

# 2012 RESIDENTIAL CODE CHANGES



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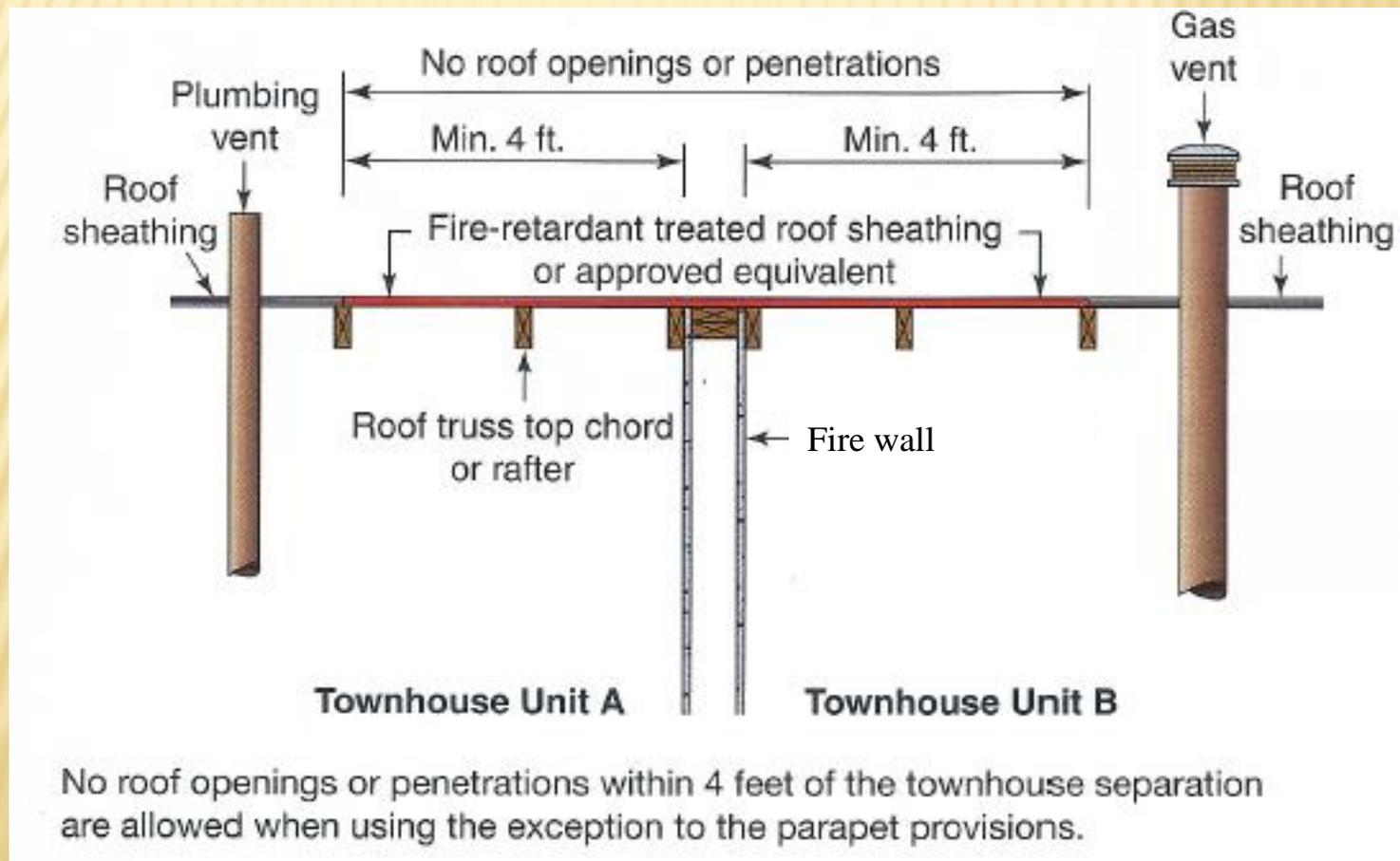


This presentation will be on the most significant changes to the 2012 International Residential Code with the Virginia Technical Amendments.



# 2012 IRC SECTION R302.2.2

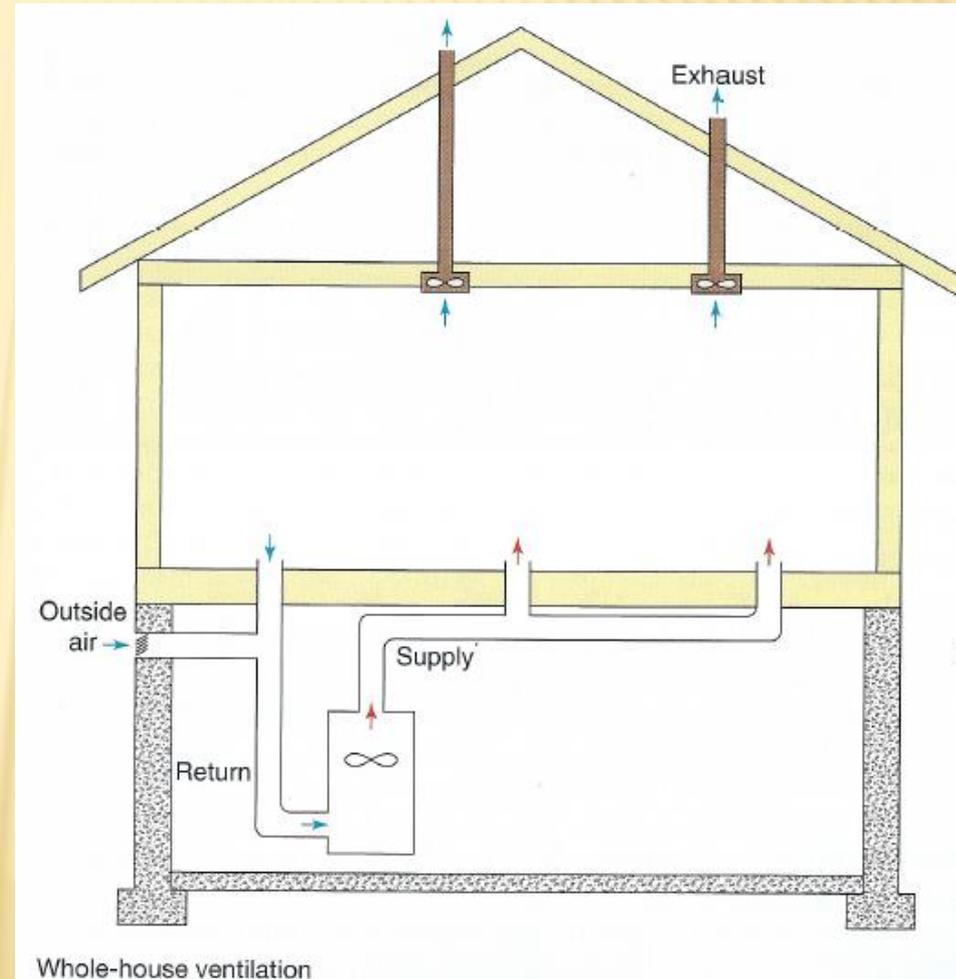
Where Fire Retardant roof sheathing or 5/8 type X gypsum board is used at a firewall, no penetrations are allowed thru the material.





# 2012 IRC SECTION R303

Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door, then mechanical ventilation in accordance with section M1507 is required to be provided.





# 2012 IRC SECTION R308.4.5

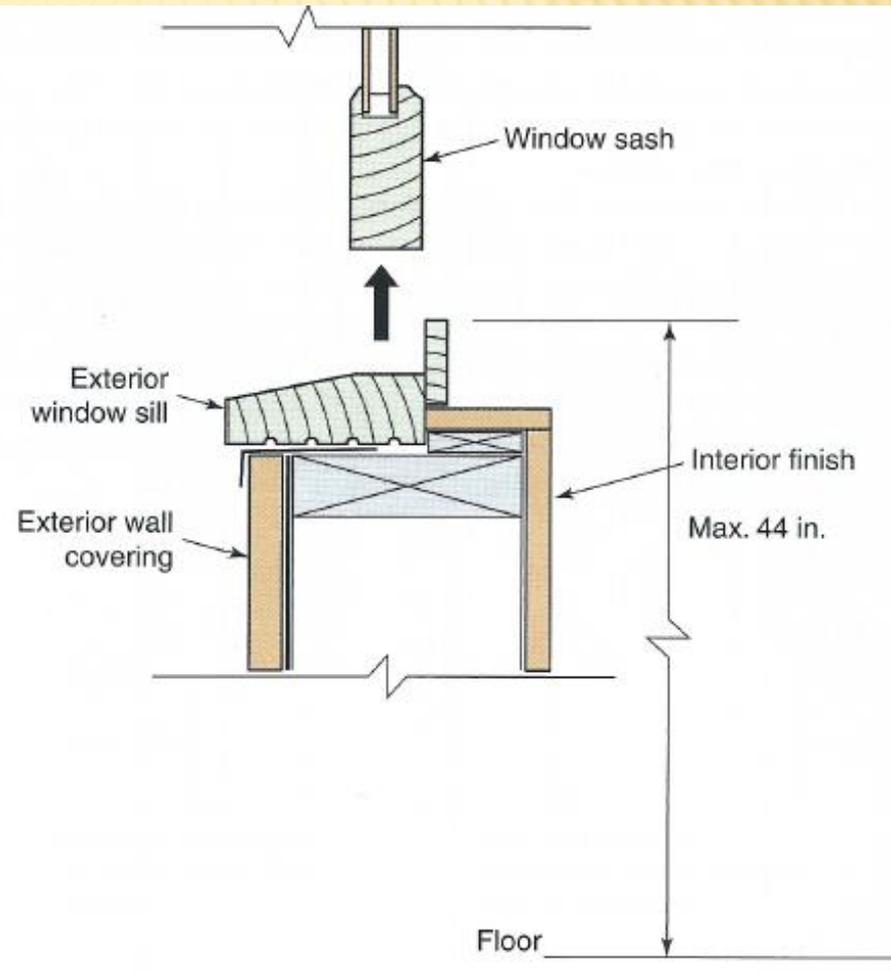
Glazing that is less than 60 inches measured horizontally in a straight line from the waters edge of a bathtub, hot tub, whirlpool or swimming pool is required to have safety glazing.





# 2012 IRC SECTION R310.1

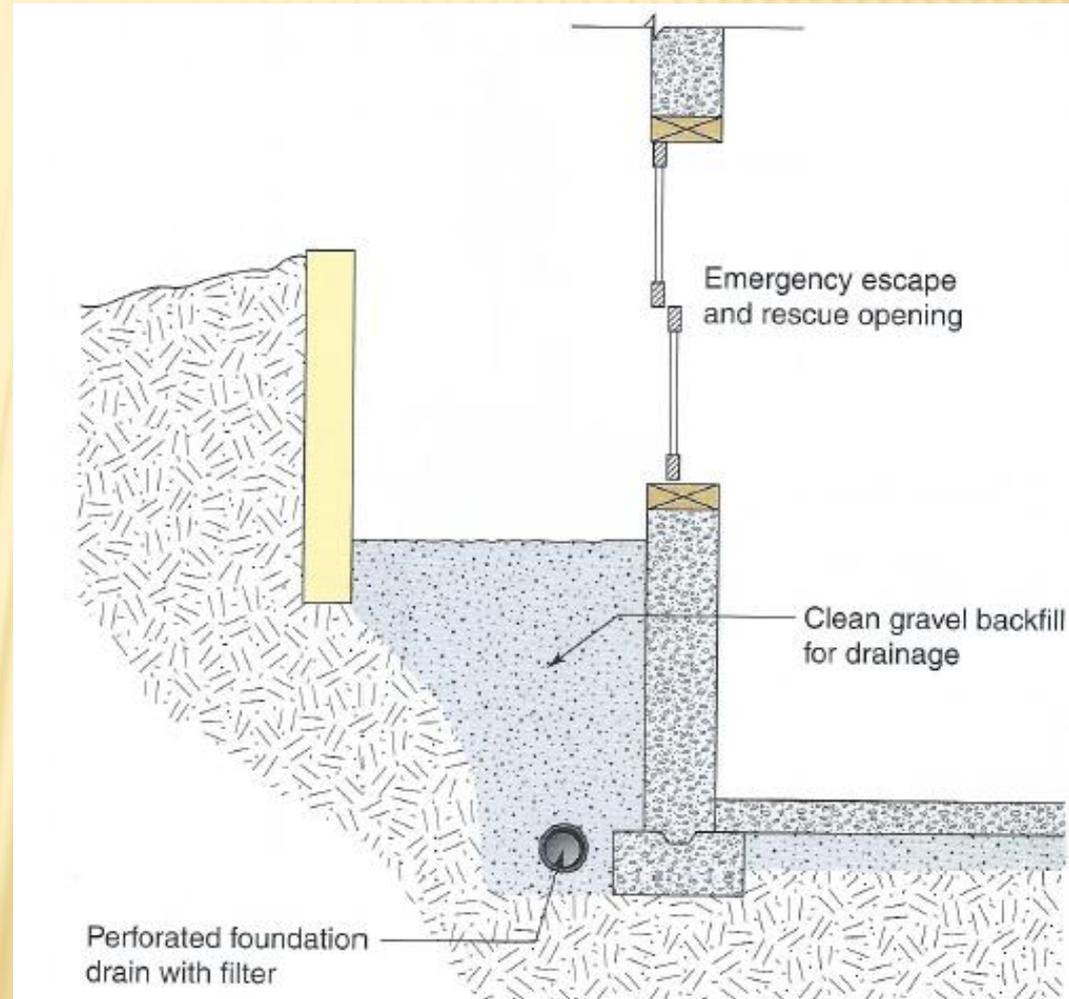
Window height for an emergency escape window is now measured to the bottom of the clear opening instead of the window sill.





