

LSTHD/STHD

Strap-Tie Holdowns



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 offering high load capacity and a staggered nail pattern to help minimize splitting. The STHD incorporates many features that aid correct installation and improve performance. When installed on the forms with the StrapMate® strap holder the unique design of the STHD delivers enhanced stability before and during the pour to help prevent both parallel and perpendicular movement (relative to the form). This results in accurate positioning of the strap and reduced possibility of spalling.

Features

- The nailing pattern allows for nailing to the edges of double 2x's
- Strap nail slots are countersunk to provide a lower nail head profile
- The slots below the embedment line enable increased front-to-back concrete bond and help to reduce spalling
- 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

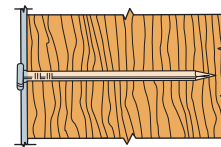
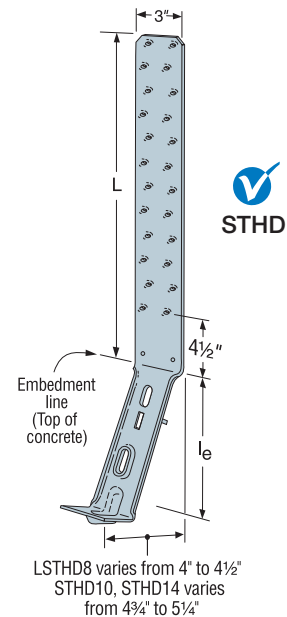
Installation:

- Use all specified fasteners; see General Notes on pp. 75–76.
- Use tables for both standard concrete and post-tension slab installations.
- Install before concrete pour with a StrapMate, or other holding device.
- Nail strap from the bottom up. Install strap plumb.
- 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. 1" to 4" spalls for LSTHD8 achieve 0.9 times table loads. STHD10 and STHD14 achieve full load for spalls less than 4". Any portion of the strap left exposed should be protected against corrosion.
- Other than where noted in the two-pour detail, 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.
- 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.
- For installations in severe corrosion environments, refer to strongtie.com/cipcorrosion for additional considerations.
- See installation illustrations on p. 85 for rebar information.

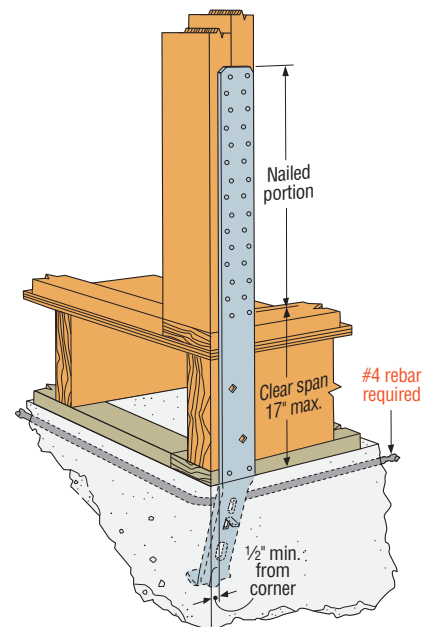
For Two-Pour Installation for Downturn Footings

- For STHD10 installed through a 4"-thick slab, use the equivalent 8"-stemwall loads of the LSTHD8.
- For STHD14 installed through a 4"-thick slab, use the equivalent 8"-stemwall loads of the STHD10.
- For STHD14 installed through a 6"-thick slab, use the equivalent 8"-stemwall loads of the LSTHD8.

Codes: See p. 14 for Code Reference Key Chart



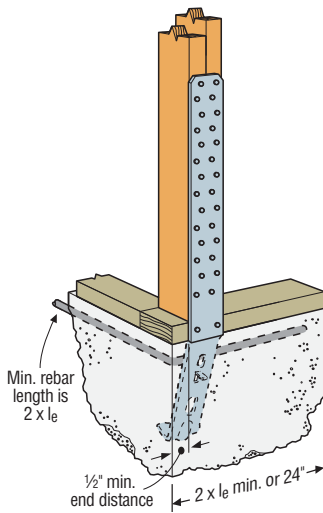
Nails are countersunk for a low-profile strap surface.



