



Building Guide ILLOWA Chapter of ICC



Single Family Residential Uncovered Deck and Porches

How to use this guide:

This guide was designed to assist the do-it-yourselfer create a construction plan to build a simple deck using conventional construction methods. Non-conventionally constructed decks may require a design professional.

1. **Complete this Building Guide** by filling in the blanks on page two and three and indicating which construction details will be used.
2. **Provide a Site Plan** showing the dimensions of your project and its relationships to existing buildings or structures, utilities, property lines and easements. In addition to project dimensions, your plot plan must also show other details such as post locations and spacing, joist and beam spans, and any other pertinent information not shown on the section drawing.
3. **Now you are ready to apply for your building permit.** The majority of permit applications can be processed with little delay. The submitted documents will help determine if the project is in compliance with building codes, zoning ordinances and other applicable laws.



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Single Family Residential—Uncovered Deck and Porches

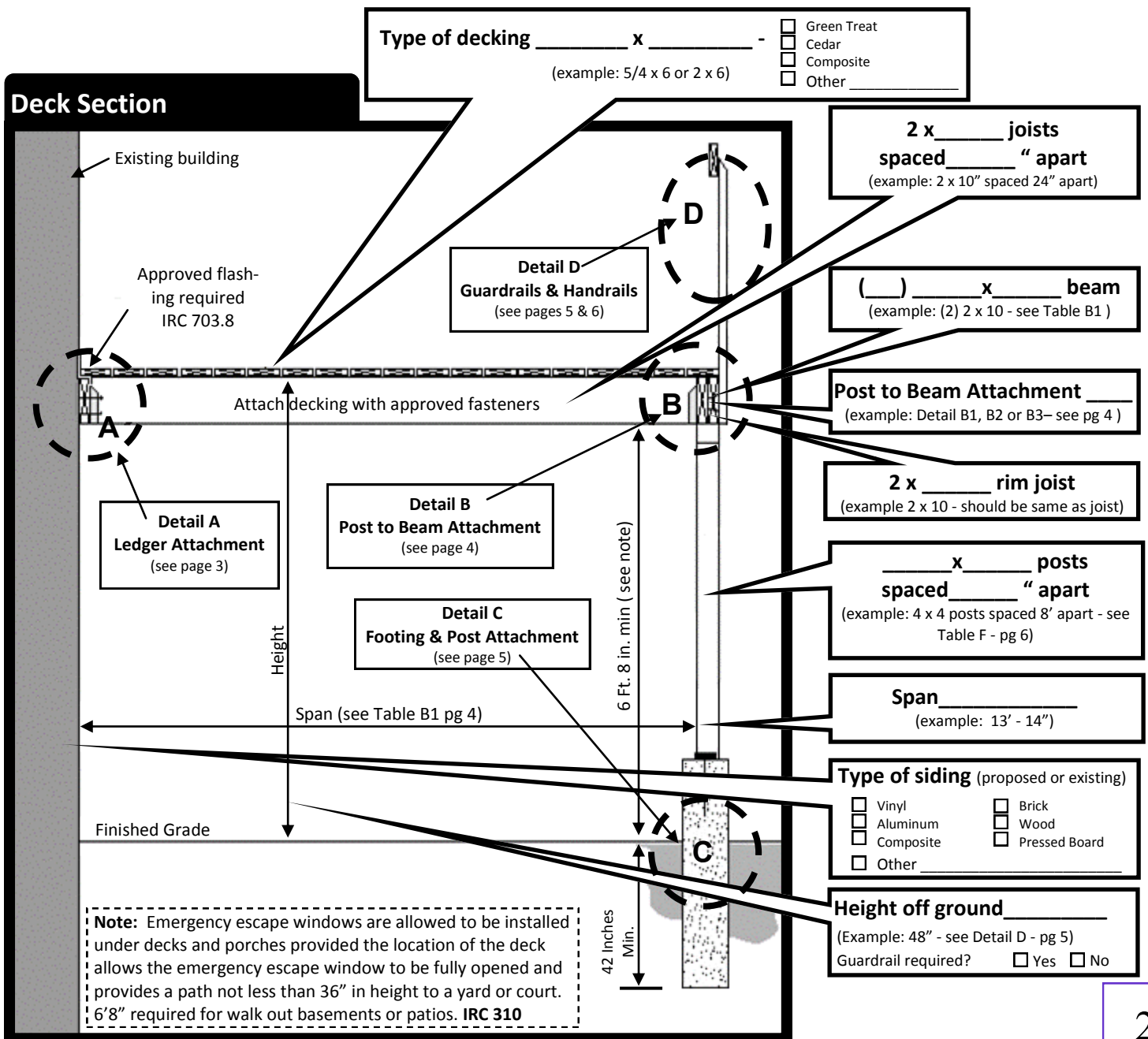
Directions:

1. List homeowner name and address of project .
2. Fill in the blanks on pages 2 and 3 with dimensions and materials which will be used to build the structure. Please print legibly.
3. Choose which post to beam detail from page 4 that will be used.

