

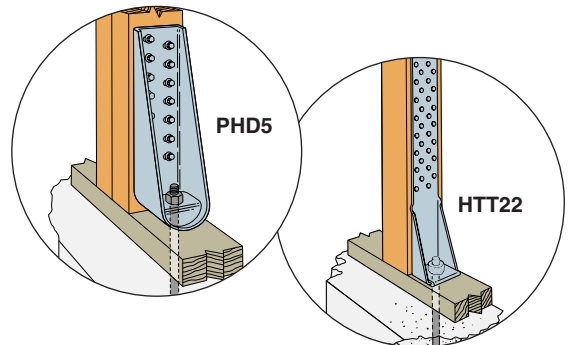
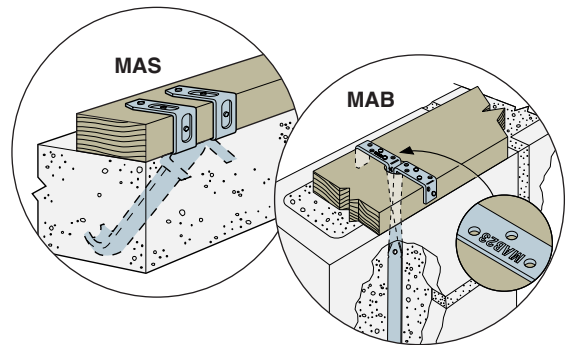
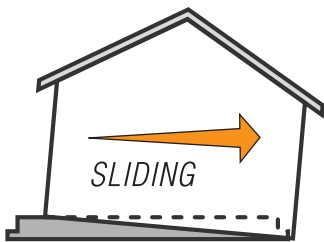
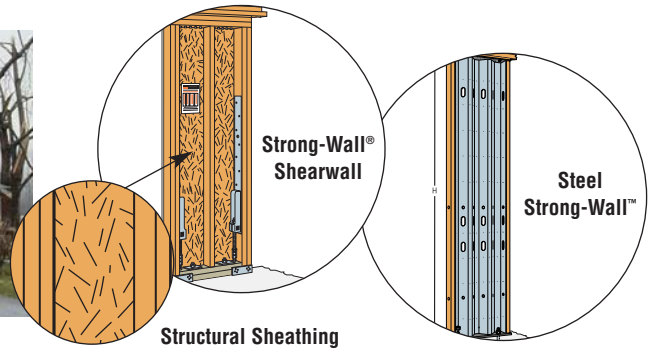
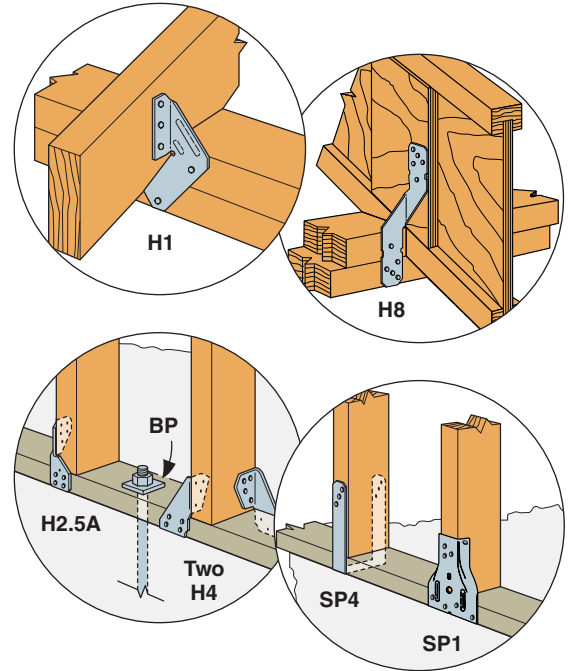
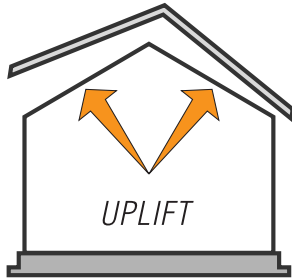


HIGH WIND- RESISTANT CONSTRUCTION C-HW05-R

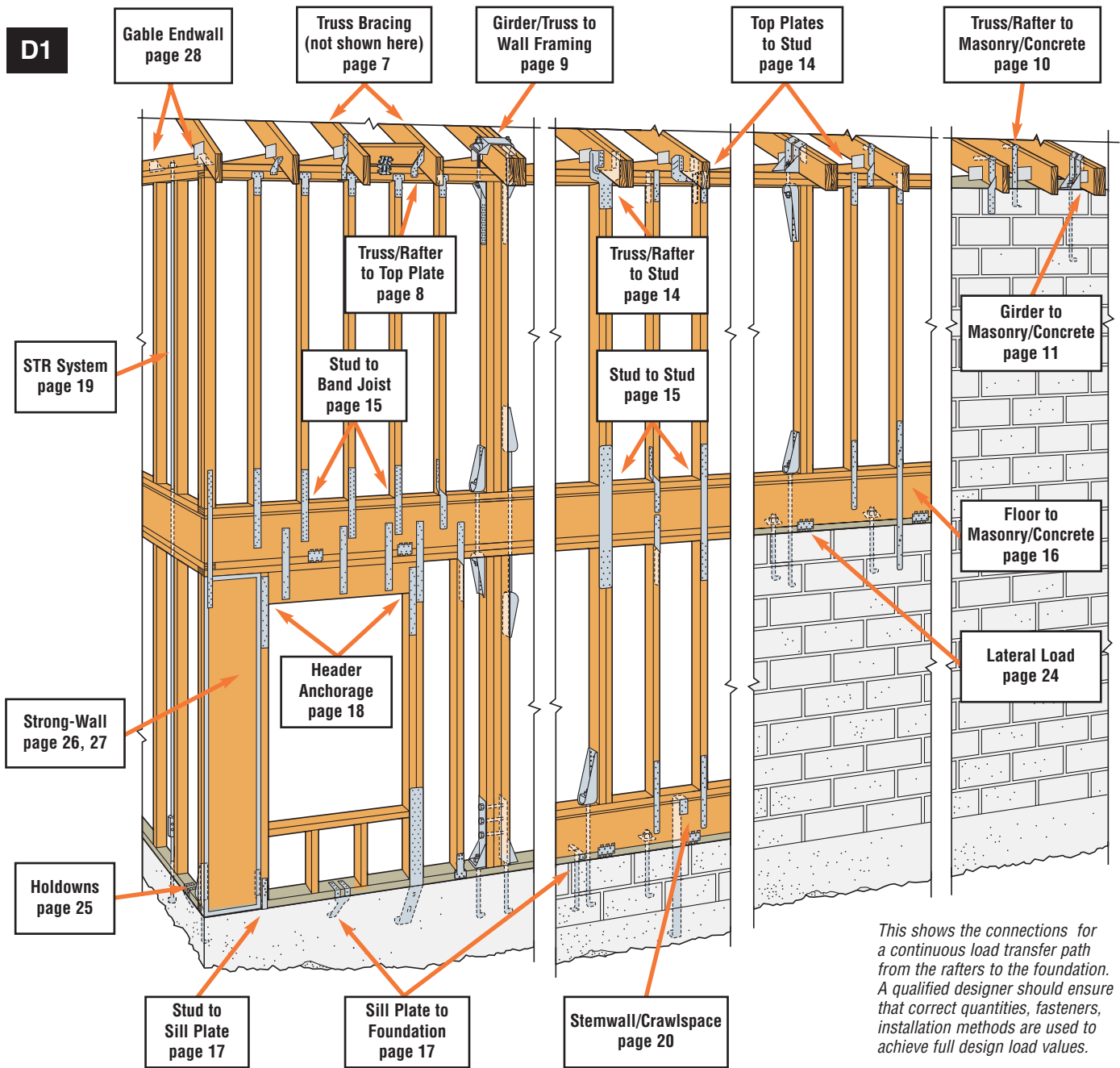
(800) 999-5099
www.strongtie.com

Wind Effects

Wind forces are generated from natural events like thunderstorms, hurricanes, and tornadoes. These winds create forces that attack the integrity of a structure in multiple ways: vertically resulting in uplift forces and horizontally resulting in overturning, sliding, and racking forces. Without proper design and construction, these forces can produce structural damage and even destruction. Modern design and construction practices, such as structural connectors used in a **continuous load path transfer** system, can effectively resist these forces by reinforcing the structure from the roof to the foundation.



D1



This shows the connections for a continuous load transfer path from the rafters to the foundation. A qualified designer should ensure that correct quantities, fasteners, installation methods are used to achieve full design load values.

Table of Contents

Wind Effects.....	2	Truss/Rafter Hip to Wall.....	12	Stemwall/Crawlspace.....	20
Continuous Load Path.....	3	Truss/Rafter to Single Top Plate.....	13	Pile/Girder to Wall.....	21
General Information.....	4	Hollow Column Uplift.....	13	Post and Column Caps.....	22
Corrosion Information.....	5	Truss/Rafter to Stud.....	14	Post and Column Bases.....	23
Fasteners.....	6	Top Plates to Stud.....	14	Roof Boundary Clip.....	24
Truss Bracing.....	7	Stud to Band Joist.....	15	Lateral Load.....	24
Valley Truss Connection.....	7	Stud to Stud.....	15	Shearwall Holddown.....	25
Drag Strut Connection.....	7	Floor to Masonry/Concrete.....	16	Strong-Wall Shearwall.....	26
Truss/Rafter to Wood Double Top Plates.....	8	Stud to Sill Plate.....	17	Steel Strong-Wall.....	27
Girder/Truss to Wall Framing.....	9	Sill Plate to Foundation.....	17	Gable Endwall.....	28
Truss/Rafter to Masonry/Concrete.....	10	Header Anchorage.....	18	Hanger Uplift Considerations.....	29
Girder/Truss to Masonry/Concrete.....	11	Strong-Tie Rod System.....	19	Load Path Installation Considerations.....	30, 31

This catalog reflects changes in the allowable loads and configurations of some Simpson Strong-Tie Company, Inc. products. This catalog is effective until January 31, 2007, and supersedes all information in earlier publications, including catalogs, brochures, fliers, technical bulletins, etc. Use this edition as a current reference. Information on allowable loads and configurations is updated periodically. After January 31, 2007, contact Simpson Strong-Tie Co., Inc. for the most current product information. Allowable loads in this catalog are for the described specific applications of properly-installed products. Product modifications, improper loading, installation procedures, or deviations from recommended applications will affect connector allowable load-carrying capacities.

General Information

Simpson Quality Policy

We help people build safer structures economically. We do this by designing, engineering and manufacturing “No Equal” structural connectors and other related products that meet or exceed our customers’ needs and expectations. Everyone is responsible for product quality and is committed to ensuring the effectiveness of the Quality Management System.



Steve Lamson
President



Tom Fitzmyers
Chief Executive Officer

Getting Fast Technical Support

When you call for engineering technical support, we can help you quickly if you have the following information at hand. This will help us to serve you promptly and efficiently.

- What Simpson catalog are you using? (*See the front cover for the form number.*)
- Which Simpson product are you using?
- What is your load requirement?
- What is the carried member’s width and height?
- What is the supporting member’s width and height?
- What is the header material and application?

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General Notes

1. Refer to the current Simpson catalog *Wood Construction Connectors* for connector load values, installation, fastener schedules and other important information including Terms & Conditions of Sale, and Building Code Evaluation listings.
2. Drawings are for illustrative purposes only.
3. “—” in the tables indicates that the product has not been tested in the particular load direction listed.
4. Loads are provided for both a 133% and 160% load duration increase on the calculated capacity of the nails. Where loads are the same, the product is test limited, and no further load duration increase is allowed by the building code. Load values on every product **DO NOT** include a one-third increase on the steel capacity.
5. The allowable load is the maximum static design load that can be imposed on a connection. Allowable loads in this catalog are determined using calculations and one or more of the following methods: static load tests in wood assemblies; static load tests in steel jigs; static load tests of products embedded in concrete or masonry. Some tests, such as purlin anchor tests, include only portions of a product—only the embedded hook is tested, not the nailed or bolted section of the strap which is calculated. Testing to determine allowable loads in this catalog is not done on connection systems in buildings. Testing is conducted under the supervision of an independent laboratory. Some loads are determined using calculations without testing. For detailed information regarding how Simpson tests specific products, contact your Simpson representative or contact the company.
6. When multiple connectors are used, they must be installed so fastener locations do not overlap.
7. Unless otherwise noted, allowable loads are for use with Douglas Fir Larch or Southern Pine Lumber.
8. Allowable loads for more than one direction for a single connection cannot be added together. A design load which can be divided into components in the directions given must be evaluated as follows:
Design Uplift / Allowable Uplift + Design Lateral Parallel to Plate / Allowable Lateral Parallel to Plate + Design Lateral Perpendicular to Plate / Allowable Lateral Perpendicular to Plate < 1.0.
9. All references to bolts or MBs are for structural quality through bolts equal to or better than ASTM Standard A 307, Grade A. Lag bolts and carriage bolts are not acceptable.
10. Unless otherwise noted, all nails are common nails.
11. Refer to Simpson Catalog T-ANCHORSPEC02 for anchors to concrete designs.
12. Some illustrations may show the connector on the outside of the wall. Installation on the inside of the wall is acceptable. For a Continuous Load Path, install roof to top plate connectors on the same side of the wall as top plate to stud connectors.
13. Some products are shown installed with Simpson Titen masonry screws. Alternative fasteners must be reviewed and approved by the designer.
14. Load tables are sorted by 160% allowable load.
15. Loads are in pounds, dimensions are in inches, unless otherwise noted.
16. Truss plates shown are not manufactured by Simpson.

Limited Warranty

Simpson Strong-Tie Co., Inc. warrants catalog products to be free from defects in material or manufacturing. Simpson Strong-Tie Co., Inc. products are further warranted for adequacy of design when used in accordance with design limits in this catalog, and properly specified and installed. This warranty does not apply to uses not in compliance with specific applications and installation procedures set forth in this catalog, or to non-catalog or modified products, or to deterioration due to environmental conditions.

Simpson Strong-Tie connectors are designed to enable structures to resist the movement, stress, and loading that results from impact events such as earthquakes and high velocity winds. Other Simpson Strong-Tie products are designed to the load capacities and uses listed in this catalog. Properly-installed Simpson Strong-Tie products will perform in accordance with the specifications set forth in the applicable Simpson catalog. Additional performance limitations for specific products may be listed on the applicable catalog pages.

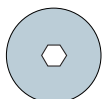
Due to the particular characteristics of a potential impact event, the specific design and location of the structure, the building materials used, the quality of construction, and the

condition of the soils involved, damage may nonetheless result to a structure and its contents even if the loads resulting from the impact event do not exceed Simpson catalog specifications and Simpson Strong-Tie connectors are properly installed in accordance with applicable building codes.

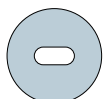
All warranty obligations of Simpson Strong-Tie Co., Inc. shall be limited, at the discretion of Simpson Strong-Tie Co., Inc., to repair or replacement of the defective part. These remedies shall constitute Simpson Strong-Tie Co., Inc.’s sole obligation and sole remedy of purchaser under this warranty. In no event will Simpson Strong-Tie Co., Inc. be responsible for incidental, consequential, or special loss or damage, however caused.

This warranty is expressly in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose, all such other warranties being hereby expressly excluded. This warranty may change periodically - consult our website www.strongtie.com for current information.

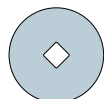
Nailing Identification



Hexagonal Holes
Used for concrete or masonry screw applications.



Obround Holes
Used to provide easier nailing access in tight locations. Fasteners may be installed at an angle.



Diamond Holes
Optional holes to temporarily secure connectors to the member during installation.



Triangle Holes
Provided on some products in addition to round holes. Round and triangle holes must be filled to achieve the published maximum load value.

UNDERSTANDING THE ISSUES

Metal connectors, anchors, and fasteners will corrode and may lose load-carrying capacity when installed in corrosive environments or exposed to corrosive materials. There are many environments and materials which may cause corrosion including ocean salt air, fire-retardants, fumes, fertilizers, preservative-treated wood, dissimilar metals, and other corrosive elements.

The many variables present in a single building environment make it impossible to accurately predict if, or when, significant corrosion will begin or reach a critical level. This relative uncertainty makes it crucial that specifiers and users be knowledgeable of the potential risks and select a product coating or metal suitable for the intended use. It is also important that regular maintenance and periodic inspections are performed, especially for outdoor applications.

It is common to see some corrosion on connectors especially in outdoor applications. Even Stainless Steel can corrode. The presence of some corrosion does not mean that load capacity has necessarily been affected or that a failure will occur. If significant corrosion is apparent or suspected, then the wood, fasteners and connectors should be inspected by a professional engineer or general contractor and may need to be replaced.

In the last several years, pressure treated wood formulations have changed significantly. Many of the new formulations are more corrosive to steel connectors and fasteners than the traditionally used formulation of CCA-C. Simpson testing has shown that ACQ-C, ACQ-D (Carbonate), CBA-A and CA-B treated woods are approximately 2 times more corrosive than CCA-C, while

GENERAL SIMPSON RECOMMENDATIONS

- Outdoor environments are generally more corrosive to steel. If you choose to use ZMAX or HDG on an outdoor project (i.e. deck, patio cover), you should periodically inspect your connectors and fasteners or have a professional inspection performed. Regular maintenance including water-proofing of the wood used in your outdoor project is also a good practice.
- For wood with actual retention levels greater than 0.40 pcf for ACQ, 0.41 pcf for CBA-A, or 0.21 pcf for CA-B (Ground Contact), Stainless Steel connectors and fasteners are recommended. Verify actual retention level with the wood treater.
- When using Stainless Steel connectors, use Stainless Steel fasteners. When using ZMAX/HDG galvanized connectors, use fasteners galvanized per ASTM A153.

See www.strongtie.com/info for additional critical information.

SBX-DOT (Sodium Borate) treated woods were shown to be less corrosive than CCA-C. (See Technical Bulletin T-PTWOOD05 for details).

Due to the many different pressure treatment formulations, fluctuating retention levels, and because the formulations may vary regionally, or change without warning, understanding which connectors and fasteners to use with these materials has become a complex task. We have attempted to provide basic knowledge on the subject here, but it is important to fully educate yourself by reviewing our technical bulletins on the topic, and also by viewing information and literature provided by others. Additionally, because the issue is evolving, it is important to get the very latest connector information on the topic by visiting our website at www.strongtie.com/info.

Stainless Steel is always the most effective solution to corrosion risk. However, it is also more expensive and sometimes more difficult to obtain. To best serve our customers, Simpson is evaluating the options to identify the safest and most cost-effective solutions. Based on our testing and experience there are some specific applications that are appropriate for ZMAX/HDG or G90 connectors (see chart below.)

Because increased corrosion from some newer pressure-treated wood is a new issue with little historical data, we have to base our recommendations on the testing and experience we have to date. It is possible that as we learn more, our recommendations may change, but these recommendations are based on the best information we have at this time.

- Testing indicates wood installed dry reduces potential corrosion. If dry wood is used, see our website for additional information.
- Using a barrier membrane can provide additional corrosion protection, see Technical Bulletin T-PTBARRIER05.

Due to the many variables involved, Simpson cannot provide estimates on service life of connectors, anchors or fasteners. We suggest that all users and specifiers also obtain recommendations for HDG, ZMAX™ (G185), mechanically galvanized, and other coatings from the treated wood supplier for the type of wood used. However, as long as Simpson's recommendations are followed, Simpson stands behind its product performance and our standard warranty (page 4) applies.

GUIDELINES FOR SELECTING THE PROPER CONNECTOR

1 Evaluate the Application.

Consider the type of structure and how it will be used. These recommendations may not apply to non-structural applications such as fences.

2 Evaluate the Environment

Testing and experience indicate that indoor dry environments are less corrosive than outdoor environments. Determining the type of environment where a connector or fastener will be used is an important factor in selecting the most appropriate material and finish for use on the connectors and fasteners. To help in your decision making, consider the following general exposure information:

Interior Dry Use: Includes wall and ceiling cavities, and raised floor applications of enclosed buildings that have been designed to ensure that condensation and other sources of moisture do not develop.

Exterior - Dry: Includes outdoor installations in low rainfall environments and no regular exposure to moisture.

Exterior - Wet: Includes outdoor installations in higher moisture and rainfall environments.

Higher Exposure Use: Includes exposure to ocean salt air, large bodies of water, fumes, fertilizers, soil, some preservative treated woods, industrial zones, acid rain, and other corrosive elements.

3 Evaluate and select a suitable pressure-treated wood for the intended application and environment.

The treated wood supplier should provide all the information needed regarding the wood being used. This information should include: the specific type of wood treatment used, if ammonia was used in the treatment, and the chemical retention level. If the needed information is not provided then Simpson would recommend the use of Stainless Steel connectors and fasteners. You should also ask the treated wood supplier for a connector coating or material recommendation.

4 Use the chart on the right, which was created based on Simpson's testing and experience to select the connector finish or material.

If a pressure treated wood product is not identified on the chart, Simpson has not evaluated test results regarding such product and therefore cannot make any recommendation other than the use of Stainless Steel with that product. Manufacturers may independently provide test results or other product use information; Simpson expresses no opinion regarding any such information.

Low = Use Simpson standard painted and G90 galvanized connectors as a minimum.

Med = Use ZMAX/HDG galvanized connectors as a minimum. Use fasteners galvanized per ASTM A153.

High = Use Type 304 or 316 Stainless Steel connectors and fasteners.

Connector Coating Recommendation - Structural Applications

Environment	Untreated Wood	SBX/DOT & Zinc Borate	ACQ-C, ACQ-D (Carbonate), CA-B & CBA-A			ACZA	Other or Uncertain
			No Ammonia	With Ammonia	Higher Chemical Content ¹		
Interior Dry	Low	Low	Med	Med	High	High	High
Exterior - Dry	Low	N/A ²	Med	High	High	High	High
Exterior - Wet	Med	N/A ²	Med ^{3,4}	High	High	High	High
Higher Exposure	High	N/A ²	High	High	High	High	High
Uncertain	High	N/A ²	High	High	High	High	High

1. Woods with actual retention levels greater than 0.40 pcf for ACQ, 0.41 pcf for CBA-A, or 0.21 pcf for CA-B (Ground Contact level).
2. Borate treated woods are not appropriate for outdoor use.
3. Test results indicate that ZMAX/HDG will perform adequately, subject to regular maintenance and periodic inspection. However, the nationally-approved test method used, AWPA E12-94, is an accelerated test, so data over an extended period of time is not available. If uncertain, use Stainless Steel.
4. Some treated wood may have excess surface chemicals making it potentially more corrosive. If you suspect this or are uncertain, use Stainless Steel.

5 Compare the treated wood supplier's recommendation with the Simpson recommendation.

If these recommendations are different, Simpson recommends that the most conservative recommendation be followed.

