

## 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 above ground shall have not less than 36-inch high guardrail. Horizontal spacing between the vertical pickets in guardrails shall be a maximum of 4-inches between members. For horizontal rails and ornamental closures, the railing should be constructed so a 6" 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 Professional Engineer or Architect.

## 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.

**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.

**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.

**Floor joist cantilevers** allowed per Table R502.3.3(1)

**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.

**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.

## EXTERIOR GIRDER CLEAR SPANS

| Deck Width  | Nominal Lumber Size |     |      |      |
|-------------|---------------------|-----|------|------|
|             | 2x6                 | 2x8 | 2x10 | 2x12 |
| 20' (2 ply) | 3-11                | 5-0 | 6-1  | 7-1  |
| 20' (3 ply) | —                   | 6-3 | 7-7  | 8-10 |
| 20' (4 ply) | —                   | —   | 8-9  | 10-2 |

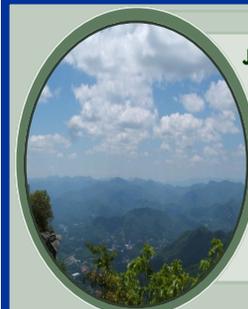
\*Partial reproduction of Table R502.5(1) at 30 ground snow load and roof ceiling and 1 clear span floor. Deck width is 20' or less measured in the direction of joists span. Splices in plys must break over bearing supports.

**The information contained in this brochure is verified to be correct as of March 2014.**

# DECK CONSTRUCTION



# INFORMATION YOU NEED TO KNOW BEFORE BUILDING AN ATTACHED OR FREE-STANDING DECK.



Jackson County Office of  
Permitting & Code Enforcement  
401 Grindstaff Cove Rd.  
Suite 145  
Sylva, NC 28779  
Phone: 828 586-7560  
Fax: 828 586-7563  
[www.jacksonnc.org/code-enforcement.html](http://www.jacksonnc.org/code-enforcement.html)

## GENERAL INFORMATION

Be sure to obtain a Land Development Permit and a Building Permit from the County Permit Center before starting construction. (A Zoning Permit may be required if within a municipality.)

### PROCEDURE FOR PERMIT ISSUANCE

1. Complete Land Development and Building Permit applications and submit them to the County Permit Center. In addition to the applications, you will need to provide deck plans (and a Zoning Permit, if applicable).
2. At the Permit Center a Code Enforcement Official will review your application and plans and, after approval, a permit will be issued. You will need to pick up the permit and pay the permit fee before work is started. (It usually takes a few days for the plan review to be completed and a permit issued.)

## STEPS FOR BUILDING A DECK

### ATTACHING A DECK TO YOUR HOUSE

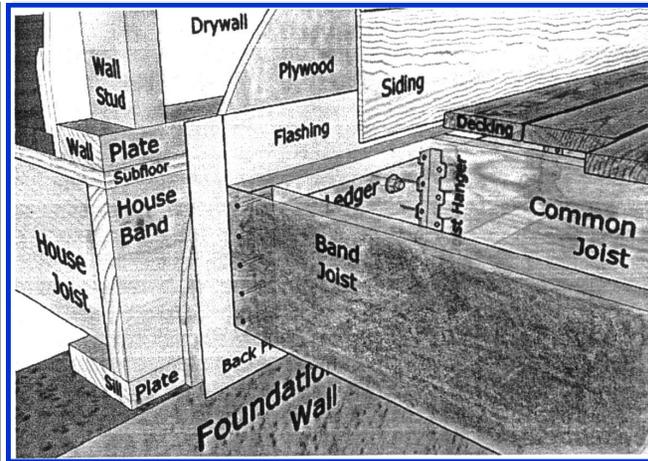
When the deck band is connected to the house band, the deck is being partially supported by the foundation of the house. Attached decks to the band or rim joist of the house with 5/8" hot dipped galvanized thru-bolts. The existing siding (except brick) which covers the house band must be removed so the deck band makes full contact with the house band. Flashing must be installed between the house and deck band to prevent water from rotting the house band. The following chart shows minimum spacing for bolts and nails.

| 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** | 1 @ 3'6" OC and<br>2 @ 8" OC | 1 @ 1'8" OC and<br>3 @ 6" OC |
| 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.

OC=On Center



### DECK TO HOUSE BAND

**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 2012 NC Building Code for #2 SP and a 40 lb. Live Load:

| Joist Size | Spaced at... | Span   |
|------------|--------------|--------|
| 2x6        | 12" OC       | 10'9"  |
|            | 16" OC       | 9'9"   |
|            | 24" OC       | 8'6"   |
| 2x8        | 12" OC       | 14'2"  |
|            | 16" OC       | 12'10" |
|            | 24" OC       | 11'0"  |

| Joist Size | Spaced at... | Span   |
|------------|--------------|--------|
| 2x10       | 12" OC       | 18'0"  |
|            | 16" OC       | 16'1"  |
|            | 24" OC       | 13'1"  |
| 2x12       | 12" OC       | 21'9"  |
|            | 16" OC       | 18'10" |
|            | 24" OC       | 15'4"  |

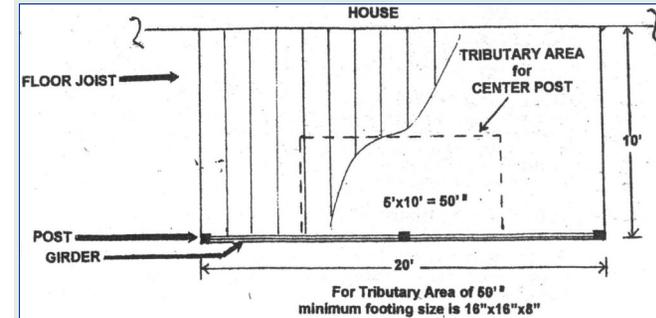
SP=Southern Pine (typical pressure treated lumber)

OC=On Center

### 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.**



|                              |                               | FOOTING SIZE (minimum)       |                         |   |  |
|------------------------------|-------------------------------|------------------------------|-------------------------|---|--|
| SIZE (Inches)                | TRIBUTARY AREA* (square feet) | THICKNESS (inches)           |                         |   |  |
| 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

### HOW HIGH OFF THE GROUND WILL THE FLOOR OF YOUR DECK BE?

If the walking surface of the deck is 30-inches off the ground, 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.

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