

HOUSING MATTERS

Modular Construction Gains Ground

Developing its Potential for Housing, Slowly but Steadily

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A little over 100 years ago, Model T cars began rolling off assembly lines, and, though he didn't invent the process, Henry Ford is often credited with mass production that made cars more affordable –

to address a need.

Boosting production through innovation – can this same concept be applied today to other things that we desperately need? Like housing?

In the U.S., nobody has been mass-producing housing, accelerating the process and cutting costs so supply can meet growing demand. In fact, building housing hasn't changed much at all. Until recently.

Last summer the Grossman Cos. opened an 80-unit apartment complex near Brighton Landing made of boxes. These sophisticated boxes were manufactured at plants in Quebec, fitted with infrastructure like electrical wiring and plumbing, trucked to the site and assembled to look like they were built the old-fashioned way – from the ground-up.

Until recently there hasn't been much in Greater Boston, and the technique has been slow to catch on in the United States. Worldwide, Sweden, Japan and China, in particular, have innovated and employed modular construction.

While the industrial and technology revolutions of the last two centuries have yielded enormous increases in productivity in most industries, construction has lagged badly.

The reason is that there are unique challenges for the industry. They include significant government regulation, dramatic and unpredictable changes in economic cycles, the huge investment required for research and development of streamlined new ways to design and build, fragmented construction company ownership and skepticism among labor.

Why is this an issue? Low productivity means scarcity and higher prices. While construction cost is not the only factor that makes housing unaffordable – in a time when land costs are at an all-time high, wages are not keeping up with the cost of living and public resources are shrinking – it is a major negative factor in Boston and many other cities where people want – but can't afford – to live.

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Modular construction – the assembly of parts of a building offsite for assembly onsite – comes in two general categories: panelized, including “two-dimensional” walls and floors; and volumetric, referring to three-dimensional boxes like ready-made rooms.

Growing Trend

Ivan Rupnik, associate professor in the School of Architecture at Northeastern University, recently coauthored a report for the Modular Building Institute and found there were only about five markets nationally where modular has significantly progressed. With less than five percent of those markets employing modular so far, “They're looking to scale up,” he said.

Internationally, as many as 30 companies now manufacture equipment that will produce the parts of modular housing in factories. Kattera, a California company with 1,500 employees, is one of the best-known of the firms disrupting old ways of construction, including establishing plants to make panelized sections. Another company, Factory OS,

was started by a San Francisco developer frustrated at not being able to build housing people can afford.

“This has been common in Sweden since the '90s, but it's a new thing for us,” said Rupnik, speaking of automated production. The industry there has moved toward volumetric, which is more complicated.

Transporting boxes along highways and under bridges, preventing damage to heavy and unwieldy structures and finding places to store huge sections are challenges that developers wrestle with. Even arranging construction loans with banks is more complicated.

“Does it save money? Maybe. It's not a slam dunk,” said Paul Dawson, director of asset management at The Grossman Cos. But it can save time, assuming a developer understands its constraints and tackles the more complex front-end planning.

In Boston, a cross-disciplinary team has formed a new tech-focused company called WorldHomes, or WoHo. Alongside renowned architects Anton Garcia-Abril and Debora Mesa of Ensemble Studio, Larry Curtis and Jared Curtis of WinnCos. have been working to pioneer advanced systems of industrialized construction. WoHo is experimenting and working with Suffolk Construction with the goal of making housing production faster and less expensive.

“We're excited,” said Larry Curtis, president of Winn. “This won't replace normal construction. But in the middle-income housing space, there's an ever increasing need to try to be as efficient as possible in construction costs, both for homeownership and rental.”

And overall, given the difficulty of producing the housing that we so desperately need, striving to make modular construction part of the solution is both timely and worthwhile. ◀

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