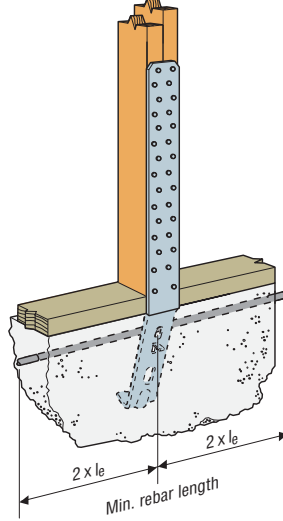
Typical STHD14RJ
Rim Joist Application

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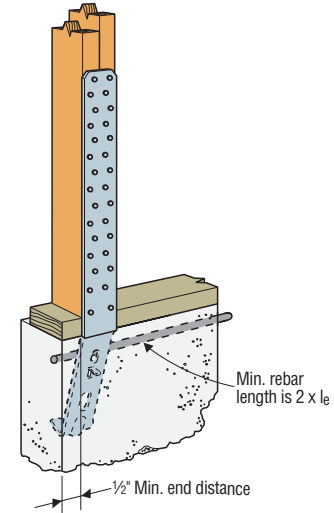
Strap-Tie Holdowns (cont.)



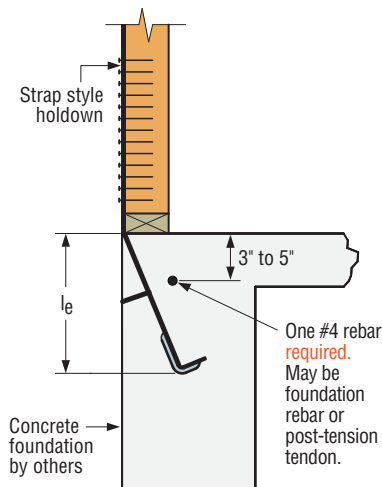
Typical STHD14
Corner Installation



Typical STHD14
Mid-Wall Installation

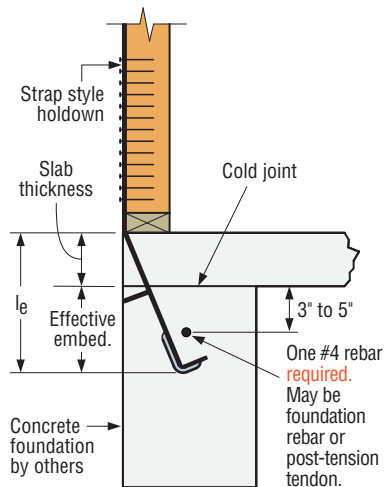


Typical STHD14
End-Wall Installation

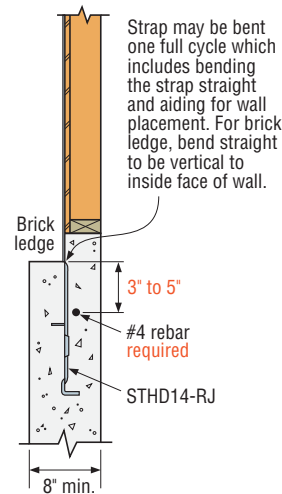


Single-Pour Rebar Installation

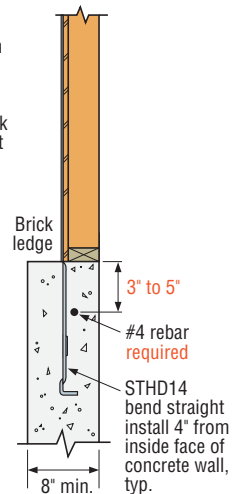
*Maintain minimum rebar cover, per ACI-318 concrete code requirements.



Two-Pour Installation
for Downturn Footings



Brick-Ledge Installation
with Step



Brick-Ledge Installation
without Step

Spall Reduction System for STHD Holdown

Features

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

Benefits

Built-in Tab:

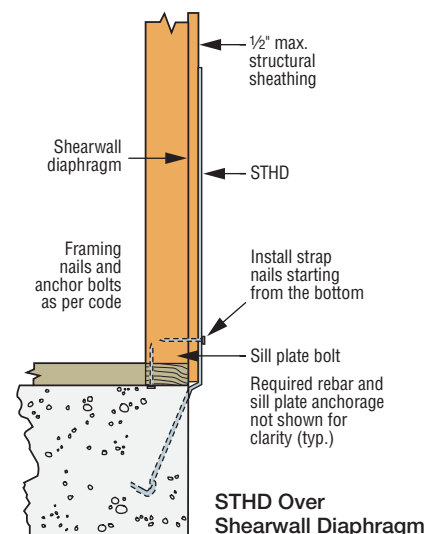
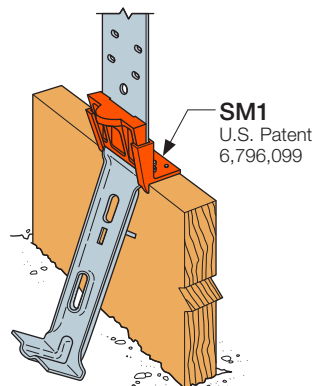
- Reduces spalling and costly retrofits
- No additional labor to install
- Holds STHD away from form board

