

PRODUCT SPOTLIGHT

NEW & IMPROVED ANCHOR TIEDOWN SYSTEM FOR MULTI-STORY STRUCTURES OFFERS SEVERAL BENEFITS

Simpson Strong-Tie has introduced its second generation Anchor Tiedown System (ATS) for multi-story structures, which features higher loads, fewer parts and an innovative rod coupling device to restrain (tie off) each floor. Since launching its initial product line in 2000, Simpson has gathered feedback from engineers and installers to fine-tune the product design so that installation is faster, easier and more cost-effective.

The Anchor Tiedown System provides designers and engineers an innovative solution for light-frame multi-story construction. ATS is a continuous rod system that extends from the foundation to the top of the structure and is tied off at each level to provide the load capacity and overturning resistance that's necessary for multi-story buildings. This level of restraint is especially critical during earthquakes and high wind events. (For more information about tying off at each floor, see the special section on our website at www.strongtie.com/ats and click on Skipped Floor Systems vs. All Floors Tied-Off Systems.)

Some of the features and benefits of the new system include:

- **Innovative take-up device**

The stacking of multiple stories creates a significant amount of settling within the structure due to shrinkage and construction loading. The ATS's new Coupling Take-Up Device (CTUD) helps resolve this issue by connecting the rods and bearing plates within the system. The CTUD is an innovative spring-driven rod coupling device, which contracts to compensate for rod movement caused by settling.

- **Fewer parts, easier installation**

The ATS design has been simplified so there are fewer parts – 64% less than the previous design, making it easier and faster to install. The CTUD, for example, combines a rod coupler with a shrinkage take-up device, reducing the number of parts. The ATS parts are all color-coded and stamped, so it's simple to match system components.



3-story ATS testing at the Tye Gilb lab.

(continued on page 2)

CODE CORNER

SUMMARY OF STRUCTURAL CODE CHANGES TO THE IBC AND IRC

The 2006/2007 ICC code development cycle concluded in May with the Final Action Hearings in Rochester, New York. During this cycle, substantial changes were made to the IRC and IBC that may affect readers of this publication.

For the IBC, one significant change was the removal of most wood design information from Chapter 23, with reference added to the AF&PA *Special Design Provisions for Wind and Seismic Standard*. This document is available for free download at www.awc.org/Standards/SDPWS.html.

Section 1605.3.1.1 was revised to clarify that stress increases other than duration of load increases for wood are allowed. These might include wall stud bending stress increase or repetitive member factors.

The minimum live load on balconies and decks was standardized to be the same as required for the occupancy served by the balcony or deck.

The use of wood structural panels for windborne debris protection was restricted

to Group R-3 and R-4 occupancies, and the requirements for attachment of the panels were strengthened. In another wind-related change, a new standard, ASTM D 7158, was added as a test method for wind resistance of composition shingles, and a table was added specifying performance classifications of shingles for windspeeds from 85 to 150 miles per hour.

To aid with the design for rain loads, new figures were added to Section 1611 to show the 100-year, one-hour design rainfall.

A new Section 1708 was added for special inspections for wind. In higher wind speed areas, special inspection of both the main wind force resisting system, and the roof and wall cladding is required. This applies to wood framing and cold formed steel framing, with the exception of wood framing where the shearwall nailing is more than 4 inches on center. In another change, the exemption from special inspections for Group R-3 occupancies was removed.

Based on Simpson Strong-Tie's cyclic testing of mudsill anchors, sill plate anchorage in Chapter 23 was revised to permit "approved anchor straps" as a substitute for anchor bolts and plate washers in higher seismic areas. Also in Chapter 23, 5/16" wood structural panel was removed for most structural uses. Lastly, a new ICC 400 Standard for the Design and Construction of Log Structures was adopted by reference in Chapter 23.

IRC Code Changes

For the IRC, a number of changes either identical to or very similar to the IBC changes were approved. For example, the strengthened fastening of wood structural panel windborne debris protection, adoption of ICC 400, classification of asphalt roof shingles for wind resistance, and the use of approved anchor straps as an acceptable substitute for anchor bolts with plate washers in higher seismic areas were all approved. Also, the live load of balconies and decks was standardized at 40 psf.

(continued on page 4)

SERVICE UPDATE



SIMPSON STRONG-TIE DONATES \$1 MILLION TO HABITAT FOR HUMANITY INTERNATIONAL

A proud supporter of Habitat for Humanity for more than a decade, Simpson Strong-Tie recently strengthened that commitment by signing a four-year national sponsorship agreement with Habitat for Humanity International. Simpson Strong-Tie is donating \$250,000 in cash and products over the next four years for a total donation of \$1 million. The contribution is helping to support several Habitat houses across North America and national programs, such as the Gulf Recovery Effort and the Jimmy Carter Work Project. Simpson’s national agreement also includes volunteer time for employees to help build Habitat homes.

“Simpson’s mission is to help people build safer and stronger homes economically. By sharing similar goals with Habitat and working together on a national level, we can provide more people homes that are built to last,” said Tom Fitzmyers, CEO of Simpson Strong-Tie.

