

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 holddown offering high load 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 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 (RJ) 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

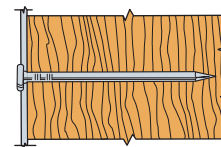
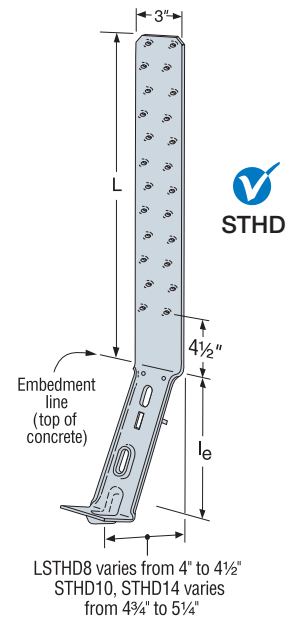
Installation:

- See Holddown and Tension Tie General Notes on pp. 49–50.
- 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;
 - (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. 60 for rebar information.

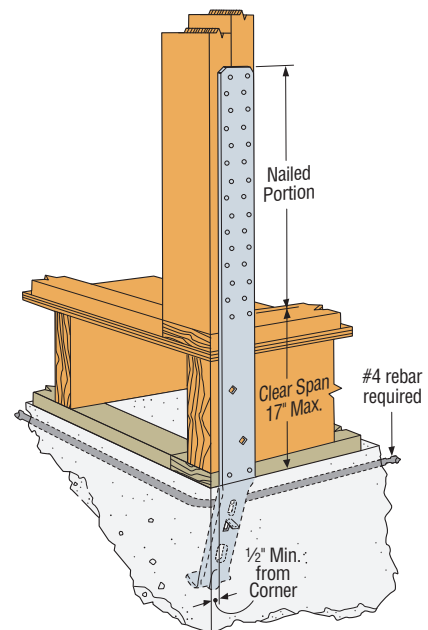
For Two-Pour Installation for Downturn Footings

- 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. 11 for Code Reference Key Chart



Nails are countersunk for a low-profile strap surface.



Typical STHD14RJ
Rim Joist Application

LSTHD/STHD

Strap-Tie Holdowns (cont.)

Tension Loads for STHD Installations

Min. Stemwall (in.)	Model No.		Strap Length (L)		l _e (in.)	Required Nails (in.)	Uncracked			Cracked			Code Ref.
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)			Midwall	Corner	Endwall	Midwall	Corner	Endwall	
Wind and SDC A&B – Allowable Tension Loads for DF/SP/SPF/HF (160)													
6	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 0.148 x 3/4	2,985	2,590	1,620	2,565	2,225	1,395	IBC, FL
	STHD10	STHD10RJ	24%	38%	10	(24) 0.148 x 3/4	3,535	3,535	1,960	2,910	2,910	1,635	
	STHD14	STHD14RJ	26%	39%	14	(30) 0.148 x 3/4	4,935	4,935	3,065	4,935	4,935	3,065	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 0.148 x 3/4	2,985	2,590	2,135	2,565	2,225	1,835	
	STHD10	STHD10RJ	24%	38%	10	(28) 0.148 x 3/4	4,755	4,075	3,015	4,020	3,350	2,480	
	STHD14	STHD14RJ	26%	39%	14	(30) 0.148 x 3/4	5,285	5,285	4,410	5,285	5,285	4,410	
SDC C-F – Allowable Tension Loads for DF/SP/SPF/HF (160)													
6	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 0.148 x 3/4	2,270	2,090	1,220	2,250	1,950	1,220	IBC, FL
	STHD10	STHD10RJ	24%	38%	10	(18) 0.148 x 3/4	2,750	2,750	1,615	2,550	2,550	1,435	
	STHD14	STHD14RJ	26%	39%	14	(22) 0.148 x 3/4	3,695	3,695	2,685	3,695	3,695	2,685	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 0.148 x 3/4	2,615	2,125	1,635	2,250	1,950	1,610	
	STHD10	STHD10RJ	24%	38%	10	(20) 0.148 x 3/4	3,400	2,940	2,295	3,400	2,940	2,175	
	STHD14	STHD14RJ	26%	39%	14	(24) 0.148 x 3/4	3,815	3,815	3,500	3,815	3,815	3,500	

