


**THIS GUIDE IS PROVIDED TO COVER THE *MANDATORY* REQUIREMENTS OF DECK CONSTRUCTION UNDER THE 2025 NEW YORK STATE RESIDENTIAL PRESCRIPTIVE CODE.**

## 2025 NEW YORK STATE RESIDENTIAL CODE – PRESCRIPTIVE DECK CODE

### SECTION R507—EXTERIOR DECKS

**R507.1 Decks.** Wood-framed decks shall be in accordance with this section. Decks shall be designed for the live load required in Section R301.5 or the ground snow load of 50 psf, whichever is greater. For decks using materials and conditions not prescribed in this section, refer to Section R301. Proposed decks not complaint with this guide may require stamped plans from an architect or engineer.

**R507.3 Footings.** Decks shall be supported on concrete footings or other *approved* structural systems designed to accommodate all loads in accordance with Section R301. Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3.

**Exceptions:**

1. Footings shall not be required for free-standing decks consisting of joists directly supported on grade ***over their entire length.***
2. Footings shall not be required for free-standing decks that meet ***all of*** the following criteria:
   - 2.1. The joists bear directly on *precast concrete* pier blocks at grade without support by beams or posts.
   - 2.2. The area of the deck does not exceed 200 square feet (18.6 $m^2$).
   - 2.3. The walking surface is not more than 20 inches (508 mm) above grade at any point within 36 inches (914 mm) measured horizontally from the edge.

**R507.3.1 Minimum size.** The minimum size of deck footings shall be in accordance with Table R507.3.1, based on the tributary area and allowable soil-bearing pressure in accordance with Table R401.4.1(1).

**TABLE R507.3.1—MINIMUM FOOTING SIZE FOR DECKS**

| LIVE OR GROUND SNOW LOAD[b] (psf) | TRIBUTARY AREA[e] ($ft^2$) | LOAD-BEARING VALUE OF SOILS[a, c, d] (psf) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1,500 | | | 2,000 | | | ≥ 3,000 | | |
| | | Side of a square footing (inches) | Diameter of a round footing (inches) | Plain concrete thickness (inches) | Side of a square footing (inches) | Diameter of a round footing (inches) | Plain concrete thickness (inches) | Side of a square footing (inches) | Diameter of a round footing (inches) | Plain concrete thickness (inches) |
| 50 | 5 | 7 | 8 | 6 | 7 | 8 | 6 | 7 | 8 | 6 |
| | 20 | 11 | 13 | 6 | 10 | 11 | 6 | 8 | 9 | 6 |
| | 40 | 15 | 17 | 6 | 13 | 15 | 6 | 11 | 13 | 6 |
| | 60 | 19 | 21 | 6 | 16 | 18 | 6 | 13 | 15 | 6 |
| | 80 | 21 | 24 | 8 | 19 | 21 | 6 | 15 | 17 | 6 |
| | 100 | 24 | 27 | 9 | 21 | 23 | 7 | 17 | 19 | 6 |
| | 120 | 26 | 30 | 10 | 23 | 26 | 8 | 19 | 21 | 6 |
| | 140 | 28 | 32 | 11 | 25 | 28 | 9 | 20 | 23 | 7 |
| | 160 | 30 | 34 | 12 | 26 | 30 | 10 | 21 | 24 | 8 |

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 $m^2$, 1 pound per square foot = 0.0479 kPa.
a. Interpolation permitted, extrapolation not permitted.
b. Based on highest load case: Dead + Live or Dead + Snow.
c. Footing dimensions shall allow complete bearing of the post.
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
e. Area, in square feet, of deck surface supported by post and footings.

**R507.3.2 Minimum depth.** Deck footings shall be placed not less than 12 inches (305 mm) below the undisturbed ground surface.

**R507.3.3 Frost protection.** Where decks are attached to a frost-protected structure, deck footings shall be protected from frost by one or more of the following methods:

1. Extending below the 48” frost line specified in Table R301.2.
2. Erecting on solid rock.
3. Other approved methods of frost protection.

**R507.4 Deck posts.** For single-level decks, wood post size shall be in accordance with Table R507.4.

**TABLE R507.4—DECK POST HEIGHT**

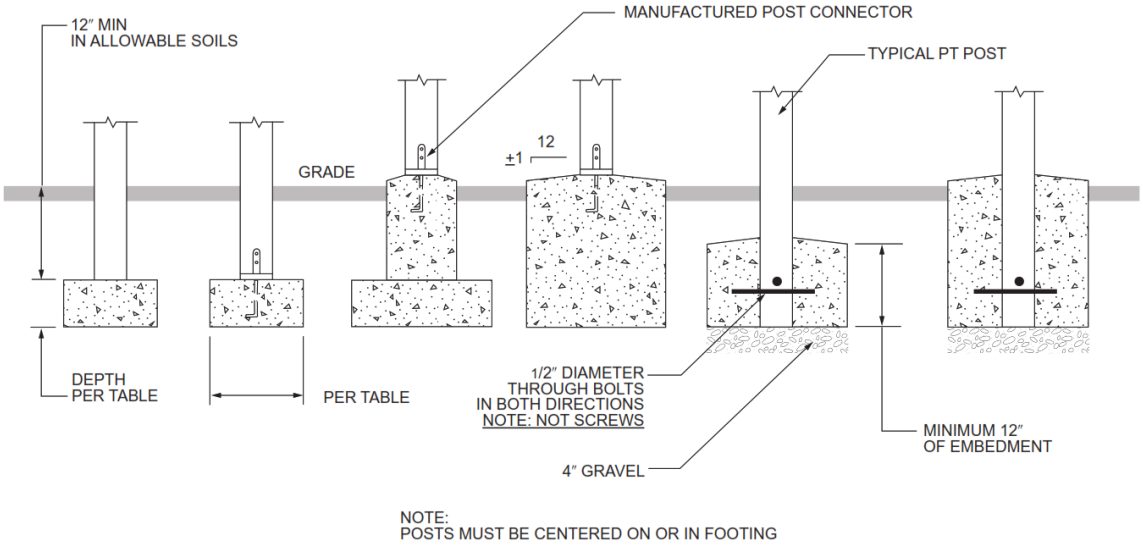
| LOADS (psf)[b] | POST SPECIES[c] | POST SIZE[d] | TRIBUTARY AREA ($ft^2$)[g, h] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 |
| | | | MAXIMUM DECK POST HEIGHT[a] (feet-inches) | | | | | | | |
| 50 ground snow load | Southern pine | 4 × 4 | 14-0 | 12-2 | 9-10 | 8-5 | 7-5 | 6-7 | 5-11 | 5-4 |
| | | 4 × 6 | 14-0 | 14-0 | 12-6 | 10-9 | 9-6 | 8-7 | 7-10 | 7-3 |
| | | 6 × 6 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 13-4 |
| | | 8 × 8 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 |
| | Douglas fir[e] Hem-fir[e] Spruce-pine-fir[e] | 4 × 4 | 14-0 | 12-1 | 9-8 | 8-2 | 7-1 | 6-2 | 5-3 | 4-2 |
| | | 4 × 6 | 14-0 | 14-0 | 12-4 | 10-7 | 9-4 | 8-4 | 7-7 | 6-11 |
| | | 6 × 6 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 12-10 |
| | | 8 × 8 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 |
| | Redwood[f] Western cedars[f] Ponderosa pine[f] Red pine[f] | 4 × 4 | 14-0 | 11-8 | 9-0 | 6-10 | 3-7 | NP | NP | NP |
| | | 4 × 6 | 14-0 | 14-0 | 12-0 | 10-0 | 8-6 | 7-0 | 5-3 | NP |
| | | 6 × 6 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 10-8 | 2-4 |
| | | 8 × 8 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 | 14-0 |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
NP = Not Permitted.
a. Measured from the underside of the beam to the top of footing or pier.
b. 10 psf dead load. Snow load not assumed to be concurrent with live load.
c. No. 2 grade, wet service factor included.
d. Notched deck posts shall be sized to accommodate beam size in accordance with Section R507.5.2.
e. Includes incising factor.
f. Incising factor not included.
g. Area, in square feet, of deck surface supported by post and footings.
h. Interpolation permitted. Extrapolation not permitted.

**R507.4.1 Deck post to deck footing connection.** Where posts bear on concrete footings in accordance with Section R403 and Figure R507.3, lateral restraint shall be provided by approved connectors or a minimum post embedment of 12 inches (305 mm) in surrounding soils or concrete piers.

**Exception:** Where expansive, compressible, shifting or other questionable soils are present, surrounding soils shall not be relied on for lateral support.

**FIGURE R507.3—DECK POSTS TO DECK FOOTING CONNECTION**




For SI: 1 inch = 25.4 mm.

