

Deck Permit Guidelines

Required Documentation:

1. **Building Permit Application** w/ frame & concept sheet.
2. **Survey map:** Please draw location of the deck on the survey map.
3. **Insurance or Exemption Form** (One of the following):
 - Contractor: General Liability & Worker's Compensation
 - Homeowner, family member or friend: Please provide the CE- 200 form on <http://www.wcb.ny.gov>

If the deck is going to be connected to a pool there are additional requirements below that must be met.

1. Pool deck barrier options:

- a. 48" pool deck barrier & gate: If height of the deck is less than 48" from ground, then the guardrails on top of the deck may need to be modified to 48" or opening reduced. Location of the pool gate is determining factor.
- b. 48" yard fence & gate

2. Pool Gate:

- a. 48" gate height
- b. Gate must open outward, away from the pool
- c. Self-closing & self-latching
- d. Gate location:
 - i. Gate at bottom of steps: Guardrail & gate must be 48" high from floor
 - ii. Gate at top of steps: 3 x 3 landing is required since gate cannot swing over steps and must open away from pool entrance. Guard rails on each side of gate must be 48" as well.
- e. Latch location:
 - i. Standard latch: 3" below top gate
 - ii. Magna latch: 54" from floor

3. Alarms:

- a. Any doors and windows less than 48" from deck/ground that are inside of the barrier/gate must have alarms that meet the UL2017 standard. Please note that this is not the same thing as the pool alarm.

Please refer to Town, State & ICC codes for current code requirements.

Additional requirements may apply.

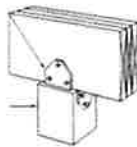
Deck Requirements

1. FOOTINGS/CONCRETE PIERS shall be a minimum of 48" deep. 8" diameter (minimum) pier type footings are required according to NYS design loads. Widen base of footing as required.
2. ALL LUMBER must be pressure treated or equal.
3. POST must be anchored to piers or otherwise prevent movement.
4. ALL nails, connectors & hangers shall be galvanized or equal.
5. Beam end joints and splices must be made over posts. Beams bolted to post must have at least two ½" bolts per post. Stagger bolts on post.
6. Decks off cantilevered houses require deck joist to either be run to the bearing wall or be supported independently. Rim joist on cantilever will not support a deck.
7. Deck ledger boards must be bolted to the house. Flash the ledger plate against the house or space the ledger plate away from the house to prevent snow, ice and rain from getting behind siding. Caulk all penetrations into siding. Flashing must be non-corrosive.
8. Joist hangers are required wherever joist do not have at least 1-1/2" of bearing. Joist hangers must be of proper size (i.e. 2x8 joist requires 2x8 joist hangers). Joist hangers must be fully nailed with one nail or approved screw per hole as designed.
9. Decks more than 30" off grade require a 36" minimum high guardrail, built so that a 4" diameter object cannot pass through any gaps present.
10. Handrails are required on at least one side of stairs with four or more risers. Handrails must be 34"-38" above the tread nosing. Stairs to decks more than 30" off grade or above adjacent floor level require a guardrail on all open sides, built so that a 4" diameter object cannot pass through any gaps present. Open risers more than 30" off grade or above adjacent floor level must be guarded as well.
11. Stairs must be at least 36" wide. Handrails may project into stairs a maximum of 4-1/2" each side. Maximum rise on stairs is 8-1/4". Risers may not vary more than 3/8" between the tallest and the shortest riser included at top and bottom of stairs. Minimum depth of tread with open risers 9". If risers are closed, treads must have 1-1/8" nosing. Tread depth may not vary more than 3/8" between deepest and shallowest tread.
12. Landings (minimum 36" deep) are required outside all doorways and at top and bottom of stairs. Landings may be a maximum of 8-1/4" below door threshold to prevent ice & snow accumulation.
13. Decks must be a minimum of 44" above grade if over a basement escape windows.
14. CALL FOR footing inspections after holes are dug, before pouring concrete. Call for framing prior to placement of decking. Call for final inspection when deck and stairs, if applicable, is/are complete.
15. Before digging, call Dig Safe New York excavation notification center at 1-800-962-7962 to locate utilities. ALL utilities (gas, electric, phone, cable TV, ect) will be located free of charge.

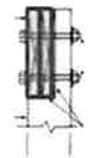
NOTE: The items listed on this sheet are common deficiencies noted during inspections of Decks, Stairs and Rails. Not all codes for Decks, Stairs and Rails are listed. For all codes related to Decks, Stairs and Rails requirements see the 2020 Residential Code of NYS or contact a design professional.

General Deck Code Information

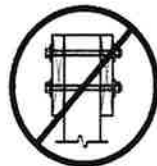
Beam Attached to Post



Post Bracket



Notched Post



Does not meet code

Cannot bolt beams to side of post without notching

Joist Spans

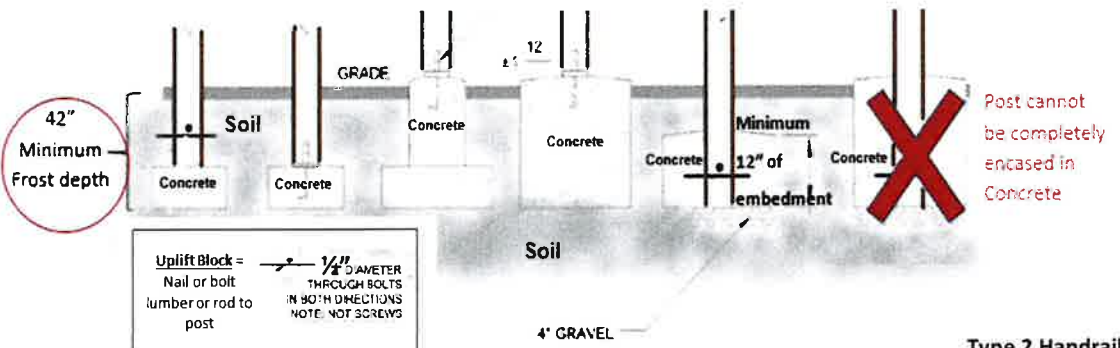
Species	Joist Size	12" OC Spacing	<-Maximum Cantilever	16 OC Spacing	<-Maximum Cantilever	24 OC Spacing	<-Maximum Cantilever
Southern Pine	2x6	9'-11"	1'-3"	9'-0"	1'-4"	7'-7"	1'-6"
Southern Pine	2x8	13'-1"	2'-1"	11'-10"	2'-3"	9'-8"	2'-5"
Southern Pine	2x10	16'-2"	3'-4"	14'-0"	3'-6"	11'-5"	2'-10"
Southern Pine	2x12	18'-0"	4'-6"	16'-6"	4'-2"	13'-6"	3'-4"

Hot Tubs: Joist & Beam spans are calculated at 40 lbs psf. calculate spans to meet 100lbs psf

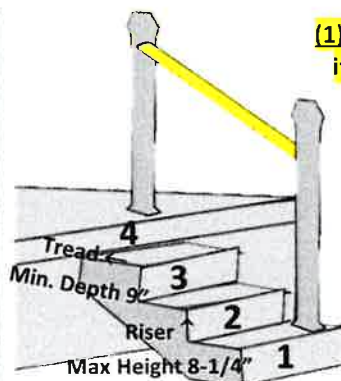
Beam Spans

Species	Deck Beam Size	6' *Joist span	8' *Joist span	10' *Joist span	12' *Joist span	14' *Joist span	16' *Joist span	18' *Joist span
Southern Pine	1-2x6	4'-11"	4'-0"	3'-7"	3'-3"	3'-0"	2'-10"	2'-8"
Southern Pine	1-2x8	5'-11"	5'-1"	4'-7"	4'-2"	2'-10"	3'-7"	3'-5"
Southern Pine	1-2x10	7'-0"	6'-0"	5'-5"	4'-11"	4'-7"	4'-3"	4'-0"
Southern Pine	1-2x12	8'-3"	7'-1"	6'-4"	5'-10"	5'-5"	5'-0"	4'-9"
Southern Pine	2-2x6	6'-11"	5'-11"	5'-4"	4'-10"	4'-6"	4'-3"	4'-0"
Southern Pine	2-2x8	8'-9"	7'-7"	6'-9"	6'-2"	5'-9"	5'-4"	5'-0"
Southern Pine	2-2x10	10'-4"	9'-0"	8'-0"	7'-4"	6'-9"	6'-4"	6'-0"
Southern Pine	2-2x12	12'-2"	10'-7"	9'-5"	8'-7"	8'-0"	7'-6"	7'-0"
Southern Pine	3-2x6	8'-2"	7'-5"	6'-8"	6'-1"	5'-8"	5'-3"	5'-0"
Southern Pine	3-2x8	10'-10"	9'-6"	8'-6"	7'-9"	7'-2"	6'-8"	6'-4"
Southern Pine	3-2x10	13'-0"	11'-3"	10'-0"	9'-2"	8'-6"	7'-11"	7'-6"
Southern Pine	3-2x12	15'-3"	13'-3"	11'-10"	10'-9"	10'-0"	9'-4"	8'-10"