Address:

Minimum Requirements:

- All lumber shall be naturally durable wood or pressure treated.
- All screws, bolts, and nails for use with preservative treated wood shall be hot-dipped galvanized, stainless steel, silicon bronze or copper. Fasteners to be hot-dipped galvanized shall meet the requirements of ASTM A 153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware, Class D for fasteners 3/8" in diameter and smaller or Class C for fasteners with diameters over 3/8". IRC 317.3.1
- All hardware (joist hangers, cast-in-place post anchors, etc.) shall be galvanized or shall be stainless steel. Hardware to be hot-dipped prior to fabrication shall meet ASTM A 653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process, G-185 coating. Hardware to be hot-dipped galvanized after fabrication shall meet ASTM A123, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.



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Detail A

DIRECTIONS:

1. Identify Ledger Size 2 x ____ X ____ (example 2' x 10 " X 10')
2. Identify # of fasteners needed _____ Size _____ X _____ @ _____ O.C.
(example two 1/2" X 6" lags @ 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)

- 1/2 Lags
- 1/2 Bolts
- 1/2 Bolts w washers
- Other* _____ @ _____ O.C.

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 (502.2.2).

Table A1

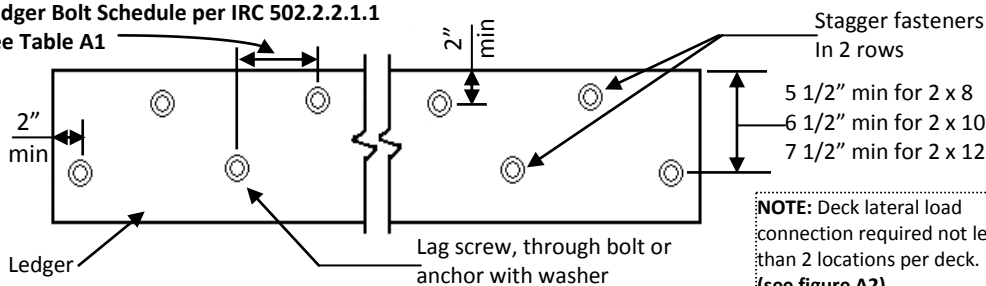
IRC TABLE 502.2.2.1
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST^{C,F,G} (Deck live load = 40 psf, deck dead load = 10 psf)

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'
Connection details	On-center spacing of fasteners^{d,e}						
1/2 inc diameter lag screw with 15/32 inch maximum sheathing ^a	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 ^{b,h}	36	36	29	24	21	18	16

Figure A1

Ledger Bolt Schedule per IRC 502.2.2.1.1

See Table A1



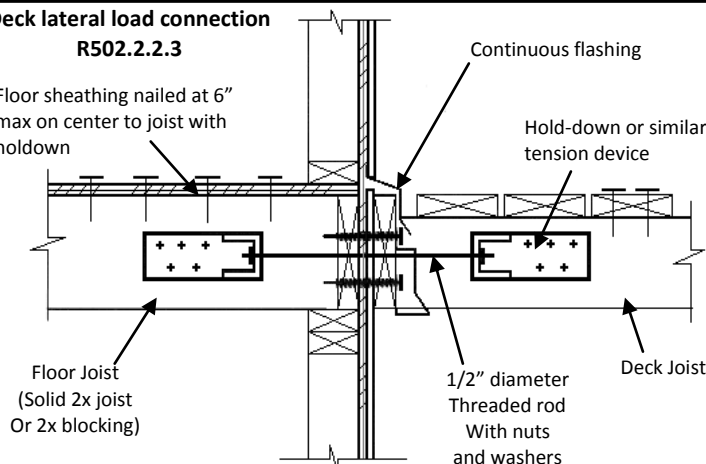
NOTE: Deck lateral load connection required not less than 2 locations per deck. (see figure A2)

- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- The maximum gap between the face of the ledger board and face of the band joist.
- Ledgers shall be flashed to prevent water from contacting the house band joist.
- Lag screws and bolts shall be staggered in accordance with the diagram above.
- Deck ledger shall be minimum 2 x 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials by standard engineering practice.
- 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.
- A minimum 1 x 9 1/2 Douglas Fir LVL rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- 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 joist shall be 1 inch.

