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## Boozer "Dances Past the Elephants"



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# Automation

## straight talk

by Jerry Koskovich, P.E.

### Expectations: What You See Isn't Near What You Get

Learn about the "fringe" benefits of automation!

**W**hen the conversation turns to automation, many people have preconceived ideas as to what it is and what it can do for them. Certainly the primary expectation is that it will increase their profits. Visions of accomplishing certain production tasks at astoundingly fast rates while requiring fewer employees to make it happen usually come to mind.

While achieving greater production with lower labor costs are reasonable expectations, they are only a few of the benefits that can accrue as a result of automation. Some of these "fringe" automation benefits are more subtle—but no less important.

#### Automated Unhooking

Imagine that you're considering replacing your truss plant's manual component saw with a new automated component saw. Currently, you're greatly dependent on your skilled sawyer for the accuracy and through-put flowing from your manual saw. A good sawyer is like money in the bank. Your sawyer, after all, has learned the nuances of the manual machine in order to process components with a reasonable degree of accuracy. He knows that angles or lengths need to be cheated this way or that on the protractors or scales in order to achieve the correct result. This knowledge is what makes him valuable and, in many instances, nearly irreplaceable.

The problem is that good sawyers are hard to come by and, in the worst of cases, can be downright independent. I can't recall how many times I've had plant managers and owners tell me about problems they've had with non-dependable sawyers, due to issues ranging from temperament, alcoholism, or drug abuse. But in many cases, their sawyers were so necessary, so critical to a component saw's production, that these employers were compelled to keep them on board. These issues present the impetus to automate, as one of the benefits of an automated saw is that you will no longer need a highly skilled sawyer. A properly maintained automated saw will process components at tolerances far better than had been the standard prior to their introduction. And, while an intimate knowledge of the automated machine can be advantageous, it's not necessary.

Indeed, your experienced sawyer may not be the right person for your new automated saw. They often have preconceived ideas about what the automated saw should do and how it should do it. Years ago, while on an installation of a new component saw, a sawyer that operated the plant's remaining manual saw kept coming over and confronting me with things he could do on his manual saw that couldn't be done on the new one. Tiring of this, I went over to his machine and stood there in silence staring at his manual pride and joy. Finally he walked over and asked, "What are you looking at?" "I'm waiting to see it do an automated set-up!" was my reply.

My point is...attitude is everything when introducing any new concept or technology.

If you have someone who isn't buying into the new automated machine, give someone else a try. Typically, there are eager beavers in the plant who will jump at the chance to try something new. A user-friendly automated saw will require nothing more than a willing learner to quickly handle the various operator-dependent functions of the machine. He will produce, and likely do so at rates well above what could be achieved on a manual saw by even the most experienced sawyer.

But let's insert a "sharp" operator in the same circumstance. The sharp operator is always thinking of ways he can improve his performance. He's always racing against another sawyer or, at the very least, against his numbers from the day before. He'll be paying attention to how the saw is performing—is something setting up slower than it did yesterday? Does the machine need attention beyond the daily maintenance he performs? He's a proponent of preventive maintenance rather than the benefactor of "free time" when something goes down on the saw. He's the eyes and ears of the maintenance department. **Get the sharpest operator with the best attitude...he'll be worth the extra dollars.**

#### Automated Incentives

Most automated saws today have some form of production reporting. In reports generated on all of our wood processing systems, you get a comprehensive picture of everything that is going on at the machine. The saws automatically monitor and report set-up times and other performance measures, through-put rates, and even non-productive delays that are controlled by the operator. They provide great insight as to where any bottlenecks might be forming.

One of our customers that had never used these reports in all the years they'd owned one of our automated component saws (they were my fourth customer in 1988) finally began using them a few years ago. Then they promptly established an incentive plan that awarded an increase in operator pay proportionate to the percent of production above the benchmark (our reports establish a benchmark of 100 percent for the various functions that relate to the performance of the saw, material handling, and the operator). If the numbers were below the benchmark, the dollars on the paycheck were proportionately less. Results have been outstanding!

This plant has found that production is consistently above the benchmark and is significantly higher than the saw crews had done as the norm for years prior to establishing the program. A fringe benefit was that the saw received better preventative maintenance (PM) since, obviously, if it went down so did operator paychecks.

#### Other Automated Benefits

For the most part, all of the aforementioned has related to the conditions and circumstances attributable to the saw and its operator at the cutting workstation. But there are many other attributes that can affect the company as a whole. Let's take the case where the shop may not be able to keep up with demand. Lead times begin to become unacceptable to cus-

tomers, workers are stressed to keep up with the demands of management, and additional labor may not be readily available. All of the preceding can contribute to a less-than-ideal work environment.

Many times the best answer to such problems and conditions would be to automate where it will do the most good. But there are points to consider as you approach this major step. The purchase of a new automated machine could give plant employees the impression that the company is trying to eliminate workers. I've always promoted the belief that automation is a means to enable employees to produce more with less effort—and, in a safer environment. When making a presentation to employees, especially in union shops, you'll want to establish the notion that the company is willing to go the extra mile to improve the product it sells while improving conditions, circumstances, and often safety for the workers.

With automated cutting, the task of building trusses or walls becomes easier. Speed, accuracy, and ink jet marked components increases overall production. Not only will the components be processed more efficiently at the saw, but production at the build tables is typically improved by ten to twenty percent simply because of the improved accuracy. The product has a better appearance, panel points on trusses look like they grew together, and there is a perception, founded in reality, of improved quality. And, because there aren't any problems with cut parts being delivered for assembly (no re-cuts, mis-cuts, or forgot-to-cuts), there isn't near the finger-pointing and irritation between employees. In addition, deliveries will likely get back on track, day-to-day attitudes and the whole of the work environment will likely be much improved.

With all of the preceding there exists the very real possibility of greater demand for the company's products. With increasing demand comes the benefit of greater job security and perhaps best of all, the feeling of pride managers and workers have when employed by a growing, progressive and respected company.

#### Automated Downsides

There are downsides to automation as well: the biggest one is that you must be willing to look at your operation differently and make significant adjustments throughout your plant. You can't simply increase cutting efficiency by multiples with a new saw, for example, and expect that the rest of the plant will follow suit. For example, if you double or triple component production with a new automated saw, how do you assemble them into trusses or panels with the same staff and equipment? For that matter, do you even have staff and systems in place to cart two or three times the volume of finished components to the assembly stations? And that's assuming you have whatever's needed to deliver lumber stock—in the increased volume and at the correct times—to the saw in the first place. And that's just the tip of the adjustments-you'll-need-to-make iceberg. But I'll leave that for another discussion. **SBC**

*Jerry Koskovich is President of The Koskovich Company in Rochester, MN.*

#### at a glance

- ❑ A user-friendly automated saw requires a willing learner to handle its operator-dependent functions.
- ❑ Most automated saws today have some form of production reporting, including a comprehensive picture of everything that is going on at the machine.

# Boozer

## "Dances Past the Elephants"

by Libby Maurer

**O**n a winding industrial road in Columbia, SC, sits Boozer Lumber, a seemingly standard component manufacturing operation, product showroom and retail building supply store. The truss and panel shops each run one shift five days a week, employing over 130. The component and CAD design department totals 18 designers who crank out custom residential homes, tract homes and commercial structures, while about 85 other office staff handle accounting, administrative and sales work. But the rigors of "making it" in this business are secondary to the folks at Boozer. What distinguishes Boozer is the management team's notion that there is more to the employee's life than the nitty gritty, daily grind of working in this industry.

A closer look reveals they've come up with something very unique, maybe unprecedented, in an industry known for shaving nanoseconds off set-ups, crunching numbers to expand margins, and racing to catch up with ever-changing software technology. Reciting inspiring quotes like "personal accountability; the power of one," a vocabulary understood only by its employees, flow charts and diagrams illustrating interpersonal communication and psychological models, a CEO who warns managers not to let work get in the way of the "important stuff"? What are the chances this approach could distinguish this manufacturer from the rest? Turns out, the chances are good.

Unlike many of their contemporaries, Boozer CEO Bob Jones and his leadership team has adopted a progressive approach to sustaining their business: self-awareness. "When I came here in February 1991, I saw that the only sustainable competitive advantage for Boozer was for our people to learn and grow at a faster rate than our competition," says Jones. This was a perfect complement to the passion for lifelong learning held by the company's chairman and second generation owner, Dale Boozer. Their team's philosophy on sustainability is truly authentic, with a culture centered on the body's most complex organ, the human brain.

### If You Do What You've Always Done, You'll Get What You've Always Gotten

Boozer has but one thing in common with its competitors; in the mid-90s, the business grew nearly to excess, and production capacity was severely hampered by out-dated equipment and a technically-challenged staff. To address the inefficiencies, "we became specifically product oriented," explains Jones. This meant build-

ing a brand new \$8 million truss plant. Overnight, Boozer's production capacity went through the roof. "At that point, our bottleneck was no longer manufacturing, it was design. Over the years we had hired several smart young folks to fill holes," says Jones. He noticed something very different about the new hires: they wanted more out of their careers than the previous generation had ever desired. "I realized that the future of this business was hiring smart and figuring out how to get them to stay," he says. And stay they did.

Employees yearned for, according to Jones, not only career growth but also personal development. Rather than disregarding their need for fulfillment beyond a 40-hour work week, Jones saw an opportunity for differentiation by injecting a healthy dose of Psychology 101 into the growing company's culture. This new strategy created a strategic byproduct: if Boozer employees operated seamlessly, solved conflicts without management intervention, and possessed the tools necessary to understand human triggers, reactions and tendencies, customers would actually derive more value. Another factor that influenced Jones' decision to facilitate a major culture shift was industry consolidation. "Jobs are being commoditized and so are people," he says. "The forces of commoditization do not lend themselves to the human spirit's hard-wired need to thrive. Consolidation might be good for shareholders, but not for the people who end up working in those bureaucracies," he says.

Under the leadership team's direction, the company's culture shifted from technical job-based learning to a more humanistic approach focusing on self-awareness and interpersonal relationship development. A lifelong psychology buff, the well-read Jones slowly began incorporating brain chemistry and communication models into Boozer's training sessions.

Keith Harris, Boozer's vice president of sales support, is quick to point out that prior to the culture transformation, Boozer has always been a popular place to work, which he attributes to the private, family-based company ownership since 1946. Dale Boozer and his family's reinvestment in not only the business but the individual employee's well-being is a well-known local story. "This has always been a good company to work for with a high retention rate. While that's a good thing, what happens is people who had been here for their entire careers could find themselves stuck in a rut, doing what they've always done. The company has always been innovative, but



"...industry trends are telling us we must do something truly different to thrive."

—Keith Harris, Vice President of Sales Support

industry trends are telling us we must do something truly different to thrive," explains Harris. A dangerous place for a company to be, says Jones. "That's why we started teaching about the human condition of wanting to feel comfortable and not wanting to change."

One of the most powerful resources Jones introduced is based on Dan Sullivan's Strategic Coach, a program "outfitting successful entrepreneurs with the direction, confidence, capability and focus to get to the next level in their business and the freedom and income to enjoy a unique quality of life." What Sullivan calls "The Gap™" is a cornerstone of Boozer's training model, designed to help people measure their progress on goals not by how far they've fallen short, but how far they've come. "It's human nature to fall short of our goals," Jones explains. "But measuring success in terms of how short we fall puts us in the negative zone." Sullivan's "gap" is simply a model for assessing goals in positive, tangible increments instead of spiraling into the gap of negativity. Boozer's employees often uses the phrase "failing forward" to recognize that while a goal may not have been completely met, the true success lies in any forward progress achieved.

### Crazy or Genius?

Jones is the first to admit to his employees that he "might be crazy." In fact, he flashes a slide at the beginning of staff meetings to warn that they might experience violent, negative emotional reactions during the session (due to "brain-stretching"). Staff is encouraged not to bury their emotions, but rather to push through them and figure out why they are having a particular reaction. "When you exercise your brain and allow yourself to open up to all the possibilities, there is no problem you can't solve. But it hurts a little at first," he explains.

Another expert in the field of psychology would further impact Boozer's cultural transformation. Jones became familiar with Dr. Glen Rediehs and the "Solution Focused Brief Therapy," a clinical protocol to treat psychotherapy patients. Jones saw something in this theory that triggered an idea so radical it made complete sense. He approached Dr. Rediehs about training him on the Solution Focus with the intent of implementing its principles into the business. Boozer's Solution Focus was introduced to employees in 1999, and the model is now used on a daily basis to solve conflicts and work through challenges.

### WARNING:

A strategy like Boozer's must have support and "buy-in" at the top of the organization. The leadership team must hold each other accountable for directing and demonstrating Class Act Behavior. The talk is useless without the walk.

### at a glance

- Boozer Lumber has taken a humanistic approach to employee training to accommodate the needs of a changing work force.
- The training strategy is vastly different from the traditional cerebral and academic-focused leadership training.
- One significant element of Boozer's training involves employees' career-long journey to self-awareness.
- The company's culture change has positively impacted its bottom line and has allowed Boozer to differentiate itself from the competition.

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"When you exercise your brain and allow yourself to open up to all the possibilities, there is no problem you can't solve. But it hurts a little at first."

—Bob Jones, CEO

A serial self-diagnosed job-hopper, Collins' M.O. was: 1) gain as much knowledge and new skills as possible at Company A; 2) look for a job with Company B and request a salary increase based on knowledge and experience gained at Company A; and 3) repeat Step 1 and 2 until retirement. He soon realized Boozer's culture was crafted to lasso the chronic job-hopper and give him the opportunity for continued career growth and personal development. It worked; Collins is thrilled with his progress in just

two years at Boozer. He's found a place where he can be himself, create his own career goals, share them with management, and contribute to a positive and thriving culture. "I don't see myself leaving," he says confidently.

### Company's Organizational Chart & Bottom Up Approach

When COO James Padgett came to Boozer, cohesiveness and teamwork were all but missing from the company's culture. The shortfall was instantly apparent to Padgett, who had spent much of his pre-Boozer career managing several Lowe's retail stores. "Coming from a place where I was try-

### Boozer Lumber "Dances Past the Elephants"

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The premise of Solution Focus is the "solution always walks in with the problem." Jerry Sandersfeld, a senior member of Boozer's design team, who has been with the company well before the culture shift points out, "No matter whether you are dealing with depression or negative attitudes, [Solution Focus] gives you a model to turn every negative situation into a positive." Sandersfeld says the key component encourages people to move quickly away from the problem. Instead of dwelling on the "why" or "who" of it, you learn to take the first small step in solving the issue.

## The solution always walks in with the problem.

### Hire the Smile, Train the Skill

Between 1999 and now, Boozer's inner focus has been fully-integrated into every facet of the business. Human resources manager Dale Berry has built the humanistic learning model into the hiring process, which gives candidates a taste of the culture right out of the starting blocks.

When designer Chris Collins applied for a technician position at Boozer, he was intrigued by the rigorous personality, IQ and technical skills testing. "It was an interview unlike any I'd ever had," he remembers. He quickly picked up on the probing personality questions and far-out scenarios he was asked to comment on. "It was more like a discussion than anything else. I could tell they wanted a sense for if I'd fit with the group's chemistry."

ing to make separate locations work together, I saw a real problem with the lack of teamwork," he says. Padgett remembers, for example, that the retail department wasn't "encouraged" to sell trusses. "I started telling employees that there isn't much difference between the retail department's goals and those of someone in design."

Padgett's desire to change the segregation of tasks between departments fit Boozer's Strategic Network management structure like a glove. Harris says during the hiring boom, "we did not want to institute a management hierarchy. We felt that people tend to harbor territorial feelings with that type of structure," he explains. The company needed to function much like a sports team; specialized positions lead by coordinators in pursuit of one common goal. So the Strategic

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**Boozer Lumber "Dances Past the Elephants"**  
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Network replaced a functional hierarchy by involving a ring of people from different departments who meet on a regular basis. Padgett describes the network like the transmission of a high performance automobile. "Success in this type of organization cannot be achieved by micromanaging. Productivity must be leveraged through communication, delegation and trust."

Berry says, "Since we have no organizational chart to fill a certain number of positions with pre-determined job titles, it's allowed our culture to constantly evolve." Instead, Boozer employees are fitted with custom job titles based on their unique skill sets and talents. As a result, Berry, who's official title puts him in the HR department, has undertaken Boozer's recent marketing/branding overhaul. "It's crazy—we're changing up our graphics and our HR guy is designing the new logo!" exclaims Harris.

**Productivity must be leveraged through communication, delegation and trust.**

**Going Deeper—The Leadership Trust®**

Shaking up the traditional management hierarchy may seem like a mere cosmetic change for Boozer. The leadership team went deeper, enlisting yet another expert in the field of psychology. Dr. Holly Latty-Mann, graduate of the University of South Carolina, Kent State and Duke University Medical Center, became involved with Boozer in 2003 when the group began attending her personalized leadership development program. Specializing in social psychology within the discipline of experimental psychology, Dr. Latty-Mann operates The Leadership Trust®, a company she co-founded. The management team became interested in her expertise with the mind-body-emotion connection and interpersonal relationship dynamics. "She is the single most powerful female I've ever met," says Jones. "She captivates the crowd."

