

BRACING YOUR DECK FOR LATERAL SUPPORT

For attached decks over 4 feet above the ground, bracing for lateral support is required. Freestanding decks greater than 30 inches high require bracing. Several methods of bracing are acceptable. The most common method is pressure treated 4"x4" knee braces, provided on each column in both directions. The knee braces shall attach to each post at a point not less than 1/3 of the post length from the top of the post, and the braces shall be angled between 45° and 60° from the horizontal. Knee braces shall be bolted to the post and the girder with one 5/8" diameter hot dipped galvanized bolt at each end. "X" bracing and "W" bracing are, also, accepted. Decks over 4' above ground shall have an approved strap or post anchor for girder attachment to post.

WILL MY DECK NEED A GUARDRAIL?

Decks located more than 30 inches or more above ground (measured 3' from edge) shall have not less than 36 inch high guardrail. Horizontal spacing between the vertical pickets in guardrails shall be a maximum of 4" between members. The triangular openings at the open side of a stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6 inches in diameter. For horizontal rails and ornamental closures, the railing should be constructed so a 4" sphere would not pass through any part of the rail. Rail posts cannot exceed 8' on center.

PLEASE REMEMBER:

All materials to construct your deck must be decay resistant. Typically, this is PT (Pressure Treated) Southern Yellow Pine. Any material other than wood will require special approval from a Building Inspector before installation.

Deck Supporting Hot Tub or Spa: Standard deck design is a 40 lb. Live Load and a 10 lb. Dead Load. This is not adequate support for a hot tub or spa and this hand-out would **not** apply. Decks with hot tubs shall be designed and sealed by a NC Design Professional.

WILL YOUR DECK HAVE STAIRS TO GROUND?

The maximum stair riser height is 8 1/4 inches and the minimum stair tread depth is 9 inches plus 3/4" nosing. Stair tread and riser shall be of uniform height and width. Exception, the bottom riser of an exterior stair adjoins and exterior walk, driveway or finished grade, the height of the riser may be less than the height of the adjacent risers. When the total rise of the stairs is greater than 30 inches, open risers are not permitted by Code. Open riser is defined as permitting the passage of a 4 inch diameter sphere.

HANDRAIL shall be provided on at least one side of stair with four or more risers. Handrail shall be minimum 34 inch to 38 inch maximum above stairs. Handrail shall be continuous the full length of the stairs from a point directly above the lowest riser of the flight. Handrails adjacent to a wall shall have a space of not less than 1.5 inches between the wall and the handrail. Handrails shall have a minimum cross-section of 1 1/4" to a maximum cross-section of 2 1/4". Handrails shall be returned to a wall or floor, or terminate in a newel post or in some type of end that will not catch clothing or limbs. When the height of the deck requires guardrail protection, that protection must extend down both sides of the steps.

Guards at a Minimum 36" required per R312.1 with 30" drop and opening limits per R312.2 (4" on vertical pickets, 6" on horizontal and ornamental guard rails), top rail and post to support 200lbs with infill to meet 50lbs per Table R301.5 and footnotes.

Rail posts cannot exceed 8' o.c. spacing and shall be attached with 2-3/8" Galv bolts with nut & washer to outer bands.

Attachment to structure based upon all cladding types but brick veneer per AM104.1.1, Brick veneer per AM104.1.2, Masonry ledge per AM104.1.3 or other per AM104.1.4.

Stair handrail/ Guard. Height between 34"-38" per R311.7.1 & R312.2. Openings on side of stairs requiring guards shall not allow a sphere 4 3/8" to pass per R312.3 exception #2.

Deck post per AM108

Footers per Table AM102.1. Minimum base of footers 12" below grade.

Stairs treads and risers per R311.7.4.1 (8 1/4" Max riser) & R311.7.4.2 (9" minimum tread depth). Stairways min 36" width per R311.5.1 (rail projections allowed). 4 or more risers require a handrail.

