



Editor's Message

Component Research & Testing

by Kendall Hoyd

You could benefit from a new WTCA initiative to conduct performance testing of structural components. Find out how!

A few months ago, I wrote an article in this space in which I outlined, in broad terms, the direction that our fiscal success with publications and BCMC will allow our association to take in the coming years (see April 2005). In this issue, I'd like to give you some more detail with respect to a major portion of our investment plan that is being put into effect as we speak, and which I believe will add significant value to our industry. The initiative to which I am referring is a significant, ongoing investment in testing, research and analysis of the structural performance and properties of construction components that will provide a body of knowledge we can use to influence new building code enactment and enforcement, spur new product development and dramatically change the role of the WTCA in the building construction economy as a whole.

This is an important initiative for a couple of reasons. One is that if you listen to discussion related to component design, manufacturing and construction and the building codes that regulate them for long enough (and that's not very long) you will find that a lot of the regulations to which we are subject are based on a body of knowledge that can best be described as tradition. There is little or no research, data or analysis to support them. Our component products are relatively new in the overall lifecycle of the carpentry trade, and we are still using rules and guidelines about carpentry that may or may not apply to govern the use of our products.

Another reason is that the markets we serve are changing more rapidly now than ever, in terms of who is participating, what products and services are demanded, and perhaps most confusingly, how products and services are bundled together to meet various emerging needs. The gray areas created by all of the changes highlight a great need for fact-based understanding of component performance and properties because as the lines of responsibility and liability get rearranged, we want the industry as a whole to be able to advocate our position from as strong, credible and factual a position as possible.

When you examine some of the "rules of thumb" used to guide design and construction practice in the twenty-first century, you encounter that some of our building code regulations and thresholds have been developed on the basis of knowledge that can be traced to practices that might be hundreds of years old—or more! In other cases, they might be based on the assertion that "it has always worked." In either event, absent actual knowledge about structural performance, if you end up with a building that is designed as efficiently as it could be in that environment, it is purely by accident. Here are some examples of how we use guidelines based on ideas that are unsubstantiated by any real or at least current knowledge:

- Applying trusses at a 24 inch on-center spacing.
- Built up column analysis and effect on the buckling of the web and chord members.
- Load distribution in side-loaded girders.
- Long term deflection (creep) performance of floor trusses.
- Bearing capacities using compression perpendicular to grain design values.
- The two percent rule for accumulating buckling loads.

at a glance

- ❑ A major WTCA initiative to conduct research and testing of structural component performance has been launched.
- ❑ The data derived from this work will help influence new building code enactment and may provide new marketing opportunities for component manufacturers.
- ❑ Stay tuned for more updates on this initiative in future issues of *SBC Magazine*.

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- How a truss buckles and what causes such buckling.
- Why some trusses in a system buckle and others do not, even though both have similar bracing.
- The effect of wind on trusses (MWFRS) and individual truss members (C&C).
- Connection of trusses to bearing to resist design uplift forces.
- Fire research to combat building labeling requirements for trusses.

When you consider that we also need to have a lot more knowledge about the system effects of trusses used in their actual applications and more sophisticated testing of the performance of attic trusses, it becomes apparent that we have an opportunity to take a much more valuable and effective role in the development of structural engineering principles.

The effect of having solid, empirical facts regarding these issues will be a huge benefit to the building code formulation process. In many instances, we are in a position in which we have to "negotiate" on issues where we know we are right, but don't have the formal, academic, engineering data to support our position. I like our odds a lot better in that situation if we can point to scientific, published data that bear out our point. This will be good for the economics of our companies and our industry, to be sure, but as importantly, it will work to the benefit of the design and construction process in general.

Over time, our development of this body of knowledge will result in better buildings, in terms of structural integrity and cost efficiency. This will change the very nature of where component manufacturers reside in the construction market food chain. We will no longer be what may be considered assemblers and distributors of others' intellectual property, because we will be providing valuable insight and information that helps engineers, architects and other specifiers do their jobs better. This body of knowledge will, over time, result in a material increase in the percentage of time that our products are demonstrably the best solution. For example, once we have a better understanding of the real flow of loads through an entire roof system, we can optimize the design of the specific truss and bracing and diaphragm elements that need to be used to resist actual versus assumed loads.

This is just one example of the opportunities with which we are faced. As most anyone involved in business has undoubtedly experienced, once you start uncovering real facts in situations like these, even greater opportunities start to present themselves. It will take a few years for this to take final form, but we are moving forward on it now, and it will only be a few months before it starts to take effect.

In that earlier article regarding our investment plans and our reserve funds, I described the opportunity that our financial success has created as an exciting prospect. Well, this is where the rubber starts to hit the road. Watch for exciting and informative developments in the next couple of years. **SBC**

SBC Magazine encourages the participation of its readers in developing content for future issues. Do you have an article idea for a future issue or a topic that you would like to see covered? Email ideas to editor@sbcmag.info.



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The mission of *Structural Building Components Magazine (SBC)* is to increase the knowledge of and to promote the common interests of those engaged in manufacturing and distributing structural building components. Further, *SBC* strives to ensure growth, continuity and increased professionalism in our industry, and to be the information conduit by staying abreast of leading-edge issues. *SBC's* editorial focus is geared toward the entire structural building component industry, which includes the membership of the Wood Truss Council of America (WTCA), the Steel Truss and Component Association (STCA) and the Structural Component Distributors Association (SCDA). These associations make up an industry strategic planning committee called the Structural Building Components Council (SBCC). The opinions expressed in *SBC* are those of the authors and those quoted, and are not necessarily the opinions of the associations listed above.

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