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The Journey from Survive to Thrive Begins with a Single Step

For every step in your process, there is an industry best practice program developed with your operations in mind to help you succeed.



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TRUSS DESIGNERS The Marines of QC



by Sean D. Shields

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The mission of *Structural Building Components Magazine (SBC)* is to increase the knowledge of and to promote the common interests of those engaged in manufacturing and distributing structural building components. Further, *SBC* strives to ensure growth, continuity and increased professionalism in our industry, and to be the information conduit by staying abreast of leading-edge issues. *SBC's* editorial focus is geared toward the entire structural building component industry, which includes the membership of the Structural Building Components Association (SBCA). The opinions expressed in *SBC* are those of the authors and those quoted, and are not necessarily the opinions of Truss Publications or SBCA.



Supplier Members' Support

material handling

Our supplier members provide services and expertise that can help you improve your business and your bottom line. This year, **SBC Magazine** will profile several aspects of the component manufacturing industry and highlight the supplier companies that serve those business segments.

This month, we focus on our industry's material handling suppliers. Proper handling and transport of your products ensures your highly engineered components aren't compromised or damaged once they leave your production line. These material handling suppliers offer a wide variety of equipment you can rely on to handle this aspect of your operations effectively.

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editor's message

by Scott Ward

I'm an Addict

Hello. My name is Scott Ward,
and I am an addict.
My drug of choice? SBCA.

It all started innocently enough a few years back when I attended a BCMC show. That's where I met my pusher and dealer, Kirk Grundahl (SBCA's Executive Director). I admit, I was young and naive at the time and didn't have a care in the world. I had little idea what I was getting myself into, but Kirk and the other members of the Board of Directors knew. They surely knew. Soon after, they introduced me to the Godfather of trusses: "Don Dwight," or the Honorable Mr. Hikel, as some in the industry call him.

It was then that I began my journey into the world that they like to call their little "triangle of trust!" I jumped feet-first into this unknown organization, taking it in one meeting, one dose, at a time. One day, recently, I woke up and found that I had become a diehard user of this nation's greatest trade association, SBCA.

This group has gone to great lengths to establish world peace and solve global hunger...well, perhaps not. However, we collectively have done some pretty cool stuff. For instance, we developed the flux capacitor for the component industry, the SBC Research Institute (SBCRI), which will transport us to a brave new world of construction we haven't seen before. For those of you who didn't get the humor in that last statement, and haven't seen the movie *Back to the Future*, SBCA also sells bracing tags.

I am often asked what it is like to be the President of such a powerful and awe-inspiring group. Okay, to be honest, my wife doesn't really ask me all that often. Really, she just tells me to hurry up and get off of the phone and stop playing with my "association friends." I'm kidding. She's 100 percent supportive of SBCA...just as soon as she allows me to remove the block on all calls from SBCA headquarters from our home phone. No, that's not true either. However, what is true is, behind every member of the SBCA Board, there is a supportive family that allows us to do good work on behalf of this industry we care so much about.

It is because of this support that we are such a strong group. Sometimes we are called upon to be outlaws, going against the grain and traditions of the construction industry to pave new roads. I'll be honest, it's gotten pretty scary at times. Although I haven't woken up with a horse head in my bed, I've had some pretty scary nightmares about being stuck on an island with a bunch of truss engineers and needing to build a "consensus-based" life raft out of tongue depressors.

All kidding aside, I am a simple man who doesn't know much. What I do know is that the individuals within our membership who have stepped up to the plate to be leaders in our association are really an awesome bunch. They truly care about this industry and our membership, sometimes making huge personal sacrifices to be present at meetings and putting their businesses aside to take care of association work.

When the economy took a nose dive, most of us spent the majority of our time trying to keep the doors open to our own businesses. To some degree, SBCA and our association's management team were left to fend for themselves in the wilderness. Thankfully, we survived. While things are never perfect with any organization, I believe SBCA came through that trial stronger, with a renewed energy to keep us headed in the right direction.

Continued on page 6

at a glance

- The SBC Research Institute (SBCRI) acts as our industry's "flux capacitor" and will transport us to a brave new world of construction we haven't seen before.
- The future is now and our industry only has two choices—we can each grasp at it individually, or we can hold onto it firmly through a collective effort.
- One of the best places to get active in SBCA is by attending a component manufacturer's-only roundtable discussion at a SBCA Open Quarterly Meeting (OQM).

