April/May 2011

ICF BUILDER

The Insulating Concrete Forms Magazine

The Green Revolution

Better Faster Footings

Project Profiles: Large Residential

Building Business with Bracing

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Advertising
Craig Shorts

Editorial Director
Clark Ricks

Circulation Manager
Monica Hall

Art Director
Jason Robinson

Webmaster
Brad Moulton

Contributing Editors
Robert Klob
Ian Giesler
Pieter Vanderwerf
Cameron Ware
Randy Wilkerson

Contributors
Karen Bunz
Patrick M.B. Chan
Richard Fearn
Troy Gibson
Ken Williams

Summit Publishing
884 East 700 North
Mapleton, UT, 84664-3761
toll free: 877-229-9174
editorial: ext. 2
advertising: ext. 1
subscriptions: ext. 3
fax: 801-494-3232
www.icfmag.com

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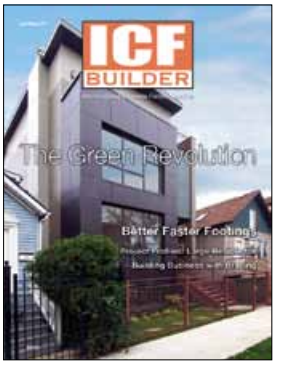
Inside This Issue

Features

Departments



On the Cover: *The Park-Raines Residence in Chicago, Ill. is one of the winning large residential projects for this year's ICF Builder Awards. For more information on this project see p. 16.*

Photo courtesy Reward Wall Systems.

As I See It...

A Paler Shade of Green

by Clark Ricks

A few years ago Dean Seibert, then chairman of the Insulating Concrete Forms Association (ICFA), made a memorable presentation. He went through a few leading construction publications and pointed out that nearly every product advertised was suddenly labeled eco-friendly, recycleable, sustainable or energy-efficient.

The construction industry, he said, was moving to "a paler shade of green."

Several years have passed since he made that remark, but it's truer than ever. When every construction product on the market is claiming to be good for the environment, it's difficult to determine those construction products and methods that are truly sustainable. Finding a bull in a china shop is easy; finding the same animal in a crowded stockyard is entirely different.

That's the dilemma that the ICF industry faces today. Due to their energy-efficiency and incredible durability, no product is better suited for green building than ICFs. This message, however, isn't being heard over the roar of the tumult.

The construction industry is moving to "a paler shade of green."

There's no better time than now to change that. The cover story in this issue explains how, if the industry works together, ICFs can become the premier green building technology. An additional six pages of project profiles highlight solid case studies to back this claim.

With the economy still dragging, I understand that the installation contractor can't survive on "potential industry growth." That's why the remainder of the magazine is chock-full of practical ideas that will boost profitability immediately. Better bracing, faster footings, newer technology, and strategic planning. It's all here in this issue.

Let's show the building community that we're "a deeper shade of green." ■

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ICF News Roundup

Home Sales And Prices Fall Unexpectedly

Sales of previously owned U.S. homes plunged in February and prices hit their lowest level in nearly nine years. The data indicates a housing market recovery is still a long way off.

The National Association of Realtors reports that sales fell 9.6% compared to the previous month, and down 3% compared to 12 months ago. The percentage decline was the largest since July, and was twice the decline that experts predicted. Sales were down in all categories, with multifamily dwellings declining 10% and single-family home units dropping 9.6%.

"This is a frustrating number." said David Carter, chief investment officer at Lenox Advisors in New York. "The U.S. residential real estate market doesn't seem to want to turn around despite better affordability."

Nationally, home prices also continued dropping. The median home price is down 5.2% compared to 12 months earlier, and is the lowest since April 2002.

Falling prices are being driven by a glut of homes on the market and the flood of foreclosure properties. Foreclosures and short sales, which typically occur below market value, accounted for 39% of transactions in February.

Arxx Has New Canadian Distribution Partner

Arxx Corp, the Cobourg, Ontario-based ICF brand, has teamed up with Broadleaf Logistics to distribute their forms throughout Canada. Broadleaf Logistics Company is the number one seller and supplier of brand-name building materials across Canada.

The primary benefit of the partnership is that it allows Arxx to ship products to dealers on a less-than-truckload (LTL) basis. Full truckload orders will continue to be shipped through Arxx's regular distribution channels.

Broadleaf Logistics, a former Weyerhauser subsidiary, operates 14 distribution centers across Canada which will be used to stock and ship all three lines of ICF Arxx currently markets. This will allow for faster delivery on LTL shipments, makes inventory available at Broadleaf warehouses, and national as well as local area sales and merchandising support.

"This strategic relationship establishes the best-of-both-worlds support, says Gael Mourant at Arxx. "Through the Arxx and Broadleaf partnership, we will continue to support our customers with a world-class level of merchandising, contractor training, technical project support, and lead generation. This partnership will enhance the ability of dealers to respond to market needs and opportunities."

LOGIX Platinum Now Greenguard Certified

GREENGUARD®
Indoor Air Quality Certified

LOGIX Platinum Series ICFs have received Greenguard certification. According to the ICF manufacturer, the silver-gray colored ICF is the only insulated concrete form in the world to be certified by Greenguard under both their Indoor Air Quality and Children & Schools criteria.

The Greenguard Environment Institute certifies products and materials for low chemical emissions and provides a resource for choosing healthier products and materials for indoor environments.

With its Greenguard certification, LOGIX Platinum Series can be used to gain additional points under LEED For Schools v3 and can help achieve points in a variety of green building programs.

Greenguard Certification is widely recognized by other green building programs and accepted by major energy building codes worldwide such as:

- US Federal Facilities Environmental Stewardship & Compliance Assistance Center
- US General Services Administration Building Specifications
- Dept of Defense Unified Facilities Guide Specifications Divisions 12 – Furnishings
- The American Lung Association Health House Builder Guidelines
- Association for Retail Environments Green Purchasing
- Canada Green Building Council's LEED Rating System
- City of Boston Environmental Department Guidelines for High Performance Buildings and Sustainable Development
- Green LA Coalition Environmentally Preferable Purchasing

LOGIX Platinum Series is made with BASF's graphite-enhanced Neopor, and provides more R-value per inch than traditional white EPS.

PermaCrete In Haiti

PermaCrete, the acrylic stucco made by Quality Systems, Inc., is being used to finish the exteriors of thousands of small new houses being built in Haiti. The homes are being built by various relief agencies to provide shelter and living quarters for those hundreds of thousands who have endured squalid conditions since the devastating earthquake a year ago destroyed over 300,000 residences and

commercial buildings.

"The PermaCrete is being applied over the plywood and block structures originally intended as temporary housing," stated George Henderson, president and CEO of QSI. "This finish, blended in custom Haitian colors created by QSI, has helped create permanent residences for the Haitian people and allowed them to begin the difficult task of stabilizing their devastated and economically-deprived Caribbean country."

The surfaces were first coated with PermaCrete's waterproof membrane before being surfaced with two applications of PermaCrete's roadway matrix products which included an embedded fiberglass mesh to greatly strengthen and protect the buildings from future earthquake and hurricane disasters.

Henderson says the buildings have an expected usable life of 10 years.

"This will be a continuing project for years to come in one of the most difficult humanitarian assistance projects undertaken, and we're grateful for the opportunity to contribute a viable solution towards the critical housing needs of the Haitian people," says Henderson.

European Decision May Affect EPS

In a move that's sure to affect both sides of the Atlantic, the European Union announced in late February that five chemicals—including one used to make EPS foam—will be banned from use within the next three to five years.

The targeted substances include three phthalates (BBP, DEHP and DBP) used in many flexible PVC products but are hormone-disrupting reproductive toxicants, MDA - a potent carcinogen used in the manufacture of polyurethane foams, and HBCD.

HBCD is widely used in the ICF industry as a flame retardant in EPS foam. However, it's classified as a persistent bioaccumulative toxicant (PBT), a chemical that has been shown to accumulate in humans and eventually cause serious health concerns.

Tom Lent, policy director at the Healthy Building Network explains, "The phthalates and flame retardant subject to the EU ban have also been targeted by LEED Pilot Credit 11… We can expect a fierce effort by some companies to obtain authorizations to continue production beyond the scheduled sunset dates, but those authorizations can only give temporary reprieve."

The EPS Molders Association has prepared a fact sheet on the importance of using HBCD in foam, and notes that there are no viable substitutes for the chemical. Additionally, they point out that the vast majority (86%) of HBCD in the environment comes from the textile industry.

