

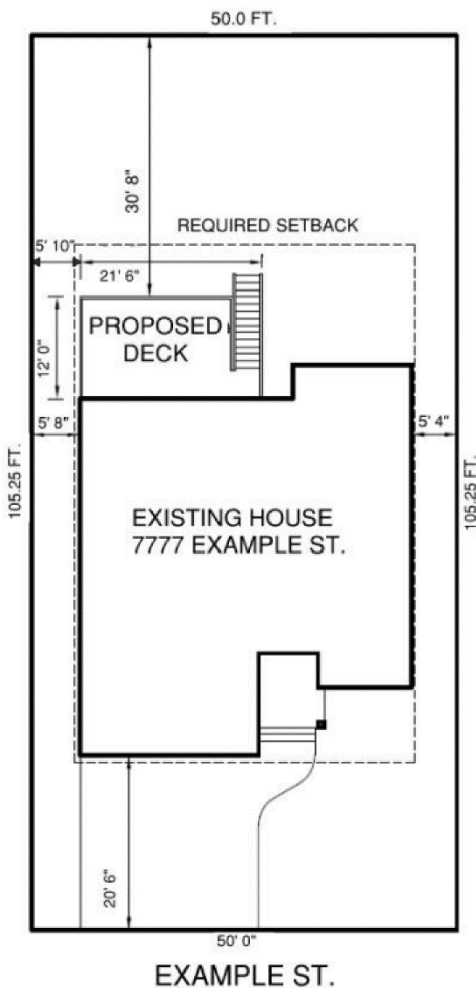


## Required Deck Documentation

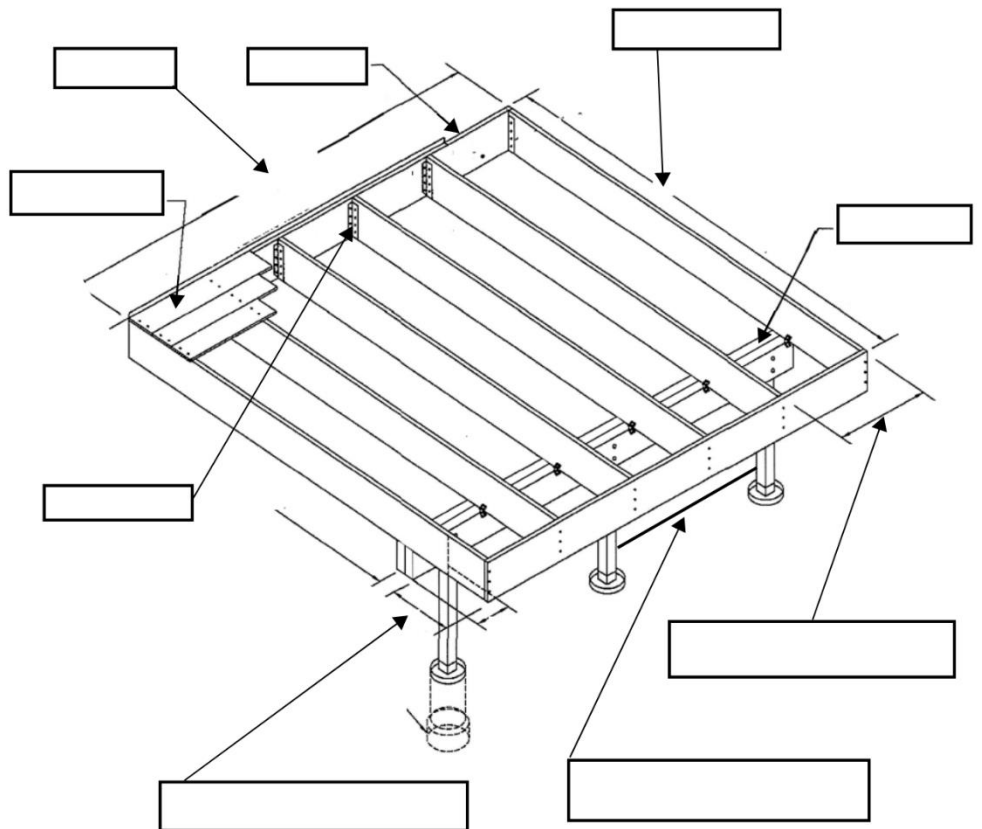
1. **Site Plan** – Deck location and distances from property lines
2. **Deck Plans** – Deck size (length and width) & location of stairs
  - Size, type, location and spacing of posts, beams, joists, and headers
  - Fasteners, flashing, and joist hangers
  - Guard Height (if any), stair, and handrail details

Plans that you submit shall be neat, drawn to scale, and indicate the nature, and or extent of the work being conducted.

