Joist span tables from the Building Code for #1SYP and a 40 lb. Live Load:

* Continuous joist requires #1SYP See the 2003 IBC, Residential Building Code Table R502.3.3(1) for span.

Figure 8

Handrails, Guards, and General Construction

Handrails: at a minimum 36" required per R313.1.3 with 30" drops and opening limits per R313.2 & R313.3.4 or vertical, 4" or horizontal and ornamental (guard rail), top rail and post to support 200 lbs with an 8 lb to meet 50 lbs per Table R301.5 and footnotes.

Guards: Girder shall not be more than 36" wide, with 8" maximum rise from passing per R311.7.4.3 or opening restricted to prevent a 4" sphere from passing per R311.7.4.1 & R311.7.4.2 and shall not exceed 8' o.c. guards shall not be more than 36" wide, with 8" maximum rise from passing per R311.7.4.3.

Figure 6

Lateral Bracing

per AM104.1.1; brick veneer per AM104.1.2; Masonry, Ledge per AM104.1.3.

Footers:

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

Footers on Table AM102.1.

City of Raleigh
Development Services Department

Height between 34"-42" to meet 50 lbs per Table R301.5 and footnotes.

Stair treads and risers

per R311.7.6.2 (min tread width) & R311.7.6.3 (min rise height). Stairways min 24" wide. per R311.5.5 (put projections allowed).

Figure 5

3x10d shall be provided at each joist or approved screws. Other materials per mfg installation based on posts or splices. Attaches attached per mfg installation instructions.

Braces shall be between 45 and 60 degrees

Stair handrails:

Guard shall not be more than 36" wide, with 8" maximum rise from passing per R311.7.4.3 or opening restricted to prevent a 4" sphere from passing per R311.7.4.1 & R311.7.4.2 and shall not exceed 8' o.c.

Figure 7

Floor post: Placement allowed per Table R502.3.3(1)

Girder span tables from the Building Code for #1SYP and a 40 lb. Live Load:

* Note: Girder span tables are from the 2012 NC Residential Building Code Table R502.3.3(1) for span.

* Partial reproduction of Table R502.3.3(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.

Figure 4

2x6 ledger strip or joist hanger required for attachment of wood post.

Top of post mounted guards

Decks 48" or greater from grade require top of post guards in the direction of joists span. Splices in plys must break over bearing supports.

Removal of #2SYP from the Building Code for #2SYP and a 40 lb. Live Load:

2x8 ledger strip or joist hanger required for attachment of wood post.

Top of post mounted guard

Decks less than 48" from grade can use 3-16d toenailed from grade #1SYP.

Figure 3

2x2 ledger strip or joist hanger required for attachment of wood post.

Top of post mounted guard

Decks 48" or greater from grade require top of post guards in the direction of joists span. Splices in plys must break over bearing supports.

Figure 4

2x6 ledger strip or joist hanger required for attachment of wood post.

Top of post mounted guard

Decks less than 48" from grade can use 3-16d toenailed from grade #1SYP.

Girder span tables from the Building Code for #1SYP and a 40 lb. Live Load:
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 rim or joist of the house by 5/8 inch Hot Dipped Galv. Bolts with nut and washer. **OR** use 2-2" x 12" through bolted to 2" x 2" Ledger. **Non-aluminum, non-corrosive flashing must be installed between the house and deck bands** (see Figure 1) to prevent water from entering the house band. **See diagram below for detail.**

### Some Things to Think About...

#### First Things First…

- **What is the height of your deck?**
- **What is the intended use of your deck?**
- **What is the bearing capacity of your soil?**
- **What is the expected load on your deck?**
- **What is the maximum beam span for your joists?**
- **What is the maximum deck height for your area?**

### Footing Chart a, b, c

<table>
<thead>
<tr>
<th>SIZE (inches)</th>
<th>FOOTING DEPTH (inches)</th>
<th>DECK HEIGHT (inches)</th>
<th>TRIBUTARY AREA (square)</th>
<th>Joist Size</th>
<th>Deck Band &amp; Ledger</th>
<th>Guard Rail &amp; Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Footing</td>
<td>Deck Band</td>
<td>Footing</td>
<td>Joist</td>
<td>Deck Band &amp; Ledger</td>
<td>Guard Rail &amp; Height</td>
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<tr>
<td>Footing</td>
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<td>Ledger</td>
<td>Footing</td>
<td>Joist</td>
<td>Deck Band &amp; Ledger</td>
<td>Guard Rail &amp; Height</td>
</tr>
<tr>
<td>Footing</td>
<td>Poured-in-Place Footing</td>
<td>Ledger</td>
<td>Footing</td>
<td>Joist</td>
<td>Deck Band &amp; Ledger</td>
<td>Guard Rail &amp; Height</td>
</tr>
<tr>
<td>TRIBUTARY AREA (square)</td>
<td>Joist</td>
<td>Deck Band &amp; Ledger</td>
<td>Guard Rail &amp; Height</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Footings:**
  - 4" x 8" x 16"
  - 4" x 8" x 16"
- **2" x 8" for Band 2" x 2" for Ledger:**
- **Deck Band & Ledger:**
  - Use 2" x 10" Ledger:
  - Use 2" x 12" through bolted to posts
- **Guard Rail & Height:**
  - Max. clear space between pickets is 4" max.

4. **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 stability 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.

5. **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.

### 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 #1SYP (girders and cantilever joist) and #2SYP floor post with joint 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 must build to Minimum Code.** However, if you want a sturdier deck, we have also given you our recommendations for a Code Plus deck.

### 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.