SHERMAN HOSPITAL REPLACEMENT CAMPUS

ELGIN, ILLINOIS

The Walsh Group, Ltd. is a 110–year old, family owned business in its fourth generation of leadership providing general contracting, construction management and design–build services. The Chicago–based company maintains a national presence within the industry through thirteen regional offices. The Walsh Group provides services through the operations of two subsidiaries: Walsh Construction Company and Archer Western Contractors, Ltd. The Walsh Group is consistently listed among the nation's Top 20 Contractors in ENR's Top 400.

This replacement hospital will include a six-story Patient Tower, a two-story Diagnostic and Treatment Center, Cancer Center and Emergency Department totaling 645,273 SF with 255 private patient beds and appropriate services. One of the unique features of this project is the fifteen acre geothermal lake that will be used to heat and cool the facility in addition to being an aesthetic feature. The total project site is 154 acres.

CHOICE HEALTHCARE

We endeavor to discover quality improvements in the Healthcare delivery environment while consistently implementing the tried, tested, and proven solutions that sever to:

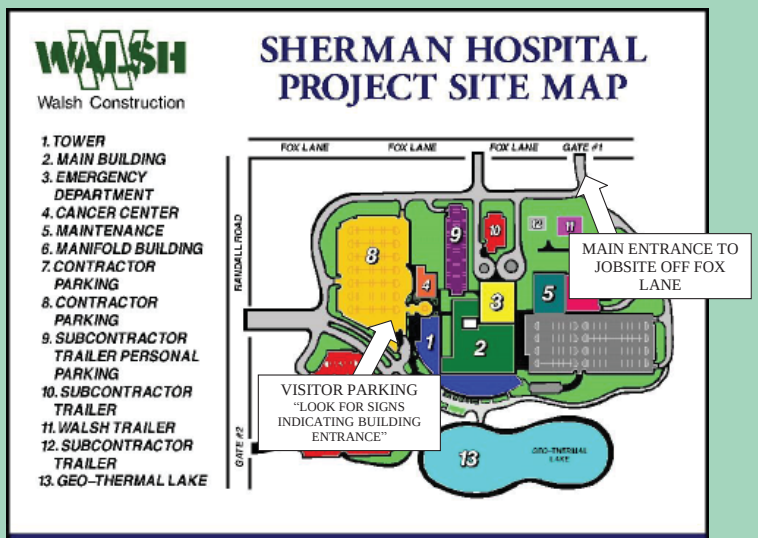
- Enhance Operational Efficiency
- Compel Staff Satisfaction
- Exercise Good Stewardship of all Resources
- Conserve Capital
- Reduce Medical Error and Hospital Acquired Infection

PROVEN EXPERIENCE

The Walsh Group has recently completed, or is in progress on, many healthcare projects throughout the Midwest. Last year we ranked as the 5th largest Healthcare General Contractor by Modern Healthcare Magazine.

DRIVING DIRECTIONS FROM CHICAGO - 2325 FOX LANE - ELGIN, ILLINOIS

- I-90 W/I-94 W/KENNEDY EXPY W
- Keep LEFT to take I-90 W/JANE ADDAMS MEMORIAL TOLLWAY via EXIT 43B toward O'HARE-ROCKFORD (Portions toll)
- Take the RANDALL RD exit
- Merge onto CR-34 S/N RANDALL RD via the ramp on the LEFT toward ELGIN
- Turn LEFT onto FOX Lane
- End at 2325 FOX Lane



GEOTHERMAL A GO-GO

Construction at Sherman Health's replacement hospital nears final stages

Nearly a year after construction began on the country's second geothermal HVAC hospital project at Sherman Health's replacement facility in Elgin, Ill., the project is nearing completion.

Mechanical, Inc., the contractor tasked with building the system, faced several challenges during construction, but perhaps the biggest hurdle was tackling a project that had only been completed once before at a hospital.

