

Clearview Elementary School

Hanover, PA



Team

Owner:

Hanover Public School District
Hanover, PA

Architect:

L. Robert Kimball & Associates
Ebensburg, PA

Engineer:

L. Robert Kimball & Associates
Ebensburg, PA

General Contractor:

Kamand Construction, Mechanicsburg, PA

Total Project Cost:

\$6035 million

Total Project Size:

43,450 sq ft

Photography:

L. Robert Kimball & Associates
Ebensburg, PA

STRUCTURAL FRAMING SYSTEM

School administrators at Clearview Elementary School in Hanover, Pennsylvania, wanted their new school to look just like any other school. But its design and construction were anything but typical.

The school incorporates a variety of sustainable-design techniques which allow the building to consume one-third less energy than a conventional structure, providing a substantial budget savings. The school achieved Gold certification in the Leadership in Energy & Environmental Design (LEED) program from the U.S. Green Building Council and became the first LEED-certified school in Pennsylvania.

UNIQUE DESIGN FEATURES

One of the key aids to achieving its energy-efficient, sustainable design was the use of insulating concrete forms (ICFs) to create the school's exterior structural walls. The forms consist of light-weight, interlocking foam panels stacked in the shape of the structure and enclosing the wall reinforcement. The ICFs are then filled with concrete to create solid walls with excellent thermal mass and structural strength. They also provide excellent absorption of sound and high durability, as well as elimination of mold risks and superior fire resistance. Other key features of the building include improved ventilation and super-efficient ground-source heat pumps and radiant-floor heating. An innovative reinforced concrete mix design was crucial to achieving the LEED certification. The concrete mixes incorporated a high ratio of slag cement and fly ash, replacing 40 percent of the Portland cement needed to achieve the proper compressive strength. The approach was so creative it also helped the school earn an Innovation Credit. The reinforced concrete also aided the school's receipt of all 10 available credits for Optimized Energy Performance. No special reinforcing steel was required in the concrete to achieve these goals.

Classrooms, hallways and even stairwells maximize the use of daylight due to the long, narrow design of the classroom wing, which allows light to penetrate to its core. This approach reduces the need for electrical lighting and promotes studying.

REASONS FOR CHOOSING REINFORCED CONCRETE

Approximately 40 percent of the building material, including the reinforced concrete, was manufactured locally, and about 75 percent (by cost) was manufactured with a high recycled content, again including the reinforced concrete. In all, the measures taken will save the school an estimate of about \$34,000 annually in HVAC costs.

Reinforced concrete walls helped the school achieve Gold certification from LEED.