"Leadership is so much more than self-knowledge; it's self-awareness," Holly says, describing her work as highly psychological humanistic leadership training. Most leadership training programs, she says, acknowledge the role of emotions in developing effective leadership skills. "But they also tend to be very academic and left brain oriented." She's convinced that people must become drenched in emotion in order to make a permanent change. As a workshop facilitator, she takes a gentle approach with her students. "I don't

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## Boozer Circle of Leadership

I feel that the Leadership Trust class is the key to helping or allowing us to achieve the goals and changes we have set forth or ourselves.

By teaching us to recognize the pitfalls or excuses (games), we subconsciously and consciously create, we can become more focused on the goals we have set for ourselves.

Exposing everyone to self awareness in a work setting has a compounding effect. So much so that once everyone recognizes their own triggers and short-comings, their environment will become a nurturing one and will allow everyone the freedom to accomplish goals, both personal and professional.

After repetitive completion of our goals, we can then gain confidence in ourselves and our abilities, so that in turn, we can create larger goals.

Confidence in conjunction with self-awareness, and understanding what is expected from you, and what is needed for the next person in line, creates an atmosphere of leadership on every level.

### Boozer Lumber "Dances Past the Elephants"

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use force. I don't use pressure. I just make the delivery of the information compelling."

Holly also recognizes that the old model of fear-training and leading by criticism just doesn't work anymore. "There's a very different breed in the work force today. [Generations X and Y] have minds of their own, they're much more demanding, and they want to be part of the decision-making process," she explains.

And just like an individual can turn a 180 by making a big change in his life, a company's "tipping point" manifests in a culture change. Holly says that has recently happened at Boozer. "Watching the company's metamorphosis has been thrilling. It's amazing what the human mind and spirit is capable of when we are open to change," she says.

Wayne Berry, vice president of business development, says Dr. Holly's work is an essential component of Boozer's self-awareness training. "For instance, technicians tend to be introverts by nature and not the most approachable people in the office. On the other hand, you have sales staff who aren't usually detail-oriented and operate on a 'fly by the seat of your pants' mentality. Realizing which personality type you are and knowing that the other person isn't going to change helps you understand everyone's interactions and relations," says Wayne.

Harris explains why perception is so important with an old saying: introverts think to talk and extroverts talk to think. "Understanding how people are hard-wired makes a big dif-

"The choices for a family owned company in today's industry are limited. The Boozer family can sell out or create something truly unique to keep the company growing into the future."

—Keith Harris

ference when you are communicating with someone who has the opposite tendencies as you."

Through Dr. Holly's training, technician Matt Strickland learned a phrase that is paramount to active listening: "I understand." "I learned that repeating those words to the person talking to you acknowledges that you heard and have absorbed what they're saying," he says. "Everyone needs to be heard; it's as basic a need as food and water."

Strickland appreciates the Boozer model of humanistic training because it allows for—if not encourages—employees to present their own entrepreneurial ideas to management. "For instance, I can see the big picture of just how all this training can impact the company." After a recent course, Strickland was inspired to draft a paper on the company's philosophy on self-awareness (see sidebar).

Boozer has since implemented Strickland's assessment of what self-awareness can do for their team into a PowerPoint® presentation used at employee training sessions.

### What about the Real Work?

A company that has invested in its employees' personal development is great and all, but how can it afford to fund a colossal

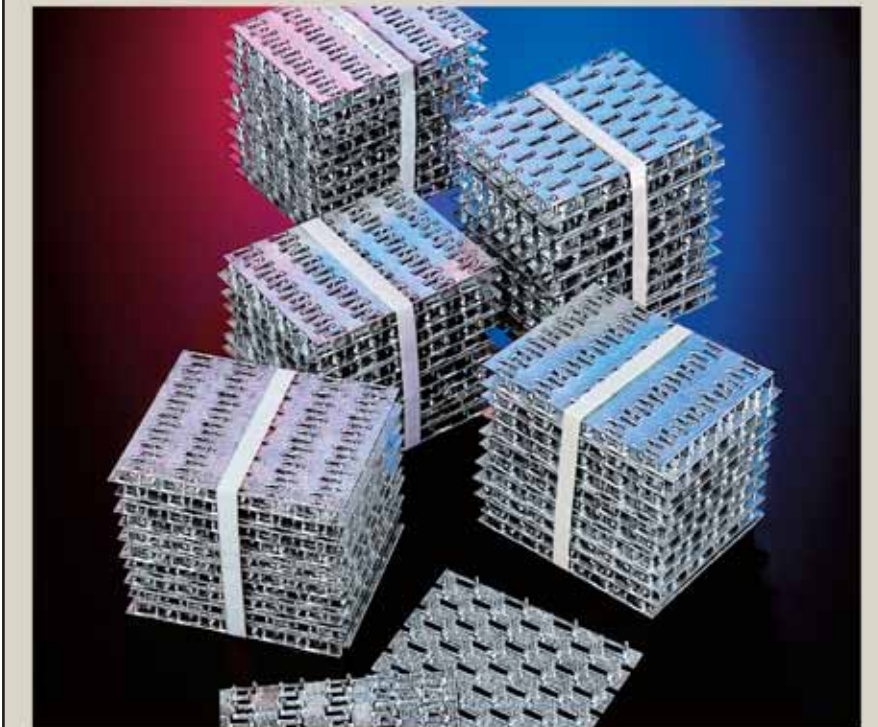
## A company's "tipping point" manifests in a culture change.

training effort and allow staff to take time away from their usual work while tending to customer demands? Dale Berry says that question isn't even a factor anymore. "Yes, we give a lot of seminars to employees on company time, and yes, it's a big investment." Berry notes that job and personal development are integrated whenever possible inside Boozer's train-

ing process. "It's really become institutionalized. It's not something we do in addition to doing our jobs, it's how we do our jobs." Harris echoes Jones' catchphrase of not letting work get in the way of becoming self-aware. "We try to be practical about getting work done, but the real management focus is on personnel development." On the personal front he says, "If you're someone who tends to blow up, and you've taken a self-awareness class and now realize what triggers your reactions, you can use that knowledge in future interactions.

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## Boozer Lumber "Dances Past the Elephants"

Continued from page 43

That's a huge milestone for some of us." Harris explains that on the corporate level, "the choices for a family owned company in today's industry are limited. The Boozer family can sell out or create something truly unique to keep the company growing into the future." Jones and the Boozer family refuse to accept the first alternative. To build for the next 60 years, they intend to then tap the entrepreneurial spirit of a new generation of stakeholders. They see that next generation as knowledge workers who are looking for something more than just a paycheck.

Berry says even down to the hiring process, time spent on determining how a candidate will fit with the organization's culture and chemistry is not an impediment. "You have to train yourself out of that mindset," he explains. "Invariably, the hire doesn't work in the long run if you don't follow the process from day one."

### Boozer-speak

Down to water cooler conversation, the staff at Boozer speaks a language of self-awareness that reinforces another tool called the Flywheel Effect. That is, synergy among staff creates a positive upward spiral that builds on its own momentum. Words like "awareness," "cultivate," "failing forward," "solution," "focus," "trigger," "doom loop," "personal hedgehog," "class act behavior" and "active listening" are staples in the Boozer vocabulary, and employees have no time for those who suggest they may have been brainwashed with fancy psycho-babble terms. "Even the most resistant people [to learning self-awareness] didn't take long to admit this approach works," says Collins. "These words mean more to me than they ever did prior to working at Boozer."

Another new one in their vocabulary? Don't laugh: Boozer University. Dale Boozer, who is also a college professor at the University of South Carolina, hails from a long line of teachers. His mother and father brought their passion for education to the business. Not long ago, the company created a team of facilitators including Padgett, Berry, Harris and others on the management team. The L3 (life long learning) concept was rolled out in the Goal Cultivator™ program, an optional course offered to every employee. "Students" actually pay tuition in exchange for monthly goal-setting meetings and personal coaching sessions. The program is designed to help employees both in and outside of the workplace. How many employees opted to enroll? Over 70.

### 'Dancing Past the Elephants'

Acknowledging criticism of the company's radical approach to training, Padgett admits the more humanistic employee development model is often looked at as a "soft" management style. "But it also establishes really strong contracts between people who trust each other and are able to have truly honest conversations," he says. "Our employees have a strong understanding of what is both expected and acceptable." And he's got several hundred employees to back him up. Dale Boozer says his intent is to "introduce both motivation and some specific techniques to keep the fires of intellectual curiosity burning forever." It looks like this may be working. Remember Jerry Sandersfeld, the technician who has spent 12 years of his career at Boozer? "Exposing people to [this type of learning] allows them to stretch. For those who feel like they've had their brains muzzled or compressed by their environment, it seems like once placed in fertile soil, they thrive," he comments.

If thriving in this industry really does come down to Dale Boozer's passion for life-long learning and his leadership team's commitment to self-awareness, we all could stand to learn a thing or two from Boozer. While the rest of us ponder this strategy of sustainability, Boozer (as Jones puts it) "dances past the elephants." **SBC**

*To learn more about Boozer's culture shift, contact Keith Harris at [kharris@boozerlumber.com](mailto:kharris@boozerlumber.com). A list of resources described in this article can be found in **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info).*



# The Essence of the Industry Lies at Its Grassroots

by Marisa Peters

Discover how one chapter has become involved in educating state and local building officials.

2005 was a year of renewed focus on the purpose and function of WTCA chapters, of which there are 32. Ranging from those that have existed since the industry's first years to new start-ups, chapters are the lifeblood of our organization. By monitoring local markets, keeping in touch with elected officials, reaching out to inspectors through educational efforts and taking off their competitive hats to unite over marketplace issues, manufacturers and their suppliers comprise the many regional chapters that, in tandem with the organization's underlying support system, make WTCA a world class association.

While some admit to harboring hesitation when it comes to participating in their local chapter, others would be at a loss without them. We've chosen to spotlight the Western Component Manufacturers Association (WCMA), a newly formed chapter that has defined the essence of their existence by establishing relationships with building official groups.

Officially the 32<sup>nd</sup> chapter in October 2004, WCMA has made quick work of reaching out to building inspectors within Oregon and southern Washington. After a previous attempt to form a chapter didn't work out, a group of manufacturers and suppliers re-upped their efforts. "There had been some interest in the truss fabricating community for the past five or ten years," said Lee Howe, WCMA president and branch manager of Lumbermen's. "Dave Hughes, Rudy Pierce, myself and Kris Alberti—somehow we all just started talking."

Besides talking with one another, they also spoke with various people they know in the marketplace. From these conversations, they decided there was enough interest and willingness to create a chapter, Howe said.

David Hughes, WCMA vice president and general manager of Oregon Truss, remembers what unified the chapter. "Lee Howe and I were frustrated by the issues that local building departments created in this area," he said. "We decided we needed to get everybody together to change it, instead of trying to do it individually."

### Professional Ties

Although WCMA is a newer chapter, it has already made a difference by making education a priority. There is now a relationship between component manufacturers (CMs) and building inspectors on both local and statewide levels that did not exist prior to the chapter's formation. For example, Howe was contacted by Dennis Carney of the City of Hillsboro in November 2005, who needed assistance in understanding how to inspect trusses for proper bracing in the field. Howe said the City did have a copy of BCSI 1-03, but when they started to look at the permanent lateral bracing in trusses, they realized there were some things they didn't really understand. "My recollection is that they were a little confused as to who was responsible for the bracing to begin with, how it was to be done, and how were they supposed to know how it was attached to the structure," Howe said.

This conversation led to Carney inviting WCMA to participate in a meeting of inspectors regarding bracing. "He was trying to get some education because I think he discovered that they [building inspectors] were all applying different rules to things," Hughes said.

Continued on page 46

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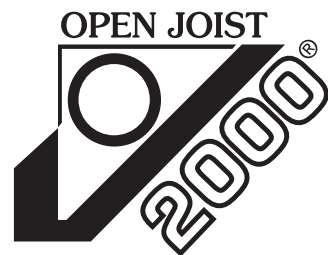
### at a glance

- ❑ The Western Component Manufacturers Association has taken an active role in educating local and state building officials in Oregon.
- ❑ Through its educational efforts, WCMA has begun to forge relationships with the building inspector community.
- ❑ In the last six months, WCMA has been invited to participate in several meetings with the inspectors, who have been very receptive to the manufacturers' information.



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WCMA has already made a difference by making education a priority. There is now a relationship between component manufacturers and building inspectors on both local and statewide levels that did not exist prior to the chapter's formation.

### The Essence of the Industry Lies at Its Grassroots

Continued from page 44

As the date of the meeting approached, attendance numbers and technicalities became greater than originally anticipated. It seemed as though there was much more interest in bracing than expected. Hughes said the number of participants grew from about five people to more than 20, and that was when they decided to call in help. Assistance came in the form of WTCA staff member Rachel Smith, who joined WCMA in giving a presentation about bracing.

Armed with a Truss Technology Workshop (TTW) on Jobsite Truss Inspections, BCSI 1-03 booklets and WTCA Jobsite packages, Smith flew in for the meeting-turned-event. Hughes said that in the end, about 50 people attended.

"Rachel was well-prepared," said Howe. "Additionally, the truss fabricators were prepared to field questions." The fact that so many people were there from different segments of the industry also helped the whole thing to go smoothly and professionally.

In the end, WCMA and WTCA were successful in working together to show the group of building officials that they are serious about bracing education. There were some preconceived notions about permanent bracing and design responsibilities, but Howe said he believes these were eliminated during the meeting.

Carney said the presentation helped bring the inspectors up to speed on bracing issues and also sparked some debate.

### Continuing Education

While the meeting helped to clear up some questions, the complexity of the issues made it very difficult to address everything in one presentation. This was made clear as people were leaving the meeting, when it was suggested that WCMA should be at the Oregon Building Officials Association (OBOA) seminar in March 2006.

"So [WCMA's participation], in fact, has happened," said Howe. "I think that there were a lot of unanswered questions at the Hillsboro meeting. A lot of people left thinking they understood the industry and the business more than before, but the attendees still had a lot of questions."

WCMA, having been pleased with Smith's presentation at the meeting, decided to reach out again and have her return to teach a class at the OBOA seminar.

Hughes said he sees the invitation to participate in OBOA's seminar as recognition that education is important. "I think that the folks at the meeting wanted more info, and asking us to present at the state-level seminar is pretty good evidence that there is definitely a recognized need for education," he said.

While the relationship between WCMA and Oregon building inspectors is going in a positive direction, CMs and building inspectors are still getting to know each other and figuring out how to work together productively. The fact that they're communicating is clearly a good sign, though.

"What we can hopefully accomplish is a relationship where when they [inspectors]

have a question, they'll come to the association for an answer—not only locally but nationally—instead of trying to interpret it themselves," Hughes said. "My hope is that we'll get a mutual understanding of each other's needs, and educate each other."

Howe said he feels positive about the developing relationship between WCMA and building inspectors. The exchange of information that occurred when city officials asked for information, and WCMA responded by providing it in a helpful way, was a good step.

"I want to have open dialogue between the building inspector groups that look at our work every day and our fabricators," said Howe. This is his hope because if there's open dialogue, then when issues come up they can be handled maturely and effectively, and consequently won't blow up into huge problems.

Carney seems to agree, expressing gratitude for the growing relationship with WCMA. "I really appreciate what the chapter is doing to help educate us," he said, adding that he hopes more manufacturers participate in the future.

### Aiding Through Associations

It is apparent that many chapters and their members would benefit from having a positive working relationship with building inspectors from local jurisdictions. One thing that can help turn an unhealthy relationship into something beneficial is to be professional and willing to offer education if an issue arises, Howe said.

"Respond professionally," he said. "If you sense that it's something relatively complex, and perhaps a bigger issue, get as many people involved—including WTCA staff—as you can."

Another important thing is to be sure that members are working together as an entity rather than as competitors. There should be only one agenda, and it should be a win-win outcome for everyone involved.

"I think the association—both locally and nationally—has got to work together to present ourselves with one united voice," said Hughes. "That way, we don't add confusion to an already confused issue, whatever it is. We can't press individual agendas. We've got to press industry agendas."

Being main contributors to WCMA, the industry in general,

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and helping to forge a relationship between local CMs and inspectors is quite a bit of work. However, Howe and Hughes both seem to know why they do it.

Having spent most of his career in the industry, Howe said the time has come to give back. "I've made my living over the past 25 years in the truss industry, and I can see the need for returning a little bit to keep the industry whole," he said.

Hughes is motivated by his desire to help CMs in his area. "That's basically it...just trying to make a positive change as far as what's being required of all component manufacturers in this area," he said. **SBC**

The world recently lost Robert E. Mort, Sr.—beloved husband, father, grandfather, friend, colleague, and volunteer. A long-time contributor to and supporter of the building components industry, Mort passed away peacefully in the early morning hours of December 12, 2005 at his residence with his family at his side after a relatively short illness. Mort was 84.

Although he is no longer with us, Mort's legacy lives on in each soul he touched during his lifetime. According to the many people who had the great fortune of crossing his path, "Bob" wanted to be remembered most of all for touching lives. And touch he did.