# 2012 IRC SECTION R310.2.2

Window wells serving emergency escape openings now require a means to drain surface water to the foundation drainage system.





# 2012 IRC SECTION R311.2.1

## Virginia Amendment

Where a dwelling unit has both a kitchen and a living or entertainment area on the same level as the required egress door, an interior passage route shall be provided from such egress door to the kitchen and the living or entertainment area. Also, at least one bedroom and one bathroom containing a water closet, lavatory and bathtub or shower where such rooms are provided on that same level. Any doors or cased openings along such interior passage route providing access to the areas identified above shall have cased openings and provide a minimum 34 inch clear width; and doors shall be, at a minimum of 34 inches.

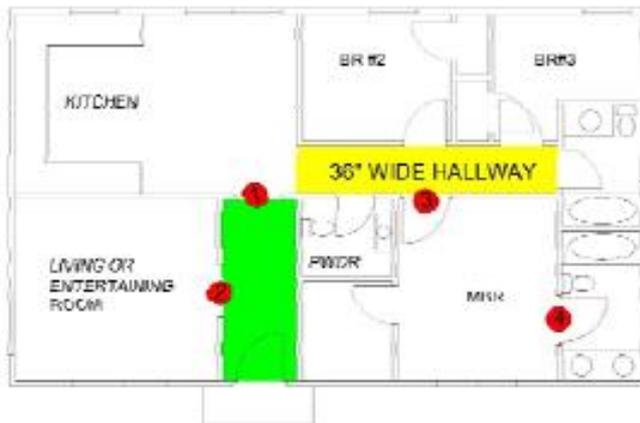
### Exceptions:

1. A door or cased opening at the end of and facing a hallway where the width of the hallway is not wide enough to accommodate such doors or cased openings.
2. Closet and pantry doors.
3. Doors to bathrooms accessed from a bedroom not on the interior passage.



# 2012 IRC SECTION R311.2.1

## Virginia Amendment



EXAMPLE 1

### R311.2.1 Interior passage.

Where a dwelling unit has both

1. a kitchen and
2. a living or entertainment area on the same level as the egress door required by Section R311.2,

Then:

1. An interior passage route shall be provided from such egress door to

1. the kitchen and
2. the living or entertainment area and
3. to at least one bedroom and
4. at least one bathroom containing a water closet, lavatory and bathtub or shower, where such rooms are provided on that same level.

2. Any doors or casied openings along such interior passage route providing access to the areas identified above shall comply with the following:

1. Casied openings shall provide a minimum 34-inch clear width.
2. Doors shall be, at a minimum, nominal 34-inch doors.

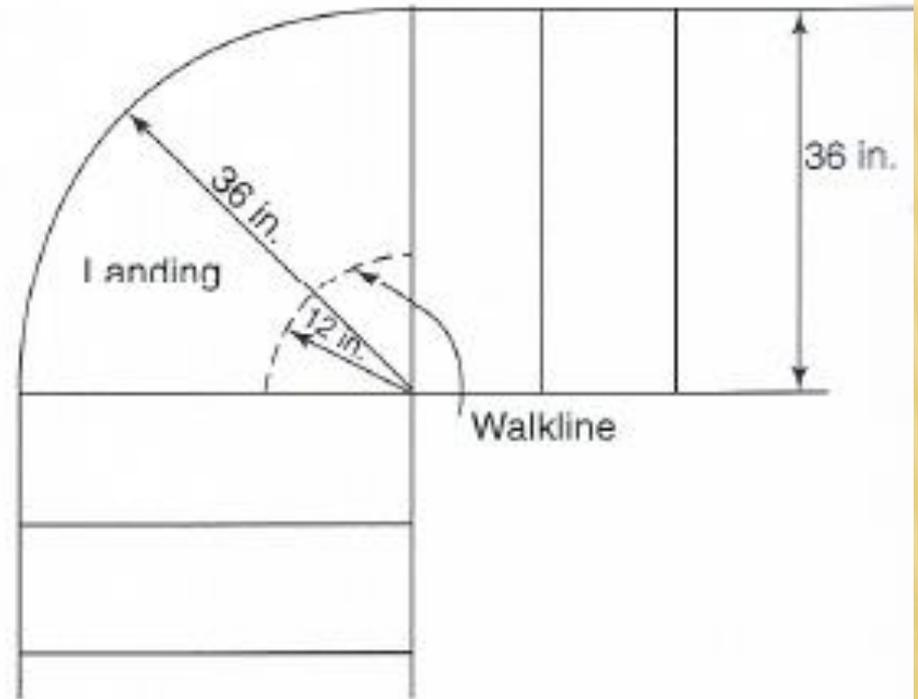
Exceptions:

1. Where a door or casied opening, and its associated molding or trim, is at the end and facing the length of a hallway and the width of the hallway is not wide enough to accommodate such doors or casied openings.
2. Closet doors or casied openings.
3. Pantry door or casied openings.
4. Bathrooms accessed directly from a bedroom that is not required to comply with this section.



# 2012 IRC SECTION R311.7.6

Landings on stairs are permitted to be shapes other than square or rectangular provided that the depth of the walk line and the total area is not less than that of a quarter circle with a radius equal to the required landing width.



Curved landing at turn in stair.



# 2012 IRC SECTION R314.1

Physical interconnection of smoke alarms is no longer required if listed wireless smoke alarms are used.

Note!!

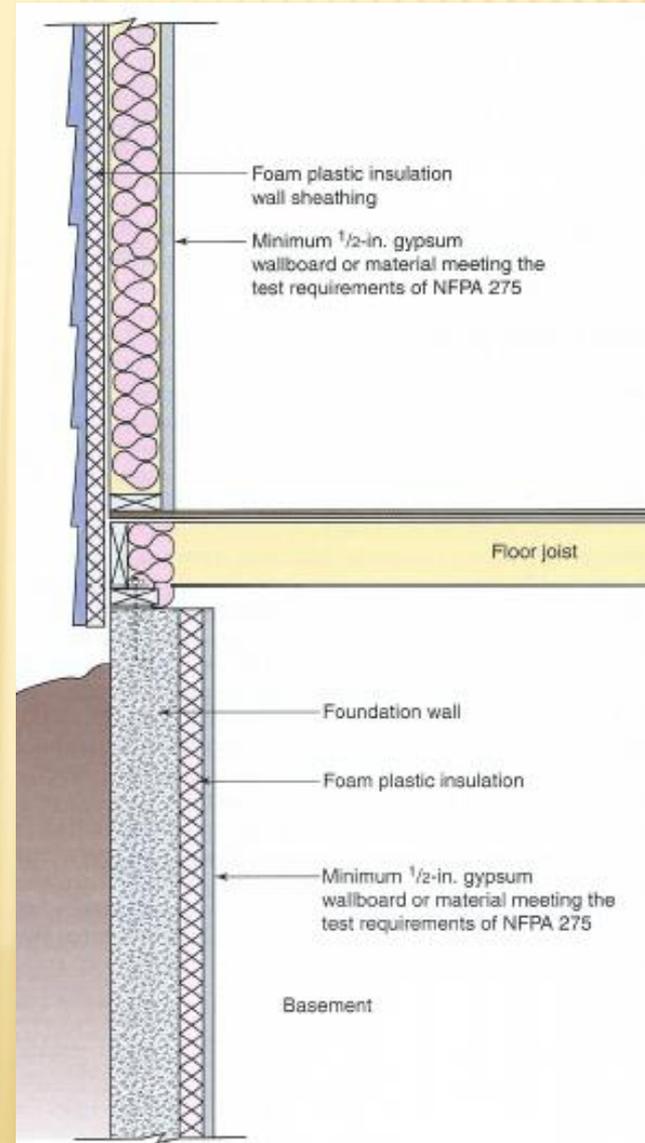
Smoke alarms are still required to have AC power and battery backup. This section only allows another method of interconnection.





# 2012 IRC SECTION R316.4

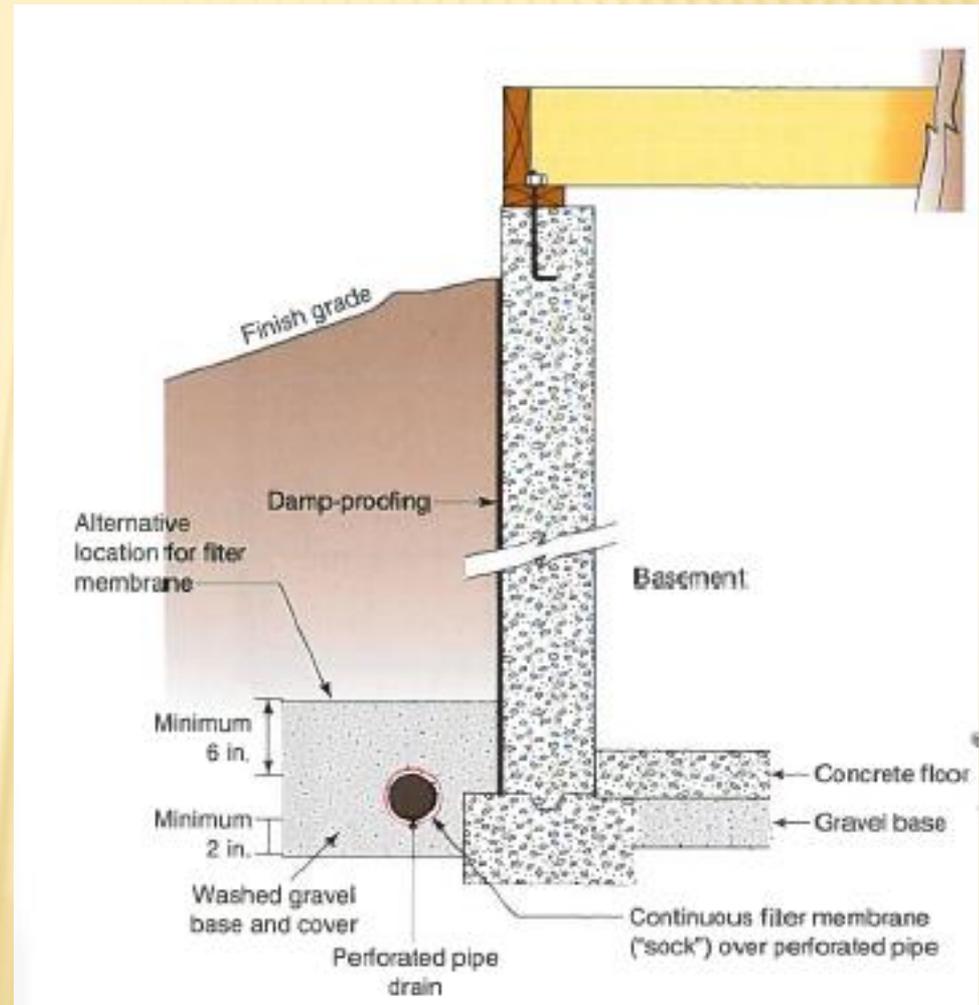
In addition to  $\frac{1}{2}$  sheetrock other thermal barriers are permitted if they comply to NFPA 275 to cover foam plastic insulation.





