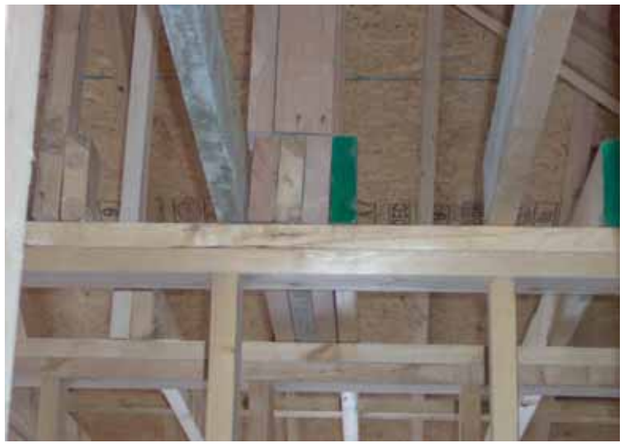
Laying Out the Facts about Framing

by Marisa Hirsch

Education may lead to more business for component manufacturers.

It's well-known that many unique features make structural building components an attractive and beneficial method of framing. It is also true that problems can arise with any framing system, but working with structural building components may help lessen some of the issues that building inspectors and homeowners may encounter.

This is true for a few different reasons, some of which were addressed when Steven Spradlin, president of Capital Structures in Fort Smith, AR, presented a Truss Technology Workshop entitled "Today's Wood Framing Systems—Problems and Solutions" to a group of Arkansas code officials. Spradlin, an active exhibitor at Code Officials of Arkansas (COAR) meetings, presented this TTW to COAR at a meeting on June 29, 2007 in Fayetteville, AR. However, its creation had actually been in the works for quite a while.



Spradlin says examples of poor framing practices can be found in his market. For example, in this photo, a 4-ply beam bearing on a wall has no studs under it to transfer the load to the floor below.

Benefiting from Educating

The idea of putting together a presentation like this one originated through various discussions among Spradlin, people at MiTek Industries, Inc. and several WTCA staff members. Eventually, the core people who would work on creating the TTW were determined.

Spradlin was motivated to participate in the TTW's creation because he's very familiar with the problems that exist in framing and with framing inspections. The residential market for Capital Structures, which he says consists of Arkansas and parts of Oklahoma, is about 80 percent conventionally-framed. Spradlin said a framing inspection for a residential building in Arkansas is basically a quick walkthrough by a code official who has no framing plan to refer to—unless the building was framed with structural building components. The result, Spradlin said, is some really poor framing practices that do not meet code because the focus often falls on making sure the heating and air conditioning technicians, electricians and plumbers didn't cut or break anything.

"My contention in all this was that at some point we have to have some sort of plan or view of structural information in residential construction with which to inspect by," said Spradlin. "I think that somebody, whether it be an architect, an engineer or a trade contractor, needs to sit down and do a...layout that shows where the loads are supposed to go or how they're provided for. Because you can't walk into a two-story house and in 20 minutes understand the load paths—how or where they're going, and if they're going to the right place."

at a glance

- Steven Spradlin of Capital Structures helped develop a Truss Technology Workshop entitled "Today's Wood Framing Systems—Problems and Solutions."
- He presented the TTW to a group of building inspectors from the Code Officials of Arkansas in June.
- Spradlin believes building inspectors would catch more framing problems if they had a plan of structural information for all residential inspections.

Steve Cabler, senior vice president of engineering and technical services at MiTek, said that CEO Gene Toombs had been in contact with WTCA staff and thought the creation of a TTW on this subject was a project that would benefit connector plate makers as well as component manufacturers. This led to both Cabler's and Vice President of Marketing Gregg Renner's participating in creating the TTW.

"We were in agreement at MiTek that this was a very worthwhile project," Cabler said.

Spradlin said that the idea was to show, through facts and photos, some of the framing issues that often arise and how structural building components can help to eliminate or lessen these problems.

"What it all boiled down to is 'Here's what's going on, here's how bad it is, and we need to create this awareness right now of what's happening,'" he said. "Once we do that, then we believe that simple awareness will start driving the industry to a better solution, which is structural building components."

Documenting the Dangers

On April 11, 2007, Spradlin and two of his salesmen, along with Cabler and Renner of MiTek, took one day to travel around to several jobsites in northwest Arkansas. They visited jobsites where they saw examples of both good and bad conventional framing, as well as good and bad component framing. At these jobsites, they observed, took notes and documented what they saw in photos. They then worked with WTCA staff and others around the country to pull together a TTW highlighting some of what they saw and what occurs at other jobsites around the U.S.

