DIRECTIONS
CHESTERFIELD COUNTY DEPARTMENT OF BUILDING INSPECTIONS HAS PREPARED THIS GUIDE FOR BASIC DECKS, PORCHES, STAIRS, AND RAMPS. YOU MAY USE IT BY FILLING IN THE DESIGN SHEET(S) WITH THE SPECIFICATIONS OF YOUR DECK OR PORCH.

IF THE DECK OR PORCH IS BEING CONSTRUCTED ON A NEW HOUSE OR IS BEING BUILT AS AN ADDITION TO AN EXISTING HOUSE, CONSTRUCTION DOCUMENTS (i.e. PLANS) ARE REQUIRED. INCLUDING:
1. PLAN VIEW OF THE DECK OR PORCH, INCLUDING THE LOCATION OF THE FOOTINGS.
2. PLAT SHOWING EXACT LOCATION AND DIMENSIONS TO THE PROPERTY LINES.

SUBMIT:
1 COPY OF YOUR PLAT PLAN,
2 COPIES OF THE DECK PLAN AND SPECIFICATION SHEETS,
2 COPIES OF THE DETAILS TO BE USED INCLUDING THE STAIR AND/OR RAMP SHEET.

YOU WILL NEED THE FOLLOWING INSPECTIONS:
A. FOOTING INSPECTION PRIOR TO THE PLACEMENT OF CONCRETE.
B. FINAL INSPECTION.
NOTE: THE FOOTING INSPECTION AND FINAL INSPECTION CAN BE COMBINED INTO A SINGLE INSPECTION VISIT IF YOU USE SOLID CONCRETE BLOCKS AS THE FOOTING AND LEAVE THE FOOTINGS EXPOSED FOR THE INSPECTOR.

DECK AND PORCH DESIGN
THESE DESIGN SHEETS ARE GUIDELINES FOR A BASIC, SINGLE LEVEL DECKS AND PORCHES. IF A SPA, HOT TUB OR OTHER SPECIAL USE IS INTENDED, SEEK THE HELP OF A DESIGN PROFESSIONAL. THERE ARE MANY EXCELLENT REFERENCE BOOKS AVAILABLE FROM HOME IMPROVEMENT STORES, THE LIBRARY OR THE INTERNET TO PROVIDE CUSTOM DESIGNS AND CONSTRUCTION METHODS.

THESE DESIGN SHEETS ARE BASED ON THE PRESCRIPTIVE REQUIREMENTS OF THE 2012 VIRGINIA RESIDENTIAL CODE (VARC) AND IN SOME CASES EXCEED THE CODE BASED ON CURRENT "BEST PRACTICES" ENCOURAGED IN CHESTERFIELD COUNTY. THIS DOCUMENT IS NOT INTENDED TO PRECLUDE THE USE OF OTHER CONSTRUCTION METHODS OR MATERIALS.

HOW TO USE THIS GUIDE
1. DECIDE ON THE APPROXIMATE DIMENSIONS AND LOCATION OF THE DECK OR PORCH YOU WANT TO BUILD.
2. DECIDE ON THE FRAMING STYLE YOU PREFER: CANTILEVERED, FREE STANDING, FLUSH STYLE, ETC.
3. NEXT, MAKE DECISIONS ON THE MATERIALS YOU WANT TO USE. A LUMBER SIZING GUIDE IS INCLUDED ON SHEET 3.
   A. DECIDE ON THE SIZE OF YOUR DECK JOISTS.
   B. DECIDE ON THE NUMBER OF FOOTINGS.
   C. SIZE THE COMPONENTS:
      1. BEAMS(S),
      2. JOISTS,
      3. DECK POSTS,
      4. FOOTINGS,
      5. DECK BOARDS,
      6. RAFTERS (IF APPLICABLE).
5. FOR YOUR CONVENIENCE, WE HAVE PROVIDED TYPICAL CROSS-SECTION SKETCHES OF VARIOUS CONNECTIONS ON SHEET 4. USE THEM IF YOU PREFER, OR DESIGN YOUR OWN DETAILS AND PROVIDE YOUR SKETCHES.
6. DRAW A PLAN OF YOUR PROPERTY (REFERRED TO AS A "PLAT"), SKETCH YOUR HOUSE AND SHOW WHERE THE DECK IS INTENDED TO BE CONSTRUCTED. PROVIDE APPROXIMATE DIMENSIONS OF THE DECK TO YOUR PROPERTY LINES.
7. USE THE ATTACHED DETAILS FOR OTHER ASPECTS OF THE CONSTRUCTION.