Post Footing Options



Stairs, Guards and Handrails



(1) Handrail required if 4 or more risers

Type 1 Handrails:

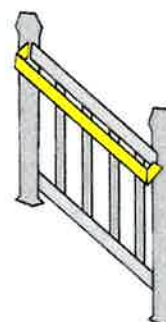
Circular

Min.=1-1/4" Max.=2"

Non-Circular

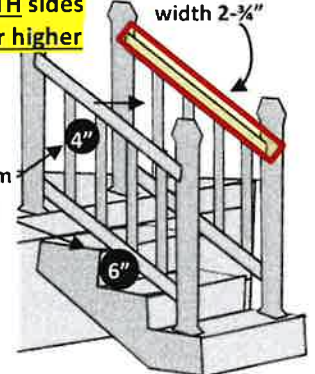
Min.=1-1/4" Max.=2"

Guards required on BOTH sides of stairs if deck is 30" or higher



Maximum Spacing

Type 2 Handrails: Recessed railing Max width 2-3/4"



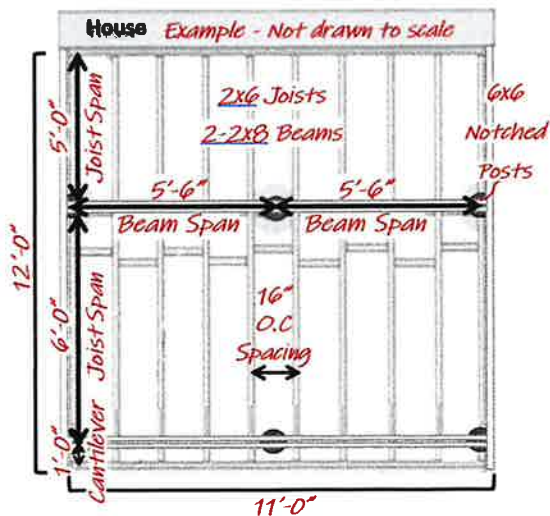
Max 3/8" difference between treads/risers. Guards on deck/stairs must withstand 200lbs of lateral force which is applied during inspection. Additional requirements apply. Contact Inspector for details.

Deck Frame & Concept

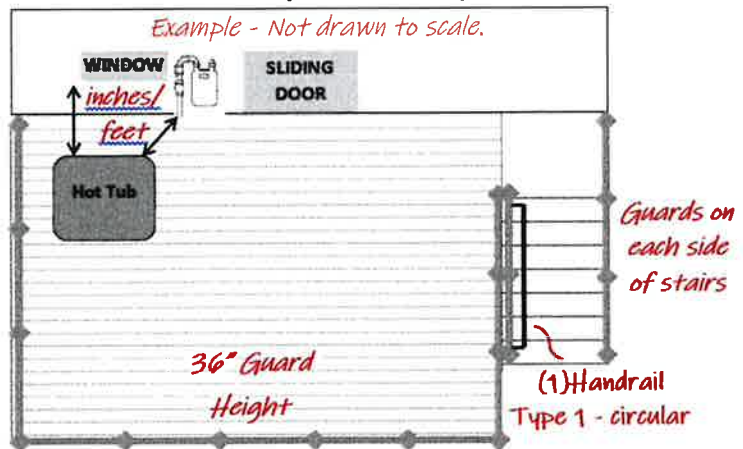
Property Address: _____

	Dimensions & Attachment	1. Deck Size: _____ x _____ = _____ SF
		2. Deck Board Size: _____ (Ex: 5/4" or 2")
		3. Deck Height: _____
		4. Direction of Deck Boards (Decking):
		5. ☐ Perpendicular (Straight) ☐ Diagonal
		6. Deck: ☐ Freestanding ☐ Attach to house
		7. If Deck is attached to the house:
		8. Ledger Size _____ x _____ (minimum 2 x 8)
		9. Flashing Type _____
	Beam to Post	10. Post Size: _____ x _____ (Ex: 4x4, 4x6 or 6x6)
		11. Beam to Post: ☐ Notch Post ☐ Post Bracket
		12. Post Depth: _____ (Min. 42")
		13. Post Hole Diameter: _____ (12"-18")
	Beam & Joists	14. Post Footing type: _____ (Refer to previous page. Cannot encase post in concrete.)
		15. Beam Size: _____ x _____ ☐ Single ☐ Double ☐ Triple Beam?
		16. Beam Span: _____ (See example)
		17. Beam Cantilever: _____ (See example)
		18. Joist Lumber Size: _____ x _____
		19. Spacing: _____ "OC
	Stairs, Guards & Handrails	20. Joist Span: _____ (See example)
		21. Joist Cantilever: _____ (See example)
		22. Deck/Stair Guard Height: _____ (If deck is higher than 30", Guards required on both sides of stairway.)
		23. Stair Riser Height: _____ (Max. 8 1/4")
		24. Stair Tread Depth: _____ (Min. 9")
		25. How many Steps? _____ (Include deck as step. Handrail required if 4 or more risers) ☐ Type 1- Circular ☐ Type 1-Non-Circular ☐ Type 2-Recessed (Refer to previous page for details.)

Deck Frame Plan Example



Deck Concept Plan Example

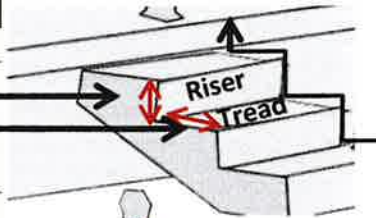


Stairs, Guards & Handrails

Deck Stairs

General Requirements for Deck Stairs:

- Riser height: 8- $\frac{1}{4}$ " maximum
- Tread depth: 9" minimum
- Step Openings (Risers): Must prevent a 4" sphere from passing through steps
- Variation Between Steps: Max $\frac{3}{8}$ "
- Refer to R311.7 code for Spiral Stairways/ Winder Treads & Alternating Treads



Stairs

The height and depth of each step cannot vary/differ more than $\frac{3}{8}$ " (Including height between step and top of deck).

Are Guardrails the Same as Handrails?

No. Guards prevent falling off the stairs. A Handrail is used for mobility and the size must meet ICC code standards, providing grip-able support for climbing.

If using a Guard kit, verify if the manufacturer designed the top rail to meet the handrail size requirements or if it is customizable.

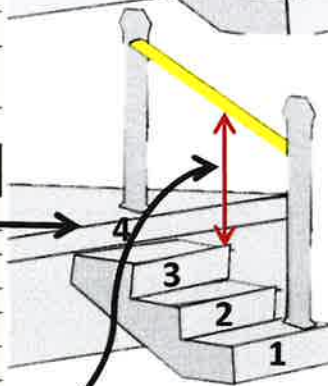
Handrail Required

Required: if 4 or more risers

Purpose: To grip for support

General Handrail Requirements:

- Required on 1 side of stairway
- Handrail must meet Type 1 or Type 2 size
- Continuous handrail aligned from top riser to bottom riser
- 34"-38" Height from nosing of tread
- Min. clearance between handrail and wall is 1- $\frac{1}{2}$ ".



Required Handrail Sizes

Handrail & Guards Required (aka Guardrails)

Required: 30" deck height or more and 4 or more risers

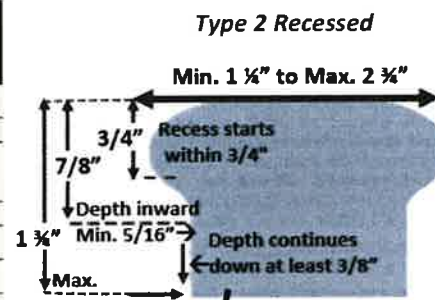
Purpose: The Guard prevents falling off and Handrail aids mobility when climbing stairs.

General Guard Requirements:

- 36" Minimum Guard height
- Guards required on both (2) sides of stairway. (Wall, along stairs, may be used as guard with minimal openings to reduce tripping hazards.)
- Continuous guards from deck to bottom step.
- Opening in guards must prevent 4" sphere from passing.
- Triangular opening, between bottom railing and step must prevent 6" sphere from passing.
- Guards on deck &/or stairs must withstand 200lbs lateral force.

General Handrail Requirements:

- Handrail required on 1 side of stairway
- Handrail must meet Type 1 or Type 2 size
- Continuous handrail aligned with top & bottom riser that returns/terminates into post or
- Handrail must be 34"-38" from nosing of tread
- Handrail max 4- $\frac{1}{2}$ " projection from guard
- Min. clearance between handrail and wall is 1- $\frac{1}{2}$ ".