"We decided to start in the northwest Arkansas market—trying to figure out what was going on—with the ultimate goal of creating a presentation for Steven to give to espouse the benefits of trusses," Cabler said.

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"I saw a lot of practices that are not code compliant.... And the problems aren't evident immediately because, to somebody that moves into a house, everything looks fine. But in several years, there would be deflection, sagging, serviceability issues."

—Steve Cabler

This photo is an example of inadequate support of a valley rafter bearing on an unsupported beam.

Truss Technology Workshop

Educating Professionals on the Future of Framing

Teaming Up on TTWs

Like many of WTCA's successful projects, "Today's Wood Framing Systems—Problems and Solutions" was created thanks to cooperation between WTCA members and WTCA staff. Steven Spradlin of Capital Structures originally approached WTCA staff to ask for assistance in creating a presentation covering common problems in framing and possible solutions. Independently, staff had a conversation with Gene Toombs of MiTek Industries, who brought up a very similar marketplace need that he was getting feedback on and thinking about how to address. In both cases, staff said they were happy to help and brought the two concepts together to lay a foundation through focusing on this educational program first. Next, Spradlin and some of his salespeople, as well as Gregg Renner and Steve Cabler (also of MiTek), traveled around northwest Arkansas and took most of the pictures needed for the presentation. They then passed their photos on to WTCA staff, who used them to create the presentation and also wrote a script to accompany it.

Once Spradlin had presented the brand new TTW at the Code Officials of Arkansas meeting in June, staff and members teleconferenced to hear how it went and to talk about how the TTW could be improved. Several worthy ideas were discussed, and tasks were assigned—some to members and some to staff. Currently, final touches are being made to "Today's Wood Framing Systems—Problems and Solutions." Once these final touches are complete, the TTW will be recorded and made available online. Everyone wins when challenges are approached with a united team.

Courtesy of Aries Engineering

These improper shims for a common girder on top of a block pier in a crawl space will likely cause this girder and floor to sag over time.

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Spradlin said one of the things they saw during their jobsite visits was a gross abuse of load paths, such as massive amounts of roof bracing weight being transferred onto a non load-bearing wall. Cabler said they saw things that would cause serious problems for homeowners in the future.

"I saw a lot of practices that are not code compliant," Cabler said. "Not only not code compliant, but that do not work from an engineering standpoint.... And the problems aren't evident immediately because, to somebody that moves into a house, everything looks fine. But in several years, there would be deflection, sagging, serviceability issues—especially with the larger custom homes that have longer spans and bigger rooms that are ideal for trusses."

The fact that structural building components are advantageous in this way is one of the points addressed within the TTW. As the presentation states, "...problems of structural support tend to appear more often in complex and large roofs. The design of roofs of almost any complexity or size, however, can be accommodated fairly simply with trusses."

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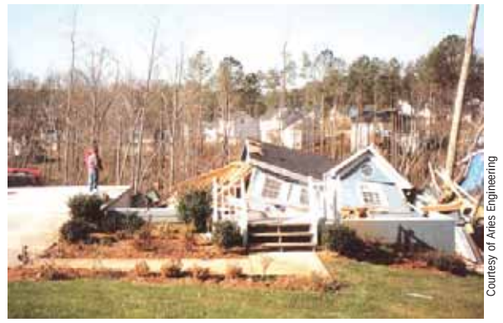
The reason this is true of structural building components is because of the information that component manufacturers already provide.

"Component manufacturers are already providing layout information and bracing," Spradlin said. "It's already in place; it's a service we provide. And by us, as an industry, already having that information in place, we become a much more viable framing solution."

As the TTW states, "The Truss Placement Plan shows how these are laid out, and there is no guesswork on the jobsite about how the roof is to be adequately structurally supported."

Presenting the Problems

The things the group documented, in addition to what was provided by others, were used to create an information-packed TTW that covers problems with incorrectly framed structures—including load paths, connections, supports and structural member sizing. It looks at specific examples of these things in roofs, walls, floors and foundations. The TTW, which has been through revisions and discussed at length among members and WTCA staff, continues to be added to and improved upon. It is now available for any WTCA member to use.



Courtesy of Aries Engineering

This dramatic collapse photo revealed incorrect framing practices.

About 50 COAR attendees were present to see Spradlin's presentation on June 29, and the general response was one of interest and appreciation for the information. Jimmie Deer, current president of COAR and a building official for the city of Fort Smith, said the presentation helped educate inspectors.