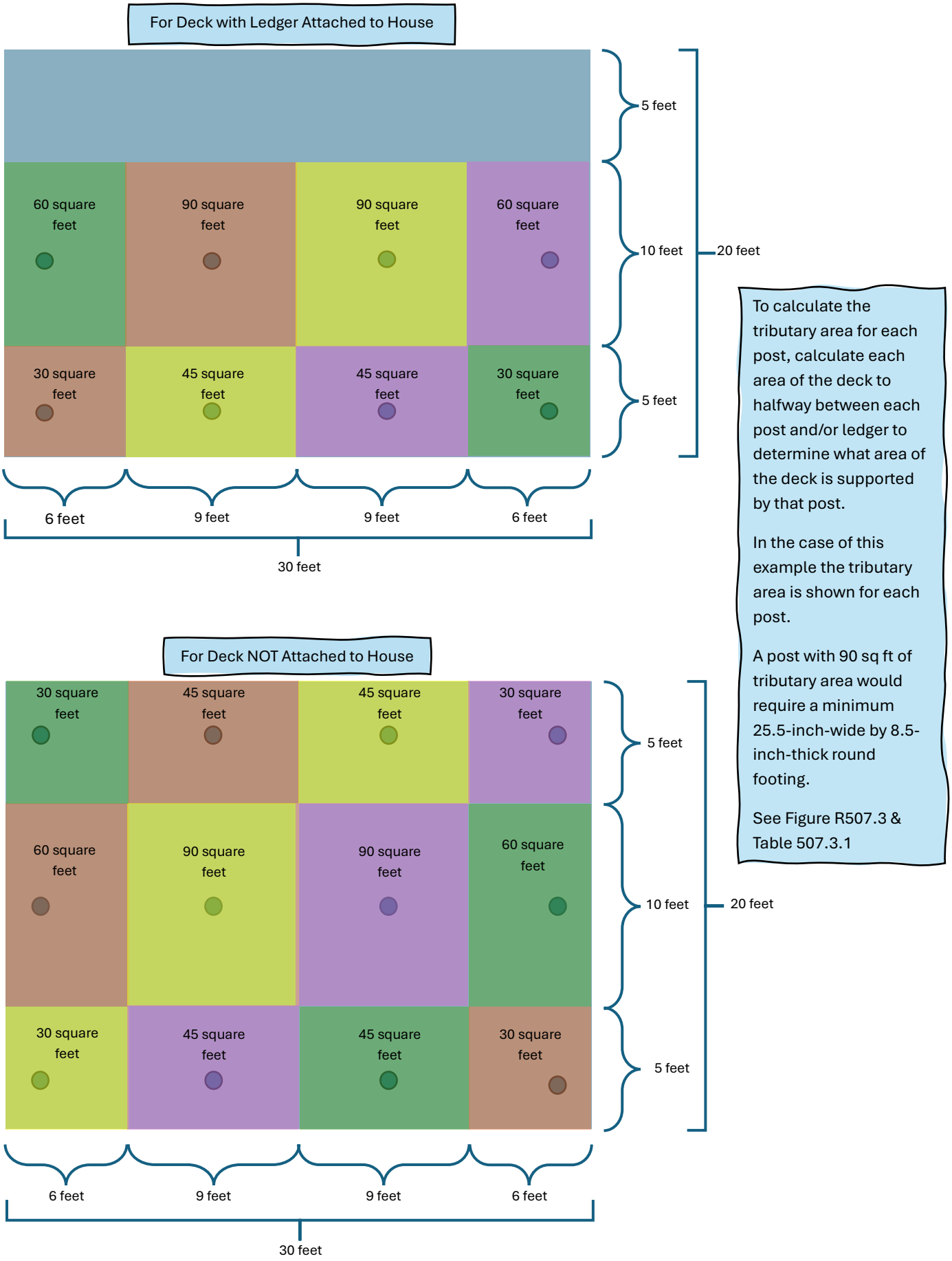






***ANY deck supported by posts shall have footings complying with Section 507.3***

# Examples of Tributary Area Calculation




To calculate the tributary area for each post, calculate each area of the deck to halfway between each post and/or ledger to determine what area of the deck is supported by that post.

In the case of this example the tributary area is shown for each post.

A post with 90 sq ft of tributary area would require a minimum 25.5-inch-wide by 8.5-inch-thick round footing.

See Figure R507.3 & Table 507.3.1

**R507.5 Deck beams.** Maximum allowable spans for wood deck beams, as shown in Figure R507.5, shall be in accordance with Tables R507.5(1) through R507.5(4) and based on the joist span length and cantilever length as shown in Figure R507.6. Beam plies shall be fastened together with two rows of 10d (3-inch × 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Deck beams of other materials shall be permitted where designed in accordance with accepted engineering practices.



***"Sandwiched" Beams are NOT permitted on any deck. Beams must comply with Section R507.5***



***Carriage Bolts are NOT permitted to be used in the construction of a deck***

***Beam size and span is in direct correlation to the joist span—the longer the joist span, the larger the beam and/or smaller the beam span.***

Pressure Treated

**TABLE R507.5(2)—MAXIMUM DECK BEAM SPAN—50 PSF GROUND SNOW LOAD[c]**

| | JOIST SPAN | JOIST SPAN LENGTH AND JOIST CANTILEVER LENGTH[a, i] (feet & feet) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 6 & 0 | 6 & 1.5 | — | — | — | — | — | — | — | — |
| | 8 | — | 8 & 0 | 8 & 1 | 8 & 2 | — | — | — | — | — | — |
| | 10 | — | — | 10 & 0 | 10 & 1 | 10 & 2.5 | — | — | — | — | — |
| | 12 | — | — | — | 12 & 0 | 12 & 1 | 12 & 2 | 12 & 3 | — | — | — |
| | 14 | — | — | — | — | 14 & 0 | 14 & 1 | 14 & 2 | 14 & 3.5 | — | — |
| | 16 | — | — | — | — | — | 16 & 0 | 16 & 1 | 16 & 2.5 | — | — |
| | 18 | — | — | — | — | — | — | 18 & 0 | 18 & 1.5 | 18 & 3 | 18 & 4.5 |
| **BEAM SPECIES[d]** | **BEAM SIZE[e]** | **MAXIMUM DECK BEAM SPAN LENGTH[a, b, f] (feet-inches)** | | | | | | | | | |
| Southern pine | 1 – 2 × 6 | 4-9 | 4-6 | 4-2 | 3-11 | 3-6 | 3-4 | 3-2 | 2-11 | 2-9 | 2-7 |
| | 1 – 2 × 8 | 6-2 | 5-9 | 5-4 | 4-11 | 4-5 | 4-2 | 4-0 | 3-9 | 3-6 | 3-3 |
| | 1 – 2 × 10 | 7-2 | 6-9 | 6-3 | 5-10 | 5-3 | 5-0 | 4-9 | 4-5 | 4-2 | 3-11 |
| | 1 – 2 × 12 | 8-6 | 8-0 | 7-5 | 6-11 | 6-2 | 5-11 | 5-8 | 5-3 | 4-11 | 4-7 |
| | 2 – 2 × 6 | 7-1 | 6-8 | 6-2 | 5-9 | 5-2 | 4-11 | 4-9 | 4-4 | 4-1 | 3-10 |
| | 2 – 2 × 8 | 9-1 | 8-6 | 7-11 | 7-4 | 6-7 | 6-3 | 6-0 | 5-7 | 5-2 | 4-11 |
| | 2 – 2 × 10 | 10-9 | 10-1 | 9-5 | 8-9 | 7-10 | 7-5 | 7-1 | 6-7 | 6-2 | 5-10 |
| | 2 – 2 × 12 | 12-9 | 11-11 | 11-1 | 10-3 | 9-2 | 8-9 | 8-5 | 7-9 | 7-3 | 6-10 |
| | 3 – 2 × 6 | 8-3 | 7-11 | 7-6 | 7-2 | 6-6 | 6-2 | 5-11 | 5-6 | 5-1 | 4-10 |
| | 3 – 2 × 8 | 11-0 | 10-5 | 9-10 | 9-3 | 8-3 | 7-10 | 7-6 | 6-11 | 6-6 | 6-2 |
| | 3 – 2 × 10 | 13-6 | 12-8 | 11-9 | 10-11 | 9-9 | 8-4 | 8-11 | 8-3 | 7-9 | 7-3 |
| | 3 – 2 × 12 | 15-11 | 14-11 | 13-11 | 12-11 | 11-6 | 11-0 | 10-6 | 9-9 | 9-1 | 8-7 |
| Douglas fir-larch[g]<br>Hem-fir[g]<br>Spruce-pine-fir[g] | 1 – 2 × 6 | 4-3 | 4-0 | 3-8 | 3-5 | 2-11 | 2-9 | 2-7 | 2-4 | 2-2 | 2-0 |
| | 1 – 2 × 8 | 5-9 | 5-4 | 4-11 | 4-7 | 3-11 | 3-8 | 3-5 | 3-1 | 2-10 | 2-8 |
| | 1 – 2 × 10 | 7-0 | 6-7 | 6-1 | 5-8 | 4-11 | 4-8 | 4-5 | 4-0 | 3-8 | 3-5 |
| | 1 – 2 × 12 | 8-1 | 7-7 | 7-1 | 6-7 | 5-11 | 5-7 | 5-4 | 4-10 | 4-6 | 4-2 |
| | 2 – 2 × 6 | 6-5 | 6-0 | 5-7 | 5-2 | 4-7 | 4-4 | 4-2 | 3-10 | 3-5 | 3-2 |
| | 2 – 2 × 8 | 8-6 | 8-0 | 7-5 | 6-11 | 6-2 | 5-11 | 5-8 | 5-0 | 4-7 | 4-2 |
| | 2 – 2 × 10 | 10-5 | 9-9 | 9-1 | 8-5 | 7-7 | 7-3 | 6-11 | 6-4 | 5-10 | 5-4 |
| | 2 – 2 × 12 | 12-1 | 11-4 | 10-7 | 9-10 | 8-9 | 8-4 | 8-0 | 7-5 | 6-11 | 6-6 |
| | 3 – 2 × 6 | 8-0 | 7-6 | 7-0 | 6-6 | 5-9 | 5-6 | 5-3 | 4-11 | 4-7 | 4-4 |
| | 3 – 2 × 8 | 10-8 | 10-0 | 9-4 | 8-8 | 7-9 | 7-5 | 7-1 | 6-6 | 6-1 | 5-8 |
| | 3 – 2 × 10 | 13-1 | 12-3 | 11-5 | 10-7 | 9-6 | 9-1 | 8-8 | 8-0 | 7-6 | 7-0 |
| | 3 – 2 × 12 | 15-2 | 14-3 | 13-3 | 12-4 | 11-0 | 10-6 | 10-1 | 9-4 | 8-9 | 8-3 |
| Redwood[h]<br>Western cedars[h]<br>Ponderosa pine[h]<br>Red pine[h] | 1 – 2 × 6 | 4-4 | 4-1 | 3-9 | 3-6 | 3-0 | 2-10 | 2-8 | 2-5 | 2-3 | 2-1 |
| | 1 – 2 × 8 | 5-6 | 5-2 | 4-10 | 4-6 | 4-0 | 3-9 | 3-6 | 3-2 | 2-11 | 2-9 |
| | 1 – 2 × 10 | 6-9 | 6-4 | 5-11 | 5-6 | 4-11 | 4-8 | 4-6 | 4-1 | 3-9 | 3-6 |
| | 1 – 2 × 12 | 7-10 | 7-4 | 6-10 | 6-4 | 5-8 | 5-5 | 5-2 | 4-10 | 4-6 | 4-3 |
| | 2 – 2 × 6 | 6-6 | 6-1 | 5-8 | 5-3 | 4-8 | 4-6 | 4-4 | 3-11 | 3-6 | 3-3 |
| | 2 – 2 × 8 | 8-2 | 7-8 | 7-2 | 6-8 | 5-11 | 5-8 | 5-5 | 5-0 | 4-8 | 4-3 |
| | 2 – 2 × 10 | 10-0 | 9-5 | 8-9 | 8-2 | 7-3 | 6-11 | 6-8 | 6-2 | 5-9 | 5-5 |
| | 2 – 2 × 12 | 11-8 | 10-11 | 10-2 | 9-5 | 8-5 | 8-0 | 7-8 | 7-2 | 6-8 | 6-3 |
| | 3 – 2 × 6 | 7-5 | 7-1 | 6-9 | 6-5 | 5-11 | 5-8 | 5-5 | 5-0 | 4-8 | 4-5 |
| | 3 – 2 × 8 | 9-10 | 9-4 | 8-10 | 8-4 | 7-5 | 7-1 | 6-10 | 6-4 | 5-11 | 5-7 |
| | 3 – 2 × 10 | 12-6 | 11-9 | 10-11 | 10-2 | 9-1 | 8-8 | 8-4 | 7-8 | 7-2 | 6-9 |
| | 3 – 2 × 12 | 14-7 | 13-8 | 12-9 | 11-10 | 10-7 | 10-1 | 9-8 | 8-11 | 8-4 | 7-10 |

