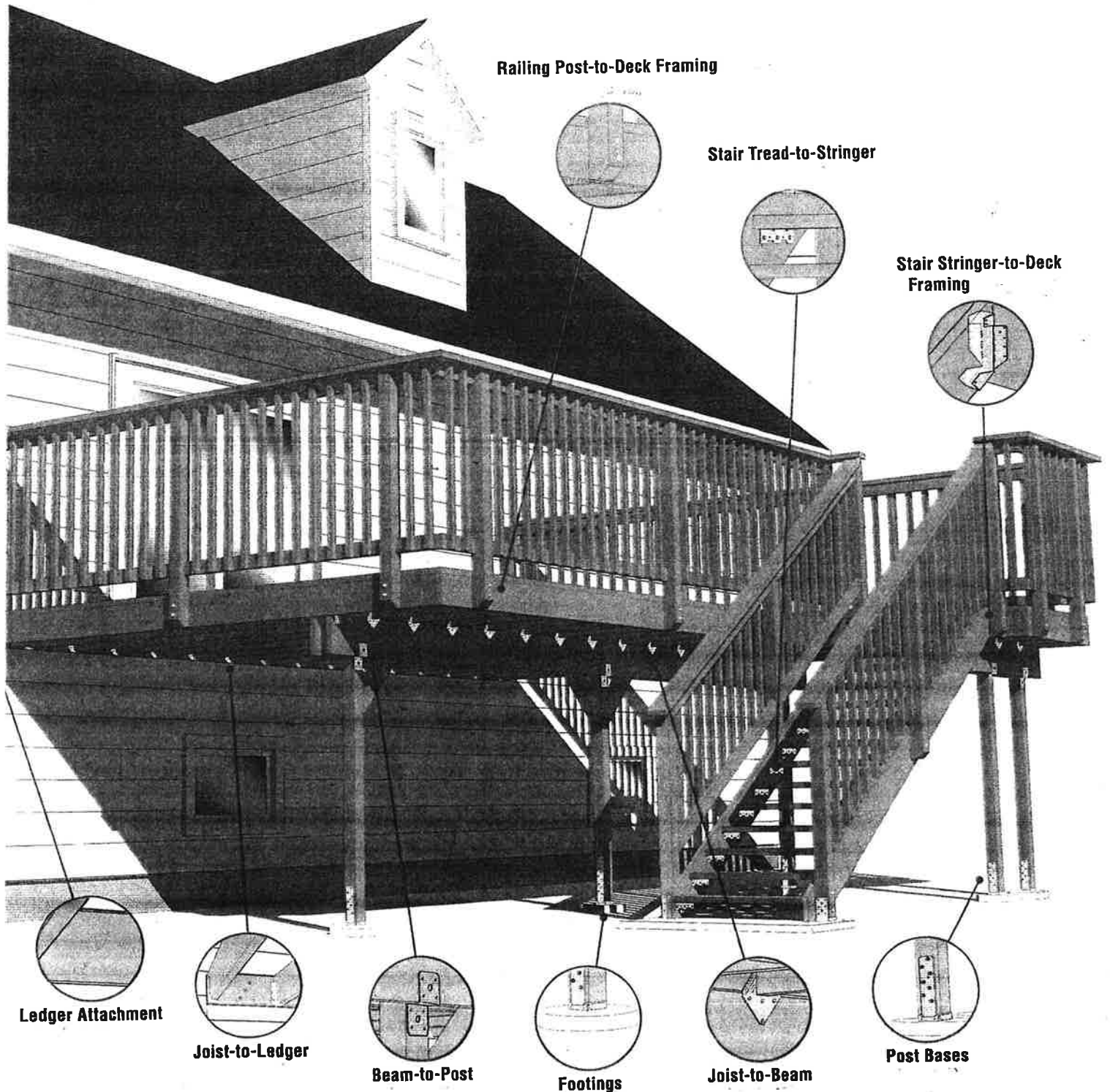


CRITICAL DECK CONNECTIONS

A system of key connections throughout the deck framing, also known as a continuous load path, is essential to building a safe, code-compliant deck. When this system of connections is made properly, loads are transferred throughout the deck's frame and into the ground and /or the adjacent structure to which the deck is connected.