"It helped them understand the areas they really need to look at," Deer said. "If they see something [during an inspection] that may or may not have been attached properly, it gives them something to talk to the contractor about. It (the TTW) gives the inspectors a visual so they can say 'I saw that before.'"

One point that Spradlin said he tried hard to drive home was how a lot of damage resulting from poor structural work doesn't show up while builders' typical one-year warranties are in effect. Then, once problems do start to show up, the builder is gone and it's the homeowner's problem. The homeowner, who doesn't want to have to disclose problems when they're ready to sell, sometimes brings in a potentially unqualified person to fix whatever damage has shown up.

> "We hit it home that structural building components are already doing what needs to be done as far as providing the proper information."
>
> —Steven Spradlin

Spradlin said he views his experience presenting "Today's Wood Framing Systems—Problems and Solutions" as a very positive one. Some of the attendees even asked for particular slides to be sent to them.

"I think that we showed them a lot of problems, and we gave them things to look at and think about on their inspections," he said. "We hit it home that structural building components are already doing what needs to be done as far as providing the proper information."

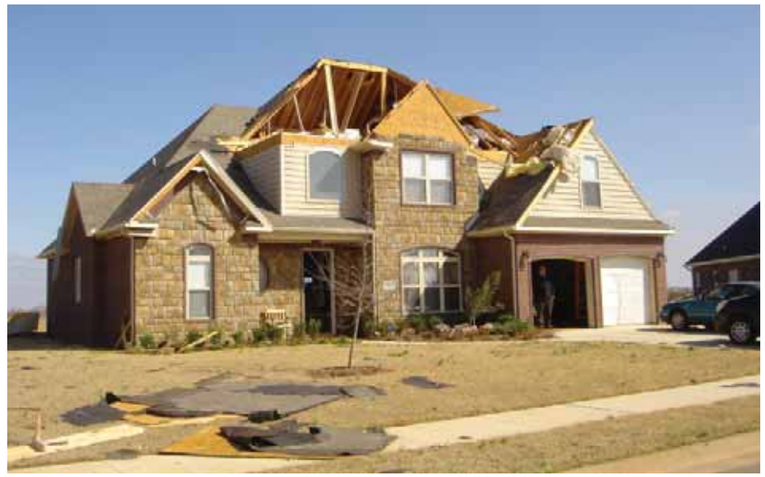
Deer said that, for him, the presentation refreshed many of the things he's learned during the 26 years he's been in the business. "[The presentation] kind of reinforces seminars we've had in the past," he said. "Such as, this span on this header really needs to be designed."

Cabler said he feels the TTW turned out well. "It's certainly factual and captures a lot of the information that we needed," he said. "We need to figure out how we translate this effort into more areas, involving WTCA, different chapters and MiTek."

Deer said he thinks the green building movement could bring more structural building components to markets like Arkansas. "I think the more they go toward the concept of green building, there's possibly going to be more of that (component framing) happening," he said.

Spradlin said COAR inspectors realize that there's a problem with some framing practices today, but they don't know what the solution is. He said inspectors wanted to know if contractors can be educated, and so he explained that it's really framers who need to be educated. However, he said, there are a lot of problems with that—such as language barriers and a lack of any formal education.

While reaching framers through education is a worthy goal, it is also a difficult one to accomplish. In the mean time, a good way to improve framing practices is to communicate freely with building inspectors. Doing so will help to ensure that they have all the information and details needed in order to spot inadequate framing and/or bracing—before it becomes a property- (and possibly life-) threatening problem. SBC



Tornado damage exposed framing issues that revealed structural defects in this home.

The end of a ridge beam for a dormer is bearing on a 2x4.

A good way to improve framing practices is to communicate freely with building inspectors.

Many Thanks!

WTCA thanks the following people for their help in developing and improving the Truss Technology Workshop entitled "Today's Wood Framing Systems—Problems and Solutions."

- Steve Cabler, MiTek Industries, Inc., Chesterfield, MO
- Joe Heinsman, Stock Building Supply, Franklin, IN
- Gregg Renner, MiTek Industries, Inc., Chesterfield, MO
- Jerry Vulgaris, California Truss Company, Perris, CA
- Tom Zgraggen, Aries Engineering, Inc., Royston, GA

"Today's Wood Framing Systems—Problems and Solutions" is now available for member use. Please contact Melanie Birkeland at 608/310-6720 or mbirkeland@qualtim.com for more information. In the near future, it will also be available online.

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