The Immaculate Conception Parish in Cottonwood, AZ was established in 1930. As it has continued to flourish, Immaculate Conception recently made the decision to build a bigger and better church to host its growing parish. Ground breaking began in the latter part of 2008 and with a steadfast crew working with Quad-Lock’s insulating concrete forms, the new church was dedicated on December 8th, 2009.

**Why Quad-Lock was Chosen**

Original designs for this monumental project utilized a masonry wall system, but the decision was made to favor Quad-Lock’s superior ICF system for the following reasons:

- Height of the building
- Improved insulation value
- Increased construction speed
- Reduction of project costs
- Ease of pilaster construction (including double corner pilaster fabrication)
- Better sound attenuation
- Higher energy efficiencies & cost savings for the congregation

**Interesting Facts**

<table>
<thead>
<tr>
<th>Location</th>
<th>Cottonwood, AZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion Date</td>
<td>December 2009</td>
</tr>
<tr>
<td>Building Size (Total):</td>
<td>30,115 sqft</td>
</tr>
<tr>
<td>Quad-Lock Walls:</td>
<td>58,664 sqft</td>
</tr>
<tr>
<td>Interior Walls:</td>
<td>19,000 sqft</td>
</tr>
<tr>
<td>ICF Installation Time:</td>
<td>210 days</td>
</tr>
<tr>
<td>Total Construction Time:</td>
<td>440 days</td>
</tr>
<tr>
<td>Wall Bracing:</td>
<td>Panel Jack, Uniscaffold</td>
</tr>
<tr>
<td>Floor Joists:</td>
<td>None</td>
</tr>
<tr>
<td>Exterior:</td>
<td>Stucco</td>
</tr>
<tr>
<td>Waterproofing:</td>
<td>Soprema Colphene LM300</td>
</tr>
</tbody>
</table>
The Design Vision

The design concept envisioned the use of large supporting columns and expansive ceiling spans integral to Church construction in the early 1500’s.

To fulfill this vision, the building incorporated a total of 38 pilaster columns in five different designs, perfected by Quad-Lock for tall-wall applications. This provided the desired Cathedral appearance essential to the Catholic Church in this expansive project.

The floor plan illustrates the project complexity, including the corner details associated with the pilaster columns, wall height and the absence of internal supporting walls.

Integral to the design was the under-floor air ducting. Using Quad-Lock enabled forcing of air under the pews and recycling the conditioned air 14 feet off the floor, resulting in long term comfort and cost benefits for the Parish.

Challenges Addressed with Quad-Lock

The many challenges of this 30,000+ sq ft project were surpassed by utilizing the flexibility of the Quad-Lock System to its best advantage.

- Construction of walls on rough placed and unleveled, trenched, footings.
- Variable concrete consistency, truck to truck, from project beginning to end.
- Scaffolding limitations when plumbing walls and erecting the extensive wall runs.
- Only 277’ of wall that was less than 8’ tall.
- Wall above grade varying from 31’ along the Nave, to 42’ at the main entry and 49’ on the two bell towers.

Project Partners

General Contractor: Redden Construction Inc., Phoenix, AZ
Architect: CCBG Architects Inc., Phoenix, AZ
Engineer: A.V. Schwan & Assoc. Inc., Phoenix, AZ
ICF Installer: ICWalls, Gilbert, AZ
Quad-Lock Dealer: Arizona Radiant Heat Barrier, Vail, AZ

“This project demonstrates Quad-Lock’s adaptability to complete large tall wall projects without internal floor support required in the open design of these types of facilities.” states Hannis Latham of Arizona Radiant Heat Barrier.
Villa Rose in Qualicum Beach on Vancouver Island, BC was a project that presented a unique set of challenges. The Developers, Architects, Engineers and Contractors worked together on a restricted site of varying grades, to construct a high quality environment for residents and commercial clients, while keeping within strict local aesthetic and planning obligations.

The building is a solid concrete structure from top to bottom. The parkade walls were formed with Quad-Lock’s Insulated Concrete Forms for their insulation values, speed of construction and the ability to work with minimal clearance due to the proximity of adjoining properties. All exterior and interior residential walls were also constructed using Quad-Lock ICFs and most residential floors with Quad-Deck, giving the advantages of low operating costs, durability of the structure over time (vs. wood), excellent fire ratings, and low sound transfer. With 20 condominium units occupying this building, there have been zero complaints due to noise transfer, which would not have been the case with wood frame construction.

Early on in the planning stages, several ICF brands were examined for their suitability. Chris Doyle of Willow Lane Construction explains, “We felt that a panel system, as opposed to a block, gave us the best chance of dealing with the structural steel issues that arose. We were correct. The structure included hundreds of zone reinforced columns (within the wall form) that stabilize the building during seismic events. The Quad-Lock system allowed us to thread the ties through these zones as opposed to building the zones within the block form, saving us countless man hours.”
Each commercial and residential unit in the building is heated and cooled by its own dedicated heat pump which had its size significantly reduced - thanks to ICF construction. The traditional exterior appearance is a combination of Hardie shingle and Hardie lap, prefinished in the factory and mechanically secured to the ties in the Quad-Lock ICF system. The exterior decks and balconies are concrete in structure as well, and all windows and exterior doors are glazed with Low-E argon filled glass. The building’s many patio doors are of European design, incorporating an eight point cam lock system, for maximum air tightness to complement the low ICF air permeability.

The result? Villa Rose has set the standard for high-end condominiums in this area. The quality and durability of the structure will remain long after comparable wood-frame buildings have been torn down. The residents of Villa Rose are happy that - however long they live comfortably in the building - when they are ready to sell, they will receive an excellent resale value for their unit.

Many wood framed apartment buildings utilize the same finishes that were used on Villa Rose, such as hardwood flooring, granite countertops, high-end appliances, etc. However, the benefits of the Quad-Lock ICF wall and floor systems go far beyond the cosmetics. High insulation values, air-tightness, sound-deadening, structural stability, and the fact that ICFs are not subject to mold, mildew or dry-rot, put Villa Rose miles ahead of the competition in energy use, maintenance, comfort, and sustainability.

General Contractor Chris Doyle remarks, "The use of the Quad-Lock ICF as a forming system allowed us far more flexibility in terms of dealing with complex wall configurations. This building serves as an example to prove that there are no limits to what can be built with the Quad-Lock ICF Systems."

The Villa Rose project has been very well received and it is felt that, as the public continues to become educated about green and sustainable building practices, its reputation will only grow. Even the building’s strata council concurs stating, "All of the owners are very proud of the superior construction of our building and would like the public to be aware of how special it is."

Put simply, Villa Rose has set the benchmark for how buildings of this type should be built, and this project serves as an attractive example of the superior results achievable with Quad-Lock’s Insulating Concrete Forms.

Interesting Facts:
- 64,500sqft - 20 Unit Condominium Complex with Commercial/Retail on main
- 3 levels plus underground parkade
- 88 Days ICF Construction Time
- Time Saved by using ICFs = 20 Days
- R-22 Configuration with Quad-Deck used for flooring system
- 44 corners on main level, 97 on 2nd and 146 corners on 3rd level
- 20 Sun Tubes on 3rd level
- 9 Architectural (non-functioning) chimneys
- Wall heights in parkade vary from 12’ at top end to 6’ at lowest point

Project Partners:
- Owner/Developer - Ladner Ventures
- Architect - Ulrich Laska Architectural Corp.
- Engineer - Herold Engineering
- General Contractor/ICF Installer - Willow Lane Construction - Chris Doyle
Kindergarten in the North Atlantic

Challenge:
ICF? What’s ICF? This North Atlantic island location was the perfect environment for using insulating concrete forms – with its rugged landscape and severe, coastal weather conditions. So for his first challenge, Torfinn Johansen of Kubbi ApS had to convince the municipality that ICFs were not an “untested” and new idea, but a well established and superior building product, produced and used successfully for decades. He next had to convince the local fire authorities (who again, had never heard or seen the likes of this “new” building system) that ICFs provide a much safer construction than traditional systems, and are ideal for producing a very protective building envelope for the island’s youngest inhabitants.

Solution:
Quad-Lock was the perfect choice for this project. As the design incorporated a hexagon shaped building with angles of 120 degrees, Quad-Lock’s flexible and simple format meant that there were no special order items for the design and angles were easily configured. It also meant comparatively easy and economical transport to this remote country, with no possibility of “missing items” to disrupt the schedules. The crew thoroughly enjoyed working with Quad-Lock because it was so easy to use (they referred to it as “playing with Lego™”), and with it being so lightweight, their backs were not suffering as they would have with traditional concrete forms. With the project now completed, the municipality is looking forward to the many benefits of having chosen Quad-Lock, including the significant reduction in costs for keeping the children comfortable throughout the year.

For the Faroe islanders, Quad-Lock is “Simply” a better building system.
Abu Dhabi - Guard House

The Challenge:
This Guard House at the entry to the National Avian Research Center (NARC), is literally situated in the middle of nowhere, surrounded by nothing but sand. Miles and miles from any water, power or people, this pilot project for the NARC had to be sustainable and entirely self-sufficient. Can you imagine being short shipped a corner unit (if they had gone with a “block” system) in this desolate area?

The Quad-Lock Solution:
The project was designed to utilize the optimal thermal mass efficiencies of Quad-Lock PLUS Panels on the outside and Quad-Lock Regular Panels on the inside. The Guard House also utilizes energy efficient doors and windows, with its water treatment provided by solar panels on the roof and power generation through a free-standing wind generator near the building.

Benefits:
The NARC chose Quad-Lock for its durability, insulating qualities and ease of construction. By using Quad-Lock, no special order components were required and the crew was able to complete the construction easily and efficiently with no delays. With 50 more units now planned, their choice to use Quad-Lock was obviously the right one.

Proof yet again, that Quad-Lock is: “Simply a Better Building System”.

www.quadlock.com
604.590.3111 or 888.711.5625
Home to thirty-three thousand people and over twelve thousand households, Orange, New Jersey is a bustling city where Northern Hills Redevelopment chose to build their newest project. Conveniently set in a township on the rise, surrounded by lifestyle, luxury and access to all major roads, the NHR residential lofts are an investment in distinction and change. Seventeen to twenty-foot soaring ceilings and elegant modern flooring throughout, as well as polished travertine countertops in the bathrooms and kitchens finishes the spacious and serene feeling this building emits to its residents and visitors.

