

STRUCTURAL REPORT

STRUCTURAL SYSTEMS AND BUILDING SAFETY NEWS

SIMPSON

Strong-Tie™

Volume 2

Number 2

April 2005

PRODUCT SPOTLIGHT

CONNECTOR SIMPLIFIES PURLIN TIE DESIGN AND CONSTRUCTION

In response to wall anchorage failures in tilt-up and masonry wall buildings with wood roofs during past earthquakes, building codes over the past decade have increased the design requirements for wall anchorage to the structure. One of the code requirements is to provide a continuous tie across the building and into the diaphragm to provide lateral support for the perimeter walls.

A challenging connection in this type of system is the tie from adjacent purlins framing into a supporting beam. In an effort to simplify the design and construction of this type of connection, Simpson Strong-Tie developed the **Purlin Cross Tie (Model PCT)** connector. The connectors are installed in pairs to transfer the lateral loads into the structure.

(continued on page 2)



CODE CORNER

CODES AND STANDARDS – WHAT’S THE DIFFERENCE?

Editor’s Note: This column will analyze various code requirements to make them easier to understand. If you know of a section of the code that you feel is often misinterpreted or unclear, let us know and we’ll feature it here. Contact us at chudak@strongtie.com.

In the past, when a designer sat down to perform the structural design of a building, he or she could go to the building code as a single source of information. After all, building codes are supposed to contain all the information needed to design and construct a safe building, as well as the administrative guidance for building officials to oversee construction. However, the current trend is to remove design information from the building code and to refer the designer to a “reference standard.”

These standards are published by groups other than the model code groups, and are typically written under the rules of ANSI or ASTM. For structural design of buildings, the reference standard is ASCE 7. This

standard contains all the design loads for a building: dead, live, snow, soil, rain, ice, earthquake, wind, and flood. Over the years, more and more loading information has been removed from the code and replaced by a reference to ASCE 7. In February, proposals were approved to remove all seismic, wind, and snow design information from the International Building Code, and simply reference ASCE 7.

The groups that represent the various materials used in construction have also published their own standards for use when designing with that material. For example, a designer would need to have the National Design Specification for Wood Construction, published by the American Forest and Paper Association (AF&PA), in order to design with wood. Similarly, ACI 530/ASCE 5/TMS 402 is used for masonry construction, and for concrete construction, a designer would use ACI 318. For cold formed steel, the new North American Specification for the Design of Cold-Formed Steel Structural Members is referenced in newer codes.

In addition to design standards, some material groups write other standards for use with building codes. Good examples of these are the prescriptive construction standards that can be used to assist designers and builders. For wood buildings, the Wood Frame Construction Manual for One- and Two-Family Dwellings from AF&PA is very useful. The AISI has produced their Standard for Cold-Formed Steel Framing – Prescriptive Method for One- and Two-Family Dwellings, while the The Masonry Society is currently writing their own prescriptive manual for masonry dwellings. Eventually, prescriptive methods for wood, steel, and masonry currently in building codes may be removed and these standards could be referenced just as the material design standards have been.

So, just having the building code is no longer enough. Today’s designers will have to keep up with the newest industry design standards to ensure their designs are code compliant. ■

PRODUCT SPOTLIGHT

CONNECTOR SIMPLIFIES PURLIN TIE DESIGN AND CONSTRUCTION *(continued from page 1)*

The published allowable loads for the PCT range from 14,365 lbs to 39,665 lbs. Loads are provided in the catalog for the steel in both tension and compression and the fastener strengths in different sizes of lumber. This is done to help the specifier easily evaluate each component to meet code requirements that say the steel elements in the wall anchorage system should be designed for higher forces than the fasteners.

