PROJECT PROFILE

UNIVERSITY OF PITTSBURGH FORBES HALL PAVILION RENOVATION

Photo by Catherine Donahue

Following the academic years of 2023 and 2024, AIMS Construction completed two challenging renovation projects at Forbes Hall. One was part of the University of Pittsburgh's ongoing effort to increase and improve its student residences; the other involved a more unusual, if coincidental, problem to remedy.

Forbes Hall is a student residence hall located in the Forbes Pavilion at 3525 Forbes Avenue. Built in 1964 as a nursing home, Forbes Pavilion is a cast-in-place concrete structure, which the university partially renovated to create student residences on the upper six floors after acquiring the property in 1977. Pitt issued a request for proposals in winter 2023 to add 28 beds by converting 5,300 square feet of office space on the second floor. AIMS Construction was selected as general contractor for the project. Design Group had advanced to design development by the time of AIMS's selection.

At the same time, Pitt engaged Wiss Janney Elstner (WJE) to design a solution to the failing lower roof systems of Forbes Pavilion, which included an original green roof. Seeing that the phasing of the roof project would be intertwined with the Forbes Hall renovation, Pitt awarded a second contract to AIMS Construction for replacing the roof. Bringing a general contractor onto both projects during design helped with one of the project's more difficult challenges: the schedule.

"Schedule was a major challenge," says Alicia Densmore, project manager for AIMS Construction. "The project was in design development when we were hired. We were able to have input on some of the design decisions and sequencing. That was how we were able to convince them to do an early demolition package. Waiting until the summer months would not have given us enough wiggle room to get completed by the time the students returned."

While the floors above the project area were occupied in spring 2023, the office area was vacated and AIMS was able to award and begin demolition in February 2023. Densmore and Tony Pokusa, AIMS' project manager for the roof replacement, coordinated a phasing plan that had 14 double-occupancy rooms completed between May and mid-August 2023, while a

The interior color palette as designed to offset the lack of daylight that the building could offer. Photo by Catherine Donahue.

portion of the roof was replaced. The main roof replacement, including the green roof, would be accomplished during the summer of 2024.

"There were multiple things going wrong with the different roof surfaces. One of the challenges was that there were worn surfaces that were only accessible from the portion of the building being renovated. We were depending upon the interior renovation being completed before we could get the soil off the roof and replace the waterproofing and roofing," explains Pokusa.

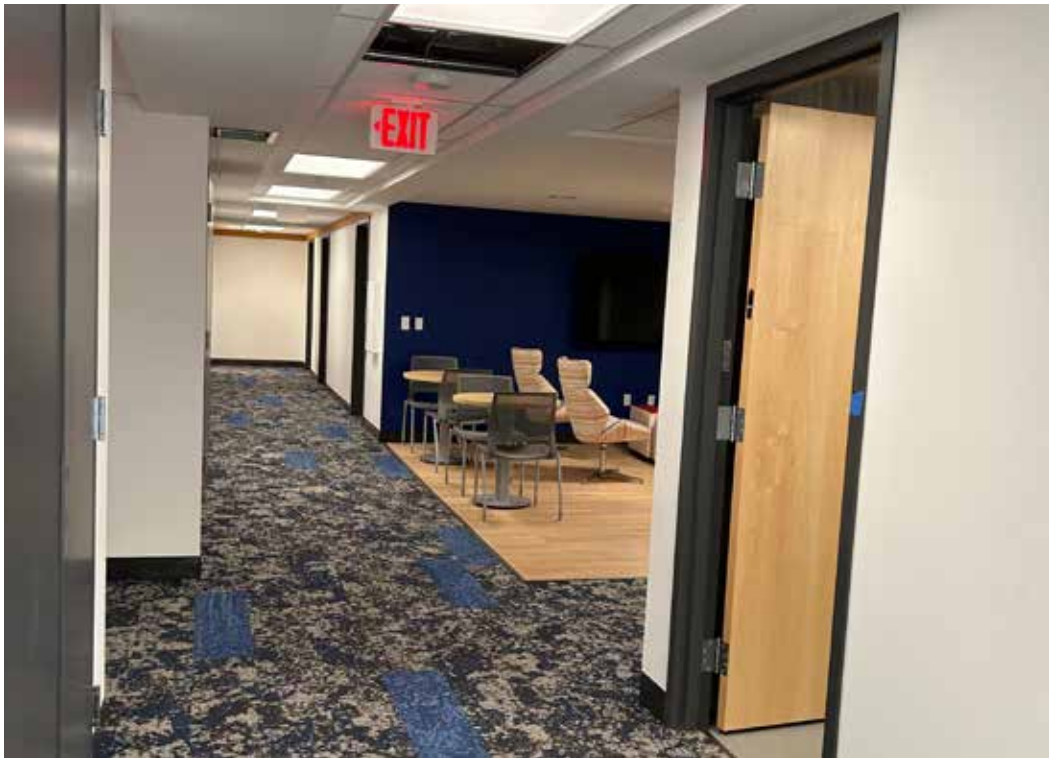
Renovating office space into dorm rooms should have been relatively straightforward, but the structure and age of the building created problems, both structural and architectural, for the design and construction team to resolve.

