

Old World Charm Meets High Performance

by Brad Duckham

Old world craftsmanship and innovative materials produce superior indoor environmental quality and exemplary energy efficiency in this Fort Collins home.

I grew up flying out of my house every summer in order to build forts and castles in the woods of Westador, Texas. I lost a lot of my father's tools, unearthed a bunch of arrowheads, "borrowed" one too many garage rafters and, all in all, made a timeless, epic mess of my childhood.

But it wasn't all Huck Finn. I was also afflicted with what my pediatrician lightheartedly called "cotton candy lung" (asthma) and, looking back, I often wonder if my condition was at least partly a result of having moved into a brand new house that was off-gassing toxins at a greater rate than one of the refineries my father helped engineer.

I have since built a comfortable life here in Colorado, but it is the straw bale home that Merten Homes recently completed in Fort Collins that has rekindled a whimsical sense of timelessness and—without warning—taken my breath away again. Located in the new urbanist neighborhood of Old Town North, Fort Collins, Merten's first offering (there will be 11 others) embodies everything a high performance home should be—resource conservation, energy efficiency, stunning design, and exceptional indoor environmental quality.

Start with Natural Finishes

When visitors pass through the front door and enter the kitchen they often stop and look bewildered.

"Why doesn't this home have that new house smell? Is this house pressurized? Why is everything so quiet?"

I enjoy watching people nudge one another, resume breathing, and slowly relax as they wander through the dramatic space of the Tuscan-inspired home.

And it is dramatic. With 14-inch-thick walls, 10-foot ceilings on the main level, and an entire interior (walls and ceilings) finished in rich natural plasters, the space exudes a reserved, unassuming elegance, full of texture and light. Yes, the design is striking, but it is the shifting tapestry of natural plaster that produces the unfamiliar, bewitching effect.

The entire exterior and interior shell of the straw bale home contains four layers of plaster—clay slip, high clay earth plaster, low clay earth plaster (either gypsolite or lime plaster), and lime wash as the final coat. The interior walls (ceilings included) are finished with a modified mix, but exhibit the same beautiful, variable patina. The plaster, which contains no volatile organic compounds (VOCs), catches natural light and creates a sense of flowing, organic grace.

And with colors like *Marsh Apricot*, *Walden Stone*, *Crushed Scarlet*, and *Baby Blue*, each room radiates a warmth and ambiance that other wall systems simply can't touch. Plus, the plasters add thermal mass, which helps to regulate heating and cooling loads.

In addition to the zero-VOC building envelope, the kitchen cabinets are made of an extremely low urea formaldehyde medium density fiberboard (mdf). The cabinets are wrapped in a stylish espresso and graham-striped veneer that contains 40 percent post-consumer waste product. The amber and espresso tones of the acid-washed polished **concrete slab floor and countertop echo the color theme**. Equipped with radiant floor heat, the concrete floors inevitably draw comments from visitors, especially if they

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happen to be standing in one of the many huge pools of natural light that spill through the triple-paned windows.

And because there is no carpet, the home offers no sanctuary for the dust mites and mold so common in conventional homes. Forgoing carpet also reduces indoor toxin levels, because most carpets offgas an array of chemicals.

Building Green with the Blues

In the interest of resource efficiency, the home also uses a ubiquitous local resource—beetle kill lodgepole pine. A staple in Merten Homes' design palette, this local lumber has a number of applications—window ledges, tongue and groove ceilings, kitchen shelving, flooring, stair treads and handrails, fireplace mantles, rough sawn beams, interior trim, and exterior corbels.

Using beetle-kill pine requires no aesthetic compromise. The blighted trees get their blue hue from a fungus that the beetle leaves, and when stained with a zero-VOC water-based clearcoat, the results are nothing less than spectacular.

Merten also used a zero-VOC Timbertek interior stain on some of the wood, and the contrast between the dark and clear finishes offers an appealing contrast. All doors feature a zero-VOC AFM Safecoat **finish**.

Tuscan Zen

Visitors will not notice the hum of a furnace or their allergies kicking in, because this home has no furnace and no ducting. A commercial-grade Rinnai instantaneous hot water heater supplies both domestic hot water and radiant floor heat. Broan fans help exchange air. The lack of ducting, coupled with a breathable wall system and low-toxicity finishes provides a unique, eco-informed indoor environment. Plus, without the usual HVAC systems, the home is whisper-quiet.

The focal point of the kitchen is the floating aquamarine slab of polished concrete. This kitchen island, which seats six, functions as the heart of the home. Accented with a slate blue geode insert, the island provides a centerpiece for any wine tasting, dessert sampling, or twilight supper.

Of course, concrete contains a large amount of embodied energy, and the acid used to stain both the main level floor and kitchen counter can hardly be considered eco-friendly. But having recently used a soy-based stain on a personal project (especially in a high traffic area) I'd have to say the acid stain is more vibrant, electric, captivating, **and durable**. Once the acid has dried, a neutralizing agent is added and the entire surface is coated with an eco-friendly sealer.

The second level features caramelized bamboo floors. Highlights in the master bath include custom tile, a two-person electric sauna, and stylish curved walls and arches. A handsome coffered ceiling in the third bedroom resembles the white sand canvas of a Japanese rock garden, with rippling rake-like patterns.

The stairs to the third level and its entire finish floor are made of beetle-kill pine. Views from this level offer a commanding panorama of downtown, the mountains and foothills, and the growing development of Old Town North.

Beauty by the Numbers

Yes, it's beautiful—but how energy efficient is it?

In order to have objective energy performance estimates, Merten hired professional home energy raters to assess the home. The raters determined that the straw bale walls provide an insulation value of R-28 and the soy-based foam in the ceilings yields an insulation value of R-72. Thanks to these high insulation values, combined with radiant floor heat, a 2.2-kilowatt solar electric (photovoltaic or PV) system, the

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instantaneous hot water system, and high performance windows, the home is expected to have an annual energy bill of \$1296.

The home also earned a 5-Star Plus rating from E-Star™ Colorado, and its HERS rating came in at 63. (A HERS rating of 100 represents the energy use of the “American Standard Building” and a rating of 0 [zero] indicates a net zero energy building.)

By building an eco-elegant luxury home, Merten has made an impressive introductory statement for its rollout of 11 more high performance homes in Old Town North. Rarely does a showing go by that someone doesn't take me aside and tell me how calm the home is or how quiet it is. I even had an older lady who, under the watchful gaze of her smiling, grown daughter whispered, “Is this one of those net zero gravity homes?”

With careful attention to indoor environmental quality and energy and resource efficiency, this home establishes a tranquil atmosphere in which natural materials and finishes hold zen-like sway over the mechanical and structural elements of the home. A testament to the design and construction skills of the Merten Homes team and its talented affiliates, aesthetics and mechanics merge, rather than compete with and overshadow each other.

The American novelist Thomas Wolfe once said, “You can't go home again.” But when I step inside this home, the same sense of wonder that I had as a child building my own “masterpieces” returns tenfold and reminds me what's possible when the responsible use of natural resources is paired with high-performance technology and the unbound human imagination.

Brad Duckham (bduckham@mertenhomes.com, 720.284.2416), EcoBroker, is a Broker Associate with Keller Williams Front Range Properties and a long-time resident of Boulder.