



Sussex County, Virginia

Building Department

Memo

To: Builders, Contractors, and Homeowners
From: Travis Luter
Building Official
Date: December 1, 2008
Re: Helpful Hints

There have been some recent questions about where the deck detail requirements come from. Below is a list of code sections which are the basis of the Typical Deck Detail. The Typical Deck Detail is provided as a service, predominately for homeowners and do-it-yourselfers.

1. **IRC R502.2.1 Decks.** Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

This code section sets the standard for the entire deck. Per Table R301.5 the deck must have a live load of 40psf. It also states the references to bearing, ledgers, uplift and lateral restraint. It is also the basis for requiring certain decks to be free-standing and a ledger not be allowed.

2. **IRC R403.1.1 Minimum Size.** Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 and Figure R403.1(1). The footing width shall be based on the load-bearing value of the soil in accordance with Table R401.4.1. Spread footings shall be at least 6 inches in thickness. Footing projections shall be at least 2 inches and shall not exceed the thickness of the footing. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table 401.4.1. Footings for

wood foundations shall be in accordance with the details set forth in Section R 403.2 and Figures R 403.1(2) and R 403.1(3).

IRC R403.1.4 Minimum Depth. All exterior footings shall be placed at least 18 inches below the undisturbed ground surface. Where applicable, the depth of footings shall also conform to Sections 403.1.1.1 through R403.1.4.2.

The required 16X16X16 footing in the deck detail is designed to carry all imposed loads for all spans of lumber and deck sizes. The alternative to the suggested footing is to have the deck loads calculated and the footing designed accordingly.

3. **IRC R502.5 Allowable girder spans.** The allowable spans of girders fabricated of dimensions lumber shall not exceed the values set forth in Tables R502.5(1) and R502.5(2).

This code section requires the beam to be a double two by [(2)2X]. Split girders are not allowed per above

4. **IRC R502.6 Bearing.** The ends of each joist, beam or girder shall not have less than 1.5 inches of bearing on wood or metal and not less than 3 inches on masonry or concrete except where supported on a 1 inch by 4 inch ribbon strip and nailed to the adjacent stud or by the use of approved joist hanger.

This code section coupled with IRC section 502.7 requires the 6X6 post. In order to have the required bearing and lateral restraint the post must be a 6X6 minimum. There are other alternatives to the use of the 6X6 such as 4X6 provided it is installed properly.

5. **USBC R502.2.1.1 Deck ledger connection to band joist.** For residential applications and a total design load of 50 psf, the connection between a pressure preservative treated southern pine (or approved decay-resistant species) deck ledger and a two inch nominal band joist bearing on a sill plate or wall plate shall be constructed with ½ inch lag screws or bolts with the washers per table R502.2.1.1.

This code section specifies the loading of the ledger, the treatment of the ledger, and the attachment of the ledger.

6. **USBC R502.2.1.1.1 Placement of lag screws or bolts in residential deck ledgers.** The lag screws or bolts shall be placed two inches in from the bottom or top of the deck ledges and two inches from the ends. The lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger.

This code section determines the acceptable location for the bolts or lags in the ledger.

7. **IRC R502.7 Lateral restraint at supports.** Joists shall be supported laterally at the ends by full-depth solid blocking not less than 2 inches nominal in thickness; or by attachment to a header, band, or rim joist, or to an adjoining stud; or shall be otherwise provided with lateral support to prevent rotation.

8. **IRC R502.9 Fastening.** Floor framing shall be nailed in accordance with Table R602.3(1). Where posts and beams or girders construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement.

This section is an extension of section IRC R502.2.1 pertaining to uplift and lateral displacement. It also specifies the fastening of all framing members.

The Typical Deck Detail is a guideline to help individuals get a permit for a deck with minimal design. There are several alternatives to the Typical Deck Detail, but the use of alternatives will require the person applying for the permit to provide more design details and calculations. This deck detail is a quick and easy way to apply for and obtain a deck permit.

W. Travis Luter Sr.