LIST OF DRAWINGS IN THIS DECK GUIDE:
1. DECK SPECIFICATIONS
2. PORCH SPECIFICATIONS
3. MEMBER SIZING
4. CONNECTIONS
5. DETAILS
6. PICTURES

STANDARD ABBREVIATIONS
HDG: HOT DIPPED GALVANIZED (IN ACCORDANCE WITH ASTM A-153 OR B-695, CLASS 55)
O.C.: ON CENTER
P.T.: PRESERVATIVE TREATED
FT.: FEET
IN.: INCH
SKETCH YOUR DECK HERE IF IT IS A SIMPLE LAYOUT. SHOW HOW MANY AND APPROXIMATE LOCATION OF FOOTINGS YOU WILL BE USING.

IF IT IS COMPLEX, PROVIDE A SEPARATE SHEET WITH DIMENSIONS TO BEAMS, CANTILEVERS, AND POSTS.

DECK SPECIFICATIONS

5/12/2016
NOTES:
1. IF THIS IS A SCREEN PORCH, A GUARDRAIL WILL BE REQUIRED IF THE DECK IS GREATER THAN 30 INCHES ABOVE FINISHED GRADE - MEASURED AT 36 INCHES FROM THE FACE OF THE DECK.
2. IF THE PORCH IS TO BE ADDED TO AN EXISTING DECK WITH SOLID WALLS TO CREATE A HABITABLE SPACE, SUNROOM OR FLORIDA ROOM, IT WILL BE CONSIDERED AN ADDITION, NOT A DECK OR PORCH.
3. YOU ARE NOT ALLOWED TO CONNECT A DECK OR PORCH TO A TRAILER OR MOBILE HOME. IT MUST BE FREE STANDING.
4. YOU ARE NOT ALLOWED TO ATTACH A SHED ROOF TO A CANTILEVERED WALL WITHOUT ENGINEER’S DESIGN.
   IF THE SHED ROOF IS TO LAY OVER THE HOUSE ROOF, A PONY WALL ABOVE THE TOP PLATE SHOULD BE PROVIDED.

MINIMUM RAFTER SUPPORT BEAM

<table>
<thead>
<tr>
<th>POST SPACING (FT)</th>
<th>RAFTER SPAN (FT)</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
</tr>
</thead>
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<td>1 (1) 2X6</td>
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<td>1 (1) 2X6</td>
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<td></td>
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<td></td>
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<td>1 (1) 2X6</td>
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<td></td>
</tr>
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</tr>
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<td></td>
</tr>
</tbody>
</table>

MAXIMUM RAFTER SPANS (IN) WITH/ WITHOUT CEILING JOISTS

<table>
<thead>
<tr>
<th>SIZE</th>
<th>MAXIMUM RAFTER SPANS WITH CEILING JOISTS</th>
<th>MAXIMUM RAFTER SPANS WITHOUT CEILING JOISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2X4</td>
<td>12&quot;, 14&quot;, 16&quot;</td>
<td>12&quot;, 14&quot;, 16&quot;, 18&quot;, 20&quot;</td>
</tr>
</tbody>
</table>