### Site Plan Example



### Deck Plan Example



## Helpful Tables

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

| LOAD <sup>a</sup><br>(psf) | JOIST SPECIES <sup>b</sup>  | JOIST SIZE | ALLOWABLE JOIST SPAN <sup>b, c</sup><br>(feet-inches) |      |       | MAXIMUM CANTILEVER <sup>d, f</sup><br>(feet-inches) |     |     |      |     |     |      |      |
|----------------------------|---|------------|---|------|-------|---|-----|-----|------|-----|-----|------|------|
|                            |   |            | Joist spacing<br>(inches)                             |      |       | Joist back span <sup>g</sup><br>(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 <sup>c</sup><br>Hem-fir <sup>c</sup><br>Spruce-pine-fir <sup>c</sup>                      | 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 <sup>f</sup><br>Western cedars <sup>f</sup><br>Ponderosa pine <sup>f</sup><br>Red pine <sup>f</sup> | 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.

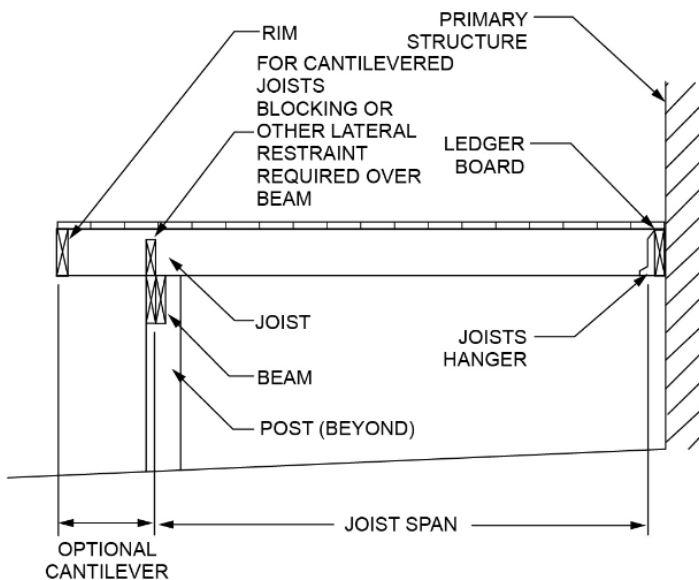
c.  $L/\Delta = 360$  at main span.

d.  $L/\Delta = 180$  at cantilever with a 220-pound point load applied to end.

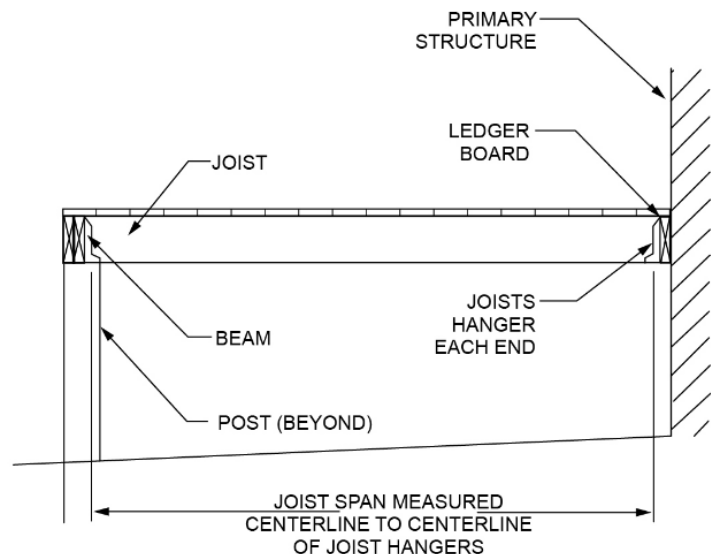
e. Includes incising factor.

f. Incising factor not included.

g. Interpolation allowed. Extrapolation is not allowed.