Figure A2

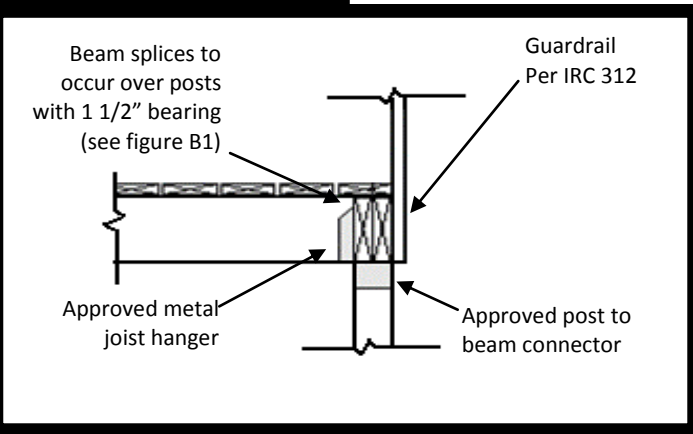
Deck lateral load connection R502.2.2.3

Floor sheathing nailed at 6" max on center to joist with holddown

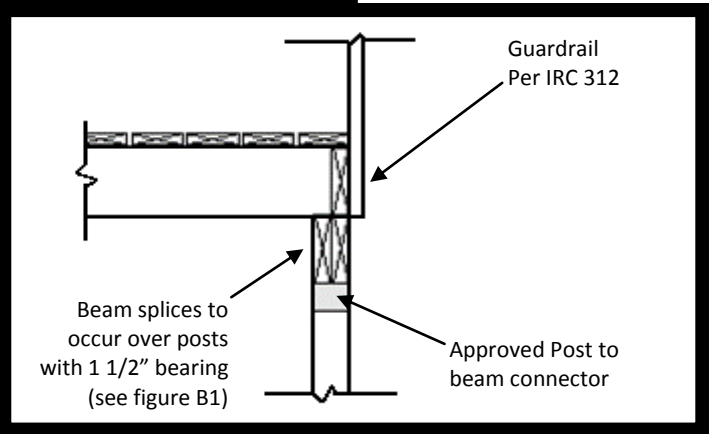


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Detail B1



Detail B2



Detail B3

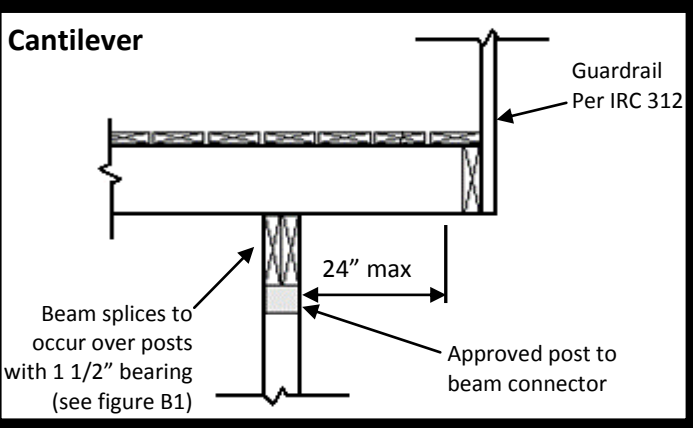


Figure B1

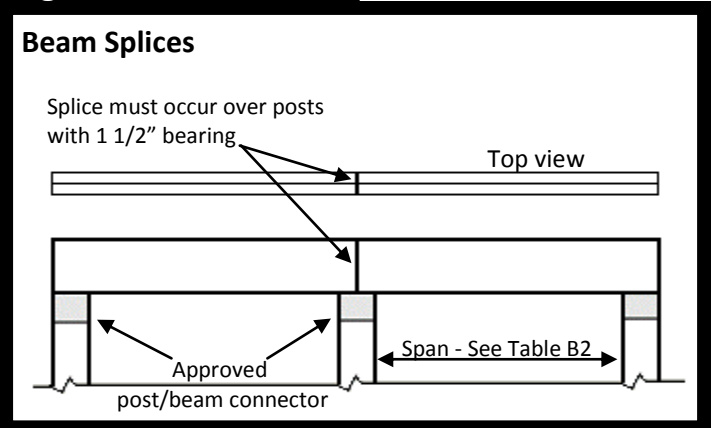


Table B1 MAXIMUM FLOOR JOIST SPANS ^{a,b}

IRC Table 502.3.1(2)					
Species	Size	Floor Joist Spacing On Center			
		12"	16"	19.2"	24"
Southern Yellow Pine	2 x 8	14'2"	12'10"	12'1"	11'0"
	2 x 10	18'0"	16'1"	14'8"	13'1"
	2 x 12	21'9"	18'10"	17'2"	15'5"
Douglas Fir-Larch, Hem-Fir, SPF	2 x 8	13'6"	12'3"	11'6"	10'3"
	2 x 10	17'3"	15'5"	14'1"	12'7"
	2 x 12	20'7"	17'10"	16'3"	14'7"

NOTES: a. # 2 grade or better, wet service conditions b. 40 psf live load, 10 psf dead load

Table B2* DECK BEAM SPANS ^{a,b,c}

Lumber Species	Joist Size	Floor Joist Spans Less Than or Equal to						
