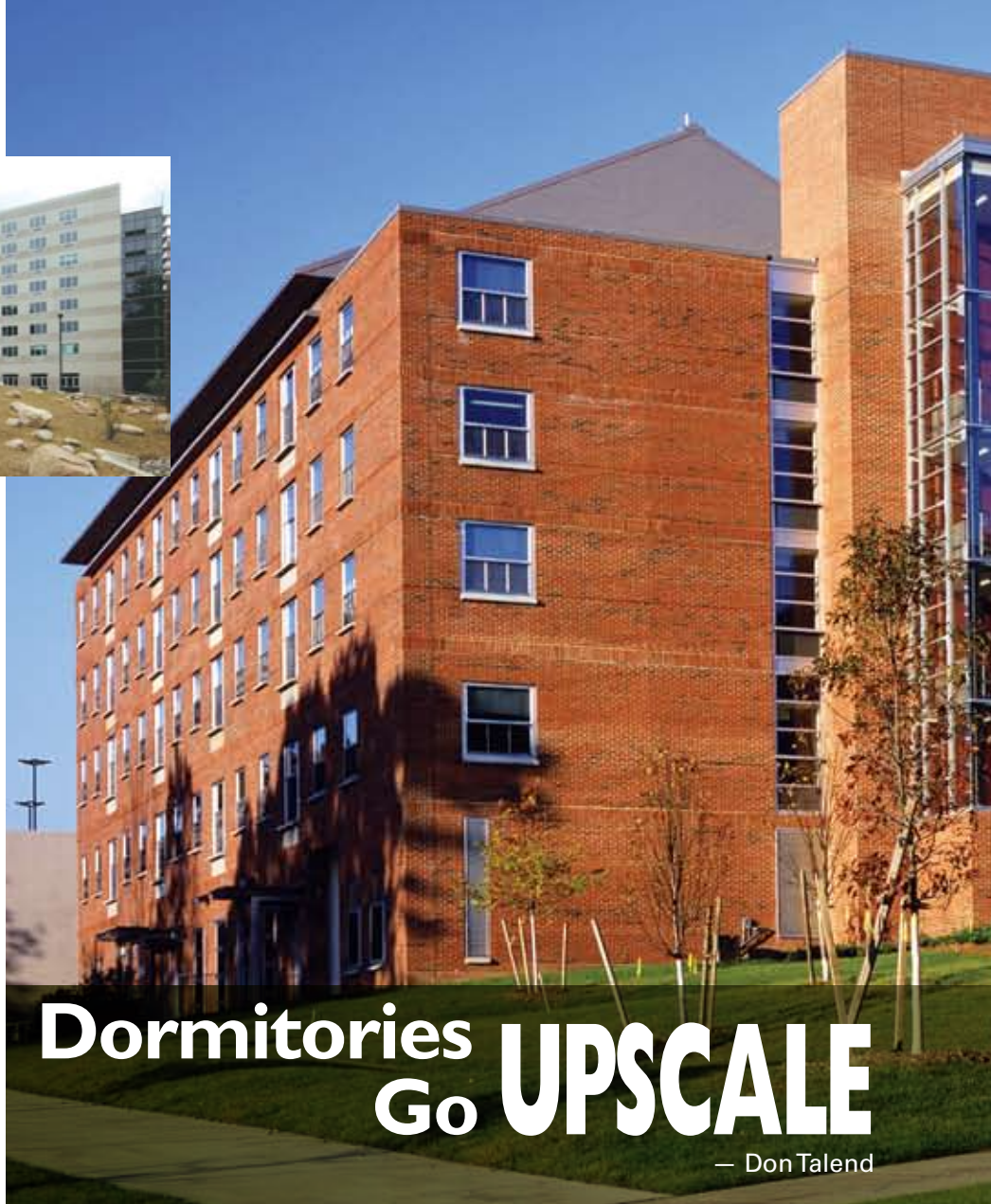




**Ramapo College Phase 8
Mahwah, N.J.**
PS&S Engineering, Warren, N.J.



Precast concrete helps designers provide versatility to the changing university residential market

Dormitories Go UPSCALE

— Don Talend

If they revisit their alma maters during Homecoming Weekend this year, pre-Generation Y college graduates might not recognize the newly constructed residence hall on campus. Although the days of barracks-style living have not completely gone by the wayside, the college dormitory market is undergoing changes driven mainly by secondary education economics and socioeconomic changes. Fortunately, versatile materials, including structural and architectural precast concrete components, are helping designers meet the new needs.

