The Tour Series
ON DEMAND The Timberhill Project 'Gabriela's Greenvilla'
Pond Hill LEED®/Net Zero Energy Home
ON-DEMAND The Sunset Project 'Glass Box in the Woods'
VIRTUAL Burh Becc Earth Day Celebration
VIRTUAL The 713 Project: 'For the Journey'
Residential Net Zero Conference
VIRTUAL Passive House: A Building Revolution
The 'Modern on Miller'
The Garden Bungalow Passive House
Burh Becc at Beacon Springs
Pushing the Envelope
Rancho Deluxe
Riverview House

Press

MICHIGAN IS NOW HOME TO THE WORLD'S SECOND 'LIVING BUILDING'

Ann Arbor Home Achieves International Environmental Status with Living Building Certification

ANN ARBOR, Mich. – Feb. 17, 2020 – Tom and Marti Burbeck – in search of truly sustainable living – brought together an architect, builder, green building project consultant and multiple building science engineers to design and build Burh Becc at Beacon Springs. They have succeeded in creating a home that will still be standing 200 years from now and will still be regenerative to the surrounding ecosystem. In late 2017, their home at Beacon Springs Farm, in Ann Arbor, became the second house in the world to achieve a Living Certified ruling via the Living Building Challenge™ certification by the International Living Future Institute. The Burbecks hope their truly restorative farmhouse inspires others to reimagine common building techniques.

Tom Burbeck describes the Living Building Challenge (LBC) as a green building certification program that "establishes the highest possible standards for residential building sustainability." He and Marti learned about the LBC certification while seeking to design their farmhouse to have minimal environmental impact.

The 2,200 square-foot (main floor living space) home borrows from the characteristics of 200-year-old Tuscan farmhouses, with a 2,400 square foot barn and workshop. The buildings sit at the center of 15 acres of depleted farm land.

A 20-person design/build team, led by the Burbecks, spent five years executing the project with primary contributors Michael Klement AIA, principal, Architectural Resource; Bob Burnside, CEO, Fireside Home Construction and Amanda Webb Nichols, senior project manager, Catalyst Partners, who managed the LBC certification process.

Marti Burbeck said creating a sustainable living environment was just the next challenge on the list for her and her husband to tackle in life. "As we looked at the criteria for LBC certification we thought, why not go for it?" she said. "If our goals include helping to change peoples' relationship with the environment and to change building philosophies, we should start with our own project, and then become advocates."

"Since the 1960s, the number of U.S. households has grown from 53 million to about 126 million last year," said Klement. "We have to rethink the relationship between humans, buildings and the environment. Our current model is too destructive. We're depleting our resources and creating an unacceptable amount of economic disparity. The Living Building Challenge forced us to recalibrate how we design a home and build like nature intended. This is our 'moon shot' in the building industry," Klement added.

"The LBC certification comprises seven performance categories – site, water, energy, health, materials, equity and beauty," explained Eric Doyle, senior project manager, Catalyst Partners. "These are subdivided into a total of 20 imperatives, each of which focuses on a specific sphere of influence, such as urban agriculture, net positive water, net positive energy and responsible industry."

For example, to receive full "Living" certification by the Living Building Challenge, a building cannot use any materials on the LBC Red List, such as formaldehyde, halogenated flame-retardants, lead, mercury, phthalates or PVC/vinyl.

"The materials imperative was the most challenging project component I've come across in my 21 years in the green building industry," said Burnside. "Multi-component mechanical, electrical and appliance products were the toughest. Working with Catalyst Partners, we vetted more than 900 products, around 500 of which we used in construction."

Another challenging LBC imperative concerned the wood used for the project. Almost all the wood was certified by the Forestry Stewardship Council, which verifies that it was grown and harvested in local forests in a sustainable manner. The rest of the wood used for the project was either reclaimed or salvaged. The team also advocated the creation and adoption of third-party certified standards and fair labor practices for sustainable extraction of stone and rock, metal and other minerals.

Below are more examples of how the home earned the international credential.

Urban Agriculture

- Uses permaculture farming methods to reverse the harsh impact commodity farming has had on land immediately surrounding the farmhouse. Permaculture uses an integrated system of design encompassing agriculture, horticulture and ecology.
- Restores the oak-hickory savanna once common to the area.
- Provides healthy food for the local community, especially for those with limited access to fresh produce.

