Division of Building

CITY OF MIDDLEBURG HEIGHTS

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Matthew J. Castelli
Mayor

Norman H. Herwerden
Building Commissioner

REQUIREMENTS FOR CONSTRUCTION OF DECKS

1. Before constructing a patio/deck, a building permit must first be obtained from the Middleburg Heights Building Department. At the time of application for the permit, a plot plan showing lot measurements, length and width of the existing house and the actual size of the deck, including steps, must be submitted. If applicable, show overhead power and phone lines.

2. The plot plan must also indicate the distance of the proposed patio/deck from the rear and side property lines. The location on the property must conform to Chapter 1133 of the Middleburg Heights Zoning Code. Specifically, the patio/deck must be at least twenty-five feet (25') from rear lot lines in R1-A and R2-F districts and eighteen feet (18') from the rear lot line in R1-C districts. Pool decks must be at least 10 feet (10') from a property line.

3. Drawings detailing the method of construction of the proposed patio/deck must also be submitted; use form on page 2.

4. Lumber to be used should be pressure treated or approved naturally durable lumber.

5. Fasteners must be approved for type of lumber used. Packaging must be on site.

6. Floor joists shall be of sufficient size to carry the live load above. For determining the correct sizes of floors, joists, etc., please refer to the attached charts, or consult with the lumber manufacturer specifications.

7. Patio/decks which are elevated thirty inches (30") or more above grade shall have railings installed around the perimeter of the deck. Railings are to extend thirty-six inches (36") above the deck flooring. Railings may be of 2" X 4" or 2" X 6" construction and shall be rigid and securely fastened to the house. Posts are to be 4"x4" through bolted to outside of rim joist or inset with 4" fully blocked framing and structural screws.

8. It is recommended that the space between the ground and patio/deck be enclosed to prevent the harborage and infestation of wildlife. The enclosure should extend below the surface of the ground approximately twelve inches (12") to prevent burrowing. The enclosure should be aesthetically compatible with the structure's design and should be made from certified ground contact treated lumber or other similar materials. The materials used as a weed barrier below the patio/deck should be described and indicated on the construction plans.

