



Posted by [Eric Miller LEED AP BD&C](#)

# ICF Construction Myths: What You Should Know

A growing number of construction industry professionals recognize Insulated Concrete Forms (ICFs) as an affordable, high-performance building enclosure system. At the same time, many in the construction field have never heard of ICFs or have false perceptions about their performance and usage.



I am constantly surprised at how much myth and misconception pervades daily conversations with design professionals and other members of the construction community, as we enroll them in using these innovative stay-in-place concrete forms. ICFs deliver a "perfect wall" building envelope, and this elegantly simple and robust system may be exactly what you need to meet your project goals. However, if you are reading this and not building with ICFs, it may be because you and your team may need to separate fact from fiction. Here are the top 5 myths about ICFs and the truth behind them.

- Myth #1: *ICFs are too expensive.*

ICFs deliver remarkable thermal protection and can be installed so quickly that many people assume ICF construction is expensive. The bottom line is, ICFs are not going to break the bank on any building project, of any size, whether used for below-grade or above-grade walls. When you add up the benefits that an ICF wall system brings to your project, the costs are comparable with other quality building enclosure assemblies. If accurately weighed and evaluated, the combined attributes of this construction method make ICFs a logical choice for almost any project.

- Myth #2: *I thought ICFs were for residential foundation walls only.*

This is a huge misconception. Sure, it was true twenty-five years ago, especially with early versions of ICFs that did not feature monolithic concrete cores. Today, ICF construction is being widely used for K-12 schools, higher education, military projects, theaters, warehouses, and even multi-story, multi-family projects and high-rise buildings as well. Another growing trend is utilizing ICFs for houses with the walls being installed from the footings to the roof. Any wall you would build with wood, cast-in-place concrete, CMU, or tilt-up can be built with ICF. The truth is, an increasing percentage of ICF construction is above-grade, and factoring in the array of available wall core thicknesses and means of exterior finish systems that can be used with ICFs, there is typically no height limitation to an ICF building within appropriate building uses and setback constraints in the USA and Canada.



- Myth #3: *We tried ICFs years ago and we had blowouts and a hard time getting the walls straight.*

Like any construction method, training is required to install ICFs properly. ICFs are engineered to hold liquid concrete placed at a rate of 4 feet in height per hour, and typical placement is usually to thirteen feet per day. When contractors experience blowouts, when concrete forms fail and allow concrete to spill out of the wall, it is usually because they are skipping key steps. Installers following appropriate means and methods, properly reinforcing the system at specific conditions, and placing concrete at correct rates, will find that blowouts are an extremely rare occurrence. I have coached numerous first timers installing ICFs who have had zero problems with blowouts. Getting the walls straight involves using the proper bracing and alignment system, and again, getting the proper training in using it. You can enroll in [one such training course here](#).

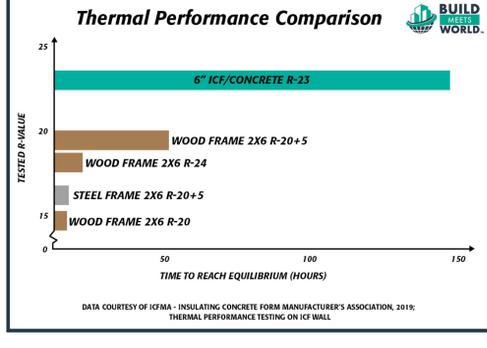
- Myth #4: *My mechanical contractor says we can't downsize the HVAC system.*

You made the commitment to go ICF and your HVAC contractor is reluctant to downsize the heating and cooling system. This is a lost opportunity to save money on upfront as well as ongoing costs. Why does this happen? The first reason is HVAC contractors want to protect themselves from customers calling them and complaining of being too cold or too hot because the system cannot handle extreme loads in very cold or very hot times of the year. While it's understandable and commendable to avoid call backs, this fear often leads to oversizing HVAC systems, rather than "rightsizing" them.

The second reason is energy modeling programs may not recognize the real-world performance of an ICF wall. The models rely on the input of a nominal R-Value and assume higher air leakage rates. R-Value is not the only metric that determines the in-situ performance of a wall assembly. Make sure your energy model accounts for the fact that ICF walls are going to drastically reduce your HVAC load. If you downsize your HVAC, you save money on first costs, and you take advantage of reduced operating costs for the life of the building (see Myth #1). If you don't downsize, you are missing an opportunity to take advantage of this airtight thermal mass wall.

