CONCRETE Homes

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CONCRETE Homes

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Concrete Homes
Gaining in Popularity

Ten years ago concrete homes made up just three percent of the market. Today their popularity is exploding, making up some 15 percent of the new homes that are built, according to Pieter VanderWerf, president of Building Works, Inc., a consulting company.

From the outside a concrete home looks like any other home. Drive up to a new home today and you probably cannot tell how that home was constructed. That's because the "skin" covering a home - whether it's stucco, brick, wood or vinyl siding - provides the same finished appearance whether it's placed over wood-frames or concrete construction.

Many manufacturers and concrete system distributors have reported an increase in sales of up to 30 percent in recent years for concrete home construction. Some of the more aggressive companies report even higher growth rates.

Concrete is making a strong presence in the mainstream homebuilding arena. Indeed, this year's New American Home — an annual fixture at the International Builders Show that showcases new housing trends and technology — was virtually all-concrete.

What's more, the National Association of Home Builders (NAHB), recognizing the burgeoning demand for concrete homes has created the Concrete Home Building Council, which will provide NAHB membership access to an invaluable network of technical, educational, and training experts on concrete building systems and concrete product applications.

NAHB HOUSE

TIERRA CONCRETE HOMES INC.

"It's got so much benefit to the end user.
There are a lot of things that come to the client
when they purchase something like this
that are not indigenous to stick frame houses."

— JOE MORREALE, THE VILLAGES AT RIO DEL SOL,
IN JAN. 1, 2004 ARTICLE IN
Permanent Buildings & Foundations Magazine

Concrete Homes Offer Numerous Benefits

Constructing a home from concrete offers numerous benefits; many that might well be the material's best-kept secrets.

Long-lasting, durable

One of the key benefits of building with concrete is that it's durable and easy to maintain. Concrete and cement-based products form a solid, durable surface that resists rot, pests and wildfires.

Buying a home is typically the biggest investment you'll ever make. If that home is constructed with concrete walls, your investment is naturally protected from the structural damage that can be caused by the effects of nature. As the owner of a concrete home, you'll benefit from lower annual maintenance and energy costs while living in a home that provides a secure haven for your family.

In a normally constructed home, fire can endanger the lives of everyone in the family and destroy those things that cannot be replaced. Insurance companies recognize concrete as being safer than any other form of construction when fire threatens a home. Living in a concrete home can ultimately bring peace of mind for homeowners concerned about fire, especially those living in high fire-prone areas.

In fire wall tests, insulating concrete forms (ICFs), withstood exposure to intense flame without structural failure longer than common frame walls. The polystyrene foam used in most ICFs is treated so it will not support combustion. Also, tests show that its tendency to transmit an outside flame source is less than that of most wood products.

REWARD WALLS

"Fire safety is a big issue. These homes (we built) are beyond five miles from the nearest fire department. Building with Arxx gives a three-hour fire rating which makes this system of construction very attractive."
— STEPHEN LEE, *Global Construction, Inc.*

ICF HOMES

Energy efficient

Concrete forms an integral wall - solid, continuous and airtight. By comparison, a wood-frame wall is a collection of components - studs, sheet rock, sheathing and insulation. Each joint and connection is a potential air leak. As the air passes through these leaks, so too does your heating and air conditioning with it.

Homes built with concrete forms or walls are more energy-efficient than their non-concrete counterparts.

One company, Reward Walls, says homes built with its concrete walls are less expensive to operate, saving the homeowner 50 to 80 percent in heating and cooling costs when built from footings to the eaves. Ultimately you can save hundreds, even thousands of dollars during the life of the home.

Why? Because concrete systems mean there's virtually no air infiltration. And the thermal mass of the concrete wall and the outstanding insulating properties of the expanded polystyrene result in an airtight, easily controlled environment.

In Southern California, cooling a 2,800-square-foot house can run $600 to $700 a month. By using ICFs, residents save at least 50 percent.

The combination of high R-values, low air infiltration, and high thermal mass is believed to account for the amazing 25 percent to 50 percent energy savings of ICF versus wood or steel-framed homes.

STANDARD ICF

Heating and cooling savings can be especially important for the first-time homebuyer.

"They are the buyers who can benefit the most from savings on energy bills and insurance premiums … and they are the ones who can least afford the cost of damage from natural disasters. So concrete makes a lot of sense in that market."

— JON RUFTY, *Rufty Homes, Cary, N.C.*

Options

Other environmental benefits

Portland cement, which makes up about 10 percent of concrete, is manufactured from limestone, clay and sand. Scrap tires and other combustible waste that would otherwise take valuable land in land fills are often used as a fuel source in the cement manufacturing process. Sources of aggregates are diverse and plentiful: sand, gravel, crushed stone, and an ever-increasing array of consumer and industrial waste products — fly ash from coal burning electric power plants and blast furnace slag from steel mills. Crushed concrete from demolition is often used as aggregate for concrete. Concrete's nearly inert matrix of materials makes it an ideal recycling medium, with absolutely no degradation of strength or performance.