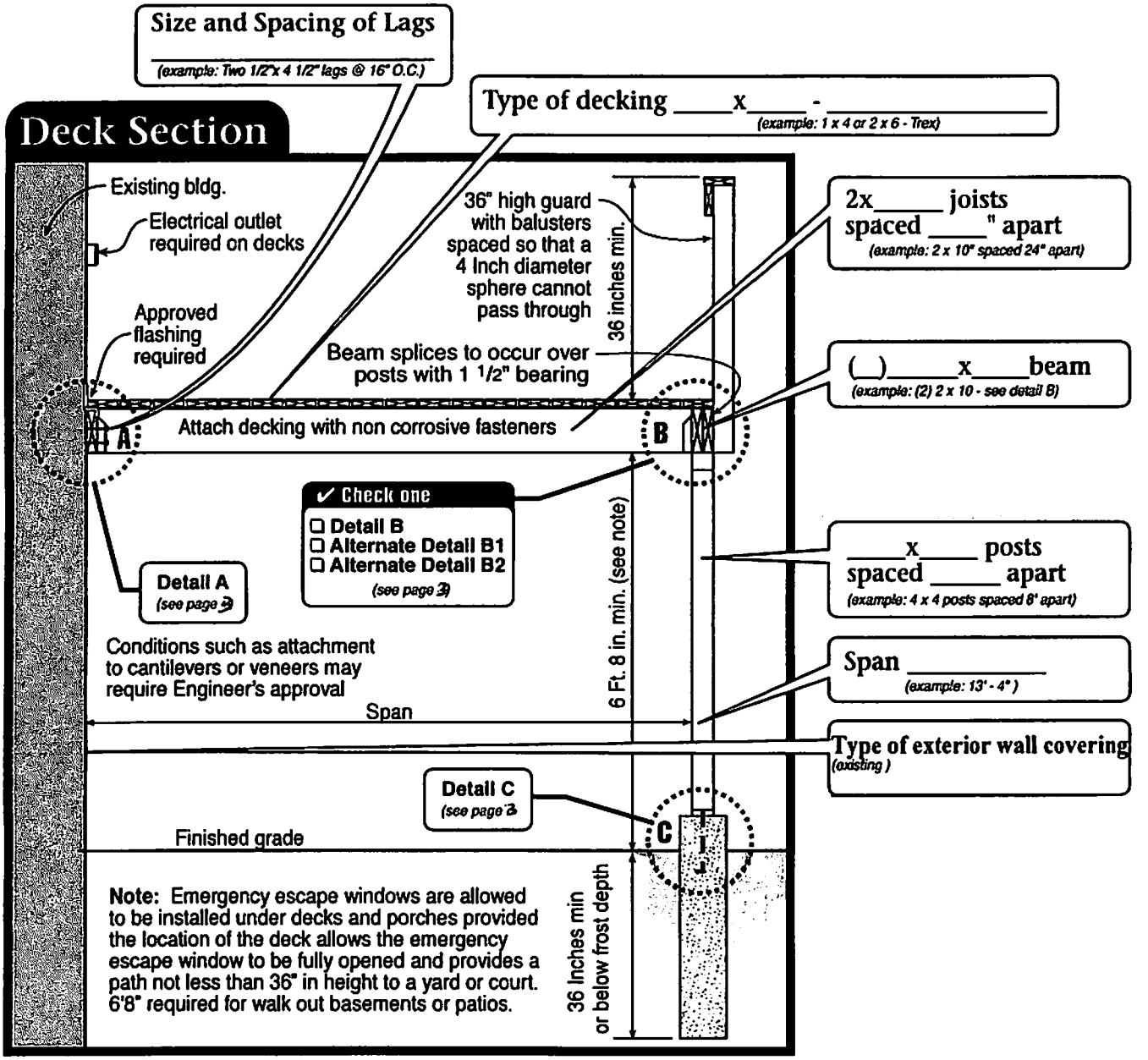
9. Please refer to the Deck Guide PDF Download for further details:
(https://awc.org/wp-content/uploads/2022/02/AWC-DCA62015-DeckGuide-1804.pdf)

Single Family Residential Uncovered Decks and Porches

Directions

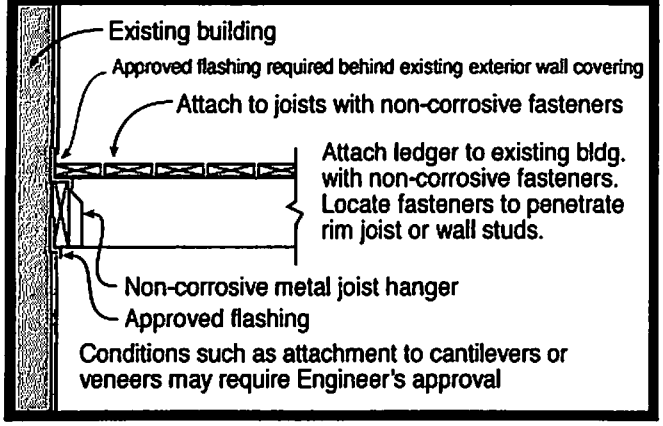
1. Fill in the blanks. Please print legibly.
2. Indicate in the check box which detail from page 3 will be used.