These exquisite and eco-friendly residential apartment buildings, utilizing green roof technology were designed by John E. Alford and engineered by Babs Engineering. Quad-Lock’s local representative, Rich DeVito of Innovative Building Products, worked closely with the design team and developer, Keith Miles to maximize the efficiency and effectiveness of the product during planning and construction.

After having used other ICF systems in the past, Northern Hills chose Quad-Lock specifically for its ease of use and the incorporation of the Quad-Deck Green Roof application. The two buildings, totaling over twelve thousand square feet of living area have walls thirty-five feet high finished with stucco exterior. Quad-Lock ICFs were also used for the interior firewalls. The creation of this superior building envelope allows for even greater energy efficiency.
efficiency and lower long term maintenance & operating costs. The increased safety of the building shell allowed the insurance company to offer better rates to the residents of this green building.

The Green Roof application has many benefits; it has no susceptibility to water damage, lower storm water runoff, doubles the service life of the roof, reduces the buildings CO₂ production, increases oxygen to the atmosphere and lastly, enhances the urban setting of the building.

When asked, developer Keith Miles explained that, “Using the Quad-Lock and Quad-Deck ICF system instead of the traditional ‘stick-built’ construction allowed us to find efficiencies and sharpen our pencils to come up with a better bottom line”.

The developer’s only comment when asked what he would do differently next time was, “Change the interior floors from stick-built to the Quad-Deck flooring system”.

Proof once again that using the Quad-Lock and Quad-Deck building envelope system is not only a Sustainable building solution but an economically sound decision as well.

Just the facts:

- Residential condos/lofts with 12,000 sqft living space over 2 buildings
- Green Roofs on both buildings utilizing Quad-Deck
- Firewalls separating units using Quad-Lock

Project Partners:

- Developer - Northern Hills Redevelopment, LLC - Keith Miles
- Architect - John E. Alford
- Engineer - Babs Engineering, PC
- Quad-Lock Dealer - Rich DeVito - Innovative Building Products
Hotel Thermal - Slovakia

Have you ever tried building a shed in your backyard without making any noise or stirring up any dirt? Well try to do that when building a 2 story, 32 room hotel, in a hurry!

The Contractor tackled the unique challenges and obstacles in building this new hotel in Veľký Meder, Slovakia, with the confidence brought from using the complete Quad-Lock system for both walls and floors. Without upsetting the guests in the existing hotel right next to the build site, the Quad-Lock system allowed the new construction to be achieved quietly, cleanly and quickly, in only 5 months — A full month ahead of schedule!

Proof yet again, that Quad-Lock is “Simply a Better Building System”.

Details:
Outer Walls:
• Combined Regular & Plus Panels with a 7¾” [197mm] concrete cavity for an R-30 [U-0,20] value

Inner Walls:
• Utilized Regular Panels with both 5¾” [147mm] and 7¾” [197mm] concrete cavities for an R-22 [U-0,28] value

Construction Time:
• 5 months

Summary:
• 30% Savings on Construction Costs
• 60% Savings on Operating Costs
High School Rebuilt After Katrina

Slidell, LA is an upper-middle class suburb on the shores of Lake Pontchartrain, and was hit particularly hard by the winds and storm surge of hurricane Katrina. The storm surge pushed over eight feet of water through the area. Salmen High School was all but demolished by the storm. When FEMA’s assessment was complete, it showed more than 51% of the facility was destroyed beyond repair. Constructed in 1965, the 20 buildings damaged by the hurricane encompassed a combined area of 153,984 square feet and contained multiple classrooms, administrative offices, a kitchen/cafeteria, restrooms and a gymnasium.

The scope of the project was even more amazing based on the fact that they had to have this school ready for occupancy by fall 2010. The fast paced construction schedule made the Quad-Deck Floor and Roofing System ideal for the project. Quad-Deck was designed into the project at the start with the help of Quad-Lock’s “go to” technical support team. The 12” Quad-Deck floor system was built on concrete piers with an additional 3” of EPS on top of the Quad-Deck to increase the beam depths for added load and span capacity. Quad-Deck was also chosen for its exceptional insulation benefits as well as for the additional sound reduction to the parking garages located under some of the buildings.

Concrete precast panels were selected for the exterior of the building. Typical panelized foundations can be erected in four to five hours, without the need to place concrete on site for the foundation. Combined with the Quad-Deck Floor and Roofing System, the result is a foundation that can be installed in any climate zone in one sixth of the time needed for a formed concrete wall. This project is on track to create a durable, sustainable and safe haven for over 500 students and over 50 teachers at Salmen High School.
La Concha Pearl

This seven-story luxury condominium, built on a white sand beach overlooking Mexico's beautiful Sea of Cortez, is a remarkable example of engineering, education, and sustainability.

La Paz, Mexico, located in southern Baja California, is a world-class destination. With white sand beaches, friendly locals, and first-rate services, it's becoming the location of choice for vacationers and retirees alike.

In the early years of the 20th Century, the city was known for its black pearls. Today, a new treasure can be found on the beach: La Concha Pearl, “The Pearl of La Paz.” The seven-story luxury condominium project is built to the highest sustainable building standards and makes extensive use of Insulating Concrete Forms (ICFs).

The story begins nearly five years ago, when developers Dan Shore and Robert Hefner purchased 45,000 sq. ft. of beachfront real estate in La Paz.

The California-based developers spent more than a year researching the best way to develop the land, eventually settling on a luxury condominium suited for vacation or retirement living, with elegant interior finishes and a modern design, which would still blend into the Colonial Mexican architecture that surrounds it. They also decided to take advantage of cutting-edge, energy efficient technologies to make it as environmentally-friendly as possible.

“I fell in love with the people and waters surrounding La Paz about five years ago,” says Hefner. “I felt that with this opportunity to live in paradise came critical responsibilities in regards to protecting the environment that could not be overlooked merely for the sake of additional profit. As my partner Dan Shore and I watched the sun set over the Bay of La Paz one evening, we made a commitment to minimize our impact wherever we could in hopes we may set an example of what can be done using leading edge technologies.”

Shore made the decision to build La Concha Pearl with ICFs. After meeting with New Tek, a Quad-Lock distributor who has pioneered ICF use in Mexico, the developers were sold on the system. Les Zwaryck, owner of New Tek, spent a few months redesigning the building to optimize it for ICF construction. New Tek also did the ICF install on the job—no small feat considering it used 60,000 sq. ft of wall forms and 80,000 sq. ft of EPS decking.

Shore is no stranger to the sustainable building movement, having worked for environmentally-conscious clients such as Yahoo! and Adobe. But, Shore believes safety and practicality should come first. That’s why he chose ICFs over earthen blocks. ICFs also have advantages over the traditional post-and-beam-with-CMU-infill construction common in Mexico. They offer seismic strength exceeding Zone 4 earthquake standards, the ability to withstand a Category 5 hurricane, and climate comfort. The Quad Deck Flooring System virtually eliminates any interior noise between residences.

Zwaryck was introduced to ICFs in
the mid-1990’s when he was a residential homebuilder in Northern Canada. He moved to Baja about 10 years ago, building several projects—including his own home there—with ICFs. The cost of shipping molded block became prohibitive, so he switched to Quad-Lock, a knock-down system based in Vancouver, Canada. “The company is just excellent to work with,” says Zwaryck. “They solved all my problems.”

Quad-Lock ICFs, combined with passive shading, provide an estimated 50% reduction in cooling load at La Concha Pearl. Quad-Lock also reduced material handling, and was able to deal with the extremely congested rebar the design called for.

“Many developers overlook the energy savings you can create by shifting your thinking,” says Shore.

Green Features

“Energy efficiency is often overlooked by developers who don’t ever pay utility bills, and it is especially important in La Paz where summertime temperatures regularly exceed 100° F for months on end,” says Shore.

In addition to the super-insulated walls, the building uses an innovative cooling system. Instead of the typical 150-ton air conditioning system, it uses a half-sized 70-ton system coupled to evaporative coolers. An ice-maker comes on in the off-peak hours, which shifts 30% of the cooling load to the nights, further reducing utility bills by staying off the peak billing period.

The windows use E2-coated glass with thermal breaks, which dissipate up to 40% more heat than conventional dual-pane windows.

Solar panels provide year-round heating for the spa and pools and power the perimeter lighting.

The building is so green that it’s been submitted to the U.S. Green Building Council (USGBC) for LEED-Gold certification.

“La Concha Pearl is being built in such a manner that it will qualify for LEED certification,” states Hefner. “It would send a dramatic statement...if we achieve LEED-Gold, because it demonstrates that it is possible to build in a manner that protects [the environment], and remain profitable as well.”

Construction Issues

Construction began on the project in early 2007, with the first ICFs being placed in May. Zwaryck served as project manager at La Concha Pearl and oversaw the ICF installation.

“The structure is significantly over-engineered,” says Zwaryck. The building uses nearly 600 tons of rebar in the walls.
Designed to withstand earthquakes and hurricanes, the wall contained a tremendous amount of reinforcing steel. The job was made even more challenging because the rebar cages were tied together prior to the walls being stacked. Fortunately, Quad-Lock’s versatile panel made the job relatively easy.

and floors. “The rebar in the walls is quite congested,” he says. “And the crews tied the rebar before the forms went up.” Fortunately, the Quad-Lock system allowed New Tek crews to stack each side of the wall independently, and then slip the ties through the rebar cages to connect them.

“The amount of steel in the walls led some engineers to think we’d never get the concrete to flow properly,” he says. Once again, a significant amount of education was required. Working with Cemex, they developed a specialized high-slump mix that performed flawlessly.

Because crews had to work out the challenges involved with rebar and mix design, the first floor took 45 days to form and pour. The rest of the floors, though, were much quicker. “Every floor was Quad-Deck, and it was slick,” Zwarycz says. “It worked flawlessly. We’d lay 5,000 sq. ft. in 3 hours.” By the time they reached the last story, installation crews finished the walls and floors in just 23 days.

As this issue goes to press, workers are putting the finishing touches on the PermaCrete exterior finish, and the interior will be finished shortly. The 33 residences, including five luxury penthouses, offer spectacular views of the Bay of La Paz. Half of the units, including two of the penthouses, are already sold.