Type 1 Circular or Non-Circular

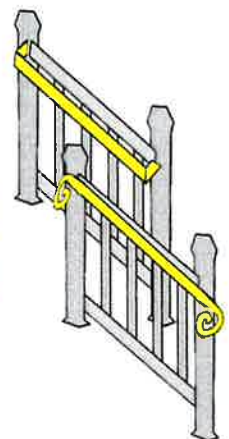
1- $\frac{1}{4}$ " - 2" Diameter

1- $\frac{1}{4}$ " - 2- $\frac{1}{4}$ " Cross Section



Guards required on BOTH sides of stairs if 30" or higher

Handrail required on 1 side of stairs if 4 or more risers



The information provided includes general requirements and does not replace code as written. Please refer to current version of Residential Codes of New York State for details.
Drawings are not to scale.

2025 Residential Code of New York State (2025 RCNYS)

CHAPTER 5 FLOORS

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 indicated in [Table R301.2](#), whichever is greater. For decks using materials and conditions not prescribed in this section, refer to [Section R301](#).

R507.2 Materials.

Materials used for the construction of decks shall comply with this section.

R507.2.1 Wood materials.

Wood structural members shall be protected from decay where required by [Sections R304.1](#) and [R304.1.2](#), and protected from termites where required by [Section R305.1](#). Where design in accordance with [Section R301](#) is provided, wood structural members shall be designed using the wet service factor defined in [AWC NDS](#). Sawn lumber for joists, beams and posts shall be No. 2 or better. Cuts, notches and drilled holes of preservative-treated wood members shall be treated in accordance with [Section R304.1.1](#).

R507.2.1.1 Engineered wood products.

Engineered wood products shall be in accordance with [Section R502](#).

R507.2.2 Plastic composite deck boards, stair treads, guards or handrails.

Plastic composite exterior deck boards, stair treads, *guards* and *handrails* shall comply with the requirements of [ASTM D7032](#) and this section.

R507.2.2.1 Labeling.

Plastic composite deck boards and stair treads, or their packaging, shall bear a *label* that indicates compliance with [ASTM D7032](#) and includes the allowable load and maximum allowable span determined in accordance with [ASTM D7032](#). Plastic or composite *handrails* and *guards*, or their packaging, shall bear a *label* that indicates compliance with [ASTM D7032](#) and includes the maximum allowable span determined in accordance with [ASTM D7032](#).

R507.2.2.2 Flame spread index.

Plastic composite deck boards, stair treads, *guards*, and *handrails* shall exhibit a *flame spread index* not exceeding 200 when tested in accordance with [ASTM E84](#) or [UL 723](#) with the test specimen remaining in place during the test.

Exception: *Plastic composites* determined to be noncombustible.

R507.2.2.3 Decay resistance.

Plastic composite deck boards, stair treads, *guards* and *handrails* containing wood, cellulosic or other biodegradable materials shall be decay resistant in accordance with [ASTM D7032](#).

R507.2.2.4 Termite resistance.

Where required by [Section 305](#), *plastic composite* deck boards, stair treads, *guards* and *handrails* containing wood, cellulosic or other biodegradable materials shall be termite resistant in accordance with [ASTM D7032](#).

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.

R507.2.3 Fasteners and connectors.

Metal fasteners and connectors used for all decks shall be in accordance with [Section R304.3](#) and [Table R507.2.3](#). Holes for through bolts shall be drilled to a diameter of $\frac{1}{32}$ inch to $\frac{1}{16}$ inch larger than the bolt diameter. Connectors shall be installed in accordance with the manufacturer's *approved* instructions.

TABLE R507.2.3—FASTENER AND CONNECTOR SPECIFICATIONS FOR DECKS^{a, b}

ITEM	MATERIAL	MINIMUM FINISH/COATING	ALTERNATE FINISH/COATING ^c
Nails and glulam rivets	In accordance with ASTM F1667	Hot-dipped galvanized per ASTM A153 , Class D or ASTM A641 Class 3S for $\frac{3}{8}$ -inch diameter and less	Stainless steel, silicon bronze or copper

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Bolts			
Lag screws (including nuts and washers)	In accordance with ASTM A307 (bolts), ASTM A563 (nuts), ASTM F844 (washers)	Hot-dipped galvanized per ASTM A153 , Class C (Class D for $\frac{3}{8}$ -inch diameter and less) or mechanically galvanized per ASTM B695 , Class 55 or 410 stainless steel	Stainless steel, silicon bronze or copper
Metal connectors	Per manufacturer's specification	ASTM A653 type G185 zinc-coated galvanized steel or post hot-dipped galvanized per ASTM A123 providing a minimum average coating weight of 2.0 oz./ft ² (total both sides)	Stainless steel

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- Equivalent materials, coatings and finishes shall be permitted.
- Fasteners and connectors exposed to salt water or located within 300 feet of a salt water shoreline shall be stainless steel.
- Stainless-steel-driven fasteners shall be in accordance with [ASTM F1667](#).

R507.2.4 Flashing.

Flashing shall be corrosion-resistant metal of nominal thickness not less than 0.019 inch (0.48 mm) or *approved* nonmetallic material that is compatible with the substrate of the structure and the decking materials. Self-adhered membranes used as flashing and counterflashing shall comply with [FGIA 711](#).

R507.2.5 Alternate materials.

Alternative materials, including glass and metals, shall be permitted.

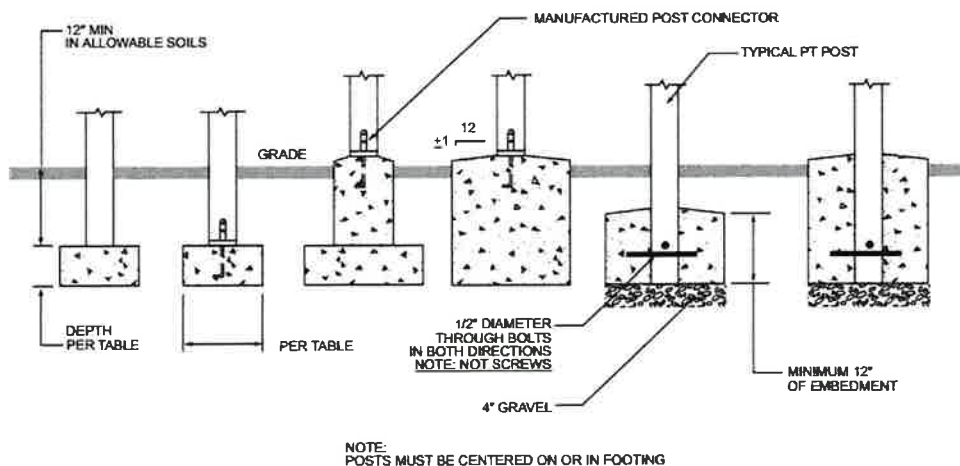
R507.3 Footings.

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:

- Footings shall not be required for free-standing decks consisting of joists directly supported on grade over their entire length.
- Footings shall not be required for free-standing decks that meet all of the following criteria:
 - The joists bear directly on *precast concrete pier blocks* at grade without support by beams or posts.
 - The area of the deck does not exceed 200 square feet (18.6 m²).
 - 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.

FIGURE R507.3—DECK POSTS TO DECK FOOTING CONNECTION



For SI: 1 inch = 25.4 mm.

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)	TRIBU TARY 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)
40	5	7	8	6	7	8	6	7	8	6
	20	10	12	6	9	9	6	7	8	6
	40	14	16	6	12	14	6	10	12	6
	60	17	19	6	15	17	6	12	14	6
	80	20	22	7	17	19	6	14	16	6
	100	22	25	8	19	21	6	15	17	6
	120	24	27	9	21	23	7	17	19	6
	140	26	29	10	22	25	8	18	21	6
50	160	28	31	11	24	27	9	20	22	7
	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
60	140	28	32	11	25	28	9	20	23	7
	160	30	34	12	26	30	10	21	24	8
	5	7	8	6	7	8	6	7	8	6
	20	12	14	6	11	12	6	9	10	6
	40	16	19	6	14	16	8	12	14	6
	60	20	23	7	17	20	6	14	16	6
	80	23	26	9	20	23	7	16	19	6
	100	26	29	10	22	25	8	18	21	6
70	120	28	32	11	25	28	9	20	23	7
	140	31	35	12	27	30	10	22	24	8
	160	33	37	13	28	32	11	23	26	9
	5	7	8	6	7	8	6	7	8	6
	20	12	14	6	11	13	6	9	10	6
	40	18	20	6	15	17	6	12	14	6
	60	21	24	8	19	21	6	15	17	6
	80	25	28	9	21	24	8	18	20	6
	100	28	31	11	24	27	9	20	22	7
	120	30	34	12	26	30	10	21	24	8
	140	33	37	13	28	32	11	23	26	9
	160	35	40	15	30	34	12	25	28	9

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m², 1 pound per square foot = 0.0479 kPa.

- Interpolation permitted, extrapolation not permitted.
- Based on highest load case: Dead + Live or Dead + Snow.
- Footing dimensions shall allow complete bearing of the post.
- If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
- Area, in square feet, of deck surface supported by post and footings.

