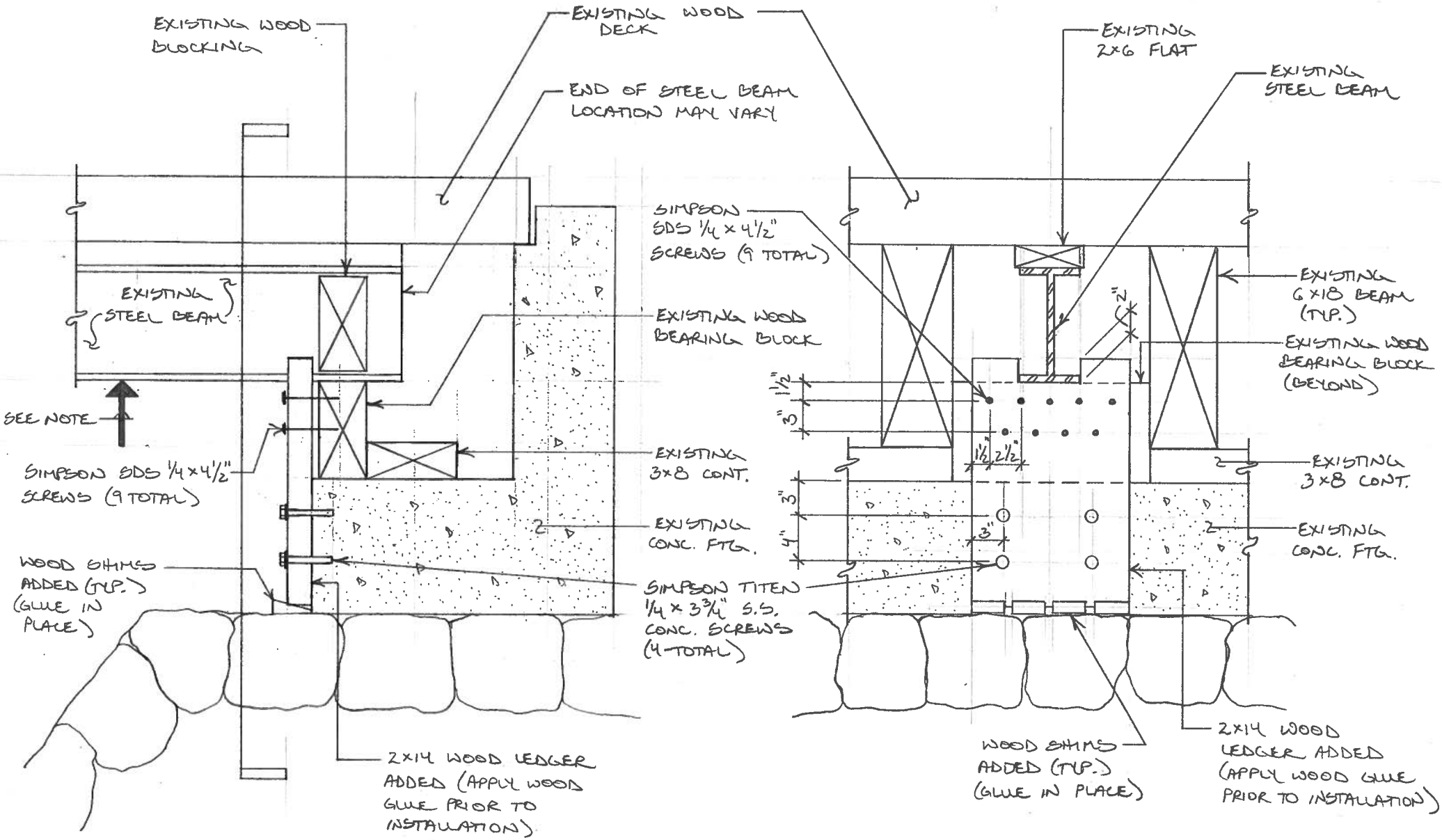