## "March to the sound of the drums you hear."

Born to Roy Fitzgerald and Minnie Gross Mort on a day of good luck, March 17, 1921, in Poland, OH, Bob adopted a mantra that would become one of his favorite quotes, "march to the beat of your own drum," early in his life. Like many in his generation, Bob proudly served in the United States Army during World War II, attended the U.S. Army Midwestern Signal School, and was instrumental in many overseas combat operations. Because of his leadership and service record, Bob was later appointed to a communications post for General MacArthur at the American Embassy in Tokyo. Bob was aboard the USS Missouri when Japan signed the Instrument of Surrender on September 2, 1945 in Tokyo Bay. For his service, Bob earned five Campaign Bronze Stars among other medals. "[My dad] was proud of his military career in a humble sort of way," remembers son Tom.

His service in the military was only the beginning of Bob's lifelong commitment to service and leadership. Bob married Donna R. Haessly in January 1947. Bob and Donna met after WWII, when Bob had just arrived back from the service. They began dating when Donna graduated from college and moved home. They loved to go dancing, and frequently went on picnics and spent time outdoors together.



## Remembering the Life of Robert E. Mort, Sr.

# Leave a Legacy

by Libby Maurer & Emmy Thorson-Hanson

Creating their homestead in Hermitage, PA in 1950, the Morts' family grew to include four children: son Thomas and the late Robert Jr., and daughters Patricia and Mary. Bob belonged to the First Presbyterian Church in Sharon.

Bob's career began in accounting, Donna recalls. He established an accounting firm, built an office building, staying in that business for numerous years while at the same time he and his brother, Edgar, formed a company called Inter-Lock Steel Co. around 1960. Together with sister companies Unity Machine Tool and Die Co. and Standard Aluminum Company of America, they supplied heavy industrial machinery and steel products to the truss industry. "I can remember them talking about producing [truss] plates even before they were in the business," says Donna. A salesman at heart with a genuine understanding of the human condition, Bob went out on the road to develop new business and generate sales while helping individuals just starting in the truss business. Thanks to his background in public accounting, he was able to help with the business end of start-up companies as well. Edgar ran the plant operations side of Inter-Lock, focusing his efforts on manufacturing and delivery. Edgar's two sons, David and Doug, were also active in the business. Bob's primary responsibilities were engineering, technology, sales and product development. Donna says when sons Robert Jr. and Tom got old enough they became involved in their father's business. Tom, currently regional vice president for MiTek Industries, Inc., remembers why his dad excelled in his career: "Bob was a natural communicator. He had the ability to reach people of all levels and backgrounds. He truly listened to what people were saying."

Consolidation among industry suppliers would eventually result in a change of ownership for Bob and Edgar's company. "Bob was a very astute businessman, a tough negotiator, and a person of great integrity," says Gene Toombs, CEO of Mi-Tek. After negotiating for a year, MiTek Industries acquired Inter-Lock in October 1991, and Bob stayed on through the transition in an advisory role. "We wound up with a seamless transition from Inter-Lock to MiTek due to his efforts," says Toombs.

MiTek President Tom Manenti saw Bob as father figure: "I thought extremely highly of him...he had a way of making guys feel like sons. He was a mentor in my business career."

In addition to his tremendous contribution to Inter-Lock and MiTek, Bob will be remembered for several inventions. He held a patent on Multi-Head Roof Truss Machine/Vac-u-Lok Multi-Head C-Clamp presses/Portable C-Clamp Splicing Machine. Edgar's patented T-Plates (for the top chord bearing floor truss) are still used by MiTek today. Bob and Edgar's early plate designs were forerunners to current models used by many plate companies.

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A vocal advocate of the lifelong pursuit of continuing education, Bob stayed connected to academia as an adult. He heavily recruited young engineers to join the truss industry by working with Youngstown State University professor John (Jack) Ritter, P.E., to place students in truss industry positions. Throughout his career, Bob strived to promote the widespread acceptance of wood trusses in building applications by conducting load, sound transmission and fire tests. He was also instrumental in gaining acceptance from the Federal Housing Authority by submitting thousands of truss drawings, all supported by dozens of corroborating load tests done throughout the country. Craig Rustay of Greene Lumber Co. in Jamestown, NY, invited Bob to serve on a committee formed to create a document that interpreted building code provisions. The result was Bob's "Code of Standard Practice," a document that was not only accepted by the truss industry, but by code officials and numerous political subdivisions of this country, including the five boroughs of New York City.

## "He liked to do things behind the scenes and he didn't like a lot of attention."

A relentless proponent of unity among industry leaders, Bob was actively involved in the Truss Plate Institute (TPI) while also advocating for an association exclusively representing the interests of truss manufacturers. He was a founding member of TPI, actively encouraging all truss plate manufacturers to produce to the highest quality standards. In 1977 and 1991, Bob served as TPI President. He understood the differences between suppliers and manufacturers, yet recognized the importance of working together. He recognized that plate suppliers and truss manufacturers should have two separate but connected organizations, and thus advocated for the creation of the Component Manufacturers Council (CMC), when it first began around 1962. After many meetings and much debate, the current Wood Truss Council of America evolved from the CMC in 1983.

Despite his extensive work schedule and the time and effort he devoted to his career, Bob always had more to give at home. Bob and Donna shared a special connection from the very start of their courtship that many people only dream of. Not only did they share the same birthday, but in Donna, Bob had found someone who was equally as kindhearted and generous as her husband. They both shared the same attitude about life: *Do the right thing.*

Bob once said, "I would like everybody to do the right thing. I don't like being honored for something that we should do." Throughout their marriage, Bob and Donna touched so many

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### Leave a Legacy

Continued from page 65

lives that in 2002 they were both dubbed Buhl Day honorees, and were recognized for their commitment to education and the betterment of the disadvantaged in Shenango Valley, PA. At the time, Bob had referred to their contributions as "labors of love" commenting, "We've always been involved in the gut issues...for the [benefit of] people who have fallen through the cracks."

Another advocacy effort for Bob and Donna was fighting discrimination and prejudice by facilitating equality. "I care deeply about working to eliminate discrimination and I feel that everybody should have an equal chance," Donna once said. For his part, Bob was an active member of the National Association for the Advancement of Colored People (NAACP). He was a founding father of the Shenango Valley Urban League and served on its board for many years.

He was a wonderful father and grandfather, always setting a good example of how to live life to the fullest while staying true to your values. He was a creative storyteller and often took his grandchildren fishing, swimming, to parks and on vacations to the ocean, Donna says.

Bob lived every moment of his life according to his ideals and convictions. Always giving to his family and friends, deserving organizations, or people in need, Bob was a constant source of sincere effort and commitment to make the world a better place, through everything he did. "He was generous and caring on every level," recalls Donna. "He was able to cultivate and mentor people to perform at their best by working one on one with



In 2002 Bob and Donna were recognized for their commitment to education and the betterment of the disadvantaged in Shenango Valley, PA.

them, which contributed in making him a great leader," says son Tom. No matter what he was doing or where he was, Bob was making a difference. "He touched many lives along the way, often one-on-one. Everyone had a 'Bob Story,'" remembers Donna.

After his passing, Bob's positive impact on the lives of countless individuals became unmistakable. "He was quite a person, and we have realized that even more since his death. People have been calling to tell us special things about their relationship with Bob. That's when the magnitude of his influence really hit us, of how many people that he had been involved with and how many relationships he had," says Donna. Inevitably Bob left an indelible mark on everyone in his life, Bob never disappointed. "He was just a prince of a gentleman and he left a tremendous legacy. He lived up to everything, what you saw was what you got with Bob," says Manenti. "Throughout the years, Bob was a very compassionate man. He always offered a helping hand, be it in business or personal matters. Frankly, he was someone we all looked up to," notes Toombs.

Bob's devotion to his community was no different than his commitment to family and work. Bob volunteered for countless organizations over the course of his life, and true to form, he left his very inspiring mark on each of them. Keystone Blind Association—dedicated to improving the quality of life for blind people—was just one of the many organizations he served. Keystone's first quarter newsletter remembered Bob's selfless contribution: "Robert Mort, a great friend of the

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**"Giving of one's self is rewarded tenfold."**



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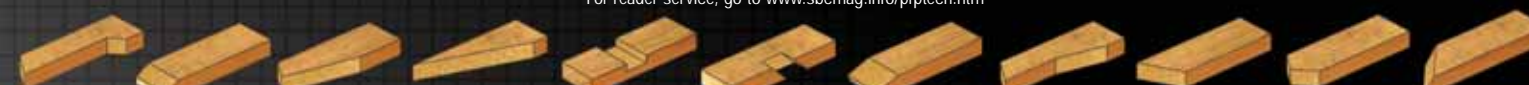


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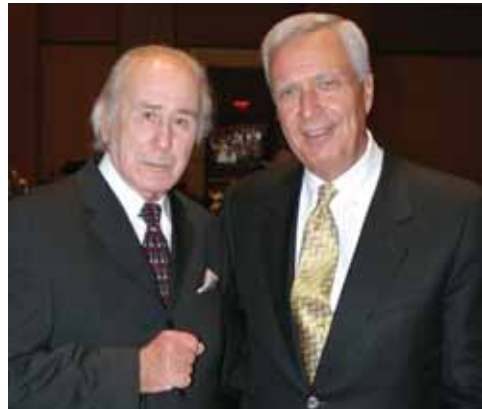
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### Leave a Legacy

Continued from page 66

agency...was the major benefactor and driving force behind the origination and growth of the Keystone Kids Program. Up until the time of his illness, Mr. Mort attended most of the Keystone Kids' activities, sharing his time and talents with the staff and the children. Our sincere sympathy to his family, and our deepest gratitude for designating the Keystone Kids Program as recipient of memorial donations. His memory will live on for years to come at the agency." Donna noted the importance of Keystone in her husband's life: "Working with visually impaired children was very important to him. He planned bowling outings, organized games of beeper baseball, Easter egg hunts, encouraged music lessons and recitals, writing and artwork." she said.

Children were always a large area of focus of Bob's volunteer and philanthropic efforts. Early on, he was a board member for Sharon General Hospital and was a loyal supporter and promoter for Mercer County Crippled Children's Association. Mr. Mort was one of the



Bob and Gene Toombs pose for a shot at BCMC 2004 in Charlotte, NC.



Bob enjoyed sport fishing, which he pursued in locations around the world. Here he and son Tom enjoy one of many exciting fishing trips.

pioneers in the forma-

*A special thanks to Donna Mort and Tom Mort for sharing their memories of Bob. Thanks also to Gene Toombs, Tom Manenti and Mike Klein of MiTek for contributing to this piece. To view Robert Mort, Sr.'s complete obituary, visit [Support Docs](http://www.sbcmag.info) at [www.sbcmag.info](http://www.sbcmag.info).*

tion of the former Shenango Valley Osteopathic Hospital. It was in his office in Hermitage that the first funds for the establishment of the hospital were collected and disbursed.

Even with the active lifestyle Bob led, he still made time to do the things he loved. Flying was a great source of enjoyment for Bob, once a member of the American Owners and Pilots Association. He was also fond of sport fishing, which he pursued all over the globe. He also enjoyed golf, boating, travel, genealogy, and studying astronomy. But his first passion was reading. "He was an avid reader, heavy on history, poetry and classic literature," recalls Donna. "He was always quoting books. We have a bookcase in every room of the house."

Not only did Bob love to read, he was also a passionate writer. When Bob became ill, his first book, *Summer-1933*, which recounted his childhood experiences and described what it was like growing up in the 1930s, was in the midst of publication. His family hurried the process along and he was able to see his first book in print before he passed. He also wrote a book on his experiences serving in WWII, which the Mort family plans to publish in the near future. Bob also loved to tell his grandchildren stories; they've been compiled into a book that the family also has goals of publishing in the future.

Music from a diverse set of genres was represented at Mort's memorial tribute on December 17, 2005, from "Ave Maria" and Nat King Cole's "Unforgettable" to the uplifting "Bridge over Troubled Water." Robert Mort's services were at McGonigle Funeral Home Chapel in the presence of family and friends. While Bob is missed, his legacy lives on, as if he were still among us. Donna said one of his favorite quotes was "better to light one candle than to curse the darkness." Bob's candle shines on. **SBC**

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# NOWHERE BUT UP:

## WTCA Past Presidents & the State of the Industry

by Emily Patterson

In 2005, *SBC* began a three-part series focusing on WTCA past presidents' reflections on the industry and their predictions on what the future holds for the structural building components industry. The first article chronicled a fledgling association's coming of age (September/October 2005) and was followed by a second installment that examined industry advancements (March 2006). Here, in the third and final installment, WTCA past presidents discuss the current state of the industry, market trends and what lies ahead for the industry.

### Industry Overall

Reflecting on the industry and its future, our past presidents said that the signs are evident that component construction is destined to make up a larger share of the construction market. "It's amazing," said 2000 President Roger Gibbs (SpaceJoist TE). "I see a lot of areas in the country that still stick frame roofs and floors, and I see that changing. I talked to a builder recently who said, 'We can design more complex roofs [with trusses] than they can possibly stick frame.' In 20 years, a lot of stick framing could be eliminated," Gibbs said.

Many past presidents credit the business acumen of the industry's leaders for component construction's strong performance today and its positive forecast for the future. "I am proud of the fact that we are very entrepreneurial. Our plant owners and managers are problem solvers and they do an incredible job of assembling materials, information and manufacturing know-how into a valuable product that makes housing more affordable," said 2005 President Kendall Hoyd (Idaho Truss & Components).

While celebrating the industry's current strong performance and its potential for future success, past presidents stressed the need to remain vigilant in watching market demands. "It's imperative that we look down the road five to ten years to predict the needs and makeup of our membership, suppliers and our members' customers," said 1992-1993 President Don Hershey (Imperial Group).

### Consolidation

One of the biggest areas where past presidents stressed the industry's need to remain vigilant was the trend toward consolidation, and with it, the gulf this could create between large and small operations. "I think there'll be two types of fabricators [in the future]: the small fabricator versus the larger mass producers," said 1990 President John Herring (A-1 Building Components). 1996 President Merle Nett (Richco Structures) expressed concern for the impact that consolidation could have on smaller companies. "Unfortunately, I see a trend toward conglomeration. The big are getting bigger. The small and mid-sized companies are going to decrease, and the big players will become a bigger force," Nett added.

Continued on page 52

### at a glance

- ❑ The future of the industry is cemented in the simple truth that by using trusses, manufacturers can design more complex roof lines than with stick framing.
- ❑ The industry is entrepreneurial.
- ❑ Past presidents noted the far-reaching effects that consolidation could have on the industry and its leadership.
- ❑ Development and involvement of leadership from the larger companies in the industry is essential.



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## Nowhere but Up

Continued from page 50

Past presidents also noted the far-reaching effects that consolidation could have on the face of the industry and its leadership. "I see a lot of consolidations, with larger companies eating up the little guys," said 1999 President Richard Brown (Truss Systems). "Years ago, the industry was made up of entrepreneurs and influenced by the owners and presidents of smaller companies who provided guidance for the industry. With acquisitions, we have a serious problem down the road. We won't get leaders involved in the industry, we will get administrators, and I think we'll see a leadership vacuum in 10-15 years. I think that's the biggest drawback right now," he said.

Looking ahead to the next decade, Brown stressed that, "we have to do a better job of developing leaders. That means getting the larger companies to understand that their leaders need to be involved."

## Market Growth & Engineering

Past presidents also noted that the emergence of larger component manufacturers is yet another indicator that the industry is permeating the construction market. Gibbs commented on how components are changing the old-guard ways of framing, saying, "I see framers getting into the truss business. They are creating one-stop shopping in some parts of the country with turnkey operations. In other parts of the country, builders want to control a project and use all components because it saves time and is a faster turnaround," he said.

Along with changing framing in the construction industry, past presidents felt that component construction will continue to play a larger role in the engineering of a structure. "Engineering is becoming more of a facet of our industry. With whole house [design], manufacturers will be doing everything. I see great opportunities," said Herring.

Past presidents pointed to the emergence of whole house design as another factor influencing engineering and the use of components in a structure. "Engineering design is headed into the construction industry more fully than ever before. There is more sophistication in the market and builders are seeing a greater need for an engineer and a need for an engineer's seal to complete the job," said Gibbs. "Fifty or even just 30 years down the road, they may need an engineer's seal or review on the design of the complete structure," he added. Gibbs commented that such a trend could be an opportunity for the industry to make its voice heard, noting, "Our industry can be proactive in this because we identified that whole house design and construction is the way to go."

Some past presidents questioned the impact that whole house design could have on larger versus smaller component manufacturers. "My concern is that large companies will

have their own whole house engineer, and smaller companies may have to change their business structure because they can't afford to have their own engineer on staff," said 2003 President Scott Arquilla (Best Homes, Inc.). "There will be a challenge for the smaller companies to remain competitive, but I feel they also have an advantage because they have the ability to move faster and change direction," he noted.

## Partnering with Associations

Envisioning increased demand for structural building components in the future, past presidents said they saw component construction's growing market share translating into the industry's growing influence in the construction industry overall. With that increased influence, past presidents also predicted increased opportunities for WTCA. "Cooperative efforts among allied associations are bound to increase our industry's influence and opportunity and strengthen marketing opportunities as we learn to work together and not waste resources on duplication of efforts," said 1991 President Bob Ward (Southern Components).

