

# GREEN SPACE

The Kootenays' green-building scene is a creative fusion of simpler times and innovative technology

By Mark Mallet

## STRAW BALE CONSTRUCTION:

### General Notes:

Contractor to review and incorporate all sb construction requirements prior to framing. Ensure to install all provisions including blocking, anchors, and firestops, coordinate optimum fitting (in height) to suite bale coursing, and layout.

4. Straw type shall be of, but not limited to, wheat, rice, rye, barley, oats. verify with consultant before using similar species. Verify straw type w/ owner in precaution for allergy reaction.

5. Moisture content of bales, at the time of installation, shall not exceed 20 percent. This shall be measured through the use of a moisture monitor/probe with sufficient length to reach to the centre of the bales. Check each and every bale just prior to installing. do not use bales exceeding moisture reading over the specified limit for any construction assembly.

6. All bale courses shall be laid out flat (with string ties in between the bales), unless specifically noted otherwise in the drawings. For bale walls on top of concrete foundations, Secure 10M impaler @ 18" o.c. set in concrete @ centre of sb wall. For framed floors, Secure 16d common nails @ 8" o.c. to 2x6 plates on both sides of bale edges.

7. Bale wall reinforcement and attachments shall conform to typical wall sections. 1/2" dia. x 42" long bamboo rods or rebars @ 2 per bale with rebar staples (6" x 18" x 6") @ corners at each course.

8. 2" x 2" galv. stucco wire shall be used through out entire wall surfaces (both in and out). Installation shall be horizontally laid out, w/ 2" lap, and joints staggered and tied. Secure Stucco wire to top plates, floor plates and timber posts w/ 1" long galvanized metal staples w/ 1/2" crown @ 6" o.c. Stucco wire shall be through stitched @ 20 locations per 10 sq.ft. and/or Secured to bales w/ 6-10mm galvanized metal bobbie pins complete with hook ends spaced 6" vertically and 16" horizontally or 4" vertically and 24" horizontally

9. Install all necessary stucco accessories (ie. galv. Metal J-mould, edge trim, expansion joints, metal flashing, etc.) as required.

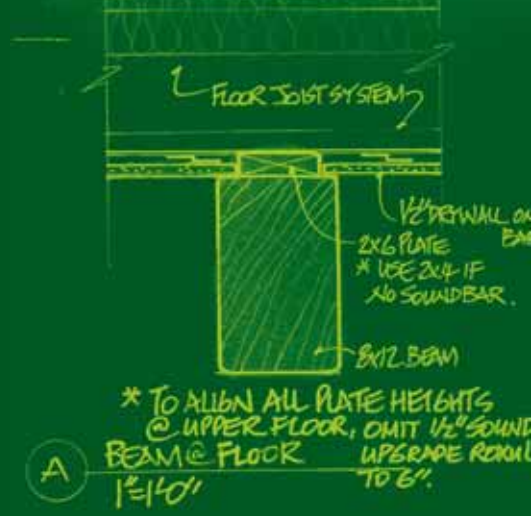
10. Verify stucco/plaster recipe w/ owner, consultant and stucco applicator. Provide mockup samples for texture/colour finishes.

11. Seal/caulk all stucco edges and around openings prior to finish coat. apply foam bead if required.

1. Obtain bales from reputable bale suppliers with experience in supplying construction grade straw bales. Notify bale supplier to meet specifications on density, shape, moisture content and ties set forth by the consultant prior to purchasing. Reject any materials not meeting the specified requirements.

2. Bale dimension shall be 14"H x 18"W x 35"-40"L and rectangular in shape. bale ties shall be either polypropylene string or baling wire. Minimum of two ties per bale shall be used for each bale and shall be tightly bundled to the compacted straw.

3. Straw bales shall have a min. calculated dry density of 7.0 lb. per cubic foot. The calculated dry density shall be determined after reducing the actual bale weight by the weight of the moisture content. Minimum WEIGHT OF STANDARD 2-STRING SCAN. BALE: approx. 35LB /



NO ONE HAS EVER ACCUSED the Kootenays of being ordinary. I once saw a group of naked people paint themselves blue and march down Baker Street in Nelson. I know of a guy in Golden who gap-jumped the highway on his snowmobile, then beat the cops in a high-speed chase. And on the east shore of Kootenay Lake, a man built a castle out of 500,000 recycled bottles of embalming fluid. Avant-garde meets hillbilly.

A survey of the region's green buildings turns up a selection that can only be described as eclectic. There's the recycled sternwheeler-cum-beach house on the shores of Kootenay Lake's west arm, a high-tech K-12 eco-school in Crawford Bay, and countless tepees and hippie shacks tucked into just about every valley and mountainside from the Blaeberry to the Slocan. Kootenayites are nothing if not resourceful.

**WITH ONE PAGE TORN FROM THE HAPPY GUIDE TO FIERCELY INDEPENDENT HOMESTEADING AND ANOTHER FROM THE BIBLE OF WHIZ-BANG URBAN TECHNOLOGY, KOOTENAYITES ARE ONCE AGAIN PROVING THAT IT'S POSSIBLE TO FOLLOW A TREND AND BUCK IT AT THE SAME TIME.**

So when the mainstream North American marketing machine recently started saturating the public sphere with an ever-expanding list of eco catchphrases, it's no wonder folks around here were left feeling a little nonplussed. What's the big deal about living sustainably? Haven't we been doing that for years?

Well, yes. And no. It's true the Kootenays have a higher concentration of back-to-the-land homesteaders than just about anywhere else in Canada. You can't swing a carbon credit in this part of the world without hitting an off-grid, wood-heated eco-house. And although we can't all live off the land and grow carrots for a living, most of us have at least thought about it, if only in a moment of nostalgic longing for a simpler time.

