

By John Fulmer and Penny Colston

Abbott Helps Aultman

Aultman Hospital in Canton, Ohio, was bursting at the seams. The administration planned to cure the problem with an expansion, a major operation that would increase the hospital's one-million-square foot facility by one-third.

Recently, the hospital has seen a dramatic increase in patients. So much so that the expansion includes 124 new inpatient rooms and will free up space for 105 rooms in the old building. Aultman vice president of engineering, Ed Friedl, said the expansion was necessary as the hospital's resources are now stretched far beyond capacity.

"We see about 75,000 visits a year and it continues to grow," Friedl said. "Our current facility was built for 45,000 visits."

In June 1999, Friedl said Aultman started looking at some of the key specialty programs, some of their centers of excellence, and began making decisions on how to use their new square footage to accommodate the anticipated growth of both inpatient and outpatient services.

"Quite frankly, a couple of them were outgrowing their space. We know we needed to grow and had to figure out which programs made sense to expand into that new facility," he said.

The expansion freed up 175,000 square feet in the existing building that will be used for future renovation. The administration undertook a lengthy evaluation and benchmarked a number of different hospitals, did a lot of volume and market studies, and came up with their current plan, which they called "Aultman 2010."

Aultman 2010 had a major stumbling block. The design hospital officials thought would work best involved connecting the expansion and the main campus's Emergency/Trauma Center entrance with a new lobby. To do that, the city would have to permanently close off Sixth Street, one of Canton's main east-west thoroughfares. The negotiations were lengthy and delicate, but in the end city officials decided on the closure.

"That took quite a long time to accomplish. Once that was done, it opened the door for us to expand our building even further, so we actually had to redesign [the original expansion plans]," Friedl said.

Abbott Electric wins the job

Canton, situated 50 miles southeast of Cleveland, is home to the Pro Football Hall of Fame and birthplace of Hoover vacuum cleaners. For years, this city of about 80,000 was sustained by heavy industry, mainly steelmaking and manu-

facturing. Timken Roller Bearing is still the area's largest employer, but Aultman comes in second with more than 4,000 employees, an indication of how important health-care has become to the Canton area's economy and its related construction is to local contractors.

When the administration began the bidding process for the 338,000-square-foot expansion, there were only two local electrical contractors who could handle the project's scope and complexity. Abbott Electric turned in the low bid for heavy electrical construction. Though outbid on some IBS systems, Abbott won the nurse-call systems and fire-alarm setup, a Notifier fully addressable system with ceiling-mounted speakers and paging capabilities.

Abbott Electric has a history of hospital projects, including a prior Aultman expansion, but tackling the new addition was certain to be a challenge. The Canton contractor has completed retrofits at three area hospitals, but the Aultman job was a whole new ballgame.

"This is by far the largest project that Abbott Electric has undertaken in its history. The project has many aspects which are similar to hospital projects that we have done in the past; it is just a larger scope of the same general type of work," said Mike Abbott, the firm's president. "It is also 99 percent new construction work, whereas the other projects incorporated more retrofitting and renovation of existing areas along with the new work that was done."

Abbott Electric, which went into business in 1978, does all types of commercial, residential and institutional construction, including maintenance and engineering, and has a work force of 60 to 100 journeymen.

According to the company's Web site, it has "the capability to increase manpower on demand," which is exactly what happened on the Aultman project as additional electricians were hired out of International Brotherhood of Electrical Workers (IBEW) Local 540.

Abbott's portion of the contract for the addition to the

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A computer model of the finished expansion

112-year-old, 682-bed teaching hospital came to \$7.5 million. The contractor started on the job in the spring of 2004 and is scheduled to finish the job in spring 2006.

Working on four floors

The four-story addition included a basement with a separate main mechanical and electrical room. The Aultman Web site describes the first three floors of the new building as “a hospital within a hospital.” It has a wide array of services that had to be fed with voltages that range from 24 to 12,470 volts.

For instance, the first floor housed the new emergency rooms on the north end. The south side is home to related X-ray, computed tomography (CT), electrophysiology (EP) labs and four heart catheter labs. The south end also has outpatient heart exam rooms along with a new lobby main entrance. The radiographic rooms and catheter labs all have floor, wall and ceiling duct for their specific equipment.

“A big challenge in these labs was that the underground and the



Aultman Hospital during construction

in-slab conduits had to be run in conduit with a 3½-inch outside diameter into 3½-inch metal stud frames,” project manager Bill Groh said. “Obviously there was no margin for error whatsoever.”

The second floor houses the new open-heart surgery center with four operating rooms, step-down rooms and intensive-care units. The isolation panels are wired with XHHW wire. The aluminum-alloy conductor in XHHW is insulated with cross-linked polyethylene to help resist heat and moisture. It is also designed to eliminate any stray current in critical environments such as operating rooms, Groh said. The third floor has 56 coronary care patient rooms along with support rooms and unassigned space.

