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THE FUTURE OF FRAMING

January/February 2010

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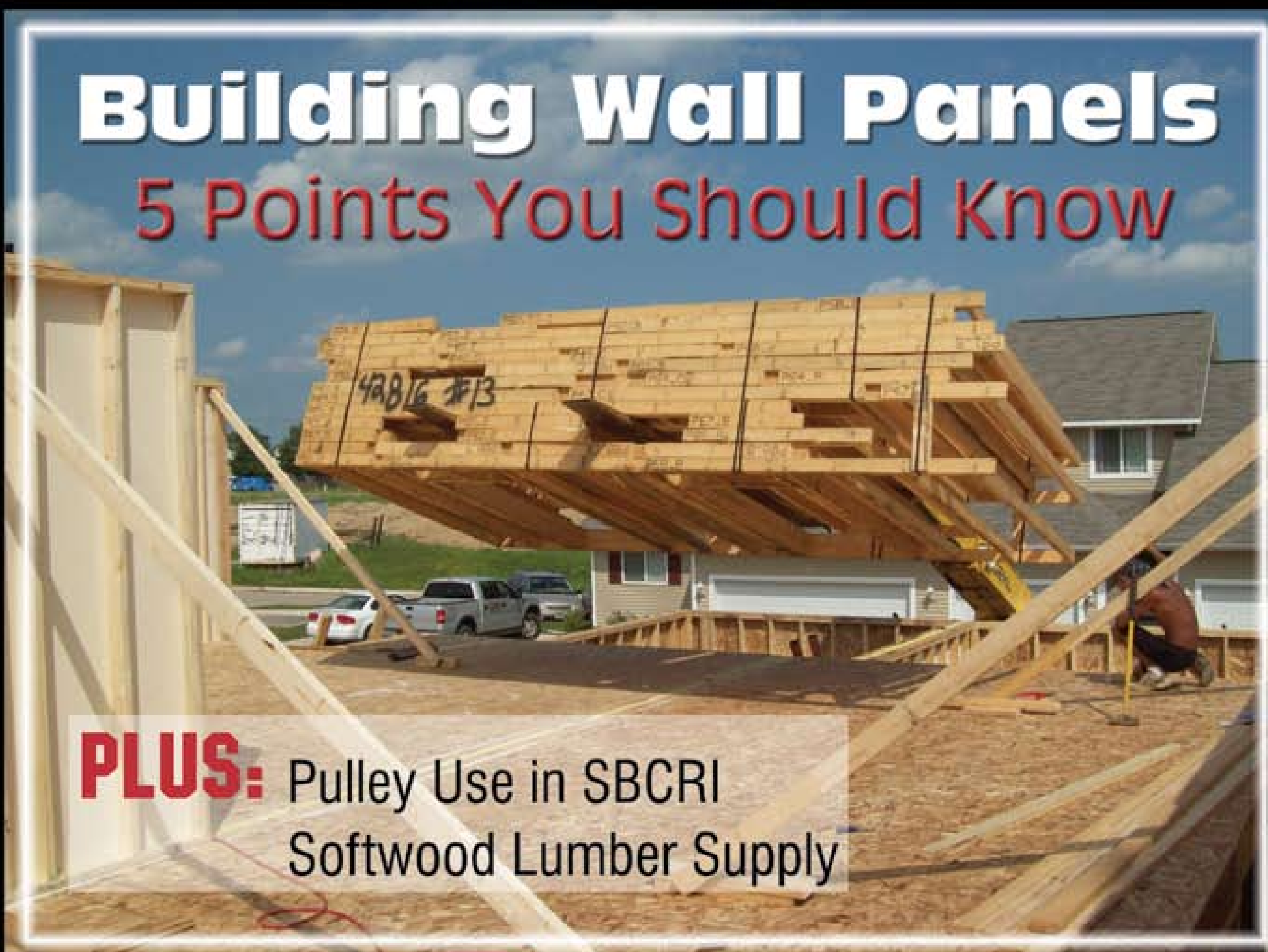

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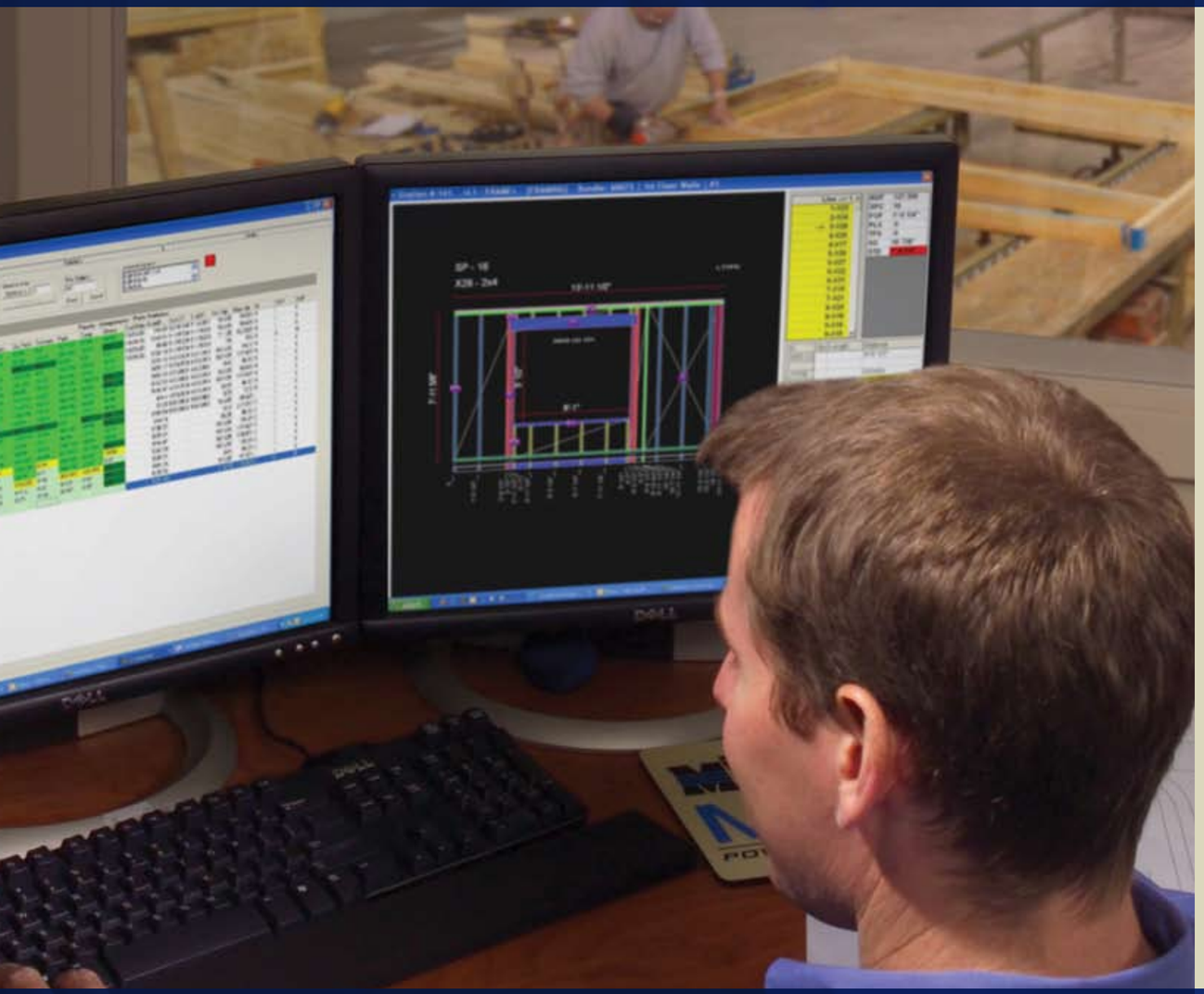