**CANTILEVERED JOISTS WITH DROPPED BEAM**



**JOISTS WITH FLUSH BEAM**



## Helpful Table

**TABLE R507.5(2)**  
**MAXIMUM DECK BEAM SPAN—50 PSF GROUND SNOW LOAD<sup>c</sup>**

| BEAM SPECIES <sup>d</sup>   | BEAM SIZE <sup>e</sup> | EFFECTIVE DECK JOIST SPAN LENGTH (feet) <sup>a, i, j</sup>     |       |      |      |      |      |      |
|---|------------------------|--|-------|------|------|------|------|------|
|   |                        | 6  | 8     | 10   | 12   | 14   | 16   | 18   |
|   |                        | MAXIMUM DECK BEAM SPAN LENGTH (feet-inches) <sup>a, b, f</sup> |       |      |      |      |      |      |
| Southern pine   | 1 – 2 × 6              | 4-6  | 3-11  | 3-6  | 3-2  | 2-11 | 2-9  | 2-7  |
|   | 1 – 2 × 8              | 5-9  | 4-11  | 4-5  | 4-0  | 3-9  | 3-6  | 3-3  |
|   | 1 – 2 × 10             | 6-9  | 5-10  | 5-3  | 4-9  | 4-5  | 4-2  | 3-11 |
|   | 1 – 2 × 12             | 8-0  | 6-11  | 6-2  | 5-8  | 5-3  | 4-11 | 4-7  |
|   | 2 – 2 × 6              | 6-8  | 5-9   | 5-2  | 4-9  | 4-4  | 4-1  | 3-10 |
|   | 2 – 2 × 8              | 8-6  | 7-4   | 6-7  | 6-0  | 5-7  | 5-2  | 4-11 |
|   | 2 – 2 × 10             | 10-1   | 8-9   | 7-10 | 7-1  | 6-7  | 6-2  | 5-10 |
|   | 2 – 2 × 12             | 11-11  | 10-3  | 9-2  | 8-5  | 7-9  | 7-3  | 6-10 |
|   | 3 – 2 × 6              | 7-11   | 7-2   | 6-6  | 5-11 | 5-6  | 5-1  | 4-10 |
|   | 3 – 2 × 8              | 10-5   | 9-3   | 8-3  | 7-6  | 6-11 | 6-6  | 6-2  |
|   | 3 – 2 × 10             | 12-8   | 10-11 | 9-9  | 8-11 | 8-3  | 7-9  | 7-3  |
|   | 3 – 2 × 12             | 14-11  | 12-11 | 11-6 | 10-6 | 9-9  | 9-1  | 8-7  |
| Douglas fir-larch <sup>g</sup><br>Hem-fir <sup>g</sup><br>Spruce-pine-fir <sup>g</sup>                      | 1 – 2 × 6              | 4-0  | 3-5   | 2-11 | 2-7  | 2-4  | 2-2  | 2-0  |
|   | 1 – 2 × 8              | 5-4  | 4-7   | 3-11 | 3-5  | 3-1  | 2-10 | 2-8  |
|   | 1 – 2 × 10             | 6-7  | 5-8   | 4-11 | 4-5  | 4-0  | 3-8  | 3-5  |
|   | 1 – 2 × 12             | 7-7  | 6-7   | 5-11 | 5-4  | 4-10 | 4-6  | 4-2  |
|   | 2 – 2 × 6              | 6-0  | 5-2   | 4-7  | 4-2  | 3-10 | 3-5  | 3-2  |
|   | 2 – 2 × 8              | 8-0  | 6-11  | 6-2  | 5-8  | 5-0  | 4-7  | 4-2  |
|   | 2 – 2 × 10             | 9-9  | 8-5   | 7-7  | 6-11 | 6-4  | 5-10 | 5-4  |
|   | 2 – 2 × 12             | 11-4   | 9-10  | 8-9  | 8-0  | 7-5  | 6-11 | 6-6  |
|   | 3 – 2 × 6              | 7-6  | 6-6   | 5-9  | 5-3  | 4-11 | 4-7  | 4-4  |
|   | 3 – 2 × 8              | 10-0   | 8-8   | 7-9  | 7-1  | 6-6  | 6-1  | 5-8  |
|   | 3 – 2 × 10             | 12-3   | 10-7  | 9-6  | 8-8  | 8-0  | 7-6  | 7-0  |
|   | 3 – 2 × 12             | 14-3   | 12-4  | 11-0 | 10-1 | 9-4  | 8-9  | 8-3  |
| Redwood <sup>h</sup><br>Western cedars <sup>h</sup><br>Ponderosa pine <sup>h</sup><br>Red pine <sup>h</sup> | 1 – 2 × 6              | 4-1  | 3-6   | 3-0  | 2-8  | 2-5  | 2-3  | 2-1  |
|   | 1 – 2 × 8              | 5-2  | 4-6   | 4-0  | 3-6  | 3-2  | 2-11 | 2-9  |
|   | 1 – 2 × 10             | 6-4  | 5-6   | 4-11 | 4-6  | 4-1  | 3-9  | 3-6  |
|   | 1 – 2 × 12             | 7-4  | 6-4   | 5-8  | 5-2  | 4-10 | 4-6  | 4-3  |
|   | 2 – 2 × 6              | 6-1  | 5-3   | 4-8  | 4-4  | 3-11 | 3-6  | 3-3  |
|   | 2 – 2 × 8              | 7-8  | 6-8   | 5-11 | 5-5  | 5-0  | 4-8  | 4-3  |
|   | 2 – 2 × 10             | 9-5  | 8-2   | 7-3  | 6-8  | 6-2  | 5-9  | 5-5  |
|   | 2 – 2 × 12             | 10-11  | 9-5   | 8-5  | 7-8  | 7-2  | 6-8  | 6-3  |
|   | 3 – 2 × 6              | 7-1  | 6-5   | 5-11 | 5-5  | 5-0  | 4-8  | 4-5  |
|   | 3 – 2 × 8              | 9-4  | 8-4   | 7-5  | 6-10 | 6-04 | 5-11 | 5-7  |
|   | 3 – 2 × 10             | 11-9   | 10-2  | 9-1  | 8-4  | 7-8  | 7-2  | 6-9  |
|   | 3 – 2 × 12             | 13-8   | 11-10 | 10-7 | 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 allowed. Extrapolation is not allowed.

