



# Residential Decks

## Community Development Department Building Inspections Division

5200 85<sup>th</sup> Avenue North / Brooklyn Park, MN 55443  
Phone: (763) 488-6379 / Fax: (763) 493-8171  
6/15 www.brooklynpark.org

This handout is a **guide** only and does not contain all of the requirements of the Minnesota State Building Code or city ordinances.

**Building Permits are required for any deck that is attached to a dwelling or is more than thirty (30) inches above grade, including freestanding decks.**

### REQUIRED INFORMATION WHEN APPLYING FOR A PERMIT:

1. **CERTIFICATE OF SURVEY/ SITE PLAN:**

Drawn to scale, indicating lot dimensions, deck location and setbacks from property lines.

2. **TWO (2) COPIES OF DECK PLAN, DRAWN TO SCALE:**

PLAN VIEW                      CROSS SECTION                      ELEVATIONS

\*Proposed deck size, location of stairs.

\*Size, type and spacing of floor joists.

\*Size & type of decking.

\* Diameter and depth of footings.

\*Legible, scalable and neat.

\*Size, type, location and spacing of posts and beams.

\*Height of structure from grade.

\*Joist hangers, flashings and fasteners.

\*Guardrail height and spacing of intermediate rails.

### DECK BUILDING REQUIREMENTS

1. **Setbacks** - Decks may extend to within five (5) feet of side or rear lot lines, but in no case over any easement. Decks may extend into front setback six (6) feet providing the floor is no higher than the entrance floor of the building. It is the responsibility of the property owner to locate property corner irons.
2. **Live Load** - All deck floor systems must be designed to support a live floor load of 40 psf. (IRC Table R301.5)
3. **Footings** - Frost footings must extend to at least 42" below grade for any deck that is attached to a dwelling or a garage that has frost footings. The diameter of the footings shall be at least 12", attached three-season or screen porches may require larger footings such as 16" - 24" in diameter. The future addition of a porch roof should be considered at the time of permit application. A positive mechanical connection between post and footing is required.
4. **Wood Required** - All wood used in the construction of decks is required to be of approved naturally durable wood or treated wood. This includes posts, beams, joists, decking, guards and rails. All lumber shall bear the quality mark of an approved inspection agency. (IRC Sec.R317) Plastic/composite deck materials must be **approved** before installing; material must be installed according to the appropriate code evaluation report. A copy of the report must be available for installer and inspector.  
Evaluation Reports can be found at: [http://www.icc-es.org/Evaluation\\_Reports/index.shtml](http://www.icc-es.org/Evaluation_Reports/index.shtml).  
Code Compliance Reports can be found at: [http://www.archtest.com/certification/deck\\_and\\_handrail.aspx](http://www.archtest.com/certification/deck_and_handrail.aspx).
5. **Flashing** - All connections between deck and dwelling must be flashed and weatherproof. (IRC Sec.R703.8)
6. **Ledger Board** - Siding must be removed to allow this member to be properly fastened. 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. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. (IRC Sec.R507) Fasteners must be long enough to penetrate framing members. Decks shall not be supported by cantilevered floor framing without specific engineering.