		6'	8'	10'	12'	14'	16'	18'
Southern Yellow Pine	2 - 2 x 6	7'1"	6'2"	5'6"	5'0"	4'8"	4'4"	4'1"
	2 - 2 x 8	9'2"	7'11"	7'1"	6'6"	6'0"	5'7"	5'3"
	2 - 2 x 10	11'10"	10'3"	9'2"	8'5"	7'9"	7'3"	6'10"
	2 - 2 x 12	13'11"	12'0"	10'9"	9'10"	9'1"	8'6"	8'0"
	3 - 2 x 6	8'7"	7'8"	6'11"	6'3"	5'10"	5'5"	5'2"
	3 - 2 x 8	11'4"	9'11"	8'11"	8'1"	7'6"	7'0"	6'7"
	3 - 2 x 10	14'5"	12'10"	11'6"	10'6"	9'9"	9'1"	8'7"
	3 - 2 x 12	17'5"	15'1"	13'6"	12'4"	11'5"	10'8"	10'1"
	Douglas Fir-Larch, Hem-Fir, SPF	2 - 2 x 8	6'10"	5'11"	5'4"	4'10"	4'6"	4'1"
2 - 2 x 10		8'4"	7'3"	6'6"	5'11"	5'6"	5'1"	4'8"
2 - 2 x 12		9'8"	8'5"	7'6"	6'10"	6'4"	5'11"	5'7"

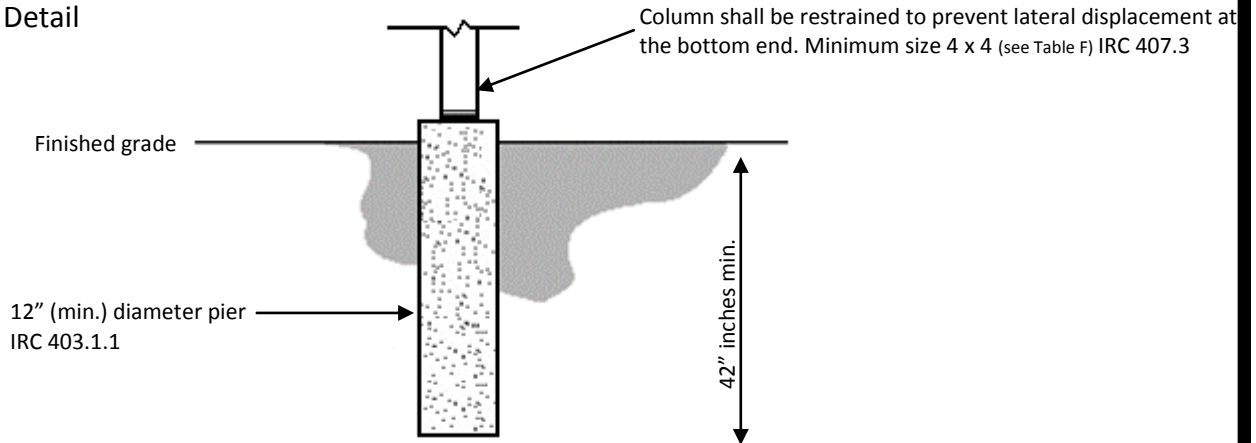
NOTES: a. # 2 grade or better, wet service conditions b. 40 psf live load, 10 psf dead load c. Beam assembled per (IRC 602.2(1)) * Table taken from 2008 American Forest & Paper Association, Inc "Prescriptive Residential Wood Deck Construction Guide"