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
2. Concrete shall have a minimum compressive strength of $f'_c = 2,500$ psi.
3. 0.148" x 3" or 0.148" x 2 1/2" nails may be used as a direct replacement for the required nails shown in the table with no load reduction when they are installed directly over framing or over 1/2" maximum structural sheathing.
4. Use the number of nails listed in the table or as otherwise specified. In many cases, not all nail holes will be filled. Nail strap from the bottom up.
5. Deflection at the highest allowable loads for installations over wood double studs is as follows: Installed on framing: LSTHD8 = 0.089", STHD10 = 0.117", and STHD14 = 0.118". Installed over 1/2" maximum structural sheathing: LSTHD8 = 0.114", STHD10 = 0.146", and STHD14 = 0.164".
6. To obtain LRFD values, multiply ASD seismic load values by 1.43 and wind load values by 1.67.
7. Per 2012, 2015, 2018 and 2021 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, $3 \times l_e$, for STHD strap-tie holdowns acting in tension simultaneously. Midwall installation is based on $1.5 \times l_e$ 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" stem wall.
11. For slab-on-grade installation, use full loads shown for LSTHD/STHD installed in 8" stem wall.
12. **Fasteners:** Nail dimensions are listed diameter by length. See pp. 21–22 for fastener information.

Spall Reduction System for STHD Holdown

Features

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

Benefits

Built-in Tab:

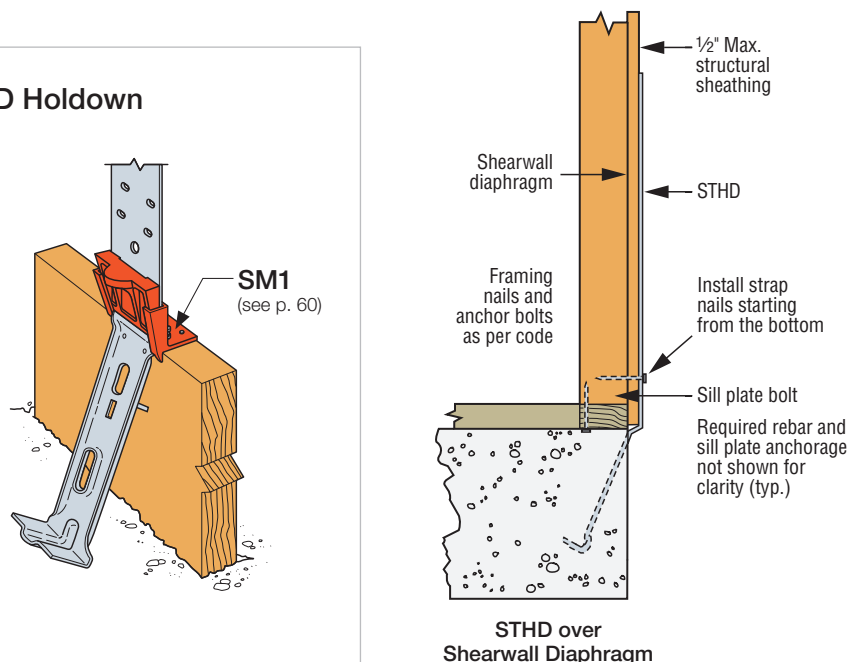
- Reduces spalling and costly retrofits
- No additional labor to install
- Holds STHD away from form board

StrapMate Locator Line:

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

Additional Diamond Hole:

