January/February 2025



ORI DOR NCRETE

The Insulating Concrete Forms Magazine

## What's New for 2025 Reconcile Wall Assemblies Project Profiles



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By Andy Lennox

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This custom beachfront residence in Melbourne Beach, Florida, was the 1st Place Winner in the Unlimited Residential category of the 2024 ICF Builder Awards. This very high-energy efficient design was also built to withstand hurricane-force winds.



#### Project Profile: Garnet Way Infinity Pool

This Penticton, British Columbia, pool was the winner of the Pools category and the People's Choice Winner in the 2024 ICF Builder's Award.







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## **New Opportunities**

Welcome to the first issue of 2025! This is always an exciting time as we prepare for our visit to World of Concrete and the ICF Builder Awards taking place at the Las Vegas Convention Center on January 22 in Las Vegas. Stop by the ICF Builder booth N1769 to meet our team and discuss the amazing projects we'll be featuring throughout the year.

As Trevor Brown reflects in this issue, ICFs have come an incredibly long way from their early days. What was once seen primarily as a below-grade solution is now revolutionizing construction at all levels, from hurricane-resistant homes to high-rise hotels. This evolution mirrors the broader transformation we're seeing in the construction industry. Tom Patton explores a little of this as he recounts how building materials and methods have evolved since the 1970s. With the increasing focus on sustainability, resilience, and energy efficiency, ICFs are perfectly positioned to meet the challenges of modern construction.

The industry continues to mature and innovate. Logix president and ICFMA member Andy Lennox shares in his industry update. Engineer Dave Gowers also opens our eyes to expanding possibilities, showing how ICFs are finding new applications beyond tradi-



tional building construction, from retaining walls to bridge abutments.

This evolution comes at an important time. As we face increasing challenges from natural disasters and stricter building codes, the inherent advantages of ICFs — from disaster resilience to superior energy efficiency — are finally getting the recognition they deserve. Insurance companies are taking notice, and more builders are realizing that ICFs offer a way to future-proof their projects while saving on labor costs and construction time.

As we move into 2025, our industry stands at an exciting threshold. The technological innovations, expanding applications, and growing acceptance of ICFs point to a future where resilient, energy-efficient construction becomes the norm rather than the exception. Through the pages of this magazine and our digital platforms, we look forward to sharing the stories of the innovators and builders who are making this future a reality.

Thank you for being part of our community as we continue to push the boundaries of what's possible with ICF construction. Here's to another year of growth, innovation, and success!



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#### **ICF Builder Awards**

This year marks the 20th annual ICF Builder Awards, which is the premier event for recognizing ICF construction. This year, the event ceremony

will be held in-person on Wednesday, January 22, 2025, at World of Concrete. Returning this year are the popular People's Choice Awards, as well as the top picks of our judging panel. Awards will be given for the winning projects in the following categories:

Small Residential: 3,000 square feet or less Large Residential: 3,001 to 6,000 square feet Unlimited Residential: Over 6,000 square feet MultiFamily: Duplexes, apartments, hotels MultiFamily Low-Rise: Under 5 stories Light Commercial: Less than \$5 million Heavy Commercial: \$5 million or more Education: K-12 educational buildings Pools: Residential or commercial ICF pools Specialty Applications: Any other use of ICFs

A record number of people voted for their favorite People's Choice Awards projects in all of these categories. For more information regarding the ICF Builder and People's Choice Awards visit www.icfmag.com/builder-awards. To RSVP to attend the awards ceremony on January 22, 2025, at World of Concrete, go to www.icfmag.com/builder-award-rsvp. Doors open at 5 pm and will be held in room N256 of the North Hall.

www.icfmag.com/builder-awards www.icfmag.com/builder-award-rsvp

#### PHNX Development Forms Alliance with Mercury Insurance



PHNX Development, pioneer of the nation's first Type 1A noncombustible singlefamily home, announced an alliance with Mercury Insurance to forge a path to making homes in high fire-risk areas insurable. In Type 1A construction there is no wood and no roof vents, nothing to ignite. An ICF PHNX Home structure is simply concrete and steel. Mercury Insurance bound its first PHNX Home policy

on PHNX1, the company's flagship Type 1A noncombustible home in Santa Clarita, California. San Diego-based PHNX Development has pioneered PHNX Home, the nation's first fully non-combustible, wildfire-safe home design. Founded by architect Laurie Fisher, PHNX combines innovation with a commitment to environmental responsibility to create homes that are both resilient and eco-friendly.

www.phnxdevelopment.com

#### BuildBlock Adds Russ Nicely As Commercial Development Director



BuildBlock has added Russ Nicely as Commercial Development Director. Nicely will focus on continuing education and promotion for architects, engineers, general contractors, specialty subcontractors, and owners and developers as well as working to further develop commercial construction

projects across North America. Nicely has been the owneroperator of Superior Building Solutions for the past 20 years, focused on resilient and energy-efficient ICF construction. He has more than two decades of field experience in developing and building custom residential and large commercial projects throughout Oklahoma, Texas, Missouri, and Arkansas. Nicely has been providing technical training and support on projects in the region and promoting ICFs through educating architects, engineers, and contractors for the past several years. Nicely resides in central Oklahoma with his wife, Melissa, and their two daughters.

