



Heat Transfer in Building Materials Oldcastle Precast, Inc.

Northeastern U.S.

Project Data: Precast Concrete Panel System

Oldcastle Precast, Inc. has been working with SWA to develop a precast concrete panel system for high-performance finished basements. Now there's a breakthrough product: Castle-Wall, a new panel system for building comfortable, durable, and energy efficient basements. Oldcastle representatives first became interested in creating a finish-ready precast basement panel after attending a June 2004 Building America Expert Meeting on Advanced Concrete Construction organized by SWA. Past CARB research has illustrated a number of alternatives for creating well-insulated unfinished basements, but creating finished space in the cool, damp basement environment presents other problems. Since holes in the ground sometimes fill up with water, moisture-sensitive building materials such as 2x4s and conventional gypsum board are not ideal in basement applications.

After analyzing thermal properties, condensation trends, constructability and manufacturing issues, the project team arrived at a solution. Castle-Wall consists of a 2 inch thick concrete shell supported by concrete ribs 2 feet on-center, with concrete flanges at the top and bottom of the panel. Blocks of EPS foam 7½ inches thick fill the space between the ribs. A half-inch layer of insulation also covers each rib, mitigating thermal bridging and providing a continuous insulation surface for an impressive whole-wall insulation value of R-14. Each EPS block also contains a vertical chase for installing electrical wiring. Laminated to the surface of the EPS is DensArmor™ Plus, a moisture-resistant paperless drywall product made by Georgia Pacific. Glass mat facing replaces paper on the drywall to prevent the mold growth that can occur on organic materials. Builders can tape drywall joints and run electrical wiring for a fully finished basement wall system, but a moisture-resistant, well-insulated space is created as soon as the panels are set into place. Oldcastle claims that a Castle-Wall basement can be erected in one day under a wide range of weather conditions, offering builders more flexibility and control of project schedules than traditional cast-in-place foundation walls.



Client: Oldcastle Precast, Inc.

Location: Northeast

Project Status: Completed

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