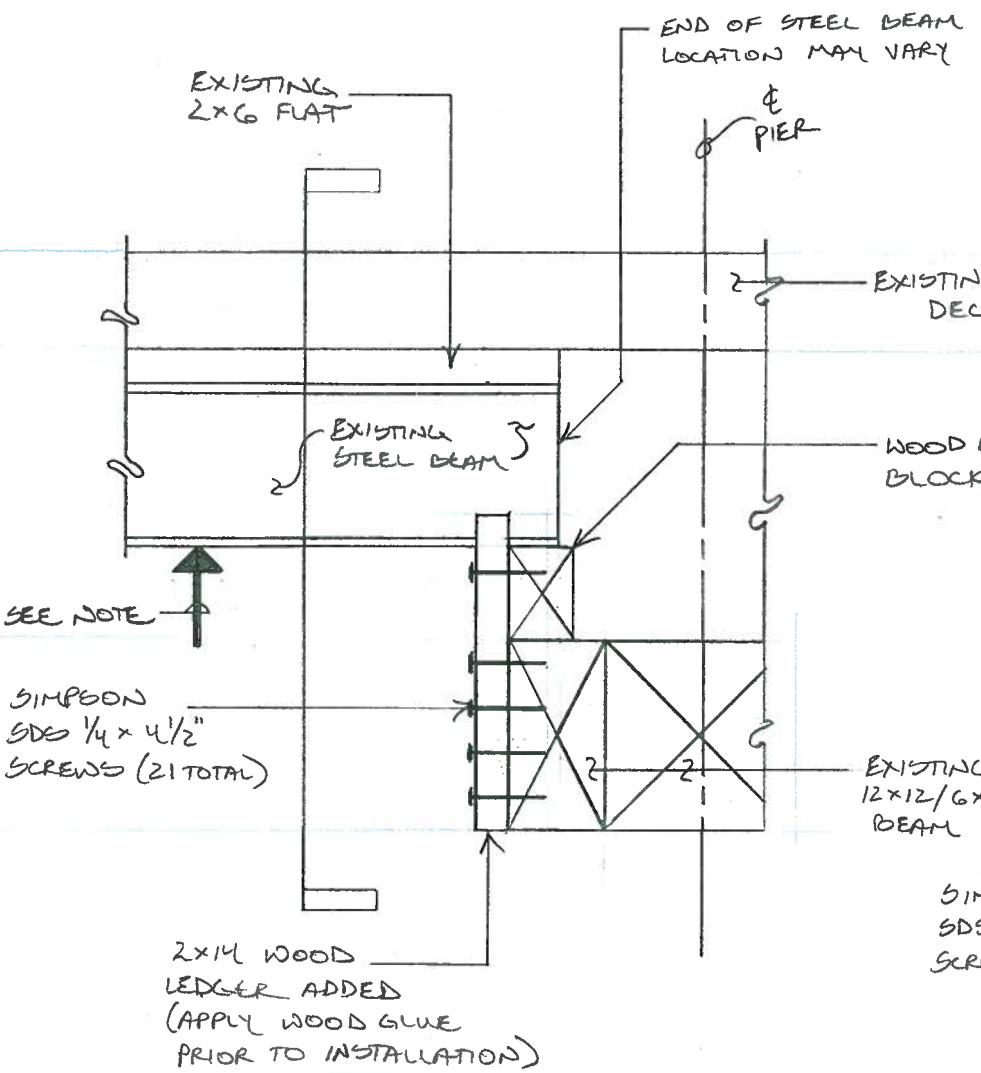