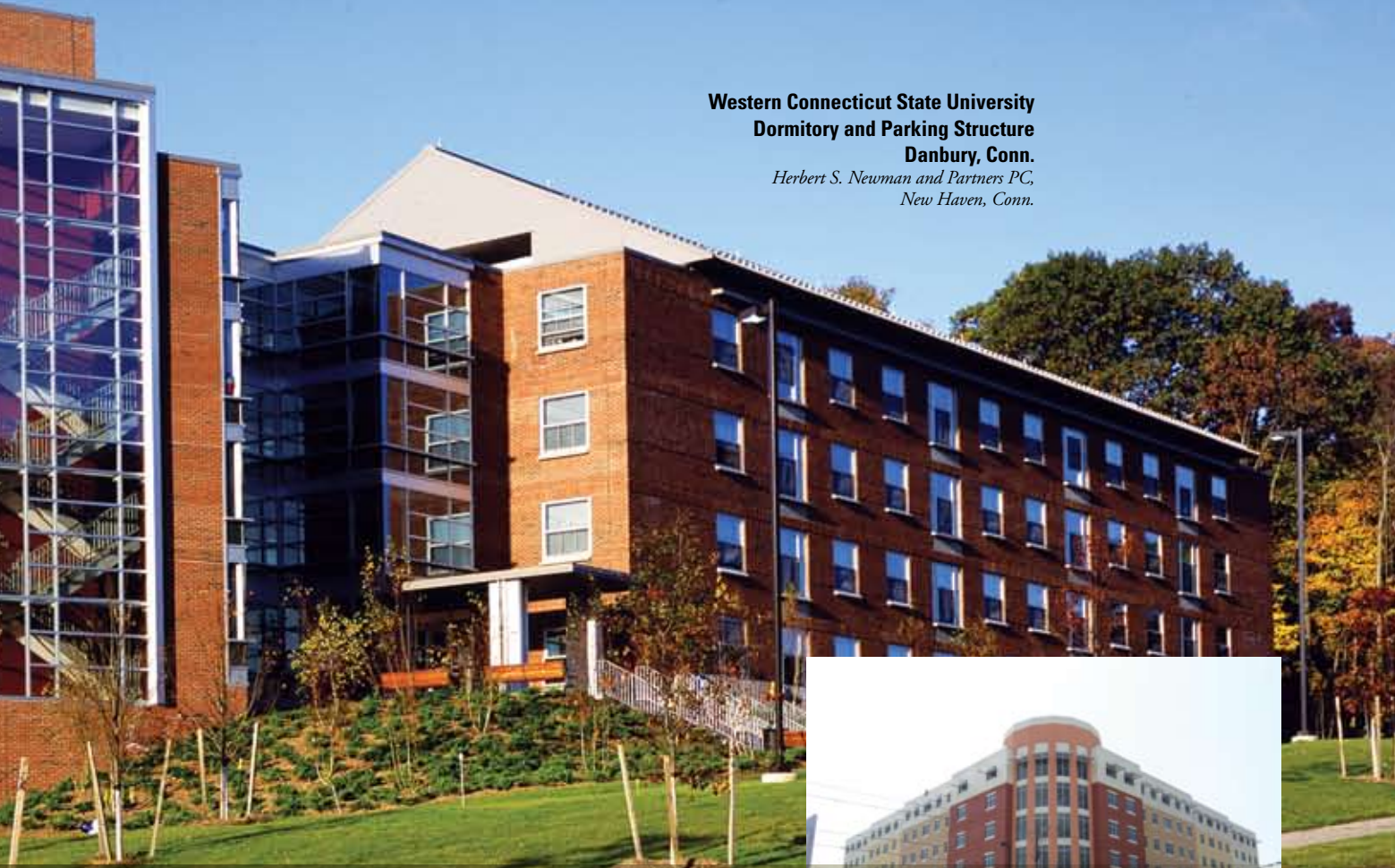
Increasingly, newly constructed dormitories bear more of a resemblance to an apartment building than a barracks. Instead of providing one room for two students to share, dormitories more often are designed as suites with separate sleeping accommodations and common kitchen and living areas.