"I would never have envisioned where this association would go," said 1989 President Rip Rogers (retired from Trussway Ltd.). "It has exceeded my wildest thoughts and hopes in terms of its influence in the marketplace, the quality of products it provides to the membership, and the sheer volume of activity in the industry to support component manufacturers," he added.

Past presidents credited the association's track record for setting the stage for WTCA's continued success into the future. "By taking the lead position with facts rather than emotional rhetoric, WTCA has earned a position of respect and trust, thereby giving our industry a voice when a matter of industry interest occurs," Ward said.

Along with the respect WTCA has earned over the years, Ward also points to the association's financial health as a major reason why it can move forward and pursue new projects. "WTCA's strong financial position will allow us to take advantage of industry promotional opportunities as they arise," Ward commented.

## What Lies Ahead

Looking ahead and seeing a bright future for the structural building components industry, past presidents took a moment to reflect on how far the industry has come. "I'm proud of the professionalism [the industry] has achieved, and the way it fits a need in overall construction in the country," said 1994 President Lee Vulgaris (retired from Reliable Truss).

Indeed, the structural building components industry can look forward to a bright future thanks to the dedication and entrepreneurial spirit of component manufacturers and WTCA's past presidents. Continuing that tradition, component manufacturers can look forward to a future that Gibbs predicts can go "nowhere but up." **SBC**

"I was really impressed with how much the Legislative Conference had to offer. This was my first time there, and while I live nearby in Virginia, I had never been to a Congressional office before. Not only were the meetings with the lawmakers exciting, I felt I had a significant chance to voice the concerns I have with the railroad service. I'm definitely coming back next year."

—Brian Johnson, Structural Technologies, Inc.



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## Shear-out at High Tension Connections:

# "Chunk-out" Re-examined

by Steve Cramer, Kirk Grundahl  
& Dave Brakeman

Curious about the technicalities behind "chunk-out" checks in design software? Find out what it is meant to prevent and plans for future testing.

### at a glance

- ❑ A new design check, initially termed "chunk-out," appeared in the truss design process with the adoption of TPI 1-2002.
- ❑ The appropriate technical term for chunk-out is actually "shear-out."
- ❑ Understanding shear-out requires defining the stress distribution around the plate and comparing the magnitude of stresses to the wood shear strength under the plate.
- ❑ Future finite element stress analysis and testing has been planned in order to define the nominal stresses associated with the shear-out condition.

In the May 2005 issue of *SBC*, Rachel Smith first reported on "chunk-out" messages that truss technicians were getting when designing trusses to ANSI/TPI 1-2002. Smith explained that a new provision in Section 8.9.2 of the standard applies to trusses with plating on the narrow face of lumber, like floor trusses. The chunk-out provision programmed into design software was meant to address a design mode of failure where high tension forces can tear out the wood at the edge of the teeth along the grain of the wood. The "chunk-out" phenomenon is re-addressed providing TPI TAC and TPI Board approved language along with the needed commentary through this article.

### Introduction

With the adoption of TPI 1-2002, a new design check appeared in the truss design process embodied in TPI 8.9.2. "For wood thickness greater than two inches with plates embedded only on the surface normal to the thickness, the tension, T, introduced by a single joint into a wood member, shall not exceed 1600 pounds per inch of wood width,...." Some component manufacturers found long standing truss designs impacted by this provision prompting questions about the basis of the provision. Recently, TPI-TAC approved a new interim guideline:

It is recognized by the metal plate connected wood truss industry that block shear (failing of the lumber beneath the connector plate teeth), is a failure mode that needs to be checked in truss design. The current design value of 1600 lbs/inch was established based on limited information and is considered conservative. Values of up to 3100 lbs/inch have been justified by some in the industry based on engineering experience, full and small scale truss testing and engineering analysis. There are many variables that affect this issue, including the species and grade of the material, and the length of the connector plate involved in the connection. Empirical evidence, field experience and engineering judgment may be used to consider design values significantly higher than the current design value stated in the standard.

Block shear for axial tension members has only been identified as a concern at the ends of a member. The provisions of section 8.9.2 do not apply to joints in the middle of a piece, such as chords that are continuous through a joint.

This allows other limiting values to replace the 1600 pound per inch of wood width when test data or engineering can justify an alternative value. Needless to say, this provision has generated considerable excitement in the technical truss design community and herein we will shed light on the problem and the path to total resolution.

### Chunk-out, Shear-out, Shear-plug, Tear-out?

The phenomenon embodied in provision 8.9.2 has caused considerable confusion as to exactly what failure mode or problem the TPI 1-2002 standard is intending to prevent. The appropriate technical term for this problem is shear-out or shear-plug failure. This occurs when a metal connector plate fastened to a high force tension web transfers the forces from the plate to the wood web member. It is this transfer of load and the resulting nonuniform stress distribution that can prompt the wood to shear underneath the plate and with a significant portion of wood remaining embedded in the plate as the joint pulls apart. Figure 1 on page 72 illustrates the subject failure mode. Although there has been no complete test data set nor field experience presented that clearly demonstrates this failure mode and its likelihood of occurrence, some members of the TPI 1 Project Committee and TPI TAC believe that there are circumstances where this failure mode can occur at a load below the tensile strength of the connecting wood member and the plate tooth withdrawal and associated plate values.

Continued on page 72

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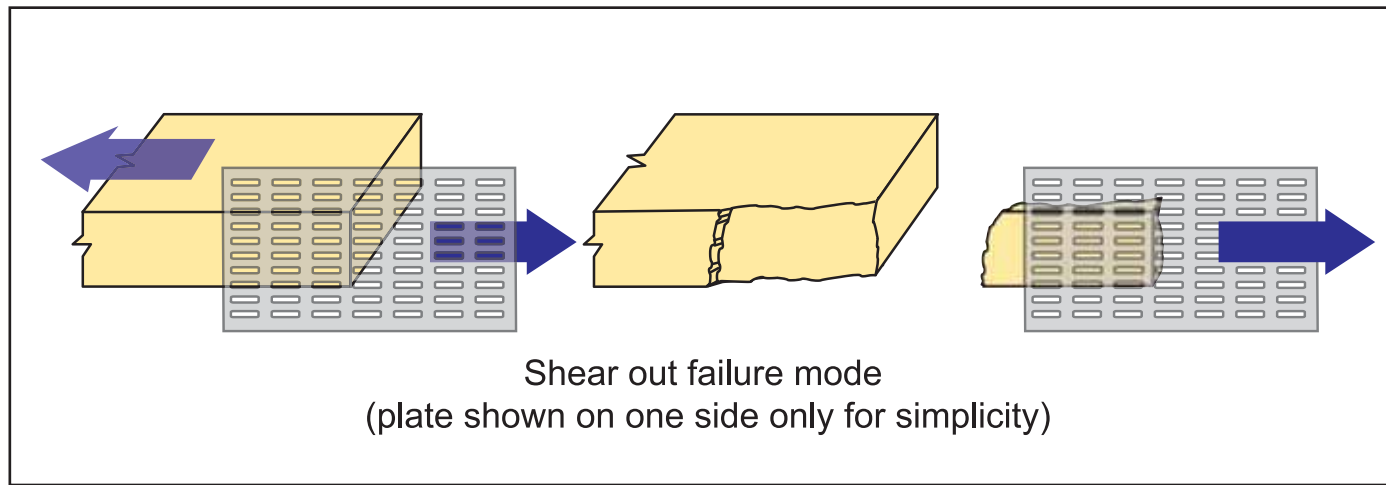


Figure 1.

### “Chunk-Out” Re-examined

Continued from page 70

The TPI 1 Project Committee and TPI-TAC believe that section 8.9.2 presents a necessary truss design check and in fact recent additions to the National Design Specification for Wood Construction adds analogous design checks for bolted connections. But the corresponding problem in trusses is more complicated because the teeth in the plate don't penetrate the full width of the wood member. Thus, we are faced with a complex stress analysis problem that includes how stresses dissipate from the wood adjacent to the teeth at the surface to the center of the wood member. Whether these stresses will control truss failure depends on the shear strength of the wood as influenced by the grade, the species, potentially even the ring structure of the wood and the occurrence of other high stresses in the truss. In other words, we still have more to learn about when and where a shear-out failure mode check should control truss design.

### What Got Us Here?

Ultimately, understanding the shear-out problem requires defining the stress distribution around the plate and comparing the magnitude of stresses to the wood shear strength under the plate. One can then determine the likelihood that these conditions exist in everyday truss design and target design provisions accordingly. Since we cannot “see” stresses nor easily measure them, mechanical load tests provide only an end-result, single-outcome indication of this problem or its absence. If a test produces a shear-out failure, obviously one knows that the stresses exceeded the shear strength for the conditions of that test. Generalizing test results to a wider variety of situations in absence of stress data is merely an engineering art, not an absolute.

Small scale tests formed the original basis for the 1600 lb per inch of width provision currently in the TPI-1-2002 standard but these tests were few in number and did not provide conclusive evidence of the conditions or stresses associated with shear out. Given the outcome of these tests and the conditions examined in the tests, the 1600 pounds per inch of

width is considered conservative by TPI TAC.

The shear-out failure mode is most often associated with top chord bearing, parallel chord trusses of considerable span with large plates attaching the first panel 4x2 or larger tension web. Some engineers have reported what they believe to be the shear-out failure mode in truss tests of this configuration but the observations have been few and not well documented. California Truss Company undertook a series of 44 tests in 1986. To date, this is the best and most extensive set of data available on the subject although the tests did not specifically include webs as narrow as 4x2. We are very fortunate that California Truss was willing to share these data, because without it, clarification of ANSI/TPI 1 section 8.9.2 would have been more difficult to make. This testing was conducted on top chord bearing trusses manufactured with Douglas-fir lumber with double 4x2 or single 4x6 chords with 4x4 or 4x6 webs in the first panel. These 44 trusses ranged in span from 31' to 60' and the trusses were tested to failure. None of the 44 truss tests yielded a shear-out failure even though web forces exceeded 2.1 times the 1600 lb per inch width limit (a conversion to take the 1600 lb from a design to an ultimate load basis) in many cases.

By taking the computed tensile force in the web at ultimate load and dividing it by 2.1 and the web width, appropriate comparisons can be made to the original 1600 lbs per inch design load limit. In 18 of the 44 tests, the truss failure load was high enough such that the design value of the first web member in tension was in excess of the section 8.9.2 limit of 1600 lbs per inch. In these cases, section 8.9.2 would have limited the design of the truss causing the web member size to increase to accommodate the web member design forces. In all 18 cases, the truss failed outside of the first panel where the highest web member tension forces existed. The highest web design force in these trusses without a failure was 2285 pounds per inch of web width. These tests provide evidence that tension webs can safely sustain forces well beyond 1600 pounds per inch but only in the conditions associated with these tests. Additionally, none of these tests were designed

to prompt failure in the first panel. Conversely, these trusses demonstrate the anecdotal feedback that has been received that suggests that this type of failure is a very rare occurrence.

### Current Design Considerations

As noted above, the TPI 1 Project Committee and TPI TAC members believe that there are conditions where the shear-out failure mode should control the design of the truss. TPI TAC has provided the guidance needed to recognize that the current design value of 1600 lbs per inch is to be considered conservative and that by working with your truss design engineer, other design values can and should be used so that we do not limit the truss design process when we know that the truss being designed can safely and effectively carry the applied loads. The section 8.9.2 design limit can be justifiably adjusted up to and potentially beyond 3100 lbs per inch of width based on engineering experience, full and small scale truss testing and engineering analysis. Until additional analysis and data are available to further shape design guidelines, the key to implementation will be to work with your truss design engineer and use the experience that you have with these types of trusses to determine the section 8.9.2 design limit for your truss designs.

One approach to guide selection of the design limit is to apply the species and grade NDS allowable adjusted shear strength times the contact area of the plates on both faces of the connection to yield a computed shear-out design limit. Sometimes the wood shear values will be less than the corresponding plate withdrawal values and therefore will control. Such an approach will yield alternative design limits in the approximate range of 2000 lbs per inch of width to 3600 lbs per inch of width depending on assumptions such as the minimum plate length necessary to prompt the shear out failure mode. One limitation of such a calculation is that it assumes that the shear stress in the wood under the plate is uniform when in fact it is not. Nonetheless, higher values are appropriate for species with higher allowable shear strengths and vice versa.

The typical truss design conditions where the section 8.9.2 limits will come into play include:

- Short span high load top chord bearing floor trusses.
- Heavily loaded commercial floor trusses.
- Purlin trusses in panelized roof systems.

### The Path Forward

Finite element stress analysis and testing planned for the future offer a path to define the nominal stresses associated



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with the shear-out condition. Such an analysis combined with full and small scale verification tests is one of the steps in defining when shear-out plate failure is likely to control truss design and the appropriate limits that should apply. Computing stresses is much easier than attempting to measure them in tests. But testing will also be necessary to affirm computations. Testing of discrete truss situations will provide additional evidence of when the shear-out failure mode should control a given truss design.

There are no known in-service truss failures in the public domain that have been associated with the shear-out failure mode as defined in section 8.9.2. In contrast, there have been lumber shear failures and tooth withdrawal failures even though there are design properties readily available for these failure modes. This is not reassurance by itself that shear-out can be neglected in truss design. Only a relative handful of truss tests have exhibited this failure mode, but it is unclear to what degree these few truss tests represent a wider set of conditions. Better definition of the mode of failure, the truss designs likely to raise shear-out failure concerns, and the percentage of such truss designs in the marketplace will then help define a strategy to deal with this design provision most appropriately. Fortunately, our planned industry testing facility will provide a testing vehicle to help develop the data and design methodology needed to provide our industry with a sound long term solution. This will be one of the testing programs, combined with appropriate stress analysis and small scale tests, we intend to implement in the early stages of the testing program. **SBC**

*Steve Cramer, P.E., is a professor at the University of Wisconsin-Madison; Kirk Grundahl, P.E. is the Executive Director of WTCA; and Dave Brakeman, P.E., S.E., is Vice President - Engineering at Alpine Engineered Products, Inc.*



# EAST MEETS (& BUILDS) WEST

180 miles up the Yangtze River in the heart of China...

by Steve Zastera & Paul Harmon



**W**hen Jay Halteman of Wood Truss Systems in Yorktown, IN, first replied to the used-equipment inquiry off his web site, he didn't expect much to come of it. He certainly didn't expect, 18 months later, to be standing next to the Yangtze River in Nanjing, China, in front of some of the most elegant western-style homes he'd ever seen. And he most definitely didn't expect that he and his Midwestern company would be the hub of the equipment consortium that made it possible.

"It was an arduous journey, grueling wouldn't be exaggerating...and I'm not talking about the flights," Halteman reflected, "but, without a doubt, it's one of the most satisfying and educational journeys I'll ever take...I've never been party to something like this, something so momentous in every sense of the word."

Halteman explained that the Chinese had originally wanted used truss and wall panel equipment to embark upon a unique project—building Western-style "up-scale" homes in the heart of China, starting in Jiangsu Province. After communicating with them through an English-speaking representative, it became apparent to Halteman that they really shouldn't be buying old, manual equipment for what they were trying to do.

The clincher was when they told him their goal was to build 3,000 homes per year.

### They needed highly automated equipment.

"Recommending state-of-the-art, high-speed automated equipment might sound odd, given that their labor rates are around a dollar a day," Halteman said, "but labor savings was not primarily what I was after. It became abundantly obvious to me that the hurdle these folks had to somehow jump was their lack of fundamental design and construction knowledge at all levels, when it came to building our type of structures. They needed to be able to see pictures and push buttons and get exactly the components and completed assemblies they needed."

Halteman explained that terms such as "web" and "chord" and "gable" were unknown to them, even if they could have communicated in the same language

(which they couldn't).

"That's not to say that they weren't intelligent or lacked any kind of ability, quite the opposite," Halteman emphasized, "I was absolutely amazed at what these folks pulled off—they are an amazingly capable and thoroughly devoted people. But there were no skilled sawyers, operators and assemblers available at any price. There were no design-engineers for what they wanted to do. Indeed, at the time, there weren't even building codes for what they wanted to do."

### East "Leaps" West

By using computerized designs and design-engineering which downloaded directly to intelligent equipment, technology developed over the last 20 or 30 years in western society, they were able to bypass a huge educational step, Halteman explained. "They literally leaped over a generation or two of education and development that we had to go through in this country's building sector. They never had to learn how to put a home like this together manually—they didn't even have to learn the terminology."

### Putting It All Together

Halteman designed the entire truss and panel plant for Jiangsu Jifco Holdings (operating under the trade name, Cogent Home Manufactory), specifying the building size and configuration, the equipment it should contain, and where most everything should be installed.

He worked closely with Dr. Du Hai, the company's chairman, and Liang Zhang, project coordinator (who soon became simply, "David").

Halteman selected proven reliable automated equipment from companies he believed to be the best suppliers available—it not only had to be the easiest to operate ("as intuitive and very simple to use as possible"), it had to keep operating ("all but bulletproof durability—it would be 4,500 miles away from the nearest technician"). He looked at essentially the same things when it came to design-engineering software and connector plates.