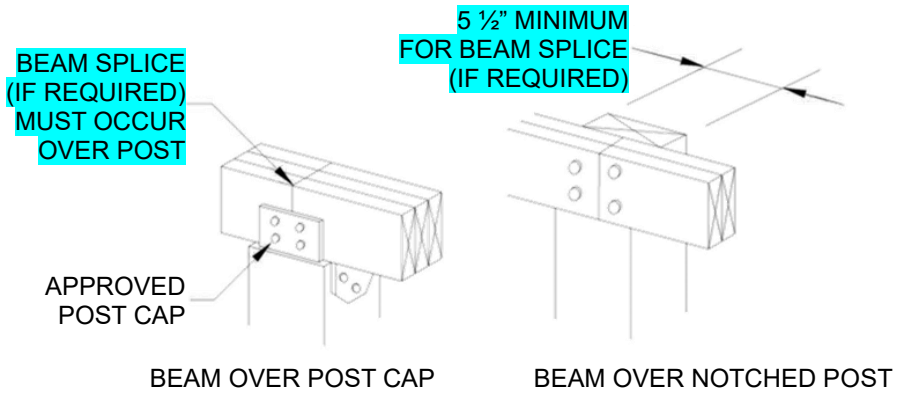
For SI: 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation permitted for conditions with zero joist cantilever length. Extrapolation not permitted.
b. Beams supporting a single span of joists with or without cantilever.
c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.
d. No. 2 grade, wet service factor included.
e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4.
g. Includes incising factor.
h. Incising factor not included.
i. Deck joist span as shown in Figure R507.5.

**R507.5.1 Deck beam bearing.** Beams and individual beam plies of built-up beams shall be continuous between bearing locations and continuous across bearing locations supporting beam cantilevers. Beams shall be permitted to cantilever beyond bearing locations up to one-fourth of the actual beam span. The ends of beams shall have not less than $1^1/_2$ inches (38 mm) of bearing length on wood or metal and not less than 3 inches (76 mm) of bearing length on concrete or masonry for the entire width of the beam.

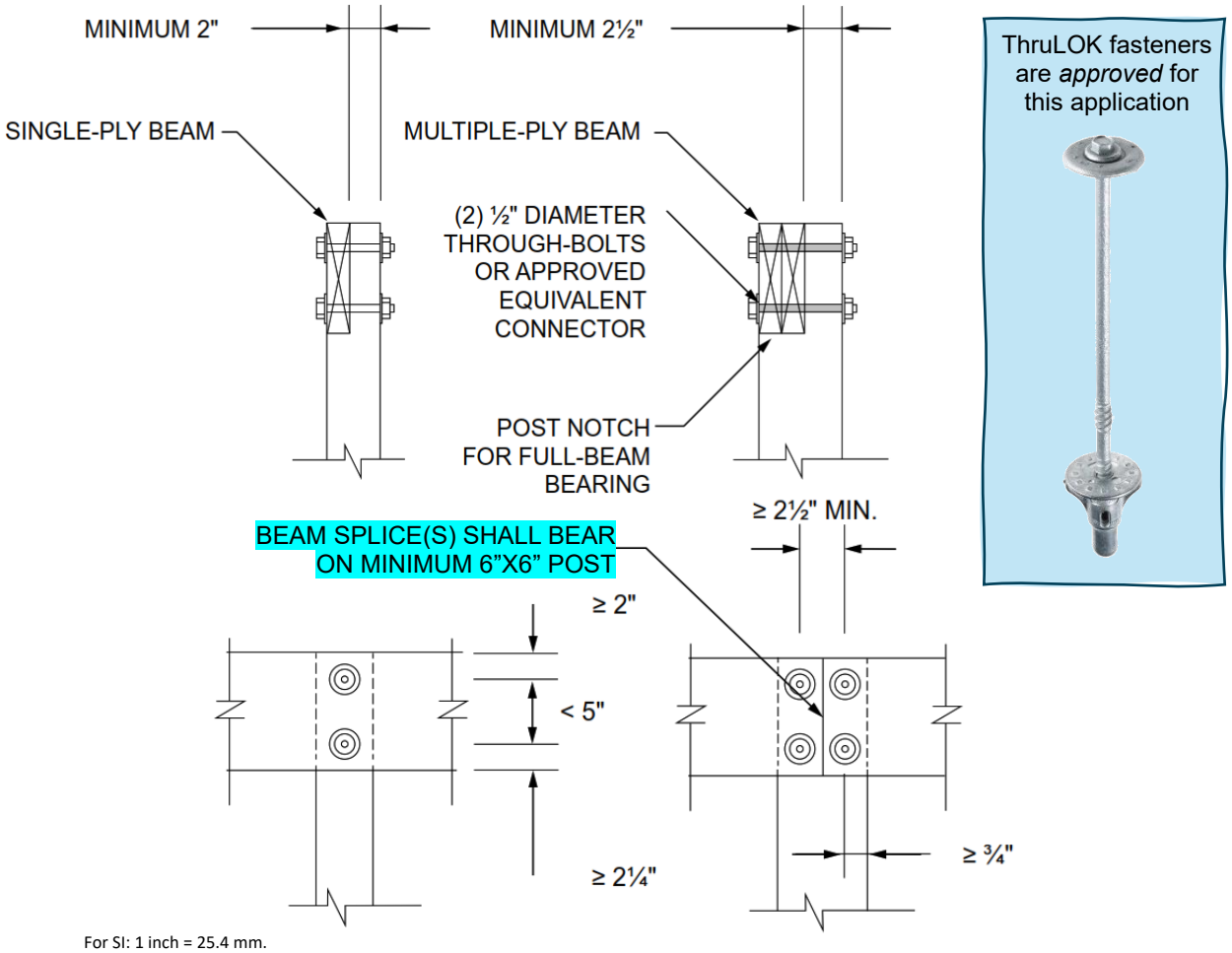
**R507.5.2 Deck beam connection to supports.** Deck beams shall be connected to supporting members to prevent lateral displacement. Deck beam connections to wood posts shall be in accordance with Figures R507.5.2(1)) and R507.5.2(2). Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut.

