



Masonry Construction Creates Durability and Permanence in Four Schools

Case Study: Warsaw Community Schools, Warsaw, Indiana

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When a northern Indiana school district moved forward with a significant investment in upgrading four elementary schools, the Architects used masonry construction to provide long-term performance for the taxpayers, and to create a sense of permanence and community pride for generations to come.

Creating the plan

In early 2007, the Board of the Warsaw Community Schools decided that it was time to take a closer look at how well the district's facilities met the needs of the area's children. The 7,000-student district's buildings ran the gamut from fairly new schools to structures from the early part of the 20th century, and the Board wanted to develop a strategic master plan to identify needs and recommendations for improvements. Cost was a major consideration, but there were also concerns in the community about inequities in the quality and resources of specific buildings.

That spring, the Board retained Kovert Hawkins Architects to study the facilities, work with staff and community residents to understand the needs, and create that master plan. The firm's project team began an exhaustive review of the facilities and the operations each housed, and then shared their initial findings with the community through a series of meetings. Those sessions also served as opportunities to listen to community concerns about school adequacy.

Next, Kovert Hawkins met with faculty, staff, and administrative team members to better define the challenges faced at each school and the inherent deficiencies in the buildings' designs. Based upon all the information they had gathered and reviewed, the project team presented three options to the School Board, each incorporating a cost analysis and the financial impacts.

The Board chose an option that included the immediate replacement of Leesburg and Madison Elementary Schools, reopening and renovating the closed Claypool Elementary School, and renovating and adding on to Jefferson Elementary School. Subsequent phases of the option also called for renovations and additions at the four remaining elementary schools, both middle schools, and eventually at Warsaw Community High School.

Four school projects

This article will focus on the four elementary school buildings that were included in the first phase of the option selected by the Board. All four were designed and constructed simultaneously. Each presented unique challenges to the team, but the Architects determined that masonry construction delivered the most effective solutions in all cases.

At Leesburg and Madison Elementary Schools, new buildings replaced antiquated facilities. According to team leader and Project Architect James Lake, AIA, the buildings are essentially identical. "We developed a prototype design which served as the 'ideal' elementary school for Warsaw's needs," he explains.

A small school in Claypool had been closed for several years and was slated for sale along with two other shuttered buildings. “Claypool was the first community we visited, and when we arrived, there were 100 people there,” Lake recalls. “The district was prepared to sell, and we asked them to wait. We told them that we couldn’t imagine a plan that didn’t include this building. People don’t realize how important a school is to their community until it’s gone.” The team converted the outdated single-section building into a three-section facility that includes a new two-story academic building.

Site and budget challenges

The most challenging project was the renovation of Jefferson Elementary, a small building that was completely surrounded by Grace College in Winona Lake. The outdated two-section building was shoehorned between several college buildings and a water tower, leaving little room to move during the process. Adding to the challenge was the fact that the school would continue to be occupied throughout construction. “It was a logistical challenge from day one,” says Lake, “right down to simple matters such as figuring out where the contractors could park.” The new design replaced a 1950s-era single-story section with a two-story academic area, and added new kitchen, cafeteria, and stage spaces to the back of an earlier addition. “We demolished more than half of the existing building.”

Before construction began, the Indiana Department of Local Government Finance -- then charged with reviewing school construction projects -- demanded that Warsaw slash the project budget by 26 percent. That sent Lake’s team back to the design stage. “Fortunately, we were able to maintain the quality of the building without sacrificing quality of materials,” Lake recalls. “We were able to work within the revised budget, and actually delivered final costs that were equal to that of similar buildings that had been built with lower-quality materials.” Warsaw included some of the cancelled elements as alternates in the bid process, and the competitive construction market meant that they were able to restore all of them.

Masonry builds durability

Durability was a critical objective for the Kovert Hawkins team. Some of Warsaw’s previous buildings had unexpectedly short service lives before major components began to fail. That was one of several reasons Lake and his team opted for masonry construction at all four buildings. “We noticed that the newer facilities were comprised of stud construction, with much drywall interior and little masonry on the exterior,” Lake says. “That methodology generally provides a life expectancy of only 20 years before it requires major attention or substantial renovation. The buildings in the best condition were the older ones, which had been constructed with masonry block.” They also noted that the new facilities lacked essential storm and tornado shelter areas.