https://buildblock.com

#### BuildBlock Welcomes Frank Gordon as Vice President of Strategic Development



BuildBlock Building Systems, manufacturer of BuildBlock Insulating Concrete Forms (ICFs), announced the addition of Frank Gordon, Assoc. AIA as the Vice President for Strategic Development. Gordon will lead marketing, sales, and technical teams to build relationships with industry leaders, stakeholders, developers,

industry professionals, and more supporting BuildBlock's growth initiatives. Prior to joining BuildBlock, Gordon spent five years at the National Ready Mixed Concrete Association as the Senior Director of Building Innovations in the Mid-Atlantic Region for the "Build With Strength" program, where he oversaw promotions and operations across eight states. Gordon has more than 36 years of experience as a design architect and large-project construction manager, having worked on projects with institutions such as the Tennessee Valley Authority (DOE) and Oak Ridge National Laboratory (DOE), as well as various architecture, engineering, and construction firms. Gordon and his family live in Knoxville, Tennessee.

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## World of Concrete at booth # N476 International Builders' Show at booth # SU9115





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From the ICFMA

## What's New In The ICF Industry Going Into 2025



#### By Andy Lennox

On an industry level, here is what is new going into 2025.

#### **New ICFMA Website**

The Insulating Concrete Forms Manufacturers Association launched a new website: *icf-ma.org*. This website is an excellent resource for the ICF industry.

#### New Chair of The ICFMA Technical Committee

Keven Rector has just assumed the role of Chair of the ICFMA's very active Technical Committee.

#### Industry-level NFPA 285 Testing Of ICF Wall Assemblies

Compliance with NFPA 285 is essential for ensuring the safety of buildings, particularly those with multiple stories and those that use materials that might be considered combustible. It's often a requirement for buildings that fall under certain building codes, especially when combustible materials are used in the facade.

Meeting NFPA 285 requirements is crucial for building safety in preventing fire spread, ensuring that materials and design choices contribute to the overall fire safety strategy of a structure.

A joint research project has been recently undertaken by the National Ready Mixed Concrete Association (NRMCA) and the ICFMA to conduct NFPA 285 testing of ICF wall assemblies and to develop and test window opening construction details that facilitate successful test results.

The first phase of this testing was successfully completed this winter, and the draft reports are now being reviewed. Stay tuned—we look forward to sharing the exciting results once the final reports are published. Once the final report is published, only ICFMA member brands will be able to reference this successful test result.

#### Updated ICFMA Prescriptive Design Tables for Par 9 Buildings in Canada

The ICFMA is working to complete the second edition of the ICFMA Prescriptive ICF Design Tables for Part 9 Building in Canada. These updated guidelines and specifications have been developed on behalf of the member companies of the ICFMA by Tacoma Engineers Inc. with offices in Ontario, Canada.

The objective of this manual is to provide Prescriptive Tables, Engineering Details, and ICF product information that is code-compliant for buildings constructed under Part 9 of the 2015 National Building Code of Canada. This manual provides code-compliant information for Insulating Concrete Forms across each provincial region of Canada and contains a broad scope of residential designs that cover specific nuances of individual provincial regions. Each of the tables and designs covers the standard specifications for products manufactured or produced by members of the ICFMA.

The tables in this manual are the property of the ICFMA and are specific to the products offered by ICFMA member companies. Please note the tables will not be authorized for use by non-member ICF manufacturers or non-ICF methods of concrete forming.

#### **World Of Concrete Booth**

The ICFMA will have a booth at the upcoming World of Concrete trade show in Las Vegas over January 21 to 23. The ICFMA booth is N572. Please drop by to learn about the latest and greatest in the ICF industry. The ICFMA-member ICF brands will also have their own booths as well at WOC 2025!

## Here's What's New With the ICF Brands

Speaking of the ICFMA-member ICF brands, here is a quick summary of what is

new with them:

At Airfoam, the manufacturer of Quadlock, Todd Blyth has joined as CEO, and Scott Carpenter recently joined as Training and Education Manager. Airfoam also just opened a new production facility in Paris, Ontario, managed by Kyle Fitzpatrick.

Alleguard, the manufacturer of Amvic ICF, has recently introduced the Ambuck bucking system for wall openings.

Tremco, the manufacturer of Nudura, recently opened a new distribution center in Vaughan, Ontario, and a new training center in Coppel, Texas. They also recently announced that Scottie Sinson is their new President and Bill Clymer has been promoted to the position of Key Account Executive.

