

INDUSTRY NEWS

PRESSURE-TREATED WOOD AND CORROSION – GET THE FACTS

Effective December 31, 2003, one of the most commonly used pressure-treated wood chemicals, Chromated Copper Arsenate (CCA-C) will no longer be available for residential or general consumer use. Because of concerns about the use of arsenic in the formulation, the pressure-treated wood industry voluntarily transitioned from using CCA-C; several alternative treatments are now being used. Recent testing indicates that certain alternative treatments are generally more corrosive than CCA-C to steel products such as nails, screws and connectors, and should not be used with standard G60/G90 connectors and fasteners.

In order to address this concern, Simpson Strong-Tie recommends the use of stainless steel connectors and fasteners where practical or products that offer a thicker zinc coating. At a minimum, Simpson recommends the use of its ZMAXTM products which have three times the amount of zinc as the industry standard G60 products. The zinc provides corrosion resistance that helps protect steel connectors and fasteners. Standard G60/G90 connectors and fasteners are hot-dip galvanized with a layer of zinc (0.60 oz/ft², 0.90 oz/ft² respectively).

(continued on page 2)



Simpson is helping customers to identify products with additional corrosion resistance by using a teal color on all box labels that contain products made with Z-MAX, Hot Dip Galvanized or Stainless Steel.

TECHNICAL UPDATE

SIMPSON STRONG-TIE'S NEW LAB TO IMPROVE BUILDING TECHNOLOGY AND SAFETY

On July 15, 2003, a three-story wall structure was put to the test, as a state-of-the-art shake table simulated the ground motion of the 1994 Northridge, California earthquake. The wall performed well under this force, but when it was subsequently subjected to a larger ground motion – one

similar to the 1995 Kobe, Japan quake – the wall was effectively destroyed.

The testing occurred at the grand opening of Simpson Strong-Tie's Tyrell Gilb Research Laboratory in Stockton, California. The lab and testing equipment were built to test structures' resistance to high winds, earthquakes and other natural disasters in an effort to improve product design and building safety.

"Simpson's laboratory and testing will help validate years of design methodology, and allow the engineering community to know where we stand with current structural design and safety," said J. Daniel Dolan, Ph.D., P.E., professor of structural engineering for Washington State University. "Simpson will be able to use this technology to design new products that offer a higher level of structural performance."

TEST EQUIPMENT

The \$10-million facility houses two main types of test equipment: a one-of-a-kind shake table and two, unique cyclic/static test rigs. Built with more than 500,000 pounds of steel, the specialized equipment can test wall structures up to five stories high by simulating vertical and horizontal forces. Together, the two types of testing equipment complement one another by providing a complete picture

of a structure's performance capabilities.

Simpson teamed with MTS Systems Corporation, an international mechanical testing and simulation equipment supplier with headquarters in Eden Prairie, Minnesota, to design and build the shake table. The shake table can test shear wall assemblies

(continued on page 4)



Simpson's one-of-a-kind shake table.

TRAINING & EVENTS

SIMPSON INTRODUCES TRAINING PROGRAM FOR IMPROVED INSTALLATION

As part of its commitment to building stronger, safer, structures, Simpson Strong-Tie has introduced a modular training program for builders and trade contractors. The program – in English and Spanish – consists of self-training booklets, videos, and CDs covering essential information on the correct installation of connectors and other Simpson products.

Presently under review by the NAHB Research Center's National Housing Quality Program (NHQ), Simpson's curricula is on track to become the first participant in the Manufacturer's Training Certification (MTC) Program. The NHQ Program is the leading resource for quality in the residential construction industry. The MTC program

requires that building material manufacturers prepare training materials devoted to the correct installation of particular product lines. NAHB Research Center staff will make field visits to evaluate the effectiveness of the training as part of the certification process.

Simpson is the first manufacturer in the nation to submit their training materials for certification to the NAHB Research Center. Its initial training module presents the correct installation of joist hangers, and includes such key points as choosing the right nail, installation methods, the use of other fasteners, and identifying fastener holes.



Simpson Sales Representatives conduct the training all over the country for framers and installers, often at the jobsite during lunch breaks. If you are interested in learning more about this program, visit www.strongtie.com/workshops/kit/requestkit.asp and sign-up to receive a free CD or video of the first training module. ■

INDUSTRY NEWS - CORROSION *(continued from page 1)*

Simpson Strong-Tie has expanded its offering of ZMAX™ and stainless steel products.