The connections called out below are necessary in order to create an effective continuous load path.

For information on the inspection of existing decks, see page 6.



Railing Post-to-Deck Framing

Stair Tread-to-Stringer

Stair Stringer-to-Deck Framing

Ledger Attachment

Joist-to-Ledger

Beam-to-Post

Footings

Joist-to-Beam

Post Bases

R502.2.2.3 Deck lateral load connection. The lateral load connection required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

Figure 18: No Attachment to House Overhang

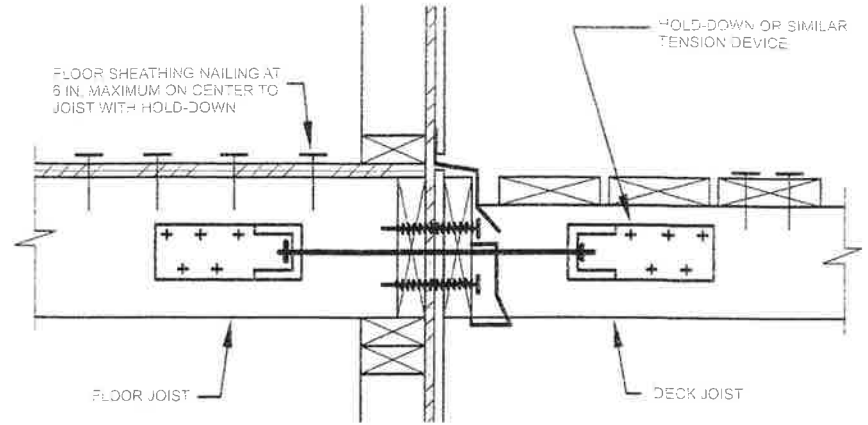


TABLE R502.2.2.1
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER
AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST^{a, f, g}
 (Deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	On-center spacing of fasteners ^{d, e}						
1/2 inch diameter lag screw with 1 5/32 inch maximum sheathing ^d	30	23	18	15	13	11	10
1/2 inch diameter bolt with 1 5/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 1 5/32 inch maximum sheathing and 1/2 inch stacked washers ^h	36	36	29	24	21	18	16

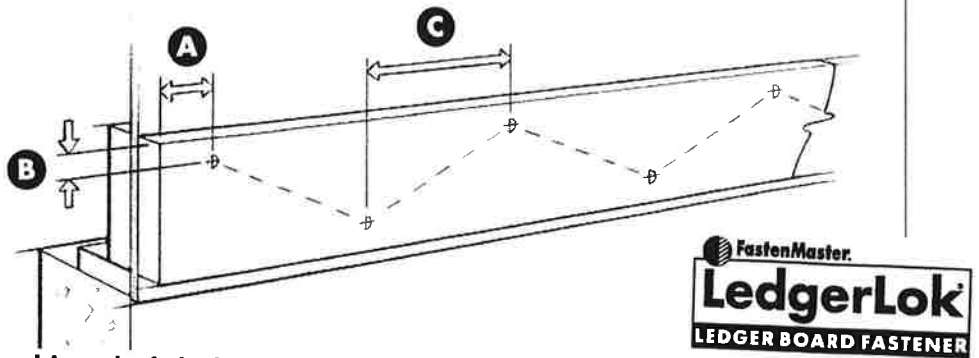
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

- a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2".
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with Section R502.2.2.1.1.
- e. Deck ledger shall be minimum 2 x 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1 inch thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum 1 x 9 1/2 Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.

SPACING REQUIREMENTS

Fasteners should be staggered in a "W" pattern and spaced as follows:

- A. Minimum end distance = 3 3/4"
- B. Minimum edge distance = 1 3/4"
- C. On-center spacing = Per Table 1



Fastening pattern for attaching deck ledger to rim joist using LedgerLok

Joist Span	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'
Live Load	O.C. spacing of fasteners in inches				
40 psf	12	9	7	6	5
60 psf	8	6	5	4	4
100 psf	5	4	3	3	2

Office of Building Department

Town of Southington, Connecticut

John Smigel
Building Official
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196 North Main Street
Southington, CT 06489

Residential Handrails & Guards

Single Family and Duplex

Handrails: Provide a graspable surface along stairs.