When it comes to North American regulations, HBCD is not a listed chemical for the U.S. Toxics Release Inventory (TRI) program. It is not a listed by Environment Canada , either, although it is currently under review. This magazine will take an in-depth look at the topic in the August 2011 issue. ■

The Green Revolution

The Green Building movement is taking the American construction industry by storm. And it shows no sign of slowing down. Even in the worst construction downturn since the Great Depression, green building is making astronomical gains.

In the 2005-2009 timeframe, single family home starts fell from 1.7 million per year to a mere 500,000, a 70% decline. Over the same five-year time period, the square footage of projects certified by LEED annually increased from 20 million sq. ft. to 500 million sq. ft. That's a 2500% increase!

Even in the worst construction downturn since the Great Depression, green building is making astronomical gains.

Trade show attendance tells a similar story. World of Concrete and the International Builders Show are down between 50% to 60% from 2007 highs. Attendance at the annual Greenbuild show has grown 36% over the same three years.

"A perfect storm is brewing right now in the green building movement," says Burke Ewers, an Illinois energy consultant. "What we're seeing right now in the down economy is that our customers are focusing on top line revenue growth, but they're even more concerned with bottom line profitability."

"Historically, builders have been looking at making construction more economical," says Gary Brown, vice-president of sales and marketing at Amvic ICF. "But with the recent economic downturn, the building community is more receptive to understanding exactly what green or sustainable construction means, and offering as an option, or an upsell, something that keeps them apart from the other builders."

Perhaps no product is better suited to take advantage of this trend than Insulated Concrete Forms (ICFs). The unrivaled energy-efficiency and durability of concrete and foam construction gives ICFs a clear advantage in actual field performance. The next two years will determine whether that opportunity is squandered or maximized.

What Green Building Is

The green building movement seeks to transform traditional construction by using materials and methods that use less resources to create structures that are healthier for those that live and work in them.

The U.S. Environmental Protection Agency defines green building as having the following three objectives:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

Last month, the U.S. Green Building Council released the results of a survey on why people build green. Participants overwhelmingly identified energy efficiency and cost reduction as the best-communicated and the most significant factors. Interest-

ingly, less than a third thought regulatory factors played a role. Perhaps most importantly, "at least 80% of participants said their clients had at least 'somewhat embraced' the message of green building."

The biggest drawback, the survey found, was cost. At least 58% of participants believed there was a significant cost premium (between 10-25% higher) for green building over traditional design and construction methods.

The Role of ICFs

Individual ICF companies have expended a fair amount of effort trying to take advantage of the green building movement. Brown explains, "Like everything with ICF, it's a matter of education, educating them on what "green" really means."

Like many other ICF companies, Amvic has put together a presentation highlighting the many ways ICFs can contribute to sustainable construction. Over the years, they've given the presentation at dozens of meetings to hundreds of builders, architects and developers.

Brown also noted that several ICF companies have prepared brochures defining exactly how ICFs can contribute to LEED certification.

Other companies have put together blogs, case studies, technical information, and other literature.

"It all comes down to awareness," says Jim Buttrey, vice-president of marketing at IntegraSpec ICF. "We need to get as much exposure with energy efficiency as possible."

A few companies have gone beyond education, developing or modifying products specifically for the green market. American PolySteel, now part of Arxx Corp., was the first ICF company to earn Cradle-to-Cradle certification. It's a rigorous program that establishes that every part or component in the ICF is environmentally friendly. LOGIX earned a similar certification from Greenguard last month for its Platinum Series ICF.

LOGIX has also developed XRV panels with four-inch sidewalls; Quad-Lock developed a line of forms with similar

Last month, the (USGBC) released a list of the top 10 states for LEED-certified commercial and institutional green buildings, based on square feet per capita.

The top LEED states per capita, including the District of Columbia:

District of Columbia	25.15 sf
Nevada	10.92 sf
New Mexico	6.35 sf
New Hampshire	4.49 sf
Oregon	4.07 sf
South Carolina	3.19 sf
Washington	3.16 sf
Illinois	3.09 sf
Arkansas	2.9 sf
Colorado	2.85 sf
Minnesota	2.77 sf

insulation values.

Fox Blocks and LOGIX both offer ICFs with graphite-enhanced polystyrene, which creates additional insulation without increasing the wall thickness.

The newest trend in green building, "net-zero" homes that generate as much energy as they consume, also favors ICFs. Homes of this type have been built using all of the major ICF brands. NUDURA was used to create the first net-zero school in the U.S., which opened last fall. LOGIX has published a 56-page white paper on how to create net-zero homes with its product.

Jerry Yudelson, a nationally recognized green building expert predicts, "Zero-net-energy designs for new buildings will become increasingly commonplace in both residential and commercial sectors as LEED and Energy Star ratings become too common to confer competitive advantage."

Challenges

Still, with the skyrocketing popularity of green building, concerns about energy efficiency, and total "life-cycle assessment" (LSA) planning, it's curious ICFs haven't enjoyed greater growth.

One major reason is that the leading green building standards—the USGBC's Leadership in Environmental and Energy Design (LEED) program and the National Association of Home Builders (NAHB) NAHBGreen—aren't performance-based rating systems.

Scott Lewis, a LEED consultant in Portland Ore., points out that the original LEED point system was created by market interests, not research. Take, for example, LEED for New Construction (NC), which awarded a point for use of HFCs, even though the chemical has a high global warming potential. Rick Fedrizzi, the current president of USGBC, spent 25 years as an employee of air conditioning giant Carrier Corp. which uses HFCs as a refrigerant. After an uproar from the membership—and after competitor Trane joined USGBC—the standard was revised.

NAHB, which receives the vast majority of its funding from the lumber and wood frame industry, has a similar

conflict of interest. As Jim Wise, president of Eco-Integrations in Richland, Wash., says, "There are better ways to design and build green buildings."

Still, many in the ICF industry think these two standards have been positive. "The green revolution has at least opened the door for ICFs in a few cases," says Brown. "The door is certainly not wide open, but it's certainly not locked."

Buttrey agrees. "LEED is a good start. I hope they move to a more performance-based system. The technology—blower-door tests, infrared cameras, and energy monitoring—is certainly there."

The Opportunity

For ICFs to make a bigger impact, the industry needs to come together with a unified voice and become an effective lobbying organization.

In 2009, Vera Novak, then technical director at the Insulating Concrete Forms Association (ICFA), presented a list of all the major code-writing and regulatory bodies making decisions facing ICFs. Many of them had no representation from anyone in the ICF industry.

Novak says, "The take-away from the chart is that there are opportunities for the ICF Industry to get involved, and they do require a coordinated effort… Individuals will not have much clout without a concentrated industry effort. The example of the sprinkler industry is a good case of an industry working in concert to get a code change."

Novak is currently earning a PhD. in building construction, and stays connected to the ICF industry through her blog, *www.Ecobuildtrends.com*.

If the ICF industry can get the attention of the green building code bodies, the future looks rosy indeed. Yudelson, the green building forecaster, predicts "Performance Disclosure will be the fastest-emerging trend [next year in green building], highlighted by new requirements in California and other states. Commercial building owners will have to disclose actual building performance to all new tenants and buyers." ■

Better *Faster* Footings

by Richard Fearn

The vast majority of ICF foundations are poured using a two stage method. But, by coupling an innovative fabric form with adjustable supports, it's now possible to pour footings that are level and square at the same time as the first few courses. Besides eliminating a cold joint, it saves time, and eliminates one of the pumper's trips to the jobsite.

What are the risks and benefits of monopoured foundations and how can the ICF industry compete in this growing market?

Two-Stage vs. Monopour

A two-stage foundation is one where wall forms are constructed on a prepoured concrete footing. A monopour foundation is one where concrete in the footing and wall forms is placed at the same time.

The biggest disadvantage of a two-stage pour is that it is expensive. Calling out the pump twice costs big money, as does the double return of concrete to the ready mix plant.

The second disadvantage is that any footing inaccuracies are magnified by the ICF wall. To correct these, the contractor must scribe blocks to high points, wedge the low points and fill the gaps with foam glue; a time consuming and expensive process. Rebar stubbed in the footing sometimes has to be moved to align with the ICF wall cavity.

The third disadvantage is time: a two-stage pour takes about two days longer than a monopour. For time-sensitive projects, this is a big concern.

Finally the cold joint between the footing and wall is a weak point in the foundation.

On the other hand, two-stage pours have a number of advantages: first, since the footing is already cured, there is no danger that the wall forms and bracing will shift or settle during the wall pour, as they are supported by the pre-poured footing. This reduces contractor risk and is very important. Second, the contractor has two kicks at the "accuracy can."

