



Quick Facts:

Project:

Tilden Elementary Center

Location:

Hamburg, Pa.

Type of Precast:

High Performance Wall Panels

Size:

75,000 sq. ft.

High Performance Wall Panels (load-bearing)

110,000 sq. ft. project

Architect:

AEM Architects, Inc.
Reading, Pa.

Engineer:

Multani Associates, Inc.
Reading, Pa.

General Contractor:

Labor, Inc.
Dillsburg, Pa.

Owner:

Hamburg Area School District
Hamburg, Pa.

Precast Company:

High Concrete Group LLC
Denver, Pa.

About High:

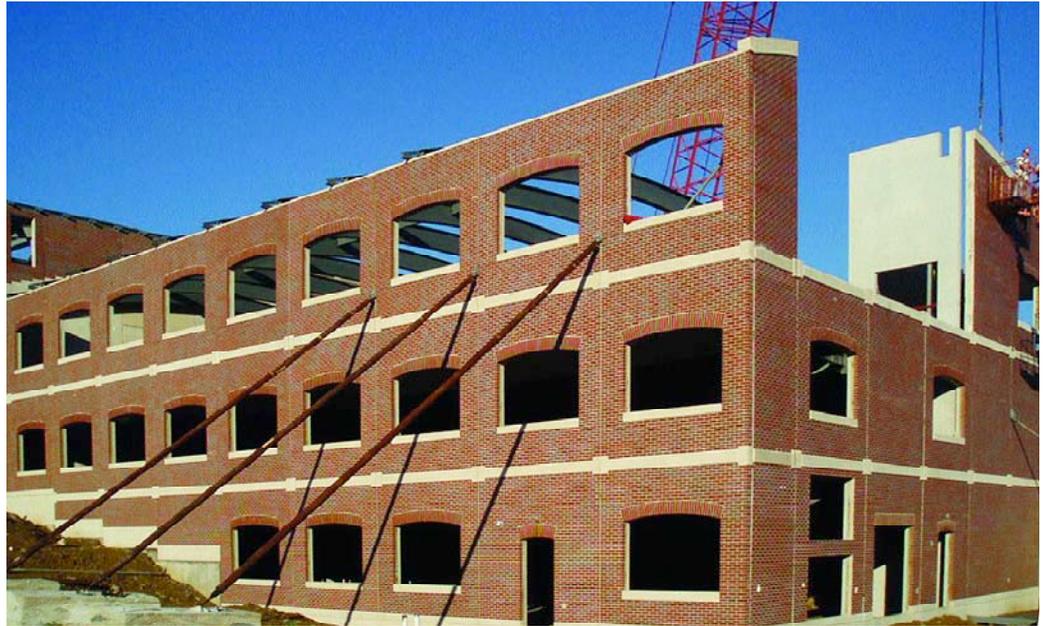
Building on nearly a century of experience and a firm commitment to innovative thinking and quality manufacturing, High Concrete Group LLC has become a nationally recognized leader in the design, manufacture, and installation of precast concrete products.



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Outstanding Thermal Performance Achieved with CarbonCast® Walls



Thermally efficient wall panels decrease the impact of the exterior environment on energy costs at Tilden Elementary School.

Amid skyrocketing energy costs and heightened public awareness of green construction practices, more building owners are seeking environmentally friendly solutions—but without incurring higher costs.

Tilden Elementary Center in Hamburg, Pa., is no exception. The school for kindergarten through fifth grade students will save on heating and cooling costs with innovative CarbonCast precast high performance insulated wall panels engineered, manufactured and erected by High Concrete Group.

Carbon fiber grid a key component

When first designing the structure, the project team considered a conventional block and brick cavity wall for the exterior. However, masonry ties create an energy-inefficient thermal conductance path. In addition, brick-and-block walls are often susceptible to mold and mildew issues—a problem school districts don't even want to utter let alone face.

High Concrete's 10"-thick precast exterior walls on the 110,000-square-foot project deliver solid state R-19 performance. They use three inches of continuous XPS insulation ("ci")* sandwiched between a 4" interior wythe and a 3" exterior wythe. C-GRID® carbon fiber shear grid connects

the two wythes. With relatively low thermal conductivity, the carbon fiber prevents thermal transfer, virtually eliminating hot and cold spots on the interior wall preserving comfort for students.

"With thermally efficient wall panels, the building will be much slower to cool down and warm up, meaning the exterior environment will have less impact on energy costs," said Phil Leinbach, architect, AEM Architects, Inc. "Because of the thermal mass of the panels, we were able to reduce the size and cost of the central HVAC plant."

The carbon fiber grid also creates 100 percent composite action, which enables the load-bearing walls to deliver structural support. Thermal efficiency and load-bearing performance combine to provide a lower-cost alternative to non-composite walls, which require a thicker inner wythe and thinner outer wythe resulting in more concrete and greater expense.

In addition to exceptional performance, the precast exterior provided aesthetic freedom. The building features a traditional brick facade composed of thin brick embedded in the panel face. "Thin brick can be somewhat tile-like in appearance," noted Leinbach, "but its >>

*("ci") continuous insulation as defined in ASHRAE Building Energy Code 90.1-2004.



advantage is in thinner, better performing walls. We were pleased with the traditional aesthetic it achieved when viewed from the curb."

Exposed precast banding and window sills impart the feel of limestone accents. A large, central cupola is the focal point of the building. Spring arched windows were created in the panels to emphasize the traditional look of the building.

The pre-curved steel featured on the exterior of the building is exposed inside, providing a unique touch. "The owner wanted sloped rather than flat roofs for drainage reasons," said Leinbach. "We proposed the curved beams as a way to preserve the building's aesthetics. As a design element they're distinctive because they're not native to the area. The curves help tie together the past with the present."

The interior of the precast walls was float-finished to complement the masonry walls throughout the building, and eliminate the dust and potential moisture issues associated with masonry.

Learning on the fast track

The project team lauded the fast enclosure time enabled by precast from High Concrete. The precast walls were fabricated while the structural steel was erected. Quick wall panel placement at a pace of six to eight panels a day expedited installation of the windows and roof. This allowed other contractors to conduct interior finishing in a dry, friendly environment conducive to quality. Conduits were cast directly into the walls, which streamlined the work of mechanical, electrical and plumbing trades and reduced change orders.

High's precast walls helped keep the project on schedule and under budget, both of which are critical for a public school. The project completion is expected in June 2008—in plenty of time for teachers to welcome students for the first day of school in fall 2008.

High is a founding member of AltusGroup, Inc., the first-ever consortium of precast concrete manufacturers, incorporated to make CarbonCast technology—and future innovations—available throughout North America.

High Concrete Group LLC is one of the nation's largest precasters, the top precast parking garage producer, and a leading producer of architectural panels. Its five Precast-Concrete-Institute-certified plants serve five of the nation's top 10 metropolitan areas and 13 states from Connecticut south to Virginia, west to Missouri and north to Wisconsin. Ranked 41st on ENR's Top 600 Specialty Contractors, High Concrete employs nearly 800 co-workers.



*Philip M. Leinbach, AIA, NCARB, CSI
is a principal with AEM Architects, Inc.*



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