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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 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)							
40 live load	Southern pine	4 × 4	14-0	13-8	11-0	9-5	8-4	7-5	6-9	6-2
		4 × 6	14-0	14-0	13-11	12-0	10-8	9-8	8-10	8-2
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		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	13-6	10-10	9-3	8-0	7-0	6-2	5-3
		4 × 6	14-0	14-0	13-10	11-10	10-6	9-5	8-7	7-10
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		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	13-2	10-3	8-1	5-8	NP	NP	NP
		4 × 6	14-0	14-0	13-6	11-4	9-9	8-4	6-9	4-7
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	13-7	9-7
		8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
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
60 ground snow load	Southern pine	4 × 4	14-0	11-1	8-11	7-7	6-7	5-10	5-2	4-6
		4 × 6	14-0	14-0	11-4	9-9	8-7	7-9	7-1	6-6
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	12-9	11-2
		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	10-11	8-8	7-3	6-2	5-0	3-7	NP
		4 × 6	14-0	13-11	11-2	9-7	8-4	7-5	6-8	5-11
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	12-2	10-2
		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	10-6	7-9	4-7	NP	NP	NP	NP
		4 × 6	14-0	13-7	10-9	8-9	7-0	4-9	NP	NP
		6 × 6	14-0	14-0	14-0	14-0	14-0	9-9	NP	NP
		8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Southern pine	4 × 4	14-0	10-2	8-2	6-11	5-11	5-2	4-4	3-4
		4 × 6	14-0	12-11	10-5	8-11	7-10	7-1	6-5	5-10
		6 × 6	14-0	14-0	14-0	14-0	14-0	12-9	10-11	8-7

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70 ground snow load	Douglas fir ^e Hem-fir ^e Spruce-pine-fir ^e	8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		4 × 4	14-0	10-1	7-11	6-6	5-3	3-7	NP	NP
		4 × 6	14-0	12-10	10-3	8-9	7-7	6-8	5-10	4-11
		6 × 6	14-0	14-0	14-0	14-0	14-0	12-2	9-9	5-9
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		4 × 4	14-0	9-5	6-5	NP	NP	NP	NP	NP
		4 × 6	14-0	12-6	9-8	7-7	5-3	NP	NP	NP
		6 × 6	14-0	14-0	14-0	14-0	10-8	NP	NP	NP
		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.

- Measured from the underside of the beam to the top of footing or pier.
- 10 psf dead load. Snow load not assumed to be concurrent with live load.
- No. 2 grade, wet service factor included.
- Notched deck posts shall be sized to accommodate beam size in accordance with [Section R507.5.2](#).
- Includes incising factor.
- Incising factor not included.
- Area, in square feet, of deck surface supported by post and footings.
- 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.

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.

FIGURE R507.5—TYPICAL DECK BEAM SPANS

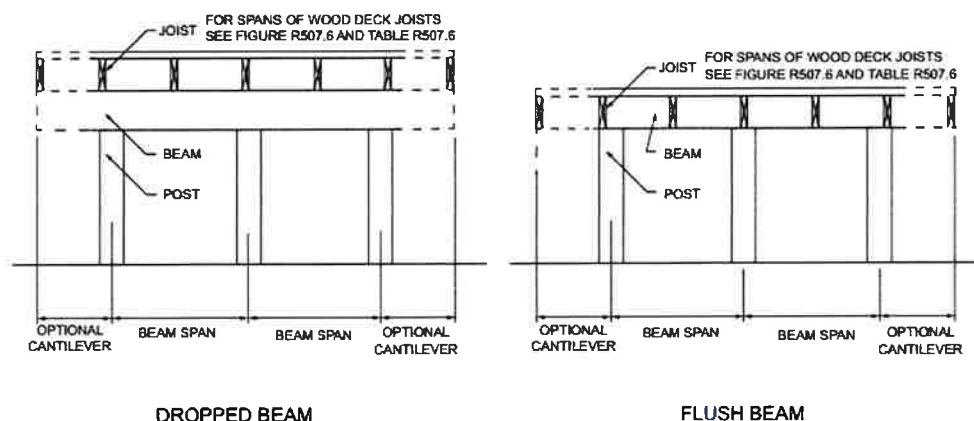


TABLE R507.5(1)—MAXIMUM DECK BEAM SPAN—40 PSF LIVE LOAD^c

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	JOIST SPAN	JOIST SPAN LENGTH AND JOIST CANTILEVER LENGTH ^{a, l} (feet & feet)									
	6	6 & 0	6 & 1.5	—	—	—	—	—	—	—	—
	8	—	8 & 0	8 & 1	8 & 2	—	—	—	—	—	—
	8	—	—	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	16 & 4	—
	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	4-10	4-7	4-3	4-0	3-7	3-5	3-3	3-0	2-10	2-8
	1 - 2 × 8	6-4	5-11	5-6	5-1	4-7	4-4	4-2	3-10	3-7	3-5
	1 - 2 × 10	7-6	7-0	6-6	6-0	5-5	5-2	4-11	4-7	4-3	4-0
	1 - 2 × 12	8-8	8-3	7-8	7-1	6-4	6-1	5-10	5-5	5-0	4-9
	2 - 2 × 6	7-4	6-11	6-5	5-11	5-4	5-1	4-10	4-6	4-3	4-0
	2 - 2 × 8	9-4	8-9	8-2	7-7	6-9	6-5	6-2	5-9	5-4	5-0
	2 - 2 × 10	11-0	10-4	9-8	9-0	8-0	7-8	7-4	6-9	6-4	6-0
	2 - 2 × 12	13-0	12-2	11-4	10-7	9-5	9-0	8-7	8-0	7-5	7-0
	3 - 2 × 6	9-0	8-6	7-11	7-5	6-8	6-4	6-1	5-8	5-3	4-11
	3 - 2 × 8	11-7	10-11	10-3	9-6	8-6	8-1	7-9	7-2	6-8	6-4
	3 - 2 × 10	13-11	13-0	12-1	11-2	10-0	9-7	9-2	8-6	7-11	7-6
	3 - 2 × 12	16-3	15-3	14-3	13-3	11-10	11-3	10-9	10-0	9-4	8-10
Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir	1 - 2 × 6	4-5	4-1	3-9	3-6	3-0	2-10	2-8	2-5	2-3	2-1
	1 - 2 × 8	5-11	5-6	5-1	4-8	4-0	3-9	3-6	3-2	2-11	2-9
	1 - 2 × 10	7-1	6-8	6-3	5-10	5-1	4-9	4-6	4-1	3-9	3-6
	1 - 2 × 12	8-3	7-9	7-3	6-9	6-0	5-9	5-6	5-0	3-9	3-6
	2 - 2 × 6	6-6	6-1	5-8	5-3	4-9	4-6	4-4	3-11	3-7	3-3
	2 - 2 × 8	8-8	8-2	7-7	7-1	6-4	6-0	5-9	5-2	4-8	4-4
	2 - 2 × 10	10-8	10-0	9-3	8-7	7-9	7-4	7-0	6-6	6-0	5-6
	2 - 2 × 12	12-4	11-7	10-9	10-0	8-11	8-6	8-2	7-7	7-1	6-8
	3 - 2 × 6	8-2	7-8	7-2	6-8	6-0	5-9	5-6	5-1	4-9	4-6
	3 - 2 × 8	10-11	10-3	9-6	8-10	7-11	7-7	7-3	6-8	6-3	5-11
	3 - 2 × 10	13-4	12-6	11-8	10-10	9-8	9-3	8-10	8-2	7-8	7-2
	3 - 2 × 12	15-6	14-6	13-6	12-7	11-3	10-9	10-3	9-6	8-11	8-5
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1 - 2 × 6	4-5	4-2	3-10	3-7	3-1	2-11	2-9	2-6	2-3	2-2
	1 - 2 × 8	5-8	5-4	4-11	4-7	4-1	3-10	3-7	3-3	3-0	2-10
	1 - 2 × 10	6-11	6-6	6-0	5-7	5-0	4-9	4-7	4-2	3-10	3-7
	1 - 2 × 12	8-0	7-6	7-0	6-6	5-10	5-7	5-4	4-11	4-7	4-4
	2 - 2 × 6	6-7	6-2	5-9	5-4	4-10	4-7	4-5	4-0	3-8	3-4
	2 - 2 × 8	8-4	7-10	7-4	6-10	6-1	5-10	5-7	5-2	4-10	4-5
	2 - 2 × 10	12-2	9-7	8-11	8-4	7-5	7-1	6-9	6-3	5-10	5-6
	2 - 2 × 12	11-9	11-1	10-4	9-8	8-7	8-2	7-10	7-3	6-10	6-5
	3 - 2 × 6	8-1	7-8	7-2	6-9	6-0	5-9	5-6	5-1	4-9	4-6
	3 - 2 × 8	10-6	9-10	9-2	8-6	7-7	7-3	6-11	6-5	6-0	5-8
	3 - 2 × 10	12-9	12-0	11-2	10-5	9-4	8-11	8-6	7-10	7-4	6-11
	3 - 2 × 12	14-10	13-11	13-0	12-1	10-9	10-3	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.

