



ICF SUPERIORITY

FACTS LEAD HOMEOWNER TO TRADE WOOD CONSTRUCTION FOR CONCRETE

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CONCRETE CAN PLAY VARIOUS ROLES IN THE CONSTRUCTION OF ANY HOME. USED FOR THERMAL MASS AND STRENGTH, AN INSULATING CONCRETE FORMS (ICF) WALL SYSTEM IN A HOME FUNCTIONS AS AN ENERGY efficient component of the entire house. Such is the case with a new ICF home being built in New Windsor, Md.

“The unique aspect of this 15,000-square-foot home is that the exterior walls are entirely ICF, with insulated concrete floors and Geothermal HVACs,” homeowner Frank Russell, president of Russell Insurance Group Inc., said. “This includes more than 12,000 square feet of ICF walls and insulated concrete floor systems. I realized the energy demands of a house of this size and decided to build as energy efficient as possible.”

Russell acted as his own general contractor and initially specified the home as a traditionally framed house utilizing batt insulation and a strip form basement.

Bruce Neale, president of Modern Foundations Inc. in Woodbine, Md., said the house was originally specified as a wood house, but his company was able to negotiate a contract based on the new ICF design. Modern Foundations is a major foundation company in Woodbine, specializing in excavation, foundation, flatwork and precast concrete products.

"It went from a little over 120 yards for the strip form wall and footers to more than 400 yards with the walls and all the slabs, including the basement slab."

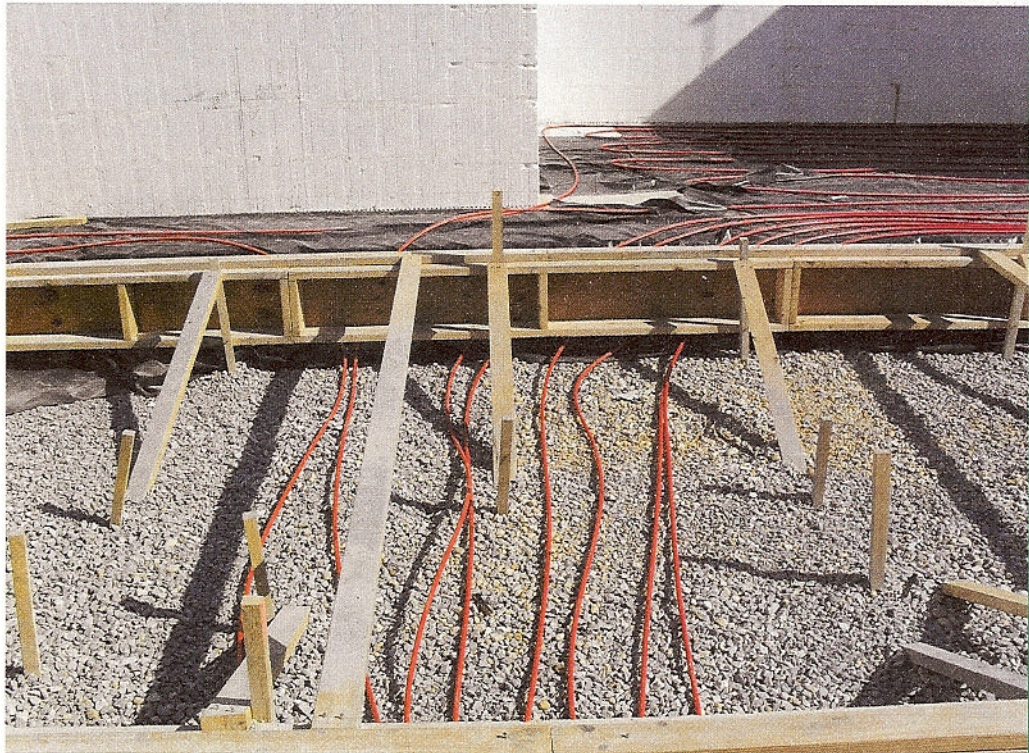
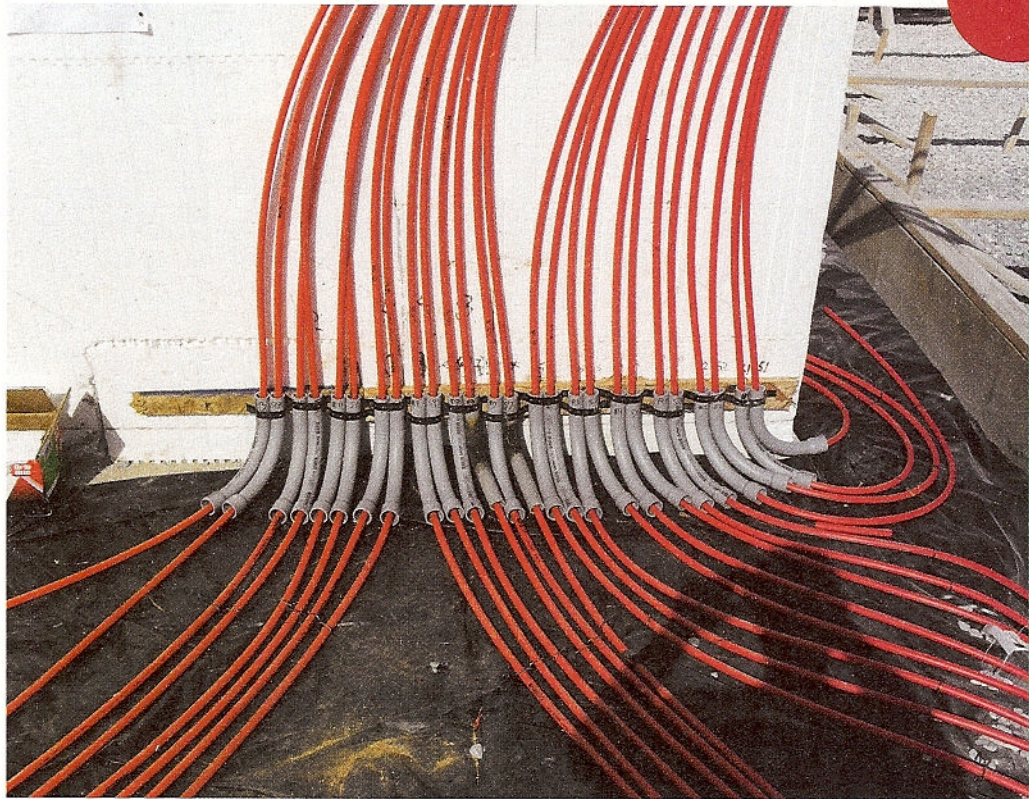
THE HOME

