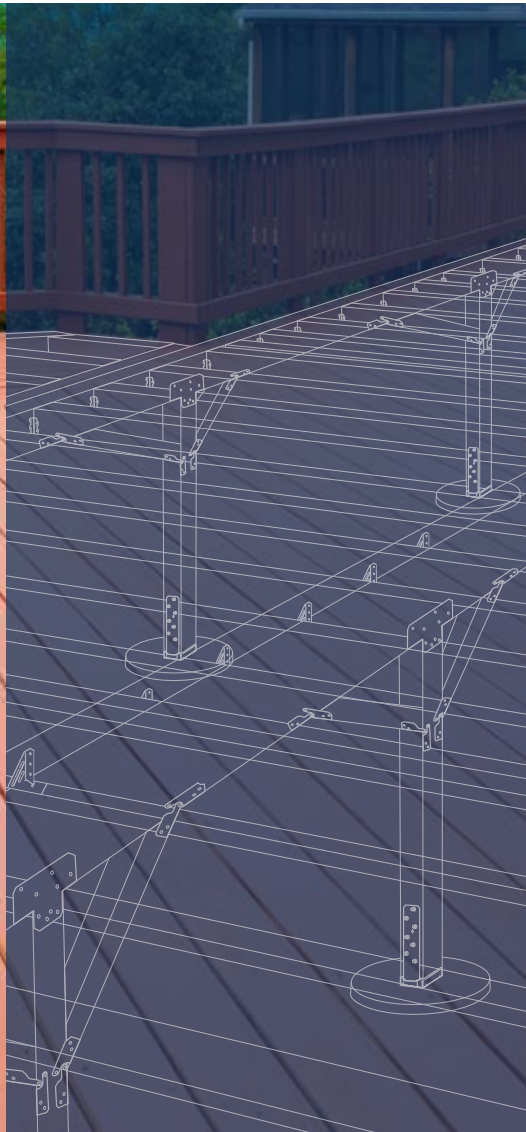




## Deck Connection and Fastening Guide



RECOMMENDATIONS FOR THE CONSTRUCTION OF CODE-COMPLIANT DECKS

# Contents

<b>Build a Safe, Strong Deck</b> . . . . .	<b>3</b>	<b>Mitigating Corrosion Risk</b> . . . . .	<b>24</b>
Introduction . . . . .	4	Selecting Connector and Fastener Coatings . . . . .	25
Code Concerns . . . . .	5	Corrosion Information . . . . .	26–27
Critical Deck Connections Checklist . . . . .	6–7	<b>Structural Deck Connections</b> . . . . .	<b>28</b>
Existing Decks: Retrofit or Replace? . . . . .	8–9	Stainless-Steel Connections . . . . .	29
<b>Deck Solutions That Meet Code</b> . . . . .	<b>10</b>	Correct Fasteners for Use with Simpson Strong-Tie® Connectors . . . . .	30
Footings . . . . .	11	Fastener Information . . . . .	31
Post Bases Installed on Existing Concrete . . . . .	12	<b>Performance Fasteners for Decks</b> . . . . .	<b>32</b>
Post Bases Installed in New Concrete . . . . .	13	Structural Wood Fastening . . . . .	33
Beam-to-Post Connections . . . . .	14	Corrosion-Resistant Fasteners for Decking . . . . .	34–35
Ledger Attachment . . . . .	15	Quik Drive® Auto-Feed Screw Driving Systems for Decks . . . . .	36
Joists Terminating into Beam/Ledger . . . . .	16–17	Color-Match Fasteners for Composite and PVC Decking . . . . .	37
Joists Bearing on a Beam . . . . .	18	EB-TY® and Fastener Finder . . . . .	38
Lateral-Load Connection . . . . .	19		
Guard Post to Deck Framing . . . . .	20–22		
Stair Stringers and Treads . . . . .	23		

## Visit the Deck Center at [strongtie.com/deckcenter](http://strongtie.com/deckcenter)

### Everything You Need in One Place

We have brought all of our information and training on building stronger, safer decks together in one location to make learning easier than ever.

### A Word About Building Codes

This guide recommends connectors and fasteners for deck construction that may meet the requirements of the 2012/2015 International Building Code® and the 2012/2015 International Residential Code®. The information contained here is a summary of the requirements of these codes as they pertain to the connections highlighted in this guide. The building codes contain other requirements regarding aspects of deck construction that are not addressed here; check the codes for details. Check with your local building department to verify what building codes have been adopted in your area.

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.** Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

*International Building Code and International Residential Code are registered trademarks of their respective organizations.*

### Limited Warranty

For information regarding the Simpson Strong-Tie Limited Warranty see [strongtie.com/limited-warranties](http://strongtie.com/limited-warranties) or call (800) 999-5099

# Build a Safe, Strong Deck

# Introduction

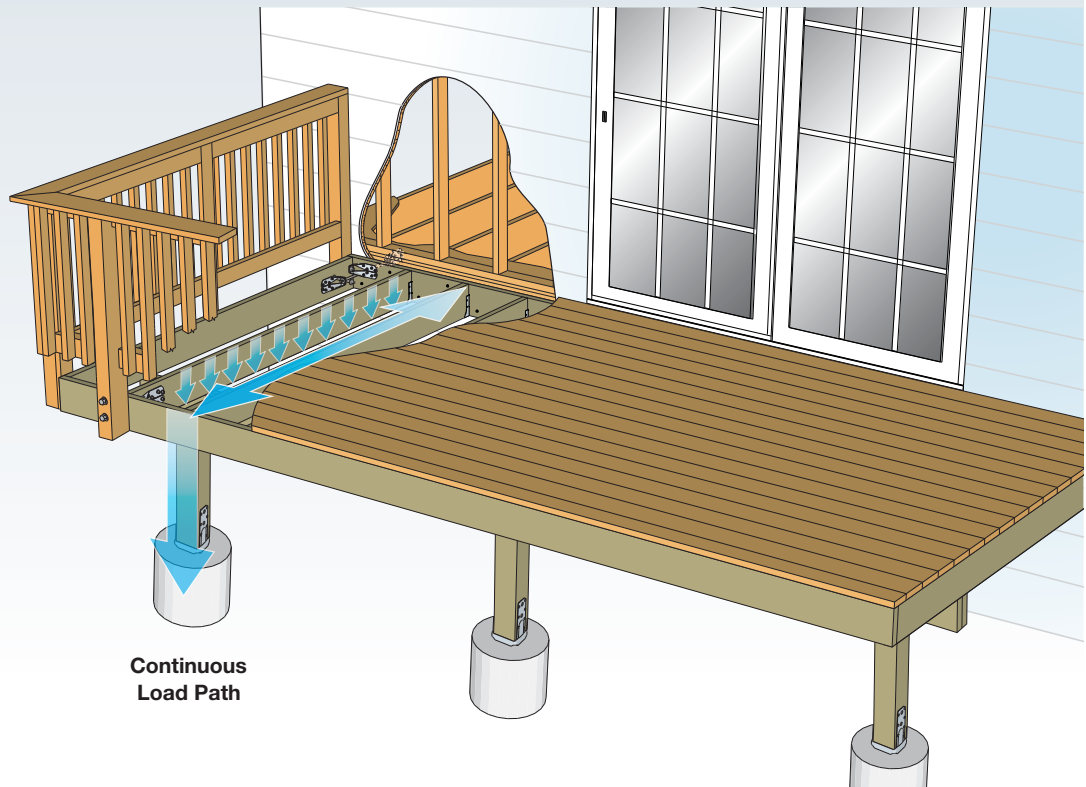
## Build a Safe, Strong Deck

Building a beautiful deck is about more than wood, fasteners and connectors. It's about the experiences and connections that happen between people while they are enjoying their time outside. Outdoor living can enhance our enjoyment of life immeasurably, and a well-built deck can make an important contribution to that aspect of our lifestyle. Simpson Strong-Tie believes that a beautiful deck must also be safe and strong.



### Continuous Load Path

As with your home, your deck should be built using a “continuous load path.” The continuous load path is an engineering concept that, when constructed, assures loads are completely transferred from point of application to the foundation via the structural components and connections. The load path or forces from gravity (vertical), lateral (horizontal) and uplift loads effectively transfer the weight (load) from the deck through its frame and then to the foundation and the adjacent support structure (typically your home). If your deck is built with a continuous load path, it will be better equipped to resist forces, such as occupancy, wind, snow and earthquakes. Visit [safestronghome.com/deck](http://safestronghome.com/deck) to learn more about achieving a continuous load path in the construction of your deck.



## Code Concerns

### Do Decks Really Need to Meet Code Requirements?

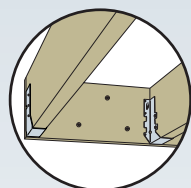
Because decks may look relatively simple to build, many people do not realize that they are structures that need to be designed to meet minimum standards and resist certain stresses. Like a house, or any other building, a deck must be designed to support the weight of people and objects placed on it, as well as lateral and uplift loads that can act on the deck as a result of occupant movement, wind or seismic activity. The 2012/2015 versions of both the IBC and IRC contain language outlining the general design requirements of structures. This excerpt from the 2012/2015 IRC (Section R301.1) represents a summary of the intent of both codes:

“The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets all requirements for the transfer of all loads from their point of origin through the load-resisting elements to the foundation.”

The concept of a complete or continuous load path refers to a series of solid connections and structural members within the deck that transfer load to the ground or adjacent supporting structure (*commonly a building*). This same principle is applied to the design of all types of wood-frame buildings. This continuous load path is created by using a system of structural connectors and fasteners to connect the wood members together.

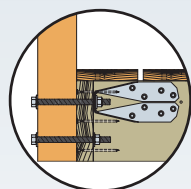
#### Preventing Common Code Violations

The following code requirements can be easily overlooked in deck construction:



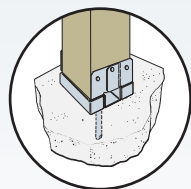
**1. Proper fastening of the ledger connection**

The building code prohibits the “use of toenails or nails subject to withdrawal” when making this connection, yet a number of deck failures result due to using these or other types of improper fasteners.



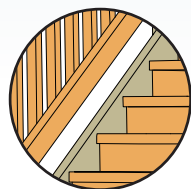
**2. Proper fastening of guard posts to the deck**

The IRC requires the guard post to resist a 200-pound load. This load, applied at the top of the guard post, creates a large leverage force where the guard post attaches to the deck framing.



**3. Post-base connections**

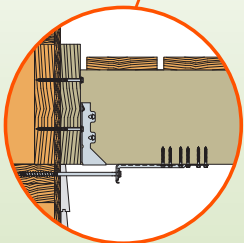
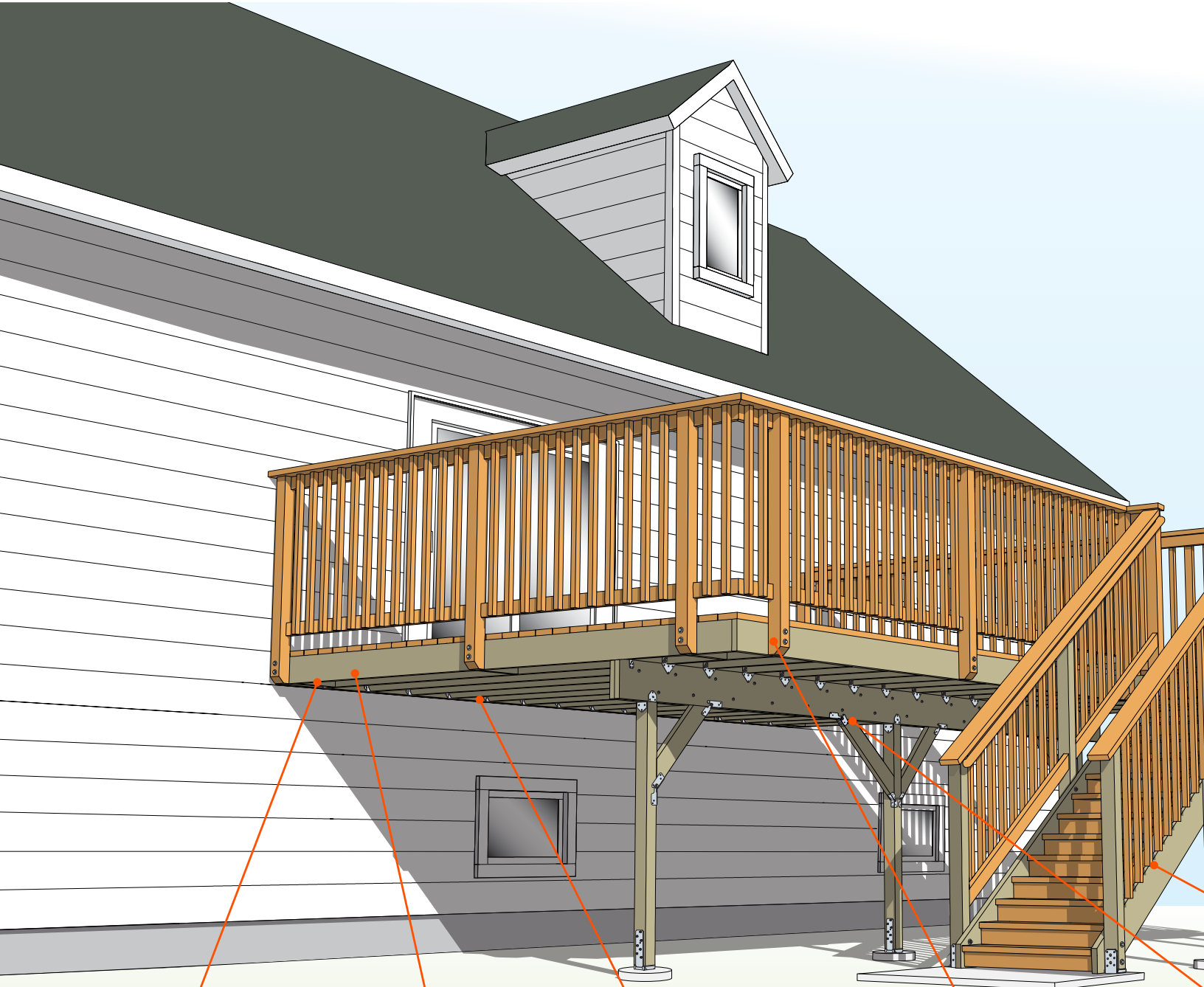
The IRC requires posts “be restrained to prevent lateral displacement at the bottom end.” This requirement is important because most decks cannot safely support part or all of their load if a post base can move.



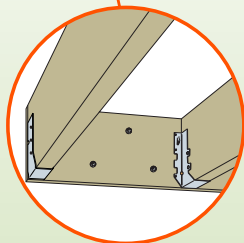
**4. Openings in guards and stair railings**

The building code places a limit on the size of openings, for the occupants’ safety in case of tripping or falling, and for the safety of small children.