7. **Joists/Beams** - Joist spacing of 24 inches on center requires decking with a 2" nominal thickness, 5/4" decking material requires joist spacing no greater than 16 inches on center (decking installed perpendicular to the joists). Joists with cantilevers which exceed 3 times the (nominal) depth of the joist will require structural engineering. Beams must not overhang posts by more than 12 inches unless a special design is approved. Built-up beams (two or more members) are to be nailed together. A positive, mechanical connection between post and beam is required.
8. **Joist Hangers** - Joists framing into the side of a beam or ledger shall be supported by approved framing anchors such as joist hangers. (IRC Sec.R502.6.2)
9. **Fasteners** – Fasteners for pressure-preservative wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153. (IRC Sec. 317.3)
10. **Guards** - All open sides of decks, landings, balconies and porches which are more than 30" above grade or floor below, must be protected by a guard not less than 36" in height. Open sides of stairs with a total rise of more than 30" above the floor or grade below shall have guards not less than 34" in height measured vertically from the nosing of the treads. Required guards shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4" in diameter (4 3/8" for guards on open sides of stairways). The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway may be of such size that a sphere 6 inches in diameter cannot pass through. (IRC Sec.R312)
11. **Stairs** - Stairways shall not be less than 36 inches in width. The maximum riser height shall be 7 3/4" (3/8 inch maximum variation in riser heights) and the minimum tread depth shall be 10" (3/8 inch maximum variation in tread depths). Open risers are permitted, provided that the openings between treads does not permit the passage of a 4-inch-diameter sphere. (IRC Sec.R311.7.5.1) For minimum width stairs, a minimum of three stringers is required. If 5/4" decking material is used for treads, stringers shall be spaced a maximum of 16" O.C. (For plastic/composite material see the ICC ES or ATI CCR report for the product).
12. **Handrails** - A handrail shall be provided on at least one side of all stairways having 4 or more risers. Handrails shall be placed not less than 34" or more than 38" above the nosing of treads and be continuous the full length of the stairs. Handrails projecting from a wall or guardrail must have a space of not less than 1 1/2" between the wall or guardrail and the handrail. The handgrip portion of handrails shall have a cross section of 1 1/4" minimum to 2" maximum in cross-sectional dimension and must have a smooth surface with no sharp corners. Handrail ends shall be returned or shall terminate in newel posts. (IRC Sec.R311.7.8)

### REQUIRED INSPECTIONS

- 1 -**Footings:** After the holes are dug, but before concrete is poured.
- 2 -**Ledger:** This is to ensure a secure attachment to the principle structure is made. This must be verified.
- 3 -**Final/Framing:** In most instances the framing can be inspected at the final inspection. If your deck is less than three feet above the ground, a separate framing inspection will be required before the decking is installed.

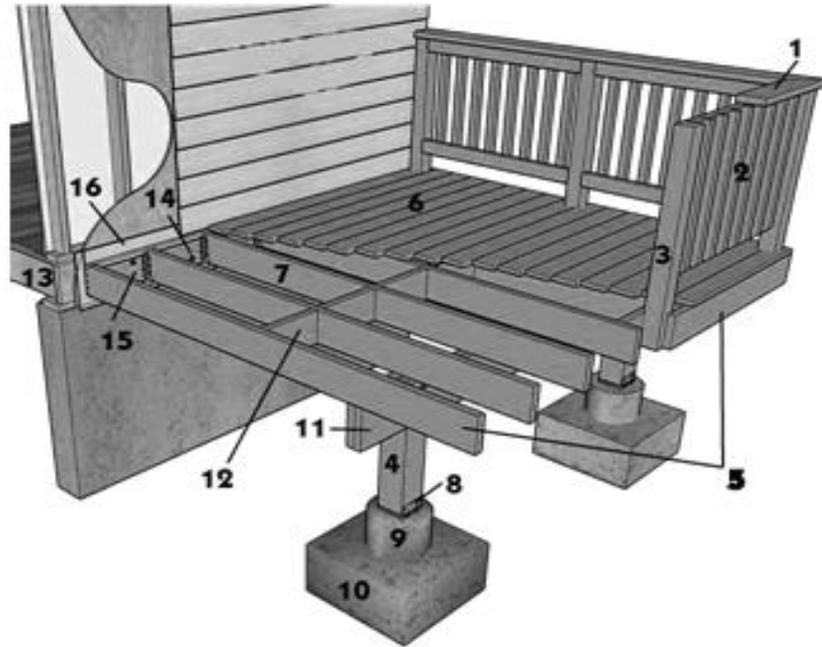
### PLEASE NOTE

If you plan to use plastic/composite materials to build your deck, you must provide an Evaluation Services Report or a Code Compliance Report and the manufacturer's installation instructions at the time of permit application (this report must remain on the job for all inspections). Each report is unique to the manufacturer and will include requirements for decking, stair treads, or railing systems. If they are not included in the report then it cannot be used for that installation.

