



At the ski resorts of Big Sky, Montana, a builder typically completes two to three homes per year. The speed and efficiency of modular construction allowed for double the number of homes to be built in this Big Sky development. Courtesy of Stratford Building Corporation | Photo: Chris Chaffee

# A Better Way to Build

Meet the heroes of modular housing construction, five voices helping transform the way America builds.

*Silver bullet*

*Industry savior*

*Timely disrupter*

There are many ways to describe the promise and, to some, the hype now coloring the growing home builder and remodeler interest in **modular home construction**.

The term is a broad one. Modular home construction can include everything from roof trusses and wall panel systems all the way up to volumetric modules of fully-equipped and finished rooms.

Few dispute the need for an alternative home-building method. A scarcity of skilled construction labor in many parts of the country has many local, regional, and national home builders scrambling for talent. [A recent survey](#) by the National Association of Home Builders verifies the harsh new reality.

How have modular building elements changed your workflow? What do other home building leaders say about this construction alternative?

How can modular transform your sales, profits, and volume?

*Building Forward* reached out to an assortment of leading voices in the modular home construction industry to gain their insights. This special report shares their informed perspective on one of the housing industry's most compelling topics.

## ACADEMIC GURU: RYAN SMITH



Ryan E. Smith, Director and Professor, Washington State University School of Design + Construction

Smith is arguably the nation's leading authority on the modular housing industry. Smith is the director of Washington State University's [School of Design and Construction](#) and serves as a consultant to various industry trade groups, including the [Modular Building Institute](#), and was the founding chair of the National Institute of Building Sciences' [Off-site Construction Council](#).

Smith brings a deep and diverse perspective to modular building system understanding. Last year, for example, Smith personally surveyed modular home builders throughout Europe, Asia, and Australia. His insights on global modular building development and growth form a revealing forecast on where a comparatively nascent U.S. marketplace may be headed.

Consider off-site, modular home construction in Japan. "In Japan, modular construction is the standard for high quality. There's an entire regulatory program that supports that distinction. So much so, Japanese modular home builders don't have to go through traditional code compliance. They use a separate code," reports Smith. "That allows them to deliver projects faster. The modular home factory is certified, not the project."

## Japan as Template

Scale is also a differentiator in Japan. Smith estimates there may be as many as 250 off-site home construction companies in the U.S. In Japan, "... there's really five companies that do all modular manufacturing work. In Sweden, there might

be 18 companies. Because large conglomerates own these companies, the larger company can protect the modular company during economic downturns. Our companies struggle during downturns, with many going out of business."

One project Smith is working on in collaboration with the Modular Building Institute is the development of a database of costs, schedules, and labor hours associated with off-site construction. He has high hopes this will be the necessary documentation for spurring modular home building to the next level. "There's no standard procurement process right now. The database will help developers better understand competing bids on projects."

#### ARCHITECT: PETER ANDERSON

You could say Peter C. O. Anderson, FAIA and principal of [Anderson Anderson Architecture](#), wrote the book on modular building construction because, in fact, he did. His 264-page [Prefab Prototypes](#), nominated for a Royal Institute of British Architects Book Award, is an investigation of his firm's widely-acclaimed modular building design.

Anderson's work defies expectations. His portfolio of homes demonstrates that modular construction isn't predictable in form, structure, or materials. His commissions are for high-end projects, though the architect is sensitive to the idea of more affordable production housing. Whatever stigma "modular" may have once had because of shoddy workmanship decades ago has vanished through the efforts of his team and other designers.

#### Prefab World

"Even a site-built home is full of prefabricated elements. The windows are manufactured in a factory. The plumbing. The appliances. The wood components are pre-cut to standardized sizes and lengths," Anderson observes. The most completely prefabricated element is volumetric modular, meaning the room is completely finished in the factory. There are things you can only do in modular."

The idea of factory-built has always appealed to Anderson. "Factory-built offers very good quality control," he says. It can also offer the designer surprising flexibility and innovation.

"We visited a factory in Indiana where many of the modular building manufacturers are located. We had designed a modular building with a number of innovative features. We expected to hear, 'Sorry, we do it a certain way here.' Instead we heard, 'Tell us what you want to do and let's figure it out together.' It was a great experience. Modular building manufacturers are more flexible and skilled at innovating than people think."

#### Distributed Industry

As a long-time modular building proponent, Anderson is encouraged by the growing enthusiasm for the building method by mainstream home builders, even if it's roof trusses or wall systems. For Anderson, it's just the beginning. "It's happening a bit slowly in some

ways," Anderson acknowledges. "That's because the housing industry is so distributed. It's not like the tech industry where there are a couple of big players who set rules and parameters.

"So many of the buildings here are constructed by small companies distributed all across the country. The product delivery system is geared toward a large number of smaller-volume buyers. If you try to introduce new building concepts, you have to convince a lot of people. It doesn't happen at once," he says.

#### Inevitable Outcome

But modular building's relentless if slow ascendancy is assured in Anderson's view. "Designing with a prefab system is a very useful design tool. It allows us to go further faster, save cost, and achieve so many positive things: environmental advantages, reduced material waste, building better in a dry, climate-controlled environment, to name a few. It's inevitable we'll move the construction needle to more and more prefabrication," he predicts.