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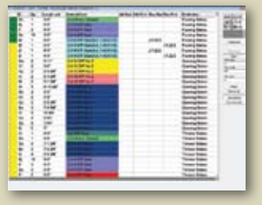

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contents

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.

Editor's Message

Tales of Living in the Stick Frame Zone of America

by Steven Spradlin

What to unlearn and learn to succeed in the wall panel business

I live in an area of the country that is mostly stick framed. We always seem to run into issues with framers. They want the same amount of money to stick frame a roof as they want to set trusses. We felt like the only way to make any headway into our market was to offer the labor on the jobs and become the framer. The best method to solve our issues was to offer the complete frame package including labor. Of course, being in the manufacturing business led us to the conclusion that we should build wall panels.

This type of business model is not for everyone though. The market for wall panels can be large, but it is hard to convert. It is a completely different business that requires component manufacturers to unlearn some things and to learn a large amount of new things. Since we've been through the "unlearning" process already, I thought I'd offer tips for those of you who are thinking about doing wall panels.

1. Go, See, Talk

The first thing I did was research. I even traveled to several panel plants outside of my market to see what they were doing and what they had to say. I strongly recommend this because it can give you some affordable common sense advice. It can also save you from wasting time on mistakes early on...lessons that can be very costly when you're starting up. In your quest, you may learn things you don't want to do. I learned it would be best for us to start a small, simple operation instead of aspiring immediately to a huge operation with all the bells and whistles.

2. Lock Up Your Checkbook

One of my favorite pieces of advice is this: When a component manufacturer gets into the panel business he needs to lock his checkbook up. In my area, stick framing prices run from $1.35 to $2.25/sq ft on a simple house. It is hard to sell panels when site labor is this cheap. Plant labor for panels runs $0.25 to $0.35 per sq ft (rough guess). You cannot afford to tack on the dreaded overhead to this cost of labor. If you invest in equipment and buildings you have to save the money on the labor to pay for it. We can only sell panels for 25 cents per sq ft on a good day. Hence my suggestion to put the checkbook on lockdown. But here's the way I look at it. We can build panels for little or no margin and convert stick framed roofs to trusses. Most of us know how to make money on trusses. If you get people buying the complete package, there are opportunities for profit.

3. Keeping Plant Operations Simple

Today's advances in wall panel equipment are huge! The saws cut and lay out plates while optimizing waste at a very high production rate. Panel lines are built to accommodate these higher production rates. They are something to behold. But when we started, we built panels on top of wood tables with hand held nail guns until we couldn't make enough to keep up with demand. Then we built another wood table to double our production. For saw equipment we started with a $700 compound miter pull saw. We replace it about once a year. Our set-up isn't fancy, but it works for us!

4. To Sheath or Not to Sheath?

Sheathing wall panels? In my area it is worth $.10 per sq ft if you can get it out of the framer. This amounts to around $0.80/linear foot on an 8' tall wall. Sheathing

Continued on page 8

at a glance

- ❑ The wall panel business is completely different than trusses and has a learning curve.
- ❑ Before you start a panel operation, talk to panel manufacturers for specific tips.
- ❑ Make sure you compare the cost of labor for stick framed walls in your market to your own labor and overhead costs.

Editor's Message

Continued from page 7

walls in your plant cuts production capacity in half or doubles your labor costs, however you choose to look at it. If the framer can do it for less than we can (labor, overhead, profit), then I say by all means knock yourself out! You may have already guessed that we don't sheath walls in our plant. The panels are lighter and easier to handle, and just in case things aren't perfect they are easier to modify on site if they aren't sheathed.

But every market is different so keep your options open. Unsheathed walls can cause some shipping issues with roller trailers with its uneven surface or a supporting surface at 3' on center. It also takes longer to plumb and line a building if the panels are not sheathed.

Good luck if you are attempting to get a wall panel business off the ground. Even after six years building walls, framers around here still want the same amount of money to frame a job with or without panels. Ah, the joys of living in the stick frame zone of America. 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.