Editor's Message • Continued from page 5

As I look forward to the coming year, I see a great land of opportunity for us to seize. With our builder customers facing severe labor shortages, now is the time for us to promote our products as the only logical framing method.

As the energy code drives the building code to require greater and greater energy efficiency in building practices, now is the time for us to promote our products as the only logical framing method.

As rising raw material costs drive the desire for material optimization, now is the time for us to promote our products as the only logical framing method.

We have been talking about our industry and its products as the "Future of Framing." It is evident to me that the future is now (it must have been that flux capacitor). We have two choices—we can each grasp at it individually, or we can hold onto it firmly through a collective effort. I challenge and invite each and every one of you reading this to find some way to get involved in SBCA. Your input and leadership are needed now more than at any time in our industry's existence.

I would argue that one of the best places to start is by attending a component manufacturers-only roundtable discussion at an SBCA Open Quarterly Meeting (OOM). Our discussions cover important industry issues that affect all component manufacturers, and participant insights go much deeper than you would expect. Beyond the ideas that are shared, the greatest benefit of these meetings is the enduring friendships that are established through them.

I want to extend a personal thank you to those who have already made the sacrifice and are a member of SBCA. Without your support and encouragement, we could not be the great association that we are today. If you aren't a member of this organization, I invite you to join me in my addiction. **SBC**

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

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You Don't Know What You Don't Know, Part III

A proud supporter of the innovation revolution taking place within the structural building components industry.

What Is Innovation?

To answer that, I would strongly recommend taking 15 minutes out of your day to listen to the June 2013 commencement address by Mr. Wesley Bush, Chairman, President and CEO of Northrup Grumman. It can be found on C-SPAN¹ or in the online version of this article.

He hits on some timeless points for anyone who desires to innovate but is pulled back by "status quoers" who resist such advancements. He also confirms that anyone who has a penchant for innovation, meaning they're a strong advocate for making change happen, will be met by strong resistance.

I believe Bush's key statements are:

"Leadership is a very demanding but very fulfilling role."

"Three fundamental strengths that great leaders bring to their endeavors: a genuine passionate commitment to the mission of the enterprise; a genuine competence including knowledge and expertise; and a very serious focus on ethics and integrity."

"Leaders then give weight in their decision-making to priorities that are based on deeply held personal values. This differentiates one leadership style from another."

"The interesting thing about innovation is that it brings change, change that builds vigor and excitement in an organization. Companies in any enterprise need innovators and diverse thinkers so they can truly exploit the opportunities that go with change. Now that is not to say that innovation is always welcome in every enterprise that you are going to encounter. Simply because innovation means change, it inherently attacks the status quo. Any time the status quo in any enterprise is attacked, you might expect a response."

"In fact, I have seen some organizations that practically drive good innovators out of their systems because they are not capable of dealing with the change that results. Now fortunately, those organizations usually don't last very long, and if you happen to find yourself in one of them, recognize it and get out."

"Innovation is an inherently important process that leads to the creation of the future of any enterprise. So my bias in decision-making: favor the innovative ideas, accept the discomfort that comes with that change if you can see a promising potential for a pay-off."

"It is important to have a commitment that your decisions will drive true value (i.e., profit) creation."

at a glance

- Innovation brings change that builds vigor and excitement in an organization or industry.
- We should challenge ourselves to look for ways to innovate and foster the discomfort of change.
- I am a proud supporter of the innovation revolution taking place within the SBC industry, and I invite you to join me as an advocate for change.

So, Is There Any Value to Being an Engineer?

Bush's advice to new graduates speaks directly to the place the structural building components industry stands at this moment. We can yield to those that desire the status quo because it is comfortable, or we can challenge ourselves to look for ways to innovate and foster the discomfort of change. I contend that we need to seize this opportunity in time and drive the construction industry toward the future, just as our industry did at its inception in the 1950s. When presented with a new idea, our industry should be energized, and as Bush recommends, "let our expertise and values guide us" in serving the best interests of our industry.

For example, the definition of what an engineer should be is a perfect example of what and who should be driving our industry forward. What is a professional engi-

neer? Professional engineering law generally says the following:²

An engineer is a professional practitioner of engineering, concerned with applying scientific knowledge, mathematics, and ingenuity to develop solutions for technical problems. Engineers design materials, structures, and systems while considering the limitations imposed by practicality, regulation, safety, and cost. The word engineer is derived from the Latin roots *ingeniare* ('to contrive, devise') and *ingenium* ('cleverness').