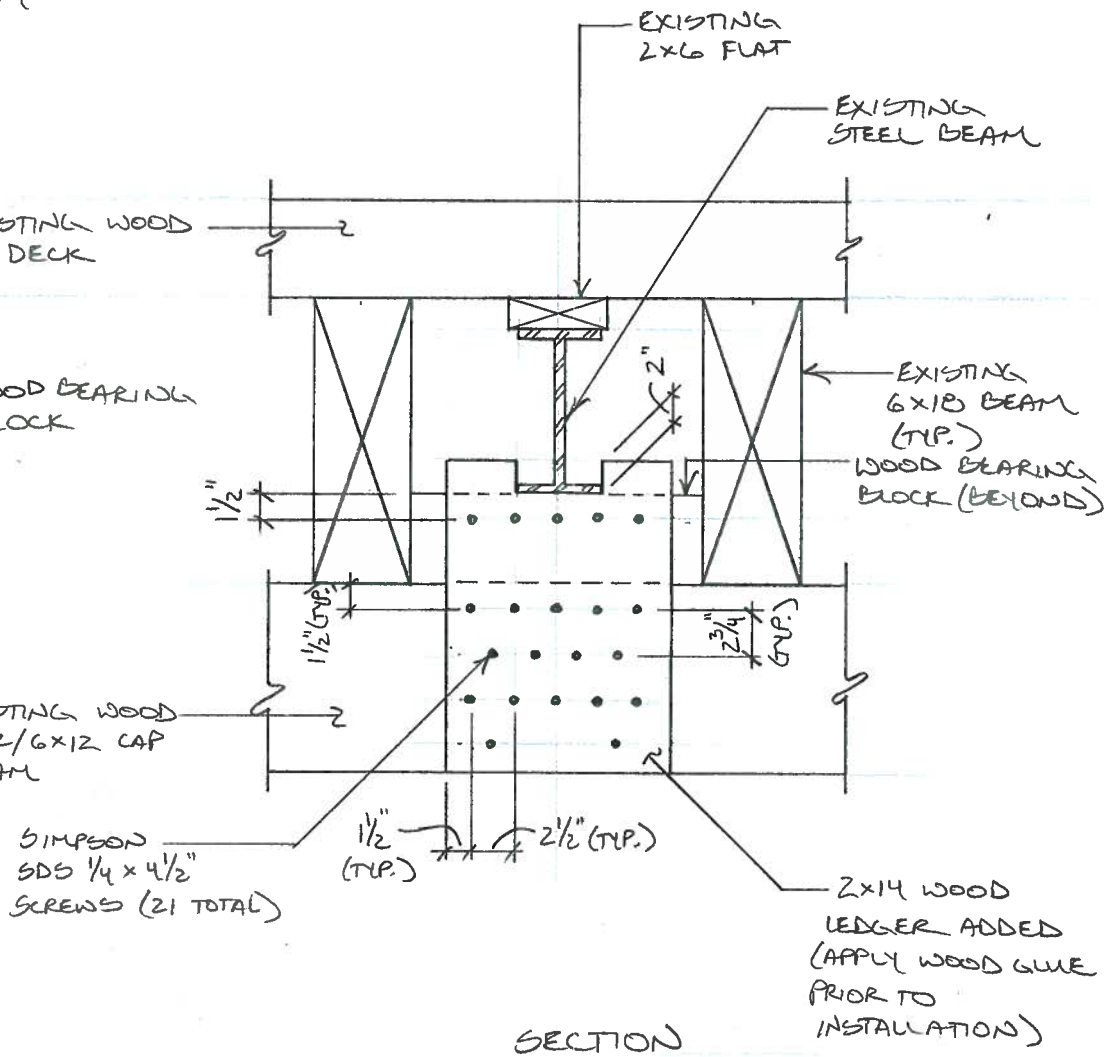
TYP. ADDED LEDGER FOR STEEL BEAM (@ ABUTMENT)

