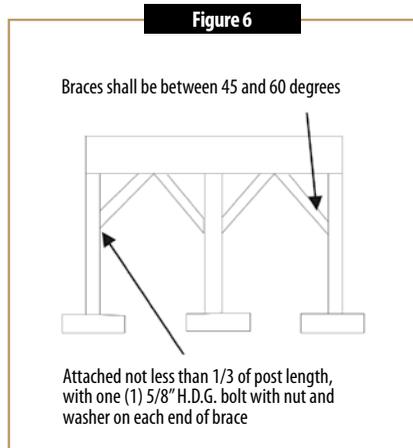


Girder span tables from the Building Code for #2SYP and a 40 lb. Live Load:

Exterior Girder Clear Spans				
Deck Width	Nominal Lumber Size			
	2 x 6	2 x 8	2 x 10	2 x 12
20' (2 ply)	3'11"	5'	6'1"	7'1"
20' (3 ply)	----	6'3"	7'7"	8'10"
20' (4 ply)	----	----	8'9"	10'2"

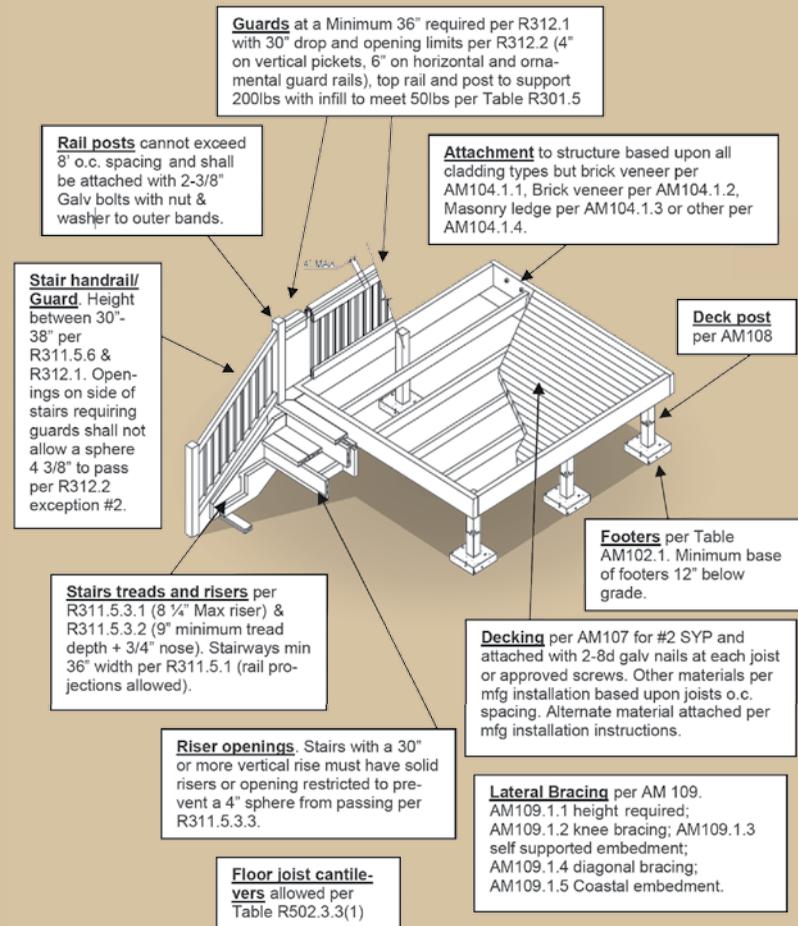
\*Partial reproduction of Table R502.5(1) at 30 ground snow load and roof ceiling and 1 clear span floor. Deck width is 20' or less measured in the direction of joists span. Splices in plys must break over bearing supports.