The work of engineers forms the link between scientific discoveries and their subsequent applications to human needs and quality of life.

In short, engineers are versatile minds who create links between science, technology and society. The building code³ defines an "approved source" as follows:

Approved Source: An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

For all intents and purposes, this concept is identical to the definition of an engineer. Further, the building code often says that the provisions of the code ought to be implemented in accordance with generally accepted engineering practice.⁴

Confirm that other structural design criteria and design assumptions conform to this code and are in accordance with generally accepted engineering practice.

Therefore, structural engineers have a golden opportunity to support innovative ideas that link scientific discoveries to subsequent applications that advance value to the quality of life. In our industry's case, this means that innovation should create greater structural framing value, resulting in more accurately designed and reliable structures. Ideally, this results in a more affordable residence or commercial building; otherwise, there is less value to customers for embracing innovation.

There is a common thought in the market that, to undertake engineering today, one has to follow or get approval through the use of a specific ASTM standard, IBC/IRC code provision, ANSI/TPI 1, or be endorsed by some governmental agency, ICC Evaluation Service "Evaluation Service Report (ESR)," national or state engineering association, university professor, etc.

Does this make sense? Are any of these entities more professional than an individual professional engineer? This "approval by others" notion seems very condescending toward normal professional engineers who are knowledgeable in their own right and want to create innovative proprietary solutions to construction problems. It also seems contrary to the concept of creatively using generally accepted engineering practice to better serve society through change. Creative engineers should be about new scientific discoveries and turning those into innovative ideas for the positive advancement of any industry.

The fact is, the "approval by others" notion is intended to thwart innovation. It is the tool that many try to use to maintain the status quo or their proprietary agenda, and it is meant by them to drive good innovators out of the system because they are not capable of dealing with change.

The status quo is particularly desirable for those who have been able to codify into law through the IBC/IRC system a distinct competitive advantage⁵ in the market,

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Direct links are provided in online version of this article at sbcmag.info:

¹ c-spanvideo.org/program/312861-1

² en.wikipedia.org/wiki/Engineer

³ publiccodes.cyberregs.com/icod/ibc/2012/icod_ibc_2012_2_sec002.htm

⁴ publiccodes.cyberregs.com/st/ny/ci-nyc/b200v08/st_ny_ci-nyc_b200v08_16_par266.htm

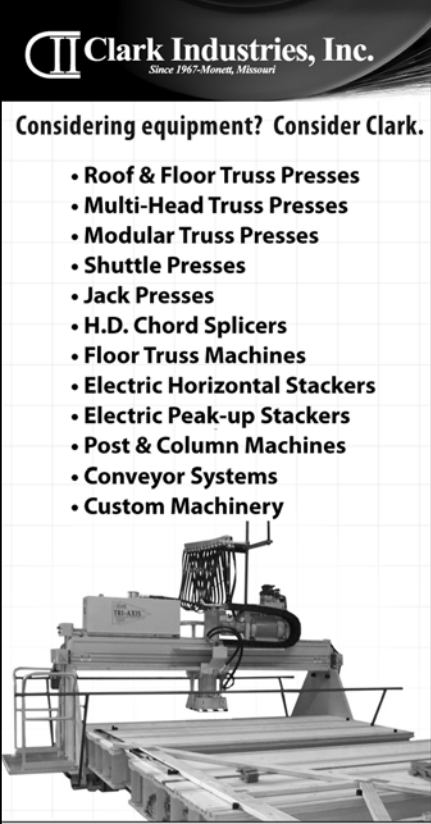
⁵ sbcmag.info/article/2013/you-dont-know-what-you-dont-know-part-ii



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Tips for Training New Truss Designers

Developing a solid plan for training designers is the best way to make sure that you cover all of the critical areas.

As our industry starts to ramp up again, we face many issues, and hiring and training new designers is at the top of the list. It takes longer to train designers than any other position, and the design department affects almost every aspect of the company, including material usage, plant labor, customer satisfaction, pricing, and the bottom line. Bringing a designer up to speed can take anywhere from three months to a year, and even an experienced designer will need time to understand all of the nuances of your business. Developing a solid plan for training designers is the best way to make sure that you cover all of the critical areas.

Question

What is a typical training plan for a truss designer?

