

# Professional *Southern Nevada Edition* BUILDING Review

A Trade Publication Focusing On The Local Building and Contracting Industry

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Putting on a Fresh Face

The New American Home

Local Builders on the Internet



Panorama Towers—Las Vegas Is Growing Up



# The New American Home: The Future is Carved in Concrete

The versatility and beauty of concrete and cement-based products were put on full display at The New American Home® 2004, featured at the International Builders' Show, January 19-22, 2004, in Las Vegas. The visible and invisible benefits of concrete give life to a refreshing demonstration of new ideas for designing, living, and building.

The New American Home (TNAH) is an annual showcase project sponsored in part by the National Association of Home Builders' (NAHB's) National Council of the Housing Industry. This innovative Energy Star® home reveals a modern "loft" design, and for the first time since 1994, concrete provides the vast majority of the structural elements.

## Cement or Concrete: What's the Difference?

Although the terms cement and concrete often are used interchangeably, cement is actually an ingredient of concrete. Concrete is basi-



Living room features decorative concrete flooring, view of exterior concrete decking, and exposed concrete masonry.

cally a mixture of aggregates and paste. The aggregates are sand and gravel or crushed stone; the paste is water and portland cement. Concrete gets stronger as it gets older. Portland cement is not a brand name, but the generic term for the

type of cement used in virtually all concrete, just as stainless is a type of steel and sterling a type of silver.

While The New American Home was constructed using insulating concrete forms (ICFs), there are three other types of concrete home



## INSULATING CONCRETE FORMS (ICFS)

One of the fastest growing methods of home construction in the United States involves the use of Insulating Concrete Forms (ICFs). Two basic types of ICF systems are currently available. One uses hollow, polystyrene blocks that stack and interlock almost like children's building blocks. The other uses panels or planks that are held a constant distance apart by a series of plastic or metal ties.

After using the forms to construct a hollow wall with vertical and horizontal steel reinforcement, contractors pump concrete into the cavity to create a solid structural wall with insulation on both sides. Unlike traditional concrete forms, the forms stay in place and the polystyrene insulation on either side of the concrete functions as the insulation for the home.

Drywall is screwed into the fastening surface on the interior side of the forms. The result is a highly energy-efficient, disaster-resistant home that fits into any neighborhood.

The Insulating Concrete Form Association (ICFA), Portland Cement Association (PCA), and other allied organizations have produced a variety of technical, training and promotional tools concerning ICF construction over the last several years. For more information about ICFs, visit [www.forms.org](http://www.forms.org), [www.concretehomes.com](http://www.concretehomes.com) or [www.icfweb.com](http://www.icfweb.com). Information about the Arxx High Performance Wallsystem, which was used to construct The New American Home 2004, can be found at [www.arxxbuild.com](http://www.arxxbuild.com).



Exterior view of the lower level deck.

## CONCRETE MASONRY

A concrete home building system that is familiar to most Americans is concrete masonry, also known as concrete block. Using this time-proven technique, masons lay a series of courses, or rows, using the block units. Each course is set on a layer of mortar to bind the blocks and to ensure proper spacing. The most common exterior finish is stucco, while on the inside surface, the walls can be furred out to accommodate drywall. There are a number of new types of concrete block systems on the market that make it easier than ever to achieve a wide variety of architectural looks and to incorporate rigid insulation for added energy efficiency.

The National Concrete Masonry Association works to further the cause of masonry construction in North America. Visit [www.ncma.org](http://www.ncma.org) to learn more. The Portland Cement Association's residential website, [www.concretehomes.com](http://www.concretehomes.com) also has useful information about concrete masonry.

building systems—removable forms (cast-in-place), concrete masonry, and precast concrete forms. (Please see the accompanying sidebars to this article for the differences.) Their design options are slightly different; however, the advantages each provides to the homeowner are equivalent.

Interior and exterior walls can be finished to meet the homeowner's preference on all concrete homes. Options including finishing the concrete itself—to look like brick or other finish styles—or adding vinyl siding, stucco, brick or stone. Exemplifying these options, three different concrete flooring techniques, integrated with decorative finishes, appear on all three levels of TNAH, as well as the exterior decks. The exterior finish features decorative concrete masonry and stucco with exposed masonry functioning as a beautiful interior wall finish.

