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Walmart Scales 3D Printing Across Its Store Network

Five completed additions and more than 30 planned projects are turning Walmart's use of 3D concrete printing into a repeatable commercial construction program.

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Walmart is expanding [its use](#) of 3D concrete printing after completing a series of store additions across the US, turning what began as an experimental construction project into a much larger program.

Over the past two years, contractors working for the retailer have completed five 3D-printed additions at Walmart stores in Tennessee, Missouri, Alabama, and Arkansas. Walmart's construction partners, FMGI and Alquist 3D, now have more than 30 additional projects in the pipeline through 2027, including standalone fuel stations and pickup and delivery facilities.

The technology uses robotic arms to build walls by depositing layers of a concrete-based material directly from a digital design. Instead of crews assembling traditional masonry walls piece by piece, much of that process can be automated on-site.

For Walmart, the early projects suggest the technology can reduce both construction time and labor requirements. More importantly, the retailer is now giving 3D printing something construction technologies often struggle to find - enough repeat projects to improve the process from one building to the next.

From Pilot to Program

Walmart's first major project with the technology came in Athens, Tennessee, back in 2024. FMGI and Alquist used 3D concrete printing to build an 8,000-square-foot, roughly [20-foot-high addition](#) to an existing Walmart Supercenter, creating additional space for online pickup and delivery.

At the time, FMGI described this as the largest commercial 3D-printed structure in the US.

The project was still very much a learning exercise. Contractors had to work out how the printing process fitted into a conventional construction schedule, while high temperatures created problems for the concrete mixture and equipment.

The next Walmart project already showed how quickly that process could improve. At an Alabama Supercenter, FMGI and Alquist printed the walls for a 5,000-square-foot addition in seven days, requiring 75 printing hours, five workers, and two robots.

Since then, the companies have continued deploying the system across Walmart properties. And what started with one unusual addition is beginning to look much more like a repeatable construction method.

Printing the Walls

3D concrete printing is currently being used for one specific part of the construction process - building the walls. Other elements of the store are still completed using conventional methods.

A robotic arm follows a digital design, and deposits the concrete mixture layer by layer until the required wall structure has been formed. Other parts of the project - including roofs, mechanical and electrical systems, doors, finishes, and much of the remaining construction - are still completed using more conventional methods.

Even automating one major part of the building, however, can change the construction process considerably. FMGI says its robots can operate with a crew of only around five people, and continue printing for long periods without requiring the number of workers normally involved in masonry construction.

The contractor says its Walmart projects have reduced construction costs by around 15%, and shortened production time by roughly a third. While those are FMGI's own figures, Walmart's decision to continue expanding the program shows in itself that the approach is producing worthwhile results.

FMGI has also invested directly in the technology. The contractor now owns four Alquist robotic printing rigs, rather than relying entirely on Alquist to provide the equipment for each project, which has started to make 3D printing part of its own construction capacity.

Learning Between Projects

One of the more interesting parts of Walmart's program is its sheer repetition.

3D printing has already produced homes, offices, warehouses, and other structures around the world, but many projects remain one-offs designed partly to demonstrate what the technology can do. Walmart offers a very different environment.

The retailer operates thousands of properties, and repeatedly builds many of the same types of spaces. Pickup facilities, fuel stations, grocery stores, and store expansions

share enough similarities that contractors can take lessons from one project and apply them to the next.

The Athens project, for example, took considerably longer than the Alabama build that followed it. Equipment, materials, site preparation, sequencing, and worker training can all be refined as the same technology is used repeatedly. And repeated projects give contractors a chance to turn construction automation into a standard way of working, rather than treating every deployment as an experiment.

A robot completing one impressive building proves that the technology works. A contractor owning multiple machines, and moving them between dozens of similar projects, is a sign that the approach could be used on large-scale, long-term construction.



Why Walmart Is a Good Test Case

Walmart's scale could offer 3D concrete printing a particularly useful proving ground.

The company regularly builds new stores while also expanding, remodeling, and adding facilities to existing locations across the country. That creates a large pipeline of relatively standardized construction work.

If a particular wall system works well in Alabama the same basic process can potentially be adapted for a project in Arkansas or Missouri. Digital designs can be changed for individual locations, without requiring contractors to invent an entirely new construction method each time.

There are still some physical differences between sites, of course. Weather, local building codes, foundations, engineering requirements, and site conditions all affect how a building gets delivered.

The printing equipment itself also has environmental limits. The concrete mixture has to remain within suitable temperature ranges, for example, creating challenges in particularly hot or cold conditions.

Again, repeated deployments give contractors more opportunities to solve those problems. And Walmart is certainly in an excellent position to provide the volume needed to turn 3D printing from a specialist construction technique into a more standardized process.

A Much Bigger Test Ahead

The next stage of this process could move beyond additions to existing stores.

FMGI and Alquist have more than 30 Walmart-related projects planned [through 2027](#), including standalone structures such as fuel stations. The companies are also in final negotiations over a roughly 50,000-square-foot grocery store that would use 3D-printed construction.

If completed as planned, the latter project would be considerably larger than Walmart's existing printed additions, and could become the world's largest 3D-printed building. That would provide a much stronger test of whether the technology can move into ground-up commercial construction.

Construction Gets More Automated

The Walmart projects also show how construction robotics may enter the industry gradually.

Replacing an entire construction site with autonomous machines remains extraordinarily difficult. Buildings involve too many different materials, trades, site conditions, and changing tasks for that to happen quickly. Automating individual parts of the process, however, is much more achievable.

For Walmart, the walls provide an opportunity to try just that. A digital design can tell the printer exactly where material needs to be placed, while a relatively small crew operates and monitors the equipment. Other trades can then continue working around the resulting structure.

The same pattern is appearing across construction technology more broadly, with robots increasingly taking on narrowly defined jobs such as layout, surveying, site monitoring, excavation, and material movement.

3D concrete printing brings that automation directly into the construction of the building itself, meaning Walmart's expanding program is therefore interesting well beyond retail.

If FMGI and Alquist can show that robotic printing works reliably across dozens of commercial projects, other developers and contractors will have a much stronger example to study than another experimental 3D-printed building.

The five completed Walmart additions mean the technology has already moved beyond a single pilot. The next 30-plus projects will provide a much better indication of whether 3D printing is ready to become a repeatable part of commercial construction.