Answer

The approach a company takes to train a new designer will vary depending on how knowledgeable the person is of the industry and the duties he or she will be assigned. For example, will they primarily focus on designing trusses, or will they handle multiple tasks like bidding a job, creating the layout, taking field measurements, designing trusses, and creating the paperwork for the shop and the jobsite package? In general, a well-rounded truss designer should be able to:

- Understand basic industry terminology
- Perform math, including algebra and trigonometry
- Read plans and specifications
- Read and comprehend the building codes and design aides
- Run truss design software
- Read and understand printouts from truss software
- Learn the building practices your customers use
- Understand how your company interacts with customers

Some companies train new designers by having them work in the shop to build trusses for a week or two. Others like to send new designers out to shadow a salesperson. Regardless of the approach a company takes, a good place to start designer training is to teach (or to give a refresher for more experienced designers) basic industry terminology such as span, heel height, pitch, and on-center spacing. There are several industry books, brochures, and online resources that define these terms (see sidebar on facing page). Give new designers a chance to review these resources, and then go over some terms with them.

Math, especially basic algebra and trigonometry, are very important requirements for the job. During the interview process, it's a good idea to ask applicants about their math skills. If they have taken and done well in algebra and trigonometry, a quick review may be all that's needed. If they don't have a strong math background, you will want to spend time showing them how to use a calculator for design problems like figuring out heel heights, an example being the heel height of trusses over a garage when the roof plane extends up to the second story. You may also want to work through other issues that require math, like how to make eaves line up when roofs have different pitches.

at a glance

- A good place to start a training program is by covering basic truss industry terminology, along with your company's terminology and approach to serving customers' technical needs.
- Example math and complete truss design problems using sample plans are a good way to coach new designers and bring them up to speed with your business practices.
- Each new hire and, in general, all staff needs to know who is responsible for client communication at each stage of a project.

Designers must read plans and specifications so they can design trusses correctly. This can be difficult, even for experienced designers. Plans are not always accurate, and there may be contradictions from one page to another. Specifications tend to be written in legal language. If a designer is focused on residential jobs, you may not spend a lot of time on specifications. Once they become more experienced and are ready to start working on commercial projects, this may be a better time to cover this information. Start by going over basic items to look for on the plans, like dimensions, pitches, heel heights, overhangs and loads, and then special items like tray ceilings, vaults and other specifics on the building design and truss design.

Designers need to be familiar with local building codes, both residential and commercial. They must know where design information about trusses can be found in the codes. Snow loads, wind loads, floor loads, roof live loads, attic floor loads and dead loads are all examples of loadings they will need to understand. Show the designer how to use the SBCA Load Guide and other industry programs available through the software providers.

A designer will spend the majority of their time running truss software, so this is an area to spend a considerable amount of training time. One way to get them started is to have them work with a simple plan, like a ranch house. With the new designer watching, the manager/trainer can go over the basics of the program, showing software features and how to set up the loads and code information. The trainer can input the walls, show how to change wall heights and widths, and enter ceiling planes and roof planes. After the walls and planes are in, show the 3D views to make sure everything appears correct, and then input the trusses. Once the trusses are input, show the 3D views again to make sure everything appears correct and no trusses are sticking above the planes of the roof. Next, focus on engineering all the trusses. Go through each truss one by one and make sure they look correct. Then, price the job. It's worth spending time going over pricing, including accessories, like framing anchors, hangers, bracing, etc.

The trainer can then switch places with the new designer and have them go through and redo the job from scratch. Watch every step and coach them as necessary. After this first job is input and everything appears correct, give the designer another example job to do on their own, and always encourage them to ask questions. When they are finished with this second job, look it over, checking for mistakes and ways they can improve. If the new hire needs more practice, give them one or two more example jobs to input, until you're confident they have the basics down and are ready to move on to the next step in the process.

Along with design program training, provide an overview of the paperwork that needs to be created for the shop and

jobsite. This paperwork may include a layout, shop drawings, cutting lists, and auto table setup. Go through all of the paperwork needed, explaining what it is and how to create it. Let the designer run the software, and coach them on the steps needed to create this using the software. Once the paperwork is created, go over what to do with the paperwork, like creating a jobsite package, a package for the shop, etc.

Every customer is different, and it's very important to make your designers aware of special requests and company policies related to communication with clients. Will the designer interact directly with a customer, or will the salesperson handle all communication? If the customer wants someone to come out to the jobsite and do field measurements for the trusses, who should make the trip? All staff needs to know who is responsible for client communication at each stage of a project.