NOTE:
USE SCREW JACKS OR ADJUSTABLE SHORING POSTS TO SET STEEL BEAM FLUSH TO UNDERSIDE OF WOOD DECKING PRIOR TO MOUNTING 2x14 WOOD LEDGER.

MAKAHA #3 AND #3A



BEAM ELEVATION



SECTION

TYP. ADDED LEDGER FOR STEEL BEAM (@ PIER)

NOTE:
USE SCREW JACKS OR ADJUSTABLE SHORING POSTS TO SET STEEL BEAM FLUSH TO UNDERSIDE OF WOOD DECKING PRIOR TO MOUNTING 2x14 WOOD LEDGER.

MAKAHA #3 AND #3A

Titen® *Stainless-Steel Concrete and Masonry Screws*

The stainless-steel Titen® screws attach various types of components to concrete and masonry in environments where a medium level of corrosion resistance is required (reference table on page 12). Available in hex and phillips head, the Titen screws are designed for use with appropriately-sized drill bits that are included with each box.

FEATURES:

- Type 410 grade stainless steel zinc plated with a protective top coat for added corrosion protection
- Suitable for concrete, brick, grout-filled CMU and hollow-block applications
- Suitable for some preservative-treated wood applications
- Available in lengths from 1¼" to 4"
- 5% observed red rust after 1500 hours of ASTM B117 salt spray test*.

* Salt-spray test performance is based on tests on uninstalled fasteners, and may not reflect actual performance when installed. This information is provided for comparative purposes only.

MATERIAL: Heat-treated type 410 stainless steel

FINISH: Zinc plated with a protective top coat

INSTALLATION:

Caution: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Steps must be taken to prevent inadvertent sustained loads above the listed allowable loads. Overtightening and bending moments can initiate cracks detrimental to the hardened screw's performance. Use the Simpson Strong-Tie Titen installation tool kit as it has a bit that is designed to reduce the potential for overtightening the screw.

Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity.

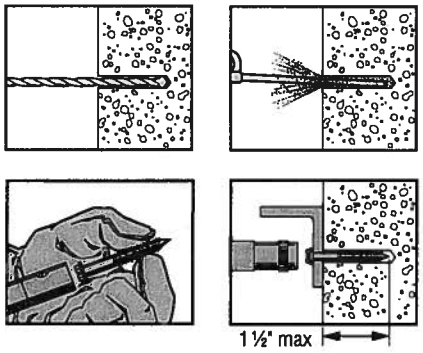
- Drill a hole in the base material using the appropriate diameter carbide drill bit as specified in the table. Drill the hole to the specified embedment depth plus ½" to allow the thread tapping dust to settle and blow it clean using compressed air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.
- Position fixture, insert screw and tighten using drill and Titen screw installation tool fitted with a hex socket or phillips bit.

For contact with preservative-treated wood and untreated wood, reference the table on page 12. Use caution not to damage coating during installation. The type 410 stainless-steel Titen with a protective top coat provides "medium" corrosion protection. Recommendations are based on testing and experience at time of publication and may change. Simpson Strong-Tie cannot provide estimates on service life of screws. Contact Simpson Strong-Tie for additional information.

Titen® Stainless-Steel Hex-Head Screw (HSS)

Titen® Stainless-Steel Phillips-Head Screw (PFSS)

Installation Sequence



Type 410 Stainless-Steel Titen® Tension and Shear Load Values in Normal-Weight Concrete

Titen Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Spacing in. (mm)	Critical Edge Dist. in. (mm)	Tension Load $f'_c \geq 2000$ psi (13.8 MPa) Concrete		Tension Load $f'_c \geq 4000$ psi (27.6 MPa) Concrete		Shear Load $f'_c \geq 2000$ psi (13.8 MPa) Concrete	
					Ultimate lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Allow. lbs. (kN)
¼ (6.4)	5/16	1 (25.4)	3 (76.2)	1½ (38.1)	600 (2.7)	150 (0.7)	935 (4.2)	235 (1.0)	760 (3.4)	190 (0.8)
¼ (6.4)	5/16	1½ (38.1)	3 (76.2)	1½ (38.1)	1,040 (4.6)	260 (1.2)	1,760 (7.8)	440 (2.0)	810 (3.6)	200 (0.9)

1. Maximum anchor embedment is 1½" (38.1 mm).
2. Concrete must be minimum 1.5 x embedment.

Type 410 Stainless-Steel Titen® Tension and Shear Load Values in Face Shell of Hollow and Grout-Filled CMU

Titen Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Spacing in. (mm)	Critical Edge Dist. in. (mm)	Values for 6" or 8" Lightweight, Medium-Weight or Normal-Weight CMU			
					Tension Load		Shear Load	
					Ultimate lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Allow. lbs. (kN)
¼ (6.4)	5/16	1 (25.4)	4 (101.6)	1½ (38.1)	550 (2.4)	110 (0.5)	495 (2.2)	100 (0.4)

1. The tabulated allowable loads are based on a safety factor of 5.0 for installations under the IBC and IRC.
2. Maximum anchor embedment is 1½" (38.1 mm).