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.

j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with Table R507.5(5).

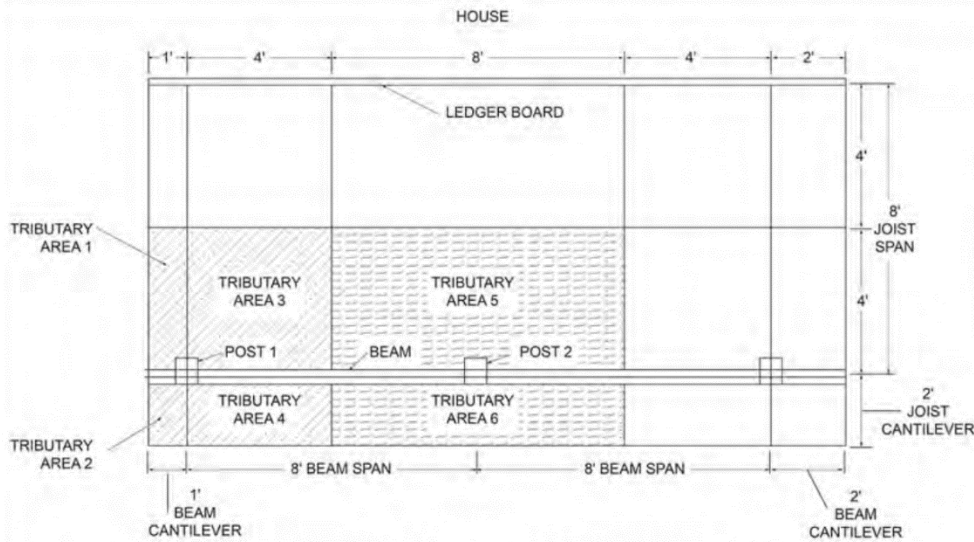
## Helpful Tables

**TABLE R507.5(5)**  
**JOIST SPAN FACTORS FOR CALCULATING EFFECTIVE DECK JOIST SPAN**  
[for use with Note j in Tables R507.5(1), R507.5(2), R507.5(3) and R507.5(4)]

