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School balances thermal and energy efficiency with daylighting

The Roosevelt Elementary School in Elkhart, Indiana, gets high marks as one of the first new buildings in the state of Indiana to exceed upcoming changes to energy and building code requirements.

"Initially, we expected that the stricter energy requirements would force us to sacrifice the positive health effects of natural daylighting in favor of energy efficiency," explains Rick Boyd of [Fanning Howey Associates](#), architect for the Roosevelt School project. "We selected the new R-20 Kalwall®+ Nanogel® aerogel translucent skylights because they are the only insulated daylighting products able to meet both the design and energy criteria."

According to John Kabana of [Shaffner Heaney Associates](#), a distributor of Kalwall® products, "The building owners insisted that the new school meet the proposed new energy codes, even though the new regulations have yet to be adopted. The Kalwall® daylighting systems allowed them to create open, spacious classrooms that balance light and heat, a difficult task considering the new building envelope's R-value requirements."



Design Features

The school features skylights located throughout the building: in the library, auxiliary corridors and student dining areas, as well as over school entrances. There is one large skylight that measures 64 feet over the library, four pyramids measuring 16 feet, and another pyramid that is 12-foot long located in the corridor.

The source of the museum-quality daylight in the student dining area is one skylight gable (17 feet, 6 inches wide by 40 feet long). The main school entrance features a long gable measuring 36 feet by 32 feet. In addition, there are smaller gables located over the school's other three entrances measuring 16 feet by 8 feet long. Needless to say, light, heat and glare are not an issue in this educational facility.

Technical Specifications and Ergonomics

The glazing U-value performance is .05 for the interior area skylights and the Solar Heat Gain Coefficient (SHGC) is .12. "The energy benefits are very visible," said Tony Gianesi, Facility General Manager, Elkhart Community Schools. "Even on a cloudy day you can be in the space without turning on any lights. This is a real energy savings we experience everyday."

The [Kalwall+Nanogel daylighting system](#) also offers other ergonomic benefits such as greatly reduced sound transmission and spectrally correct diffuse light. "The height of the interior skylights is 64 feet, which can act as a sound tunnel," said Jim Satterwhite, Cabot Nanogel's Global Marketing Manager. "Fortunately, aerogel is a sound-absorbing material, which also reduces and reflects unwanted noise levels that can be quite deafening in a group of excited school children."

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