



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

DECKS

GENERAL

1. This document does not apply to decks supporting a hot tub or similar large concentrated load. An engineered drawing will be required in these instances.
2. All decks require a permit except for those that are detached from the dwelling, less than 200 square feet, and less than 30" in height from the ground.
3. All decks shall be constructed of materials resistant to moisture and decay.
4. Lumber shall be No. 2 grade or better
5. Plastic composite deck boards, stair treads, guards or handrails must be stamped in compliance with ASTM D7032 and not exceed the flame spread index of 200 when tested with ASTM E84 or UL 723 and termite resistant in accordance with ASTM D7032
6. All screws, bolts, washers, nuts, and nails for use with preservative treated wood shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper.
7. In lieu of the requirements in this document, an engineer's report showing structural equivalency may be submitted for review.
8. Flashing shall be corrosion-resistant metal of nominal thickness not less than 0.019 inch or approved nonmetallic material that is compatible with the substrate of the structure and the decking materials.

FOOTINGS AND POSTS

1. Decks are required to be properly anchored to the ground. Prefabricated deck footings that sit on top of the ground are not permitted to serve as the foundation for a deck.
2. All footings must be a minimum 12" deep. Exact footing size to be determined by the table R507.3.1

Exception: 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*
- *The walking surface is not more than 20 inches above grade at any point within 36 inches measured horizontally from the edge.*



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

TABLE R507.3.1
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
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
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
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 m², 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.

1. **Single-level deck post sizing:** Sizing is based on height shown in Table R507.4. No deck shall exceed a height of 14' without an engineered design.



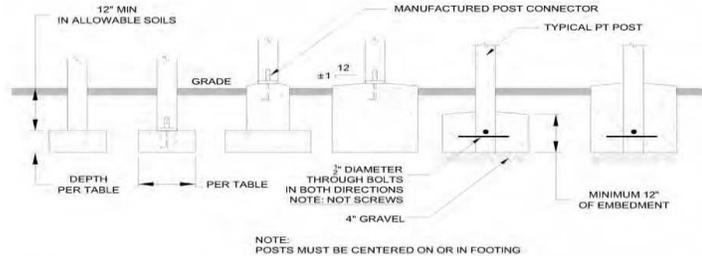
CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

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

DECK POST SIZE	MAXIMUM HEIGHT ^{a, b} (feet-inches)
4 × 4	6-9 ^c
4 × 6	8
6 × 6	14
8 × 8	14

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

- a. Measured to the underside of the beam.
- b. Based on 40 psf live load.
- c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.



For SI: 1 inch = 25.4 mm.

**FIGURE R507.3
DECK POSTS TO DECK FOOTING CONNECTION**

Deck Beams

- Deck Beam Spans:** Decks with beams shall use Table R507.5 for sizing the beam properly:

**TABLE R507.5
DECK BEAM SPAN LENGTHS^{a, b, g} (feet - inches)**

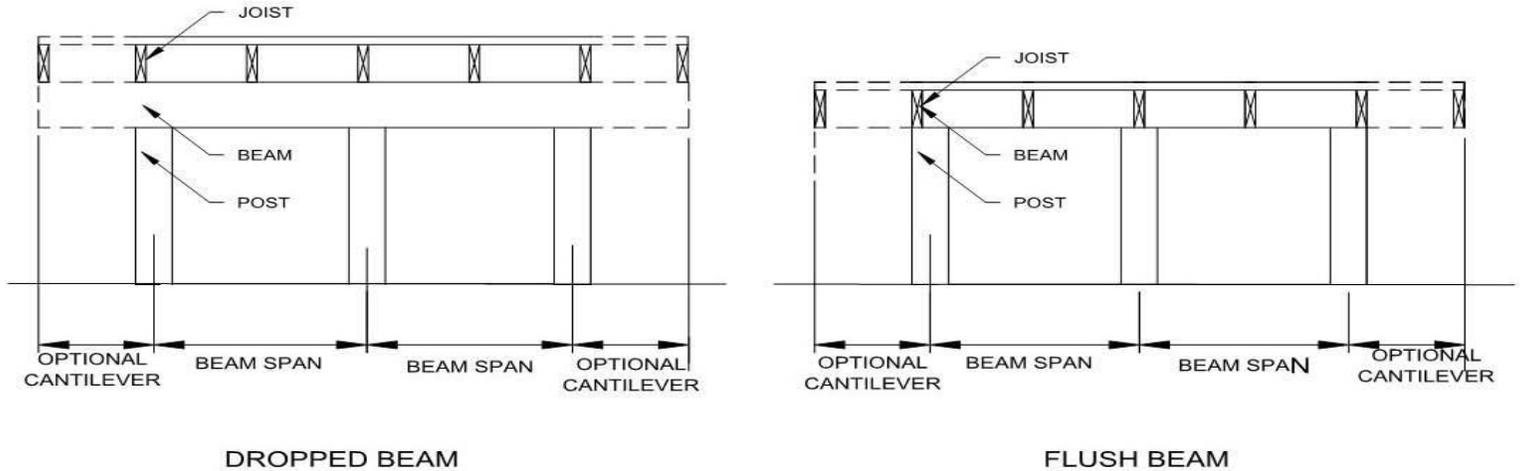
SPECIES ^e	SIZE ^d	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	1-2 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1-2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1-2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1-2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2-2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2-2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2-2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2-2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3-2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3-2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
3-2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6	
3-2 × 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 × 6 or 2-2 × 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2-2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2-2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2-2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3-2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3-2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3-2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3-2 × 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



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

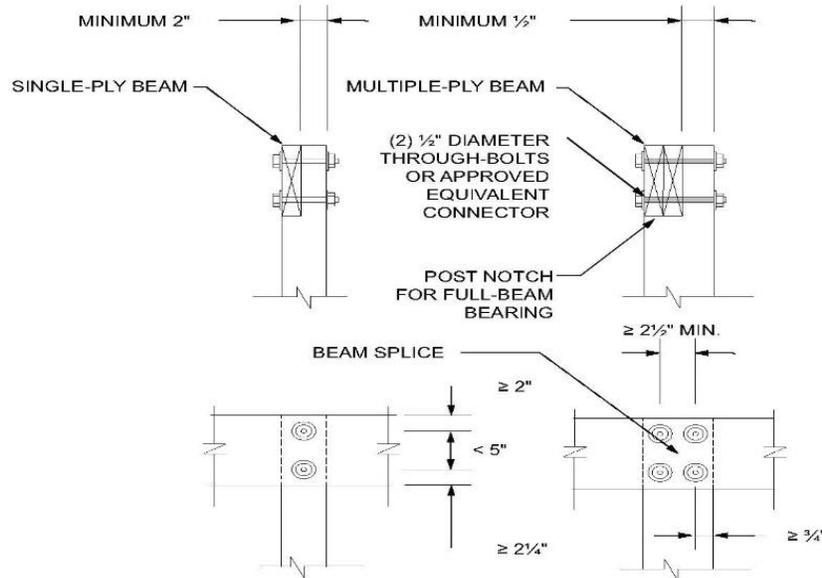


**FIGURE R507.5
TYPICAL DECK JOIST SPANS**

- Deck Beam Bearing:** Deck beams must bear no less than 1 ½ inches of bearing on wood or metal and not less than 3 inches on concrete or masonry for the entire width of the beam. When there are multiple span beams bearing on intermediate posts each ply must have full bearing on the post matching figure 507.5.1 (1) and R507.5.1 (2)

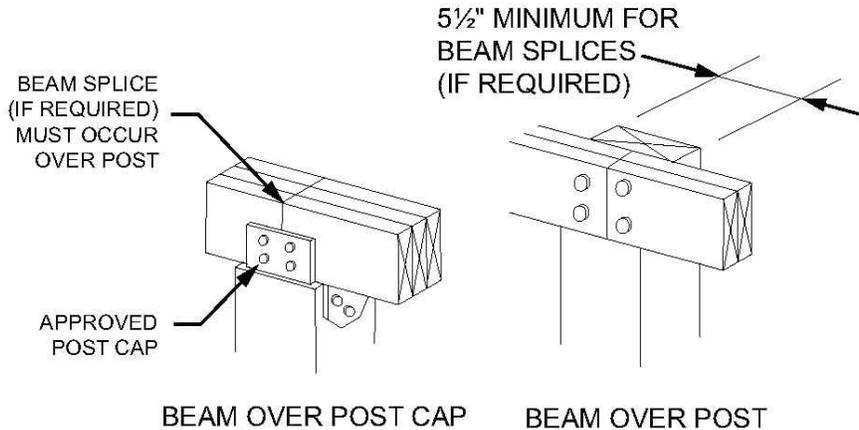


CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(2)
NOTCHED POST-TO-BEAM CONNECTION