- Myth #5: *The R-20 cavity wall I'm building is almost as good as your R-24 Mass Wall with Continuous Insulation, so why would I go ICF?*

A Mass Wall with continuous insulation is recognized by international building code as entirely different than a cavity wall. That's because airtightness, continuous insulation and thermal mass greatly affect the real world performance of a building enclosure. [The Insulating Concrete Form Manufacturers Association \(ICFMA\)](#) has completed multiple comparative thermal performance tests of various wood and steel stud wall assemblies versus an R-23 ICF wall (see results below). These tests confirmed that an R-23 ICF wall will far outperform an R-25 cavity wall with continuous insulation (R-20+5c.i.) The test confirmed that the R-23 ICF wall performed about 60% better than a typical R-20 wood-framed wall, after the walls reached steady state. The wood wall only performed at R-14.8 to its nominal R-Value of 20, whereas, the ICF wall performed at an R-Value of 23.36, compared to its nominal R-Value of 23.



In the summary of one ICFMA study, the testing agency stated that the ICF wall took longer to equilibrate than any other wall they had ever tested, a testament to the robust performance of an ICF wall. From the moment the clock started on the thermal testing of these two wall systems, the temperature of the wood walls began to drop immediately, whereas it took over two days for the ICF wall to start dropping. That means the ICF wall needed no energy to maintain its temperature for 48 hours after a dramatic drop in temperature and the wood walls would have started calling for heat almost immediately. So, NO, your R-20 wall is not even close to this R-23 Mass Wall. At best, it's 60% worse.

Every progressive building product has its pros and cons, but don't let myths and misconceptions stop you from discovering the time and cost benefits of this robust thermal envelope solution. These stay-in-place insulated concrete forms are here to stay, so it might be time to re-evaluate your approach to building enclosures.

[For more information, visit this ICF-specific blog hosted by NUDURA Systems, Inc.](#)



## About Eric Miller LEED AP BD&C

Eric Miller brings a diverse background to his role as Regional Sales Manager at Nudura Systems, Inc. With a background in geology, finance, and construction, Eric is passionate about helping people build better buildings utilizing progressive techniques and is a champion of integrated design strategy.

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[Bruce Anderson](#) 30/5/2020, 8:29:35 am

Excellent article. Clear, concise, and thorough. Keep up the good work.

[Eric Weisenbach](#) 9/6/2020, 1:05:31 am

Excellent written article. A wealth of information. I wish someone from Nudura would contact me to talk.

[Joseph Mark](#) 11/6/2020, 11:38:19 pm

Great article! Thanks for unraveling the myths.

[Kent Taylor](#) 1/7/2020, 4:36:26 am

Well detailed and properly maintained wood frame, masonry & masonry veneer buildings can last essentially "forever", as many examples can attest. And a lasting building is a sustainable one. And a lasting financial investment. As an ICF system ages, what happens to this as an Instruct through-wall ties, that are used to attach the outer skin? Do they lose their plasticizer, become brittle & weak?

[Elise Bigley](#) 2/7/2020, 4:05:24 am

Thank you for question.

I decided to have someone with vast ICF experience reply to this query.

Keven Rector of NUDURA is widely considered one of the top technical experts in the Insulating Concrete Form industry. Here is his response to your question.

"There are ICF systems that have been in place and working successfully since as early as 1968. The vast majority of Popular ICF systems technology (using polypropylene and polystyrene web) have been in place since the mid 80s and dwellings and buildings constructed since then have never been reported as falling due to fastener detachment or web deterioration. (We would have been alerted to this as an industry long ago if this ever was a concern). Once the web materials are cast into concrete they are never exposed to UV from sunlight, therefore not ever in danger of degradation."

[TEE DAVIS](#) 29/8/2020, 6:03:53 am

Very professionally presented from an outstanding ICF company. Keep up the great work Nudura!

[Steven Swoszowski](#) 10/1/2021, 5:02:50 am

Excellent article, Eric. You've highlighted the top concerns of most of our potential customers. And through supporting information like this, we can only hope change peoples perception of modern building practices. Like using ICF for all envelopes. Stronger Buildings-Sustainable Design.

[Janet Cannon-Jones](#) 9/3/2021, 9:53:28 pm

Whilst this article shows all the advantages of ICF as being energy efficient, it does not address the issues you could potentially come across if water was to penetrate the walls. Living in Wales where the most part of the year is rain, it is an important factor to introduce ICF is the way to go.



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