Concrete forming is the minimization of three constraints: risk, cost, and time. As will be shown, monopouring is less expensive and faster than a two-stage pour. The real question for the ICF contractor is whether risk of wall settlement can be eliminated when monopouring.

Cost/Benefit Analysis

There are two types of monopours used with ICFs. Conventional lumber systems use wooden footing forms, stakes, cleats made of 1x4s or hat-track, and U-channels to support the bottom edge of the first row of ICF.

This method has some serious drawbacks, not the least of which is that the wall nearly always experiences significant movement. Trying to correct for this movement once the wall is full of concrete is virtually impossible. Additionally, the 1x4 cleats form a moisture pathway through the wall, which many jurisdictions deem inacceptable. This method will not be considered further in this article.

The Fastfoot ICF monopour system eliminates these drawbacks. The system consists of four elements: First, the bottom two courses of ICF blocks are glued into panels three blocks long and two blocks high with a two web offset. Second, two pairs of side supports are screw-attached to each component to suspend it accurately above the ground at the 'footing' height. These supports can be quickly and accurately adjusted for height with an electric drill. Third, the Fastfoot fabric membrane is attached with screws to the bottom edge of each large forming panel to form the footing. Fourth, an adjustable bracing system is needed to align the wall.

Fastfoot Monopour Installation

To pour an ICF wall using the Fastfoot monopour system, the foundation components are installed clockwise around the excavation, with each interlock glued to the adjacent component. Each component is aligned one inch away from a string line marking the outside edge of the wall, and leveled using an electric drill on the side supports. After building up to the fourth course, bracing is installed.

With traditional vertical bracing, this is as high as the wall can go with the monopour system. That's because the base of the brace is not fixed to the ground but rather 'floats' above the ground at the footing height. It is essential that the base of the ICF brace be locked to the ground to prevent lateral movement. To address this problem, Fab-Form developed Zont bracing which uses horizontal walers in conjunction with vertical strongbacks. If Zont bracing is used, the installer can build to the finished wall height before pouring the footing.

In any case, before pouring, check the wall elevation and alignment. Adjust the footing side supports and turnbuckle kickers until the wall is plumb, level, and square.

Concrete Placement

The first lift of concrete should fill the footing and first block only. (I recommend a 5" slump.) Do not over-vibrate. Allow sufficient time for the first lift to "go off" before filling the balance of wall.

Once the wall has been poured, use the string line to check wall alignment. It may be necessary to laser-screed the top of concrete wall.

Advantages

The Fast-Foot Monopour method has significant benefits to the ICF contractor.

First, time is reduced by about two days. **Second**, it achieves a more accurate foundation, as the contractor can adjust and align his foundation even on pour day. **Third**, the monopour provides a stronger foundation without any cold joint. **Fourth**, the monopour eliminates the second pump and second concrete return, saving money. **Fifth**, monopour eliminates all forming lumber, stakes and associated labor to build and strip footing forms. **Finally**, the Fastfoot® membrane prevents ground moisture from entering the concrete footing.

Risks

With monopour, uplift and settlement can occur if the pour is not done carefully.

The top of footing can produce uplift if the footing concrete is not allowed to set sufficiently. This uplift can lead to form uplift. To eliminate this risk, the contractor must ensure the footing concrete has set sufficiently before continuing with the second lift.

Settlement can occur in three different ways: failure of the side support, failure of the attachment of the support to the ICF block, and settlement of side support pad in the ground. Most of these risks can be eliminated with Zont bracing, as all scaffolding loads are taken through the strongback.

Side supports are designed to carry 300 pounds of vertical load, or 100 pounds per running foot of wall. Even if the structural engineer asks for #7 horizontal rebar, 16" on center, that's only 23% of the support's capacity. Similarly, each side support is attached through the ICF web with three screws. The shear capacity of each screw through the web is approximately 150 pounds, so the attachment is incurring only 15% of its potential. Assuming the soil has a load-bearing capacity of 1,500 pounds per square foot, each pad can support 226 pounds; 30% of its' load capacity.

We've all been on enough jobs to know that in the real world, unevenness in the soil or the weight of the concrete, may cause settlement to occur. The solution is to do a final top-of-wall leveling on pour day to ensure exact elevations.

For projects with deep footings, step footings and/or complex corners, a two-stage pour is still the best option.

That said, the Fastfoot monopour works exceedingly well with normal basements, producing a more accurate foundation than a two-stage pour. With Zont bracing, perfect wall alignment can be achieved.

Richard Fearn is owner of Fab-Form Industries, Ltd., makers of Fastfoot fabric footings and Zont bracing. He can be reached at (888)303-3278 or via his website at www.fab-form.com.

ICF BUILDER AWARDS

Large Residential — 2nd Runner Up

Green Dream Home

This unassuming house at the end of a quiet street has a secret identity. It's actually a net-zero energy home—a fully functional year-round residence that generates as much energy as it consumes.

Patrick M.B. Chan, the LOGIX representative that provided the ICFs for the project, says, "The concept for The Green Dream Home is a simple one: Reduce electrical demand through efficient systems and effective envelope design, then produce the remaining energy required using grid-tied photovoltaic cells."

The super insulated walls are constructed with LOGIX's XRV panels, which have 4" of foam on the outside and 2.75 inches of foam on the interior. An additional 4" of foam was then added to the outside face of the wall, providing R-44 insulation. Expanding spray-on foam in the roof assembly (R-60) ensured a well sealed envelope (ACH of 0.68 @ 50 Pa).

Heating and cooling systems use a high efficiency heat pump connected to a geothermal well. A heat exchanger further increases the efficiency of the HVAC system. The geothermal system is also used to preheat the hot water for the home, which is then run through solar hot water panels. LED and fluorescent lighting in combination with passive day lighting drastically reduce the electrical requirements.

The 12/12 pitched roof shades the facade in summer while allowing ample light into the interior in the winter. It also offers more than 1,000 sq. ft for the photovoltaic and solar hot water system. This system allows the homeowner to sell excess power to the utility company and buy power when needed. Back up batteries were installed to allow the homeowner to ride out short power outages. The 36 panels currently in place more than offset the energy usage of the home, but there's room for additional panels if the owners want to create additional revenue.

The home was built by first-year

Thompson River University (TRU) students under the direction of Hank Bangma. "The main challenge for the project was to coordinate the trade students (carpentry, electrical, plumbing, etc.) with volunteer trades, sponsored trades and suppliers while dealing with a small site and a compressed time line," Bangma says.

Unusual wall angles, custom windows, and differing wall heights were just a few of the ICF installation issues students dealt with. Most of the challenges, though, were compounded by the eight inches of exterior foam. Anchor bolts for the balcony needed to be extra long. The acrylic stucco finish was chosen precisely because it would work with the thick foam.

Additional support for the project came from the Canadian Home Builders Association Central Interior (CHBA-CI) region and Kamloops Home Building Centre, which provided extensive technical assistance. Patrick Chan, the LOGIX manufacturer's rep, was involved from the conceptual stages and provided unlimited training and support throughout the project.

CHBA commissioned a 20-minute documentary film on the project. A timelapse video of the construction process is available on the *www.builderawards.com* website.

Completed in May 2010, the home has been toured by thousands in the past 10 months. The home has been featured as part of the EQuilibrium Sustainable Housing Demonstration Initiative led by Canada Mortgage and Housing Corporation (CMHC).

CMHC is monitoring energy usage for a full twelve months of ordinary use, using data provided from sophisticated meters and temperature sensors built into various cross-sections of the walls.

"This project could not be more significant in terms of the educational value it has generated," says Chan. "From the design, to the construction, to the occupancy, this house has served to educate everyone involved with it on green building in general and ICFs in particular. Ongoing research and energy studies will further this knowledge base."

Project Statistics

- Location: Kamloops, BC, Canada
- Type: Private Residence—Spec Model Home
- Size: 3,100 sq. ft. (floor)
- ICF Use: 3,220 sq. ft. (all exterior walls) plus 585 sq. ft. interior walls
- Cost: $750,000

Project Timeline:

- Total Construction: 300 days (completed May 2010)
- ICF Installation time: 50 days

Construction Team

- Owner: Canadian Home Builders Association
- Architect/Engineer: TRU Architectural and Engineering
- General Contractor/ICF Installer: TRU Residential Construction Trades Program
- ICF Distributor: Kamloops Home Building Centre
- ICF System: LOGIX ICF/ Bracing by Giraffe

Fast Facts

- Designed as "Net-Zero Energy" Home
- 8-inch thick exterior foam creates R-44 walls
- LED lighting, 36 photovoltaic panels, and closed-loop geothermal water heating
- Built by first-year Thompson River University (TRU) students
- Gable walls, differing wall heights, and non-square corners were challenging
- Used as an educational tool for students
- Toured by thousands during demo period

ICF BUILDER AWARDS

Large Residential — 1st Runner Up

Troy Gibson
Reward Wall

Cian O'Mahony
Killarney Development

Park-Raines Residence

The Park-Raines family had decided to build their dream home in Chicago. They were committed to building a sustainable home that would fit their family's long-term needs, but they also had a limited budget. To complicate factors, they chose to build on a small urban infill lot which would require them to build vertically to achieve the desired square footage.