Nails

Nail Type	Description	Wire Gauge (ga)	Metric Equivalent (mm)	Finish ³	Fasteners per CWT	Doug Fir-Larch/So. Pine Allowable Loads ¹			Spruce-Pine-Fir Allowable Loads ¹		
						Light Gauge		3 Gauge	Light Gauge		3 Gauge
						Shear (100)	Gauge	Shear (100)	Shear (100)	Gauge	Shear (100)
N8HDG	(8d) 0.131 x 1 1/2" Smooth shank	10 1/4	3.3 x 38.1	HDG	15200	95	14	134	81	16	114
SSN8	(8d) 0.131 x 1 1/2" Smooth shank	10 1/4	3.3 x 38.1	SS	15200	95	14	134	81	16	114
SS8D	(8d) 0.131 x 2 1/2" Smooth shank	10 1/4	3.3 x 63.5	SS	9400	95	20	134	81	18	115
8d common	(8d) 0.131 x 2 1/2" Smooth shank	10 1/4	3.3 x 63.5	BRIGHT	9400	95	20	134	81	18	115
N10HDG	(10d) 0.148 x 1 1/2" Smooth shank	9	3.8 x 38.1	HDG	11900	119	14	168	102	16	133
SSN10	(10d) 0.148 x 1 1/2" Smooth shank	9	3.8 x 38.1	SS	12200	119	14	168	102	16	133
SS10D	(10d) 0.148 x 3" Smooth shank	9	3.8 x 76.2	SS	6700	119	18	168	102	20	144
10d common	(10d) 0.148 x 3" Smooth shank	9	3.8 x 76.2	BRIGHT	6700	119	18	168	102	20	144
10DHDG	(10d) 0.148 x 3" Smooth shank	9	3.8 x 76.2	HDG	6700	119	18	168	102	20	144
16d sinker	0.148 x 3 1/4" Smooth shank	9	3.8 x 82.6	GV	6100	119	18	168	102	20	144
12d common	0.148 x 3 1/4" Smooth shank	9	3.8 x 82.6	BRIGHT	6100	119	18	168	102	20	144
N16	(16d) 8 ga x 2 1/2" Smooth shank	8	4.1 x 63.5	BRIGHT	6300	132	18	198	120	20	170
SS16D	(16d) 0.162 x 3 1/2" Smooth shank	8	4.1 x 88.9	SS	4400	132	18	198	120	20	170
16d common	(16d) 0.162 x 3 1/2" Smooth shank	8	4.1 x 88.9	BRIGHT	4400	132	18	198	120	20	170
16DHDG	(16d) 0.162 x 3 1/2" Smooth shank	8	4.1 x 88.9	HDG	4400	132	18	198	120	20	170

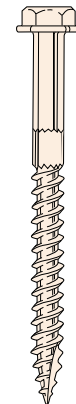
- Allowable loads are based on the 2001 NDS. Adjustments are made for use with metal side plates, Fes = 45 ksi. Loads under light gauge are based on 22 gauge. Allowable loads for gauges not indicated must be calculated according to the code. Contact the factory for more details.
- N16 may be ordered galvanized; specify EG; for example N16EG.
- HDG = hot-dip galvanized; SS = stainless steel; Bright = no finish; GV = Green vinyl.
- Metric equivalents are listed Diameter x Length.
- The 8d common, 10d common, 12d common, 16d common (bright), and 16d sinker nails are for reference only. Simpson does not sell these nails. All other nails are available through Simpson.
- For pneumatic fastener info, request additional technical information.
- Recommended minimum end distance to prevent splitting is 10 x the nail diameter per 97 NDS Commentary Table C12.4.1.
- These loads are for 100% duration. They may be increased per the NDS.
- Use HDG nails with ZMAX™ and HDG products.
- 16d sinker with GV finish is not acceptable for ZMAX or HDG applications.
- Use stainless steel nails with stainless steel products.

Load Reduction for Optional Nails Used with Straight Straps ONLY

Catalog Nail	Replacement Nail	Allowable Load Adjustment Factor
16d common (0.162 x 3 1/2")	10dx1 1/2" (0.148 x 1 1/2")	0.64
16d common (0.162 x 3 1/2")	10d common (0.148 x 3") 12d common (0.148 x 3 1/4")	0.85
16d common (0.162 x 3 1/2")	16d sinker (0.148 x 3 1/4")	0.85
16d common (0.162 x 3 1/2")	16d x 2 1/2" (N16) (0.162 x 2 1/2")	1.00
10d common (0.148 x 3") 12d common (0.148 x 3 1/4")	10dx1 1/2" (0.148 x 1 1/2")	0.77
10d common (0.148 x 3")	10d x 1 1/4" (0.148 x 1 1/4")	0.64
10d common (0.148 x 3") 12d common (0.148 x 3 1/4")	16d sinker (0.148 x 3 1/4")	1.00
8d common (0.131 x 2 1/2")	8dx1 1/2" (0.131 x 1 1/2")	0.86
16d common (0.162 x 3 1/2")	spiral 8d x 2 1/2" (0.110 x 2 1/2")	0.70
16d common (0.162 x 3 1/2")	spiral 10d x 3 (0.132 x 3")	0.83
16d common (0.162 x 3 1/2")	spiral 16d x 3 1/2" (0.152 x 3 1/2")	0.96
10d common (0.148 x 3")	8d x 2 1/2" (0.131 x 2 1/2")	0.83
10d common (0.148 x 3")	spiral 8d x 2 1/2" (0.110 x 2 1/2")	0.83
10d common (0.148 x 3")	spiral 10d x 3 (0.132 x 3")	1.00

- This table does not apply to steel thicker than 10 gauge. Straight straps may be installed with alternate nails. Use this table to determine the load adjustment factor.
- Loads on non-straight strap products may not be reduced with the values in this table as they are test limited. Contact Simpson for guidance.

Available with additional corrosion protection. Check with factory.



Identification on all screw heads (SDS 1/4 x 3 shown)

SDS 1/4 x 3
US Patent 6,109,850

Wood Screws

Model No.	Description	Metric Equivalent (mm)	Finish ³	Fasteners per Carton	Doug Fir-Larch/Southern Pine Allowable Loads ¹		Spruce-Pine-Fir Allowable Loads ¹	
					Wood to Wood (DF to DF)	14 ga to 3 ga	Wood to Wood (SPF to SPF)	14 ga to 3 ga
						Shear (100)		Shear (100)
SDS 1/4 x 1 1/2	1/4 x 1 1/2" Wood Screw	6.1 x 38	ZINC	1500	—	295	—	245
SDS 1/4 x 1 1/2 HDG	1/4 x 1 1/2" Wood Screw	6.1 x 38	HDG	1500	—	295	—	245
SDS 1/4 x 2	1/4 x 2" Wood Screw	6.1 x 50.8	ZINC	1300	—	470	—	395
SDS 1/4 x 2 HDG	1/4 x 2" Wood Screw	6.1 x 50.8	HDG	1300	—	470	—	395
SDS 1/4 x 2 1/2	1/4 x 2 1/2" Wood Screw	6.1 x 63.5	ZINC	1100	—	470	—	395
SDS 1/4 x 2 1/2 HDG	1/4 x 2 1/2" Wood Screw	6.1 x 63.5	HDG	1100	—	470	—	395
SDS 1/4 x 3	1/4 x 3" Wood Screw	6.1 x 76.2	ZINC	950	240	470	200	395
SDS 1/4 x 3 HDG	1/4 x 3" Wood Screw	6.1 x 76.2	HDG	950	240	470	200	395

- Allowable loads for SDS screws are based on testing per ASTM D1761.
- Metric equivalents are listed by Diameter x Length.
- Zinc = Yellow zinc dichromate, HDG = Hot-dip Galvanized.
- SDS screws install best with a low speed 1/2" drill with a 3/8" hex head driver.
- Wood-to-wood applications are based on a wood thickness of 1 1/2" side member. All applications are based on full penetration into the main member.
- These loads are for 100% duration. They may be increased per the NDS. Max C_d = 1.33.
- New tested loads have been submitted to the Code Agencies.
- Other sizes are available. Refer to current *Wood Construction Connectors* catalog.
- The SDS screws with HDG finish will be supplied with their corresponding HDG or ZMAX™ connectors.
- SDS-HDG available in bulk or 50-piece retail pack.
- Withdrawal values for SDS screws may be calculated using NDS equations for a #14 wood screw.

Titen Tension and Shear Load Values in Concrete and Masonry

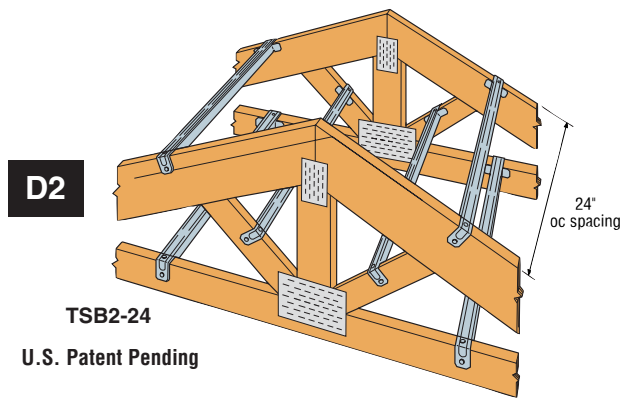
Titen Dia. (in)	Drill Bit Dia. (in)	Embed. Depth (in)	Critical Spacing (in)	Critical Edge Dist. (in)	Tension Load				Shear Load	
					f'c >= 2000 psi (13.8 MPa) Concrete		f'c >= 4000 psi (27.6 MPa) Concrete		f'c >= 2000 psi (13.8 MPa) Concrete	
					Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.
1/4	3/16	1	3	1 1/2	580	145	725	180	900	225
1/4	3/16	1 1/2	3	1 1/2	1,460	365	2,005	500	1,600	400

Titen Hex Head



Model No.	Fasteners	L	Maximum Allowable Loads ¹	
			Compression	Tension
TSB2-16	4-10dx1½	17½	540	365
TSB2-24	4-10dx1½	25½	540	365

1. No load duration increase allowed.

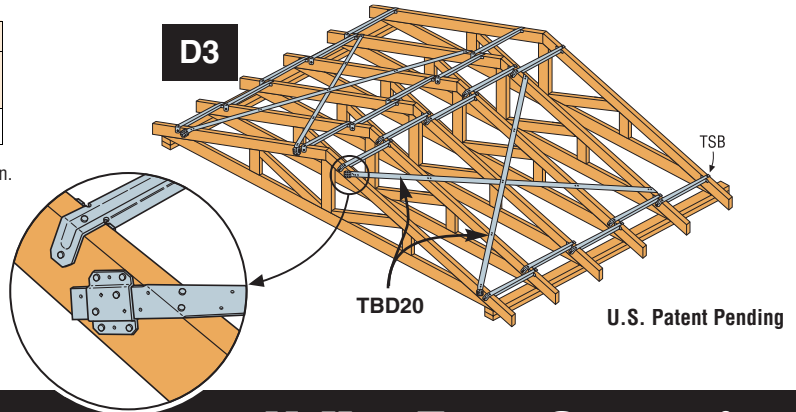


Truss Bracing - Diagonal

Model No.	Fasteners		Allow. Tension Loads ²	
	Strap End & ¹ Bracket	At Intermediate Trusses	DFL/SP	HF/SPF
TBD20	6-10dx1½	1-10dx1½	755	650

1. 4-10dx1½ nails at exterior clip section and 2-10dx1½ at interior clip section.
2. Allowable tension loads are based on a 2.5 safety factor.

Each carton contains 12 straps (each 13' long) and 24 clips.



Valley Truss Connection

Model No.	Fasteners		Allowable Loads											
	Common Truss	Valley Truss	Doug-Fir-Larch				Southern Pine				Spruce-Pine-Fir			
			Uplift (133/160)	Download (100) (115) (125)	Uplift (133/160)	Download (100) (115) (125)	Uplift (133/160)	Download (100) (115) (125)						
VTC2	4-10d	5-10dx1½	330	480	550	600	405	520	600	650	310	415	475	520

VTC2 INSTALLATION SEQUENCE

D4

Step 1: Align the centerline of VTC2 with the common truss top chord centerline. Attach through the roof sheathing to the common truss top chord.

Step 2: Adjust the upslope stirrup vertically and attach to valley truss bottom chord.

Step 3: Adjust the downslope stirrup vertically and attach to bottom chord.

D5

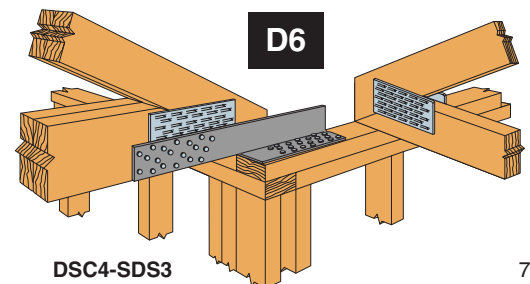
Bend stirrups one time only.

VTC2
U.S. Patent Pending

Drag Strut Connection

Model No.	L	Fasteners	Avg Ult Comp.	Avg Ult Tension	Doug Fir Allowable Loads		Spruce-Pine-Fir/Hem Fir Allowable Loads	
					Comp. (133)	Tension (133)	Comp. (133)	Tension (133)
DSC4-SDS3	21	40-SDS¼x3	16,600	14,033	4935	4235	4035	3500

1. Comp. = Compression.
2. SDS screws minimum penetration is 1¼", minimum end distance is 2½" and minimum edge distance is ¾" for full load values.



Truss/Rafter to Wood Double Top Plates

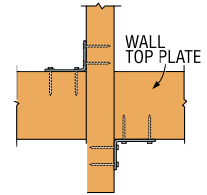
Available with additional corrosion protection. Check with factory.

Model No.	Qty Reqd	Fasteners		DF/SP Allowable Loads				SPF Allowable Loads			
		To Rafters	To Plates	Uplift		Parallel to Plate (F ₁) (133/160)	Perp. to Plate (F ₂) (133/160)	Uplift		Parallel to Plate (F ₁) (133/160)	Perp. to Plate (F ₂) (133/160)
				(133)	(160)			(133)	(160)		
H2.5	1	5-8d	5-8d	415	415	150	150	365	365	130	130
H5A	1	3-8d	3-8d	350	420	115	180	245	245	100	120
HGA10	1	4-SDS ^{1/4} x1 ^{1/2}	4-SDS ^{1/4} x3	435	435	1165	940	375	375	870	815
H5	1	4-8d	4-8d	455	465	115	200	265	265	100	170
H1	1	6-8dx1 ^{1/2}	4-8d	490	585	485	165	400	400	415	140
H2.5A	1	5-8d	5-8d	600	600	110	110	520	535	110	110
LTS12	1	6-10dx1 ^{1/2}	6-10dx1 ^{1/2}	720	720	75	125	620	620	75	125
H8	1	5-10dx1 ^{1/2}	5-10dx1 ^{1/2}	620	745	—	—	530	565	—	—
H10-2	1	6-10d	6-10d	760	760	455	395	655	655	390	340
H2.5	2	10-8d	10-8d	830	830	300	300	730	730	260	260
H5	2	8-8d	8-8d	910	930	230	400	530	530	200	340
H10	1	8-8dx1 ^{1/2}	8-8dx1 ^{1/2}	905	990	585	525	780	850	505	450
MTS12	1	7-10dx1 ^{1/2}	7-10dx1 ^{1/2}	840	1000	75	125	730	860	75	125
H1	2	12-8dx1 ^{1/2}	8-8d	980	1170	970	330	800	800	830	280
H2.5A	2	10-8d	10-8d	1200	1200	220	220	1040	1070	220	220
H14	1	12-8dx1 ^{1/2}	13-8d	1350	1350	515	265	1050	1050	480	245
LTS12	2	12-10dx1 ^{1/2}	12-10dx1 ^{1/2}	1440	1440	150	250	1240	1240	150	250
HTS20	1	12-10dx1 ^{1/2}	12-10dx1 ^{1/2}	1450	1450	75	125	1245	1245	75	125
H16S	1	2-10dx1 ^{1/2}	10-10dx1 ^{1/2}	1470	1470	—	—	1265	1265	—	—
H16	1	2-10dx1 ^{1/2}	10-10dx1 ^{1/2}	1470	1470	—	—	1265	1265	—	—
H10	2	16-8dx1 ^{1/2}	16-8dx1 ^{1/2}	1810	1980	1170	1050	1560	1700	1010	900
MTS12	2	14-10dx1 ^{1/2}	14-10dx1 ^{1/2}	1680	2000	150	250	1460	1720	150	250

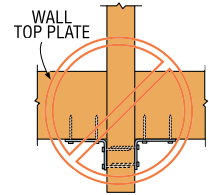
1. "—" in the tables indicates that the product has not been tested in the particular load direction listed.
2. For connections to single top plates, see page 12.
3. Fasten multiple members together to act as a single unit.
4. Southern Pine allowable loads for H14: 1465 lbs (133/160), 560 lbs (F₁ Lateral 133/160) and 285 lbs (F₂ Lateral 133/160).

D7

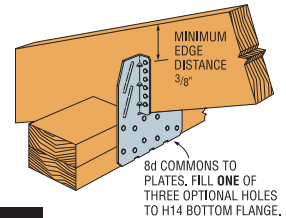
Hurricane Tie Installations to Achieve Twice the Load (Top View)



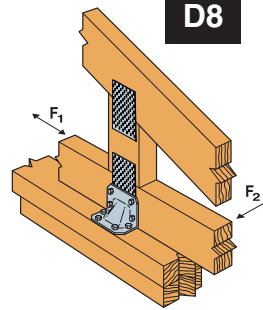
Install diagonally across from each other for minimum 2x truss.



Nailing into both sides of a single ply 2x truss may cause the wood to split. A minimum rafter thickness of 2^{1/2}" must be used when connectors are installed on the same side.

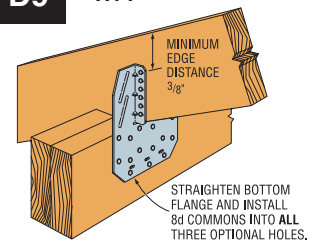


D8



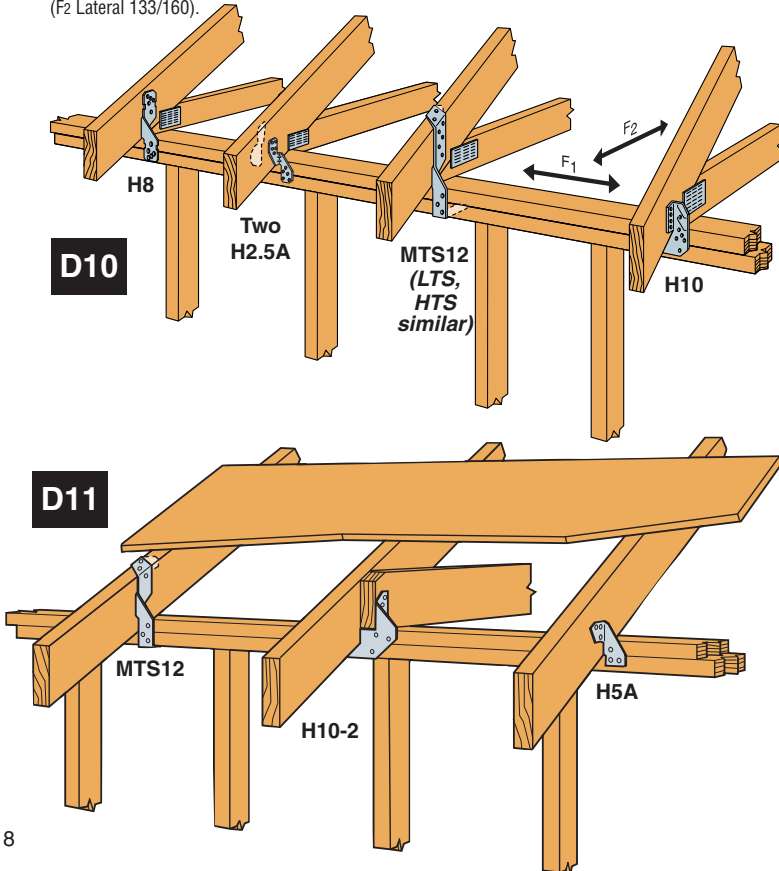
D9

H14



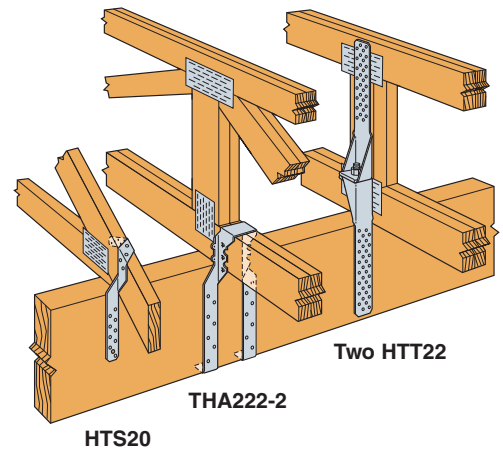
Refer to page 5 for important considerations regarding finishes on connectors attached to preservative-treated wood.

D12



Available with additional corrosion protection. Check with factory.

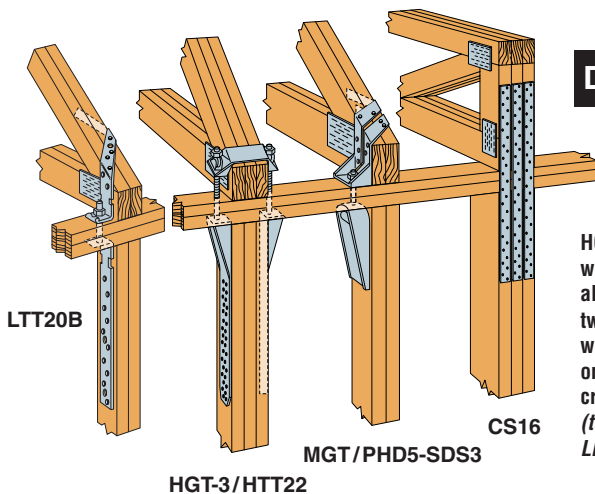
Model No.	Total No. of Connectors Attached to Girder	Fasteners		DF/SP Uplift		SPF Uplift	
		Truss/Studs	Wall Framing	(133)	(160)	(133)	(160)
HTS20	1	10-10d	10-10d	1450	1450	1245	1245
H16	1	2-10dx1½	10-10dx1½	1470	1470	1265	1265
H16S	1	2-10dx1½	10-10dx1½	1470	1470	1265	1265
H16-2	1	2-10dx1½	10-10dx1½	1470	1470	1265	1265
H16-2S	1	2-10dx1½	10-10dx1½	1470	1470	1265	1265
LTT20B ³	1	10-16d	1-5/8" or ¾" ATR	1750	1750	1675	1750
MTS12	2	28-10d	28-10d	1680	2000	1460	1720
LGT2	1	16-16d sinkers	14-16d sinkers	2050	2050	1785	1785
THA222-2	1	6-16dx2½	14-16d	2300	2300	2145	2300
HTS20	2	40-10d	40-10d	2900	2900	2490	2490
LTT20B ³	2	20-16d	2-5/8" or ¾" ATR	3500	3500	3350	3500
PHD2-SDS3 ³	1	10-SDS¼x3	1-5/8" ATR	3610	3610	3375	3375
MGT ³	1	22-10d	1-5/8" ATR	3965	3965	3330	3330
HTT16 ³	1	18-16d	1-5/8" ATR	3480	4175	3080	3695
THA222-2	2	12-16dx2½	28-16d	4600	4600	4290	4600
PHD5-SDS3 ³	1	14-SDS¼x3	1-5/8" ATR	4685	4685	4380	4380
CS16	3	33-10d	33-10d	5115	5115	4680	5115
HTT22 ³	1	32-16d sinkers	1-5/8" ATR	5250	5260	4670	5250
PHD6-SDS3 ³	1	18-SDS¼x3	1-7/8" ATR	5860	5860	5480	5480
PHD2-SDS3 ³	2	20-SDS¼x3	2-5/8" ATR	7220	7220	6750	6750
HD5A ³	2	2-¾" MB	2-5/8" ATR	7410	7410	6260	6260
HD10A ³	1	4-7/8" MB	1-7/8" ATR	8310	8310	7045	7045
HGT-4 ³	1	16-10d	2-5/8" ATR	9250	9250	9250	9250
HTT22 ³	2	64-16d sinkers	2-5/8" ATR	10500	10520	9340	10500
HGT-3 ³	1	16-10d	2-5/8" ATR	10530	10530	9035	9035
HGT-2 ³	1	16-10d	2-5/8" ATR	10980	10980	6485	6485
HD8A ³	2	3-7/8" MB	2-7/8" ATR	12930	12930	10960	10960
HD10A ³	2	4-7/8" MB	2-7/8" ATR	16620	16620	14090	14090



D13

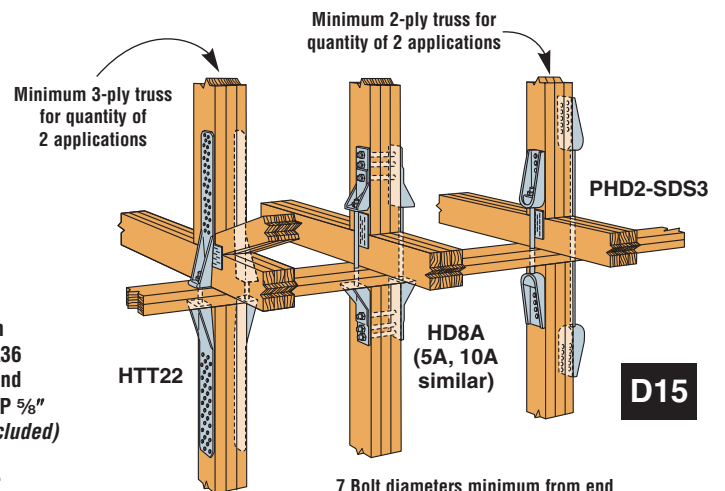
1. Parallel to plate - THA222-2 is 350 lbs. Perpendicular to plate - THA222-2 is 280 lbs.
2. Holdown load values are based on a 3" thick vertical member. See Simpson mainline catalog for load values based on different wood thickness.
3. For connectors using ATR to the wall framing, check for adequate connection to stud or header below.
4. ATR - All-Thread Rod.
5. Through bolts may be shared on double HDA with no load reduction.
6. For multiple holdowns, verify the allowable tension capacity of the wood member.