"There are low floor-to-floor heights in this building. To make it even more challenging, there are thickened floor slabs because it is structural concrete

construction. It is seven feet nine inches from the floor to the bottom of the thickened slab. In healthcare today, we do 14 feet floor-to-floor and when it's 10 or 12 feet, it really hamstrings the project," says John Ryan, associate principal at Design Group "We worked hard to make sure that low floor-to-floor height did not define this project."

"Working with an existing building and not having great documentation of what was there and how it was built was a challenge," Gary Wentzel, principal at WJE's Pittsburgh office. "We had some drawings, but it was a former healthcare facility and there have been some changes since then."

"It was a challenge to make sure we had natural light in the space, so that it didn't feel like a cave with the low ceiling height. We made sure that whatever windows we had lit the corridors where we could," he continues. "We used warm tones and bright pops of color to guide people along the corridors to the lounge and amenity spaces. We tried to work with the Pitt brand on the colors



The interior corners of the building were used for gathering and amenity spaces. Photo by Catherine Donahue.

to draw people into the space."

Densmore explains that the heavy concrete structure created multiple problems for several areas of the renovation, especially the plumbing and heating. Pitt tasked AIMS with tying the new bathrooms into the building's existing, partially failing sanitary stack on the floor above.

"We replaced the sanitary piping on our level and had to work on the dorm floor above to tie in. When we scanned the floor, we discovered 80 percent of the locations where the bathroom and toilet layout were located were on top of a beam," Densmore recalls. "The structural engineer had to determine where we could penetrate that floor without compromising the structure."

Densmore also credits Ruthrauff Sauer, the mechanical contractor on the renovation, with critical preconstruction work. The renovation required shutting down all toilets and sinks in the rooms above, which meant coordinating with any summer occupants. Ruthrauff Sauer conducted an extensive survey of the concealed plumbing and developed a sequencing plan for the plumbing fixture replacement. Ryan also credits mechanical engineer Buro Happold with a creative design solution. There was also significant coordination necessary with Pitt's information technology team and Integrate Security Department to maintain the secured access to the building and the building's wi-fi access when the power was off.

Consideration for the existing residents of Forbes Hall was an important issue at the start of the renovations, which happened during finals.

"It was a hurdle to work through the renovations while students were living in the building. The main problem was at finals time when noise was a consideration. We were asked to evaluate how we could do that and ended up shutting the project down for two weeks because we could not get the noise levels down," says Travis Wertman, project manager for the University of Pittsburgh. "AIMS was able to rework their schedule and there was minimal impact on the completion date."

Students moved into Forbes Hall, including the new rooms on the second floor, as scheduled in August. When the preparation for the larger second phase of the roof replacement got underway in spring 2024, the team discovered several unforeseen issues. An examination of the roof drains uncovered a long-time deficiency from the original installation, which caused water damage to the building. As demolition got underway on the existing roof, a more difficult problem presented itself.

"With safety being the primary concern of the university, we had a structural analysis done to determine if the roof could bear the weight of the machines. It was determined it would not," says Wertman.