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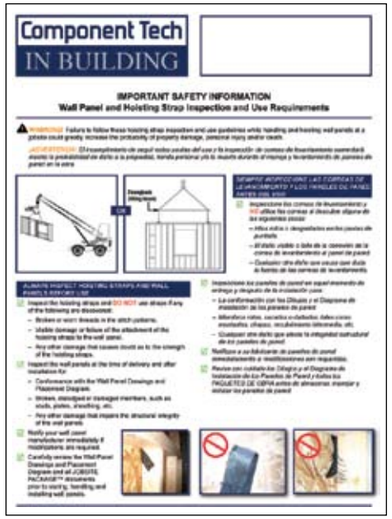
New Wall Panel Products from SBCA

Two new products from SBCA's Cold-Formed Steel Council (CFSC) feature wall panel safety tips for installation. Both products can be ordered at www.sbcindustry.com/pubs.



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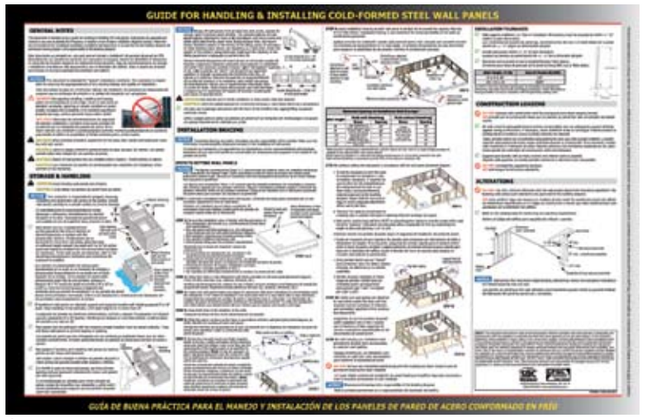
Wall Panel and Hoisting Strap Inspection and Use Requirements applies to wood and cold-formed steel wall hoisting practices. The document encourages the use of straps when lifting panels by crane.



^^^ *Guide for Handling & Installing Cold-Formed Steel Wall Panels* depicts guidelines for safe installation of steel panels. It contains step-by-step storage, handling, installation, loading and altering procedures. Its colorful pictures and graphics show how to handle the panels safely. Translated in English and Spanish, it comes in an 11x17 folded or flat sheet with a blank back side. SBC

clarification on SBCRI graphic:

Several readers have asked about a graphic on page 21 of the November issue. The article introduced a new device, called "WB," that accurately measures web member forces in SBCRI. The last page of the article shows sample data from a test using WB, including a picture of one truss tested and the resulting reactions. The graphic and reactions represent just one truss in a system of five. While the data and reactions listed are correct, we acknowledge that taken out of context, they appear to be inaccurate. We will provide further clarification about the graphic in a follow-up article at a later date.

Technical Q & A

Installing Insulation in Truss Fire Endurance Assemblies

by SBCA Staff

Rules of thumb for if and when insulation can be added in a fire-rated assembly.

Some tested fire endurance assemblies include insulation in the assembly; others do not. The question of whether insulation can be added to a particular assembly can be tricky. Follow these tips to figure it out.

Question

I have been asked to add insulation in a floor-ceiling or roof-ceiling fire-rated assembly that has otherwise been tested without it. Can I do this? And why would someone want it?

Answer

Reasons to add insulation could be for temperature control or sound dampening. To make a rational assessment of this modification, you must look at the properties of the insulation and the impact that its placement inside the assembly will have on the fire endurance performance of the assembly.

The effect of insulation is to reduce the flow of cold air to heated spaces and vice versa. Since insulation restricts the flow of heat, its addition to a fire endurance assembly can create heat build-up problems. The insulation will retard heat movement and may also reduce the open space (i.e., plenum) that was available for heat dissipation during the original test. Because of this, it is likely that the protective gypsum layer will heat up more quickly resulting in an increased rate of hydration. This can lead to an earlier failure of the gypsum and consequent failure of the fire endurance assembly.[1]

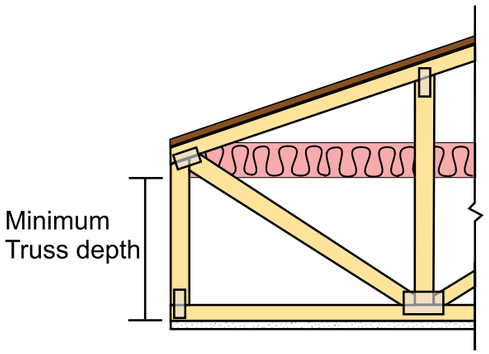


Figure 1. Example of Insulation Installation while Maintaining the Minimum Tested Truss Depth above the Gypsum Board.

The single most critical element in the fire endurance performance of cold-formed steel and wood truss assemblies is the gypsum board, but there are ways insulation may be added to assemblies without affecting the gypsum board.

Following are some observations about the problem:

- Since insulation will retard the flow of heat through it, incorporation of insulation in a rated assembly must be kept as far away from the gypsum surface as possible. This will minimize the heat build-up that causes premature hydration.
- Since the plenum cavity helps to dissipate the heat as it passes through the gypsum membrane, maintaining a plenum space that is greater than or equal to that of the tested assembly is critical to the field assembly's performance in a fire.

Therefore, to incorporate insulation into a tested assembly, an equivalent or greater plenum space should be maintained and the insulation must be placed as far away from the gypsum surface as possible (see Figure 1).

As a general rule of thumb, it is allowable to add insulation to an assembly provided that the depth of the truss is increased by the depth of the insulation and that the insulation is maintained at the maximum distance possible from the gypsum surface. SBC

To pose a question for this column, call the SBCA technical department at 608/274-4849 or email technicalqa@sbcmag.info.

at a glance

- Gypsum board is the most critical element in the fire endurance performance of cold-formed steel and wood truss assemblies.
- When adding insulation to a tested assembly, plan for an equivalent or greater plenum space.

Here's an example.