It's Anderson's hope his high-end modular housing projects will help show the way for a new generation of affordable housing builders. "Think about how any technology comes into any industry. Take the new features on cars. They always come out in the luxury brands before filtering down to the high-production models."

To the award-winning architect's list of credentials, it may be time to add "Modular Housing Pioneer."

#### ENTREPRENEUR/EVANGELIST: KEN SEMLER



Ken Semler, President and CEO, Express Modular

Ever hear of Express Modular?

An ever-growing body of home buyers have. The reason: What [Ray Kroc](#) was to hamburgers, Ken Semler is to modular home construction.

His company, [Express Modular](#), has rewritten the rulebook for an industry populated by over 200 regional modular housing manufacturers. Today Express Modular is the nation's only custom home builder that serves all 50 states and "happens to use modular construction," according to Semler.

"I come from a remodeling background. My team and I excel at that because we have a 'don't worry, we'll figure it out' approach to problem-solving. Modular was a natural for us. Modular fit right in because the modular home manufacturer did the heavy lifting. We put the modules together. A little bit of trim. A little bit of siding. The same for flooring, electric, and plumbing. It's really just an assembly process," Semler says.

#### Coast to Coast

That was around 2004. Fast forward 15 years. Semler has taken his "figure it out" philosophy and

fashioned an online-based network of modular home builders. Need a custom home in Iowa, Arizona, Maine, or Alaska? Just visit [ExpressModular.com](#). Each market offers home plans uniquely suited for that region's taste and style. All told, Express Modular includes more than 6,400 house plans to choose from.

"Our modular homes arrive at the homesite about 75% finished. The drywall is done. The trim is in. The same for the kitchen cabinets, countertops, and even tiled bathrooms. I can only think of two or three times in the last eight years where we had any kind of crack in transit." Semler says all homes comply with the building code, the same as any other on-site built home. "I just happen to be dividing the home plan into modules," he says.

#### Big Giant Whoosh

Semler is a tireless evangelist for the modular home building industry. He likes to cite all the advantages of the construction type. "The planning process takes longer because all the decisions must be made up front. From the buyer's point of view, nothing much happens at the homesite at first. Then what I call the Big Giant Whoosh happens: The home modules arrive. In a single day, your house is up and under roof with most of the work complete. That's the Big Giant Whoosh. You've just bypassed your neighbor who started building months before you. In four to six weeks, you'll move in and they're still building."

Project delivery speed is one thing. Durability and resilience of modular construction is the other. To help underscore that, FEMA commissioned an investigation into building performance in the aftermath of Hurricane Andrew. [The 1993 report states](#), "Overall, relatively minimal structural damage was noted in modular housing developments. The module-to-module [structure] ... performed much better than conventional residential framing," the report concludes.

The structural dynamics of modular construction is only part of the story. "The truth is, we overbuild the homes. The factory puts extra lags and screws into the framing elements to better withstand highway speed transport," Semler says.

#### Education is Key

With so much going for modular construction, why aren't more home builders using modular to drastically streamline field construction risk, expense, and time? Semler has a theory: "The housing industry is super-fragmented. Most builders build just a couple houses a year. They work within a 45-mile radius of their main office and don't have the time, funds, or inclination to see what's going on outside their service area. They don't have time to investigate a better house-selling system."

The housing industry must do a better job of educating home builders on modular construction best practices, Semler says. "There's no mentor system," he observes. That often means a builder's



initial foray into modular home construction is a disappointment—they lose money. To help bridge that education gap and mitigate builder risk, Semler's company has started to offer Express Modular franchises. "We train the builder and provide the branding, marketing, and sales leads," Semler says.

#### MANUFACTURER: WES MINSTER



Wes Minster, VP/General Manager, Stratford Building Corporation

To understand the trajectory modular home construction has taken over the last few years, consider Wes Minster, general manager and vice president of [Stratford Building Corporation](#).

The 20-year modular home building industry veteran spent most of his career working in East Coast modular home manufacturing facilities, constructing modules for middle-market home builders in the Mid-Atlantic area. Today he oversees the 40,000 square foot Stratford factory in Rathdrum, Idaho. His team of 70

builds modular components for luxury mountain estates, frequently valued north of \$5 million.

Whatever questions the home building community may have about modular construction fit and finish emphatically end at the doors of the Stratford manufacturing facility.

"It's a different game," Minster observes.

#### Reclaimed Barn Wood

"We do some very high-end finishes, working with reconditioned or reclaimed barn wood, with a lot of granite and stone. It's not a production line-friendly type of construction, but it's lucrative," he says.

The role of modular construction is amplified by the region's short building season. Homes that can easily top 5,000 square feet are immensely difficult to construct with a traditional field approach. Custom home builders look to Stratford's modular solutions to give them a leg up on a too-short summer. The good news is that building edge comes with a quality advantage.

