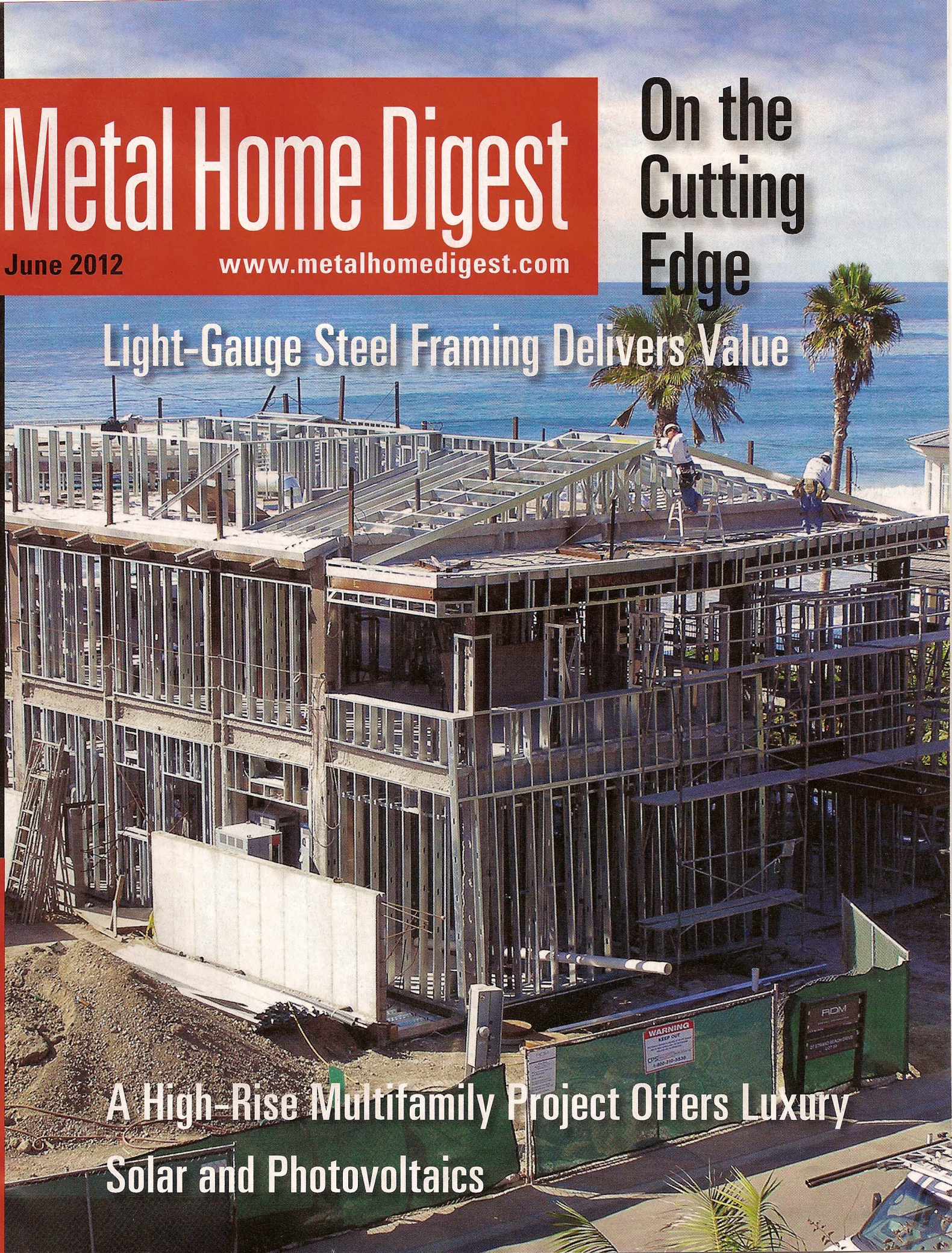
Metal Home Digest

June 2012

www.metalhomedigest.com

On the Cutting Edge

Light-Gauge Steel Framing Delivers Value



A High-Rise Multifamily Project Offers Luxury Solar and Photovoltaics

Supplement to Metal Construction News and Metal Architecture

VOLUME 16 NUMBER 2

On the Cutting Edge

By Paul Deffenbaugh, Editorial Director

California custom homebuilder and framer pushes the front edge of light-gauge steel framing in residential construction

W. Don Wheeler switched from being a wood framer to metal framing in 1996. The California home building industry was flush and growing flusher every day. From a timing point of view, it was a good time to take a business risk, and, inarguably, switching to metal framing in the California residential construction market would be considered a big risk.

The president of Wheeler Construction, Anaheim, Calif., began as a general contractor in 1979 but today earns his living framing houses with steel. He faces a tough task, not the least of which is the collapse of the residential construction industry, especially in Southern California. As with most business owners working in that industry, Wheeler can spin stories of collapse that include failed business, failed banks and seizures of assets, but he has managed to keep his own business moving ahead.