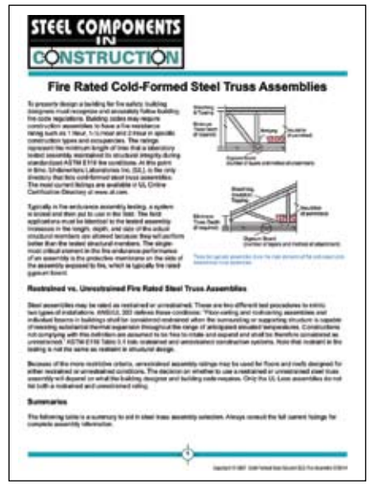
A specific truss application calls for an 18" deep truss. A 12" deep truss assembly was tested and passes the 1-hr. fire endurance requirement, with 5/8" Type X gypsum directly attached to the bottom chord and 5/8" plywood directly attached to the top chord. The resulting plenum space for this assembly is 12".We plan to apply the rating from the 12" tested assembly to the truss with a depth of 18".

If insulation is to be added to this hypothetical 18" assembly without diminishing its fire endurance, consideration must be given to the following points:

- Pursuant to Underwriters Laboratories' Fire Resistance Directory,[2] increasing the depth of an assembly does not adversely affect its fire endurance rating. In fact, increasing the depth may actually enhance performance through better heat dissipation properties, and through reduced chord stresses resulting from a larger moment of inertia for the truss section.
- The addition of insulation must be kept as far away as possible from the surface of the gypsum, so that it does not speed up the hydration process unduly, and so that the additional weight of the insulation will not cause a premature collapse.

Therefore, it is logical to assume that insulation can be added to this truss fire endurance assembly since the depth of the assembly has increased to 18"; the extra 6" of space can be filled with insulation. This insulation would be attached 12" above the gypsum membrane. This maintains the original test plenum depth and is a conservative approach.

A argument could be made for the allowance of insulation within the 12" free plenum space, but this should be dealt with on a case by case basis, since the final performance of the assembly is dependant on the insulation density, the type of gypsum used, the stresses developed in the chords of the trusses, etc. It is wise to obtain professional engineering assistance in situations like this.



SBCA offers two documents that list all the fire-rated cold-formed steel and wood truss assemblies that are currently available. It should be noted that certain assemblies from Underwriters Laboratories and Gypsum Association allow the addition of any depth of insulation at any location in the tested truss assembly as long as another layer of gypsum (of the same type as specified in the tested assembly) is installed at the ceiling.

[1] *Metal Plate Connected Wood Truss Handbook,* 3rd Edition, Section 17: Fire Performance of Trusses. www.sbcindustry.com/fire.php

[2] 2009 UL Fire Resistance Directory: General information on fire resistance ratings (BXRH)

Building Wall Panels: 5 Points You Should Know

by Steve Kennedy

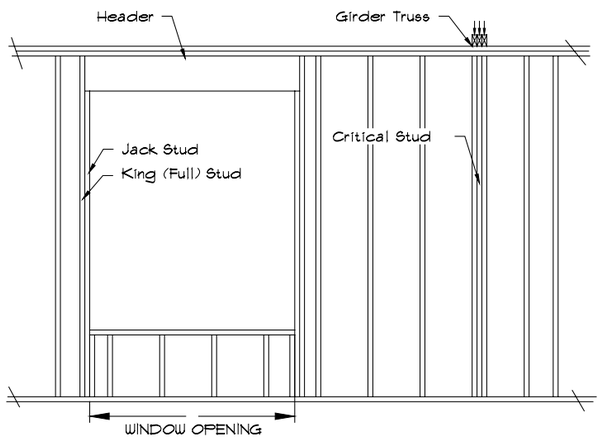
Over the last couple of years my company has done a lot of research on the best way to build a wall panel business. We saw an opportunity to provide another value-added product to our customers and wanted to make sure we learned as much as possible about building them. In my research, I've seen a lot of walls framed in the field. Based on what I've seen, I believe that a very high percentage of these would not pass a comprehensive code review. I am writing this article so that the same could not be said for your wall panels.

How would you answer these questions: Are you building your wall panels per the prescriptive requirements of the building code? Who in your operation is responsible for the details and what would happen if the building department red tags a wall panel as not meeting the code requirements?

The details for framing walls in the International Residential Code (IRC) are not always very clear and even when they are clear they may not be followed. One needs to be cautious when detailing wall panels to ensure they meet not only the requirements of the customer but also the building code.

Common Questions

Here are five specific panel manufacturing items that are commonly skipped over or misunderstood.



1. Do you know how many jack studs are required under a 6' window header on an exterior wall or how many full (king) studs are needed?
2. What about nailing? What on-center spacing is required if it's part of the braced wall line?
3. Do you know if that particular wall is part of the braced wall line?
4. Let's say the plans call out the braced wall lines or shear walls and specify 2" on center for the edge and 12" in the field using 10d nails. Do the nails your company uses in walls meet this? What is a 10d nail today?
5. How many studs should be placed under your girder trusses, and if this is questioned do you have backup information to provide to the building department?

This article will point you in the right direction on some of these questions to help keep you building to code.

You should already have a copy of the IRC or local codes and the Wood Frame Construction Manual (WFCM) in your reference library, especially if you're building walls. The IRC prescriptive requirements for wall framing have been a subject of intense scrutiny and revision since the 2003 version of the IRC. The 2009 version is by far the best version to date, so it is worthwhile to get a copy (as well as the one your local jurisdiction is using). The WFCM is a referenced standard in IRC and has much more detail as well as tables to make your job easier. You can get these through International Code Council's (ICC) and American Wood Council's (AWC) websites.