# 2012 IRC SECTION R405.1

Foundation drain pipes are required to be surrounded by an approved filter membrane or the filter membrane shall cover the washed gravel covering the drain



# SOUTHERN PINE SPAN REDUCTIONS



## Virginia Amendment

Southern pine spans have been reduced to the 2015 IRC requirements as per the Southern Pine Inspection Bureau grading rules.

- This reduction has caused the span charts in the code book to be revised so that No 1 southern pine replaces No 2 southern pine in all of the beam charts in the code book.
- The reduction has generally caused the No 2 southern pine spans to be about the same as No 2 Spruce Pine Fir.
- No 1 southern pine is now required to obtain spans similar to the previous spans of No 2.



# 2012 IRC SECTION R502.6

Joist, beam or girder bearing on masonry or concrete shall be direct or a sill plate of 2 inch minimum nominal thickness shall be provided. The sill plate shall provide a minimum nominal bearing area of 48 square inches.





# 2012 IRC SECTION R506.2.3

The vapor retarder is no longer required under a slab in any garages, detached or attached.





# 2012 IRC SECTION TABLE 602.3(1)

Some nailing requirements have been modified or added to the chart.

**TABLE R602.3(1) Fastener Schedule for Structural Members**

Item	Description of Building Elements	Number and Type of Fastener <sup>a,b,c</sup>	Spacing of Fasteners
<b>Roof</b>			
5	Rafter or roof truss to plate, toe nail	2 3-16d box nails (3½" × 0.135") or 3-10d common nails (3" × 0.148")	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss <sup>l</sup>
<b>Wall</b>			
7	Built-up corner studs –face nail	10d (3" × 0.128")	24" o.c.
8	Abutting studs at intersecting wall corners, face nail	16d (3½" × 0.135")	12" o.c.
89	Built-up header, two pieces with ½" spacer	16d (3½" × 0.135")	16" o.c. along each edge
<b>Floor</b>			
<del>26</del> 25	Rim joist to top plate, toe nail (roof applications also)	8d (2½" × 0.113")	6" o.c.
26	Rim joist or blocking to sill plate, toe nail	8d (2½" × 0.113")	6" o.c.
<del>24</del> 27	1" × 6" subfloor or less to each joist, face nail	2-8d (2½" × 0.113") 2 staples 1¾"	--



# 2012 IRC SECTION R602.7.4

King studs are now required to be fastened to the header with a minimum of 4 - 12d nails.





# 2012 IRC SECTION R602.12.3

## Virginia Amendment

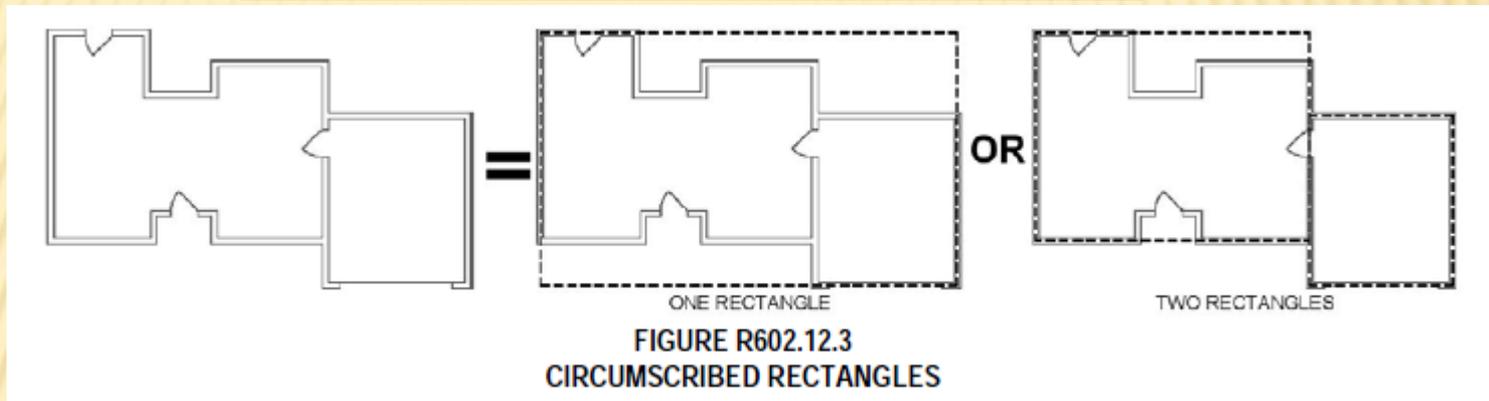
Virginia has removed the simplified method for wall bracing in the code and replaced it with the Circumscribed Rectangle Method.

- This method is very similar to the simplified method.
- The size of the rectangle has been increased from the 60 feet between braced wall lines to 80 feet with this method.
- While this method is easier to calculate it does require more bracing than the standard method.



# 2012 IRC SECTION R602.12.3

## Virginia Amendment



**TABLE R602.12.4**

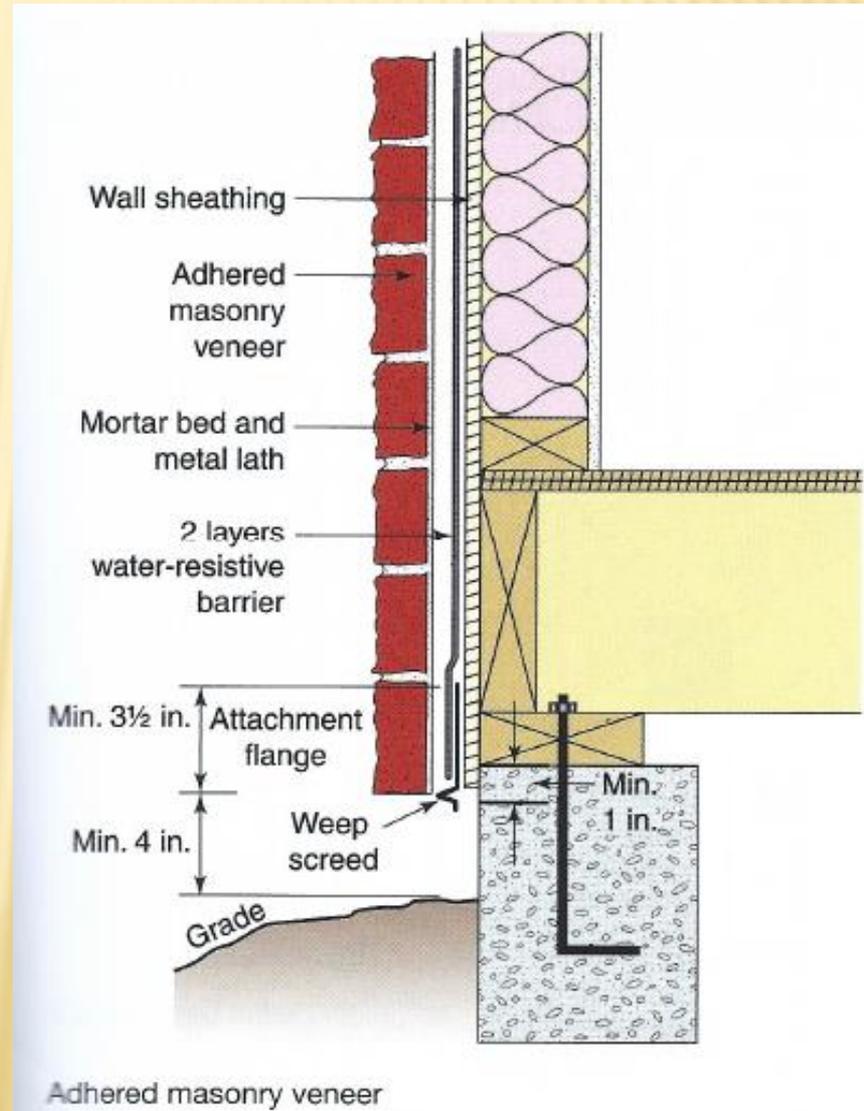
**REQUIRED LENGTH OF BRACING ALONG EACH SIDE OF A CIRCUMSCRIBED RECTANGLE<sup>a,b,c</sup>**

WIND SPEED	EAVE-TO-RIDGE HEIGHT (feet)	NUMBER OF FLOOR LEVELS ABOVE <sup>e,f</sup>	REQUIRED LENGTH OF BRACING ON FRONT/REAR SIDE (feet)								REQUIRED LENGTH OF BRACING ON LEFT/RIGHT SIDE (feet)							
			Length of Left/Right Side (feet)								Length of Front/Rear Side (feet)							
			10	20	30	40	50	60	70	80	10	20	30	40	50	60	70	80
90	10	0	2.0	3.5	5.0	6.0	7.5	9.0	10.5	12.0	2.0	3.5	5.0	6.0	7.5	9.0	10.5	12.0
		1 <sup>d</sup>	3.5	6.5	9.0	12.0	14.5	17.0	19.8	22.6	3.5	6.5	9.0	12.0	14.5	17.0	19.8	22.6
		2 <sup>d</sup>	5.0	9.5	13.5	17.5	21.5	25.0	29.2	33.4	5.0	9.5	13.5	17.5	21.5	25.0	29.2	33.4
	15	0	2.6	4.6	6.5	7.8	9.8	11.7	13.7	15.7	2.6	4.6	6.5	7.8	9.8	11.7	13.7	15.7
		1 <sup>d</sup>	4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2	4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2
		2 <sup>d</sup>	5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7	5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7
	20	0	2.9	5.2	7.3	8.8	11.1	13.2	15.4	17.6	2.9	5.2	7.3	8.8	11.1	13.2	15.4	17.6
		1 <sup>d</sup>	4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5	4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5
		2 <sup>d</sup>	6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5	6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5



# 2012 IRC SECTION R703.12

Adhered Masonry Veneer now has some code requirements which must be complied with in addition to the manufacturers instructions.





# 2012 IRC SECTION R802.11

## Roof Uplift Connection

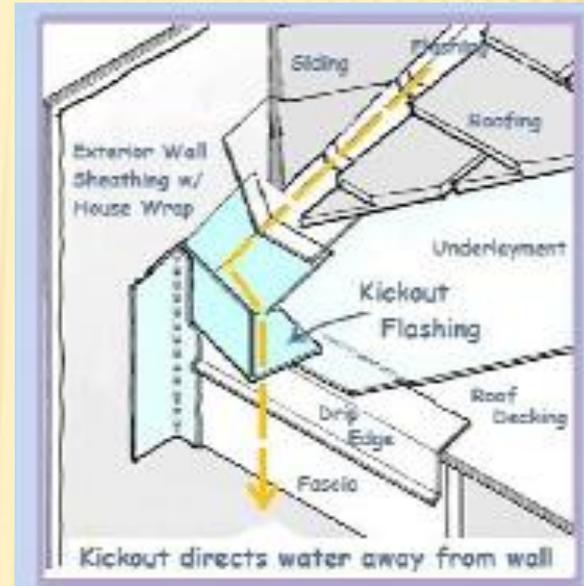
Trusses will now require hurricane straps when the uplift exceeds 200 lbs.

Table R802.11 has been added to provide the uplift for rafters based on spacing, span and roof pitch. If that figure is greater than 200 lbs., then hurricane straps would also be required on the rafter connections at the walls.



# 2012 IRC SECTION R903.2.1

Kick out flashing will now be required where the eave of a sloped roof intersects a vertical sidewall.





# 2012 IRC SECTION TABLE N1102.1.1

## Virginia Amendment

Virginia amended the required insulation for one and two family dwellings to the following:

Walls: R-15 or R-13 + 1 (R-20 or R-13 +5 before amendment)

Ceiling: R-38 (R-49 before amendment)

The remainder of the R values are the same as the previous edition of the code.