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D14

HGT installed on wood: Use 5/8" A36 all thread rod, and two Simpson LBP 5/8" washers (not included) on top of each crescent washer (total of four LBP 5/8" washers).



D15

7 Bolt diameters minimum from end of truss vertical to first bolt. (Typical quantity of 2 applications.)

Note: Two products are required for this application to achieve table load.

Truss/Rafter to Masonry/Concrete

Available with additional corrosion protection. Check with factory.

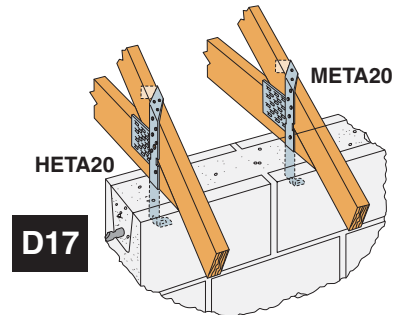
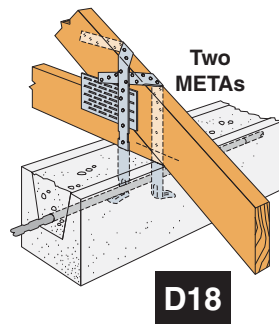
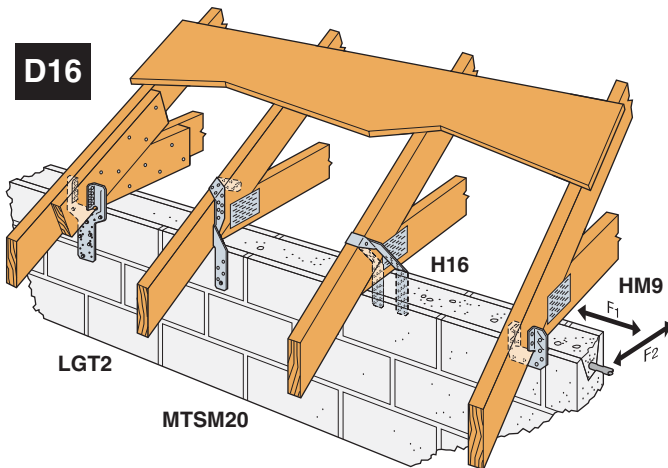
Model No.	Qty Req'd	Fasteners to Block	Uplift One Ply Truss			Uplift Two Ply Truss			Lateral Loads	
			Fasteners to Truss/Rafter (Total)	DF/SP Uplift ¹⁰		Fasteners to Truss/Rafter (Total)	DF/SP Uplift ¹⁰		Parallel to Plate (F ₁)	Perp. to Plate (F ₂)
HM9	1	4-1/4x2 1/4 Titen ⁹	4-SDS 1/4x1 1/2	595	595	N/A	N/A	N/A	425	125
HGAM10	1	4-1/4x2 1/4 Titen ⁹	4-SDS 1/4x1 1/2	850	850	N/A	N/A	N/A	1005	1105
MTSM16, MTSM20	1	4-1/4x2 1/4 Titen ⁹	7-10dx1 1/2	840	860	7-10d	830	860	—	—
HTSM16, HTSM20	1	4-1/4x2 1/4 Titen ⁹	8-10dx1 1/2	1045	1175	8-10d	1175	1175	—	—
LTA1	1	Embedded	12-10dx1 1/2	1420	1420	12-10d	1420	1420	350	1470
META12, META14	1	Embedded	7-10dx1 1/2	1240	1450	6-16d	1250	1450	65	85
META16, META18, META20, META22, META24, META40	1	Embedded	7-10dx1 1/2 ⁶	1240	1450	6-16d ⁶	1250	1450	335 ⁶	635 ⁶
H16	1	6-1/4x2 1/4 Titen ⁹	2-10dx1 1/2	1470	1470	N/A	N/A	N/A	—	—
H16-2	1	6-1/4x2 1/4 Titen ⁹	N/A	N/A	N/A	2-10dx1 1/2	1470	1470	—	—
HETA12	1	Embedded	7-10dx1 1/2	1265	1515	7-16d	1475	1770	65	85
HETAL12	1	Embedded	11-10dx1 1/2	1265	1515	11-16d	1475	1770	415	1100
HHETA12	1	Embedded	7-10dx1 1/2	1305	1565	7-16d	1520	1820	65	85
LTT20B	1	1-1/2 ATR	10-10dx1 1/2	1375	1650	10-16d	1750	1750	—	—
HETA16, HETA18, HETA20, HETA22, HETA24, HETA40	1	Embedded	9-10dx1 1/2 ⁶	1625	1810	8-16d ⁶	1685	1810	335 ⁶	730 ⁶
HETAL16, HETAL20	1	Embedded	13-10dx1 1/2	1625	1810	12-16d	1685	1810	415	1100
LGT2	1	7-1/4x2 1/4 Titen ⁹	16-16d Sinker ⁸	2150	2150	16-16d Sinker	2150	2150	—	—
HHETA16, HHETA18, HHETA20, HHETA22, HHETA40	1	Embedded	10-10dx1 1/2 ⁶	1860	2235	9-16d ⁶	1950	2235	335 ⁶	730 ⁶
META12, META14, META16, META18, META20, META22, META24, META40	2	Block Embedded	14-10dx1 1/2	1985	1985	14-16d	1900	1900	1210	1160
		Concrete Embedded	14-10dx1 1/2	1985	1985	14-16d	2575	2575		
HETA12, HETA14, HETA16, HETA18, HETA20, HETA22, HETA24, HETA40	2	Block Embedded	14-10dx1 1/2	2035	2035	14-16d	2500	2500	1225	1520
		Concrete Embedded	14-10dx1 1/2	2035	2035	14-16d	2710	2710		
HHETA12, HHETA14, HHETA16, HHETA18, HHETA20, HHETA22	2	Block Embedded	14-10dx1 1/2	2035	2035	14-16d	2500	2500	1225	1520
		Concrete Embedded	14-10dx1 1/2	2035	2035	16-16d	3365	3365		
FGTR	1	2-1/2x5 Titen HD	18-SDS 1/4x3 ⁸	5000	5000	18-SDS 1/4x3	5000	5000	—	—

- "—" in tables indicates that the product has not been tested in that particular application.
- For SPF trusses multiply catalog values by 0.86 for uplift and F₂ directions (use F₁ values as shown). Higher loads may be possible (contact Simpson Strong-Tie).
- Unless noted otherwise, embedment is into either block or concrete (minimum f'c is 2000 psi for single strap installations and 2500 psi for double strap installations).
- Add a standard cut washer to seat of LTT20B when 1/2" diameter anchor bolt is used.
- The HETAL requires 5 nails to be installed into the truss seat.
- To achieve the lateral loads published, the quantity of fasteners shall be increased to 12.
- Multiple META, HETA, and HHETA are spaced at 1 5/8" for single ply and 3 5/8" + width of trusses staggered as shown.
- Product may be used for a single ply truss provided the truss is blocked to receive the 3" SDS screws and blocking is attached to the truss to act as a single unit.
- For Concrete Applications use 1/4x1 1/4" Titen⁹.
- META, HETA, and HHETA loads are based on attachment to SP lumber.
- To achieve the published loads, the FGTR must be attached to a grouted and reinforced block wall or reinforced concrete wall designed by others to transfer the uplift loads to the foundation.
- FGTR installed within 16" from the end of a wall will have an allowable load of 4685 lbs.
- FGTR is packaged with the SDS and Titen HD fasteners.

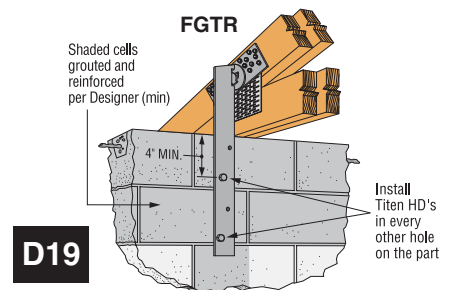
14. Calculate the connector value for a reduced number of nails as follows: Allowable Load = $\frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Load}$

Example: META20 in DF/SP with 6 - 10dx1 1/2 nails total (160).

$$\text{Allowable Load} = \frac{6 \text{ Nails (Used)}}{7 \text{ Nails (Table)}} \times 1450 \text{ lbs} = 1240 \text{ lbs}$$



Moisture barrier not shown on this page

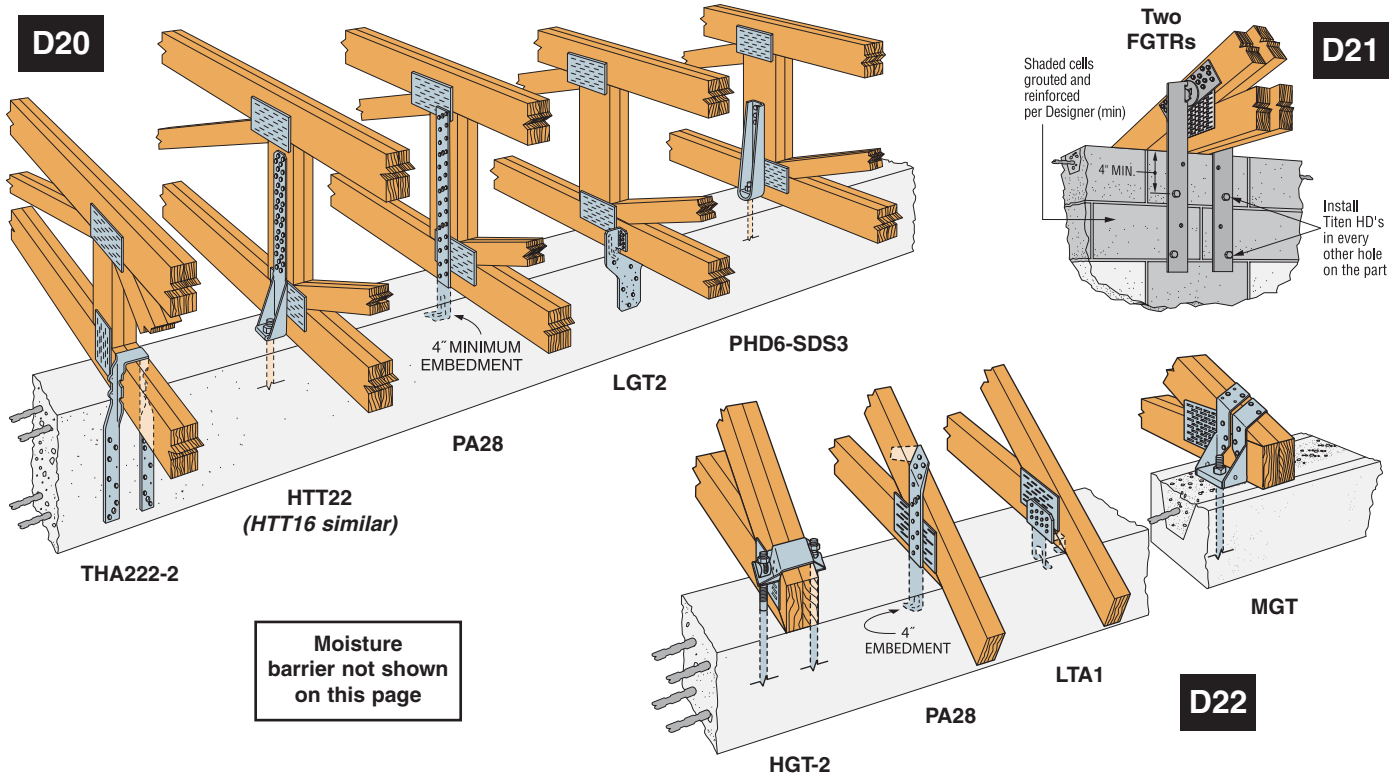


Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners		DF/SP Uplift		SPF Uplift	
		Truss	Masonry/Concrete ³	(133)	(160)	(133)	(160)
H16	1	2-10dx1½	6-¼x2¼Titen ⁹	1470	1470	1265	1265
H16-2	1	2-10dx1½	6-¼x2¼Titen ⁹	1470	1470	1265	1265
LTA1	1	12-10dx1½	Embed	1420	1420	1220	1220
LGT2	1	14-16d sinkers	7-¼x2¼Titen	2150	2150	1850	1850
THA222-2	1	6-16dx2½	14-¾x1¼Titen	2150	2150	1850	1850
PA28 ⁷	1	20-16d	Embed 4"	2765	2765	2765	2765
LTT20B	2	20-16d	2-5/8" or ¾" ATR	3500	3500	3350	3500
PHD2-SDS3	1	10-SDS¼x3	1-5/8" ATR	3610	3610	3375	3375
MGT	1	22-10d	1-5/8" ATR	3965	3965	3330	3330
THA222-2	2	12-16dx2½	28-¼x2¼Titen ⁹	4300	4300	3700	3700
PHD5-SDS3	1	14-SDS¼x3	1-5/8" ATR	4685	4685	4380	4380
FGTR	1	18-SDS¼x3	2-½x5 Titen HD	5000	5000	4300	4300
HTT22	1	32-16d sinkers	1-5/8" ATR	5250	5260	4670	5250
HPA35 ⁷	1	27-16d	Embed 8¼"	5265	5265	4525	4525
PHD6-SDS3	1	18-SDS¼x3	1-7/8" ATR	5860	5860	5480	5480
PHD2-SDS3	2	20-SDS¼x3	2-5/8" ATR	7220	7220	6750	6750
HD5A	2	2-¾" MB	2-5/8" ATR	7410	7410	6260	6260
HD10A	1	4-7/8" MB	1-7/8" ATR	8310	8310	7045	7045
HDQ8-SDS3	1	20-SDS¼x3	1-7/8" ATR	8325	8325	7210	7210
HGT-4	1	16-10d	2-¾" ATR	9250	9250	9250	9250
FGTR	2	36-SDS¼x3	4-½x5 Titen HD	9400	9400	8080	8080
HTT22	2	64-16d sinkers	2-5/8" ATR	10500	10520	9340	10500
HGT-2	1	16-10d	2-¾" ATR	10980	10980	6485	6485
HGT-3	1	16-10d	2-¾" ATR	10530	10530	9035	9035
PHD6-SDS3	2	36-SDS¼x3	2-7/8" ATR	11720	11720	10960	10960
HD8A	2	3-7/8" MB	2-7/8" ATR	12930	12930	10960	10960
HD10A	2	4-7/8" MB	2-7/8" ATR	16620	16620	14090	14090

- Through bolts may be shared on double HDA applications with no reduction in load.
- Holdown load values are based on a 3" wide vertical member. See *Simpson Wood Construction Connectors* catalog for load values based on different wood widths.
- The designer must specify anchor type, length and embedment. Refer to T-ANCHORSPEC03 for guidance on selected products.
- Designer must evaluate multiple installations not listed.
- HDA - First bolt installed 7 diameters up from bottom of truss vertical.
- ATR - All-Thread Rod or Anchor Bolt.
- PA28 and HPA35 must be embedded in a concrete tie beam.
- Multiple PHD's must be installed staggered as shown on page 9.
- For Concrete Applications use ¼x1¼" Titen's.
- To achieve the published loads, the FGTR must be attached to a grouted and reinforced block wall or reinforced concrete wall designed by others to transfer the uplift loads to the foundation.
- FGTR is packaged with the SDS and Titen HD fasteners.
- Screw holes on FGTR are configured to allow for a double installation on a two ply truss.
- For multiple holdowns, verify the allowable tension capacity of the wood member.

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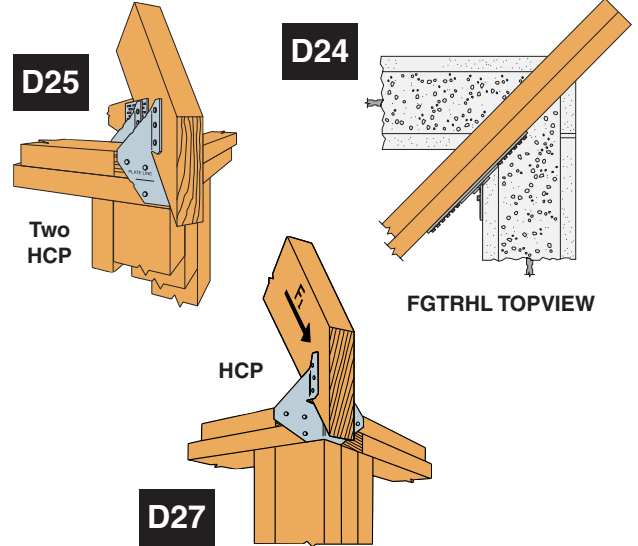
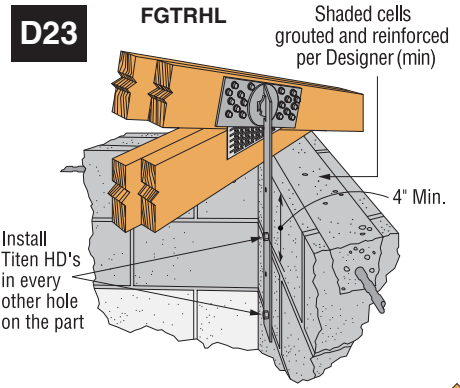
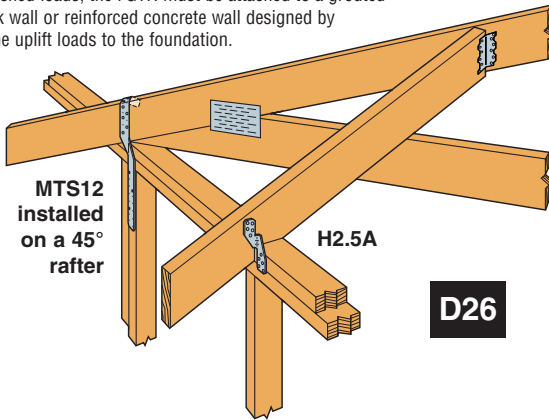


Truss/Rafter Hip to Wall

Available with additional corrosion protection. Check with factory.

Model No.	Member Size	Fasteners		DF/SP Allowable Loads		SPF Allowable Loads	
		To Truss/Rafters	To Wall	(133/160)		(133/160)	
				Uplift	F ₁	Uplift	F ₁
HCP2	2x	6-10dx1½	6-10dx1½	605	300	520	260
HCP1.81	1¼	6-10dx1½	6-10dx1½	605	300	520	260
MTS12	2x	7-10dx1½	7-10dx1½	840	—	730	—
HCP4	4x	8-10d	8-10d	1000	265	860	230
MTSM16	2x	7-10dx1½	4-Titen ¼x2¼	840	—	730	—
FGTRH L/R	2-2x	18-SDS ¼x3	2-Titen HD ½x5	3850	—	3850	—

- The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the load capacity.
- “—” in the table indicates that the product has not been tested in this direction.
- MTSM16 can be field bent to a 45° angle for CMU/Concrete applications similar to what is shown for the MTS12.
- For concrete applications for the MTSM16, use Titen ¼x1¾ screws.
- Minimum Edge Distance for ¼” Titen is 1½”, ½” Titen is 4”.
- To achieve the published loads, the FGTR must be attached to a grouted and reinforced block wall or reinforced concrete wall designed by others to transfer the uplift loads to the foundation.
- FGTR is packaged with the SDS and Titen HD fasteners.

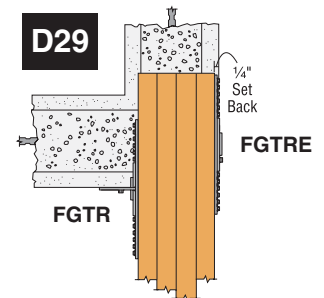
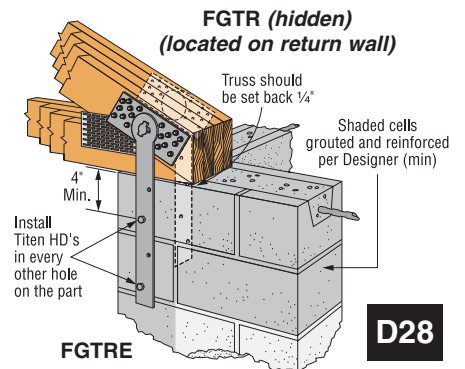
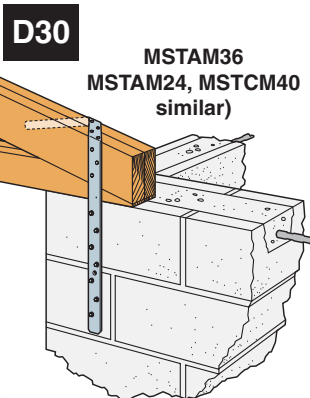
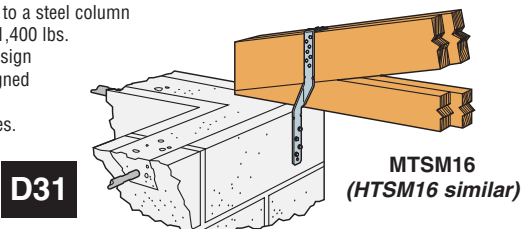


Truss/Rafter Hip to End Wall

Available with additional corrosion protection. Check with factory.

Model No.	Member Size (min.)	Fasteners		DF/SP Allowable Loads		SPF Allowable Loads	
		To Truss	To Wall	133	160	133	160
MTSM16	2-2x	7-10d	4-Titen ¼x2¼	860	860	750	750
HTSM16	2-2x	8-10d	4-Titen ¼x2¼	1175	1175	1020	1020
MSTAM24	2-2x	9-10d	5-Titen ¼x2¼	1465	1500	1270	1500
MSTAM36	2-2x	13-10d	8-Titen ¼x2¼	1870	1870	1870	1870
MSTCM40	2-2x	26-16d Sinkers	14-Titen ¼x2¼	4250	4250	3745	4250
FGTR	2-2x	18-SDS ¼x3	2-Titen HD ½x5	4685	4685	4300	4300
FGTR & FGTR E	2-2x	36-SDS ¼x3	4-Titen HD ½x5	4685 ⁶	4685 ⁶	4685 ⁶	4685 ⁶

- Minimum Edge Distance for ¼” Titen is 1½”.
- Minimum Edge Distance for ½” Titen HD is 4”.
- For concrete tie beam applications, use Titen ¼x1¾ screws.
- To achieve the published loads, the FGTR must be attached to a grouted and reinforced block wall or reinforced concrete wall designed by others to transfer the uplift loads to the foundation.
- FGTR is packaged with the SDS and Titen HD fasteners.
- FGTR and FGTR E loads are governed by the grouted wall capacity based on testing of the products attached to the corner of a blocked wall at an average ultimate load of 14,800 lbs. The pair of connectors has been tested attached to a steel column to an allowable load of 11,400 lbs. which can be used for design provided the wall is designed by the engineer of record to transfer the uplift forces.



