

LSTHD/STHD Strap Tie Holdown

Holdowns & Tension Ties



This product is preferable to similar connectors because of a) easier installation, b) higher loads, c) lower installed cost, or a combination of these features.

The STHD is an embedded strap tie holdown with high load capacity and a staggered nail pattern to help minimize splitting. The STHD strap tie holdown incorporates many features that improve installation and function. When used in conjunction with the StrapMate® you have a system that helps prevent both parallel and perpendicular movement during installation relative to the form. Allows for accurate location of the STHD's and reduces the possibility of spalling.

FEATURES

- The strap nailing pattern allows for nailing to the edges of double 2x's.
- A slot below the embedment line allows for increased front to back concrete bond and reduced spalling.
- Strap nail slots are countersunk to provide a lower nail head profile.
- Rim joist models accommodate up to a 17" clear span without any loss of strap nailing.

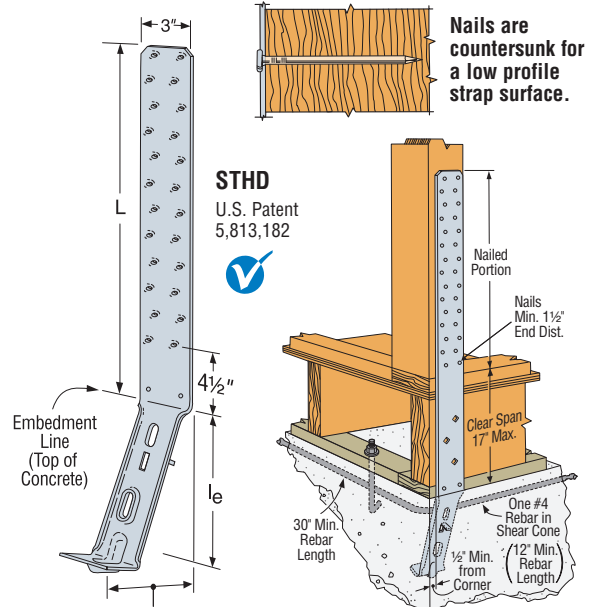
MATERIAL: LSTHD8, LSTHD8RJ—14 gauge, all others—12 gauge

FINISH: Galvanized

INSTALLATION: • Use all specified fasteners. See General Notes.

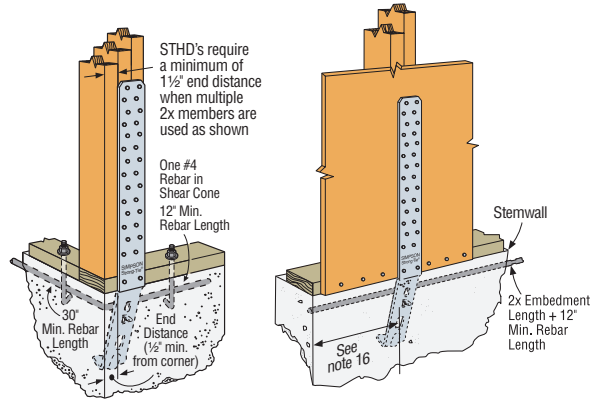
- See Post Tension information on page 43.
- Install before concrete pour with a StrapMate, or other holding device.
- Nail strap from the bottom up.
- Strap may be bent one full cycle (*bent horizontal 90° then bent vertical*) to aid wall placement, but may cause spalling behind the strap. If the spall is 1" or less, measured from the embedment line to the bottom of the spall, full loads apply. For larger spalls see table footnotes for load reduction. Any portion of the strap left exposed should be protected against corrosion.
- For two pour installations spalling is measured from the first pour.
- Unless otherwise noted, do NOT install where: (a) a horizontal cold joint exists within the embedment depth between the slab and foundation wall or footing beneath, unless provisions are made to transfer the load, or the slab is designed to resist the load imposed by the anchor; or (b) slabs are poured over concrete block foundation walls.
- To tie multiple 2x members together, the Designer must determine the fasteners required to join members to act as one unit without splitting the wood.
- Additional studs attached to the shearwall studs or post may be required by the Designer for wall sheathing nailing.
- Wood shrinkage after strap installation across horizontal members may cause strap to buckle outward.