# 2012 IRC SECTION N1102.4.1.2.2

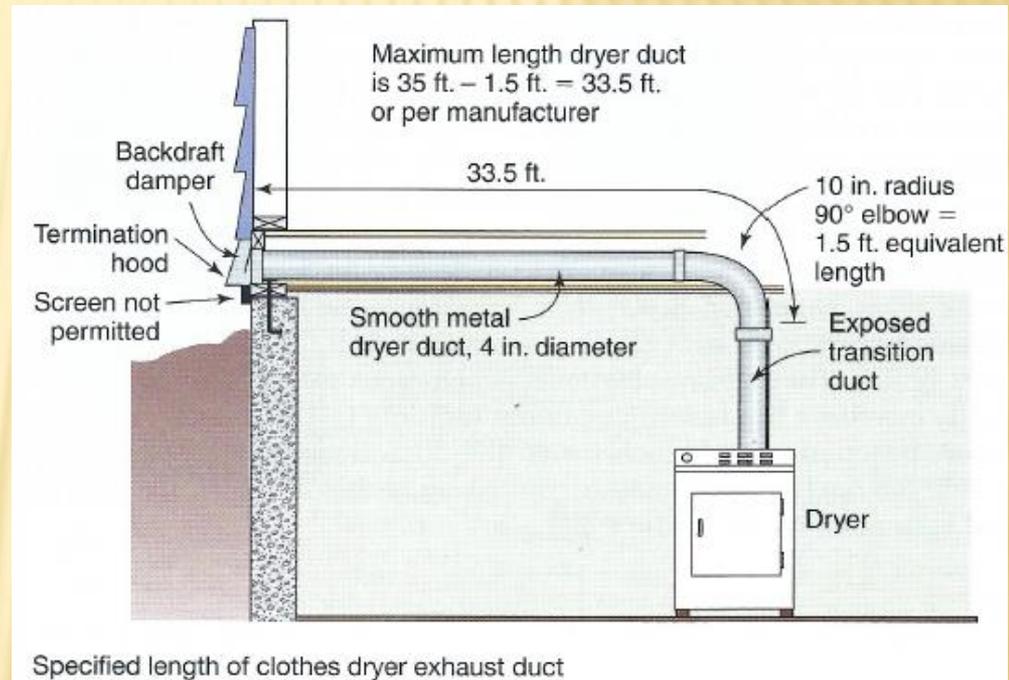
## Virginia Amendment

- Virginia added the visual inspection option for the building envelope tightness. The code originally required all houses to be blower door tested. If the building department inspects the structure the building is not considered to have less than 5 air changes per hour and would not require mechanical ventilation.
- Under that section the Building Official can require an approved party, independent from the install to inspect the air barrier. If this is chosen then the code requires the whole-house mechanical ventilation system to be installed per section M1507.3



# 2012 IRC SECTION M1502.4

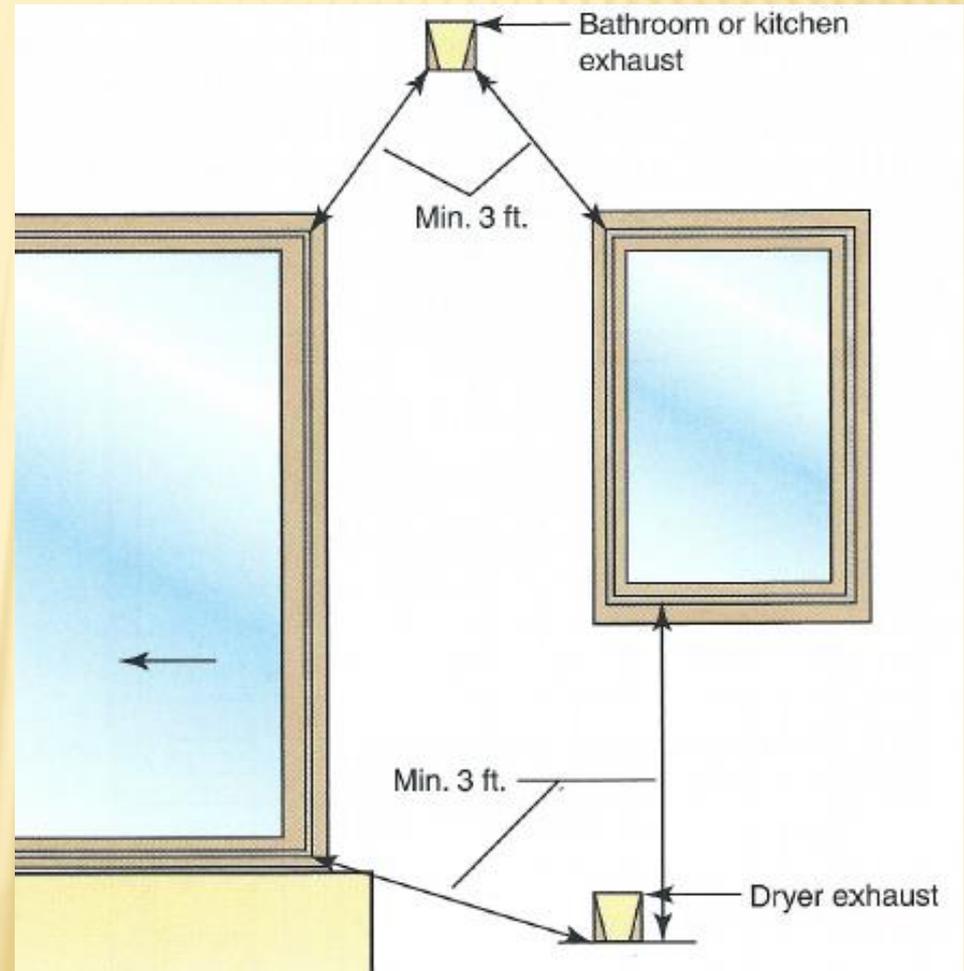
- Dryer vent length has been increased to 35 feet.
- Dryer vents have to be supported at intervals not exceeding 12 feet.
- Their joints shall be mechanically fastened with screws or similar fasteners that protrude no more than 1/8 inch into the inside of the duct.
- The joints shall be sealed.





# 2012 IRC SECTION M1506

Bathroom or kitchen exhaust shall be at least 3 feet from operable or non operable openings into the building.



# 2012 IRC SECTION R507

## DECKS



# 2012 IRC SECTION R507.1



## DECKS

Wood-framed decks shall be in accordance with this section or Section R301 for materials and conditions not prescribed herein.

USE	LIVE LOAD - lbs./sq.ft
Balconies (exterior) and decks <sup>e</sup>	40
Guardrails and handrails <sup>d</sup>	200 <sup>h</sup>
Guardrail in-fill components <sup>f</sup>	50 <sup>h</sup>
Stairs	40 <sup>c</sup>

c. Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.

d. A single concentrated load applied in any direction at any point along the top.

e. See Section R502.2.2 for decks attached to exterior walls.

f. Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

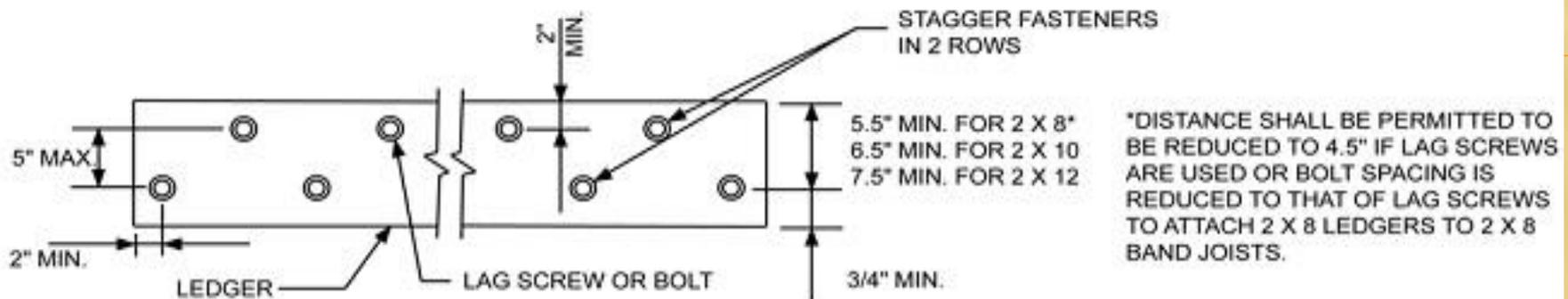
h. Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.

# 2012 IRC SECTION R507.1



## 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. 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



# 2012 IRC SECTION R507.1

## DECKS



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.



# 2012 IRC SECTION R507.2



## Deck Ledger Connection to Band Joist

**TABLE R507.2 FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH-NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST<sup>c, f, g</sup> (Deck live load = 40 psf, deck dead load = 10 psf)**

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'
Connection details	On-center spacing of fasteners <sup>d, e</sup>						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing <sup>a</sup>	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 15/32 inch maximum sheathing and 1/2 inch stacked washers <sup>b, h</sup>	36	36	29	24	21	18	16

# 2012 IRC SECTION R507.2



## Deck Ledger Connection to Band Joist

**TABLE R507.2 FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH-NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST<sup>c, f, g</sup> (Deck live load = 40 psf, deck dead load = 10 psf)**

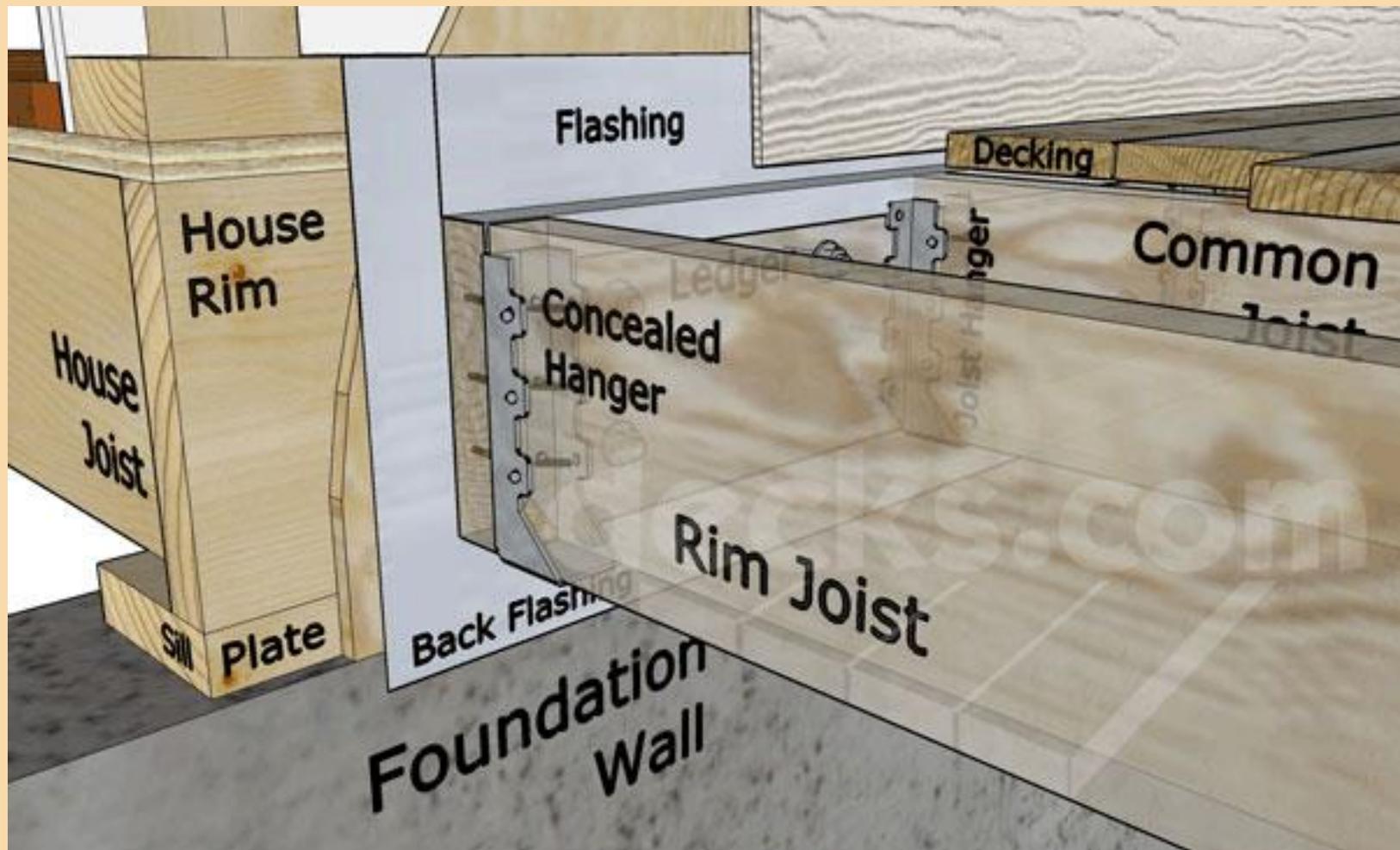
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. 1 pound per square foot = 0.0479 kPa.

- 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 wall sheathing shall be  $\frac{1}{2}$  inch.
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with Section R507.2.1.
- e. Deck ledger shall be minimum  $2 \times 8$  pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1-inch-thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum  $1 \times 9\frac{1}{2}$  Douglas Fir laminated veneer lumber 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 in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch

# 2012 IRC SECTION R507.2



## Deck Ledger Connection to Band Joist



# 2012 IRC SECTION R507.2.1

Placement of lag screws or bolts in deck ledgers and band joists.