Situated at 3048 Island View Court in a gated-community subdivision of *The Lakes at West Sahara*, The New American Home site makes full use of its waterfront location, the application of xeriscape, and textured wall treatments inside, so that the overall effect is not typical of concrete at all. Indeed, TNAH matches comforting solidity with an airy openness to provide a very livable combination of attributes.

### Energy Efficient Construction

The 5,180 sq. ft. home brings the outside in and the inside out, with excellent use of natural light and dramatic use of building materials. ICFs make up the high performance envelope for the below- and above-grade walls, which insulate the structure to an uncommon degree.

The home has been designed to reach a Home Energy Rating Sys-

tem (HERS) score of 90 (well above the current Energy Star rating requirement of 86) thanks to a high number of high-performance technologies, including the ICFs. Homes built with ICF exterior walls offer greater energy efficiency, improved comfort through less air infiltration and reduced sound penetration, and greater strength and durability—without sacrificing beauty and architectural flexibility.

According to the Portland Cement Association, “Houses built with exterior concrete walls can require less energy to heat and cool than comparable wood frame houses.” Project developer Citadel Sahara, LLC and its international development team consulted with Building America’s IBACOS Consortium to design and build a home that is energy efficient as well as attractive. TNAH will use 46 percent less energy for space heating and cooling, hot water, and lighting than a standard home.

#### More Concrete Advantages

Apart from energy savings, concrete construction can yield a number of other benefits. In TNAH these include:

**Acoustical Performance**—Significantly less sounds penetrates through a concrete wall as compared with an ordinary frame wall.

**Fire Safety**—Concrete walls will withstand up to four hours of intense fire and temperatures without structural failure, compared with wood frame that can fail in one hour or less. A 1997 report issued by McGraw-Hill indicates that “Fire is five times more likely to spread when exposed to wood compared to exposure to plastic foams used in ICFs.” What’s more, when exposed to fire, the emissions from plastic foams are no more toxic than those released by wood.

**Indoor Air Quality**—Volatile organic compound emissions from concrete building products are lower than those observed for most other building materials and do not present a health risk.

**Wind Resistance**—Debris driven by 250 mile-per-hour tornado-force winds will penetrate through typical wood frame construction but will be stopped and fail to damage the concrete within ICF construction or cast-in-place walls.

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## PRECAST CONCRETE FORMS

With pre-cast technology large sections, or panels, of concrete walls are poured horizontally in a carefully controlled factory environment. Openings for walls, doors, electrical and plumbing lines are selected in advance of the pour. The factory setting ensures a very high level of quality, which is unaffected by weather or unexpected jobsite conditions. Once completed and cured, the panels are delivered by truck to the job site, lifted into place with a crane, and fastened together. Precast panel systems often incorporate a layer of foam insulation to greatly enhance the energy efficiency of the completed wall.

A textured orange peel finish and coat of latex paint are all that is needed to finish the interior panel. The combination of concrete and foam insulation delivers an aesthetically pleasing home with superior energy efficiency, durability and moisture resistance. A precast home can utilize virtually any blueprint design. For further information, the Precast/Prestressed Concrete Institute maintains a website at [www.pci.org](http://www.pci.org).

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## The Local Connection

Las Vegas's own Merlin Contracting and Developing LLC was the builder selected to complete the home in time for the NAHB show. Merlin's portfolio includes the upgrades of luxury high-rise condominiums at Park Towers, as well as custom homes built throughout the Las Vegas Valley, totaling some \$44 million worth of construction activity since the company's inception in 1989. Finishing touches were still being applied on the Monday morning of the opening, but TNAH was ready and open for scheduled tours for viewing by attendees throughout the duration of the show.

According to Merlin executive Bart Jones, "It's a neat, three-story structure that blends entirely with the setting, yet with no sense of the suburban. Rather, to use the words of Lex Van Straten, our architectural consultant (with Netherlands-based Food for Buildings), it has an 'urban vitality,' perfect for the smaller size lots we are seeing on the market these days."

Working with a "Loft" concept, the interior design team made up of Source Francaise and Jiun Ho Collection have created what the NAHB calls, "a timeless fusion of Asian



TNAH features insulating concrete forms (ICFs) for exterior walls and landscaped walls. Here, concrete is about to be pumped within the ICF wall.

## REMOVABLE CONCRETE FORMS

Traditional concrete forming, also known as "cast-in-place," is typically associated with basement foundations and commercial construction. However, in recent years a number of form manufacturers have utilized their products for the above ground walls and floors of single-family homes.

