



A consortium of building research partners broke ground Aug. 12, 1996, at Armstrong World Industries' Innovation Center, Lancaster, Pa., to begin work on Susquehanna House I, the first of a series of experimental houses whose innovative materials and processes could revolutionize residential homebuilding.

“The Susquehanna House Project aims to explore the performance and interaction of affordable, innovative, energy- and environmentally-responsible building products and practices,” says Richard M. Fantazier, Ph.D., general manager, Strategic Technologies, at Armstrong. “Residential construction is a complex process, supported by relatively little research and development. Though it is a key element in the U.S. economy, it is a fragmented industry. These factors make innovation risky for an individual builder. This project has been conceived as a way of reducing that risk by sharing it among a consortium of organizations.”

Susquehanna House I will be a two- and one-half-story home with a full basement and is expected to be completed over the course of approximately 10 weeks of actual construction time (excluding research, planning and



“DISCOVERY” HOME TO SERVE AS TESTING GROUND FOR INNOVATIVE BUILDING MATERIALS AND PROCESSES

analysis activities). During construction, special attention will be paid to the handling and flow of materials to reduce labor.

One of the most interesting innovations of the house is that its interior space can be reconfigured through moveable walls as residents' needs dictate. This will allow growing families to create additional bedrooms as desired and provide "empty nesters" maximum flexibility in utilizing their space to best serve their needs. In conjunction with this feature, wiring will be surface mounted for ease of installation and relocation. (For a complete list of Susquehanna House I features, see the "Innovative Features" sidebar at right.)

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Innovative Features of Susquehanna House I



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Innovative aspects of Susquehanna House I include these:

- The use of structural foam panels instead of conventional wood studs.
- The home's interior space can be reconfigured through moveable walls as residents' needs dictate.
- The roof will be built on the ground and hoisted into place.
- Wiring will be surface mounted for ease of installation and relocation.
- Bathrooms can be easily added or removed.
- Air distribution is completely flexible, through a unique floor plenum design.
- Energy efficiency is expected to be outstanding.
- The house is expected to exhibit exceptional durability in flood-prone areas.

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Fantazier looks upon the Susquehanna House Project as a discovery exercise. "The components of a house have evolved to work together as a system," he says. "It is difficult, therefore, to introduce a new product if it does not fit the system, but it is equally difficult for any one company to address the entire building system. This project will allow us to work together to address the building process as a whole."

Fantazier and the consortium expect the project will lead to discoveries regarding the following:

- Better ways to construct a house.
- Simpler processes to reduce time and scrap.

- Flexibility to reconfigure space during and after construction.
- The development and performance of new materials.
- The workability of new industry alliances and partnerships.
- Identifying builder and customer needs.
- Opportunities to reduce lumber requirements and enhance recyclability.

Each consortium member brings a specific new product or area of expertise to the Susquehanna House Project. By working together, members of the consortium hope to more effectively inform, educate and move innovative concepts into the building industry

As construction on Susquehanna House I proceeds, House II is in its planning stage, with a 1997 construction target. The building process for both houses will be documented to meet both research and educational needs. Performance will be monitored through one or more seasons and compared with software models being developed concurrently. The houses will be maintained as dynamic research tools, allowing systems to be modified and resulting changes in performance to be measured. 🏠

About the Author

This article was prepared on behalf of Armstrong World Industries, Inc., a participating consortium member.