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(1)
DECK BEAM TO DECK POST

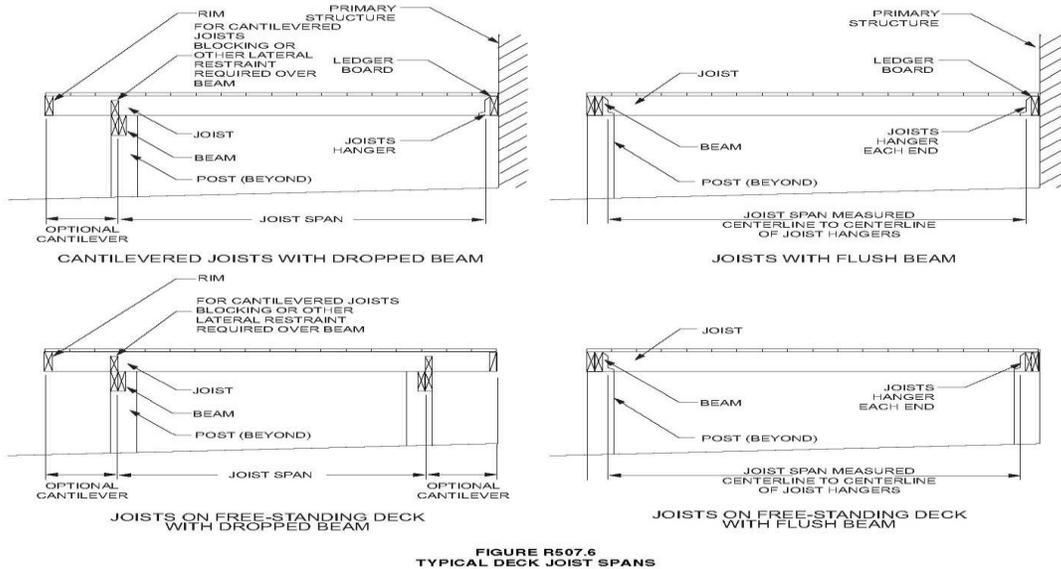
- Deck Beam Support:** Deck beams shall be attached to supports in a manner capable of transferring vertical loads and resisting horizontal displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut

Deck Joists



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

- Deck Joist Span:** The maximum allowable spans for wood deck joists are shown in Figure R507.6 and shall be in accordance with Table R507.6.



- Deck Joist Cantilevering:** The maximum allowable joist cantilever shall be limited to one-fourth (1/4) of the joist span or a maximum cantilever length specified in Table R507.6, whichever is less.

**TABLE R507.6
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)**

SPECIES ^a	SIZE	ALLOWABLE JOIST SPAN ^b			MAXIMUM CANTILEVER ^{c, f}		
		SPACING OF DECK JOISTS (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS ^c (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 × 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 × 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 × 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch ^d , hem-fir ^d , spruce-pine-fir ^d ,	2 × 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 × 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 × 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 × 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2 × 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 × 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 × 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 × 12	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/Δ = 360.

c. 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 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.



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

3. **Deck Joist Spacing:** The maximum joist spacing shall be limited by the decking materials in accordance with Table R507.7

**TABLE R507.7
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
1 ¹ / ₄ -inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.2	In accordance with Section R507.2

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.

4. **Deck Joist Bearing:** Deck joist bearing shall have no less than 1 ½ inches on wood or metal and no less than 3” on Concrete or masonry.
5. **Deck Joist Connection:** 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.

