

This handout is written only as a guide; it is not intended nor shall it be considered a complete set of requirements. Information sheets are available at the City's website at IGHMN.gov.

CALL BEFORE YOU DIG. Contact Gopher State One Call at (651) 454-0002 or www.gopherstateonecall.org for protection against underground utility damage. Contact Gopher State One Call 48 hours before you intend to dig.

The current Minnesota State Building Code is available on the Department of Labor and Industry website.

PERMITS

- A Building Permit is required for all decks attached to the home or detached decks that are 30" or more above grade. Allow 7-10 business days for review of your plans. The permit fee is based on valuation. The permit can be applied for on our permit portal on our website. We no longer accept paper applications at the counter.

APPLICATION SUBMITTALS

- A completed Deck Permit Worksheet attached in this handout
- A site plan of the lot on either a survey or a plat map drawn to scale, with dimensions, showing distances to property lines**
- A copy of your plan indicating:**
 - Cross section
 - Size of the deck
 - Plan view
 - Joist sizes and spacing
 - Beam sizes
 - Post sizes and spacing
 - Footing sizes and depth
 - Guardrail details (if required)
 - Type and location of lateral resistant hardware
 - Type of ledger fasteners
 - Decking material
 - **Refer to illustrations in this handout**

Computer-generated drawings must be labeled with all pertinent information, i.e. the information on the material list must be transferred to the drawing.

Some deck designs may not be appropriate should the placement of a porch on the deck platform be a future consideration.

GENERAL BUILDING CODE REQUIREMENTS

- **Exposed Wood:** Exposed wood (posts, beams, joists, and decking) is required to be of approved wood of natural resistance to decay (redwood, cedar, etc.). Composite decking must be approved material, labeled that it meets ASTM D7032.
- **Easements:** Check easement locations on your property with the City's Engineering Department, (651) 450-2570, as structures are not allowed in easements.
- **Flashing:** All connections between the deck and the dwelling shall be flashed.
- **Frost Footings:** Frost footings are required when the deck is to be attached to a dwelling or garage that has frost footings (see illustration).

- **Guardrails:** A minimum 36" high guardrail must protect decks 30" or more above grade. Openings in guardrails shall have intermediate rails or an ornamental pattern such that a 4" diameter sphere cannot pass through. The triangular area formed at the intersection of the tread, riser, and bottom of the guardrail must be such that a 6" diameter sphere cannot pass through.
- **Header Joists:** Header joists more than 6' long and tail joists over 12' long shall be supported by approved framing anchors such as joist hangers.
- **Joists:** Joists shall not overhang beams unless a special design is approved. At cantilevered beam ends, do not end-notch or miter-cut more than 25% of the beam depth. The maximum joist cantilever shall be limited to one-fourth of the joist span or the maximum cantilever length specified in Table R507.6, whichever is less. Beam cantilevers are limited to the adjacent beam's span, divided by four.
- **Live Load:** Decks shall be designed to support a live load of 40 pounds per square foot and a dead load of 10 pounds per square foot.
- **Pressure Treated Wood:** Treated wood may require special hardware (fasteners, hangers and/or flashing). Contact your lumber supplier for more information.
- **Setbacks:** Setback requirements vary by zoning districts. Please check with the Planning Department at 651-450-2545.
- **Stairs:** Stairs shall have a 7-3/4" maximum rise and 10" minimum tread depth. The largest riser shall not exceed the smallest by more than 3/8". The largest tread shall not exceed the smallest by more than 3/8". On stairs of four or more risers, a graspable handrail equivalent to 1-1/4" to 2" diameter and mounted between 34" to 38" above tread nosing is required on at least one side of the stairs. A continuous stair guardrail is required at all open sides of stairways located more than 30" above floor or grade and shall be a minimum of 34" in height (R311.5.6.2). Handrail shall have a minimum 1-1/2" open space from wall or guardrail (see handout). The minimum stair width shall be 36" and stairs shall be provided with illumination in the immediate vicinity of top landing.
- Exterior work authorized by a building permit issued in accordance with the Minnesota State Building Code must be completed within 180 days of permit issuance.
- Carbon monoxide detectors are required by law in all single-family homes (Minnesota State Building Code).

APPROVED PLASTIC/COMPOSITE DECKING MATERIALS

- Please visit the **10,000 Lakes Chapter of the International Code Council** website at www.10klakes.org to find structural plastic products approved for decking materials in Eagan. Other products may be submitted for approval by the City's Building Inspections Division within the limitations of the Evaluation Service Report.