*See page 13 for an explanation of the load table icons

410 Stainless-Steel Titen® Product Data

Size (in)	Head Style	Model No.	Bit Dia. (in)	Quantity	
				Box	Carton
¼ x 1¼	Hex Head	TTN25114HSS	5/16	100	1600
¼ x 1¾		TTN25134HSS		100	500
¼ x 2¼		TTN25214HSS		100	500
¼ x 2¾		TTN25234HSS		100	500
¼ x 3¼		TTN25314HSS		100	400
¼ x 3¾		TTN25334HSS		100	400
¼ x 4		TTN25400HSS		100	400
¼ x 1¼	Phillips Flat Head	TTN25114PFSS		100	1600
¼ x 1¾		TTN25134PFSS		100	500
¼ x 2¼		TTN25214PFSS		100	500
¼ x 2¾		TTN25234PFSS		100	500
¼ x 3¼		TTN25314PFSS		100	400
¼ x 3¾		TTN25334PFSS		100	400
¼ x 4		TTN25400PFSS		100	400

One drill bit is included in each box

STRONG-DRIVE® SDS HEAVY-DUTY CONNECTOR *Screw*

SIMPSON Strong-Tie

The Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screw is a ¼" diameter structural wood screw ideal for various connector installations as well as wood-to-wood applications. It installs with no predrilling and has been extensively tested in various applications. The SDS Heavy-Duty Connector screw is improved with a patented easy driving 4CUT™ point and a corrosion resistant double-barrier coating.

The #8x1¼" SD Wafer-Head screw is ideal for miscellaneous fastening applications. The needle point ensures fast starts and deep #2 Phillips drive reduces cam-out and stripping.

SDS FEATURES:

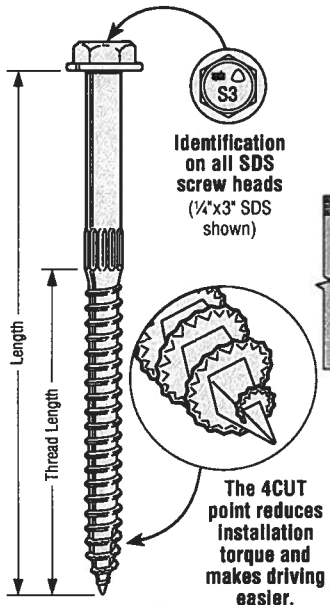
- The patented 4CUT point has a square core and serrated threads to reduce installation torque and make driving easier with no predrilling and minimal wood splitting.
- Available with a double-barrier coating or in Type 316 stainless steel. Carbon steel loads apply to corresponding stainless steel models.
- ⅜" hex washer head is stamped with the No-Equal sign and fastener length for easy identification after installation.

MATERIAL: Heat-treated carbon steel, Type 316 stainless steel

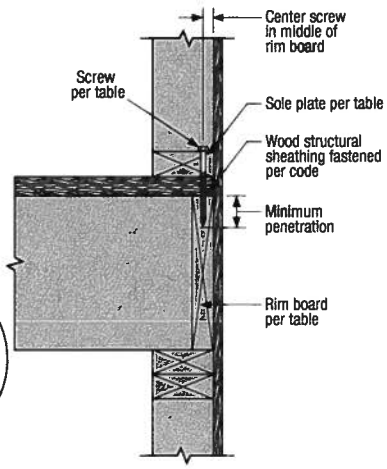
FINISH: SD8x1.25—Electro Galvanized:
SDS—Double Barrier (all lengths):
SDS—Type 316 Stainless Steel (1½" thru 3½" lengths)

CODES: See page 12 for Code Reference Key Chart.

WARNING: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, the SD8x1.25 should be used in dry, interior, and noncorrosive environments only.



Strong-Drive® ¼"x3" SDS HEAVY-DUTY CONNECTOR Screw
U.S. Patent 6,109,850; 5,897,280; 7,101,133



Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw Sole-to-Rim Connection

Wafer-Head Screw
(Not for structural applications – see note 8)

These products feature additional corrosion protection. Additional products on this page may also be available with this option, check with Simpson Strong-Tie for details.