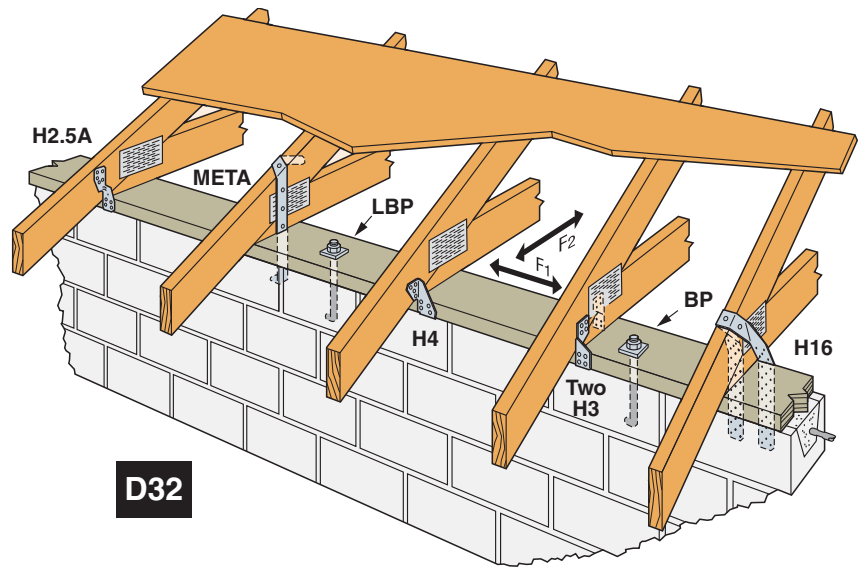
Note: FGTR can be used by itself to achieve table loads.

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners (Total)		DF/SP Allowable Loads				SPF Allowable Loads			
		To Rafters	To Plates	Uplift		Parallel to Plate (F ₁) (133/160)	Perp. to Plate (F ₂) (133/160)	Uplift		Parallel to Plate (F ₁) (133/160)	Perp. to Plate (F ₂) (133/160)
				(133)	(160)			(133)	(160)		
H4	1	4-8d	4-8d	360	360	165	160	235	235	140	135
H2.5A	1	5-8d	4-8d	390	390	—	—	315	315	—	—
H3	1	4-8d	4-8d	455	455	125	160	320	320	105	140
H4	2	8-8d	8-8d	720	720	330	320	470	470	280	270
H2.5A	2	10-8d	8-8d	780	780	—	—	630	630	—	—
H3	2	8-8d	8-8d	910	910	250	320	640	640	210	280
H16	1	2-10dx1½	6-¼x2¼ Titens ²	1470	1470	—	—	1265	1265	—	—
META16	1	7-10dx1½	N/R	1240	1450	75	125	985	1180	75	125
META20	1	7-10dx1½	N/R	1240	1450	335 ⁶	635 ⁶	985	1180	270 ⁶	545 ⁶

1. "—" in the tables indicates that the product has not been tested in the particular load direction listed.
2. H16 fastens to masonry/concrete with Titen screws (Use 1¾" screws for concrete applications).
3. N/R - Not required, product is embedded into concrete or CMU.
4. Refer to page 10 for multiple META16 loads.
5. Refer to page 8 for installation details of two connectors on a single truss.
6. To achieve the lateral loads published, the quantity of fasteners shall be increased to 12.

Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.

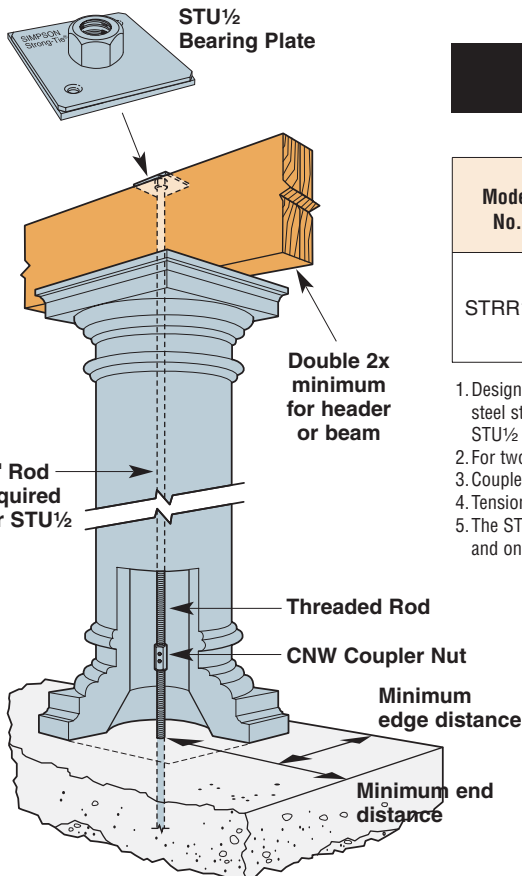


D32

Hollow Column Uplift

Model No.	Adhesive Type	Anchor Diameter	Drill Bit Diameter	Minimum Embedment	Min. End Distance	Min. Edge Distance	Allowable Tension (100)
STRR1/2	SET	½"	⅝"	6"	7"	1¾"	3315
	SET	½"	⅝"	6"	7"	7"	3315
	AT	½"	⅞"	6"	7"	1¾"	2805
	AT	½"	⅞"	5½"	7"	7"	3315

1. Design load is based on the lesser of the allowable tension load based on adhesive bond strength, steel strength of the rod or coupler nut, bearing load from the top plate, STU½ tested capacity with 2.5xFS.
2. For two pour condition, increase anchor length and embedment by the depth of the pour.
3. Coupler nut to be A307 or better.
4. Tension loads for steel are based on grade A307/SAE1018 threaded rod.
5. The STRR½ system consists of one bearing plate, one ½" X 12" all thread rod, and one ½" coupler nut with witness holes. ½" threaded rod by others.



D33

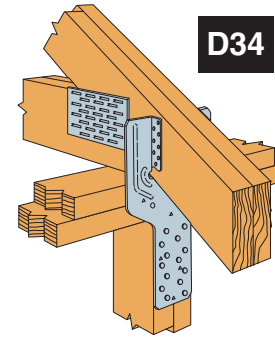
Refer to T-COLUMN04 for other hollow column uplift connection options

Truss/Rafter to Stud

Available with additional corrosion protection. Check with factory.

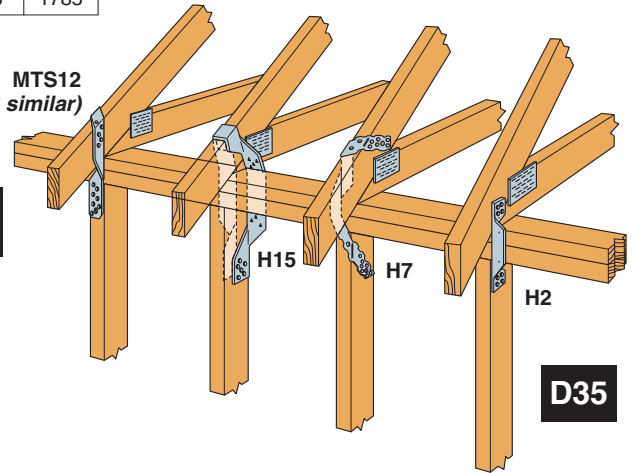
Model No.	Qty Req'd	Fasteners (Total)			DF/SP Allowable Loads		SPF Allowable Loads	
		To Rafters	To Studs	To Plates	Uplift		Uplift	
					(133)	(160)	(133)	(160)
H2	1	5-8d	5-8d	N/R	335	335	230	230
H2	2	10-8d	10-8d	N/R	670	670	460	460
LTS12	1	6-10dx1½	6-10dx1½	N/R	720	720	620	620
H7Z	1	4-8d	8-8d	2-8d	930	985	800	845
MTS30	1	7-10d	7-10d	N/R	995	995	720	720
MTS12	1	7-10dx1½	7-10dx1½	N/R	840	1000	730	860
H15	1	4-10dx1½	12-10dx1½	4-10dx1½	1300	1300	1120	1120
H15-2	1	4-10dx1½	12-10dx1½	4-10dx1½	1300	1300	1120	1120
HTS20	1	12-10dx1½	12-10dx1½	N/R	1450	1450	1245	1245
LGT2	1	16-16d sinkers	14-16d sinkers	N/R	2050	2050	1785	1785

1. N/R - Not required.



LGT2

MTS12
(LTS, HTS similar)



D35

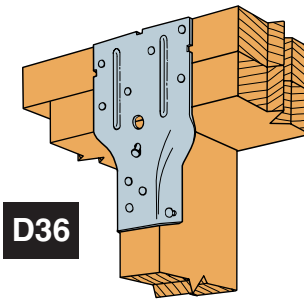
Top Plates to Stud

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners (Total)		DF/SP Allowable Loads		SPF Allowable Loads	
		To Plates	To Studs	Uplift		Uplift	
				(133)	(160)	(133)	(160)
SSP	1	3-10dx1½	4-10dx1½	350	350	350	350
H2.5	1	5-8d	5-8d	415	415	365	365
H5A	1	3-8d	3-8d	350	420	245	245
RSP4	1	4-8dx1½	4-8dx1½	450	450	370	370
H5	1	4-8d	4-8d	455	465	265	265
H2.5A	1	5-8d	5-8d	600	600	520	535
LTS12	1	6-10dx1½	6-10dx1½	720	720	620	620
H8	1	5-10dx1½	5-10dx1½	620	745	530	565
DSP	1	6-10dx1½	8-10dx1½	775	775	775	775
H2.5	2	10-8d	10-8d	830	830	730	730
H5A	2	6-8d	6-8d	700	840	490	490
SP4	1	N/R	6-10dx1½	735	885	630	760
H5	2	8-8d	8-8d	910	930	530	530
MTS12	1	7-10dx1½	7-10dx1½	840	1000	730	860
SP2	1	6-10d	6-10d	890	1065	605	605
SP3	1	6-10d	6-10d	890	1065	605	605
H2.5A	2	10-8d	10-8d	1200	1200	1040	1070
SPH4	1	N/R	12-10dx1½	1360	1360	1170	1170
LTS12	2	12-10dx1½	12-10dx1½	1440	1440	1240	1240
HTS20	1	12-10dx1½	12-10dx1½	1450	1450	1245	1245
MTS12	2	14-10dx1½	14-10dx1½	1680	2000	1460	1720
HTS20	2	24-10dx1½	24-10dx1½	2900	2900	2490	2490

1. N/R - Not required.

2. Maximum load for SPH4 in Southern Pine is 1490 pounds.



SP2

Two
H2.5A

D38

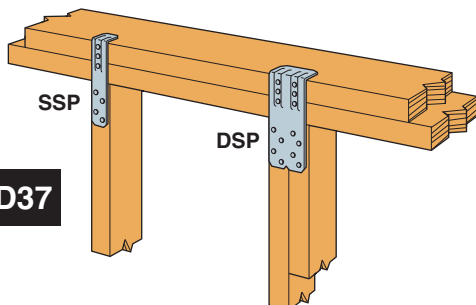
MTS12
(LTS, HTS similar)

RSP4

SP4
(SPH4 similar)

H8

Truss-to-plate connections not shown for clarity.



D37

Available with additional corrosion protection. Check with factory.

Model No.	Qty. Req'd	Single Ply Band Joist (1½")						Double Ply Band Joist (3")					
		DF/SP Allowable Uplift Loads			SPF Allowable Uplift Loads			DF/SP Allowable Uplift Loads			SPF Allowable Uplift Loads		
		Fasteners (Total)	(133)	(160)	Fasteners (Total)	(133)	(160)	Fasteners (Total)	(133)	(160)	Fasteners (Total)	(133)	(160)
LSTA12	1	6-10dx1½	485	580	6-10dx1½	415	500	6-10d	485	580	6-10d	415	500
LTS16	1	12-10dx1½	720	720	12-10dx1½	620	620	12-10d	775	775	12-10d	665	665
H6	1	12-10d	915	950	16-8d	785	820	16-8d	915	950	16-8d	785	820
MTS16	1	14-10dx1½	840	1000	14-10dx1½	730	860	14-10d	1000	1000	14-10d	860	860
CS20	1	12-10dx1½	960	1030	14-10dx1½	960	1030	12-10d	960	1030	14-10d	960	1030
HTS20	1	16-10dx1½	1005	1150	16-10dx1½	865	990	16-10d	1260	1450	16-10d	1085	1245
LSTA18	1	12-10dx1½	970	1160	12-10dx1½	830	1000	12-10d	970	1160	12-10d	830	1000
LSTA24	1	14-10dx1½	1125	1235	16-10dx1½	1110	1235	14-10d	1125	1235	16-10d	1110	1235
CS18	1	16-10dx1½	1290	1370	18-10dx1½	1250	1370	16-10d	1290	1370	18-10d	1250	1370
LSTA30	1	16-10dx1½	1300	1570	16-10dx1½	1130	1355	16-10d	1300	1570	16-10d	1130	1355
CS16	1	18-10dx1½	1475	1705	20-10dx1½	1415	1700	18-10d	1475	1705	20-10d	1415	1700
CMST14	1	24-10dx1½	2065	2480	24-10dx1½	1790	2150	24-16d	2065	2480	24-16d	1790	2150
MST37	1	24-10dx1½	2180	2615	24-10dx1½	1890	2270	24-16d	2520	3025	24-16d	2185	2620
CMST12	1	24-10dx1½	2260	2710	24-10dx1½	1960	2350	24-16d	2605	3125	24-16d	2225	2710
MSTC28	1	28-10dx1½	2335	2800	28-10dx1½	2015	2420	28-16d Sinker	2335	2800	28-16d Sinker	2015	2420

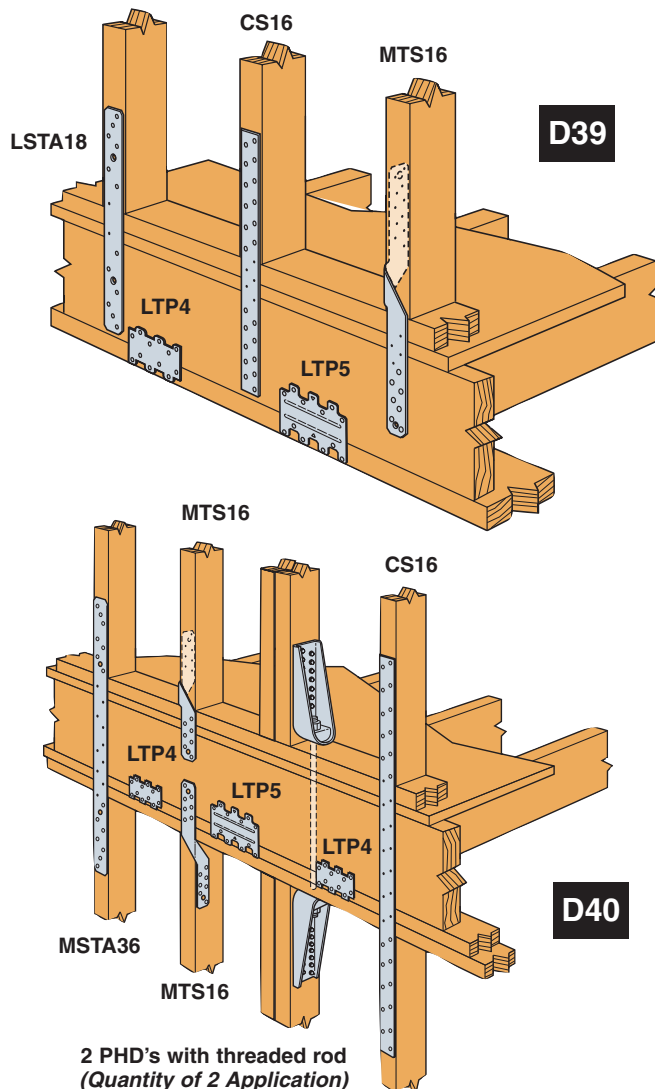
- Loads for stud to band joist connections are based on a minimum band joist depth of 11¼".
- Loads for straps based on 2½" clearspan between stud and band joist.
- Multiple members must be fastened together to act as a single unit.
- For straight straps, use half of the total fasteners listed on each member in the connection.
- Reduce loads for a single band joist less than 1½" thick.
- CMST and MST require double studs of a minimum 3" width.
- Values for straps assume a minimum nail penetration of 6 nail diameters into the stud or rimjoist.
- Nailing over sheathing is acceptable as long as minimum diameter nail penetration into the framing is maintained.

Stud to Stud

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	DF/SP Allowable Loads			SPF Allowable Loads		
		Fasteners (Total)	Uplift		Fasteners (Total)	Uplift	
			(133)	(160)		(133)	(160)
CS20	1	14-8d	895	1030	16-8d	885	1030
CS18	1	18-8d	1165	1370	22-8d	1230	1370
LSTA36	1	14-10d	1140	1365	14-10d	990	1185
MSTA36	1	14-10d	1165	1400	14-10d	1010	1210
CS16	1	22-8d	1450	1705	26-8d	1490	1705
MSTC40	1	28-16d Sinks	2335	2800	28-16d Sinks	2015	2420
HD2A	2	4-5/8" MB	2775	2775	4-5/8" MB	2570	2570
PHD2-SDS3	2	20-SDS¼x3	3610	3610	20-SDS¼x3	3375	3375
HD5A	2	4-5/8" MB	3705	3705	4-5/8" MB	3130	3130
HD6A	2	4-7/8" MB	4405	4405	4-7/8" MB	3680	3680
PHD5-SDS3	2	28-SDS¼x3	4685	4685	28-SDS¼x3	4380	4380
MSTC66	1	64-16d Sinks	5505	5660	64-16d Sinks	4780	5660
PHD6-SDS3	2	36-SDS¼x3	5860	5860	36-SDS¼x3	5480	5480
HD8A	2	6-7/8" MB	6465	6465	6-7/8" MB	5480	5480
CMST14	1	56-16d	5600	6490	64-16d	5545	6490
CMST12	1	72-16d	7825	9235	82-16d	7710	9235

- Loads are based on an 18" clear span.
- Nailing over wood structural panel sheathing is acceptable as long as minimum nail penetration into the framing is maintained.
- Allowable loads for HDA and PHD based on 2-2x and greater vertical wood member.
- Cut length for coil strap are CS16 = 42", CS18 = 38", CS20 = 35", CMST14 = 76", CMST12 = 92".
- For straight straps, use half of the total fasteners listed on each member in the connection.



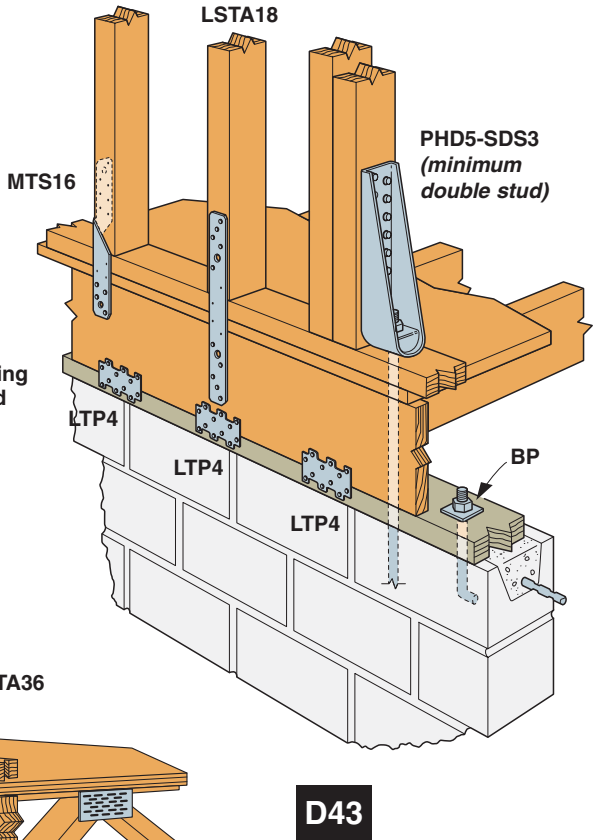
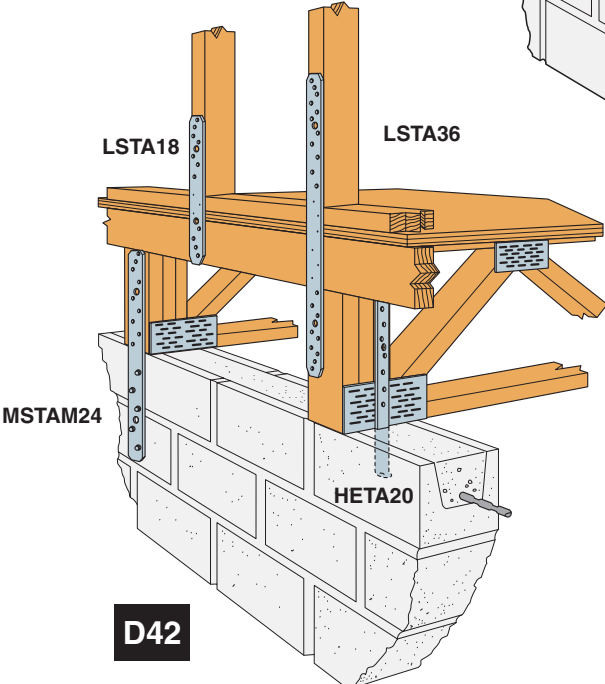
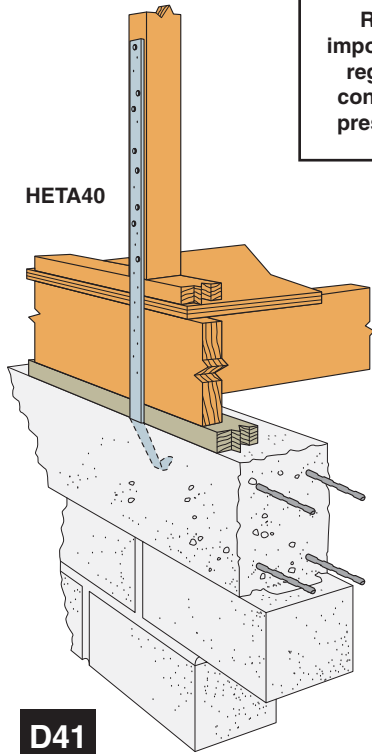
Floor to Masonry/Concrete

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners To Block	DF/SP Allowable Loads			SPF Allowable Loads		
			Fasteners To Wood Framing	Uplift		Fasteners To Wood Framing	Uplift	
				(133)	(160)		(133)	(160)
MSTAM24	1	5-1/4x2 1/4 Titen ⁵	9-10d	1465	1500	9-10d	1270	1500
HETA20	1	Embedded	10-10dx1 1/2	1665	1810	11-10dx1 1/2	1585	1810
HETA40	1	Embedded	10-10dx1 1/2	1665	1810	11-10dx1 1/2	1585	1810
MSTAM36	1	8-1/4x2 1/4 Titen ⁵	13-10d	1870	1870	13-10d	1870	1870
HD2A	1	5/8" ATR	2-5/8" MB	2775	2775	2-5/8" MB	2570	2570
PHD2-SDS3	1	5/8" ATR	10-SDS1/4x3	3610	3610	10-SDS1/4x3	3375	3375
HD5A	1	5/8" ATR or 3/4" ATR	2-3/4" MB	3705	3705	2-3/4" MB	3130	3130
MSTCM40 ³	1	14-1/4x2 1/4 Titen ⁵	26-16d sinkers	4250	4250	26-16d sinkers	3745	4250
HD6A	1	7/8" ATR	2-7/8" MB	4405	4405	2-7/8" MB	3680	3680
PHD5-SDS3	1	5/8" ATR	14-SDS1/4x3	4685	4685	14-SDS1/4x3	4380	4380
HTT22	1	5/8" ATR	32-16d sinkers	5250	5260	32-16d sinkers	4670	5250
HD8A	1	7/8" ATR	3-7/8" MB	6465	6465	3-7/8" MB	5480	5480
HD10A	1	7/8" ATR	4-7/8" MB	8310	8310	4-7/8" MB	7045	7045

1. Holdown load values are based on a 3" thick vertical member. See Simpson "Wood Construction Connectors" catalog for load based on different wood thickness.
2. HETA40 will require a 30° bend and a 4" minimum embedment depth and shall be attached to a concrete bond beam only.
3. MSTCM requires attachment to a minimum 3" wide member.
4. Nailing over structural wood panel sheathing is acceptable as long as minimum nail penetration into the framing is maintained.
5. For Concrete Applications use 1/4x1 1/4" Titen⁵.
6. ATR – All-Thread Rod or Anchorbolt. The designer must specify anchor type, length, and embedment. Refer to T-ANCHORSPEC03 for guidance on selected products.

