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

RESEARCH REPORT: RR 25540
(CSI #06090)

Expires: March 1, 2009

Attn: Annie Tran, P.E.
(714) 738-2108

GENERAL APPROVAL - Renewal/Clerical Modification - Simpson Strong-Tie PCT Purlin Crosstie, HDC concentric holdown, and HDQ8 holdowns.

DETAILS

PCT Purlin crossties connect wood purlins to each other through the intersection of a supporting beam and transmit compression and tension forces from one purlin to the other. The crossties shall be installed in pairs. The crossties are manufactured from cold-formed, square-shaped, seamless, structural carbon-steel square tubing, measuring 1 ½" by ½" and 1 ½" by 3/16". The crossties are made from hot-dipped galvanized A500, grade B steel with a minimum yield strength of 46 ksi and a minimum ultimate strength of 58 ksi. See Table 1 for dimensions and capacities.

The HDC concentric holdown is designed to anchor vertical wood members to foundations or to another wood members. HDC concentric holdowns consist of two components, a 3" wide, die-formed, U-shaped steel strap and a 2 ½" high aluminum support base.

The U-shaped steel strap is made from galvanized A 653 SS, grade 33 steel with a minimum yield strength of 33 ksi and minimum ultimate strength of 45 ksi. The galvanized coating has a G90 designation. The base is made from 6061-T6 aluminum with a minimum yield strength of 40 ksi and a minimum tensile strength of 45 ksi. See Table 2 for dimensions and capacities.

HDQ8 holdown is designed to anchor vertical wood members to foundations or to another wood members. The HDQ8 is made from No. 7 gage A 653 steel, SS, Grade 33. See Table 3 for dimensions and capacity.

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Simpson Strong-Tie Co., Inc.

RE: PCT Purlin Crossties, HDC Concentric Holdowns, and HDQ8 Holdowns

The approval is subject to the following conditions:

1. The values shown in this report shall not be used in the repair, retrofit and new construction of tilt-up and masonry wall anchorage (in tension) for the connection with the horizontal wood diaphragm.

For allowable values, refer to the list in the Interdepartmental Correspondence of "Approved Anchors and Anchors Connectors for Repair, Retrofit and New Construction of Tilt-up Wall and Masonry Wall Buildings."

2. A 25% reduction in all allowable loads specified in the research report shall be taken in holdown devices as required by Section 2315.5.6 of the 2002 Los Angeles City Building Code.
3. The Holdowns shall be fully detailed and dimensioned on the approved plans showing anchor bolt embedments. The concrete footings and anchor bolts must be checked to insure that they are capable of resisting the design loads.
4. The tabulated allowable loads shall not be increased for duration of loading.
5. Wood screw capacity shall be verified where the wood species is other than Douglas Fir Larch (specific gravity of 0.50).
6. The Purlin Crossties and Holdowns shall be installed per the manufacturer's instructions.

DISCUSSION

The clerical modification is to change the address, phone number and contact person.

This report is based on test and analysis.

The SDS ¼ wood screws are approved by City of Los Angeles Research Report No. 25281.

Simpson Strong-Tie Co., Inc.

RE: PCT Purlin Crossties, HDC Conccentric Holdowns, and HDQ8 Holdowns

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.

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.

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Attachment: Load Tables (3 Pages.)

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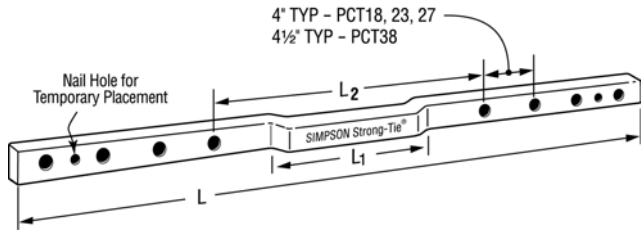
TABLE 1 - PCT PURLIN CROSSTIE

Model No.	Tube Wall Thickness	Dimension (inches)			No. and Size of Fasteners	Douglas Fir-Larch/Southern Pine - Allowable Loads Per Pair of PCTs (lbs)						
		L	L1	L2		Steel Tension	Steel Compression	Bolts (Double Shear) (133) Length of Bolt in Purlin				
								3 1/8"	3 1/2"	5 1/8"	5 1/2"	6 3/4"
PCT18	1/8"	44 3/4	14	17 3/4	8-5/8"MB	24665	19165	14365	15925	15925	15905	15875
PCT23	1/8"	52 3/4	14	17 3/4	10-5/8"MB	24665	19165	17720	19705	19705	19685	19600
PCT27	3/16"	66 5/8	19 1/2	23 1/2	12-5/8"MB	39665	28665	20715	23085	23670	23690	23545
PCT38	3/16"	71 5/8	19 1/2	23 1/2	12-3/4"MB	39665	28665	24255	27520	33735	33805	33490

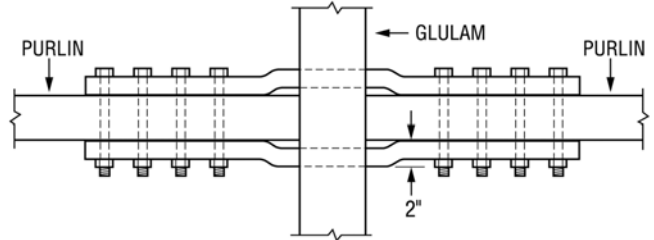
*35365

*26030

1. Loads are based on the lowest of the following criteria: 1/8" deflection static test on a steel jig, ultimate load from a static test on a steel jig divided by 3.
2. Allowable Loads have been increased 33% for wind or earthquake loading. No further increase is allowed.
3. The PCT purlin crossties must be installed in pairs.
4. Allowable loads for bolts assume a purlin with a minimum depth of 10 1/2".