Sam Park posted regular updates to his blog the project developed. "After looking at a number of different building materials—wood, masonry/brick, SIPS, ELFI, and even straw bale—we decided to build our home with ICFs," he writes. "I geeked out and did a lot of research before settling on ICFs and I won't bore you with the details [but] ICFs typically provide better insulation and air sealing than other types of homes. I'll just say that they're going up very nicely and turning some heads around the neighborhood."

They settled on a modernist design with three stores above grade and a full basement. The verticality posed a challenge because the City of Chicago requires an exterior exit stair from the third floor to grade. Fortunately, because the building envelope is noncombustible, the city allowed an exemption if a residential sprinkler system was installed. So ICF construction allowed them to keep the rear yard open. The cost of the sprinkler system was less than what the stair would have cost.

In order to provide additional access to outdoor space, the third floor was set in at the front and rear elevations in order to provide two roof decks. The rooftop penthouse provides access to the green roof with spectacular views of the Chicago skyline.

Cian O'Mahony served as general contractor; he'd encountered ICFs on an earlier job, but this was his first Reward project. He says most of the construction difficulties stemmed from the small lot

Photos courtesy Reward Wall Systems

Project Statistics

- Location: Chicago, Ill.
- Type: Private Residence-4-story single-family
- Size: 4,100 sq. ft.
- ICF Use: 5,500 sq. ft. (all exterior and interior walls)
- Cost: Undisclosed

Project Timeline:

- Total Construction: 10 months (finished early 2010)
- ICF Installation time: 1.5 weeks per floor

Construction Team

- Owner: Sam Park and Mary Raines
- Architect: WRAP Architecture
- General Contractor: Killarney Development
- ICF Installer: Leitrim and Mani
- ICF Distributor: Reward
- ICF System: iForm by Reward

Fast Facts

- Extremely tight jobsite (25'x100') requiring interior bracing
- Designed to achieve LEED-Silver
- Radiant heat coupled to geothermal wells
- Green roof and rainwater harvesting
- Served as model LEED home on tour
- Featured at Chicago AIA conference
- After this first-time ICF project, the construction/design team is already working on another ICF project

(only 25 feet wide) and the installation of the vertical closed-loop geothermal system.

The geothermal system supplements the solar water heater, which was paid for with a grant from the State of Illinois Solar Energy Incentive Program. Radiant heat ensures maximum efficiency in heating and cooling.

Designed to achieve a LEED Silver, the home scored a 41 on the HERS Energy Star Rating which beat out the proclaimed "greenest house in Chicago" which only scored 50.

Other green features include the green roof with plants in removable trays, rain barrels for water harvesting, and an exterior facade made of Paperstone, a 100%-weatherproof cladding made from recycled paper.

The finished home has already attracted the attention of Chicago developers and Chicago Green Homes organizations. It was featured in the regional home show tour as a model LEED home and was also toured as part of the Chicago AIA Professional Development Conference as a model green home.

Troy Gibson, marketing manager at Reward Wall Systems, which provided the ICFs, says, "This is an amazing client who could not have approached this project more thoughtfully and who deserves tremendous credit for their commitment to the project… It shows green building truly has no limits on location or in style."

Additional info and photos of the project can be viewed at *www.builderawards.com*, at *www.leedforhomesillinois.org*, or on the owners construction blog, *http://greenlogan.blogspot.com*. ■

ICF BUILDER AWARDS

Large Residential — **Winner**

Salero Residence

The Salero Home in southern Arizona is a beautiful example of an attractive, sustainable, well-built home that blends seamlessly into its surroundings. It's also an outstanding example of how enormous design and logistical challenges can be overcome with ICFs and an experienced contractor with a can-do attitude.

The design is a classic of southwestern architecture with clean lines, sweeping curves, and varied wall heights and window openings. The architect, Wendi Munsey, was awarded third place in a national competition for her work on the project.

But converting the plans into a home would be difficult. For starters, just reaching the jobsite could prove challenging. It sits 25 miles from the main highway, the last seven on dirt roads. The driveway was almost a quarter mile long, with a 200 foot elevation gain. It was so steep that all the ready-mix trucks and concrete pump trucks had to back up the driveway.

Then there was the plan itself. All exterior walls reached a minimum of 25 feet above the footing. They had 5 different radius walls. Three of them were extremely tight (4', 5', and 9'6" radius). High winds at the mountain site, tight rebar spacing, and multiple embeds further complicated the work.

Roy Lauger and his crew at LGS Framing were up to the task. They did the ICF install using Quad-Lock ICF, a panel system that ships compactly and requires no specialized parts. Quad-Lock claims their system can form radius walls more easily than block-type systems, but even panels require modification for curves this tight. Lauger's solution for building tall, small radius walls was so innovative—and successful—that Quad-Lock revised their installation manual based on his results.

To simplify logistics, Lauger moved his personal camper trailer up to the site for his four-man crew to stay in for the duration of the build.

The 3,450 sq. ft. home used more than 6,750 sq. ft of ICF wall, and used just over 400 cubic yards of concrete.

The owners spared no expense in finishing their low-impact home. Low-E windows, a heat exchanger, tankless water heater, and graywater recovery system keeps environmental impact to a minimum. Travertine tile, maple floors, and custom-made doors ensure the owners feel pampered.

The final home serves as an witness that ICFs can create a sustainable, award-winning green home in virtually any environment. ■

Project Statistics

- Location: Outside Tubac, Ariz.
- Type: Private Residence-Custom Home
- Size: 3,452 sq. ft. (floor)
- ICF Use: 6,750 sq. ft. (95% exterior walls) plus 1,250 sq. ft. interior walls
- Cost: $750,000

Project Timeline:

- Total Construction: 450 days (finished March 2010)
- ICF installation time: 120 days

Construction Team

- Owner/GC: Richard Zeron
- Architect: Design Solutions
- Engineer: CDK Engineering
- ICF Installer: LGS Framing
- ICF Distributor: Arizona Radiant Barrier
- Additional Team Member: Sundance Framing
- ICF System: Quad-Lock

Fast Facts

- 4" Foam on exterior walls
- Energy efficient windows and doors, 15-seer A/C units
- Five radius walls, including tight 4' and 5' radius
- Remote site; last 7 miles are via dirt road
- Installer moved personal RV to site for installation crew
- Used 400 yards of concrete
- Architect won national prize for this design

Building Your Business With Bracing

Photo courtesy Giraffe Brace

Turnbuckle braces not only helps keep your walls straight and plumb, but they can also play a major role in improving company profitability and help win bids on larger projects.

The importance of a good ICF wall bracing system cannot be overstated.

"A wall alignment bracing system is as much a standard tool for building with ICFs as a paintbrush is to a painter," says Ian Giesler. "If you think that you can build perfect walls without bracing systems, you're only kidding yourself."

Even stemwalls three or four courses high require bracing. The walls may look plumb, square and level without bracing, but typically they aren't.

More commonly, contractors who skimp on bracing end up with walls that are bowed, wavy, or out-of-plumb—or all three. And fixing this type of mistake is extremely costly. Says one contractor, "If you have a problem with the bracing, you have a very expensive, permanent mistake."

Even more expensive than the repair—or the teardown and rebuild—is the cost of lost work. When a builder tries to sell clients on the advantages of ICFs, some "nightmare job" in the region comes up. The developer says something like, 'Yep, I saw that job. Those walls were the waviest walls I had ever seen. I even waved back in disgust as I got back in the truck and drove away. I knew foam forms were a crazy idea. I wouldn't touch ICFs with a ten foot pole."

It happens with alarming frequency. Over the past ten years, dozens—probably hundreds—of jobs have been lost because of shoddy bracing. And it affects not only that contractor, but the entire industry. In some regions, ICFs have been effectively locked out of the market because of a single thoughtless builder who tried to shave a few hundred dollars off his bid.

It doesn't have to be this way. Over the last decade, dozens of high-quality ICF bracing systems have been developed, and are surprisingly affordable. Most ICF distributors will also rent bracing, conveniently packaged in a crate or on a trailer. Many will rent the bracing even if the forms were purchased from a competitor; they understand that they have an interest in making every job successful.