# 2012 IRC SECTION R507.2.1



## Placement of lag screws or bolts in deck ledgers and band joists.

The lag screws or bolts in deck ledgers and band joists shall be placed in accordance with Table R507.2.1 and Figures R507.2.1(1) and R507.2.1(2).

**TABLE 507.2.1 PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS**

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger <sup>a</sup>	2 inches <sup>d</sup>	$\frac{3}{4}$ inch	2 inches <sup>b</sup>	$1\frac{5}{8}$ inches <sup>b</sup>
Band Joist <sup>c</sup>	$\frac{3}{4}$ inch	2 inches	2 inches <sup>b</sup>	$1\frac{5}{8}$ inches <sup>b</sup>

For SI: 1 inch = 25.4 mm.

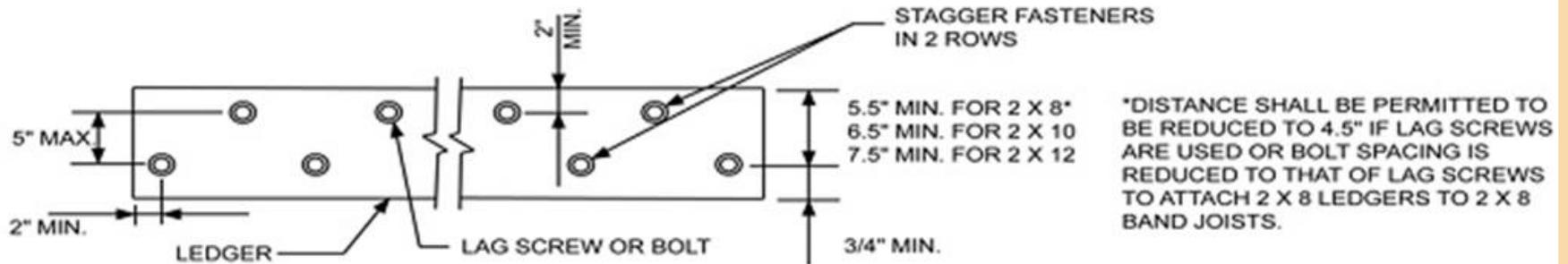
- Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
- Maximum 5 inches.
- For engineered rim joists, the manufacturer's recommendations shall govern.
- The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).

# 2012 IRC SECTION R507.2.1



Figure (1) Placement of lag screws and bolts in ledgers

## FIGURE R507.2.1(1) PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS



# 2012 IRC SECTION R507



## Decks



# 2012 IRC SECTION R507



## Decks

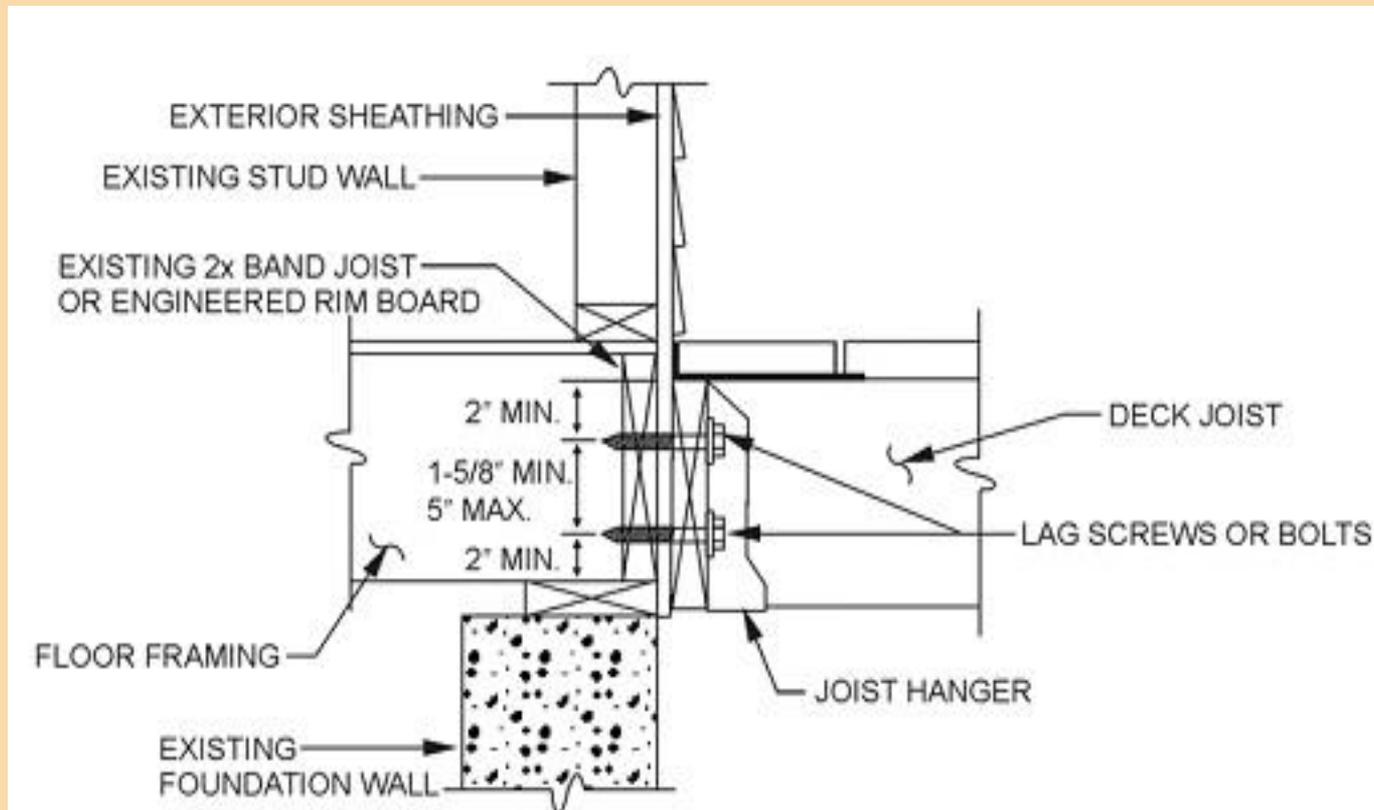


# 2012 IRC SECTION R507.2.1



Figure (2) Placement of lag screws and bolts in band Joist

## FIGURE R507.2.1(2) PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

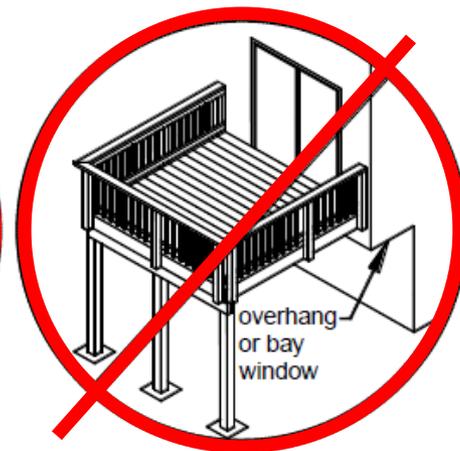
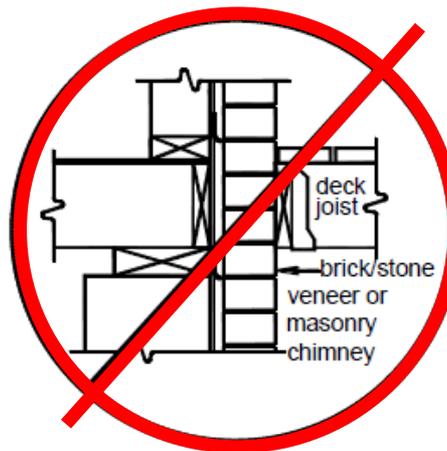
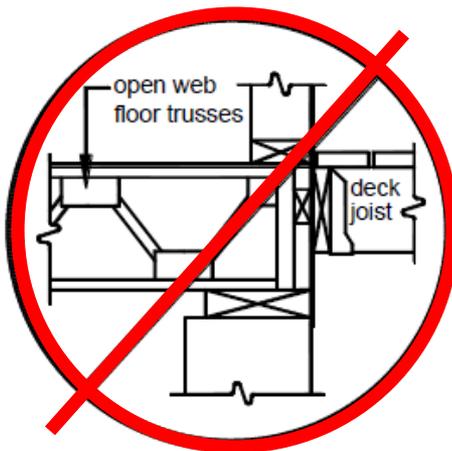


# 2012 IRC SECTION R507.2.2



## Alternate Deck Ledger Connections

Deck ledger connections not conforming to Table R507.2 shall be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.



# 2012 IRC SECTION R507



## Decks



# 2012 IRC SECTION R507.2.3



## Deck Lateral Load Connection

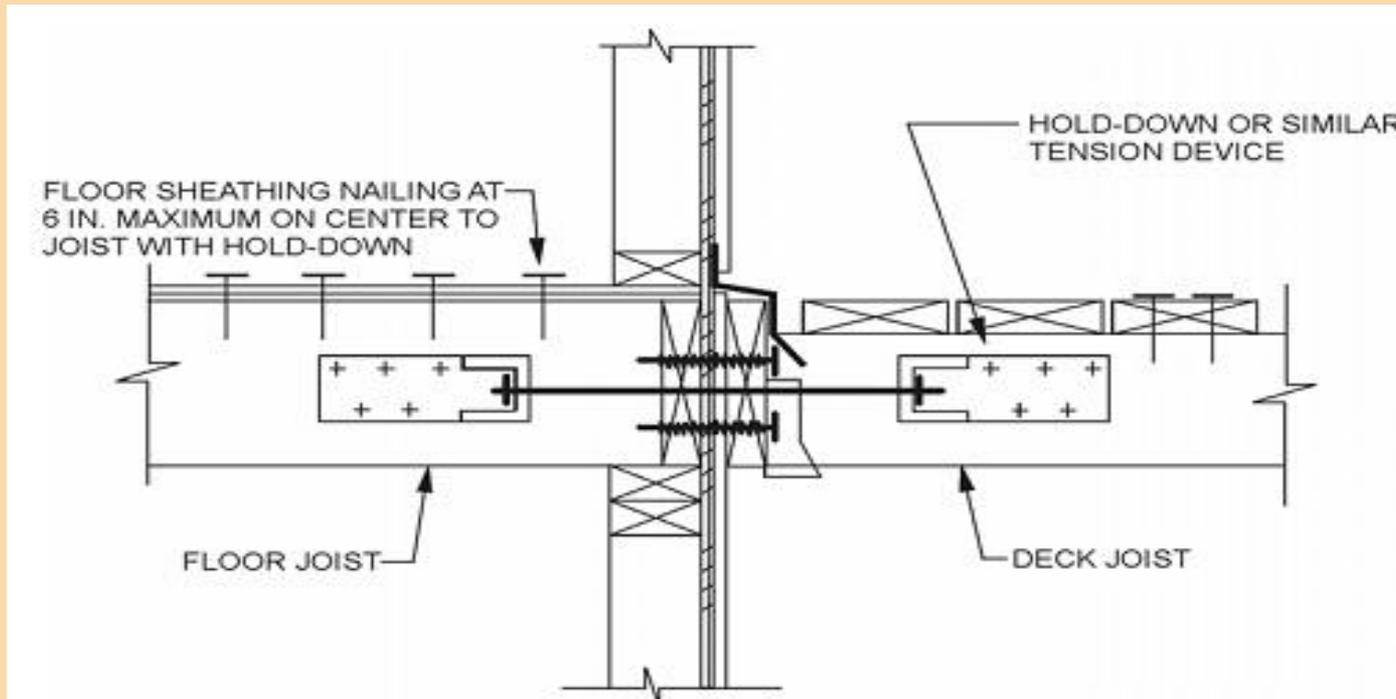
The lateral load connection required by Section R507.1 shall be permitted to be in accordance with Figure R507.2.3. Where the lateral load connection is provided in accordance with Figure 507.2.3, hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

# 2012 IRC SECTION R507.2.3



## Deck Lateral Load Connection

**FIGURE 507.2.3 DECK ATTACHMENT FOR LATERAL LOADS**



# 2012 IRC SECTION R507.2.3

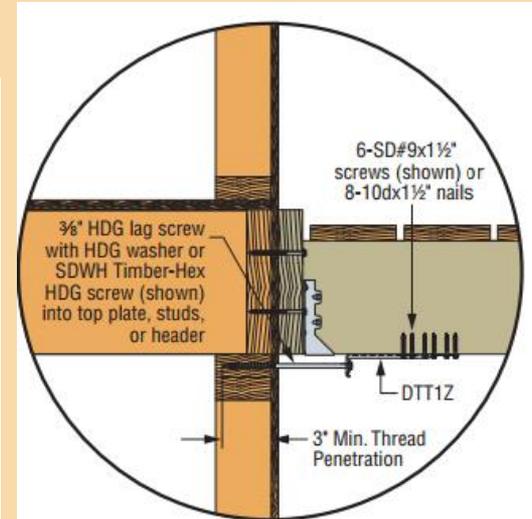


## Deck Lateral Load Connection

### FIGURE 507.2.3 DECK ATTACHMENT FOR LATERAL LOADS (Other approved options)

These products are available with additional corrosion protection. Additional products on this page may also be available with this option, check with Simpson Strong-Tie for details.

