# Roosevelt University Moves Into Modern Digs

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Photo by Tudor Van Hampton for ENR

Upstaging Adler & Sullivan's rock-solid Auditorium Building in downtown Chicago is a glassy new landmark for Roosevelt University. The school's “vertical campus,” set to open next March, has faced difficult obstacles—tight laydown and delivery zones, delicate underground work, tough hoisting logistics, to name a few—but the building team is handily making the grade on the $118-million project.

The glass curtainwall moves in and out as the building rises, requiring custom landings to enable crews to get in and out of the temporary hoist. Each glass panel was bar-coded and installed to match the architects renderings.

The first challenge to overcome had to do with fire safety. In 2004 the city adopted a new code requiring pre-1975 high-rises to be equipped with automatic sprinklers. That meant Roosevelt University would have to retrofit its 19-story Herman Crown Center, a residence hall built in 1970. The school had a big decision to make: modernize or rebuild.

“We said the building just isn't worth the investment of putting sprinklers in,” says Steven Hoselton, associate vice president in charge of campus operations. At the same time, enrollment was up, and the school had just received its first credit rating. Bonds funded the new urban campus, and the project's budget has benefitted from the ongoing industry slowdown.

The design, by Chicago-based architecture firm VOA Associates Inc., incorporates a 32-story, 400,000-sq-ft tower that combines retail, office, classroom, cafeteria and student housing in one structure. Making room for the structure required the school to tear down Herman Crown and an adjacent Fine Arts Annex, whose six-story facade is being preserved.

Hemming in the tight, 17,000-sq-ft site is a private parking lot to the north, the Auditorium Building to the east and south and elevated tracks to the west. The 157-ft-long and 95-ft-wide building stacks its amenities in varying floor-to-floor heights. “There are no two floors

that are exactly the same," says Hoselton, who adds that building-information modeling helped keep the project, which is targeting LEED-Silver status, in check.

Floors one through five feature student support—including a cantilevered bridgeway to the Auditorium Building on the second floor. On floors six through 13, it houses classrooms and offices, while floors 14 to 32 contain student housing with views of Lake Michigan.

The building's saw-tooth shape required floor plates on the short sides of the building to reach out beyond its steel columns at varying lengths to locate the curtainwall. More than 2,200 glass panels, supplied by Italy-based Permasteelisa Group, drape the building in a sea of blue. On the north side are dark precast-concrete panels that contrast against the blue glasswork.

Once it stabilized the Fine Arts Annex's facade in the spring of 2010, general contractor Power Construction Co. LLC, Schaumburg, Ill., and its subs awaited demolition. A prolonged teardown and union strike delayed construction by about 10 weeks. But that was a drop in the bucket compared with the earthwork challenges.

The 238-ft-tall Auditorium Building, completed in 1890, was once the tallest building in Chicago. It bears on so-called "wedding cake" stone footings that progressively widen to spread out the massive load. They rest on a mat of steel beams and rails embedded in concrete. Timbers permanently submerged in groundwater provide final support.

Draining the neighboring site would be disastrous. "You can't dewater your spot to bring the water table down," explains Julie Allman, Power's senior project manager. The builder brought in Roselle, Ill.-based Case Foundation Co. to drill rock and belled caissons, 24 in total, and Thatcher Foundation Inc., Gary, Ind., then installed steel sheeting, roughly 40 ft deep around the site's perimeter, to protect the Auditorium's underpinnings. Excavators could then dig out the vertical campus' 23-ft-deep basement.

With the foundation secure, contractors then turned to the problem of delivering concrete for the floor slabs and eccentrically-located core—which sits close to the north wall. After the first floor was in place, crews shored it to support ready-mix trucks so they could back into the building, rather than deliver concrete from the street. Another problem was the tower crane, which would foul up schedules if placed inside the core. Crews couldn't stick the crane outside the building either, as the owner of an adjacent parking lot would not allow any penetrations in the lot's asphalt.

Chicago-based structural consultant Chris Kohout, principal of ACK Engineering Services Ltd., devised an innovative solution to hang the crane about 10 ft above grade using steel beams tied back into the core.

"It's not something that's done very often," says Kohout, who designed the so-called "diving board" for steel erector Chicago Decking Inc., a subcontractor to fabricator Zalk Josephs, Stoughton, Wis.

The cantilevered foundation consisted of two steel plate girders, roughly 6 ft deep and 35 ft long. According to David Eckmann, principal of Seattle-based Magnusson Klemencic

Associates and the building's structural consultant, the solution worked well for the project team. “They had no problems with it,” he says.

One last structural sleight of hand is an six-story bustle of the building that cantilevers over the south side, close to the Auditorium, without disturbing the footings below. The historic building “has settled a fair amount over the years,” Eckmann says. “We didn't want it to move any more as a result of our building.”