"Modular construction is a superior construction method. If the buyer is looking for quality, they get it. First, you're building inside, you're not exposed to the weather. A stick-built house, whether it's a \$3 million house or \$50,000, is soaked for three months of framing," Minster explains.

#### Like Any Other Builder

"Most of the home builders we work with come from a stick-built background. They understand what we offer right away. Developers, on the other hand, sometimes come in thinking we're just a manufactured home builder. We'll deliver a module just like that. We have the same scope of work as any builder. The difference is it takes us fewer man-hours to accomplish the same task," Minster says.

His company's website presents many house plans to consider. However, the home builders they partner with these days only do custom work. "The companies back east are pretty rigid on what they'll do and what they won't do. They aren't willing to accommodate the architect's vision. We try to make it as production-friendly as possible. We work hard to meet the architect's requirements," Minster explains. And what of all those house plans on the website? "We haven't built one of those homes in probably five years," he says.

#### Quality Brands

The emphasis on quality carries over to the materials they specify, such as brands that signify quality or exceptional performance. Take windows and patio doors. The combination of breathtaking high-country beauty and challenging weather extremes can play havoc on a home's glazing component. Big glass means big weather exposure. That's one big reason Stratford specifies JELD-WEN.

"Probably the biggest reason we use JELD-WEN is that they have a substantially better U-value rating than most. They're very energy efficient," the senior executive states.

"We recently chose to use [their vinyl line](#) as well," he adds. "They just do a great job. Our [JELD-WEN sales representative](#) is probably here once every two weeks to make sure we get what we need. That kind of service speaks volumes."

Minster's thought on modular home building's future is cautious optimism. Cautious because he's heard exuberant talk before. "I know we're getting more acceptance from architects and builders, especially builders that are facing serious labor shortage issues. Modular is a great solution for them," he advises.



Courtesy of Stratford Building Corporation | Photo: Chris Chaffee



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Courtesy of Stratford Building Corporation | Photo: Chris Chaffee

## REMODELER: MICHAEL WINN



Michael Winn, President,  
WINN Design+Build

Why does a home remodeler need modular home solutions?

Just ask Michael Winn, owner and operator of [WINN Design + Build](#). For nearly 20 years his company of 12 designers and project managers have worked

the Virginia and Maryland suburbs of Washington, D.C., offering home owners comprehensive renovation and expansion services.

Winn's remodeling clients in Washington, D.C.'s close-in suburbs meet a unique set of criteria: densely-sited homes, far too small by today's standards, yet in highly desirable neighborhoods and typically occupied by families with two high-income-earning adults. Just one issue: Adding an extra story, which is often the only viable expansion option, is a very time-consuming project. It can require the family to leave their home for up to a year, a huge disruption especially if school-age children are involved.

What to do?

### From Interest to Action

Winn had a long, casual interest in modular home design. However, he saw no practical application in his business. After all, they were home remodelers, not new home builders.

"The more I studied it, the more I thought there might be something here that could benefit us," Winn recalls.

He started placing calls to modular home manufacturers ... lots of calls. "I visited seven

factories and personally spoke to nearly 20 more by phone. We finally found one that was a good fit," Winn says.

What Winn and his team had in mind was topping the small, shoebox-like homes with a fully-equipped home module. Instead of months of disruptive work, it could be compressed to weeks. That presented the remodeler with a huge competitive edge and the family with a humane relocation decision.

"To give you an idea of time, a typical second-story addition is about a five-month project. With modular, it's about half that," Winn explains. Which begs the question ...

### Lead with Quality

Why aren't more of Winn's peers doing the same thing? "I think it's the fear of the unknown and a lack of comfort with the idea," Winn speculates. The owner side is a different matter. Winn says millennial-age owners grew up with smartphones and expect instant gratification. They don't carry the same baggage baby boomers may still have about modular construction, including the myth of shoddy construction.

Winn now claims about two dozen modular addition projects that explode that myth. Modular construction has proved to be a powerful differentiator for his firm.

### Mission to Mars

What do code officials think about this difference-maker? "Most are familiar with modular construction in rural areas. A second-story modular addition isn't usual. Permitting goes smoothly, really no issues," he reports.

Modular remodeling, like new home construction, isn't entirely free of challenges. Chief among them: planning, planning, and more planning. "The pre-construction phase is considerably longer. It's like planning a mission to Mars. There's no going back. Don't forget your toothbrush," he laughs.

For now, WINN Design + Build has the pop-top home expansion market to itself. Not a bad position to be in in a crowded, affluent remodeling marketplace. "I haven't had a single conversation with anyone else doing modular construction," Winn says. That may be a business blessing for Winn. For the modular home construction industry at large, it points to the development challenges ahead.

### For More Information

For assistance with your 2019 home building projects, visit [JELD-WEN's professional portal](#).

See why JELD-WEN's extensive offering of [high-quality wood and vinyl windows](#) includes the right windows for your next build.

Need to know more about specifying the correct performance or decorative glass for your windows? [This guide will help](#).

Enhance your projects with [interior doors](#) and [exterior doors](#) that bring design, efficiency and functionality.

Create a connection between indoor and outdoor living spaces with [patio doors](#).