Water Conservation

- Achieves net-positive water through a rainwater and snow harvesting system, capturing runoff from the roofs to supply 7,500 gallons of in-ground cisterns, currently for non-potable water. A new well provides potable water to comply with Michigan building codes, with a future-ready potable rainwater filtration system.
- Waste water is returned to the aquafer. Black water from low-flush toilets and the kitchen sink, and graywater drains to a traditional septic system and drain field. A future-ready greywater system for reclaiming water from baths, sinks and washing machines will enable drainage to a shallow leach field and rain gardens.

Net-Positive Energy

- A passive solar house design, with a very tight thermal envelope and a tall cooling tower, minimizes house loads required for heating and cooling.
- A 16.8-kilowatt photovoltaic system provides electricity to the house and the grid using 60 solar panels covering the south plane of the barn roof.
- A closed-loop geothermal system provides radiant floor heating during winter, forced air heating during shoulder seasons and potable water pre-heating.
- During the required 12-month LBC audit period, the house generated 20,270 kWh of electricity, and used 15,987 kWh, producing 26 percent more energy than it used. In 4,283 kWh were pushed back to the electric utility grid, moving the home past net-zero into net-positive.

LBC certification is based on actual measured performance, rather than modeled performance. To earn "Living" certification, projects must demonstrate compliance with stringent performance standards dictated by the 20 LBC Imperatives for 12 consecutive months of operation.

After more than three and a half years in design, 18 months in construction and a year of performance auditing, Burh Becc at Beacon Springs Farm received full Living Building Challenge certification in December 2017, along with LEED for Homes Platinum certification by the United States Green Building Council.

The Burbecks now plan to focus on hosting educational workshops and house tours with Architecture Resource, Fireside Home Construction, and Catalyst Partners to educate the community, building industry, government officials and NGOs about sustainable living and the Living Building Challenge. The Burbecks also will continue to develop the permaculture farm surrounding the buildings at Beacon Springs Farm.

In 200 years, who knows what the landscape in this small Michigan community will look like, but the Burbecks do know one thing: this home will still stand as a beacon of sustainability for all interested in playing a part.
To learn more, visit http://www.beaconsprings.org/

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The International Living Future Institute (ILFI) is a nonprofit working to build an ecologically-minded, restorative world for all people. Using principles of social and environmental justice, ILFI seeks to counter climate change by pushing for an urban environment free of fossil fuels. ILFI runs the Living Building Challenge, which is the world's most rigorous green building standard, not to mention several other programs: The Living Product Challenge, the Living Community Challenge, and the Reveal, Declare and Just labels. These programs develop a green framework for living in a 21st-century world.

Architectural Resource is a full-service, award-winning, architectural design firm specializing exclusively in fine residential design of new homes, cottages, additions, remodels, and renovations with an emphasis on smart, sustainable design. Our expertise ranges from ILFI Living Building Challenge, to USGBC LEED for Homes, to NAHB National Green Building Standard, to PHIUS Passive House. Since the firm's inception in 1991, creating beautiful, healthy, energy efficient buildings have been a fundamental aspect of its core mission. Architectural Resource- Imagine Inspired Design®

Fireside Home Construction - Since 1996, Fireside Home Construction's mission to provide clients with efficient, environmentally-friendly, innovative and high-quality home construction and renovation services has resulted in numerous homebuilding awards, much praise and a reputation for building every project as if it were our own. Fireside Home Construction is an established, nationally recognized and reliable Michigan company headquartered in Dexter, Mich., and serving clients throughout Washtenaw County and clients as far as 100 miles away. We offer clients a full-line of design, custom construction, remodeling services and light commercial building.

Catalyst Partners is a multi-dimensional consortium of knowledge leaders committed to high performance and restorative design protocols for buildings, interiors, and products. They are proven leaders in the development and implementation of leadership standards used to design, develop, assess and certify sustainable buildings and products. They address each client's unique needs by matching them with a carefully selected team of environmental design and engineering experts. The team collaborates with the client, their architect, and builder from project planning through completion, to assure that the prescribed environmental objectives are met or exceeded.

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