The finished seven-story building is one of the tallest weight-bearing ICF structures yet built. It’s certainly the highest condo project built using Quad-Lock.

The project has attracted attention throughout the peninsula, and throughout Mexico as well. Daniel Hernandez, a New Tek principal, reports that several other Quad-Lock projects are underway in the surrounding area, including a 15-home development in Pescadero, slated to be the first green community in Mexico. A 200-home green development in Todos Santos is also in the planning stages.

“Our goal in bringing green methods to Baja Sur is to respect and maintain the value of the views and the natural environment that first drew us to Baja,” says Zwarycz. “Feeling green is not enough, we have to build smart.”
Fast Facts

Project Timeline
First form set May 15, 2007
ICF Start-to-Finish Time:
8 Months
First floor construction time:
45 days
Seventh floor construction
time: 23 days

Construction Team
Owner: Robert Hefner/
Dan Shore
Architect: New Tek
Construction
General Contractor: New Tek
Construction
ICF Installer: New Tek
Construction
ICF System: Quad-Lock

Project Statistics
Project Name: La Concha
Pearl
Location: La Paz, Baja
California, Mexico
Type: 33 Luxury Beachfront
Condominiums
Cost: Undisclosed
Total building size: 84,000
sq. ft. (Floors)
Height: Seven Floors
ICFs Used: 60,200 sq. ft.
(15,000 forms) plus 82,000
sq. ft of Quad-Deck
Estimated Energy
Savings: 66%
Concrete Volume: 3,775
cubic yards
Steel: 598 tons of rebar

Additional photos of this project are available in the
online version of this story, or on the Quad-Lock website
http://www.quadlock.com/
**Project Description**

**Location:**
- Denver, CO

**Project Type:**
- 2-Story, 4-Unit, Multi-Use: Office, Warehouse, Showroom Development

**Size:**
- Building Area: 10,700 sqft with 15,000 sqft common area
- Units: 2,500 - 2,700 sqft
- Total Land Area: 22,500 sqft

**Products Used:**
- Quad-Lock R-22 Wall Assembly
- Brick Ledge Ties (12" to 6" Brick-Faced Wall)
- FastFoot Fabric Form for Footings
- Colphene LM300 Waterproofing
- Fero Brick Tie Units
- Simpson ICFVL Ledger Insert Plate (for garage door hardware attachment)

**Project Partners:**
- Art Raines (Architect)
- Jonas Development (GC)
- Advantage Exteriors (ICF Contractor)
- Energywise Sustainable Products (Quad-Lock Dealer)

**www.quadlock.com**
604.590.3111 or 888.711.5625

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**Challenge:**

Working on a landfill site that had to be removed and replaced with compacted fill provided the initial challenge. The secondary challenge was the site footprint which created a cramped work area with limited movement of trades and finish applications. To allow for continuous work, the project was completed moving side-to-side and floor-to-floor.

The site is an inner-city reclamation project right next to the Light Rail Transportation System. It required a design to fit the project land area. Quad-Lock walls where chosen because of the high R-Values and their ability to provide standard details for masonry brick finish that gave the warehouse and shop area an old loft style appearance. The project was designed to provide site run-off storage on the roof system, due in part to the limited land footprint available.

The development may eventually consume the whole city block if the project design is accepted by the retail community.

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**Why Quad-Lock:**

- No staging room. Form placement from the inside of the footprint.
- Energy performance
- Standard details available for brick application
- Run-off water load had to be carried by the structure
- Architect had been to Quad-Lock training
- Sound deadening characteristics
- Recommended accessory products that saved time and money
Why Quad-Deck:
- Odd dimensions could be cut on-site for exact fit
- Insulation factor of R-32
- Faster setup time than hollow-core pre-cast panels & no need for crane
- Lighter & easier to move around job-site (smaller, less expensive handling equipment)
- Less bracing than conventional poured concrete floors (no secondary shoring beams)
- Sound deadening
Quad-Lock Insulating Concrete Forms (ICF) have made their commercial debut in Sofia, Bulgaria. An exceptional three-storey administration building was formed using the Quad-Lock ICF system.

This project was made possible because the investor had a vision for his property, the architect had a vision for sustainability and the structural supervisor planned the project to integrate these visions.

During the design process, the architect strived to provide the maximum total square meter usage within the building footprint. To do this, the building’s plan has no 90° corners. Each floor is ‘twisted’ in a different direction so that the cladding façade on each floor has a different angle.
The project began in the winter, the basement walls were formed with Quad-Lock ICF in November. It had snowed heavily in the days before the concrete pour and when the concrete pump truck arrived on-site it began snowing heavily again.

Two days after the pour with the average temperature being 5°C, we decided to check the hydration of the concrete. We cut the Quad-Lock panels away from the concrete and discovered that the concrete temperature was 15-20°C. Once uncovered, the concrete started to emit steam. The consolidation was excellent. The concrete’s surface looked exactly like exposed concrete. After this verification, the insulation was replaced.

Quad-Lock ICFs are an excellent choice for cold-weather concreting. The expanded polystyrene (EPS) panels provide ideal conditions for the curing process. Without any additional care, the concrete can appropriately age and gain strength sheltered within the ICF.

While we were constructing the building, many people stopped to look at the structure some wondering whether the building would collapse. Quickly, they were convinced that Quad-Lock ICF is not only a durable but also extremely versatile formwork. The building envelope construction was completed in January.

In this region of Bulgaria, buildings have to withstand seismic activities. This administration building has been designed for a seismic event reaching level 9 on the Richter Scale. The only ICF system that could accommodate the heavy reinforcement required for this type of stability during seismic activity is Quad-Lock’s insulating concrete forming system.
The Kyoto Protocol is an agreement that by 2012, industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% compared to the year 1990. If you compare expected emission levels by 2010 without the Protocol, this represents a 29% reduction.

Concrete and Insulating Concrete Forms (ICFs) play an important role in any sustainable development. Long building lifecycle, low maintenance and operating costs, energy efficiencies and superior indoor air quality are just a few of the reasons to consider this building technology…

Building a Better Building…

“Ultimately, I’m in the landlord business” says Michael Laver, realtor, developer and proud owner/builder of a mixed-use insulated concrete building in Courtenay, BC. “I own a number of older, wood-framed buildings in the downtown area. When I first began thinking about developing a downtown lot I owned, I thought I don’t want to build a ‘sick’ building.” Sick buildings are a fairly recent tag-line for buildings that perpetuate an unhealthy living or working environment – poor air quality, lighting, heating & cooling and generally, an ideal environment for mold, allergens, rot and insects.

“When I started to read about sick buildings and their effect on the people, I wanted to build something better, smarter and, sustainable” says Mike. “In BC, we have so many problems with ‘leaky condos’, where bad construction practices have led to mold and rot causing millions and millions of dollars worth of damage. I don’t want to be associated with that type of construction. I have close, long-term relationships with my tenants; I don’t want to do something that could jeopardize their, my, or my family’s health.”

“I’m always on the look-out for the next new thing” says Mike, “when I learned about insulating concrete form (ICF) wall systems and then found Quad-Lock, who has an ICF floor system that can be completely integrated with their wall system – I knew I found the right envelope for my new building. In addition, Quad-Lock’s expanded polystyrene (EPS) forms contain no formaldehyde, CFCs, HCFCs or other harmful substances so I knew that I was making the right decision.”

“If my tenants are happy, they will stay in my building – it could take months, with no lease contract, before I find a suitable replacement tenant. Why would I want to jeopardize my earnings? Building with ICF & concrete have inherent energy efficiencies and other desirable attributes which give me the ethical peace-of-mind that I’m doing the right thing. It allows me to offer a superior building that tenants will pay to lease – long-term.”

Smaller Appetite…

“I’ve been in the landlord business for years and I chuckle when I think about the efficiencies of building an insulated concrete structure.” Here are some examples:

• Because of the air-tight nature of ICF construction, an air replacement system is required that will run at least 3 times per hour. The engineer-specified system, based on concrete & ICF, indicated that HVAC system could be sized at 2 tons versus 5 tons. So by design, there was a 60% reduction in the HVAC. Unfortunately, a 2 ton system isn’t strong enough to force the air through the square footage of this building. A 3 ton system had to be used – still, that’s a 40% reduction in tonnage.

• Using Quad-Deck, the insulated concrete floor has a deep (6 inch) concrete cap (that houses the radiant in-floor for the apartments on the third level). This means that fire code approval was not only received for the walls (side-by-side) but for the floors (up-and-down), as well. That’s great news if you want to attract a
Kyoto-Friendly Building...cont’d

restaurant into the building. And, insurance costs are less, compared to insurance costs on older buildings in the same area. Plus, there’s an additional insurance savings because of sprinkler systems that were installed, expecting that this would be a great location for a restaurant.

“If you couple these types of savings with all the other qualities of ICF construction, like high STC ratings, 4-hour fire rating, and the structural integrity that only comes from a reinforced concrete building – why would anyone build with anything else?”

Just the Facts...

Building Summary:
• 3 Levels: 1st -2nd commercial, 3rd residential
• 50,000 sqft of walls and floors (reinforced concrete & ICF)

A multi-use designed building, in the downtown core. There are:
• Five commercial, “walk-in” spaces. These locations are ideal:
  – For tenants – restaurant, office, retail, art studio
  – For proximity – heart of downtown
• Four residential, two-bedroom apartments. These premium view residences have:
  – Beautiful custom cabinetry & fixtures (kitchens/bathrooms).
  – Room-by-room controlled radiant in-floor heating/cooling
  – Open floor plans, custom kitchens, in-suite washers, dryers

Not Just any ICF...

“When you are doing a project of this magnitude in this type of location, you want to be sure you can get the support you need to be successful. I could have used virtually any insulating concrete form – there are some key reasons why I chose Quad-Lock.”

• Knowledge – Quad-Lock understands how to build and their product was designed with builders in mind. They partner with you to ensure you have a successful project.
• Experience – Anything you can ask these guys, Quad-Lock has seen it before and will assist you in all aspects of your development. From window and door bucks to membranes to plumbing and heating configurations.
• Training – Quad-Lock is the best at providing assistance whenever it’s needed. They offer contractor certification training as well as on-site job training; they were always just a phone call away.
• Lower Transportation Costs – because Quad-Lock is a flat panel system, there was more product in each shipment, which means less shipments were needed. It’s easy to store on-site and all deliveries were on-time.
• No special ordering – with Quad-Lock you don’t have to order corner or spacer pieces. You have everything you need in 4 simple components to build on-site, whatever it is you want to build.