This article only briefly delves into all of the things a new designer needs to learn. Training is an ongoing process for a new designer. Training a new designer takes time, but once you have a good designer trained, you will want to do everything you can to keep them employed with you. **SBC**

See feature article on page 16 for more details on the benefits of a well-trained design staff. To pose a question for this column, call the SBCA technical department at 608-274-4849 or email technicalqa@sbcmag.info

industry resources:

Keep these tools in mind when training new truss designers.

- **Technical Assessment Test Online (TATO)** – One-hour online tests for wood, cold-formed steel and EWP

wtcatko.com/training/tato

- **Truss Technician Training (TTT)** – Three levels of training on wood design and engineering fundamentals for truss technicians

wtcatko.com/training/ttt

- **SBCA Load Guide** – Load calculation tool to help users more easily understand, define and specify all the design loads applied to structural building components

sbcindustry.com/sbca-load-guide

- **Truss Specification** – Available in the 2012 Master Format for Section 06 17 53 Shop Fabricated Wood Trusses

sbcindustry.com/specifying-trusses

- **Structural Details for CAD** – Free downloads of over 100 structural details for roof trusses, floor trusses, hangers, hold-downs and temporary bracing

support.sbcindustry.com/structuraldetails.php

- **Other SBCA Technical Resources** – Information on span charts, bracing and other technical issues

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Before production even begins, you need to worry about the basics: building a good workforce and ensuring you are protected from undue risk. SBCA's WorkForce Development website can help you with the former, while the ORisk program can help you knowledgably navigate liability issues.



PRODUCTION LINE

Component production is not necessarily straightforward, and it is the little production details that can make all the difference. The In-Plant Basic Training course can get new hires up to speed and even teach veterans a trick or two. WTCA In-Plant QC ensures you put out a consistently high-quality product.



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Your company's success is dictated largely by the success of your designers. Use the TATO test to gauge the abilities of potential truss designers and the Truss Technician Training (TTT) programs to expose individuals to increasingly more advanced design concepts.



SBCA's Operation Safety creates a culture in which everyone is aware of their surroundings and diligent in avoiding hazards.



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S A W S



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JOBSITE

You have put a lot of work into the design and manufacture of your products. Proper handling, installing and bracing of components during construction is essential to

ensure they function as intended throughout their use. Jobsite packages are the best way to protect yourself and your product.



TRUSS DESIGNERS

The Marines of QC



by Sean D. Shields



Think of that 45-unit single-family development as the beaches of Normandy, or that 150-unit apartment complex and parking structure as the Kandahar Region of Afghanistan. Both projects are fraught with potential dangers and unique challenges, and both must be overcome successfully in order for your business to thrive. Who do you choose to undertake these monumental challenges? Easy, you choose your best and your brightest: your truss designers.

The first two articles in this series looked at what it means to have a formal quality control (QC) process and the benefits component manufacturers have witnessed since implementing one in their production facilities. This article will wrap up the discussion by exploring how your truss designers are your first, and best, line of defense when it comes to QC (your QC Marines). Further, it will look at the ways in which your truss designers can help or hinder your production QC process. Finally, it will explain how your designers actually put the capital “Q” in QC.

Designers Are Your First Line of Defense

It’s logical to focus your QC efforts first with your designers because they are at the beginning of the production process. “It’s cheaper to fix a designer’s mistake in design than it is anywhere else in the process,” says Dan Morris, Design Manager at Apex Technology. “To find and correct an error takes just a few minutes of review, but every step beyond that compounds the problem and cost to fix it.”

Dan Holland, President of Clearspan Components, is quick to point out that what designers do is greatly underappreciated. Not necessarily by the company owner, or by their coworkers or peers, but by the customers. “The concept of truss design appears simple to the outsider, and sometimes there doesn’t appear to be a great deal of variation,” says Holland. “However, there’s a large volume of it that needs to be done with a wide variety of subtle technical and software details to keep track of.”

By way of example, he points to a recent multi-family project he completed. The project had close to 200 unique designs; none of them were particularly complex to the casual observer, but the opportunity to make a mistake was high given the sheer number. “Unfortunately, any error by the designer is inexcusable,” points out Holland, “because their error can have such a significant downstream ripple effect from ease of installation to the cost of repair to fix a design problem.”

Morris concurs, “With a mistake during production, you can fix it. With a mistake during delivery, you can repair or replace a truss. However, a design mistake can threaten to have to redo the whole project.”