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



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Strap-Tie Holdowns (cont.)

Tension Loads for STHD Installations

Wind and SDC A&B — Allowable Tension Loads for DF/SP/SPF/HF (160)													
Min. Stemwall (in.)	Model No.		Strap Length (L)		l _e (in.)	Required Nails	Non-Cracked			Cracked			Code Ref.
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)			Midwall	Corner	Endwall	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 16d sinkers	3,115	2,700	1,690	2,675	2,320	1,455	I25, FL
	STHD10	STHD10RJ	24%	38%	10	(24) 16d sinkers	3,820	3,820	2,050	3,140	3,140	1,705	
	STHD14	STHD14RJ	26%	39%	14	(30) 16d sinkers	5,150	5,150	3,200	5,150	5,150	3,200	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 16d sinkers	3,115	2,700	2,230	2,675	2,320	1,915	
	STHD10	STHD10RJ	24%	38%	10	(28) 16d sinkers	4,755	4,120	3,145	4,195	3,500	2,585	
	STHD14	STHD14RJ	26%	39%	14	(30) 16d sinkers	5,345	5,345	4,210	5,345	5,345	4,210	
SDC C–F — Allowable Tension Loads for DF/SP/SPF/HF (160)													
Min. Stemwall (in.)	Model No.		Strap Length (L)		l _e (in.)	Required Nails	Non-Cracked			Cracked			Code Ref.
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)			Midwall	Corner	Endwall	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 16d sinkers	2,270	2,090	1,220	2,250	1,950	1,220	I25, FL
	STHD10	STHD10RJ	24%	38%	10	(18) 16d sinkers	2,750	2,750	1,615	2,640	2,640	1,435	
	STHD14	STHD14RJ	26%	39%	14	(22) 16d sinkers	3,695	3,695	2,685	3,695	3,695	2,685	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 16d sinkers	2,615	2,125	1,635	2,250	1,950	1,610	
	STHD10	STHD10RJ	24%	38%	10	(20) 16d sinkers	3,400	2,940	2,295	3,400	2,940	2,175	
	STHD14	STHD14RJ	26%	39%	14	(24) 16d sinkers	3,815	3,815	3,500	3,815	3,815	3,500	

1. Allowable loads are for wind or seismic loading. Nail quantities reflect an increase for duration of load with no further increase allowed. Reduce where other loads govern.
2. Concrete shall have a minimum concrete strength, f'_c of 2,500 psi.
3. 10d common (3" long x 0.148") or 10d x 2½" (2½" long x 0.148") nails may be used as a direct replacement for the required nails shown in the table with no load reduction when installed directly over framing or over ½" max. structural sheathing.
4. Use the specified number of nails listed in table or as specified. In many cases, not all nail holes will be filled. Nail strap from the bottom up.
5. Deflection at highest allowable loads for install over wood double studs are as follows:
Installed on framing: LSTHD8 = 0.089", STHD10 = 0.117" and STHD14 = 0.118".
Installed over ½" maximum structural sheathing: LSTHD8 = 0.114", STHD10 = 0.146" and STHD14 = 0.164".
6. To obtain LRFD values for STHD holdowns, multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC).
7. Per 2009 and 2012 IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
8. Minimum center-to-center spacing is three times the required embedment ($S_{min} = 3 \times l_e$) for STHD's acting in tension simultaneously. Midwall install is based on 1.5 x l_e end distance.
9. See technical bulletin T-C-SCLCLM at strongtie.com for installation on structural composite lumber posts or columns.
10. For brick ledge applications, use full loads shown for STHD14 installed in 8" stemwall.
11. Nails: 16d sinker = 0.148" dia. x 3¾" long. See pp. 26–27 for other nail sizes and information.