Simply put, ICF installers can't afford not to use some sort of quality, adjustable ICF brace. "The goal of the ICF contractor should be to do a good job, and do it profitably," says Jeff Bresler, sales manager for Monobrace. "Turnbuckle bracing helps him meet both these goals.

What to Look For

More than half-a-dozen bracing systems are currently on the market, each with their own unique traits. The turnbuckles, type of storage system, and pricing varies widely as well. While installers may weigh factors differently than the distributor, a few traits always rise to the top of the list.

Rigidity—Installers and distributors both agree that the bracing system—especially the strongbacks—must be rock solid.

"You want something that doesn't give," says Bresler. "Steel, even though its heavier, is far more rigid."

Ken Williams, at Giraffe Brace, agrees. "Heavy gauge steel lets you brace heavier walls," he says. "You can pour thicker cores and higher lifts. It also allows for more loading on the walls. When you have three guys on the scaffold during the pour, and those strongbacks are flexing, it will affect the straightness of the finished wall."

Durability—A closely related factor is the durability of the system. This is especially important for distributors planning a bracing rental business.

"You want low- or no-maintenance bracing," says Williams. Think about the abuse the system will take. You don't want to be concerned about the condition the equipment comes back in."

He cites the example of a typical teardown after pouring the second story walls. "The guy typically takes the strongback and tosses it out the window," he says, "and when it hits the ground it

often buckles or bends if it's too lightweight."

Other areas to check are the turnbuckles (are they protected from concrete splatter?) and the foot plates (stamped vs. welded).

Williams recommends checking if the bracing manufacturer that offers a written warranty, and the availability and cost of replacement parts.

"You want a system that doesn't wear out," he says. "Nobody wants to replace their equipment every two or three years."

Weight—One of the challenges with heavy, rigid bracing is that it often ends up weighing too much. It's too heavy to easily transport, and too heavy to carry around the jobsite.

Says a retired Wyoming contractor, "I think the old steel braces worked best, but they worked me the hardest. I shudder thinking of the weight."

Another says, "I need to be able to haul three or four guys, at least 85 braces, 300 ICF blocks, and all the tools needed, at highway speeds with a 3/4 ton pick-up… Extruded aluminum strongbacks are the way to go in my opinion. They bounce back, take a beating, and don't rust out."

Williams, at Giraffe Brace, says aluminum equipment may work for the careful contractor. "If you're not doing too many jobs, and you're the guy personally managing the equipment, it may work well."

Others are less generous. "I don't care if they are light if they rust out or bend easily," says the Wyoming builder. "Even if they are light and durable but flex when a 220 pound guy walks on them, performance has been sacrificed. What's the use doing all the hard work if the finished product is only as good as the (inadequate) bracing?"

Turnbuckles—Many claims are made about why one brand's turnbuckles are better than another, but it comes down to one thing: how easily does it adjust the wall?

For starters, how far will it move the wall? Most brands have a length of travel of around six to eight inches. Some braces use coil thread, some standard thread, which affects how many turns per inch are required.

The method of turning also varies. Giraffe and the discontinued Arxx brace use circular tubing with welded handles. Plumwall can be manipulated with a cordless drill. Reechcraft uses square tubing, and a few require a wrench.

Some brands emphasize the convenience of being able to adjust the turnbuckle from the scaffold. This may be a factor with a small crew, but on jobs with more than three individuals, it fades in significance.

Photo courtesy Mono-Brace

Photo courtesy Plumwall

More important is protecting the turnbuckle from splatter. Giraffe uses an internal jack system to protect the threads. Others, like Hilltop, put the threads at the bottom of the turnbuckle so concrete splatter is not an issue.

Storage System—Even for the busiest installer or distributor, braces will spend more time in storage than they will on the wall, so convenient, compact storage is a prime consideration. Giraffe Brace set a new standard when they unveiled their crate system in 2007. Others have followed suit; Plumwall's trailer-mounted bracing set has attracted a good deal of attention.

Monobrace takes a different approach. It uses a foldaway design where all the parts—including the safety rail— are attached to the strongback and fold away inside it for storage. "You save a lot of time not looking for lost parts," says Bresler. "Set-up and tear-down time is minimized. The system is stacked efficiently like lumber."

Williams, at Giraffe, agrees that storage is a key consideration. "Especially for bracing rental operations, a good inventory and storage system can save literally hours of work."

Versatility—Finally, consider the versatility and completeness of the equipment as well as the price. Does it include a scaffolding bracket or built-in safety rail? Does it come with ground stakes or is the user expected to have rebar on-hand? How many additional components are needed to convert it for stemwall and tall-wall applications?

Photo courtesy Hilltop Mfg.

Photo courtesy Giraffe Brace

Bottom Line Impact

Giesler, the Texas-based ICF installer summarizes, "Straight, plumb and square walls make successful jobs easier to attain. The cost of a typical factory-made bracing system may cost as little as $100 to a high of $200 per set. In many areas bracing can be rented even more cheaply. That's a small price to pay to ensure the wall is built right."

Williams, at Giraffe, says good bracing can also build customer loyalty. "Quality bracing draws a better customer," he says. "If dealers can provide their contractor/customers with a system that doesn't bend, come apart, or waste their time looking for components, they're more likely to stick with that distributor. At the end of the day it all comes down to the quality of the equipment." ■

Photo courtesy Plumwall

The Competition, Round 2

by Pieter VanderWerf

Last issue I wrote about a competitive wall system that has been growing since WWII and is now starting to butt heads here and there with ICFs. That was tilt-up construction.

For our second look at competitive systems, I'm going to delve into one that has been fairly steadily losing ground, but is still formidable in some markets. That's concrete block.

Concrete block walls have been a mainstay of low-rise building construction in the U.S. since the early 20th century. The product first appeared before 1910. Sears even sold a hand-operated block-making machine that sold well to farmers. In the 1920s Jesse Besser produced automated equipment and it was off to the races. Just before and after World War II, block was used to build something like 20% of the homes in the U.S., as well as a huge share of basements and small commercial buildings.

A major advantage of block was that once stacked, it was a fairly complete wall assembly.

But their market share slid steadily after the war. The overarching reason for this was that it has stayed the same while its competition advanced technologically. Wood frame got plywood and then OSB and nail guns. Tilt-up got larger cranes, bond breakers, and lift inserts. Cast-in-place concrete got modular forming systems of aluminum and steel-backed fiberboard. Precast, ICFs, and several other systems have come along and taken chunks out of block's slice of pie

Meanwhile, blocks are still laid up by hand by trained masons using mortar attended to by laborers while standing on scaffolding. The skilled labor content has stayed the same. The training time needed for a mason has remained around 2 years. Nothing has become much cheaper or more efficient. As a result, block started losing sales just on a cost basis.

But the market also began to expect more from a wall, most notably insulation. Alas, there was no convenient, inexpensive way to insulate a block wall. (Some methods have been developed, but by and large it is still more costly to add insulation to a block wall than it is to most other wall types.

Over time, a block wall lost its cost advantage in more and more applications. By the early 1990s, only about 3% of all houses in the U.S. had block walls, and nearly all of those were in the southern two-thirds of Florida. They had the most favorable conditions for block construction: The combination of high winds, high humidity, and high insect populations all work against wood construction. Moderate temperatures meant low insulation requirements. Block plants were plentiful and cheap, and so was skilled labor.

After Hurricane Andrew hit Florida in 1994, building codes and enforcement tightened up. Wood had to be beefed up to comply, and that eliminated its cost advantage. Block use surged, and by the early 2000s block walls were in nearly 10% of the houses built in the country.

But the long-term trends are still not in block's favor. Even in places where it can outcompete wood—like Florida—and certain commercial and industrial buildings, the competition is continuously improving. They figure to take more and more of these markets.

The final death blow may be that there is no one committed to fighting for concrete block. Most block manufacturers do not care much. They make much higher profit margins on segmented retaining walls, pavers, and erosion control units. The loss of block sales has little impact on their success. On top of this, many block plants are owned by companies that also sell ready-mix concrete. They don't care much if block loses sales to other concrete systems.

For their own personal interests, masons should fight the loss of business. But that would require changing the way the product is installed. The mason's two years of training would become useless. Suddenly a kid off the street can be trained to install the "new block" as readily as a mason can, and often will do so for half the money. So the masons consistently fight innovative new block systems.