Logix Brands Ltd. has launched Element ICF — a brand-new hybrid ICF system — which will eventually replace their flagship ICF line, Logix ICF, which will begin its well-earned retirement at some point in 2025. Logix Brands also recently published the Pathway To Performance series, which is a series of building science–principled guidelines designed to help builders profitably construct healthy and durable code-compliant and high-performance homes. Jeff Nipper has been appointed as Vice President, Sales & Marketing at Beaver Plastics Ltd., one of the member companies of the Logix Brands consortium.

Andy Lennox is President of Logix Brands Engineered Insulation Products. This article is brought to you by the Insulating Concrete Forms Manufacturers Association (ICFMA). The mission of the ICFMA is to promote and enhance the social, environmental, and economic value of insulating concrete forms in the North American marketplace. The following ICF product brands are members of the ICFMA: Nudura, Fox Blocks, Element ICF, Logix ICF, SuperForm, IntegraSpec, Amvic, Quad Lock, and BuildBlock.

## World of Concrete Preview



World of Concrete is the best place to connect with manufacturers of ICF systems and accessory products, as well as get continuing education credits, achieve a certification, or attend an informative session to learn something new about concrete. If you are new to ICFs, attend the 90-minute "Introduction to Insulated Concrete Forms" seminar (session code MO129) taught by Micah Garrett, the Chair of the Insulating Concrete Forms Manufacturer Association (ICFMA) Education Committee. Visit ICF Builder magazine staff at our booth, N1769, for industry information and invitations to the 2025 ICF Builder Awards, and to subscribe to the magazine or join the ICF Builder Group.





#### ICF-Related Companies at World of Concrete 2025

Company	Booth #
ACPA	C4330
Amvic (Alleguard)	N455
BuildBlock Building Systems	N911
DMX Membranes	S12517
Ecospan (Nucor Corp)	N3117
Extrutech Plastics	N2769
Form-A-Drain	N2045
Fox Blocks ICF & TrueGrid	C4044
GatorBar	N3123
ICF Builder Magazine	N1769
ICFMA	N572
IntegraSpec ICF	N476
LiteForm	N1949
Logix Brands (Element ICF)	N2870
Mar-flex Waterproofing	C4812
Mono Slab EZ Form	C7732
Nudura (Tremco)	N2037
Oztec Industries	N2527
PreBuck (Tremco)	N2037
Plumwall ICF Bracing Systems	N3063
Rub R Wall	S12312
SuperForm	N2768

#### World of Concrete

Exhibits: January 21-23 Education: January 20-23 Las Vegas Convention Center Las Vegas, Nevada www.worldofconcrete.com

Exhibitors in bold are advertisers in this issue.

## How To

## **Reconcile Wall Assemblies**



By Tom Patton

Moving into a new year and especially 2025, there is always a pause for reflection. If we look back at building materials, wall assemblies, and building codes there is a lot that has happened since the 1970s. We have gone through these development phases from building green, healthy homes, thermal efficiency, air tightness, and now to sustainability and resiliency. Each of these "phases" has had an impact on building materials, methods, and how wall assemblies are built. Plus, take into consideration advancements in building and energy codes and third-party testing and certification.

Everyone jumped on the "building green" phase until every product had the word Green stamped on it. The "healthy home" movement improved construction quality related to building science, leading to betterinsulated and air-tight envelopes, resulting in better indoor air quality (IAQ). This phase initiated a concern to have the wall assemblies meet building science norms with respect to dew points, condensation, mold growth, and the ability of the wall assemblies to breathe and dry. Materials for air barriers, weather-resistive barriers, and vapor retardants were developed, resulting in the need for sealants and tapes. Homes became more air-tight, and that created other issues for IAQ, air changes, and replacement.

Wall assemblies and codes became more complicated with multiple material layers, full-height continuous insulation, sealants, testing and certification, which meant increases in timelines, material, and labor costs. In addition, various types of exterior insulation are added to meet thermal requirements, which requires more attention to the attachment of the exterior finishes. All this requires more coordination, more building materials at a higher cost, and more labor and time at a higher cost. The ultimate end product is much better, if and only if it has been installed correctly.

From the 1970s to now, 55 years, conventional building materials have certainly evolved. Wood studs are now 2x6 but the quality of some of the wood is not as specified and the pricing has fluctuated dramatically over the last few years. The design and use of air and weather barrier sheathing has come a long way and is now basically a standard application. The use of vapor retardants has developed a debate whether to use it or not depending on climate zone. Interior insulation has a number of material and application variations, similarly, exterior insulation – EPS, XPS, mineral wool, etc.

As we now move into the "resiliency" phase, the addition to wood framing with load path columns, anchors, wind bracing, and hurricane straps add considerable cost and labor to the wall assemblies.

In this reflection, let's look at the evolution of insulated concrete forms (ICFs) over the last 55 years. The block is basically the same.