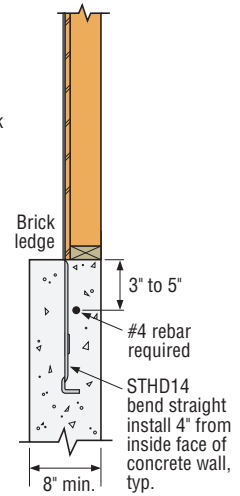
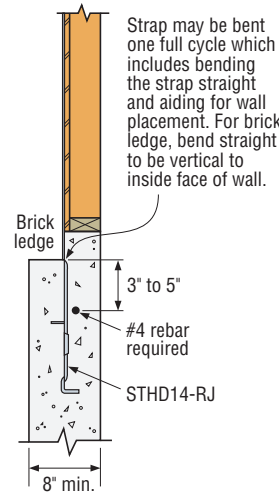
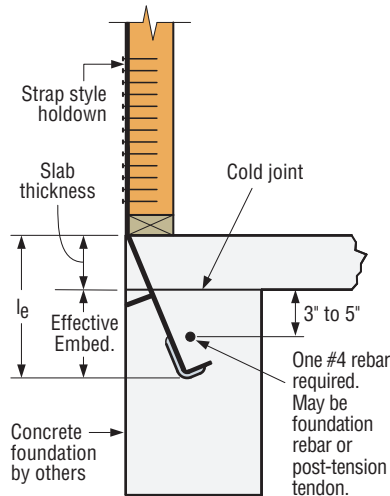
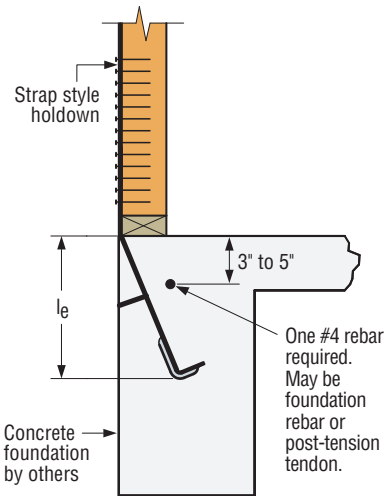
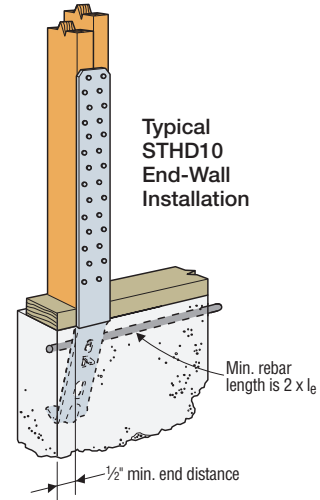
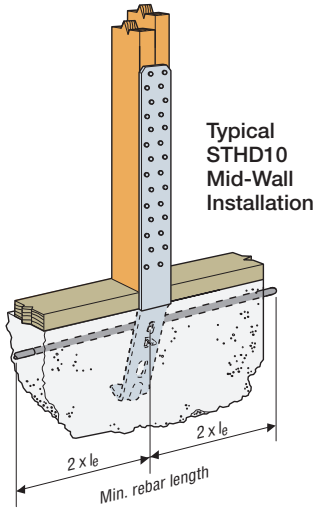
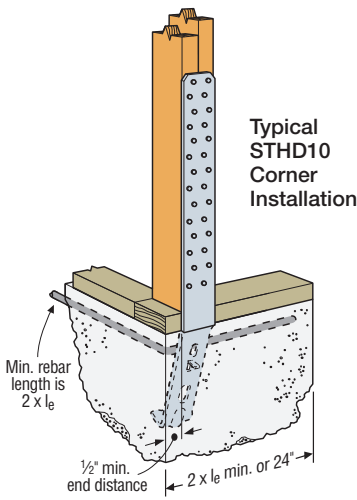
- One more fastener to help prevent the STHD RJ models from bowing out at the rim joist section



LSTHD/STHD

Strap-Tie Holdowns (cont.)

