

the floor joist. Single trimmer joists may be used to carry a single header joist that is located within 3 feet (914 mm) of the trimmer joist bearing. When the header joist span exceeds 4 feet (1219 mm), the trimmer joists and the header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved hangers shall be used for the header joist to trimmer joist connections when the header joist span exceeds 6 feet (1829 mm). Tail joists over 12 feet (3658mm) long shall be supported at the header by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).

**R502.3 Design and construction where basic wind speed equal or exceed 100 mph (160.9 km/h) in hurricane-prone regions or 110 miles per hour (177.1 km/h) elsewhere.** Floor framing of light-frame wood construction shall be designed and constructed in accordance with the provisions of Section R301.2.1.1 and Section R502.1.

**Reason:** This modification reorganizes the provisions for wood-frame construction of floors by separating general provisions applicable to all wood construction from that of prescriptive wood-frame construction from that of engineered wood construction. This change adds new Section R502.1 General Requirements, revising Section R502.2 to clarify where the prescriptive construction applies and adding new Section R502.3 to clarify where an engineered construction is required.

**Cost Impact:** The code change proposal will not increase the cost of construction. This change merely reorganizes the provisions for wood-frame construction of floors by separating general provisions applicable to all wood construction from that of prescriptive, wood-frame construction from that of engineered wood construction.

Public Hearing: Committee: AS AM D  
 Assembly: ASF AMF DF

## RB159-06/07

### R502.2.2.1 (New), Table R502.2.2.1 (New), R502.2.2.1.1 (New)

**Proponent:** Richard E. Bartell, Hanover County, VA, representing the Virginia Plumbing and Mechanical Inspectors Association/Virginia Building and Code Officials Association

**Add new text and table as follows:**

**R502.2.2.1 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, incised PPT hem-fir, (or approved decay-resistant species) deck ledger and a 2-inch nominal band joist bearing on a sill plate or wall plate shall be constructed with ½-inch lag screws or bolts with washers per Table R502.2.2.1.

**TABLE R502.2.2.1  
 FASTENER SPACING FOR A RESIDENTIAL PPT SOUTHERN PINE OR HEM-FIR DECK LEDGER  
 AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST (50 PSF TOTAL LOAD)<sup>3,6</sup>**

<b><u>Joist Span (ft)</u></b>	<b><u>6' and less</u></b>	<b><u>6'-1 to 8'</u></b>	<b><u>8'-1" to 10'</u></b>	<b><u>10'-1" to 12'</u></b>	<b><u>12'-1" to 14'</u></b>	<b><u>14'-1" to 16'</u></b>	<b><u>16'-1" to 18"</u></b>
	<b><u>On-Center Spacing of Fasteners<sup>4,5</sup></u></b>						
<b><u>½" diameter Lag Screw with 15/32" sheathing<sup>1</sup></u></b>	<b><u>30</u></b>	<b><u>23</u></b>	<b><u>18</u></b>	<b><u>15</u></b>	<b><u>13</u></b>	<b><u>11</u></b>	<b><u>10</u></b>
<b><u>½" diameter bolt with 15/32" sheathing</u></b>	<b><u>36</u></b>	<b><u>36</u></b>	<b><u>34</u></b>	<b><u>29</u></b>	<b><u>24</u></b>	<b><u>21</u></b>	<b><u>19</u></b>
<b><u>½" diameter bolt with 15/32" sheathing and ½" stacked washers<sup>2</sup></u></b>	<b><u>36</u></b>	<b><u>36</u></b>	<b><u>29</u></b>	<b><u>24</u></b>	<b><u>21</u></b>	<b><u>18</u></b>	<b><u>16</u></b>

<sup>1</sup> The tip of the lag screw shall fully extend beyond the inside face of the band joist.

<sup>2</sup> The maximum gap between the face of the ledger board and face of the house band joist shall be ½".

<sup>3</sup> Ledgers shall be flashed to prevent water from contacting the house band joist.

