

# Residential Decks

## Requirements for Building Permit Application

1. Completed Building Permit application form with signature.
2. Submit two (2) copies of plans showing proposed designs and materials; plans shall be drawn to scale and shall include a floor plan indicating the following:
  - Proposed size of deck
  - Type of lumber used
  - Size/type of decking material
  - Spacing and size of floor joist
  - Location and spacing of posts
  - Elevations indicating the height of structure from established grade
  - Diameter, depth and location of footings
  - Guardrail height (if any)
  - Spacing of intermediate rails (if any)
  - Stair location and construction detail (if any)
3. Submit two (2) copies of a Certificate of Survey (a Certificate of Survey for the property may be on file at City Hall) or a Site Plan. The Survey /Site Plan shall be drawn to scale and include:
  - Lot dimensions and location of the existing and proposed structures.
  - Indicate the setbacks from property lines.

### Code Requirements (Based on the 2015 MN State Residential Code)

1. Depending on the specifics of the deck project, you may need to involve a structural engineer. If a future porch is something that is being considered, you will need to involve a structural engineer.
2. Where the positive connection to the primary structure cannot be verified during inspection (i.e. not able to see the inside of the home where the ledger board attaches to the rim), DECKS SHALL BE SELF SUPPORTING. MN State Residential Code Section R507.1
3. Deck ledger shall be attached to the 2 x rim board with ½" lag screws or bolts with washers. Lag screws and bolts and washers shall be hot-dipped galvanized or stainless steel. Fasteners shall be spaced per MN Residential Code Table R507.2 and Figure R507.2.1(1) (see attached).
4. Lateral load connection shall be installed in not less than 2 locations and have a design capacity of 1500 lbs each. MN State Residential Code Section R507.2.3
5. Frost footings are required for any deck attached to any structure that has frost footings. The minimum depth to the base of the footing is 42 inches. MN State Residential Code Section 1303.1600
6. All decks shall be designed to support a combined load of 50 lbs. per sq. ft. MN State Residential Code Section R507.2
7. Guardrails are required on all decks more than 30 inches above grade or floor below. Rail must be 36 inches minimum in height. Open guardrails railings must have intermediate rails or an ornamental pattern that a 4 inch sphere cannot pass through. MN State Residential Code Section R312.1.2 & R312.1.3
  - a. *Exception:* Openings for required guards on the sides of stair treads shall not allow a sphere of 4 3/8 inches to pass through.
  - b. *Exception:* The triangular opening formed by the riser, tread and bottom element of a guardrail may be sized so that a six inch sphere cannot pass through.

8. All connections between deck and dwelling shall be weatherproof. Any cuts in exterior finish shall be flashed.MN State Residential Code Section R703.1
9. Header beams and joists that frame into ledgers or beams shall be supported by approved framing anchors such as joist hangers and fastened with approved fasteners, **NOT SCREWS**. Joist hanger manufacturer installation instructions
10. All fasteners (nails, bolts, screws, hangers, etc.) must be corrosion resistant as required by the code and manufacturer.MN State Residential Code Section R317.3.1
11. All exposed wood used in the construction of decks is required to be of approved wood of natural resistance to decay (*redwood, cedar, etc.*) or approved treated wood. This includes posts, beams, joists, decking and railings.MN State Residential Code Section R317.1.3
12. Stairs minimum width is 36 inches. Maximum rise is 7 <sup>3/4</sup> inches; minimum run is 10 inches. Largest tread width or riser height shall not exceed the smallest by more than 3/8 *inch*. Stairways with 4 risers or more requires a handrail. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4 inch sphere.MN State Residential Code Section R311.7
13. Composite Decking must labeled showing compliance with the provisions of ASTM D 7032.MN State Residential Code Section R317.4
14. Decks shall not be hung from the cantilever of the house floor system. MN State Residential Code Section R507.2
15. Exterior stairways shall be provided with a means to illuminate the stairway and shall have a light source in the immediate vicinity of the top landing of the stairway.MN State Residential Code Section R303.7
16. The top of the handrail shall be placed not less than 34 inches or more than 38 inches above the nosing of the treads. The handgrip shall have a smooth surface with no sharp comers. Handrails shall be continuous the full length of stairs and returned at ends. The handgrip portion of handrails shall not be less than 1 <sup>1/4</sup> inches or more than 2 inches and shall provide a grippable surface.MN State Residential Code Section R311.7.8
17. Pressure Treated Wood: Recent changes have been made in the chemicals used in the manufacture of pressure-treated wood. Chromated copper arsenate, also known as CCA, is being phased out and the most common new treatments approved for outdoor use are Alkaline Copper Quaternary (ACQ) and Copper Azole. According to the lumber and fastener industry, the newer chemicals being used to treat the wood approved for outdoor use are considerably more corrosive than those previously treated with CCA and therefore require special fasteners, hangers, and greater care in the selection of materials that may come in contact with the wood. The fastener industry has indicated that some of the hangers and fasteners currently on the market may not perform with some of the new treatments.
18. Designers, builders, and home owners will need to pay particular attention to the grade marks on the lumber, and verify that proper hardware (hangers, nails, brackets) are appropriate with the particular treatment of lumber. This not only applies to decks utilizing these products but sill plates and posts as well. The code references the American Wood Preservers Associates (AWPA), which has published information on this issue. Particular attention should also be made to the manufacturer's installation instructions for the hardware. Questions should be directed to your wood and fastener supplier or your local Building Official.