The Leesburg site presented another reason for choosing masonry. “There is no municipal water in Leesburg, and we were initially concerned that we wouldn’t be able to install a sprinkler system,” he explains. “We anticipated that we would have to look at the concept of compartmentalization to provide fire resistance without sprinklers, and masonry would have allowed us to do that.” In the end, the design included two wells and an underground storage tank to feed sprinklers.

“We believe in making our buildings last beyond the current generation,” Lake notes. “We always look out at least 50 years, and when you look at block, brick, and stone, you inherently get 50 years at a very reasonable cost. And you don’t need a warranty on brick, because it’s going to last.”

“Masonry also provides a sense of strength and longevity beyond its physical durability. There’s the inherent sturdiness and makeup of the material itself, along with the mass that provides sound deadening in interior hallways. You can’t do all that with metal wall panels or other materials.”

Different designs with similarities

Leesburg and Madison were both designed as single-story buildings. Load-bearing masonry walls are used through the entire exterior and in most interior corridors. The 85’ x 92’ gymnasiums employ free-spanning steel joists across 30’ tall load-bearing concrete block walls. “The block provided an extremely durable surface in the areas that receive the most abuse, and assured sufficient protection for storm-safe zones. It also allowed us to construct the spaces quickly, as the finished surfaces could be completed as the block was being installed.”

While Claypool and Jefferson were very different situations, the team took a similar design approach, using two-story academic buildings constructed of load-bearing exterior walls and interior corridor walls that were centered on each floor. “That allowed the exterior building shell to be constructed quickly, so the brick masons could work on the exterior while the block masons continued inside. The load-bearing corridor walls also formed the support for the second-floor framing. Once the second-floor steel joists were set, work commenced simultaneously on both the first and second levels of the addition.”

From an aesthetic standpoint, the designs echo the multi-story brick school buildings that dominated small-town Indiana for most of the 20th century. “We wanted to recall that history, and we believed that the only way to accomplish that was with block, brick, and stone,” Lake says. “We included stone on all the buildings, although we used it only on headers and sills at Jefferson, because that material really didn’t exist anywhere on the adjacent Grace College campus.”

The schools stand out as centerpieces of the community, with efficient and sturdy designs and no opulent elements. “We were also able to incorporate some additional masonry components to add character and an extra sense of arrival without adding a lot of extra cost,” Lake explains. “For example, we added some masonry seat walls, landscaping walls, entry gate walls, and monument signs, using materials we already had on the sites.”

“It’s more than building a new building,” he adds. “We’re there to make the community’s dreams come true. When the community gains a new school that just seems like it’s grounded in the community’s history, those dreams can be passed on to the next generation. Thanks to the durability of the materials, the school will still be there to serve them.”

KEY FACTS

Client: Warsaw Community Schools
Architect: Kovert Hawkins Architects

Leesburg Elementary School
Size: 98,916 sf on 34.89 acres
Current Enrollment: 496
Capacity: 800
Cost: \$12,152,150 (\$123/sf)
General and Masonry Contractor: Feters Construction, Inc.
Masonry Supplier: Masolite
Brick Supplier: Old Fort Building Supplies, Inc.

Brick: Yankee Hill Brick Company, Light Ironspot Smooth, utility size
Completed: August 2010

Madison Elementary School

Size: 98,916 sf on 20 acres

Current Enrollment: 535

Capacity: 800

Cost: \$12,354,650 (\$125/sf)

General and Masonry Contractor: Fetters Construction, Inc.

Masonry Supplier: Masolite

Brick Supplier: Old Fort Building Supplies, Inc.

Brick: Bowerston Brick Company, Dark Red Smooth Ironspot, utility size

Completed: August 2010

Claypool Elementary School

Size: 83,527 sf on 6.788 acres

Current Enrollment: 349

Capacity: 600

Cost: \$8,198,500 (\$98/sf)

General Contractor: Michael Kinder and Sons, Inc.

Masonry Contractor: A1 Choice Masonry

Masonry Supplier: Masolite

Brick Supplier: Old Fort Building Supplies, Inc.

Brick: Redland Brick, #74 Chestnut, utility size

Completed: June 2010

Jefferson Elementary School

Size: 82,304 sf on 5.862 acres

Current Enrollment: 503

Capacity: 600

Cost: \$8,182,500 (\$99/sf)

Contract Organization:

General Contractor: James S. Jackson Co., LLC

Masonry Contractor: Weigand Construction

Masonry Supplier: Masolite

Brick Supplier: Rose Brick & Materials, Inc.

Brick: Glen-Gery Corporation, Aberdeen, utility size

Completed: August 2010

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