<sup>4</sup> Lag screws and bolts shall be staggered per R502.2.1.1.

<sup>5</sup> Deck ledger shall be 2x8 PPT No.2 grade (minimum) or other approved method and material as established by standard engineering practice.

<sup>6</sup> When solid-sawn PPT deck ledgers are attached to engineered lumber products (composite rimboard or LVL), the ledger attachment requirements in the product manufacturer's engineering report shall be followed.

**R502.2.2.1.1 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 ledgers and two inches in 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.

**Reason:** Researchers at Virginia Tech University and Washington University have tested simulated deck-ledger to house-band-joint connections in their respective laboratories. A practical range of pressure-preservative-treated (PPT) deck ledger lumber (incised Hem-fir and Southern Pine) was attached to a simulated Spruce-Pine-Fir band joist by ½-inch lag screws or bolts with washers. The deck ledger was separated from the house band joist by placing a piece of 15/32" wall sheathing in the connection, and in another test case for bolts only, a ½-inch stack of washers was inserted into the connection to produce a drainage plane. The specimens were tested to failure and the average test results were divided by a factor of 3.0, intended to provide an adequate in-service safety factor, and further divided by 1.6 to convert from a "test duration" to a "normal duration" of ten years recognized by the NDS and IBC as the proper duration for occupancy live load.

The proposed on-center spacing is the closest spacing for the two cases of deck ledger lumber studied. Due to the limited investigation into the performance of composite type house rimboards (only DFL was evaluated) and the possibility of rimboards entering the market being a lower quality than what was tested at Washington State University, engineered rimboards are not included in the scope of the proposed fastener spacing table. Instead, footnote 6 is proposed to refer the contractor and official to the manufacturer of the rimboard product. The two papers cited in the Bibliography gives the testing procedure and results for the cases included in the caption to the proposed table.

**Bibliography:**

1. Carradine, D. M., D. A. Bender, J. R. Loferski, and F. E. Woeste. 2005. Wood Bits: Residential deck ledger design. Building Safety Journal (6): 4-7. [www.iccsafe.org/news/bsj/1205\\_Woodbits.pdf](http://www.iccsafe.org/news/bsj/1205_Woodbits.pdf)
2. Loferski, J., F. Woeste, R. Caudill, T. Platt, and Q. Smith. 2004. Load-tested deck ledger connections. Journal of Light Construction 22(6): 71-78

**Cost Impact:** The code change proposal will increase the cost of construction.

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

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## RB160–06/07

**R502.11.1, R502.11.2, R502.11.3, R502.11.4, R502.11.4.1 (New), R502.11.4.2 (New), R502.11.4.3 (New), R502.11.5 (New), R502.11.6 (New), R502.11.7 (New)**

**Proponent:** Kirk Grundahl, P.E., WTCA, representing the Structural Building Components Industry

**Add new text, revise, reorder and add sections as follows:**

### **R502.11 Wood trusses.**

**R502.11.1 Truss design drawing.** A type of construction document that includes the written, graphic and pictorial depiction of each individual truss.

**R502.11.2 Truss submittal package.** Shall consist of each individual Truss Design Drawing, the Truss Member Permanent Bracing per R502.11.3 and, as applicable, the cover sheet/truss index sheet.

**R502.11.3 Truss placement diagram.** Optional manufacturer's installation instructions, which identifies the proposed location for each individually designated truss and references the corresponding Truss Design Drawing. The Truss Placement Diagram shall not be required to bear the seal or signature of the Truss Designer.

**R502.11.4 Design.** Wood trusses shall be designed in accordance with the provisions of this code and approved engineering practice. ~~The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI-1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R406.1.~~ Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved framing devices.

**R502.11.4.1 Truss design drawings.** The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. ~~Truss design drawings, prepared in compliance with Section R502.11.1, shall be submitted to the building official and approved prior to installation.~~ Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Slope or depth, span and spacing.