A good example Morris points to is a truss designer using the same label for two different truss profiles. If it isn’t caught immediately, the production line will most likely build two of the first profile, and ignore the second. There is no error for the QC process to catch, and no amount of visual inspection will alert someone to the fact a truss profile is missing. It likely will not get caught until the truss is installed. “The worst case scenario is you end up having to call a crane back out to the jobsite,” says Morris. “That represents a significant cost in time and materials for both you and your customer.”

Beyond spotting their own errors and minimizing headaches and guesswork for your production line, truss designers also have the ability to make or break your company through the quality of their designs:

“I can honestly say our company is only as successful as our designers. The better the design and the easier it is to install, the more the framer wants to work with us.”

—David Mitchell, Operations Manager,
Engineered Building Design

So, the first challenge for any design department lead is to have a process in place that ensures every designer is meticulous in what they do, even when the repetition may threaten to bore them to death. "Implement strategies to keep their minds sharp. Work with your design team to form techniques that help them keep a fresh perspective," adds Holland.

"Limiting and eliminating mistakes from the design process also has the added benefit of building trust between your production and design departments," said Morris.

Designers Can Make the Entire QC Process Easier

There are several things your truss designers can do to make it easier on the production side of things. Having a good checklist or established process in place to take care of low hanging fruit is a good place to start. "Our design process starts by establishing all heel heights, dimensions, etc.," said Morris.

"We have found checklists to be very useful. In fact, we probably don't use them enough," said Holland. "We have also looked into automating aspects of the design process as much as we can to eliminate opportunities for some of the more common errors that the computer is good at finding and correcting."

Morris added, "Next, we look at each builder's specifications, from special bottom chords to pulling out extra material." Knowing the customer's unique needs is one key to ensuring they're happy, so he tries to keep all the jobs from a particular builder going through the same designer every time.

Next, the designer needs to be familiar with the demands of the market where the job is located, whether it's something driven by the building code or just "the way things are done." For instance, Morris points out that, in Florida, they do valley sets on every job. "But in Atlanta, they don't want valleys because it makes the truss package price too expensive."

While it may seem too simplistic, it's also important to make sure your designers know what lumber and plates you have in stock. "Your designers should know the species, grades and lengths of the lumber you have in the yard," said Morris. "Through that, they should know your standard splice lengths and panel points."

"Specifying a plate that isn't in your shop can be costly, due to the production delays," added Holland. "While you can sometimes plate up, you don't want to do that on a regular basis."

Beyond knowing the customer's unique needs and the limits of your raw materials in stock, the designer can play a key role in the production QC process by ensuring all the necessary details are communicated in the shop drawings sent to the assembly line. "The designer isn't usually present during the production process," pointed out Holland. "If a dimension isn't included by the designer, it leaves a bunch of guesswork for the production crew. Sometimes those guesses don't work out

so well and lead to greater problems later on."

In some cases, having an experienced production line can be a double-edged sword. David Mitchell, Operations Manager for Engineered Building Design, explained: "As soon as they know what they're doing, they may be more apt to make assumptions to keep production running smoothly. You try to teach them to build only what is on the drawings. Of course, that means the drawings have to be both correct and complete."

To that end, plate placement details are a critical responsibility for the truss designer, one which can be overlooked at times. Mike Cassidy at the Truss Plate Institute (TPI) has conducted numerous third-party inspections at truss plants across the country. What he has noticed is that, while QC inspections (and thus, formal QC programs) look at predetermined "critical joints" in the truss, they do not necessarily look at other joints that may have issues.

For example, Cassidy points to joints with offset plates. "If the assembler isn't given enough information on the drawing to know the plate is supposed to be offset, they may end up installing the plate symmetrically out of habit." This may lead to significant problems in the field later in the life of that truss, if repairs are needed to improve joint capacity. "Partly, this can be addressed by the production crew knowing what to look for, and partly the designer needs to make sure the information is communicated correctly through the shop drawings that are created."

If certain problems, like the offset plate details or specification of materials not in stock, become common, Morris recommends having regular meetings between your production and design managers. "They are in the best position to evaluate the effectiveness of the processes you have in place and to figure out a solution to eliminate the problem from occurring again."

Designers Put the Capital "Q" in Your Quality

Beyond spotting their own errors and minimizing headaches and guesswork for your production line, truss designers also have the ability to make or break your company through the quality of their designs. "I can honestly say our company is only as successful as our designers," said Mitchell. "The better the design and the easier it is to install, the more the framer wants to work with us."

Mitchell is quick to point out that being preferred by the truss or product installers leads to a good reputation with existing builder customers and recommendations to other potential customers. "It's the best marketing we could ever do."

