Requirements for attached decks have changed with the adoption of the 2015 edition of the IRC. Please answer the following questions to help the plan review process.

1. Is the ledger board existing ________________
2. Is this house on a full basement ________________
3. Is the existing basement finished in the area the deck is to be attached ________________
4. Is or will the ledger board be attached by ½” lag screws or bolts ________________ Note: new requirements for lag screws and bolts spacing. To be placed minimum 2” from top and minimum ¾” bottom of ledger and 2” from end. Spacing per attached table. Lag screws minimum 5” long
5. Alternative method of attachment Please describe. Provide manufacturer specifications

6. Washers are required on all lag bolts and screws
7. Is any portion of structure, where deck is to be attached, cantilevered ________________
8. Decks cannot be supported by cantilevered areas of the structure
9. All new attached decks require lateral hold down devices. If the deck is being attached to an area where the room inside below the deck level is finished then a freestanding deck is to be installed. See illustration of lateral HDD attached
10. Decks being attached to rimboard must be attached by rimboard manufacturer installation instructions or by a WV licensed design professional.
11. Where joists are top loaded on beams at both ends (freestanding decks) hurricane straps or similar hold down devices are required
12. Decks cannot be attached through masonry or stone veneer
13. CARRIAGE BOLTS ARE NOT ALLOWED
Not suitable for spas, hot tubes or Jacuzzis

This design is for decks only. If a hot tub is planned then a design from a WV design professional is required. If a future room is possible then larger footings may be required.

Decks less than 3' above grade require framing inspection. All decks require 2nd footing inspection after concrete pour.

Decks with cantilevers require uplift protection by use of hangers or hurricane straps.

Do not notch deck railing posts. Factory notched posts are acceptable.

* COMPLETE ALL MARKED FIELDS
**Single Family Residential—Uncovered Deck and Porches**

**Detail A**

**DIRECTIONS:**
1. Identify Ledger Size 2 x _____ X _______ (example 2' x 10" X 10")
2. Identify # of fasteners needed _____ Size _____ X _____ _______ (example two 1/2" X 6" lag @ 18" O.C. See Table A1) If using fasteners other than 1/2 lag or bolts, provide manufacturer’s specs.
3. Location of lateral load connections ______ (see Figure A2)

**NOTE:** This is for attached decks only. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting (50°C ± 2°C).

| Table A1 | FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST | Connection details | FLOOR JOIST SPAN | 6' and less | 6'1" to 8' | 8'1" to 10' | 10'1" to 12' | 12'1" to 14' | 14'1" to 16' | 16'1" to 18' |
|----------|-------------------------------------------------|------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1/2 inc diameter lag screw with 15/32 inch maximum sheathing | 30 | 23 | 18 | 15 | 13 | 11 | 10 |
| 1/2 inch diameter bolt with 15/32 inch maximum sheathing | 36 | 36 | 34 | 29 | 24 | 21 | 19 |
| 1/2 inch diameter bolt with 1/4 inch maximum sheathing | 36 | 36 | 29 | 24 | 21 | 18 | 16 |

**Figure A1**

**Ledger Bolt Schedule per IROCS e.7.2.l**

See Table A1

**Figure A2**

**Deck lateral load connection**

Floor sheathing nailed at 5" max on center to joist with holdown

<table>
<thead>
<tr>
<th>Continuous flashing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hold-down or similar tension device</td>
</tr>
<tr>
<td>Deck Joint</td>
</tr>
<tr>
<td>1/2&quot; diameter Threaded rod With nuts and washers</td>
</tr>
<tr>
<td>Floor Joist (Solid 2x joist Or 2x blocking)</td>
</tr>
<tr>
<td>1 1/2&quot; lag screw through bolt or anchor with washer</td>
</tr>
</tbody>
</table>

**NOTE:** Deck lateral load connection required not less than 2 locations per deck. (see figure A2)

a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
b. The maximum gap between the face of the ledger board and face of the band joist.
c. Lag screws shall be flush to prevent water from contacting the house band joist.
d. Lag screws and bolts shall be staggered in accordance with the diagram above.
e. Deck ledger shall be minimum 2 x 8 pressure preservative treated No. 2 grade lumber, or other approved materials by standard engineering practice.
f. When solid-sawn preservative treated deck ledgers are attached to a minimum 1 inch thick engineered wood product (structural composite lumber, LVL or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
g. A minimum 1 x 9 1/2 Douglas Fir LVL rimboard shall be permitted in lieu of the 2-inch nominal band joist.
h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joint shall be 1 inch.
Table 1A. Maximum Joist Spans (L/4')

