

# The Benefits of Insulated Concrete Forms

By Ken Williams, North River Distributing

At one time, the decision to build an energy efficient home or to use “green building” technologies was driven by the consumer. They would often drag their chosen designer and contractor into using products and materials they had no interest in using and quite often, found more costly or difficult to work with.

These roles are now reversing, as contractors and specifiers are the ones introducing innovative technologies to those constructing new buildings. More and more, builders and developers are finding that there are systems out there that not only are environmentally friendly, but also are faster to install and can cost the same or less as a building built the traditional way.

Some of these products have been around for many years and would previously have been considered an expensive upgrade. But with ever increasing code requirements (including health and safety), experienced builders are able to offer their customers better-built homes at similar pricing as a traditionally built home.

Walls built with ICF's (Insulated Concrete Forms) have gained much popularity for these reasons. Now ICF's for floors, both suspended and slab-on-grade, are being used.

Lightweight, insulated forms for suspended concrete floors are being seen more regularly as ICF companies are expanding their product lines and are providing one-stop shopping for both wall and floor systems. This type of floor has an advantage over traditional concrete floor systems for the following reasons:

- It provides the thermal break required for proper heating design when radiant floor heating is used;
- Its lightweight structure also means that the panels can be placed at a fraction of the cost of craned in-place systems;
- In some cases temporary shoring is required but can be placed at 6' o.c. as opposed to the standard practice of 4' o.c. when forming conventional; and
- Sturdy concrete floors, with little or no deflection or camber, also provide an exceptional sound barrier and a one hour (or more) fire rating.

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These floor panels are made from varying thicknesses of EPS with light gauge steel studs moulded into the panels. Each two foot wide panel is ordered to size and 2-4 1/2" chases run the length of each form making it easy to install services. The steel studs provide attachment strips for the installation of dry-wall. The panel's cost will vary between \$3.75 and \$7.00 a square foot, depending on the span, and installed will cost between \$9.00 and \$14.00.

Rick Ksander P.Eng., from Peterborough, automatically specifies this type of system whenever he is asked to design a room below a garage. “It's an easy choice,” says Ksander. “There's no guess work and the contractors find the installation and reinforcing placement simple. Bar placement is easy to review and there is little chance of error for the contractor.”

The lighter weight of these floor

types also substantially reduces the overall weight of a building. This also reduces the size of footings and the foundation requirements, ultimately saving money in other areas.

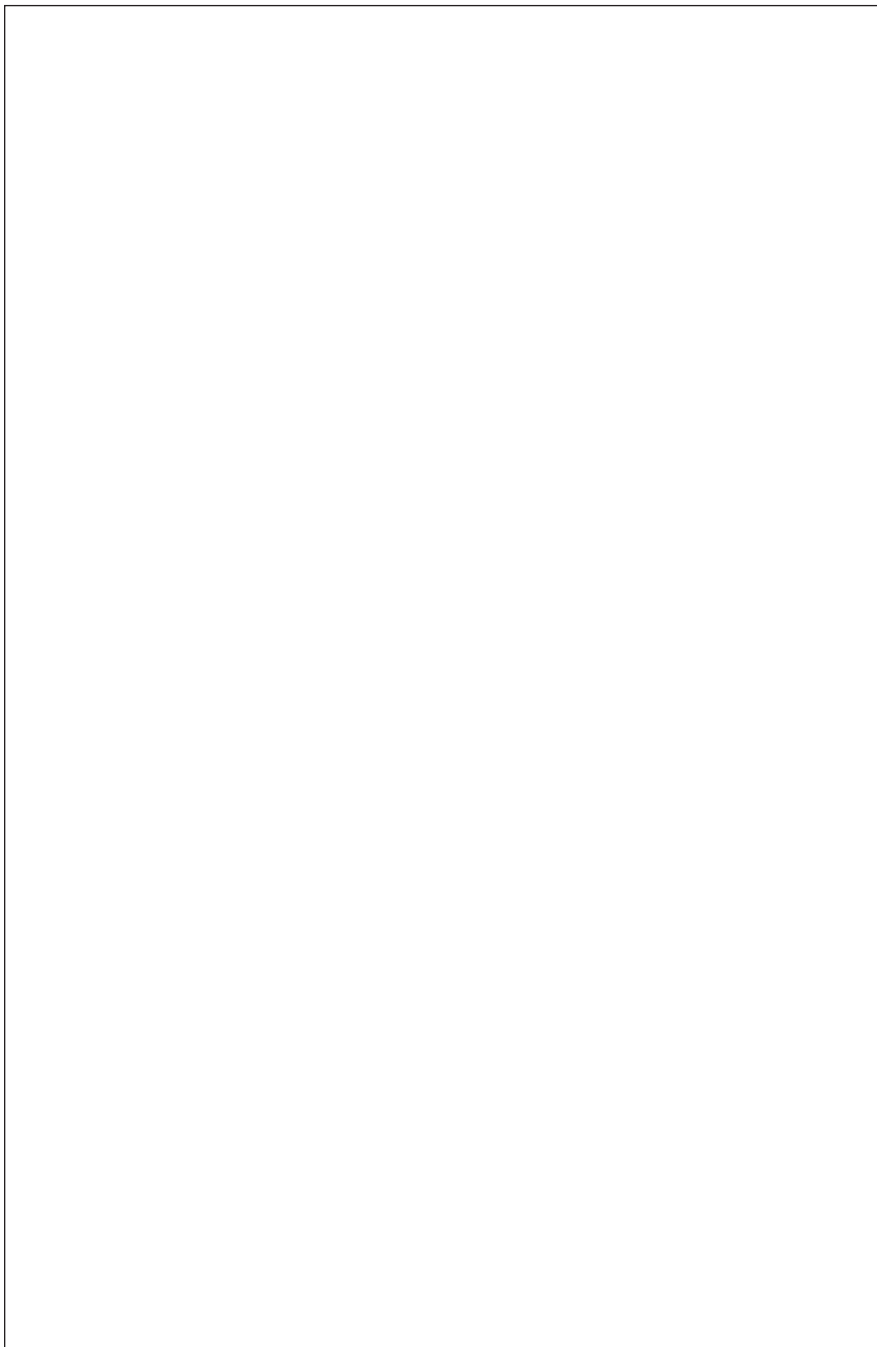
Frost Protected Shallow Foundations (FPSFs) are also becoming popular. More people are now interested in single level living as empty nesters are no longer wanting a large storage area below ground or require the additional living space that costs more to finish, furnish and heat. The fact that there is less “good land” to build on and because areas with high water tables (or even land fill sites) are quite often turned into in-fill subdivisions, FPSFs are becoming a smart choice for the educated builder.