In addition, a solid wall structure that eliminates air infiltration and uncomfortable drafts means the air quality will be superior to that of a non-concrete home and will be free of all airborne pollen, molds, mildews, dust and allergens.

OREGON BLAZER DEVELOPMENT, INC.

GURNEE CONCEPT HOUSE

Land for homebuilding is becoming more scarce and homes are being built closer together and near noise sources like highways, railways, and airports. Concrete homes have attractive sound-reducing qualities to provide the kind of quiet comfort buyers look for in a home.

The greater mass of concrete walls can reduce sound penetrating through a wall by over 80 percent when compared to wood-frame construction. Although some sound will penetrate the windows, a concrete home is often two-thirds quieter than a wood-frame home.

Design options are endless

When it comes to design, concrete offers incredible flexibility. Because of the strength of the concrete, architectural features like arches, radii, long spans and large open areas are easy to create.

Concrete can create any shape or size home you can imagine. Because concrete takes any shape or form, it can create an unlimited variety of curves and angles. Concrete's strength can be used to create large open spaces — offering total flexibility in designing your home's floor plan.

Whether a Victorian gingerbread home or a Colonial mansion, concrete homes are quiet, easy-to-maintain and safe from fire, hurricanes, termites and wood rot. Concrete also can be used to create classic, low maintenance floors with patterns similar to classic stonework but with a look all their own.

Should your tastes lean toward traditional or contemporary, the strength and flexibility of concrete can create a home that looks like the 21st Century and, with minimum maintenance, will hold its beauty and value throughout the next century.

To Sum Up: *Concrete Homes* A Worthwhile Investment

EMGEE HOMES (ARLINGTON, TEXAS)

MURRAY GROUP (SUGARLAND, TEXAS)

When it comes time to buy a home, buyers want to feel confident that they've made a good investment. Homeowners reap the financial benefits of concrete homes in more ways than one — in terms of operating cost when it comes to heating and cooling costs, resale value, and quality of living.

Over the long run, benefits like energy efficiency, disaster and fire resistance, and durability reduce the cost of owning a home. Reduced noise and more regulated temperatures mean quiet comfort that you can enjoy year round.

- ***Lower utility bills***

Concrete homes save energy in two ways. The mass of the concrete slows down the passage of heat or cold moving through the wall. With the same insulation, a concrete home stays warmer in the winter and cooler in the summer. Also, concrete walls are more air-tight than wood-frame walls. Since leaks account for a large percentage of energy loss in the home, concrete homes enjoy savings in energy consumption. That adds up to lower utility bills. A survey, conducted by Pieter VanderWerf, president of Building Works, Inc., at Boston University, found that using insulating concrete forms (ICFs) reduces energy used for heating by about 44% and for cooling by about 32%.

Premiums

SPRINGDALE (DEVELOPER ALLAN STARKER)

• Reduced insurance premiums

Concrete homes resist fire. They're stronger than wood frame homes and safer during tornadoes, hurricanes, and earthquakes. Insurance for concrete homes is often 15 percent to 25 percent lower. One insurance agent in St. Louis, Missouri, offers discounts on homeowners insurance policies of up to 25 percent for ICF homes. No one, however, can put a price on the peace of mind that comes with owning a concrete home.

"I'm a stick (lumber-based) builder. That's my past.
But this year, I started building ICF homes.
After doing lots of research, educating myself,
I decided ICF is superior in every way.
My goal is to be all-ICF someday; it's just a matter of time."

"Why? There's energy savings … 30 percent to 50 percent on heating and air-conditioning costs.
There's the environmental savings — an average-size ranch using ICFs saves 47 trees.
There's safety — they can withstand tornado-type winds.
ICF homes are superior for soundproofing and pest control, too."

— SHAWN J. MITCHELL, *homebuilder in New Berlin, Wisc.*

Concrete Homes
Offering Shelter from the Storm

Homeowners and builders in hurricane- and tornado-prone areas are increasingly turning to ICF walls to stand up to what would otherwise be devastating disasters. ICF walls can withstand flying debris from tornadoes and hurricanes and are more wind-resistant than traditional wood or steel walls.

After the devastation of Hurricane Andrew in south Florida, lawmakers passed stricter building codes requiring wood frame houses to have lots of steel connector plates.