Although this style has been used in some locations for some time, the trend has picked up considerably. The reason is simple: An increasingly competitive secondary-education market must find more ways to appeal to students to take advantage of on-campus living. Socioeconomic changes in suburban America are driving changes in campus life, and economic prosperity is giving students more housing choices than ever. And an increased focus on aesthetics is opening eyes to the fact that dormitories do not have to loom as massive, gray institutional structures.

Designers are finding these changes, as well as inherent design and construction benefits, make dorms particularly well-suited to using precast concrete components. Fixed starting times for semesters sometimes can drive the need for dormitories to be erected on unusually

**Western Connecticut State University
Dormitory and Parking Structure
Danbury, Conn.**

*Herbert S. Newman and Partners PC,
New Haven, Conn.*



**Residence Hall One,
University of South Florida
St. Petersburg, Fla.**

KBJ Architects Inc., Jacksonville, Fla.



pressing schedules. Properties such as fire resistance and noise attenuation also are in high demand for this market, as is the durability to stand up to undergraduates releasing tension or frustration on a weekly basis. In addition, the functional and design potentials for precast concrete have created new paradigms that designers are recognizing more often for this market.

Fitting The Landscape

An example can be seen at Ramapo College of New Jersey in Mahwah, N.J., a public liberal-arts college located in the state's rural northeast. During the past several years, the college has built four new residential complexes, with a fifth scheduled for 2006. The most recently completed residence hall, called the Overlook, is an eight-story structure that relies significantly on precast concrete for both interior and exterior designs to blend

into the surrounding Ramapo Mountains, provide students with impressive views of the countryside and fit the surrounding hilly terrain. Paulus Sokolowski & Sartor Architecture was the architect on the project.

On one side, the building uses architectural precast panels that are alternately flat and fluted, while on the other, designers specified a tinted curtain wall, producing the look of a luxury apartment building. Precast columns support the glass curtain wall.

The interior makes use of exposed precast concrete panels, columns and beams that provide a bright contrast with the glass while minimizing the need for maintenance. "The walls in the dormitories were exposed concrete without paint, because that's the look they wanted," says Robin Brown, the sales representative for Fabcon USA on the project. "The owner

Precast concrete
helps dorms
meet needs for
strict deadlines,
fire resistance
and acoustical
control.



The interior of the Overlook consists of unfinished precast concrete, which reduces the need for maintenance a great deal and provided the college with value engineering.

Fact Sheet

Project Name: Ramapo College Phase 8

Type: School dormitory

Location: Mahwah, N.J.

Owner: Ramapo College of New Jersey

Architect: PS&S Engineering, Warren, N.J.

General contractor: Century 21 Construction, Clifton, N.J.

Precaster, erector, precast specialty engineer: Fabcon, Allentown, Pa.

Size: Eight stories, 191,659 square feet

Components: Precast beams, columns, floor plank, interior demising/shear walls and exterior architectural precast.

Project construction cost: \$80 million (est.)

likes the fact that the interior is durable and that it looks like concrete. There's no maintenance involved."

The college's preconstruction task force considered other options during the planning phase, notes Richard Roberts, associate vice president and contracting officer. Precast was chosen for several specific reasons. "The designers felt precast could achieve an aesthetically pleasing design that would blend with our surroundings," he says. The idea of laying block during the winter also was unsettling, he adds. The group agreed to the designer's plan for using precast concrete after meeting with the architect, examining precast panel samples and visiting a nearby precast structure.

The terrain and a particularly unforgiving construction schedule — constricted due to permit delays — presented construction challenges that made precast the right choice. Brown points out that a liquidated-damages clause was incorporated into the contract, which would have required the project stakeholders to bear the cost of temporary housing in the event that the hall was not ready to open for the fall semester. But precast provided the college with the confidence that the rooms it had reserved to students would be ready for the move-in date.

The site was not ideal, as the building had to be constructed into a hillside by general contractor, Century 21 Construction. "They had wetlands there and they had to build it into a hillside and they had a very limited timeframe in which to do it," Brown explains. Additionally, a large portion of the construction took place during the winter, which would have made masonry construction problematic. "You couldn't disturb so much of the area," he says. "There were only so many

places you could erect from; they were challenged by access requirements."