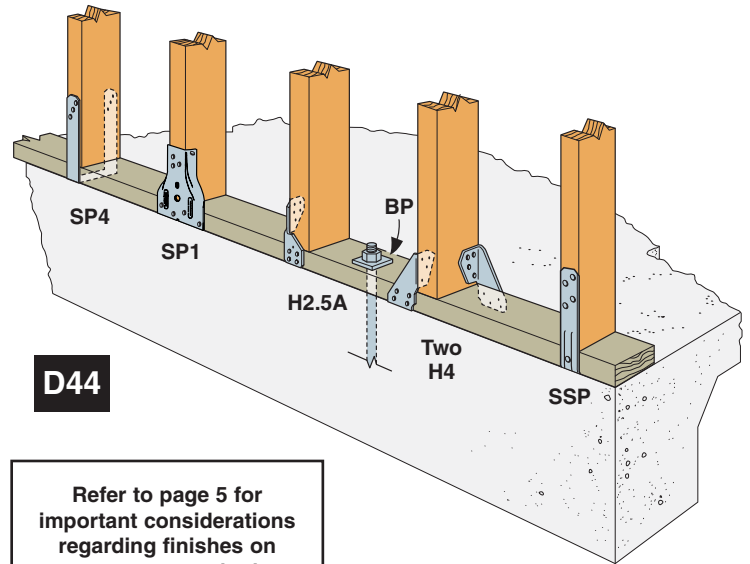
Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.



Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners (Total)		DF/SP Allowable Loads		SPF Allowable Loads	
		Stud	Plate	Uplift		Uplift	
				(133)	(160)	(133)	(160)
H8	1	5-10dx1½	4-10dx1½	310	310	310	310
RSP4	1	4-8dx1½	4-8dx1½	315	315	285	285
H4	1	4-8d	4-8d	360	360	235	235
H2.5A	1	5-8d	4-8d	390	390	315	315
H2.5	1	5-8d	4-8d	400	400	315	315
SSP	1	4-10dx1½	1-10dx1½	420	420	325	325
H3	1	4-8d	4-8d	455	455	320	320
SP1	1	6-10d	4-10d	585	585	535	535
SP5	1	6-10d	4-10d	585	585	535	535
DSP	1	8-10dx1½	2-10dx1½	660	660	545	545
H4	2	8-8d	8-8d	720	720	470	470
H2.5	2	10-8d	8-8d	800	800	630	630
SP4	1	6-10dx1½	N/R	735	885	630	760
H3	2	8-8d	8-8d	910	910	640	640
SPH4	1	10-10dx1½	N/R	1240	1240	1065	1065

1. N/R - Not required.
2. SPF loads reflect attachment to SPF stud and sill.
3. Max load for SPH4 in Southern Pine is 1490 lbs.
4. SP1, SP5 drive one stud nail at an angle through the stud into the plate to achieve table load.
5. Refer to page 8 for installation details of two connectors on a single stud.



D44

Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.

Sill Plate to Foundation

Available with additional corrosion protection. Check with factory.

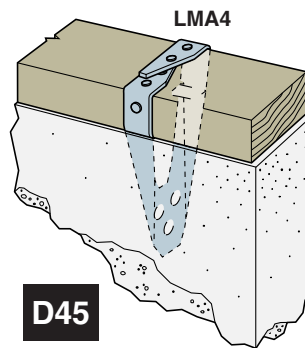
Model No.	Qty Req'd	Fasteners (Total)	DF/SP Allowable Loads					
			Uplift		Parallel To Plate (F ₁)		Perp. To Plate (F ₂)	
			(133)	(160)	(133)	(160)	(133)	(160)
MAB15	1	6-10dx1½	565	565	500	500	500	500
MAB23	1	6-10dx1½	565	565	500	500	500	500
MA4	1	4-10dx1½	830	830	480	575	430	430
LMA4	1	6-10dx1½	905	905	675	675	520	520
MAS	1	6-10dx1½	1005	1005	720	815	480	575
Titen HD ¹	1	—	1495	1495	1950	1950	510	510

1. Titen HD ½x6.3.
2. MAS installed with one leg attached to stud has loads of 435 lbs. (uplift), 700 lbs. (parallel to plate) and 240 lbs. (perp. to plate).

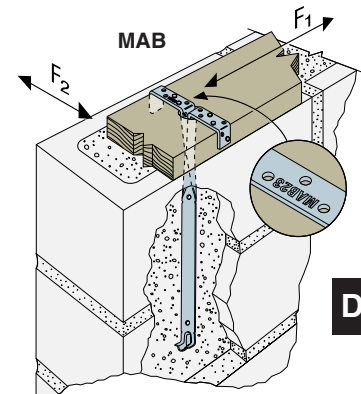
Anchor Spacing

Model No.	O.C. Spacing to replace ½" Anchor Bolt 6' O.C.		O.C. Spacing to replace ⅝" Anchor Bolt 6' O.C.	
	(133)	(160)	(133)	(160)
MAB	3½'	3'	2½'	2'
MA4	3½'	3½'	2½'	2½'
LMA4	5'	4'	3½'	3'
MAS	5'	5'	3½'	3½'
Titen HD	6'	5¼'	—	—

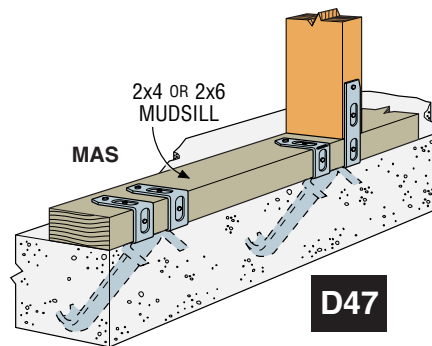
1. Place anchors not more than 1' from the end of each sill.
2. Spacing is based on parallel to plate load direction only.



D45

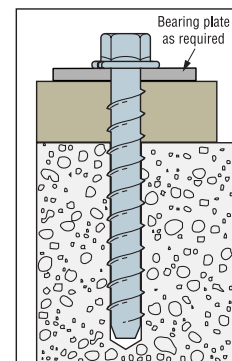


D46



D47

When using MAS, stud to bottom plate connectors must be on same side of the wall as the MAS.

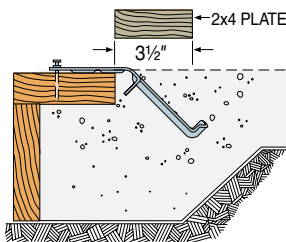


D49

Titen HD

Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.

D48



Alternate MAS Installation for Brick Ledges

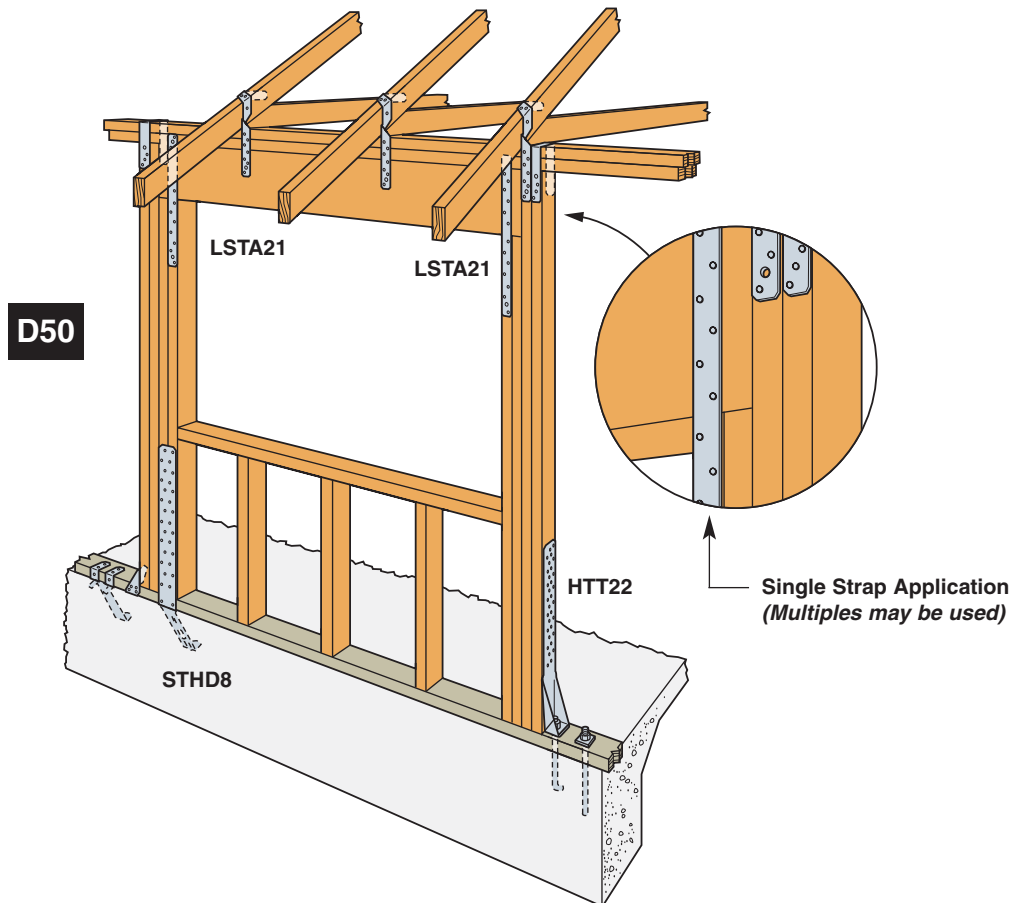
Header Anchorage

Available with additional corrosion protection. Check with factory.

HEADER TO STUDS							
Model No.	Min. Header	DF/SP			SPF		
		Fasteners (Total)	Uplift (133)	Uplift (160)	Fasteners (Total)	Uplift (133)	Uplift (160)
LSTA12	7.25"	10-10d	805	970	10-10d	695	830
CS16	7.25"	12-10d	985	1180	12-10d	850	1020
LSTA18	9.25"	14-10d	1130	1235	14-10d	970	1165
LSTA21	11.25"	16-10d	1235	1235	16-10d	1110	1235
CS16	9.25"	16-10d	1310	1575	16-10d	1135	1360
	11.25"	18-10d	1475	1705	20-10d	1420	1700

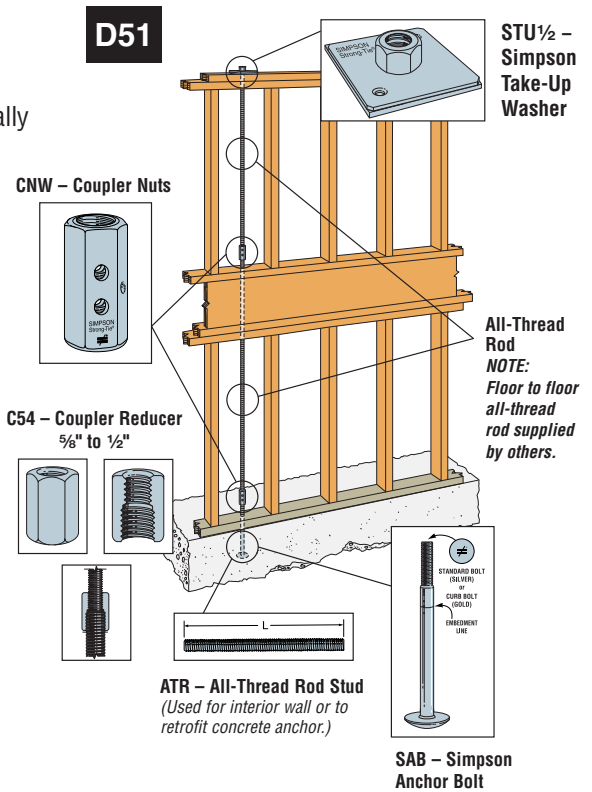
STUDS TO PLATE / FOUNDATION							
Model No.	Fasteners		DF/SP		SPF		
	Stud	Plate / Foundation	Uplift (133)	Uplift (160)	Uplift (133)	Uplift (160)	
DSP	8-10dX1½	2-10dX1½	660	660	545	545	
SP4	6-10dX1½	—	735	885	630	760	
SPH4	10-10dX1½	—	1240	1240	1065	1065	
	12-10dX1½	—	1360	1360	1170	1170	
STHD8	24-16d sinker	Embedded	3195	3195	3195	3195	
PHD2-SDS3	10 SDS¼X3	⅝" ATR	3610	3610	3375	3375	
STHD10	28-16d sinker	Embedded	3725	3725	3725	3725	
HTT16	18-16d	⅝" ATR	3480	4175	3080	3695	
PHD5-SDS3	14-SDS¼X3	⅝" ATR	4685	4685	4380	4380	
HTT22	32-16d sinker	⅝" ATR	5250	5260	4670	5250	

1. Straps must use one half the total fasteners into each member being connected to achieve the listed loads.
2. Multiple straps may be used for increased load values.
3. For a continuous load path, truss/rafter to top plate/stud/header connections must be on the same side of wall as header to stud connections.
4. The designer must specify anchor bolt type, length, and embedment for PHD's and HTT's. Consult T-ANCHORSPEC03 for anchoring options.
5. For STHD, allowable loads are based on a minimum end distance equal to the length of embedment. For shorter end distances, refer to the current Simpson Catalog for *Wood Construction Connectors*.
6. ATR = All Thread Rod or Anchor Bolt.



The Strong-Tie Rod System (STR) is an engineered system of components designed to transfer uplift forces from the double top plates directly into the foundation to provide a continuous load path within the wall system. The key component in the system is the take-up washer (STU1/2) which is specially designed to self tighten when any shrinkage or compression occurs in the wall, so that when uplift occurs, the system is ready to perform without excessive deflection which can cause failures in other components of the wall. The following tables list the allowable loads to be used in designing with this system. Note the following considerations which should be accounted for in the design:

- The designer shall determine the spacing of the rods based on the applied uplift forces as well as the effects of the double top plate in bending and the potential increased forces for rods located in a shearwall due to overturning.
- The anchors can be used to transfer shear as well as uplift provided the unity equation is checked as noted in the table below. For those applications, it is recommend that a bearing plate and nut be used to restrain the sill plate.
- Anchor allowable loads are based on a minimum spacing of anchors equal to twice the embedment depth. The loads shall be adjusted for two runs spaced at less than the minimum spacing.



STR SYSTEM: CAST-IN-PLACE ANCHOR INSTALLATION OPTIONS

Model	Anchor Diameter	Anchor (Included)	Coupler (Included)	Threaded Rod (NOT Included)	Take-Up Washer (Included)	Location		Embedment	Capacity
						Min. Edge	Min. End		
STR $\frac{1}{2}$	$\frac{1}{2}$ "	SAB $\frac{1}{2}$	CNW $\frac{1}{2}$	$\frac{1}{2}$ " ATR	STU $\frac{1}{2}$	1.75	6	7"	3315
STR $\frac{5}{8}$	$\frac{5}{8}$ "	SAB $\frac{5}{8}$	C54					7"	3315
STR $\frac{5}{8}$ L	$\frac{5}{8}$ "	SAB $\frac{5}{8}$ L	C54					11"	3315

1. Design load is based on the lesser of the allowable tension load based on adhesive bond strength, steel strength of the rod or coupler nut, bearing load from the top plate, STU $\frac{1}{2}$ tested capacity with 2.5x F.S.
2. Spacing to be determined by designer.
3. All thread rod is not supplied with the system and must be purchased separately. Loads above assume standard grade A307/SAE1018 threaded rod.
4. For multiple story applications, additional coupler nuts are available (sold in boxes of 20).
5. SAB $\frac{5}{8}$ L is for installation through a 4" tall concrete curb with 7" concrete embedment beyond the curb.
6. SAB values are based on 2500 psi concrete and adhesive values are based on 2000 psi concrete.

STR SYSTEM: RETROFIT ANCHOR INSTALLATION OPTIONS

Model	Anchor Diameter	Anchor (Included)	Coupler (Included)	Threaded Rod (NOT Included)	Take-Up Washer (Included)	Location		Epoxy Solutions (Not Included)					
						Min. Edge	Min. End	ET		SET		AT	
								Embedment	Capacity	Embedment	Capacity	Embedment	Capacity
STRR $\frac{1}{2}$	$\frac{1}{2}$ "	$\frac{1}{2}$ x12 ATR	CNW $\frac{1}{2}$	$\frac{1}{2}$ " ATR	STU $\frac{1}{2}$	1.75	7	4.25"	1920	6"	3315	6"	2805
						7	7	4.25"	3315	6"	3315	4.25"	3315
STRR $\frac{5}{8}$	$\frac{5}{8}$ "	$\frac{5}{8}$ x12 ATR	C54	$\frac{1}{2}$ " ATR	STU $\frac{1}{2}$	1.75	7	5"	2745	7.25"	3205	7.5"	3315
						7	7	5"	3315	3.75"	3315	5.5"	3315

DESIGN VALUES FOR CHECKING ANCHORAGE INTERACTION EQUATION

Component	Anchor Size	Embedment Depth (in)	Uplift (lbs)	F1 (lbs)	F2 (lbs)
SAB	$\frac{1}{2}$ "	7	4340	1630	465
	$\frac{5}{8}$ "			1630	465
SET	$\frac{1}{2}$ "	7.25	3427	640	640
	$\frac{5}{8}$ "			680	680
ET	$\frac{1}{2}$ "	4.25	1872	543	543
	$\frac{5}{8}$ "			585	585
AT	$\frac{1}{2}$ "	7.5	3463	430	430
	$\frac{5}{8}$ "			430	430
Steel Rod	$\frac{1}{2}$ "	n/a	3750	1930	1930
	$\frac{5}{8}$ "	n/a	5875	3025	3025
Sill Plate	$\frac{1}{2}$ "	n/a	n/a	1055	560
	$\frac{5}{8}$ "	n/a	n/a	1485	625

1. Designs using the rods for combined tension and shear shall ensure the following equation is satisfied:

$$\frac{\text{Applied Tension}}{\text{Allowable Tension}} + \frac{\text{Applied F1}}{\text{Allowable F1}} + \frac{\text{Applied F2}}{\text{Allowable F2}} \leq 1.0$$

2. Values provided are for allowable loads for each component, however the system is limited at 3315 lbs Tension.
3. Values assume a minimum edge distance of 1 3/4" and end distance of 7".
4. SAB values are based on 2500 psi concrete, Adhesive solutions based on 2000 psi concrete.
5. Sill Plate design values are based on SYP lumber with a load duration factor of 1.6.
6. F1 loads are parallel to the sill plate and F2 loads are perpendicular.
7. Values do not include a stress increase on the steel.

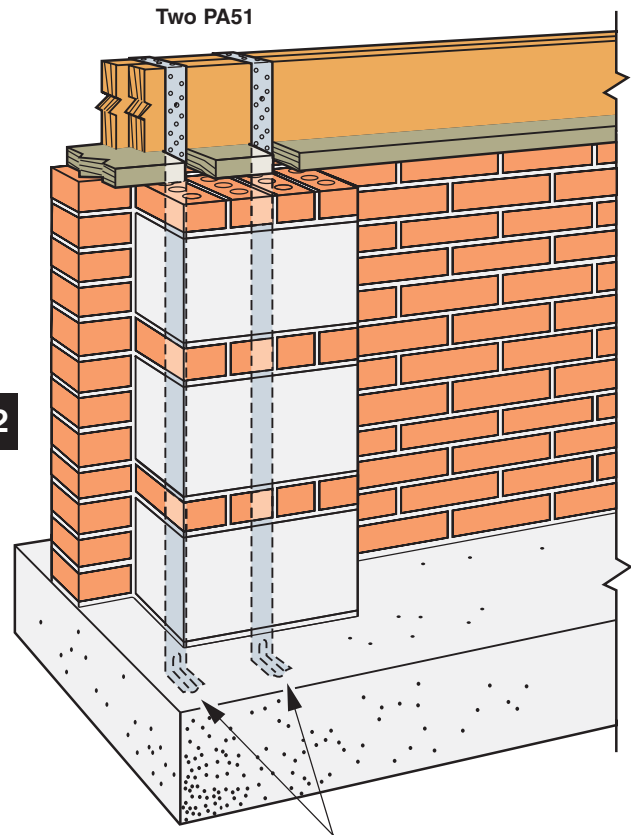
Stemwall/Crawlspace

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	Fasteners		DF/SP Allowable Loads		SPF Allowable Loads	
		Anchors	Nails	Uplift		Uplift	
				(133)	(160)	(133)	(160)
FJA	1	2-½"	8-10dx1½"	1000	1205	860	1035
PA51	1	4" embed	9-16d	1690	2030	1455	1745
PA68	1	4" embed	9-16d	1690	2030	1455	1745
FJA	2	4-½"	16-10dx1½"	2000	2410	1720	2070

1. Minimum embedment for PA into concrete footing is 4" with minimum 5" to nearest edge. Optional nail holes provided.
2. Refer to T-PAUPLIFT04 for additional information on use of PA straps as foundation anchors.

D52

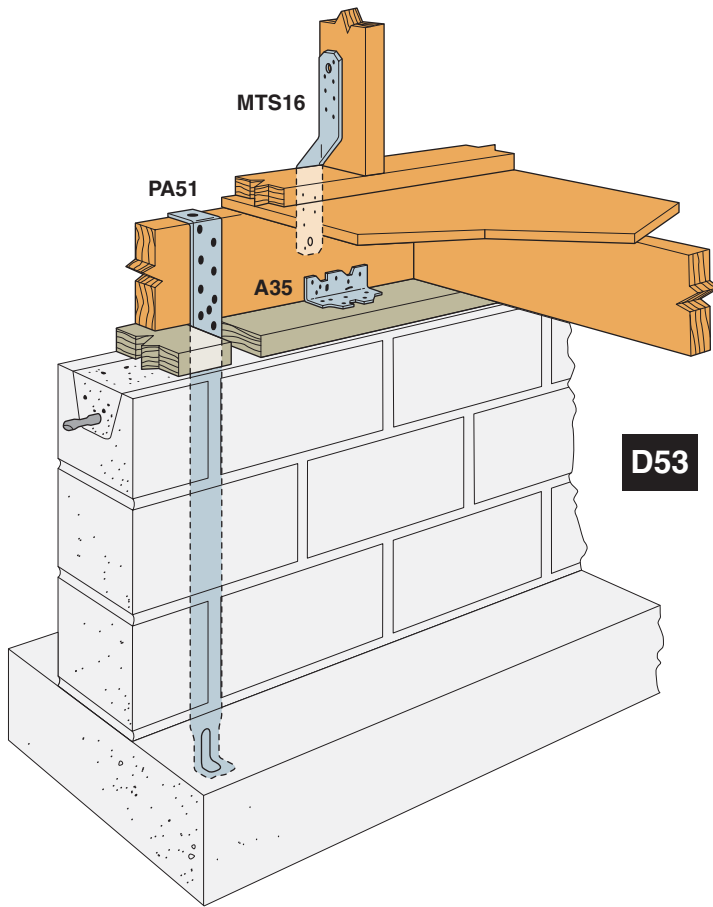


Min. two straps per pier
Min. 4 in. embedment into footing

Per International Residential Code,
Section R404.1.5.1

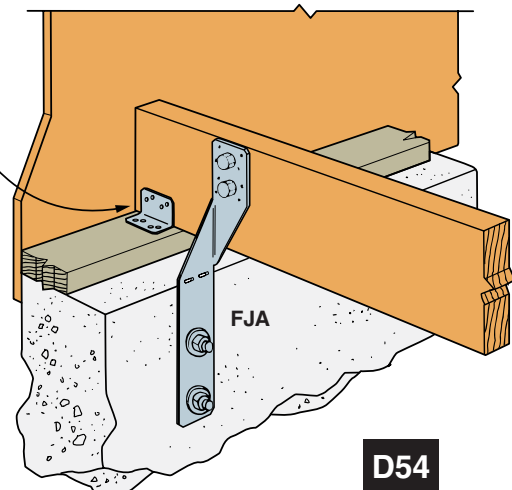
Two PA51's installed as shown above will meet the requirements of this section of the IRC. However, they will not achieve twice the load listed in the table unless spaced a minimum of 8" apart.