"But most concrete houses were already strong enough," said Pieter VanderWerf, President of Building Works, Inc., in the Nov. 15, 2002 *Permanent Buildings & Foundations Magazine*. "…the tougher requirements pushed the cost of frame construction up about $2,000 per house, while the cost of a block house stayed nearly level. The result: a boom in concrete block homes in Florida."

On Long Beach Island in New Jersey, homeowner Stuart Stainecker explains, "The most prominent reason I chose to build my Barnegat Light home with the Arxx Building Products insulated concrete wall system is because of the product's resistance against tropical storms, hurricanes and flooding."

Tests at Texas Tech University show that concrete walls can withstand the impact of debris hurled at an intense velocity by tornado-force winds. To duplicate tornado-like conditions in the laboratory, researchers shot wall sections with 15 pound 2 X 4 lumber missiles at up to 100-mph, simulating debris carried in a 250-mph wind. Arxx Building Products walls, like all other concrete wall systems, survived the tests with no structural damage.

REWARD WALL SYSTEMS

"Pretty soon buyers come to realize that they can get features they want with a concrete house less expensively than they can by trying to bandage frame construction."
— PIETER VANDERWERF, *president of Building Works, Inc.*

The Cost of *Concrete Homes* Comparable to Standard in the Long Run

Concrete homes aren't just custom built anymore. *Permanent Buildings & Foundations Magazine* reported in its Jan. 1, 2004 edition that small concrete-home subdivisions are popping up across the country, many in Florida and California.

The Portland Cement Association says that when you add up all the costs and savings of a standard home versus a concrete home, you'll only end up paying $1 more for a concrete home each month.

In addition, because homeowners insurance and energy bills are less for an ICF house, most major mortgage companies will allow clients to have a slightly larger mortgage because debt ratios still fit. The amount of mortgage you are allowed is based on your income-to-debt ratio. That extra $5,000 to $10,000 may allow you to get more house.

> *"It's caught on. We open subdivisions and we can sell them out in a month."*
>
> — KIRK MALONE, *Mercedes Homes, Palm Beach, Fla.*

	Standard Home	Concrete Home	Comments
Purchase Price	$200,000	$208,000	4 percent more
Principal & Interest	$1,119	$1,163	7.5 percent interest
Taxes	$300	$312	.15 percent tax rate
Insurance	$60	$48	20 percent savings
Energy	$145	$102	30 percent savings
Housing costs	**$1,624**	**$1,625**	**Only $1 more**

ICFs: The Heart of the Concrete Home

Insulated Concrete Forms (ICFs) are basically forms for poured concrete walls that stay in place as a permanent part of the wall assembly. Made of foam insulation or other insulating material, they come in two basic configurations: pre-formed interlocking blocks into which the concrete is poured, and as individual panels with plastic connectors that form cavities into which the concrete is poured. All major ICF systems are engineer-designed, code-accepted, and field-proven.

ICF homes do not use a traditional wood frame. Instead, polystyrene blocks or panels are used as forms. Steel Reinforcement is then placed both horizontally and vertically in the forms and concrete is poured inside.

Block Systems-a typical block unit is 8" to 16" tall, and 16" to 4' long. They have interlocking edges that stack together similar to Lego blocks.

Panel Systems- are the largest ICF system. These units are 1' to 4' tall and 8' to 12' long.