In general, the thicker the coating of zinc, the greater the expected service life of a product. Stainless steel offers the greatest corrosion resistance and is recommended with pressure-treated wood when possible. Whether using stainless steel or a hot-dip galvanized finish, connectors and fasteners

need to be made with the same type of coating. For example, stainless steel connectors should be used with stainless steel fasteners.

Because this is an important issue for the specifier community as well as the connector industry, Simpson Strong-Tie has conducted a series of tests to measure the corrosion levels of the alternative pressure-treatments. Simpson has written a Technical

Bulletin entitled "Preservative Treated Wood" (form T-PTWOOD03) which details the method and results of this testing. A chart summarizing the findings is shown below. The complete Technical Bulletin is available in this mailing or on our Web site. You can also find general corrosion information, product recommendations and frequently asked questions. For additional critical information visit www.strongtie.com/info and click on Corrosion Information. ■

The following chart was created based on testing performed by Simpson Strong-Tie. If a pressure treated wood product is not identified on the chart, Simpson has not evaluated test results regarding such product and therefore cannot make any recommendation other than the use of Stainless Steel with that product. There may be products not identified on the chart that do not require the use of Stainless Steel. Manufacturers may independently provide test results or other product use information; Simpson expresses no opinion regarding any such information. (Note: ACQ-D (Carbonate), ACQ-D and CBA-A treatments are currently not available in Canada).

| Simpson Strong-Tie Product Finishes | Untreated Wood | Chromated Copper Arsenate (CCA-C) | DOT Sodium Borate (SBX) | Alkaline Copper Quat ACQ-C and ACQ-D (Carbonate) | Copper Azole (CBA-A and CA-B) | SBX (DOT) with NaSiO ₂ | Ammoniacal Copper Zinc Arsenate (ACZA) | Other Pressure-Treated Woods |
|-------------------------------------|----------------|-----------------------------------|-------------------------|--|-------------------------------|-----------------------------------|--|------------------------------|
| Standard (G90) | ✓ | ✓ | ✓ | | | | | |
| ZMAX™ (G185) | ZMAX G185 | ZMAX G185 | ZMAX G185 | ZMAX G185 | ZMAX G185 | ZMAX G185 | | |
| Post Hot-Dip Galvanized (HDG) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| SST300™ (Stainless Steel) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

These coatings or metals provide additional corrosion protection. Recommendations shown are based on accelerated testing per AWWA Standard E12-94, and may or may not have a relation to actual service life.

CONTINUING EDUCATION & EVENTS

ENGINEERS, ARCHITECTS & SPECIFIERS

| | |
|---------------------------|------------------------------|
| Brea, California | Thursday, January 8, 2004 |
| Stockton, California | Tuesday, January 13, 2004 |
| Mount Laurel, New Jersey | Thursday, January 22, 2004 |
| Morton, Illinois | Wednesday, February 4, 2004 |
| Columbus, Ohio | Wednesday, February 25, 2004 |
| Fredricksburg, Virginia | Wednesday, March 3, 2004 |
| Monroeville, Pennsylvania | Wednesday, March 10, 2004 |
| Providence, Rhode Island | Wednesday, March 17, 2004 |
| Indianapolis, Indiana | Wednesday, March 24, 2004 |

INTRODUCTION TO HIGH WIND DESIGN AND CONSTRUCTION

| | |
|-----------------------|---------------------------|
| McKinney, Texas | Thursday, March 18, 2004 |
| Jacksonville, Florida | Wednesday, March 24, 2004 |

DESIGNING FOR HIGH WIND CONSTRUCTION

| | |
|-----------------------|--------------------------|
| McKinney, Texas | Friday, March 19, 2004 |
| Jacksonville, Florida | Thursday, March 25, 2004 |

For more information regarding workshop content and for a complete schedule, visit the Workshops and Training section of our Web site.

YOUR TURN/TESTIMONIAL

Your Turn will feature various information shared with us by our customers, including common technical questions and testimonials. If you have a technical question you need answered or if you'd like to share a testimonial, contact "The Simpson Man" at www.strongtie.com/ask.

Tehachapi, CA - On a Thursday afternoon this past November, the Simpson salesman in Tehachapi, CA, Alan Hanson, received a call from a framer who was working for a national builder/developer. The developer has an in-house inspection and auditing company that is exceptionally thorough.

They know the Simpson catalog inside and out, and had an issue with the way the framer installed the IUS joist hangers.

The problem was that there was a ¼" gap between the end of the I-joists and the header, which exceeds the ⅛" allowance. Since the IUS product line is relatively new, Simpson had no testing for conditions other than what the catalog shows. The framer was in danger of replacing many joists unless they could get some help.