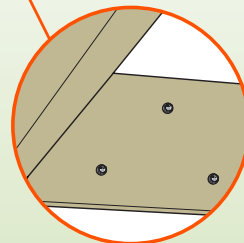
# Critical Deck Connections Checklist



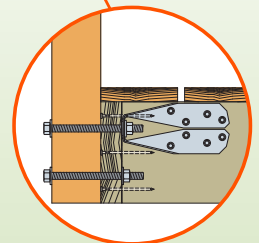
**Lateral-Load Connection**  
(page 19)



**Joist to Ledger**  
(page 16)



**Ledger Attachment**  
(page 15)



**Guard Post to Deck Framing**  
(pages 20–22)

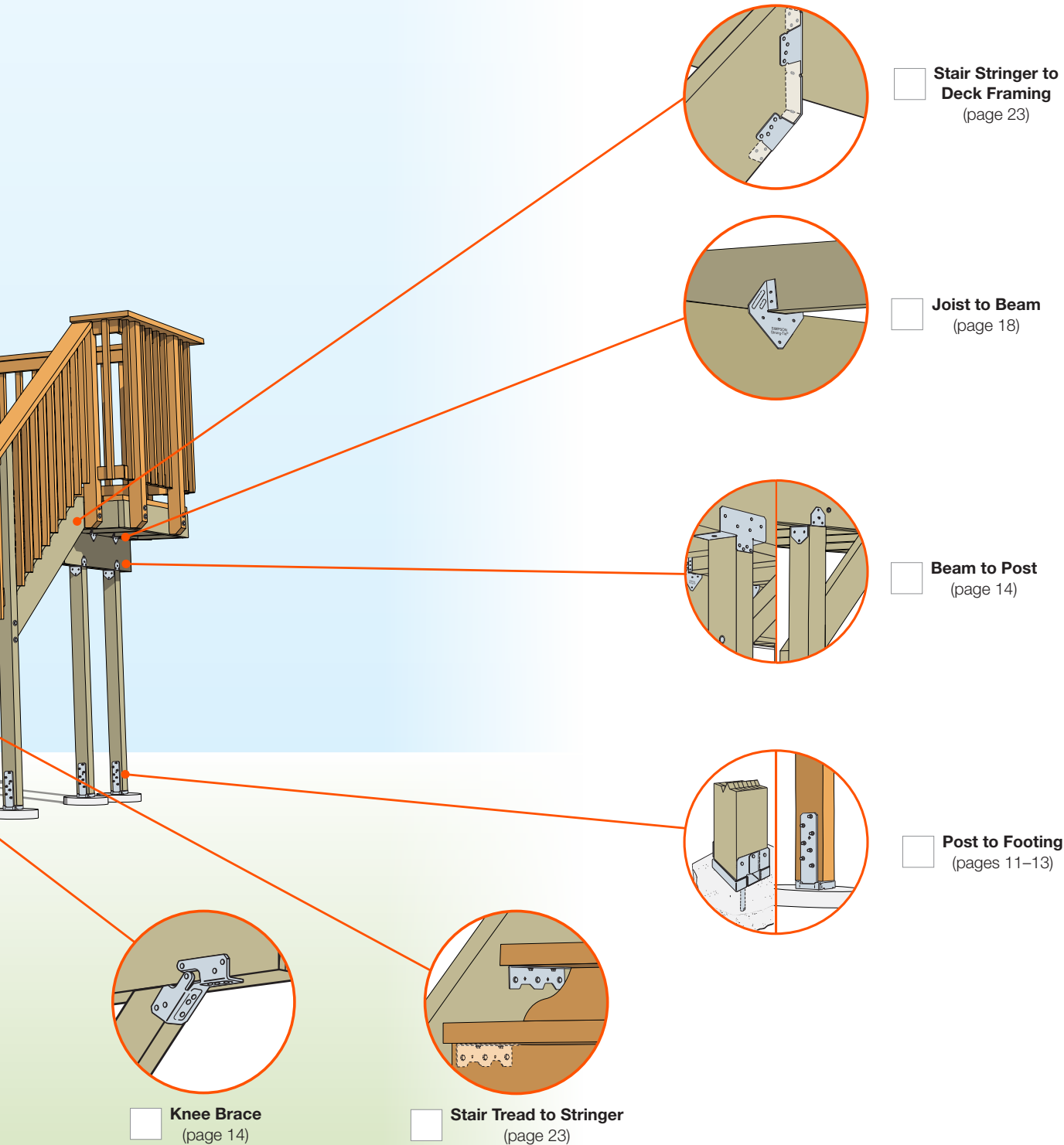
# Critical Deck Connections Checklist

To build a safe, code-compliant deck, it's essential that the deck design establish a continuous load path using a system of key connections throughout the deck framing. When this system of connections is made properly, loads are transferred through the deck frame and into the ground and/or the adjacent structure to which the deck is connected.

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

For information on the inspection of existing decks, see page 8.

Use the diagram below to determine which deck connections may need retrofitting.



# Existing Decks: Retrofit or Replace?

## Do I Need to Retrofit?

### Retrofitting an Existing Deck

It's estimated that of the approximately 40 million existing decks, only half are code compliant. Experts believe that many of these decks are potentially unsafe. In situations where it's not feasible to rebuild an existing deck, it may be preferable to retrofit it by applying hardware to existing framing members. Many of the products shown in this guide may be installed after deck framing is in place and can improve the safety of the structure and help bring it within the requirements of the code.

### The Life Expectancy of Decks

Most experts agree that the average life expectancy of a deck is 10 to 15 years. Decks are exposed to the elements, which can cause deterioration. It's important that decks are properly inspected and maintained on a routine basis. If you are unsure what to inspect for or how often, it's best to consult with a professional, such as a structural engineer, architect, home inspector or contractor, in order to make sure the deck is safe.

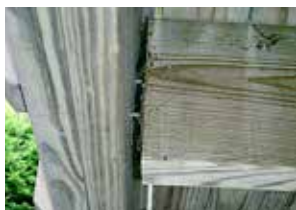
## 5 Things to Look for on an Existing Deck

It is recommended that you annually inspect your deck for issues that need to be addressed. It's best to do this prior to seasons when you use your deck most. When inspecting a deck to determine overall safety and compliance with building codes, look at the five areas below. Use this checklist to help ensure a thorough evaluation.



### 1. Improper Connections

Any connections that do not meet the requirements discussed in this guide can compromise the safety of the deck. In many cases, toenailing (i.e., joining two wood members with angled nailing) does not constitute a proper connection. Connectors must be installed with the correct fastener.



### 2. Loose Connections

Vital connections may have degraded over time. Wobbly railings, loose stairs and ledgers that appear to be pulling away from the adjacent structure are all causes for concern.



### 3. Corrosion

Metal connectors and fasteners can corrode over time, especially if a product with insufficient corrosion resistance was originally installed. See pages 26– 27 for more information on corrosion.



### 4. Decay

Wood can rot and degrade over time with exposure to the elements. Deck framing members that have rotted may no longer be able to perform the function for which they were installed.



### 5. Splitting

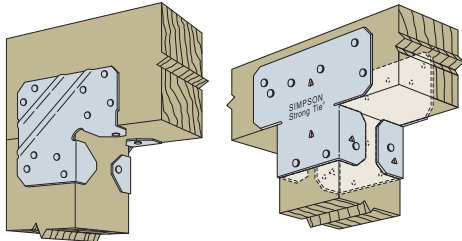
As wood ages, it is common for splitting to develop. Large cracks or excessive splitting can weaken deck framing members.



# Existing Decks: Retrofit or Replace?

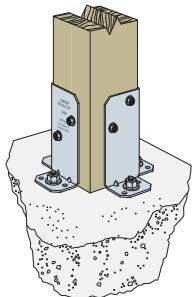
## Connector Solutions for Retrofitting

The following connectors are some of the products that may be suitable for deck retrofit. Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional. Simpson Strong-Tie recommends that deck designs be approved by the local building department before work begins.



### LCE/AC Post Caps

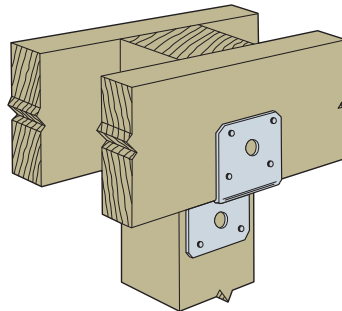
Two-piece cap may be installed before or after lumber is in place.



### RPBZ Retrofit Post Base

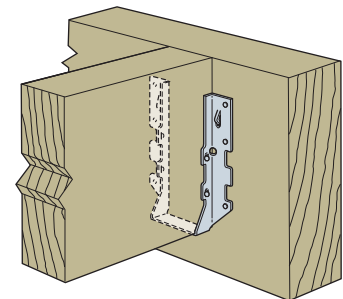
Reinforcement for post applications.

*(not for new construction where a standoff is required)*



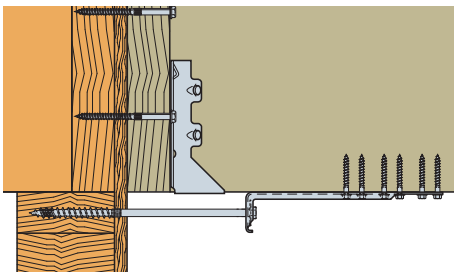
### DJT

Connects beams at the side of the post.



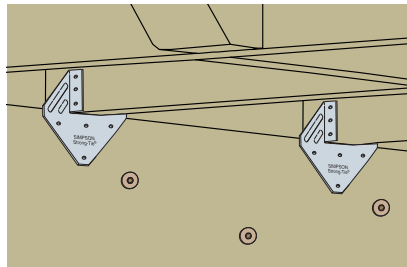
### LUS Joist Hanger

Provides bearing and uplift resistance, features double-shear nailing for added strength.



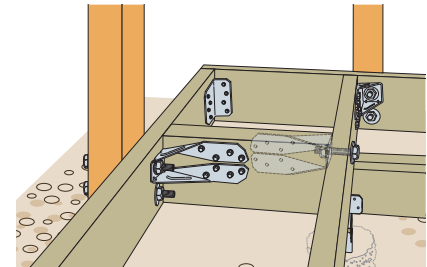
### DTT1Z Deck Tension Tie

Lateral connections into wall plates, header or studs. Kit contains four DTT1Z connectors and SD and SDWH screws to meet the requirements of R507.2.4 (2015-IRC).  
*(siding not shown for clarity)*



### H1 Hurricane Tie

Attaches to both sides of the joist.



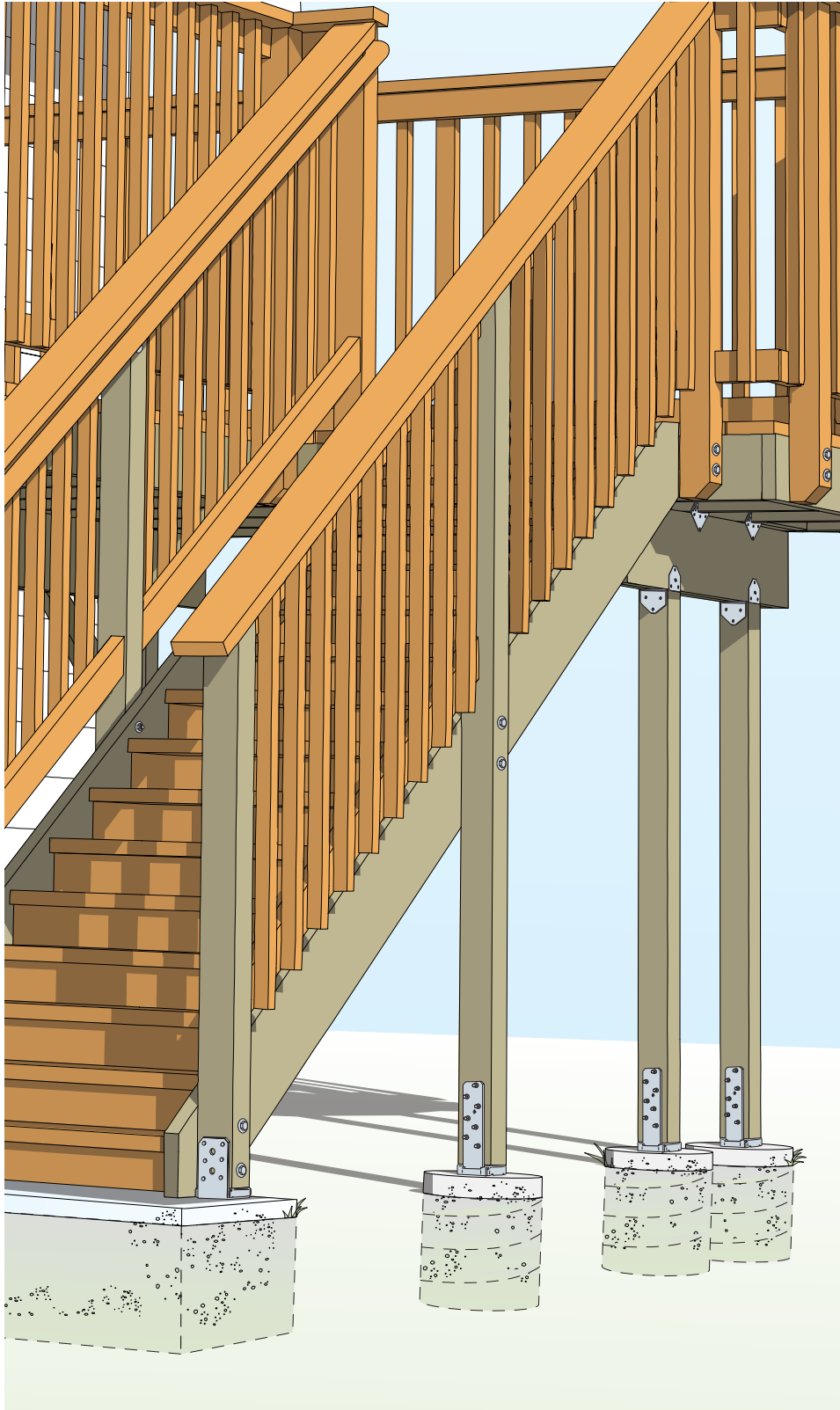
### DTT2 Deck Tension Tie

Horizontal application fastening guard post to deck framing.

# Deck Solutions That Meet Code

# Footings

In order for posts to properly resist various types of loads, they must be supported by, and anchored to, concrete footings. Thin concrete slabs and precast concrete piers do not qualify as proper footings for decks attached to the structure.



## Code Requirements

### Footings

- The building codes include specific requirements regarding footing size that are dependent upon factors such as the dead and live loads that the deck is designed to resist, as well as soil conditions. Footings should be designed per

*IRC 2012/2015, Section R403  
IBC 2012/2015 Chapter 18*

### Minimum Footing Size and Depth

(See the codes for actual footing size required.)

- Footings shall be at least 12" below the undisturbed ground surface.

*IRC 2012/2015 Section R403.1.4*

- The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table R401.4.1.

*IRC 2012/2015 Section R403.1.1  
Table R401.4.1*

**Note:** In order to achieve published load values, footings must provide sufficient concrete cover of the embedded portion of Simpson Strong-Tie® cast-in-place post and column bases. In some cases, a footing larger than the minimum required by the building codes will be necessary to meet these requirements. See the Simpson Strong-Tie *Wood Construction Connectors* catalog for more information.