TABLE R502.5(1)
GIRDER SPANS[a] AND HEADER SPANS[a] FOR EXTERIOR BEARING WALLS
(Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[a]										
		30						50				
		Building width[c] (feet)										
		20		28		36		20		28		3(
		Span	NJ[d]	Span	NJ[d]	Span	NJ[d]	Span	NJ[d]	Span	NJ[d]	Span
Roof and ceiling	2-2×4	3-6	1	3-2	1	2-10	1	3-2	1	2-9	1	2-6
	2-2×6	5-5	1	4-8	1	4-2	1	4-8	1	4-1	1	3-8
	2-2×8	6-10	1	5-11	2	5-4	2	5-11	2	5-2	2	4-7
	2-2×10	8-5	2	7-3	2	6-6	2	7-3	2	6-3	2	5-7
	2-2×12	9-9	2	8-5	2	7-6	2	8-5	2	7-3	2	6-6
	3-2×8	8-4	1	7-5	1	6-8	1	7-5	1	6-5	2	5-9
	3-2×10	10-6	1	9-1	2	8-2	2	9-1	2	7-10	2	7-0
	3-2×12	12-2	2	10-7	2	9-5	2	10-7	2	9-2	2	8-2
	4-2×8	9-2	1	8-4	1	7-8	1	8-4	1	7-5	1	6-8
	4-2×10	11-8	1	10-6	1	9-5	2	10-6	1	9-1	2	8-2
	4-2×12	14-1	1	12-2	2	10-11	2	12-2	2	10-7	2	9-5

Table 1. Partial view of Table R502.5. For the full table as well as WFCM table 3.22F, go to the Support Docs for this issue at www.sbcmag.info.

1 Jack studs

Jack studs are installed to support the gravity loads carried by the header. The number of jack studs required can be found in IRC-06 Table R502.5(1) (see Table 1) or a similar table can be found in the WFCM table 3.22F. I suggest reviewing these tables and possibly making a more specific table with criteria that fits your area to make it easier for the technicians in your department.

STUD SIZE (inches)	BEARING WALLS					NONBEARING WALLS	
	Laterally unsupported stud height[a] (feet)	Maximum spacing when supporting roof and ceiling only (inches)	Maximum spacing when supporting one floor, roof and ceiling (inches)	Maximum spacing when supporting two floors, roof and ceiling (inches)	Maximum spacing when supporting one floor only (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24	16	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

For SI: 1 inch = 25.4 mm.
a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Increases in unsupported height are permitted where justified by analysis.
b. Shall not be used in exterior walls.

Table 2. Full view of Table R602.3(5) SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

2 King studs

King studs are installed to provide resistance to positive and negative wind pressure loads applied to the area of wall in which the opening (e.g., window or door) is located. The number of king studs that should be installed, however, is not as clear. Table R602.3(5) in the IRC says max spacing of studs is 24" on center. You'll need to extrapolate this; that is, take the number of full height studs that would have been placed within the area of the wall where the opening occurs and move them to each side. The WFCM Table 3.23C does this for you and takes advantage of the header location which may reduce the number of full-height studs required. (See Table 2 above.)

3 Braced walls

The braced wall requirements of the IRC have undergone lots of changes over the past several code cycles and building departments are starting to take note. If you're in an area that does not enforce these requirements, it's only a matter of time until they will. You should become familiar with the requirements of IRC section R602.10 along with the connection tables R602.3(1) and make sure your panels are in conformance. Since we typically cannot change wall lengths or window locations you should at least look out for where you're splicing the sheathing and the nailing requirements along with any blocking requirements. View www.sbcindustry.com/wallpanels.php for more information and resources about braced wall panels.

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ICC Revisiting Braced Wall Requirements

This provision in the IRC may soon be changed in a way favorable to component manufacturers. At the ICC Code Hearings in October, a provision was approved to allow the vertical sheathing joints within a braced wall panel to occur at the joint between two adjacent studs. (The current requirement is that the joints must occur over a common stud.) The ICC will vote on this provision at its upcoming Final Action Hearings in May 2010. Be sure to stay on top of these changes so that when they do adopt them you know what is required.

Building Wall Panels...

Continued from page 13

4 All 10d nails are not created equal

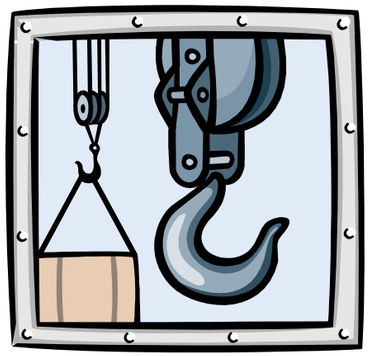
The 2005 National Design Specification® for Wood Construction (NDS), another great reference book that you should have (can be purchased through the SBCA website at www.sbcindustry.com/pubs), shows three nails classified as 10d: a common 0.148" diameter by 3" long, a box 0.128" x 3", and a sinker 0.120" x 2.875". If the print does not specifically call out the diameter and lengths you will need to verify which nail is needed. It's also a good idea to have conversion options ready for the nails your guns will shoot. You will also want to make sure the nails you are using, if not specified, meet the minimum code requirements.

5 Critical Studs

The number of critical studs that should be under a girder truss or other point loads is a column design issue that is best answered by an engineer along with most of the questions above. One prescriptive method that is commonly used is to determine the column size (i.e., number of studs) based on the crushing of the plate material. You would take the total load of the girder or beam and divide it by the Fc-perp of the plate material (335 psi for SPF-south is often used for conservatism). Note that you need to check the bottom plate and the second top plate if they are different species. This calculation will give you the square inches of studs that are required to prevent the plate material from being crushed. Keep in mind that you cannot adjust the Fc-perp for duration of load or repetitive member bending. This prescriptive method also assumes that the built-up column is installed to support gravity loads only and that lateral loads applied to the surface of the wall are resisted by the standard full-height wall studs at the specified on-center spacing.

Staying informed will allow this fairly complex set of information to become less complicated. It will ensure that you take full advantage of today's code requirements, add value to your wall panel products, and assure you are in compliance with the IRC requirements. SBC

Steve Kennedy has over twenty years of experience in the metal plate connected wood truss industry. He has worked for several component manufacturers and plate suppliers. Steve has volunteered on numerous SBCA committees. While studying to earn his engineering degree and the University of Wisconsin, he worked closely with Professor Steve Cramer on truss related research projects.



Pulleys Used to Ensure Known Applied Load & Even Load Distribution

by SBCRI staff

In the November issue, we updated you on the new WB4 device in SBCRI, which is helping us evaluate and systematize BCSI temporary and permanent lateral restraint and diagonal bracing. The latest step in fine-tuning in situ truss assembly testing is ensuring that we know the load going into a given truss at a given location through a uniform distribution of applied loads. To do this, the SBCRI team turned to a very basic theoretical means of applying a uniform load across multiple trusses: the pulley.

