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# REAL ESTATE

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## Straw Bale Construction

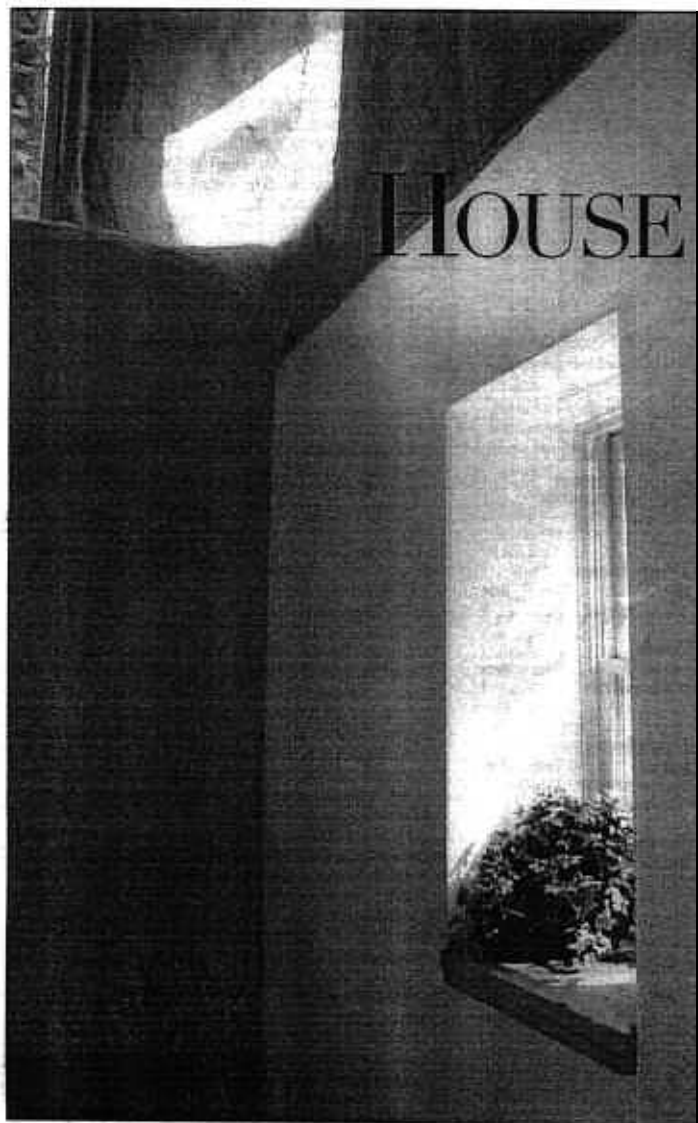
According to the Historic Survey of Straw Bale Construction<sup>SM</sup> found on the Internet at <http://constructionfibres.free.fr/histo.html> in the United States, Straw bale construction commenced in the Sand Hills region of Nebraska around the middle of the nineteenth century. A lack of conventional building materials such as timber in its pioneering prairie region and the sandy soil which was unsuitable for sod (hard) mud built walls necessitated the use of a locally available and cheap alternative building construction material. The newly invented one drawn hay bales (which was born straw hay) bale construction. The oldest known building was a classroom in Hayard, Nebraska built around 1866-67.

These buildings were durable and comfortable and straw bale developments continued in this region up to the 1940's when the availability of better known materials halted the use of straw. Around thirty buildings including houses, a church and farm buildings were constructed. Most were built as load-bearing bale structures, some without center. The oldest surviving building from this era is the Owlake Ranch Bunkhouse 914, which is used as a dormitory for farm laborers.

Ecoamando is an ecologically centered recreation and education facility, supporting the outdoor adventures in Baja. They provide a wide variety of educational and recreation programs entered around the natural beauty of Bahía Concepción, Conception Bay off Highway 1 in Baja, Mexico, 600 miles south of the U.S.-Mexico border and 80 miles north of Loreto Airport.

