

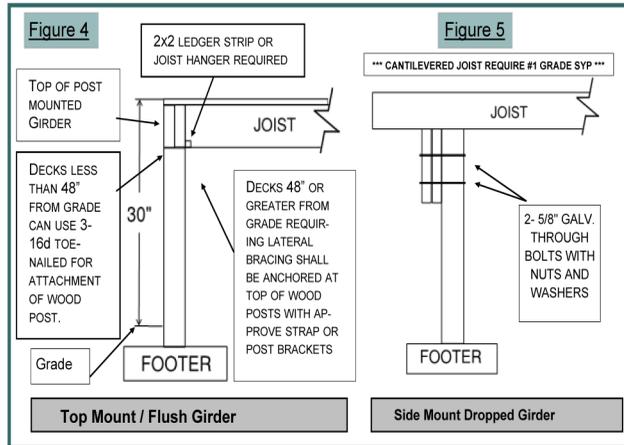


Building Inspections
 73 Hunter Street, PO Box 250
 Apex, NC 27502
 919-249-3418

**Guide to
 planning and
 constructing an
 attached or
 self-supported
 deck**



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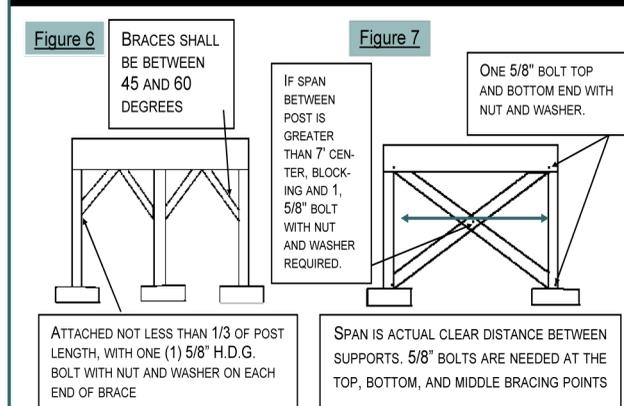


GIRDER SPAN TABLES #2 SYP @ 40 psf LIVE LOAD, 30 psf SNOW LOAD NCRC

Exterior Girder Clear Spans ***

DECK WIDTH	Nominal Lumber Size				Nominal Lumber Size				
	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	
20' (2 ply)	3'-6"	4'-5"	5'-1"	5'-7"	28' (2 ply)	3'-0"	3'-10"	4'-6"	5'-0"
20' (3 ply)	----	5'-5"	6'-0"	6'-6"	28' (3 ply)	----	4'-9"	5'-5"	5'-11"
20' (4 ply)	----	6'-1"	6'-9"	7'-3"	28' (4 ply)	----	5'-5"	6'-0"	6'-6"

***Partial reproduction of Supplemental Table R502.5(3) 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. For Larger Spans see Table R502.5(3). For other wood species, See Table R502.5(1). New Span charts were effective 01/01/2015.



Joist Span Tables #2 SYP @ 40 psf Live Load, 10 psf Dead Load NCRC

JOIST SIZE	SPACED @	MAX SPAN	JOIST SIZE	SPACED @	MAX SPAN
2 x 6	12" OC	10'-3"	2 x 10	12" OC	16'-2"
	16" OC	9'-4"		16" OC	14'-0"
	19.2" OC	8'-8"		19.2" OC	12'-10"
	24" OC	7'-7"		24" OC	11'-5"
2 x 8	12" OC	13'-6"	2 x 12	12" OC	19'-1"
	16" OC	11'-10"		16" OC	16'-6"
	19.2" OC	10'-10"		19.2" OC	15'-1"
	24" OC	9'-8"		24" OC	13'-6"

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 contact Town of Apex Building Inspections at (919) 249-3418.

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

	Minimum Code Deck	Code Plus Deck
Footing Depth:	12" to bottom of footing	2'
Footing Size:	8" x 16" x 6"	16" x 16" x 8"
Post Size:	4" x 4" x varies up to 8'	6" x 6"
Girder Size:	2-2" x 8" (see girder table in Figure 4 & 5)	2-2" x 12" through bolted to posts
Post Spacing:	(see span drawing in Figure 7)	6' maximum between posts around perimeter and in lines across the deck floor
Deck Band & Ledger:	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 <small>*(may substitute 2" x 8" for band if joist hangers are used in lieu of ledgers)</small>
Joist Size:	(see span table under Figure 6)	Use 2" x 10" spaced 16" OC
Deck Flooring:	5/4" x 6"	Use 2" x 6" flooring with 1/8" space between
Guard Rail & Height:	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 PLAN REVIEW PERSONNEL IF YOU HAVE QUESTIONS ABOUT WHAT THE CODE REQUIRES. ALL REFERENCES TO "AM" REFER TO APPENDIX M AND IT'S AMENDMENTS TO THE 2012 NORTH CAROLINA RESIDENTIAL CODE.



First Things First...

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."

But, first things first...The Town of Apex requires a building permit before deck construction can begin. For information on how and where to obtain your building permit, call or visit the Town of Apex Building Inspections Department at 73 Hunter Street, Apex, NC 27502 (919) 249-3418. Office hours are 8 am to 5 pm Monday thru Friday.