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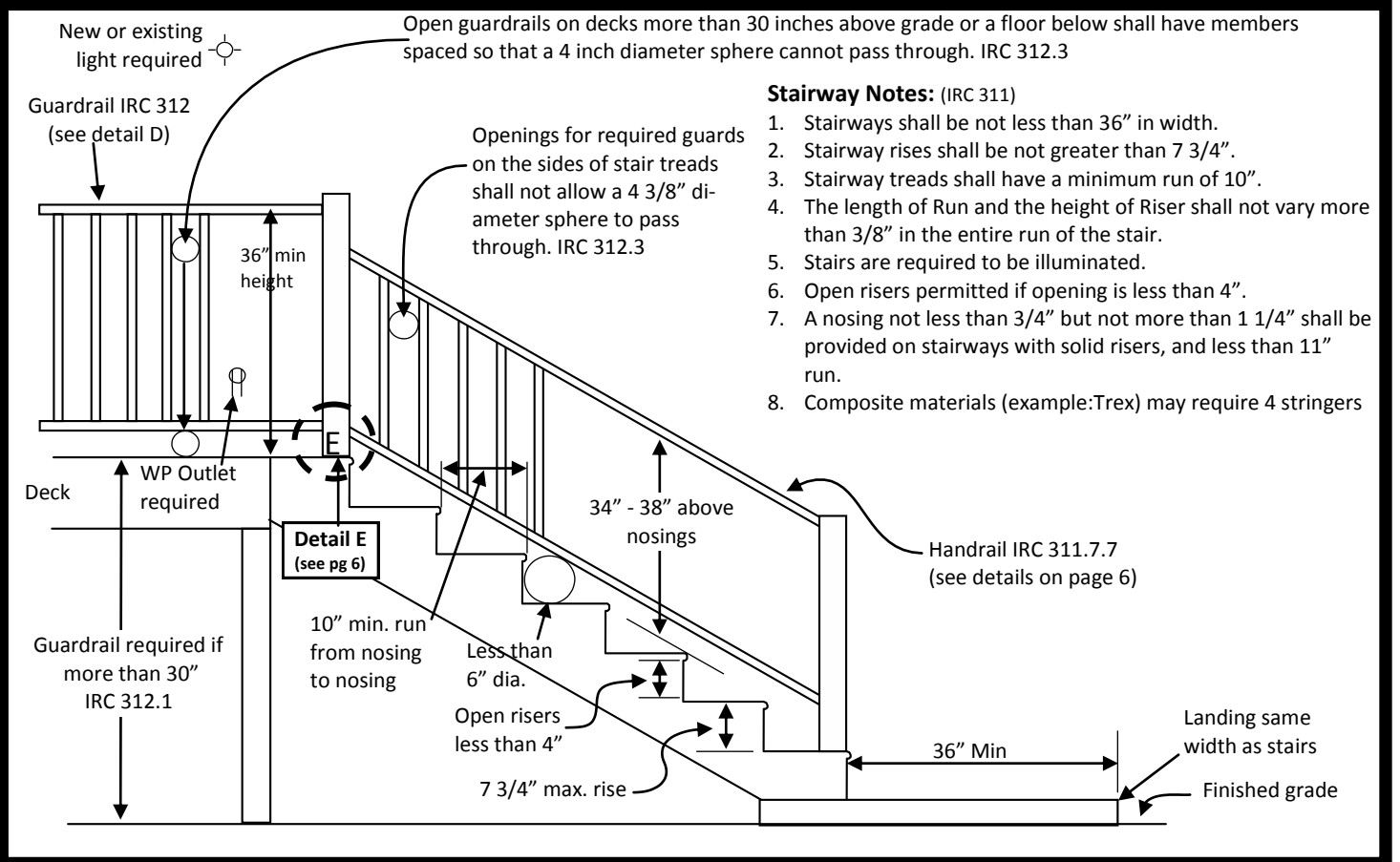
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Detail C