The industry has evolved for the better with manufacturing standards, more product testing, and manufacturing quality control. ICFs have been approved by the ICC with specific testing to meet an Acceptance Criteria (AC353) and adopted into the IRC section R404 and R608, plus engineering tables for above- and below-grade walls and lintels. Each manufacturer has enhanced their product lines with some of the biggest changes being in thicker EPS insulation to provide more R-Value in the colder climate zones. All the building science and structural aspects of ICF have not really changed but have been refined, over these 55+ years. One ICF block provides at least six attributes for a wall assembly, including airtightness, vapor control, fire resistance, and high thermal resistance. By weight, typically one block is 45% recycled material with webs made from recycled plastic. The structural integrity of a 6-inch reinforced concrete ICF wall assembly can withstand winds of 200 mph. All this with no added materials or labor in building the wall assembly. Just add the exterior and interior finishes.

The ICF industry has developed a number of specific accessory products to enhance constructability and speed. The ICFMA, which is an alliance with the major manufacturers, endeavors in a joint effort to promote the technical development and education of the ICF construction industry, along with the Build With Strength program promoted by the NRMCA.

Reconciliation is an assessment on compatibility, in the decisionmaking process, between building with wood framing or with reinforced concrete walls made with ICFs. As a contractor or developer, if you are able to assure your clients through your marketing that by building wall assemblies with ICFs, plus other related fortified elements, the building and occupants will be protected from all these weather events to a much higher degree than in a wood-framed home, wouldn't that the better way to build, satisfy your customers, and give yourself peace of mind?

Meet the challenge of Mother Nature head-on with insulated concrete forms. Check out the ICFMA and the major ICF manufacturer's webpages. Take a training course, have your crew take the course, and learn the advantages. We haven't even mentioned the energy savings. Like the commercial said — "Try it, you'll like it."

Tom Patton had a 30-year architectural design background prior to joining the ICF industry in 2001 with the technical support department at ARXX. Over the last 20 years, Tom has worked with major ICF companies developing technical documentation, application details, and training programs, as well as consulting and promoting ICFs with various associations including the ICFMA, NRMCA, and codes and standards committees. Currently, Tom is Corporate Brand Ambassador for Fox Blocks and co-developer of the Fox Blocks Integrated Learning Center.

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## Perspectives by Build With ICF Corner

## **ICFs Are Finally Getting LOVE**



By Trevor Brown

Twenty-four years ago I saw ICF at the International Builders Show in Las Vegas and I thought it was "pretty Cool." At that moment, I didn't think it would change my life. I didn't even think it would change my business. I thought this could be another product I could sell, install, and utilize in conjunction with my real business. Despite the enthusiasm and smooth talking of the BlueMaxx/Arxx salesman, I didn't see this product going above grade. I couldn't see this product building high schools, movie theaters, fire stations, and definitely not 26-story hotels and apartments. But here we are.

Within 12 months of that meeting in Vegas, we were fully engaged in the industry that would change not only my business but my LIFE. Year after year I am blown away at the popularity and growth we see in Insulated Concrete Forms. Hold on. I mean, I can see why, but I should say I'm excited to see others finally seeing the advantages of ICF. I feel like year after year we continue to prove the effectiveness and positive attributes of the product for all forms of construction. As an industry, we continue to spread the word via marketing, increased distribution channels, and education. We work with trade schools, colleges, high schools, and even a few junior high schools to bring in the next generation of ICF installers and builders. All of these things continue to grow our loyal following and enlighten new folks to our ways. Still, it comes down to four crucial measures.

#### **Resiliency**

Something very topical for a lot of Americans right now is resiliency due to the horrible hurricanes and flooding that we have seen across the US in the last six months. I know I speak for a lot of people in the ICF world when I say I catch myself pulling my hair and yelling at the television, or my phone, "Why didn't you build with ICF??" I know it's not realistic to think that everyone can build with ICF, but it hurts to know that a lot of these tragic natural events could have a way better ending for at least some people. I was talking with a friend in the insurance business and he told me how sad it was that companies he works with are pulling out of those areas and are not going to provide homeowners insurance because they know they will just have to do it again in a few years.

I asked if they realized that people do have the option to build a house that will survive a hurricane or flood and they could make that a stipulation of rebuilding in that area. He said they are finally looking into that, but the industry is very slow-moving when it comes to adapting to new concepts. He gave the example of Uber. Ride-sharing companies have been around for almost 15 years and auto insurance companies are still barely figuring out how to insure them. I explained my frustration stems from the fact that we have the option of building a home that will require considerably less money to repair, even if it doesn't survive in perfect shape, than a house that will be a total loss.

One of the trends we are seeing in disaster areas, including not only hurricane areas but in fire areas, are people forgoing \$1,000 to \$2,000 per month insurance costs and building a house that they don't worry about replacing. One example is a house our drafting company just designed in Florida. The client decided to raise the house up and make the entire downstairs a garage that can be opened up on both ends to allow flood waters to pass through without damaging any of the valuables in the home. After the hurricane passes they will hose it out, close it back up, and wait for the next one. He will save \$1,200 per month in flood Insurance.