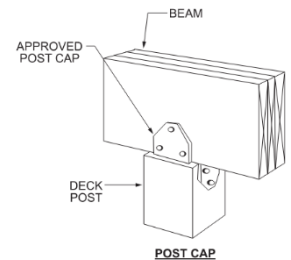
| C/J <sup>a</sup>  | JOIST SPAN FACTOR |
|-------------------|-------------------|
| 0 (no cantilever) | 0.66              |
| 1/12 (0.87)       | 0.72              |
| 1/10 (0.10)       | 0.80              |
| 1/8 (0.125)       | 0.84              |
| 1/6 (0.167)       | 0.90              |
| 1/4 (0.250)       | 1.00              |

For SI: 1 foot = 304.8 mm.

a. C = actual joist cantilever length (feet); J = actual joist span length (feet).

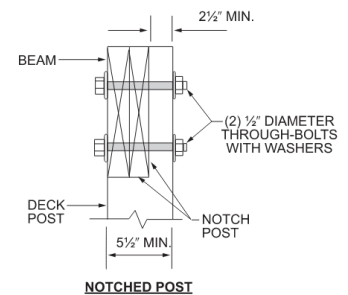


| POST | INCLUDES                             |
|------|--------------------------------------|
| 1    | AREA 1<br>AREA 2<br>AREA 3<br>AREA 4 |
| 2    | AREA 5<br>AREA 6                     |



**TABLE R507.4**  
**DECK POST HEIGHT**

| LOADS (psf) <sup>b</sup> | POST SPECIES <sup>c</sup>   | POST SIZE <sup>d</sup> | TRIBUTARY AREA (ft <sup>2</sup> ) <sup>a, h</sup>   |      |      |      |      |      |      |       |
|--------------------------|---|------------------------|---|------|------|------|------|------|------|-------|
|                          |   |                        | 20  | 40   | 60   | 80   | 100  | 120  | 140  | 160   |
|                          |   |                        | MAXIMUM DECK POST HEIGHT <sup>e</sup> (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 <sup>e</sup><br>Hem-fir <sup>e</sup><br>Spruce-pine-fir <sup>e</sup>                            | 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 <sup>f</sup><br>Western cedars <sup>f</sup><br>Ponderosa pine <sup>f</sup><br>Red pine <sup>f</sup> | 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.

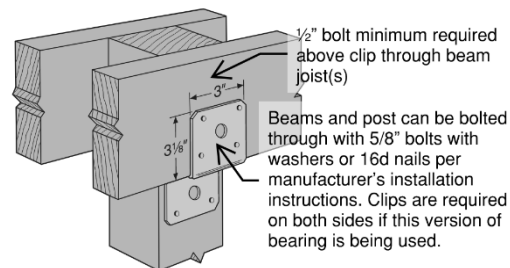
d. Notched deck posts shall be sized to accommodate beam size in accordance with Section R507.5.2.

e. Includes incising factor.