Deck Ledgers and Attachment to House

1. **Deck Ledgers Details:** Deck ledgers shall be a minimum 2-inch by 8-inch nominal, pressure-preservative treated southern pine, incised pressure-preservative treated hem-fir, or approved, naturally durable, No. 2 grade or better lumber. Deck ledgers shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on store or masonry veneer.
2. **Band Joist Details:** Band joists supporting a ledger shall be a minimum 2-inch nominal solid sawn spruce pine fir or better lumber or a minimum 1 inch by 9 ½ inch dimensional Douglas fir or better laminated veneer lumber. Band joists must bear fully on the primary structure capable of supporting all required loads.
3. **Ledgers to Band Joist Details (Bolts and Lag Screws):** Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel 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)



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST^{a,b}
(Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

CONNECTION DETAILS	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'
	On-center spacing of fasteners						
1/2-inch diameter lag screw with 1/2-inch maximum sheathing ^{c,d}	30	23	18	15	13	11	10
1/2-inch diameter bolt with 1/2-inch maximum sheathing ^d	36	36	34	29	24	21	19
1/2-inch diameter bolt with 1-inch maximum sheathing ^e	36	36	29	24	21	18	16

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

a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.

b. Snow load shall not be assumed to act concurrently with live load.

c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.

d. Sheathing shall be wood structural panel or solid sawn lumber.

e. 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.

4. **Ledgers to Band Joist Details:** Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel 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)

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	3/4 inch	2 inches ^b	1 5/8 inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 5/8 inches ^b

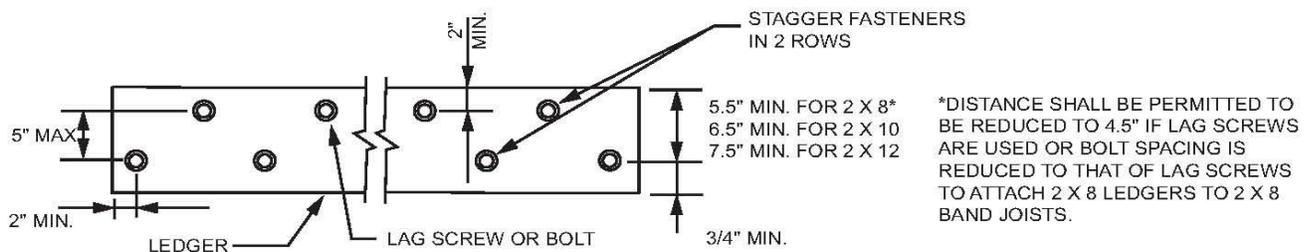
For SI: 1 inch = 25.4 mm.

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 R507.9.1.3(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 R507.9.1.3(1).

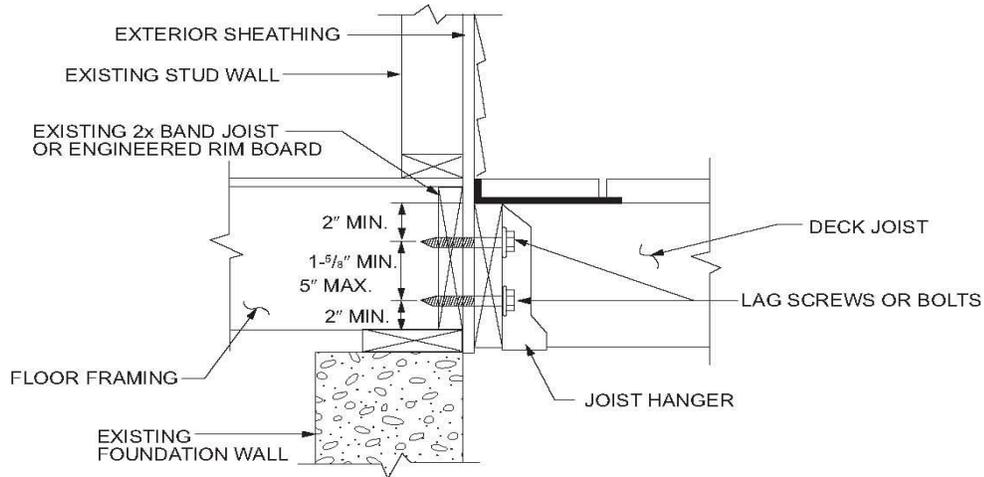


For SI: 1 inch = 25.4 mm.