Address: _____

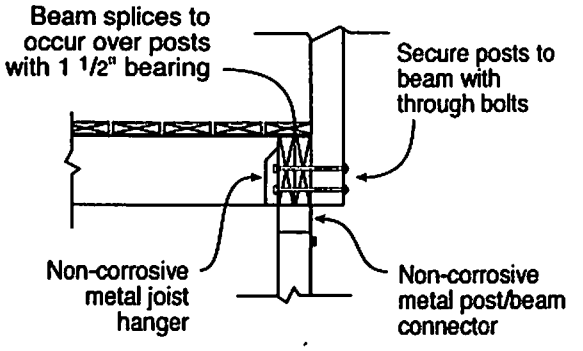


Single Family Residential Uncovered Decks and Porches

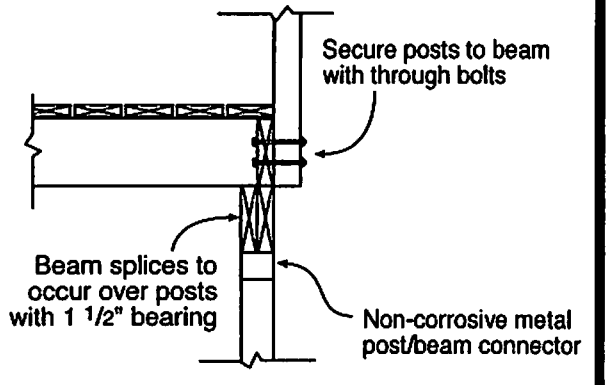
Detail A



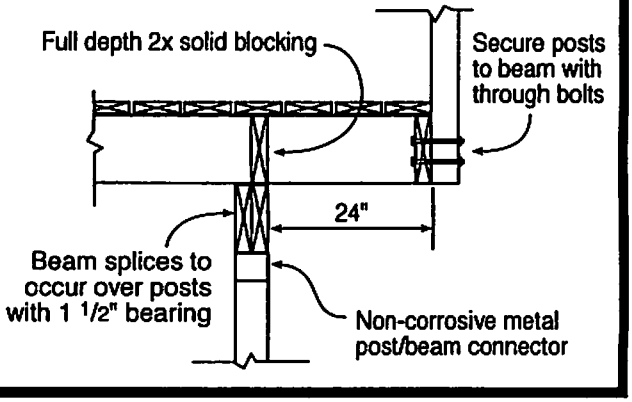
Detail B



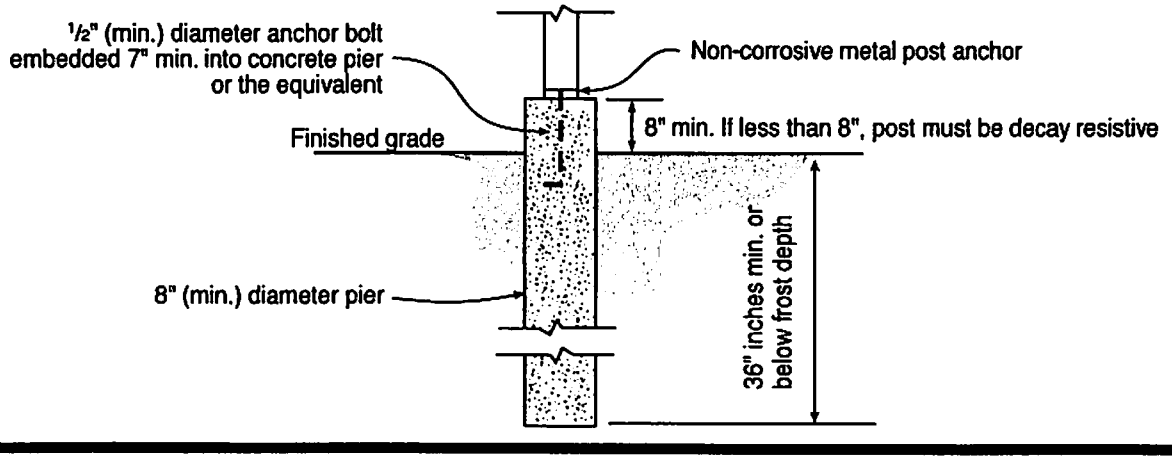
Alternate Detail B1



Alternate Detail B2

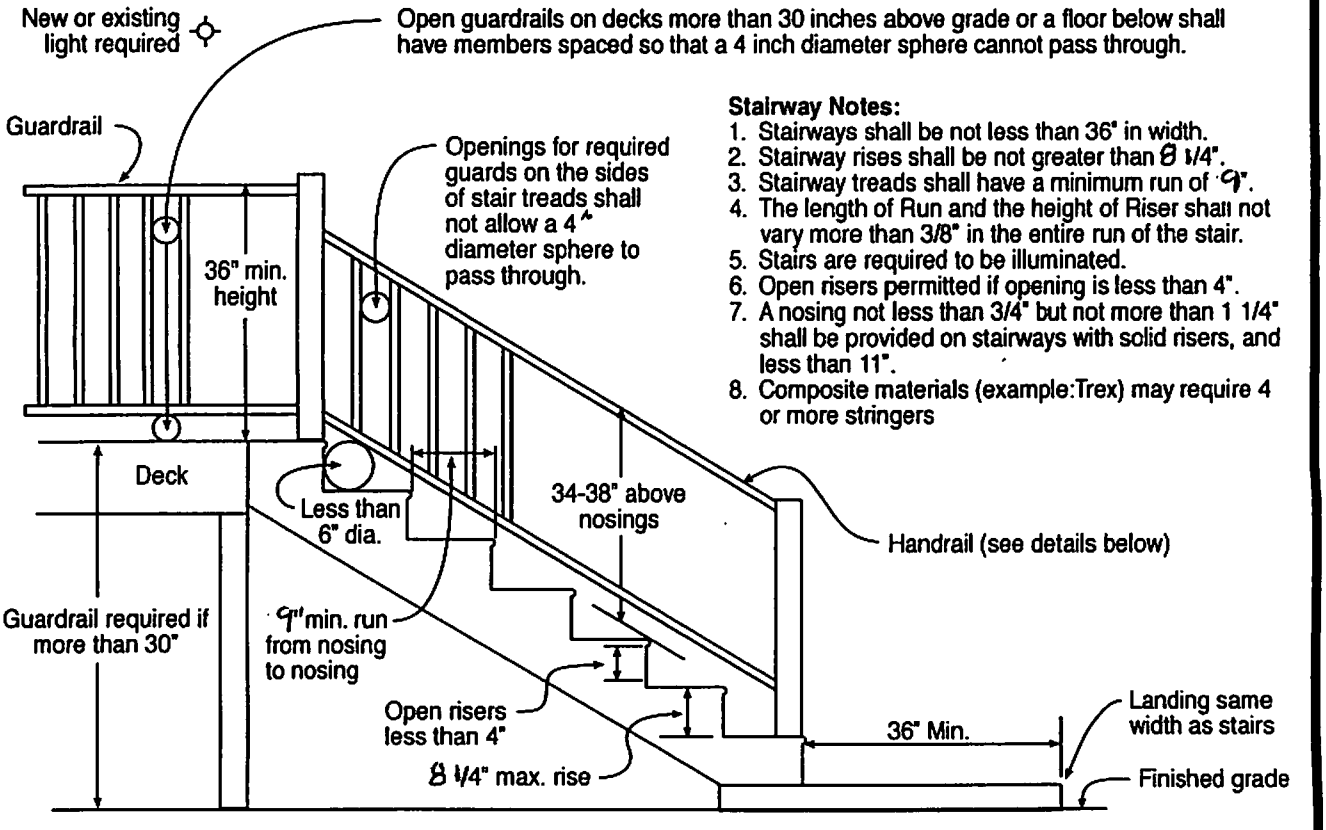


Detail C



