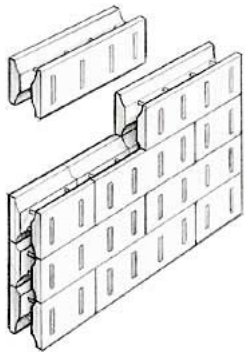


# Insulated Concrete Forms (ICFs)

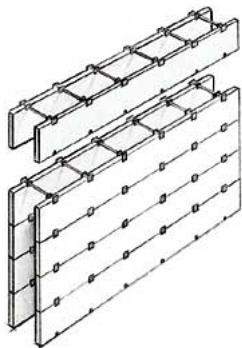
## *Factsheet from Coconino County Sustainable Building Program*

ICFs are becoming more accepted as a substitute to traditional wood framing. They come in blocks and planks, with over 50 companies producing patented designs. ICFs are hollow forms of foam that are held apart by a spacer made of plastic, metal, or more foam. (The holes are filled later with concrete, and sometimes rebar.) The blocks (or planks) interlock with grooves or teeth that keep them together as concrete is poured into the hollows.

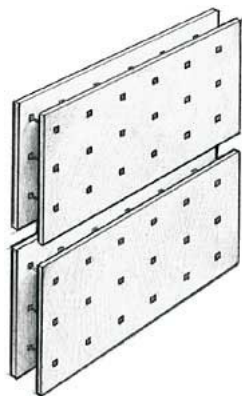
### *Types of ICFs :*



**Block Forms**  
(usually 16 in by 4 ft)



**Plank Forms**  
(usually 1ft by 8ft)



**Panel Forms**  
(varying sizes up to 4 ft by 8ft)

**Advantages:** Durability, strength (hurricane and tornado resistant), good insulation value, very quiet, pest resistance, plank forms are rot resistant. A good choice for passive solar.

**Appearance/Style:** ICFs favor styles such as stucco and plaster for the outside surfaces. Some ICFs (especially plank forms) have integral elements that allow fastening of conventional siding.

**Structural Requirements :** All ICFs are structural and load bearing once concrete is poured. Rebar reinforcing is required for all ICFs.

**Energy Efficiency :** Insulating values for ICFs range from R-17 to R-26. Houses built with ICF exterior walls use 44% less energy to heat the homes than wood frame.

**Recycled Content:** ICFs range in recycled content. Rastra, for example is 85% recycled and some of the other ICFs contain no recycled content at all.

**Health Issues:** There is no off-gassing of foam blocks. The poured concrete makes ICF homes fairly air-tight.

**Ease of Construction:** ICFs can be heavy, (plank forms are light and require bracing before concrete is poured) but are usually easily maneuvered and put in place by two or more people. Construction is relatively easy.

**Cost estimates:** ICFs cost about 0.5-4% more than a traditional wood frame house.

**Availability :** There are no ICF distributors in Flagstaff, but there are some in the Phoenix area.

**Considerations:** Use non ozone-depleting foams ( all expanded polysterene products are ok, but not all extruded polystyrene foams.) All require concrete, and some require more than others.

### **Resources :**

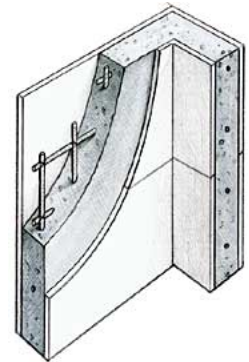
[www.icfweb.com](http://www.icfweb.com) - Info on manufacturers and dealers

[www.rastra.com](http://www.rastra.com) - Rastra Corporation

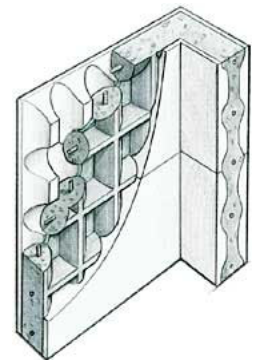
[www.forms.org](http://www.forms.org) - Insulating Concrete Forms Association

[www.concretehomes.com](http://www.concretehomes.com) - Info on concrete construction

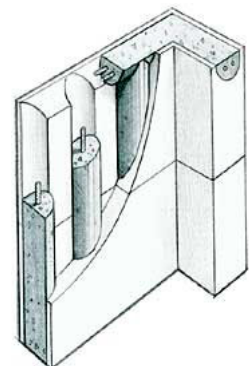
### *How concrete forms in ICFs:*



Flat walls



Grid walls use less concrete than flat walls



Post-and-beam walls use the least concrete