Putting a capital "Q" in the quality of your truss designs means different things to different component manufacturers, but to Mitchell, it simply means making the truss designs in the framing layout as easy as possible to install. "My first goal with any layout is to identify and eliminate potential framing problems." He admits that the design software has come a long

Continued on page 18



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Truss Designers...

Continued from page 17

way, but it isn't perfect. It's up to the designer to understand how the software works and to know its limitations.

It's also vital for the truss designer to identify the most effective and efficient bearing locations in every layout. "The most elegant solution is often the simplest one," said Mitchell. "Whatever we can do to reduce bearing locations and reduce the effort the framer needs to expend during installation, the greater our success." Another example Mitchell points to is load distribution. "If you can eliminate a girder to girder to girder connection, you not only make it easier to install, it's probably a better built structure as well."

Cranking out amazing truss layouts doesn't just happen; it takes years of experience and a good amount of natural skill. However, just as in managing common errors, having effective processes in place can go a long way toward helping newer designers produce efficient layouts. "It all starts with a good analysis of the initial plans to identify the challenges that need to be overcome," said Mitchell. "Not everyone has, or should have, the same process, but having a rational and easy-to-understand plan analysis methodology is the key."

For example, Mitchell's process is one of establishing all the variables, then picking a master truss in the middle of the roof and treating it as a template off of which he designs the rest of the truss designs as he moves in both directions away from that truss. "I make sure that first truss is designed as well as I can make it, from the number of webs and their locations to the optimization of materials and panel lengths. As I move away from it, I incorporate the variables

I identified in the earlier layout analysis process until it makes sense to switch to a new truss type or truss layout."

Mitchell admits that his way is not the way for everyone. It's based on his years of experience, the needs and demands of his market and his customers, and his knowledge of the software he uses. Again, the important point is to have a well thought through analysis plan.

"I don't think even most truss manufacturers understand how much time and labor a designer can save, both in the manufacturing process and the installation of the product," said Mitchell. "Ultimately, a designer can have an immeasurable impact on your relationship with your customer, in both good and bad ways." That's what a capital "Q" in quality is truly all about.

Designer ("D") Day

Clearly, your truss designers need to know how much you understand and appreciate the vital role they play in the quality of the products you manufacture, and the role they play in establishing and maintaining your company's reputation for meeting your customer's framing needs.

Consequently, it is very important to ensure you are giving your designers the planning, analysis and software tools they need to do the best job possible. As this article outlined, that includes everything from establishing best practice processes to help them catch and eliminate their mistakes; providing a feedback loop from the production side to identify and address missing or incomplete data on the shop drawings; and finally, assisting them in the development of a good truss design methodology they can use to ensure their design layouts meet your customers' needs. **SBC**

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Exec's Message

Continued from page 9

or convinced the market, through good marketing mythology, there is a key approval gatekeeper that needs to be satisfied before one uses any type of new and innovative product.

Fortunately, as Bush stated in his speech, people and organizations that foster the status quo and restrict innovative ideas usually don't last very long. Likewise, if you happen to find yourself supporting one of these organizations, it's probably best to recognize it and run away.

Can Engineers Do Anything They Want Without Constraint?

The above question is the common response by the status quo to anyone who suggests the gatekeeper is unnecessary. This question is intended to mislead, because the obvious answer is no. Engineers must follow generally accepted engineering practice, and their structural design criteria and design assumptions must conform to the minimum properties defined by and codified into law by the building code.

What is unfortunate is that sometimes the building code defines minimum properties in strange ways, primarily because the building code is a political document—not a science-based document. Anyone who believes the building code is purely objective should know there are a few of us who have hundreds of miles of Arizona Pacific Ocean beachfront property for sale today.

One of the key roles of the plan review process is to confirm that the structural design and implementation of that design is done in accordance with these minimum code provisions. The specific role of the building official is as follows:

104.1 General. **The building official is hereby authorized and directed to enforce the provisions of this code.**

The *building official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. **Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code.** Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code. [Emphasis added]

The key concept here is to enforce the provisions of the code. It appears benign, yet it is vitally important because it does not say, "to enforce the building official's opinion of what he/she likes or does not like," but rather, "any interpretations, policies and procedures shall be in compliance with the intent and purpose of this code."

