



HOW IT STACKS UP: Corum, at left in the center, led a community event in the building even before it was finished, talking about straw bale construction with tribal youth in a summer science program. When finished with stucco, the building, below, will not appear different from conventional construction.

Straw bale construction works well in dry, cold areas like the Southwest or Great Plains. Because the walls are two feet thick, the houses are economical to heat. A Red Feather home costs about \$75 a square foot to build, while standard construction ranges from \$120 to \$250 per square foot. A family's heating bill might drop from \$500 a month to less than \$100. And once the stucco has been applied, straw bale construction is less flammable than standard construction.

Turtle Mountain Reservation, 6 miles by 12 miles and home to 8,000 Chippewa, is by no means the poorest area where Red Feather has worked, even though tribal leader Gerald Monette told Corum it would take 1,000 new homes to provide a residence for each family. Recently more than 200 houses were condemned because of mold, so more and more families live with relatives in crowded conditions. Nationally, more than 300,000 of the 2.5 million tribal members who live on American Indian reservations are homeless or live in substandard conditions.

Red Feather's goal is that after a demonstration build is finished, a tribal community should be able to construct more homes using straw bale techniques and community labor. "Education is our commission, along with providing housing," Corum says. To that end, he wrote *Build-*



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Bale Bonding

Nathaniel Corum brings community design and straw construction to Indian reservations.
by Laura McDaniel

It's a 49-degree July morning at a construction site 10 miles from the Canadian border in North Dakota. Neither the cold nor the early hour has discouraged the mosquitoes. Some 30 volunteers are assembled for this week's only hot breakfast—with scrambled eggs and sausages, not just Pop-Tarts and cold cereal. Although everybody worked the previous day from 6 a.m. until past midnight, the conversation is lively. No one is happier, though, than Nathaniel Corum. He is, at last, done done done with the state and federal paperwork granting permission and funds for this "build" on the Turtle Mountain Reservation. Plus, the rebar in the foundation all got tied down last night, along with the radiant heat tubing. So long as the plumber comes today, and then the cement guys, things are about as good as they get.

The volunteers are here to raise a 2,000-square-foot straw bale building that will serve as an environmental research

center for Turtle Mountain Community College. Corum, '89, is a Rose Architectural Fellow and design director of Red Feather Development Group, a nonprofit organization formed 10 years ago to build housing on Indian reservations. Red Feather, which has built 40 homes so far, took up straw bale construction about four years ago.

Straw bale construction is an old method gaining new advocates. The building begins with the usual poured-concrete foundation. Subcontractors install electrical work and plumbing. Then 80-pound wheat-straw bales are stacked to form walls, which are secured with rebar rods hammered into the bales. The walls get covered with stucco, inside and out. Stacking and stuccoing are skills easy to teach to volunteers from the community. "We liken it to adult Legos," Corum says. When the building is complete, it's difficult to distinguish it from conventional construction, save for the "truth window"—an opening in the stucco that lets observers see the straw within.

ing One House: A Handbook for Straw Bale Construction, published in January by Red Feather. (He hopes to do a second book, *Agriecture*, on agricultural byproducts in construction—things like the wallboard of sunflower hulls that will form interior partitions in the Turtle Mountain project.)

Corum was raised on a 30-acre farm in Vermont. Now he values his rural upbringing, but as a teen he couldn't wait to blow

would withstand North Dakota winters, where temperatures drop to 30 below.

Volunteers travel on their own dime to the Red Feather project sites. The guy who looks like a surfer dude in nylon shorts and work boots a couple of sizes too big is an architect visiting from Australia. Marilyn Cochran, a veteran of other Red Feather projects, takes the lead in constructing "bucks"—lumber frames for win-

The Red Feather job allows him to combine varied interests. 'I've been able to massage architecture into something I feel good about.'

out of there. His first major at Stanford was international relations, but he individually designed a major in architecture and design before going on to earn a master's in architecture from the University of Texas at Austin. He was a Fulbright scholar in Morocco, where he admired how Berber tribespeople taught their children to build as their ancestors had. The Red Feather job allows him to combine varied interests in anthropology, archaeology, architecture and languages. "I'm having a great time doing this," he says. "I've been able to massage architecture into something I feel good about."

Corum is becoming a leader in the community design movement, someone quoted in books and articles about architecture in the public interest. "It's a way of working in the profession in a different manner," he says. "The real magic is when you can revitalize a community and do it with the people, empower them to help you to do a better design." After planning meetings with the Turtle Mountain tribe, their building took on a subtle turtle-ness, with a gazebo-like entryway resembling an outstretched head.

Stacie Laducer, director of the USDA Equity Grant at the Turtle Mountain Community College, visited a Red Feather build at Crow Agency, Mont. "What really grabbed me there was all the volunteers from throughout the United States who were actually concerned about the issues," she says. She saw right away that straw bale construction was a smart choice for Turtle Mountain because the insulation

dows. Patrolling the project—roaming among the sleeping tents, the kitchen, the solar shower unit and the line of portable toilets—is a black dog with blue eyes named Tote, the Lakota word for blue. Tote was a gift from Katherine Red Feather, for whom organization founder Robert Young built the first house.

Corum spends much of this day on a

cell phone, lining up suppliers and subcontractors and promising to fax proofs of insurance. After the plumbers depart, red-and-white cement trucks show up—though the cement comes from Killarney, Manitoba, not Minot, N.D., as expected. Corum then turns his attention to organizing a lecture series for the volunteers and community members. He's lined up a couple of pioneers in straw bale construction, a fiddler and a tribal elder versed in native plants. The building needs to be built, Corum says, but it's just as important that people share their experiences.

The tribal communities have welcomed Red Feather because it takes this partnering approach. At Turtle Mountain, the community showed its hospitality by slaughtering a bison. "We're going to be eating a lot of buffalo burgers," Corum says. "People are just so generous." ■

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