**FIGURE R507.5.2(1)—DECK BEAM TO DECK POST**




For SI: 1 inch = 25.4 mm.

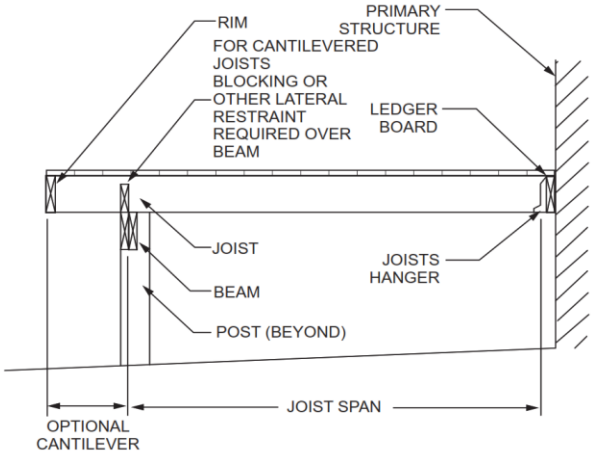
**FIGURE R507.5.2(2)—NOTCHED POST-TO-BEAM CONNECTION**



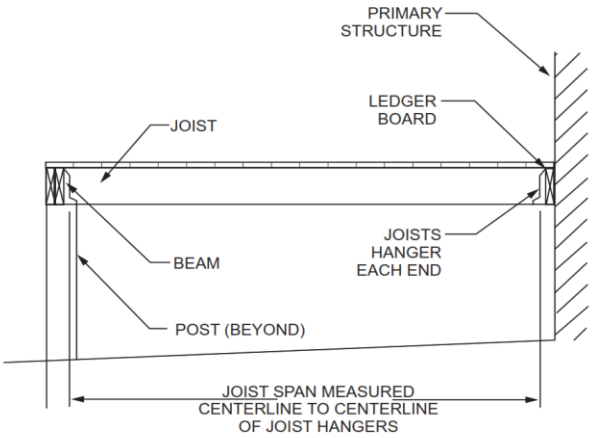

For SI: 1 inch = 25.4 mm.

**R507.6 Deck joists.** Maximum allowable spans for wood deck joists, as shown in Figure R507.6, shall be in accordance with Table R507.6. The maximum joist spacing shall be limited by the decking materials in accordance with Table R507.7.

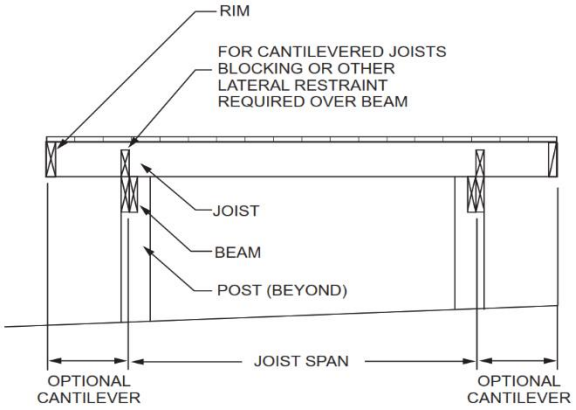
**FIGURE R507.6—TYPICAL DECK JOIST SPANS**



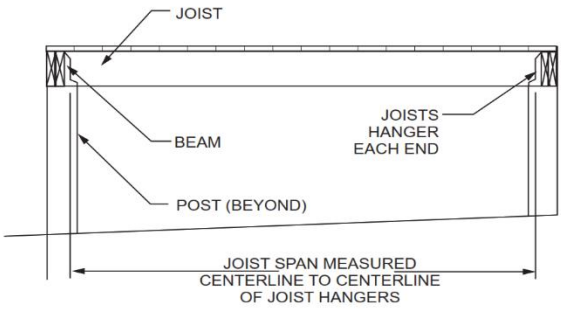

CANTILEVERED JOISTS WITH DROPPED BEAM




JOISTS WITH FLUSH BEAM




JOISTS ON FREE-STANDING DECK WITH DROPPED BEAM




JOISTS ON FREE-STANDING DECK WITH FLUSH BEAM

**TABLE R507.6—MAXIMUM DECK JOIST SPANS**

| LOAD[a] (psf) | JOIST SPECIES[b] | JOIST SIZE | ALLOWABLE JOIST SPAN[b,c] (feet-inches) | | | MAXIMUM CANTILEVER[d,f] (feet-inches) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Joist spacing (inches) | | | Joist back span[g] (feet) | | | | | | | |
| | | | 12 | 16 | 24 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 50 ground snow load | Southern pine | 2 × 6 | 9-2 | 8-4 | 7-4 | 1-0 | 1-6 | 1-5 | NP | NP | NP | NP | NP |
| | | 2 × 8 | 12-1 | 11-0 | 9-5 | 1-0 | 1-6 | 2-0 | 2-5 | 2-3 | NP | NP | NP |
| | | 2 × 10 | 15-5 | 13-9 | 11-3 | 1-0 | 1-6 | 2-0 | 2-6 | 3-0 | 3-1 | NP | NP |
| | | 2 × 12 | 18-0 | 16-2 | 13-2 | 1-0 | 1-6 | 2-0 | 2-6 | 3-0 | 3-6 | 3-10 | 3-10 |
| | Douglas fir-larch[e] Hem-fir[e] Spruce-pine-fir[e] | 2 × 6 | 8-10 | 8-0 | 6-8 | 1-0 | 1-6 | 1-4 | NP | NP | NP | NP | NP |
| | | 2 × 8 | 11-7 | 10-7 | 8-11 | 1-0 | 1-6 | 2-0 | 2-3 | NP | NP | NP | NP |
| | | 2 × 10 | 14-10 | 13-3 | 10-10 | 1-0 | 1-6 | 2-0 | 2-6 | 3-0 | 3-0 | NP | NP |
| | | 2 × 12 | 17-9 | 15-5 | 12-7 | 1-0 | 1-6 | 2-0 | 2-6 | 3-0 | 3-6 | 3-8 | NP |
| | Redwood[f] Western cedars[f] Ponderosa pine[f] Red pine[f] | 2 × 6 | 8-3 | 7-6 | 6-6 | 1-0 | 1-4 | 1-1 | NP | NP | NP | NP | NP |
| | | 2 × 8 | 10-10 | 9-10 | 8-6 | 1-0 | 1-6 | 2-0 | 1-11 | NP | NP | NP | NP |
| | | 2 × 10 | 13-10 | 12-7 | 10-5 | 1-0 | 1-6 | 2-0 | 2-6 | 2-9 | NP | NP | NP |
| | | 2 × 12 | 16-10 | 14-9 | 12-1 | 1-0 | 1-6 | 2-0 | 2-6 | 3-0 | 3-5 | 3-5 | NP |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.
NP = Not Permitted.
a. Dead load = 10 psf. Snow load not assumed to be concurrent with live load.
b. No. 2 grade, wet service factor included.
c. $L/\Delta = 360$ at main span.
d. $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.
e. Includes incising factor.
f. Incising factor not included.
g. Interpolation allowed. Extrapolation is not allowed.

**R507.6.1 Deck joist bearing.** The ends of joists shall have not less than $1^1/_2$ inches (38 mm) of bearing length on wood or metal and not less than 3 inches (76 mm) of bearing length on concrete or masonry over its entire width. Joists bearing on top of a multiple-ply beam or ledger shall be fastened in accordance with Table R602.3(1). Joists bearing on top of a single-ply beam or ledger shall be attached by a mechanical connector. Joist framing into the side of a beam or ledger board shall be supported by approved joist hangers.

**R507.6.2 Deck joist lateral restraint.** Joist ends and bearing locations shall be provided with lateral resistance to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall equal not less than 60 percent of the joist depth. Where lateral restraint is provided by rim joists, they shall be secured to the end of each joist with not fewer than three 10d (3-inch by 0.128-inch) (76 mm by 3.3 mm) nails or three No. 10 x 3-inch-long (76 mm) wood screws.