Mike is so convinced that building with Quad-Lock ICF and concrete is the way to build; he summarizes his experience this way: “It’s worth building with Quad-Lock for the energy savings alone – I will never build with anything else.”

Quad-Lock has proven itself as the manufacturer of the most versatile and highest quality insulating concrete forming system on the market and customer satisfaction is its mission.

For more information on Quad-Lock and its products visit www.quadlock.com, email info@quadlock.com or call 888.711.5625.
Places of Worship

Places of worship can be as different in design as the make up of its congregation. They can be simple structures with clean building lines or, they can be beautiful ornate buildings incorporating many architectural design elements. Not only do they serve as a focal point for their congregation, but like any other structure, they have to be practical. They need to be energy efficient, quiet, and safe buildings that will stand up to the test of Father Time and the ravages of Mother Nature. Quad-Lock’s Insulating Concrete Forms (ICFs) combine these benefits and more, to bring the most versatile and highest quality ICF to the construction industry. Because construction and maintenance costs generally are paid for by the congregation, funds must be spent wisely. Worshippers at Surrey Pentecostal Church can take comfort in knowing that their new Church will start to save them money right away, with lowered energy and ongoing maintenance costs each month. Other construction methods cannot offer those same savings.

The Church was originally designed with cast-in-place construction in mind. ICF construction wasn’t even a consideration until after the plans were drawn. Because it was impossible to find a contractor and crew to work on a cast-in-place project in the desired timeframe, the search for another method of construction began. ICF construction became an attractive alternative since it allows even the first-time contractor and crew to get up to speed quickly.

Quad-Lock’s forming system is cast-in-place but the forms are not stripped and remain in place to provide insulation for the wall structures. Because the plans were originally drawn for 8” cast-in-place concrete, Quad-Lock easily adapted saving both time and money. Quad-Lock walls can be virtually any thickness, so there was no need to re-draw plans to incorporate the use of the Quad-Lock ICF.

According to Herb Maretz, one of the Project Managers and a member of the Church, “the single biggest reason for choosing Quad-Lock was because labor shortage was not an issue. A qualified contractor was available to begin construction right away and the product was locally available. As an added bonus, it turned out that the product was also competitively priced.” Just as Herb began the selection process for an ICF supplier, he was put in contact with Doug Saunders of Planet E Construction. Once Doug was hired, the decision of who’s ICF was quickly narrowed down to Quad-Lock, since Doug had previously worked with Quad-Lock.

Months earlier, Doug built a 20,000 sqft music building for a local University using Quad-Lock, “The Quad-Lock ICF was a perfect fit for the University since the plans called for 23 practice rooms. The sound resistance that Quad-Lock offers made it possible for students to practice in a room and only hear their music” stated Doug. He also liked the energy efficiencies and the quick construction time that was available to him by choosing
Quad-Lock’s ICF. All of which Doug felt, were an ideal fit for the new Church.

Construction began on the 25,000 square foot Pentecostal Church in March, 2006. The Church stands two and three storeys tall. The 26’ high sanctuary holds 1,000 people and has classrooms on the first and second floors as well as a multi-purpose room and a full kitchen. Even the elevator shaft is built out of Quad-Lock.

Sound resistance was an important factor for choosing ICF. All exterior walls were formed with Quad-Lock’s ICF that forms an 8” concrete wall cavity producing an extremely effective noise buffer. Built at the intersection of a busy highway, thousands of vehicles will pass by the Church daily. Not only will the concrete walls help to keep the loud traffic noise outside, but it will also contribute to the peace and tranquility inside.

The expected energy savings also played a large part in choosing Quad-Lock. While energy costs continue to rise, the expected energy savings of up to 70% are a great comfort to the Church congregation. The concrete walls have high thermal mass which moderates the interior of the building from outdoor temperature swings. If these significant energy savings can be found in the mild British Columbia climate, just imagine the savings on a Quad-Lock structure located in a climate with more extreme temperature fluctuations.

Maintenance costs will also be less since concrete does not rot, the structure will literally be safe and solid for centuries. Ultimately this means that the money that would have been spent on monthly operating and maintenance costs can be spent on other Church activities or simply stay in the pockets of the congregation.

Doug is sold on building with Quad-Lock’s insulating concrete forms. He recently started construction on his next project – a large, custom house. Doug prides himself on building projects that are ‘different’ from the norm. ‘Not only am I using a different building technology, but at the end of the day, I feel good about building responsibly using sustainable building practices.”

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Tom Ground, an architect based in Norfolk, England, has built his own green dream home set in a steep sand hill. The house is highly insulated as not only are its walls formed with Quad-Lock insulating concrete forms, but by being part of the hillside, this makes it an earth-sheltered home as well. It is roofed with sedum grass, features a glass frontage and traditional local flints to blend into the native habitat and landscape. Toilets that flush with rainwater, a geothermal heat pump, and a three pond sewerage system with reed beds make the house even more environmentally friendly.

Mr. Ground, who did much of the building and decorating work himself, says, "As an architect, I did not want to live in a house I hadn't designed myself. I wanted to make full use of the land by building it into the bank, and it gives the house great insulation."

**Eco-House Features:**
- Whole house ventilation system
- Under-floor heating
- Walk-able glass panels
- Heat recovery system
- Rainwater harvesting
- No drainpipes
- Green roof of sedum
- Designed around sun
North Norfolk District Councillors were full of praise of this design when they granted planning permission. They thought it was innovative and different and hoped that it would encourage others to build eco-houses like it.

A high density of steel was required to resist the extreme sheer loading of the sand earth sheltering. Quad-Lock’s inherent tie position flexibility allowed working around this extreme steel density a simple task. The home had many radius walls and angles which were handled efficiently with Quad-Lock, the easiest system for forming these types of architectural features. The home was built by Tom and his family, in their spare time. “It was easy, and the kids helped,” Tom says.

The home was designed to utilize the natural elements of the sun. The curved wooden peak roof, designed like a baseball cap, shields the interior in the hottest months when the sun is highest. In the cooler months, when the sun is lower, it heats the glass and warms up the home. There are four bedrooms embedded into the dunes in an underground tunnel and the natural cover of the ground, in addition to the Quad-Lock insulating concrete forms, keeps this eco-house extremely well insulated and energy efficient.

The Grounds have opened their home on numerous occasions, to showcase this unique and sustainable house of the future. “When I started building this it was difficult to find sources for information on green buildings, so I don’t mind giving up a weekend to show and talk to people who want to do it too. I am happy to share it.”

For more information on this project, contact Peter Townend at p.townend@quadlock.co.uk.
Jefferson County, Colorado is a place filled with magnificent wonders only nature can provide. Several years ago, Mike Hegdahl envisioned his home here perched high above a spectacular vista of forested valleys in a remote subdivision, just southwest of the Denver area. His plan was to build his 8400 square foot dream house on a spot close to the site’s access road. However, after initial work began on the site in 2007, influence from the neighboring area pushed the site further from the road and out to the canyon’s rocky edge which required a complete revamp of the home’s foundation.

The redesign of the plan added even more difficulty to the project, requiring a construction team with extraordinary creativity, tenacity and vision. Keith Bleeker of Advantage Exteriors, from Colorado Springs was chosen as the ICF contractor. He is a gold certified Quad-Lock installer with extensive experience on difficult projects from earth-sheltered homes to masonry clad commercial buildings. John Hatfield of Energywise Sustainable Products, the Colorado Quad-Lock Distributor, brought 40 years of construction experience to the project and assisted Advantage Exteriors in working through the myriad of challenges the project presented.

The county required the owner to bury a 10,000 gallon water tank on the site, to combat fire fighting concerns in the remote forested area. This was quite a challenge in light of the numerous exposed granite outcroppings and steeply sloping property. Additionally, multiple propane storage tanks were required due to the roads being nearly impassible several months each year.

Blasting the rock to prepare for construction was not an option because of the proximity of neighboring homes and the steep terrain that would funnel debris downhill to structures below. The granite formations on the site were extremely hard, resisting and devouring jackhammer bits by the dozen. The project was further complicated when an overzealous excavator dug into natural rock resulting in an excavation that was over 15 feet deeper than planned in some areas. With some areas cut way too deep, and high spots being too hard to level off, level foundations for the home using traditional forming methods were impossible. Innovation and creativity were required.

On-site discussions between all parties generated a plan to use Fab-Form materials to customize a stepped foundation along the south foundation wall which dropped 15 feet in elevation. A pad footing was constructed within the rock outcrop using epoxy doweled rebar and fabric forming methods to create a base for a 10 foot tall column that would hold the corner of the main garage. The Quad-Lock wall materials were sculpted to the natural rock surface which tilted two different directions up to 20 inches within a 24 inch wall height change. In all areas where natural rock was used as support, vertical rebar was drilled and epoxy set in to the rock.
The complex foundation and undulating rock surface required extensive customization of the Quad-Lock panels, which included numerous changes in wall thickness and different support mechanisms for the panels on either side of the same wall. The ability to hand carve each Quad-Lock panel was crucial to the success of this project. The commitment to excellence and quality by Advantage Exteriors in measuring, calculating, cutting, leveling and re-leveling the Quad-Lock wall system as construction progressed was the key to an eventually successful outcome.

The multiple elevation changes and customized footings and pads created a series of challenging steel reinforcement and forming details. Drops in footing levels, as much as six feet, had created virtual “windows” in the foundation which generated another set of challenges during concrete placement.

Due to the raised floor level in the center of the building and the long narrow footprint of the building, the foundation corner points were not visible across the structure. This made dimension lines, plumb and level lines and point verification impossible. The house was constructed “blind” in three sections until all three areas were built up to a level where visual confirmation was possible. When the first floor was measured for parallel chord wood trusses and TJI’s, the contractor was able to verify, for the first time, that all the walls and dimensions matched up. Needless to say it was a huge relief to find everything plumb, straight, square and level!