Simpson Strong-Tie® Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw and Wafer-Head Screw

Size (in.)	Model No.	Thread Length (in.)	Fasteners per Carton[6]	DF/SP Allowable Loads[4]						SPF/HF Allowable Loads[4]						Code Ref.
				Shear (100)[1]					Withdrawal[5] (100)	Shear (100)					Withdrawal[5] (100)	
				Wood Side Plate[3]		Steel Side Plate				Wood Side Plate[3]		Steel Side Plate				
				1½"	1¾" SCL	16 ga	14 ga & 12 ga	10 ga or Greater	Wood or Steel Side Plate	1½"	1¾" SPF LVL	16 ga	14 ga & 12 ga	10 ga or Greater	Wood or Steel Side Plate	
5/32 x 1¼	SD8x1.25[8]	—	—	—	—	50	50	50	—	—	—	45	45	45	—	170
¼ x 1½	SDS25112	1	1500	—	—	250	250	250	170	—	—	180	180	180	120	I5, L1, F20
¼ x 2	SDS25200	1¼	1300	—	—	250	290	290	215	—	—	180	210	210	150	
¼ x 2½	SDS25212	1½	1100	190	—	250	390	420	255	135	—	180	280	300	180	
¼ x 3	SDS25300	2	950	280	—	250	420	420	345	200	—	180	300	300	240	
¼ x 3½	SDS25312	2¼	900	340	340	250	420	420	385	245	245	180	300	300	270	
¼ x 4½	SDS25412	2¾	800	350	340	250	420	420	475	250	245	180	300	300	330	
¼ x 5	SDS25500	2¾	500	350	340	250	420	420	475	250	245	180	300	300	330	
¼ x 6	SDS25600	3¼	600	350	340	250	420	420	560	250	245	180	300	300	395	
¼ x 8	SDS25800	3¼	400	350	340	250	420	420	560	250	245	180	300	300	395	

Simpson Strong-Tie® Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw – Allowable Shear Values for Sole-to-Rim Connections

Size (in.)	Model No.	Sole Plate Nominal Size	Minimum Penetration into Rim Board (in.)	Allowable Loads								Code Ref.
				2x DF/SP Rim Board		2x SPF/HF Rim Board		1¼" Minimum LVL Rim Board		1¼" Minimum LSL Rim Board		
				DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	
¼ x 4½	SDS25412	2x	2	250	190	190	190	190	190	220	190	I5, L1, F20
¼ x 5	SDS25500	2x	2	250	190	190	190	190	190	220	190	
¼ x 6	SDS25600	2x or 3x	2	250	190	190	190	190	190	220	190	

1. Screws may be provided with the 4CUT or Type 17 point.
2. Strong-Drive® SDS Heavy-Duty Connector screws install best with a low speed ½" drill with a ⅜" hex head driver.
3. Values are valid for connections between two members with full thread penetration into the main member. For other wood side plate values, see *Fastening Systems* catalog (C-F-14) pages 317-321.
4. Allowable loads are shown at the wood load duration factor of C_D=1.00. Loads may be increased for load duration per the building code up to a C_D=1.60.
5. Withdrawal loads shown are in pounds (lbs.) and are based on the entire threaded section installed into the main member. If thread penetration into the main member is less than the Thread Length as shown in the table, reduce allowable load by 172 lbs. x inches of thread not in main member. Use 121 lbs./inch for SPF.
6. Fasteners per Carton represent the quantity of screws that are available in bulk packaging. Screws are also available in mini bulk and retail packs. Refer to Simpson Strong-Tie® *Fastening Systems* catalog (C-F-14).
7. LSL wood-to-wood applications that require 4½", 5", 6" or 8" SDS screws are limited to interior-dry use only.
8. SD8x1.25 requires ¾" minimum penetration. DO NOT USE SD8x1.25 wood screws with structural connectors unless specified and stated in this catalog.
9. Where predrilling is required for Strong-Drive® SDS Heavy-Duty Connector screws, predrill diameter is 5/32".
10. Minimum spacing, edge, and end distance requirements are listed in ICC-ES ESR-2236. For smaller requirements, please contact Simpson Strong-Tie engineering.