# Post Bases Installed on Existing Concrete

## Code Requirements

### Load Resistance

- Columns shall be restrained to prevent lateral displacement at the bottom end. Such lateral restraint shall be provided by manufactured connectors installed in accordance with section R507 and the manufacturer's requirements, or a minimum post embedment of 12 inches in surrounding soils or concrete piers. Wood columns shall not be less in nominal size than 4" x 4".

*IRC 2015 Section R507.8.1*  
*IRC 2012/2015 Section R407.3*

- Column and post-end connections shall be fastened to resist lateral and net induced uplift forces.

*IBC 2015 Section 2304.10.7*  
*IBC 2012 Section 2304.9.7*

For additional information see page 13.

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.** Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

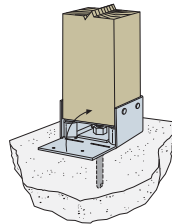


These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

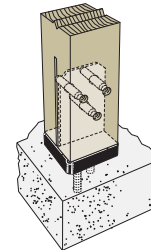
Posts must be properly attached to a concrete footing in order to resist lateral and uplift loads. Preservative-treated wood that is cut must be field treated or the post must be elevated off the concrete by 1".

## Simpson Strong-Tie® Solutions

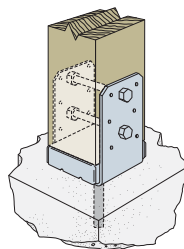
These products utilize anchors installed during the pour or after the concrete hardens.



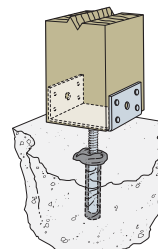
**ABW Adjustable Post Base with Standoff**  
Available in ZMAX® coating.



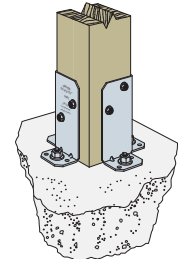
**CPTZ Concealed Post Tie**  
Available in ZMAX coating and stainless steel.



**ABU Adjustable Post Base with Standoff**  
ZMAX coating or stainless steel recommended.



**EPB44PHDG Elevated Post Base**  
Available with hot-dip galvanized coating.



**RPBZ Retrofit Post Base**  
Available in ZMAX coating. (not for new construction)

## Post-Installed Anchors

Installing a post base on existing concrete requires the installation of a post-installed anchor to attach the base to the concrete. Simpson Strong-Tie offers a variety of mechanical anchors and anchoring adhesives that are code listed for structural applications.

### Mechanical Anchors: Strong-Bolt® 2 Wedge Anchor

The Strong-Bolt® 2 wedge anchor is a wedge-style expansion anchor designed to provide optimum performance in concrete and masonry. It is code listed under the current IBC/IRC requirements for post-installed anchors in cracked and uncracked concrete.



### Anchoring Adhesives

Anchoring adhesives are ideal when maximum strength is needed or when anchoring close to the edge of concrete or masonry. Simpson Strong-Tie SET-XP® epoxy is a high-strength epoxy adhesive, and AT-XP® is an acrylic formula ideal for fast cure and cold-weather applications. Both products are available in a variety of cartridge sizes, including convenient single-tube cartridges. Hot-dip galvanized or stainless-steel threaded rod recommended.



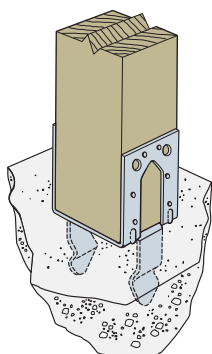
For more information on these products, see the Simpson Strong-Tie *Anchoring and Fastening Systems for Concrete and Masonry* catalog or visit [strongtie.com/anchors](http://strongtie.com/anchors).

# Post Bases Installed in New Concrete

## Simpson Strong-Tie® Solutions

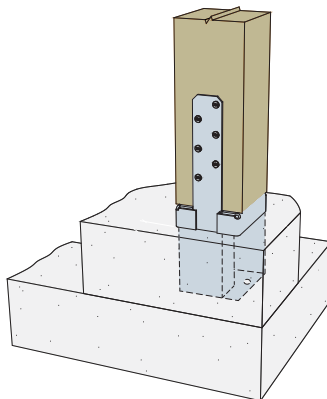
### Cast-in-Place

These products are cast into the concrete at the time of the pour.



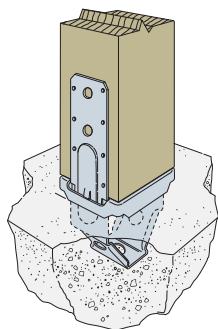
#### PB Post Base

For use with decay-resistant or preservative-treated wood. ZMAX® or hot-dip galvanized coating recommended.



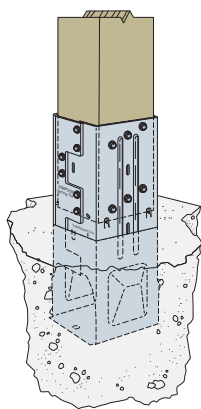
#### PPBZ Porch Post Base

Features a 1" standoff. Available in ZMAX coating.



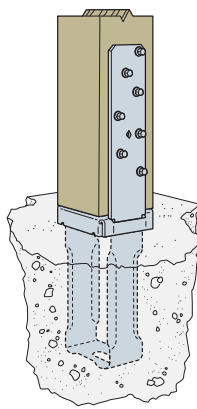
#### PBS Post Base with Standoff

Features a 1" standoff. ZMAX or hot-dip galvanized coating recommended.



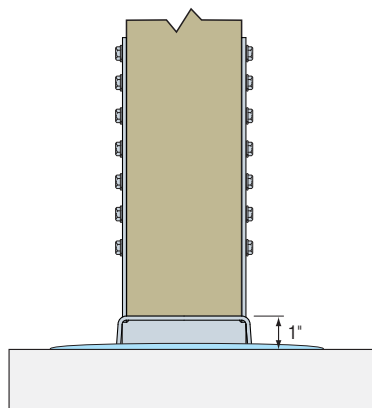
#### MPBZ Moment Post Base

Provides moment resistance for wooden columns or posts in free-standing structures. Features 1" standoff tabs.



#### CBSQ Column Base

Installs with Strong-Drive® SDS wood screws and features a 1" standoff. Hot-dip galvanized coating recommended.



A 1" standoff at the base of the post is required when building with wood that is not preservative treated or decay resistant. The standoff plate raises the post end off the concrete, keeping it drier and reducing the chances of decay. For best long-term results, Simpson Strong-Tie recommends that a base with a standoff be used in exterior/wet applications.

### Code Requirements

#### Decay Resistance of Post

- Wood columns shall be approved wood of natural decay resistance or approved pressure-preservative-treated wood.

**Exception:** Columns exposed to the weather when supported by concrete piers or metal pedestals projecting 1" above a concrete floor or 6" above exposed earth and the earth is covered by an approved moisture-impervious barrier.

*IRC 2012/2015 Section R317.1.4*

*IBC 2015 Section 2304.12.2.2*

*IBC 2012 Section 2304.11.2.7*

For additional information see page 12.

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

# Beam-to-Post Connections

## Code Requirements

- Deck beams shall be attached to deck posts in accordance with Figure R507.7.1 or by other equivalent means capable to resist lateral displacement.

*IRC 2015 Section R507.7.1*

- Where posts and beam or girder construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement.

*IRC 2012/2015 Section R502.9*

*IBC 2015 Section 2304.10.7*

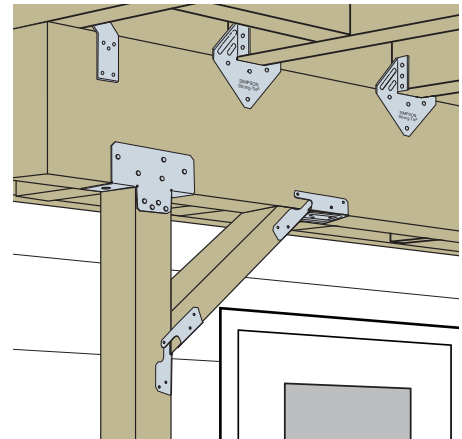
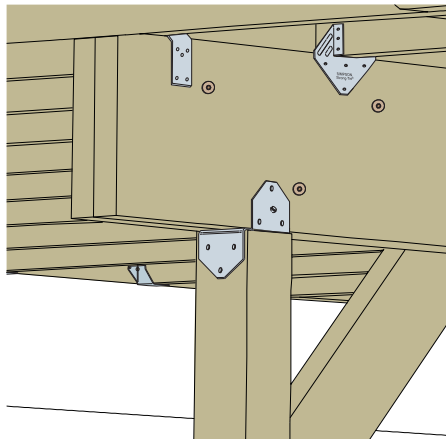
*IBC 2012 Section 2304.9.7*

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.** Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

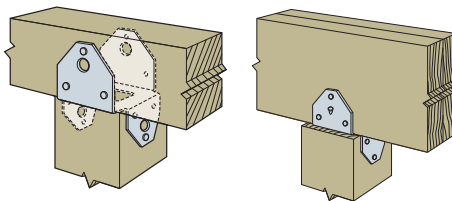


These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

At the point where a beam meets a post, it must be properly connected to the post in order to resist gravity, lateral and uplift loads. This pertains to solid sawn beams or those comprised of multiple members, whether they rest on top or are fastened to the side of the post.

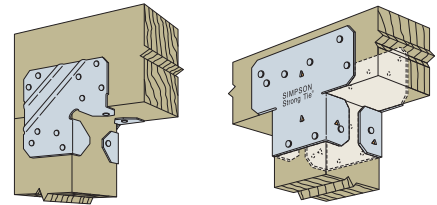


## Simpson Strong-Tie® Solutions



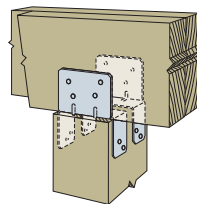
### BC/BCS Post Cap

For single-member solid sawn beams. Connects double 2x's to a 4x post or triple 2x's to a 6x post. ZMAX® coating or stainless steel recommended.



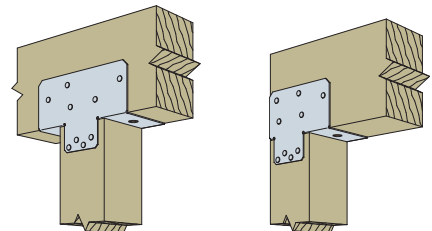
### LCE/AC Retrofit Post Caps

Two-piece cap may be installed before or after lumber is in place when the sides of the post and beam are flush. ZMAX coating or stainless steel recommended.



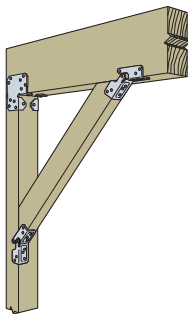
### LPC Post Cap

Two-piece cap adjusts for beams smaller than post width. Features a ZMAX coating.



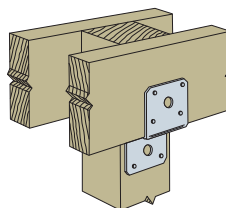
### PCZ/EPCZ Post Caps

Connects beams at the top of the post. Features ZMAX coating.



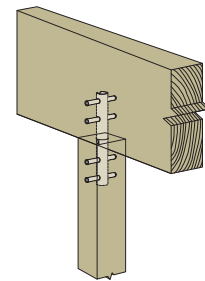
### KBS1Z

Connects knee bracing and columns. ZMAX coating.



### DJT14

Connects beams at the side of the post. ZMAX coating or stainless steel recommended.



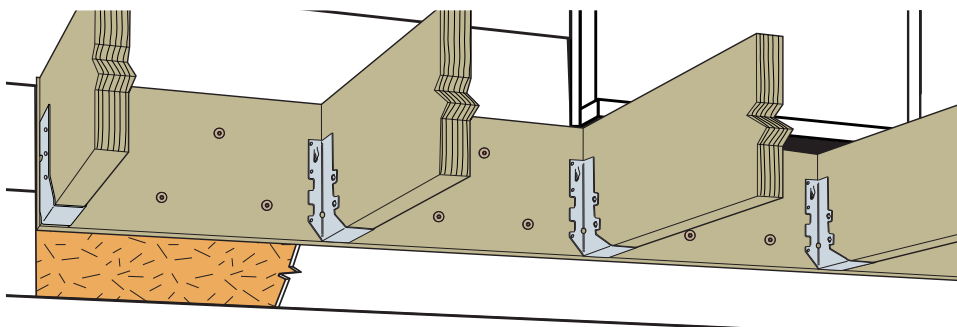
### CBTZ Concealed Beam Tie

Provides clean look for beam-to-post connections. ZMAX coating.

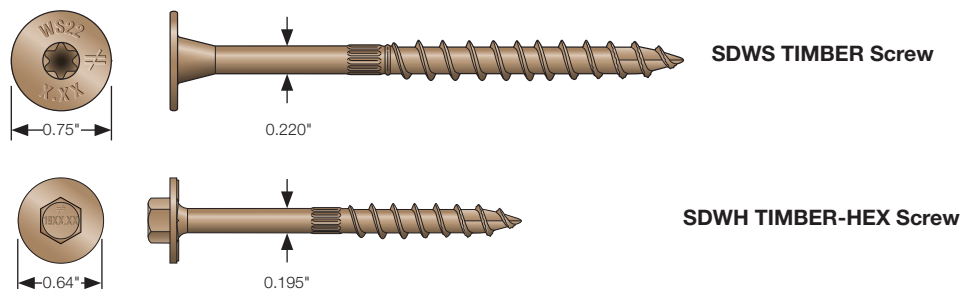
# Ledger Attachment

One of the most common causes for deck failure is ledgers that pull away from the primary structure, resulting in complete collapse.

The Simpson Strong-Tie® Strong-Drive® SDWS Timber and SDWH Timber-Hex structural wood screws provide an easy-to-install, high-strength alternative to lag screws and through-bolts. They are ideal for securely attaching ledgers to structural wood members, are easier to drive than comparable fasteners and are coated for many exterior and preservative-treated wood applications.

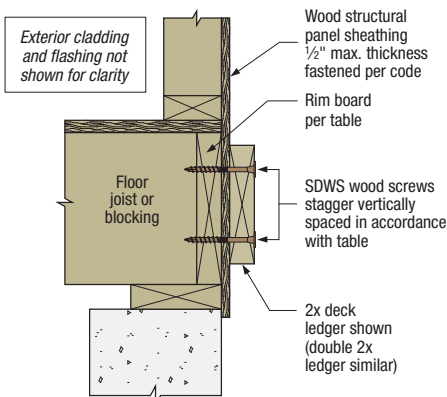
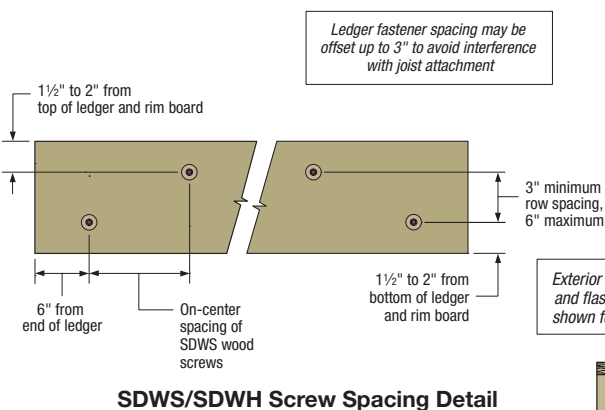


## Strong-Drive® Structural Wood Screw



- Patented points, serrated thread and knurled shank reduce installation torque
- Identification on all screw heads
- Low-profile washer head on SDWS provides excellent bearing area and a clean look

For stainless-steel ledger fastening, use the Strong-Drive SDWH Timber-Hex SS screw (page 33).