D53



Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.

A23
Optional

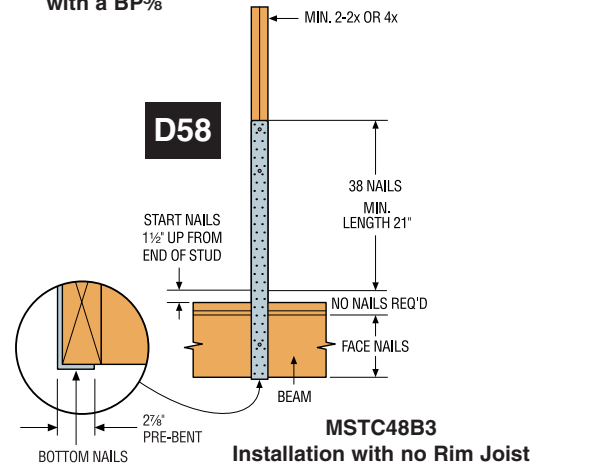
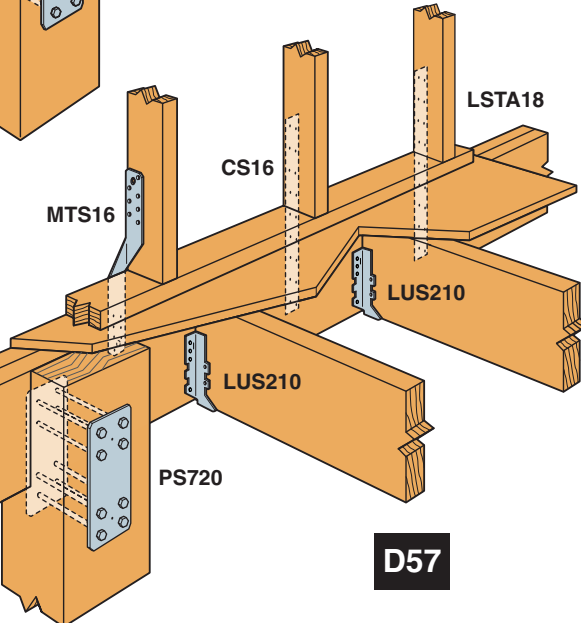
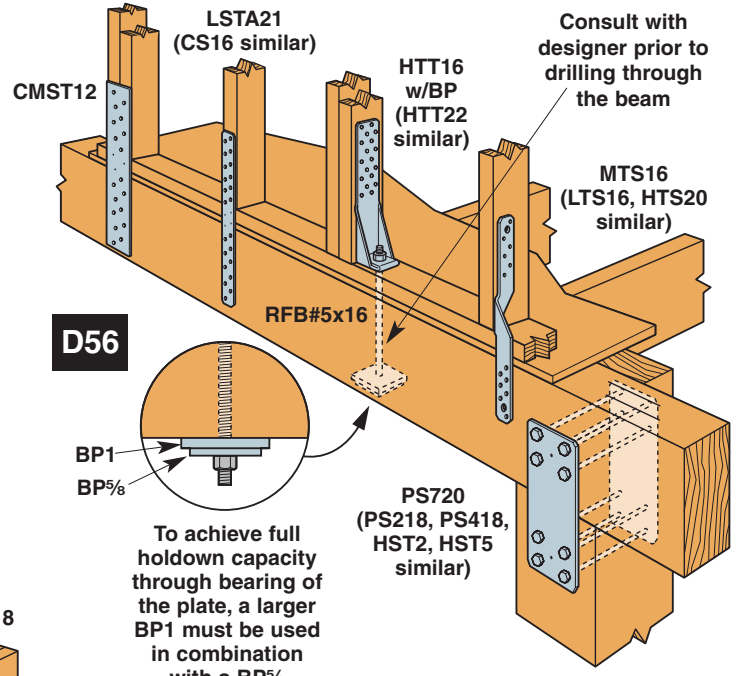
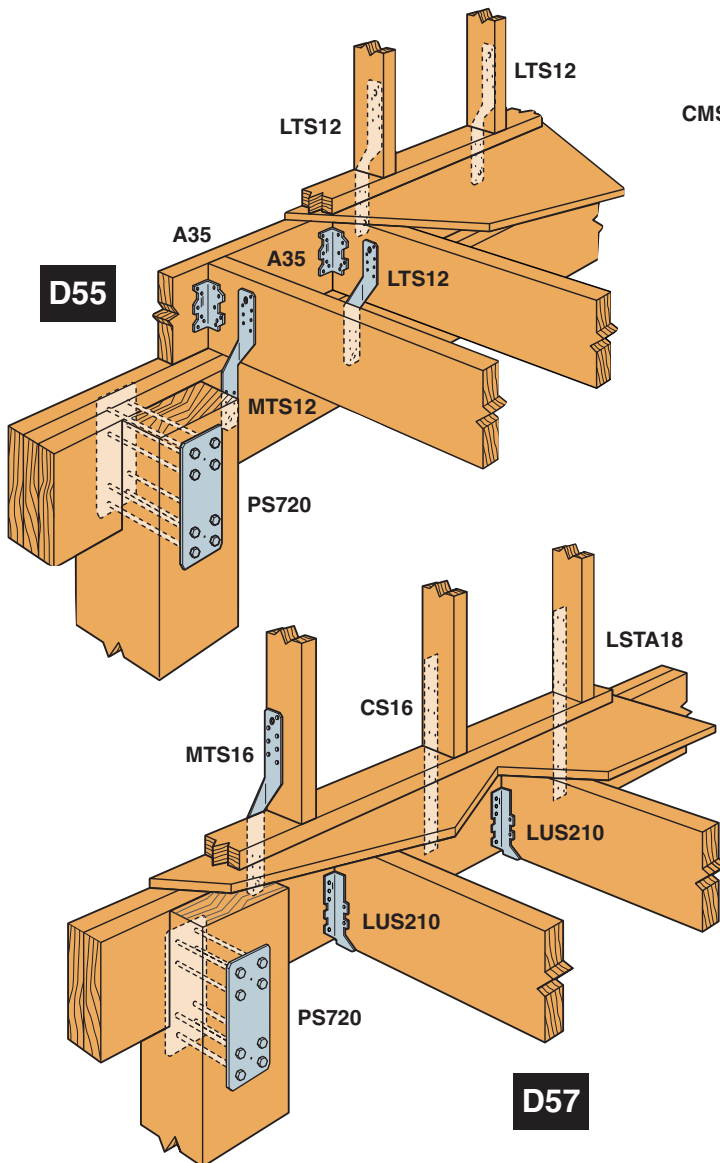


D54

Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	DF/SP Allowable Uplift Loads			SPF Allowable Uplift Loads		
		Fasteners (Total)	(133)	(160)	Fasteners (Total)	(133)	(160)
A35	1	12-8dx1½	450	450	12-8dx1½	450	450
LTS12	1	12-10dx1½	720	720	12-10dx1½	620	620
LTS16	1	12-10dx1½	720	720	12-10dx1½	620	620
MTS12	1	14-10dx1½	840	1000	14-10dx1½	730	860
MTS16	1	14-10dx1½	840	1000	14-10dx1½	730	860
HTS20	1	16-10dx1½	1005	1150	16-10dx1½	865	990
LSTA21	1	12-10d	1050	1235	14-10d	970	1160
CS16	1	18-10d	1475	1705	20-10d	1410	1700
CMST12	1	24-16d	2605	3130	24-16d	2255	2710
MSTC48B3	1	54-10d	3930	3930	54-10d	3380	3380
HTT16	1	18-16d	3480	4175	18-16d	3080	3695
PS218	2	4-¾" MB	2575	4290	4-¾" MB	2780	3340
PS418	2	4-¾" MB	2610	4330	4-¾" MB	2795	3355
MSTC66B3	1	56-10d	4440	4440	56-16d	3820	3820
HTT22	1	32-16d sinker	5250	5260	32-16d sinker	4670	5250
PS720	2	8-½" MB	4830	5795	8-½" MB	4300	5155
HST2	2	6-⅝" MB	4850	5815	6-⅝" MB	3775	4535
HST5	2	12-⅝" MB	9775	11730	12-⅝" MB	7565	9080

1. Loads are based on 11¼" girder depth. See Simpson Wood Construction Connectors catalog for other options.
2. PS and HST are for pile to girder applications only. Published loads are governed by double shear perp-to-grain bolt calculations using a minimum member thickness of 3½". Alternate values may be calculated per the NDS for other girder and pile widths. Straps must be centered about splice joint and bolt edge and end distances must meet the NDS minimum requirements.
3. For straight straps, use half the total fasteners listed on each member in the connection.
4. Refer to page 5 for corrosion considerations.

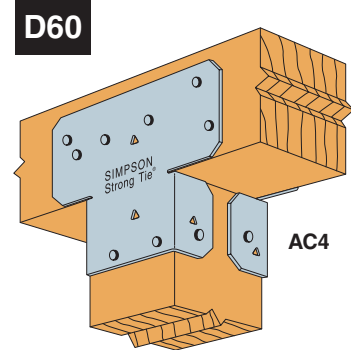
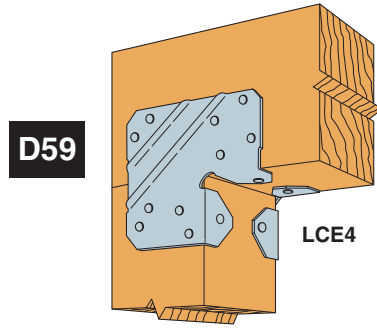


Post and Column Caps

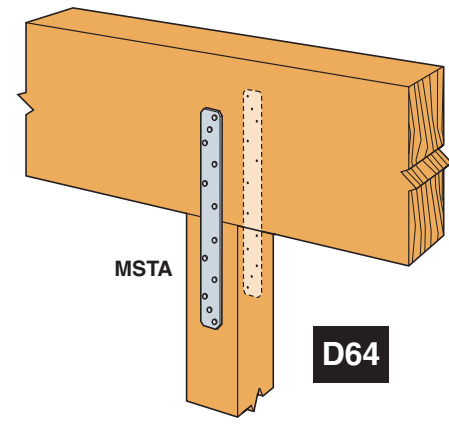
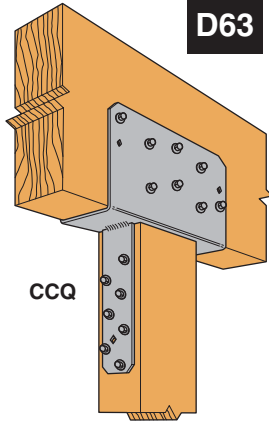
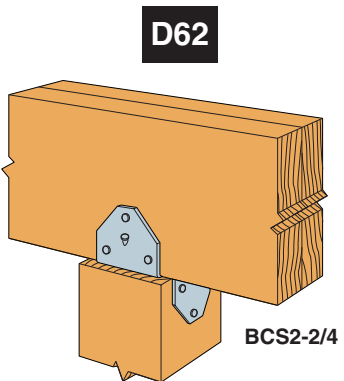
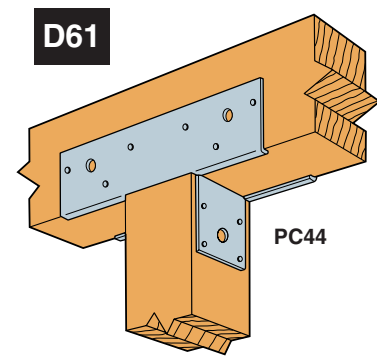
Available with additional corrosion protection. Check with factory.

Model No.	Qty Reqd	Fasteners		DF/SP Allowable Loads			SPF Allowable Loads	
		Beam	Post	Uplift		Parallel (F ₁)	Uplift	
				(133)	(160)		(133/160)	(133)
4 X 4 POST / COLUMN TO 4X BEAM								
LPC4	2	8-10d	8-10d	760	760	325	655	655
BC4	1	6-16d	6-16d	980	980	1000	—	—
PC44-16	1	12-16d	8-16d	1000	1000	925	—	—
AC4 Min	2	12-16d	8-16d	1430	1430	715	—	—
CC44	1	2-5/8 MB	2-5/8 MB	1220	1465	—	—	—
PC44	1	12-16d	8-16d	1470	1700	925	—	—
LCE4	2	14-16d	10-16d	1800	1800	1425	—	—
AC4 Max	2	14-16d	14-16d	2500	2500	1070	—	—
MSTA18	2	28-10d	28-10d	2280	2730	—	1980	2370
CCQ44SDS2.5	1	16-SDS1/4x2 1/2	14-SDS1/4x2 1/2	5680	5680	—	—	—
4 X 6 POST / COLUMN TO 4X BEAM								
BC46	1	12-16d	6-16d	980	980	1000	—	—
PC46-16	1	12-16d	8-16d	1000	1000	925	—	—
PC46	1	12-16d	8-16d	1470	1700	925	—	—
CC46	1	4-5/8 MB	2-5/8 MB	2330	2800	—	—	—
CCQ46SDS2.5	1	16-SDS1/4x2 1/2	14-SDS1/4x2 1/2	5955	7145	—	—	—
6 X 6 POST / COLUMN TO 6X BEAM								
LPC6	2	8-10d	8-10d	915	915	490	785	785
PC66-16	1	12-16d	8-16d	1000	1000	925	—	—
BC6	1	12-16d	12-16d	1050	1050	2000	—	—
AC6 Min	2	12-16d	8-16d	1430	1430	715	—	—
PC66	1	12-16d	8-16d	1470	1700	925	—	—
LCE4	2	14-16d	10-16d	1800	1800	1425	—	—
AC6 Max	2	14-16d	14-16d	2500	2500	1070	—	—
CC66	1	4-5/8 MB	2-5/8 MB	3365	4040	—	—	—
CCQ66SDS2.5	1	16-SDS1/4x2 1/2	14-SDS1/4x2 1/2	5955	7145	—	—	—
4 X 4 POST / COLUMN TO 2-2X BEAM								
BCS2-2/4	1	8-10d	6-10d	780	780	1025	670	670
4 X 4 POST / COLUMN TO 3-2X BEAM								
BCS2-3/6	1	12-16d	6-16d	800	800	1495	690	690
4 X 4 POST / COLUMN TO 3 1/8" BEAM								
CC3 1/4 - 4	1	4-5/8 MB	2-5/8 MB	3035	3640	—	—	—
CCQ3 - 4SDS2.5	1	16-SDS1/4x2 1/2	14-SDS1/4x2 1/2	5680	5680	—	—	—
6 X 6 POST / COLUMN TO 5 1/8" BEAM								
CC5 1/4 - 6	1	4-3/4 MB	2-3/4 MB	6275	7530	—	—	—
CCQ5 - 6SDS2.5	1	16-SDS1/4x2 1/2	14-SDS1/4x2 1/2	6270	7245	—	—	—

1. "—" in the tables indicates that the product has not been tested in the particular load direction listed.
2. Quantity of two represents one left and one right connector which must be present to achieve listed loads.



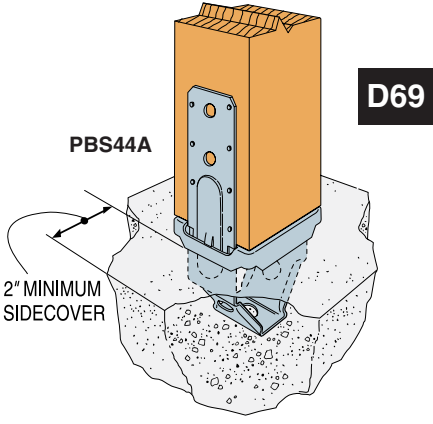
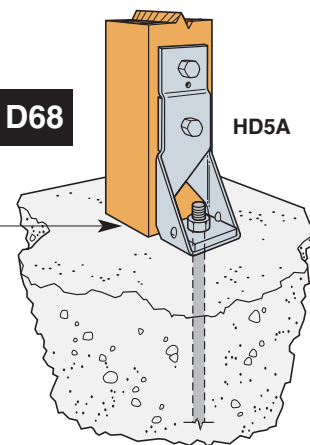
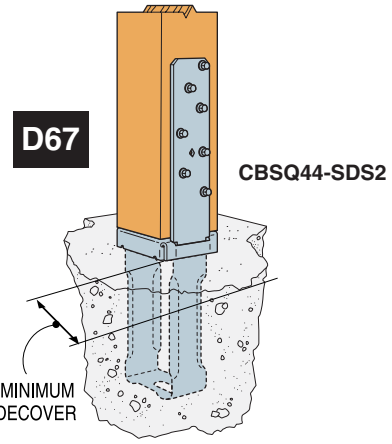
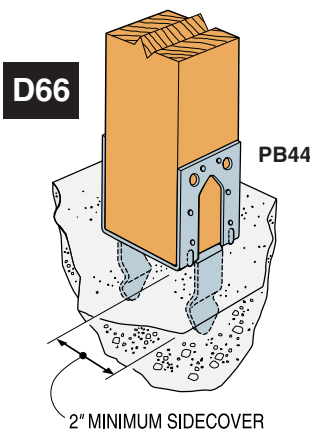
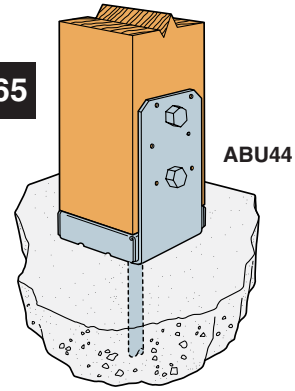
Fill all round and triangle holes for maximum load.



Available with additional corrosion protection. Check with factory.

Model No.	Qty Reqd	Anchor Diameter	Fasteners To Wood	DF/SP Allowable Loads		SPF Allowable Loads	
				Uplift		Uplift	
				(133)	(160)	(133)	(160)
4 x 4 POST / COLUMN BASES							
ABE44	1	1/2"	6-10d	520	520	445	445
ABA44	1	1/2"	6-10d	555	555	475	475
PB44	1	embed	12-16d	1365	1365	1175	1175
ABU44	1	5/8"	12-16d	2200	2200	1890	1890
PBS44A	1	embed	14-16d	2400	2400	2065	2065
HD2A	1	5/8"	2-5/8" MB	2775	2775	2565	2565
LCB44	1	embed	2-1/2" MB	3545	4250	3310	3975
HD5A	1	5/8"	2-3/4" MB	4010	4010	3645	3645
CB44	1	embed	2-5/8" MB	4200	4200	4200	4200
CBQ44-SDS2	1	embed	12-SDS 1/4"x2	4200	4200	3615	3615
HTT22	1	5/8"	32-16d Sinkers	5250	5260	4670	5250
CBSQ44-SDS2	1	embed	14-SDS 1/4"x2	5335	5335	4590	4590
HD2A	2	5/8"	2-5/8" MB	5550	5550	5130	5130
HD5A	2	5/8"	2-3/4" MB	8020	8020	7290	7290
HTT22	2	5/8"	64-16d Sinkers	10500	10520	9130	10520
6 x 6 POST / COLUMN BASES							
ABA66	1	5/8"	8-16d	720	720	620	620
ABE66	1	5/8"	8-16d	900	900	775	775
PB66	1	embed	12-16d	1640	1640	1410	1410
ABU66	1	5/8"	12-16d	2300	2300	1980	1980
HD2A	1	5/8"	2-5/8" MB	2760	2760	2550	2550
PBS66	1	embed	14-16d	2630	3160	2260	2715
HD5A	1	5/8"	2-3/4" MB	3980	3980	3680	3680
CB66	1	embed	2-5/8" MB	4200	4200	4200	4200
LCB66	1	embed	2-1/2" MB	3525	4230	3300	3960
CBQ66-SDS2	1	embed	12-SDS 1/4"x2	4200	4200	3615	3615
HD2A	2	5/8"	2-5/8" MB	5520	5520	5100	5100
HTT22	1	5/8"	32-16d Sinkers	5250	5260	4670	5250
CBSQ66-SDS2	1	embed	14-SDS 1/4"x2	5710	6855	4910	5895
HD5A	2	5/8"	2-3/4" MB	7960	7960	7360	7360
HTT22	2	5/8"	64-16d Sinkers	10500	10520	9130	10520
8 x 8 POST / COLUMN BASES							
ABU88	1	2-5/8"	18-16d	2320	2320	1995	1995
CB88	1	embed	2-3/4" MB	6650	6650	5265	6315

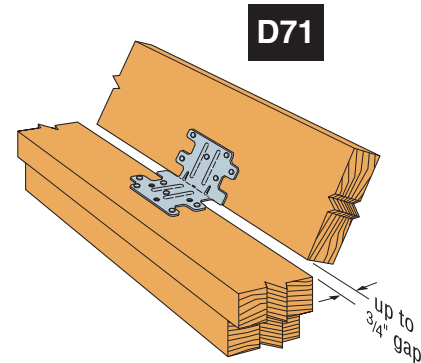
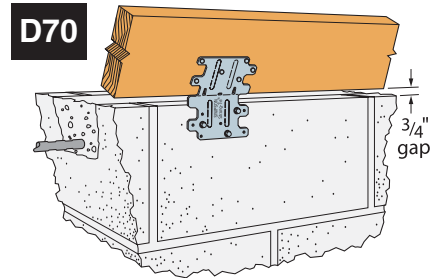
1. ATR is all thread rod or embedded anchor bolt.
2. Designer must specify anchor bolt type and embedment. Refer to T-ANCHORSPEC03 for concrete anchoring information.
3. Double HDA may share through-bolts with no load reduction.
4. For multiple holdowns, verify the allowable tension capacity of the wood member.



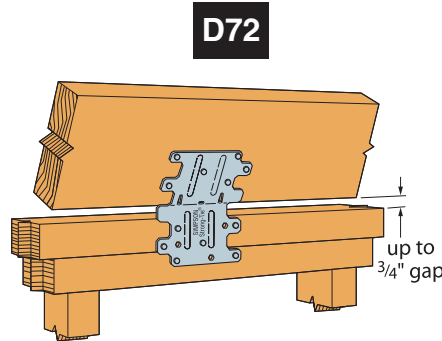
Roof Boundary Clip

Model No.	Type of Connection	Bending Angle	Fasteners		Avg Ult	Doug-Fir-Larch/ So. Pine Allowable Loads	Spruce-Pine-Fir Allowable Loads
			To Plate	To Blocking		Lateral (133/160)	Lateral (133/160)
RBC	1	0° to 45°	6-10dx1½	6-10dx1½	1237	440	380
	2	0° to 30°	6-10dx1½	6-10dx1½	1310	485	420
	3	0° to 30°	3-¼"x2¼" Titen	6-10dx1½	1125	350	350

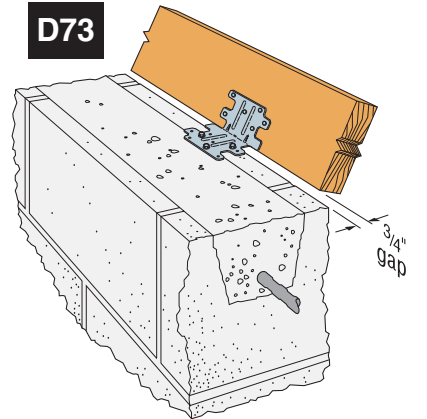
1. Allowable loads are for one anchor attached to blocking minimum 1½" thick.
2. RBC can be installed with up to ¾" gap and achieve 100% of the listed load.
3. Reference F-RBC04.



1 Typical RBC Installation



2 Typical RBC Installation



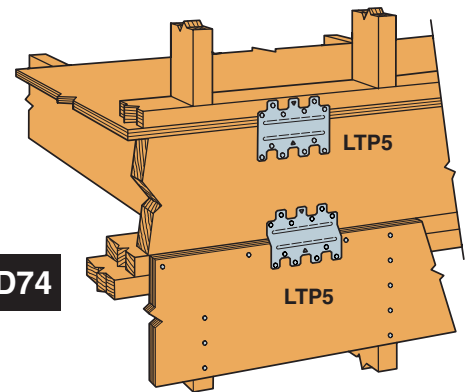
3 Typical RBC Installation to CMU Block

Lateral Load

Available with additional corrosion protection. Check with factory.

