

COMPLIMENTARY

BIG SKY

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Big Sky home
designed to conserve energy,
building materials

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PHOTOGRAPHY BY THOMAS LEE



Planning for the future usually means saving and investing money. The future took on a different meaning, however, when it came time for Christian and Amy Johnsen to build their house — a modest, colorful two-story home near Big Sky's Town Center.

The house manifests their concern for elements of the future that money can't buy—their family and the

environment.

While planning and designing the house, the Johnsens were particularly interested in making it functional while, at the same time, integrating “environmentally friendly” features.

Their two daughters are young now and several rooms in the house were created specifically for them to discover their creativity. But Christian is quick to point



out that those rooms were also designed to accommodate the girls' transition into their teens. Looking even beyond that, he said he and Amy also anticipated their own needs as they get older as well as potential needs their parents may have as they age. Various design features were added to adapt to that point in their future.

Josh Greene of Greene Construction, the contractor on the project, said the Johnsens put in "a lot of time, energy and research" to select all of the materials for the house.

Christian admitted to having "an eye toward the future" as he and Amy planned the details of the house. None of the features would be considered extreme when compared to so-

The Johnsen home in Big Sky was conceived and constructed to have a minimal impact on the environment while providing superlative comfort for the family.

called “green” buildings but the Johnsens are confident that the choices they made will leave the environment and their family better off.

A stained concrete floor, stamped to mimic large tiles, spans the main floor of the house. Concrete is becoming the new flooring material of choice for designers and homeowners, often chosen because of its aesthetic appeal and low maintenance. The Johnsens chose it for other reasons — to save energy and wood.

Without the need for floor joists and a sub-floor, the four-inch-thick slab floor minimized the need for using wood — which the Johnsens viewed as an opportunity to reduce the need to cut trees. Although a radiant propane heating system was installed in the floor, the concrete itself has heating and cooling attributes that make it energy efficient.

With a wall of south-facing windows in the house, the slab soaks up the sun’s heat during the day and releases it at night. Cooled by night air, the slab helps regulate daytime temperatures during the summer.

Christian confessed to initially being a bit skeptical

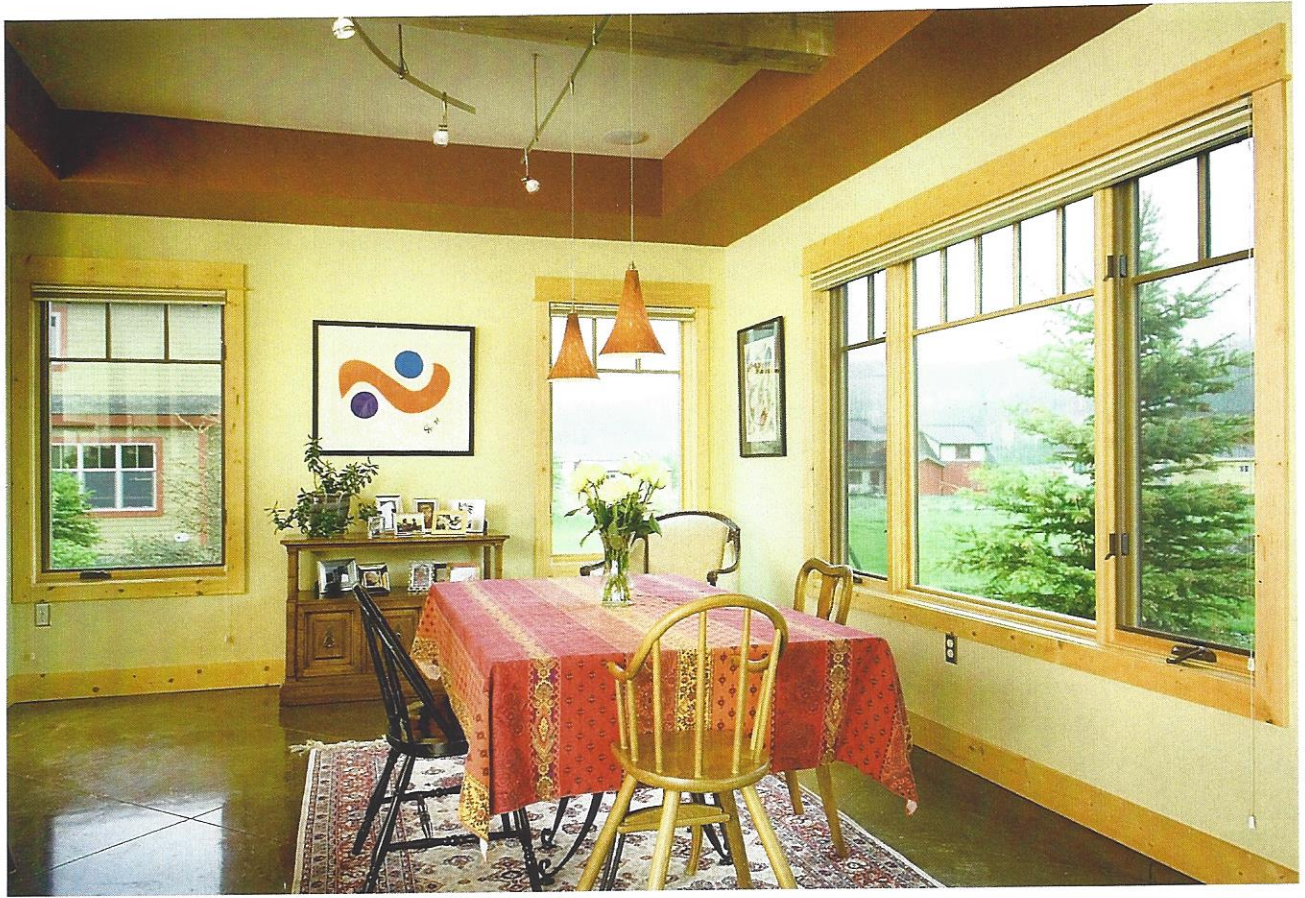
of a hard-surfaced floor but now talks enthusiastically about the benefits of it.

