

# Lifeline

Central Utility Plant helps solve energy solutions in Maryland hospital project



The hospital includes a central utility plant adjacent to the hospital, which houses generators, boilers, water heaters and more. The plant includes four specially fabricated roof hatches manufactured by The BILCO Company.

Photo credit: LNJ Designs Photo

**T**he lifeblood of any hospital lies with the team working within the facility. Doctors, nurses, medical support staff and all of the other employees are tasked with important responsibilities to aid and support patients.

While medical personnel tend to their duties, an equally critical part of the hospital infrastructure are utilities that power the facility. The mechanical, electrical and plumbing fixtures need dependable and round-the-clock operation. The supply must be energy efficient, expandable and fit within the hospital budget.

Hospitals in the United States spend nearly \$5 billion annually on energy and related costs. The trend toward digital record-keeping

has fueled even more reliance on electric, and new electrical equipment is becoming increasingly essential to patient care.

Adventist HealthCare White Oak Medical Center will open in August in Maryland. It will include an adjacent Central Utility Plant, which will house generators, hot water heaters and more mechanical equipment. It will be just as critical to the success of the new \$400 million facility as the physicians who are trying to improve the health of their patients.





The Adventist HealthCare White Oak Medical Center is scheduled to open in August in Maryland. The hospital cost \$400 million and will include 180 private patient rooms.

Photo credit: Adventist HealthCare

"This allows us to replace an aging building—a structure that, depending on which part of the building you're talking about, was built between 1950 and 1980—and was suboptimal for modern healthcare," says hospital president Erik Wangsness.

The designing of the hospital and utility plant faced several challenges, including a tight footprint and integration between the structures. When the facility opens, it will be a key piece to the infrastructure of Eastern Montgomery County in Maryland, an area that sits inside the Washington D.C. beltway and is just a few miles from the nation's capital. It will also be part of the county's White Oak Science Gateway, an area that includes 3,000 acres, including the new headquarters for the Food & Drug Administration.

"The White Oak Science Gateway is in a strategic position to be an economic boost in the East County and for all of Montgomery County," says Montgomery County executive Marc Elrich.

## Plant life

The two-story, 16,000-square-foot utility plant will house equipment essential to the hospital infrastructure. "Locating all of the generators, chillers, electrical switchgear, hot water heaters and other equipment from the hospital allows more future flexibility for the hospital and removes some of the more hazardous mechanical, electrical and plumbing equipment from the main building," says Ryan Dellinger, an architect with CallisonRTKL, the firm that designed the hospital.

The utility plant includes four generators, a cogeneration generator, four chillers, four boilers, 10 hot water heaters, electrical panels and switchgear. It also includes a small office for the building manager.

The hospital will require tremendous energy sources. The seven-story structure includes 180 private patient rooms, state-of-the-art equipment and 472,000 square feet. There will also be an emergency room with more than three dozen treatment bays.

"From an architectural perspective, the main issues we faced were visibly matching the central utility plant with the adjacent hospital, finding ways to get enough free air into the generator room while also providing generator access through the roof, and dealing with high-hazard occupancy classifications," Dellinger says. "Our MEP engineers had the challenge of designing all of the systems to work with the adjacent hospital, with each project being built by a different contractor on a different schedule."

## Going through the roof

While the hospital is built for the long haul, the mechanical equipment will need repaired and eventually, replaced. An essential component to the plant is four specially made roof hatches manufactured by The BILCO Company. The roof hatches are 9-feet by 22-feet, which will allow access to the generators when they eventually need to be replaced.

"They considered the life span expectations of the generators and looked for a way to replace them down the road," says Robb Macdonald of CBG South, the BILCO sales representative who provided the vents. "The site's slope presented a challenge to the traditional way of removing large equipment through the sides of the building, so rooftop access was the best solution."

Rick Brigham of Cole Roofing, which installed the hatches, said they were the largest his company has worked with. "They were the best choice for this job due to their ability to custom fabricate them to meet special size requirements," he says.