Think about the situations that are most favorable to building with block: walls not more than 20 feet tall (to minimize scaffolding), no insulation desired, plenty of responsive and inexpensive masons available, high strength and durability required (to eliminate wood and light steel as competition), high flexibility in the field needed (to eliminate systems prepped in the factory, like precast and manufactured metal). This is a shrinking sliver of the market. And as other systems advance, they will encroach even more.

There are still a couple billion structural blocks sold each year. It remains one of the major systems. But ICF contractors should expect to win a few more projects at block's expense each year. They can expect to pick off a few more buildings even in the warm-weather, low-building, commercial/industrial, plenty-of-masons, high-field-modifications markets at the expense of block.

Next issue: The Competition, Round 3

Pieter VanderWerf is President of Building Works, Inc., a consulting company that helps companies enter and invest in the construction products industry. He can be reached at pvander@buildingworks.com, and his company at www.buildingworks.com.

CONTRACTOR'S CORNER

by Ian Giesler

Making the Move From Residential to Commercial and Institutional Installations

Predictions are that there will be a record number of home foreclosures this year. I've already addressed the importance of following the finish manual. This news may imply that new housing start statistics will be negatively affected by opportunities for some potential new home owners to be distracted by great deals on repossessed homes and not build new. Predictions also indicate that the number of publicly funded projects will continue to rise, especially Federal Government and Local School District construction. Projects expected in 2011 are mostly due to funding approval from 2010.

There is definitely an increase in the specification and use of Insulating Concrete Forms (ICF) in the Commercial and publicly funded construction arena. This uptick as well as the downturn in residential applications has attracted many smaller ICF installers to bid work in a foreign and many times uncomfortable field where the "legalese" and terms are not so clearly defined. In comparing building in the residential market and commercial environment, many smaller installation outfits look only at the vast volumes of wall square footage and drool with the expectation that they can make more money based strictly on the fact that one large commercial project is equivalent to many smaller residential projects. Making larger margins on larger projects has typically been the case in years past because the large project market was essentially "reserved" for the few capable installation companies that had the financial and logistical backing that many smaller installation companies did not have. This has changed.

Commercial and publicly funded projects are generally more stringently controlled and monitored at all levels of business which adds a significant overhead cost to the installation company. We'll attempt to break down and explain many of the most prevalent overhead requirements for commercial work that differ from the typical residential construction project and allow you to consider how they affect the bottom line in terms of the cost of doing business and the risk factor.

Commercial and Publicly funded projects are generally more stringently controlled and monitored at all levels of business which adds a significant overhead cost to the installation company.

Paperwork, Paperwork, Paperwork!

Publicly funded projects tend to have massive volumes of specifications, of which, the first few chapters of a seemingly 2" thick binder of specifications deal only with the requirements and qualifications of the bidding companies. These pages need to be read and understood fully, if not, they can easily come back and create problems with starting, performing and getting paid for the work. These requirements and qualifications cover details ranging from: How bids or proposals shall be formatted; Provide a litmus test as to whether or not the company is qualified to bid or provides a weighted scale for companies that are HUB (Historically Underutilized Business), or Minority owned will affect the selection and value of the bid; Personnel requirements of the company; Mainly, regarding tobacco, legality and criminal history of all employees that are projected to be on the project site; Bonding requirements, Insurance requirements, Payment application requirements as well as how and when subcontractors will get paid; Payroll reports, Project safety issues and documentation submission requirements, Work schedule and just about any other possible legal issue one can imagine.

When bidding, first and foremost an installation company needs to have a statement of qualifications. This statement should contain the "life history" of the company, including who the principles are, their individual accomplishments and how they make the company successful. The company needs to be treated as an individual, so listings of larger projects, with statistical information regarding the scope of work as well as time to install and pertinent information should be listed. The statement of qualifications should contain all vital information such as tax I.D. number, years in business and include insurance capacities as well as contact information for insurance and bonding. In a sense, the statement of qualifications is the introduction of the company to all prime contractors who would use this information to present their building team as they

qualify their bid to the owners and construction design team. A great marketing piece or resume for the company.

Prior to bidding, review of the insurance and bonding requirements is necessary. Nearly all projects require General Liability and Worker's Compensation Insurance. Verification of the limits of these insurances may require changes in current policies if the company already carries these. Some projects require additional General Liability Umbrella policies that can cost several thousand dollars as these policies are typically annualized. Changing existing policies is typically not an issue, securing General Liability at a decent cost for the first time requires time to shop and compare. Typically, time is of the essence at this point, so one could budget the insurance into the bid and if selected as the installer, the company could purchase the policies just prior to starting work. This requires having some level of cash on hand to pay the down payment even if the insurance carrier will allow premium payments.

If a bond is required and the company doesn't have a history of bonding, then getting to the point of being "bondable" can be an onerous task for the owners and the company managers as the bonding agency will typically want the entire financial and employment history of all major contributors to the company. The bonding companies are usually very slow at getting to the point of "offering" a bond rate and typically want to know all pertinent information on the potential project. Since ICF is relatively new in the construction marketplace, bond rates are typically based on poured concrete wall and masonry wall risk factors as well as heavily weighted on the perceived risk of the installation company.

Commercial project prime contractors typically are not as familiar with ICF as the installation company will be, so to get a step ahead, a visit with several of the bidding prime contractors is always advantageous. Take an ICF form along on this visit and be prepared to discuss how you would construct the ICF walls. As an example, discussions of "construction methodology" is paramount as many times the design and engineering of commercial ICF walls indicate a methodology similar to concrete block walls where embeds or joists are to be inserted at various levels. If steel bar joists are purchased with a base shoe that is intended to bear on the ICF wall and then have concrete poured over the top and the building has several elevation points for bearing beams and structural members, this can pose issues with the typical ICF installation method of forming to a determined elevation and then stacking and pouring to the next level. If these bearing points are at various heights within a five or six foot elevation, placing forms and concrete is not so quick and easy. Understanding the plans, specifications and verbalizing the installation methodology is a must in the proposal to do the work. A proposed scope of work other than "install ICF walls per plans and specifications" is necessary to protect the installation company from being forced into an installation method that is not conducive to making a profit and providing a near perfect set of walls. If the installation company waits until the project is awarded to them to negotiate, chances are that all structural member shop drawings have been approved as designed and been ordered. The prime contractor will not necessarily be able to make changes without significant financial penalties so they will require the installation crew to conform to their construction methods.

Once awarded the contract to install ICF walls, more paperwork issues can come to surface without warning. Many government projects require a multitude of paperwork be submitted and the prime contractor's employees may not know the extent of the paperwork either, but you will be reminded of this requirement AFTER you think you are due to be paid. If paperwork is not submitted timely on these projects, delay of pay is certain. Here are some items that will create delays in payment:

- Signed and notarized contract
- Submittals
- Shop drawings or Construction details as they pertain to the specific project
- Schedule of values for the work
- Proof of insurances
- Executed bond (usually must be in place before work commences)
- Daily and weekly scaffold inspection reports
- Safety meeting attendance sheets
- Employee eligibility report (usually school projects which do not allow felons to work near an operating school)
- Signed documents from employees agreeing to "tobacco free", "drug free" and "alcohol free" worksite
- Certified payroll
- Lien waivers from suppliers or subcontractors
- Proper payment request forms filled out correctly and notarized

Once you believe you have completed all paperwork and provided evidence thereof to the prime contractor, there is typically language in the contract that states that the prime contractor will pay sub contractors within a certain number of days AFTER they receive payment from the owner. If your properly filled out request for payment was not received by the prime contractor on or before a specified date, then the request is set aside until the next payment request is initiated which is usually every 30 days. One can typically expect to get paid for work installed and materials stored on site about 90 days after completing the work. Then one must expect some level of retainage to be withheld until some much later date in the project. Many projects hold retainage until the project has been fully complete or six months time from completion of the work. The installation company must follow these time-lines in the event that additional paperwork requirements and submissions are necessary in order collect payment.

Have a construction question you'd like answered? Email your question to Ian at AskTheBuilder@icfmag.com. ■

ICFs From an Architect's Perspective

by Robert J. Klob

Why should architects and engineers specify ICFs? The common response from the ICF industry is "it's Green" or "it's more energy efficient" or any number of one-line answers we have all heard or used. But that's not good enough.

The ICF industry has become complacent in what it takes to get their product integrated into specifications throughout construction.

How many jobs have we all had that started out as ICF, only to be flipped to frame during the design or pre-construction process? There is no way of knowing exact numbers, but I feel confident in saying that its much higher than projects that started as frame and switched to ICF.

It all starts with the design. An owner can want it, a builder can request it, but ultimately if your design team is not on board, it will not see the light of day. In this economy, I have seen many design firms say and do what it takes to get the contract, even saying they have experience with ICFs when they have none. Experience and specifications are two completely different things in an architect's office.

