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Virginia Housing Announces \$500,000 Grant to Fund 3D Home-Building Printer

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Collaborative community partnership will build Virginia's first 3D-printed home in South Richmond this summer

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Public can follow construction updates online

RICHMOND, Va. – June 8, 2021 – Virginia Housing today announced a \$500,000 Innovation Demonstration grant to the Virginia Center for Housing Research at Virginia Tech to secure a 3D modular construction printer to print the concrete walls on the first 3D-printed home for sale in Virginia.

[Alquist](#), a 3D printing construction firm, will be working directly with the VCHR to print the home's exterior walls. In addition, [Virginia Housing](#) and the [VCHR](#) are partnering with [project: HOMES](#), [Better Housing Coalition](#) and [RMT Construction & Development Group](#) to explore innovative, affordable and energy-efficient new homes. Additional details about each organization are included in an accompanying fact sheet.



About the 3D-printed home

- The 1,550-square-foot home with three bedrooms and two baths will have its exterior concrete wall system printed and constructed at 217 Carnation St. in Richmond, Va., off Midlothian Turnpike and Chippenham Parkway.
- Crews will use 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. Thanks to the grant funding to VCHR, Alquist has purchased the first BOD2 printer to be used in Virginia to build homes in the next two years.
- The concrete slab foundation, roof system and interior walls will be completed using traditional construction techniques.



- Better Housing Coalition and project: HOMES, two housing nonprofits with a history of partnering with Virginia Housing, will work to identify a future Richmond homeowner who will have the option to secure a mortgage through Virginia Housing. The nonprofits will help coordinate local regulatory compliance, permitting, zoning and insurance.
- The home is designed to be comfortable, durable and affordable to maintain with energy-saving features that are expected 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.
- Other features include a kitchen island, laundry room and a covered front porch with a swing.
- A preliminary production direct cost analysis of future 3D-printed houses like this one is estimated at \$181,000 with it being listed for sale around \$210,000. The cost and sales price of this initial prototype in Richmond will be slightly higher. A similar standard-built (wood structure) home is estimated to cost over \$200,000, at least 10% higher. Alquist’s 3D-printed homes with concrete walls are expected to save up to \$10 per square foot in building costs.
- The home is expected to be completed by early October.
- The public can follow the construction progress through updates on Virginia Housing and Alquist social media channels.

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.

“Besides the scalability of 3D-printed homes, the team will explore design and constructability challenges and opportunities for integrating on-site and off-site building services systems such as heating, cooling, ventilation and domestic water heating,” said **Dr. McCoy**, director of VHCR, a professor in Virginia Tech’s Department of Building Construction, and associate director of the Myers-Lawson School of Construction at the university. “Once the first project in Richmond is completed, we plan to pursue other projects in Virginia with the 3D printer as part of our Virginia Housing grant.”

“Virginia Housing is funding and leading this collaborative 3D-printed home with a team of housing experts and community partners,” said **Susan Dewey**, CEO, Virginia Housing. “Our latest project builds off recent innovative approaches we’ve explored, including modular and factory-built homes, and it reflects our longstanding commitment to making homes affordable for all Virginians. The lack of affordable housing impacts every family and every community, and we won’t stop until every Virginian has a safe, affordable place to call home.”

Zachary Mannheimer, founder and CEO of Alquist, added, “These two cutting-edge organizations – Virginia Housing and the Virginia Center for Housing Research – are breaking barriers and finding new ways to serve their community, and we’re honored to be working hand-in-hand with them.”

About Virginia Housing

When homes are affordable and accessible to jobs, good schools and transportation, everyone benefits. Individual lives are improved and communities as a whole grow stronger. Virginia Housing was created in 1972 by the General Assembly to help Virginians attain quality, affordable housing. We carry out this mission by working in public-private partnerships with local governments, community service organizations, lenders, Realtors, developers and many others. We provide mortgages for first-time homebuyers, as well as financing for apartment communities and neighborhood revitalization efforts. We offer free homebuyer classes, support housing counseling, and help people with disabilities and the elderly make their homes more livable. We also administer the federal Housing Choice Voucher and Housing Credit programs in Virginia. Virginia Housing is self-supporting and receives no state taxpayer dollars to fund our programs. Instead, we raise money in the capital markets, and we contribute a significant portion of our net revenues each year to help meet Virginia’s most difficult housing needs. www.virginiahousing.com

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Editor’s Notes:

- *Interested media will be invited to a preview day tentatively set for 10 a.m. June 24 (depending on the weather) to see the 3D printer in action.*
- *High-resolution images – including architectural renderings and floor plans of the 3D-printed home to be built and photos of the 3D printer (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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