Model No.	¢	Anchor Dia.	Fasteners	Minimum Wood Member Thickness	Allowable Tension Loads		Code Ref.
					DE/SP	SPF/HF	
<span style="color: red;">NEW</span> DTT1Z	¾	⅜ <sup>6</sup> or SDWH <sup>3</sup>	6-SD #9x1½	1½	840	840	160
			6-10dx1½		910	640 <sup>4</sup>	
			8-10dx1½		910	850	
DTT2Z/DTT2SS	13/16	½	8-¼"x1½" SDS	1½	1825	1800	I6, L8, F5
				3	2145	1835	
DTT2Z-SDS2.5	13/16	½	8-¼"x2½" SDS	3	2145	2105	



**Typical DTT1Z Deck-to-House Lateral Load Connection**

For more information on lateral load connections, see technical bulletin T-DECKLATLOAD

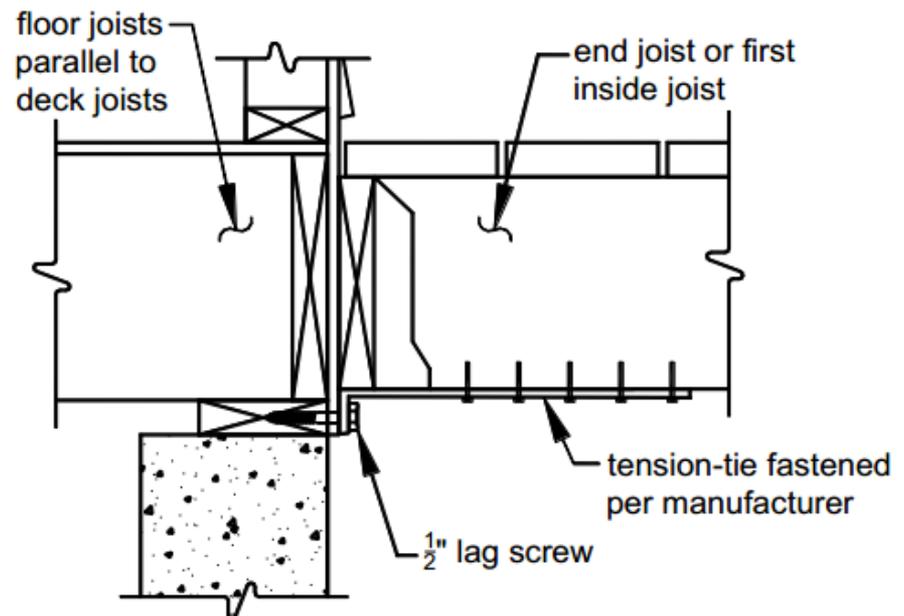
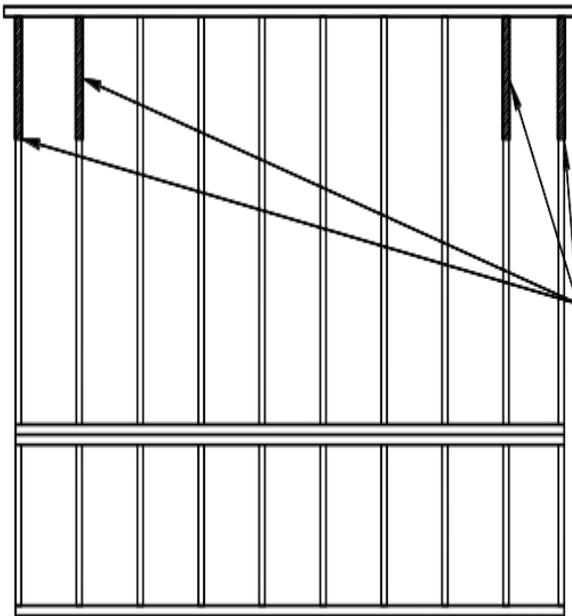
DTT1Z from Simpson Strong-Tie (four total) shall be installed at the end joist and first inside joist at each end of the deck.

# 2012 IRC SECTION R507.2.3



## Deck Lateral Load Connection

### FIGURE 507.2.3 DECK ATTACHMENT FOR LATERAL LOADS (Other approved options)



DTT1Z from Simpson Strong-Tie (four total) shall be installed at the end joist and first inside joist at each end of the deck.

# 2012 IRC SECTION R507.3

## Wood/Plastic Composites



# 2012 IRC SECTION R507.3

## Wood/Plastic Composites



Wood/plastic composites used in exterior deck boards, stair treads, handrails and guardrail systems shall bear a label indicating the required performance levels and demonstrating compliance with the provisions of ASTM D 7032.

# 2012 IRC SECTION R507.3.1



## Installation of Wood/Plastic Composites

Wood/plastic composites shall be installed in accordance with the manufacturer's instructions.

Decking Installation & Maintenance Guide

 **TimberTech**<sup>®</sup>  
Less Work. More Life.



# 2012 IRC SECTION R507.4



## Decking

Maximum allowable spacing for wood joists supporting decking shall be in accordance with Table R507.4. Wood decking shall be attached to each supporting member with a minimum of (2)8d nails or (2)#8 wood screws.

# 2012 IRC SECTION R507.4



## Decking



# 2012 IRC SECTION R507.4



## Table R507.4

### Maximum Joist Spacing (inches)

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM JOIST SPACING	
	PERPENDICULAR TO JOIST	DIAGONAL TO JOIST <sup>a</sup>
5/4-inch thick wood	16	12
2-inch thick wood	24	16
Wood/plastic composite	Per R507.3	Per R507.3

For SI: 1 inch = 25.4 mm

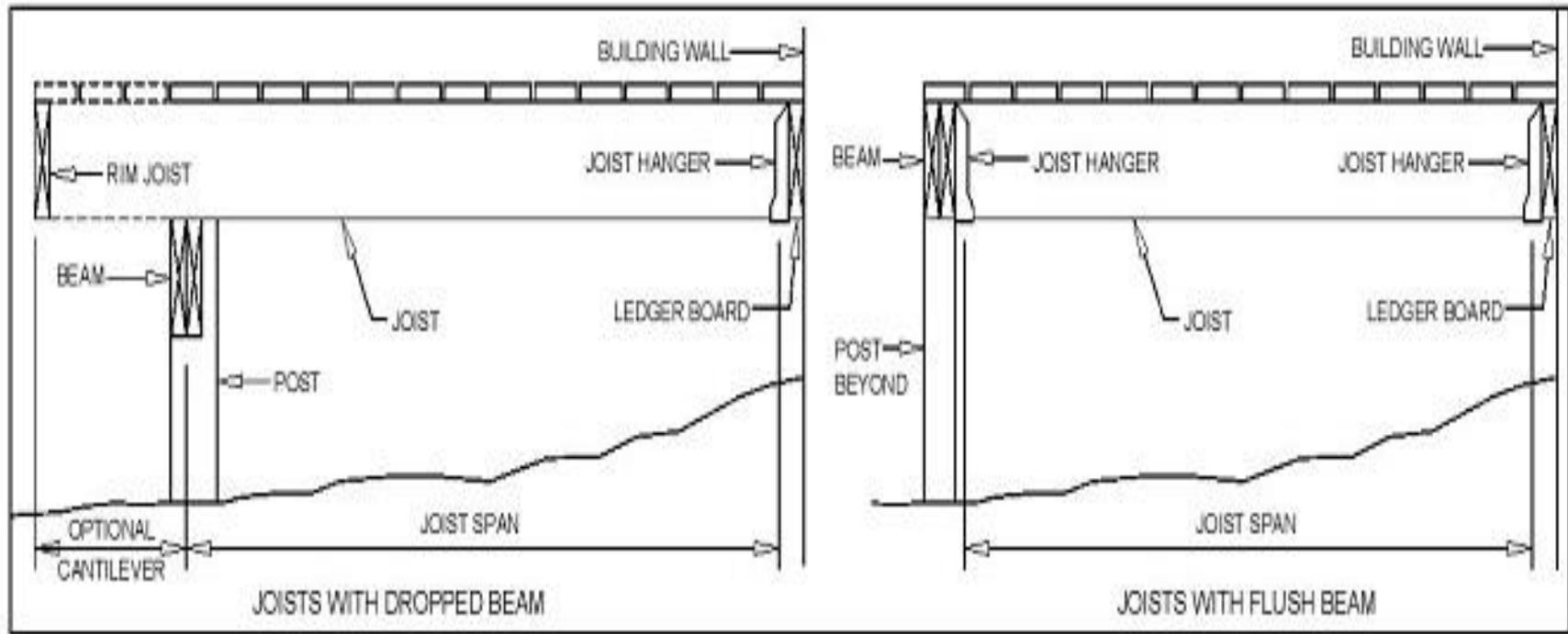
a. Maximum angle of 45 degrees from perpendicular for wood deck boards

# 2012 IRC SECTION R507.5



## Typical Deck Joist Spans

Figure R507.5



# 2012 IRC SECTION R507.5



## Typical Deck Joist Spans

**TABLE R507.5 DECK JOIST SPANS<sup>a</sup> AND CANTILEVERS<sup>a</sup> FOR COMMON LUMBER SPECIES**

SPECIES <sup>b</sup>	SIZE	ALLOWABLE JOIST SPAN <sup>c</sup>			ALLOWABLE CANTILEVER <sup>d,e</sup>		
		Spacing of deck joists (inches)			Spacing of deck joists (inches)		
		12	16	24	12	16	24
Southern pine	2 x 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 x 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 x 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 x 12	18-0	16-6	13-6	4-6	4-2	3-4

# 2012 IRC SECTION R507.5



## Typical Deck Joist Spans

**TABLE R507.5 DECK JOIST SPANS<sup>a</sup> AND CANTILEVERS<sup>a</sup> FOR COMMON LUMBER SPECIES**

SPECIES <sup>b</sup>	SIZE	ALLOWABLE JOIST SPAN <sup>c</sup>			ALLOWABLE CANTILEVER <sup>d,e</sup>		
		Spacing of deck joists (inches)			Spacing of deck joists (inches)		
		12	16	24	12	16	24
Douglas fir-larch <sup>f</sup> , hem-fir <sup>f</sup> , spruce-pine-fir <sup>f</sup>	2 x 6	9-6	8-4	6-10	1-2	1-3	1-5
	2 x 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 x 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 x 12	18-0	15-9	12-10	4-6	3-11	3-3

# 2012 IRC SECTION R507.5



## Typical Deck Joist Spans

**TABLE R507.5 DECK JOIST SPANS<sup>a</sup> AND CANTILEVERS<sup>a</sup> FOR COMMON LUMBER SPECIES**

SPECIES <sup>b</sup>	SIZE	ALLOWABLE JOIST SPAN <sup>c</sup>			ALLOWABLE CANTILEVER <sup>d,e</sup>		
		Spacing of deck joists (inches)			Spacing of deck joists (inches)		
		12	16	24	12	16	24
Redwood, western cedars, ponderosa pine <sup>g</sup> , red pine <sup>g</sup>	2 x 6	8-10	8-0	6-10	1-0	1-1	1-2
	2 x 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 x 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 x 12	17-5	15-1	12-4	3-10	3-9	3-1

# 2012 IRC SECTION R507.5



## Typical Deck Joist Spans

### TABLE R507.5 DECK JOIST SPANS<sup>a</sup> AND CANTILEVERS<sup>a</sup> FOR COMMON LUMBER SPECIES (footnotes)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Spans and cantilevers are given in feet and inches.
- b. No. 2 grade with wet service factor.
- c. Ground snow load, live load = 40 psf, dead load = 10 psf,  $L/\Delta = 360$ .
- d. Ground snow load, live load = 40 psf, dead load = 10 psf,  $L/\Delta = 360$  at main span,  $L/\Delta = 180$  at cantilever with a 220 pound point load applied to end.
- e. Maximum allowable cantilever shall not exceed one-fourth of the actual joist span.
- f. Includes incising factor.
- g. Northern species with no incising factor.