**R507.7 Decking.** Maximum allowable spacing for joists supporting wood decking, excluding stair treads, shall be in accordance with Table R507.7. Wood decking shall be attached to each supporting member with not less than two 8d deformed shank nails or two No. 8 wood screws. Maximum allowable spacing for joists supporting *plastic composite* decking shall be in accordance with Section R507.2. Other *approved* decking or fastener systems shall be installed in accordance with the manufacturer's installation requirements.

**R507.2.2.5 Installation of plastic composites.** *Plastic composite* deck boards, stair treads, *guards* and *handrails* shall be installed in accordance with this code and the manufacturer's instructions.

**TABLE R507.7—MAXIMUM JOIST SPACING FOR WOOD DECKING**

| DECKING MATERIAL TYPE AND NOMINAL SIZE | DECKING PERPENDICULAR TO JOIST | | DECKING DIAGONAL TO JOIST[a] | |
|---|---|---|---|---|
| | Single span[c] | Multiple span[c] | Single span[c] | Multiple span[c] |
| | Maximum on-center joist spacing (inches) | | | |
| $1^1/_4$-inch-thick wood[b] | 12 | 16 | 8 | 12 |
| 2-inch-thick wood | 24 | 24 | 18 | 24 |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.
a. Maximum angle of 45 degrees from perpendicular for wood deck boards.
b. Other maximum span provided by an accredited lumber grading or inspection agency also allowed.
c. Individual wood deck boards supported by two joists shall be considered single span and three or more joists shall be considered multiple span.

**R507.9 Vertical and lateral supports at band joist.** Vertical and lateral supports for decks shall comply with this section.

**R507.9.1 Vertical supports.** Vertical loads shall be transferred to band joists with ledgers in accordance with this section.

**R507.9.1.1 Ledger details.** Deck ledgers shall be a minimum 2-inch by 8-inch (51 mm by 203 mm) nominal, No. 2 grade or better pressure-preservative-treated Southern pine, incised pressure-preservative-treated hem-fir, or decay-resistant, *naturally durable wood*. Deck ledgers shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer.

**R507.9.1.2 Band joist details.** Band joists supporting a ledger shall be a minimum 2-inch-nominal (51 mm), solid-sawn, spruce-pine-fir or better lumber or a minimum 1-inch (25 mm) nominal engineered wood rim boards in accordance with Section R502.1.7. Band joists shall bear fully on the primary structure capable of supporting all required loads.

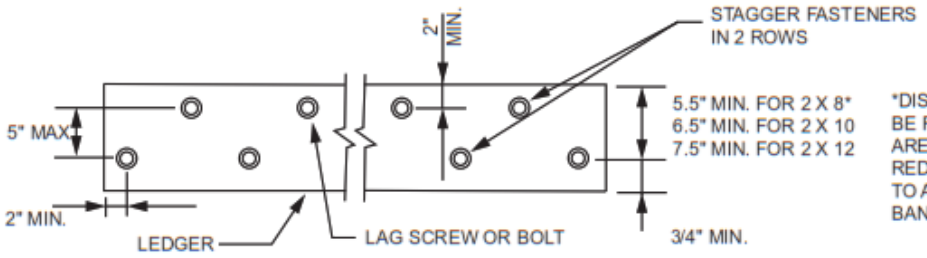
**R507.9.1.3 Ledger to band joist details.** Where ledgers are fastened in accordance with Table R507.9.1.3(1), fasteners shall comply with Section R507.2.3 and shall be installed in accordance with Table R507.9.1.3(2) and Figures R507.9.1.3(1) and R507.9.1.3(2). Holes for $^1/_2$-inch (12.7 mm) lag screws shall be predrilled with two drill bits so that a hole $^1/_2$ inch (12.7mm) in diameter is drilled through the ledger and sheathing, if present, and a hole $^5/_{16}$ inch (7.9 mm) to $^3/_8$ inch (9.5mm) in diameter is drilled through the band joist.

**TABLE R507.9.1.3(1)—DECK LEDGER CONNECTION TO BAND JOIST**

| LOAD[c] (psf) | JOIST SPAN[a] (feet) | ON-CENTER SPACING OF FASTENERS[b] (inches) | | |
|---|---|---|---|---|
| | | $^1/_2$-inch diameter lag screw with $^1/_2$-inch maximum sheathing[d, e] | $^1/_2$-inch diameter bolt with $^1/_2$-inch maximum sheathing[e] | $^1/_2$-inch diameter bolt with 1-inch maximum sheathing[f] |
| 50 ground snow load | 6 | 29 | 36 | 36 |
| | 8 | 22 | 36 | 35 |
| | 10 | 17 | 33 | 28 |
| | 12 | 14 | 27 | 23 |
| | 14 | 12 | 23 | 20 |
| | 16 | 11 | 20 | 17 |
| | 18 | 9 | 18 | 15 |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
a. Interpolation permitted. Extrapolation is not permitted.
b. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
c. Dead Load = 10 psf. Snow load shall not be assumed to act concurrently with live load.
d. The tip of the lag screw shall fully extend beyond the inside face of the band joist. Lag screws shall be full-body diameter screws.
e. Sheathing shall be wood structural panel or solid sawn lumber.
f. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to $^1/_2$-inch thickness of stacked washers shall be permitted to substitute for up to $^1/_2$ inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

**FIGURE R507.9.1.3(1)—PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS**




For SI: 1 inch = 25.4 mm.

**TABLE R507.9.1.3(2)—PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS**

| MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS | | | | |
|---|---|---|---|---|
| | **TOP EDGE** | **BOTTOM EDGE** | **ENDS** | **ROW SPACING** |
| Ledger[a] | 2 inches[d] | $^3/_4$ inch | 2 inches[b] | $1^5/_8$ inches[b] |
| Band Joist[c] | $^3/_4$ inch | 2 inches | 2 inches | $1^5/_8$ inches[b] |

For SI: 1 inch = 25.4 mm.

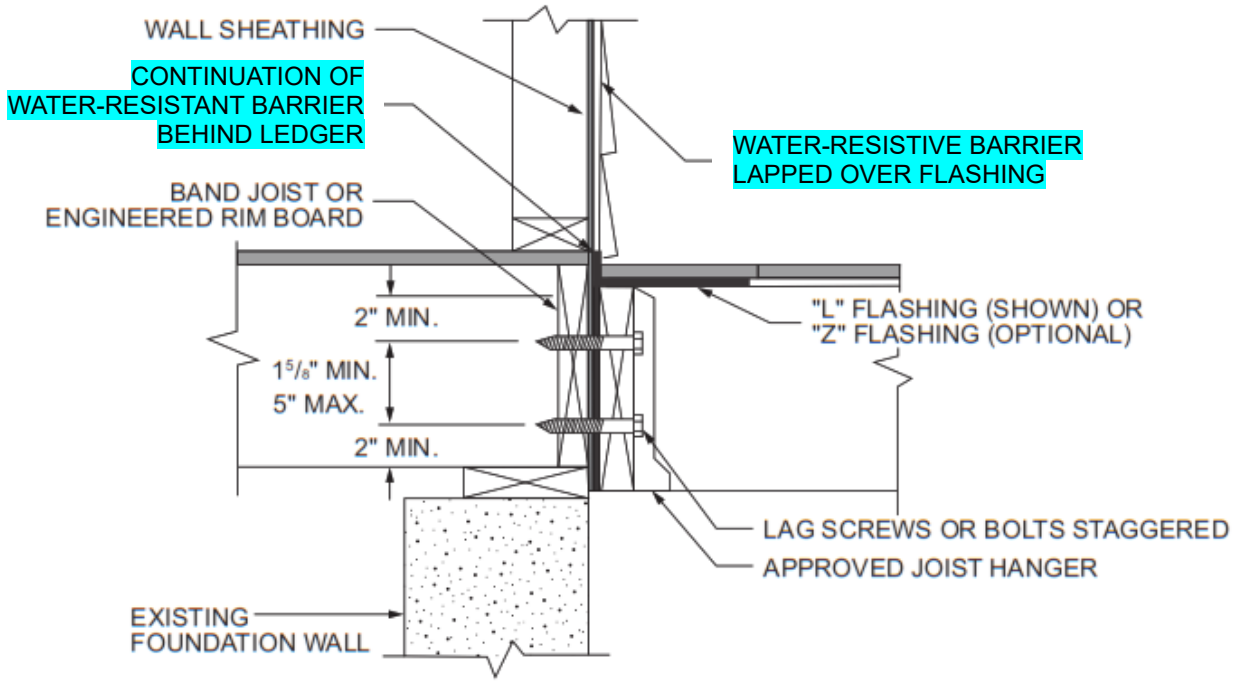
a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.9.1.3(1).

b. Maximum 5 inches.

c. For engineered rim joists, the manufacturer's recommendations shall govern.

d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.9.1.3(1).

**FIGURE R507.9.1.3(2)—PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS**




THIS DETAIL IS SHOWN AT A TYPICAL FOUNDATION WALL LOCATION. SIMILAR AT WOOD WALL.

For SI: 1 inch = 25.4 mm.

**R507.9.1.4 Alternate ledger details.** Alternate framing configurations supporting a ledger constructed to meet the load requirements of Section R301.5 shall be permitted.