The Johnsens designed their 3,269-square-foot house using a four-foot grid, which is somewhat unconventional from an architectural standpoint, Greene said. By doing this, there was very little lumber waste during the course of construction since plywood is purchased in four-foot increments. To put this in perspective, Greene said that if he buys \$90,000 worth of framing lumber for a home, it is not unusual for \$5,000 of it to go in the dumpster because the dimensions of the house require using only a fraction of a sheet of plywood. The same goes for sheetrock, Greene said, which also comes in increments of four-feet.

“We used a minimum amount of materials to maximize square footage” in the Johnsens’ home, he said.

Left, The Johnsen kitchen design is compact yet attractive with beamed ceilings and concrete floors that mimic expensive tile. Below, The home’s solid exterior manages to be welcoming as well as sturdy.





Opting for cement fiber board plank siding on the exterior of their house was another wood-saving measure by the Johnsens. With only a small percentage of wood fiber used in this siding, it is primarily a cement product, Greene said. Designed to withstand the wear and tear of cold climates, cement fiber siding is extremely strong, resistant to fires, insects and rot, and it absorbs paint in an enduring way—making it virtually maintenance free.

Being maintenance free, cement board offers more savings than just trees. Greene pointed out that energy — both physical and petroleum-based — is conserved by not having to take road trips or spend the money to gather up the materials needed to repair and repaint.

The same goes for the maintenance-free Trex decking that was used on the front porch and deck. Trex is made primarily with recycled plastic grocery bags, reclaimed pallet wrap and waste wood. Although it costs a little more than traditional wood decking, the long-term savings outweighs the initial cost, Christian said.

The dwelling's interior is blessed with abundant natural light and the large windows showcase the area's natural beauty. Left, the home's deck and front porch are made of recycled material that needs virtually no maintenance.

Insulation is another area where the Johnsens knew it wouldn't pay to skimp. Foam insulation was sprayed two inches thick into the wall cavities; the foam then expands to fill all of the nooks and crannies within the wall. Once again looking ahead, the Johnsens chose a material that costs more up front than conventional fiberglass batt insulation but the long-term energy savings is substantial.

The spray foam insulation in the ceiling is five inches thick so it is more effective against what Big Sky builders and homeowners are all too familiar with—"ice damming." Without adequate insulation, Greene said, heat from the house will escape through the ceiling to the roof, causing accumulated snow to melt and drain into the eaves. When the water reaches a shaded area in the eaves, it freezes again. The ice in the eaves creates a dam effect and results in standing water on the roof that eventually leaks into the house.

In addition to the spray foam insulation to help maintain the temperature in the house, the Johnsens installed a high-efficiency, low emissions wood-burning fireplace insert. A catalytic combustor in the system burns away gases and particulates that would normally be emitted into the air. This process makes it cleaner and slower burning than

traditional wood-burning fireplaces.

Aside from their contributions to conserve energy and the environment, the Johnsens are most proud of how they utilize every space in the house. A second-floor room with three crank-open skylights currently serves as an oversized playroom for their daughters. When the house was being constructed, the Johnsens had it pre-wired for a home entertainment system, knowing that as their children got older, the playroom would need to transform into an environment more conducive to teen-agers.

A support beam in one daughter's bedroom was used as the base for a loft against the sloped ceiling, where the Johnsens expect their daughter will want to put a computer desk and study area someday.

Another room that they anticipate will transform into something different in the future is the art room on the main level. With Amy being a painter and ceramicist, it is an ideal place for her and the children to let their creative juices flow with chalkboard easels, paints, beads and a host of other art supplies. There is no need to worry about messes—they purposely did not put any baseboard in the room and installed a drain in the center of the concrete floor so that they could hose down the

floor to clean up spills. The hallway wall leading into the art room is an exhibit area for everybody's works of art.

If the need arises, Amy said the art room can be converted to a bedroom for their aging parents.

Down to the landscaping that uses the native sagebrush, Greene said he appreciated the Johnsens' forward-looking approach to planning and designing their home. The experience has inspired Greene to educate himself on more environmentally friendly ways to build homes.

"As a builder, parent and citizen, everyone needs to wake up their conscience," Greene said. ◉

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The oversize bathroom mirror will get plenty of use when the family's two young daughters enter their teenage years.