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Low-profile, high ideals

Super-efficient Berm House reflects a vision of community

BY SANDRA STRIEBY

Three miles down valley from Mazama, the Berm House was built with sustainability in mind. Reflecting its owner's curious nature, inventive mind and ongoing willingness to explore ideas, the house goes beyond resource conservation and pollution prevention

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to engage in sustaining community, farmland and connections to the landscape.

The house's owner worked with architect Matt Hutchins of CAST Architecture and builder Lucas Evans of Methow Valley Builders Inc. to create a house that draws on science while meeting the needs of the developing cohousing community of which it's a part. The team members worked together to balance the Berm House's impact on the larger landscape with the needs of the community's inhabitants.

Energy efficiency

Designed for energy efficiency, the Berm House employs concrete and cross-laminated timber (CLT) to create thermal mass, and ultra-tight construction to retain heat in winter and keep the interior cool in summer.

Although the form of the house is simple, the structure involved careful engineering and precision construction to support the berm and roof and prepare for installation of pre-built CLT panels. Post-and-beam construction keeps the main living spaces open and airy and

lets them take advantage of natural light, as well as solar gain, that come from a southwest-facing wall of windows and generous glazing in the building's other exposed walls.

The concrete work was the most complicated and challenging part of the project, said Evans, entailing a 16-foot retaining wall that forms the back of the building and its crawl space and supports the berm. Five Star Concrete Construction's JR Barnhart and his crew did "an outstanding job," said Evans.

Noting that the pre-cut elements of the house allowed "no room for



error," he lauded the precision with which the concrete crew worked "right at the beginning" of the project to prepare for placement of the beams and panels.

CLT is a relatively new material, and one not typically used for residential construction. Fabricated from small-diameter timber, it makes use of wood that has typically not been profitable to harvest, said Evans. That wood might otherwise be burned as part of post-logging clean-up or left standing, creating a wildfire risk.

Incorporating the material in buildings sequesters the carbon in

the trees so it's not released to the atmosphere, said Evans, and creates a market for small-diameter wood, making forest thinning cost-effective while contributing to forest health and local economies.

The house's CLT roof panels were supplied by Vaagen Timbers in Colville. The owner worked closely with Vaagen to identify exactly what components the house would need so the material could be fabricated in advance for delivery to the site and installation once the concrete was in place.

When the order had been agreed on, Vaagen used a computer

numerical control cutter to produce precisely sized panels weighing thousands of pounds apiece. Jerry Palm of Palm Construction placed the panels, bringing "the perfect training" for that work to the job, said Evans.

Together, the large volume of concrete, posts, beams, and CLT panels creates both the building's superstructure and the thermal mass that is central to what's referred to as Passive House design. Solar gain in summer is limited by a wide overhang on the building's southwest wall.

The house was sited to take full advantage of the low winter sun, which penetrates beneath the overhang to warm the house's interior. Continuous insulation, extending beneath the crawlspace as well covering the roof and exterior walls, keeps the building air-tight to reduce unwanted heat exchange with the outdoors.

A Passive House typically requires "30% to 40% of the energy input that you might see under a comparable, high-performance building under current code," said Hutchins. In the Methow Valley, where summer days are hot and winter temperatures are among the coldest in the state, that adds up to a substantial savings in energy use, and cost.

Fitted to the earth

The Berm House sits more than 100 yards from Highway 20, facing

an open field, with territorial views down the Methow Valley and up to McKinney Ridge. The namesake berm shields the house from the adjacent access road and minimizes its visual presence. It also provides additional insulation and fire protection, and a defense against winter weather.

And it's an important design feature, connecting the house to the surrounding landscape, emphasizing the entry, and creating a rooftop space where people can relax and enjoy the view. Clad with rough stone gathered on the building site and surrounding land, it mirrors the rugged rock walls that rise on either side of the valley and, from the road, reveals just a hint of the house sheltered beneath it.

A split in the berm provides access to the house and a view straight through to the open field and evergreen forest beyond. The berm itself extends across the roof of the house; stone steps provide access, and a surface of sand creates what the owner suggests may be "the only beach in the upper Methow."

Eventually, the top of the berm will be home to a building that served as one of the Methow Valley's original schoolhouses. More than a caprice, the schoolhouse on the roof is meant to represent a link between the modern structure grounded in science and the valley's history. It will also be a shelter and retreat for community members and guests.

Space for community

The Berm House's owner began visiting the Methow Valley in the early 1970s, and he and his late wife moved to the valley in 2000. They bought farmland near Mazama and later acquired the adjacent land, site of the former Liberty Bell Campground.

The couple became interested in cohousing, a form of intentional community that includes individual dwellings and a shared space for gatherings and, often, overnight stays by guests. The owner has pursued the idea with development of the McKinney Ridge community and the Berm House.

To date, McKinney Ridge includes eight houses developed by the Methow Housing Trust and 10 as-yet undeveloped lots, most of which will probably be sold for market-rate housing. The Berm House, measuring 3,130 square feet, is designed and

scaled to serve as the community's gathering place, with a kitchen and great room large enough for groups on one side of the entry and four bedroom suites, to accommodate the owner and guests of McKinney Ridge residents, on the other.

Each suite includes a bathroom and kitchenette and a Murphy bed that folds into the wall to create extra space during the day. The owner's suite is similar; its Murphy bed includes a desk that can be pulled out from the underside for use when the bed has been tucked away, allowing the room to double as an office.

The house's interior is spacious and lightly furnished, finished with a simple palette of light, mid-tone, and dark woods. The ceilings are the same CLT panels that bear the weight of the walk-on roof, with the supporting posts and beams exposed. Walls are clad in Europly birch and maple plywood panels, attached with stainless steel screws and easily removed for access to plumbing or electrical systems.

The electrical system itself, installed by Tamarack Electric Inc., includes "a lot of very high-end and specific detail-oriented wiring," said Evans. That complex wiring is

needed to supply the demands of the large house and the sophisticated mechanical system that's integral to the Passive House design.

Evans described the panels as more durable than drywall and "a little more futureproof" since they're easy to replace if damaged, without requiring the patching and repainting that a conventional wall repair entails. The panels are "very utilitarian," he said, but also "clean and linear and crisply executed," reflecting the house's focus on livability coupled with efficiency.

The exposed faces of the structure are dark wood and glass. The house is clad with Shou Sugi Ban siding — wood that's been charred to enhance its resistance to fire. Shou Sugi Ban is a Japanese technique that has also been used in Scandinavia and other parts of Europe for centuries, said Evans. The charring process hardens the wood, making it resistant to insects and rot as well as developing a layer of charcoal that resists ignition, he said.

In addition to providing shelter from the sun, the house's southwest-facing overhang creates an area in which snow is less likely to accumulate in winter, protecting

the house and contributing to ease of movement for people outside. Beneath the overhang, a concrete apron is both a walkway and a fire protection feature. The apron opens to an irrigated lawn to create an additional barrier in case of wildfire, as well as easing the visual transition to the fields beyond and, with a patio at the southeast end of the house, providing outdoor living space.

Honoring time and place

The Berm House is a multi-functional space designed to meet the present needs of an evolving

community. It also celebrates the community's connection to the larger landscape of the Methow Valley, the site's agricultural heritage, and the history of human settlement in the valley.

Built to endure and ensconced in the earth, the Berm House is central to the owner's long-range vision for McKinney Ridge as "an example of how we might live together differently," and promises to become part of an ongoing legacy of human adaptation to and enjoyment of a place that's both challenging and beautiful. ■



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