**Ledger-to-Rim Board Assembly**

For more information on ledger attachment see *Fastening Systems* catalog C-F-2017 and flier F-SDWSSDWH.

## Code Requirements

- Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal.

IRC 2012/2015 Section R507.1  
IBC 2012/2015 Section 1604.8.3

- Deck ledgers shall not be supported on stone or masonry veneer.

IRC 2015 Section R507.2.1  
IRC 2012 Section R507.2.2

- Lag screws and bolts (1/2" diameter) may be used in details for a ledger to band joist, to support a deck live load = 40 psf, and a deck dead load = 10 psf.

IRC 2012/2015 Table R507.2

- Deck ledger connections to band joists shall be in accordance with this section. For other grades, species, connection details and loading conditions, deck ledger connections shall be designed in accordance with IRC Section R301.

IRC 2015 Section R507.2  
IRC 2012 Section R507.2.2

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

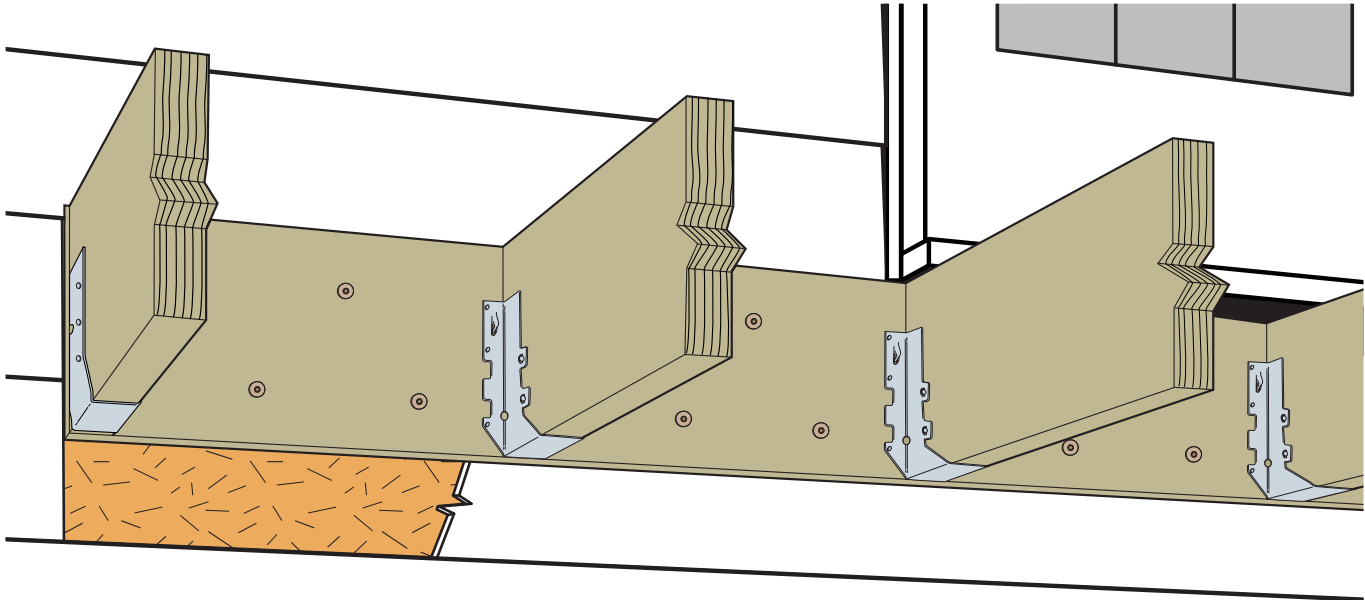
Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

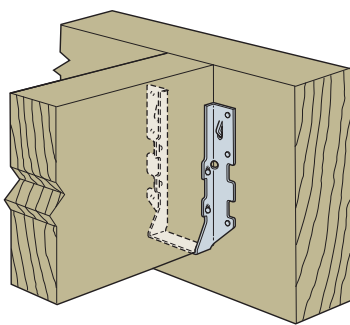
# Joists Terminating into Beam/Ledger

When joists terminate into a beam or ledger, a connection is required to provide bearing. In cantilever applications, the connection must also resist uplift.



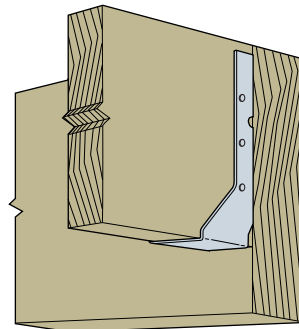
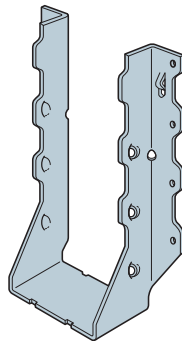
**Ledger may not be installed over siding or stucco. It must be fastened directly to the rim board, or fastened to the rim board through the sheathing.**

## Simpson Strong-Tie® Solutions



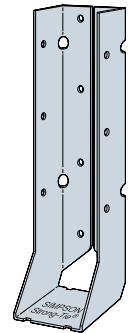
### **HUS/LUS Joist Hanger**

Provides bearing and uplift resistance, features double-shear nailing for added strength. ZMAX® coating or stainless steel recommended.  
*(LUS shown)*



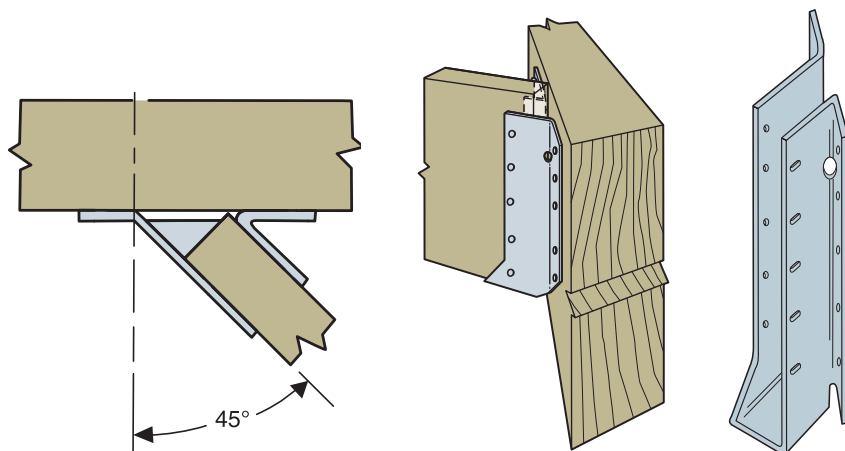
### **HUC/LUC Concealed Flange Joist Hanger**

Provides bearing and uplift resistance, concealed flanges for cleaner look and for end conditions. ZMAX coating or stainless steel recommended.  
*(LUC shown)*

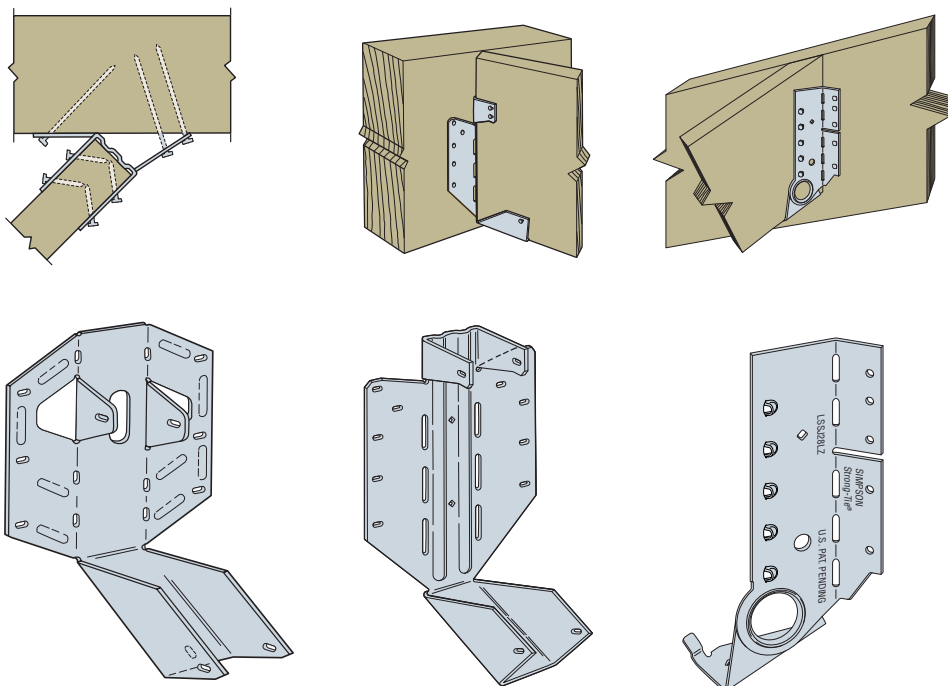




# Joists Terminating into Beam/Ledger



**SUR/SUL Skewed Joist Hanger**  
45° skewed hanger (available in skewed right and left versions), provides bearing and uplift resistance. ZMAX coating or stainless steel recommended.



**LSU26/LSSU210/LSSJ Field-Skewable/Slopeable Joist Hanger**

Field skewable right or left up to 45°, provides bearing and uplift resistance. Also field slopeable up or down to 45°. Available with a ZMAX coating.

## Code Requirements

### Bearing

- The ends of each joist, beam or girder shall have at least 1½" of bearing on wood or metal.

*IRC 2015 Section R507.7*

*IRC 2012 Section R502.6*

*IBC 2015 Section 2308.4.2.2*

*IBC 2012 Section 2308.8.1*

- Joists framing into the side of a ledger board or beam shall be supported by approved joist hangers.

*IRC 2015 Section R507.7*

*IRC 2012 Section R502.6.2*

*IBC 2015 Section 2308.4.2.3*

*IBC 2012 Section 2308.8.2*

### Cantilevered Applications

- Decks with cantilevered framing members, connections to exterior walls or other framing members shall be designed and constructed to resist uplift resulting from the full live load acting on the cantilevered portion of the deck.

*IRC 2012/2015 Section R507.1*

*IBC 2012/2015 Section 1604.8.3*

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

316

ZMAX  
G185

HOT DIP GALVANIZED

These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

# Joists Bearing on a Beam

## Code Requirements

- Where posts and beam or girder construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement.

*IRC 2012/2015 Section R502.9*

- Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation.

*IRC 2015 Section R507.5.1*

*IRC 2012 Section R502.7*

*IBC 2015 Section 2308.4.2.3*

*IBC 2012 Section 2308.8.2*

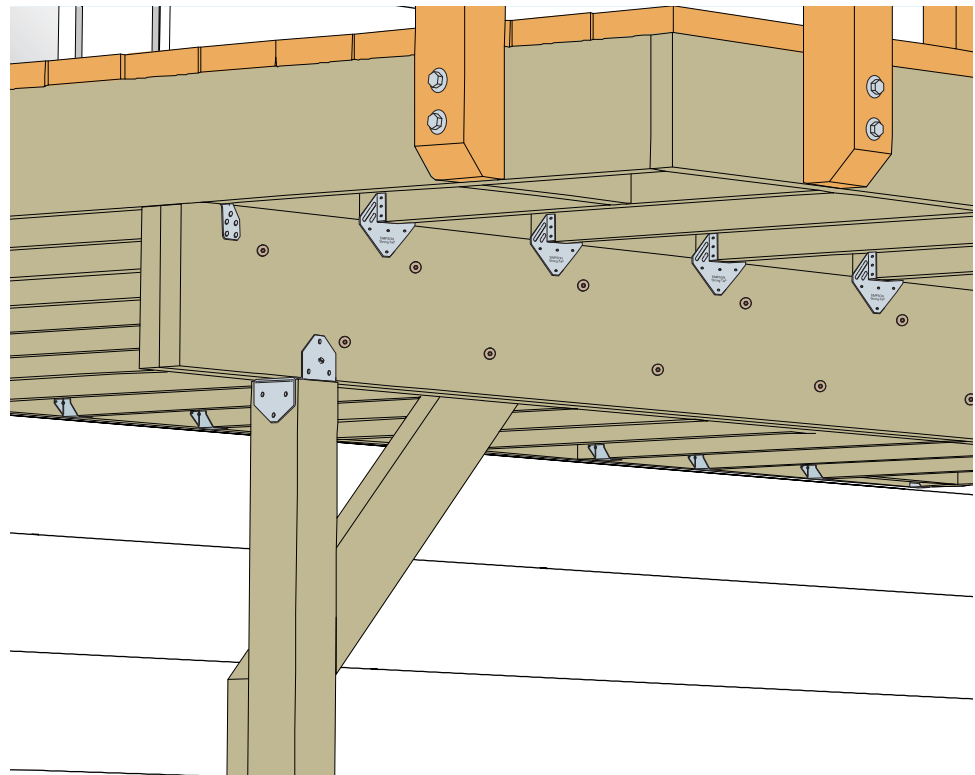
- Joists bearing on a beam shall be connected to the beam to resist lateral displacement.

*IRC 2012/2015 Section R507.7*

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

At the point where the joist bears on top of a beam, there must be a connection to resist lateral and uplift forces. Blocking or framing is also required to prevent overturning of the joists.

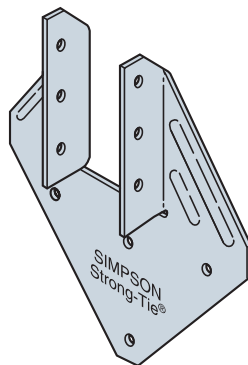


G185



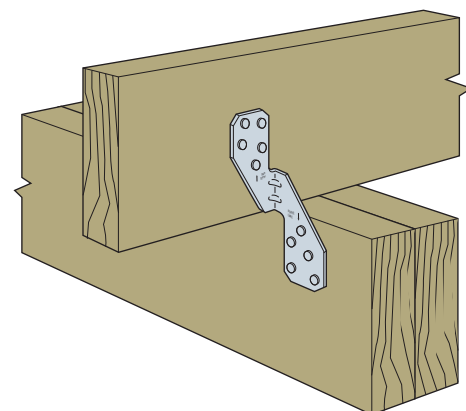
These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

## Simpson Strong-Tie® Solutions



### H1 Hurricane Tie

Holds joist on both sides.  
ZMAX® coating recommended.



### H2.5A Hurricane Tie

Suitable for single-sided applications.  
ZMAX coating or stainless steel recommended.

Simpson Strong-Tie offers a full range of hurricane ties for all types of applications and load requirements. See the Simpson Strong-Tie *Wood Construction Connectors* catalog for more information.