CODES: See page 12 for Code Reference Key Chart.



STHD8 varies from 4" to 4 1/2"
STHD10, STHD14 varies from 4 3/4" to 5 1/4"

Typical STHD14RJ Rim Joist Application



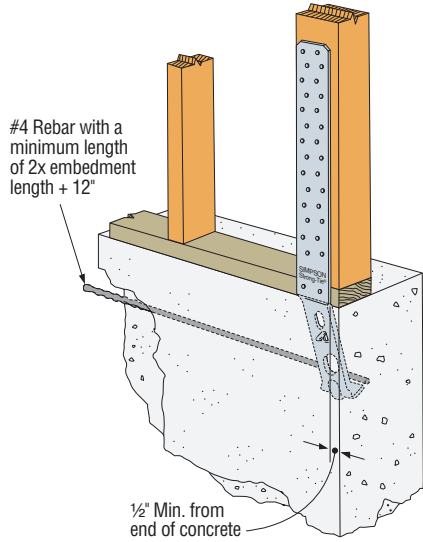
Typical STHD Applications
(for two pour, see footnote 5.)

Tension Loads for STHD Installations

Model No. Standard / Rim Joist	Min. Stem Wall	Strap Length (L)		le	Nails	Allowable Tension Loads (DF/SP/HF/SPF) (160)									Code Ref.
		Std. Model	Rim Joist Model			End Distance									
						1/2"5	1 1/2"	le	1/2"	1 1/2"	le	1/2"	1 1/2"	le	
						2000 psi Concrete			2500 psi Concrete			3000 psi Concrete			
LSTHD8 / LSTHD8RJ	6	21 1/2"	35 1/2"	8	24-16d Sinkers	1695	1695	1695	1825	1825	1825	1950	1950	1950	IL4 ¹⁷ , F24
STHD8 / STHD8RJ	6	21 1/2"	35 1/2"	8	24-16d Sinkers	1760	2050	2345	1950	2210	2385	2135	2370	2425	
STHD10 / STHD10RJ	6	23 1/2"	36 1/2"	10	28-16d Sinkers	2035	2575	3295	3730	3730	3730	3730	3730	3730	
STHD14 / STHD14RJ	6	31 1/2"	39 1/2"	14	38-16d Sinkers	3235	4220	4805	5025	5025	5025	5025	5025	5025	
LSTHD8 / LSTHD8RJ	8	21 1/2"	35 1/2"	8	24-16d Sinkers	1695	1695	1695	1825	1825	2335	1950	1950	2975	
STHD8 / STHD8RJ	8	21 1/2"	35 1/2"	8	24-16d Sinkers	2370	2370	3195	2370	2370	3195	2370	2370	3195	
STHD10 / STHD10RJ	8	23 1/2"	36 1/2"	10	28-16d Sinkers	2745	2745	3725	3730	3730	3730	3730	3730	3730	
STHD14 / STHD14RJ ²	8	31 1/2"	39 1/2"	14	38-16d Sinkers	3885	4430	5785	5025	5025	5785	5025	5025	5785	