<table>
<thead>
<tr>
<th>Species</th>
<th>Size</th>
<th>Without Overhangs 1</th>
<th>With Overhangs up to L/4 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12”</td>
<td>16”</td>
</tr>
<tr>
<td>Southern Pine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2x8</td>
<td>13'-8&quot;</td>
<td>12'-5&quot;</td>
<td>10'-2&quot;</td>
</tr>
<tr>
<td>2x10</td>
<td>17'-5&quot;</td>
<td>15'-10&quot;</td>
<td>13'-1&quot;</td>
</tr>
<tr>
<td>2x12</td>
<td>18'-0&quot;</td>
<td>18'-0&quot;</td>
<td>15'-5&quot;</td>
</tr>
<tr>
<td>Douglas Fir-Larch, Hem-Fir, SPF3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2x8</td>
<td>12'-6&quot;</td>
<td>11'-1&quot;</td>
<td>9'-1&quot;</td>
</tr>
<tr>
<td>2x10</td>
<td>15'-8&quot;</td>
<td>13'-7&quot;</td>
<td>11'-1&quot;</td>
</tr>
<tr>
<td>2x12</td>
<td>18'-0&quot;</td>
<td>15'-9&quot;</td>
<td>12'-10&quot;</td>
</tr>
<tr>
<td>Redwood, Western Cedars, Ponderosa Pine1, Red Pine 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2x8</td>
<td>11'-8&quot;</td>
<td>10'-7&quot;</td>
<td>8'-8&quot;</td>
</tr>
<tr>
<td>2x10</td>
<td>14'-11&quot;</td>
<td>13'-0&quot;</td>
<td>10'-2&quot;</td>
</tr>
<tr>
<td>2x12</td>
<td>17'-5&quot;</td>
<td>15'-1&quot;</td>
<td>12'-4&quot;</td>
</tr>
</tbody>
</table>

1. Assumes 40 psf live load, 10 psf dead load, L/360 deflection limit, No. 2 grade, and wet service conditions. See Figure 1B.
2. Assumes 40 psf live load, 10 psf dead load, L/180 cantilever deflection with 220 lb point load, No. 2 grade, and wet service conditions. See Figure 1A and Figure 2.
4. Design values based on northern species with no incising assumed.

Table 2. Deck Beam Spans (Ls) 1

<table>
<thead>
<tr>
<th>Species</th>
<th>Size 4</th>
<th>Joist Spans (Ls) Less Than or Equal to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6’</td>
</tr>
<tr>
<td>3x6 or 2-2x6</td>
<td>5'-5&quot;</td>
<td>4'-8&quot;</td>
</tr>
<tr>
<td>3x8 or 2-2x8</td>
<td>6'-10&quot;</td>
<td>5'-11&quot;</td>
</tr>
<tr>
<td>3x10 or 2-2x10</td>
<td>8'-4&quot;</td>
<td>7'-3&quot;</td>
</tr>
<tr>
<td>3x12 or 2-2x12</td>
<td>9'-8&quot;</td>
<td>8'-5&quot;</td>
</tr>
<tr>
<td>4x6</td>
<td>6'-5&quot;</td>
<td>5'-6&quot;</td>
</tr>
<tr>
<td>4x8</td>
<td>8'-5&quot;</td>
<td>7'-3&quot;</td>
</tr>
<tr>
<td>4x10</td>
<td>9'-11&quot;</td>
<td>8'-7&quot;</td>
</tr>
<tr>
<td>4x12</td>
<td>11'-5&quot;</td>
<td>9'-11&quot;</td>
</tr>
<tr>
<td>3-2x6</td>
<td>7'-4&quot;</td>
<td>6'-8&quot;</td>
</tr>
<tr>
<td>3-2x8</td>
<td>9'-8&quot;</td>
<td>8'-6&quot;</td>
</tr>
<tr>
<td>3-2x10</td>
<td>12'-0&quot;</td>
<td>10'-5&quot;</td>
</tr>
<tr>
<td>3-2x12</td>
<td>13'-11&quot;</td>
<td>12'-1&quot;</td>
</tr>
</tbody>
</table>

1. Assumes 40 psf live load, 10 psf dead load, L/360 simple span beam deflection limit, L/180 cantilever deflection limit, No. 2 grade, and wet service conditions.
3. Design values based on northern species with no incising assumed.
4. Beam depth must be equal to or greater than joist depth if joist hangers are used (see Figure 6, Option 3).
Beam splices to occur over posts with 1 1/2" bearing (see figure B1)

Approved metal joist hanger

Approved post to beam connector

Guardrail Per IRC 312

Detail B1

NOTE:
THIS DETAIL IS APPLICABLE WHERE FLOOR JOISTS ARE PARALLEL TO DECK JOISTS.