**R507.9.1.5 Ledger flashing.** Where ledgers are attached to wood-frame construction, flashing shall be installed above the ledger to prevent the entry of water into the wall cavity or behind the ledger. Flashing shall extend vertically not less than 2 inches (51 mm) above the ledger. Flashing shall extend horizontally not less than 4 inches (102 mm) beyond the ledger face or shall extend to the ledger face and not less than $^1/_4$ inch down the ledger face.

**Exceptions:**

1. Where a window or door opening is located less than 2 inches (51 mm) above the ledger, flashing shall extend to the bottom of the wall opening.
2. Flashing is not required where the ledger is spaced horizontally from the *exterior wall covering* not less than $^1/_4$ inch (6.4 mm) to allow for drainage and ventilation behind the ledger.

**R507.9.1.6 Water-resistive barrier.** The water-resistive barrier required by Section R703.2 shall be lapped over a vertical leg of the ledger flashing or counterflashing extending up the wall by not less than 2 inches (51 mm) or the height of the vertical flashing leg, whichever is less. The *water-resistive barrier* shall continue from the top of the ledger flashing down the wall and behind the ledger flashing and ledger.

**Exceptions:**

1. Flashing shall be permitted to be placed against the face of the *water-resistive barrier* where a self-adhering membrane counterflashing is installed not less than 2 inches (51 mm) over the vertical leg of the flashing and not less than 2 inches (51 mm) onto the *water-resistive barrier*.
2. Flashing shall be permitted to be placed in front of the *water-resistive barrier* and behind the *exterior wall covering* where ledgers are spaced horizontally from the exterior wall not less than $^1/_4$ inch (6.4 mm) to allow for drainage and ventilation behind the ledger.

**R507.9.1.7 Existing walls.** Where ledgers are attached to existing walls without water-resistive barriers, a *water-resistive barrier* shall be installed behind the ledger and ledger flashing. The *water-resistive barrier* shall extend to the top of the ledger flashing vertical leg and not less than $^1/_2$ inch (12.7 mm) beyond the sides and bottom of the ledger. A self-adhering membrane counterflashing shall be installed not less than 2 inches (51 mm) over the vertical leg of the ledger flashing and not less than 2 inches (51 mm) onto the existing sheathing.

**Exceptions:**

1. Where a window or door opening is located less than 2 inches (51 mm) above the ledger, flashing shall extend to the bottom of the wall opening.
2. Flashing is not required where the ledger is spaced horizontally from the *exterior wall covering* not less than $^1/_4$ inch (6.4 mm) to allow for drainage and ventilation behind the ledger.

**R507.9.1.8 Exterior wall coverings.** *Exterior wall coverings* shall be terminated above the finished deck surface in accordance with the covering manufacturer's requirements and Chapter 7, as applicable to the type of covering.

**Exception:** *Exterior wall covering*s shall be permitted behind ledgers in accordance with Section R507.9.1.5 where capable of resisting compression forces from the ledger attachment.

**R507.9.2 Lateral connection.** Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold-down tension devices shall be installed in not less than two locations per deck, within 24 inches (610 mm) of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 pounds (6672 N). Where the lateral load connections are provided in accordance with Figure R507.9.2(2), the hold-down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress design capacity of not less than 750 pounds (3336 N).

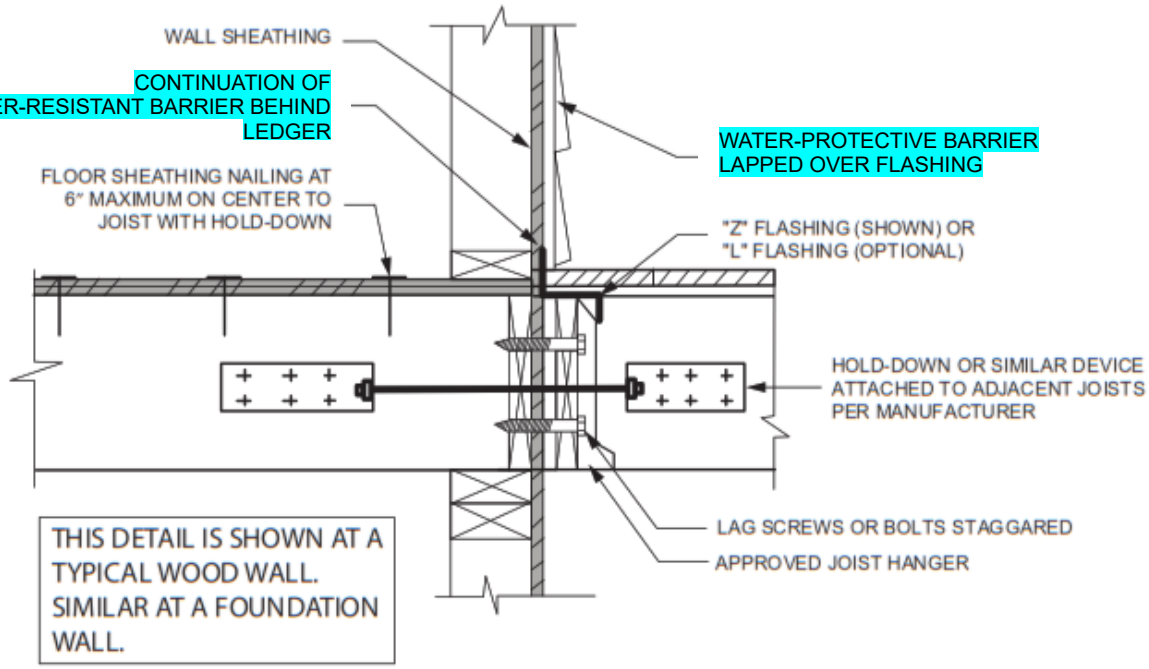



DTT1Z Installation Kit (750lb)




DTT2Z Lateral Load Tie (1500lb)

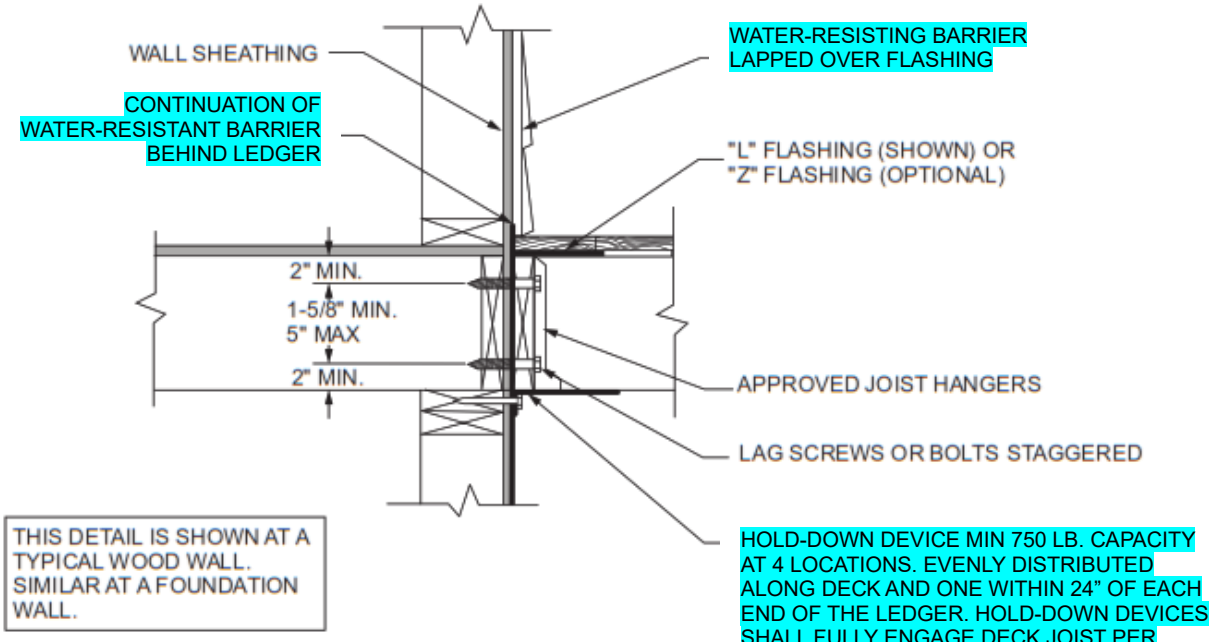
**FIGURE R507.9.2(1)—DECK ATTACHMENT FOR LATERAL LOADS**




DTT2Z or equivalent Lateral Load Tie (1500lb)

For SI: 1 inch = 25.4 mm.

**FIGURE R507.9.2(2)—DECK ATTACHMENT FOR LATERAL LOADS**




DTT1Z or equivalent Installation Kit (750lb)

**R507.10 Exterior guards.** *Guards* shall be constructed to meet the requirements of Sections R301.5 and R321, and this section.

**R507.10.1 Support of guards.** Where *guards* are supported on deck framing, *guard* loads shall be transferred to the deck framing with a continuous load path to the deck joists.