1. 'RJ' after the model indicates STHDs for rim joist applications, e.g. STHD8RJ.
2. STHD14RJ on 8" stemwall requires 30-16d sinkers.
3. 10d commons nails may be used with no load reduction.
4. Minimum nail end distance to prevent splitting is 10 x diameter, 1 1/2" for 16d sinkers and 10d common.
5. For two pour with 4" slab or less. The STHD14 load at 1/2" end distance 2000 psi is 3235 lbs. and 4220 lbs. at 14" end distance. The STHD10 at the same condition is 2035 lbs. for 1/2" end distance, and 2750 lbs. at 10" end distance.
6. Allowable loads have been increased for wind or earthquake load durations with no further increase allowed; reduce where other load durations govern.
7. Where fewer fasteners are used in the structural wood member, reduce loads according to the code.
8. To get the full table load, the minimum center-to-center spacing is twice the embedment depth when resisting tension loads at the same time.
9. There is an increase in the amount of deflection if the strap is installed on the outside of the shear panel instead of directly to the framing. Refer to technical bulletin T-PLYWOOD (see page 191 for details).
10. Calculate loads using straight line interpolation for corner distances between 1/2" and le.
11. STHD14RJ installed on HF/SPF in an 8" stemwall: the le load is **5370 lbs.**
12. Post design shall be by Designer.
13. Loads shown apply to post tension slabs when one #4 rebar (minimum) is installed (per single pour rebar installation on page 43).
14. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-SCLCOLUMN for values on the narrow face (edge) (see page 191 for details).
15. For concrete spalls between 1" and 4" the allowable loads is 0.90 of the table loads.
16. Table loads apply to corner stemwall applications provided that there is a perpendicular stemwall at the corner having a minimum length of le. See page 43 for loads where there is not a perpendicular stemwall at corners.
17. Testing to new ICC-ES acceptance criteria to be completed in 2009. Reference www.strongtie.com for latest loads and information.
18. **NAILS:** 16d sinker = 0.148" dia. x 3 1/4" long. See page 16-17 for other nail sizes and information.

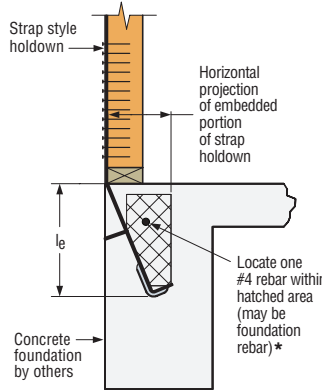
LSTHD/STHD Strap Tie Holdown



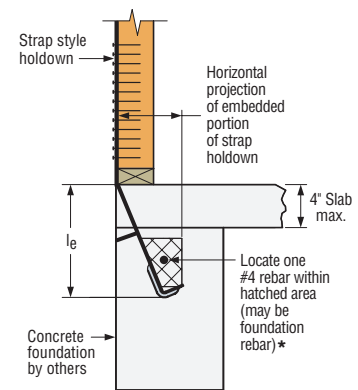
Typical STHD14 End Installation
(No corner return)

Model No.	End Installation Allowable Tension Loads at 1/2" End Distance (DF/SP/SPF/HF)		
	Stemwall Width		
	6"	8"	10"
STHD10	2095	—	—
STHD14	3105	3645	4500

1. Loads based on 2500 psi minimum concrete strength.
2. Allowable loads have been increased for wind or earthquake load durations with no further increase allowed; reduce where other load durations govern.
3. For dimensional information and required fasteners, refer to table on page 42.
4. For STHD14 1 1/2" End Distance in 8" stemwalls, loads can be increased to 4200 lbs.
5. Allowable loads also apply to rim joist models.
6. Testing to new ICC-ES acceptance criteria to be completed in 2009. Reference www.strongtie.com for latest loads and information.



Single Pour Rebar Installation
*Maintain minimum rebar cover, per ACI-318 concrete code requirements.



Two Pour Rebar Installation
*Maintain minimum rebar cover, per ACI-318 concrete code requirements.

SPALL REDUCTION SYSTEM FOR STHD STRAP TIE HOLDOWN

FEATURES

- Built-in tab.
- StrapMate® locator line.
- Additional diamond hole in RJ versions.