"In the midst of the removal of the soils on the existing green roof an issue arose with the structural loading. We couldn't remove the soil the way we wanted to," says Pokusa.

AIMS and its green roof contractor, Eisler Landscapes, planned to use excavating equipment to remove the existing soil, but the inadequate structure quashed that plan. WJE identified several small areas that would support small equipment, but AIMS' team suggested an alternative that would allow additional loads to be spread across the roof structure.

"We devised structural wooden mats that were able to bridge between beams to carry micro excavators that were 32 inches wide. We were able to scoop dirt into wheelbarrows and then run it up a ramp to a dump truck," says Eric French, president of Eisler Landscapes. "It was quite a challenge."

"Even with the excavator, they ended up having to hand remove a large quantity of the soil," says Pokusa. "There were between 12 to 15 inches of soil in some areas and 23 to 27 inches in others. We also had to manually bring 400-pound pavers to the roof."

The limitations of the structure also meant that it was impractical to completely update the roof to current codes.

"There was quite a bit of effort put into figuring out how much insulation we could get into the roof," recalls Wentzel. "New projects are supposed to meet the current code for minimum insulation, but we couldn't fit it in without it obstructing access to the roof. We had to seek a variance for that."

The completed roof project includes several greenscapes, including a planted lawn area, along with various seating options, dining tables, and a birds-eye view of bustling Forbes Avenue.

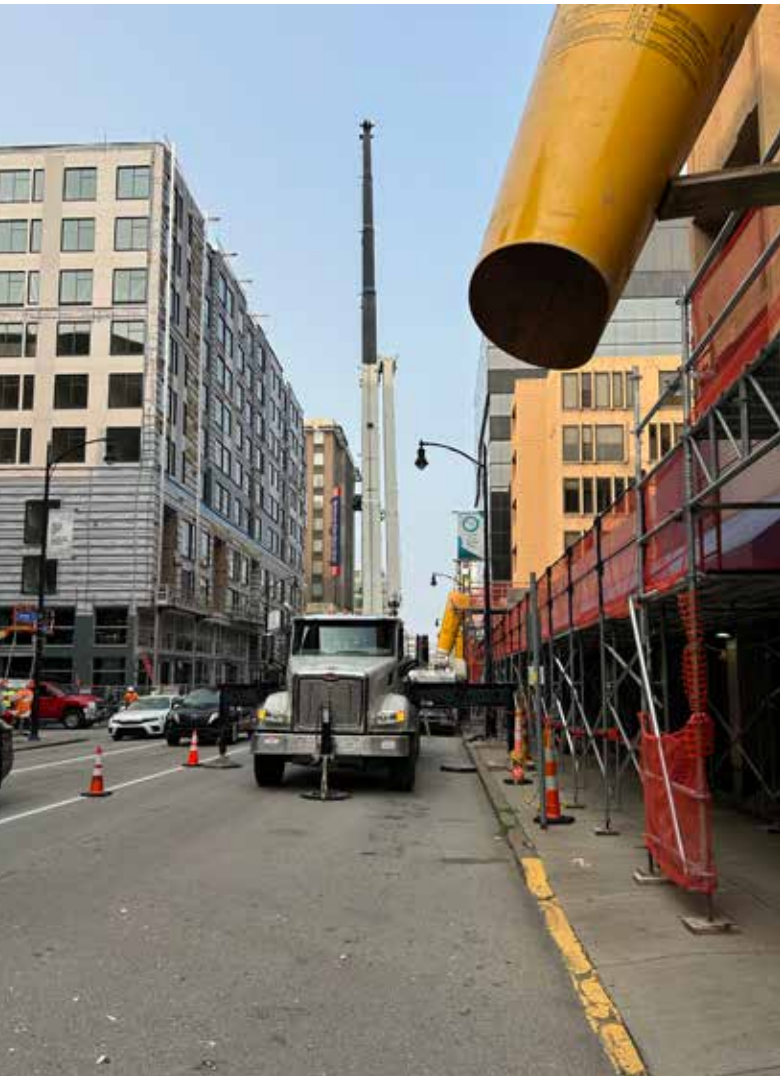
"Eisler did a great job. They are the experts on these green roofs and without them we wouldn't have been able to do it, notes Mike Tarle, senior vice president and Pittsburgh market leader for AIMS.