**Note:** *The aforementioned criteria represent general code requirements relative to decks. For specific code requirements, please contact the Building Inspection Department at 952-873-5655.*

## **Required Inspections**

- **Footings**; after forms and reinforcing are in place, but **PRIOR TO POURING CONCRETE.**
- **Framing**;(ONLY if deck is low to the ground and prior to decking being installed)
- **Final** inspection is required.

## **General Notes**

- Some deck designs may not be appropriate for future screen porch or 3-season porches. Setbacks for porches may not be the same as setbacks for decks.
- The approved Plan and Survey shall be kept on the job site and accessible until the final inspection has been made.
- The Inspection Record Card shall be posted until the final inspection has been made. Cards should be protected from the weather.
- Post Address on construction site visible from the street.

*\*The State of Minnesota requires that all residential building contractors, remodelers and roofers obtain a state license unless they qualify for a specific exemption from the licensing requirements. Any person claiming an exemption must provide a copy of a Certificate of Exemption from the Department of Labor & Industry to the City before a permit can be issued.*

*\*To determine whether a particular contractor is required to be licensed or to check on the licensing status of individual contractors, please call the Minnesota Department of Labor & Industry, Residential Building Contractors Unit at 651-284-5069.*

If you have any questions or need to schedule an inspection please call the Building Inspection Department at **952-873-5655** between 8:00 a.m. and 4:30 p.m. Monday thru Friday.

No Building Permit required for decks not attached to house (*or any structure with a frost protected foundation*) AND less than 30 inches above grade. Zoning requirements still apply, please contact Community Development Department to verify zoning requirements before building any deck.

# Deck Handout

Figure 6. Joist-to-Beam Detail.

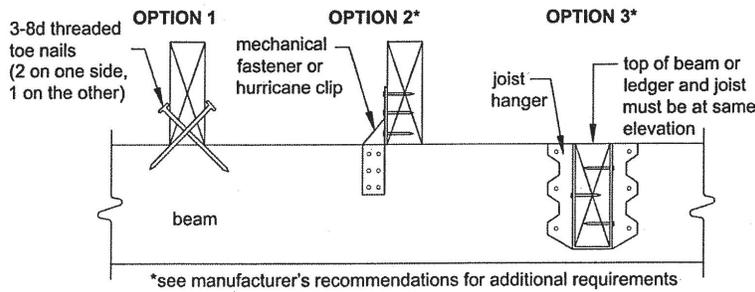


Figure 8B. Alternate Approved Post-to-Beam Post Cap Attachment.

