BY RUSS MUNYAN

The Construction

PREMIER ELECTRICAL SERVICES MASTERS COORDINATION AND PLANNING AT BOTHELL HIGH SCHOOL

If you ask people in the construction industry to list what they like about their work, a common answer is that each project is different. That was definitely the case for the Premier Electrical Services LLC crew that worked on the Bothell High School project in Bothell, Wash.

"Coordination and planning were the biggest parts of this job," said Rod Yanney, owner of Premier Electric, Ferndale, Wash. "They're part of why it was so unique."

Operated by the Northshore School District, Bothell High School first opened more than 100 years ago. The most recent academic building had been built in 1953. In order to accommodate the educational needs of its 1,700 students, the multibuilding campus underwent a nine-year renovation and reconstruction project that ended in September 2008.

In the first two phases, which were completed in 2000 and 2005, 121,000 square feet of new space was constructed, including science, math, drama and music classrooms; a performing arts center; and a gymnasium, all at a cost of $26.1 million.

"The phases went from north to south across the campus," Yanney said. "The third phase, on the far south end of the campus, was the last and the biggest one."

The third phase of the project involved construction of an 87,300-square-foot academic building with classrooms, a modern cafeteria and kitchen, school offices, and a large commons area for $35 million.

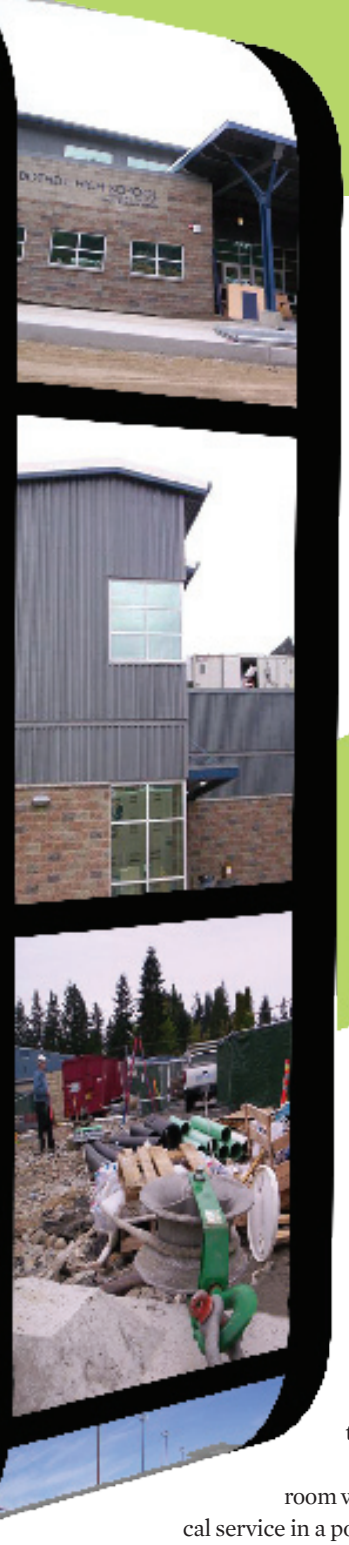
Electrical heart surgery

Premier Electric was the electrical contractor for the third phase, which began in June 2007, the first day of summer vacation for the students.

"There wasn't any time to waste," Yanney said. "Before the students returned in the fall, we had to demo the northern half of the pre-existing academic building and get the remaining southern half operational for that coming school year."

Following the northern-half demolition and while other trades sealed off the southern-half for safe occupation, Premier Electric set about making operational the remaining electrical and low-voltage systems, all of which had been cut in half.

The existing electrical room and the low-voltage



PREMIER ELECTRICAL / BONOTOM STUDIO

Cycle

systems main distribution frame (MDF) had both been located in the northern half of the building. It had also included the old school office, which was the head-end room for the building-wide sound and clock systems, as well as an intermediate distribution frame (IDF) for the telecommunications system.

Before the end of the summer vacation, Premier Electric crews located and identified all of the existing electrical and low-voltage cables and reconnected them to temporary electrical, MDF and head-end rooms.

"We built the temporary electrical room with 3,000 amps of underground electrical service in a portable storage container," Yanney said.

His crews then rerouted all of the old feeders to either the temporary electrical room or to another, pre-existing (non-demolished) electrical room.

"Relocating that electrical room was like heart surgery from an electrical perspective. It was the critical link in the whole summer's construction, and both the general contractor and the school district knew it," Yanney said. "The remaining low-voltage systems also had to be temporarily interconnected to the rest of the campus. We had temporary poles and guy wires in place to support all of those systems."

The crews performed all disconnections and reconnections without accurate, or even existing as-builts from the original construction of and subsequent work in the 1953 school.

"There were a few outlets that we missed that teachers discovered when they came back," Yanney said, "but for the most part, it all came off."

Of course, that intense beginning only gave way to the main focus of the project, constructing the two-story academic building on the newly cleared site.

"That part was really a pretty traditional school construction project," Yanney said. "The main electrical portion was a basic catalog installation."

Company crews installed 4,000 amps of electrical service in the new building and the electrical distribution system.

All the bells and whistles

But it was the low-voltage sections that required the greatest coordination and intentional management, Yanney said.