Decking per AM107 for #2 SYP and attached with 2-8d galv nails at each joist or approved screws. Other materials per mfg installation based upon joists o.c. spacing. Alternate material attached per mfg installation instructions.

Riser openings. Stairs with a 30" or more vertical rise must have solid risers or opening restricted to prevent a 4" sphere from passing per R311.7.4.3.

Lateral Bracing per AM 109. AM109.1.1 height required; AM109.1.2 knee bracing; AM109.1.3 freestanding embedment; AM109.1.4 diagonal bracing; AM109.1.5 Coastal embedment.

Deck Girder Span Length:

SP Size	Deck Joist Span Less Than Or Equal To: (Feet)					
	6	8	10	12	14	16
2-2 x 6	6-11	5-11	5-4	4-10	4-6	4-3
2-2 x 8	8-9	7-7	6-9	6-2	5-9	5-4
2-2 x 10	10-4	9-0	8-0	7-4	6-9	6-4
2-2 x 12	12-2	10-7	9-5	8-7	8-0	7-6
3-2 x 6	8-2	7-5	6-8	6-1	5-8	5-3
3-2 x 8	10-10	9-6	8-6	7-9	7-2	6-8
3-2 x 10	13-0	11-3	10-0	9-2	8-6	7-11
3-2 x 12	15-3	13-3	11-10	10-9	10-0	9-4

DECK GUIDE



**Transylvania County
Building Permitting and Enforcement
106 East Morgan Street, Suite 208
Brevard, NC 28712
(828) 884-3209**

www.transylvaniacounty.org/departments/building-permitting-and-enforcement

The information contained in this brochure is verified to be correct as of January 2020.

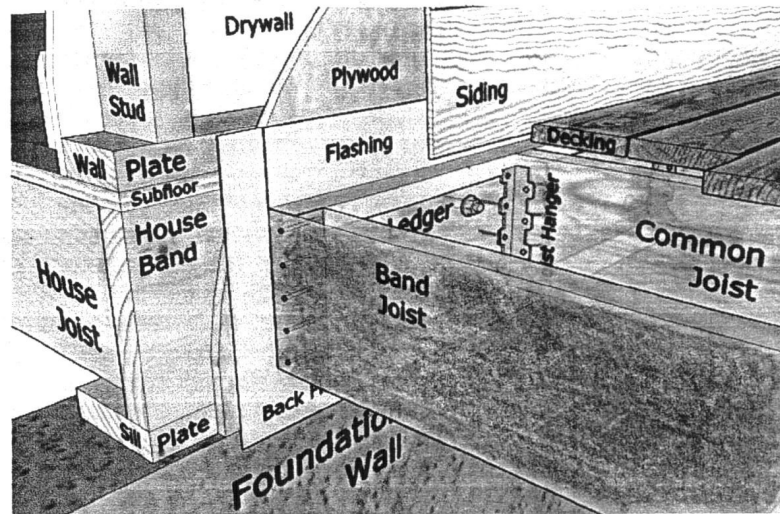
First Things First

We are required to permit and inspect your deck to ensure that it complies with the North Carolina State Residential Building Code and any local zoning regulations established by the City of Brevard. The City's requirements typically involves minimum setbacks from property lines. The Building Code governs the method of construction, materials, means of support, attachment and requires safety features such as guard rails and hand rails. Decks require an open footing inspection, as well as a final inspection.

Attaching a Deck to Your House

All Structures except Brick Veneer		
Fasteners	8' Max. Joist Span	16' Max Joist Span
5/8" Hot Dipped Galv. Bolts with Washers & 12d Common Hot Dipped Galv. Nails** or Self drilling screw fastener	1 @ 3'6" OC and 2 @ 8" OC or 12" o.c. staggered	1 @ 1'8" OC and 3 @ 6" OC or 6" o.c. staggered
Brick Veneer Structures		
Fasteners	8' Max. Joist Span	16' Max Joist Span
5/8" Hot Dipped Galv. Bolts with Washers*	1 @ 2'4" OC	1 @ 1'4" OC

Minimum edge distance for bolts is 2 1/2 inches. Nails must penetrate the supporting structure band a minimum of 1 1/2 inches.