What benefit does an architect get in specifying ICFs? What they get is added cost incurred to them. In these economic times, added cost is not what any of us want to incur.

Added expense to a design professional? I will show several of the most common marketing bullet points used by the ICF industry and then from the architects perspective. Hopefully this will reveal what many are thinking, but probably are not saying directly to you.

Argument 1: ICFs are Better Across the Board

While those of us in the industry believe this, how about others? In the race for building material use, wood and steel frame are the most common building materials, with masonry construction following as a distant second. ICFs are only a very small piece of overall construction pie. Why? Because studs and CMU offer advantages ICFs can't: a large pool of installers and codes geared toward their use.

Architects Perspective: ICFs require more staff training to make the system work as intended. Plus, all plans, details, specifications and schedules have to be modified or redone to accommodate ICFs. Also, city officials, inspectors and sub-trades are typically not familiar with ICFs so they require more information and also RFI questions during construction. All of these things cost money that can rarely be charged to a client.

Argument 2: ICFs are Green

This is typically true, but many times exaggerated. With some, the EPS is new and the webs are recycled. With others, it's the other way around. Others are both and others are neither. Yet others have no webs and recycle EPS beads with concrete. Saying ICFs are green is painting with a very wide brush.

Architects Perspective: Wood studs, steel studs and CMU can also be green. They are more widely known and accepted. The forestry service had done a great job in promoting sustainable forests for harvesting wood. These sustainable materials can easily be found at any hardware store.

Argument 3: ICFs are more Energy Efficient

Energy efficiency is an area where ICFs tower above their competition and it's pretty difficult to refute. However, many exterior walls are not just ICFs. Typically they have openings for doors and windows. When this is averaged into the wall as a whole, it can drop the overall efficiency of that wall considerably.

Architects Perspective: Designers usually prefer many openings and windows in an effort to bring the feeling of the outside to the inside. Plus owners have a tendency to skimp on the quality of the windows and doors installed when costs need to be cut. This is even more relevant in commercial construction where aluminum framed storefront with substantial glazing is very common. This is one of the least energy efficient links in the building envelope chain.

Argument 4: ICFs are Soundproof

Another area where there is little argument. End users will agree, nothing beats an ICF wall for sound vibration attenuation.

Architects Perspective: A frame wall with sound insulation and drywall is the norm. Until recently, STC ratings primarily showed assemblies for frame construction. These notes and details are integrated into most design offices and easily incorporated. Switching to ICF means reworking details and notes, again rarely reimbursed by the clients.

Argument 5: ICFs are Safe and Secure

Mother Nature has finally met a manmade material that can withstand many of her forces. Human life can be protected like no other. Few (if any) construction materials can make this same claim.

Architects Perspective: A properly designed ICF wall system will withstand high wind, water and to a degree seismic activity. However, few ICF structures are designed as "Disaster Resistant Construction". The walls are separate from the floor or slab and again from the roof structure. The wall might withstand a 200 mph wind and flying debris, but the roof will peel off like a banana peel. If the roof is gone, the contents inside are destroyed. Construction still has to start over in most cases. Fire is similar. The wall will protect from penetration for a substantial amount of time, the concrete can become unstable under high heat and still have to be replaced after the fact. Both replacements are at a considerable cost.

Argument 6: Manufacturers provide CAD Details & Manuals

The manuals and details are a great way to get the ball rolling and a design team understanding how the systems work.

Architects Perspective: Oh look, another book for our library! An-

other manufacturer that has developed CAD details that don't match local construction techniques plus we have to convert each one to match our CAD standards and then catalog each one so we can find them if we ever use them again. Plus many are metric or have metric notations so each one has to be converted or notes deleted for jobs in the US.

Argument 7: Manufacturers provide Engineering

This is typical for nearly all ICF manufacturers. Manufacturers have either hired engineers to review their product or followed a national testing laboratory for their recommendations. While this is base engineering, it really has little to do with day-to-day construction engineering.

Architects Perspective: We have to train our engineers to properly design and specify in order to keep the project under budget. The engineering that has been prepared by the manufacturers is done in another state or country, plus it has to be verified because the manufacturer carries little or no liability for the construction integrity. While the argument could be made that math is math, regardless of where or who does it, most states require an engineer be licensed in that state. An engineer's seal from a manufacturer in Canada does little for job located in Kansas – and vice versa. This equates to more costs from the engineer that may have to come out of the pre-negotiated architecture fees.

All is not gloom and doom – but the industry does need a reality check. Very few architects are going to be beating down the doors of an ICF manufacturer to specify their product. Manufacturers, distributors and installers have a vested interest in having ICFs specified. Architects don't.

Very few architects are paid any type of commission or have any type of incentive to specify ICFs. Furthermore, in large firms it's not necessarily the firms' namesake architect that specifies, it's the project team. Those are paid employees and are only looking for the most efficient and cost effective way to design a project with the least amount of headaches.

Ok, now that I have knocked the industry around, how do you get into the good graces of the architects and engineers?

As a minimum, your sales staff should visit architects regularly. But how many actual relationships have been established? Relationships are the key to getting your product specified. Relationships are the key to getting your design manual out of the library and on the desk of the design team. Relationships are the best way to ensure your product stays with a project from day one and most importantly, into construction. The design team has the power to keep your product in when a client is trying to cut costs – or make it one of the first to go.

Many companies feel that calling periodically and a lunch meeting a couple of times a year is building a relationship. It's not.

How would a personal relationship with a spouse work if all you saw of each other was two or three times a year? I agree that analogy is a loaded question; some might answer "great!" But the reality is that it wouldn't work at all.

Manufacturer reps need to stay in front of design teams. It's also nice, especially in this economy, to promote those that are promoting you. Architects appreciate having trade partners promote their business and also bring in more business. They are much more apt to promote you if they are making money because of you. These relationships are not always about lunches, or commissions, it's about building a bond where each side becomes an asset to the other.

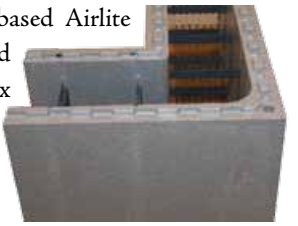
It sounds like common sense, but from personal experience, I have not talked to any ICF manufacturer reps where I didn't initiate the call in over 6 months. I can count on one hand the number of brands that have promoted my firm in the last year with fingers left over. Those that know me, know that I promote ICFs every day and this has left me questioning those relationships that were once strong. If my firm is being taken for granted, what about the firms that are on the fence about ICFs?

We have all cut back and had to streamline our businesses due to this economy. Design firms are no different. As I have said in my previous columns, by working together we will succeed together. With the current state of the construction industry no truer words could be said. In the end the success or failure of the ICF industry will come down to the *Architects Perspective*.

Robert J. Klob is President of Robert Klob Designs, Inc., a full service residential design firm. He can be reached at (480) 968-2474.

New Products

Fox Blocks Unveils Graphite-EPS Block



Fox Blocks, a division of Omaha-based Airlite Plastics, now offers a graphite-enhanced ICF product line. Dubbed the "Silver Fox Series," it was unveiled at the World of Concrete show in January. "The Silver Fox Series is a premium line of insulated concrete forms offering higher R-value with no change in foam thickness," explains Dave Jackson, Fox Blocks marketing manager.

The Silver Fox ICF is silver/gray in color instead of traditional white EPS. The darker color comes from the graphite added to the EPS bead. Graphite-enhanced EPS is 20% more effective as insulation, delivering an R-26 wall instead of the standard ICFs R-22.

While the same insulation gains could be achieved with thicker foam sidewalls, the Silver Fox delivers additional energy savings without changing the wall thicknesses.

For more information, call 877-369-2562 or visit *www.FoxBlocks.com/Products/Silver-Fox.aspx*.

Horizontal Bracing for Straighter Walls

Zont Bracing is a lightweight ICF bracing system that uses brackets and 2x4 lumber to make bracing and straightening ICF walls faster and easier than ever before. With this system, the primary contact with the wall is a horizontal 2x4 waler held in place with Zont brackets (the product name Zont is derived from this key characteristic). This differs from conventional ICF bracing where the primary contact is the vertical brace itself.

As Zont Bracing uses 2x4s readily available on the jobsite, the brackets weigh approximately 7% of conventional ICF bracing, and can be easily transported to the jobsite in the trunk of a compact car.

It's also much more cost-effective. A set of Zonts large enough to brace an average home can be purchased for less than the price of a one-time rental of traditional strongback bracing.