"I chose automated cutting and marking equipment," Halteman reflected, "because it's the easiest to use, is extremely reliable and durable, is compatible with any design software, and it pictures everything on its monitors. I emphasize 'marking' because system-applied markings would be the key to simple assembly—of both trusses and wall panels."

Halteman noted that while the component saws and Canadian lumber use imperial measurements and the design software would be in metric measurements, the equipment's extreme precision (thousandths of an inch) made comparable measurements more than acceptable.

Halteman chose design-engineering software and connector products for similar reasons; the company has offices in Australia, much closer to China than the United States.

Every piece of equipment selected was the best in the industry, in Halteman's judgment, and had companies behind them with a history of exceptional service and support—"every bit of which I would need to pull this off."

Available equipment and the manufacturers themselves are something Halteman has considerable knowledge of, having worked in the industry for over 30 years beginning with a part-time job building wall panels. His grandfather set the family's construction-career path in 1934 when he started building homes. In 1988, Jay Halteman and his father, Bob, formed Wood Truss Systems, Inc. in Yorktown, IN (right outside Indianapolis). Bob is semi-retired now, but has represented equipment for most every major manufacturer in the industry during his career. Jay Bunyard rounds out the

Wood Truss Systems group and, as it turns out, would also play a key roll (albeit in the background) in the China project.

While knowing equipment and manufacturers was one thing, putting together the necessary logistics and financing while satisfying a sea of confusing regulations was another. Halteman sought government assistance at both state and federal levels. He found that the U.S. Department of Com-



"They literally leaped over a generation or two of education and development that we had to go through in this country's building sector. They never had to learn how to put a home like this together manually—they didn't even have to learn the terminology."

—Jay Halteman (right), pictured with members of the installation team & Mr. Xu Shao Gui, Project Manager

Continued on page 56

### at a glance

- ❑ East met West when Chinese Jiangsu Jifco Holdings went equipment shopping for a new truss and wall panel manufacturing facility in the U.S.
- ❑ Even though there were no skilled sawyers, operators, assemblers, or truss technicians available in China, Jay Halteman (Wood Truss Systems) was amazed at the Chinese's capability and devotion to the project.
- ❑ For the new plant in China, Halteman chose what he believed to be the most reliable automated equipment that was also the easiest to operate and had extreme durability.

## East Meets (& Builds) West

Continued from page 55

merce, a federal agency with (fortunately) a field-office in Indianapolis, was extremely helpful. Likewise, the Export/Import Bank of the United States, the U.S. Consulate, and the Small Business Administration all were responsive, prompt and very supportive.

"We're all accustomed to working with government agencies at the consumer level, like the Motor Vehicle Department,

While knowing equipment and manufacturers was one thing, putting together the necessary logistics and financing while satisfying a sea of confusing regulations was another.

and coming away unsatisfied if not insulted," Halteman remarked. "But that was not my experience at the federal level at all...to the person, they were knowledgeable, prompt, and do-whatever-it-takes folks."

With their help, and the help of others they recommended, Halteman was able to put in place the necessary Letters of Credit, satisfy "Harmonized Tariffs," arrange for freight and the necessary documentation to accompany it. The total sale was about \$1.25 million.

Early on, Halteman could see that this project would consume the majority of his time if he were to hope to bring it to a successful conclusion. So he turned over all his domestic work to Bunyard who, Halteman remarked, "somehow kept everything cooking without a hiccup."

### The Work Bears Fruit

The contract was in place, the shipments were made, and Halteman and his team of suppliers' technicians—a total of 11—were there in Nanjing for installation and operator training. It was difficult at times. Communication was limited even with the help of their interpreter.

"There was a lot of signing and face gesturing, but we made it work," Halteman explained, "The equip-

ment all got set up as planned and the operators adequately trained and in place."

"There was a little disappointment with the robotic component saw though," Halteman remarked, "My customer's help opened the shipping containers and didn't find the robots they were expecting."

Things went slow at first, but once they hit their stride—probably within a week, Halteman estimated—they were

Continued on page 58

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SOUTHERN PINE: YOUR CHOICE FOR COMPONENTS

## East Meets (& Builds) West

Continued from page 56

"cranking out" trusses and wall panels as well as their American counterparts would. And the structures they built were "simply magnificent."

Halteman was awestruck. "If you look at what they're building and where it is—and when you consider these are the first homes like this that they've ever built and they can't even speak our language, let alone read the truss design drawings—you can't help but be amazed. It is, genuinely, awesome to see."

### A Look Inside a Chinese Model Home—Really Inside

The Chinese do not typically sell new homes with fixtures and appliances in place. The hookups are there—plumbing and electrical—but all else is the homebuyer's responsibility.

Cogent Homes, the company selling the new structures, built a model home to display their construction quality, including the quality of their electrical and plumbing work. Instead of sheetrock, a section of an interior wall was covered with Plexiglas to show prospective buyers the quality and engi-



While this new construction might look like a typical Western home from the outside, the Chinese do not sell homes with fixtures and appliances in place. These are the responsibility of the homebuyer.

neering in wood components.

As of August 2005, Cogent Homes had built over 250 homes.

The company is developing a demand for their western-style homes in the region and recently participated in a Shanghai trade exposition that indicated strong promise in other regions. There is little question now that the plant and its equipment are performing well and, indeed, that the Wood Truss Systems' recommendations were sound. The relationship remains

strong and Halteman stays in communication.

"A lot of difficulties, a lot of frustrations, a lot of holding your breath," Halteman reflected, "but without all that, we wouldn't have received such a great measure of satisfaction."

"Besides, should I ever need a place to live in China, I know just where to go." **SBC**

*Steve Zastera & Paul Harmon are partners in Harmon & Associates, Lakeville, MN. For a listing of equipment selected by Halteman for the Cogent Home Manufactory in Nanjing, PR China (Jiangsu Province), visit **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info).*

## Wage and Benefit Survey

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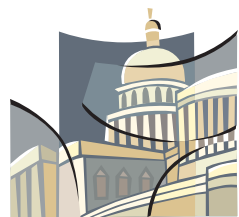
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## Adventures in Advocacy

Visit [www.sbcmag.info](http://www.sbcmag.info) for legislative updates and alerts.  
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### It's All About Who Ya Know!

by Sean D. Shields

Relationships. We all have them. With our families, with our friends, with our coworkers—they are a natural extension of our social nature. In addition, except for cousin Jim, they all make our lives just a little easier. We don't have to go through each day all alone, trying to figure out every little thing just to get by.

We also have similar personal relationships that are one step removed from our daily lives. Our insurance agent, our plumber, and that guy we really can trust with our car—we don't interact with these people every day, and we wouldn't usually consider getting them a gift for their birthday, but we have come to rely on them to do the things we don't have time or the knowledge to accomplish.

It's much the same in your professional life. Your lumber supplier, your plate supplier rep, that guy who can help you get OSHA off your back...wait, you don't know someone who can stop those bureaucrats from breathing down your neck? How about someone who can help find grants to pay for retraining your employees on new technology or production techniques? No? Well, you must have someone you go to when you want to quickly get to the bottom of a workers' compensation claim, right? Still no??

Then the problem is you haven't established one of your most important relationships—the one with your Congressperson's office. As you may know, the industry has been working through its membership since 2001 during the annual **SBC** Legislative Conference to build these relationships. Each year, attendance at the conference has grown, and our industry has begun to form very strong relationships with some key members of Congress.

However, if traveling to Washington, DC in May isn't possible, you can also participate in a new effort by WTCA called Congressional District Meetings. Each lawmaker has local offices back in their home districts, and during Congressional breaks, your federal lawmakers return home to meet with their constituents. These are perfect opportunities for you to establish relationships with your lawmakers just by hoping in your car and driving across town.

For example, recently Glenn McClendon of Sun State Components and Mike Murray of A.C. Houston Lumber attended meetings with their U.S. Senators from Nevada, John Ensign (R) and Harry Reid (D). Mike had never visited with a member of Congress before, afterward he said, "I felt really good about these meetings. I felt we were able to establish a good relationship with them, they were very accessible. I also learned which methods to use to make sure our views are heard in the future."

*"...I felt we were able to establish a good relationship with them, they were very accessible. I also learned which methods to use to make sure our views are heard in the future."*

—Mike Murray, A.C. Houston Lumber, after his first district meeting

WTCA staff scheduled the meeting on their behalf and prepared a list of issues to discuss ahead of time. These "talking points" covered immigration reform, regulatory costs on small business and a trade law known as the Byrd Amendment. These issues are being debated heatedly in the halls of Congress this year, and giving our industry's viewpoint on them is an important effort not to be overlooked. As Glenn pointed out, "They were well informed on all the issues, particularly immigration. Everyone agreed that immigration reform needs to happen, and they were in favor of a guest worker program. These were really effective meetings."

The reality is, however, that the talking points are really an ice breaker to generate discussion on topics they're familiar with. The real purpose of the meeting is to establish a relationship with either the lawmaker or a member of their staff. By bringing good information and a strong perspective on how these issues affect your company, you establish a reputation they can trust and are willing to respond to in the future—regardless of the issue.

Herb Hildebrand from Casmin in Florida attended a Congressional District Meeting with a staff member of his Senator, Mel Martinez (R). Herb had also never met with his lawmaker before. After the meeting, he said, "I could see the light bulb go off as I shared how these issues affected our company. I felt confident that the staff person would share my message with the Senator." More importantly, Herb added, "I felt I was able to make a good connection with the people we met with and if I called them, they'd take my call. This was very valuable from a networking perspective."

Time is precious, and when things are busy there's never enough of it. However, it is possible to more than make up for the time it takes to attend a few meetings with your members of Congress when one subsequent phone call to them can help you resolve a permitting issue that threatens to hold up your production for days. If Glenn could sum up his experiences during his two meetings, "it was well worth the effort!" **SBC**

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## Housing Starts

As widely expected, housing starts fell 7.9% in February to 2.12 million (SAAR). The January starts were upwardly revised to 2.3 million which was a 15.8% increase over the December numbers. The pullback was due primarily to the 30% drop in the volatile multi-family sector while single-family fell a more modest 2.3% to 1.8 million SAAR. Permits, which are less affected by weather, were down a more modest 3.2%.

U.S. Housing Starts				
Millions - Seasonally Adjusted Annual Rate (SAAR)				
U.S. Totals	Feb	Jan (rev.)	% Change	
Starts	2.120	2.303	-7.9%	
Permits	2.145	2.216	-3.2%	
<b>Single Family</b>				
Starts	1.800	1.843	-2.3%	
Permits	1.639	1.690	-3.0%	
<b>Multi Family</b>				
Starts	0.320	0.460	-30.4%	
Permits	0.506	0.526	-3.8%	
Starts and Permits By Region:				
<b>NE</b>	Starts	0.182	0.238	-23.5%
	Permits	0.203	0.213	-4.7%
<b>MW</b>	Starts	0.326	0.364	-10.4%
	Permits	0.372	0.388	-4.1%
<b>S</b>	Starts	1.041	1.172	-11.2%
	Permits	1.015	1.078	-5.8%
<b>W</b>	Starts	0.571	0.529	7.9%
	Permits	0.555	0.537	3.4%

**Analysis & Outlook:** The trends are still very positive for housing. For example, Bob Walters (Chief economist for Quicken Loans) tell us that the 12 month moving average for starts is 2.0-2.1 million SAAR—a good number. He also went on to say that as long as jobs are plentiful and interest rates low, the housing trends will remain solid. The fixed rate mortgage, although moving up to 6.37%, remains attractive by historical standards. The job picture continues to improve with the unemployment rate dropping below 5% and incomes still increasing faster than inflation. The recent CPI report tells us that inflation is “tame” with the exception of volatility in the oil markets. Inflation should remain tame as long as excess manufacturing capacity (world basis) continues. Globalization trends mean more intense global competition—outsourcing, for example, will continue to drive labor costs down. Housing is slowing, but most analysts don't expect a bust. Slowing signs are growing: (1) the inventory of new homes on the market is 530,000, a 5.2 month supply at current sale rates; (2) builders are starting to offer “deals”; (3) price increases are moderating (actually falling in some areas); (4) sellers are seeing fewer “multiple offers”; (5) mortgage delinquencies are increasing; and (6) lending standards are tightening. As long as the “wild cards” don't come into play (dollar free fall, terrorist attacks on home soil, bird flu pandemic, etc.), housing should remain healthy in 2006—single-family will pull back some while multi-family is expected to make modest gains. Things to watch: oil prices; the dollar; inflation trends; and the job market. Most analysts don't expect any serious problems, but prudent planners need to consider various scenarios and be prepared for surprises. **SBC**

This housing starts report is provided to **SBC** on a monthly basis by **SBC Economic Environment** columnist Al Schuler. Visit [www.sbcmag.info](http://www.sbcmag.info) for more economic news.



## Builder Banter

### Wood Reinforced with Fiberglass Offers Environment-Friendly High-Strength Material

Wood reinforced with fiberglass potentially offers “green”—or environment-friendly—products, according to a life-cycle inventory (LCI) that investigated the energy consumed and environmental emissions produced during its premanufacture and manufacturing stages. The analysis was conducted by researchers at ERG, Inc., of Lexington, MA, and reported in the *Forest Products Journal* in June 2005.

The reinforced wood door system analyzed in the study, for example, uses patented technology developed at the USDA Forest Service Forest Products Laboratory (FPL) in Madison, WI. The fiberglass reinforcement, primarily at joints, hinges and latches, improves the strength and durability of the doors, making them suitable for use in some residential applications where increased security is a primary concern.

The life-cycle inventory looked at energy consumption and emissions involved in acquiring raw materials, such as harvesting lumber or mining iron ore, and in manufacturing a typical door. The study did not include distribution, product use or disposal.

The LCI analysis quantifies 44 atmospheric emissions (including five greenhouse gases), 32 waterborne wastes, energy consumption and solid-waste generation associated with the pre-manufacturing and manufacturing states of a door's life cycle.

An additional environmental benefit from using wood-fiberglass doors is the fact that the doors can be manufactured using low-grade, small diameter timber.

More information is available at FPL's web site: [www.fpl.fs.fed.us](http://www.fpl.fs.fed.us).

### Builder Confidence Virtually Unchanged In March

A one-point decline in the National Association of Home Builders/Wells Fargo Housing Market Index (HMI) for March indicates that housing demand and sales are gradually returning to a sustainable pace that is right in line with our forecasts, said NAHB on March 15.

“Today's HMI provides the latest evidence of a predicted and orderly cooling process for the nation's single-family new-home market, which easily hit record highs in 2005,” said NAHB President David Pressly, a home builder from Statesville, NC.

Noting that the confidence gauge has remained within a narrow two-point range for four consecutive months following a retreat from its peak in mid-2005, NAHB Chief Economist David Seiders attributed March's slight downshift to eroding affordability conditions as well as a gradual withdrawal of investor demand in some areas.

“Rising interest rates and high rates of home-price appreciation have raised the bar for homeownership to beyond what some families can reach,” he noted. “Meanwhile, a retreat of short-term investors from certain markets is helping restore equilibrium between supply and demand.”

[Source: NAHB Press Release, 3/15/06, [www.nahb.org](http://www.nahb.org)]

### Housing Market Index 2005-06 (HMI)

The HMI is a weighted, seasonally adjusted statistic derived from ratings for present single family sales, single family sales in the next 6 months and buyers traffic. The first two components are measured on a scale of “good” “fair,” and “poor,” and the last one is measured on a scale of “high,” “average” and “low.” A rating of 50 indicates that the number of positive or good responses received from the builders is about the same as the number of negative or poor responses. Ratings higher than 50 indicate more positive or good responses.

Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan06	Feb	Mar
67	70	72	70	67	65	68	61	57	57	56(r)	55

Source: National Association of Home Builders

## The Future of Outdoor Lighting

WW Creative Solutions Inc. is an innovative technology company based in the San Diego area. Headed by Tim and Victoria Woodward, this company develops futuristic products for home and industrial use that not only enhance and change life as we know it, but are also energy efficient.

“Our company offers a family of innovative products,” says Victoria. “The recent and dramatic rise in energy costs has created demand for products that reduce energy usage and dependency on non-renewable sources. Plus, saving energy is just good business.”

This company's newest product is the Solar Energy Lighting Brick and Road Marker system. The bricks are extremely low-maintenance because they automatically turn on and off at dusk and dawn and don't require batteries because they are powered by solar energy charging capacitors.

Available in five colors, the bricks are as easily installed as a regular brick or tile, making arrangement possibilities and decorative effects endless. These modular, self-contained lighting devices can be used for decorative use in backyards (lighting for pathways, pool decks, patios, driveways) and for commercial use for traffic flow purposes (road stripping, taxiways, private runways, crosswalks, marking intersections).

[Source: E-News web site. For more information, visit [www.creativesolutions.com](http://www.creativesolutions.com).]

### Coming Attractions: Futuristic Features

No longer are remote controlled homes an idea only seen in cartoons or read about in fantasy books. We are closer than ever to having homes comparable to the futuristic living style of “The Jetsons.” Although high-tech features such as remote controlled lighting, heating and window blinds are priced high, the prices are heading down, which will soon make these options more readily available to the general public.