# 2012 IRC SECTION R507.5

## Typical Deck Joist Spans



# 2012 IRC SECTION R507.5.1



## Lateral restraint at supports.

Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall equal not less than 60 percent of the joist depth. Where lateral restraint is provided by rim joists, they shall be secured to the end of each joist with a minimum of (3)10d (3-inch x 0.128-inch) nails or (3)#10x3 inch (76 mm) long wood screws.

# 2012 IRC SECTION R507.5.1



## Lateral restraint at supports.

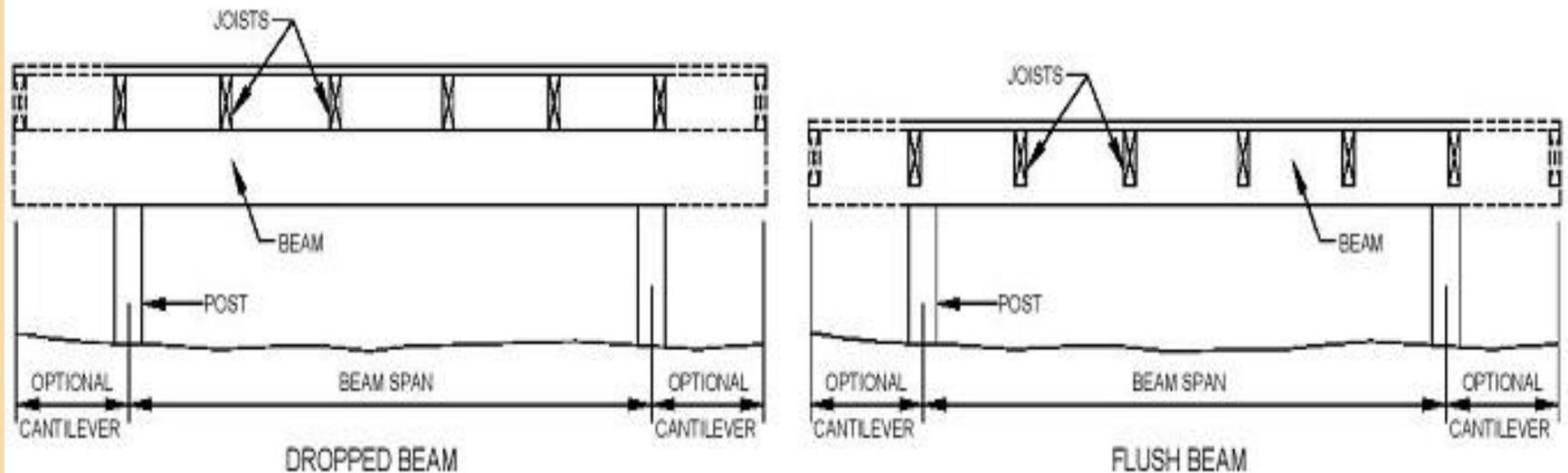


# 2012 IRC SECTION R507.6



## Deck Beams

Maximum allowable spans for wood deck beams, as shown in Figure R507.6, shall be in accordance with Table R507.6.



**FIGURE R507.6 TYPICAL DECK BEAM SPANS**

# 2012 IRC SECTION R507.6



## Deck Beams

**TABLE R507.6 DECK BEAM SPAN<sup>a</sup> LENGTHS<sup>b,c</sup>**

SPECIES <sup>d</sup>	SIZE <sup>e</sup>	DECK JOIST SPAN (feet) LESS THAN OR EQUAL TO:						
		6	8	10	12	14	16	18
Southern pine	2-2x6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2-2x8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2-2x10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2-2x12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3-2x6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3-2x8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3-2x10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3-2x12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

# 2012 IRC SECTION R507.6



## Deck Beams

### TABLE R507.6 DECK BEAM SPAN<sup>a</sup> LENGTHS<sup>b,c</sup>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Spans are given in feet and inches.
- b. Ground snow load, live load = 40 psf, dead load = 10 psf,  $L/\Delta = 360$  at main span,  $L/\Delta = 180$  at cantilever with a 220 pound point load applied at the end.
- c. Beams supporting deck joists from one side only.
- d. No. 2 grade, wet service factor.
- e. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- f. Includes incising factor.
- g. Northern species with no incising factor.

# 2012 IRC SECTION R507.6



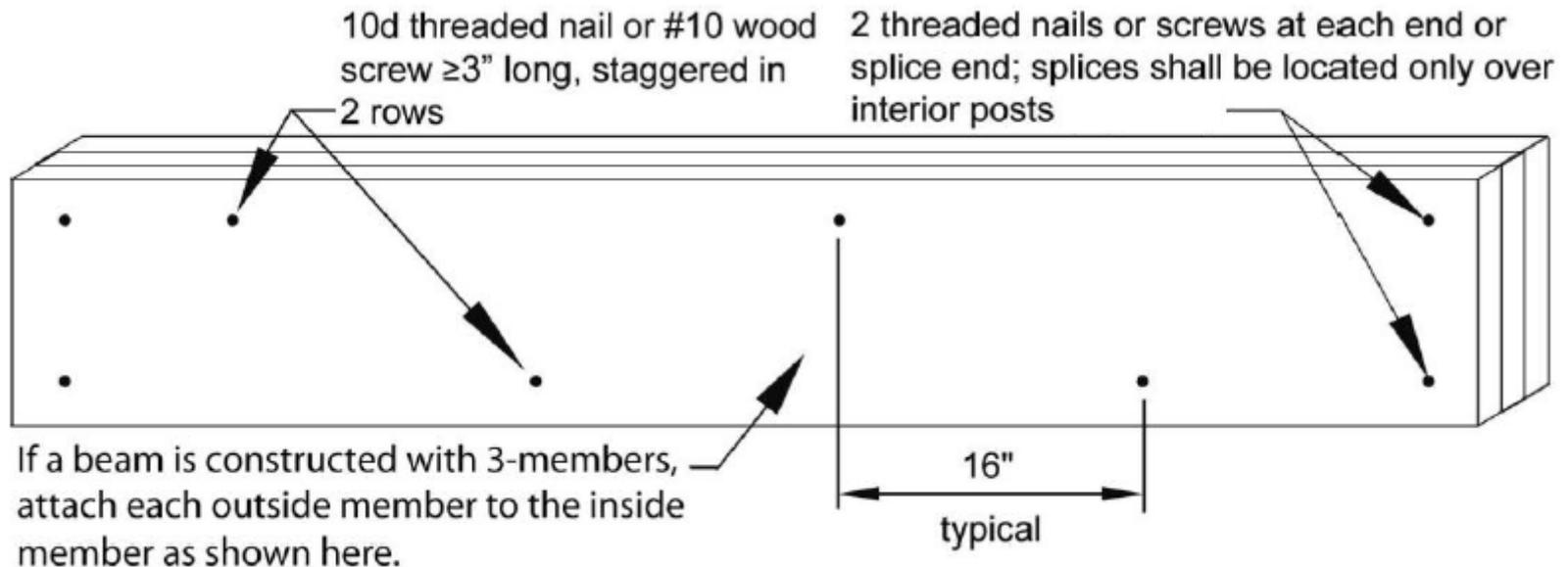
## Deck Beams

Beam plies shall be fastened with two rows of 10d (3-inch x 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the beam span. Splices of multi-span beams shall be located at interior post locations.

# 2012 IRC SECTION R507.6



## Deck Beams



# 2012 IRC SECTION R507.7



## Deck joist and deck beam bearing

The ends of each joist and beam shall have not less than 1.5 inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on concrete or masonry for the entire width of the beam.

# 2012 IRC SECTION R507



## Decks



# 2012 IRC SECTION R507.7



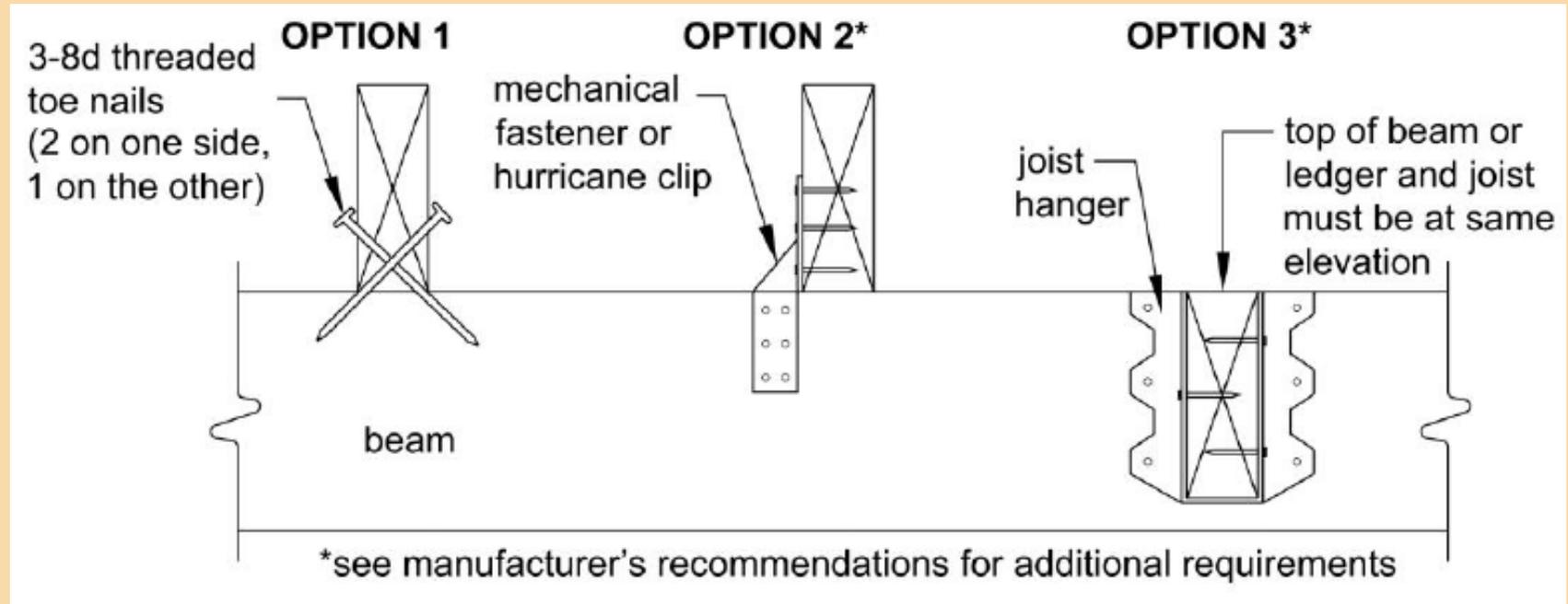
## Deck joist and deck beam bearing

Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. Joists bearing on a beam shall be attached to the beam to resist lateral displacement.