The home is a two-story colonial with a fully finished basement. The garage floor and the front porches were completed with an insulated concrete floor system. This enabled the homeowner to have extra space in the basement, highlighted by a two-lane bowling alley. The first floor has a kitchen, butler pantry and a long-term pantry, formal dining room, two mudrooms, home school/office, rear office, media room and breakfast/sunroom, elevator, powder room, laundry room and walk-in closet.

The second floor features a master suite and an additional three bedrooms each with a bath, one being a Jack-n-Jill bath. There is also a laundry room and library. An elevator, as well as stairs, goes from the basement to the second floor. The attic areas are also being finished.

INSTALLING INTEGRASPEC ICFS

"This was our first experience with ICF construction," Neale said. He contacted GNP Inc., a company in Annapolis, Md., specializing in ICF construction and conversions, and distributors of ICF blocks by IntegraSpec. "We had a meeting with the homeowners, showed them the spreadsheets and calculations for

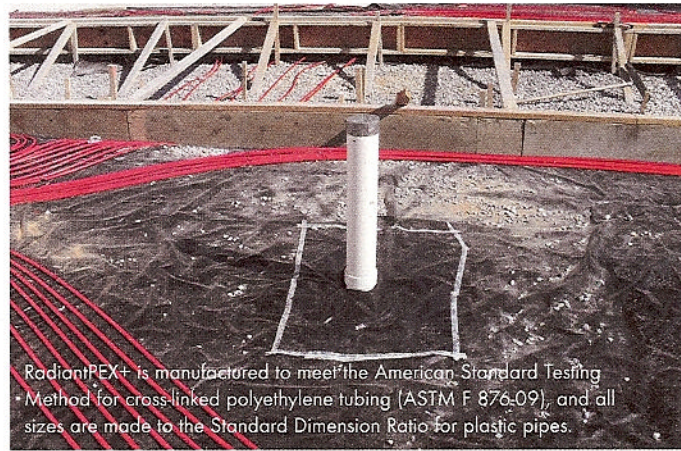


top Watts Radiant Inc. prefers installs that use its RadiantPEX+ or RadiantPEX-AL. The difference is that RadiantPEX+ combines all of the traditional advantages of plastic PEX tubing, but with an EVOH oxygen barrier to add protection against corrosion for the various ferrous components of a heating system. RadiantPEX-AL is a composite pipe engineered for radiant floor heating with an aluminum layer to protect boiler systems.

