

SOUTH WARREN MIDDLE AND HIGH SCHOOL

Bowling Green, KY

Project Size: 332,000 square feet

Architect: Sherman Carter Barnhart

ICF System: Nudura

ICFs PROVIDE A SAFER PLACE TO LEARN

At the time of construction, South Warren was the largest K-12 school building in the state of Kentucky. Comprising 332,000 square feet, the building sits on an 85-acre site. Goals of the project included energy efficiency, speed of construction, student safety and "green" design principles.

01. Speedy Construction.

This was the first educational project anywhere to utilize ICF construction for the entire structural wall system of the building, both exterior and interior bearing walls. Construction spanned the winter without delay. ICFs allow the concrete to be protected and insulated when placed, permitting continuity of the construction schedule.

02. Sustainable Design.

The design team identified targets for potential energy reduction, such as a super-insulated roof system, optimized geothermal HVAC system and daylight harvesting. By combining all sustainable elements, South Warren is zero-energy ready, operating at only 24.3 kBtu/ft² EUI, which equates to a 70 percent reduction in energy use compared with the average school in Climate Zone 4. Additionally, it was calculated that the ICF construction costs less per square foot than traditional masonry and steel framing.

03. Safer for Students.

The school includes a gymnasium which has 40-foot-tall ICF walls, two "cafeteriums" with 35-foot-tall walls and a performing art center with a compound curve, the 8-inch and 12-inch ICF wall system provides students a safer building even during the severe tornadic activity that is common during Kentucky's spring and summer seasons. The inherent core strength of the concrete in the ICF wall system, coupled with the hollow-core concrete plank floor system, created a building structure capable of resisting 250-mph winds.