PCT



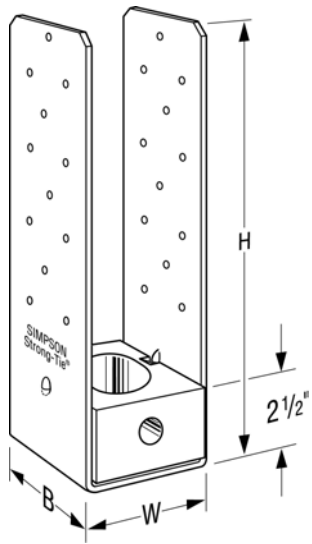
Typical PCT Installation

* revised due to additional testing

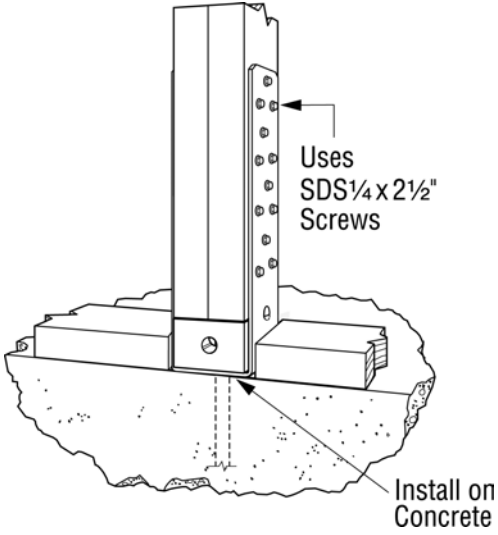
TABLE 2 - HDC CONCENTRIC HOLDOWNS

MODEL NO.	W (in)	H (in)	B (in)	ANCHOR BOLT	FASTENERS	ALLOWABLE TENSION	ALLOWABLE COMPRESSION
						133	133
HDC5/22 - SDS2.5	3 1/8	9 3/8	3	5/8"	12-SDS1/4X2.5	4870	15820
HDC5/4 - SDS2.5	3 9/16	9 1/8	3	5/8"	12-SDS1/4X2.5	4870	16995
HDC10/22 - SDS 2.5	3 1/8	14 3/8	3	7/8"	24-SDS1/4X2.5	9665	15820
HDC10/4 - SDS2.5	3 9/16	14 1/8	3	7/8"	24-SDS1/4X2.5	9665	16995

1. Allowable loads have been increased 33% for wind or earthquake loading. No further increase is allowed.
2. The anchor bolt and concrete foundation must be designed. The anchor bolt type, length and embedment must comply with code requirements.
3. Loads are based on the lowest of the following criteria: 1/8" deflection static test on a steel jig, ultimate load from a static test on a steel jig divided by 3, or the fastener in wood value.



HDC

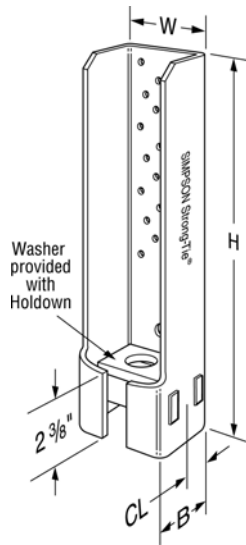


**Typical HDC Installation with 2x4 studs
(Similar with 2x6 studs)**

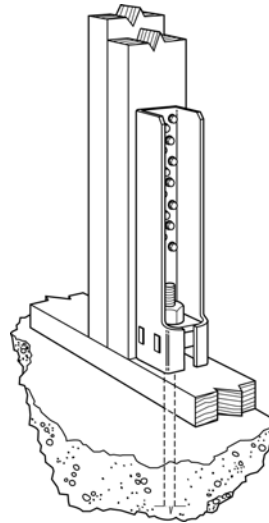
TABLE 3 - HDQ8 HOLDOWN

MODEL NO.	GA.	W	H	B	CL	ANCHOR DIA	QTY SDS1/4X3 SCREWS	ALLOWABLE TENSION (lbs.) (133)	ALLOWABLE COMPRESSION (lbs.) (133)
HDQ8-SDS3	7	2 7/8	14	2 1/2	1 1/4	7/8"	20	8325	7175

1. Allowable loads have been increased 33% for wind or earthquake loading. No further increase allowed.
2. Allowable loads are for a single HDQ8 installation. Allowable loads may be doubled for installations where HDQ8s are installed on both sides of the wood member, provided either the post is large enough or the holdowns are offset to eliminate screw interference.
3. The designer must specify anchor bolt type, length, and embedment. The anchor bolt type, length and embedment must comply with code requirements.
4. Loads are based on the lowest of the following criteria: 1/8" deflection static test on a wood jig, ultimate load from a static test on a wood jig divided by 3, or the fastener in wood value.
5. Allowable compression forces are based on a maximum unbraced anchor bolt/rod length of 6 inches, measured from the concrete surface to the base of the HDQ8 holddown device. Designer to calculate compression rod capacity as per AISC guidelines for lengths other than 6". The allowable load shall not exceed tabulated compression value.
6. The tabulated allowable compression load does not consider the end bearing capacity of the wood member.



HDQ



HDQ Vertical Installation