Holdowns and
Tension Ties



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

StrapMate®

Strap Holder

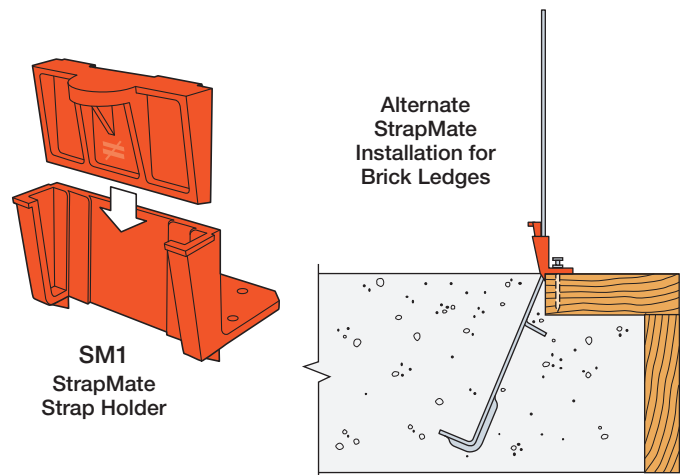
The StrapMate is designed to keep the STHD and LSTHD straps vertically aligned during the concrete pour to minimize possibility of spalling. The friction fit allows for quick and easy installation.

Features:

- The StrapMate is reusable
- Works with STHD, LSTHD
- Designed to fit 3/4" plywood forms up to 1 1/4" LVL forms and larger
- The strap is positioned off the front edge of the form board

Material: Engineered composite plastic

Model No.	Nails (in.)
SM1	(2) 0.131 x 2 1/2 Duplex



STHD/LSTHD 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 holddown offering high-load capacity. 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 fastener pattern allows for fastening to the edges of back-to-back studs
- 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 fastening

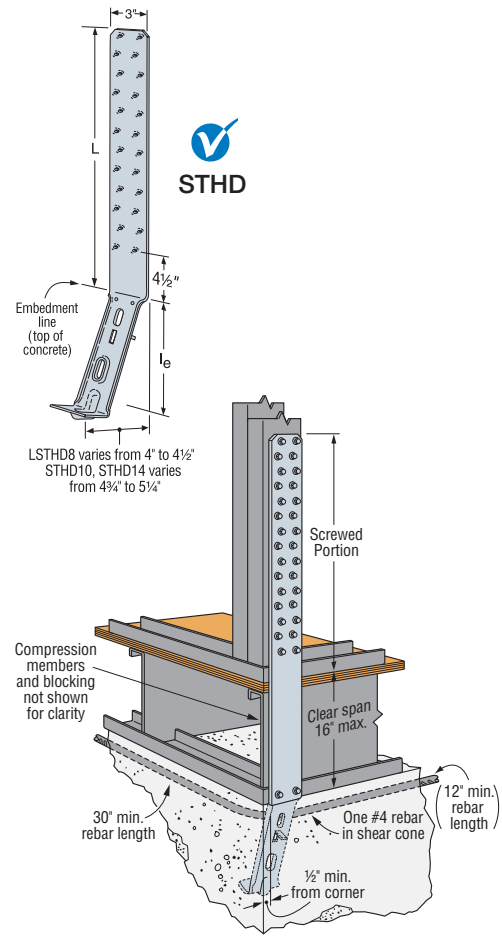
Material: LSTHD8, LSTHD8RJ – 14 gauge, all others – 12 gauge

Finish: Galvanized

Installation: • Use all specified fasteners; see General Notes.

- Use table below for both standard concrete and post-tension slab installations.
- Install before concrete pour with a StrapMate® or other holding device.
- Fasten 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. 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 fastening.
- For installation in severe corrosion environments, refer to strongtie.com/cipcorrosion for additional considerations.