Flashing shall be between bands for full depth and kick out underneath if siding below. Flashing shall extend underneath siding above a minimum 2". Aluminum flashing shall not be used.

What distance will the floor joist span between supports?

Your floor joists must be sized to carry a minimum 40 lb. per sq. ft. live load. In some instances, a center girder is used to help meet this design criteria and to allow the use of smaller floor joists.

Span Tables from the 2018 NC Building Code for #2 SP and a 40 lb. live load:

Joist Size	Spaced at...	No Cantilever Span
2x6	12" OC	9'11"
	16" OC	9'0"
	24" OC	7'7"
2x8	12" OC	13'1"
	16" OC	11'10"
	24" OC	9'8"

Joist Size	Spaced at...	No Cantilever Span
2x10	12" OC	16'2"
	16" OC	14'0"
	24" OC	11'5"
2x12	12" OC	18'0"
	16" OC	16'6"
	24" OC	13'6"

Joist Size	Spaced at...	Cantilever Span
2x6	12" OC	6'8"
	16" OC	6'8"
	24" OC	6'8"
2x8	12" OC	10'1"
	16" OC	10'1"
	24" OC	9'8"

Joist Size	Spaced at...	Cantilever Span
2x10	12" OC	14'6"
	16" OC	14'0"
	24" OC	11'5"
2x12	12" OC	18'
	16" OC	16'6"
	24" OC	13'6"

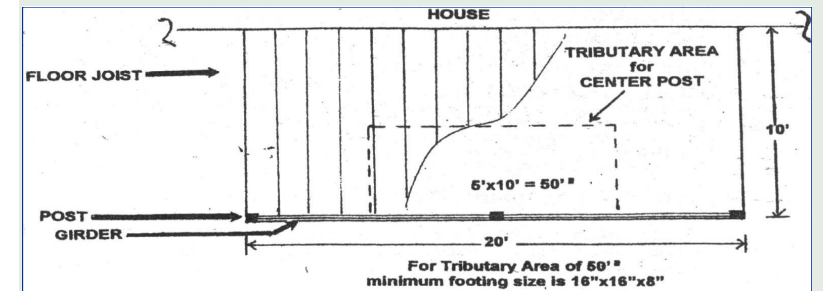
How deep and how large must the footings be?

Each deck support post must be supported by concrete footings. The size of each footing is determined by the tributary load imposed on it. See the diagram below for an explanation of tributary load. Each footing must be dug down into undisturbed soil and the minimum depth of 12 inches (frost line) below finished grade.

Deck footings are required to be inspected prior to placing the concrete. Call the Permit Center to schedule a Footing Inspections.

How high off the ground will the floor of your deck be?

If the walking surface of the deck is 30 inches or more off the ground (measured 3' from edge) your deck must be surrounded by guardrails which are a minimum of 36 inches in height. The steps for the deck must, also, have a handrail on one side if there are 4 or more individual risers (spaces between steps). If the steps have a total rise of 30 inches or more above ground level, guardrails/handrails must, also, be provided on both sides of the steps.



	FOOTING SIZE (minimum)		THICKNESS (inches)	
	SIZE (Inches)	TRIBUTARY AREA* (square feet)	Pre-cast Footing (CAP BLOCK)	Poured-in-Place Footing
Pre-cast Footing (CAP BLOCK)	Poured-in-Place Footing			
8x16	8x16	36	4	6
12x12	12x12	40	4	6
16x16	16x16	70	8	8
	16x24	100	NP	8
	24x24	150	NP	8

Round up to the next larger size when exact area is exceeded.

NP (Not Permitted)

POST SIZE (minimum)	
Post Size (inches)	Post Height
4x4	8'0"
6x6	20'0"
Engineering Required	Over 20'0"