Applicable Code: 2012 IRC Section 311.7.8

When Required: Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

Height: 34" – 38"

Continuity: Handrails shall be continuous for the full length of the stairs and handrails ends shall be returned or terminate in newel posts or safety terminals. Handrails shall have a space of not less than 1 1/2" between a wall and the handrail (See Figure 1).

Size:

- Circular handrails shall have a diameter of 1 1/4" – 2" (See Figure 2)
- Noncircular:
 - No noncircular handrail shall have a perimeter less than 4" (See Figure 3)
 - If the perimeter is 4" – 6 1/4" shall have a maximum cross section of 2 1/4" (See Figure 3)
 - If the perimeter is greater than 6 1/4" shall have a graspable finger recess area on both sides as described in IRC Section 311.7.7.3 #2 (see Figure 4)

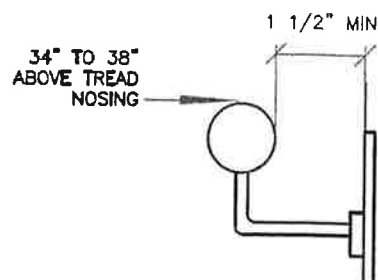


Figure 1. Handrail height

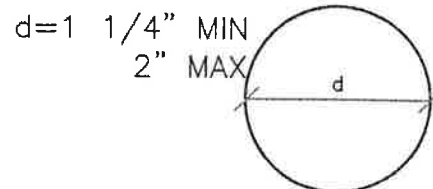
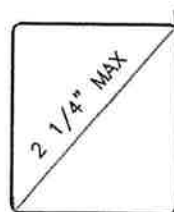


Figure 2. Circular handrail



TOTAL PERIMETER
4" MIN
6 1/4" MAX

Figure 3. Noncircular handrail

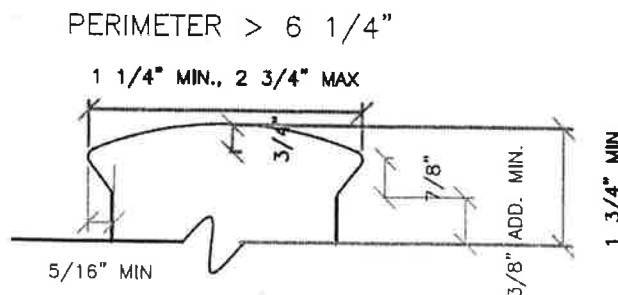


Figure 4. Noncircular handrail, with recess



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Deck Tension Tie

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New DTT1Z Deck Tension Tie Provides Alternate Approach to Attaching Decks to Homes

The new DTT1Z deck tension tie provides a less invasive approach for attaching a new deck to a home or retrofitting an existing deck to current code standards. This tension tie addresses a 2015 International Residential Code provision (section R507.2.4) that now allows four 750 lb. lateral connectors to be fastened to framing in the house with a lag screw. This provision is an alternative to using two 1,500 lb. lateral connections from the deck to the floor joists within the house.

The DTT1Z is specifically designed to comply with this new code detail that permits the lateral connection from the deck joists to be made to top plates, studs, or headers within the supporting structure. This eliminates the need to access the floor joists inside the house.

The DTT1Z fastens to the narrow or wide face of a single 2x with Strong-Drive® SD Connector screws. The new Strong-Drive® SDWH Timber-Hex HDG screw with an integral washer attaches the tension tie to the supporting structure.

Additional Features

- ZMAX® coating offers additional corrosion protection for exterior and preservative-treated wood applications
- DTT1Z offered as an individual part or as part of a retail pack with Strong-Drive® SD Connector Screws and SDWH Timber-Hex HDG Screws

Additional Fastening Options

To Joist:

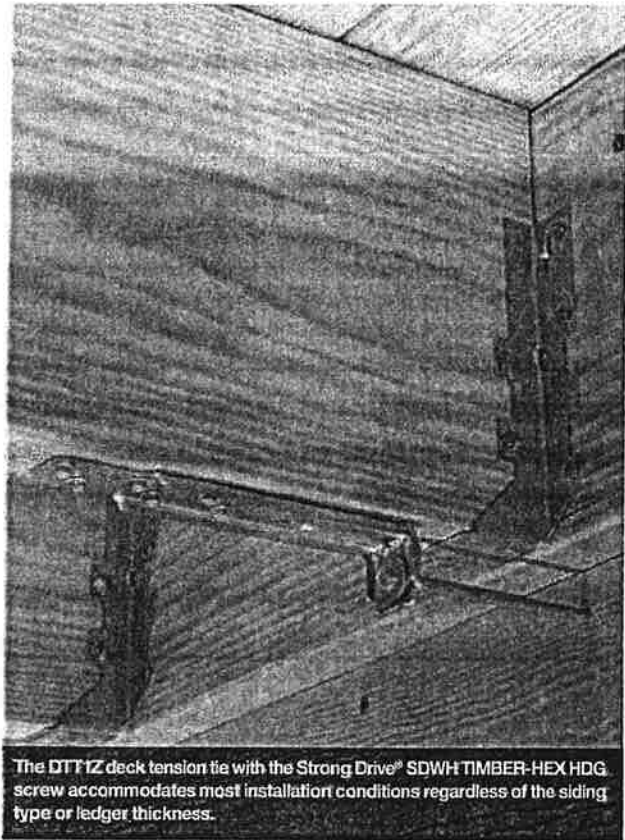
- #9x1½" Strong-Drive® SD Connector Screw
- 10dx1½" HDG nail

To Structure:

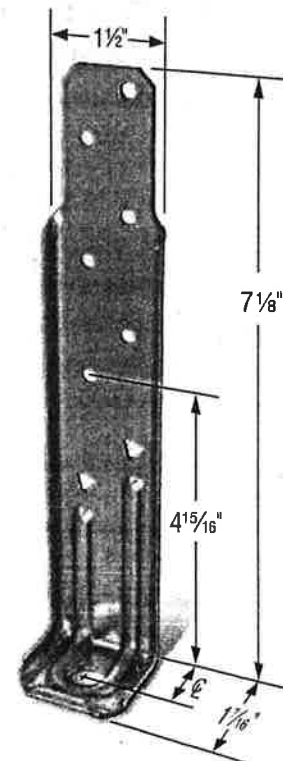
- Strong-Drive® SDWH Timber-Hex HDG Screw (available in 4"-12" lengths)
- ¾" machine bolt, anchor bolt or lag screw (washer required)
- ¾" Titen® HD Heavy Duty screw anchor (interior dry holdown applications only, see page 4)

Model No.	¢	Anchor Dia. or Type	Fasteners	Allowable Tension Loads (lbs.) (160)				Deflection at Allowable Load (in.)
				Dry		Wet		
				DF/SP	SPF/HF	DF/SP	SPF/HF	
DTT1Z	¾"	¾" ⁵ or SDWHG ⁶	6-SD #9x1½"	840	840	840	755	0.170
			6-10dx1½"	910	640 ⁴	795	640 ⁴	0.167
			8-10dx1½"	910	850	910	850	0.167

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed.
2. Dry values are applicable to installations into wood with a moisture content that does not exceed 19%.
3. Wet values are applicable to installations into wood with a moisture content greater than 19% at time of installation or in service. Values include a NDS wet service factor for the fasteners.
4. DTT1Z installations with allowable loads of less than 750 lbs. do not satisfy the 2015 IRC requirements for deck-to-house lateral load connections.
5. A standard ¾" cut washer is required when using a ¾" machine bolt, anchor bolt or lag screw.
6. The Strong-Drive® SDWH Timber-Hex HDG screw with a min. of 3" of thread penetration into dry lumber has an allowable withdrawal load (160) of 1380 lbs. into SP, 1225 lbs. into DF and 1020 lbs. into SPF/HF.
7. Load values are valid if the product is flush with the end of the framing member or installed away from the end.
8. FASTENERS: SD #9x1½" (model SD9112) = 0.131" dia. x 1½" long, 10dx1½" = 0.148" dia. x 1½" long.



The DTT1Z deck tension tie with the Strong Drive® SDWH TIMBER-HEX HDG screw accommodates most installation conditions regardless of the siding type or ledger thickness.



DTT1Z Deck Tension Tie
U.S. Patent Pending