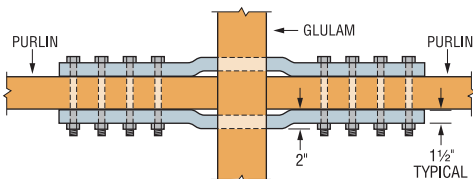
Installing the PCT is an easy 5-step process. First, an access hole is drilled on each side of the purlin at least 6" below the top of the glulam to allow the tube-shaped PCT to be passed through to the receiving purlin. (*The PCT is designed with an offset angle that simplifies drilling access through the glulam.*) Next, the PCT is nailed to the purlin for temporary placement. Using the PCT as a drill jig, bolt-holes are drilled through the purlin, followed by installation of the through-bolts. Finally, the nuts are tightened on the reverse side. No washers are required.

Utilizing the PCT for cross-tying purlins requires fewer parts than any other method, makes installation quicker and reduces installed cost. The product has found ready acceptance among structural engineers, particularly in southern California. The connectors are listed under ICBO Report 5938.

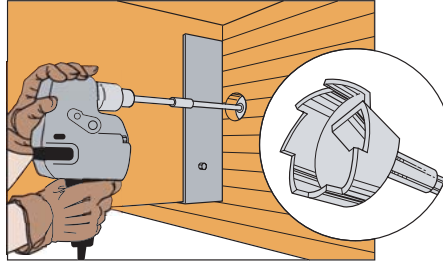
Simpson Model PCT Purlin Tension Ties are available, nationwide, from authorized Simpson Strong-Tie dealers.

A new flier, F-PANELROOF05, is available, detailing installation instructions for the PCT, as well as presenting information on additional Simpson Strong-Tie connectors for panelized roof construction. Additionally, a technical bulletin (T-PRS05) will be available in June of this year with detailed design examples for designing these types of systems.

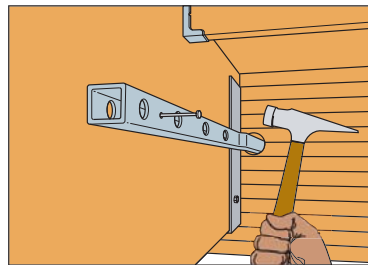
For detailed information on other Simpson products, visit www.strongtie.com or call 800-999-5099. ■



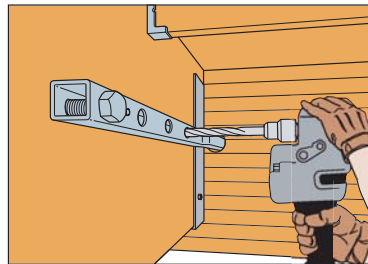
PCT installed in pair.



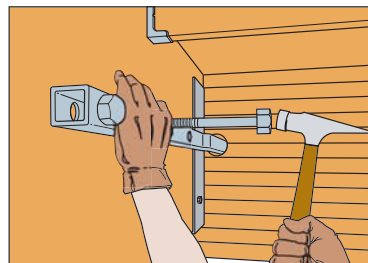
- 1 Drill 2⁹/₁₆" hole into glulam beam, at least 6" below the top of the glulam. (*One on each side*)



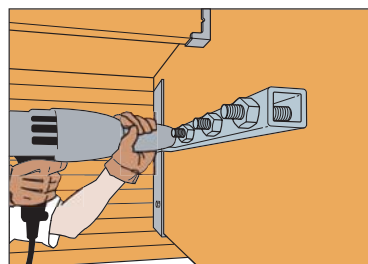
- 2 Nail PCT to purlin for temporary placement.



- 3 Use PCT as drill jig.
 - For 5/8" bolt use minimum 2¹/₃₂" or maximum 1¹/₁₆" diameter bit.
 - For 3/4" bolt use minimum 2⁵/₃₂" or maximum 1³/₁₆" diameter bit.



- 4 Install through-bolts.



- 5 Tighten nuts on reverse side. No washers required.

NOTE:
PCT's are always installed in pairs.