PORCH (ROOF) SPECIFICATIONS

IF APPLICABLE - Fill in all the blanks

ARE YOU CONSTRUCTING A PORCH ON NEW FOOTINGS?
   ______ YES  ______ NO

ARE YOU ADDING A ROOF TO AN EXISTING DECK?
   ______ YES  ______ NO

WILL IT BE A SCREENED PORCH?
   ______ YES  ______ NO

PORCH SPECIFICATIONS

DECK LENGTH __________ FT
DECK WIDTH __________ FT
CEILING JOISTS (OPTIONAL)

MAXIMUM RAFTER SPANS WITH / WITHOUT CEILING JOISTS

<table>
<thead>
<tr>
<th>RAFTER SPACING (O.C.)</th>
<th>SIZE: 2X</th>
<th>10-&quot;</th>
<th>8-&quot;</th>
<th>6-&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>2X6</td>
<td>10-&quot;</td>
<td>8-&quot;</td>
<td>6-&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>2X6</td>
<td>10-&quot;</td>
<td>8-&quot;</td>
<td>6-&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>2X8</td>
<td>10-&quot;</td>
<td>8-&quot;</td>
<td>6-&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>2X8</td>
<td>10-&quot;</td>
<td>8-&quot;</td>
<td>6-&quot;</td>
</tr>
</tbody>
</table>

1. BASED ON 2012 VA-IRC SPAN TABLES FOR SOUTHERN PINE #2.
   FOR OTHER SPECIES, REFER TO THE CODE BOOK.
2. ASSUMES 20 PSF GROUND SNOW LOAD AND 10 PSF DEAD LOAD.

PORCH (ROOF) SPECIFICATIONS

IF APPLICABLE

PORCH ROOF SIZE BEING BUILT

ROOF LENGTH __________ FT
ROOF SPAN __________ FT
ROOF SLOPE _______ : _______ (example 4:12)
ROOF SUPPORT POSTS
POST SIZE _______ X _______ 
POST SPACING _______ FT
(IF THEY ARE NOT ALIGNED WITH FOOTINGS)
RAFTERS
SIZE (________) X (________)
(1) BASED ON 2012 VA-IRC SPAN TABLES FOR SOUTHERN PINE #2.
   FOR OTHER SPECIES, REFER TO THE CODE BOOK.
(2) ASSUMES 20 PSF GROUND SNOW LOAD AND 10 PSF DEAD LOAD.
**Joists**
The span of the joists is measured from the centerline of bearing at one end of the joist. (a) Typically the centerline of the post to the centerline of bearing at the other end of the joist. And does not include the length of the overhangs (cantilevers).

See detail on sheet 4.

**Maximum Joist Span**

<table>
<thead>
<tr>
<th>Size</th>
<th>Minimum Joist Span (in.)</th>
<th>Maximum Joist Span (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 in.</td>
<td>12 ft.</td>
<td>16 ft.</td>
</tr>
<tr>
<td>3 in.</td>
<td>16 ft.</td>
<td>24 ft.</td>
</tr>
<tr>
<td>4 in.</td>
<td>20 ft.</td>
<td>32 ft.</td>
</tr>
</tbody>
</table>

- Maximum Joist Span is based on the 2012 VA-IRC Table R507.5 for Southern Pine #2.
- Joist spacing is based on the joist span and 4 in. as a nominal thickness.
- Joist spacing shall be determined by interpolation.
- Joist spacing shall be determined by interpolation.

**Member Sizing**

- Joists support the deck joists. The joists either bear on top of the beam for a cantilever design, or are suspended flush against it with mechanical hangers.
- Two or three members may be connected together to form the beam using 10d HDG nails or #10 HDG screws, staggered in two rows, at 16" O.C.
- Whenever four or more members are used, they should be bolted together with 1/2" x 1/2 HDG through bolts at 24" O.C.
- Joists shall be designed to support the tributary area as shown on the Typical Footing Plan.
- Joists shall be designed to support the tributary area as shown on the Typical Footing Plan.

