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Simpson Strong-Tie Company, Inc.  
260 N. Palm St.  
Brea, CA 92821

RESEARCH REPORT: RR 25643  
(CSI #06090)

Expires: February 1, 2010

Attn: Tim Kaucher, P.E.  
(800) 599-5099

**GENERAL APPROVAL** -Renewal/Technical Modification - Simpson Strong-Tie Coupling Take-Up Device (CTUD) and Take-Up Device (TUD) used in conjunction with tension tie systems in wood and steel framed structures.

**DETAILS**

The Simpson Strong-Tie Coupling Take-Up Device and Take-Up Device are perpetual high strength shrinkage compensation devices used in conjunction with tension tie down systems in wood and steel framed structures.

The Simpson Strong-Tie CTUD and TUD are fabricated from ASTM A311 Class B, Grade 1144 Steel, the CTUD has a minimum tensile strength of 126,000 psi, and minimum yield strength of 105,000 psi. The CTUD and TUD springs are fabricated from ASTM A313 stainless steel torsional wire.

There are five sizes of CTUD's being manufactured, the allowable capacities are as follows:

**COUPLING TAKE-UP DEVICE (CTUD) CAPACITIES**

Model Number	Rod Dia. (In)	Allowable Capacity (lbs.)
CTUD55, CTUD75	5/8	14,390
CTUD77, CTUD97	7/8	28,171
CTUD99	1 1/8	46,593

For S1: 1 inch = 25.4mm, 1 pound = 4.45N

1. Coupling Take-Up Devices compensate for up to 1" of shrinkage or settlement due to dead load and construction loading.

RR 25643  
Page 1 of 3

Simpson Strong-Tie Company, Inc.  
RE: Coupling Take-Up Device (CTUD) and Take-Up Device (TUD)

There are two sizes of TUD's being manufactured; and allowable capacities are as follows:

**TAKE-UP DEVICE (TUD) CAPACITIES**

Model No.	Maximum Threaded Rod Size (in)	Allowable Capacity (lbs.)
TUD9	1 1/8	26,056
TUD10	1 1/4	34,135

For S1: 1 inch = 25.4mm, 1 pound = 4.45N

1. Take-Up Devices compensate for up to 1" of shrinkage or settlement due to dead load and construction loading.

**The use of Simpson Strong-Tie CTUD and TUD as part of the continuous tie-down system is subject to the following conditions:**

1. For each shipment, the products are hard stamped by the manufacturer, which indicates that the hardware complies with the manufacturer's standards.
2. Installation of the CTUD and TUD shall be in accordance with the manufacturer's instructions.
3. Complete design calculations shall be submitted to the Structural Plan Check for each tie-down system installation. Plans and calculations shall bear the stamp and signature of a California registered civil or structural engineer. Calculations must consider:
  - a. The rod value of 0.2" elongation between connectors/restraints.
  - b. Bearing plate value per Code, considering the wood bearing capacity of the net area and plate bending.
  - c. Wood posts shall be designed for combined stresses at the critical net section and for compression parallel and perpendicular to grain.
  - d. The code allowable value of anchor bolt and tension rod.

Simpson Strong-Tie Company, Inc.  
RE: Coupling Take-Up Device (CTUD) and Take-Up Device (TUD)

4. The CTUD and TUD devices shall be installed in a manner that assured shrinkage at all floors will be accounted for.

## **DISCUSSION**

The technical modification is to update the approval capacities in accordance with 2008 LABC.

This approval is based on tests and calculations. The tests is in accordance with ICC-ES AC316, and the calculated allowable capacities is based on  $0.5 * 0.75 F_u$  (Astm A 193-B7)\*  $A_b$  (Nominal Bolt Area).

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this approval have been met in the project in which it is to be used.

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