“Homes of the future will be more advanced in terms of both technology and comfort,” say Robin Burrill, Chief Executive Officer of Curb Appeal Renovations of Keller, TX, and Mark Brick, President of B&E General Contractors of Glendale, WI. Trends that they see becoming more common are entertainment systems in all rooms, personal wine cellars, prep kitchens to prepare food apart from the “show” kitchen, outdoor kitchens, cylindrical vacuum-tube elevators, elegant spa bathrooms, radiant flooring and more creative methods of lighting (including automated lighting).

[Source: [www.housingzone.com](http://www.housingzone.com)]

### U.S./Mexican Cement Accord Paves Way for Free Trade

An accord signed on March 6 by the U.S. and Mexico that will dras-

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tically lower duties on Mexican cement imports and eventually result in free trade between the two nations will help to increase much-needed supplies of Mexican cement to the U.S. market, according to the nation's home builders.

“More than 30 states reported shortages of cement in 2005. This agreement is vital to meet consumer demand, which will only grow in the coming year as the Gulf Coast rebuilding effort moves into high gear following last year's devastating hurricane season,” said David Pressly, president of the National Association of Home Builders (NAHB) and a home builder from Statesville, NC.

[Source: NAHB Press Release, 3/6/06, [www.nahb.org](http://www.nahb.org).] **SBC**

Email ideas for this department to [builderbanter@sbcmag.info](mailto:builderbanter@sbcmag.info).



# Bcmc 2006

## Exhibitor Spotlight: Viking Inc.

by Stephanie Watrud

One exhibitor explains how her company uses the show to conduct valuable marketing research.

After exhibiting in their fourth consecutive show in 2005 in Milwaukee, WI, Viking Inc. has come a long way since their first show in 2002 in Columbus, OH. "Milwaukee was a turning point for our organization," said Linda Resch of Viking. "Now we leave the show with pages and pages of things to follow up on. I think that is a good sign of success."

At BCMC 2002 the average time spent in Viking's booth by an attendee was five to seven minutes, and the question most attendees asked was, "How much is that?" This past year, people still asked how much equipment cost, but it was after the attendee walked through their booth spending a minimum of 20 to 30 minutes talking to staff to find out just what Viking had to offer, and learning a tremendous amount about the products and Viking.

Each year Viking took note of how their interaction with attendees had dramatically changed. In 2005, Viking indicated that 66 percent of their wall panel system customers and 75 percent of their revenue can be directly tied back to either BCMC visits or the corresponding advertisements they run in *Structural Building Components Magazine*. This is part of Viking's integrated marketing strategy that ties their advertising to the concepts they use at BCMC so they get the best reach they can to those who attend the show and work in the industry.

Resch believes that each year at BCMC, Viking gains more acceptance from show attendees. "People are there to learn about what is going on in the industry and who has products or services to help them succeed," said Resch. "Lumber yards and truss manufacturers are finding themselves receiving more demands for wall panels in addition to their current services. We're here to assist them with this."

"Based on customer's needs, we go back to the drawing board [after the show] to refine our marketing plan and engineering design focus. We're there to provide the customer what they want and need," said Resch.

Resch is also an advocate of BCMC to her clientele. When someone phones Viking looking for information, Resch is the first person they speak to. Prior to the 2004 show in Charlotte, she received a call from a potential customer asking for information. She asked them if they were planning to attend BCMC in Charlotte. Since they weren't familiar with BCMC, Resch explained the strategy behind the show, the benefits of attending, and why they should consider attending.

"By encouraging customers to attend, they can see what is taking place in this industry and what the competition has to offer," said Resch. BCMC gives the customer the ability to compare and contrast equipment and information that fits their need. The customer is able to find all the resources they are looking for in one spot. Because Resch was able to use BCMC as a tool, they not only gained a customer, but that company became a WTCA member and has taken advantage of the membership benefits ever since. **SBC**

*Come and experience BCMC for yourself October 4-6, 2006, where we will be Bigger and Better in Texas. Don't forget to check out the web site at [www.bcmshow.com](http://www.bcmshow.com). Remember, the early bird registration deadline for exhibitor booth fees is May 1, 2006.*



### at a glance

- Viking noted that in 2005, 66 percent of its wall panel system customers and 75 percent of its revenue could be directly tied to exhibiting at BCMC or advertising in *SBC Magazine*.
- Exhibitors can use the show to learn customer needs, improve their marketing plans, and fine-tune their products.

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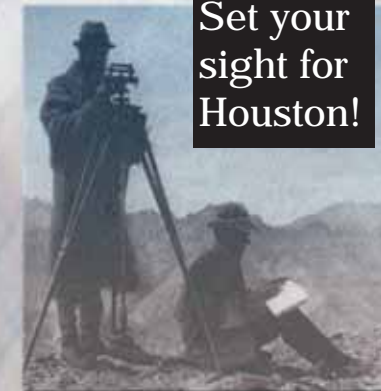
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700 - 1,000	\$ 9.55	\$12.50	\$11.15	\$14.60
1,100 - 2,000	\$ 9.00	\$11.80	\$10.10	\$13.20
2,100 - 4,000	\$ 8.20	\$10.80	\$ 9.30	\$12.15
Over 4,000	\$ 7.40	\$ 9.75	\$ 8.50	\$11.10

\*If you are exhibiting a trailer, crane or forklift, contact Peggy ([ppichette@qualtim.com](mailto:ppichette@qualtim.com) or 608/310-6723) for pricing.

### Submit your Application & Contract for Exhibit Space by MAY 1 to save money!



"BCMC always provides a great opportunity for us to meet with our current customers, and connect with potential clients within the building component industry. This year was no exception: due to the overwhelming number of Deacom visitors, we decided to upgrade to a larger booth for 2006!"

Ms. Susan Shaw, Deacom



[www.bcmshow.com](http://www.bcmshow.com)

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# Code Connection

## Referenced Standards

by WTCA Staff

Did you know that some material from ANSI/TPI 1-2002 is included in the IBC and IRC?

**B**uilding codes cannot and do not include all design, installation and testing provisions for all materials and methods. To do so would make a building code too unwieldy and too expensive.

The ICC provides A Guide to the Use of Standards in the ICC International Codes. It includes a discussion of the use of referenced standards in model building codes. A portion from the preface to the 1999 edition is included here:

There is a long-standing relationship between construction codes and standards that address design, installation, testing and materials related to building construction. Building regulation cannot be effectively carried out without such standards. The critical role of standards in the building regulatory process is such that the standards are an extension of the code requirements and are therefore equally enforceable. Consequently, standards that are referenced in codes carry an expectation of being as clear, direct and enforceable as code requirements that are primary text.

A standard is a published technical document that represents an industry consensus on how a material, product or assembly is to be designed, manufactured, tested or installed so that a specific level of performance is obtained. Standards are primarily developed by industry organizations and professional associations incorporating the views of interested parties. A standard is developed in response to an identified need and typically contains information which is based on experience, knowledge, testing, analyses and research.

A standard is not intended to be used as primary law but as a referenced authoritative resource. While a model code becomes law when it is adopted by a jurisdiction, a standard becomes law to the extent to which it is referenced in a model code. When a standard that is referenced in the code (first-tier reference) in turn references another standard (second tier reference), the second-tier referenced standard is equally applicable, again, to the prescribed extent of the reference to it in the first-tier reference. This trail of applicability extends throughout all tiers of references.

A model code establishes minimum quality and performance criteria for the materials and methods regulated by the code. For many materials and methods the code relies on referenced standards to provide these criteria. The referenced standards are an enforceable extension of the code. Standards supplement the code by setting forth conditions or requirements that a material or method must meet, thereby providing an acceptable level of safety for building occupants. To comply with the provisions of the model code, a method or material must meet the requirements of the referenced standard.

When the code has specific requirements that vary from those found in a referenced standard, the requirements of the code take precedence over the standard. If the code is silent on a particular issue, then the provisions in the standard are applicable to the prescribed extent of the reference to that standard.

Referenced standards may include a wide range of content. ANSI/TPI 1, National Design Standard for Metal Plate Connected Wood Truss Construction, contains chapters on the following:

- design responsibilities
- member design procedures
- quality criteria for manufacturing
- metal connector plate joint design
- metal plate connector manufacturing
- performance evaluation of metal connector plates
- material and general design considerations

Some of the material from ANSI/TPI 1 is included in the IBC and IRC, especially the information that must be provided on a Truss Design Drawing.

A Project Committee has been formed to evaluate the 2002 edition of ANSI/TPI 1. In addition to addressing technical issues related to member and joint design and quality criteria, the Project Committee will evaluate the relationship of ANSI/TPI 1 to the current model codes.

WTCA is planning to propose changes to the I-Codes for the 2007 code cycle that will move in the direction of having the metal plate connected wood truss requirements currently included in the IBC and IRC also placed into TPI 1 so that both are consistent and ultimately most of the information about truss design and construction will be in TPI 1. This is the general direction in which the code process is moving, per the IBC structural committee staff. WTCA Staff will develop a code change plan based on the work done in developing The Load Guide and from what we have learned during the last code change cycle. The discussion in the Project Committee will include what "code type" language should be added to TPI 1 rather than placing the language in the IBC/IRC in deference to the desire of the code to use reference standards to contain language specific to a given industry. **SBC**

For more information about how to get involved in the code process, contact WTCA staff at 608/274-4849 or codes@sbcindustry.com.

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### at a glance

- ❑ To comply with the provisions of the model code, a method or material must meet the requirements of the referenced standard
- ❑ A Project Committee has been formed to evaluate the 2002 edition of ANSI/TPI 1.
- ❑ WTCA is planning to propose changes to the I-Codes for the 2007 code cycle that will move in the direction of having the metal plate connected wood truss requirements currently included in the IBC and IRC also placed into TPI 1 so that both are consistent and ultimately most of the information about truss design and construction will be in TPI 1.

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# Publisher's Message

## Tending the "Grassroots"

by Libby Maurer

"That kind of life is most happy which affords us most opportunities of gaining our own self-esteem."  
—Samuel Johnson

**T**he term "grassroots" is often difficult to define and generally means something different to each of us. But in the articles we bring you in this issue, it is clear that grassroots is synonymous with at least one of these: people, spirit, vision and education.

Do you or someone you work with play mind games, fall into patterns of negative thinking, or seem to be triggered by certain personalities? Sure, we all do; it's what makes us human. In our cover story beginning on page 36, we've revealed one company that has turned its culture around by incorporating psychology in hiring and training procedures. In the last seven years, Boozer Lumber has grown by leaps and bounds in terms of sales, production capacity, and...self-awareness? That's right, the company has put a new spin on differentiation by studying how brain chemistry influences achieving success in the work place and the bottom line.

If you've ever wondered what all the hoopla about being involved in a local WTCA chapter is all about, don't miss "The Essence of the Industry Lies at Its Grassroots" on page 44, which spotlights the Western Component Manufacturers Association (WCMA) and its efforts to forge a relationship with the building official community in Oregon. Although still becoming familiar with each other, WCMA has been invited to participate in two meetings—one at the local level and one at the state level—for the purpose of shedding light on permanent bracing inspections. Thus far, the building inspectors have been receptive to the information in BCSI 1-03 and seem to appreciate WCMA's commitment to educating the marketplace.

Right now in China, a family is settling into its brand new western-style home built with wood trusses and wall panels, thanks to Wood Truss Systems of Indiana. "East Meets (& Builds) West" (page 54) chronicles the journey involved in setting up a state-of-the-art component manufacturing operation in Jiangsu Province, central China. Language and technology barriers aside, Wood Truss Systems assisted Cogent Home Manufactory in meeting its goal of manufacturing 3,000 homes each year.

In the March 2006 issue, we reported that Robert E. Mort, Sr., founder of Inter-Lock Steel Co., had passed away in December 2005. With the help of Mort's family and former co-workers, we've honored his life and contribution to the industry in "Leave a Legacy: Remembering the Life of Robert E. Mort, Sr." on page 64. It is certain that he will be missed, and his memory lives on in those who had the fortune of crossing his path.

You may have heard of a truss design issue that emerged over the last few years known as "chunk-out." Its technical term is actually "shear-out," describing a warning in design mode for situations where high tension members can tear out the wood at the edge of the teeth along the wood grain. Read more about this failure mode and the findings of the TPI 1 Project Committee in "Shear-out at High Tension Connections: "Chunk-out" Re-examined" on page 70.

Finally, don't forget to spend some time perusing the annual WTCA membership listing. Starting on page 76, this list puts you in touch with fellow association members and chapters—a key ingredient for healthy grassroots. **SBC**

### at a glance

- ❑ This issue of *SBC Magazine* focuses on grassroots activities within the industry and also houses the annual membership listing.
- ❑ The cover story features Boozer Lumber, a South Carolina component manufacturer with a new perspective on sustainability.
- ❑ Another feature honors the life of Robert Mort, Sr.
- ❑ The concept of "shear-out" is explained in this issue's technical feature article.

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# Working for Your Workers

## Homegrown Truss Technicians

by Sean D. Shields

What's the solution to finding, training and retaining truss technicians? Find some answers in *SBC's* newest column.

**W**hen it comes to truss technicians, there really is no substitute for someone who can do the job well. How do you find these promising individuals? The answers are as varied as the markets component manufacturers sell products in.

However, one method has the greatest potential for meeting the industry's need for technicians: hiring and training locally, also referred to as the "homegrown" method. In general, this consists of working with your local high school or technical college and encouraging a talented student with an interest in the construction industry to come and work at your facility, or hiring and training a current employee from within.

Steve Kloss, Automated Building Components, has successfully utilized this method for years. "Most of my designers are from the local technical college, but two of them came from the shop and just worked their way up," he said.

**One method has the greatest potential for meeting the industry's need for technicians: hiring and training locally, also referred to as the "homegrown" method.**

The first key to developing a successful homegrown technician method is to determine the source and size of your pool of potential candidates. Successful component manufacturers have gone out to their local high school's industrial arts program, tech school construction design and architecture classes, and even the local work force center. Other manufacturers, like Kloss, have been successful searching within their own plant.

The next step is to determine which individuals may have an aptitude for component design. One method commonly used is administering WTCA's Technical Assessment Test Online (TATO). If the individual scores well on the test, they're likely someone worth spending the time to recruit and train. If they score low, signifying they may have difficulty grasping some of the technical aspects of the component design process, they are probably better suited for a different career.

Once you have identified and developed a source of competent individuals and weeded out those who seem unlikely to succeed in this career path, training is your biggest investment. Many component manufacturers that use this method have found putting homegrown technicians through WTCA's Truss Technician Training (TTT), Level I, is a straightforward way to give them a strong foundation. Afterward, many manufacturers combine plate supplier-specific training (live or online) on component design software with in-plant mentoring alongside production and technical department employees.

The homegrown method has three primary advantages:

1. Technicians trained and mentored from within cost significantly less than those hired through alternative methods.
2. Inexperienced technicians present an absence of "bad habits," or a "clean slate" with which to nurture and train.

3. Individuals who lack design experience are significantly more plentiful in your local market, generally have a desire to live where they have strong ties and are consequently more likely to grow into this profession with your company.

"We have been successful with our homegrown technicians; one reason is they come up through the ranks, and the pay is competitive with the typical salaries for these jobs in our industry, but is a lot less than the inflated pay scales produced by headhunters in the open market," says Keith Azlin, Sun State Components.

The most immediate advantage to utilizing the homegrown method of hiring technicians is that you are not held hostage when your business has an immediate hiring need. If you are constantly searching for local talent, and subsequently have several options in mind to fill your needs, you will be able to build the technical portion of your staff in a way that keeps your costs in line with your competitor's costs, while providing a professional growth environment that is beneficial for the employee and a benefit for you through the long-term.

You also provide an intrinsic motivator for your other employees who may be interested in pursuing this level of responsibility. Hiring from within also guarantees that individual will know a great deal about the company and the product before designing their first component.

Along these lines, homegrown technicians present a clean slate for you to train on your company's practices and products. Priscilla "Perky" Becht, Chambers Truss, explained why they exclusively use the homegrown method: "Experienced technicians come with a lot of baggage they've picked up from their other places of employment. Unfortunately, they're usually bad habits. We also have a specific way of doing things here, and we don't want someone who's going to do it their way, we want them to do it our way."

Ben Hershey, Alliance TruTruss, echoed this sentiment, stating simply, "I prefer homegrown technicians because they are easier to teach, and they're not focused on job hopping."

This brings up the third advantage of the homegrown method—loyalty. Not only is the pool of individuals with aptitude yet with no prior industry experience significantly larger than the pool of experienced truss technicians, you are more likely to find more possibilities in your own back yard.

Hiring locally, through a school, work force board or your own company, will drastically increase the chances that person has a strong tie to the community and will stay around for a while. Steve Kloss summed it up saying, "trying to find experienced truss technicians is like finding a needle in the haystack. Potential technicians who come through head hunters are more apt to leave six months down the line because they are hooked on change and not settling down, whereas if they come to you on their own with ties to a local community they're likely to stay."