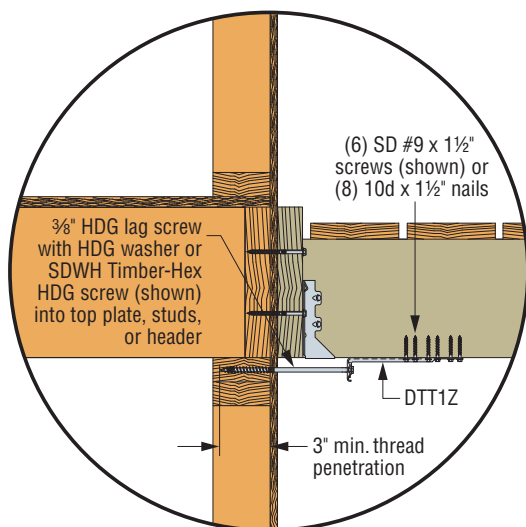
# Lateral-Load Connection

For decks that are partially supported by an adjacent structure (such as a house), the connection between the deck and that structure is vital. A bolted or screwed ledger-to-rim-board connection is suitable to support gravity loads; however, in some cases the building codes require a connection that is able to resist lateral loads. In these situations, tension ties are typically called out to tie the joists of the deck directly to the structure.

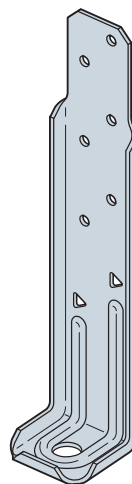
DTT deck tension ties are a safe, cost-effective solution designed to meet or exceed lateral-load code requirements for deck construction.

The DTT1Z satisfies the 2015 IRC provision for a 750 lb. lateral-load connection to the house at four locations per deck. This code detail permits the lateral connection from the deck joists to be made to top plates, studs or headers within the supporting structure.

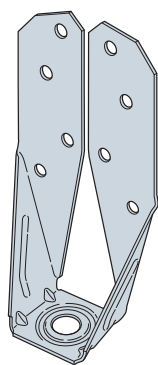
The DTT2 can be used to satisfy the 2012/2015 IRC provision for a 1,500 lb. lateral-load connection at two locations per deck.



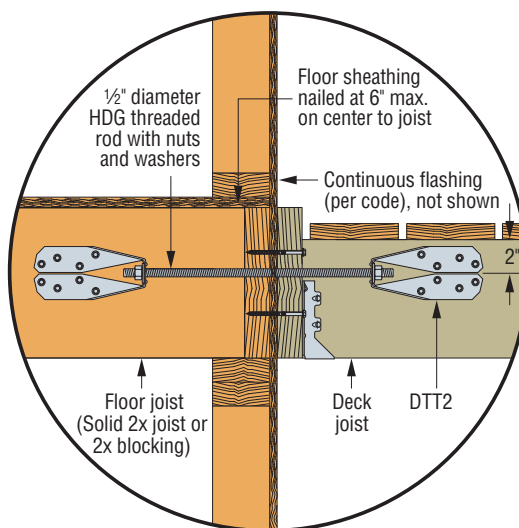
**Typical DTT1Z Deck-to-House Lateral-Load Connection**



**DTT1Z Deck Tension Tie**



**DTT2 Deck Tension Tie**



**Typical DTT2 Deck-to-House Lateral Load Connection**

## Code Requirements

- The lateral-load connection required by Section R507.1 shall be permitted to be in accordance with Figure R507.2.3(1) (2012 IRC Figure R507.2.3) or R507.2.3(2) (not included in 2012 IRC).

*IRC 2015 Section R507.2.4  
IRC 2012 Section R507.2.3*

- Where the lateral-load connection is provided in accordance with Figure R507.2.3(1) (2012 IRC Figure R507.2.3) hold-down tension devices (with capacity not less than 1,500 pounds) shall be installed in not less than two locations per deck, within 24 inches of each end of the deck.

*IRC 2015 Section R507.2.4  
IRC 2012 Section R507.2.3*

- Where the lateral-load connections are provided in accordance with Figure R507.2.3(2), the hold-down tension devices (with capacity not less than 750 pounds) shall be installed in not less than four locations per deck.

*IRC 2015 Section R507.2.4*

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.** Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

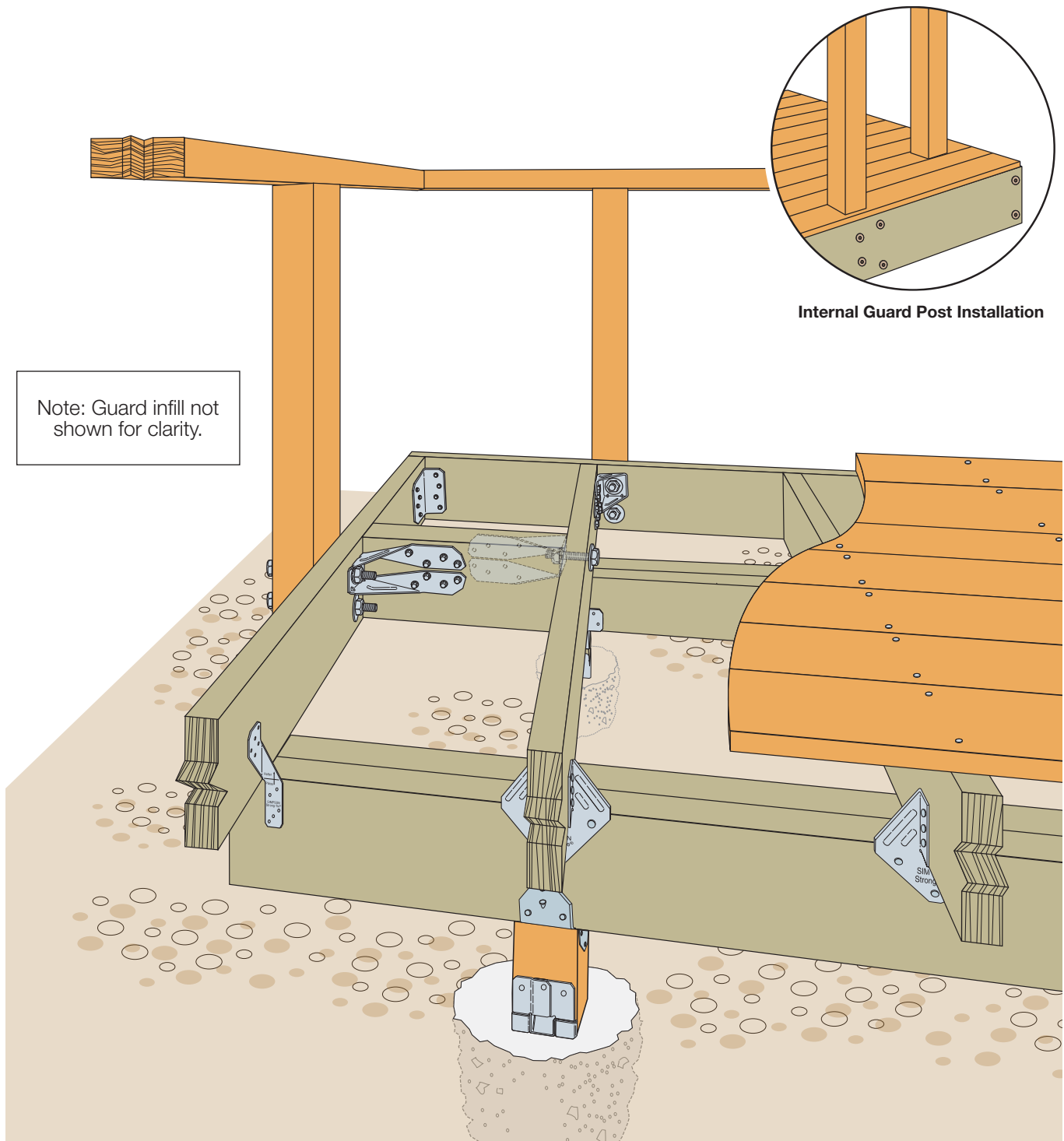


These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

For more information on lateral-load connections, refer to Simpson Strong-Tie technical bulletin T-C-DECKLAT at [strongtie.com](http://strongtie.com).

# Guard Post to Deck Framing

The guard post connection is a crucial connection pertaining to deck safety, and it is often inadequately constructed. In order to provide the required load resistance at the guard, the post must not only be fastened to the rim joist, but also tied back into the joist framing. Machine bolts through the post and rim joist alone do not typically meet the performance requirements of the code. The details on pages 20–22 have been shown through testing or analysis to resist the required 200 lb. concentrated load (or load of 50 lb. per linear foot) applied in an outward direction for maximum guard heights of 36" and 42" above the deck surface.

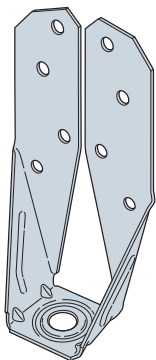


For more information on this application, see Simpson Strong-Tie technical bulletin T-C-GRDRLPST.

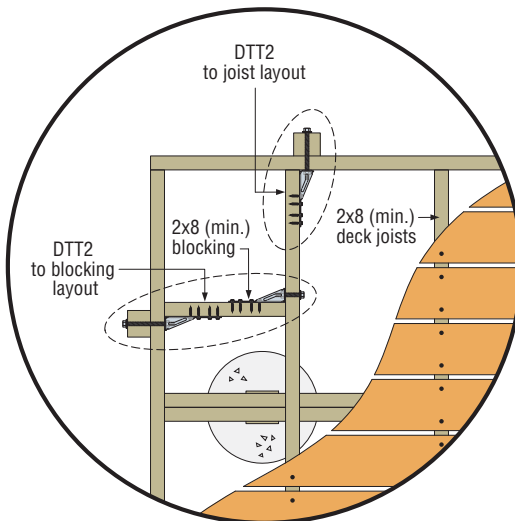
# Guard Post to Deck Framing

## Simpson Strong-Tie® Solutions

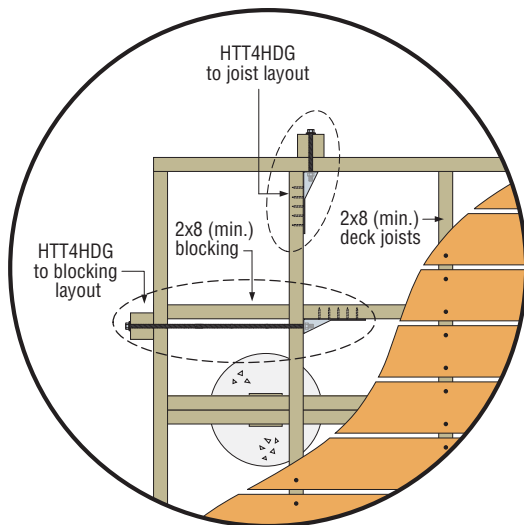
For 36"-Tall (minimum) Guard Posts



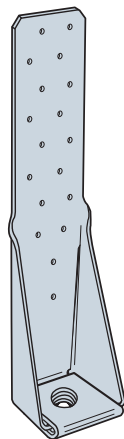
**DTT2 Deck Tension Tie**  
Available with ZMAX® coating or in stainless steel.



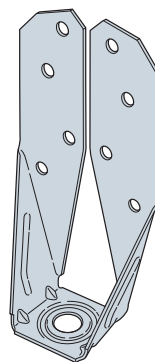
For 42"-Tall (maximum) Guard Posts



**Note:** The DTT2 may also be used to secure 42" guard posts with 2x10 (min.) deck joists



**HTT4 HDG Tension Tie**  
Available in hot-dip galvanized coating.



**DTT2 Deck Tension Tie**  
Available with ZMAX® coating or in stainless steel.

### Code Requirements

#### When required

- Guards shall be located along open-sided walking surfaces, including stairs, ramps and landings, that are located more than 30" measured vertically to the floor or grade below at any point within 36" horizontally to the edge of the open side.

*IRC 2012/2015 Section R312.1.1*  
*IBC 2015 Section 1015.2*  
*IBC 2012 Section 1013.2*

#### Height

- Guards shall be a minimum of 36" tall (IRC) or up to 42" tall for certain occupancies (IBC).

*IRC 2012/2015 Section R312.1.2*  
*IBC 2015 1015.3*  
*IBC 2012 1013.3*

#### Load Resistance

- Guards and handrails shall be able to resist a single concentrated load of 200 lb., applied in any direction at any point along the top.

*IRC 2012/2015 Table R301.5*  
*IBC 2012/2015 Section 1607.8.1*  
*(1 and 2 family dwellings)*

- Handrails and guards shall be designed to resist a linear load of 50 pounds per linear foot.

*IBC 2012/2015 Section 1607.8.1*  
*(not required for 1 and 2 family dwellings)*

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



These products are available with a ZMAX or hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

For more information on connecting posts inside the rim joist using the DTT2 or HTT4, see Simpson Strong-Tie technical bulletin T-C-GRDRLPST.

# Guard Post to Deck Framing

## Code Requirements

### When required

- Guards shall be located along open-sided walking surfaces, including stairs, ramps and landings, that are located more than 30" measured vertically to the floor or grade below at any point within 36" horizontally to the edge of the open side.

IRC 2012/2015 Section R312.1.1

IBC 2015 Section 1015.2

IBC 2012 Section 1013.2

The acceptance criteria apply to one- and two-family dwellings for compliance with the 2015 and 2012 International Residential Code (IRC) and International Building Code (IBC). The SDWS screws used in the guard post installations do not replace the required connections to the rim joist or the ledger.

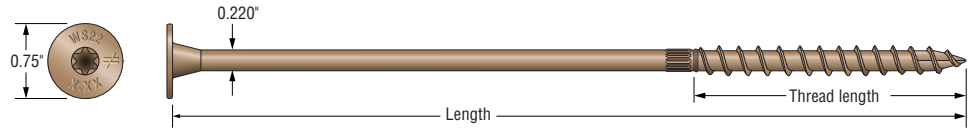
### Code-Compliant Guard Post Connection Details

- Installation scope:
  - 36" and 42" guard post height (above deck surface)
  - Nominal 4x4 guard post
  - Nominal 2x8 band/rim joist minimum, 2x blocking and 4x blocking
  - DFL, HF or SP framing lumber for 36" solution
  - DFL and SP only for 42" solution
  - Full-depth blocking required
  - Internal post installation (post positioned inside of the rim/band joist — see Figure)
  - Fastener position tolerance:  $\pm 1/16"$

**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.** Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

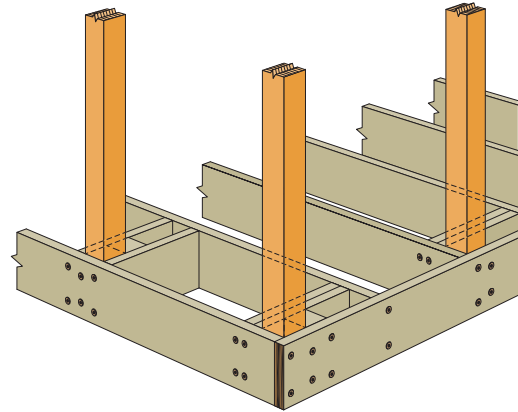
## For 36"- and 42"-Tall Guard Posts

As an alternative code-compliant solution for attaching wood guard posts without the use of typical hardware and through-bolts, the guard posts and the framing elements can be fastened with Strong-Drive® SDWS Timber screws. The SDWS Timber screws are code report listed in IAPMO UES ER-192. The solutions below have been tested and verified for 36"-tall guard posts constructed with DFL, HF and SP framing. These solutions have also been tested and verified for 42"-tall guard posts constructed with DFL and SP framing only.

