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# Architects, Developers Take Modular Construction to New Heights

New Projects in London, Manhattan Set to Benefit From Faster Construction Timeline



A crane lifts the final module on a London residential building that's expected to be the world's largest modular tower. (HTA Design)

Modular construction, the building of sections of structures off-site, is reaching new heights in the United States and Europe as developers increase the number of floors they literally add to commercial projects.

At 101 George St in south London's Croydon, a crane hoisted the final module this autumn atop an apartment development that, at 44 floors and 446 feet tall, is set to be the world's tallest tower using the most levels of modular units. In Manhattan, a development team is lifting entire guest rooms into the sky at [842 Sixth Ave.](#) for the 26-floor AC Hotel New York NoMad that would make it the world's tallest modular hotel tower.





Simon Bayliss of London-based architecture firm HTA Design. (HTA Design)

New technology and building techniques are enabling developers to build taller modular towers that reach higher into the sky, providing more units and rooms. The factory-built residences and hotel rooms, however, still bear the stigma of being of lower quality than



traditionally constructed units, linked to a rash of poorly prefabricated houses built several decades ago.

Simon Bayliss, managing director of U.K.-based architecture firm HTA Design, is working to erase that stigma. Bayliss played a key role in the design of the 101 George St. residential tower that contains a 38-floor tower in addition to a taller 44-floor tower.

Bayliss said the architecture and design community should lead the way to show how innovation and technology can improve the quality of multifamily developments.

"Any tall building or multifamily mid-rise is a structural frame and then a cladding," Bayliss said in an interview. "We can design and create air-tight, weather-tight units and configure those modules to deliver the best accommodation."

That's what Forest City Realty Trust had in mind in New York City about eight years ago when it announced plans to develop a residential tower at [461 Dean St.](#) in Brooklyn's Pacific Park neighborhood that would be the tallest modular building ever constructed.

The project shows there are challenges involved in using an evolving building technology: Forest City opened its own modular component factory in Brooklyn and eventually completed the tower, but only after enduring engineering challenges and construction delays that resulted in lawsuits over the tower's design and execution.

By the fall of 2016, Forest City, now owned by Brookfield Asset Management, exited the modular construction business and sold its factory at Brooklyn Naval Yard to a former company executive just as the first residents moved in.

Even so, two years later, Forest City [sold 461 Dean St. for \\$156 million](#) to Principal Financial Group. That equates to about \$429,752 per unit, more than 17% higher than the area's average top-of-the-line apartment sale price of \$366,000 per unit at the time, according to CoStar data.

That premium price combined with time savings that leads to lower overall costs for workers and being more environmentally friendly are reasons architects and developers expect modular construction for apartments, hotel rooms and medical facilities to take off.

## Growing Market

The global modular construction market is growing rapidly and is expected to hit \$107.2 billion by 2026, a 65% increase over its 2018 level of \$64.9 billion, according to a new report from Fortune Business Insights, a market research firm.

Modular construction should gain further popularity as companies use it to address major labor shortages in the industry because of the reduced construction timeline,

according to the Emerging Trends in Real Estate 2020 report from the Urban Land Institute.

"While prefabricated components are not necessarily cheaper, technology solutions can at least address the labor gap," the report says. Global architecture firm Gensler is designing several apartment projects with modular units "that can be assembled on site in a fraction of the time of conventionally-built projects," according to its 2019 Design Forecast report.

The latest technology allows for modular buildings of up to 50 floors, with the number of elevators in the buildings often determining how high one can go, said Bayliss with HTA Design. Modular construction works particularly well for apartments, student housing and hotels because they "break down into repetitive elements" such as a living area, bedroom and bathroom, Bayliss said.

The team of Tide Construction and Vision Modular Systems plans to complete the London-area residential project with 546 rental units at 101 George St. in just over two years, or half the time it would have taken using traditional methods of construction, the companies said. The project is scheduled to be completed in May 2020.

That time saved using modular construction will pay off, Bayliss said. "You want that money" invested in the development "to be returning rent as soon as possible."







Skender Chief Design Officer Tim Swanson. (Skender)

The world's tallest modular tower was completed this year in Singapore. The 40-floor Clement Canopy apartment towers each measure 459 feet high, about 13 feet taller than 101 George St. — though the London project has more stories than the one in Singapore, which was developed by Bouygues Bâtiment International, a subsidiary of French industrial conglomerate Bouygues SA.

One construction firm, Skender of Chicago, saw so much potential in modular construction that last year it opened its own [advanced modular manufacturer facility](#) in its hometown's southwest side. The firm also created a new division called Skender Manufacturing. The new manufacturing arm plans to produce modular units for developer Resurrection Project's planned [45-unit apartment complex at 1850 S. Racine Ave.](#) in Chicago.

Skender Chief Design Officer Tim Swanson said modular units, whether built as apartments, hospital rooms or for other uses, typically are of a higher-quality than those produced using modern delivery methods.

Modular construction provides "massive speed-to-market efficiencies" because it can shave more than a third off of the time of traditional construction, Swanson said. The challenge is getting that word out to the general population in the United States and erasing the stigma attached to modular construction, he said.

"Here in the United States, as we build, there's a lot of undue skepticism and misperception about modular," Swanson said in an interview. "Why is there skepticism about something built in a factory?" The answer, in part, he said is that the United States is steeped in the "legacy of conventional construction techniques" that dictate how apartments and other commercial properties are built.

## **Corporate Support**

When Marriott International announced plans this spring for the \$65 million AC Hotel New York NoMad, the hospitality giant said it was time to for the construction industry to embrace modular construction and move forward.

“In North America, the construction process hasn’t changed significantly in 150 years and it’s ripe for innovation,” Eric Jacobs, Marriott's chief development officer of North America, said in a statement earlier this year. “The world’s tallest modular hotel in one of the world’s greatest destinations will act as a game-changing symbol to ignite even greater interest in modular” construction, he said about the AC Hotel New York NoMad.

In Asia, the perception of modular housing is completely different, said Swanson with Skender. "In Japan, if you built it in a factory, it must be better."





The 26-story AC Hotel New York NoMad is expected to open in fall 2020 on Sixth Avenue. (Danny Forster & Architecture via Marriott)

The Asia-Pacific region represents the largest market for modular construction. The region accounted for 46.3% of the modular construction market in 2016, according to the latest figures from research firm Market Reports World. North America ranked second with 27.6% market share, according to the report.



Swanson said he expects modular construction to grow in popularity in the United States because a large portion of commercial buildings are cookie-cutter elements.

"Eighty percent of a building is defined by code," he said. "We're kitting that out anyway. The steel already is cut. The flooring is pre-cut. All of the plumbing and studs are the same." You might as well build and assemble those parts in a factory and ship the unit to a job site, he said.

HTA's Bayliss said as the stigma of the 20th century's prefabricated housing wears off and more developers embrace factory construction, he expects to see more modular projects in the United Kingdom and beyond.

"If we had our choice, we would build everything in modular," Bayliss said. "It's quicker and has better coordination. The process is smoother."

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