**Decks**

- Decks are typically 2x6, 5/4 P.T. boards, or manufactured of composite material.
- Attaching deck boards to joists with 2x4 HDG Nails, or 2x6 HDG Screws, or temporarily fasteners intended for P.T. wood.
- Deck boards shall be spaced approximately 1/8" apart (edge to edge).
- Decks may be applied diagonally. 2x6 with joists at maximum 12" O.C. or 2x8 with joists at maximum 16" O.C.
- Joists are spaced every 4 ft. to 6 ft. to 8 ft. depending on span.
- Each piece of decking must bear on at least 3 joists.

**Deck Posts**

- Deck posts may be either P.T. wood, or natural decay resistant wood or masonry.
- Posts can be notched to carry a 2x6 beam or can carry a 3x4 beam using a post cap. A 4x4 post can be notched to carry a 2x6 beam. A 4x4 post can be notched to carry a 2x8 beam. A 6x6 post can be notched to carry a 2x6 beam or can carry a 2x10 beam using a post cap. An 8x8 post can be notched to carry a 2x8 beam.
- Posts that are over 96" in height should be cross braced in both directions.

**Footings**

- All footings shall be on undisturbed soil at 18" - 24" below finished grade. If the footing is within 4 ft. of the existing house, it shall be at least as deep as the house footing.

- Footing size is based on the area inscribed by one-half the length of the spans adjacent to all four sides surrounding the post.

- Footing size is based on the area inscribed by one-half the length of the spans adjacent to all four sides surrounding the post.

**Minimum Beam Size**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 in.</td>
<td>(1) 2X10</td>
<td>(1) 2X10</td>
<td>(1) 2X10</td>
<td>(1) 2X10</td>
</tr>
<tr>
<td>3 in.</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
</tr>
<tr>
<td>4 in.</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
<td>(1) 2X12</td>
</tr>
</tbody>
</table>

- Joist depth must be equal to or greater than the joist depth if joist hangers are used.
- Simple deck - A deck without joist cantilevers and without beam cantilevers. The joists are supported on the beam using through bolts.
- Complex deck - A deck with joist cantilever(s) and/or beam cantilever(s) or deck joists are supported with 3-point bearing. Cantilever length is based on joist span + 4 in. and beam span + 4 in.

**Maximum Deck Post Height**

<table>
<thead>
<tr>
<th>Deck Post Size</th>
<th>Attached Deck</th>
<th>Free Standing Deck</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 x 4</td>
<td>6' - 9'</td>
<td>5' - 7'</td>
</tr>
<tr>
<td>4 x 6</td>
<td>10' - 12'</td>
<td>8' - 10'</td>
</tr>
<tr>
<td>6 x 6</td>
<td>14' - 16'</td>
<td>10' - 12'</td>
</tr>
</tbody>
</table>

- Based on the 2012 VA-IRC for Southern Pine #2, Douglas Fir Larch #2, Hem-Fir #2, Spruce #2, Redwood #2. For other species of materials, refer to species specific data. Assumes 40 PSF live load, 10 PSF dead load, wet service factor and P.T.
- Simple deck - A deck without joist cantilevers and without beam cantilevers. The joists are supported on the beam using through bolts.
- Complex deck - A deck with joist cantilever(s) and/or beam cantilever(s) or deck joists are supported with 3-point bearing. Cantilever length is based on joist span + 4 in. and beam span + 4 in.

5/12/2016 3
DECK JOISTS
4x4 GUARD RAIL POST WITH MAX SPACING OF 6'-0"
"NOTE - DO NOT NOTCH GUARD POSTS"
2x2 PICTETS SCREWED OR SHANK NAILED TO OUTSIDE OF RAILS
4" MAX. OPENING
DECK JOISTS BLOCKING BETWEEN JOISTS OVER BEAM
BEAM TO POST (SEE OPTIONS PAGE 5)
4x4, 4x6 OR 4x8 P.T. WOOD POST TO FOOTING (SEE OPTIONS)
CONCRETE FOOTING SEE TABLE FOR SIZE

4X4, 4X6 OR 6X6 P.T. WOOD POST TO FOOTING (SEE OPTIONS)

