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# ICF BUILDER

*The Insulating Concrete Forms Magazine*

## **Green Building**

Sustainable Homes

Living Stone Lodge

ICF Developments





Built in tornado country, this Texas home combines disaster resistance, energy efficiency and stunning architecture in a practical and very livable residence.



## KARNAVAS RESIDENCE

A large residential project in Cedar Hill, Texas, took first in its class in the annual ICF Builder Awards. Completed last November, the home wowed the judges with the technical complexity of the build, dramatic energy efficiency and challenges the team overcame on the build site.

Built using Nudura ICF blocks, the home had 9,642 sq. ft. of exterior ICF walls and total conditioned space of 4,653 sq. ft. This wasn't intended to be your average residential home. Cedar Hills, Texas, is at very high risk of tornados, with an average of four hitting the town each year. The homeowners wanted a safe room along with more interior walls than usual, and some challenging decorative touches such as arches poured out of concrete.

The home was built 100% from ICF, and included a 108-sq.-ft. safe room with an ICF ceiling. A retaining wall at the back of the home and a detached

storage building were also built using ICF. Construction time for the ICF installation was 45 days out of a total of 13 months for the build, and the builders estimate that they saved 30 days of work time over what it would have taken had they used concrete masonry units.

The owner, Gary Karnavas and his wife, took the time to research and visit several other nearby ICF projects and ultimately attended a 2015 Nudura installation class in Fort Worth, Texas, and that's when Karnavas became familiar with Stone Creek ICF. Karnavas was an informed homeowner determined to build an ICF home—he met with several ICF professionals to get feedback on best use and their recommendations.

Robert Klob specializes in designing ICF homes, and has worked on projects nationwide including this one. He says, "The owner has now become one of the

*By Vanessa Salvia*

strongest proponents of using ICFs in the area. He is happy to discuss and recommend the design and construction team without hesitation."

This home is the Karnavas couple's retirement dream home. While they wanted to enjoy all the comforts of modern living, it was also important to them that costs of maintenance be minimal and that construction remain within budget. An energy analysis showed that the home is 53.7% better than code minimum. And while the home is larger than average, its monthly energy bill averages only \$175 per month. ICF construction costs were calculated to be less when compared to CMU construction. After the home was built, Karnavas opted to add a 1000-sq.-ft. ICF shed, which was designed and built using 3D modeling with less than 2% waste.



Building on the lot was a challenge. The property has a steep slope on one side that is approximately 100 feet below the pad site. Although the property is nearly two acres, there was only a small area on the property where the home would fit. Views were also extremely important to the couple, says Klob. "We wanted the home to be somewhat hidden from the road," he explains. "The design blocks the fantastic views as you enter the driveway—it isn't until you enter the front door and see the valley beyond that a full appreciation can be achieved."

In order to maximize views and location on the lot, the design needed to match geographic constraints, and that meant incorporating some unusual angles into the plan. Further challenging the layout was the use of 29 corners, eight T-walls and four custom-angle 33-degree corners.

"Due to the angles and long, two-story walls, craftsmanship was critical," said Klob. "Any mistake would be noticeable. Combining the angles along the roof

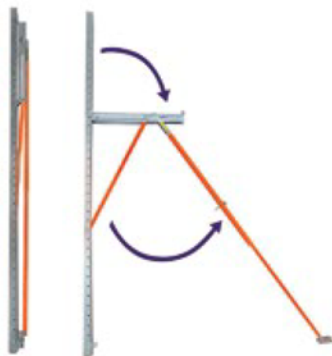


Photos Courtesy Nudra Corp.

proved to be a geometric puzzle. Great care and diligence was done between the design team and the framers."

Work was difficult and had to be

delayed at times due to substantial rain. The home is on a rock base, which made anchoring and trenching for the foundation difficult. That 100-foot drop on the



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property made staging equipment difficult.

Karnavas, acting as both the owner and the general contractor, took a hands-on role in the construction of the home and personally fabricated all the door and window bucks, making it the most heavy-duty buck system of any ICF home Klob has worked on.

Despite the challenges, there were also many positive aspects. This home was the first ICF home the building official had seen. He regularly brought other city officials to review the work and regularly expressed how well the construction went. The official was so impressed that building officials in the area are now promoting the use of ICFs. This could be key to this area of the country where tornado risk is so high.

Just as important is the fact that people in this area now have a showcase ICF home. Several homeowners in Cedar Hill and surrounding areas are said to be considering ICF construction based on the construction of this one.

Since its completion, the home has won an American Residential Design Award (ARDA) and it has been featured on NBC in a segment on tornado safe homes which was also picked up by the Weather Channel. The home is currently being considered for two more national awards.



"Robert Klob put a great deal of energy and work into the careful planning with the owners to design this home," said Cameron Ware, who supplied the Nudura ICFs for the home. "Although this home is unique and one of a kind, several additional homes of similar complexity and magnitude are in design now due to homeowners visiting the home and seeing the television coverage."

Most importantly, the owners are thrilled. "We are very pleased with our new home and with our decision to use insulated concrete forms," said Gary Karnavas. "Installation quality was excellent, as was Nudura's technical support. I would absolutely recommend ICF construction above any technology currently available. If you want to build the best house possible ICF construction is absolutely the best way to go." ■







### Project Statistics

**Location:** Cedar Hill, Texas  
**Type:** Private Residence  
**Size:** 4,653 sq. ft. (floor)  
**ICF Use:** 9,642 sq. ft.  
**Cost:** \$1.5 million  
**Total Construction:** 57 weeks  
**ICF Installation Time:** 45 days

### Construction Team

**Owner & General Contractor:**  
 Gary Karnavas  
**ICF Installer:** Stone Creek ICF  
**Form Distributor:** FutureStone, LLC  
**Architect:** Robert Klob Designs, Inc.  
**Engineer:** James Lane Engineering  
**ICF System:** Nudura

### Fast Facts

Many Corners, Custom Angles and  
 ICF T-Intersections  
 Reduced Energy Use by 50%  
 Tornado-Resistant Features, Including  
 Safe Room  
 Won Design Awards  
 Featured on NBC and Weather Channel

**Resilient Protection & Sustainable Comfort**  
 ICF Deck Product for Floors, Roofs & Elevated Buildings

PCA Resilience Leadership Award



Photo by Daniel Park

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