Single Family Residential Uncovered Decks and Porches

Stair & Handrail Specifications



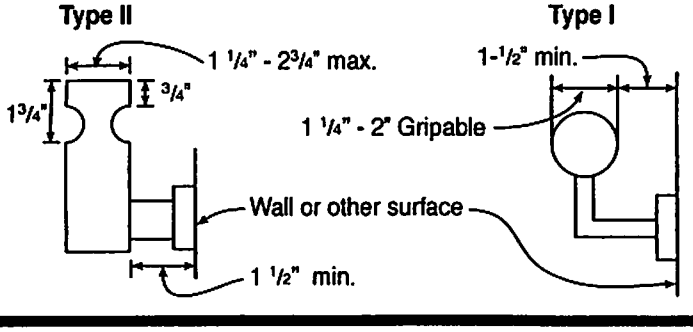
Stairway Notes:

1. Stairways shall be not less than 36" in width.
2. Stairway rises shall be not 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 than 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

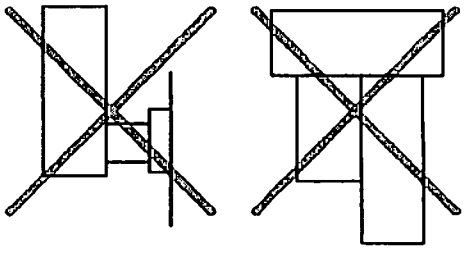
Handrail Notes:

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 to be returned to wall, post or safety terminal (per 311.7.8.2 IRC)

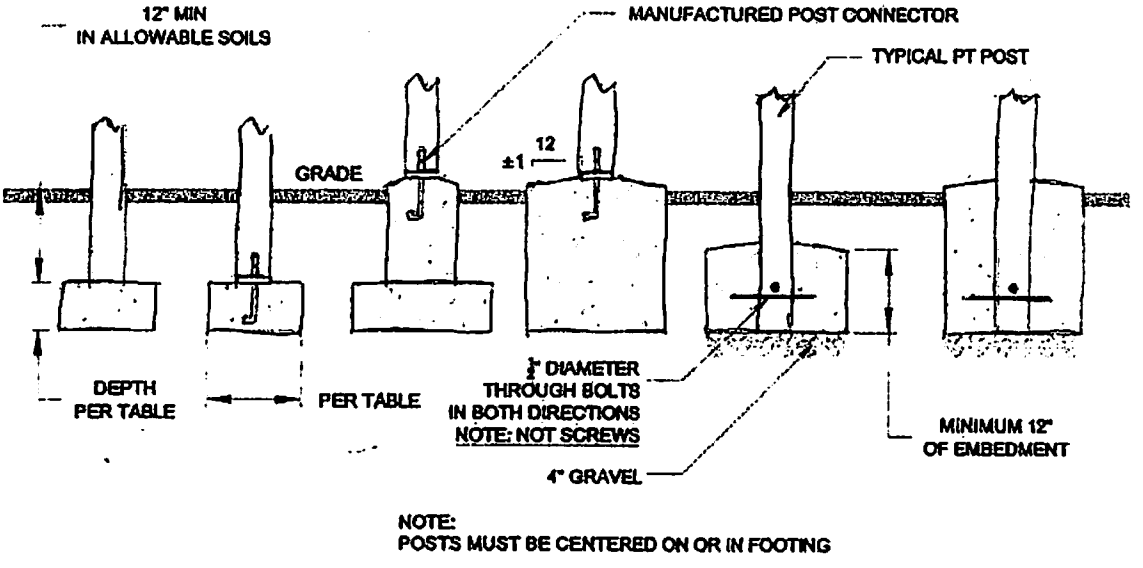
Acceptable Handrail Details



Unacceptable Handrails



507.3.1 Minimum size. The minimum size of concrete footings shall be in accordance with Table 507.3.1, based on the tributary area and allowable soil-bearing pressure in accordance with Table 401.4.1.



For SI: 1 inch = 25.4 mm.