BENEFITS

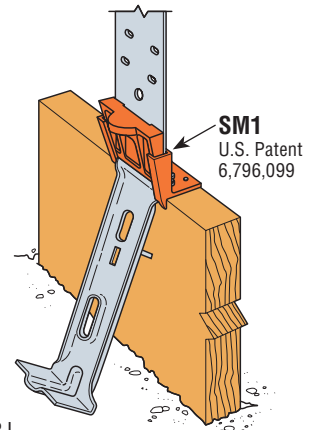
- Built-in Tab:**
- Reduces spalling and costly retrofits.
 - No additional labor to install.
 - Holds STHD away from form board.

StrapMate Locator Line:

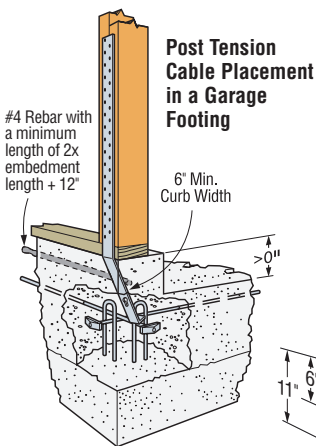
- Easy inspection to ensure proper location.
- Allows adjustment without removing STHD.

Additional Diamond Hole:

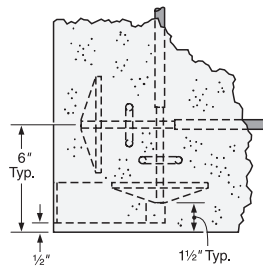
- One more fastener to help prevent the STHD RJ models from bowing out at the rim joist section.



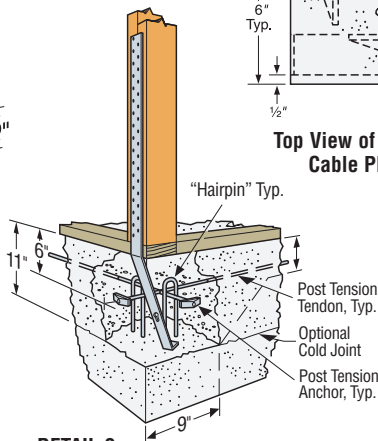
POST-TENSION INFORMATION



DETAIL 1
When installed on a raised curb, use 6" Stemwall installation and loads (rebar required see above)



Top View of Post Tension Cable Placement



DETAIL 2
Post Tension Cable Placement Corner Installation (no rebar required)

Model No.	Distance from Corner	Fasteners	Allowable Uplift Loads (160)	Code Ref.
HPAHD22	1/2" Min	13-16d	2705	IL1 ⁶ , F24
	8" Min	23-16d	4570	
LSTHD8/ LSTHD8RJ	1/2" Min	24-16d Sinkers	1695	IL4 ⁶ , F24
	8" Min	24-16d Sinkers	1695	
STHD8/ STHD8RJ	1/2" Min	24-16d Sinkers	2055	IL4 ⁶ , F24
	8" Min	24-16d Sinkers	2345	
STHD10/ STHD10RJ	1/2" Min	28-16d Sinkers	2055	IL4 ⁶ , F24
	10" Min	28-16d Sinkers	3185	

1. Minimum concrete strength is 2500 psi.
2. Post-tension steel is minimum 1/2" diameter, 7-wire, low-relaxation strand in accordance with ASTM A416, Grade 270 ksi, with a guaranteed ultimate strength of 41.3 k.
3. Anchorage is monostrand-type anchor system with current ICC approval using a ductile iron casting of at least 2.25"x4.5" of bearing and reusable pocket formers on all stressing ends.
4. It is the Designer's responsibility to provide reinforcement to tie cold-joints and to resist bending stresses in the foundation due to anchor uplift.
5. Post design shall be by Designer.
6. Testing to new ICC-ES acceptance criteria to be completed in 2009. Reference www.strongtie.com for latest loads and information.
7. **NAILS:** 16d = 0.162" dia. x 3 1/2" long, 16d sinker = 0.148" dia. x 3 1/4" long. See page 16-17 for other nail sizes and information.