Another challenge for this project was the concrete delivery and placement. The closest batch plant is 18 miles away, and the slow climb to the site makes the travel time over an hour and fifteen minutes long. Advantage Exteriors decided to utilize a site-mix concrete company called 24/7 Site Mixed Concrete, who would load the individual components of the mixture into the separate bins of “volumetric trucks” and then combine them with water on-site. This allowed for slump adjustments to be made immediately, and concrete easily placed. If placement had to be suspended temporarily while footers or walls were plumbed or straightened, the freshness of the concrete allowed for that time gap without concern for a too-quick set up of a partially poured wall. The site-mixed solution was extremely valuable to the overall success of the structure, resulting in walls that were plumb, straight, square and level.

The long narrow home has two large garages located on either end of the structure, one for family use and one to be used as a hobby center. The main floor includes the kitchen and dining areas, a “sun hall” and a large dramatic great room that overlooks the dizzying 2000 foot drop from cliff’s edge and provides a breathtaking vista of mountains to the west. The second level contains several bedrooms and more spectacular views.

The construction of the main floor was relatively simple compared to the extraordinarily difficult foundation phase. The walls, which are twelve feet tall, have numerous large windows to utilize the abundance of natural light and capture the stunning views. They also provide support for the second story.

The second story of the home was designed with large gable ends which were a challenge to construct with the high winds at the site. At times it was difficult to keep the lightweight Quad-Lock panels straight during stacking and concrete placement. Extra precautions for bracing and for worker safety were taken. The gabled end of the home rises forty-one feet above the ground with the second story encompassing...
Rock Solid House on the Hill...cont’d

the top nineteen feet. As that top gable was poured, stops had to be created within the wall so that the pump could continue to place concrete all the way up to the peak.

The owners wanted a distinctive finishing treatment for their dream home. Cultured light grey veneer stone, manufactured by H&M Stone of Greeley, CO was installed on the exterior of the home. The expanded wire mesh required underneath the stone was screwed into the Quad-Lock ties at twelve inch centers. The secured wire mesh allowed the light gray field stone to be securely attached to the walls up to 61 feet high.

The result after all the challenges and inventive solutions is a dramatic and enduring home that commands extraordinary views from inside and out.

Quad-Lock Insulating Concrete Forms ensured the success of this unique and challenging, one-of-a-kind project. Quad-Lock is a proven product that can be ADAPTED to ANY site and ANY condition.
Quadruple the R-Value with R-ETRO

Challenge:
With no exterior wall insulation and an R-Value of only R-5, this 1954 brick home near Ontario desperately needed radical improvement. As temperatures in Whitby can soar as high as 34°C [93F] in the summer and plunge to -25°C [-13F] in the winter, massively increasing this homes thermal efficiency was clearly the key to transforming it for 21st Century living, but how? "By using the R-ETRO system from Quad-Lock!" replies Rudi Dyck emphatically. Owner of the home and partner in a local construction company, Rudi also benefited from R-ETRO’s unique qualities to give a much needed facelift to this home’s dated appearance and re-plumb its crooked exterior walls.

Solution:
"Installing the R-ETRO System from Quad-Lock was by far the easiest and most secure way to exponentially increase the R-Value from R-5 to R-24. With such a radical change to the home’s energy efficiency we have significantly reduced our carbon footprint, our heating costs, and we get a tax break from the government!" explains Rudi. “At the same time as saving so much money and increasing comfort levels within the home, straightening the walls and giving the house a modern look has also added re-sale value. With R-ETRO, it’s so simple, how can you go wrong?” he added.

The project was finished on time, on budget and will rapidly give this proud householder a solid return on his investment, as well as satisfying his desire to be “more green”.

To find out more about the system and the savings you can expect, go to www.r-etro.com.
Project Details

Location:
- Whitby, ON, Canada

Project Type & Size:
- 2-Story residential property built in 1954
- 1500 sqft [139 sqm]

Products Used:
- R-ETRO System - 4.25" [108mm] Plus Panels
- Quad-Lock Peel & Stick
- Energy Star Windows
- Stucco finish

Project Partners:
- Owner - Rudi Dyck
- General Contractors - Das Haus Ltd. and Einbau Ltd.
- Quad-Lock Dealer - Renfrew Agri Systems

Why R-ETRO by Quad-Lock:
- Increase the R-Value by more than 300%
- Superior indoor comfort levels
- Tax incentives
- Updates & enhances appearance, increasing home value
- Easily fastens to existing walls
- Easily shims to correct walls that are out of alignment

Comparative Data:
- Cost of R-ETRO & upgrades.................................$5,600
- Total annual energy savings from improvements........$1,370
- Payback calculated at 4 years

*Source: Hot2000 Calculations from Ministry of Natural Resources Canada
**PROJECT SUMMARY**

**Sustainable Housing in Bulgaria**

**Challenge:**
These two custom homes are located on the side of a hill where there is no access to water or electrical services. This posed an immediate problem with trying to obtain approval to build on this site. The homes needed to be a self-sufficient and sustainable design.

**Solution:**
The statistics compiled from other Quad-Lock projects in the region were used to convince the officials that a self-sufficient design could be accomplished. The energy efficiencies of Quad-Lock ICF and concrete meant that the energy requirements were cut dramatically and could be supplied by a hybrid system utilizing a wind generator and solar panels. The water services are supplied through two 130' [40m] wells. Initially, a geothermal installation was looked at and deemed too expensive for only two homes. A water-in-water heating and cooling system with thermal pumps was used because of its efficiency and environmental friendliness. In the winter, the thermal pump heats the water from 13°C to 40°C and circulates it through the in-floor system. In the summer, the water is circulated bypassing the thermal pump.

**Why Quad-Lock:**
- Energy efficiencies
- Product familiarity through other projects in Bulgaria

These were the first homes of their kind in this region and have been widely recognized as a premier example of alternative or green building methodology.

**Project Description**

**Location:**
- Rudartsi, Sofia Region
- Bulgaria

**Project Type:**
- Two, 2-Story residential properties

**Size:**
- Each Home: 2605 sqft [242 sqm]

**Products Used:**
- Quad-Lock R-22 Wall Assembly with 6” [15cm] wall cavity
- J Bornay, Inclin 3000 heo, 5KW Wind Generator
- CIAT, Aurea 2 40HT Water-in-Water Thermal Pumps
- WILO, TWU4-0420-EM-B pumps for autonomic water source

**Project Partners:**
- Architect - Andrea Momerin Archeos Ltd.
- Facade Design - Betty Bencheva, Michaeldesign Ltd.
- Structural Engineer - Tsvetan Vashkov
- Quad-Lock Bulgaria - Maria Kolentsova

**www.quadlock.com**
604.590.3111 or 888.711.5625
**Project Summary**

**Wyoming Earth Sheltered Home**

**Challenge:**
The initial challenge was the timeline. The first inquiry from the homeowner came via the internet in the early part of 2008. The preliminary project concept and design was started in June, 2008 with a goal of having the home’s shell weather-tight by October 1st. Details and layout were completed in 25 days and construction started just before July 1st, 2008. The 4-man crew traveled 8 hours one-way to work on the project, working shifts of 8 10-hour days then taking 6 days off.

Additional challenges were the homeowner’s desire for an earth-sheltered design, along with a rather remote, rural building site. All construction materials, except for concrete, were shipped in.

**Solution:**
In order to meet the short construction timeline it was imperative that all aspects of the project come together expeditiously and efficiently leaving little time for second guessing or costly errors. With previous experience in building an earth-sheltered home, Energywise Sustainable Products was eager to lend expertise to the homeowners in assembling a team that understood the design concept and was willing to put forth the extra effort it would take to meet the tight time schedule. Choosing high quality, energy efficient products like Quad-Lock and hiring quality installers committed to working together got the project off to a solid, fast start.

**Building Efficiencies:**
- The Advantage Exteriors crew installed Quad-Lock R-22 components below grade and R-30 components on the exposed wall surfaces.
- The owners selected dual pane windows and an in-floor radiant heat system. These choices, together with the extensive solar gain from the sun hall design, should allow the structure to operate at a 70% savings over a comparable structure in Pinedale, WY. (*At publication, the home has not yet been completed so energy performance data is not available.*)
- Final exterior and interior wall finishes as well as window installation methods will affect the overall energy efficiency of the structure.

**Summary:**
The structural shell of the 4160 sqft earth sheltered home was completed in 64 labor days by a crew of four. The visible portions of the exterior design features reflect a southwestern Santa Fe style home and incorporate as many energy saving products as possible. Approximately 250 yards of concrete went into the 550 linear feet of footers and walls and 4100 sqft of roof. The design includes a retaining wall on either end of the home constructed in a 35-foot radius, allowing more southern exposure and an additional window into the master bedroom. Rapid weather changes and countless mosquitoes were the largest environmental factors to overcome.
When Colin Dumais thought about building his new home he wanted to feel a connection to it, rather than it being a ‘disposable asset’ for his family. “There’s no one that passes their home from grandfather to father to son anymore, there’s no emotional investment in the structure that houses and keeps our families safe and sheltered.”

Three years ago when the Dumais family were eagerly awaiting their first child, Colin thought about building a legacy home. Colin’s new home started with a vision to build a self-sufficient home. He wanted it to be connected to the area so he modeled it after an early 20th century local CPR train station. Finally, he didn’t want to live any different and he didn’t want his home to cost any more to build.

Colin works as a technology specialist with an electric utility in Calgary, Alberta. His position gives him better vision than most of us on predicting the future of energy consumption and our fate as a planet of over-consumers. With little money, experience and time, he did what most of us do these days – he turned to the internet.

The internet is a big place full of lots of information, so Colin developed a set of criteria to research in his quest to build a self-sufficient home. His basic criteria for his home were:

1. the use of a low-temperature radiant heat source
2. high levels of insulation
3. air-tight building envelope

Colin felt that if he could find products that met his criteria, he would have found the basis for building his home.

Soon after logging on, Colin came across Quad-Lock’s website – designing his home using Insulating Concrete Forms (ICF) in an R-40 configuration would deliver on 2 of his 3 criteria right away — high levels of insulation and being built with reinforced concrete, it would provide an air-tight building envelope. “Using the R-40 configuration was a no-brainer, the additional cost of building with Plus Panels was about $1.00/sqft (more than Regular Panels), over 2000 sqft that’s $2,000. I got 3 times the insulation value and a whole bunch of options.”

