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Virginia Housing and Its Partners Unveil the First 3D-Printed Home in Richmond

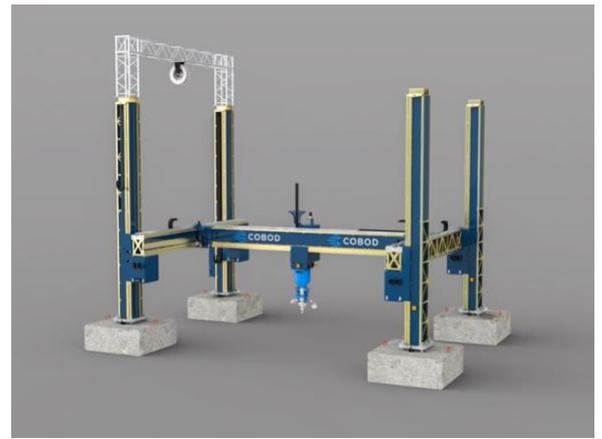
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Homeowner to move into energy-efficient home this summer thanks to collaborative community partnership and a massive 3D modular printer

RICHMOND, Va. — The future of innovative, creative and affordable homebuilding is on display just off Midlothian Turnpike at 217 Carnation St., and a new homeowner will soon be moving in the city's first 3D-printed home.

In June 2021, Virginia Housing and a variety of partners broke ground on a single-level, 1,500-square-foot home, and a massive 3D modular construction printer from Denmark built the exterior concrete walls.

A \$500,000 Innovation Demonstration grant from Virginia Housing in 2021 to the Virginia Center for Housing Research at Virginia Tech enabled the technology to be brought to the Commonwealth.



“Innovation requires looking at things differently – imagining the possibilities,” said **Susan Dewey**, CEO of Virginia Housing. “Because of this focus on innovation, 3D printing is now one of the many tools available to us to help increase housing inventory. And, we’re not going to rest on our laurels. We’re going to continue to find new solutions to the affordable housing crisis.”

About the community partners

[Virginia Housing](#) and the [VCHR](#) collaborated with [project: HOMES](#) and [Better Housing Coalition](#), two long-time partners. Started in 1998, the Better Housing Coalition is now the Richmond region’s largest nonprofit community development corporation and helped to fund the project with homebuyer assistance.

project:HOMES, a 30-year-old nonprofit that challenges the misconceptions of what defines affordable housing, owned the lot where the 3D-printed home was built, about 500 yards from its office. It provided project oversight and worked with a local real estate agent to find an interested homeowner who met the requirements, including earning less than 80 percent of the area’s median income.



[RMT Construction & Development Group](#) served as the general contractor working closely with all parties to coordinate local regulatory compliance, permitting and zoning and insurance.

[Alquist](#), a 3D printing construction firm from Iowa, worked directly with the VCHR to print the home's exterior walls. Additional details on each partner are highlighted in the accompanying fact sheet.

Chris Thompson, Director of Strategic Housing for Virginia Housing, said, "The 3D-printed home has been a learning construction lab for us, so we took our time to learn as much as possible. Innovation can be messy. I'm proud we're willing to take risks. We imported this technology from Denmark, so we had a lot to learn. All our partners, including the City of Richmond, went above and beyond. When we see a family open the front door of a home like this for the first time, it is magical."

About the 3D-printed home

- Crews used a large-format 3D printer from Danish company COBOD (**C**onstruction **O**f **B**uildings **O**n **D**emand) to build concrete walls for the one-story home.
- RMT Construction & Development Group used traditional construction techniques to complete the concrete slab foundation, roof system and interior walls with oversight by project:HOMES.
- The three bedroom, two bath home is all-electric and includes vinyl plank floors, a kitchen island, laundry room and a covered front porch.
- The home is designed to be comfortable, durable and affordable to maintain. Its energy-saving features are designed to be 50 percent more energy efficient than code.
- Smart home sensors called "Building Data Lite" (using Raspberry Pi hardware) by VCHR will monitor indoor environmental data including air quality, temperature, humidity, lighting, sound, vibration, smoke, gases and security.



About the \$500,000 grant from Virginia Housing

Dr. Andrew McCoy and **Dr. Philip Agee** with the VCHR applied for the one-year grant to explore building affordable housing units with the goal of making them scalable across Virginia.

About Virginia Housing

By investing in the power of home, Virginia Housing transforms where and how thousands of Virginians live and thrive, strengthening communities and the economy. Founded in 1972 as the Virginia Housing Development Authority (VHDA), Virginia Housing is celebrating its 50th year of working in partnership with the public and private sectors to help Virginians attain quality, affordable housing. While receiving no state taxpayer dollars, Virginia Housing raises money in capital markets to provide mortgages to first-time homebuyers, invest in developments and innovations in affordable housing, and make homes for people with disabilities and older Virginians more livable. Virginia Housing is committed to diversity, equity and inclusion among its associates, customers and affordable housing partners. Learn more at [Virginiahousing.com](http://virginiahousing.com) and review its [most recent annual report](#).

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Editor's Notes:

- *High-resolution images – including architectural renderings and floor plans of the 3D-printed home (shown on page one) – are available for media use in this [Google Drive folder](#).*
- *Additional details about project partners are included in a fact sheet.*

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