The Problem

What's unique about SBCRI is its capacity to test full scale component assemblies. This means a given amount of force is applied to the assembly through devices called actuators, and then load cells placed at certain points in the assembly record and analyze how the trusses in the assembly react in response to those forces.

Tests performed on a five-truss assembly over the past few months made it clear that it is important to have the ability to apply load at specific points, measure what the exact applied load is at each point, and determine how that load distributes itself through web members monitored by WB4. To accomplish each of these things, the SBCRI team needed a way to apply the same load across the assembly in an accurate manner that was easy to set up. So they set out to address the challenge to ensure the most accurate load application possible. This led to the pulley load application concept.

The Approach

The team first researched previous truss tests that found a solution to the challenge at hand. A thesis written by University of British Columbia PhD student Xiaobin Song[1] addressed this very topic. The paper demonstrates tests on a single roof truss and a truss assembly (containing five trusses—similar to the assembly in SBCRI) that employed a system of pulleys to evenly distribute loads throughout the truss(es).

SBCRI staff adopted Song's pulley approach for its system of trusses. They installed a pulley system by running cable between pulleys straddling each truss in the system (photos 1 and 2). The load was applied from one side of the system (photo 1).

According to the pulley theory, with one end of the cable solidly affixed to a bearing point and the cable wrapped around two pulleys, the total load going into the system (the tension on the cable (P)) should have been twice the load being applied by the actuator (see Illustration 1 in sidebar). Four identical pulley systems were installed at joints J2, J4, J6 and J8, and load was applied at all four locations.

Photo 1.

Photo 2.

Flaws in the Theory

The first tests using the pulley fixture yielded unexpected results; they revealed a flaw in the theory Song had applied. The pulley arrangement did not allow the load to distribute evenly as the theory suggests. The friction in the cable-pulley system was too great. The tests indicated that the tension on the cable (P) was only 1.5 times the load exerted by the actuator onto the roof system. According to the theory (see inset), the cable's tension should have been twice the load applied by the actuator. After investigating the setup and test results, the team realized that the load distribution resulting from

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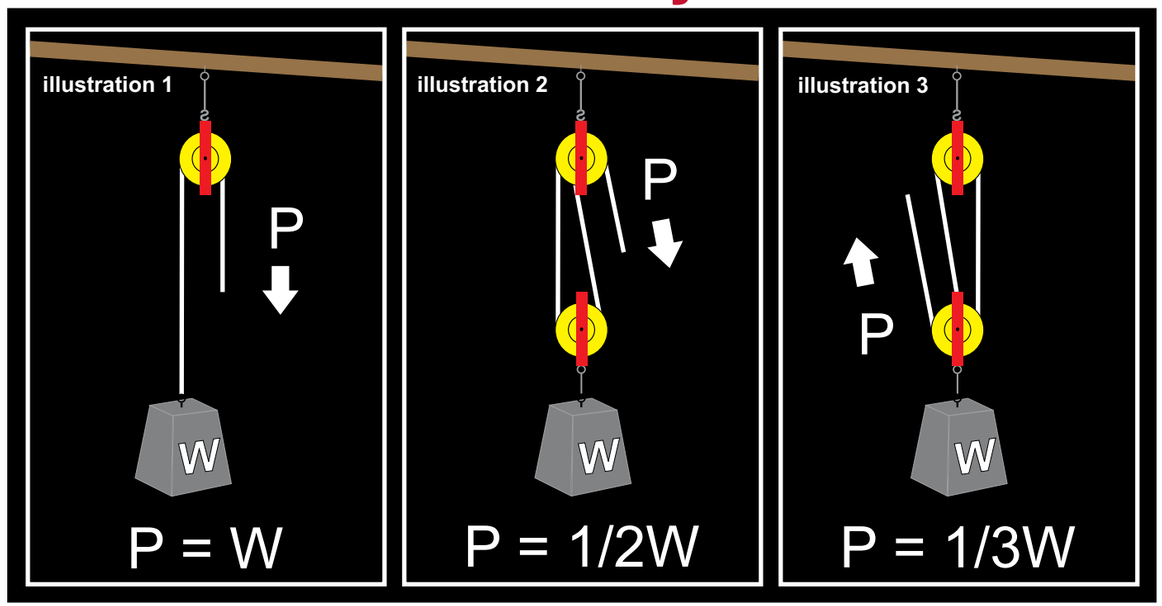
[1] Stability and Reliability Analysis of Metal Plate Connected Wood Trusses Assemblies, Xiaobin Song, Faculty of Graduate Studies (Forestry), University of British Columbia, Vancouver, March 2009.

How Do Pulleys Work?



According to basic pulley statics theory, with a simple fixed pulley (illustration 1) the tension on the rope (P) is equal to the weight of the object (W). By adding the movable pulley to the fixture (illustration 2), the tension (P) on the rope is reduced to one-half the weight. Theory further states that you reduce the tension on the rope by one-third by re-orienting the pulley/rope configuration (illustration 3).

Photo 3.

Photo 4.

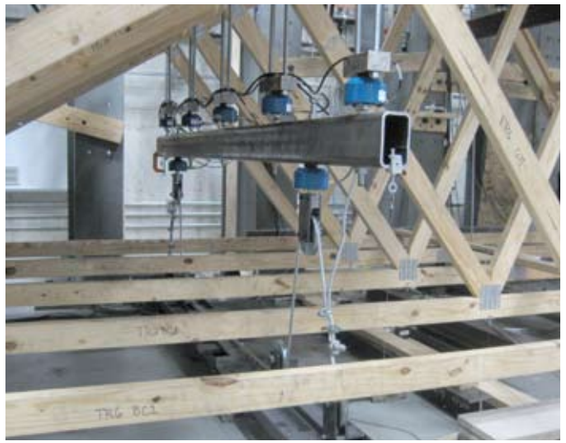


Photo 5.