Alan made an immediate call to Tom Evans, Simpson's engineer for engineered wood products. Tom did testing to duplicate the field installation, found that the load reduction was negligible, and sent out a

letter that afternoon stating that the ¼" gap was acceptable for IUS hangers up to 14" tall and 2½" wide.

The framer used the letter to satisfy the inspectors and there was no need to replace a single hanger. The tests were turned around in just a couple of days and Alan reports that the framer was very pleased with the rapid response.

Simpson Strong-Tie conducts many tests for customers who find themselves in this kind of a predicament. If you have an installation or jobsite concern, contact your local salesperson or call **1-800-999-5099** for assistance. ■

Structural Report is published by Simpson Strong-Tie Co., Inc. All information is meant to be relevant and useful. However, 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 add yourself or a friend to our mailing list, sign up on our Web site at www.strongtie.com/newsletter/.

TECHNICAL UPDATE - NEW LAB *(continued from page 1)*

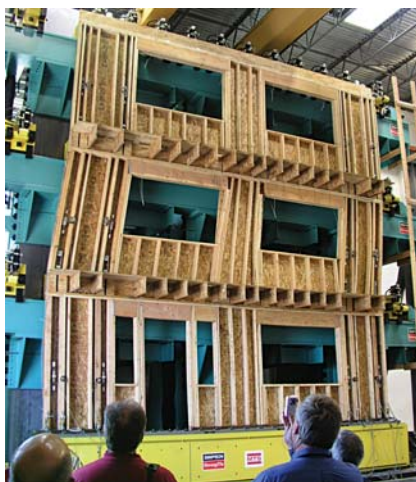
up to 25 feet long and three stories tall, with an effective specimen weight as heavy as 60,000 pounds. The shake table is moved by a powerful hydraulic actuator, and can be programmed to reproduce specific earthquake ground motions to capture important structural performance effects. The actuator has a static capacity of 150,000 pounds, and the 32-inch stroke coupled with a high-performance, 800 gallon per minute servovalve enables the reproduction of very large magnitude, high-velocity, near-field events.

The vertical and horizontal cyclic test frames, which were designed by Simpson's engineering team, apply force laterally to a shear wall to test load paths and capacities. The two-story cyclic test frame can test walls up to 50 feet long and has a shear capacity of 110,000 pounds, while the five-story cyclic test frame can test walls up to 16 feet long and has a shear capacity in excess of 110,000 pounds.

STRONG FLOOR

The main test area in the lab consists of a 10,000-square-foot "strong floor" to which the shake table and cyclic/static test frames are connected. This floor, which is three feet thick, is constructed with heavily-reinforced concrete and covers a full basement of the same area. In addition, it has holes running through it on a two-foot grid in both direc-

tions, so that the machines and experiments can be bolted directly to the floor. The 300,000-pound point load capacity of the floor ensures that it will have adequate strength for nearly any experiment that can be conceptualized. Multiple internal bays in the basement combine with a two-foot thick mat foundation to provide the support for the floor.



Racking occurs as a 3-story wall is subjected to a simulation of the Kobe, Japan earthquake.

The weight of the floor/basement assembly is 10 million pounds. When used to its full capacity, the combined moving weight of the shake table and test specimen mounted to

the strong-floor can be as much as 100,000 pounds. To violently shake the table and specimen requires a massive foundation to withstand the effects of repeated shaking while also minimizing the transmission of ground vibrations to nearby facilities.

INNOVATION AND BUILDING SAFETY

The innovative testing equipment solves a major challenge in structural testing – it can accurately measure a structure's earthquake resistance by analyzing a full-scale, standard wall section. Research from the Tyrell Gilb Research Laboratory will be used to better understand existing construction techniques as well as to design and test new, innovative structural products, which will lead to improvements in structural design, reliability and safety.

The new lab is named in memory of Tyrell (Tye) Gilb, a Simpson employee who led the company's research and development efforts for many years. "Tye's legacy of innovative product development will live on through the work done here," said Tom Fitzmyers, CEO of Simpson Strong-Tie. "The new laboratory's testing capabilities will allow us to advance our structural design technology, which will improve building safety and ultimately help save lives. That would have made Tye very proud." ■

Inside this issue:

- ▶ ***New Pressure-Treated Wood and Corrosion – Get The Facts***
- ▶ ***Simpson Strong-Tie's New Lab to Improve Building Technology and Safety***
- ▶ ***Simpson Introduces Training Program for Improved Installation***