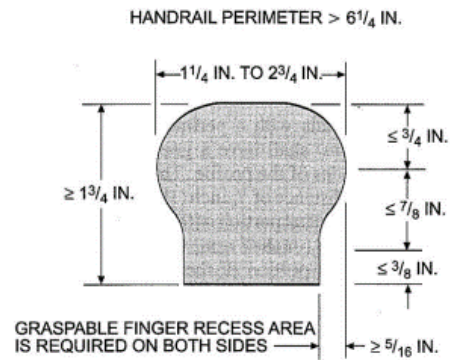
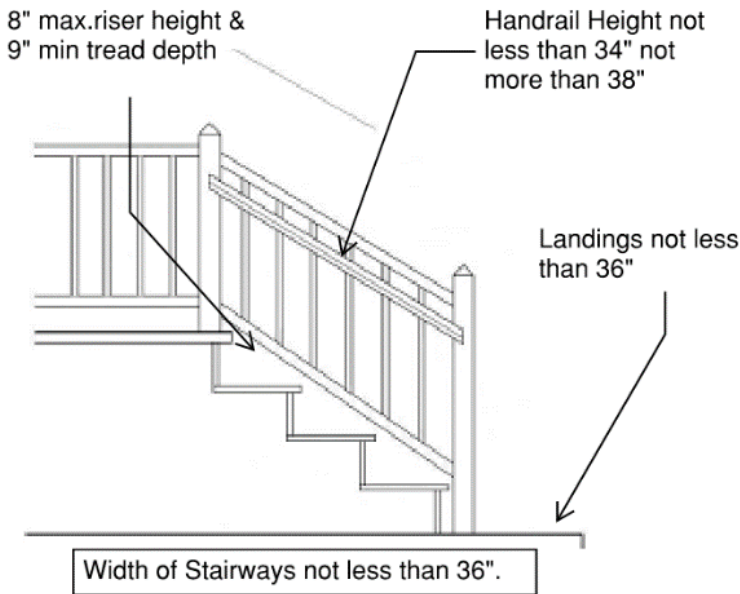
f. Incising factor not included.

g. Area, in square feet, of deck surface supported by post and footings.

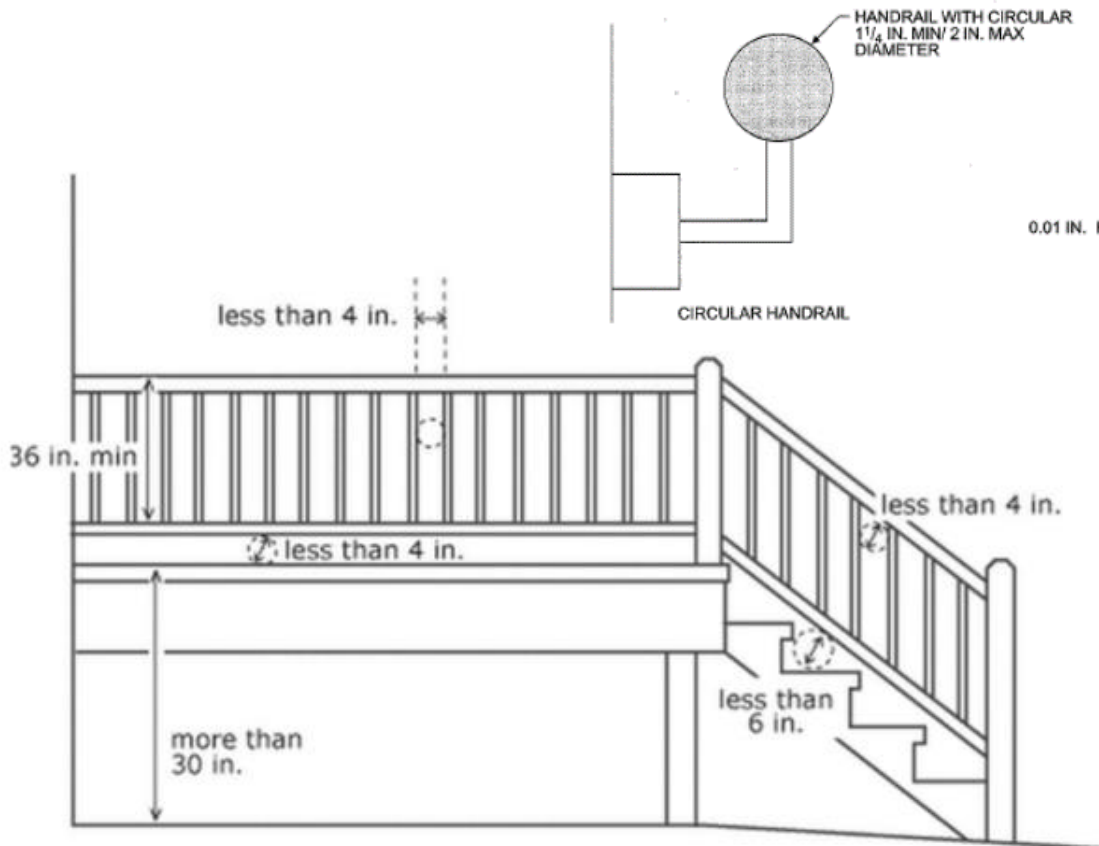
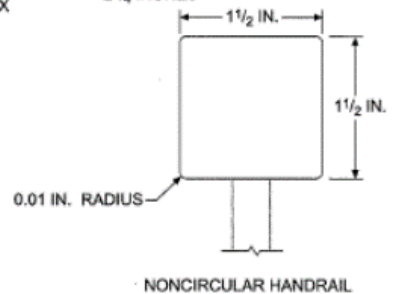
h. Interpolation permitted. Extrapolation not permitted.