Scott Perry P.Eng. from Legalett in Cornwall has seen a marked increase in the demand for FPSFs over the last two years. “The supply and install cost of this type of system is typically \$18.00 per square foot for an average 1,800 square foot bungalow. That includes excavation, materials, labour, concrete finishing and the heating system. This compares very favourably to other types of foundations and provides many additional benefits”

Where soil conditions are usually required to accept 2,000 pounds per square foot of loading, Perry says that, “advancements in engineering now allows for little change to the existing soils and eliminates the need for footings and frost walls or even the need of a thickened slab edge.” This type of design can even accommodate up to 100,000 pound point loads, making it ideal for large commercial structures.

Rick Caldwell, who worked on a 17 home subdivision at Akwesasne, had this

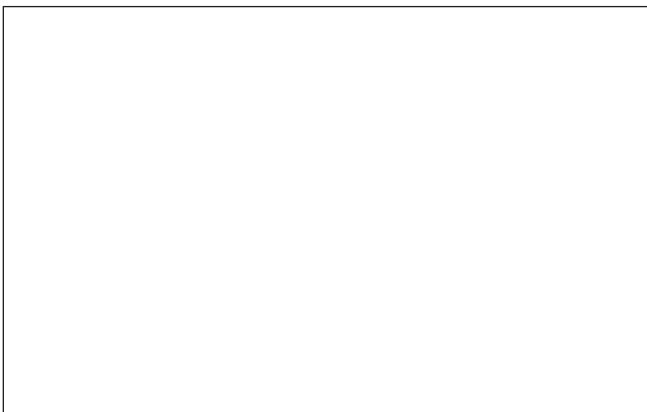




to say: "We discovered too late that the soil at this site would only support 300 pounds per square foot, and had it not been for this type of engineering, these homes would not have been built. The design of the slab allows for the total load of the building to be spread evenly over the full footprint. Six inches of EPS sits under the five inch, reinforced concrete slab and eight inches of clear stone provides a drainage layer and protects the foundation from the effects of frost. Plus, even though we had different workers on site every day, including students from the local trade school, it worked out great. There was a very short learning curve and the design was fool proof. Every one of our slabs came out perfect. Reinforcing consisted of two, four foot wide bands of 6 by 6, 6/6 WWS around the perimeter and a continuous top layer of the same."

Combined with in-floor radiant heating FPSF's are fast and easy, eliminating the forming contractor and much of the usual site work. In most cases, the same crew that will be installing the walls and roof is constructing the foundation.

Tom Kerr of Tom Kerr Heating and Air-conditioning builds in the Kincardin area and uses pre-assembled framed wall sections. He can have trusses up in two days after a slab is poured. Kerr started using FPSFs in the spring of 2007 and quickly realised the advantages. "Our seven man crew can turn a six-plex around from breaking ground, to handing the keys over to the new home owner, in eight to ten weeks" says Kerr. "Since we get paid when they move in, time is everything!" ■



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