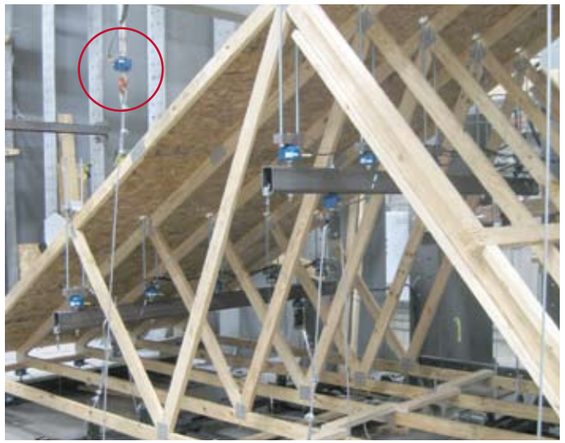


Photo 6.

Pulleys...

Continued from page 16

the pulley and cable set-up was not going to be theoretically uniform.

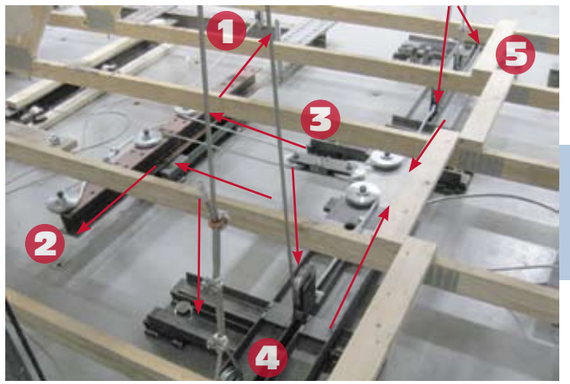
Reducing Friction. To cut down on the amount of friction between the pulleys and cable, the team reduced the number of contact points and installed a steel beam to distribute the load more evenly (photo 3). The new arrangement used a combination of fixed pulleys anchored to the floor (photo 4), and movable pulleys attached to long steel beams (photo 5).

The load or tension on the cable (P) is applied by the actuator at the upper right corner of Photo 3. The cable attached to the pulleys and steel beam is fixed at either end of the beam. Tension force is applied to both pulleys by the floor pulley attached to the cable that originates at the actuator (photo 6). Current tests are focused on evaluating this arrangement to ensure that the applied load onto each truss is accurate.

Why These Tests Are Significant. Perfecting the pulley fixture is critical to the success of future industry testing in SBCRI because it allows us to apply loads with precision and know the magnitude of the load at each applied load point. With this information we now have a defined approach to knowing loads applied to specific points on individual trusses inside the assembly *and* are beginning to understand the load paths that take place through the overall roof system.

Additionally, the pulley approach has helped us understand the differential stiffness of each truss within the system by defining the variation in the load applied at each load point. This means we can also see how the stiffness of each truss influences load distribution through the entire assembly. This system generates data that will make modeling more accurate because we know the exact load applied at specific points on each truss member or joint, the stiffness of the assembly at those load application points, and the resulting displacements emanating from specific applied loads.

While small adjustments to the pulley fixture and load application system will be ongoing, the SBCRI team is confident that this type of fixture will ultimately be the long-term solution to accurate applied load and understanding the resulting load distribution. **SBC**



This image further illustrates the path of the tension placed in the steel cable. Tension, or load, enters the system from point 1, the cable then is tied off at point 2. This tension pulls on the pulley device at point 3, which in turn pulls equally on the cable affixed at points 4 and 5.

The Future of the Softwood Lumber Supply

by Libby Maurer & Kirk Grundahl

What will a 2010 housing market recovery mean for softwood lumber supply?

New home sales are on the rise. Housing starts have begun to recover. All signs indicate that 2010 will be a year of slow growth for the housing construction industry. But talk of the ensuing recovery has many people wondering what to expect for softwood lumber supply and prices. This year, we'll examine the primary influences on the softwood lumber picture. From the Mountain Pine Beetle's damage to U.S. and Canadian forests to the industry adjusting to greater demand following a major housing slump that most of us have never experienced before; many factors contribute to what component manufacturers can expect in the next few years. Here's an overview.

Factor 1: Fallout from the Pine Beetle

The 2010 Winter Olympics aren't the only thing getting significant press in British Columbia. The Mountain Pine Beetle is a tiny insect that's made a not-so-tiny imprint on the future availability of quality softwood lumber from the region. The species, also known as the "bark beetle," is native to North America. In the past has attacked weak, older forests to make way for newer healthier trees—a good thing. Scientists believe that the outbreak of this beetle species since the 1990s is due to consistently warmer winters. In the past, below freezing temperatures would kill off the beetle in the winter. But recently, winter temperatures in Canada haven't dipped low enough to kill it. Additionally, hot and dry summers leave pine drought-stressed and more susceptible to beetle attack. As a result, the beetle continues to burrow its way into the bark of hundreds of thousands of acres of pine forests in British Columbia, Alberta and recently even further east into Saskatchewan. While burrowing through pine bark, the Mountain Pine Beetle leaves behind a blue-colored fungi stain that cuts off water and nutrient flow to the rest of the tree. If the beetle colonization isn't contained, the tree will eventually die.

What's more, the beetle has spread to the U.S. west, infecting various species in the Rocky Mountain states of Colorado, Wyoming, South Dakota and more. Although not nearly as widespread as Canada, the beetle has done enough damage—roughly 6 million acres so far—to impact more than 18 billion board feet (bbf) of American softwood lumber.

Scientists say that many of the infected logs can be salvaged, and the blue stain left behind by the beetle does not compromise its structural integrity if harvested early enough. The Canadian and U.S. governments have launched initiatives and dedicated federal resources at trying to stop the beetles' spread (e.g., a combined $1 billion investment in the case of B.C. and the Canadian governments) using chemical treatments, burning techniques and cutting healthy trees around infested ones. One of the techniques is allowing increased harvesting of infested forests. Though some of this stock can be diverted to manufacturing bioenergy and engineered wood products, a surplus supply of logs exists which has driven prices down...for the moment. But when the supply runs out, some analysts expect prices to spike.