Codes: See p. 11 for Code Reference Key Chart



Typical STHD14RJ Rim Joist Application

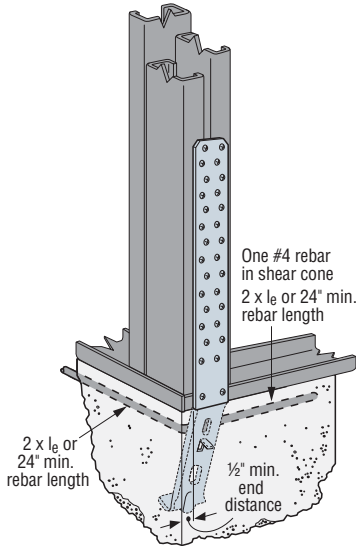
Holdowns and Tension Ties

Allowable Stress Design (ASD) Loads for STHD Strap Style Hold-Downs on CFS — 2,500 psi Concrete

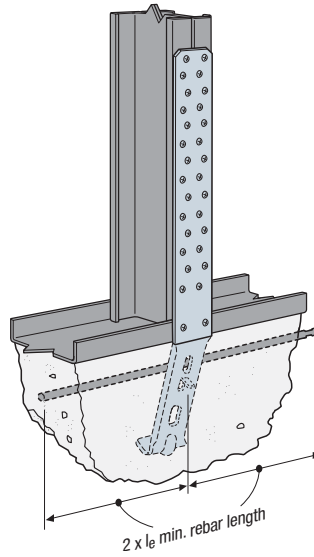
Wind and SDC A & B — Allowable Tension Loads (lb.) — 33 mil (20 ga.) Studs														Code Ref.
Min. Stem Wall (in.)	Model No.		Strap Length (L)		le (in.)	Non-Cracked				Cracked				
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)		Req'd Screws	Midwall	Corner	Endwall	Req'd Screws	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32 1/2	8	(20) #10	2,985	2,590	1,620	(16) #10	2,565	2,225	1,395	
	STHD10	STHD10RJ	24%	38 1/2	10	(24) #10	3,535	3,535	1,960	(22) #10	2,910	2,910	1,635	
	STHD14	STHD14RJ	26%	39%	14	(30) #10	4,935	4,935	3,065	(30) #10	4,935	4,935	3,065	
8	LSTHD8	LSTHD8RJ	18%	32 1/2	8	(20) #10	2,985	2,590	2,135	(16) #10	2,565	2,225	1,835	
	STHD10	STHD10RJ	24%	38 1/2	10	(28) #10	4,755	4,075	3,015	(22) #10	4,020	3,350	2,480	
	STHD14	STHD14RJ	26%	39%	14	(30) #10	5,285	5,285	4,410	(30) #10	5,285	5,285	4,410	
SDC C-F — Allowable Tension Loads (lb.) — 33 mil (20 ga.) Studs														IBC, LA, FL
Min. Stem Wall (in.)	Model No.		Strap Length (L)		le (in.)	Non-Cracked				Cracked				
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)		Req'd Screws	Midwall	Corner	Endwall	Req'd Screws	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32 1/2	8	(16) #10	2,270	2,090	1,220	(14) #10	2,250	1,950	1,220	
	STHD10	STHD10RJ	24%	38 1/2	10	(18) #10	2,750	2,750	1,615	(18) #10	2,550	2,550	1,435	
	STHD14	STHD14RJ	26%	39%	14	(22) #10	3,695	3,695	2,685	(22) #10	3,695	3,695	2,685	
8	LSTHD8	LSTHD8RJ	18%	32 1/2	8	(16) #10	2,615	2,125	1,635	(14) #10	2,250	1,950	1,610	
	STHD10	STHD10RJ	24%	38 1/2	10	(20) #10	3,400	2,940	2,295	(20) #10	3,400	2,940	2,175	
	STHD14	STHD14RJ	26%	39%	14	(24) #10	3,815	3,815	3,500	(24) #10	3,815	3,815	3,500	