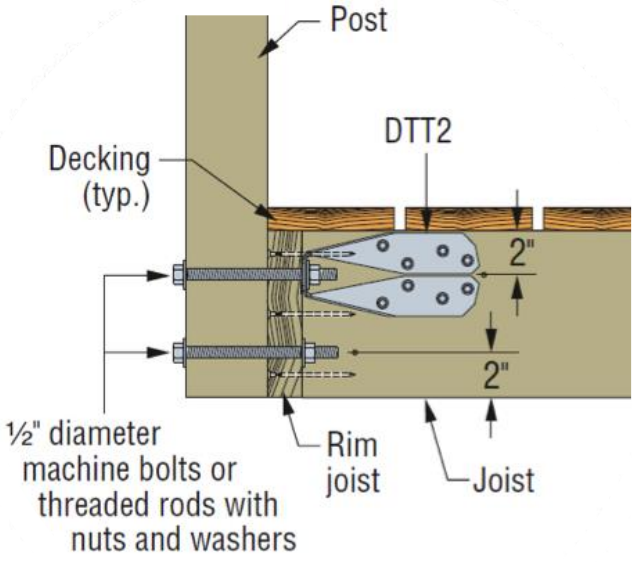
**R507.10.1.1 Guards supported by side of deck framing.** Where *guards* are connected to the interior or exterior side of a deck joist or beam, the joist or beam shall be connected to the adjacent joists to prevent rotation of the joist or beam. Connections relying only on fasteners in end grain withdrawal are not permitted.

**R507.10.1.2 Guards supported on top of deck framing.** Where *guards* are mounted on top of the decking, the *guards* shall be connected to the deck framing or blocking and installed in accordance with manufacturer's instructions to transfer the *guard* loads to the adjacent joists.

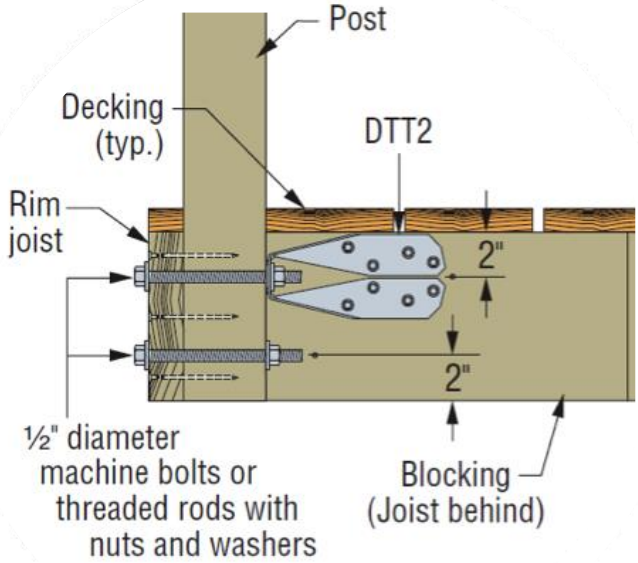
**R507.10.2 Wood posts at deck guards.** Where 4-inch by 4-inch (102 mm by 102 mm) wood posts support guard loads applied to the top of the *guard*, such posts shall not be notched at the connection to the supporting structure.



***Notched rail posts cannot be used. Rail posts cannot be screwed or lagged into the deck structure. They must be installed per section 507.10 and securely fastened to the structure with ½-inch hex bolts or ThruLok-type bolts with washers both sides.***




**Post Outside Rim**




**Post Inside Rim**

**R507.10.3 Plastic composite guards.** *Plastic composite guards* shall comply with the provisions of Section R507.2.2.

**R507.10.4 Other guards.** Other *guards* shall be in accordance with either manufacturer's instructions or accepted engineering principles.

**R318.7 Stairways.** Where required by this code or provided, *stairways* shall comply with this section.

**Exceptions:**

1. *Stairways* not within or serving a *building*, porch or deck.
2. *Stairways* leading to non-habitable attics.
3. *Stairways* leading to *crawl spaces.*

**R318.7.1 Width.** Stairways shall be not less than 36 inches (914 mm) in clear width at all points above the permitted *handrail* height and below the required headroom height. The clear width of *stairways* at and below the *handrail* height, including treads and landings, shall be not less than $31^1/_2$ inches (787 mm) where a *handrail* is installed on one side and 27 inches (698 mm) where *handrails* are installed on both sides.

**Exception:** The width of *spiral stairways* shall be in accordance with Section R318.7.11.1.

**R318.7.2 Headroom.** The headroom in *stairways* shall be not less than 6 feet 8 inches (2032 mm) measured vertically from the sloped line adjoining the tread *nosing* or from the floor surface of the landing or platform on that portion of the *stairway*.

**Exceptions:**

3.1. Where the *nosings* of treads at the side of a *flight* extend under the edge of a floor opening through which the *stair*
passes, the floor opening shall not project horizontally into the required headroom more than $4^3/_4$ inches (121 mm).

3.2. The headroom for *spiral stairways* shall be in accordance with Section R318.7.11.1.

**R318.7.3 Vertical rise.** A *flight* of stairs shall not have a vertical rise greater than 12 feet 7 inches (3835 mm) between floor levels or landings.

**R318.7.4 Walkline.** The walkline across *winder* treads and landings shall be concentric to the turn and parallel to the direction of travel entering and exiting the turn. The walkline shall be located 12 inches (305 mm) from the inside of the turn. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface. Where *winders* are adjacent within a *flight*, the point of the widest clear stair width of the adjacent *winders* shall be used.

**R318.7.5 Stair treads and risers.** Stair treads and *risers* shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.

**[NY] R318.7.5.1 Risers.** The *riser* height shall be not more than $8^1/_4$ inches (209 mm). The riser height shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any *flight* of stairs shall not exceed the smallest by more than $^3/_8$ inch (9.5 mm). *Risers* shall be vertical or sloped from the underside of the *nosing* of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. At open *risers*, openings located more than 30 inches (762 mm), as measured vertically, to the floor or *grade* below shall not permit the passage of a 4-inch-diameter (102 mm) sphere.

**Exceptions:**

- The opening between adjacent treads is not limited on *spiral stairways*.
- The riser height of *spiral stairways* shall be in accordance with Section R318.7.11.1.

**[NY] R318.7.5.2 Treads.** The tread depth shall be not less than 9 inches (229 mm). The tread depth shall be measured horizon- tally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any *flight* of stairs shall not exceed the smallest by more than $^3/_8$ inch (9.5 mm).

**R318.7.5.3 Nosings.** Treads, landings and floors of *stairways* shall have a radius of curvature at the *nosing* not greater than $^9/_{16}$ inch (14 mm) or a bevel not greater than $^1/_2$ inch (12.7 mm). A *nosing* projection not less than $^3/_4$ inch (19 mm) and not more than $1^1/_4$ inches (32 mm) shall be provided on *stairways*. The greatest *nosing* projection shall not exceed the smallest *nosing* projection by more than $^3/_8$ inch (9.5 mm) within a flight of stairs and the landings at the top of the flight.

**Exceptions:**

1. A *nosing* projection is not required where the tread depth is not less than 11 inches (279 mm).
2. Where *risers* are open, the maximum *nosing* projection shall be permitted to exceed $1^1/_4$ inches (32 mm).

**R318.7.5.4 Exterior plastic composite stair treads.** *Plastic composite* exterior stair treads shall comply with the provisions of this section and Section R507.2.2.

**[NY] R318.7.6 Landings for stairways.** There shall be a floor or landing at the top and bottom of each *flight* of stairs. The width perpendicular to the direction of travel shall be not less than the width of the *flight* served. For landings of shapes other than square or rectangular, the depth at the walk line and the total area shall be not less than that of a quarter circle with a radius equal to the required landing width. Where the *stairway* has a straight run, the depth in the direction of travel shall be not less than 36 inches (914 mm).