With conventional cast-in-place construction, a crew erects forms of plywood, steel, or aluminum that make a mold in the shape of the desired walls. After placing steel bars to reinforce the wall, the crew pours concrete inside the cavity. Once the concrete hardens, the crew strips the forms to leave the reinforced concrete walls. For above ground walls, a layer of rigid foam insulation is attached on both or either side of the

concrete, or within the inner cavity, to provide additional energy efficiency.

Some cast-in-place systems make it possible to use form liners or apply architectural finishes to the exterior surface of the concrete. On the interior, a skimcoat layer of plaster is typically applied, with painting as the final step—it is not necessary to install drywall.

The Concrete Homes Council, a subsidiary organization of the Concrete Foundations Association, maintains a website at [www.concretehomescouncil.org](http://www.concretehomescouncil.org). This group is committed to advancing the use of removable concrete forms for above-grade residential applications.

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and European traditions with modern sensibilities that blend equally with both modern and classic interiors that furnish the home.... Authentic European accents and other antiques offer timeless classics to create a blend of old and new."

Observers say the Loft style is becoming an increasingly important option in the new homes market. From first-time buyers and single-person households to the boomer generation with grown children, the versatility of loft design presents a trove of options for increasingly demanding consumers, offering exciting new features that can help builders take advantage of these growing markets.

## TNAH RESOURCES

### BUILDER

Merlin Contracting & Developing, LLC  
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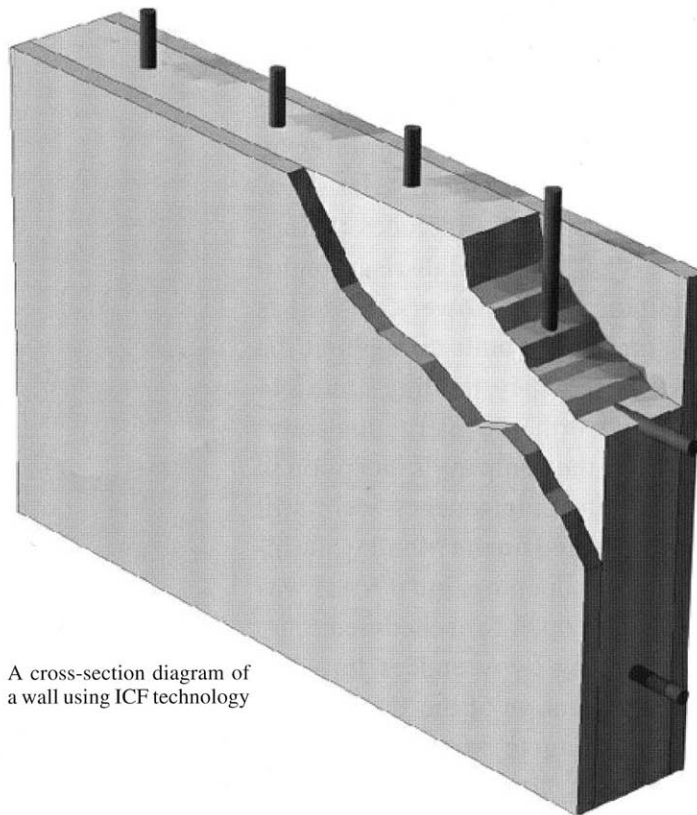
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A cross-section diagram of a wall using ICF technology

### Made with the Market in Mind

Among the many outstanding characteristics of TNAH, a "floating roof" in the master bedroom, a home theater with direct light access, and 16-foot high ceilings with skylights are particularly noteworthy. The home also includes mosaic flooring in both the living room and master suite, plus a 400-square-foot terrace with spa. There are three full baths, one of which affords a spectacular corner-window view from its jetted bathtub. Its wet bar, two-car garage, outside workshop, and three fireplaces are just a few of the amenities that any family would certainly enjoy.

Architect Van Straten describes the home as featuring "an atypical layout for American homes, that will appeal to many in different phases of life. We think a well designed house reflects European roots, but should never be an imitation of something else."

The estimated sale price of the original model is approximately \$1.8 million, although the final price is to be determined.

*All photos by Erin O'Boyle Photographics/Courtesy Portland Cement Association (CPA). Based in Skokie, Ill., the CPA represents cement companies in the United States and Canada. It conducts market development, engineering, research, education, and public affairs programs.*