"Building schools is not like it was six or eight years ago when you could just install some conduit and get a teledata group to come and do the low-voltage work," he said. "There is more technology in schools today than any jobs we do. More than offices, industry, retail or anything else, almost approaching hospital complexity. These schools are just packed with technology."

For starters, Premier Electric installed a Leviton low-voltage lighting control system that interfaces with the building management system for control of the interior pathway and exterior lighting. It also installed a Lutron Electronics dimming system for the school commons area for daytime video presentations, evening receptions and more.

"We tied the dimming board into the emergency power system, so that the emergency lighting system will override the dimmer settings and provide full egress lighting in case of a power outage," said Eric Shell, Premier Electric's Bothell High School project manager, adding that it isn't an easy specification. "Architects don't like to put the old 'bug-eye' emergency lighting fixtures on the walls of beautiful new buildings like this."

For the building's other low-voltage needs, Premier Electric relied heavily on five specialty subcontractors, one for each of the low-voltage sections in its contract: telecommunications, fire alarm, security, CATV and audiovisual, and intercom/clock.

"It's really important that you advocate for your subs, that you understand what they need and clear a path for them," Shell said. "When they do well, everyone wins"

Avid Technologies from Seattle installed the telecommunications system. The Ortronics/Berk-Tek Cat 5e HyperPlus solution services 836 user locations. Avid installed both copper and fiber outside connectivity backbones to the MDF as well as copper and fiber optic backbones to the new IDF.

For the security system, Premier Electric installed the cabling, door contacts and motion sensors, after which Johnson Controls tested and certified the system. Similarly, Premier Electric installed the cabling and devices for the fire alarm system, and then partnered with SimplexGrinnell to test and certify it.

Premier Electric subcontracted to Skyline Communications of Mukilteo, Wash., for the CATV and audiovisual systems. For building-wide CATV distribution, Skyline used RG11 backbones and RG6 horizontal distribution cables.

The audiovisual system called for each classroom to have its own separate video projection system. Skyline recommended and provided RapidRun, a proprietary modular interconnect system designed for A/V and VGA applications.

"It uses cables that are preterminated with 'barrel connectors.' They are easy to pull through conduit and connect to the pigtail lead on the A/V device, which mounts onto a standard mud ring," Shell said.

On the intercom and clock section, Premier Electric partnered with Electrocom Sound and Communication systems of Lynnwood, Wash. It used devices from multiple manufacturers, including Quam-Nichols Co. for paging speakers and Lowell Manufacturing for clock/speaker combination devices. It used Rauland-Borg Corp. for analog and digital clocks and for an indoor LED marquee display that displays messages to students throughout each school day.

One major task left

Once the new academic building was complete, Premier Electric still had to connect it with the rest of the campus in the relatively small time frame of summer 2008.

All of the low-voltage system trunk lines had to be connected, and the remaining half of the old high school building and its temporary systems had to be demolished and cleared so that a new parking lot with electrical lighting could go in by the end of September. Again, the Premier Electric crews had a lot of work to do and not much time to do it.

But as new life trickled into the facility, its spaces were ready on time to receive it. In April and May, the new library began to be stocked and the new kitchen came online. Administrators and office staff began occupying office spaces in July, and in August, the teachers moved in.

Yanney credits his company's experience and his quality team for those smooth transitions, from his key field foreman to his electricians.

"You have to specialize if you're going to successfully do schools," he said. "Doing a school is not standard electrical construction. Schools are doubly complex in that there are mandated energy conservation, lighting and emergency codes all to meet that can complicate and compete with teachers' needs in the classroom, and so, an electrical contractor must anticipate the problems that the owner and the electrical engineer did not. We have the front line experience, so we're the ones who must help the owners' reps understand what they're getting in the field."

Premier Electric did just that at Bothell High School. For the first time in nearly a decade, the school's students enjoy a construction-free campus and a beautiful new building that features top-flight technology to facilitate their educations.

As the co-principals Heather Miller and Bob Stewart wrote to the school's guests at the reopening reception in November 2008, "We are excited that you have come to see what our students see every day—a wonderful new facility that enhances their learning opportunities. We are happy that the nine years of construction have ended, and the classes of 2009, 2010 and 2011 are here to enjoy the finished product." ■

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KEY PLAYERS

NORTHSHORE SCHOOL DISTRICT—Owner

PREMIER ELECTRICAL SERVICES LLC—Electrical contractor

DYKEMAN—Architect

TRAVIS, FITZMAURICE ASSOCIATES
Electrical engineer

CORNERSTONE GENERAL CONTRACTORS—
General contractor/
Construction manager

KEY SUPPLIERS

BERK-TEK
Telecommunications cable

BOSCH SECURITY SYSTEMS
Door contacts and motion sensors

CONSOLIDATED ELECTRICAL DISTRIBUTORS
Power distribution equipment

GENERAL ELECTRIC
Power distribution equipment

LEVITON
Low-voltage lighting control system

LOWELL MANUFACTURING
Clock/speaker devices

LUTRON ELECTRONICS
Dimming system

ORTRONICS/LEGRAND
Telecommunications devices

PACIFIC POWER PRODUCTS
Emergency generator supplier

PLATT ELECTRICAL SUPPLY
Electrical supplies distributor

QUAM-NICHOLS CO.
Paging speakers

RAPIDRUN
Audio cabling system

RAULAND-BORG CORP.
Analog and digital clocks

WESCO SUPPLY
Lighting materials