

3D Printed Affordable Home

Project Description



The nonprofit Housing Trust Fund of Santa Barbara County (HTF) www.sbhousingtrust.org is developing the first 3D printed affordable home in Santa Barbara County on property located on church property at 550 Cambridge Drive in Goleta, CA. Our collaborative partners for this prototype 3D printed affordable home are the Cambridge Drive Community Church <https://www.cambridgedrivechurch.org/>, RRM Design Group www.rrmdesign.com and Apis Cor, a robotics engineering firm <https://apis-cor.com/>.

The 3D printed affordable home project has several key goals: 1) to create a prototype affordable home using new robotics construction technology and sustainable materials; 2) to test whether on-site 3D construction technology results in time and cost savings in producing affordable housing; 3) to encourage the use of surplus church property for infill affordable housing projects; and, 4) to document the 3D printed home development process and disseminate the project findings to peers in the affordable housing industry as well as the general public.

The 3D printed affordable home will be an entry-level one-story single-family home of approximately 1,433 SF with a 460 SF 2-car garage. The home will be located on the front southwest corner of the Cambridge church 2.24-acre property. The home will be printed using a start-of-the-art on-site robotic arm that has an internal stabilization system and can be easily set-up and moved around the site. The construction material for the walls of the home will be reinforced concrete, with a structural integrity equivalent to concrete masonry construction. The foundation, roof and finishings will be completed using conventional construction. The building materials for the home structure are fire resistant, climate resilient and natural.

The home will have a private patio, raised vegetable beds and fruit trees, and a play area for the residents, with the land behind the home a future gardening or dry farming area for Cambridge Drive Community Church. The home will include energy efficient systems and sustainability features, including solar panels and a photovoltaic system and drought tolerant and edible landscaping. The project will be affordable and will be leased to Transition House, a local housing provider that serves homeless women and children. Transition House will manage the home and a formerly homeless low-income family will occupy the home.

HTF plans to engage the community by hosting a construction start 3D printing event, followed with outreach and presentations on robotics construction to local schools, business, and civic groups after the home is completed. The 3D printing of the home will be filmed and a report on the project's key findings will be completed and disseminated using multi-media techniques. The completed prototype 3D printed home will serve as a regional model for new housing technology that has the potential to save time and cost in constructing a variety of affordable housing types and that uses sustainable building materials. If possible, we hope the home can be open for an annual community tour.

Sponsor and Development Team:

Cambridge Drive Community Church: As co-sponsor of the 3D printed home project, Cambridge Drive Community Church has a strong history of supporting affordable housing. The church plans to lease the home to **Transition House** a local housing provider, to provide permanent housing for a homeless family.

RRM Design Group a community-based and award-winning design firm is providing design services for the project. Detlev (Detty) Peikert, AIA, LEED, AP, BD+C, Architectural Principle at RRM Design Group, is the lead architect for the 3D home. Detty and his team have completed an innovative design for the home that showcases what can be achieved using robotics construction technology.

Abbott Reed been selected as the General Contractor for the project. The firm has experience with affordable housing projects, having recently completed a 36-unit multi-family project in San Luis Obispo for the Housing Authority, with current work on a 14-unit affordable project with the Santa Barbara County Housing Authority.

Apis Cor, an engineering firm located in Melbourne, Florida is the robotics construction partner. Apis Cor won top awards in NASA's 3D Printed Habitat Challenge for building 3D structures on Mars and recently completed the world's largest 3D printed commercial building in Dubai.

City of Goleta Land Use Permit Application Deemed Complete: In December 2023, the City of Goleta Planning Department completed its review of the Land Use Application for the 3D printed affordable home and determined that it was complete and in January 2024 the City of Goleta Design Review Board approved the project. The next step in the local approval process will be submittal of working drawings to the Building Department to obtain a building permit.

About the Housing Trust Fund of Santa Barbara County

The Housing Trust Fund is a 501(c)(3) non-profit loan fund and U.S. Treasury certified Community Development Financial Institution (CDFI) that works to expand the supply of affordable housing within Santa Barbara County. We help bridge the financial gap between the cost of housing and what people can afford to pay. We partner with the private, public, and nonprofit sectors to raise new financial resources for affordable housing. We design innovative housing solutions, provide technical assistance and low-cost loans to community sponsors to facilitate affordable housing production and provide homebuyer financial assistance. We fund affordable housing opportunities that enhance the quality of life and preserve the long-term affordability of the housing as a community resource.

HTF is governed by a volunteer Board of Directors comprised of countywide community leaders with expertise in real estate and development, banking, law, business, local government, nonprofits, and affordable housing.

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