Joist span tables from the Building Code for #2SYP and a 40 lb. Live Load:

Joist Size	Spaced @	Will span	Joist Size	Spaced @	Will Span
2 x 6	12" OC	10'9"	2 x 10	12" OC	18'
	16" OC	9'9"		16" OC	16'1"
	24" OC	8'6"		24" OC	13'1"
2 x 8	12" OC	14'2"	2 x 12	12" OC	21'9"
	16" OC	12'10"		16" OC	18'10"
	24" OC	11'		24" OC	15'4"

**Figure 8**  
Handrails, Guards and General Construction



If you have any questions about these specifications, the use of other materials, standards or the code requirements for your deck, please do not hesitate to call City of Raleigh Development Services - Litchford Office at 919-996-4200 or City of Raleigh Development Services - Customer Service Center at 919-996-2495.

For more information, visit our web site at

[raleighnc.gov](http://raleighnc.gov)

This brochure is a publication of The City of Raleigh



What you need to know before building an attached or self-supporting deck to your home

# All Decked Out?

# First Things First...

A.

## Everyone dreams of the “perfect deck”...

But getting from Point A (the dream deck) to point B (planning and constructing it) is not always as easy. This brochure will help you construct a safe, code-compliant “dream deck.”

B.

## But, first things first...

Be sure to obtain a building permit for the deck before you build it. For more information on how and where to obtain your building permit, call or visit the Residential Office 8320-130 Litchford Road, Raleigh, NC or simply call us at 919-996-4200. Office hours are Monday-Friday from 8:00 a.m. to 4:45 p.m.

C.

## Why the permit and inspections?

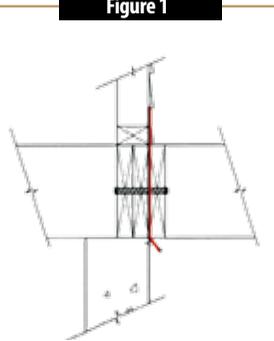
To ensure that the deck will comply with local zoning regulations and with the North Carolina State Residential Building Code. The zoning regulations establish minimum setbacks that must be maintained from property lines. The building code governs the method of construction, materials, means of support, attachment and requires safety features such as guard rails and hand rails.

## Some Things to Think About...

### 1. Will your deck be attached to the residence for support or will it be a “self supported” deck?

If attached, this means the deck band will be connected to the house band and that your deck will be supported partially by the existing foundation of the house. Attached decks must be connected to the band or rim joist of the house by 5/8 inch galvanized through bolts. Also, the existing siding (except brick) which covers the house band must be removed so that the deck band makes full contact with the house band. Non-aluminum, non-corrosive flashing must be installed between the house and deck bands (see flashing detail in Figure 1) to prevent water from rotting the house band. See diagram below for detail.

Figure 1



Non-aluminum, noncorrosive flashing shall be between bands for full depth and kick out underneath of siding below. Flashing shall extend underneath siding above a min. 2”.

#### All Structures Except Brick Veneer

Fasteners	8' Max Joist Span <sup>a</sup>	16' Max Joist Span <sup>a</sup>
5/8" Hot Dipped Galv. Bolts with nut and washer <b>b</b> and 12d Common Hot Dipped Galv. Nails <sup>c</sup>	1 @ 3'-6" o.c. <b>and</b> 2 @ 8" o.c.	1 @ 1'-8" o.c. <b>and</b> 3 @ 6" o.c.

#### Brick Veneer Structures

Fasteners	8' Max Joist Span <sup>a</sup>	16' Max Joist Span <sup>a</sup>
5/8" Hot Dipped Galv. Bolts with Nut <b>and</b> Washer <sup>b</sup>	1 @ 2'-4" o.c.	1 @ 1'-4" o.c.

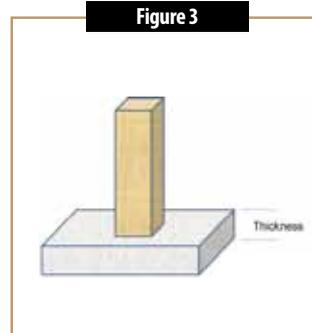
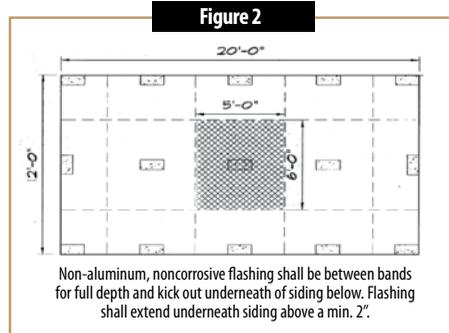
**a:** attachment interpolation between 8' & 16' joists span are allowed,  
**b:** Minimum edge distance for bolts is 2.5 inches,  
**c:** Nails must penetrate supporting structure band a minimum of 1.5 inches