Post & Footing Detail



Detail D - Stair & Handrail Specifications



Stairway Notes: (IRC 311)

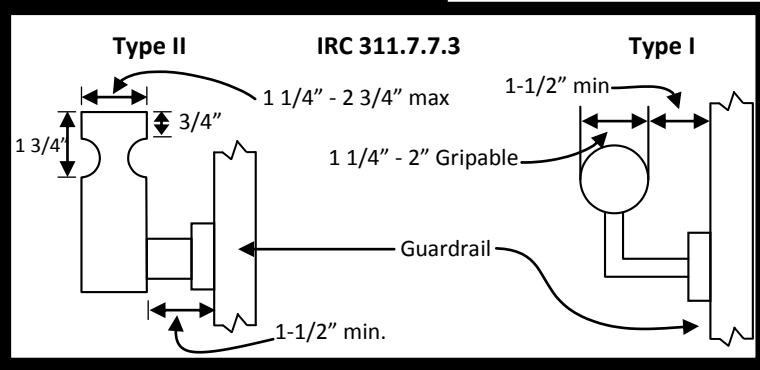
1. Stairways shall be not less than 36" in width.
2. Stairway rises shall be not greater than 7 3/4".
3. Stairway treads shall have a minimum run of 10".
4. The length of Run and the height of Riser shall not vary more than 3/8" in the entire run of the stair.
5. Stairs are required to be illuminated.
6. Open risers permitted if opening is less than 4".
7. A nosing not less than 3/4" but not more than 1 1/4" shall be provided on stairways with solid risers, and less than 11" run.
8. Composite materials (example:Trex) may require 4 stringers

Handrail Notes:

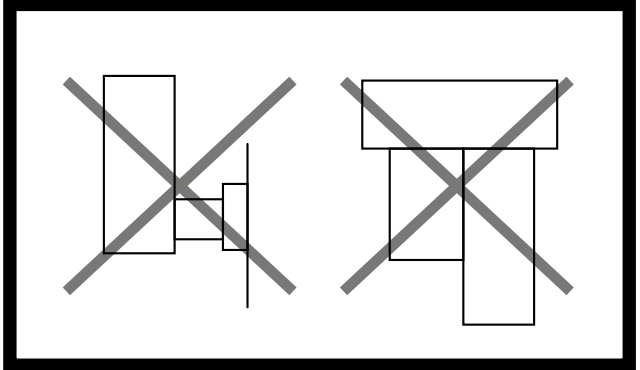
1. Handrails shall be continuous on at least one side of stairs with 4 or more risers. IRC 311.7.7.2
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings. 311.7.7.1
3. The handgrip portion of handrails shall be not less than 1-1/4 inches nor more 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

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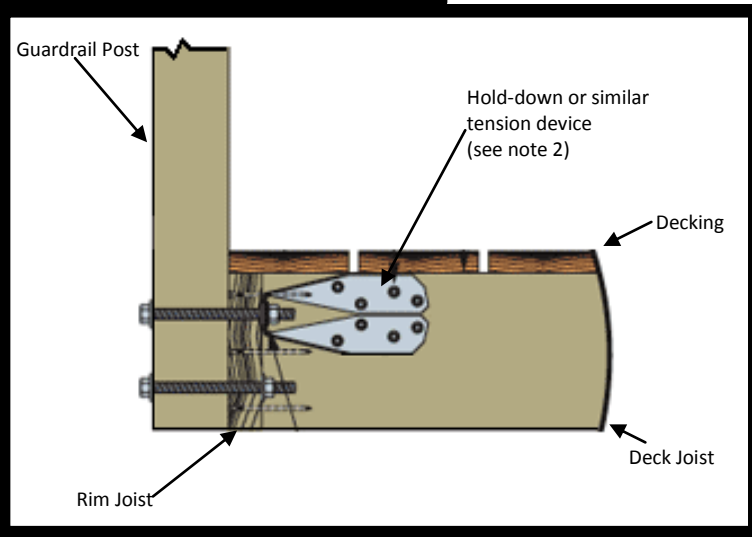
Preferred Handrail Details



Unacceptable Handrails



Detail E



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 notched.

Table F	RECOMMENDED POST SIZE				
	Load Area *				
Deck height	48	72	96	120	124
0' to 6'	4 x 4	4 x 4	6 x 6	6 x 6	6 x 6
6' and up	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6

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

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