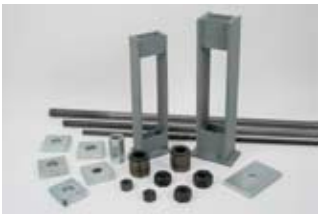
“Through its relationship with local Habitat affiliates, Simpson Strong-Tie has been making a difference in the lives of Habitat homeowners for some time,” said Mark Crozet, senior vice president of Resource Development for Habitat for Humanity International. “Their focus on local communities and the families that live in them is just one of the reasons why Habitat for Humanity International is so excited to announce this national partnership with Simpson Strong-Tie and its employees. Together, we are building more affordable homes and offering more families the opportunity to fulfill their dreams of homeownership.”

Habitat for Humanity International is a nonprofit organization that is dedicated to eliminating poverty housing around the world. Since 1976, Habitat has built more than 225,000 houses worldwide, providing simple, decent and affordable shelter for more than 1 million people. ■

PRODUCT SPOTLIGHT *(continued from page 1)*

• **Lower installed costs, savings for builders**

The new Anchor Tiedown System provides several cost advantages. The new CTUD streamlines installation and cuts labor costs by one-third compared to the previous cage system. The system design also eliminates the need for installers to precisely cut the rod at each floor—now only one precision cut is needed at the top floor. By reducing the number of parts, there are fewer materials to track and distribute, and fewer products lost at the jobsite.



Previous ATS



New and Improved ATS

• **Higher loads, more design flexibility**

All of these product enhancements have increased ATS’s load capacity by as much as 10,000 lbs. With higher loads, the system has a wider range of applications, and designers and engineers have more flexibility in their building design, including more opportunities for window and door openings and taller ceiling heights.

• **New, improved software**

New ATS software, available at strongtie.com, has been created with enhanced design versatility. The program allows engineers and architects to easily create a standard system design or customize the system to meet the specific needs of a project. It also includes CAD drawings, calculations, installation details and elevation drawings to help simplify specification.

More information about the Simpson Strong-Tie® Anchor Tiedown System can be found in the new ATS Catalog. To request a copy, visit www.strongtie.com/ats. ■

TRAINING & EVENTS

WALL BRACING SYMPOSIUM DRAWS PACKED HOUSE

This past June, Simpson invited building professionals from all around the country to attend its Wall Bracing Symposium in Stockton, California. Presenters included academia, engineers and code officials. The purpose of the symposium was to review and discuss the new wall bracing provisions in the building code, and look at some of the innovative and simplified solutions to wall bracing design. The full-day event featured 3D, cyclic/static and shake table testing at Simpson’s Tyrell Gilb Research Lab.

The topic drew a packed house and generated some positive feedback. Here’s what some of the attendees said about the symposium:

“This type of session should be seen by any engineer, building official or builder. It helped me understand some of the limitations placed on engineering design by the code. The individuals presenting were top class and very informed about issues that affect our company...”

“The discussion and interaction with code officials and engineers from across the country provides you with an enormous amount of insight on how this issue is dealt with nation wide.”

“I learned a lot from both the Simpson staff and the guest speakers. Information that I can implement on the job and share with other code enforcement and builders.”



“The lab alone was worth the trip. It is very interesting to see how products are designed and tested.”

If you are interested in learning more about wall bracing, check out our training schedule and attend one of our Braced Wall Workshops. www.strongtie.com/workshops. ■

WORKSHOPS & TRAINING

NORTHEAST

General Connector Technology – for All Audiences

Pittsford, New York Wednesday, November 14
 Carle Place, New York Wednesday, December 5

High Wind Workshops for Architects & Engineers

Annapolis, Maryland Wednesday, November 7
 King of Prussia, PA (Philadelphia) Thursday, November 8

Workshops for Builders & Contractors

Ft. Mitchell, Kentucky Thursday, November 15

Simpson Anchor Systems for Engineers

Louisville, Kentucky Wednesday, December 5
 Eagan, Minnesota Wednesday, December 12

Simpson Anchor Systems for Engineers and Architects

Philadelphia, Pennsylvania Wednesday, November 7
 New York City, New York Wednesday, November 14
 Newton, Massachusetts Wednesday, November 28

**Introduction to Simpson Anchor Systems
 for Architects and Building Inspectors/Officials**

Louisville, Kentucky Wednesday, December 5
 Eagan, Minnesota Thursday, December 13

SOUTHEAST

Builders, Contractors, and Developers

Jacksonville, Florida Thursday, August 30

Building Officials & Inspectors

McKinney, Texas Friday, November 2
 Jacksonville, Florida Thursday, November 8

High Wind Design & Detailing

Pensacola, Florida Wednesday & Thursday,
 November 14 & 15

NORTHWEST

Anchor Systems (Commercial Construction) – for All Audiences

Kent, Washington Wednesday, November 14

Building Officials & Inspectors

Stockton, California Thursday, December 6

Contractors, Builders & Developers

Stockton, California Thursday, December 13

SOUTHWEST

Building Officials & Inspectors

Brea, California Thursday, November 8

Contractors, Builders & Developers

Brea, California Thursday, December 6

Cracked Concrete and Advanced Anchor topics - For Engineers ONLY

Brea, California Thursday, November 29

General Connectors

Bakersfield, California Wednesday January 30

For more information regarding workshop content and for a complete schedule, visit the Workshops and Training section of our website at www.strongtie.com/workshops.