It’s like a big puzzle when you design a home as a unified system. With R-40 insulation and an air-tight shell, the home has inherently low energy requirements. This leaves lots of options for heating. “First we looked at a geothermal heat pump system, based upon our requirements, we would need 6 less wells than if our house was traditionally-framed – right there is a savings of $12,000. We also experimented with a hydronic boiler that not only heats water but generates electricity. This is new technology, but neither of these were exactly what I was looking for. For the first year that we lived in the house, we used a super-efficient boiler, this can now be used as a back-up system to the solar thermal array we have now installed. Living completely without fuel costs and specifically on a solar thermal array wouldn’t be possible, if not for the low energy requirements of this R-40 home.”

“When all the pieces were put together, using a ‘whole building’ design approach, I was in positive cash flow from the moment I chose to work with Quad-Lock’s Plus Panels. I believe the minimum standard is the building code – we need to be building well above the minimum.”

Since Colin works for an electric utility he has access to advanced monitoring and measurement tools for heating systems which he’s included in his home. Colin measures flow rates and temperatures, for example, which floors need heat and when; he also measures domestic hot water temperature. “I’m collecting the actual data on energy usage for my home – I can prove how much we use and where we use it.”
The solar water system generates a lot of energy and Colin needed a place to store it, so he added an in-floor radiant heat system into the concrete floors. But that wasn’t enough, he needed a bigger ‘storage area’ for his excess energy. That’s why he built a detached garage with Quad-Lock’s R-40 ICF, too.

“The garage’s 40’ X 30’ footprint was a project unto itself. I built a basement under the suspended concrete slab parking area for my workshop and ran radiant heat tubes in the walls to store the additional thermal energy from the solar water system. I also added a 1,200 sqft in-law suite above the parking. We live in the Okotoks, which is Southwest of Calgary, Alberta. The winters can get cold here. I had to have a detached garage as the home design does not lend itself well to an attached garage.”

Colin wanted to build a home that would last and he did that. He wanted to build a home that wouldn’t cost any more to construct than a traditionally-built home (built to the same energy efficient standards) and he did that. “We have a home that will be a legacy for our family for generations.”
A Journey to Net Zero

Being an inventor, I wanted to build a prototype home; a home that is not only affordable and cool to live in, but also sustainable, and hopefully an industry trend setter. The home had to be passive solar oriented, partially earth sheltered on the North side, with a heavy emphasis on aesthetics and present a unique profile – nothing ordinary would do. Some of the unique features we wanted were radius walls, sculptable, lots of mass for thermal cooling and heating, relatively affordable and easy to construct. We loved the concept of building an Earthship like the ones you see in the southwest. You know, with used tires and recycled materials; very sculpted and aesthetic. The problem with these methods of construction in a northern climate such as New England is moisture and cold. Straw rots and tires don’t insulate.

We didn’t know anything about ICF at the time, but we were willing to investigate it as an option. We flew to Vegas for the World of Concrete to try to get educated on this concept. After 3 days of walking the aisles and talking to all the ICF guys, we were pretty much hooked on the concept. The little building out in the parking lot, made onsite for the show, really sold us on the qualities of ICF. ICF became my new choice for building. I remember how solid it felt and how easy it was to put together. I could envision building our dream home with it, except for one thing: it was linear – or so I thought.

I was first attracted to Quad-Lock because of the Plus Panels for the outside. Remember, we wanted to build a zero-energy home. I remember meeting Douglas Bennion (Quad-Lock’s Manager of Training and Technical Services) for the first time. I told him that I thought his product was “Simply Elegant”. Where have you been all my life? And then I asked him if you could make radius walls with Quad-Lock, he showed my wife and me a video, and in it were some examples of radius construction. BINGO – a done deal!

My head was spinning with possibilities. I was psyched! On the return flight, I drew a concept sketch of our dream home on a napkin. Two months later we broke ground.

Our whole house showed up one day in a large semi-trailer. It took almost an entire day to unload it and stack it on the driveway. We immediately began to assemble the ICF. Kevin Spaulding of Miles Supply, our supplier, volunteered to help out for a few days to make sure everything got off to a good start. We started on the straight back wall; no problem, easy and fast. But, when we got to the first radius, things went to hell, fast. The panels didn’t bend well and, if bent too much, simply broke. We tried all day to master the radius, but gave up in despair and exhaustion. Kevin was very upset, because the entire house was mostly radius, some even tighter than the first one we took on. My wife and I were disillusioned. Our dream home was sitting
Building our first ICF house was very challenging, to say the least. Our #1 fear was blowouts. Many of our corners and wall junctions were very unconventional – meaning no metal reinforcing brackets. I substituted the brackets with 3M fiberglass strapping tape, criss-crossing it at every rise. One of the most anxiety ridden days of my life was pumping the first floor rise. The crew was as nervous as I was. After all, this was my first ICF project ever – and everyone knew it. I tried to comfort the troops that day with my motto – “go big or go home!” That didn’t help much. Well, we pulled it off without a single incident. It was also one of the happiest days of my life!

The next scariest day of my life was pumping of the second floor rise; again, no problems and another very happy day. If I ever build a square ICF Quad-Lock house, I will be fearless!

Building with ICF is a whole new ball game: from working with contractors and inspectors, to not making any big mistakes that cost a lot of money. I ran into constant problems with my building inspectors – none of them had any ICF experience, either. In my county, in order to get a building permit, you must pass a very stringent energy audit. They actually failed my zero-energy home design on the audit because I wasn’t using E-windows on my south side and they challenged the R-values of the ICF walls and open-cell Icynene foam in the roof. They were “pink” guys. They just didn’t like foam – any version of it. My electrical inspector didn’t like how my electrical conduit was terminated in the walls and scoffed at how we trenched the foam for the wire. When it came to finishing the interior walls, since many of our walls were curved, we had planned on plastering directly over the ICF – not allowed. The inspector made us apply ½” dry-wall on every curved inch of foam – fire code. This proved to be not only challenging, but costly as well.

I was able to get a little even when it came to the garage. The inspector showed up just after we had hung the ½” dry-wall in the garage – no easy task! He demanded that it be removed and replaced with 5/8” dry-wall – code in MA for garages fire rating. I simply reminded him that there was an 8-inch solid concrete wall between the garage and the rest of the house! 8” of concrete beats 5/8” dry-wall hands down. ICF saved the day!
Our electrician had never done ICF either, but wasn’t intimidated. We ran most of the conduit directly in the wall. This saved a lot of time and money; fewer holes to drill, more savings. The same thing with the plumbers – most of the water and sewer lines were cast into the concrete. Again, no holes equaled more savings!

I believe the biggest weakness of going ICF is the concrete pump operator – that is, finding the right guy! We had five pump days: one for the footings; one for the stem wall; one for the first floor rise; one for the second floor; and finally, one for the second floor rise. The first 2 pumps had terrible operators. They could barely do footings, let alone get it into an 8” opening in Styrofoam. I became very concerned. I needed someone for the first floor rise, and they had to be good – I mean darn good. After calling around and interviewing many companies, I found my man! Steve Capone saved the day. He is a true artist with the controls. We worshipped the ground he walked on. Also, it helps to keep the pump crew alive and well-fed. We always cooked cheeseburgers on pump day and had plenty of cold beer after the concrete was in place and the pump truck and tools cleaned up.

We saved a significant amount of money by replacing all of the horizontal rebar, except for headers, with Forta-Fiber – 5 lbs per yard. We added the fiber on site. We used fiber in the slabs as well, not metal – big savings! We chose an ICF drafts-person to do the final drawing. She specializes in Quad-Lock, so that made it very easy. Our engineer was also very experienced with ICF, so that went well, too.

After building and living in an ICF house, I can say with 100% confidence that it was the right choice for our dream home. After 30 years in home construction, I will never go back to conventional built – EVER!

During the last summer in New England, it was very hot and humid. The inside temperature of the house never exceeded 70 degrees Fahrenheit, even on 100+ days. This winter has been very cold and snowy. To this day we have never had to use the radiant heat upstairs. It stays between 65 and 70 degrees, day or night. On solar days, the whole house stays very warm. We have had to burn very little gas for non-solar days for heating because of the thermal mass of the concrete.

We are in the process of installing a solar thermal and PV system. Because we can, we are also installing a micro-hydro system. I believe once these systems are complete, we will not only achieve the zero-net goal we started out to achieve, but far exceed it by producing a significantly greater amount of energy than we consume. Also, we will have enough energy to fully charge 2 electric hybrid plug-in cars.
Jerry Trotter of Equity Contracting has been in the construction industry forever. He has been building custom homes and providing major renovation services in Vancouver and the interior of British Columbia for over 25 years. Jerry is a master carpenter with a passion for open, contemporary design. Today, living in Kelowna where the housing market is still red-hot, Jerry is building with insulating concrete forms.

New Tricks...

No one would ever call Jerry an old dog, but he does have some new tricks. His innovative use of Insulating Concrete Forms (ICF) to create a niche product line for his custom-built home business proves there are better ways to do things in the residential building market.

“I wanted to get back to building custom homes but due to a physical setback, my ability to do any lifting was significantly curtailed. I needed to find something different that was light-weight and yet impressive. I saw Quad-Lock’s ICF and was totally impressed. I wanted to build something really different and here was my opportunity.” Jerry’s third custom-designed project, with a flair for concrete is a 4100 sqft rancher perched high above the valley floor in Kelowna, BC. It has 4 bedrooms, 3 of which are self-contained, a gourmet kitchen and a walk-in shower in the master ensuite that has an impressive 7-window exterior radial wall. In addition to the attached large, double-car garage, there is an ICF detached garage complete with its own in-floor radiant system and 3-piece bathroom. The home features 9’6”ceilings, 7” concrete floor with an in-floor radiant system and impressive views from the front, westerly facing side of the residence. “There are unbelievable views up and down the valley from this 10-acre property. And, because of the insulation properties of Quad-Lock, you can see flights taking off and landing from the international airport, located on the valley floor below, but you have to open a window or a door to hear them.”

The original home plans were designed by Jerry and are an open-concept, well-planned residence. Originally designed years before the house was to be built, Jerry had in mind to use 2 X 6 wood-framed construction. No changes had to be made to the original plans once Jerry decided to switch to Quad-Lock ICF concrete construction. “After all my years in carpentry – if you understand header systems and bulkheads – you literally can just get started. Quad-Lock was the easiest, simplest product with which I’ve ever dealt. It was less expensive to build than if I’d built the residence using 2 X 6 wood-framed construction.”