Note: For Deck Construction Reference see  
<http://www.awc.org/codes/dcaindex.php>

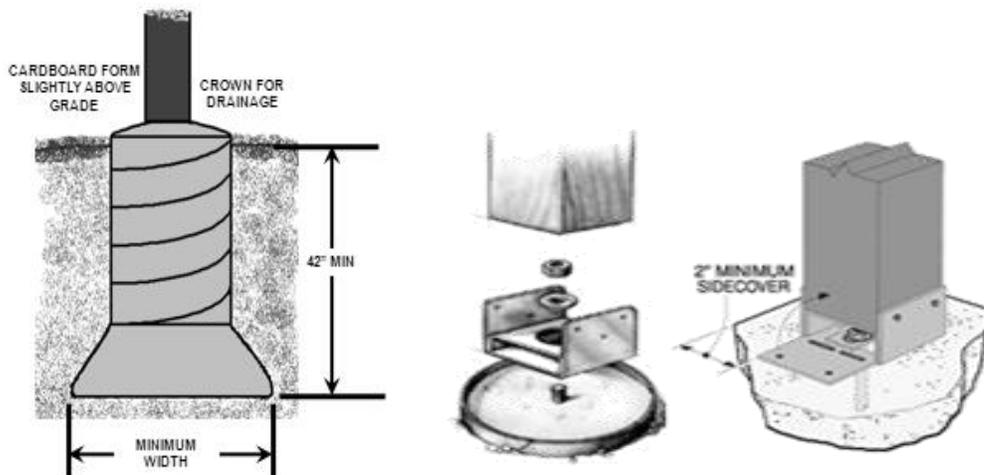
# TERMINOLOGY

1. RAIL TOP CAP
2. BALLUSTERS
3. RAIL POST
4. SUPPORT POST
5. RIM OR BAND JOIST
6. DECKING
7. JOISTS
8. POST BASE CONNECTOR
9. PIER
10. FOOTING
11. DROP BEAM
12. BLOCKING
13. HOUSE JOIST
14. 1/2" BOLTS
15. LEDGER BOARD
16. FLASHING



## Footings

Footings should be at least 12 inches in diameter and be a minimum of 42 inches deep. The footings should be belled at the base to a larger diameter. A positive mechanical connection between the post and the footing is required. Alternate types of foundations for decks are not accepted without design from a licensed professional.



Check approved plan for footing diameter at the base as noted by the reviewer.

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, and 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'
Connection details	On-center spacing of fasteners <sup>d and e</sup>						
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 15/32 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

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 2 x 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.  
f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1-inch-thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.  
g. A minimum 1 x 9 1/2 Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.  
h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.

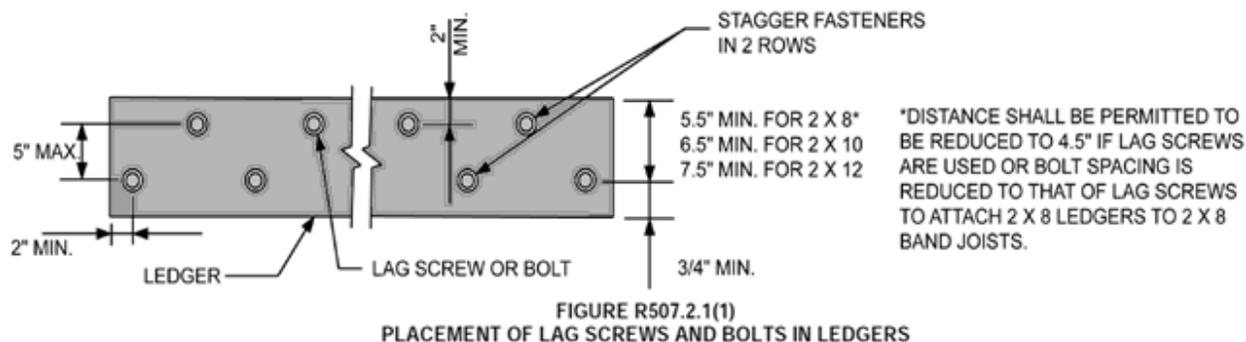


TABLE 507.2 PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS				
MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger <sup>a</sup>	2 inches <sup>d</sup>	1/4 inch	2 inches <sup>b</sup>	1 5/8 inches <sup>b</sup>
Band or Rim Joist <sup>c</sup>	3/4 inches	2 inches	2 inches <sup>b</sup>	1 5/8 inches <sup>b</sup>

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 R507.2.1(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 R507.2.1(1).