The fourth floor contains the new maternity unit and its three new C-section operating rooms. Abbott likes to tell people he had a special interest in getting the job done early since his wife is expecting their first child two months before the new wing is scheduled to open. Thirty-eight labor, delivery, recovery and postpartum patient rooms occupy the majority of the floor’s perimeter, along with a new 25-bed neonatal intensive-care unit. These obstetrics

CONSTRUCTION DETAILS

1ST FLOOR

- ▶ 48 universal treatment rooms, including five pediatric rooms with separate waiting and entry
- ▶ Three trauma rooms
- ▶ Three specialty rooms
- ▶ Two general radiology rooms and one CT room
- ▶ Heart catheter labs
- Four catheter labs
- One EP lab
- One shelled lab
- ▶ Heart noninvasive specialty
 - Three stress labs
 - Four gamma scans
 - One vascular lab
- ▶ 18 heart same-day patient rooms

2ND FLOOR

- ▶ Four open-heart rooms
- ▶ 14 CSICU beds
- ▶ 16 heart step-down beds
- ▶ Two physician suites
- ▶ Satellite central processing
- ▶ Shell for expansion

3RD FLOOR

- ▶ 56 universal heart rooms

- ▶ Cardiac rehab
- ▶ Shell for expansion

4TH FLOOR

- ▶ Six triage rooms
- ▶ Eight ante-partum rooms
- ▶ 30 LDRP rooms
- ▶ Three C-section rooms
- ▶ 25 private NICU rooms

A sketch of the finished Aultman Hospital expansion project



facilities will enable patients to keep the same room from labor through the postpartum period. The new neonatal intensive care unit will feature private rooms for each tiny patient.

Abbott had five crews working on this project, each made up of four to six men with a crew on each floor, including the basement.

“Each floor is approximately the length and width of a football field,” Abbott said. “The only way to coordinate a project of this size was to put a foreman on each floor.”

Field superintendent Bill Woronka played an important role in organizing manpower and tools for the job, and Abbott’s general foreman, Frank Silla, coordinated the work on all floors. Groh called his contribution “vital.”

“He made my job a heck of a lot easier, knowing that I had a leader on the job site of his ability,” Groh said.

Jim Abbott, who is Abbott’s CEO, Mike’s father and governor of the National Electrical Contractors Association’s (NECA) North Central Ohio chapter, said that hospitals seek them out because of their reputation and resources.

He also gave a lot of credit to Silla for keeping the project on an even keel and coordinating activity on all floors.

“It takes a certain type of company and a certain type of foreman to handle this type of project,” Jim Abbott said. “They have to be very well-organized individuals.”

Downstairs and on the roof

Much of the heavy lifting took place in the basement. Mike Abbott said the main service consists of two 5,000-amp, 277/480-volt substations fed by a 600-amp parallel 12.47-kilovolt (kV) primary from American Electric Power coming from two different substations. The main service switches are the east primary, the west secondary and one for the fire pump.

“The medium-voltage switchgear is currently set up so that if primary service is lost, secondary power is automatically transferred,” Mike Abbott said. “The services are backed up with two 1,750-kilowatt (kW) generators.”

During planning, the hospital administration talked about installing an uninterruptible supply system (UPS) into the main service but did not make it part of the bid. During construction, they decided to go with a UPS and selected Abbott for the job.

They installed two 150-kVA Caterpillar flywheel-style systems that feed two 600-amp distribution panels and 10 branch-circuit panels.

The east primary cable installation proved to be difficult. The feed was 800 feet long and had parallel 4/0 15-volt cable in the same conduit.

“So we had eight 4/0 15 kV cables in a 5-inch conduit going 800 feet,” Mike Abbott said.

Groh said the feed was all underground and its installation was

done below existing roads and with existing duct bank.

“It went through two manholes, so the rigging and the pulling was a challenge. We had to make some 90-degree turns in the manholes,” Groh said. “But we did rig it up and made it in one pull from one end to the other.”

Installing 1,400 feet of 2,000- and 5,000-amp bus duct was yet another interesting test of Abbott’s skill. The 10-foot lengths of 5,000-amp bus weigh approximately 750 pounds each and were installed 10 feet above the floor in a sloped hallway, making rigging and material handling difficult. Groh said the changing elevations and fittings made it a bear to install.

“It was all hung overhead so it was a challenge, no doubt about it,” Groh said.

One of the more unusual projects took place on the roof. Space restrictions on the ground led to Abbott wiring up an aeronautical landing strip and a special suite for pilots.

“On the fourth floor roof of this facility there’s also a helipad that’s big enough for two helicopters to sit on and that was quite an installation,” Groh said. “The fuel system had to be wired, all the aviation lights. We had to put the wind cone up.”

“There’s de-icing up there obviously and a fire-suppression system that required a pump. They have a pilot’s penthouse right on the roof. They come right off the ramp into the penthouse and straight into the elevators.”

On this project, Abbott was up to the challenge, from penthouse to basement.

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ABBOTT ELECTRIC—Electrical contractor

HASENSTAB ARCHITECTS INC.—Architect

SCHEESER BUCKLEY MAYFIELD INC.—Engineers

MIKE THORSON—Structural engineer

HAMMOND CONSTRUCTION—Construction manager