Finally, the homegrown technician method has one additional advantage, not only for you, but for the industry. As Hershey emphatically stated, "[unscrupulous] management recruiters and head hunters have been absolutely detrimental to our industry." By adopting this method over others, you can enhance the value of our industry within the communities you operate through identifying local talent and encouraging them to become employed in our industry, while at the same time curbing the ill-will created through the practice of hiring truss technicians away from fellow component manufacturers. **SBC**

*In the next issue of SBC Magazine, this column will explore ways component manufacturers have successfully promoted their companies to the community.*

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### at a glance

- Hiring and training locally, also referred to as the "homegrown" method, has the greatest potential for meeting the industry's need for technicians.
- Many potential technicians can be found in the local technical college, and some may start in the shop and work their way up.
- Component manufacturers have been successful with employing homegrown technicians; one reason is they come up through the ranks, and the pay is competitive with the typical salaries for these jobs in the industry.



# Wtca Update

## TTT Level II Online Updated

Learn more about the latest, greatest version of TTT Level II Online!

by WTCA Staff

**W**TCA has introduced a new version of TTT Level II Online! Version 2 (v.2) brings improved usability and important content changes to the user.

### Content

While v.1 references IBC & IRC 2000 in the sections dealing with codes, v.2 has been updated to reference the IBC & IRC 2003 codes. ASCE7-98 has also been updated to its newest version: ASCE7-02. A new section on truss testing has been added, and the section on the simplified method of truss design is now optional.



TTT Level II v.2 brings improved usability and important content changes to the user.

### Usability

Along with usability improvements introduced last year in the second version of TTT Level I, v.2 of TTT Level II offers a new delivery method that simplifies the downloading of course materials and navigation of the program. V.2 also features a new tab that allows hearing impaired users to see the text as it is being narrated.

### Administrative Advice

Users of v.1 are advised not to switch to v.2 if they are past section 3. This is because there are enough format, reference and continuity changes that make it very difficult to do well on the test. It is highly recommended that v.1 users who decide to make the conversion to v.2 start over at the first slide, in order to ensure that you cover all the key material that you will need to understand. There is a different exam for v.2, so users need to be aware that viewing part of v.1 and part of v.2 is not conducive to getting through all the material needed to complete a successful training experience.

### Course Materials

Another significant change to note is the required manual has changed from ASCE7-98 to ASCE7-02. All new TTT Level II binder purchases will come with the ASCE7-02. For users who have already purchased the binder with ASCE7-98, you may purchase a copy of ASCE7-02 for a discounted price of \$50. **SBC**

## Exciting Changes to WTCA's Web Site!



The WTCA Board of Directors recently voted to change the association's name to "WTCA – Representing the Structural Building Components Industry." The name more broadly represents the industry's highly varied business interests. It was chosen to retain brand equity of the current WTCA logo, while adopting a new name that more accurately reflects the membership's work.

As a result of the change, WTCA's web site domain has changed to [www.sbcindustry.com](http://www.sbcindustry.com). In addition to the new web address, component manufacturers should take note of the largest one-stop online shop of technical information and tools available on [www.sbcindustry.com](http://www.sbcindustry.com). From information on education and training to important technical resources, the site is updated daily. Check out the site's newest changes that make it easier than ever to navigate!

The most recent update includes several new menu items within the Technical Resources category in the main menu. Find information on everything from bracing and building codes to terminology. A long-time favorite of manufacturers, the Technical Q&A search function has an expanded database of results, including articles on topics like connections, lumber, partition separation and truss repairs. And if you can't locate the topic you're looking for just submit the question to the WTCA technical staff.

[www.sbcindustry.com](http://www.sbcindustry.com)

## New WTCA Members

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Mr. Jim Humbert  
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Fort Wayne, IN 46835  
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### Sullens Truss Company, Inc.

38 Old Lapping Rd  
Dawsonville, GA 30534  
706/864-8491  
Ms. Tona A. Sullens

### Goldenwood Truss Corp.

11032 Nardo St  
Ventura, CA 93004-3210  
805/659-2520  
Mr. Kevin Tollefson  
Sponsor: Mr. Don Ball

### Truss Incorporated

PO Box 23  
Susan, VA 23163-0023  
804/556-3611  
Mr. Kyle E. Dabney, III

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307 E Reynolds St  
Newton, IL 62448  
618/783-8481  
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### Trussworthy Components, Inc.

PO Box 398  
Pine River, MN 56474-0398  
218/587-8787  
Mr. Craig Anderson

For more information about WTCA membership, contact Anna (608/310-6719 or [astamm@qualtim.com](mailto:astamm@qualtim.com)) or visit [www.sbcindustry.com](http://www.sbcindustry.com). Listing as of March 8, 2006.

## WTCA Board of Directors

### Officers & Executive Committee Reps.

- **President:** Donald Groom • Stark Truss Co., Inc. • 330/478-2100 • [don.groom@starktruss.com](mailto:don.groom@starktruss.com)
- **President Elect/Treasurer:** Barry E. Dixon • True House, Inc. dba True Truss • 904/757-7500 • [barry@truehouse.com](mailto:barry@truehouse.com)
- **Secretary:** Robert J. Becht • Chambers Truss, Inc. • 772/465-2012 • [bob@chamberstruss.com](mailto:bob@chamberstruss.com)
- **Past President:** Kendall Hoyd • Idaho Truss & Component Co. • 208/888-5200 • [kendallh@idahotruss.com](mailto:kendallh@idahotruss.com)
- **Kenneth M. Cloyd** • California Truss Co. • 909/657-7491 • [kenc@caltruss.com](mailto:kenc@caltruss.com)
- **Dwight Hikel** • Shelter Systems Limited • 410/876-3900 • [dwright@sheltersystems.com](mailto:dwright@sheltersystems.com)
- **Frank B. Klinger** • Mid-Valley Truss & Door Co. • 956/428-7090 • [lftcfbk@aol.com](mailto:lftcfbk@aol.com)

### At-Large Representatives

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- **Allen Erickson** • Cal-Asia Truss • 925/680-7701
- **Ben Hershey** • Alliance TruTruss, LLC • 602/252-1772
- **David Horne** • Universal Forest Products, Inc. • 800/476-9356
- **John A. Smith** • Foxworth-Galbraith Lumber Co. • 972/437-6100
- **Steven A. Spradlin** • Capital Structures Inc. • 479/783-8666
- **Mike Walsh** • Stock Components • 919/431-1000

### Directors Representing Chapters

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- **Bruce J. Bain** • Richco Structures • 920/336-9400
- **Michael Balliet, Jr.** • Bama Truss & Components • 205/669-4188
- **Priscilla J. Becht** • Chambers Truss, Inc. • 772/465-2012
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- **Joe Kusar** • Tolleson Lumber Co., Inc. • 478/987-2105

### at a glance

- ☐ V.2 includes updated references to the IBC & IRC 2003 codes and ASCE7-02.
- ☐ A new delivery method simplifies navigation and course material downloads.
- ☐ A new feature provides all content in text format for hearing impaired users.



## Open Quarterly Meeting Highlights: March 1-3, 2006 • San Antonio, TX

The winds of change were blowing at the most recent OQM. Find out what's new on the horizon for WTCA.

by WTCA Staff

**B**oard president Don Groom opened the meeting at 8 a.m. on March 3 in San Antonio, TX. The Board passed a motion to approve the meeting minutes from October 2005. Don reviewed the remaining 2006 meeting schedule. Frank Klinger gave a presentation about the teamwork that exists within the Truss Manufacturers Association of Texas (TMAT).

### Executive Committee Report

**Truss Design Drawing Policy:** WTCA staff reminded the Board about the Minnesota building officials' suggestion that they should define how a truss design drawing should appear. The issue was discussed at the December TPI Board meeting, where it was decided that the best solution is to develop an online educational program with each of the software providers to explain what the information on truss design drawings means. PowerPoint® drafts are currently being created by each software provider.

**Name Change:** Don reviewed the statistics from the name change survey:

#### Summer 2005 Results Set 1

73.17% (210 out of 287) picked a different name than Wood Truss Council of America.  
26.83% (77 out of 287) want to stay with Wood Truss Council of America

#### Summer 2005 Results Set 2

50.17% (144 out of 287) said that changing the name of the Wood Truss Council of America to a name that more broadly represents the industry's highly varied business interests is in WTCA's best long term interest.  
25.44% (73 out of 287) said that changing the name of the Wood Truss Council of America to a name that more broadly represents the industry's highly varied business interests is NOT in WTCA's best long term interest.  
24.39% (70 out of 287) said either way is OK.

#### Fall 2005 Results

64% (64 out of 100) said "WTCA - Representing the Structural Building Components Industry" is the best name to represent us for the next 25 years.  
36% (36 out of 100) said that "WTCA - Wood Truss Council of America" is the best name to represent us for the next 25 years.

Don introduced the resolution to the Board:

*Whereas, three surveys have been taken of the WTCA membership regarding whether the association should change its name;*

*Whereas, the results of each survey demonstrate that a majority of those responding believe it in the best interest of WTCA to transition away from its current name to a new name,*

*Whereas, a name has been agreed on for the association for the current time,*

*It is therefore, RESOLVED, that the association should transition at this time from the current name of "Wood Truss Council of America" to the name "WTCA - Representing the Structural Building Components Industry;" it is further RESOLVED that Executive Committee take such necessary action as it determines in its discretion to implement the name change as approved by the Board of Directors.*

The Board unanimously passed this motion.

Continued on page 24



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**EDUCATION:** Attendees will be exposed to educators and design professionals from around the world who will be presenting some of their most interesting ideas and research results. Continuing education credits (self-documented) will be available to assist attendees to meet requirements of their professional registrations.

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**TO ATTEND:** For more information, or to inquire about exhibitor or sponsorship information, contact:

Ms. Jamie LeGore • Oregon State University  
Phone: (541) 737-6443 • jamie.legore@oregonstate.edu

[www.wcte2006.com](http://www.wcte2006.com)

### at a glance

- ❑ The WTCA Board voted unanimously to pass a resolution changing the name of the association to "WTCA – Representing the Structural Building Components Industry."
- ❑ A management committee resolution was passed to change the Wage & Benefit and Financial Performance survey policy.
- ❑ Two new technical staff members have been hired, and the number of professional engineers on staff has increased to four.
- ❑ The design of the research and testing facility is nearing completion.
- ❑ The next OQM will be May 10-12 in Washington, DC, in conjunction with the 2006 SBC Legislative Conference.

## Open Quarterly Meeting Highlights

Continued from page 22

### BCMC Report

Committee chair Doug Folker said exhibitor promotions have been sent and BCMC staff has begun to sell sponsorships. The committee has approved the economics and kick-off speakers.

WTCA staff talked about the unexpected difficulty in hotel room availability in Fort Worth. This is due to the renovation or closing of downtown hotels. A lengthy discussion about the issues facing BCMC due to this problem took place. Staff reported that if the show remains in Fort Worth, attendees and exhibitors will likely be housing in remote hotels and shuttles will transport them to and from the convention center. The Board discussed moving the show to another convention center. It was suggested that staff look into the Gaylord Texas in Dallas/Fort Worth, San Antonio or Houston. The Board directed staff to look at all options and determine the best course of action.

### SBC Magazine

WTCA staff reported that 2006 is off to a great start and **SBC** continues to undertake several industry projects that have great value to each member of WTCA. For 2006, there are currently 30 Gold, 12 Silver, and 3 Bronze program advertisers.

### Management Committee

Committee Chair Ben Hershey read a motion to change the

Wage & Benefit and Financial Performance Survey Policy:

*To encourage participation in its Wage & Benefit and Financial Performance Surveys, WTCA shall sell the Wage & Benefit and Financial Performance surveys to non-participating component manufacturer members at a cost of \$1,600 each. If the purchasing member company participates in the next survey (the next appropriate survey of the survey that was purchased), a credit of \$1,400 will be applied to the member's account.*

**The Board unanimously passed the motion to adopt the policy change from the Management Committee.**

### Legislative Committee

Allen Erickson invited everyone to participate in the 2006 Legislative Conference and reinforced the value of this to each member. The conference will be held May 10-12 in Washington, DC.

### Staff Update

Staff reported that Keith Hershey and Jim Vogt, P.E. have been hired to strengthen the technical department and help tackle industry testing needs. Rachel Smith, P.E., and Ryan Dexter, P.E., recently passed their professional engineering exams; as a result, staff has gone from one P.E. to four.

### Research & Testing Facility

Kirk Grundahl gave an update on the research and testing facility, announcing that the design of the building is nearing completion. He reported that new staff member Keith

Hershey is taking on many of the testing facility development responsibilities.

He explained that the best way to envision the testing that will be done in the facility is to think about a box that is 20 feet wide by 20 feet high by 98 feet long. This can be tested with gravity and lateral loads in two directions. The challenge we face is to design the columns and the concrete to handle the lateral loading capacities. The Board raised questions regarding dynamic testing, whole house testing, wind and seismic testing.

It was also mentioned that at its last meeting, TPI offered to become 50/50 joint venture partners in the testing facility. TPI made a proposal that will begin the process of working out an agreement.

John Huck asked about allowing organizations outside of WTCA to use the facility. This has been discussed by everyone involved to ensure that the best approach is taken to meet everyone's testing needs. A suggestion was made that some sort of cap on the percentage of usage by those outside the industry be considered.

## Treasurer's Report

Barry Dixon reviewed the 2005 financials, reporting that WTCA had another very good year. He then reviewed our historical financial performance as follows:

WTCA's Budgeting Process 2000-2005						
	2000	2001	2002	2003	2004	2005
<b>Budget Income</b>	\$789,375	\$1,182,430	\$1,412,900	\$1,614,205	\$2,203,950	\$3,053,857
<b>Actual Income</b>	\$934,469	\$1,363,565	\$1,526,626	\$1,813,458	\$2,913,004	\$3,566,128
<b>Budget Variance</b>	\$145,094	\$181,135	\$113,726	\$199,253	\$709,054	\$512,271
	18.38%	15.32%	8.05%	12.34%	32.17%	16.77%
<b>Budget Expenses</b>	\$1,247,789	\$1,437,490	\$1,806,962	\$2,218,560	\$2,747,658	\$3,681,461
<b>Actual Expenses</b>	\$1,298,624	\$1,477,426	\$1,865,566	\$2,040,220	\$2,757,565	\$3,716,148
<b>Budget Variance</b>	\$50,835	\$39,936	\$58,604	-\$178,340	\$9,907	\$34,687
	4.07%	2.78%	3.24%	-8.04%	0.36%	0.94%
<b>Budget Net Income</b>	-\$458,414	-\$255,060	-\$394,062	-\$604,355	-\$543,708	-\$627,604
<b>Actual Net Income</b>	-\$364,156	-\$113,861	-\$338,941	-\$226,761	155,439	-\$150,020
<b>Budget Variance</b>	\$94,258	\$141,199	\$55,121	\$377,594	\$699,147	\$477,584

Barry pointed out that WTCA does an excellent job of budgeting expenses and has been conservative in budgeting income. He then moved on to the 2006 budget, where we are again budgeting a \$225,000 deficit which falls well within the guidelines allowed by the WTCA bylaws.

As the Past Presidents, Executive Committee and WTCA Board have directed in the past, WTCA is not in the business of accumulating cash, it is in the business of advancing industry interests by investing all the resources that it can to

Continued on page 26

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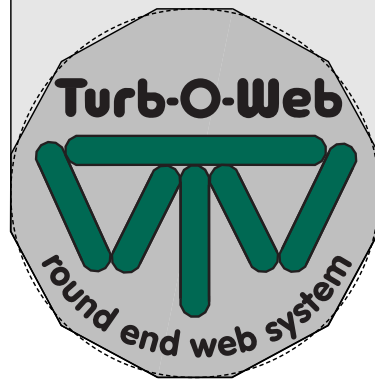
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## Open Quarterly Meeting Highlights

Continued from page 25

undertake tasks that will improve our industry for all who are deriving benefit from it.

He noted that we are being aggressive in projected expenditures for online training (TTT Level III and the development of Level IV), chapter support and staff travel to chapters, increased demand in In-Plant WTCA QC, ORisk, and the new testing facility. The 2006 numbers did not include revenue from the potential joint TPI/WTCA testing facility agreement, which could easily offset the budget deficit.

Ultimately, each year our goal is to get even better at budgeting accurately on both sides of the ledger.

**The Board unanimously passed the motion to approve the 2006 Budget as submitted.**

### TPI Report

Charlie Hoover reported that at February's joint E&T and TPI TAC meeting in Chicago, the first ANSI/TPI 1-2007 Project Committee meeting was held. The ANSI/TPI committee process has over 50 participants. It's a participatory process, and Charlie encouraged all Board members to get involved if they have an interest in this area.

TPI has a new set of officers; Tom Whatley (Eagle Metal Products) is the President, Andy Schwitter (Truswal Systems) is the Vice President and Wayne Masengill (Cherokee Metal Products) is the Treasurer. TPI is also currently conducting a search for a Technical Director.

On the topic of steel, not much has changed since October. China is still a strong steel producer and consumer, which affects the global steel supply. There has also been a big upswing in commercial demand domestically. A zinc shortage is also presenting a challenge for the galvanizing process.