"One of the biggest challenges we encountered with this project," said Selena Worster, Mechanical, Inc. project manager for the geothermal lake, "was the fact that we'd never installed a geothermal lake loop system before. So we consulted Loop Group, the Fort Wayne, Ind., manufacturer of the heat exchanger components, and they provided us with guidance on how they have installed systems. Our field crew applied that information to this project — it was a pretty steep learning curve for the first three or four days." >>

From left: > **Plumbers lift** the 2 inch HDPE piping onto the manifold room floor, where it will be trimmed and fitted with a flange, then connected to the corresponding 2 inch steel drop. > **The Sherman Replacement Hospital** "Tree of Life" entrance as it looked, in progress, in July 2008. > **Plumbers connect** the ¾ inch heat exchanger coils to the header. > **In this rooftop view** of the geothermal lake, the manifold room is on the right and the rafts are in the water on the left. The visible piping is going to a heat exchanger that has not yet been sunk into the lake.

Another contractor put into place a natural clay liner for the lake, which filled with rainwater. Water and methanol bearing coils of piping, or heat exchanger rafts, then needed to be stationed at the lake's floor. The heat exchangers are 31 foot by 8 foot PVC frames, each holding 14 coils of ¾ inch tubing. The installation of the heat exchangers into the lake began in Spring 2008 and was completed in Summer 2008.

Because of the clay liner which keeps the water level from sinking too low, 'wet' installation of the geothermal lake loop system was necessary.

"Lowering the heat exchangers into the lake had essentially no impact on the clay liner," she said. "The liner covers the entire bottom and sides of the lake."

Once the project was underway, a new challenge emerged.

"We were working on a windy site," Worster said. "We used powerboats to pull the heat exchanger rafts out into the lake. Once the rafts were in their positions, the exchangers were filled with fluid, causing them to sink to the floor of the lake. But the rafts were bigger than the boats, so when the wind caught them as they were being transported, the greater mass of the rafts would start pulling the boats. We soon found that we needed two boats to control each raft."

The heat exchangers are supplied with fluid through supply lines of 2 inch tubing which leads to a building called the manifold room. Here, four pumps circulate the fluid through the system.

"The manifold room is where fluid from the heat exchangers in the lake is transferred to the main 24 inch supply and pumped out to the main mechanical room before being sent to the rest of the building." Worster said. "Basically, energy from the lake is transferred to either heat or cool the building, depending on the time of the year."

The manifold room has a glass wall so that visitors can see what is going on inside.

The system's specialized design allows fluid from a warm room to be circulated to areas that need heating. Should the system ever fail for any reason, back-up boilers are available to heat the loop system's fluids. The emergency room and surgical suites will employ a traditional heating and cooling system, since they require cooler temperatures.

From left: > **A plumber** guides the geothermal heat exchanger raft as it is being set into the lake. > **This 2 inch HDPE piping** leads from the manifold room out to the heat exchangers at the bottom of the lake. > **Inside the manifold** room are the heat exchanger supply and return drops. > **A boat pulls** the heat exchanger out into the lake.

The hospital is still under construction and scheduled to be completed in late 2009. The geothermal system will not be turned on until Spring 2009, Worster said, but testing of the lake loop system has already taken place.

"We've pressure-tested the heat exchangers and piping in the lake to make sure there aren't any leaks," she said. "If a leak ever occurred, the anti-freeze solution in the piping would have minimal impact on the environment. Any leakage would be minimal because the pressure gauges would immediately indicate a loss in pressure. Each heat exchanger has the ability to be floated back up to the surface for repairs."

Worster also said the geothermal lake project offered some safety challenges.

"Because we were working on water, the crew needed special safety training," she said. "Also, we had to abide by Mother Nature. If any lightning was spotted, the workers had to get out of the lake."

Worster added that she was impressed by dedication of the workers of United Association Plumbers & Pipefitters Local 501, who took it upon themselves to learn more about the technology involved in this project.

"They took classes on geothermal heat pump systems at the Local 501 hall," she said. "They were interested and they wanted to learn more. They would work a full day outside and then go to class after-hours."

When the lake is finally completed, Worster said, it will be stocked with fish.

"It will truly be a natural ecosystem with fish and native plants," she said.

Worster sees this project as the beginning of a greener future for the Midwest, and ultimately, the nation.

"More and more businesses are embracing green building," she said. "Hopefully this project will inspire other businesses to pursue their own green solutions." ■

Sherman Health replacement hospital facts:

Location: Elgin, Ill.
Cost: $310 million
Contractor:
Walsh Construction Co., *construction manager*
Mechanical, Inc., *geothermal HVAC contractor*
KJWW, *engineering*
Lake: 15 acres, 17 feet deep
Completion: Testing on geothermal system in Spring 2009, facility in late 2009