- Interpolation permitted for conditions with zero joist cantilever length. Extrapolation not permitted.
- Beams supporting a single span of joists with or without cantilever.

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- c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load is 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](#).

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
Douglas fir-larch ⁹ Hem-fir ⁹ Spruce-pine-fir ⁹	3 - 2 × 12	15-11	14-11	13-11	12-11	11-6	11-0	10-6	9-9	9-1	8-7
	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
Redwood ^h Western cedars ^h Banderas pine ^h	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
	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

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ponderosa pine Red pine ^h	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.

- Interpolation permitted for conditions with zero joist cantilever length. Extrapolation not permitted.
- Beams supporting a single span of joists with or without cantilever.
- 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.
- No. 2 grade, wet service factor included.
- Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.
- Includes incising factor.
- Incising factor not included.
- Deck joist span as shown in [Figure R507.5](#).

TABLE R507.5(3)—MAXIMUM DECK BEAM SPAN—60 PSF GROUND SNOW LOAD^c

	JOIST SPAN	JOIST SPAN LENGTH AND JOIST CANTILEVER LENGTH ^{a, l} (feet & feet)									
		6 & 0	6 & 1.5	—	—	—	—	—	—	—	—
	6	—	8 & 0	8 & 1	8 & 2	—	—	—	—	—	—
	8	—	—	10 & 0	10 & 1	10 & 2.5	—	—	—	—	—
	10	—	—	—	12 & 0	12 & 1	12 & 2	12 & 3	—	—	—
	12	—	—	—	—	14 & 0	14 & 1	14 & 2	14 & 3.5	—	—
	14	—	—	—	—	—	16 & 0	16 & 1	16 & 2.5	16 & 4	—
	16	—	—	—	—	—	—	—	—	18 & 3	18 & 4.5
	18	—	—	—	—	—	—	—	—	—	—
BEAM SPECIES ^d	BEAM SIZE ^e	MAXIMUM DECK BEAM SPAN LENGTH ^{a, b, f} (feet-inches)									
Southern pine	1 - 2 × 6	4-5	4-2	3-10	3-7	3-3	3-1	2-11	2-9	2-6	2-5
	1 - 2 × 8	5-7	5-3	4-11	4-7	4-1	3-11	3-9	3-5	3-3	3-0
	1 - 2 × 10	6-8	6-3	5-10	5-5	4-10	4-7	4-5	4-1	3-10	3-7
	1 - 2 × 12	7-11	7-5	6-11	6-5	5-9	5-6	5-3	4-10	4-6	4-3
	2 - 2 × 6	6-7	6-2	5-9	5-4	4-9	4-6	4-4	4-0	3-9	3-7
	2 - 2 × 8	8-4	7-10	7-4	6-10	6-1	5-10	5-7	5-2	4-10	4-6
	2 - 2 × 10	9-10	9-4	8-8	8-1	7-3	6-11	6-7	6-1	5-8	5-4
	2 - 2 × 12	11-9	11-0	10-3	9-6	8-6	8-1	7-9	7-2	6-9	6-4
	3 - 2 × 6	7-9	7-5	7-1	6-9	6-0	5-9	5-6	5-1	4-9	4-6
	3 - 2 × 8	10-4	9-9	9-1	8-6	7-8	7-3	6-11	6-5	6-0	5-8
	3 - 2 × 10	12-5	11-8	10-11	10-2	9-1	8-8	8-3	7-8	7-2	6-9
	3 - 2 × 12	14-8	13-9	12-10	11-11	10-8	10-2	9-9	9-0	8-5	7-11
Douglas fir-larch ^g	1 - 2 × 6	3-11	3-8	3-4	3-1	2-8	2-6	2-4	2-2	2-0	1-10
	1 - 2 × 8	5-5	5-0	4-6	4-1	3-6	3-3	3-1	2-10	2-7	2-5
	1 - 2 × 10	6-6	6-1	5-7	5-2	4-6	4-3	4-0	3-7	3-4	3-2
	1 - 2 × 12	7-7	7-1	6-7	6-1	5-5	5-1	4-10	4-5	4-1	3-10
	2 - 2 × 6	5-10	5-6	5-1	4-9	4-3	4-0	3-10	3-5	3-1	2-10

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Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	2 - 2 × 8	7-11	7-5	6-11	6-5	5-9	5-4	5-0	4-6	4-1	3-9
	2 - 2 × 10	9-7	9-0	8-5	7-10	7-0	6-8	6-4	5-9	5-2	4-10
	2 - 2 × 12	11-2	10-6	9-9	9-1	8-1	7-9	7-5	6-10	6-4	5-10
	3 - 2 × 6	7-4	6-11	6-5	6-0	5-4	5-1	4-11	4-6	4-2	3-10
	3 - 2 × 8	9-10	9-3	8-7	8-0	7-2	6-10	6-6	6-1	5-6	5-0
	3 - 2 × 10	12-1	11-4	10-7	9-10	8-9	8-4	8-0	7-5	6-11	6-5
	3 - 2 × 12	13-6	13-2	11-9	11-5	10-2	9-9	9-4	8-7	8-1	7-7
Redwood ^h Western cedar ^h Ponderosa pine ^h Red pine ^h	1 - 2 × 6	4-0	3-9	3-5	3-2	2-9	2-7	2-5	2-2	2-0	1-11
	1 - 2 × 8	5-2	4-10	4-6	4-2	3-7	3-4	3-2	2-11	2-8	2-6
	1 - 2 × 10	6-2	5-10	5-5	5-1	4-6	4-3	4-1	3-8	3-5	3-3
	1 - 2 × 12	7-3	6-10	6-4	5-11	5-3	5-0	4-10	4-5	4-2	3-11
	2 - 2 × 6	5-11	5-7	5-2	4-10	4-4	4-1	3-11	3-6	3-2	2-11
	2 - 2 × 8	7-6	7-1	6-7	6-2	5-6	5-3	5-0	4-7	4-2	3-10
	2 - 2 × 10	9-3	8-8	8-1	7-6	6-9	6-5	6-2	5-8	5-4	4-11
	2 - 2 × 12	10-8	10-1	9-5	8-9	7-10	7-6	7-2	6-7	6-2	5-10
	3 - 2 × 6	6-11	6-8	6-4	6-1	5-5	5-2	5-0	4-7	4-3	3-11
	3 - 2 × 8	9-3	8-9	8-3	7-9	6-22	6-7	6-4	5-20	5-5	5-3
	3 - 2 × 10	11-8	10-11	10-2	9-5	8-5	8-0	7-8	7-3	6-8	6-3
	3 - 2 × 12	13-6	12-8	11-9	10-11	9-9	8-4	8-11	8-3	7-9	7-3

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.

- Interpolation permitted for conditions with zero joist cantilever length. Extrapolation not permitted.
- Beams supporting a single span of joists with or without cantilever.
- 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.
- No. 2 grade, wet service factor included.
- Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.
- Includes incising factor.
- Incising factor not included.
- Deck joist span as shown in [Figure R507.5](#).

TABLE R507.5(4)—MAXIMUM DECK BEAM SPAN—70 PSF GROUND SNOW LOAD^c

	JOIST SPAN	JOIST SPAN LENGTH AND CANTILEVER LENGTH ^{a, i} (feet & feet)									
		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	16 & 4	—
	18	—	—	—	—	—	—	—	—	18 & 3	18 & 4.5
BEAM SPECIES ^d	BEAM SIZE ^e	MAXIMUM DECK BEAM SPAN LENGTH ^{a, b, f} (feet-inches)									
	1 - 2 × 6	4-2	3-11	3-7	3-4	3-0	2-10	2-9	2-6	2-4	2-3
	1 - 2 × 8	5-4	4-11	4-8	4-3	3-10	3-8	3-6	3-3	3-0	2-10
	1 - 2 × 10	6-2	5-10	5-5	5-1	4-6	4-4	4-2	3-10	3-7	3-4
	1 - 2 × 12	7-4	6-11	6-5	6-0	5-4	5-1	4-11	4-6	4-3	4-0