### 2. What distance will you span between supports?

Your joists must be sized to carry a 40 lb. per sq. ft. live load. In some instances, a girder is used to help meet this design criteria and to allow use of smaller individual floor joists (See floor joist span in Figure 6).

### 3. How deep and how large must the footings under support posts 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 to a minimum depth of 12 inches.



#### Footing Chart a, b, c\*

SIZE (inches)		TRIBUTARY AREA (square)	THICKNESS (inches)	
Precast Footings	Poured-in-Place Footings		Precast	Cast-in-Place
8 X 16	8 X 16	36	4	6
12 X 12	12 X 12	40	4	6
16 X 16	16 X 16	70	8	8
	16 X 24	100	Ex.: 4"x 8"x 16" doublestacked solid block	8
	24 X 24	150		8

\*a. Footing values are based on single floor and roof loads; b. Support post must rest in center 1/3 of footer; c. Top of footer shall be level for full bearing support of post

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

If the walking surface of the deck is 30 inches off of the ground, your deck must be surrounded by guard rails which are a minimum of 36 inches in height. The steps for the deck must also have guard rails on both sides if there are 4 or more individual risers (spaces between steps). If the steps have a total rise of 30" or more above ground level, guard rails/hand rails must also be provided on open sides of the steps. See figure 4 & 8

### 5. Bracing your deck for lateral support.

If your planned deck is attached and over 4' above the ground (measured from top of footing to deck floor), bracing for lateral support is required. Self supported decks greater than 30" in height (measured from the top of footing to deck floor) also require bracing. Several methods of bracing are acceptable depending on whether the deck is free standing or attached (see figure 6 & 7). Consult with the Residential Office at 919-996-4200 to select a method that meets code and will work best for your project.

## Our Recommendations for a “Minimum Code” and a “Code Plus” Deck...

### Lumber

First, all lumber should be treated or decay resistant. We will assume that you will use pressure treated Southern Yellow Pine #2 (SYP) with joist spacing set at 16 inches on center (OC). Other species of lumber are acceptable for use. For specific allowable spans on other species, consult the building code or call the Residential Office.

You only need to build to Minimum Code. However; if you want a sturdier deck, we have also given you our recommendations for a Code Plus deck.

	Minimum Code Deck	Code Plus Deck
<b>Footing Depth:</b>	12" to bottom of footing	2'
<b>Footing Size:</b>	8" x 16" x 6"	16" x 16" x 8"
<b>Post Size:</b>	4" x 4" x varies up to 8'	6" x 6"
<b>Girder Size:</b>	2-2" x 8" (see girder table in Figure 4 & 5)	2-2" x 12" through bolted to posts
<b>Post Spacing:</b>	(see span drawing in Figure 7)	6' maximum between posts around perimeter and in lines across the deck floor
<b>Deck Band &amp; Ledger:</b>	2" x 8" for Band 2" x 2" for Ledger or use Joist hanger (see Figure 1)	Deck band: use 2" x 10" Ledger: use 2" x 2" with 3 nails under each joist *(may substitute 2" x 8" for band if joist hangers are used in lieu of ledgers)
<b>Joist Size:</b>	(see span table under Figure 6)	Use 2" x 10" spaced 16" OC
<b>Deck Flooring:</b>	5/4" x 6"	Use 2" x 6" flooring with 1/8" space between
<b>Guard Rail &amp; Height:</b>	Max. clear space between pickets is 4" Height: 36" minimum	Space railing posts 6' OC

\* This option requires the Code-Plus features

### Important Note:

The Building Code also regulates items such as the stringers and treads for steps, fastening (nailing and/or bolting) and bracing for lateral stability. Be sure to discuss these with one of our specialists if you have questions about what the code requires.