CASE STUDY:
TEXAS RANCH HOUSE

A RESIDENTIAL SHOWCASE FOR ICF CONSTRUCTION IN CHALLENGING CONDITIONS

Texas Ranch House, Loving, Texas

CHALLENGE

The team experienced a range of obstacles during the construction process. While finding an ICF assembly crew willing to drive out to rural Texas was initially challenging, the team was able to connect with an ICF expert from Oklahoma who provided excellent support to the project team. Additionally, the Texas Ranch House plans were originally designed for conventional framing; the architect revised them to incorporate additional square footage to accommodate ICF blocks. The main single-story structure features gables that reach 30 feet, making pouring concrete inside the ICF during mid-summer close to impossible. To avoid overheating, the team started work at 6 AM to beat the brutal Texas heat. The team would cease work after mid-day, with the temperature exceeding 105 degrees Fahrenheit. Multiple coolers filled with ice water were available to keep everyone hydrated. While the Texas summer sun still caused fatigue to the crew by mid-day, the team was able to complete the project without any incidents or heat exhaustion. Additionally, a cement pump truck seized up at the end of the pour. Nevertheless, the team was able to finish work just in time, before no more concrete could be pumped.

The surrounding wildlife–namely, rattlesnakes–were a constant threat to the team; the builder was bit toward the end of construction. He spent 2 days in ICU in Fort Worth and required 20 vials of antivenom to save his life. Between crews contracting COVID including the builder and the danger of snakes, the team was able to overcome the challenges and deliver a unique and striking German stone farmhouse design.

PROJECT HIGHLIGHTS

Utilizing ICF construction to enhance energy efficiency and weather protection, Texas Ranch House reintroduces traditional ranch home design with a contemporary twist to the Loving community.

PROJECT STATS

Location: Loving, TX
Category: Large Residential
Size: 5,000 Square Feet
ICF Use: 7,470 Square Feet
Cost: $1,500,000
Total Construction: 104 weeks
ICF Installation Time: 60 days

SUSTAINABILITY

Self-sufficiency and sustainability were key components of the design of the home. Aside from the integration of ICF walls, the underside of the roof is encapsulated with closed-cell foam, providing greater thermal and vapor resistance. The roof's OSB sheathing has a Grace Ice & Water Shield High-Temperature membrane under a 22-gauge Galvalume metal roof to aid in resisting water penetration. The house is 100% LED lit–the monthly electric bill averages $150 in the winter and $300 during the summer months. Instead of can lighting, the team chose Lithonia Thin Wafer Downlights to increase durability and energy efficiency. Windows and doors are manufactured by Marvin Ultimate. The house also has two Rennai tankless water heaters powered by propane.

BUDGET

The project was completed within the allocated budget.

TIMING

Due to widespread labor and materials supply shortages, the team experienced costly delays at the beginning stages of the project. To ensure quality and client satisfaction, the team made the decision to take the necessary time instead of rushing the process. The home was completed within the projected timeline, roughly two years from the construction start date to move-in.