FIGURE 507.3
DECK POSTS TO DECK FOOTING CONNECTION

Figure R507.7.1
Deck beam to deck post

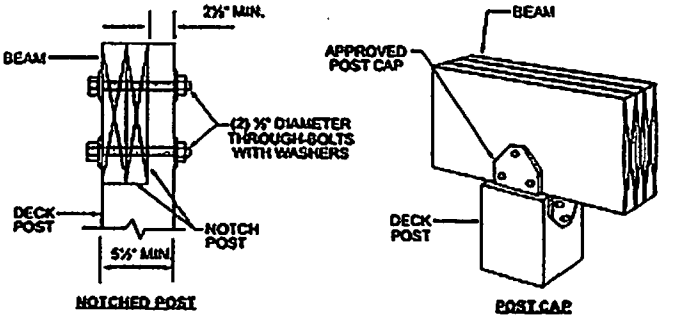


TABLE 507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD [b] (psf)	TRIBUTARY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS [a, c, d] (psf)											
		1500			2000			2500			>3000		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	14	16	6	12	14	6	12	14	6	12	14	6
	60	17	19	6	15	17	6	13	15	6	12	14	6
	80	20	22	7	17	19	6	15	17	6	14	16	6
	100	22	25	8	19	21	6	17	19	6	15	17	6
	120	24	27	9	21	23	7	19	21	6	17	19	6
	140	26	29	10	22	25	8	20	23	7	18	21	6
	160	28	31	11	24	27	9	21	24	8	20	22	7
50	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	15	17	6	13	15	6	12	14	6	12	14	6
	60	19	21	6	16	18	6	14	16	6	13	15	6
	80	21	24	8	19	21	6	17	19	6	15	17	6
	100	24	27	9	21	23	7	19	21	6	17	19	6
	120	26	30	10	23	26	8	20	23	7	19	21	6
	140	28	32	11	25	28	9	22	25	8	20	23	7
	160	30	34	12	26	30	10	24	27	9	21	24	8
60	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	16	19	6	14	16	6	13	14	6	12	14	6
	60	20	23	7	17	20	6	16	18	6	14	16	6
	80	23	26	9	20	23	7	18	20	6	16	19	6
	100	26	29	10	22	25	8	20	23	7	18	21	6
	120	28	32	11	25	28	9	22	25	8	20	23	7
	140	31	35	12	27	30	10	24	27	9	22	24	8
	160	33	37	13	28	32	11	25	29	10	23	26	9
70	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	18	20	6	15	17	6	14	15	6	12	14	6
	60	21	24	8	19	21	6	17	19	6	15	17	6
	80	25	28	9	21	24	8	19	22	7	18	20	6
	100	28	31	11	24	27	9	21	24	8	20	22	7
	120	30	34	12	26	30	10	24	27	9	21	24	8
	140	33	37	13	28	32	11	25	29	10	23	26	9
	160	35	40	15	30	34	12	27	31	11	25	28	9

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. Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 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.

TABLE 507.5
DECK BEAM SPAN LENGTHS [a, b, g] (feet - inches)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	1–2 x 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1–2 x 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1–2 x 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1–2 x 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2–2 x 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2–2 x 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2–2 x 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2–2 x 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3–2 x 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3–2 x 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3–2 x 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3–2 x 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir-larch [e], hem-fir [e], spruce-pine-fir [e], redwood, western cedars, ponderosa pine [f], red pine [f]	3 x 6 or 2–2 x 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 x 8 or 2–2 x 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 x 10 or 2–2 x 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 x 12 or 2–2 x 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 x 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 x 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 x 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 x 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3–2 x 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3–2 x 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3–2 x 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3–2 x 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

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.

a. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.

b. Beams supporting deck joists from one side only.

c. No. 2 grade, wet service factor.

d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.

e. Includes incising factor.

f. Northern species. Incising factor not included.

g. Beam cantilevers are limited to the adjacent beam's span divided by 4.

TABLE 507.6
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)

SPECIES[a]	SIZE	ALLOWABLE JOIST SPAN[b] SPACING OF DECK JOISTS (inches)			MAXIMUM CANTILEVER [c,f] SPACING OF DECK JOISTS WITH CANTILEVERS [c] (inches)		
		12	16	24	12	16	24
Southern pine	2x6	9-11	9-0	7-7	1-3	1-4	1-6
	2x8	13-1	11-10	9-8	2-1	2-3	2-5
	2x10	16-2	14-0	11-5	3-4	3-6	2-10
	2x12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d],	2x6	9-6	8-8	7-2	1-2	1-3	1-5
	2x8	12-6	11-1	9-1	1-11	2-1	2-3
	2x10	15-8	13-7	11-1	3-1	3-5	2-9
	2x12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2x6	8-10	8-0	7-0	1-0	1-1	1-2
	2x8	11-8	10-7	8-8	1-8	1-10	2-0
	2x10	14-11	13-0	10-7	2-8	2-10	2-8
	2x12	17-5	15-1	12-4	3-10	3-9	3-1

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.

a. No. 2 grade with wet service factor.
b. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$.
c. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.
d. Includes incising factor.
e. Northern species with no incising factor.
f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

507.7 Decking. Maximum allowable spacing for joists supporting decking shall be in accordance with Table 507.7. Wood decking shall be attached to each supporting member with not less than two 8d threaded nails or two No. 8 wood screws. Other approved decking or fastener systems shall be installed in accordance with the manufacturer's installation requirements.

TABLE 507.7
MAXIMUM JOIST SPACING FOR DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking diagonal to joist[a]
1½-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section 507.2	In accordance with Section 507.2

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.