### Lumber Report

Cathy Kaake said there are record levels of production in the lumber industry. She reported that Canfor is going to purchase New South, mainly due to their interest in bringing in more lumber from European sources. Also, Koch Industries has bought George-Pacific.

She also talked about the recent development of a component manufacturer-focused brochure, called Southern Pine for Structural Components. In it there are direct comparisons regarding the use of SYP in a townhouse project.

### Chapter & Supplier Roundtable Discussion

John Huck brought up girder nailing. He said they have one municipality that refuses to let them nail from one face, so they now have to flip all girders and nail them from both sides. It was suggested that they use screws to address the problem, but John pointed out some of the issues that they run into with using screws. Staff will draft a *Tech Note* clarifying all aspects of the girder nailing issues.

John asked if WTCA had thought about putting together a guide to help members navigate the business of whole house design/engineering. The Board talked about code and engineering issues, and the need to be careful when manufacturers consider this business activity. WTCA has budgeted money to ensure that we develop a fundamentally sound understanding of the legal, engineering and code environment as a first step.

Charlie gave the plate supplier's perspective, saying they are responding to the market, not driving it. Each manufacturer has to make its own decision regarding its business model, deciding how it is going to meet customers' needs. He said there are a lot of business opportunities, and the suppliers are trying to create products to meet their customers' needs (developing software and products that address bracing and shear wall engineering issues, for instance). **SBC**

*The next WTCA Open Quarterly Meeting will be held May 10-12 in Washington, DC, in conjunction with the SBC Legislative Conference. For more information, contact WTCA staff at 608/274-4849 or [wica@sbcindustry.com](mailto:wica@sbcindustry.com), or visit [www.sbcindustry.com](http://www.sbcindustry.com).*



## 2006 Committee Priorities

Below is a summary of three top priorities for each committee in 2006. For a complete listing of the priorities ranking, visit **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info).

### Membership

- Staff travel to chapter meetings and member visits
- Membership promotion to small companies
- Assistance to chapters for educational programs and Truss Technology Workshops (TTWs)

### Marketing

- Promotion of TTW Online programs
- Development of new industry details to be used by specifiers
- Assistance to local building official and fire service groups with online training

### Engineering & Technology

- Active participation in Truss Plate Institute Technical Advisory Committee (TPI TAC)
- ANSI/TPI 1 analysis
- Monitoring of and participation in building code development

### Quality Control

- Development of QC Management Information System
- Development of QC Best Practices and creation of an online training program
- Creation of QC Basics for Assembler Training

### Legislative

- Continued development of Congressional relationships
- Creation of a Voting Record Database on the **SBC** Legislative web site
- Development of state model legislation (through ALEC) on issues like transportation permitting, building labeling and fire code development

### Management

- Release of ORisk Phase I
- Development of Plant Training for New Employees
- Continued support of Operation Safety

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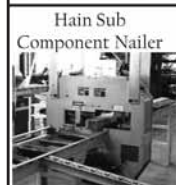
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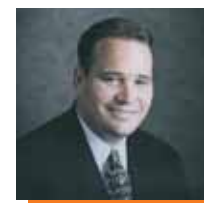
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## Editor's Message

Chapters—The Perfect Way to Get to Know (& Work With) Your Competitors

by Don Groom

"Besides winning, [the most fun thing is] getting out there and mixing it up with friends; it's the competition."  
—Al Unser, Jr., U.S. auto racer

**W**e're stronger together than we are apart." You've probably heard this saying before (or something similar). It lends itself well to our industry, especially in terms of the work component manufacturers can accomplish working together on the chapter level. This might sound odd considering that we're all in the same business and therefore competing for customers, but as an industry, we accomplish our most valuable work when component manufacturers work with their competitors.

Now there are two schools of thought on this. One school says, "Don't meet your competition and don't have anything to do with your competitors." The other school highly values getting to know one's competition. I strongly endorse the latter view. Competition in business is a lot like a basketball game. You give it your all and compete hard out on the court, but at the end of the game, everyone shakes hands. Win or lose, competing makes you a better player. Chapters offer the perfect venue to get to know your competition and even work together—to the benefit of your business, your competitors' businesses and the industry overall.

**Chapters offer the perfect venue to get to know your competition and even work together—to the benefit of your business, your competitors' businesses and the industry overall.**

One of my favorite friendly-competition stories started at a chapter board meeting. In 2002, I gave a presentation with Steve Yoder, Stark Truss President and WTCA Ohio Chapter President, on the just-released In-Plant WTCA QC program, and we encouraged members to get involved in it. A fellow Ohio chapter member jumped all over the program, and they were the first to be In-Plant WTCA QC certified in Ohio. The company sent out a flyer to many of our mutual customers promoting the fact that they were the first in the state to be certified. When the company hosted a chapter meeting at their plant later that year, all of their employees wore shirts proudly touting their certification. Stark had begun the WTCA QC certification process, but a competitor beat us to the punch at being the first certified, and that only challenged us at Stark to dedicate ourselves to move forward more aggressively with the certification process than we had before. I joked with the other company's management at the time about the "WTCA QC race," and it's still something we needle each other about to this day. It's all in good, clean fun. What's more, this kind of competition benefits both companies because each is striving and giving its all to be the best it can be by implementing an industry-based quality management program.

Local chapters offer an environment for these types of relationships and friendly rivalries to develop. WTCA provides the avenue to get to know your competition and work together for the common good. As chapter participants, component manufacturers facing similar challenges can address issues unique to their market such as building codes, insurance and risk management issues, and marketplace trends, to name a few.

### at a glance

- ❑ WTCA chapters offer an excellent venue to get to know your competition and even work together.
- ❑ Local chapters provide an environment where relationships and friendly rivalries develop.
- ❑ Working together and focusing on making the structural building components industry stronger increases its stature, and everyone reaps the benefits.

Continued on page 8

## Editor's Message

Continued from page 7

Chapters also play a critical role in how the engineering community views our industry. Last year when inspectors in northeast Ohio misinterpreted the code that applies to trusses over 32', the chapter, along with our WTCA staff, worked together to raise the issue with the county building department and resolve the misunderstanding. That united effort prevented some major headaches manufacturers might have faced if the issue hadn't been rectified. Similar situations are taking place across the country, with chapter members banding together to clarify code issues in their market and working with our staff to suggest new resources such as *Tech Notes*. Working together and focusing on making the structural building components industry the best it can be increases its stature, and everyone reaps the benefits. The industry's legitimacy in the eyes of builders and engineers increases because they can look at our industry and see that our design practices are based on sound structural engineering principles.

That same spirit of teamwork also applies at the WTCA Open Quarterly Meeting (OQM) level. Getting involved, attending these meetings and working for the growth and the common good of the industry can be very beneficial to individual component manufacturers. Where else can you go four times a year and meet with the leaders of the industry and share ideas that can readily make your company stronger? You get the chance to learn how companies in other markets handle challenges that, sooner or later, you will face in your market. It's a great way to get a head start on an issue. Gaining such perspective from a peer can save you time and money far surpassing the investment of traveling and participating in meetings.

At the end of the day, good competition doesn't just make you better—good competition makes everyone better. If you're not currently involved in a chapter, I strongly encourage you to do so. To learn how to get involved in your chapter's activities, visit [www.sbcindustry.com/chapters.php](http://www.sbcindustry.com/chapters.php). **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 your thoughts and ideas to [editor@sbcmag.info](mailto: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 WTCA – Representing the Structural Building Components Industry. The opinions expressed in *SBC* are those of the authors and those quoted, and are not necessarily the opinions of Truss Publications or WTCA.

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### Getting the Word Out

This is the WTCA booth at the 1st Annual Association of Minnesota Building Officials (AMBO) Trade Fair. WTCA's Minnesota Chapter worked with WTCA-National to support the fair. Many chapter members pitched in to make the exhibit a reality: Mike Peterman and Chris Torgerson (Scherer Brothers), Dave Danielson and Chris Backhaus (Automated Building Components), Joe Hummel (Villaume) and Randy Kor (Universal Forest Products, Inc.). Peterman commented, "...the booth turned out great. We were able to have some friendly debates with building officials." **SBC**



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by WTCA Staff

Even though the invention of the metal connector plate made nails unnecessary in truss construction 50 years ago, they still show up every now and then.

**M**etal plate connected wood trusses originally hit the market in 1952 when the first metal plate for trusses was invented by the late A. Carroll Sanford. Sanford's plate was a big step up from plywood gussets and a bunch of nails (widely used in truss construction before Sanford's metal plate), but it still required a few nails to "keep" the plate fully seated in the wood. Shortly thereafter, Cal Jureit invented the first plate that did not require additional nailing (see Figure 1 and "Gang-Nail's Golden Anniversary" from the Sept/Oct 2005 issue of *SBC*). It may seem strange that over 50 years later, we are addressing a question regarding nails in metal connector plates.



Figure 1.



Figure 2.

### Question

*During a recent new home inspection, I encountered typical roof trusses with standard truss plates and noticed additional nails were added through the plates (see Figure 2). Would this be an indication of increasing the load capacity or some other correction?*

### Answer

What you are referring to are "keeper nails," a term defined in ANSI/TPI 1-2002 Section 1.6:

**Keeper Nails** - nails driven through the metal connector plate during truss fabrication to hold the plate's location on the wood before pressing.

Some component manufacturers fasten nails or staples on joints through the metal connector plates to hold the plate and lumber together before the pressing process begins. The use of nails or staples to hold plates in place prior to final embedding with a finish press is a common industry practice for wood trusses. This is also a very common method use to construct jacks and small-span trusses that are fabricated on "jack" tables.

This is not a repair nor is it done to compensate for a plate that is too small. It was merely done to hold the plate in place. Nailing

through a metal connector plate is allowed, provided that the nailing does not damage the metal plate.

Actually, Table 11P of the 2001 National Design Specification® (NDS®) for Wood Construction, lists design values for common wire, box or sinker nails for single shear connections with up to 20 gauge ASTM A653, Grade 33 steel side plates. Therefore, as long as the truss plate is not damaged by the addition of nails and the wood does not split, the joints are actually stronger because of the nails. (Visit **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info) to view Table 11P.)

In conclusion, truss nails are used in some cases to prevent the metal connector plates from moving around and the lumber itself from shifting out of place during the fabrication process. In general, as the NDS says, this will increase the strength of the truss plated joint to boot. **SBC**

*Thanks to Tony Harris at A-1 Building Components LLC for submitting photos for this article. To pose a question for this column, call WTCA at 608/274-4849 or email [technicalqa@sbcmag.info](mailto:technicalqa@sbcmag.info).*

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### at a glance

- ❑ Placing nails through metal connector plates into wood members is allowed.
- ❑ The 2001 National Design Specification® for Wood Construction lists design values for common wire, box or sinker nails for single shear connections with up to 20 gauge ASTM A653, Grade 33 steel side plates.



# 2006 Committee Priorities

Below is a summary of three top priorities for each committee in 2006. For a complete listing of the priorities ranking, visit **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info).

## Membership

- Staff travel to chapter meetings and member visits
- Membership promotion to small companies
- Assistance to chapters for educational programs and Truss Technology Workshops (TTWs)

## Marketing

- Promotion of TTW Online programs
- Development of new industry details to be used by specifiers
- Assistance to local building official and fire service groups with online training

## Engineering & Technology

- Active participation in Truss Plate Institute Technical Advisory Committee (TPI TAC)
- ANSI/TPI 1 analysis
- Monitoring of and participation in building code development

## Quality Control

- Development of QC Management Information System
- Development of QC Best Practices and creation of an online training program
- Creation of QC Basics for Assembler Training

## Legislative

- Continued development of Congressional relationships
- Creation of a Voting Record Database on the **SBC** Legislative web site
- Development of state model legislation (through ALEC) on issues like transportation permitting, building labeling and fire code development

## Management

- Release of ORisk Phase I
- Development of Plant Training for New Employees
- Continued support of Operation Safety



# Safety Scene

## Preventing "Uh-Oh" in the Office, Part 2: Office Ergonomics for Your Component Manufacturing Plant

by Molly E. Butz

### er-go-nom-ics

*noun*, Design factors, as for the workplace, intended to maximize productivity by minimizing operator fatigue and discomfort.

One of the most commonly used "machines" in a component manufacturing office is the computer. Many resources, including OSHA, refer to computers as Video Display Terminals or VDTs. The standard VDT consists of a display screen, a keyboard and a central processing unit (CPU). Even laptop computers have each of these items neatly packaged into one compact, mobile piece.

Unfortunately, as the use of VDTs in the workplace has increased, so has the number of reported adverse health effects that can be traced back to their use. Some of the most frequent complaints include excessive fatigue, eye strain and irritation, blurred vision, headaches, stress, and neck, back, arm and muscle pain. Equipment, workstations, office environment and job design (including task variation, work breaks and working hours) are often the factors that cause these symptoms to occur. The upside is that many or all of these concerns can be controlled with proper office and workstation configuration. Let's explore the various small changes that can be made to make any office a comfortable, low-hazard place to work.

**There is no single "correct" workstation arrangement that will fit everyone, but even small changes in posture, component placement, or work environment can provide big relief!**

### Visual Problems

Improper lighting, glare from the screen, poor screen position or copy material that is difficult to read often result in problems including eye strain and blurred vision. Simple adjustments to the physical and environmental setting in which the VDT is being used can correct these difficulties. According to OSHA, "workstations and lighting can and should be arranged to avoid direct and reflected glare anywhere in the field of sight, from the display screen or surrounding areas." In addition, light should be directed in such a way that it does not shine in the operator's eyes but is adequate enough for the operator to see the screen and the copy material without straining. It is also recommended that the VDT operator look away from the screen and out the window or across the room occasionally to "change the focus" and give the muscles in the eye a chance to relax.

### Fatigue & Muscle Pain

Using a VDT often requires sitting in the same position with minimal movements for long periods of time. This can result in muscle fatigue, muscle pain and even injury. VDT operators are also prone to musculoskeletal disorders including carpal tunnel syndrome and tendonitis. Short work breaks along with varying the tasks performed during the work day can help alleviate these conditions and symptoms. Mini-breaks should include standing up, stretching at your desk and/or moving around to give the muscles time to rest and relax.

### Workstation Design

Every person's body is different, from height and weight to arm length. Providing workstations with numerous adjustable features will allow each individual to choose the settings that work best for his or her body. Ensuring that each workstation is

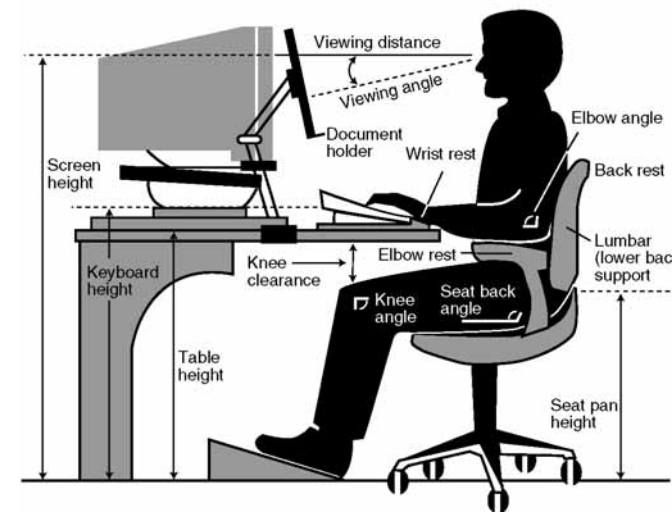


Figure 1. Guidelines for proper workstation design.

properly configured for the individual using it will decrease discomfort. When comfort is achieved, productivity will increase. The following list and graphic above provide some guidelines for proper workstation design:

- Ensure that the operator has a comfortable sitting position that is sufficiently flexible to reach, use, and observe the display screen, keyboard, and document.
- Provide posture support for the back, arms, legs, and feet as well as adjustable display screens and keyboards.
- Ensure that VDT tables or desks are vertically adjustable to allow for operator adjustment of the screen and keyboard.
- Ensure proper chair height and support to the lower region of the back.
- Ensure that document holders are used to allow the operator to position and view material without straining the eyes or neck, shoulder, and back muscles.

For more information on office ergonomics and appropriate workstation conditions, consult OSHA's "Working Safely with Video Display Terminals" or the Computer Workstations etool. (Visit **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info) for links to these resources.) And, in the meantime, have each employee consider an ergonomic overhaul of their office space. (Download a "Video Display Terminal Checklist" or a "Purchasing Guide Checklist" from the **Support Docs** section today to analyze existing workstations or evaluate new purchases before they're made!) There is no single "correct" workstation arrangement that will fit everyone, but even small changes in posture, component placement, or work environment can provide big relief! **SBC**

To pose a question for this column or to learn more about WTCA's Operation Safety Program, contact WTCA Staff at 608/274-4849, email [wtca@sbcindustry.com](mailto:wtca@sbcindustry.com), or view the Operation Safety demonstration on-line at [www.wtcalco.com](http://www.wtcalco.com).

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### at a glance

- ❑ The standard video display terminal consists of a screen, a keyboard and a central processing unit (CPU).
- ❑ Providing workstations with adjustable features allows individuals to choose the settings that work best for his or her body.

# STRUCTURAL BUILDING **COMPONENTS**<sup>TM</sup>

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