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## HOMES

# Rammed-Earth Luxury Homes

Rammed-earth homes—made of compressed soil, gravel and other natural materials—are both durable and energy efficient. Now, luxury homeowners are making aesthetic improvements.

By **AMY GAMERMAN**

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When Stephen Start bought 57 acres of forest overlooking the Canadian Rockies outside Spokane, Wash., he wanted to build a home that would evoke both the rugged landscape and a sense of timelessness.

“We wanted the house to feel almost like it came out of the ground,” said Mr. Start.

In fact, it does.

The imposing entryway of Mr. Start’s 9,000-square-foot ranch is made of rammed-earth, a contemporary incarnation of the ancient technique that helped produce the Great Wall of China and Spain’s Alhambra fortress. The umber-colored walls, 2-feet thick, were made out of 100 tons of compacted gravel from a nearby pit. Another 49 tons went into 16 rammed-earth columns that line an outdoor pavilion. “It’s like a Greek ruin or something—there’s a real sense of permanence and solidness,” said Mr. Start, 66, who founded SL Start, a human-services company for the disabled.

Although it has been around for millennia, rammed-earth construction—layers of gravel and soil, compacted into solid walls—is getting a luxury makeover. Devotees laud the low maintenance and energy efficiency of their earthen walls—and can wax poetic when describing their artisanal appeal.



The kitchen of Rick Torcasso's 5,600-square-foot home, which sits on a ridge overlooking Santa Fe. *PHOTO: ROBERT RECK*

“There’s an intrinsic power to buildings with thick walls. Your senses are immediately gratified with the quiet, and the calm feeling,” said David Easton, a leading proponent of the rammed-earth movement, whose Napa, Calif., firm has built multimillion-dollar homes.

Rammed-earth construction has been re-engineered for greater strength and stability—starting with the raw material itself. “Please don’t use the word ‘dirt’—dirt is what gathers under your refrigerator,” said Mr. Easton. Carefully calibrated blends of silt, sand, gravel and clay are fortified with portland cement. Concealed steel reinforcements can be embedded in the walls, as well as insulation.

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Architects are taking rammed-earth home design far beyond the dirt-plain adobe look—creating walls that are almost sculptural in their complexity and scale.

It took 300 tons of decomposed granite to build the 72-foot-long rammed-earth wall that forms the spine of Linda Low’s 7,800-square-foot home in Scottsdale, Ariz. Light from a narrow, 110-foot-long skylight—diffused by reflective silver-leaf panels—plays on the wall, which sparkles with bits of mica. “At any time of the day, I can look at it and see something different—and it’s never the same any day,” said Ms. Low, 72, who built the house on 10 acres with her husband, Mickey. “It gives me a sense of tranquility.”

Ms. Low estimates that they spent close to \$2 million on the 1997 compound—designed by architect Eddie Jones and rammed-earth builder Quentin Branch. She recently put the house on the market, but then took it off—after turning down a offer that was more than double the cost to build, she said. “I just decided I’m not selling—I love this house too much,” she said.

The handcrafted aesthetic of rammed earth adds an extra 15% to 20% to construction costs, said Meror Krayenhoff, president of Sirewall, the British Columbia-based rammed-earth construction firm that created Mr. Start’s portico and colonnade. A Sirewall wall with 4 inches of embedded insulation—which improves energy efficiency in cold climates—starts at about \$100 a square foot. Even in the Southwest, rammed-earth is among the costliest building materials, according to Andy Byrnes, president of the Construction Zone, a Phoenix design-build firm. Prices start at \$75 a square foot and can rise well beyond that, depending on the height and complexity of the wall. By comparison, a standard masonry wall averages \$12 to \$15 a square foot.

“In our industry, labor is the most expensive thing,” said Mr. Byrnes. “It’s guys turning

dirt into a wall using pneumatic hand tampers. If the guy is having a bad day...that part might look different or fall apart. There's a lot of the hand of the artist, which is what gives it beauty."

Both the colors of New Mexico and its history—from pre-European earthen dwellings to Georgia O’Keeffe’s paintings—inspired the design of Rick Torcasso’s 5,600-square-foot house on a ridge overlooking Santa Fe. Two long rammed-earth walls, banded with colorful striations, run through the house and out to the patio.

“Those beautiful walls—they are spectacular,” said Mr. Torcasso, CEO of Point-to-Point, a media-marketing firm, who spent “upwards of \$5 million” on the 2012 house, designed by Larry Speck. “Everything got built around them.”

Mr. Torcasso’s rammed-earth builder, Mike Sims, took tons of sand and gravel from a quarry at Santa Ana Pueblo. Then he used iron-oxide pigments to dye the earthen mixture four different colors, to evoke the multihued rock cliffs of Abiquiu, where O’Keeffe lived and worked. (Cement, which is added in varying percentages to give the mix extra strength, can turn it an unappetizing grayish-green.) A vivid installation of chromatic tiles by artist Margo Sawyer in the main living space plays off the colors of the walls and the high desert terrain.

Mr. Torcasso said that the walls are efficient as well as good-looking, noting that over a three-day period when outdoor temperatures hovered in the teens, the heating system in the main living area was in use only 20% of the time. With their high thermal mass, rammed-earth walls store heat, radiating it back when the mercury drops and maintaining steady temperatures inside the house. In the summer, shaded walls keep homes cool.

Rammed-earth requires little upkeep, so long as walls are protected from excessive moisture by roof overhangs and sealers. “I don’t have to touch up any white paint—there’s no maintenance, nothing that has to be fixed,” said Ms. Low.

Marie Whitis, a broker with Empire Realty Associates, said she sold a rammed-earth home in San Ramon, Calif., for \$1.3 million in just three days last month.

“I increased the price based on its construction,” said Ms. Whitis, who noted that the house sailed through its pre-sale inspection. Energy efficiency was another selling



Inside Sandra Masur and Scott Spector's rammed-earth study, located in Jackson, Wyo. PHOTO: © GREG VON DOERSTEN FOR THE WALL STREET JOURNAL

point; although local temperatures sometimes reach 105 degrees, the house isn't air-conditioned. "It's not needed—which is insane," said Ms. Whitis.

The wider market for luxury rammed-earth homes is difficult to gauge because there are not that many of them. "They don't turn over very often," said Scott Jarson, an owner of AZ Architecture Real Estate in Phoenix, which has a \$4.5 million listing for a 7,156-square-foot rammed-earth and copper-clad home in Paradise Valley. "The rammed-earth was really reflective of the level of the quality of the materials in the home—and it does reflect in the price," he said.

For art collectors Sandra Masur and Scott Spector, who own a classic log house in Jackson, Wyo., building a rammed-earth annex was a way to break with tradition while harmonizing more fully with the natural setting. The 500-square-foot study, designed by John Carney in 2012, consists of two insulated earthen walls nestled into the landscape in an L-formation. A third wall made of glass looks out on the Teton mountain range.

"It's very appealing—we're using this ancient technology rejiggered for modern life," said Ms. Masur, who likes to read and do yoga in the room. She declined to say what they spent on the addition. Similar homes in the area could be listed anywhere between \$4 million to \$10 million, according to Julie Faupel, an owner of Jackson Hole Real Estate Associates.

The study has been kept spare, with little decoration apart from a sculpted Buddha that dates back as far as the ninth century. A Jason Martin oil painting on stainless steel hangs on one earthen wall, but Ms. Masur has left the other one bare. “The wall itself is a piece of art,” she said.

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