

Metal Architecture

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Education— A Learning Experience for All

By Marge
O'Connor

Schools are getting older while budgets are getting smaller, forcing architects to embrace a creative and adaptive reuse of existing space.



□ **Reducing costs and energy use is a key issue** for the 126,000 elementary and secondary, public and private schools in the United States. The cost of heating and cooling buildings, providing water, electricity, and other energy and utility functions account for one-third of the total educational facility operating costs. Statistics from *American School and University* magazine show the average cost of energy and utilities per K though 12 student is on the rise. It was \$233.05 in 2005 and shot up to \$297.67 in 2006. Add the energy costs for higher education students and the overall cost per student jumps to \$712.

Generally, tax dollars going to school construction are declining, leaving many school districts struggling to find resources to meet their facility needs. But there are some exceptions. Chad Floyd, FAIA, partner at Centerbrook Architects, Centerbrook, Conn., indicated the private school market, particularly in secondary through the university level, is very busy.

In Ohio, a state with 1.82 million students, public education is the busiest construction segment at the moment. "A lot of states just don't have money to build schools, but we're spending about \$3 million every day on it. Ohio is unique because we're using the money from a settlement agreement with tobacco companies that pays the state annually over a period of time. We sold the rights to that money to bond holders, so that money is coming from the capital budget of the state directly into rebuilding K to 12 schools. We've been

working on rebuilding our schools since 1997 and now increased the rate by 1.5 times, spending \$4.2 billion over three years," said Franklin Brown, a planning director for Ohio School Facilities Commission, headquartered in Columbus.

He added that California is also spending considerable amounts on school construction, at the rate of \$9 billion a year to meet the needs of the state's 10 million students.

For schools with limited budgets, however, architects can help. "While new schools have to be designed for easy expansion to accommodate population growth, schools are generally getting older while budgets are getting smaller, forcing architects to embrace a creative and adaptive reuse of existing space. A phased replacement—in a seamless transition—of older schools and campus buildings is paramount, integrating new construction technologies and bringing future facilities up to current codes and regulations," said Adolfo Cotilla, AIA, head of ACAI Associates Inc., Fort Lauderdale, Fla.

Sustainable design is prominent in the school market and can also help in other ways. "During the RFQ process, green or sustainable architecture is probably the single most asked about aspect. We use this as an opportunity to educate the client about what works and what doesn't work in terms of sustainable design, as well as the true cost of documenting the LEED process. A spin-off of the green trend is to look at how architecture and green systems can contribute to the education of the student. For example, we designed a series of green

components into a high school project in tandem with a green exhibit that will be used by the science department to monitor those green components to determine such things as the energy generated by the sun and the wind, the amount of rainwater collected by both a traditional roof and a vegetated roof, the amount of transmission through clear and various types of tinted and low-E glazing, and the amount of heat generated from the earth's crust via a geothermal system," noted Richard P. Cozzi, AIA, REFP, principal of Arcon Associates Inc., Lombard, Ill.

Green building also is prominent in the school construction market. The Ohio School Facilities Commission, for example, made a decision to build all schools receiving state funds to meet LEED Silver certification, which will be more than 250 schools in the next three years.

For college and university students, green architecture is top of the mind. "Students are involved in green and excited about it. They create a culture on campus about it that actually leads faculty and parents and raises the conscience and excitement about conserving resources," Floyd said, adding that most of his firm's educational buildings now are being or will be LEED certified.

Green building strategies also easily integrate with other design aspects. "Tomorrow's schools will be designed not only with ever-smarter classrooms but with a keen focus on acting responsibly with regard to economic and environmental sustainability. Wherever possible, conscientious architects must integrate green design elements into tomorrow's schools and classrooms. It's the right way to go," Cotilla added.

The increased interest in green building is a good fit for metal. Metal roofs offer more energy efficiency, lower maintenance and better protection in severe weather conditions. Metal buildings can speed up the construction cycle, and the recycled content and recyclability of metal helps reduce landfill and conserve resources.

Plus, metal looks good. "In this market we use metal a lot for roofs. The standing-seam roof is an excellent choice because it has longevity and a snappy appearance that fits into the tradition of campus architecture," Floyd explained.

Whether it is a metal structure, roof systems, wall panels or decorative applications, metal is quite at home in the education market, as evidenced by the many interesting and great looking projects featured on the following pages.