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Southern pine	2 - 2 × 6	6-3	5-9	5-4	5-0	4-6	4-3	4-1	3-9	3-6	3-4
	2 - 2 × 8	7-10	7-4	6-10	6-4	5-8	5-5	5-2	4-10	4-6	4-3
	2 - 2 × 10	9-6	8-9	8-2	7-7	6-9	6-5	6-2	5-8	5-4	5-0
	2 - 2 × 12	10-11	10-3	9-7	8-11	8-0	7-7	7-3	6-9	6-3	5-11
	3 - 2 × 6	7-4	7-0	6-7	6-3	5-7	5-4	5-1	4-9	4-5	4-2
	3 - 2 × 8	9-10	9-3	8-7	8-0	7-2	6-10	6-6	6-0	5-8	5-4
	3 - 2 × 10	11-7	10-11	10-2	9-6	8-6	8-1	7-9	7-2	6-8	6-4
	3 - 2 × 12	13-9	12-11	12-0	11-2	10-0	9-6	9-1	8-5	7-11	7-5
Douglas fir-larch ⁹ Hem-fir ⁹ Spruce-pine-fir ⁹	1 - 2 × 6	3-8	3-5	3-1	2-10	2-5	2-3	2-2	2-0	1-10	1-9
	1 - 2 × 8	4-10	4-7	4-1	3-8	3-2	3-0	2-10	2-7	2-5	2-4
	1 - 2 × 10	6-1	5-8	5-2	4-9	4-1	3-10	3-8	3-4	3-1	2-11
	1 - 2 × 12	7-0	6-7	6-1	5-8	5-0	4-9	4-6	4-1	3-10	3-7
	2 - 2 × 6	5-6	5-2	4-10	4-6	4-0	3-8	3-5	3-1	2-10	2-7
	2 - 2 × 8	7-4	6-11	6-5	6-0	5-3	4-11	4-7	4-1	3-8	3-5
	2 - 2 × 10	8-11	8-5	7-10	7-4	6-6	6-2	5-10	5-2	4-9	4-5
	2 - 2 × 12	10-6	9-10	9-2	8-6	7-7	7-3	6-11	6-4	5-9	5-4
	3 - 2 × 6	6-11	6-6	6-0	5-7	5-0	4-9	4-7	4-2	3-9	3-5
	3 - 2 × 8	9-3	8-8	8-1	7-6	6-8	6-4	6-1	5-6	5-0	4-7
	3 - 2 × 10	11-3	10-7	9-10	9-2	8-2	7-10	7-6	6-11	6-4	5-10
	3 - 2 × 12	13-2	12-4	11-6	10-8	9-7	9-2	8-9	8-1	7-7	7-1
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1 - 2 × 6	3-9	3-6	3-2	2-11	2-6	2-4	2-3	2-0	1-11	1-9
	1 - 2 × 8	4-10	4-6	4-2	3-10	3-3	3-1	2-11	2-8	2-6	2-4
	1 - 2 × 10	5-10	5-6	5-1	4-9	4-2	3-11	3-9	3-5	3-2	3-0
	1 - 2 × 12	6-9	6-4	5-11	5-6	4-11	4-8	4-6	4-2	3-11	3-8
	2 - 2 × 6	5-7	5-3	4-11	4-7	4-1	3-9	3-6	3-2	2-11	2-8
	2 - 2 × 8	7-1	6-8	6-2	5-9	5-2	4-11	4-8	4-2	3-10	3-6
	2 - 2 × 10	8-8	8-2	7-7	7-1	6-4	6-0	5-9	5-4	4-10	4-6
	2 - 2 × 12	10-0	9-5	8-9	8-2	7-4	7-0	6-8	6-2	5-9	5-5
	3 - 2 × 6	6-8	6-4	6-0	5-8	5-1	4-10	4-8	4-3	3-10	3-6
	3 - 2 × 8	8-10	8-4	7-9	7-3	6-5	6-2	5-11	5-5	5-1	4-8
	3 - 2 × 10	10-10	10-2	9-6	8-10	7-11	7-6	7-2	6-8	6-3	5-11
	3 - 2 × 12	12-7	11-10	11-0	10-3	9-2	8-9	8-4	7-9	7-3	6-10

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.

- Interpolation permitted for conditions with zero joist cantilever length. Extrapolation not permitted.
- Beams supporting a single span of joists with or without cantilever.
- 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.
- No. 2 grade, wet service factor included.
- Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.
- Includes incising factor.
- Incising factor not included.
- Deck joist span as shown in [Figure R507.5](#).

R507.5.1 Deck beam bearing.

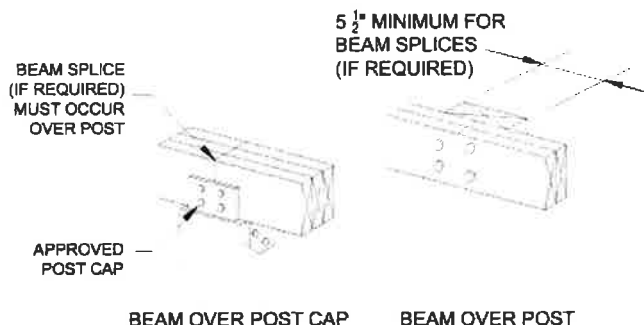
Beams and individual beam plies of built-up beams shall be continuous between bearing locations and continuous across bearing locations supporting beam cantilevers. Beams shall be permitted to cantilever beyond bearing locations up to

one-fourth of the actual beam span. The ends of beams shall have not less than $1\frac{1}{2}$ 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.

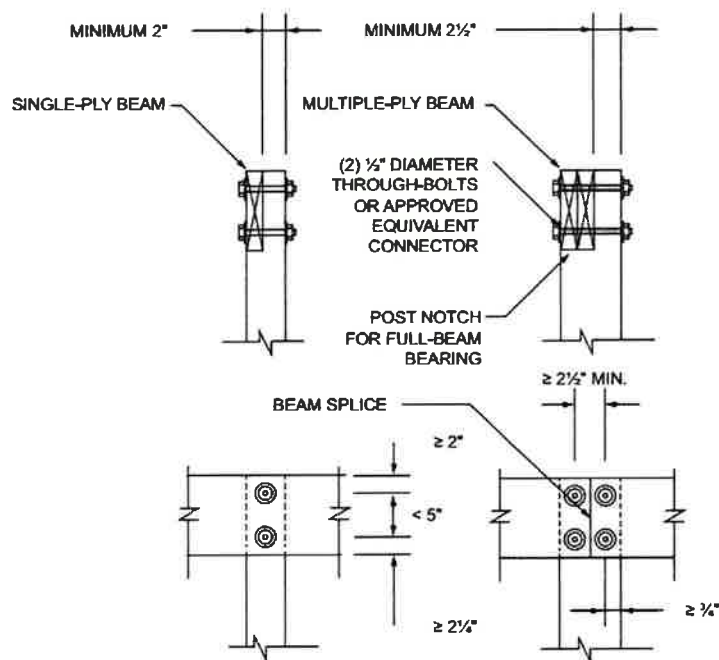
Deck beams shall be connected to supporting members to prevent lateral displacement. Deck beam connections to wood posts shall be in accordance with Figures R507.5.2(1) and R507.5.2(2). Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the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

