Steel Framing and Non-Combustible Sheathing

Play a Key Role in Hurricane Andrew Recovery

By Alex Schibanof

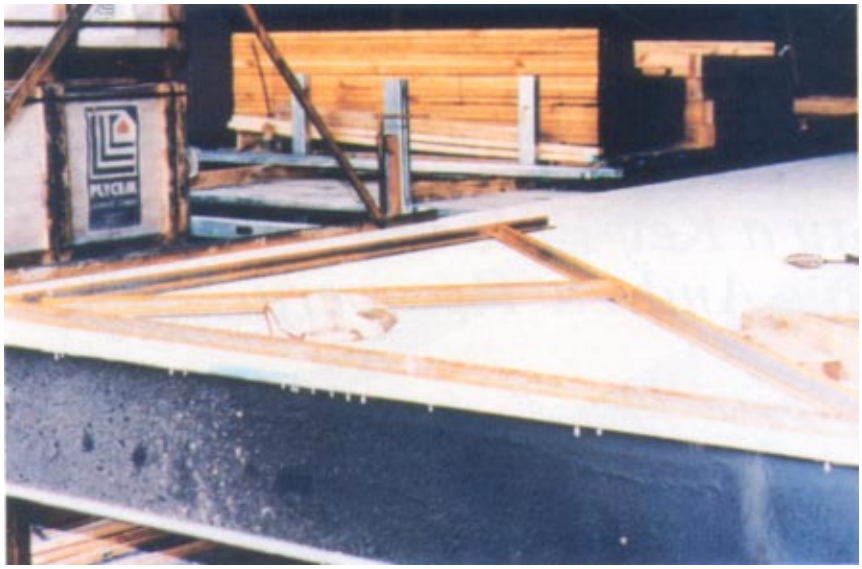
This unit contains two classrooms and a boys' and girls' bathroom.

Southern Structures, Inc. of Ocala, Fla., an innovator in the modular industry, is building one of the first totally modular schools for the Dade County, Fla., school system. Using steel framing and non-combustible sheathing, and taking advantage of modular construction techniques, an entire school was built and installed—from classrooms and a cafeteria to bathrooms and administrative offices—to replace a school destroyed by Hurricane Andrew last fall. The project was performed under the direction of the Army Corps of Engineers and was funded by the Federal Emergency Management Administration.

When several school buildings were badly damaged by Hurricane Andrew last fall, the Dade County school system did not have the luxury of time. It would have taken years to rebuild their schools using conventional construction methods, so they turned to modular technology.

Everything Is Included

For this project, 14 foot by 60 foot modules were built in a factory northwest of Orlando. The



Plycem panels are screwed to steel "C" joists to create the floor of each modular unit.

modules are complete, from electrical wiring and plumbing to windows and doors—even the classroom furniture is included.

The modules were then trucked 300 miles to the Greater Miami area. The units are too wide to be carried down the Florida Turnpike, so they were transported via Interstate 75.

This 14' by 60' module is ready to leave the factory.

Once the modules arrived in Dade County, it took a crew of six men just two days to put in a foundation and install a building. Two modules were used to create a two-classroom unit complete with bathrooms. Eight modules were combined to create a 7,000-square foot structure. These larger structures were used to create a cafeteria that seats 467 students, and the building serves as a general-purpose meeting room when meals are not being served. Modules see also combined to form a "media center" and a block of administrative offices.

From Bottom to Top

Plycem fiber-reinforced cement boards played a key role in this project. The perimeter base of each module is made of 14-gauge steel C joists, and ¾-inch (17mm) boards are used for floor sheathing. The boards are screwed directly to the joists and then covered with industrial carpet. The walls and roof of each module are framed with lightweight steel. Gypsum board is used for interior sheathing while a cementitious board is used for the exterior. The finished module is a Type 4 non-combustible structure.

Plycem was selected as floor sheathing for several reasons. First of all, it is noncombustible. While it is available in several thicknesses up to 1 inch, ¾ inch provided the strength needed for floor sheathing. Since it is rot-proof and vermin-resistant (an important consideration in Florida's tropical climate), Southern Structures knew it would last. Also, the cement

boards are moisture-resistant, an important factor in this application since the underside of the floor sheathing is only a few inches off the ground, leaving it constantly exposed to the high moisture level of Southern Florida.

The cement boards are more durable than plywood, yet they are cut and installed using conventional carpentry tools. The Plycem is purchased in 4 foot by 8 foot sheets, and it is shipped to the factory in Central Florida from the warehouse in New Jersey.

It took a crew of six men just two days to put in a foundation and install a building.

According to Southern Structures' owner and president, Hugh Stump, the biggest share of their business now comes from school systems. While school boards would prefer to build a traditional block-and-mortar structure, the savings offered them is considerable. Also, the product could be delivered to Dade County in months, rather than the one to two years it would have taken to build a school with conventional construction methods.

After school systems, state and federal agencies are Southern Structures' second largest source of business, who has also completed projects for NASA, the Air Force and the U.S. Bureau of Prisons, to name just a few agencies. They have built everything from office and medical buildings to prisons and restaurants. The modules are either placed on a foundation or set on piers or pilings. While the finished school building doesn't look like the conventional brick school house, it has the endurance of a traditional building. Considering the many natural disasters that have struck this country in recent years, durability has become a very important factor. ❑

A crew of six men install a school building in just two days.

About the Author

Alex Schibanoff is a writer and business consultant based in Piscataway, N.J.