Every year we see more destruction by fires. We saw a local ski resort get evacuated last year just 10 miles from our ICF house. There are 100 or more homes that were in the path of the fire. Thankfully the combination of a few well-timed rain storms and amazing firefighters were able to stop it before any structures were lost. But when this happens, it always makes our phone ring. People in that area realized that building with kindling in a fire area may not be the best idea.

#### Energy Efficiency and Building Codes

Another growing concern that builders can't ignore is the constant increase in building codes. Most of us with long gray beards can remember the days of 2x4 exterior wall construction. In most areas of North America, we are now required to use 2x6 for exterior walls at a minimum. And beyond that, we are seeing codes requiring builders to use continuous insulation or "CI." This basically means you must wrap the exterior with sheets of insulation to add R-value and minimize thermal bridging of the studs. Most areas require R-values of R-19, but there are already areas moving to R-23, mostly in Canada but there is some discussion in colder climates of the US as well. You can be guaranteed that these requirements will continue to climb. That being said, as a builder, you ARE going to change how you build. Whether that is how you build your stick-frame house, or just make the jump to ICF and get 10 years ahead of any foreseeable changes to the codes.

On the other hand, as a consumer and end user of the home, you have to be worried about rising heating and cooling costs. No matter how you heat or cool your home, there is an expense associated with that. It is very important to create a home that consumes as little as possible to maintain a comfortable environment in your living area. This is not a new sales feature of ICF. We have sold on operational costs for a long time, but as costs go up, it makes it easier and easier to convert those drafty stick frames to airtight insulated concrete forms.

#### Innovation

A really cool reason for this popularity boom is all the innovation we are seeing in our industry. Every time you turn around you see new products related to ICF. Everything from accessories to make the install easier to partner products like fiberglass rebar and Helix Micro Rebar to new and improved ICF blocks. You know an industry is on its way up when other companies are working to get out products that work specifically into that industry. I look back to the day Simpson came out with the first ICFVL for hanging ledger boards for floor systems. I remember saying to some other OG ICF guys, "Wow .... we made it...Simpson made us a hanger!" Now you have other companies out there making hangers, such as Burmon, Watkins, and Nudura, just to name a few. We are really growing up.

Nudura Western Division Key Account Manager Cameron Ware said, "We are maturing as an industry. We are past the gangly teenager stage and it's good to see." He also talked about 30 or more years and multiple companies that have come and gone, which worked out a lot of kinks in our industry. Sometimes it's better to not be the first guy to do something. "A lot of times the first person that tries to swim to shore doesn't make it," he joked.

#### Education

The fourth leg of this massive table of growth for the ICF industry is education. Yes, that in its simplest form refers to



training installers to execute good, straight, plumb, and square walls. We can sell all the block we can produce, but if we don't have well-trained tradespeople to provide the labor needed to seal the deal, it's all for not. Luckily, we have seen huge increases in attendance to trainings all over the country. We are not only allowed in but approached by trade schools and tech programs to certify students in ICF installation. But it's not limited to that.

Probably one of the most prolific educators in the ICF world is Alfonso Nieves. Alfonso is a regional advisor for Fox Block and is well-known for packing a room for his training classes. But he is seeing some changes in his students lately. Alfonso told me, "I'm seeing more homeowners coming to my classes to learn about ICF and take that information back to their general contractor. My last class was half homeowners and those were split 50/50 between young couples and older retirees." He also expressed his excitement that there are some other important attendees as of late."There are a growing number of subcontractors, electricians for example, as well as building officials and inspectors. It's not just installers anymore."

Outside of in-person classes, a lot of manufacturers offer a form of online training via their websites or webinars. Also, you can regularly see ICF represented on TV thanks to HGTV and DIYTV. Then if you really want to go down the ICF rabbit hole, a quick search of "ICF

Construction" on YouTube will provide you with pages and pages of videos, some with hundreds of thousands of views. Now let me insert a disclaimer here ... just because someone has a video on YouTube does NOT mean they are a qualified expert on anything. Please verify the source and work with a local professional before you take on any ICF project.

If we want to see continued success in our industry everything in this article has to be conveyed to the end user, builders, engineers, architects, drafters, and building officials. If we don't educate everyone we can about the benefits that we are so proud of, we won't continue to see the results we are seeing. We are stoked about the growth of ICF, but this is just the beginning of what we have to offer to the building industry. We are debatably 10% of the market. That leaves us 90% yet to conquer. That is a lot of potential business for all of us. Come on! Show us the LOVE!

Trevor Brown is the owner and operator of Innovative Building Products, a multiline ICF and ICF accessories distribution company. He has been in the ICF industry for over 20 years starting as an installer and distributor. He has managed the Western U.S. for an industry-leading ICF company and is now an independent consultant for ICF builders and homeowners across the country. He is also the co-host of the Build With ICF Podcast, which can be found from the website, www.buildwithicf.com.