This falls directly in line with the concept of preserving "free and unfettered competition as the rule of trade," which is a long-standing federal law that serves as a foundation for our entrepreneurial system, and one everyone is obligated to follow. From the Federal Trade Commission's website:⁶

"Congress passed the first antitrust law, the Sherman Act, in 1890 as a 'comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade.' In 1914, Congress passed two additional antitrust laws: the Federal Trade Commission Act, which created the FTC, and the Clayton Act. With some revisions, these are the three core federal antitrust laws still in effect today.

"...Yet for over 100 years, the antitrust laws have had the same basic objective: to protect the process of competition for the benefit of consumers, making sure there are strong incentives for businesses to operate efficiently, keep prices down, and keep quality up....

"For instance, in some sense, an agreement between two individuals to form a partnership restrains trade, but may not do so unreasonably, and thus may be lawful under the antitrust laws. On the other hand, certain acts are considered so harmful to competition that they are almost always illegal.

"The penalties for violating the Sherman Act can be severe. Although most enforcement actions are civil, the Sherman Act is also a criminal law, and individuals and businesses that violate it may be prosecuted by the Department of Justice." [emphasis added]

So what does this all mean in terms of the value of a sealed engineering document and the use of innovative products? It means that the mission of any professional engineering endeavor is to use any and all innovative materials, designs or methods of construction that add value to every enterprise. This innovative approach shall be approved by any building official, unless there are specific reasons that can be provided, where the engineering or innovation is non-code-compliant.

I contend this is the only approach that truly adds value to society overall, and that equally and fairly protects the consumer and the spirit behind all anti-trust laws in the U.S. through the preservation and advancement of "free and unfettered competition as the rule of trade." It is why I am a proud supporter of the innovation revolution taking place within the SBC industry, and I invite you to join me as an advocate for change. **SBC**

Direct links are provided in online version of this article at sbcmag.info:

⁶ www.ftc.gov/bc/antitrust/antitrust_laws.shtml

This article is Part III of a three-part series entitled "You Don't Know What You Don't Know." If you didn't have the opportunity to read the first two in the series, take a few minutes to check them out online at sbcmag.info in the August & September/October issues.



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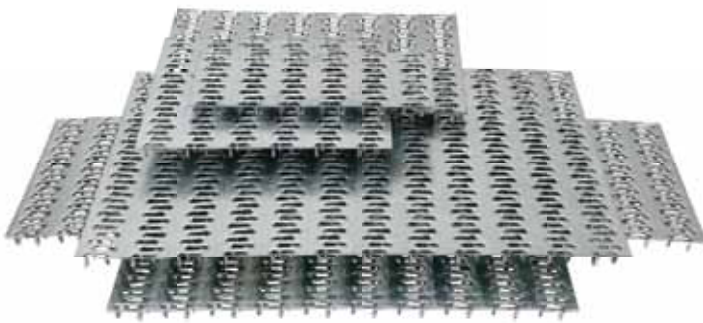
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Above: Volunteers framed the 2,000-plus square foot, three-bedroom home in just two days.

Below: SPC Cody Nusbaum tours the jobsite of his new home.

Along with framing a home in just a matter of days, this year's BCMC Build project helped deliver a huge surprise. Partnering with the NAHB Building Systems Councils (BSC) and Operation Finally Home, an organization that builds homes for wounded U.S. veterans, BCMC Build welcomed the future homeowner, SPC Cody Nusbaum, when he arrived on the jobsite and was told it would be his new home.

"It's the best thing that's ever happened to me, to be honest," said Nusbaum. Acknowledging the whirlwind of receiving such exciting news, he thanked the entire industry for its generosity and for helping make his dream come true. Welcome home, Cody!

A big thank you to the many industry manufacturers and suppliers who generously donated to the BCMC Build project, and to the dedicated individuals who volunteered their time and skills to building Cody's house.

For more on this year's BCMC Build, including photos, a video and more information on the project, visit bcmcbuild.com. **SBC**



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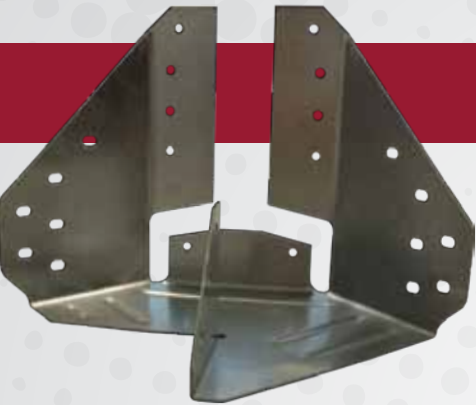
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