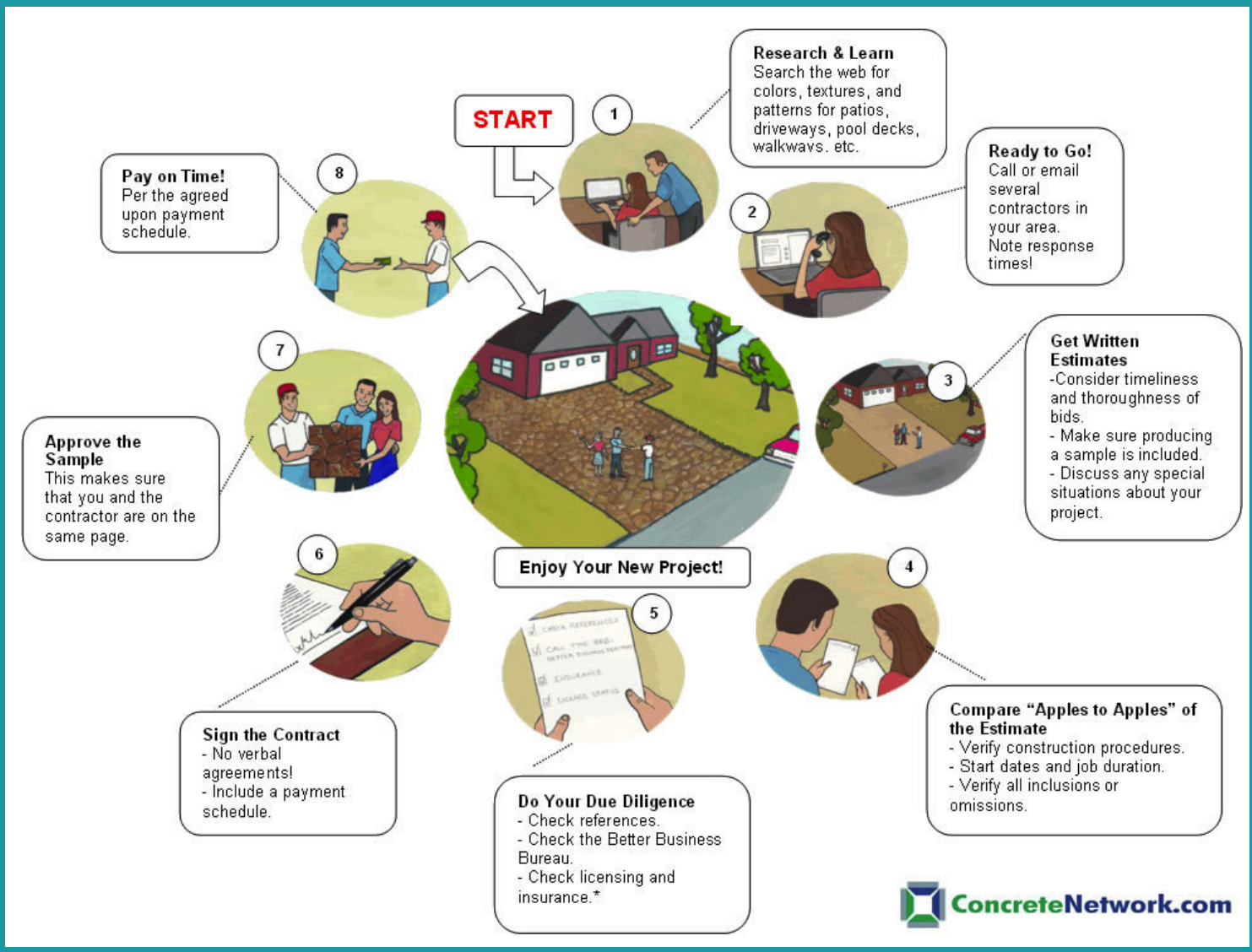
Plank Systems- are 8" to 12" tall, and 4' to 8' long. The main difference between the panel and the plank system is the assembly method.

WISCONSIN READY MIXED CONCRETE ASSOCIATION

"As far as we are concerned, the price is comparable,
and not based on factoring in the energy savings.
We dispute claims that it is more expensive to build with ICFs.
Every home we build, we figure both ways —
under conventional construction and under ICF construction.
We actually save money with ICFs."

—ROBERT ANDERSON, *CEO of Affordable Homes, Chicago, Illinois in October/November 2002 Concrete Homes Magazine*

EIGHT TIPS FOR HIRING A CONCRETE CONTRACTOR



Use this guide to make sure you're prepared when it comes to hiring a contractor. These 8 simple steps are your key to knowing what information you should look for, what questions you should ask, and to understanding some vital do's and don'ts during the process. Your preparedness can make a difference in how smoothly your project gets installed. Print a copy of this diagram and refer to it through each step of your project. Before you know it, you'll be enjoying your new concrete too!

About the Concrete Network

The Concrete Network (www.concretenetwork.com), located in Yucaipa, Calif., is the largest and most comprehensive resource online for concrete information. Over 1 million people visit the site each month to read articles, get design ideas, and to search its extensive directory for a concrete contractor in their area.

Established in 1999, The Concrete Network's purpose is to educate homeowners, contractors, builders, and designers on popular decorative techniques and applications. With thousands of articles, photographs, and a comprehensive directory of concrete contractors, The Concrete Network is a repository of information about the industry's products and services, including stamped concrete, stained concrete floors, concrete countertops, polished concrete, and much more.

The site excels at connecting buyers with local contractors in their area through its Find-A-Contractor service. The service provides visitors with a list of decorative concrete contractors throughout the U.S. and Canada, and is fully searchable by 23 types of decorative concrete work and 200 regional areas throughout North America. The directory is organized by area and specialty, such as patios, pool decks, driveways, countertops, floors, stamped concrete, and water features, among many others.

Site visitors can choose their local area and view concrete contractors and concrete products, obtain full contact information for the listed businesses, and contact them directly.

The Concrete Network was founded by Jim Peterson, a former Vice President of a major concrete company in Riverside, Calif. During the 1999 World of Concrete Trade Show in Las Vegas, Peterson had the idea to create an industry portal on the World Wide Web for all things related to concrete.