

# Santa Fe REAL ESTATE Guide

Artisan/craftsman/**builder**

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## About wall panels and blocks

by Kurt Faust

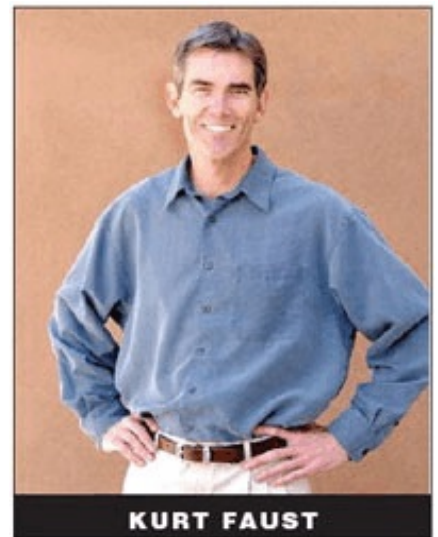
CMUs, ICFs and SIPs are building systems with many common features. CMU, the concrete masonry unit (aka concrete block, cinder block) is the oldest of these systems, being first manufactured in the 1800s. Though there are many variations on the theme, the standard is an 8x8x16-inch block with two cells. The cells stack on top of each other in every row, creating vertical column which can be left hollow or have steel reinforcing bar placed inside and then filled with concrete. The concrete and the blocks have high compressive strength and the rebar adds a tremendous amount of tensile strength, forming a very strong wall with a high degree of thermal mass.

ICF stands for insulated concrete form and covers a variety of products. It is essentially a form for a concrete wall that remains in place once the concrete has been poured. The forms are usually made of some kind of insulation. Some use new foam and some use recycled styrofoam or mineralized wood chips. They have vertical and horizontal cells or channels that all interconnect inside the form. The channels receive a piece of rebar down the center and form a grid as the wall is being built. Once the wall is the proper height, the channels are filled with concrete.

The smaller ICF blocks are 16 to 24 inches tall by up to four feet long. Others are larger panel sizes of 24 to 48 inches tall by 8 to 12 feet in length. The thickness is generally 8 to 10 inches, allowing for two inches or more of insulation on each side of the form and enough concrete to form a strong wall.

Rastra is a type of ICF made from 80 percent post-consumer waste polystyrene and Portland cement. It will form a very strong wall that is non-combustible, with very limited appeal to pests of all kinds. Stucco and plaster are readily applied to the surface also. Like other ICFs, the thermal performance is relatively high because of the continuous insulation and the lack of air infiltration. ICFs, which also offer good sound attenuation, have a very long service life.

Another product that is available for building wall systems is autoclaved aerated concrete or autoclaved cellular concrete (AAC or ACC). This block is more akin to a CMU and was invented in Sweden in the 1920s. It is made from Portland cement, limestone, aluminum powder, water, and fine silica sand. The aluminum powder creates tiny



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hydrogen closed-cell bubbles throughout the mixture and is cured with high-temperature, high-pressure steam. The resulting block is very lightweight, nontoxic, and easily formed with carpentry tools. It is made as a solid block without the open channel for columns of reinforced concrete.

SIP is the acronym for structural insulated panel. They can be quite large and form the length and height of an entire wall of a building. The panels are made from a four-inch core of foam insulation with a structural skin glued on both the interior and the exterior. Oriented-strand board (OSB), also known as flake board, is used on the exterior while drywall or OSB can be used on the interior surface. The panels have channels cut for electrical wiring and can come with all the doors and windows pre-cut. These large panels are very efficient for large, rectangular buildings or simple, repetitive forms.

Each building system has its unique advantages and disadvantages and should be considered on a case-by-case basis.

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