One unique aspect of the precast is the interior demising/shear walls, he adds. "The end walls and the long walls took a lot of the shear off of the structure," he says. "One whole side was glass. The glazing really couldn't take a lot of shear into the building — a lot of it had to be put into the building."

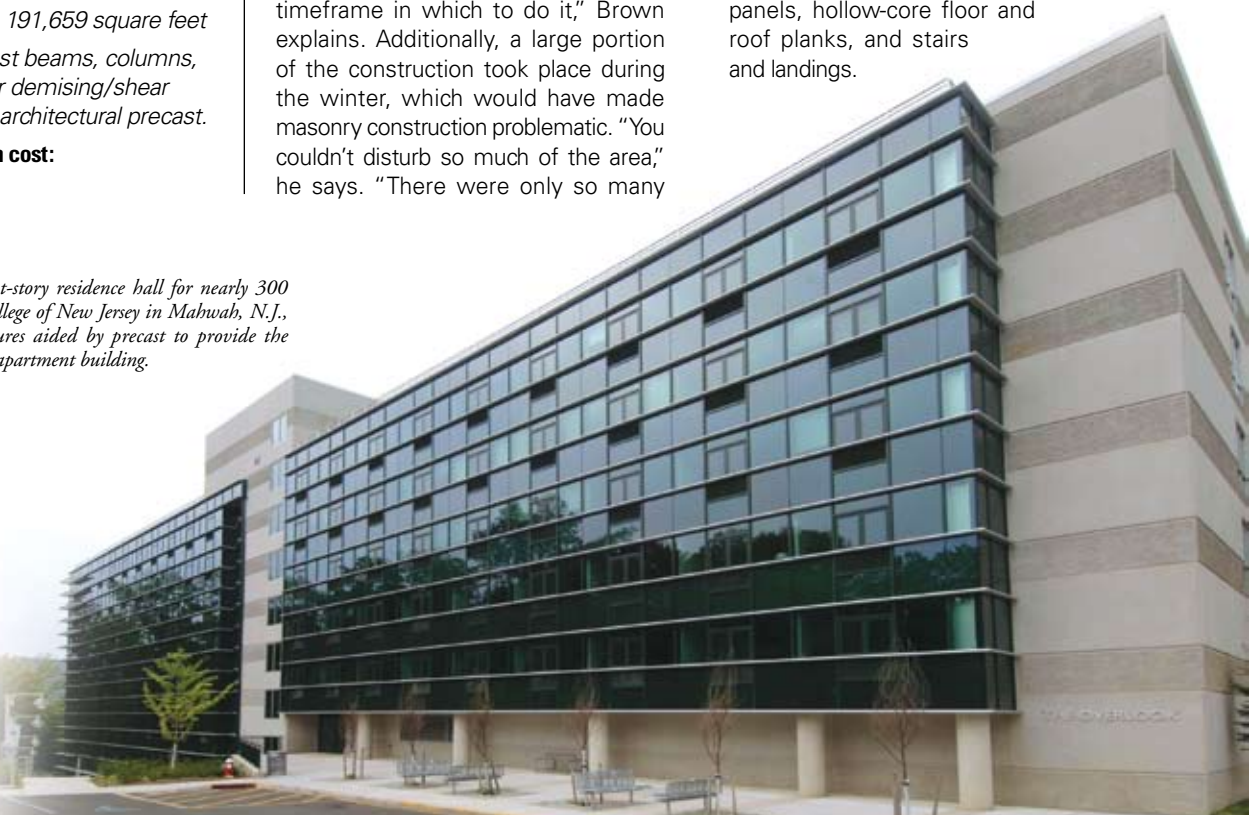
The inherent benefits of precast suit residence halls such as the Overlook. "Major benefits are the fire ratings, and the sound transmission coefficient is good with precast," he says. "It's very dense, so there's not a lot of sound transmission — it's very quiet. With the walls not needing wallpaper, there's not much that students can do to them year after year. Colleges are very concerned about abuse of the interior."

Similar Constraints At WCSU

Though different from the Overlook project in design, a recently constructed dormitory and parking structure at Western Connecticut State University in Danbury, Conn., faced similar job site, seasonal and time constraints. The owner, the State of Connecticut Department of Public Works, sought to build a dormitory on the university's Westside Campus but was constrained by a hilly site.