GUARD POST MAY BE ATTACHED TO THE OUTSIDE OF THE RIM BOARD OR THE INSIDE OF THE RIM BOARD. SEE DETAIL OPTIONS ON SHEET 5

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CONTINUOUS 2"x8 (MINIMUM) P.T. LEDGER BOARD WITH 1/2" DIA. HDG THRU BOLTS SPACED (PER TABLE) THRU MASONRY
HDG DECK JOISTHANGERS

NOTES:
1. THE MAXIMUM GAP BETWEEN THE FACE OF THE LEDGER BOARD AND FACE OF THE HOUSE BAND JOIST SHALL BE 1/2"
2. THE TIP OF THE LAG SCREW SHALL FULLY EXTEND BEYOND THE INSIDE OF THE BAND JOIST (BOARDS)
3. LEDGERS SHALL BE FLASHED TO PREVENT WATER FROM CONTACTING THE HOUSE BAND JOIST (BOARD)
4. LAG SCREWS AND BOLTS SHALL BE STAGGERED AND SHALL NOT BE CLOSER THAN 2" TO THE TOP AND BOTTOM OF THE LEDGER
5. DECK LEDGERS SHALL BE 2X6 PRESERVATIVE TREATED SOUTHERN PINE (MINIMUM) OR OTHER APPROVED METHOD AND MATERIAL AS ESTABLISHED BY STANDARD ENGINEERING PRACTICE.

CONNECTIONS
1. ATTACHMENT OF DECK TO HOUSE RIM BOARD
2. ATTACHMENT OF DECK TO MASONRY COMPOSITE FOUNDATION WALL
3. ATTACHMENT OF DECK TO MASONRY VENEER

END AWAY FROM THE HOUSE - GUARD POST OUTSIDE RIM BOARD
NOTE: DO NOT NOTCH THE GUARD POST.

END ADJACENT TO THE HOUSE
NOTE: 2X2 LEDGER STRIPS NOT ALLOWED

CANTILEVER DECK BEAM BELOW JOISTS
FREE STANDING DECK

CANTILEVER DECK BEAM BELOW JOISTS
ATTACHMENT OF DECK TO HOUSE RIM BOARD
ATTACHMENT OF DECK TO MASONRY COMPOSITE FOUNDATION WALL
ATTACHMENT OF DECK TO MASONRY VENEER

LEGER BOARD CONNECTION TO HOUSE
ON-CENTER SPACING FOR FASTENERS ATTACHING DECK TO HOUSE
JOIST SPAN (ft)
6' AND LESS
8'-6"
10'-0"
12'-0"
14'-0"
16'-0"

1/2" X 4" LAG SCREWS
30° 23° 18° 15° 13° 10°
36° 36° 34° 29° 24° 21°

BOLTS WITH WASHERS AND NUT

1/2" X 4" STEEL BOLTS
36° 36° 34° 29° 24° 21°

NOTE: 2X2 LEDGER STRIPS NOT ALLOWED

LEGER BOARD CONNECTION TO HOUSE

12/21/2015
DECK and STAIR REQUIREMENTS IN PICTURES

- Handrail returns to the post
- Guardrail height: minimum 36" above walking surface
- Handrail height between 34-35" measured vertically from the nosing of the tread
- Treads to have a nosing between 1/2" and 1-1/4" beyond the riser
- Maximum 8-1/4" risers, and minimum 9" treads (including the nosing)
- Minimum 36" wide stairs

If the porch walking surface is less than 30" to grade (measured at 36" out from the edge of the porch) then the guardrails would not be required...and if put on as an option, they can be of any height.

Handrails are not required because there are less than 3 risers on the stairs.

This porch has built-in seating. If the porch walking surface is more than 30" to grade (measured at 36" out from the edge of the deck) then the guardrails must be at least 36" above the height of the seat.

Handrails are required because there are more than 3 risers on the stairs.

This porch has built-in seating. If the porch walking surface is less than 30" measured out 36" then guardrails are not required at all.