# 2012 IRC SECTION R507.7



## Deck joist and deck beam bearing



# 2012 IRC SECTION R507



## Decks



# 2012 IRC SECTION R507



## Decks

1" for 2x's  
1 1/16" for 3x's and 4x's

W B H

LUS28

HUS210  
(HUS26,  
HUS28, and  
HHUS similar)

HUS412

HUSC  
Concealed  
Flanges  
(not available  
for HHUS,  
HGUS and  
HUS2x)

HGUS3.25/12

HGUS46

Typical LUS28 Installation  
use 0.148x3" (10d common) or  
0.148x3 1/4" (16d sinker) nail

Double-Shear  
Nailing Top  
View

Double-Shear  
Nailing Side  
View Do not  
bend tab

Dome Double-Shear Nailing Side  
View (available on some models)

# 2012 IRC SECTION R507.7.1



## Deck beam to deck post

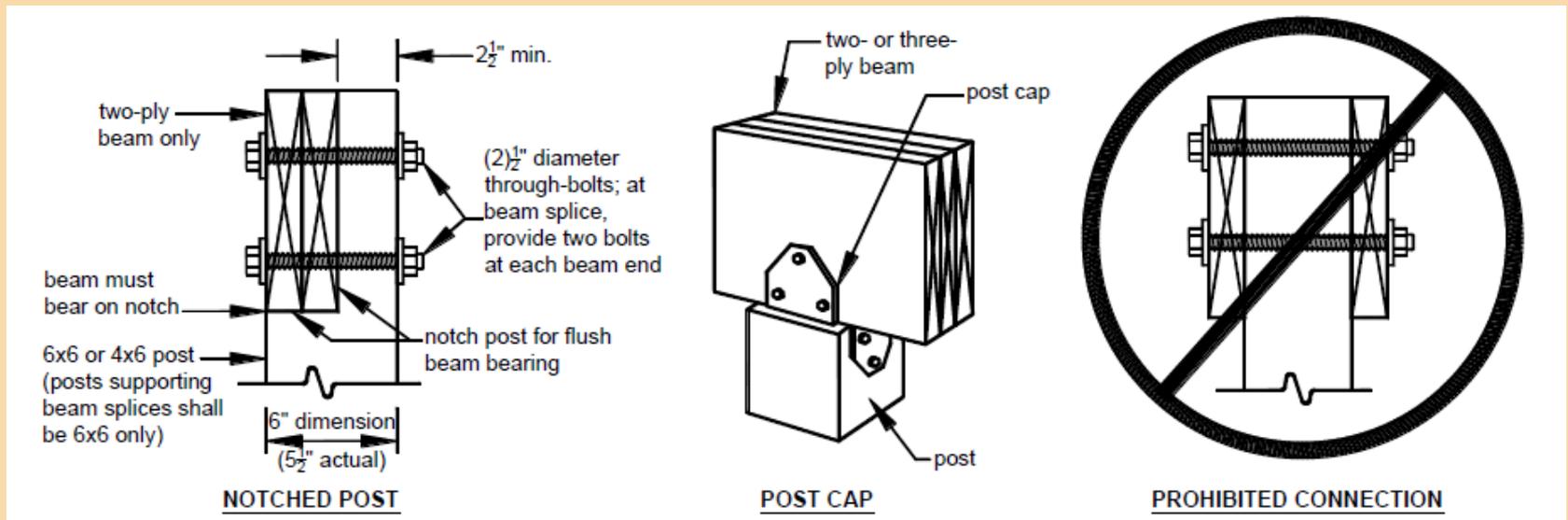
Deck beams shall be attached to deck posts in accordance with Figure R507.7.1 or by other equivalent means capable to resist lateral displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. All bolts shall have washers under the head and nut.

# 2012 IRC SECTION R507.7



## Deck joist and deck beam bearing

### FIGURE R507.7.1 DECK BEAM TO DECK POST



# 2012 IRC SECTION R507.7.1

## Deck beam to deck post



# 2012 IRC SECTION R507.8



## Deck posts

For single level wood-framed decks with beams sized in accordance with Table R507.6, deck post size shall be in accordance with Table R507.8.

DECK POST SIZE	MAXIMUM HEIGHT <sup>a</sup>
4x4	8
4x6	8
6x6	14

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.  
a. Measured to the underside of the beam.

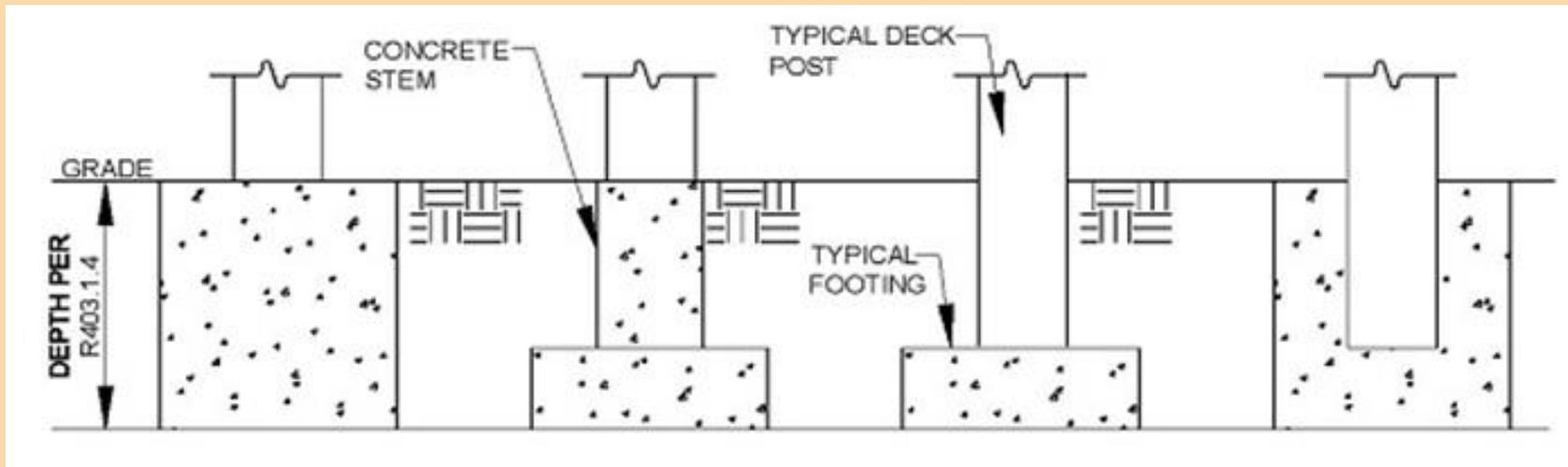
**TABLE R507.8 DECK POST  
HEIGHT<sup>a</sup>(feet)**

# 2012 IRC SECTION R507.8.1



## Deck post to deck footing

Posts shall bear on footings in accordance with Section R403 and Figure R507.8.1



**FIGURE R507.8.1 TYPICAL DECK POSTS TO DECK FOOTINGS**

# 2012 IRC SECTION R507.8.1



## Deck post to deck footing

Posts shall be restrained to prevent lateral displacement at the footing. Lateral restraint shall be provided by manufactured connectors installed in accordance with the manufacturers' installation instructions or



# 2012 IRC SECTION R507.8.1



## Deck post to deck footing

By a minimum post embedment of 12 inches in surrounding soils or concrete piers.

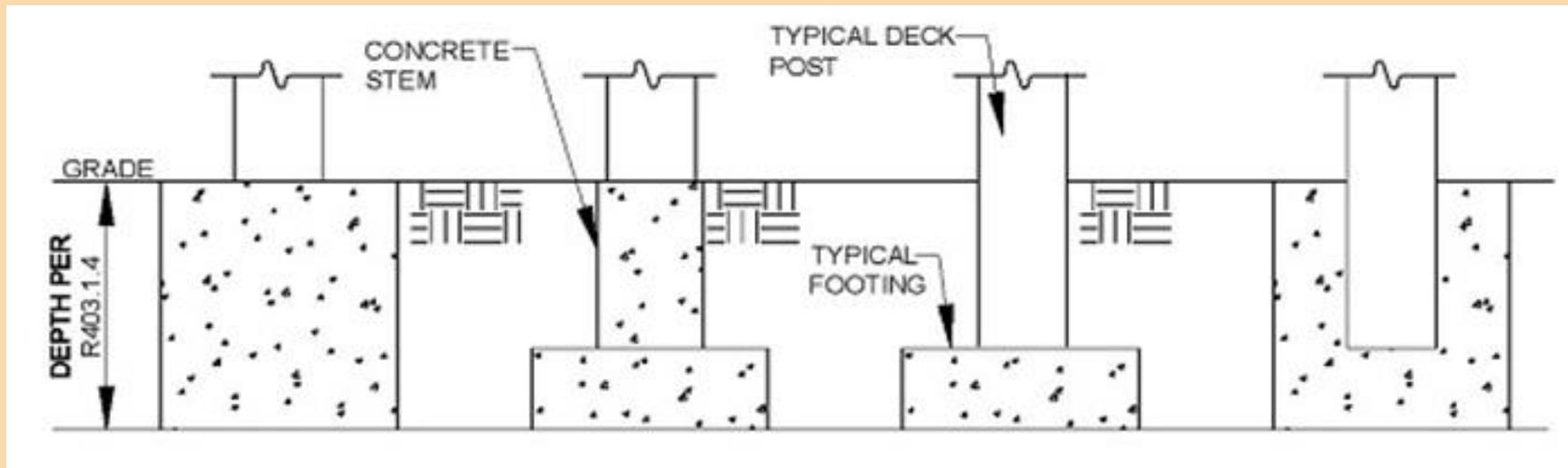


FIGURE R507.8.1 TYPICAL DECK POSTS TO DECK FOOTINGS

# 2012 IRC SECTION R311.7



## Stairways

Min. width= 36"

Max. Vertical Rise=12'

Max. Riser Height=8 1/4"

Min. Tread Depth=9"

Nosing Min.= 3/4", Max=1 1/4"

\*Not Required with  
11" tread



3/8" Tolerance



# 2012 IRC SECTION R311.7



## Stairways

Landing is required at the top and bottom of each stairway.

Min. width = the width of the flight served

Min. depth = 36" in direction of travel

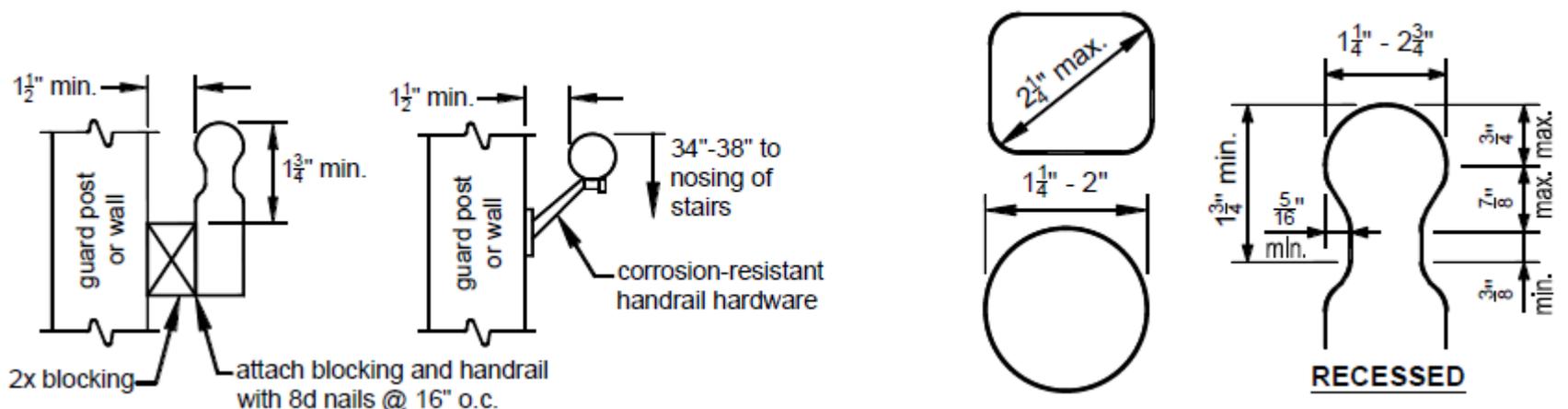


# 2012 IRC SECTION R311.7



## Stairways

- \*Handrails are required on at least one side of a flight of steps with 4 or more risers.
- \*Height shall be between 34" and 38" vertically from nosing of tread.
- \*Size shall comply with R311.7.8.3 Grip-size, and return to newel post



# 2012 IRC SECTION R312



## Guards

Required when walking surface is more than 30" above grade below at any point within 36" horizontally.

Height=36" vertically above the walking surface  
Exception- 34" on open sides of stairs,  
measured vertically from nosing.



# 2012 IRC SECTION R312



## Guards

Opening Limitations- Shall not allow the passage of a 4" sphere.

Exception 1- Triangle created by tread, riser, and guard shall not allow the passage of a 6" sphere.

Exception 2- Guards on open side of stairs shall not allow the passage of a 4 3/8" sphere

Note: Open Risers are **NOT** permitted. Must be limited to 4" opening Max.

# 2012 IRC



## Code Compliant?



# 2012 IRC



## Code Compliant?



# 2012 IRC



## Code Compliant?



# 2012 IRC



## Code Compliant?



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**Thank you for your time.**

# Questions?



# 2012 IRC



**Thank you for your time.**

Thank you for attending. If you have any questions please  
feel free to contact the  
Building Inspection Department at 540-245-5717  
Or email [bi@co.augusta.va.us](mailto:bi@co.augusta.va.us)

G.W. Wiseman- Building Official  
Renee Southers- Permit Technician  
Michael Swortzel- Combination Inspector  
Nelson Ailer- Combination Inspector  
Rusty Sprouse- Combination Inspector