HAHN READY MIX

Insulated Concrete Forms

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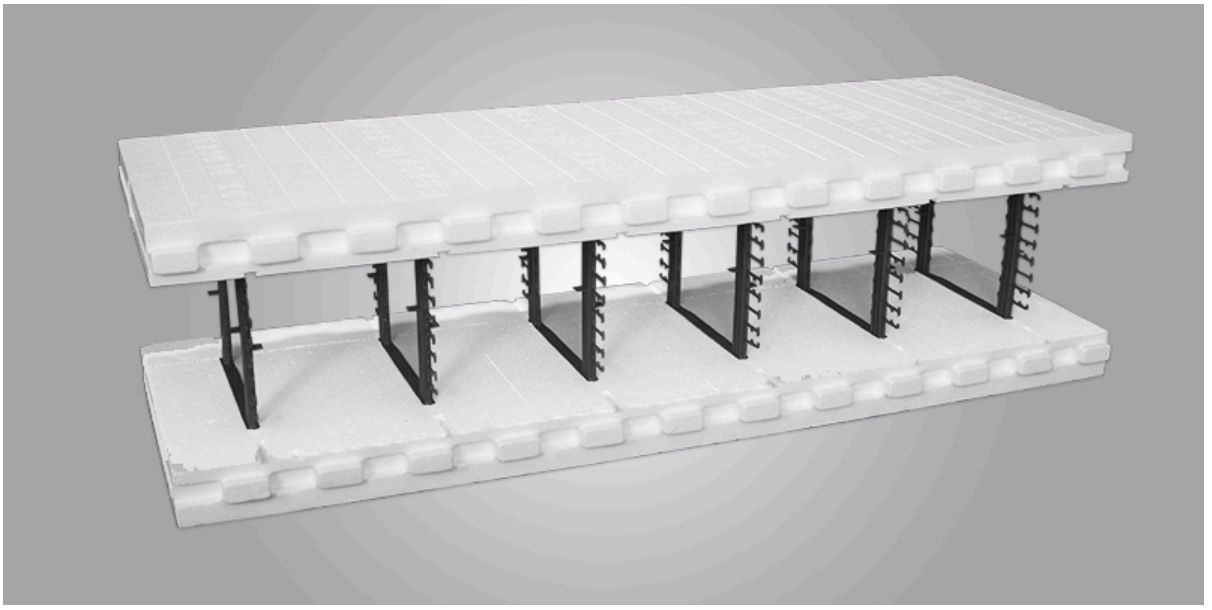
An Innovative Solution For Energy Efficiency

In large urban centers, ICF homes and buildings are becoming more and more popular. Recently, we've been asked about this type of forming system with reinforced concrete quite a bit, and thought a Tech Bulletin would be a great way to get the facts on ICFs out there.

What are ICFs?

ICFs, or insulated concrete forms, are a system of concrete forms made up of expanded polystyrene (EPS insulation) panels and polypropylene plastic ties. The ICF blocks interlock like legos to form an insulated reinforced structure shell, and then concrete is poured into the center void to provide a solid, above or below grade wall assembly, for any building type.



What are the benefits of ICFs?

ICF's main benefit lies in increased energy efficiency. With an R Value of R-23.5, ICF structures reduce operating costs by 40-50% on average, for heating and cooling, versus a wood framed home or building. Beyond a reduction in ongoing energy costs, ICFs can also reduce the size and cost of initial HVAC systems. In some cases, warehouses that don't need exact air conditioning have completely eliminated any HVAC systems in the building and still achieved remarkable climate control where the internal temperatures have been 15-20° cooler than ambient temperatures in the middle of the day in the summer.

Beyond the energy efficiency benefits, ICF's are also nearly completely airtight, with an air infiltration rate of .002 cfm/ft^2. The double layer of continuous insulation of an ICF creates an incredibly quiet space, blocking out ambient noise from outside or neighboring units. ICF buildings, like all reinforced concrete buildings to roofline, have incredible resilience to natural disasters such as fire, floods, or wind.

How do you build with ICFs?

The ICF forms come in blocks (16"x48") that are easy to assemble. Channels on the ties allow for rebar chairing and HV wire clips connect each block to those adjacent to it. In addition to straight blocks and corner blocks, a large collection of custom blocks are available for angles, radius for curves, T-blocks, taper blocks, ledge blocks, etc. It is also always easy to cut traditional straight blocks to exact plan dimensions and infinite design shapes. Typically, one would pour the footing for a house or building in the same way it would traditionally be done, and then build the ICF structure on top of the footing. Then, depending on if there is a concrete floor to tie in at grade or elevated, the forms are filled in one or two continuous pours with 6" slump concrete, either to finished floor height or to roofline. The pouring should be done in 4' lifts and the concrete vibrated with a 1" stick vibrator. The plastic ties serve as studs for the direct attachment of exterior finishes and interior drywall.

What kind of veneers and exterior finishes are compatible with ICFs?

Literally every kind of exterior finish may be directly applied to an ICF wall assembly. Masonry requires ICF tie anchors that are pushed through the EPS into the concrete prior to the pour. There is also specific ledge reinforcement for supporting brick and stone exterior finishes.

I've heard ICFs are prone to blowouts, what's the deal with that?

Bracing is critical on ICF construction, but when done correctly, and following proper pouring and consolidation techniques as recommended by the manufacturer, chances of a blowout can be eliminated. ICF specific bracing and scaffolding systems can often be rented from ICF dealers.

What's the cost of ICF construction?

ICFs provide a high performance home and can vary in cost versus stick built homes depending on the layout and dimensions of the home, the quality of windows or other finishes, and the contractors that would be performing the work. Often, ICF homes are 3-7% more than a traditional stick-built home in upfront costs. The ongoing operational savings for the ICF owner, from energy efficiency and resilience, quickly provide the pay back of any initial capital costs.

And an Annoucement!

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Hahn Ready Mix has partnered with Fox Blocks, a leader manufacturer of ICF systems. As a Fox Blocks dealer, Hahn can provide pricing, support, and materials to make your ICF project a success! Fox Blocks also offers free online contractor

training programs to make sure your contractor is well versed on the particulars of ICF construction.

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