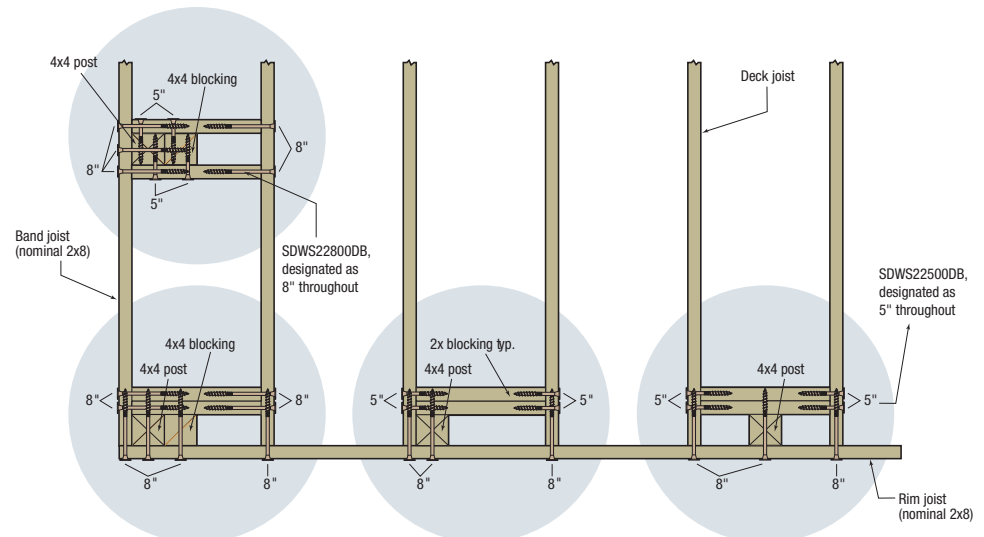


**Strong-Drive SDWS TIMBER Screw (SDWS22500DB, SDWS22800DB)**

**Note:** For this installation, it is imperative that only approved fasteners are used and installed per Simpson Strong-Tie details. Test results have shown that generic fasteners do not provide sufficient withdrawal resistance, pull-through resistance or shear strength.



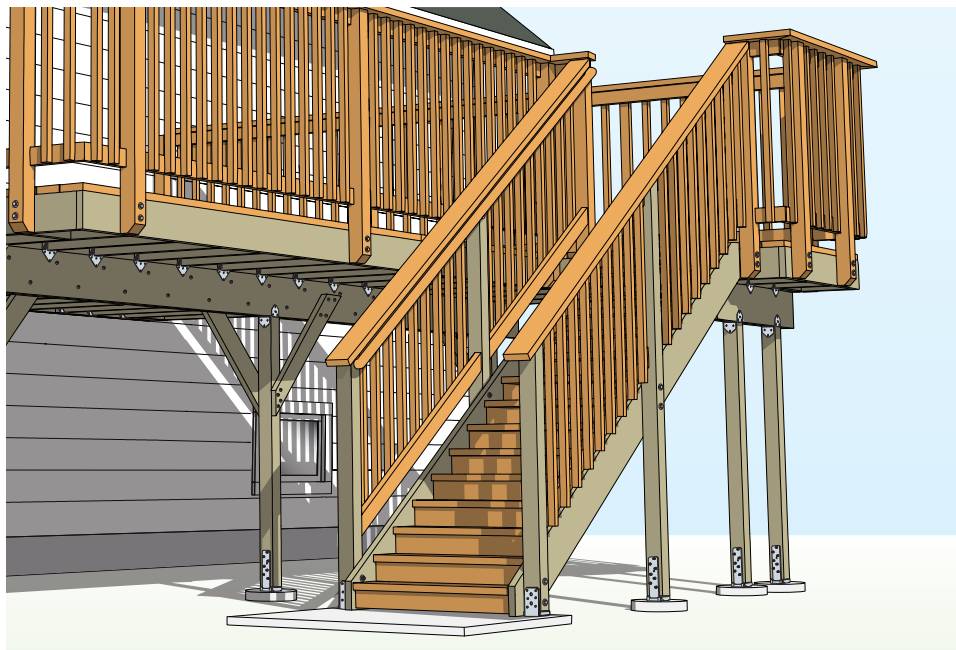
**Internal Guard Post Installations Using Strong-Drive SDWS Timber Screws**



**Plan View Showing Details of Four Connections Using Strong-Drive SDWS Timber Screws**  
(other connection hardware not shown for clarity)

# Stair Stringers and Treads

Stair stringers must be properly connected to the deck, and treads properly connected to the stringers, in order to resist loads. In addition, code requirements regarding openings between stair treads and stair railing must also be met.



## Code Requirements

### Stair Stringer to Rim Joist

- Staircases must be able to resist 40 pounds per square foot of tread area.

*IRC 2012/2015 Table R301.5*

*IBC 2012/2015 Table 1607.1*

### Stair Tread to Stringer

- Individual stair treads shall be able to resist a 300 lb. concentrated load acting over an area of 4 square inches.

*IRC 2012/2015 Table R301.5*

*IBC 2012/2015 Table 1607.1*

### Railing to Stringer Opening

- The triangular opening formed by the riser, tread and bottom rail of a guard at the open side of a stairway shall be of such a size that a sphere 6" in diameter cannot pass through.

*IRC 2012/2015 Section R312.1.3*

*IBC 2015 Section 1015.4*

*IBC 2012 Section 1013.4*

Additional IRC Exception:

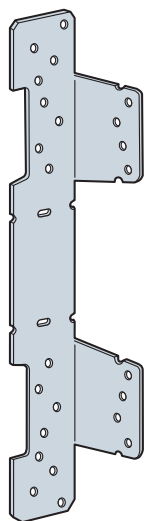
Openings for required guards on the sides of stair treads shall not allow a sphere 4 3/8" in diameter to pass through.

*IRC 2012/2015 Section R312.1.3*

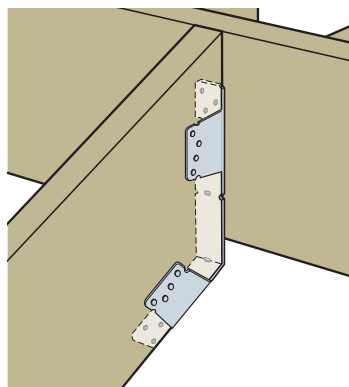
**Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.**

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.

## Simpson Strong-Tie® Solutions

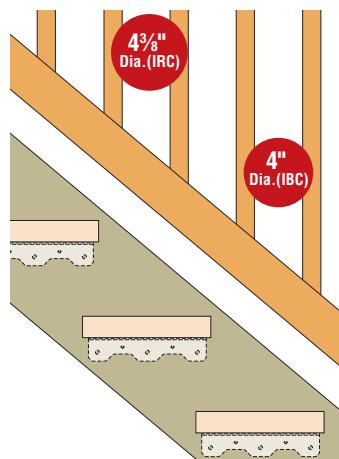


**LSC**

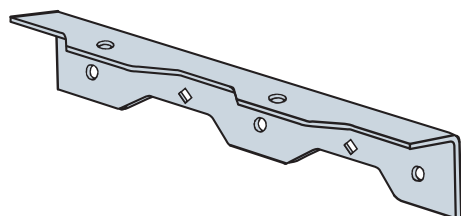


### LSC Adjustable Stair Stringer Connector

Field slopable to almost any angle, the LSC is ideal for attaching the staircase stringer to the deck. Suitable for solid and notched stringers. ZMAX® coating or stainless steel recommended.



Codes require that a 4 3/8" (IRC) or 4" (IBC) sphere must not be able to pass between any guard opening at stairs.



### TA Tread Angle

Provides a positive connection, eliminating the need to notch the stringer. A full-width stringer is stronger and makes it easier to meet maximum guardrail opening requirements of the codes. ZMAX coating or stainless steel recommended.

# Mitigating Corrosion Risk



# Selecting Connector and Fastener Coatings

## Corrosion Issues

When selecting hardware or fasteners for deck construction, it is important to use connectors with a level of corrosion resistance appropriate to the application.

Outdoor environments are generally more corrosive to steel because connectors are exposed to the elements. If building a deck in an area especially prone to moisture, such as homes along the coast or near bodies of water, the risk of corrosion is much higher. In addition, the chemicals used in some preservative-treated woods have been found to increase the corrosion of connectors and fasteners. Other corrosion risk factors include exposure to fire retardants, fumes, fertilizers, soil, industrial zones, acid rain and other corrosive elements.

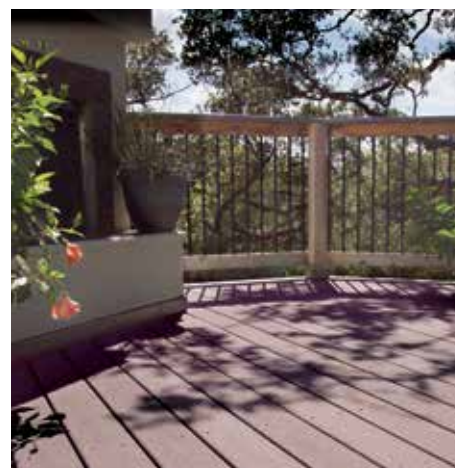
Depending on the deck materials and environmental conditions, Simpson Strong-Tie® ZMAX® coated (G185) and hot-dip galvanized (HDG) connectors and fasteners may provide adequate corrosion resistance. If you choose to use ZMAX or HDG on your deck project, you should periodically inspect your connectors and fasteners or have a professional inspection performed. Regular maintenance including water-proofing of the wood used to construct your deck is also a good practice. When using ZMAX/HDG connectors, you must use fasteners galvanized per ASTM A153, SDS screws with a double-barrier coating, or SD screws with a mechanically galvanized coating.

For higher-exposure applications, stainless-steel connectors and fasteners offer the best defense against corrosion. Simpson Strong-Tie offers a variety of connectors and fasteners in stainless steel for deck construction. Remember, when using stainless-steel connectors, you must also use stainless-steel fasteners.

For more information on corrosion and selecting the appropriate finish for your application, visit [strongtie.com/info](http://strongtie.com/info).



**Dry Service**



**Wet Service**



**Severe**

# Corrosion Information

## Corrosion Resistance Recommendations

Low	Medium	High	Severe
<b>Fasteners and Anchors</b>			
Phosphate (gray, black), Clear (bright) zinc (ASTM F1941), Heavy electro-galvanized (ASTM A641 – Class 1), Yellow zinc (ASTM F1941), Electrocoat (E-Coat™), Type 410 stainless steel	Mechanically galvanized (AS 3566.2-C3, N2000, ASTM B695 – Class 55), Quik Guard® coating, Hot-dip galvanized (ASTM A153 – Class D), Double-barrier coating, Type 410 stainless steel with protective top coat	Type 304 stainless steel, Type 305 stainless steel	Type 316 stainless steel, Hot-dip galvanized (ASTM A153 – Class C), Silicon bronze, Copper
<b>Connectors</b>			
Simpson Strong-Tie® gray paint, Powder coating, Standard G90 zinc coating	ZMAX® (G185) Hot-dip galvanized (ASTM A123)	Type 316L stainless steel	Type 316L stainless steel

## Corrosion Resistance Classifications

Environment	Material to Be Fastened					
	Untreated Wood or Other Material	Preservative-Treated Wood				
		SBX-DOT Zinc Borate	Chemical Retention ≤ AWPA, UC4A	Chemical Retention > AWPA, UC4A	ACZA	Other or Uncertain
Dry Service	Low	Low	Low	High	Med	High
Wet Service	Med	N/A	Med	High	High	High
Elevated Service	High	N/A	Severe	Severe	High	Severe
Uncertain	High	High	High	Severe	High	Severe
Ocean/Water Front	Severe	N/A	Severe	Severe	Severe	Severe




- These are general guidelines that may not consider all application criteria. Refer to product-specific information for additional guidance.
- Type 316/305/304 stainless-steel products are recommended where preservative-treated wood used in ground contact has a chemical retention level greater than those for AWPA UC4A; CA-C, 0.15 pcf; CA-B, 0.21 pcf; micronized CA-C, 0.14 pcf; micronized CA-B, 0.15 pcf; ACQ-Type D (or C), 0.40 pcf.
- Testing by Simpson Strong-Tie following ICC-ES AC257 showed that mechanical galvanization (ASTM B695, Class 55), Quik Guard® coating and Double Barrier coating will provide corrosion resistance equivalent to hot-dip galvanization (ASTM A153, Class D) in contact with chemically-treated wood in dry-service and wet-service exposures (AWPA UC1-UC4A, ICC-ES AC257 Exposure Conditions 1 and 3) and will perform adequately subject to regular maintenance and periodic inspection.
- Mechanical galvanizations C3 and N2000 should not be used in conditions that would be more corrosive than AWPA UC3A (exterior, above ground, rapid water run off).

- If uncertain about Use Category, treatment chemical or environment, use Types 316/305/304 stainless steel, silicon bronze or copper.
- Some treated wood may have excess surface chemicals making it potentially more corrosive than wood with lower retentions. If this condition is suspected, use Type 316/305/304 stainless steel, silicon bronze or copper fasteners.
- Type 316 stainless-steel, silicon bronze and copper fasteners are the best recommendation for ocean-salt air and other chloride-containing environments. Hot-dip galvanized fasteners with at least ASTM A153, Class C protection can also be an alternative for some applications in environments with ocean air and/or elevated wood moisture content.
- Some woods, such as cedars, redwood and oak, contain water-soluble tannins and are more susceptible to staining when in contact with metal connectors and fasteners. According to the California Redwood Association ([calredwood.org](http://calredwood.org)), applying a quality finish to all surfaces of the wood prior to installation can help reduce the amount of staining, which in redwood, for example, is caused by surface tannins leaching out during rains.

# Corrosion Information

## Coatings Available

Not all products are available in all finishes. Contact Simpson Strong-Tie for product availability, ordering information and lead times.