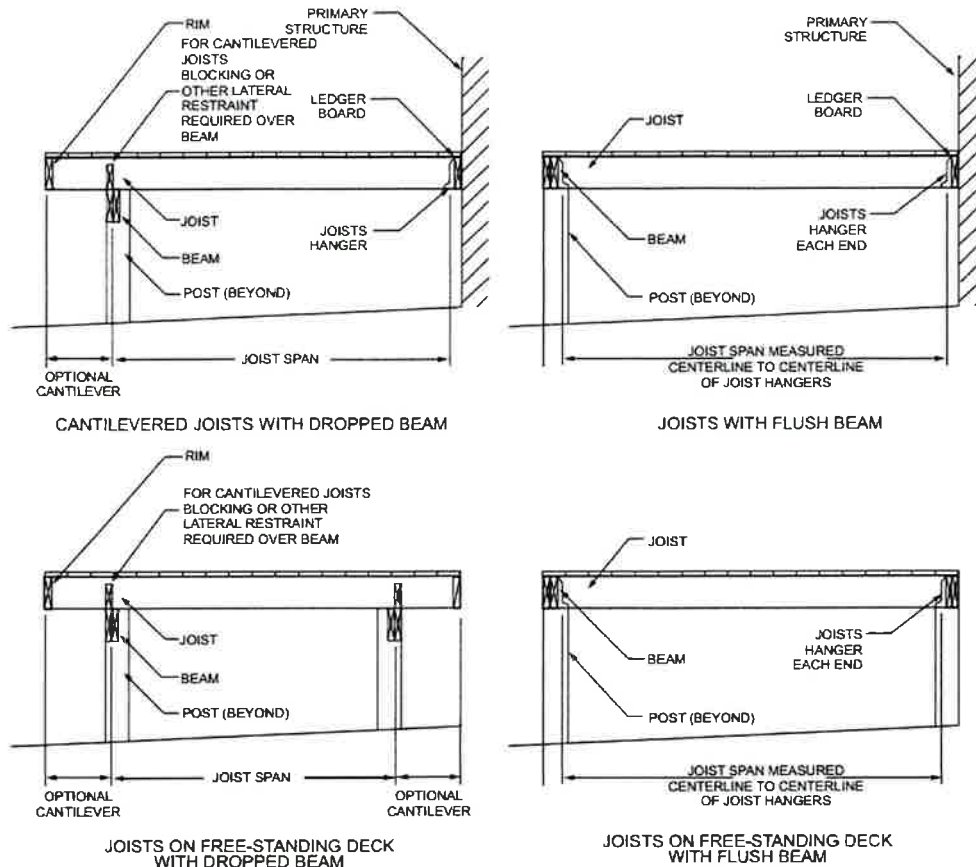


TABLE R507.6—MAXIMUM DECK JOIST SPANS

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
40 live load	Southern pine	2 × 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP
		2 × 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP
		2 × 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1
	Douglas fir-larch ^e Hem-fir ^e Spruce-pine-fir ^e	2 × 6	9-6	8-4	6-10	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	12-6	11-1	9-1	1-0	1-6	2-0	2-3	2-0	NP	NP	NP
		2 × 10	15-8	13-7	11-1	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
		2 × 12	18-0	15-9	12-10	1-0	1-6	2-0	2-6	3-0	3-6	3-11	3-11
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	8-10	8-0	6-10	1-0	1-4	1-1	NP	NP	NP	NP	NP
		2 × 8	11-8	10-7	8-8	1-0	1-6	2-0	1-11	NP	NP	NP	NP
		2 × 10	14-11	13-0	10-7	1-0	1-6	2-0	2-6	3-0	2-9	NP	NP
		2 × 12	17-5	15-1	12-4	1-0	1-6	2-0	2-6	3-0	3-6	3-8	NP
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

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	Redwood ^f	2 × 6	8-3	7-6	6-6	1-0	1-4	1-1	NP	NP	NP	NP	NP
	Western cedars ^f	2 × 8	10-10	9-10	8-6	1-0	1-6	2-0	1-11	NP	NP	NP	NP
	Ponderosa pine ^f	2 × 10	13-10	12-7	10-5	1-0	1-6	2-0	2-6	2-9	NP	NP	NP
	Red pine ^f	2 × 12	16-10	14-9	12-1	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
60 ground snow load	Southern pine	2 × 6	8-8	7-10	6-10	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	11-5	10-4	8-9	1-0	1-6	2-0	2-4	NP	NP	NP	NP
		2 × 10	14-7	12-9	10-5	1-0	1-6	2-0	2-6	2-11	2-11	NP	NP
		2 × 12	17-3	15-0	12-3	1-0	1-6	2-0	2-6	3-0	3-6	3-7	NP
	Douglas fir-larch ^e Hem-fir ^e Spruce-pine-fir ^e	2 × 6	8-4	7-6	6-2	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	10-11	9-11	8-3	1-0	1-6	2-0	2-2	NP	NP	NP	NP
		2 × 10	13-11	12-4	10-0	1-0	1-6	2-0	2-6	2-10	NP	NP	NP
		2 × 12	16-6	14-3	11-8	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	7-9	7-0	6-2	1-0	1-4	NP	NP	NP	NP	NP	NP
		2 × 8	10-2	9-3	7-11	1-0	1-6	2-0	1-11	NP	NP	NP	NP
		2 × 10	13-0	11-9	9-7	1-0	1-6	2-0	2-6	2-7	NP	NP	NP
		2 × 12	15-9	13-8	11-2	1-0	1-6	2-0	2-6	3-0	3-2	NP	NP
70 ground snow load	Southern pine	2 × 6	8-3	7-6	6-5	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	10-10	9-10	8-2	1-0	1-6	2-0	2-2	NP	NP	NP	NP
		2 × 10	13-9	11-11	9-9	1-0	1-6	2-0	2-6	2-9	NP	NP	NP
		2 × 12	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
	Douglas fir-larch ^e Hem-fir ^e Spruce-pine-fir ^e	2 × 6	7-11	7-1	5-9	1-0	1-6	NP	NP	NP	NP	NP	NP
		2 × 8	10-5	9-5	7-8	1-0	1-6	2-0	2-1	NP	NP	NP	NP
		2 × 10	13-3	11-6	9-5	1-0	1-6	2-0	2-6	2-8	NP	NP	NP
		2 × 12	15-5	13-4	10-11	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	7-4	6-8	5-10	1-0	1-4	NP	NP	NP	NP	NP	NP
		2 × 8	9-8	8-10	7-4	1-0	1-6	1-11	NP	NP	NP	NP	NP
		2 × 10	12-4	11-0	9-0	1-0	1-6	2-0	2-6	2-6	NP	NP	NP
		2 × 12	14-9	12-9	10-5	1-0	1-6	2-0	2-6	3-0	3-0	NP	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.

- Dead load = 10 psf. Snow load not assumed to be concurrent with live load.
- No. 2 grade, wet service factor included.
- $L/\Delta = 360$ at main span.
- $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.
- Includes incising factor.
- Incising factor not included.
- Interpolation allowed. Extrapolation is not allowed.

R507.6.1 Deck joist bearing.

The ends of joists shall have not less than $1\frac{1}{2}$ 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.

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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.

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.

- Maximum angle of 45 degrees from perpendicular for wood deck boards.
- Other maximum span provided by an accredited lumber grading or inspection agency also allowed.
- Individual wood deck boards supported by two joists shall be considered single span and three or more joists shall be considered multiple span.

R507.8 Vertical and lateral supports.

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. For decks with cantilevered framing members, connection to exterior walls or other framing members shall be designed and constructed to resist uplift resulting from the full *live load* specified in [Table R301.5](#) acting on the cantilevered portion of the deck. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting.

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

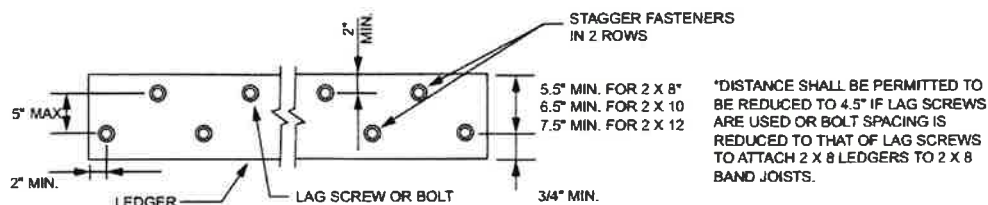
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 criminal penalties thereunder.

40 live load	6	30	36	36
	8	23	36	36
	10	18	34	29
	12	15	29	24
	14	13	24	21
	16	11	21	18
	18	10	19	16
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
60 ground snow load	6	25	36	36
	8	18	35	30
	10	15	28	24
	12	12	23	20
	14	10	20	17
	16	9	17	15
	18	8	15	13
70 ground snow load	6	22	36	35
	8	16	31	26
	10	13	25	21
	12	11	20	17
	14	9	17	15
	16	8	15	13
	18	7	13	11

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. Lag screws shall be full-body diameter screws.
- 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.

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



For SI: 1 inch = 25.4 mm.

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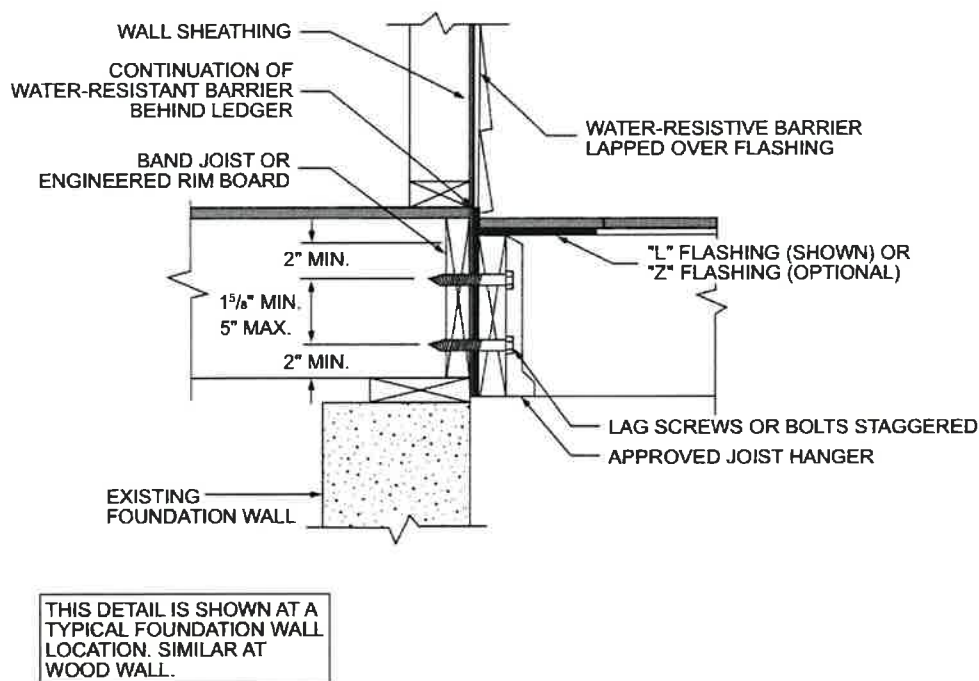
TABLE R507.9.1.3(2)—PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger ^a	2 inches ^d	$\frac{3}{4}$ inch	2 inches ^b	$1\frac{5}{8}$ inches ^b
Band Joist ^c	$\frac{3}{4}$ inch	2 inches	2 inches	$1\frac{5}{8}$ inches ^b

For SI: 1 inch = 25.4 mm.