The difficult site inspired a U-shaped, three-wing design for the four-story, 350-bed facility, as well as enclosed parking that depended heavily upon precast. The dormitory features an all-precast concrete design, using wall panels, hollow-core floor and roof planks, and stairs and landings.

The Overlook, an eight-story residence hall for nearly 300 students at Ramapo College of New Jersey in Mahwah, N.J., uses architectural features aided by precast to provide the appearance of a luxury apartment building.





Fact Sheet

Project Name: *Western Connecticut State University Dormitory and Parking Structure*

Type: *School dormitory*

Location: *Danbury, Conn.*

Owner: *State of Connecticut Department of Public Works*

Architect: *Herbert S. Newman and Partners PC, New Haven, Conn.*

General contractor: *Konover Construction Corp., Farmington, Conn.*

Precaster, erector, precast specialty engineer: *Blakeslee Prestress Inc., Branford, Conn.*

Size: *Four-story, 350-bed dormitory; three-story, 425-car parking facility; 97,850 square feet*

Components: *Spandek brand hollowcore floor and roof planks, wall panels, stairs and landings*

Project construction cost: *\$26 million*

"Often on a college campus, you have a collection of buildings that create an outdoor space; here we didn't have that luxury," explains Carl Wies of Herbert S. Newman Partners in New Haven, Conn., the architectural firm on the project. "It was an isolated site, so giving it three wings and wrapping it around a courtyard gives it a nice enclosed space. There's another dorm, but it's on a hill, so the two dorms don't interact spatially."

Geography also necessitated using precast concrete for the enclosed 425-space parking facility, Wies adds. Administrators considered putting the parking on another part of the campus, he notes, "but that would have meant that students would have to cross a dangerous road. This site that we were on — because of its sloping quality and its limited size — represented the only location where we could provide enclosed parking. The parking structure was a bit unusual because this is a suburban campus, and you figure there will be a lot of land in the suburbs, but this particular site didn't offer it."

Siting wasn't the only challenge that the construction team faced. "Precast concrete also was chosen for speed of erection," Wies says. "By the time the foundation was finished, winter was just starting, so it helped get the building enclosed quickly. It was a very cold winter."

The precast concrete design helped considerably with the unique situation, as well as with the tight schedule, says Simon Etzel, senior vice president of procurement for Farmington, Conn.-based general contractor Konover Construction Corp. The site necessitated constructing a three-story foundation wall into a hillside preceding the precast erection at the parking facility.

Fortunately the project was similar to other work the company had done previously, Etzel notes. At the University of Connecticut, the contractor worked with the same architect and used structural precast concrete for all components except exterior walls not being used for shear. "At Western, where the design is entirely precast, the material provided advantages particularly from a scheduling standpoint. It was a tremendous benefit."

The parking structure features precast double tees, girders, columns, walls, spandrels, stairs, stair walls and slabs. The spandrels combine floor support, pedestrian and vehicle barrier railings plus an aesthetic finish in one element, providing

construction savings. Blakeslee Prestress in Branford, Conn., supplied and erected the precast concrete components.

Use of the all-precast building system was critical to meeting the demanding schedule, with precast erection taking only about 12 weeks. "I don't think we would have made our schedule without the use of precast," says Etzel. "The project got off to a slow start, and the precast helped get the building up quickly. The erection time was very short, even considering the severe winter. A block-and-plank system would have taken much longer."

Precast concrete also helped the project achieve certification in the Leadership in Energy & Environmental Design (LEED) rating program. Precast aided this effort by using local aggregates, as well as a significant amount of recycled aggregate and reinforcing steel. "The state required a Basic LEED certification, and this became the first state building in Connecticut to get certified," Etzel notes. "The precast did help us; the aggregate came from within 500 miles of the site, which limited the amount of trucking. There was slag used in the mix, which was a salvaged material, and the rebar used was also a salvaged material. So all of those things helped us to secure the points available through using recycled materials in the construction."

Apartment-Style Atmosphere

Another precast concrete project now underway also will feature apartment-style living for residents. Residence Hall One, a seven-story building housing 354 University of South Florida students in St. Petersburg, Fla., is on track to open for the Fall 2006 semester. KBJ Architects Inc. in Jacksonville, Fla., made a concerted effort to ensure the building fit its urban surroundings, and precast played a key role in this effort.