Beam splices to occur over posts with 1 1/2" bearing (see figure B1)

Approved Post to beam connector

Guardrail Per IRC 312

Detail B2

Beam splices to occur over posts with 1 1/2" bearing (see figure B1)

Approved post to beam connector

Guardrail Per IRC 312

Detail B3

Cantilever

Beam splices to occur over posts with 1 1/2" bearing (see figure B1)

Approved post to beam connector

Guardrail Per IRC 312

Figure B1

Beam Splices

Splice must occur over posts with 1 1/2" bearing

Top view

Span - See Table B2

Approved post/beam connector

SHEATHING

SIDING

FLASHING FOR WATER TIGHTNESS

DECKING

APPROVED JOIST HANGERS

2x LEDGER WITH FASTENERS IN ACCORDANCE WITH TABLE R507.2

HOLD-DOWN DEVICE MIN 750 LB. CAPACITY AT 4 LOCATIONS, EVENLY DISTRIBUTED ALONG DECK AND ONE WITHIN 2' OF EACH END OF THE LEDGER. HOLD-DOWN DEVICES SHALL FULLY ENGAGE DECK JOIST PER HOLD-DOWN MANUFACTURER.

A FULLY THREADED 3/8" DIAMETER LAG SCREW PREDRILLED W/ MIN. 3" PENETRATION TO CENTER OF TOP PLATE, STUDS, OR HEADER.

FIGURE R507.2.3(2)
DECK ATTACHMENT FOR LATERAL LOADS

Per SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
**Alternate Approved Post-to-Beam Post Cap Attachment**

- Solid sawn or multi-ply beam

**Post-to-Beam Attachment Requirements**

1. 3x or 4x or
2. 2x beam

- Beam must bear fully on
- 6x6 notch
- 6x6 min.

- (2) 1/2" diameter thru-bolts with washers
- Notch post to accommodate beam
Detail C

Post & Footing Detail

- Column shall be restrained to prevent lateral displacement at the bottom end. Minimum size 4 x 4 (see Table 4 IRC 407.3)
- 6" minimum concrete base.
- 18" minimum depth if not attached to permanent structure.

Detail D - Stair & Handrail Specifications

- New or existing light required
- Open guardrails on decks more than 30 inches above grade or a floor below shall have members spaced so that a 4 inch diameter sphere cannot pass through. IRC 312.3
- Openings for required guards on the sides of stair treads shall not allow a 4 3/8" diameter sphere to pass through. IRC 312.3
- Deck
- WP Outlet required
- Guardrail required if more than 30" IRC 312.3

Handrail IRC 312.7.7 (see details on page 6)

- 34" - 36" above nosings
- 10" min. run from nosing to nosing
- Less than 6" dia.
- Open risers less than 4"
- 7 3/4" max. rise
- Landing same width as stairs
- Finished grade

Handrail Notes:
1. Handrails shall be continuous on at least one side of stairs with 4 or more risers. IRC 311.7.7.2
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings. 311.7.7.1
3. The handgrip portion of handrails shall be not less than 1-3/4 inches nor more than 2-1/4 inches in cross section for non circular handrails.
4. Handrails shall be placed not less than 1-1/2 inches from any wall or other surface. IRC 311.7.7.2
Guardrail Notes:
1. Shall be able to resist a single concentrated load applied in any direction at any point along the top of 200 lbs/sq ft. (Table 301.5)
2. Approved fasteners shall be used to connect post to deck and be able to resist 1700 lb force.
3. Guard in-fill components, balusters, and panel fillers shall be designed to withstand a horizontally applied normal load of 50 lbs on an area equal to one sq ft. (Table 301.5)
4. Guard in-fill components, balusters, and panel fillers shall be designed to shed water.
5. 4 x 4 posts should be spaced every 6 ft.
6. 4 x 4 posts cannot be field notched.

Table F

<table>
<thead>
<tr>
<th>Deck height</th>
<th>Load Area *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>48</td>
</tr>
<tr>
<td>0' to 6'</td>
<td>4 x 4</td>
</tr>
<tr>
<td>6' and up</td>
<td>6 x 6</td>
</tr>
</tbody>
</table>

*To calculate "Load area" multiply the distance between the beams by the distance between the posts (in feet).