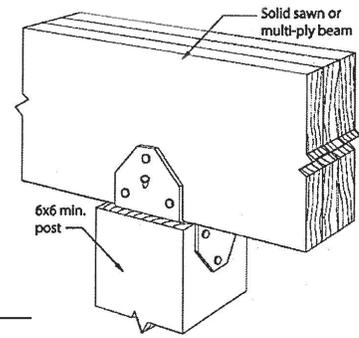


Figure 24, Example Guard Detail

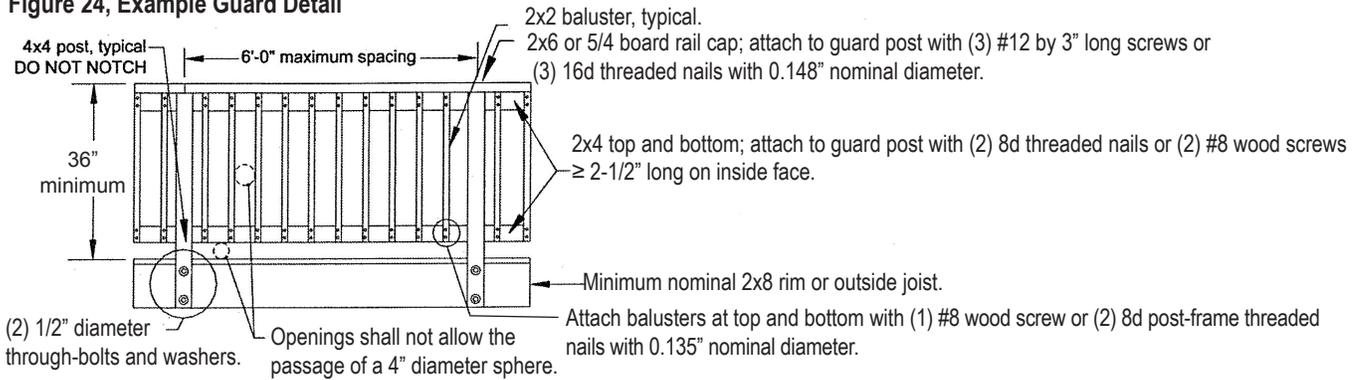


Table R507.2

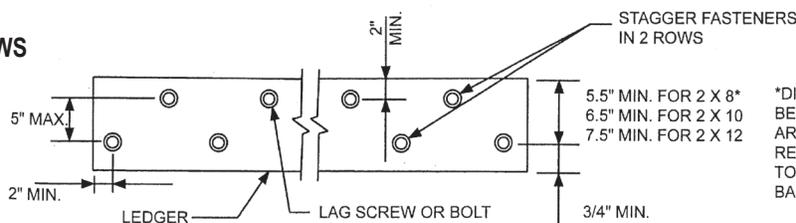
Fastener Spacing for a Southern Pine or Hem-Fir Deck Ledger and a 2-inch-nominal solid-sawn Spruce-Pine-Fir-Band Joist<sup>c,f,g</sup>  
(deck live load = 40 psf, deck dead load = 10 psf)

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

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

- a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2 inch.
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with Section R507.2.1.
- e. Deck ledger shall be minimum 2x8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1-inch-thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum 1 x 9 1/2 Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1-inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1-inch.

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

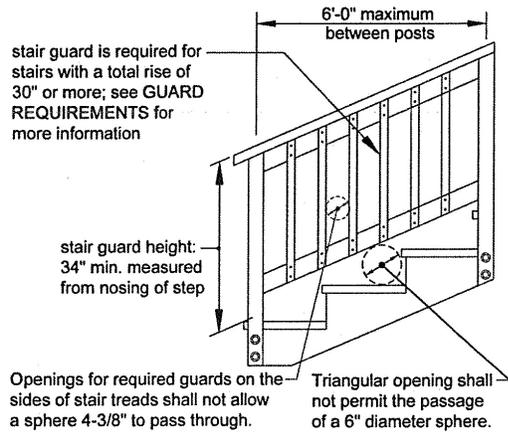


\*DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4.5" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2 X 8 LEDGERS TO 2 X 8 BAND JOISTS.

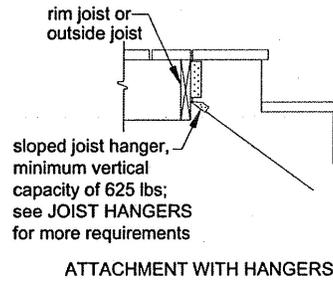
For SI: 1 inch = 25.4 mm.

# Deck Handout

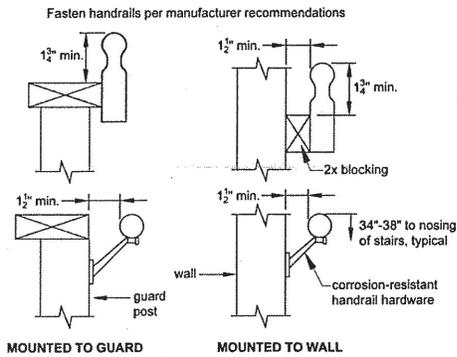
**Figure 30. Stair Guard Requirements.**



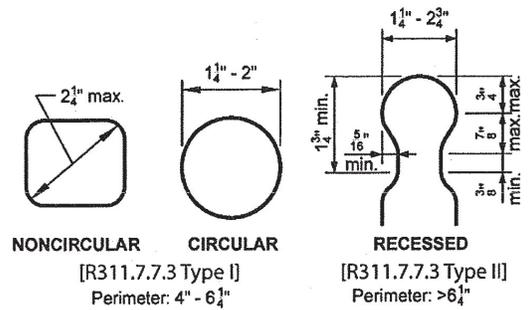
**Figure 31. Stair Stringer Attachment Detail.**



**Figure 32A. Handrail Mounting Examples.**



**Figure 32B. Handrail Grip Size.**



**Figure 33. Miscellaneous Stair Requirements.**