The sustainable, low-energy-use architecture of Ecoamando's Education Center was designed by Professor of Architecture Eugene Ray, San Diego State University. For 40 years Dr. Ray has been a leader in the field of tropical architecture, ~~with~~ wood buildings, and natural air-conditioning. The use of hay bale construction creates a natural facility with a traditional look.

Bahia Concepcion is considered as one of the top ten most beautiful settings in all of Mexico. The adjacent town of Mulige was voted by the members of the Discover Baja Travel Club as the number one town to visit in



## HOUSE OF STRAW

Wood makes it beautiful  
Straw makes it warm



There is a beautiful post and beam constructed house in the woods of western Orange County that is insulated with bales of straw. No, the straw is not stacked around the outside of the house, but baled and placed on a moisture barrier at least six inches above the final exterior grade and held securely in place by two #4 rebar pinning each bale to the foundation. Subsequent bales also have two rebar holding them securely in place.

Real stucco covers the exterior of the house and metal lath and plaster the interior. The use of compressed straw bales as an insulating material results in wide window sills and door frames. It combines with the hardwood and tile floors and wood beamed ceilings to give this house a very sturdy look. You'll feel like you're in the Old Country, as the Irish say, when you walk into this house.

Built in 1998 using New Mexico Straw-bale Construction Guidelines, a copy of which is at the house for visitors' perusal, the house was built to meet or exceed North Carolina building codes. The building passed inspection by the Orange County Building Inspection staff, according to the owners and Coldwell Banker Howard Perry and Walston listing agent Susan Waldrop.

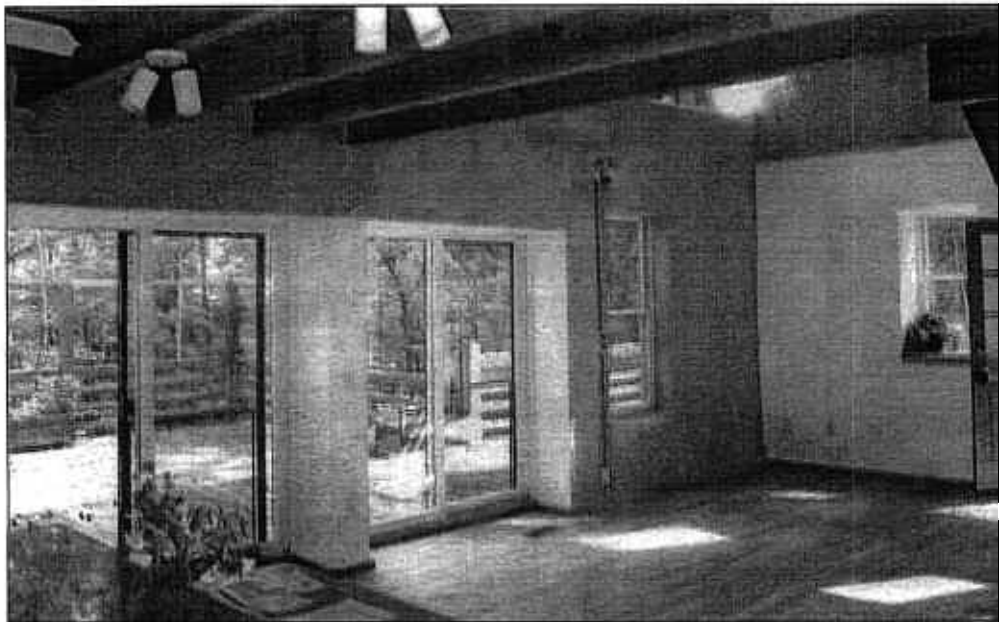
The house has 1,776 heated square feet of living space and more than 700 square feet of wrap-around decks. Situated in the middle of a hardwood forest, this is a wonderful hideaway for those who want some peace and quiet. Restrictive covenants will ensure that this large-lot neighborhood stays this way.

Step into the open living room with its two-story cathedral ceiling and you'll be able to imagine Southwestern décor filling this 15- x 20-foot space - a leather couch, hemp rug with Indian designs and wall hangings. Light fills the space from tall windows on both stories.