Being in the renovation business, Jerry can tell you about the short life span of wood-framed homes – he’s seen the damage that rot can cause in coastal areas. “The renovation business is an endless source of work, especially in B.C., where mold and mildew will eventually prevail to make replacement of a wood-framed home inevitable. This concrete home will be around for centuries.”
The upside to building custom or spec homes in Kelowna right now is it’s a hot market. The downside to custom building is the extreme labor shortages – simply because the construction industry in general is so hot. To combat the shortage of labor, Jerry hired a 3-women crew to install the Quad-Lock forms. “ICF construction really levels the playing field for women who want to get into the construction industry – it’s lightweight and really easy to move around the jobsite.”

The Ellison Estates residence is virtually maintenance free. The exterior is finished with stucco and custom aluminum trim; it will easily withstand the seasonal temperature swings seen in the interior of British Columbia. “I am eager to work with Quad-Lock again. I see concrete home construction with its sustainable attributes, energy efficiencies and its easy adaptation to any traditional or modern design elements as very desirable characteristics sought after by progressive, knowledgeable homeowners.” Jerry is not the only one talking about ICF construction; Mike Holmes, of Holmes on Homes fame is equally taken with the construction technology:

“...I’m more excited about what is called insulated concrete form (ICF) construction than any other building method out there. These forms, made of foam insulation, are put in poured concrete walls, and stay in place as a permanent part of the wall. They provide excellent insulation and sound barriers, and they don’t develop mould.”

Quad-Lock has proven itself as the manufacturer of the most versatile and highest quality insulating concrete forming system on the market and customer satisfaction is its mission.

For more information on Quad-Lock and its products visit www.quadlock.com, email info@quadlock.com or call 888.711.5625.
Mr. Kustermann

I just thought you might like to know, the Brazil team from the University of Maryland-Engineers Without Borders chapter had an extremely successful project. On August 25th, 2006, the villagers at Ilha das Pecas, in the state of Parana began to fill their concrete water tank for the first time. This new water tank will give the village added storage capacity for their basic water usage needs for their dry months of June, July, and August.

We started working with the Quad-Lock system on August 10, and only six days later, we, a group of inexperienced college students with the help of local labor, had constructed a 6-foot tall structure that will carry approximately 6,500 gallons of water for the island. The construction process had its trials and tribulations along the way, but without this system, we would have lagged in our schedule and never been able to put a roof on the structure, mortar it, or complete the necessary hydraulics to make it a working water tank. Pouring tons of concrete was an extremely tiring task, but using Quad-Lock, we were flexible enough to make minor changes here and there during the days of concrete pouring, such as properly leveling our feed and draw lines to the tank or adding an extra housing for the cleanout valve of the tank.

Working on an island and in a poorer area, we really learned the importance of having quality construction materials. Wood is not as common a construction material in Brazil, and there were only a few skilled laborers on the island, so having Quad-Lock simplified the process on all aspects. It was a challenge getting the whole system there for the project, but in the end, it paid off.

We, from Engineers Without Borders-University of Maryland would like to thank you, Mr. Kustermann and Quad-Lock, for supporting our project and our goal to make the world a better place, one community at a time.

Sincerely,
Chester Feldmann
Co-leader, Brazil Project
Engineers Without Borders – University of Maryland

All Quad-Lock materials were generously donated to ensure the success of this important and beneficial project.
Insulating Concrete Forms (ICFs) were first adopted in the European market because of their high energy savings abilities. The need for the same type of energy savings has become more apparent in North America recently. With energy costs on the rise, homeowners and homebuilders alike are looking for ways to save on the cost of energy. In response, Quad-Lock Building Systems Ltd. has developed the thickest ICF panel on the market, which provides the highest R-values, up to R-40.

R-value is the measure of thermal resistance and is an indication of a material’s ability to insulate. Simply put, the higher the R-value, the better the insulation.

Walls built with Quad-Lock Plus panels offer many benefits in addition to energy efficiency, including superb sound deadening and a healthier indoor environment. Energy savings of 40-70% have been documented using the regular 2” panel. The Quad-Lock Plus wall promises even higher energy savings.

Many builders who are looking to set themselves apart from their competition build homes that are environmentally responsible. The energy efficiencies and other desirable features of an insulating concrete building make ICF, and specifically Quad-Lock, an obvious choice for a green building solution.

Scot Smyth of Smyth Builders in Colorado is one such builder setting out to build responsibly. Scot challenged himself and his associates to build a unique home that complemented its surroundings. In his quest to build creatively and responsibly, Scot chose Quad-Lock’s ICF system. He met, and some might say exceeded that challenge, by building ‘House at Empyrean Ridge’ which won Home Builders Association of Northern Colorado’s Innovative Builder of the Year Award.

“I chose Quad-Lock as my ICF because I had seen the problems associated with other ICFs — from blowouts to lack of technical support from the manufacturer or their reps. Since ‘House at Empyrean Ridge’ was my first ICF home, I had to align myself with people and products that I could trust. Quad-Lock’s Regional Dealer, John Hatfield of Creative Exterior Materials, taught me how I could use Quad-Lock in innovative ways that saved me both time and money”, states Scot.

“Deciding to use the Quad-Lock Plus panel was an easy choice for me. Because of the rising fuel costs, I knew I needed to take steps to keep energy costs down.”
Upfront planning and investment can save you money or even pay dividends in the long run. By ensuring that I was using the highest R-value available to me, I saved money on the heating and cooling equipment I installed and now I will save money on heating and cooling my house for years to come.” As an added benefit, Scot saves about 20% annually on his house insurance.

Scot now lives in his award-winning home and he’s been impressed with how solid his house feels. “My exterior walls are 16.5” inches thick — that’s a lot of wall protecting me from, among other things, the harshness of Mother Nature”. Further, Scot states “a couple nights ago the wind was apparently blowing around 80 mph, we didn’t even know it was windy until we looked outside the windows. Inside, we couldn’t detect the wind — it was that quiet. That same night, the interior temperature dropped 1 degree, considering that it was –8 degrees outside and all the windows we have, that’s pretty incredible.”

“We had a lot of wind during construction too, but the rigidity of the Plus panels is amazing. We’d go home with 12 foot high Quad-Lock walls stacked waiting to be poured and come back the next morning and they were still standing. Even Mother Nature couldn’t put us behind schedule”.

Scot will soon begin construction on his next project, APEX, a 4000sqft home in the same development. It too, will be built with Quad-Lock’s Plus panels. “I wouldn’t use any other ICF.”

The few components of the Quad-Lock System ensure simplicity in design, construction and supply. Quad-Lock can easily be shaped to form the design elements of modern buildings – openings, corners, angles, curves and arches. The prominent features of Quad-Lock’s Building system are:

**Simplicity**: Quad-Lock consists of 4 basic components and is easy to use.

**Versatility**: The 4 components allow any design including curves and angles. Quad-Lock’s unique corner bracket system makes multi-storey ICF construction easy, safe and efficient.

**Strength**: Quad-Lock uses the highest density foam in the industry and is the only system that connects the panels along 4 planes of resistance for superior formwork strength.

**Energy & Cost Efficiency**: Energy savings are documented to range from 40 to 70%.

**Sound Reduction**: Quad-Lock walls achieve STC ratings of 50-58.
A plumb, straight, square, and level (PSSL) foundation is key to any building project and is particularly important when you’re going to place a modular home on top. Quad-Lock Insulating Concrete Forming (ICFs) system makes PSSL a snap to achieve…

Mike Hanes of Northern Shores Enterprises is a modular home distributor and Quad-Lock Dealer. He began installing Quad-Lock six years ago. He pours a Quad-Lock ICF basement under every modular home he erects. “With modular homes, we needed to find a way of doing basements that was quick, provided quality, and was cost effective. The nature of modular homes mandates that we have perfect corners, the whole idea of building ICF basements is to build a foundation that’s a perfect 90 degrees or as close to it as possible. We can achieve that with Quad-Lock.”

From our business perspective, Quad-Lock makes sense, too. “Quad-Lock doesn’t take a lot of room to inventory and doesn’t require any heavy equipment to load and unload, which are important considerations for us” states Mike Hanes.

“Both the Company and its products do what they say they will do!” What really impressed me about Quad-Lock is the:

- quality of product
- high density foam
- ease of assembly
- nice, clean 90 degree corners
- angle brackets securing any degree of angle

“Once we got past the learning curve of building with this product, which literally took three projects, our basements were quicker and straighter than we could achieve with traditional forming techniques”, says Mike. “An average basement of about 1800 square feet, 8’ tall with 10 corners takes a crew of 3 men 1 full day to stack. Add another two hours to pour concrete and we’re done and able to move on to our next project. It’s that quick!”

Time saved equals money saved.

“Quad-Lock basements actually sell before the modular home sells… that’s how impressed homebuyers are with Quad-Lock.” It’s not just homebuyers; most all trades who have worked with Mike finishing a Quad-Lock basement have come back to him to purchase their own Quad-Lock basement.

Known as the “ICF guy” in town, Mike continually speaks to anyone who will listen about Quad-Lock and its advantages in constructing a new home. “There’s no big trick to building with Quad-Lock, you just need to take the training and understand basic construc-
A Better Way to Build Basements...cont’d

He gives example after example of people either choosing or switching to Quad-Lock after they’ve seen a demo. He also tells potential home-builders and contractors about the benefits of using Quad-Lock for the entire construction project, not just the foundation. Many had only considered it for their basement but after speaking with him, they’ve had their architects redraw the plans for use with Quad-Lock. “Everyone we have demonstrated Quad-Lock to, has used it. They’re excited about what Quad-Lock will do for them.”

“I enjoy selling Quad-Lock because it sells itself. The key is to know what you’re talking about.” Quad-Lock has become second nature to Mike and his wife and business partner Robin, who display a Quad-Lock corner in their office. Everyone who walks in asks questions that Mike and Robin are ready and able to answer. “How can I convince people to build with Quad-Lock unless I’m talking from experience?” Last year the Hanes’ built a 2400sqft shed and this year they’ve completed their own 5800sqft home, both built to the roof with Quad-Lock.