The roof hatches are equipped with compression spring operators to provide smooth, one-hand operation regardless of size. They also include automatic hold-open arms to lock the covers in the open position to ensure safe egress, and are constructed with corrosion-resistant materials.

## Access challenge

Dellinger said the hospital sits on a long, narrow site which created challenges in establishing access from various points.

There are also more than 1,000 parking spaces. To help promote a natural, healing environment, architects added in a roof garden, courtyards with seating, and a wellness space with a paved walking path around a lake behind the hospital. There is also 170,000 square feet for offices and outpatient services.

"Designing all of the medical spaces in a way that allowed easy and convenient access from the exterior proved to be a challenge," Dellinger says. "However, it also presented the opportunity for many of the interior spaces to feel more connected to the surrounding site."

While challenging for CallisonRTKL and the team at Turner Construction, the hospital is nonetheless an important piece in improving the quality of life in the region. It is expected to contribute \$721.6 million to the region's economy, according to a report from George Mason University's Center for Regional Analysis.

There was also an essential need for a hospital in the community, says Peter Fosselman, Master Plan Coordinator for Montgomery County. "There is a need for medical services on that side of the county," he says. "There isn't another hospital that's really close by."

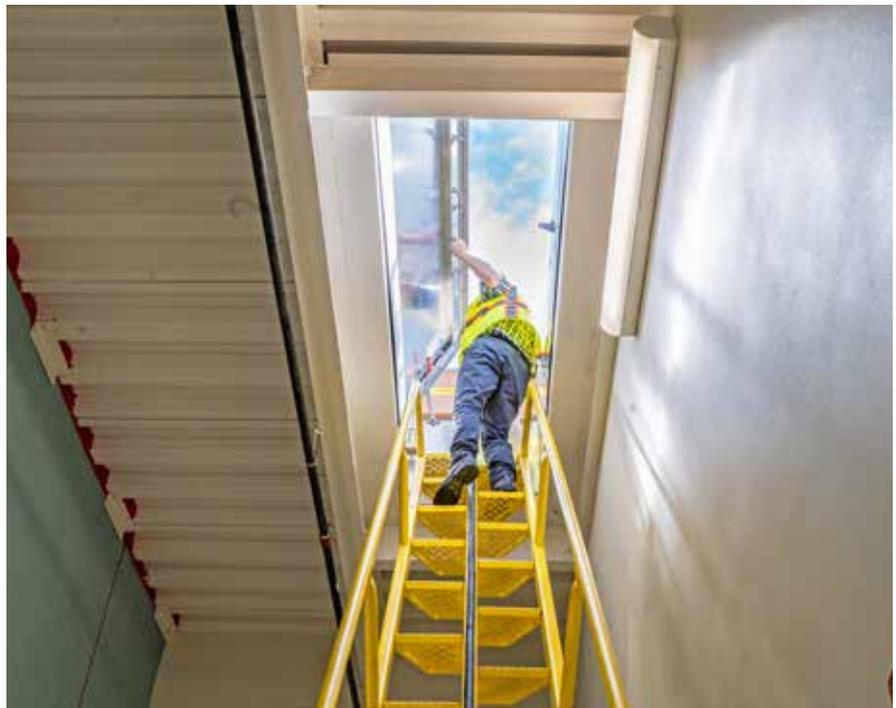
The hospital had been in the planning stages for more than a decade. It was a badly needed upgrade for the community, and the hospital. Adventist HealthCare began with the founding of Washington Adventist Hospital by the Seventh-day Adventist Church in 1907.

"There's a lot of momentum," Fosselman says. "The hospital is another piece in the puzzle in showing the community that the government cares about the East side of the county. It's hammering home that the county is trying to change the image of White Oak." **HC**



The roof hatches allow access so that the generators and other equipment can be removed.

Photo credit: LNJ Designs Photo



Because of the unique slope of the site, roof hatches were deemed the best access solution for removing large equipment.

Photo credit: LNJ Designs Photo

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