bottom Radiant systems that use PEX are known for comfort, but are also notorious for noise. As the system starts warming up, the tubing expands causing it to rub against the floor and fasteners holding it. The friction from this rubbing creates ticking or creaking. But the RadiantPEX+ and RadiantPEX-AL have an extra low-friction layer that greatly reduces expansion noise. Watts people say "comfort should be felt, not heard."



Because an ICF house is insulated so well and the capacity for the house to retain a certain temperature is longer than any other house, the additional investment in radiant heating has a legitimate payback period.



RadiantPEX+ is manufactured to meet the American Standard Testing Method for cross-linked polyethylene tubing (ASTM F 876-09), and all sizes are made to the Standard Dimension Ratio for plastic pipes.

cost of conversion vs. cost savings in utilities. The owners took some time to go over the numbers and it was a go.”

Neale pointed out GNP Inc. was chosen because of its extensive experience in ICF construction and design features, as well as the ability of the company to be significantly involved “hands-on” in the project, training the Modern Foundations crew as work progressed, performing layout and continuous instruction as the crew learned ICF construction.

GNP President William W. Naegeli Jr. said the transition was flawless, using Modern Foundations’ strip-form crew.

The house was completed in 22 ICF production days. That is 545 square feet per day with a four-man crew, including breakdown, loading and staging days.

“The reason we were able to get that fast of production was because of IntegraSpec’s superior design,” Naegeli said. “It’s a knock-down or panel type of ICF, enabling the crews to be much more flexible with the installation. This is especially important above grade where we have lintels with stirrups for headers. There are always a lot more openings, windows and doors, above grade than below grade.

“Pre-assembled blocks work well below grade where there aren’t a lot of openings, but above grade the panel blocks are much easier and faster to install. We have a lot less waste with the knock downs. Finally, with IntegraSpec ICF blocks we were able to pour 8-foot and 10-foot lifts, which made the pump time minimal.”

WATTS RADIANT HEATING

GNP Inc. was also used for the installation of PEX radiant tubing by Watts Radiant Inc. in Springfield, Mo. “We are familiar with circuit layouts and installation at reasonable prices,” Naegeli said. “We do a lot of PEX installs because radiant goes so well with ICF houses. Most plumbers or HVAC companies just don’t like installing the tubing or they want to charge plumbers’ rates for the install.


“The owner of the house hired a separate HVAC contractor for the install of equipment and hookups. Because an ICF house is insulated so well and the capacity for the house to ‘retain’ a certain temperature is longer than any other house,

the additional investment in radiant has a legitimate payback period.

“Indeed, because the house is so energy efficient the HVACs were actually down-sized to eliminate ‘short-cycling’ with the larger units,” Naegeli said. “So renewable energy investments in an ICF, such as PV solar, geothermal, wind, etc., are also reduced in size because they are so well insulated; consequently making payback periods much shorter and actually giving the home owner a good ‘return on their investment’ when they start comparing energy savings vs. cost of installation. You just can’t get those returns in a traditionally built house.”

SUSPENDED LITE-DECK

The garage used two different systems manufactured by Lite-Deck, an ICF manufacturer in South Sioux City, Neb. “We used a 22-4 Lite-Deck design for the garage and for the porches a 10-4 Lite-Deck design,” Naegeli added. “The space was needed below the garage for the two-lane bowling alley, as well as a safe room and lounge area.”

The future is very positive for ICF home construction and many of the criticisms just don’t hold water any more. The old construction process of using wood as a basic component of home construction will only decrease as concrete homes continue to grow in popularity and demand. 

Based in Bucks County, Penn., Contributing Editor Christopher Brooks writes about the home – inside and out – for consumer and trade magazines.

RESOURCES

GNP Inc. (800-713-7663) gnphouse.com

Lite-Deck (402-404-2800 or 877-481-4714)
litedeck.com

IntegraSpec ICF (800-382-9102) integraspec.com

Modern Foundations Inc. (301-854-6258 or
410-795-8877) modernfoundations.com