Finish/Material	Description	Level of Corrosion Resistance
<b>Connectors</b>		
Gray Paint	Water-based paint intended to protect the product while it is warehoused and in transit to the jobsite.	Low
Powder Coating	Baked-on paint finish that is more durable than our standard paint and produces a better-looking finished product.	Low
Galvanized	Standard (G90) zinc-galvanized coating containing 0.90 oz. of zinc per square foot of surface area (total both sides).	Low
	Galvanized (G185) 1.85 oz. of zinc per square foot of surface area (hot-dip galvanized per ASTM A653 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153). Products with a powder-coat finish over a ZMAX base have the same level of corrosion resistance.	Medium
	Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum average coating weight is 2.0 oz./ft. <sup>2</sup> (per ASTM A123 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153). Anchor bolts are hot-dip galvanized per ASTM F2329.	Medium
 Type 316L Stainless Steel	Type 316L stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% Molybdenum. Type 316L stainless steel is not hardened by heat treatment and is inherently nonmagnetic. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316L stainless-steel fasteners are compliant with the 2012 and 2015 IBC and IRC.	High/Severe
<b>Fasteners</b>		
Electrocoating (E-Coat™)	Electrocoating utilizes electrical current to deposit the coating material on the fastener. After application, the coating is cured in an oven. Electrocoating provides a minimum amount of corrosion protection and is recommended for dry, non-corrosive applications only.	Low
Type 410 Stainless Steel with Protective Top Coat	Carbon martensitic grade of stainless steel which is inherently magnetic, with an added protective top coat. This material can be used in mild atmospheres and many mild chemical environments.	Medium
Mechanically Galvanized Coating, Class 55	Simpson Strong-Tie® Strong-Drive® SD Connector screws are manufactured with a mechanically-applied zinc coating in accordance with ASTM B695, Class 55 with a supplemental overcoat. These fasteners are compatible with painted and zinc-coated (G90 and ZMAX) connectors.	Medium
Double-Barrier Coating	Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws are manufactured with two different finishes that together provide a level of corrosion protection that equals that provided by the HDG coating. (ASTM A153, Class D)	Medium
 ASTM A153 Class C and D	Simpson Strong-Tie Strong-Drive Timber-Hex screws are hot-dip galvanized in accordance with ASTM A153, Class C. Hot-dip galvanized fasteners have a minimum average of 1.25 oz./ft. <sup>2</sup> of zinc coating. Hot-dip galvanized fasteners are compliant with the 2012 and 2015 IRC (R317.3) and IBC. Specific Simpson Strong-Tie nails are hot-dip galvanized in accordance with ASTM A153, Class D, and have a minimum of 1.0 oz./ft. <sup>2</sup> of zinc coating.	Medium/Severe
Types 304 and 305 Stainless Steel	Types 304 and 305 stainless steel are nickel-chromium austenitic grades of stainless steel. Types 304 and 305 stainless steel are not hardened by heat treatment and are inherently nonmagnetic. They provide very good corrosion resistance and are suitable for use in many corrosive environments. Fasteners made from Types 304 and 305 stainless steel are compliant with the 2012 and 2015 IBC and IRC.	High
 Type 316 Stainless Steel	Type 316 stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% Molybdenum. Type 316 stainless steel is not hardened by heat treatment and is inherently nonmagnetic. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316 stainless steel fasteners are compliant with the 2012 and 2015 IBC and IRC.	Severe

See Corrosion Information on page 26 for more specific performance and application information on these finishes.

# Structural Deck Connections

# Stainless-Steel Connections

## The Science Behind Stainless Steel

Each Simpson Strong-Tie® stainless-steel connector is made with Type 316L stainless steel. Because it contains chromium, Type 316L stainless steel develops a thin coat of chromium oxide on the surface of the metal that protects the base metal from corrosive attack. Molybdenum is also added, which helps increase corrosion resistance in chloride-type exposures, such as saltwater environments. Type 316L has shown no visible sign of surface red rust after 1,000 hours of an ASTM B117 salt-spray test. For more information about corrosion, visit [strongtie.com/corrosion](http://strongtie.com/corrosion).

### Common Corrosive Factors That Can Negatively Affect Structural Connections

- Ocean salt air
- Water
- Preservative-treated wood
- Fire retardant-treated wood
- Salt used to de-ice or melt snow
- Pool or hot-tub chemicals
- Fertilizers
- Soil
- Industrial zones
- Concrete

### *Always Use Stainless-Steel Fasteners with Stainless-Steel Connectors*

Go to [strongtie.com](http://strongtie.com) for more information regarding stainless-steel connectors.



# Correct Fasteners for Use with Simpson Strong-Tie® Connectors

## Fastener Types and Sizes Specified for Simpson Strong-Tie Connectors

Many Simpson Strong-Tie connectors have been designed and tested for use with specific types and sizes of fasteners. The specified quantity, type and size of fastener must be installed in the correct holes on the connector to achieve published loads. Other factors such as fastener material and finish are also important. Incorrect fastener selection or installation can compromise connector performance and could lead to failure. For more information about fasteners, see our *Fastening Systems* catalog at [strongtie.com](http://strongtie.com) or access our Fastener Finder software at [strongtie.com/software](http://strongtie.com/software).

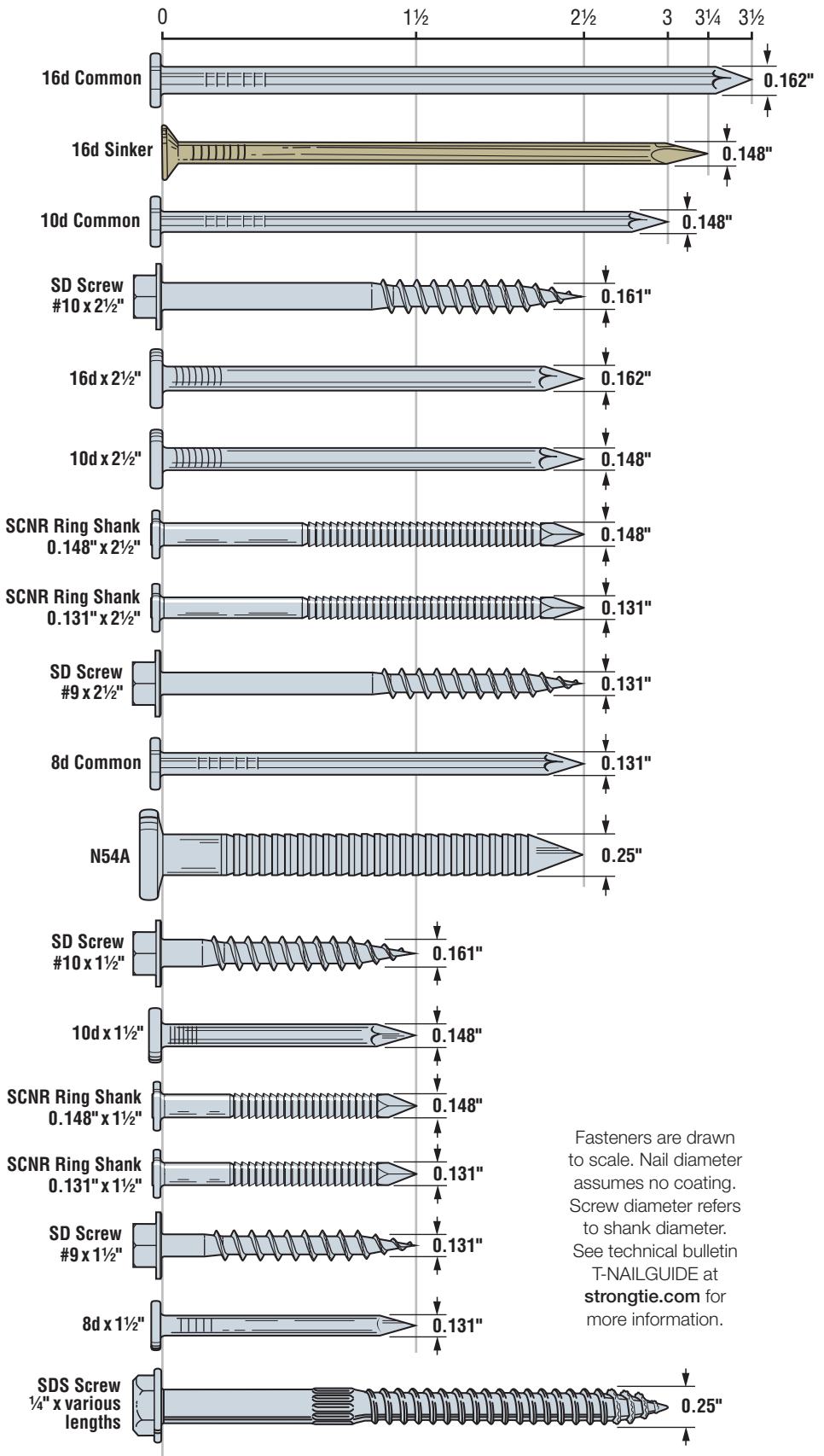


The Simpson Strong-Tie® Strong-Drive® SD Connector screw is the only screw approved for use with our connectors.

### Stainless Steel

The allowable loads of stainless-steel connectors match those of carbon-steel connectors when installed with Simpson Strong-Tie stainless-steel, SCNR ring-shank nails. For more information, refer to engineering letter L-F-SSNAILS at [strongtie.com](http://strongtie.com).

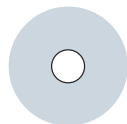
For more information on the dimensions of stainless-steel nails, visit [strongtie.com/ssnails](http://strongtie.com/ssnails).



Fasteners are drawn to scale. Nail diameter assumes no coating. Screw diameter refers to shank diameter. See technical bulletin T-NAILGUIDE at [strongtie.com](http://strongtie.com) for more information.

# Fastener Information

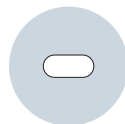
## Fastening Identification



### Round Holes

**Purpose:** To fasten a connector.

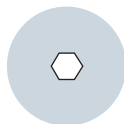
**Fill Requirements:** Always fill, unless noted otherwise.



### Obround Holes

**Purpose:** To make fastening a connector in a tight location easier.

**Fill Requirements:** Always fill.



### Hexagonal Holes

**Purpose:** To fasten a connector to concrete or masonry.

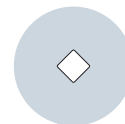
**Fill Requirements:** Always fill when fastening a connector to concrete or masonry.



### Triangular Holes

**Purpose:** To increase a connector's strength or to achieve max. strength.

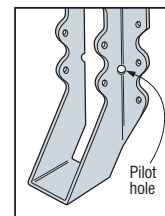
**Fill Requirements:** When the Designer specifies max. nailing.



### Diamond Holes

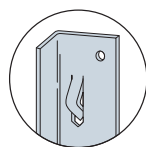
**Purpose:** To temporarily fasten a connector to make installing it easier.

**Fill Requirements:** None.



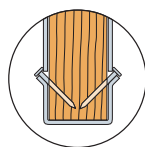
### Pilot Holes

Tooling holes for manufacturing purposes. No fasteners required.



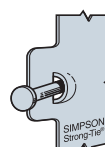
### Speed Prongs

Used to temporarily position and secure the connector for easier and faster installation.



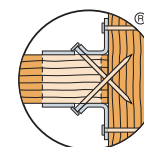
### Positive Angle Nailing (PAN)

Provided when wood splitting may occur, and to speed installation.



### Dome Nailing

This feature guides the nail into the joist and header at a 45° angle.



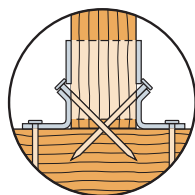
### Double-Shear Nailing

The nail is installed into the joist and header, distributing the load through two points on each joist nail for greater strength. Double-shear nailing must be full-length catalog nail.

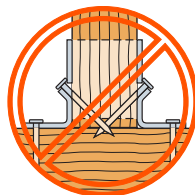
## Incorrect Applications

### Short Nails

Do not use short (1 1/2") nails for double-shear nailing.



Double-shear nailing shall use full-length common nails.



Shorter nails shall not be used as double-shear nails.

### Power Nailing

Collated framing-nailer fasteners can only be used if:

1. Correct diameter and length are installed
2. Correct material or finish is installed
3. Correct quantity is installed
4. Nails are driven with a hole-locating tool (finds the hole) or by hand

### NOTE:

- Nails with 0.131" diameter may not be used to replace 10d common or 16d sinker nails
- Do not overdrive
- Drive only through punched holes

See technical bulletin T-PNEUMATIC for more information.

Power-driven nails must meet ASTM A153 Class D or equivalent specification for ZMAX® or hot-dip galvanized applications. As most framing nails are only zinc-plated, please ensure that the nails used with ZMAX connectors are hot-dip galvanized to meet ASTM A153.



The Simpson Strong-Tie® Strong-Drive® SD and SDS Heavy-Duty Connector screws are the only screws approved for use with our connectors.

Consult the current Simpson Strong-Tie *Wood Construction Connectors* catalog for complete fastener and fastening requirements.

# Performance Fasteners for Decks



# Structural Wood Fastening

## Structural Wood-to-Wood Connections

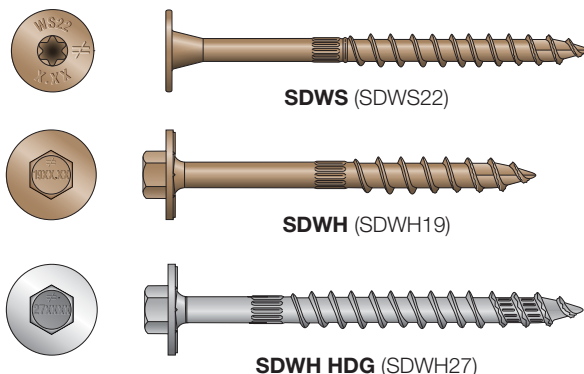
Simpson Strong-Tie® Strong-Drive® structural wood screws make high-strength wood-to-wood connections easier and stronger. Designed for both ease of installation and superior strength, these versatile screws are a time-saving alternative to multiple smaller fasteners, lag screws or bolts that require predrilling.

### Strong-Drive SDWS TIMBER and SDWH TIMBER-HEX Structural Wood Screw

The Simpson Strong-Tie Strong-Drive SDWS Timber, SDWH Timber-Hex and SDWH Timber-Hex HDG wood screws are designed to provide an easy-to-install, high-strength alternative to through-bolting and traditional lag screws. These structural wood screws are ideal for the contractor and do-it-yourselfer alike, and are available in materials and coatings for various levels of corrosion resistance to match your installation environment.

#### Features:

- Bold thread design that provides superior holding power
- Double-barrier coating (SDWS and SDWH) and hot-dip galvanized (SDWH HDG)
- Engineered points that ensure fast starts, reduce installation torque and eliminate the need for predrilling in most applications
- Underhead nibs that offer greater installer control when seating the head
- Large washer head provides maximum bearing area



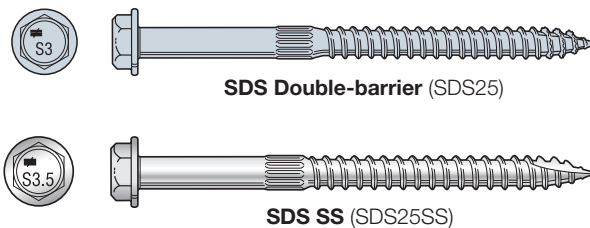
**Codes/Standards:** IAPMO UES ER-192

### Strong-Drive SDS HEAVY-DUTY CONNECTOR Screw

The Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screw is a 1/4"-diameter high-strength structural wood screw ideal for various connector installations as well as wood-to-wood applications.

#### Features:

- Available with a double-barrier coating or in Type 316 stainless steel
- Engineered points enable easy driving with no predrilling and minimal splitting
- Double-barrier coating provides corrosion resistance equivalent to hot-dip galvanization
- Head is stamped with the Simpson Strong-Tie "≠" sign and fastener length for easy identification after installation



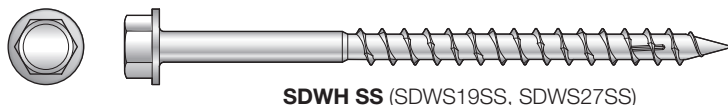
**Codes/Standards:** ICC-ES ESR-2236

### Strong-Drive SDWH TIMBER-HEX SS Screw

The Simpson Strong-Tie Strong-Drive stainless-steel heavy-duty wood screws are designed for lag screw replacement. These load-rated 1/4"- and 3/8"-diameter hex-head fasteners require no predrilling, making them easier to install than typical lag screws.