Corner Engineer's Corner

## **Using ICFs For Non-Building Projects**

ICF systems are used extensively throughout the construction industry for a variety of building applications, such as private dwellings, commercial, and industrial buildings. However, applications other than buildings can be ICF-appropriate too. This would include structures where energy efficiency may not be of prime concern, but speed of construction, and associated labor savings, would be the main objectives. The following is a review of why ICF would be a good choice for a contractor considering one of these applications.

#### **Applications Other Than Enclosed Buildings**

One obvious application is free-

standing retaining walls. These could be low-height site walls or landscaping walls. Or they could be substantial-height bluff retention retaining walls. In either case, waterproofing products are available for the ICF foam finish on the earth face. And for the exposed face, a number of finishes are possible, including stucco, stone, and brick, to name a few.

Other examples of non-building applications might be storage tanks, culvert header walls and abutments, above-ground boundary walls, bridge abutments and wingwalls, tunnels, etc.

These have traditionally been built with either conventional forming systems, or custom modular systems, both with costs as described in the next section.





#### **Conventional Forms & Forming**

I've been involved with conventional, and custom, concrete forms for more than 50 years, and have designed the application of them for commercial and heavy civil applications for about the same amount of time. When I first came to the US over 40 years ago, I encountered snaptie systems for the first time. There's no doubt that snapties have their place in construction, but in many cases, they can be replaced with ICF form systems.

The problem with conventional forms is the labor factor, which is significant, and includes the following activities: storage at an equipment yard, shipping from the equipment yard, unloading at the jobsite, placing/installing at the application location, stripping from the hardened concrete, cleaning at the jobsite, loading for site removal, shipping back to the equipment yard, unloading at the equipment yard, and storing once again at the equipment yard. These activities apply whether the forms are owned or rented. If owned, the material cost may have been amortized over several previous projects, but if rented, there is a material cost directly applicable to the project. Several studies have been done at various times, which show that 70% of the total forming cost of a project is labor.

#### **ICF Forms As An Alternative** to Conventional Forms

By contrast to the above, using ICF forms to produce the same finished product (e.g. a free-standing retaining wall), the activities are reduced to the following: loading for shipment, unloading at the jobsite, placed/installed at point of use, and the cost of the ICF form. And unlike conventional forms, all the ICF handling can be done without the need for mechanical equipment.

One significant advantage of ICF over conventional forming methods is that it's very user-friendly. With the current industry-wide shortage of skilled labor, a contractor with only a basic forming background can quickly get up to speed with ICF installation. Minimal tools are required, compared with those needed for conventional forms. Basic ICF installation is very straightforward and requires a smaller crew. Bringing in additional labor just for concrete placement days dramatically reduces the build cost. Also, the ICF installation learning curve is much faster than for other trades, which means revenue-earning production work can be undertaken in the shortest possible time.

#### **Speed of Construction**

Typically, ICF construction will be faster when compared with the same application using conventional forms. The ICF form is self-contained at the time of placement, with the necessary "form ties" already being in place as an integral part of the ICF system. Therefore, no additional labor is required to set form ties. Placing both horizontal and vertical rebar within the ICF, typically without physical ties, is yet another labor-saving feature.

#### **Design Considerations**

Depending on the particular construction project, some design considerations might be necessary. This might include rebar sizing and placement. Typically, the structural designer will strive to provide a rebar layout that coordinates with the ICF block height and the ICF web spacing. If undertaken at the outset, knowing that ICF forming will be employed, there will be no additional cost. ICF core sizes typically come in 2-inch increments from 4 inches through 12 inches. Some ICF systems can accommodate core sizes greater than 12 inches. And in many cases, systems can be siteassembled around the rebar, if it was necessary to install the rebar ahead of ICF installation.

The net result of all the above is that

using ICF forms to replace conventional forms where possible will lead to labor savings and consequent project cost savings. With escalating construction costs across all sectors, cost management and cost control on projects of all sizes is increasingly more important, to ensure that projects are delivered within budget.

In the 51 years since graduating from London University in the United Kingdom, Dave Gowers has acquired extensive experience in concrete construction through diverse commercial, residential, and industrial projects, up to \$1-billion in value, in several countries. Dave resides in Southern Oregon with his wife and business partner, Jennifer. Dave holds a PE license in 14 states/ territories and is the principal of Dave Gowers Engineering LLC, and co-principal of Cascade ICF LLC. He can be reached at 541-660-9661 or dave@dgengineering.com. ■

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AWARDS Above The Bar was the 1st Runner Up winner and the p People's Choice winner in the 2024 ICF Builder Awards in the small residential category. Built using Nudura blocks, Above The Bar stands overlooking a cliff in Salcombe Devon United

The Bar stands overlooking a cliff in Salcombe, Devon, United Kingdom. Duncan Lilburn, of Lilburn & Elliott Construction, submitted the project, which had a few challenges from the start, apart from being built on a cliff. The home was built on a coastal path that had to remain open to the public with about 100 people



passing by it each day during construction. This left little room on the site for access and for planning deliveries. At 2,066 square feet, the house steps back into the hillside on each floor to blend in with its surroundings.