The house is sited on an 11-acre lot to take advantage of passive solar building techniques. Utility bills are low because instead of insulation to R19 of the typical 2x6-inch frame wall, straw bales insulate to between R42 and R70 when the straw is mechanically baled with baling wire or polypropylene twine and sufficiently dry with a maximum moisture content of 20 percent at the time of installation. A vapor barrier is also placed over the top course of bales to prevent

See STRAW page 3

# HOUSE OF STRAW continued from page 1



moisture entering the top of the wall of bales. Building paper was not used as a moisture barrier on vertical surfaces of straw bales to allow natural transpiration of moisture from the bales. Where stucco netting was not used, the first coat of plaster or stucco was thoroughly worked into the straw. At all points where the straw bales are butted against a different material, metal lath was used to cover the junctions.

Straw bales burn very poorly because they are highly compressed; so there is not a good opportunity for air flow. Instead of burning, bales char then self-extinguish. Loose straw is a potential hazard, but was not used at all in the straw-bale construction of this home. In fact, plastered straw-bale homes perform better than conventional

building materials for fire safety according to the National Resource Council of Canada (U.S. Department of Energy, 1995 "House of Straw" DOE/G0100094-1). A University of New Mexico study ("Fire and Lateral Load for two-wire plastered and unplastered bases"), sponsored by the State of New Mexico, tested plastered and unplastered straw bales and found them to be far less flammable than a regular frame wall with fire stop and insulation. There is propane gas forced-air heat throughout the house, and a gas cooking range in the open kitchen which boasts beautiful maple cabinets. The 14- x 16-foot kitchen has an island and all appliances convey.

Walk out onto the decks and your entertainment space is doubled. There is a master bedroom

and bath on the main floor and a huge loft that could accommodate two bedrooms upstairs that would share a full bath.

Four of the 11 acres on this property are fenced. Children living in this neighborhood would attend Efland Cheeks Elementary School, Stanback Middle School and Cedar Ridge High School.

For more information or a private showing of this unique property that is being offered at \$229,900, call Susan Waldrop at 644-8710 or log onto [susanwaldrop.com](http://susanwaldrop.com).

Directions: Take I-40 to Efland Exit 160; Turn left; go through blinking light and make a left onto Chestnut Ridge Road; go 1 mile; turn left onto Carrington Farm Lane which is a gravel road. (There will be a pointer sign and curve going to the right and an asphalt road going to the left - do not take the asphalt driveway - bear right and stay on the gravel road.) Make a right hand turn with the road and turn left onto Monadnock Ridge Road; you'll see trees with wooden house number signs pointing the way to 3401 Monadnock Ridge; come to cul-de-sac and see Coldwell Banker Howard Perry & Walston sign in yard.

## ABOUT continued from page 1

Baja. Located in an area of Bahia Conception with many close offshore islands and reefs, the scenery and water activities are superb.

The Education Center is an open classroom palapa with audi-visual aids is available to educators as a base of operations

for ongoing classes, lectures and study programs, as well as special projects. Activities include guided and self-guided activities include: kayaking, bicycling, swimming, snorkeling and hiking. For more information, visit [http://home.earthlink.net/~rcmathews/EcoMundo\\_.html](http://home.earthlink.net/~rcmathews/EcoMundo_.html).



# Lending a Hand

Members of the Home Builders Association of Durham & Orange Counties have set a goal of building a Habitat home every year. Making good on that goal is a cooperative effort that relies on the generosity of a wide range of the HBA's members.

This year's home is being built for Maisha Smith and her family, who will purchase the home from Habitat for Humanity, Durham County. Ms. Smith is currently engaged in the work that is required of all Habitat homeowners and was working to help paint the house next door to her future home as it rose from a fully framed house in just one day.

Ronnie Moore and his crew gave the project jump start. Ordinarily, Moore is a framing subcontractor for D. R. Horton, Inc. For the three years, however, they have been the top volunteers on the HBA's Habitat projects!

The HBA is proud of the community service members provide—through the organization as individuals and companies.

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