NEWS UPDATE

BOSTON'S BIG DIG ACCIDENT SHOWCASES NEED FOR EDUCATION

On July 10, 2006, part of the ceiling collapsed in the D Street portal of the I-90 connector tunnel in Boston, Massachusetts (also known as the Big Dig tunnel accident), causing one fatality. The National Transportation Safety Board (NTSB) released a synopsis of its Highway Accident Report on July 10, 2007. The NTSB found that the probable cause of the collapse was “the use of an epoxy anchoring adhesive with poor creep resistance, that is an epoxy formulation that was not capable of sustaining long-term loads.” Over time, the epoxy deformed and fractured until several ceiling support anchors pulled free and caused part of the ceiling to collapse.

The adhesive used in this project was not a Simpson Strong-Tie® product. However, the NTSB report also concluded: “There is a general

lack of understanding and knowledge in the construction community about creep in adhesive anchoring systems.”

As a manufacturer of anchoring adhesives, Simpson Strong-Tie is knowledgeable about anchor performance and creep resistance. Many of our products, including ET, SET, Acrylic-Tie and VGC, have passed the creep test defined in ICC Evaluation Service AC58 and are qualified for resisting long-term tensile loads.

To help educate our customers about our creep testing and the appropriate use of our products in construction applications, including those for long-term sustained loads, we have created a list of Frequently Asked Questions that is posted on our Simpson Strong-Tie® Anchor Systems website, www.simpsonanchors.com. ■

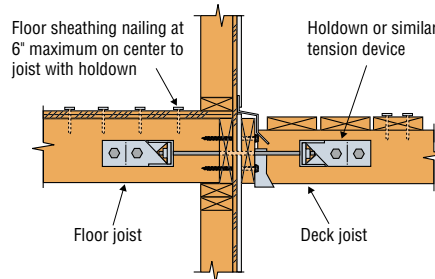
Structural Report is published by Simpson Strong-Tie Co. Inc. All information is meant to be relevant and useful. Information provided is for general understanding only. All designs or other information should be evaluated by a qualified design professional. MAILING LIST: To revise your mailing information or to be added to the mailing list, sign up on our website at www.strongtie.com/newsletter. If you have article ideas, send them to chudak@strongtie.com.

CODE CORNER (continued from page 1)

Several changes were approved that may affect the way wind design is performed in the IRC. First, a new section requiring design for topographic wind effects in specific cases where historical data shows damages from these effects was added. Secondly, the application of wind exposure was clarified so that the exposure that will exist when adjacent structures are completed can be used provided the adjacent structures are expected to begin construction within one year. This may allow the first residences in a subdivision to be designed for exposure B instead of exposure C. For component and cladding design, the effective wind area was defined so that it is calculated using an effective width not less than one third of the length.

In Chapter 4, provisions for precast concrete foundations were added, and the requirements for anchorage of basement walls for out of plane loads that had just been added for 2006 were removed. In Chapter 5, specific prescriptive requirements for anchorage of decks were added, based on testing performed at Virginia Tech and Washington State Universities. In addition to connections for

gravity loads, a lateral connection was added that requires a minimum of two 1500 pound holddown type devices to connect the deck to the primary structure. (See Figure 1).



There were many code changes approved that applied to Chapter 6. Most of those apply to wall bracing and will be summarized in our next issue. Simpson's proposal to allow the top plate repair strap to be installed with 10d x 1½" nails instead of 16d nails was approved. Also, a new section on structural insulated panel (SIP) wall construction was added.

Two items that were not approved generated considerable interest. There were several

proposals to require some type of fire sprinklers in residential construction, with many arguments on both sides of the issue. The issue was narrowly defeated by a vote of the members at the Final Action Hearings in Rochester. While not producing quite as much interest from the general membership, the roof-to-wall tiedown issue did generate four proposals for revision in the IRC. Although the four proponents could not agree on common ground in time for the Rochester hearings, they have now agreed and have submitted a common proposal for the 2007/2008 code change cycle.

The changes discussed in this article are now available for download from the ICC website as the 2007 Supplement. No doubt further changes will be made during the upcoming code change cycle prior to publishing of the 2009 IBC and IRC – we'll keep you posted. ■

Code Corner is written by Simpson Strong-Tie engineer, Randy Shackelford, PE. When he's not attending code hearings, he can be reached at rshackelford@strongtie.com.



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Inside this issue:

- ▶ **New Simpson Strong-Tie® ATS System**
- ▶ **Summary of Code Changes**
- ▶ **Simpson Donates \$1 Million to Habitat for Humanity**
- ▶ **Wall Bracing Symposium**