Out of 52 weeks of construction time, ICF construction time was only 6 weeks. And, the builders estimate they saved 8 weeks of construction time by building with ICFs. Structural engineer Nigel Ridley of N. R Associates recommended ICF as a strong, light,





easy-to-utilize material on a difficult site, with a cliff edge dropping down three stories. This was a bit of a family project, with the family's daughter working as the architect and structural engineer being their son's father-in-law.

"The inaccessibility of the site in an area of Outstanding Natural Beauty where pleasing planners and local conservationists meant that the whole project had to be dealt with very sensitively," says Lilburn.

Using Nudura meant the walls could be built, re-enforced, shored up and filled with concrete quickly.

Adapting the design was swift and uncomplicated without masses of wasted product. The building system enhanced the project by the speed and efficiency of the reinforced structure, which could be built on top of each platform and against a rock face."

Lilburn & Elliott Construction was chosen at an early stage due to previous experience with Nudura and through working with the structural engineer on past projects. "The architects hadn't designed a build with ICF before and were a little nervous using this system," says Lilburn. "Having the meeting with Nick from the Fell Partnership (form distributor) and us, put their minds at rest."

#### **Craftsmanship and Sustainability**

Different sizes of Nudura blocks were used on the same levels due to retaining wall properties. Local stone was used to clad the lower ground floor and the team even managed to use the stone that they had taken down from the existing garden wall. "Zinc wall







panels were all designed and cut to different sizes so folds would line up with the window reveals," says Lilburn. "The zinc roof design had four different lengths to each wall, making it very tricky to install, but the finished product speaks for itself."

The heating and cooling system runs using an air-source heat pump and MVHR units. LED lighting is used throughout and a log burner was installed to utilize the woods behind the construction. A SAP rating of 79, a C, was achieved. In the UK, an Energy Performance Certificate (EPC) shows the energy current and potential energy rating of a property, known as a SAP rating, which stands for Standard Assessment Procedure. A SAP rating of 92-100 SAP points, an A score, is the most efficient.

#### **Background & Significance**

Lilburn says the Above The Bar project has received a lot of attention and praise. "It's hard to put into words how we managed to build on this property in this location," he says. "A lot of the comments we have received are 'How did you do that?' It's definitely a significant build in the area being the last house you will see on

#### **Project Statistics**

Location: Salcombe, Devon, England Type: Residence Size: 2,066 sq. ft. ICF Use: 3,907 sq. ft. Cost: £940,800 Total Construction: 52 weeks ICF Installation Time: 6 weeks

#### **Fast Facts**

- + Built on the edge of a cliff
- + Tight access and located on a public path
- + House steps back to blend in with its surroundings
- + Built with a small team
- + Local stone used for lower ground floor
- Pressure air test of 2.43, almost passive

Visit www.icfmag.com/project-profiles for more photos of this project.



water and land out of Salcombe Bay."

The general contractor and ICF installer, Lilburn & Elliott Construction, won regional awards for best small commercial and residential builders and advanced to national finals. "A large part of this award is due to Above The Bar," says Lilburn. "The owners are extremely happy."





## **Custom Beach House**

This custom beachfront residence in Melbourne Beach, Florida, was the First-place winner in the Unlimited Residential category of the 2024 ICF Builder Awards. Unlimited Residential refers to any residence that is 6,000 square feet or larger. This very high-energy efficient design was also built to withstand hurricane-force winds, which was achieved through ICF construction using blocks made by Amvic by Alleguard, along with a foundation of concrete piles. Plumwall bracing ensured that everything was plumb and true.

This house is 8,900 square feet. Other ICF usage includes a 530-square-foot swimming pool, a 736-square-foot courtyard wall, and a 933-square-foot motorcycle garage. Out of 156 weeks of construction time, ICF installation took only 150 days. The builders estimate they saved 4 weeks of construction time by using ICFs. The project's architect, Spacecoast Architects, and Kinley Construction, have been major advocates of ICF construction for more than 20 years.

#### **Hurricane-Resistance**

The house is in a 160-mph wind zone, and the owners had a primary goal of hurricane- and storm surge-resistance along with the highest levels of energy efficiency, says Czyrelle Talento with



Alleguard. Site constraints included tight setbacks, State Department of Environmental Protection Coastal Design Ordinances, and local zone restrictions, which created numerous challenges. Some of the local code was rewritten to avoid ambiguities and to allow for reasonable design solutions.

The design included a dozen different wall heights, some approaching 30 feet in elevation. Multiple radiused arches, radius top window bucking, porthole windows, and second-floor cantilevered ICF wall sections added to the complexity. Insul-Deck was used for the multiple garage roof systems. "There are nearly 50 corners, varying in elevation," says Talento.

A fully sealed, non-ventilated attic with spray foam insulation on the underside of the roof deck created a tight thermal envelope, reduced infiltration to an absolute minimum, and protected roof trusses and metal hardware from salt air corrosion. All HVAC systems and all duct work were placed within the thermal/air barrier. Full home automation throughout allows control of all systems with minimal effort.