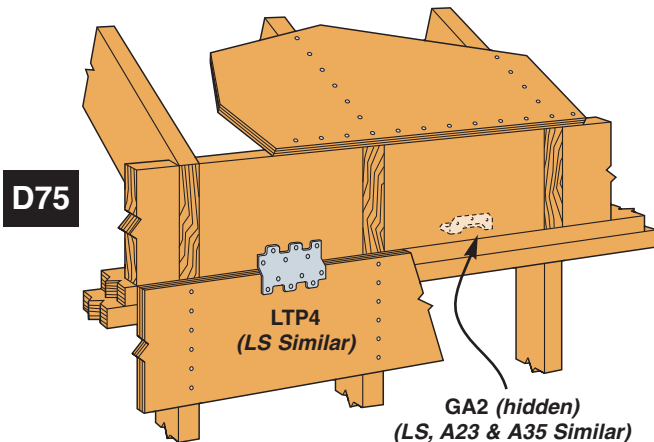
Model No.	Qty Req'd	Fasteners (Total)	DF/SP Allowable Loads				SPF Allowable Loads			
			Uplift		F ₁		Uplift		F ₁	
			(133)	(160)	(133)	(160)	(133)	(160)	(133)	(160)
A34	1	8-8dx1½	—	—	345	365	—	—	315	315
LS30	1	6-10d	—	—	415	415	—	—	360	360
A35	1	12-8dx1½	—	—	450	450	—	—	450	450
GA2	1	6-10d	—	—	490	490	—	—	335	335
A23	1	8-10dx1½	—	—	485	585	—	—	415	500
LS50	1	8-10d	—	—	595	665	—	—	515	570
LTP5	1	12-8dx1½	555	555	595	595	475	475	510	510
LS70	1	10-10d	—	—	675	675	—	—	515	580
LTP4	1	12-8dx1½	670	670	670	670	595	595	595	595
LS90	1	12-10d	—	—	895	1050	—	—	775	905

1. "—" in the tables indicates that the product has not been tested in the particular load direction listed.
2. Multiply GA values by .81 when using 1½" member with 10dx1½" nails.
3. For LTP5, increasing nails to 14-8dx1½" will result in an F₁ allowable load of 630 lbs for DF/SP and 540 lbs for SPF.

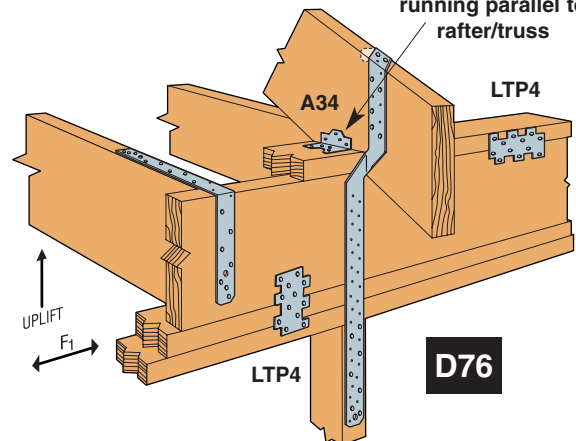


D74

A34 F₁ table loads apply to loads running parallel to rafter/truss



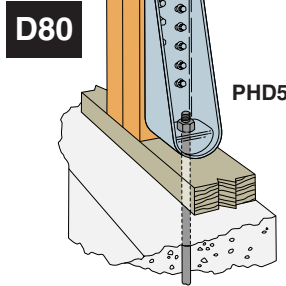
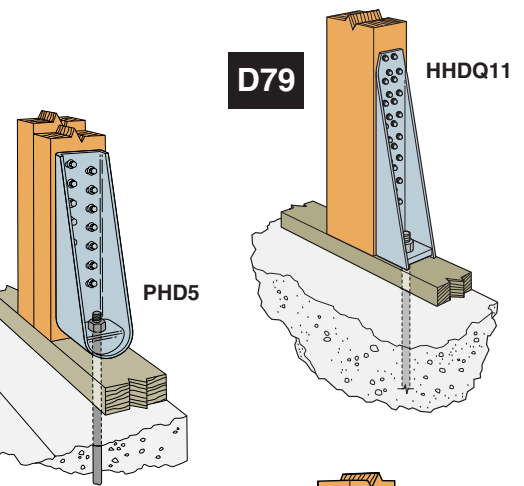
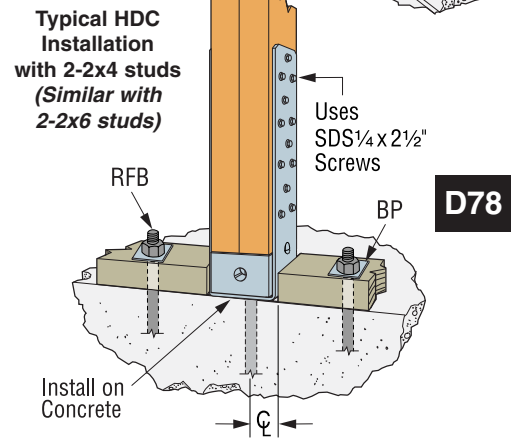
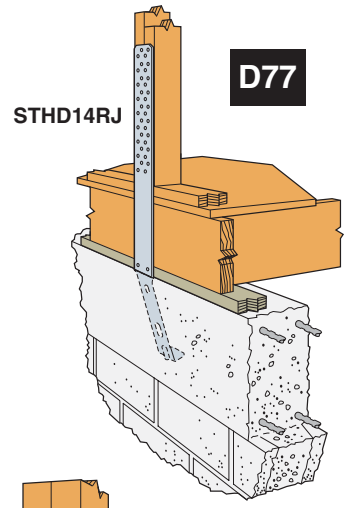
D75



D76

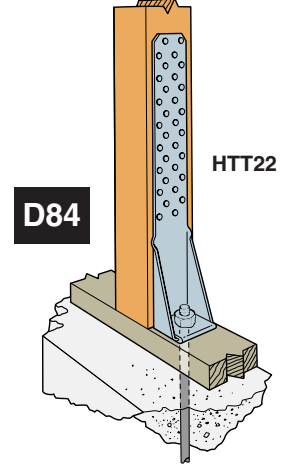
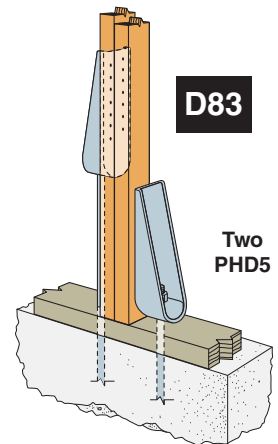
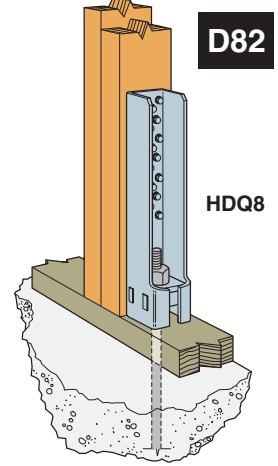
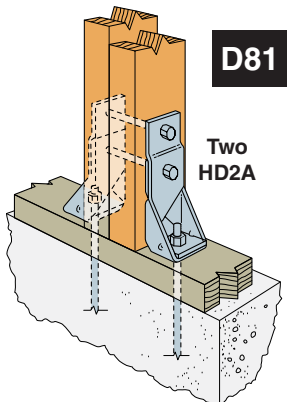
Available with additional corrosion protection. Check with factory.

Model No.	Qty Reqd	Anchor Diameter	Fasteners (Stud)	DF/SP Allowable Loads		SPF Allowable Loads	
				Uplift		Uplift	
				(133)	(160)	(133)	(160)
HPAHD22	1	embed	23-16d	2030	2030	2030	2030
STHD8/STHD8RJ	1	embed	24-16d sinkers	2370	2370	2370	2370
HD2A	1	1-5/8" ATR	2-5/8" MB	2775	2775	2570	2570
STHD10/STHD10RJ	1	embed	28-16d sinkers	2990	2990	2990	2990
PHD2-SDS3	1	1-5/8" ATR	10-SDS1/4x3	3610	3610	3325	3375
HD5A	1	1-5/8" ATR	2-3/4" MB	3705	3705	3130	3130
STHD14/STHD14RJ	1	embed	38-16d sinkers	4160	4160	4160	4160
HTT16	1	1-5/8" ATR	18-16d	3480	4175	3080	3695
HD6A	1	1-7/8" ATR	2-7/8" MB	4405	4405	3680	3680
PHD5-SDS3	1	1-5/8" ATR	14-SDS1/4x3	4685	4685	4380	4380
HDC5/22-SDS2.5	1	1-5/8" ATR	12-SDS1/4x2 1/2	4870	4870	4215	4215
HTT22	1	1-5/8" ATR	32-16d sinkers	5250	5260	4670	5250
HD2A	2	1-5/8" ATR	2-5/8" MB	5550	5550	5140	5140
PHD6-SDS3	1	1-7/8" ATR	18-SDS1/4x3	5860	5860	5480	5480
HD8A	1	1-7/8" ATR	3-7/8" MB	6465	6465	5480	5480
PHD2-SDS3	2	1-5/8" ATR	20-SDS1/4x3	7220	7220	6750	6750
HD5A	2	1-5/8" ATR	2-3/4" MB	7410	7410	6260	6260
HD10A	1	1-7/8" ATR	4-7/8" MB	8310	8310	7045	7045
HDQ8-SDS3	1	1-7/8" ATR	20-SDS1/4x3	8325	8325	7210	7210
HTT16	2	1-5/8" ATR	36-16d	6960	8350	6160	7390
HD6A	2	1-7/8" ATR	2-7/8" MB	8810	8810	7360	7360
PHD5-SDS3	2	1-5/8" ATR	28-SDS1/4x3	9370	9370	8760	8760
HDC10/22-SDS2.5	1	1-7/8" ATR	24-SDS1/4x2 1/2	9665	9665	8425	8425
HTT22	2	1-5/8" ATR	64-16d sinkers	10500	10520	9340	10500
HHDQ11-SDS2.5	1	1-1" ATR	24-SDS1/4x2 1/2	11445	11445	9615	9615
PHD6-SDS3	2	1-7/8" ATR	36-SDS1/4x3	11720	11720	10960	10960
HHDQ14-SDS2.5	1	1-1" ATR	30-SDS1/4x2 1/2	14700	14700	12350	12350
HDQ8	2	1-7/8" ATR	20-SDS1/4x3	16650	16650	14320	14320
HD8A	2	1-7/8" ATR	3-7/8" MB	12930	12930	10960	10960
HD10A	2	1-7/8" ATR	4-7/8" MB	16620	16620	14090	14090



Refer to page 5 for important considerations regarding finishes on connectors attached to pressure-treated wood.

1. Holdown load values are based on a 3" thick vertical member. See Simpson mainline catalog for load values based on different wood thickness.
2. Through bolts may be shared on double HDA applications with no reduction in load. Multiple PHD's must be staggered as shown in D76.
3. HPAHD & STHD assume 8" stemwall, full embedment depth minimum 1/2" from the corner, and 2500psi. For other conditions consult factory.
4. ATR is all thread rod or embedded anchor bolt.
5. Designers must specify anchor type and embedment. See T-ANCHORSPEC03 for concrete anchoring information.
6. For multiple holdowns, verify the allowable tension capacity of the wood member.



Strong-Wall® Shearwall



The Strong-Wall® Shearwall can be installed around window and door openings, or garage wing walls, or interior walls, where increased lateral resistance is needed. They can reduce the amount of wall space required for shearwalls, allowing for more windows and doors. **Standard** models are used for slab-on-grade applications. **Garage Portal systems** provide increased lateral resistance in locations where space is at a premium.

Standard Wall

Model No.	W (in)	H (in)	T (in)	Number of Fasteners in Top of Wall	Number of Mudsill Anchors ²	Holdown ¹ Anchor Bolts	Allowable Shear V Load (lb)	Drift at Allowable Shear V (in)	Allowable Shear V Load (lb/ft)	Wall Weight (lbs)
SW18x8	18	93¼	3½	9-SDS¼x6	2-½	2-SSTB28	1150	.317	763	85
SW24x8	24	93¼	3½	12-SDS¼x6	2-½	2-SSTB28	1610	.389	804	91
SW32x8	32	93¼	3½	16-SDS¼x6	2-½	2-SSTB28	2865	.377	1074	116
SW48x8	48	93¼	3½	24-SDS¼x6	3-½	2-SSTB28	4545	.380	1136	149
SW18x9	18	105¼	3½	9-SDS¼x6	2-½	2-SSTB28	1080	.371	722	94
SW24x9	24	105¼	3½	12-SDS¼x6	2-½	2-SSTB28	1585	.396	793	101
SW32x9	32	105¼	3½	16-SDS¼x6	2-½	2-SSTB28	2600	.427	975	128
SW48x9	48	105¼	3½	24-SDS¼x6	3-½	2-SSTB28	4370	.439	1093	165
SW24x10	24	117¼	3½	12-SDS¼x6	2-½	2-SSTB28	1590	.446	797	111
SW32x10	32	117¼	3½	16-SDS¼x6	2-½	2-SSTB28	2460	.453	923	134
SW48x10	48	117¼	3½	24-SDS¼x6	3-½	2-SSTB28	4095	.435	1024	171
SW24x12x6	24	141¼	5½	12-SDS¼x6	2-½	2-SSTB28	1260	.543	629	167
SW32x12x6	32	141¼	5½	16-SDS¼x6	2-½	2-SSTB28	2150	.581	807	201
SW48x12x6	48	141¼	5½	24-SDS¼x6	3-½	2-SSTB28	3695	.521	924	256

1. For 2-pour applications, use SSTB34. For standard wall with a second story installed above, engineer of record must specify if high strength anchorage is required, depending on load.

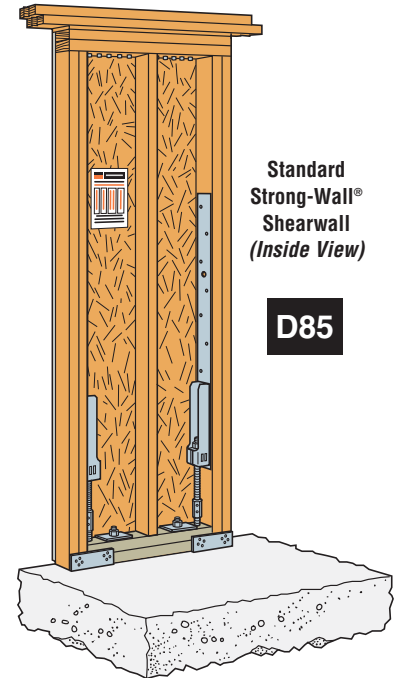
2. Recommended minimum 5/8" x 12" (LBOLT62120) mudsill anchor.

Garage Portal

Model No.	W (in)	H (in)	T (in)	Number of Fasteners in Top of Wall	Number of Mudsill Anchors ⁴	Holdown ¹ Anchor Bolts	Allowable Shear V Load (lb) for Portal System	Drift at Allowable Shear V (in)	Allowable Shear V Load (lb/ft)	Wall Weight (lbs)
SW16x7x4	16	78	4	8-SDS¼x6	2-½	2-SSTB28	2800	.367	1050	90
SW16x7x6	16	78	5¼	8-SDS¼x6	2-½	2-SSTB28	2800	.367	1050	112
SW16x8x4	16	90	4	8-SDS¼x6	2-½	2-SSTB28	2490	.420	935	95
SW16x8x6	16	90	5¼	8-SDS¼x6	2-½	2-SSTB28	2490	.420	935	120
SW22x7x4	22	78	4	10-SDS¼x6	2-½	2-SSTB28	4820	.369	1315	95
SW22x7x6	22	78	5¼	10-SDS¼x6	2-½	2-SSTB28	4820	.369	1315	117
SW22x8x4	22	90	4	10-SDS¼x6	2-½	2-SSTB28	3990	.446	1090	105
SW22x8x6	22	90	5¼	10-SDS¼x6	2-½	2-SSTB28	3990	.446	1090	130

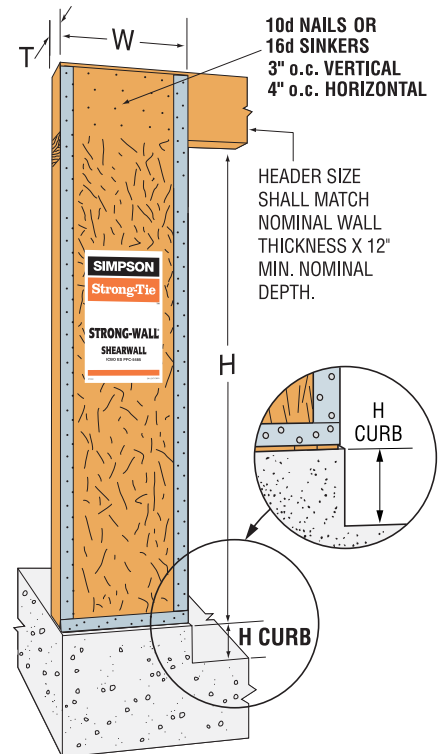
1. For two-pour bolted applications, use the SSTB34.
 2. Recommended header moisture content is **19%** or less at time of installation.
 3. A portal system consists of two walls with a header spanning over the top and connected as shown in the Simpson Strong-Tie *Wood Construction Connectors* catalog.

4. Recommended minimum 5/8" x 12" (LBOLT62120) mudsill anchor.
 5. The minimum header sizes listed are the minimum required for lateral rigidity of the portal system. Larger headers may be required due to vertical loading.
 6. **Portal walls may be installed with sheathing facing inside or outside.**



Standard Strong-Wall® Shearwall (Inside View)

D85



16" Garage Portal Strong-Wall (Outside View)

D86

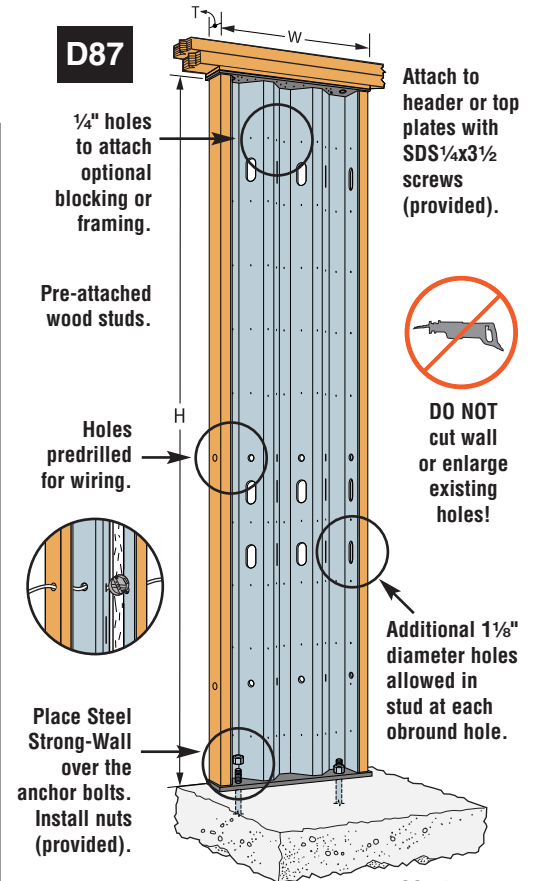
NEW! We have responded to the needs of builders, specifiers and contractors who asked for improvements in our Strong-Wall shearwall. The result is the newest addition to the Strong-Wall line, our new Steel Strong-Wall! This composite shearwall boasts some of the the highest allowable loads in the industry. Wood framing is preattached for interior and exterior finishes. The Steel Strong-Wall is the strongest, most cost-effective shearwall on the market today. **Contact Simpson for availability.**

STEEL STRONG-WALL ON CONCRETE FOUNDATIONS
2003 INTERNATIONAL BUILDING CODE

Model No.	W	H	T	Qty of Top of Wall Screws ¹	Anchor Bolt dia. (2 per wall)	Wind					
						2500 psi concrete			3000 psi concrete		
						Allowable ASD Shear V Load (lbs)	Drift (in.)	Uplift (lbs)	Allowable ASD Shear V Load (lbs)	Drift (in.)	Uplift (lbs)
SSW12x7	12	80	3½	4	¾"	965	0.25	10450	1155	0.30	12450
SSW12x8	12	93¼	3½	4	¾"	830	0.34	10450	925	0.38	10760
SSW12x9	12	105¼	3½	4	¾"	735	0.44	10450	765	0.46	9485
SSW12x10	12	117¼	3½	4	¾"	640	0.53	9720	640	0.53	8270
SSW15x7	15	80	3½	6	1"	1645	0.21	14565	1735	0.22	13580
SSW15x8	15	93¼	3½	6	1"	1405	0.29	14455	1405	0.29	12330
SSW15x9	15	105¼	3½	6	1"	1195	0.35	13170	1195	0.35	11445
SSW15x10	15	117¼	3½	6	1"	1020	0.41	11965	1020	0.41	10560
SSW15x11	15	129¼	5½	6	1"	880	0.47	10910	880	0.47	9745
SSW15x12	15	141¼	5½	6	1"	765	0.54	9915	765	0.54	8945
SSW18x7	18	80	3½	8	1"	2615	0.17	19160	3195	0.21	23790
SSW18x8	18	93¼	3½	8	1"	2240	0.24	19160	2740	0.29	23790
SSW18x9	18	105¼	3½	8	1"	1985	0.30	19160	2430	0.37	23790
SSW18x10	18	117¼	3½	8	1"	1785	0.37	19160	2180	0.46	23790
SSW18x11	18	129¼	5½	8	1"	1615	0.45	19160	1980	0.55	23790
SSW18x12	18	141¼	5½	8	1"	1480	0.55	19160	1810	0.67	23790
SSW18x13	18	153¼	5½	8	1"	1365	0.64	19160	1670	0.78	23790
SSW21x7	21	80	3½	11	1"	3810	0.16	23755	4445	0.18	26775
SSW21x8	21	93¼	3½	11	1"	3270	0.22	23755	3965	0.26	28925
SSW21x9	21	105¼	3½	11	1"	2895	0.28	23755	3535	0.34	29305
SSW21x10	21	117¼	3½	11	1"	2600	0.34	23755	3170	0.42	29305
SSW21x11	21	129¼	5½	11	1"	2360	0.41	23755	2880	0.51	29305
SSW21x12	21	141¼	5½	11	1"	2160	0.50	23755	2570	0.60	27860
SSW21x13	21	153¼	5½	11	1"	1990	0.59	23755	2275	0.67	25765
SSW24x7	24	80	3½	14	1"	5240	0.15	28350	5730	0.16	28495
SSW24x8	24	93¼	3½	14	1"	4495	0.20	28350	5105	0.23	30445
SSW24x9	24	105¼	3½	14	1"	3980	0.26	28350	4570	0.29	31040
SSW24x10	24	117¼	3½	14	1"	3575	0.32	28350	4100	0.36	31010
SSW24x11	24	129¼	5½	14	1"	3240	0.38	28350	3720	0.44	31020
SSW24x12	24	141¼	5½	14	1"	2965	0.46	28350	3405	0.53	31035
SSW24x13	24	153¼	5½	14	1"	2735	0.54	28350	3030	0.60	29140

1. SDS¼x3½ screws provided with wall.
2. Loads applicable to designs using the ASD basic (IBC Section 1605.3.1) or the alternate basic (IBC Section 1605.3.2) load combinations.
3. Loads based on a 4000 lb total axial load acting on entire panel in combination with the shear load. Contact Simpson for corresponding shear loads at 1000 lbs and 7500 lbs.
4. Uplifts are net overturning forces which include the effects of axial loading.
5. SSW panels can be ordered for use with light gauge steel construction for 8', 9' and 10' panels. Specify S/SSW and size. Example: S/SSW12x7. Example: SSW18x9-S. The shear, drift and uplift values for these shall be reduced by the following factors: 0.88 for the 8 foot tall panels, 0.83 for the 9 foot panels and 0.75 for the 10 foot panels. Contact Simpson for Panel height.