1. Deflection at highest allowable loads for install over CFS double studs are as follows: LSTHD8 = 0.065", STHD10 = 0.096" and STHD14 = 0.115".
 2. Multiply Seismic and Wind ASD load values by 1.4 or 1.67, respectively, to obtain LRFD capacities.
 3. Per 2012, 2015 and 2018 IBC Section 1613, detached one- and two- family dwellings assigned to Seismic Design Category (SDC) A, B or C are exempt from the seismic design provisions of IBC Section 1613. For this case, the allowable wind loads apply.
 4. Minimum center-to-center spacing is 3 times the required embedment ($S_{min} = 3 \times l_e$) for STHD's acting in tension simultaneously. Midwall install is based on $1.5 \times l_e$ end distance.
 5. See *Fastening Systems* catalog (C-F-2019) on strongtie.com for more information on Simpson Strong-Tie fasteners.

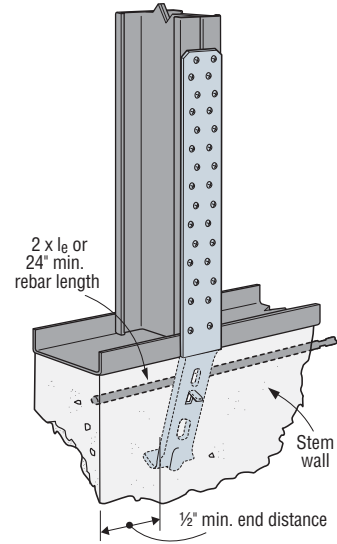
STHD/LSTHD Strap Tie Holdowns



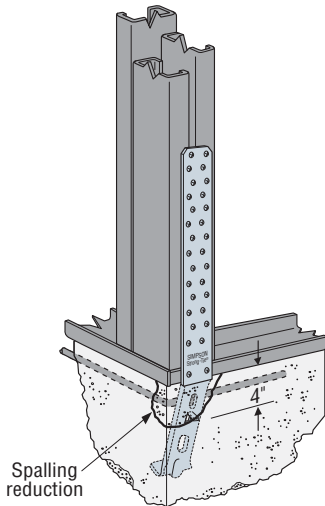
Typical STHD14 Corner Installation on Three Studs
(end of wall similar)



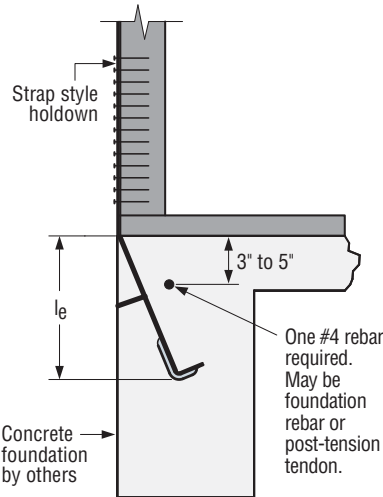
Typical STHD14 Mid-Wall Installation



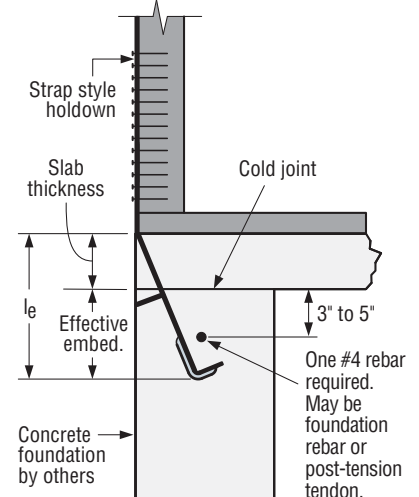
Typical STHD End Installation



Spalling Load Reduction
If strap is bent horizontal 90° during installation, and then bent vertical for fastening to the stud, concrete spalling could result. Load reductions may apply, see installation note.



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



Two-Pour Installation for Downturn Footings

Spall Reduction System for STHD Holddown

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.