During construction, several named storms hit Florida's East Coast. To mitigate this risk, the project timeline was carefully planned, taking hurricane seasons into account. "The combination of hurricane-resistant windows and doors and ICF wall and slab construction ensured the structure met or exceeded building codes, and withstood the elements with ease," says Talento. "The beachfront site's topography and the potential for coastal erosion





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were significant concerns. To address this, Kinley Construction, which acted as the general contractor and ICF installer, engaged experts in coastal engineering to design appropriate shoreline protection measures, including a foundation consisting of nearly 100 cast-in-place piles, and large-grade beams tying them together.

#### **Project Statistics**

Location: Melbourne Beach, Florida Type: Residence Size: 8,900 sq. ft. ICF Use: 14,353 sq. ft. Cost: \$6.1 million Total Construction: 156 weeks ICF Installation Time: 150 days

#### **Fast Facts**

- + Florida oceanfront hurricane-resistant ICF construction
- Concrete piles foundation
- · Hurricane- and Impact-rated window and door systems
- + Enclosed motor court and garages
- Fully solar (PV) with battery backup
- High IAQ design with advanced HVAC systems

Visit www.icfmag.com/project-profiles for more photos of this project.

#### **Design & Sustainability**

This home has many amenities including high-end architectural features such as a large arched entryway, which serves as a focal point of the home's exterior. A parking courtyard enclosed by ICF walls was designed to house a solar array on the roof of the private and sheltered outdoor space. Barrel and domed ceilings add architectural elegance and depth to various rooms while radius walls soften transitions between spaces. A massive grand staircase is a showstopper in the home's design. The ICF pool, designed with various features such as in-pool seating areas and custom lighting, provides superior insulation and durability.

High-efficiency impact-rated windows and doors further enhance the thermal and air barrier envelope, and tinted "turtle-friendly" glass was utilized as the area is a designated sea turtle nesting refuge.

A full solar PV array with full battery backup can run the entire home if commercial power is lost. Ninety-five percent of all lighting is LED. All appliances are Energy Star-rated. All horizontal roof surfaces are highly reflective white to reduce solar heat gains.

"Kinley Construction and the homeowner chose to organize site tours and marketing efforts to showcase the project to industry professionals, potential clients, and the public," says Talento. "These efforts served as educational opportunities for others in the construction and real estate sectors."

Talento says that the owners considered an ICF home in Florida as the only sensible option. "It brings a level of comfort that is truly unparalleled," Talento says.



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Pools - Winner

## **Garnet Way Infinity Pool**

Garnet Way Infinity Pool in Penticton, British Columbia, was the winner of the Pools category in the 2024 ICF Builder Awards. The 900-square-foot pool is built using 10-inch Amvic ICF by Alleguard. This pool was built to integrate into a home being constructed with ICFs. ICF installation time was only 14 days, and the builders estimate that they saved three weeks by building with ICFs.

#### **Complex Construction**

This pool was built over a large rock in the mountain, using the beauty of the rock itself as the bed of the pool, with a hot tub integrated within the main pool. "This pool holds 56,000 gallons of water," says Amvic's Czyrelle Talento.

One of the major challenges in bringing this pool to life was that it was built on the actual mountainside, which meant having to follow the lines of the natural rock. Bonding agents were required to achieve a watertight seal to the mountain rock. Significant time and energy were put into the cost of waterproofing to sustain a waterproof seal to allow for the glass tile installation. "During the winter months of construction, the snow was deep and the roads to the build site were icy," says Talento. "The temperatures were





dipping into the minus 20s."

The Infinity Pool was designed to face west on top of a mountain. With the pool designed on the west side of the home, the views of Okanagan Lake and Skaha Lake are breathtaking. The beauty of the natural rock floor bed is highlighted through the integrated lights within the pool. The builder, Jason Stutzke with Okanagan Extreme Home Builders, uses ICF for all pools. "This pool could not be built with steel," says Talento. "ICF construction allowed the pool to follow the contours of the mountain, allowing the mountain to showcase its beauty as the flooring of the pool."

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The homeowner is 100% satisfied with this remarkable pool. "This infinity pool is a one-of-a-kind build using ICF," says Talento. "The rugged mountain terrain, which lends to its beauty, was a challenge in many ways along the build. But the outcome of the end product is absolutely amazing."

#### **Project Statistics**

Location: Penticton, British Columbia, Canada Type: Pool Size: 900 sq. ft. ICF Use: 900 sq. ft. Cost: \$1 million Total Construction: 60 weeks ICF Installation Time: 14 days

#### **Fast Facts**

- Built to integrate into the ICF home build
- + Bottom of ICF pool is the mountain rock
- Bonding agents used to acquire watertightness
- Infinity edge glass wall
- Hot tub integrated within the main pool

Visit www.icfmag.com/project-profiles for more photos of this project.



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