



Benoit Farms: A Rural Escape



Challenge

At one time or another, we've all dreamed of escaping civilization, of finding a quiet, idyllic spot untouched by industry, and simply enjoying the beauty and magnificence of the natural world around us. That's exactly what the owners of Benoit Farms were seeking when they hired Atlanta-based LG Squared, Inc., an architectural and consulting firm that specializes in the design and building of high-performance homes, to build their off-grid homestead in the wilderness outside Hayesville, North Carolina. Thanks to architects willing to think outside the box and embrace new ideas, it's exactly what they got.

The greatest challenge in building the Benoit Farms homestead was its lack of a direct connection to the local power grid. Almost all buildings and homes throughout the world are connected to power grids so they can pull energy on demand, for heating, lighting, and any other needs the occupants might have. The Benoit Farms homestead, however, can only rely on energy generated on-site by solar panels and stored in gigantic batteries, which means that the structure needs to be supremely energy efficient to ensure that the limited energy supply does not go to waste.

"Off-grid is largely dependent on the performance of the house," said LG Squared, Inc. architect Chris Laumer-Giddens. "The better-performing the house, the lower the energy consumption, which contributes to less solar power generation and storage needed to be off the power grid..."

Compounding this problem was the unpredictable weather of western North Carolina. Between dramatic shifts in moisture levels and temperature swings throughout the year, and the prevalence of forest fires

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– Chris Laumer-Giddens, LG Squared Inc.



Component Quantities:
8,750 square feet of DensElement™ sheathing

380 tubes of PROSOCO R-Guard® FastFlash®

Key Companies:
Architect:
LG Squared, Inc.

Sheathing Contractor:
Select Interiors Drywall

General Contractor:
LG Cubed, Inc.

Waterproofing Contractor:
Arrowood Construction, LLC

Distributor:
Rew Materials

in the nearby mountains, LG Squared, Inc. needed to find a solution that could maximize energy efficiency, provide a continuous WRB-AB, resist destruction from fire, and wouldn't be ruined by sudden rainfall during or after installation.

Their choice? The DensElement™ Barrier System.

Unique Problems Meet Unique Solutions

"The DensElement™ Barrier System has three of four major control layers that we look for in a building assembly, and that's water, air, and vapor," Laumer-Giddens pointed out. "With the combination of that and FastFlash® from PROSOCO, which is a liquid flashing, at the joints and the seams and all the corners and penetrations, it becomes one continuous and integrated system."



The key to the unique capabilities of the DensElement™ Barrier System lies in a proprietary formulation known as AquaKOR™ Technology which integrates the gypsum core and the fiberglass mat to form a hydrophobic, monolithic surface that blocks bulk water but allows vapor to pass through. Offering optimal performance without the need for an additional WRB-AB means DensElement™ Barrier System can be installed faster and with fewer costs, and using PROSOCO

R-Guard® FastFlash®, it can be installed even in damp conditions with no residual impact to the structure.

These exclusive features proved crucial for Laumer-Giddens and his team at LG Squared, Inc., as the DensElement™ Barrier System made it possible to create a continuous air barrier that extended to all sides of the Benoit Farms homestead. "The closer we get to a

continuous air barrier around the entire structure and the stronger that air barrier is the more likely we are going to get to that lower air change, so we spend a lot of time looking at every crack, every gap, penetration, opening to make sure we have our minimum thickness and the entire air barrier is one continuous barrier."

Protection, Strength, and Versatility

Another major benefit of using the DensElement™ Barrier System discovered by Laumer-Giddens is its compatibility with a wide range of cladding systems – a crucial aspect given the thick insulation required by the Benoit Farms homestead design. This allowed the installers to more tightly integrate DensElement™ Barrier System with the rest of the structure, which

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comes in handy when trying to maintain a continuous barrier around window openings. "Installing a window right up against the sheathing, as opposed to six inches away from that, at the outside of the continuous exterior insulation, makes that transition and integration so much stronger," Laumer-Giddens stated.

According to Laumer-Giddens, the traits that allow the DensElement™ Barrier System to excel on a unique project like Benoit Farms make it ideal for a wide range of other building types and locations. "This DensElement™ Barrier System is very versatile, not just for cladding attachment, but for all wall assemblies, anywhere in the world."

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133 Peachtree Street, N.E.
Atlanta, Georgia 30303
GP Technical Hotline: (800) 225-6119

Rev 03/18
Lit # 622921