As mountain people, we pride ourselves on our rugged self-sufficiency, lording our bush-wise know-how over those unfortunate souls forced to live in the city. But the sad truth is most of us are not ruggedly self-sufficient. We live in fairly typical suburban boxes — draughty, inefficient homes built during an era of cheap fuel and a resource-rich planet — and them ignorant city folk are the

ones supplying us with heating oil, while we watch television all winter in our underwear.

But that is changing. While high-end design magazines like *Dwell* work hard to convince consumers they are saving the planet by buying \$800 recycled lawn chairs from Germany, the Kootenays are in the midst of a green-building revolution. With one page torn from the Happy Guide to Fiercely Independent Homesteading and another from the Bible of Whiz-Bang Urban Technology, Kootenayites are once again proving that it's possible to follow a trend and buck it at the same time, combining back-to-the basics with cutting-edge technology.

In Crawford Bay, builders are putting the finishing touches on the first high-tech LEED (Leadership in Energy and Environmental Design) Gold project in the Kootenays, a school that will be more energy efficient, water wise and healthier than any other in south-eastern BC. Not far to the north, a spiritual centre is using modern technology to tap into the energy of both the earth and the sun.

Meanwhile, one mountain range away and a few centuries ahead, the College of the Rockies' Kimberley campus is set to launch the fourth year of its Natural Building School, a five-week program that includes components on natural building design, timber framing, straw bale construction and a host of other techniques more commonly associated with hippies and hobbits.

In marrying the old with the new, the Kootenay sensibility is once again diverging from the mainstream. In a new Nelson subdivision, a straw bale house recently sprouted up next to its decidedly ordinary neighbours, proving that hobbits and humans can coexist peacefully. Twenty minutes down the road in Hall Siding, another new house combines the age-old traditions of natural building with the latest space-age advancements in solar-powered electricity. It's the kind of inter-era juxtaposition rarely found in other parts of the country, where green building advocates mostly fall into one of two distinct camps: the Luddites and the Technophiles.

That's where it pays to have an open mind. Not all that is new is good, and not all that is good is old. The Kootenays are just the place to ride the fence between the two. There will always be those who shun modern technology, and we are a richer community for those pioneers raising cabbages and goats in the woods behind their cordwood cabins. But not everyone is cut out for such a hardscrabble existence. Nor are we all destined to live in high-density condos, even if they are powered by the sun and sheltered by a green roof.

IT'S NO WONDER THAT A SURVEY OF THE REGION'S GREEN BUILDINGS TURNS UP A SELECTION THAT CAN ONLY BE DESCRIBED AS ECLECTIC.



**Yasodhara Ashram**

Founded in 1963, the Yasodhara Ashram sits on 120 acres of woodland on Kootenay Lake's east shore. Although its core purpose is spiritual rather than environmental, the ashram's leaders recognize the two concepts are inseparable and have therefore charted a path towards complete environmental sustainability. They started with the 2006 conversion of their cattle barn into a green residence, complete with geothermal heating, solar light tubes, solar hot water, airlock vestibules, and heat recovery units in both their ventilation and waste water systems. Now they're in the midst of a comprehensive retrofit of all their buildings, including an experiment in storing the sun's summer heat underground — heat that will then be tapped by their geothermal heating system during the long winter months.

**Crawford Bay School**

Designed to accommodate up to 200 students from kindergarten to grade twelve, the new Crawford Bay School is set to become the first LEED (Leadership in Energy and Environmental Design) Gold project in the Kootenays. Apart from its electrical supply, the school is completely off-grid, using geothermal heating and cooling, a rainwater collection system, its own tertiary waste water treatment plant, and an intricate web of landscape features to manage storm water runoff. The school's designers, Vancouver architects KMBR, were also cognizant of the social impacts of such a large construction project, insisting that all wood for the structure be harvested and manufactured locally, thereby providing jobs for a number of small Kootenay communities. While the school is receiving kudos for its energy and water efficiency, students will likely appreciate the more intangible aspects of spending their days in a green school: ample windows and daylight in every room, healthy building materials throughout, and the knowledge that their place of learning is as green as any other in North America.

**Residence in Hall Siding**

Although some may balk at the suggestion that a 2,000-square foot, one-bedroom home could ever truly be green, this new straw bale house north of Ymir comes close. Built by long-time local green builder Jim Strother, the house is completely off-grid, deriving its power from the sun, its heat from a wood-fired furnace, and its water from the ground. According to Strother, there's only one right angle in the entire house, a fact which challenged his construction crew but ultimately led to a home that is as soothing for the soul as it is for the environment. And although heating with wood isn't exactly revolutionary, Strother and the home's owner designed a system that links the furnace with a 500-gallon cistern full of water beneath the house. The furnace burns very hot, and therefore very clean, for short periods of time, storing excess heat in the underground water. The heat is then transferred to an in-floor radiant heating system with the touch of a thermostat, proving that merging old ideas with new ones can work harmoniously.

**Mandala Custom Homes**

Lars Chose decided to start Mandala Custom Homes in 2000 out of a desire to change the way people think about buildings. Although his company has gained a reputation over the years as a leader in the prefabricated round home market, Chose has also made green building design a cornerstone of his business ethic. Non-toxic materials, high insulation values and wood certified by the Forest Stewardship Council have long been part of the Mandala building model. Combined with the inherent benefits of prefabricated construction — less waste, lower site impacts and tighter homes — Mandala is perfectly positioned to take advantage of the rising interest in green building throughout North America. To meet the increasing demand, Chose has built a new production facility south of Nelson and has broadened the company's offerings to include custom and pre-designed buildings of just about any shape and size.

Photos top to bottom: Steve Ogle, KMBR Architect Planners Inc., Jim Strothers, Ariel Rubin



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