Awareness to Acceptance

Wheeler sees great opportunity for steel framing in residential construction, but at this point in the acceptance of the material,

Steel framing on residential construction has gained greater acceptance in the custom home building market than with production builders, providing greater design flexibility and improved performance over wood.

he is primarily serving the high-end custom home market. "The reason I do mainly custom homes," he says, "is that that's where I can sell this. It's been a tough sell getting people to spend more money for framing on just an average home. But the people building these big custom homes who have a lot of money, they're looking not so much for a cheaper way of doing it, they're looking more for value for their dollar."

While there is strong awareness of steel frame construction, there is little acceptance. Architects are the primary targets, especially in the custom home market. "The ones I have to win over are the architects," says Wheeler. "It has to start back before the builders and the GCs get involved." Wheeler works with several architects now, and every time he convinces a new one to try steel, he garners a convert.

Value of Education

But acceptance must come from more than the architects. Engineers, trade contractors and homeowners all need to understand and be convinced that steel framing is a better deal for them. Recently, Wheeler sold steel framing to a Hollywood star who was building a new house. The insulated concrete foundation and structural insulated panel companies competed for the project—and offered free material and labor—but the star selected steel, opting to pay $200,000 additional for the framing estimate against the free offers. For most people, Wheeler says it has to do with worry about off-gassing and indoor air quality that arises from engineered lumber products. The other benefits of steel—fire resistance, seismic performance and design flexibility—also all play an important role in the selection process.

But even with the star's house there was a difficulty that caused inefficiencies and raised costs. The engineering firm that designed the framing was more familiar with wood framing and over-engineered the project. Wheeler says, "They used 16-gauge when they could have 18-gauge. They went 16 inches on-center when they could have gone 24 inches on-center."

The biggest difference was the design called for platform framing, while Wheeler balloon frames the first floor. His method runs the first wall studs to the top of the second floor framing, which are attached to the wall with a ledger.

He then installs the subfloor diaphragm, pushing it flush to the outside of the wall framing and fastens the bottom plate of the second floor walls through the diaphragm to the top plate of the first-story walls. He uses the ClarkDietrich Trade Ready joist system to speed the process. "Whenever I platform frame, I've got to block and web stiffen every single one of those webs. But when I ledger it, it just flies together."

In addition, the engineer specified 14-gauge joists instead of 16-gauge, so Wheeler has to use a 16-gauge web stiffener. "When I'm screwing the two together," he says, "you almost have to pre-drill it. It's ridiculous."

Balloon framing the first floor allows the steel framer to hang a ledger and install the second-floor joists more quickly. The floor diaphragm is sandwiched between the top plate of the first-floor wall and the bottom plate of the second-floor wall.

The Cost Premium

Lack of understanding and familiarity can lead to increased costs, but generally steel framing is more expensive in residential construction, which is why it is gaining acceptance primarily in custom homes. Wheeler disputes that slightly, pointing out that the cost comparison between wood and steel framing often doesn't include the need to red steel in wood that may not be necessary in steel. This is especially true in Southern California, where Wheeler works, due to seismic code requirements.

"A lot of times when they're comparing between wood and steel," he says, "they pick the steel price and wood price but they don't realize the steel is not going to have all the structural steel in it. They need to actually combine the structural steel with the actual wood framing price versus the steel price, which in a lot of cases is not going to have all the structural steel."

Still, steel framing has not been able to successfully move into the production home building market with significant market acceptance, and cost is the primary reason. Currently, Wheeler is framing three, 2,600-square-foot homes

Setting the bottom plate in the slab for panelized walls is more difficult because codes restrict the use of epoxied anchor bolts. Fastening the bolts and setting the bottom plate prior to the pour allows the bolts and bottom track to be wet set in the concrete.

in Anaheim, which would be considered production level homes by any stretch. To control his costs, he embraced the idea of panelization, which would never work in a custom home situation.

Wheeler had the steel package delivered to a supplier's yard, where he cut all the material according to his cut list, labeled it, bundled it and shipped it to the job site. Once there, framers only needed to piece together the already cut and labeled pieces. "While I'm working on-site," he says, "I'm not doing very much cutting, but basically just assembling with a set of assembly drawings. ... What was taking me two weeks to do, I was doing in two days. It was like a little kit."

That strategy allows Wheeler to ship bundled framing packages anywhere, where local framers only need to assemble. The light-gauge steel framing system, then, becomes much like a pre-engineered metal building system.

The major cost savings for this tactic came from a surprising line item in the budget. Because Wheeler was cutting in a yard instead of a job site, he was able to get much lower worker's compensation rates. "There are thousands and thousands and thousands of dollars that were saved doing most of the work in the yard versus doing it out here on the job site. The minute I start cutting steel on the job site, my worker's comp rates are pushing 40 percent, and over in the yard, they were less than 10 percent."

Conclusion

As the residential home building industry struggles back from its near-death experience, steel framing and the entrepreneurs on the front line such as Wheeler, have an opportunity to gather more market share. It will require increased acceptance, greater education and innovative approaches. Steel framing should be for all homeowners, not just those who can afford custom homes.