Beyond the construction issues, the Forbes Hall renovation presented AIMS Construction with logistical challenges because of its address. Working directly above one of the busiest corridors in the city, AIMS had to protect pedestrians and vehicle traffic, as well as manage limited access to the site. Any lifts, including the soil for the green roof and the concrete that was installed, resulted in blocking at least one lane on Forbes Avenue. That was a status that the university and the City of Pittsburgh wanted to be limited.

"The logistics in general were difficult. We were right on Forbes, so we couldn't have deliveries to the front of the building. There was no loading dock at the building. We had to use Euler Way as our only access point for deliveries and dumpsters," says Densmore. "That's a one-way alley so deliveries had to be coordinated on smaller trucks. The underground parking deck goes under Euler Way, so there were weight considerations for vehicles. We had to build ramps to access the dumpsters."

Pokusa points out that a nine-story private student residence was being built across Forbes Avenue from the project during both summers of construction and the UPMC Heart and Transplant Hospital was getting into full swing throughout AIMS' project's duration, which added to the construction traffic in that part of Oakland.

Students returning to Forbes Hall in mid-August 2024 found fully



Construction on Forbes Avenue requires major traffic control and staging on one of Pittsburgh's busiest streets. Photo by Catherine Donahue.

landscaped roof decks and gardens at their disposal. Pokusa thinks they will be a welcome amenity.

"The green roof itself I think is a beautiful end product. The portion along Forbes Avenue will be a great space for the students to enjoy" he says.

Pokusa and Densmore both point to AIMS' superintendent, Brent Guenther, as a key reason the project ran successfully. Densmore notes that Guenther and Ryan met almost weekly, with Ryan stopping at the site on his commute to Design Group's offices in the morning to review progress and solve problems.

"The AIMS team was very good. There was great communication. Brent talked through everything so that he knew where we had flexibility and I understood the challenges he had," says Ryan. "It was kind of a 'Kumbaya' project, and I don't say that lightly. It was one of those projects where you schedule a weekly owner-architect-contractor meeting for an hour and every meeting only lasts 30 minutes because things are well coordinated and there are no issues coming up that we hadn't already thought through."

Pokusa gives WJE kudos for navigating the unforeseen issues that arose and keeping the end result, an on budget and on schedule project, in mind.

"WJE's weekly communication and reporting on the site kept everybody in the loop," he says. "It was the only way to hit a tight schedule."

"The team played a big role in the success of the project. Design Group was good to work with on the interior renovation," agrees Densmore. "John Ryan met with our superintendent and was very open to suggestions from the field, which I think was a big contributor to this success. There was also a good team from Pitt to work with."

"It was a good project because of the teamwork between Pitt, AIMS, and their trade partners and everybody's ability to work together resolving issues," says Wertman. They were able to maintain a tight schedule and cost."

Gina Bleck, vice chancellor for planning, design and construction at Pitt, notes that the definitive measure of a project's success is the end product.

"The students and everyone associated with the building is happy with the end result. That's the best indication of success," she says. BG

PROJECT TEAM

AIMS Construction	General Contractor
University of Pittsburgh	Owner
The Design Group	Architect
Buro Happold	Mechanical-Electrical Engineer
Taylor Structural Engineers	Structural Engineer
Wiss, Janney, Elstner Associates	Engineer (Green Roof)
BLT	Hazardous Material Abatement
Eisler Landscape	Green Roof Contractor
M & J Electrical	Electrical
Phoenix Roofing	Roofing (Green Roof)
Pittsburgh Interiors	Interiors
Ruthrauff Sauer Inc.	HVAC & Plumbing
Swank Construction	Concrete Cutting
Thomarios Painting	Painting (Green Roof)
J. Rich Concrete	Concrete
G. Kidd Inc.	Structural Steel
Tech 2000 Woodworks	Casework
Kalkreuth Roofing & Sheet Metal	Roofing (Student Housing)
Flooring Contractors of Pittsburgh	Flooring
Massaro Industries	Ceramic Tile
Lisanti Painting	Painting (Student Housing)
River City Glass	Glazing