**Exceptions:**

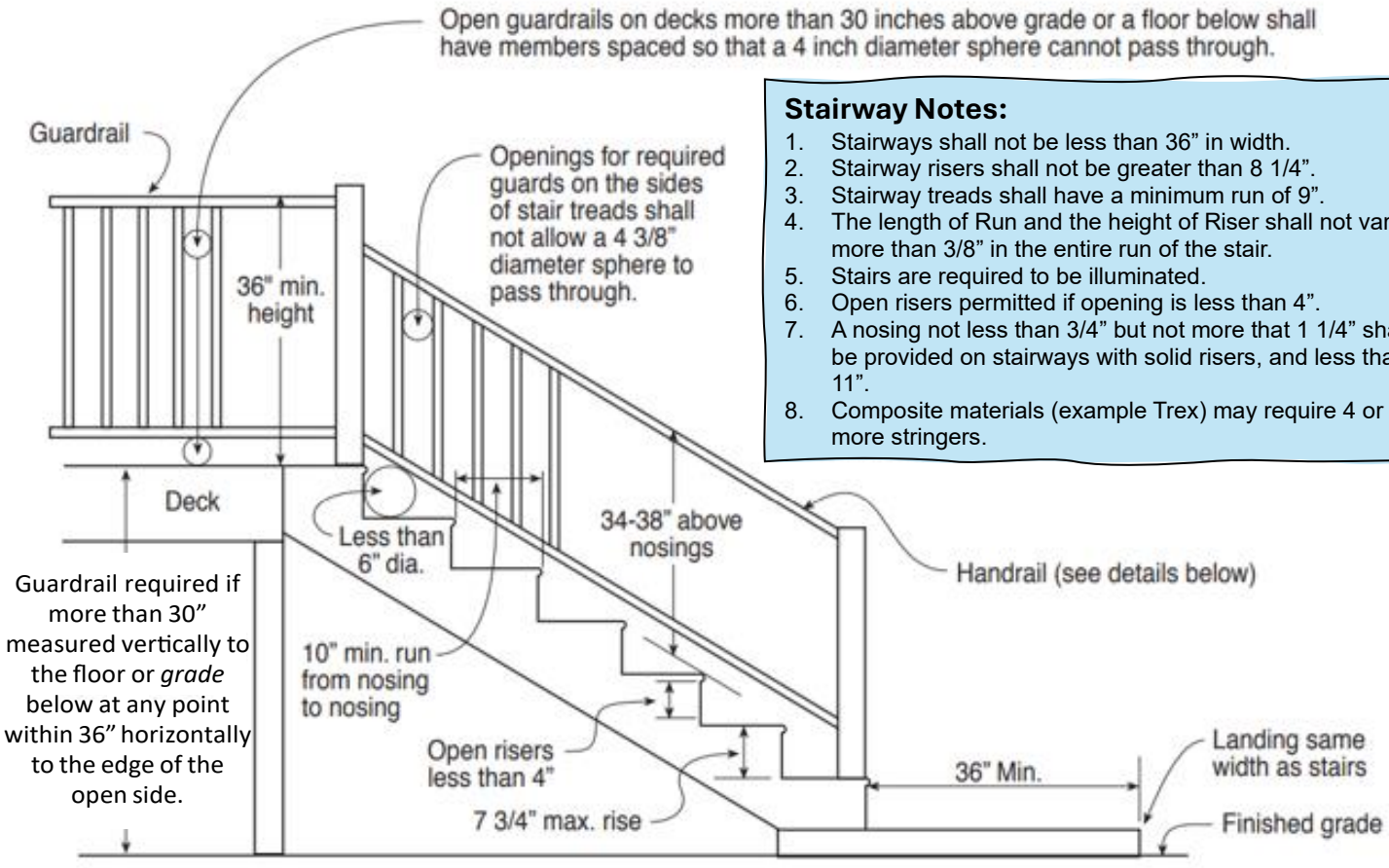
1. The top landing of an interior *stairway*, including those in an enclosed garage, shall be permitted to be on the other side of a door located at the top of the *stairway*, provided that the door does not swing over the stairs.
2. At an enclosed garage, the top landing at the *stair* shall be permitted to be not more than $8^1/_4$ inches (209 mm) below the top of the threshold.
3. At exterior doors, a top landing is not required for an exterior stairway of not more than two risers, provided that the door does not swing over the *stairway*.
4. Exterior *stairways* to grade with three or fewer *risers* serving a deck, porch or patio shall have a bottom landing width of not less than 36 inches (914 mm), provided that the stairway is not the required access to grade serving the required egress door.

**R318.7.7 Stairway walking surface.** The walking surface of treads and landings of *stairways* shall be sloped not steeper than 1 unit vertical in 48 units horizontal (2-percent slope).

**Exception:** Where the surface of a landing is required elsewhere in the code to drain surface water, the walking surface of the landing shall be sloped not steeper than 1 unit vertical in 20 units horizontal (5-percent slope) in the direction of travel.

**R318.7.8 Handrails.** *Handrails* shall be provided on not less than one side of each *flight* of stairs with four or more *risers*.

## Stair & Handrail Specifications

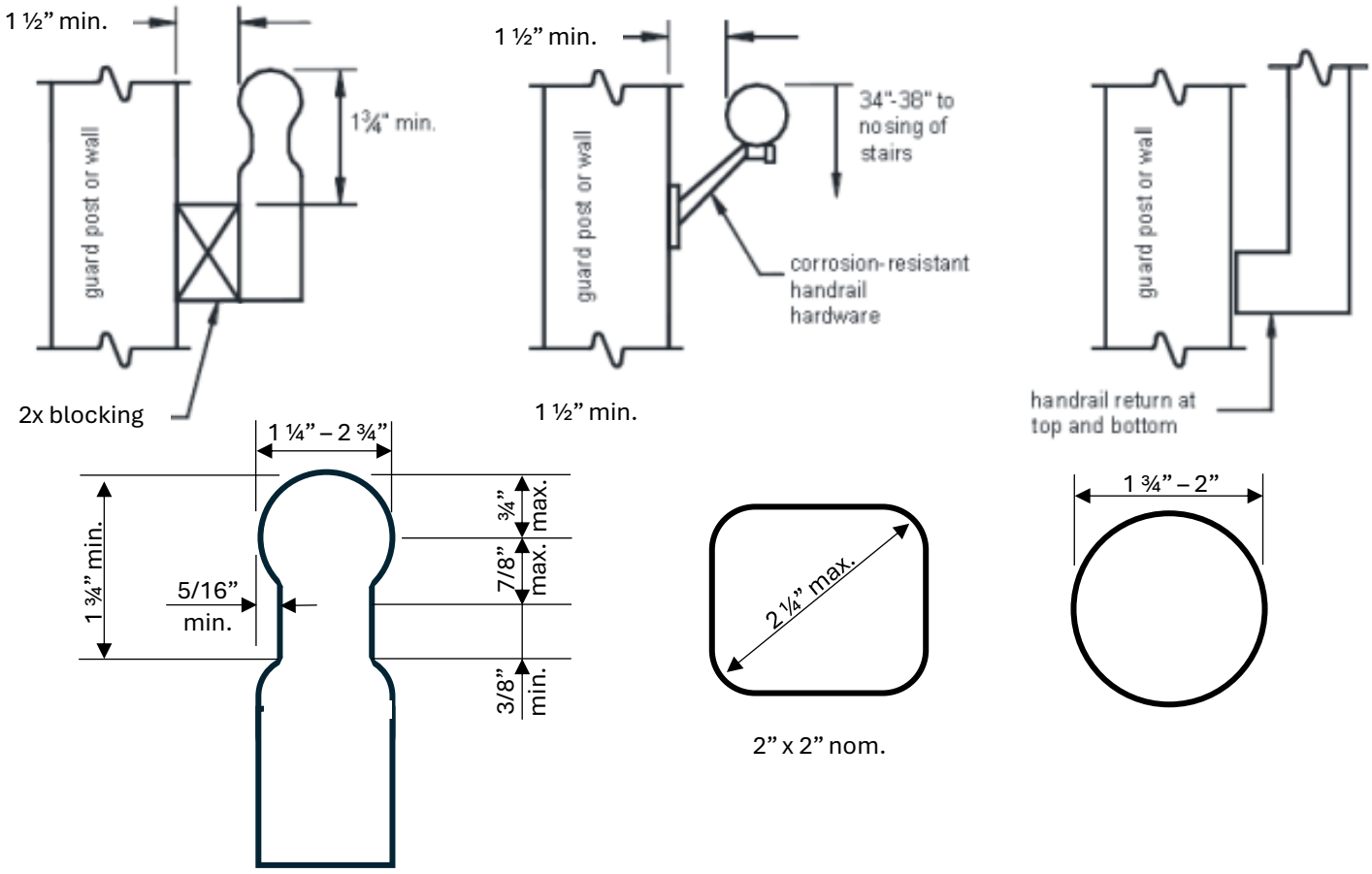



### Stairway Notes:

1. Stairways shall not be less than 36" in width.
2. Stairway risers shall not be greater than 8 1/4".
3. Stairway treads shall have a minimum run of 9".
4. The length of Run and the height of Riser shall not vary more than 3/8" in the entire run of the stair.
5. Stairs are required to be illuminated.
6. Open risers permitted if opening is less than 4".
7. A nosing not less than 3/4" but not more that 1 1/4" shall be provided on stairways with solid risers, and less than 11".
8. Composite materials (example Trex) may require 4 or more stringers.

### Handrail Notes:

1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings.
3. The handgrip portion of handrails shall be not less than 1-1/4 inches nor more than 2-1/4 inches in cross section for non-circular handrails.
4. Handrails shall be placed not less than 1-1/2 inches from any wall or other surface.
5. Handrails shall return to guard post or wall.




*PLANS SUBMITTED FOR A DECK PERMIT MUST CLEARLY SHOW COMPLIANCE WITH THE 2025 NYS RESIDENTIAL CODE.*
*THIS GUIDE IS A TOOL FOR YOUR USE IN MAKING PLANS AND UNDERSTANDING THE REQUIREMENTS FOR BUILDING A DECK IN NY STATE.*