### Please Note:

**If the floor system for your house uses Trusses or I Joists there are specific requirements for connecting the ledger to these systems. You may need to contact the builder of the house to obtain the manufacturer of the floor trusses or I joists for information on how the ledger connection to the house should be accomplished.**

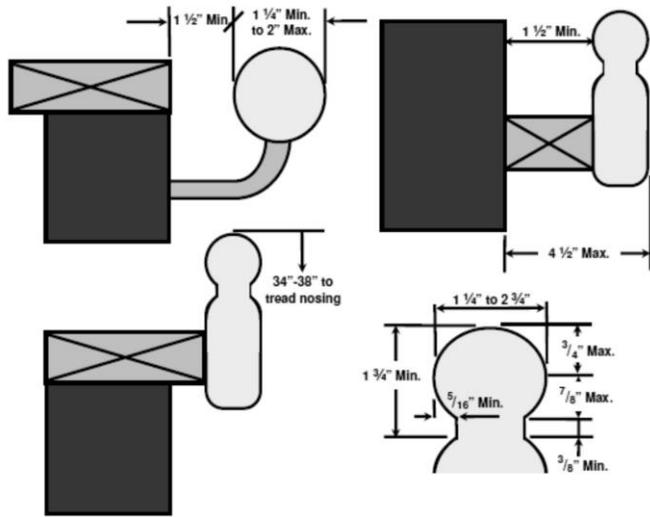
BEAM SPANS (Wet Service) (Center of one column to center of next) (Source AF&PA; rev. 8-17-10)								
Species	Beam Size	Joist Spans						
		6'	8'	10'	12'	14'	16'	18'
Southern Pine (#2 and Better)	2-2X6	6'11"	5'11"	5'4"	4'10"	4'6"	4'3"	4'0"
	2-2X8	8'9"	7'7"	6'9"	6'2"	5'9"	5'4"	5'0"
	2-2X10	10'4"	9'0"	8'0"	7'4"	6'9"	6'4"	6'0"
	2-2X12	12'2"	10'7"	9'5"	8'7"	8'0"	7'6"	7'0"
	3-2X6	8'2"	7'5"	6'8"	6'1"	5'8"	5'3"	5'0"
	3-2X8	10'10"	9'6"	8'6"	7'9"	7'2"	6'8"	6'4"
	3-2X10	13'0"	11'3"	10'0"	9'2"	8'6"	7'11"	7'6"
	3-2X12	15'3"	13'3"	11'10"	10'9"	10'0"	9'4"	8'10"
Cedar, Redwood, Ponderosa Pine	2-2X6	5'5"	4'8"	4'2"	3'10"	3'6"	3'1"	2'9"
	2-2X8	6'10"	5'11"	5'4"	4'10"	4'6"	4'1"	3'8"
	2-2X10	8'4"	7'3"	6'6"	5'11"	5'6"	5'1"	4'8"
	2-2X12	9'8"	8'5"	7'6"	6'10"	6'4"	5'11"	5'7"
	3-2X6	7'4"	6'8"	6'0"	5'6"	5'1"	4'9"	4'6"
	3-2X8	9'8"	8'6"	7'7"	6'11"	6'5"	6'0"	5'8"
	3-2X10	12'0"	10'5"	9'4"	8'6"	7'10"	7'4"	6'11"
	3-2X12	13'11"	12'1"	10'9"	9'10"	9'1"	8'6"	8'1"

JOIST SPANS (Wet Service) (Source AF&PA; rev. 8-17-10)						
JOIST SIZE	SOUTHERN PINE(#2 and Better)			WESTERN CEDAR/PONDEROSA PINE		
	12"oc	16"oc	24"oc	12"oc	16"oc	24"oc
2X6	9'11"	9'0"	7'7"	8'10"	8'0"	7'0"
2X8	13'1"	11'10"	9'8"	11'8"	10'7"	8'8"
2X10	16'2"	14'0"	11'5"	14'11"	13'0"	10'7"
2X12	18'0"	16'6"	13'6"	17'5"	15'1"	12'4"

