Floodbuster 1

Kentucky's First Concrete 3D Printed House

Overview

Floodbuster 1 is Kentucky's first 3D Concrete Printed (3DCP) structure, produced by the KCTCS Additive Manufacturing (AM) Center located at Somerset Community College. This prototype represents a breakthrough in high-strength, disaster-resilient housing and is part of a broader statewide initiative to expand additive manufacturing applications and position Kentucky as a premier workforce and AM industry service provider.

This inaugural print demonstrates the ability to automate concrete construction, significantly reduce material waste, and increase structural resilience—all at a price point competitive with traditional concrete block or wood-and-brick framed construction.

Applications in Housing

Resilient Structures for Flood- & Tornado-Prone Areas

Integrated with proprietary Floodbuster design features, this 3D-printed structure was engineered to withstand the forces generated from high-velocity floods and EF4 tornadoes.

Post-Disaster Housing Solutions

Enables rapid deployment of durable housing in disaster recovery zones.

Permanent, Multigenerational Housing

The strength, energy efficiency, and low maintenance demands of concrete construction support a lifespan of 100+ years.

Affordable, Healthy Living

Integrated with proprietary Floodbuster design features, this 3D-printed structure was engineered to withstand the forces generated from high-velocity floods and EF4 tornadoes.

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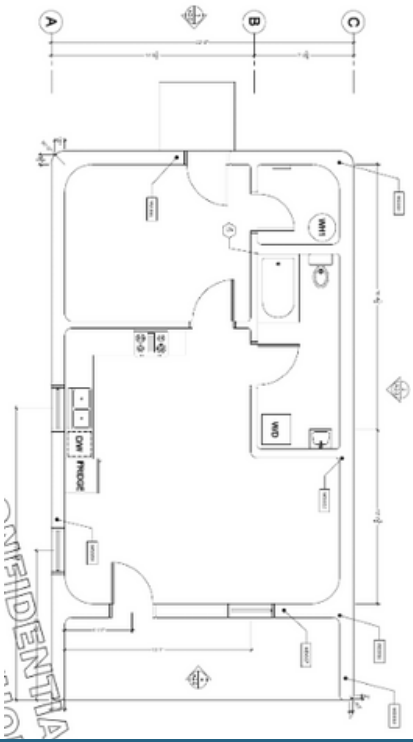
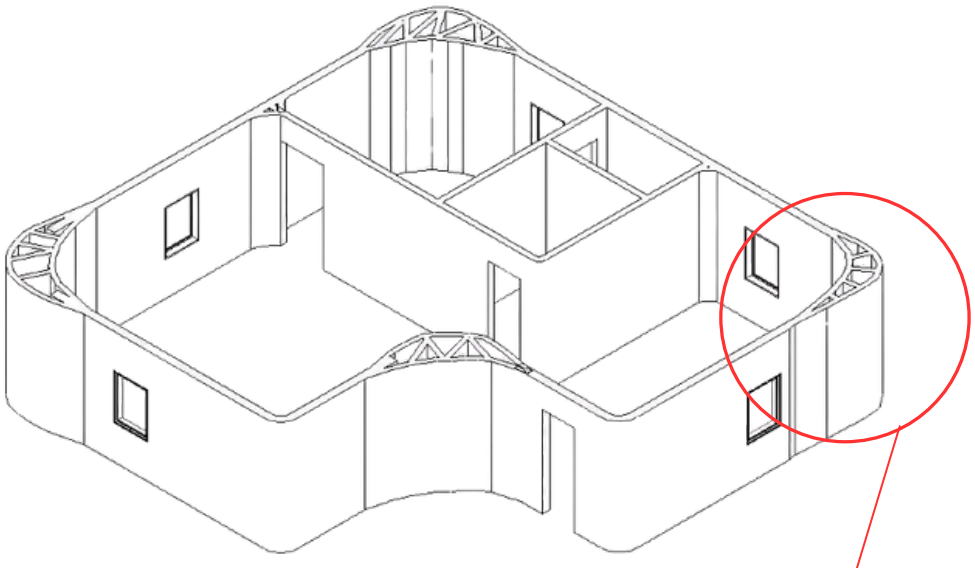
Comparisons & Data

Differentials between concrete 3D printed and conventional wood framing construction:

Foundation	Time Savings	Labor Team
Relatively the same cost	4 days versus 4 weeks (including weather delays)	4 person (concrete printed) versus 7 person (conventional)

Lifespan Differential	**115+ years versus 50+** (greater differential if in climatic event zones)
HVAC/Energy Comparison	Estimated **12% to 24% energy savings** in concrete 3D printed structures over conventional framed structures due to infiltration restriction, thermal mass effect, and higher R-value of wall structure.
Insurance Premium Savings	Estimated **162% annual savings** with noncombustible concrete 3D printed construction, per FPPR, No. 15, A Series
Internal Maintenance/Tenant Damage Savings	Estimated to be **$2 per square foot** annually





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A Broader Vision for Additive Manufacturing

Floodbuster 1 is not a standalone project—it is part of the larger vision for additive manufacturing as a driver of regional innovation. Over the past decade, Somerset Community College (SCC), the primary KCTCS curriculum and AM content developer, has built a nationally recognized Additive Manufacturing Program that has trained over 5,000 students, 250+ K–12 teachers, and 105 dual-credit instructors, introducing more than 10,000 K–12 students to 3D printing technology.

As more Kentuckians gain the skills needed to design, engineer, and operate additive manufacturing systems, KCTCS is creating a skilled workforce capable of meeting growing demands in advanced construction and beyond. The Floodbuster initiative demonstrates how this training ecosystem can be leveraged to deploy new housing solutions, create new forms of consumer products, empower local talent, and drive long-term regional revitalization.

The additive manufacturing industry is rapidly growing and expanding, with applications in construction, manufacturing, aerospace, and beyond. KCTCS is uniquely positioned to be the primary source for training the highly skilled workforce that will be needed to meet the industry's rising demand. This training pipeline is critical for scaling the technology.

By producing graduates with the knowledge to design, engineer, and operate additive manufacturing systems, KCTCS is building the talent pool required to advance projects like Floodbuster and to deploy innovative housing, consumer products, and infrastructure solutions statewide. This combination of technical leadership and workforce development ensures Kentucky remains at the national forefront of this transformational industry.

Upcoming Floodbuster Milestones

- Floodbuster 2 is in active development and will feature plumbing, electric, HVAC, and roof.
- Located just 10 minutes from SCC, it will serve as a fully functional office space at Bluegrass Veterans Ranch, further testing integration with infrastructure and site utilities.
- It will also represent Kentucky's first concrete 3D printed structure to be permitted under KY Building Code for commercial occupancy.
- Continued exploration of interior and exterior finish applications is underway to match regional aesthetic preferences.

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