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



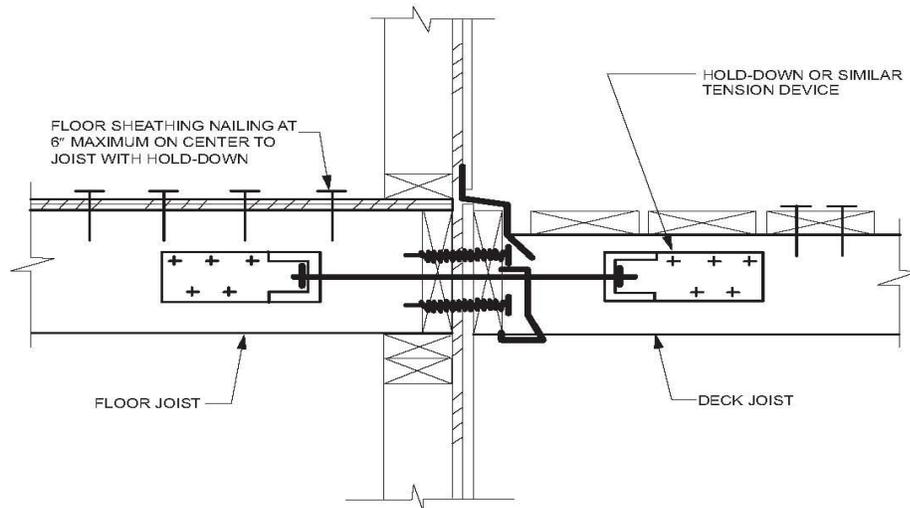
CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

5. **Lateral Connections:** 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 of each end of the deck. Each device shall have an allowance stress design capacity of not less than 1,500 pounds. Where the lateral location 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 deigns capacity of not less than 750 pounds.

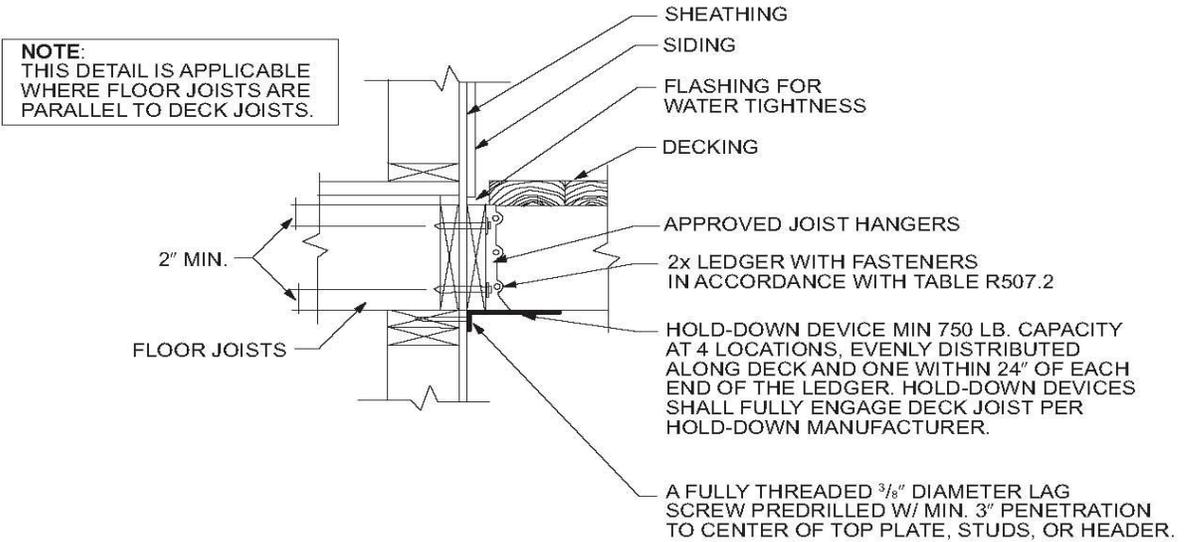


For SI: 1 inch = 25.4 mm.

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



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST



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

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