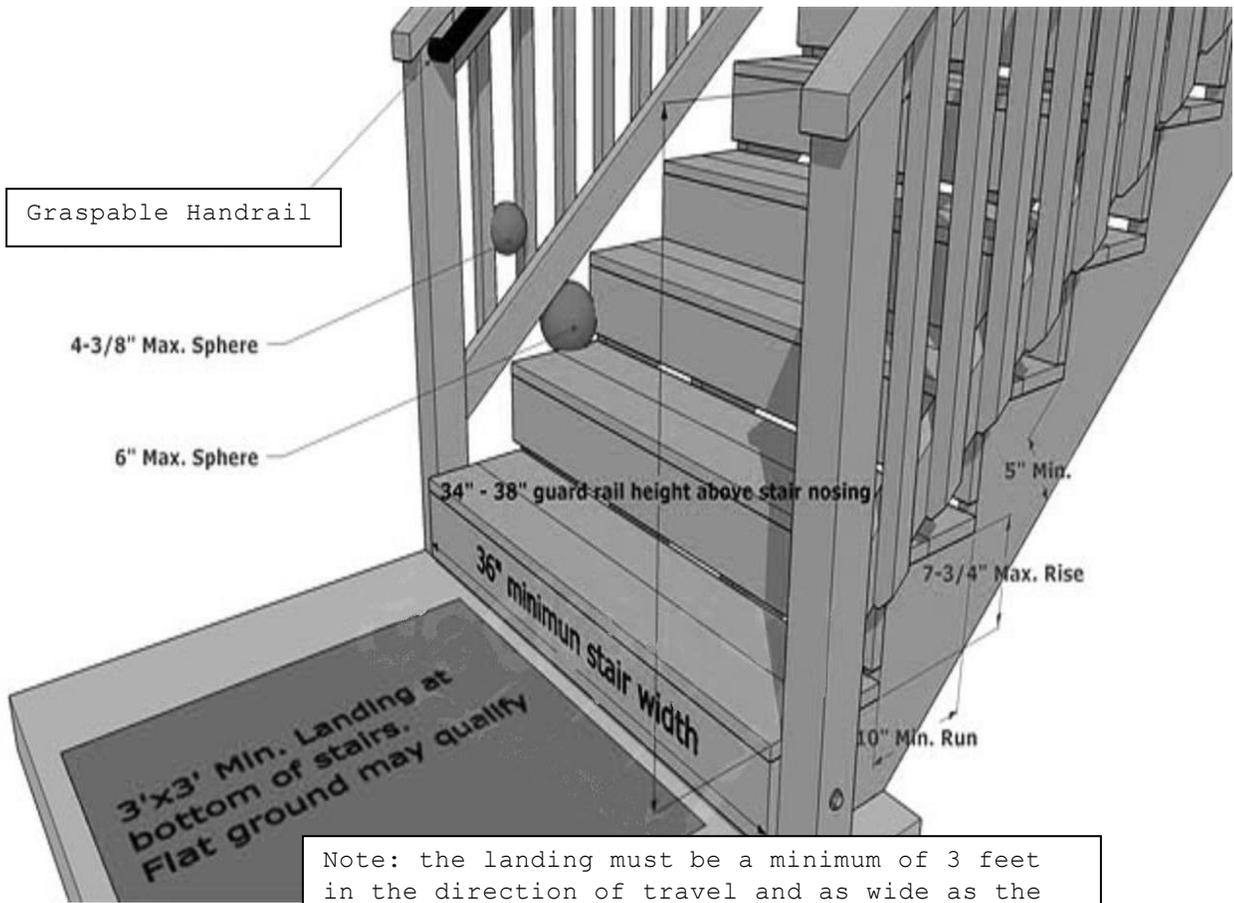
MAXIMUM DECK BOARD SPANS	
2x6 OR 5/4 SOUTHERN PINE PERPENDICULAR TO JOIST	24" O.C.
5/4 CEDAR OR REDWOOD AND 2X4 PERPENDICULAR TO JOIST OR 5/4 SOUTHERN PINE OR 2X6 AT 45 DEGREES TO JOIST	16" O.C.
5/4 AND 2X4 AT 45 DEGRESS TO JOIST	12" O.C.

**Note:** Composite decking may have different installation requirements. Check the evaluation or code compliance report regarding the spacing of framing members and other details pertaining to the installation of the product. Please make a copy of the report and submit it with your plans.

## Handrail and Stair details



Note: A continuous handrail returned to the post at the top and bottom of the stairway.



Note: the landing must be a minimum of 3 feet in the direction of travel and as wide as the stairway. Uniform riser height is required, including the first step up from the landing or ground.