"The university is trying to change its image for the St. Pete campus," notes Carl Craft of KBJ Architects. "Unlike the Tampa campus, St. Pete has been more of a commuter campus. Now they're trying to appeal to undergraduate students and students who want to stay in the area." Adds KBJ's Jason Pelletier, "This is the campus's first dorm, and it will change the face of the campus completely."

The dorm's units are laid out as suites, which include a living room and kitchen. "I think you're running into a generation that's never had to share a bedroom, so when you have the old



Vertical and horizontal color variations give Residence Hall One an apartment-like appearance from the side, a competitive plus given plenty of available apartments near the campus.

Fact Sheet

Project Name: Residence Hall One, University of South Florida

Type: School dormitory

Location: St. Petersburg, Fla.

Owner: University of South Florida

Architect: KBJ Architects Inc., Jacksonville, Fla.

General contractor: Elkins Constructors Inc., Jacksonville, Fla.

Precaster, precast specialty engineer: Gate Precast Company, Kissimmee, Fla., and Jacksonville, Fla.

Precast erector: PreCon, Tampa, Fla.

Size: Seven-story, 126,000-square-foot residence hall for 354 students

Components: Double tees, hollow-core planks, flat slabs, architectural wall units

Project construction cost: \$15 million

military-style student dormitories, that doesn't fly too well with the students or the parents," Craft says. "Now you get your own room and share common spaces. There's sharing, but you don't necessarily have to bunk with somebody in the same room."

The designers sought to avoid the appearance of a traditional dormitory and break up the building's massive appearance by using step-backs and different colors. The front of the dormitory offers an acute angle at the corner of two streets. "As you get closer to the building, it actually gets closer to you," he says. "The plaza is drawing you into the building."

Step-backs, Color Add Interest

To minimize the structure's size, the façade was split into thirds, and then each third was pushed back two feet, creating offsets for each of the building blocks. All three were connected with another three in a V-shape. "On the first two floors, we have a band of color breaking up the seven-story height, a two-story band with three individual colors on each bay as a step-back, then a band across the top," he explains. "This allows us to break up the building visually by the use of colors."

The precast wall panels were designed specifically for this project, adds Clay Callahan of Gate Precast Company in Kissimmee, Fla., the precaster on the project. The walls were

designed as one 48-foot-long structure, averaging about 11 feet tall. The wall panels were formed to create the bays.

The urban job site presented challenges in erecting the precast walls, which were supplied from Gate's Kissimmee plant, while floor planks and double tees were cast at Gate's Jacksonville facility. "They didn't actually have any lay-down area," notes Pelletier. "This was all trucked in one day, pulled off the truck, and the truck went back to the plant in one day."

That required close coordination to ensure the proper tees and wall panels arrived on time. "There wasn't too much staging," says Callahan. "The walls came in first, and then they'd drop the double tees in and tie them together. We spent a lot of time planning so that we'd have the required number of double tees on the site. The scheduling was critical so that we wouldn't have things backing up."

Precast Eliminates Steps

Precast also helped the construction team meet the aggressive construction schedule. "We were under a time crunch, and the design-build system made it a fast-track delivery system," says Pelletier. "If we had gone with a steel frame with a block infill, you've still got two processes there. Any time you can eliminate a process, you eliminate time. That was the beauty of the precast; it could all be manufactured off site and then erected on site."

The result is that students not only will be able to move into their dormitories right on time when the school year begins this fall, but they and administrators will have a structure that they'll be proud to call home, for this year and many more to come. ■

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

Precast Promotes Accessibility

Precast concrete components can aid building renovations in many ways, as designers for a recent dormitory renovation project at the University of Connecticut in Storrs, Conn., have shown. The renovation plan required accessibility for the disabled, but adding an elevator into the building would have required significant demolition and construction, increasing time and cost while reducing available space.

To overcome this, designers created a self-supporting precast concrete elevator shaft alongside the building, using an architectural finish that matched the existing building's limestone accents. The design-build project was constructed by Whiting-

Turner Construction Co., with URS Corp. in Rocky Hill, Conn., providing the design work. Coreslab Structures Inc. in Thomaston, Conn., fabricated and erected the precast components.

The four-story precast concrete structure connects to the existing building via raised walkways. It provides an aesthetic complement to the campus surroundings while ensuring accessibility to the renovated structure. The materials were chosen with the goals of achieving a long life and using sustainable-design materials.