Another big selling feature for Quad-Lock is energy savings. Oil costs in Michigan are increasing an average of 25%; people are looking for ways to save money to heat their homes. Quad-Lock offers that and so much more. Mike follows-up with clients to see how they enjoy their home. They continually talk about how energy efficient their home is, in particular their basement. He has been monitoring two very similar homes in the same neighborhood — one home has a Quad-Lock basement, the other has a conventional basement. To heat the home with the conventional basement it takes triple the amount of fuel in comparison to the home with the ICF basement.

Mike’s also been keeping close tabs on his energy costs. He wants to show just how much you can save by building with Quad-Lock. Last year, he spent $420 to heat the shed…that’s $35/month for a completely insulated workspace, even in the chilly winter days of Michigan! Mike expects to pay only $68/month throughout the winter to heat his home. He’s already noticed that the fuel tank is only at 50% of what it was last year for his conventionally built home.

Mike uses an analogy to demonstrate the heat loss concept that literally leaves people speechless. “You can grow flowers under the eaves of your home all year long with a non-insulated basement. The heat loss will seep at least two feet from the wall. Because there is no heat loss with Quad-Lock ICF, flowers can’t grow in the wintertime”.

Call today to see how you can get more out of your building!
Yellowstone – LEED Certified

Nestled in Yellowstone National Park, Xanterra Parks & Resorts completed two single-family residential homes for use by park employees. Culminating in LEED® Certification in December, these homes are the model that will be the benchmark for other green, energy-efficient construction developments within Yellowstone and other national parks. This is significant because this is the first building project in the State of Montana, for the National Parks Service and for Quad-Lock Building Systems Ltd. to receive LEED certification. From the onset, these homes were designed to reflect the commitment that both Xanterra and Yellowstone National Park Service have to sustainable projects and practices. In order to ensure that these homes could be considered for LEED certification, Xanterra Parks & Resorts felt impelled to build with insulating concrete forms (ICF). Because they provide the highest R-Value in the industry, Xanterra chose Quad-Lock as the ICF. Over 20% of the LEED certification points used in the LEED application process was a direct result of using Quad-Lock materials. The use of Quad-Lock helped point allocation under rating criteria for Materials & Resources and Energy & Atmosphere.

Xanterra Parks & Resorts combined Quad-Lock Plus panels (4.25”) and Regular Quad-Lock panels (2.25”) to construct the exterior 6” thick concrete walls. This configuration provided an R-value of 32. If used on both the interior and exterior of the wall, Plus panels can provide an R-Value of R-40. Jim Hanna, Director of Environmental Affairs for Xanterra Parks & Resorts comments “Without the energy-saving qualities of Quad-Lock walls, there’s absolutely no way we could have submitted these homes for LEED certification.”

One of the biggest benefits to building with ICF is the energy efficiency. Jim further states, “By choosing Quad-Lock ICF walls in the construction of our new housing, Xanterra was able to triple our homes’ R-values over standard construction materials, an important accomplishment in the heat-sapping winters in Yellowstone. The Quad-Lock ICF walls are excellent heat sinks that augment the effectiveness of the houses’ passive solar design, maintaining a comfortable living environment year-round and minimizing the number of days we have to heat the buildings.”
Gregg Yanke of Yanke Developments has been preaching the gospel of Insulating Concrete Forms (ICF) Construction for 5 years – ever since he worked on his first “to-the-roof” concrete home. Yanke Developments is now so efficient at working with this building technology that they can build a higher quality home for less money than using traditional construction methodologies. Gregg is now putting his money where his mouth is, so to speak, by building his own ICF home, complete with an ICF pool. Gregg states his position this way “How can I possibly sell anyone on the lifestyle benefits of this type of construction if I’m not living it myself? What better way to sell a project than to have someone come over to my residence and see first-hand how comfortable a concrete home can be.”

Gregg actually owned and lived in the home that was previously on the lot situated on Capilano Road in North Vancouver. “Because my family actually lived here in a wood-framed house previously to building our concrete home, it will be very interesting to see what amount of energy savings we realize. Right now, I’m estimating that we will pay a quarter of what we were paying before.” The original structure was leveled in October, 2004 to make room for the new 2-level 3000 sqft home that Gregg designed himself.

When viewing the home, it’s obvious that Gregg has spent many years working with concrete and has added some elegant and interesting features to his home. For example, there are no floor transitions, all door frames are imbedded; interior concrete stairs and flooring with in-floor radiant heat and an ICF party wall was poured between what will be the children’s room and the rest of the house.

The front wall of the home is 20 feet high, Gregg actually did an impressive 45o pour at the truss line. In addition, coloured concrete is used around the pool and for the driveway. Gregg has also used a treme-
dous amount of native Fir decoratively throughout the home. “Building with concrete doesn’t mean you forgo wood – but I’m able to use it esthetically and appreciate its beauty rather than have it in between the walls where it can’t be seen.” Carolyn Campbell, Executive Director of the BC Ready-Mixed Concrete Association comments “Gregg has really done an excellent job in design as well as sustainability on his home. Wood that was required between the walls was recycled from the previous structure and because of the ICF construction, there was almost no jobsite waste. This is really a great example of everything right about concrete construction.”

Gregg readily admits that ICF construction hasn’t caught on as much as he’d like to see it. “ICF is not like lego, you can not underestimate how much planning has to be done up-front in order for things to go smoothly. If you do the planning, it’s easy – I had a two-man crew who had never worked with ICF before, build my forms faster than any wood-framed house could be done. In the 5 years that I have worked with ICF, I have only worked with Quad-Lock. From my perspective, it’s the best ICF on the market and I wouldn’t work with anything else.”

The few components of the Quad-Lock System ensure simplicity in design, construction and supply. Quad-Lock can easily be shaped to form the design elements of modern buildings – openings, corners, angles, curves and arches. The salient features of Quad-Lock’s Building system are:

- **Simplicity**: Quad-Lock consists of 4 basic components and is easy to use
- **Versatility**: The 4 components allow any design including curves and angles. Quad-Lock’s unique corner bracket system makes multi-storey ICF construction easy, safe and efficient.
- **Strength**: Quad-Lock uses the highest density foam in the industry and is the only system that connects the panels along 4 planes of resistance for superior formwork strength.
- **Energy & Cost Efficiency**: Energy savings are documented to range from 40 - 70%
- **Sound Reduction**: Quad-Lock walls achieve STC ratings of 50-58.

Visit www.quadlock.com to find out more about Quad-Lock Building Systems.
Yanke Developments - N.Vancouver, BC

About the Developer:
Builder / Designer / Owner: Yanke Developments – Gregg Yanke has:

- 15 Years Experience in Building Custom Homes
- Built 6 Full ICF Homes and 16 ICF basements
- Been working with ICF for 5 years
- Always worked with Quad-Lock ICF

Gregg has built his business on custom home developments: excavations, foundations and framing. Gregg is excited about building with ICF because it offers a quality product that is, in his opinion, a better building product with better performance and significant longevity. “Building custom homes is not about building to code — it’s being superior in design, construction and ultimately, value.”

About ICF and Concrete:
- Successful ICF Construction starts with up-front planning
- Construction costs are equal or less than costs for custom wood construction
- Energy Savings: This home and pool’s energy costs will be approximately one-quarter of the costs of the original home and pool structures that have been replaced (est. at $100/month rather than $400/month previously). The original home and pool were approximately half the size of the structures being built today. If these savings were applied to the principal over a 20-year mortgage, your gross savings could be as much as $150,000.00.
- As a building technology, ICFs offer reduced risk and exposure. Because of the nature of reinforced concrete, it won’t rot and is not a host for mold nor will concrete burn. In keeping with sustainable construction, ICFs can significantly reduce energy consumption as well as site waste.

“Concrete is different from wood-framed construction – but it’s not magic – at the end of the day, it’s still just concrete inside a form...”
LIVING BY HIGHER STANDARDS

Building ENERGY STAR homes using Quad-Lock’s stay-in-place Insulating Concrete Forms (ICF), Geothermal HVAC Systems and ENERGY STAR rated appliances.

Rockford, IL - Rutu Construction is premiering its first ENERGY STAR home project. Construction on this 2475 sqft two-story home began in late May and features Quad-Lock ICF exterior walls, an engineered Geothermal HVAC system and ENERGY STAR appliances that will help to reduce energy consumption by 60 to 75%. Mitesh Bhalavat, PEng., owner of Rutu Construction is so confident in the quality and performance of the construction that he is providing a 10-year structural warranty on this home. Mr. Bhalavat comments “not only will home owners be amazed in the construction aspects of a concrete home but they will be in awe of the living qualities. These qualities include: unheralded quietness, a draft-free environment and of course, huge savings on energy consumption which leads to lower operating costs.”

Mr. Bhalavat, an ENERGY STAR partner continues, “Homeowners today are more aware of efficiencies and environmental issues than ever before – here is a building technology and associated home products that are in direct support these issues. We are currently planning more ENERGY STAR homes using these technologies to create environmentally friendly neighborhoods. Smart homeowners know that it’s not just the location but the quality and the performance of a home that should be considered when buying.”

Why pay more money for heating and cooling of your home if you can use that same money to pay down your mortgage and live in a better quality home? Quad-Lock homes give you that opportunity and in addition, are:

• **HEALTHY**: Quad-Lock walls dramatically reduce outside noise creating a peaceful indoor atmosphere. Quad-Lock walls achieve STC ratings of 50-58. Airtight Quad-Lock walls reduce air infiltration, create a mold-free environment and eliminate drafts and cold spots thereby giving the homeowner greater control over the quality of the interior air and a level of comfort not found in traditional wood-framed homes.

• **SAFE**: Quad-Lock walls offer exceptional protection from Mother Nature and the test of time, including a 3-4 hour fire rating.

• **RESPONSIBLE**: Less energy and water are used in our manufacturing processes and construction waste is not only minimized but can be recycled.

• **ENERGY & COST EFFICIENT**: Energy savings (heating and cooling) are documented to range from 40 to 70%.

To learn more about its ENERGY STAR features, book an appointment to tour this home with the builder. Find out for yourself why Quad-Lock ICF and these other products should be part of your next residential project. Call Rutu Construction at (815) 979-2673—you’ll be glad you did.

Visit www.quadlock.com to learn more about insulating concrete forms and their benefits.