#### Features:

- Shear load values exceed those of a 1/2" lag screw
- Type 316 stainless steel for superior corrosion resistance
- No predrilling required in most applications
- 4-corner box thread design significantly reduces driving torque compared with lag screws
- Code-equivalent fastening for deck-ledger-to-band-joist connections



### Code Requirements

- Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

*IRC 2015 Section R507.4*

Experience has shown that #7 stainless steel screws are acceptable for face screw fastening of hardwood and composite deck boards.

#### Fastening for composite decking or using concealed fasteners:

The IRC does not include decking fastening requirements for composite decking materials, or for the use of concealed clips. Simpson Strong-Tie recommends consulting with the decking manufacturer for their recommendations.

#### Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



These products are available with a hot-dip galvanized coating. Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.



# Corrosion-Resistant Fasteners for Decking

## Code Requirements

- Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

*IRC 2015 Section R507.4*

Experience has shown that #7 stainless steel screws are acceptable for face screw fastening of hardwood and composite deck boards.

### Fastening for composite decking or using concealed fasteners:

The IRC does not include decking fastening requirements for composite decking materials, or for the use of concealed clips. Simpson Strong-Tie recommends consulting with the decking manufacturer for their recommendations.

### Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.



Simpson Strong-Tie offers a variety of premium solutions for fastening wood, PVC or composite decking. Our fasteners are designed specifically to perform in their target decking material, and many of our fasteners are available in colors to provide a fastening solution that blends with the deck surface.

## Stainless-Steel Screws

### Deck-Drive™ DWP WOOD SS Screw

For the majority of wood deck boards



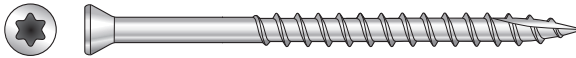
### Bugle-Head Wood Screw — Square Drive

For all types of wood decking including cedar, redwood and preservative-treated woods (non-hardwood)



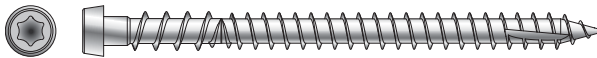
### Trim-Head Screw — 6-Lobe Drive

For wood decking and PVC decking materials



### Deck-Drive DCU COMPOSITE SS Screw

For composite decking



## Exterior-Grade Screws

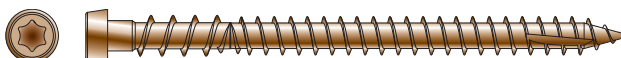
### Deck-Drive DSV WOOD Screw

For preservative-treated wood



### Deck-Drive DCU COMPOSITE Screw

For composite decking



For more information on fasteners, please visit [strongtie.com/fastenerfinder](http://strongtie.com/fastenerfinder).

# Corrosion-Resistant Fasteners for Decking

## Stainless-Steel Nails

### Hand-Drive Decking and Siding Nails



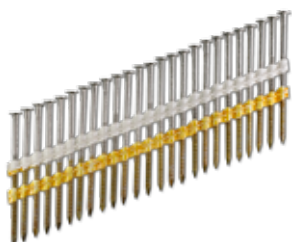
### 15° Wire Coil, Full Round Checked Head, Ring Shank

Types 304 and 316 Stainless Steel



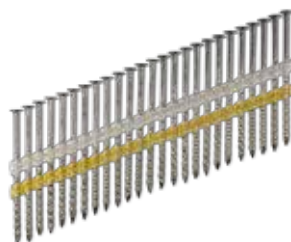
### 20°–22° Plastic Strip, Full Round Checked Head, Ring Shank

Types 304 and 316 Stainless Steel



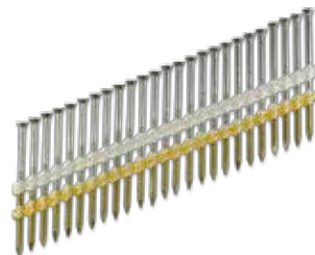
### 20°–22° Plastic Strip, Full Round Smooth Head, Screw Shank

Types 304 and 316 Stainless Steel



### 20°–22° Plastic Strip, Checked, Casing Head, Ring Shank

Type 304 Stainless Steel



### 28° Wire Weld, Clipped Smooth Head, Ring Shank

Type 304 Stainless Steel



### 31°–34° Plastic Strip, Full Round Checked Head, Ring Shank

Types 304 and 316 Stainless Steel



### 31°–34° Paper Tape, Clipped Smooth Head, Ring Shank

Types 304 and 316 Stainless Steel



### Code Requirements

- Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

*IRC 2015 Section R507.4*

Experience has shown that #7 stainless steel screws are acceptable for face screw fastening of hardwood and composite deck boards.

### Fastening for composite decking or using concealed fasteners:

The IRC does not include decking fastening requirements for composite decking materials, or for the use of concealed clips. Simpson Strong-Tie recommends consulting with the decking manufacturer for their recommendations.

### Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.



For more information on fasteners, please visit [strongtie.com/fastenerfinder](http://strongtie.com/fastenerfinder).

# Quik Drive® Auto-Feed Screw Driving Systems for Decks

## Code Requirements

- Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

*IRC 2015 Section R507.4*

Experience has shown that #7 stainless steel screws are acceptable for face screw fastening of hardwood and composite deck boards.

### Fastening for composite decking or using concealed fasteners:

The IRC does not include decking fastening requirements for composite decking materials, or for the use of concealed clips. Simpson Strong-Tie recommends consulting with the decking manufacturer for their recommendations.

### Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.

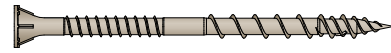


Shown with Deck Clip QDDECKCLIP-RC

Quik Drive auto-feed screw driving systems are ideal for fastening decking because they combine the efficiency of stand-up driving with the holding power of screws, providing the best long-term results.

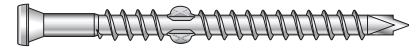
### Deck-Drive™ DSV WOOD Screw

Rimmed flat head with nibs, Quik Guard® coating in red, tan and gray



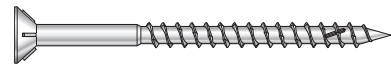
### Deck-Drive DHPD HARDWOOD Screw

Paddle-style drill point, Type 305 stainless steel



### Deck-Drive DWP WOOD SS Screw

Trim-head with nibs, available in Types 305 and 316 stainless steel



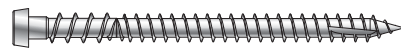
### Trim-Head Screw

#7 trim head, Type 305 stainless steel



### Deck-Drive DCU COMPOSITE Screw

Available with Quik Guard coating in 11 colors or in Types 305 and 316 stainless steel



### Bugle-Head Wood Screw

#10 bugle head, available in Types 305 and 316 stainless steel



## PROSDD/CCS+ Combo System

**Applications:** Decks/docks, subfloor, sheathing, wall plates, stair treads, fiber-cement siding, drywall

- Expanded depth settings for high-density materials
- Reversible and replaceable non-skid teeth
- Uniform toenailing and countersink on slick surfaces
- Two screw driving attachments for added versatility



## PRO300S System

**Applications:** Decks/docks, subfloor, wall plates, stair treads

- Expanded depth settings for high-density materials
- Reversible and replaceable non-skid teeth
- Includes a decking nose clip to position decking screws quickly and precisely every time
- Uniform toenailing and countersink on slick surfaces
- Sure-grip guide tube increases stability for a broad range of screws



# Color-Match Fasteners for Composite and PVC Decking

## Decking Meets Its Match

Simpson Strong-Tie® color-matched hand-drive and collated fasteners are available in a color palette specifically formulated to match a wide range of the most popular decking systems, and are designed to blend into the decking material.

**Trim-Head PVC Decking:** Azek, Cevn, Gossen, Timber Tech, Trex, Veka Deck

**Composite or Encapsulated Decking:** ChoiceDek, Evergrain, Fiberon, Moisture Shield, Timber Tech, Trex

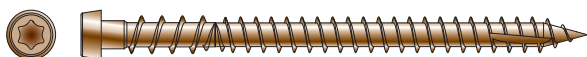
For more information on Simpson Strong-Tie color-match fasteners, please see flier S-F-CMG15.

*AZEK, Cevn, ChoiceDek, Evergrain, Fiberon, Gossen, MoistureShield, TimberTech and VekaDeck are trademarks or registered trademarks of their respective holders. Trex and Trex Escapes are registered trademarks of Trex Company, Inc.*

## Composite or Encapsulated Composite Decking

### Deck-Drive™ DCU COMPOSITE Screw

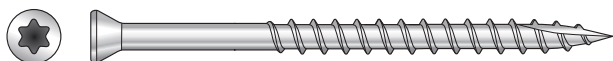
- Trim pan head to reduce mushrooming and conceal installation
- Available in colors to match popular composite deck boards
- Available with Quik Guard® coating and stainless steel



## PVC Decking Fasteners

### Trim-Head Screw, Stainless Steel, 6-Lobe Drive

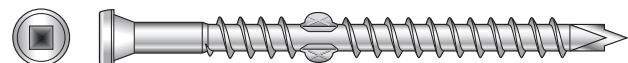
- Trim-style head reduces appearance of installed fasteners on deck surface
- Available in colors formulated to match popular PVC deck systems



## Hardwood Decking Fasteners

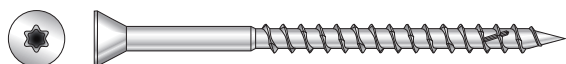
### Deck-Drive DHPD HARDWOOD Screw, Stainless Steel

- Compact head ensures low-profile installation and reduced visibility
- Paddle-style drill point virtually eliminates splitting without predrilling
- Available in hand-drive or collated for the Quik Drive auto-feed system



### Deck-Drive DWP WOOD SS Screw, Stainless Steel

- Available in Types 305 and 316 stainless steel, flat and trim head
- Driver bit included in each package



### Code Requirements

- Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

*IRC 2015 Section R507.4*

Experience has shown that #7 stainless steel screws are acceptable for face screw fastening of hardwood and composite deck boards.

### Fastening for composite decking or using concealed fasteners:

The IRC does not include decking fastening requirements for composite decking materials, or for the use of concealed clips. Simpson Strong-Tie recommends consulting with the decking manufacturer for their recommendations.

### Selection of products based upon performance and/or suitability for a specific application should be made by a qualified professional.

Simpson Strong-Tie recommends that deck designs be approved by the local building department before construction begins.



Stainless-steel connectors are also available for higher-exposure environments or applications using certain preservative-treated woods. See page 27 for more detail.



# EB-TY® and Fastener Finder

## EB-TY Hidden Deck Fastener®

The EB-TY biscuit provides a unique method of fastening deck boards that makes the fasteners virtually invisible. Fastening is done into the side of the board, leaving a fastener-free deck surface.

The EB-TY is a polypropylene biscuit fastener that fits into a slot on the edge of the deck boards. The EB-TY fasteners are inserted and fastened with a screw driven into the joist. Nesting each successive board against the EB-TY automatically ensures consistent spacing and uniform height.

- Easy to install since all fastening is done from the top side
- Affords easier deck resurfacing since nail heads are eliminated from the deck surface
- Suitable for pre-grooved decking or the builder can cut grooves with a biscuit joiner
- Formed from UV resistant polypropylene to last the life of the deck
- Stainless-steel #7 trim-head screws included
- Each carton includes installation instructions and enough EB-TY fasteners, screws and tapered lpe wood plugs to install 100 square feet of decking (assuming 6" wide boards, installed perpendicular to joists spaced 16" on center)

**New and improved EB-TY Premium coming soon.**  
For more information, visit [strongtie.com/EBTYpremium](http://strongtie.com/EBTYpremium).



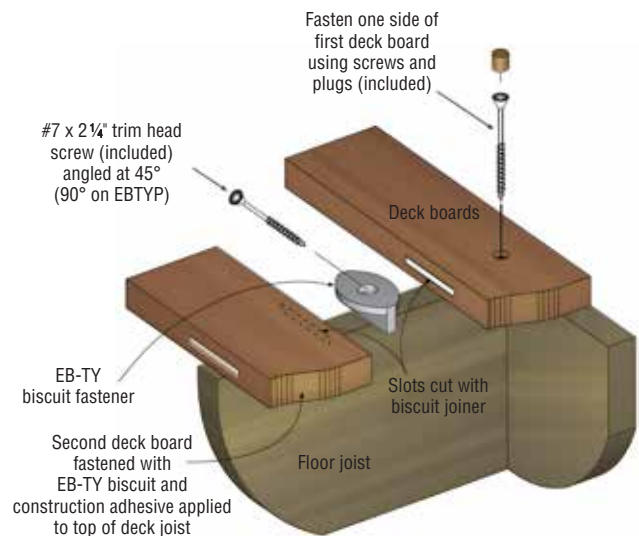
**EBTYS**



**EBTT**



**EBTYLC**



### Search with Fastener Finder

Quickly search our wide array of fasteners to find exactly what you need. Search by multiple criteria, such as application, fastener type, finish/material and model number. Explore our extensive product line in seconds in order to compare, specify or buy. Find the right fastener now by accessing our online Fastener Finder. Visit our website at [strongtie.com/ff](http://strongtie.com/ff).

Select Criteria:

Fastener Type: All Application: All Material/Coating: All Paint Color: All

Length: in inches - decimal values in Equal To Search Length

Additional Criteria:

Head Type: All Thread Type: All Shank Type: All Point Type: All

Search Model Number: Text to Search for: Search Model No.

Search Screw Size / Nail Gauge: from to Search Size / Gauge

# Plan for beauty, design for strength



## Introducing Simpson Strong-Tie® Deck Planner Software™

As the leader in structural wood connectors, Simpson Strong-Tie is the perfect partner to help build a strong, beautiful deck that will last for decades. Our new, free Deck Planner Software enables you to design a deck in just a few minutes. With this Web-based software, you don't have to worry about complicated downloads or managing licenses. Just design it, print out your permit submittal pages and materials lists, and go.

That stylish, strong deck is just clicks away. Get started today by visiting [strongtie.com/deckplanner](http://strongtie.com/deckplanner).



# Easy on the eyes. Easy to install.



## *Outdoor Accents*<sup>®</sup>

**Introducing Outdoor Accents decorative hardware.** Easily add style and strength to your outdoor projects. The new Simpson Strong-Tie<sup>®</sup> Outdoor Accents line of structural connectors features an innovative screw and washer set that combines the ease of installing a screw with the look of a bolt. And, with a black powder-coat finish, this hardware offers style that's designed to last.

To learn more about Outdoor Accents decorative hardware, call (800) 999-5099 and visit [strongtie.com/outdooraccents](http://strongtie.com/outdooraccents).

**SIMPSON**  
**Strong-Tie**<sup>®</sup>

This flier is effective until June 30, 2019, and reflects information available as of March 1, 2017. This information is updated periodically and should not be relied upon after June 30, 2019. Contact Simpson Strong-Tie for current information and limited warranty or see [strongtie.com](http://strongtie.com).

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**(800) 999-5099**  
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