## Helpful Tables

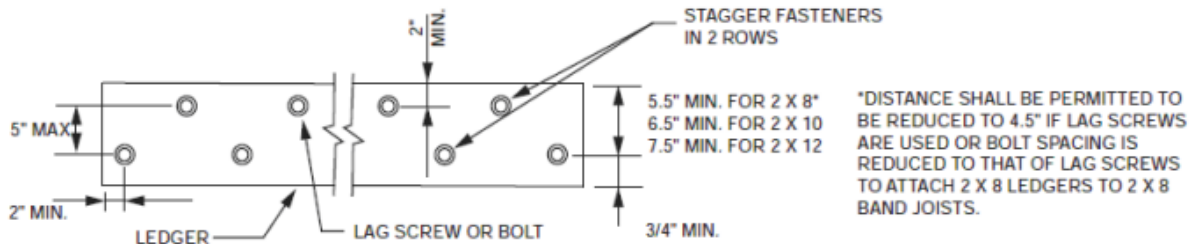


HANDRAIL THAT IS NOT CIRCULAR MUST HAVE A PERIMETER OF 4 IN. MIN/  $6\frac{1}{4}$  IN. MAX WITH A MAXIMUM CROSS SECTION DIMENSION OF  $2\frac{1}{4}$  INCHES





**FIGURE R507.2.1(1)**  
**PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS**



For SI: 1 inch = 25.4 mm.

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

| LOAD <sup>c</sup> (psf) | JOIST SPAN <sup>a</sup> (feet) | ON-CENTER SPACING OF FASTENERS <sup>b</sup> (inches)                        |   |   |
|-------------------------|--------------------------------|---|---|---|
|                         |                                | 1/2-inch diameter lag screw with 1/2-inch maximum sheathing <sup>d, e</sup> | 1/2-inch diameter bolt with 1/2-inch maximum sheathing <sup>e</sup> | 1/2-inch diameter bolt with 1-inch maximum sheathing <sup>f</sup> |
| 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.

- Interpolation permitted. Extrapolation is not permitted.
- Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
- Dead Load = 10 psf. Snow load shall not be assumed to act concurrently with live load.
- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- Sheathing shall be wood structural panel or solid sawn lumber.
- 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.



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## Frequent Asked Questions

### How much does a deck permit cost?

*A deck permit cost \$50.00 and a deck plan review fee is \$17.50. A total of \$67.50 will need to be paid for.*

### When do I call in for an inspection?

*When the deck has been completed you will need to call for an inspection. If the framing members are to be covered, an inspection prior shall be called in.*

### When do I not need a deck permit?

*Deck not exceeding 120 sq ft in area, that are not more than 7 inches above grade at any point, are not attached to a dwelling and do not serve the exit door required by Section R311.4.*

### If I change the deck layout while under construction, do I need to let the building inspections department know?

*Yes*

### Do you know of any helpful deck construction websites?

Where can I find more information?

- City Ordinances: ([Link: cityofhorace.com/government/city\\_ordiances.php](http://cityofhorace.com/government/city_ordiances.php))
- State Building Code: ([Link: communityservices.nd.gov/buildingcode](http://communityservices.nd.gov/buildingcode))
- International Residential Code (IRC) ([Link: codes.iccsafe.org/codes](http://codes.iccsafe.org/codes))

**Questions & Concerns – Please call (701-492-2972)**