The cumulative area timberland affected in B.C. alone is estimated at more than 14 million hectares (or 39 million acres, about four times the size of Vancouver Island). Some experts say that the B.C. outbreaks will reduce the timber harvests by as early as this year. But the destruction to come from B.C. is expected to spike in 2014/2015,[1] and the impact of the timber losses are likely to be felt for several years. Stay tuned for a follow-up article with more details about the affect of the beetle on softwood lumber supply and prices. See inset for list of credible sources in Canada and the U.S.

Factor 2: The Recovery

After several consecutive years of sliding demand, most analysts predict an increase in demand for lumber as the housing recovery beings this year. Rising housing starts, lean distribution channel inventories and government stimulus programs should kick-start lumber demand. But can production keep up?

In its 2010 forecast, the Western Wood Products Association (WWPA) predicts a mild 2010 recovery for lumber producers. "Given the unprecedented downturn, recovery for the lumber industry is unlikely to follow the same path as it has in the past," said David Jackson, WWPA economist. "The challenge for mills will be adjusting to a 'new normal' for the future." Though 2010's gradual recovery should prevent demand surges causing production and price spikes, the scenario is plausible for the 2011–2013 range.

Let's look at the numbers. WWPA estimates that a total of 31 bbf of lumber was consumed by the U.S. market in 2009. (About 7 bbf was used for new construction.) This is less than half of what was consumed in 2005 (roughly 65 bbf), an all-time high in lumber demand. For this year, WWPA predicts lumber demand to rise 11 percent to 34.5 bbf.[2] U.S. lumber producers have greatly curbed production as a result of declining demand. For instance, WWPA says Western lumber production in 2009 decreased about 21 percent to just over 10 bbf, while Southern mills cut 2009 production to 11.6 bbf. Lumber imports from Canada and other foreign lumber suppliers have decreased more dramatically. Shipments from Canada are predicted to total 7.9 bbf in 2009, a decrease of 32 percent from 2008.

But WWPA anticipates U.S. lumber production will increase according to improving demand...at least in 2010. Mills in the West and South are expected to increase production 8 percent. Canada should regain some of the market share it lost over the past few years. Imports from Canada are expected to rise 18.8 percent in 2010 to 9.4 bbf.

With mill closures and lumber production falling off to roughly 43 bbf, the occurrence of a rapid rebound within the home-building sector could trigger a wood product supply shortage.[3] The ten million dollar question for our industry is when and how quickly we will emerge from the slump. "If it does turnaround quickly, we could be looking at a situation with [lumber] demand outpacing supply. But that's a question mark at this point," says Al Schuler, economist with the U.S. Department of Agriculture Forest Service.

We will keep a close eye on homebuilding activity and new information about lumber supply in the next eighteen months.

Factor 3: China's Affordable Housing Initiative

Another factor? Enter China. That's right. In November, the B.C. forest industry and the Chinese government signed a memorandum of understanding to use wood frame construction in new housing construction.[4] B.C. predicts that the deal will yield an increase in softwood lumber exports to an estimated 4 bbf by 2011. As part of an initiative to expand affordable housing options in the country's urban centers, the Chinese government has also launched a new wood frame construction building code in Shanghai. Watch for continuing developments as B.C. advances wood products trade opportunities in China, and how these transactions could affect available supply.

Why You Should Stay Tuned...

Throughout the year, we will cover these and other topics in SBC to lay out the facts about lumber supply as we know them. We hope these topics will provoke some thought about our industry's future issues.

- How much of the supply of beetle kill logs remains?
- How long can dead trees stand, and what happens to their structural properties as they age after dead? Harvesting beetle kill lumber and its impact on lumber properties.
- If the tree fiber is not of the quality and strength needed for solid wood uses such as in wood trusses and components, are there alternative uses?
- What will be the raw material supply impact on the SBC industry?
- Will raw material change? For instance, will we see more products made from OSB or composite fiber?

In researching this issue, it is clear that wood fiber supply is going to be one of the major business issues that will affect component manufacturers in the near future. History has proven that if our suppliers can take advantage of the economics of supply and demand, they will. The more knowledge that we can gather, the more prepared we will be to make informed decisions. **SBC**

beetle resources:

- A credible website for the latest pine beetle information in British Columbia: www.for.gov.bc.ca
- B.C.'s Mountain Pine Beetle Action Plan presents statistics and outlines plan objectives through 2010. www.for.gov.bc.ca/hfp/mountain_pine_beetle/action-plan/2005/
- Check out the U.S. action plan and infestation maps here: www.fs.fed.us/r2/bark-beetle/

[1] www.for.gov.bc.ca/hre/bcmpb/cumulative/Summary.htm

[2] www2.wwpa.org/ABOUTWWPA/Newsroom/tabid/817/Default.aspx, Lumber Industry Sees Hopeful Signs of Slow Recovery in 2010, November 9, 2009

[3] www.woodmarkets.com/p_wm2006.html

[4] www2.news.gov.bc.ca/news_releases_2009-2013/2009FOR0078-000617.htm

Parting Shots

Share your stories and photos with us! Send submissions to **partingshots@sbcmag.info**.

When SBCA's West Florida Chapter says they have an annual tradition, they really mean it. For the past 24 years, the chapter has put on an educational event for building officials. Each fall, building officials and inspectors, plans examiners, and local architects and engineers join the chapter in a fantastic lunch and learn session. The free event includes educational seminar with CEU credit, truss testing demonstration and lunch. This year's class was the Component Technology Workshop (CTW) on Inspection of Installed Wood Trusses. However, the "fun" part was testing a truss to the limit, when the guests are asked to guess when the truss will fail.

Throughout the years, the chapter has shown what it takes to break field-repaired trusses, trusses with and without bracing, and additional demonstrations that show the strength of structural building components.The feedback from West Florida is undeniable—great job, guys! **SBC**

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