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Virginia Innovators Build the Future of Affordable Housing with 3D Printing in Henrico County

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Richmond Metropolitan Habitat for Humanity, Virginia Housing, Virginia Tech and others partners to explore new construction technology for five affordable homes at Carter Place I

RICHMOND, VA – Construction is underway on five 3D-printed Habitat for Humanity homes in eastern Henrico County thanks to a unique partnership with a group of affordable housing partners. **Richmond Metropolitan Habitat for Humanity** broke ground on five affordable single-family homes at Carter Place I, a new community at 1590 Darbytown Road near Richmond International Airport.

Through a \$1.1 million Innovation Demonstration grant from **Virginia Housing, Virginia Center for Housing Research at Virginia Tech** purchased a mobile 3D concrete printer with a robotic arm to explore affordable construction techniques across Virginia. Richmond Metropolitan Habitat for Humanity is utilizing the 3D printer to complete the homes in partnership with:

- **Virginia Tech** professors and graduate students in the Myers-Lawson School of Construction, Center for Housing, and the university's Department of Civil and Environmental Engineering.
- **Henrico County Affordable Housing Trust Fund**, established by Henrico County to expand homeownership opportunities by lowering the cost of newly constructed homes and increasing access for first-time homebuyers.
- **HiveASMBLD**, a Houston-based automated 3D-printed construction company assisting with printing expertise.
- **Tvasta**, an India-based 3D printing technology manufacturer and maker of the SIRA RC mobile printer being used on this project.
- **Williamsburg Builder Consultants LLC**, consulting on construction, structural and zoning permitting.



3D Printing Off-Site Now and Later On-Site

Throughout the fall, project partners will be working with the printer inside a warehouse at 3340 Lanvale Ave. in Richmond to print walls before moving into the home construction phase.

Unlike a traditional stationary 3D-printing system, the mobile technology gives project partners an opportunity to evaluate different approaches to producing homes. With off-site printing, workers can print wall components in a controlled environment and transport the concrete walls to the home site for final assembly. The approach can offer greater productivity and quality control while limiting weather-related disruptions. With on-site printing that is expected later this year, the Tvasta-built printer can produce concrete walls directly at the construction site.

The Carter Place I project will give partners additional real-world information about the advantages, limitations and costs associated with these emerging construction methods. The research component will help partners document what works, identify opportunities for improvement and better understand how 3D printing technology could be applied and scaled to future affordable housing developments.

What Partners Say

“We are excited about Carter Place I and the role 3D-printed construction can play in the future of affordable housing. Richmond Habitat has always looked for innovative ways to build safe, durable and affordable homes, and this project is a natural extension of that commitment. Through our partnership with Virginia Housing and Virginia Tech, we have an incredible opportunity to test new technologies while remaining focused on what matters most: creating opportunities for families to achieve the stability and hope that come with homeownership. We are honored to be part of this pioneering effort and eager to see its impact on our communities.”

Matt Waring

Chief Operating Officer, Richmond Metropolitan Habitat for Humanity

“Virginia Housing is driving and convening efforts to advance innovative construction techniques, including affordable 3D-printed homes that we can repeat and scale in communities across the Commonwealth. The Carter Place I project demonstrates how research, public-private investment and strong collaboration can align to address housing affordability challenges in Virginia.”

Tammy Neale

Virginia Housing

Chief Executive Officer



“3D printing lets us build durable, resilient concrete walls faster and with less skilled labor. That fits how affordable housing is actually built, with nonprofits and volunteers. We're building the playbook for how Virginia can use this technology to deliver more affordable homes.”

Dr. Andrew McCoy

Virginia Tech

Associate Director for Research and Innovation for the Myers-Lawson School of Construction

Director of the Virginia Center for Housing Research

Beliveau Professor in the Department of Building Construction

“We’re working to translate results in the lab to the field by innovating new materials and drawing a framework of testing requirements for quality control and quality assurance. We want to ensure that 3D printed homes in Virginia are built safely and reliably.”

Dr. Alexander Brand

Virginia Tech

Associate Professor, Charles E. Via, Jr. Department of Civil and Environmental Engineering

Principal Faculty, Myers-Lawson School of Construction

Affiliate Faculty, Department of Materials Science and Engineering

About the Carter Place I Development in Henrico County

The Carter Place I project will give the partners additional real-world information about the advantages, limitations and costs associated with these emerging construction methods. The community is named in honor of the late President Jimmy Carter, whose decades of volunteer service with Habitat for Humanity helped bring international attention to the organization’s mission. Through a generous grant from the Henrico County Affordable Housing Trust Fund, the County is helping to make the new Carter Place I development possible locally.

Learning from earlier 3D-printed homes in Virginia

This latest project builds on lessons learned through an earlier Virginia Housing Innovation Demonstration Grant awarded in 2021 that supported 3D-printed home construction in the City of Richmond and James City County.

About Richmond Metropolitan Habitat for Humanity

Habitat for Humanity was founded in 1976 as a nonprofit organization committed to providing safe, affordable housing opportunities across the world. Habitat for Humanity is a global nonprofit housing organization working in local communities across all 50



states in the U.S. and in approximately 70 countries. Richmond Metropolitan Habitat for Humanity joined the affordable housing effort in 1986, serving the City of Richmond, Henrico County and Chesterfield County. Since then, Richmond Habitat has built 400 homes for local families. Along with our homeowners, generous volunteers and donors, we have restored the hope and dignity that poverty housing often strips away. To learn more, visit RichmondHabitat.org.

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. Virginia Housing has worked for over 50 years 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, financing for rental developments and neighborhood revitalization efforts. Virginia Housing invests in innovations in affordable housing and makes homes for people with disabilities and older Virginians more livable. Learn more at VirginiaHousing.com and review the most recent annual report.

About the Virginia Center for Housing Research (VCHR) at Virginia Tech

VCHR has a mission to serve as an interdisciplinary study, research and information resource on housing for the Commonwealth of Virginia. Accordingly, VCHR provides housing-related research for localities and the Commonwealth, federal agencies, nonprofit organizations, and for-profit businesses. [Learn more.](#)

About Henrico Affordable Housing Trust Fund

The Affordable Housing Trust Fund was established in 2024 to expand affordable housing options for first-time homebuyers purchasing in Henrico County. The purpose is to expand accessibility to affordable housing by lowering the purchase price of newly constructed homes. It utilizes funds from taxes paid by new data centers to reduce the purchase price of newly constructed homes so that homeownership remains accessible to buyers who otherwise may have been priced out of the current market.

About Tvasta

Tvasta is a deep-technology start-up developing Industrial 3D Printing Solutions. Our aim is to introduce Construction & Manufacturing to its new future: Technology. We believe that enhancing productivity, customization and sustainability through new-age automation and digitization is crucial for rapid growth, swiftly steering industries to their next “new” horizon. Tvasta.Construction



About HiveASMBLD

HiveASMBLD is an industry leader in 3D-printed concrete construction and technology based in Houston, Texas. It specializes in building 3D-printed, prefabricated homes.

HiveASMBLD.com

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