Yet it still has most of the advantages: strength, rigidity, the ability to adjust the bracing via turnbuckles, and can be used as scaffolding to stack and pour the upper portion of the wall. The system handles form float and compression, and has been field-tested on walls as high as 16 feet.

The product is marketed by Fab-Form, makers of the Fastfoot fabric footing system. For more information, visit *http://www.fab-form.com/fastfootMp/fastfootMpBracingOverview.php* or call (888)303-3278.

New EPS Decking System

The company that invented EPS decking is set to revolutionize that market segment again with their new LiteDeck WRS (Wood Rib System). Basically, it's an ultra-versatile, carpenter-friendly EPS decking system designed for creating insulated concrete floors that costs far less than any other product on the market.

Shoring requirements and installation methods are similar to Lite-Deck. However, instead of integral furring strips, the new WRS system uses locally purchased lumber. The most common profile uses conventional 2x6 lumber (or a light-gauge steel beam of the same size). An even "greener" profile uses a 11 7/8" I-joist ripped lengthwise for support.

"Wood is easier to cut, attach, and modify than steel," explains Dave Hall, marketing manager at Lite-Form Technologies. "This is a carpenter-friendly system that uses materials available at every jobsite in North America."

All LiteDeck WRS orders are currently placed through its corporate service center and the foam components are shipped from regional facilities nationwide. Standard LiteDeck WRS components are available in eight-foot lengths. This system is also compatible with LiteDeck's patented "top hat" design and can create clear spans of 50+ feet.

Builders can also order WRS decking in custom lengths, or with the ribs (2x6, 2x8, 2x10, I-joist, or light-gauge steel options) pre-installed, direct from LiteDeck® headquarters in Nebraska.

"This is a fast, simple assembly that makes EPS/concrete decking more cost-effective than ever before," says Hall.

For more info, visit *www.litedeck.com* or call 877-481-4714.

Tilath Stucco Starter Strips

Alabama Metal Industries Corp.(AMICO) has launched a new backing paper called Tilath Starter Strips. It's a Grade-D, asphalt-saturated kraft paper that can be applied over the foundation weep screed on jobs that call for off-set, paper-backed lath.

The starter strips are printed with incremental one-inch marks, with larger marks at the 12- and 16-inch marks. These assist the installer in fastening the lath to the wall framing.

Because of its weather-resistant barrier (WRB) properties, the product can also be used as flashing around doors, windows, behind stucco accessories and anywhere WRB strips are needed. Tilath Starter Strips are six inches wide, and come in 225-foot-long rolls easily handled by one person. They're packaged at six rolls per carton. Starter Strips are already available at AMICO distribution centers across the US and Canada.

For more information, visit *www.amico-lath.com* or call 800-366-2642. ■

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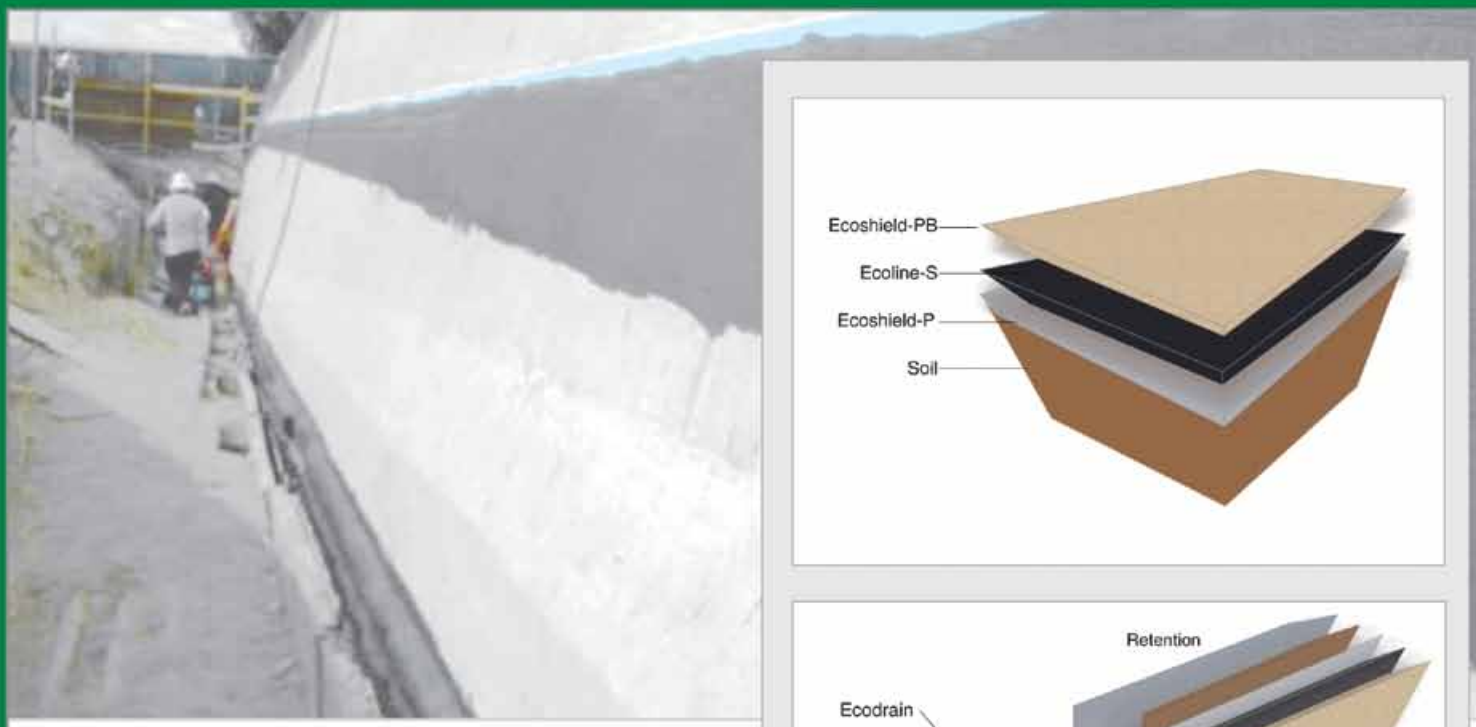

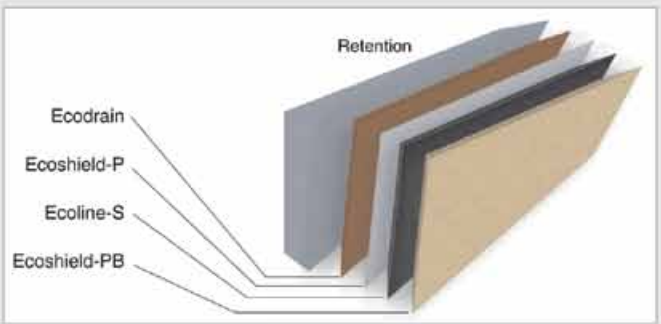

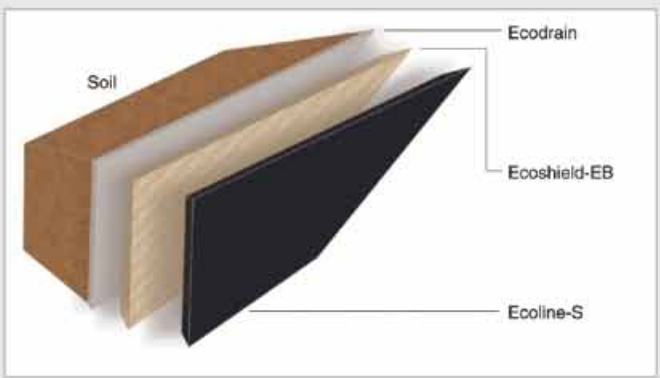

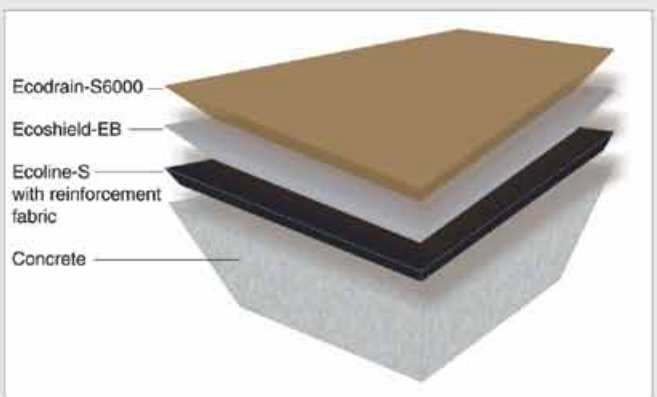

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