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.

Things to Consider Before Construction

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 (see Tables AM1041.1 and AM104.1.2 on the right hand side of the brochure for allowable Fastener and Joist Span connections). 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.

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 Figures 2 and 3 and Footing Chart (Table AM102.1) for an explanation of tributary load. Each footing must be dug down into undisturbed soil and to a minimum depth of 12 inches.

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

If the walking surface of the deck exceeds 30 inches from finished grade, 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.

5. Bracing 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 Figures 6 & 7). Consult with Plan Review personnel at (919) 249-3418 to select a method that meets code and will work best for your project.

Figure 8 Handrails, Guards and General Construction

GUARDS AT A MINIMUM 36" REQUIRED PER R312.1 WITH GREATER THAN 30" DROP AND OPENING LIMITS PER R312.3 (4" SPHERE CANNOT PASS THROUGH VERTICAL PICKETS OR 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. 4X4 POST MAY NOT BE NOTCHED PER DOI INTERPRETATION.

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.

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.

STAIR HANDRAIL/GUARD. HEIGHT BETWEEN 34"-38" PER R311.7.7 & R312.2. OPENINGS ON SIDE OF STAIRS REQUIRING GUARDS SHALL NOT ALLOW A SPHERE 4 3/8" TO PASS PER R312.3 EXCEPTION #2.

OPENINGS PER R312.3

STAIRS TREADS AND RISERS PER R311.7.4.1 (8 1/4" MAX RISER) & R311.7.4.2 (9" MINIMUM TREAD DEPTH + 3/4" NOSE). STAIRWAYS MIN 36" WIDTH PER R311.7.1 (RAIL PROJECTIONS ALLOWED).

TRIANGLE OPENINGS SHALL NOT ALLOW A 6" SPHERE TO PASS PER R312.3 EXCEPTION #1.

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.

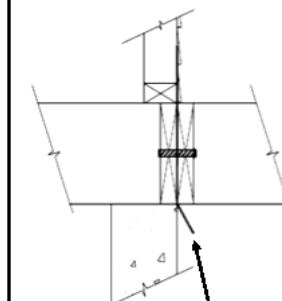
LATERAL BRACING PER AM 109. AM109.1.1 HEIGHT REQUIRED; AM109.1.2 KNEE BRACING; AM109.1.3 SELF SUPPORTED EMBEDMENT; AM109.1.4 DIAGONAL BRACING; AM109.1.5 COASTAL EMBEDMENT.

Post Height per AM108

FOOTERS PER TABLE AM102.1. MINIMUM BASE OF FOOTERS 12" BELOW GRADE.

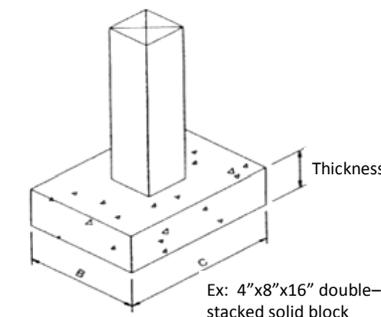
FLOOR JOIST CANTILEVERS ALLOWED PER TABLE R502.3.3(1) #1 GRADE SYP

Figure 1



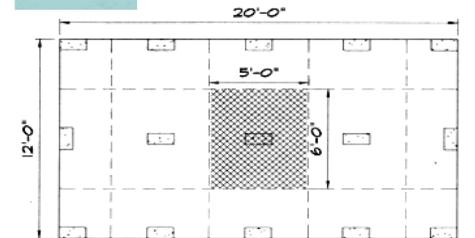
Non-aluminum, non-corrosive flashing shall be between bands for full depth and kick out underneath of siding below. Flashing shall extend underneath siding above a min. 2"

Figure 3



Ex: 4"x8"x16" double-stacked solid block

Figure 2



Tributary area of shaded section on free standing deck shown is 5'x6'=30 sf. Code will require a minimum footer of 8"x16" per Table AM102.1

FOOTING CHART a, b, c*
TABLE AM102.1

SIZE (inches)		TRIBUTARY AREA (SF)	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	8	8
	24 x 24	150	8	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.

TABLE AM104.1.1 ALL STRUCTURES EXCEPT BRICK VENEER

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

OR

Self-Drilling Screw Fastener ^d	12" O.C. staggered	6" O.C. staggered
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TABLE AM104.1.2 BRICK VENEER STRUCTURES

5/8" Hot Dipped Galv. Bolts with nut and washer ^b	1 @ 2'-4" O.C.	1 @ 1'-4" O.C.
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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, d) Self-drilling fastener shall be an approved screw having a minimum shank diameter of 0.195" and a length long enough to penetrate through the supporting structure band. The structure band shall have a minimum depth of 1-1/8". Screw shall have an evaluated allowable shear load for Southern Pine to Southern Pine Lumber of 250 lbs. And shall have a corrosion resistant finish equivalent to hot dipped galvanized. Minimum edge distance for screws is 1-7/16".