CONTINUING EDUCATION & EVENTS

NORTHEAST

Engineers, Architects, Building Officials & Contractors

Parsippany, New Jersey	Wednesday, April 6
Monroeville, Pennsylvania	Thursday, April 14
Madison, Wisconsin	Thursday, April 20
Portsmouth, New Hampshire	Thursday, April 27
Bloomington, Minnesota	Wednesday, May 4
Cleveland, Ohio	Wednesday, May 11
Syracuse, New York	Wednesday, May 25
Indianapolis, Indiana	Wednesday, June 8

SOUTHEAST

Building Officials & Inspectors

McKinney, Texas	Friday, May 13
Jacksonville, Florida	Thursday, May 19

Design Professionals

McKinney, Texas	Thursday, June 2
Jacksonville, Florida	Wednesday, June 8

Introduction to High Wind Design & Construction

McKinney, Texas	Thursday, April 21
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Designing for High Wind Construction

McKinney, Texas	Friday, April 22
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Designing with Simpson Anchor Systems

McKinney, Texas	Friday, June 3
Jacksonville, Florida	Thursday, June 9

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

NORTHWEST

General Connector Technology

Fresno, California	Thursday, April 14
Santa Rosa, California	Thursday, April 28

General Connector Technology – in Spanish/en Español

Stockton, California	Thursday, May 19
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Seismic/Lateral Design & Construction for Engineers & Specifiers

Stockton, California	Thursday & Friday, May 12 & 13
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Engineers, Architects & Specifiers

Stockton, California	Thursday, June 16
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Contractors, Builders & Developers

Kent, Washington	Tuesday, April 19
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Authorized Stocking Dealers

Stockton, California	Thursday, April 7
Kent, Washington	Thursday, April 21

SOUTHWEST

General Connector Technology

San Diego, California	Tuesday, April 19
San Luis Obispo, California	Friday, May 13

Building Officials & Inspectors

Brea, California	Thursday, May 5
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Design Professionals

Brea, California	Thursday, April 7
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Contractors, Builders & Developers

Brea, California	Thursday, June 9
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Introduction to Simpson Anchor Systems

Brea, California	Thursday, April 21
Las Vegas, Nevada	Wednesday, May 18
Las Vegas, Nevada	Thursday, May 19

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

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IN THE NEWS

SIMPSON ENGINEER RECOGNIZED IN ENR'S "TOP 25 NEWSMAKERS OF 2004"

Each year the publication *Engineering News Record* (ENR), recognizes 25 individuals for innovations and achievements that serve the best interest of the construction industry. Because of the extensive work Simpson Strong-Tie did in the area of researching the corrosive effects of chemicals used in new pressure treated wood formulations, the company and its head engineer have been named to the list.

Mark Crawford, Vice President of Engineering for Simpson Strong-Tie, has been recognized as one of ENR's Top 25 Newsmakers of 2004. Crawford and Simpson were honored at lunch and dinner events on March 30 at the Marriott Marquis Hotel in New York City.

National attention was focused on Simpson this year as a result of its research and information published on the topic of

corrosion of steel when it comes in contact with the new chemicals used in pressure-treated wood. As of December 31, 2003, the pressure-treated wood industry transitioned from the use of Chromated Copper Arsenate (CCA) treated wood to alternative treatments for residential applications. To determine the impact these changes could have on the construction industry, Simpson began an extensive testing program. Led by Crawford, the testing included more than 5,000 specimens and was the most extensive corrosion testing performed by anyone in the industry. When results showed that many of the new chemicals were substantially more corrosive to steel products, the company launched an extensive public relations campaign to ensure the industry was aware of the issue. The company shared the results on its web site, in literature, at industry trade shows and meetings, and in



Mark Crawford named to ENR's Top 25 Newsmakers of 2004.

a national campaign to spread the word on best practices for using connectors and fasteners with such materials.

Simpson continues its research and continues to educate the industry on this important topic. For more information, visit www.strongtie.com/info. ■



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Inside this issue:

- ▶ ***New Connector Simplifies Connecting Purlins***
- ▶ ***Codes and Standards – What's the Difference?***
- ▶ ***Simpson Engineer Recognized in ENR's "Top 25 Newsmakers of 2004"***