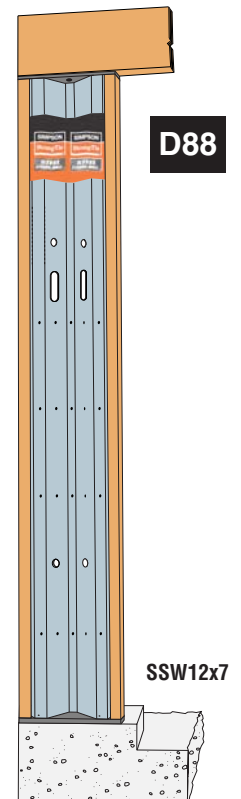
Maximum shim height between Steel Strong-Wall and top plates or header is ⅞" using SDS¼x3½ screws. For additional shim height, see C-2005.



NOTE: The Engineer of Record is responsible for concrete design.

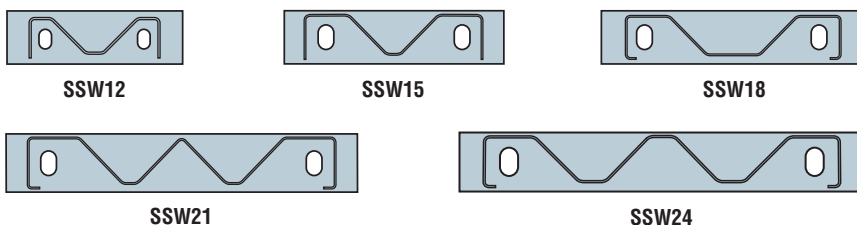
SSW24x10
Patent Pending

NOTE: Walls may also be used in 2x6 wall framing. Install Steel Strong-Wall flush to one face of framing and add furring to opposite side.



WALL PROFILES

D89



SEE THE C-2005 CATALOG FOR ADDITIONAL INFORMATION

Gable Endwall

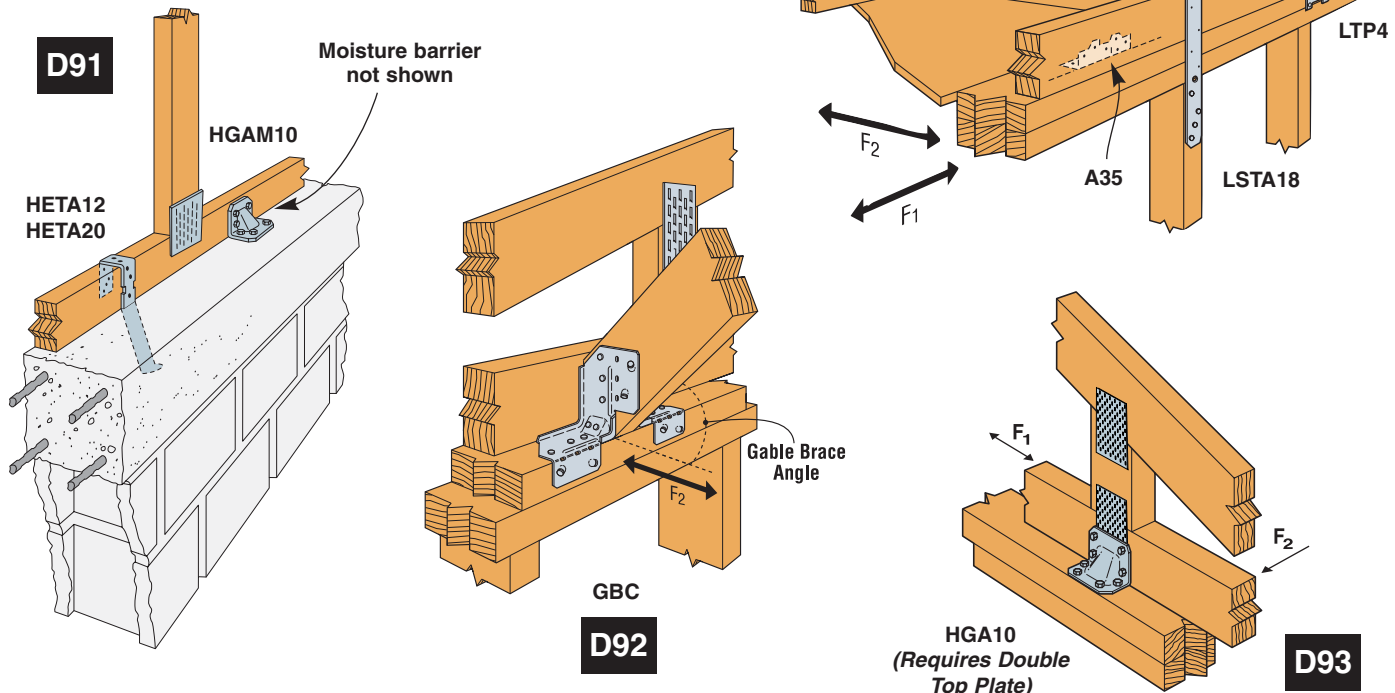
Available with additional corrosion protection. Check with factory.

Model No.	Qty Req'd	DF/SP Allowable Loads						SPF Allowable Loads							
		Fasteners (Total)		Uplift		Parallel To Endwall (F ₁)	Perp To Endwall Toward Anchor (F ₂)	Perp To Endwall Away From Anchor (F ₂)	Fasteners (Total)		Uplift		Parallel To Endwall (F ₁)	Perp To Endwall Toward Anchor (F ₂)	Perp To Endwall Away From Anchor (F ₂)
		(133)	(160)	(133/160)	(133/160)	(133/160)	(133/160)	(133)	(160)	(133/160)	(133/160)	(133/160)	(133/160)	(133/160)	
 SHEAR CONNECTIONS 															
LTP4	1	12-8dx1½	670	670	670	—	—	—	12-8dx1½	595	595	595	—	—	
A34	1	8-8dx1½	—	—	365	280	—	—	8-8dx1½	—	—	315	240	—	
A35	1	12-8dx1½	—	—	450	685	—	—	12-8dx1½	—	—	450	590	—	
 ENDWALL CONNECTIONS (CONCRETE/MASONRY) 															
HGAM10	1	4-SDS¼x1½ 4-¼x2¾Titens	850	850	1005	1105	350	—	4-SDS¼x1½ 4-¼x2¾Titens	850	850	870	815	300	
HETA12	1	7-10dx1½	1265	1515	65	85	85	—	7-10dx1½	1005	1210	55	75	75	
HETA20	1	12-10dx1½	1810	1810	730	335	335	—	12-10dx1½	1725	1810	625	215	215	
 ENDWALL CONNECTIONS (WOOD) 															
HGA10	1	4-SDS¼x1½ 4-SDS¼x3	435	435	1165	940	780	—	4-SDS¼x1½ 4-SDS¼x3	375	375	870	815	670	
LSTA15	1	6-10d	—	—	—	—	485	—	6-10d	—	—	—	—	415	
LSTA18	1	8-10d	—	—	—	—	645	—	8-10d	—	—	—	—	555	
LSTA21	1	12-10d	—	—	—	—	965	—	12-10d	—	—	—	—	830	
LSTA30	1	16-10d	—	—	—	—	1305	—	16-10d	—	—	—	—	1125	

1. "—" in the tables indicates that the product has not been tested in the particular load direction listed.
2. HETA will require a 30° bend and a 4" minimum embedment depth and loads are based on attachment to SP lumber.
3. Refer to Prescriptive Standards for spacing and construction information of D69.
4. For straps use half of the total fasteners on each member in the connection.

Model No.	Qty Req'd	Fasteners per Connector		DF/SP Allowable Loads (133/160) Perp to Endwall (F ₂)				SPF Allowable Loads (133/160) Perp to Endwall (F ₂)			
				Away from Anchors		Toward Anchors		Away from Anchors		Toward Anchors	
		Gable Brace	Top Plates	Gable Brace Angle		Gable Brace Angle		Gable Brace Angle		Gable Brace Angle	
				40-45°	46-60°	40-45°	46-60°	40-45°	46-60°	40-45°	46-60°
GBC	2	5-8dx1½	7-8d	635	570	425	325	535	480	355	275

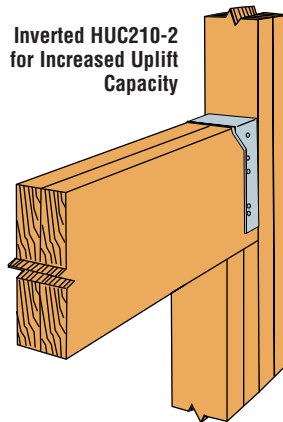
1. For 1¾ x 3½ LVL gable brace, allowable load at 40-45° = 515 lbs. towards anchors, 635 lbs. away from anchors.
2. Use minimum 2x4 gable brace. Larger members may be used.
3. Connection of gable brace to roof diaphragm is by engineer of record.
4. Gable brace should be flush with inside edge of top plates as shown.



- By inverting the proper size and type of Simpson Strong-Tie connectors in a girder, truss or beam connection, additional uplift loads can be obtained by combining the loads as shown below.
- In a combined installation of an inverted connector with a standard connector, all the component uplift and downloads can be added together (as shown in the example below) to obtain higher load values.
- Allowable loads shown are based on the lesser of either National Design Specification (NDS) calculations or the results of static load tests.
- Other hanger and connector options than those shown can be used as specified by the Designer.

Model No.	Fasteners		DF/SYP Allowable Uplift	
	Header	Joist	133	160
HUC26-2 ¹	12-16d	6-10d	2135	2570
HUC28-2 ¹	14-16d	6-10d	2490	2995
HUC210-2 ¹	18-16d	10-10d	3200	3850

1. Values based on an inverted hanger installation.
2. Loads include a 33% and 60% increase for wind loading with no further increases allowed.
3. Table values are applicable for HUC2X-3 or HUC4X models.
4. Download assumed to be carried by jack studs.



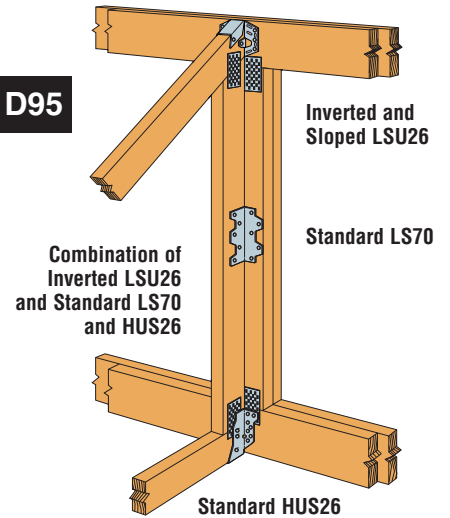
D94

Available with additional corrosion protection. Check with factory.

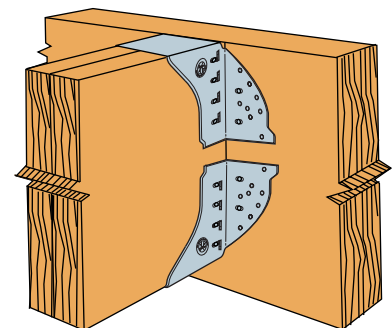
Model No.	Fasteners		DF/SYP Allowable Loads				
	Header	Joist	Uplift Loads (133 & 160)	Downloads			
				Snow (115)	Roof (125)	Roof (133)	Roof (160)
LSU26 ¹	6-16d	5-10dx1½	800	525	535	535	535
LS70	5-16d	5-10dx1½	675	645	675	675	675
HUS26	14-16d	6-16d	1550	2950	3205	3335	3335
Combined Total ³			3025	4120	4415	4545	4545

1. Values based on an inverted hanger installation.
2. Loads include a 33% and 60% increase for wind loading with no further increases allowed.
3. Combined Total Load is based on the combined results of individual connector allowable loads.
4. Other hangers can be used for this application. Contact Simpson for load information.

D95



D96

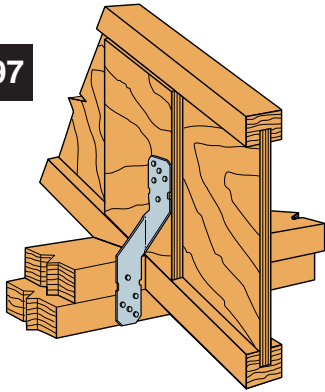


Model No.	Fasteners		DF/SYP Allowable Loads					
	Header	Joist	Uplift Loads		Downloads			
			(133)	(160)	Snow (115)	Roof (125)	Roof (133)	Roof (160)
HGUS26-2	20-16d	8-16d	2325	2325	4535	4930	5240	5460
HGUS26-2 ¹	20-16d	8-16d	5230	5460	2035	2325	2325	2355
Combined Total			7555	7785	6570	7255	7565	7785

1. Values based on an inverted hanger installation.
2. Loads include a 33% and 60% increase for wind loading with no further increases allowed.
3. Other hangers can be used for this application. Contact Simpson for load information.

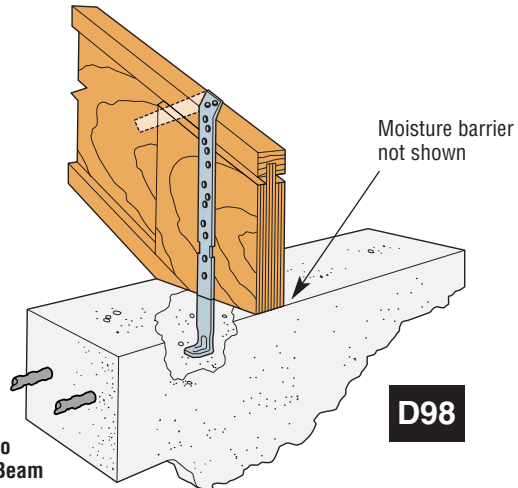
UPLIFT ON I-JOISTS

D97



Typical H8 Installation
(I-Joist to Top Plate)

NOTE: Web stiffeners
required on both sides
of the I-Joist.



META/HETA
Installation into
CMU or Bond Beam

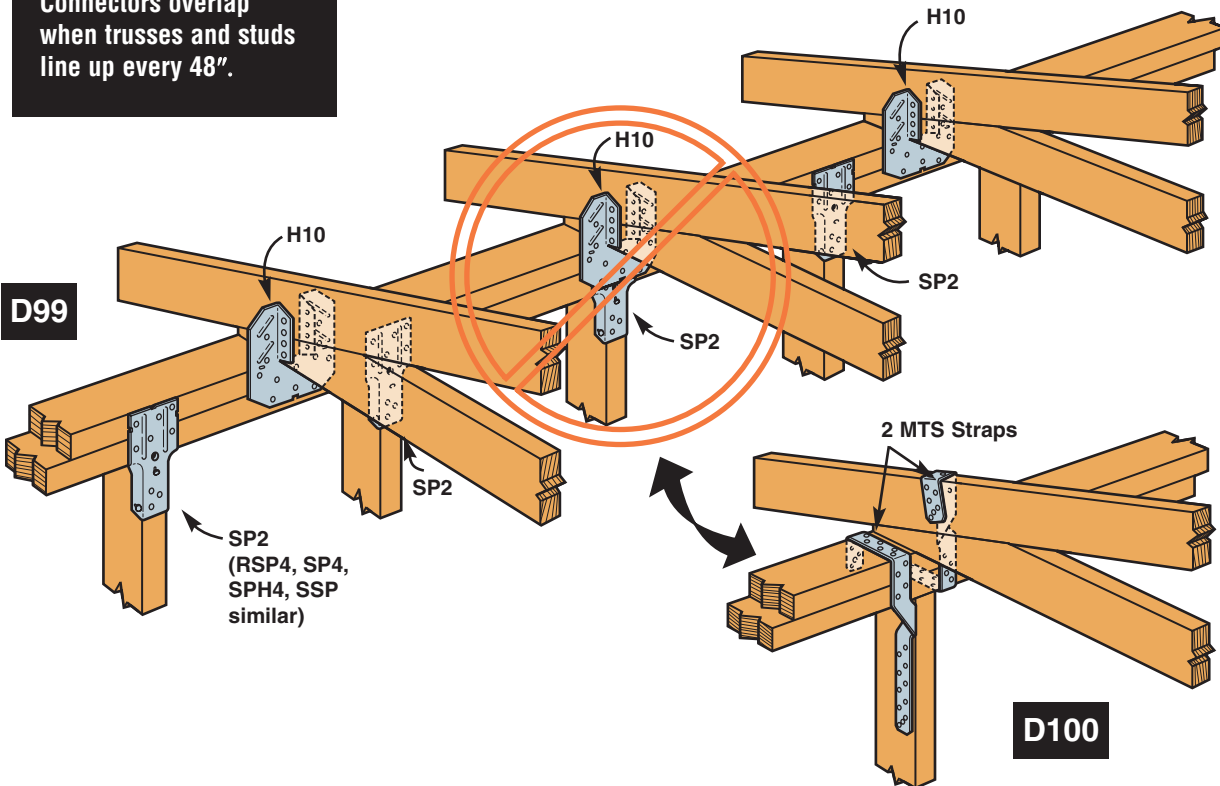
D98

Refer to Technical
Bulletin T-HWIJOIST04.

OVERLAPPING CONNECTORS

Problem:
Connectors overlap
when trusses and studs
line up every 48".

D99



SP2
(RSP4, SP4,
SPH4, SSP
similar)

D100

Solution: Specify an MTS
from stud to plate and one
from plate to truss.

BULGING FLOOR-TO-FLOOR STRAPS

Problem:

All stud nails are filled before the roof is installed and the straps bow out when compression occurs.

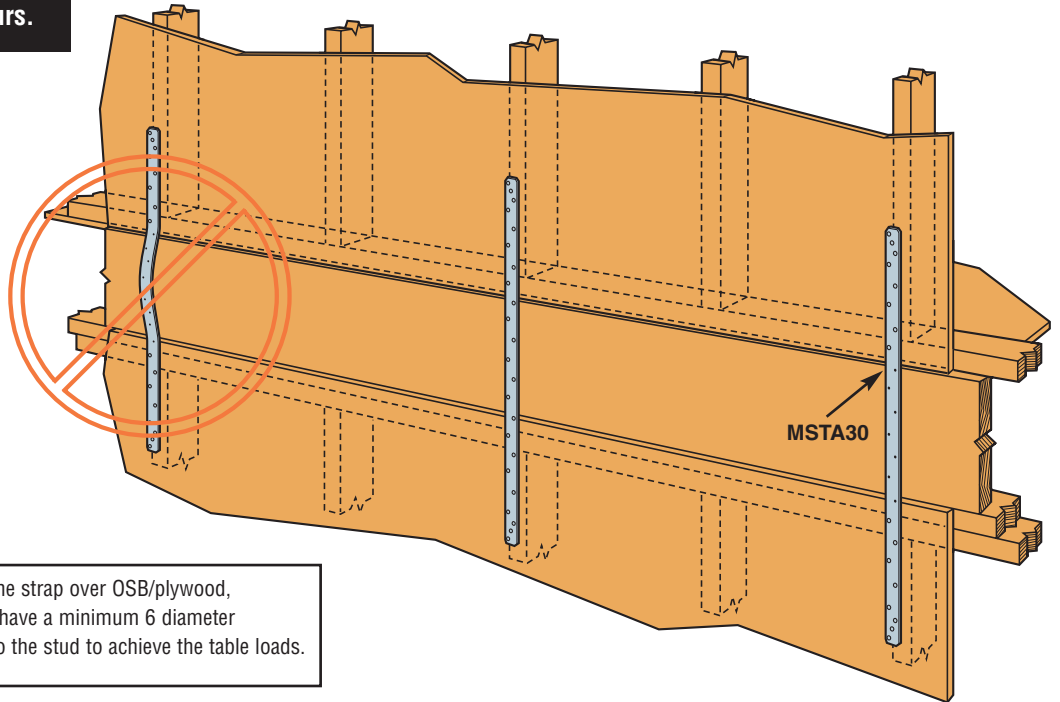
Solution 1:

Fill all nail holes in the rim joist area to limit the bowing.

Solution 2:

Fill the nail holes to the top stud before the roof is installed and then fill bottom stud nails after. Note: Rim joist nails are not required.

D101

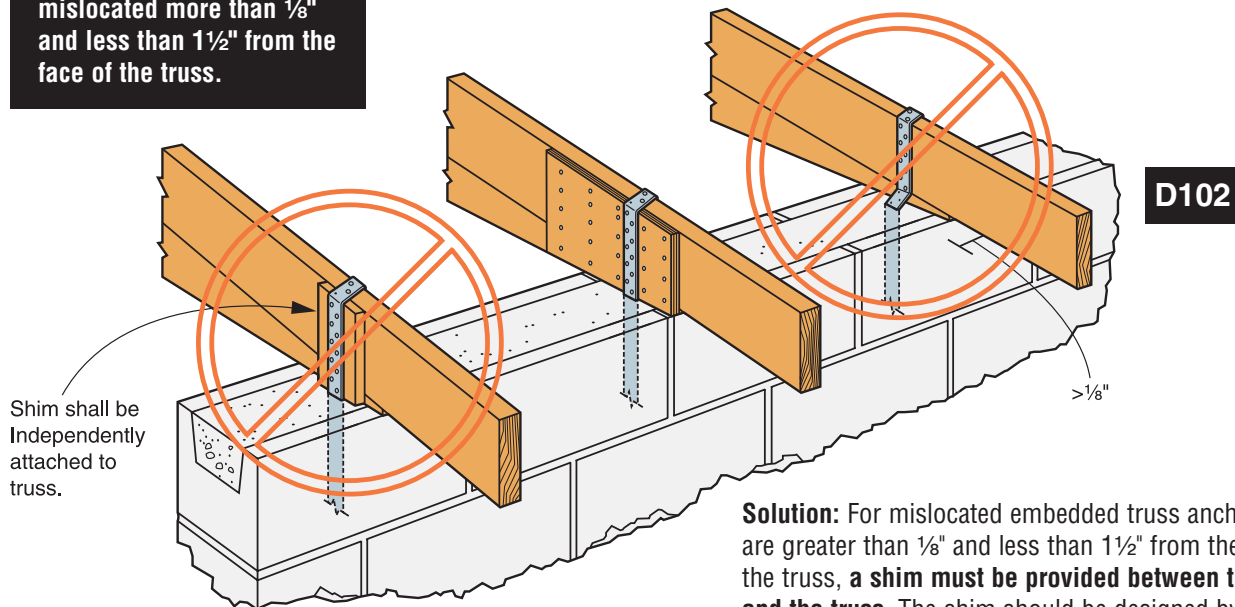


When nailing the strap over OSB/plywood, the nails must have a minimum 6 diameter penetration into the stud to achieve the table loads.

MISLOCATED TRUSS ANCHORS

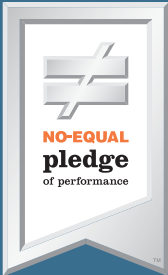
Problem:

Embedded truss anchor are mislocated more than $\frac{1}{8}$ " and less than $1\frac{1}{2}$ " from the face of the truss.



Shim shall be independently attached to truss.

Solution: For mislocated embedded truss anchors which are greater than $\frac{1}{8}$ " and less than $1\frac{1}{2}$ " from the face of the truss, a **shim must be provided between the strap and the truss**. The shim should be designed by the truss engineer to properly transfer the loads to the connector.



Every day we work hard to earn your business, blending the talents of our people with the quality of our products and services to exceed your expectations. This is our pledge to you.

G90

Standard galvanized coating, 0.90 oz. of zinc per square foot of surface area (per ASTM A653). Historically Simpson used a G60 coating (0.60 oz. of zinc) but in the late 90's decided to produce all structural products with the higher level of zinc coating.



Galvanized (G185) 1.85 oz. of zinc per square foot of surface area (per ASTM A653). ZMAX™ meets all catalog load specifications listed for the regular products and all published building code reports. These products require hot-dip galvanized fasteners (per ASTM A153).



Products are hot-dip galvanized after fabrication. The coating weight increases with material thickness. Hot-dip galvanizing is available for many products. The minimum specified coating weight is 2.0 oz./ft² (per ASTM A123). These products require hot-dip galvanized fasteners (per ASTM A153).



Products are manufactured from Type 316L Stainless Steel, and provide greater durability against corrosion. Stainless Steel nails are required with Stainless Steel products. Nails are available from Simpson.

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