- 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\(1\)](#).
- Maximum 5 inches.
- For engineered rim joists, the manufacturer's recommendations shall govern.
- 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



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 $\frac{1}{4}$ inch down the ledger face.

Exceptions:

- 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.
- Flashing is not required where the ledger is spaced horizontally from the exterior wall covering not less than $\frac{1}{4}$ inch (6.4 mm) to allow for drainage and ventilation behind the ledger.

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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 $\frac{1}{4}$ 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 $\frac{1}{2}$ 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 $\frac{1}{4}$ inch (6.4 mm) to allow for drainage and ventilation behind the ledger.

R507.9.1.8 Exterior wall coverings.

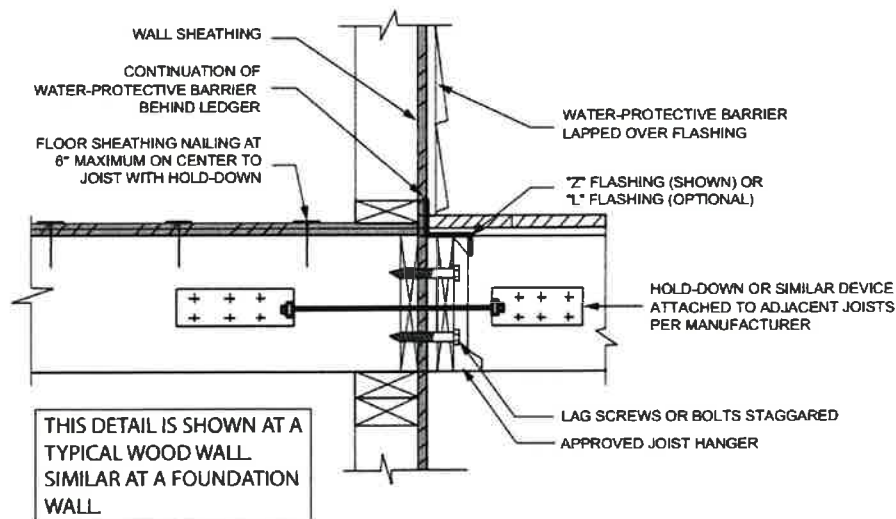
Exterior wall coverings shall be terminated above the finished deck surface in accordance with the covering manufacturer's requirements and Chapter 7, as applicable to the type of covering.

Exception: *Exterior wall coverings* 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.

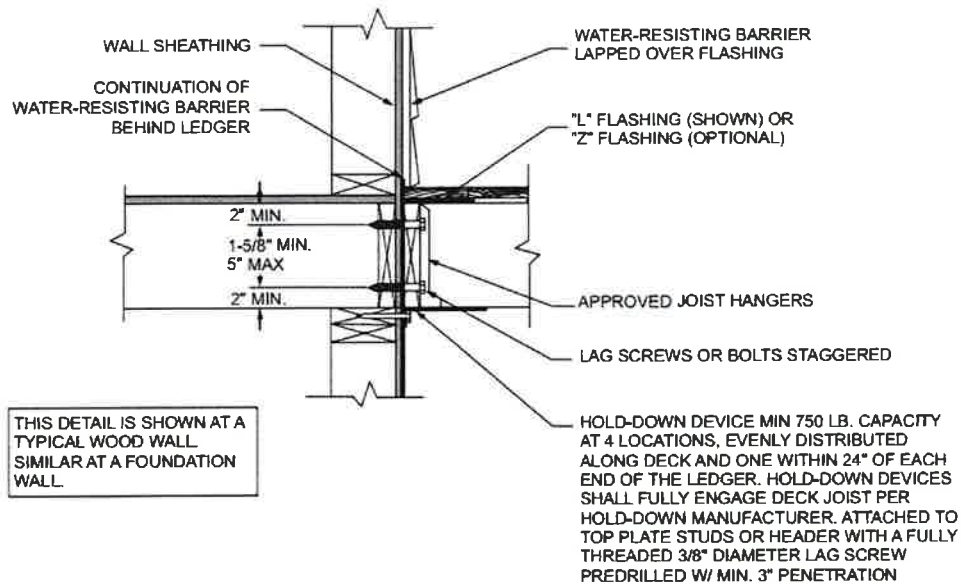
Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold-down tension devices shall be installed in not less than two locations per deck, within 24 inches (610 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).

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



For SI: 1 inch = 25.4 mm.

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



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

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.

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.



Wood Decks

This edition of the Code Outreach Program is intended to summarize the prescriptive provisions of the 2020 Residential Code of New York State (2020 RCNYS) applicable to wood decks.

Design

Wood decks are required to be designed and constructed in a manner that supports all loads imposed, including but not limited to live and dead loads, flood, snow, wind, and seismic loads as well as vertical and lateral loads. Design criteria can be found in Section R301 of the 2020 RCNYS. Section R301 includes several paths to compliance including a path using prescriptive provisions, an “alternative provisions” path (see Section R301.1.1), and an “engineered design” path (see Section R301.1.3). This edition will focus primarily on key prescriptive code-compliance provisions but is not intended to be an all-inclusive design guide or inspection tool.

Key Prescriptive Code-Compliance Provisions of the 2020 RCNYS

Ledger. Decks that are supported by the exterior wall of a building must be positively anchored to that wall. Where a positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. Lumber used for ledgers must be rated for exterior use, and a minimum nominal dimension of 2-inch by 8-inch. See Section R507.9.1.1.

Footings. Exterior footings shall be placed a minimum of 12 inches below undisturbed ground surface per Section R507.3.2. Footings of decks anchored to a building wall must also be frost-protected by one of the methods indicated in Section R403.1.4. Free standing decks are exempted from the requirement to be frost protected per exception 3 of Section R403.1.4.1 and exception 2 of Section R507.3.2. Regardless of depth, footings shall not bear on frozen soil.

Posts. Posts shall be connected to the beams per the requirements of Section R507.5.2 and restrained at the connection with the footing per Section R507.4.1.

Framing. Section R507 includes prescriptive tables to determine spans and spacing for deck joists and beams in areas with a ground snow load of 40 lbs per square foot or less. Also included in the deck joist table are allowable cantilevers similar to beams these are further limited to one forth the adjacent beam span. The ends of joists and beams shall have adequate bearing, but in no case not less than the entire width and a depth of one and a half inches on supports and shall also be fastened to them per Section R507.6.

Guards, Stairs. The requirements for guardrails of Section R312 are applicable to decks elevated 30-inches or more above the grade or floor below. The stair requirements of Section R311.7 are also applicable.

Materials. Lumber used for structural members, decking, and guard rails shall be approved for exterior use according to Section R317, with members in contact with the ground listed for ground contact. Cuts, notches, and drilled holes of preservative treated wood members shall be treated in accordance with Section R317.1.1. Fasteners and connectors must be protected from corrosion which are typically hot dipped galvanized or stainless-steel too meet this requirement. Table R507.2.3 provides the specific requirements for each type of fastener.

Composite Materials. Composite materials used for decking, stair treads, guards, and handrails shall bear a label indicating compliance with ASTM D 7032 and the allowable spans shall be determined by the same testing standard. Combustible composite deck materials shall also be decay and termite resistant and have a flame spread index of 200 or less, when tested according to ASTM E84. Biodegradable materials shall be decay and termite resistant in accordance with ASTM D 7032.

Additional information is available through the following free online training:

- Simpson Strong-Tie Online Training Courses provides two classes that cover decks <https://www.strongtie.com/resources/training>
- The International Code Council offers a free class found under the title “Deck Safety and the Codes” at <https://learn.iccsafe.org/> after an account has been created.

The provisions contained in this document are intended as a summary and not as a comprehensive checklist. Additional provisions apply to decks, in particular those constructed in seismic zones or floodplains.

**One of the standards listed under “alternative provisions” is the ‘Wood Frame Construction Manual for One- and Two-family Dwellings’ (WFCM). The 2018 version is incorporated by reference in the Uniform Code, and it is available from the [American Wood Council \(AWC\)](#). The AWC also publishes the ‘[Prescriptive Residential Wood Deck Construction Guide](#)’, which contains useful structural details including, but not limited to, lateral load connections. However, it is not enforceable and should only be used as a guide; compliance with the ‘Design Criteria,’ as put forth in Section R301 of the 2020 RCNYS, is still required.*

Please look for our next edition of the Code Outreach Program at the beginning of next month.