WEBSITES FOR EVALUATION SERVICE REPORTS

www.icc-es.org/Evaluation_Reports/index.shtml

International Code Council, Evaluation report index

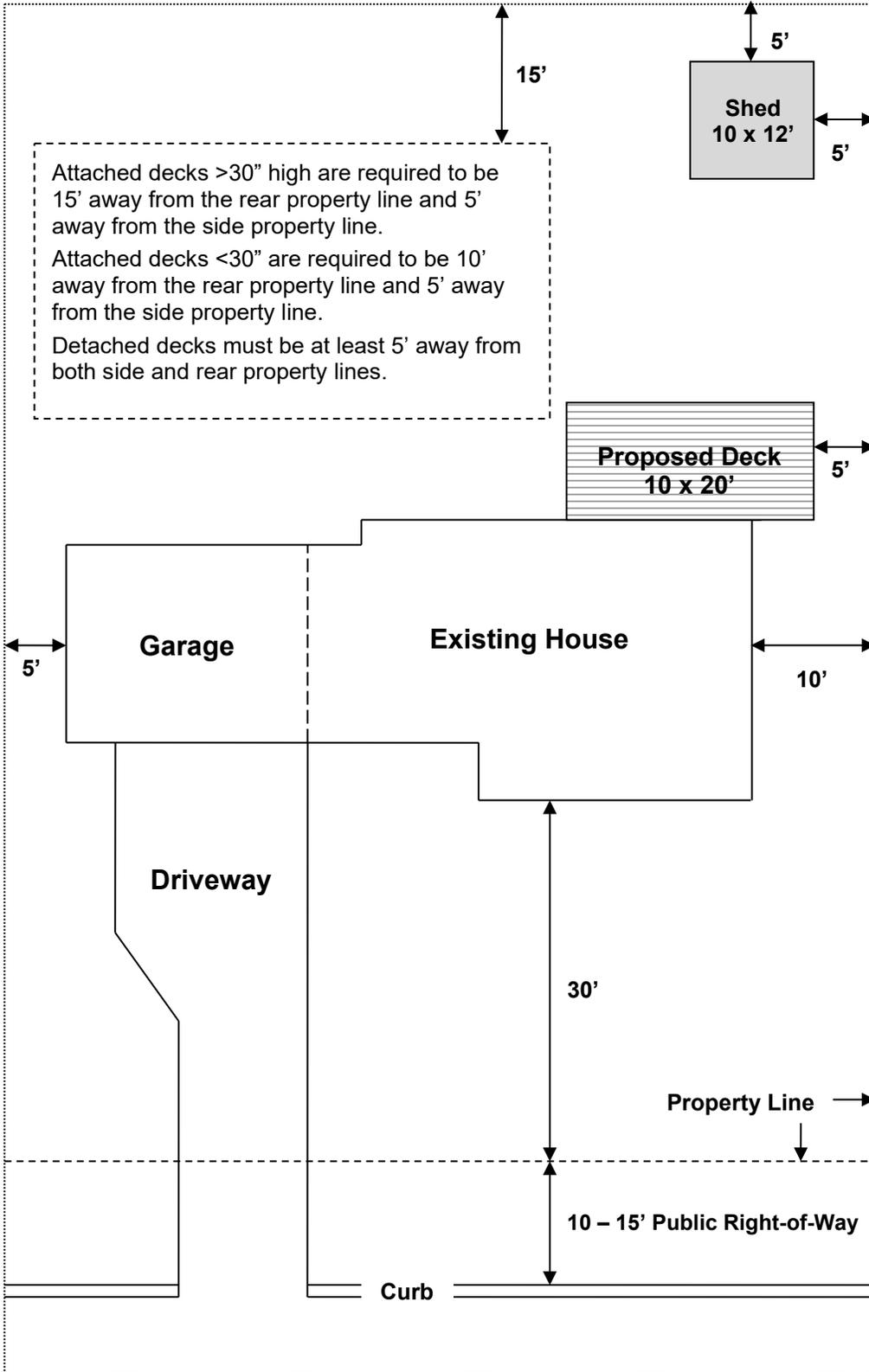
www.nateval.org

National Evaluation Service, Inc.

REQUIRED INSPECTIONS

- **Footings** – after the holes are dug, but prior to pouring the concrete
- **Framing** – if determined by the plan review
- **Final** – when deck is complete

Example Site Plan



Provide one (1) copy of a Site Plan, drawn to scale

(on Registered Land Survey or County Plat Map)

Show on Plan:

- Lot lines
- Lot dimensions
- Street name
- Address
- Owner name(s)
- All existing structures
- Driveway
- Pond / Lake / Stream
- Special easements
- Power supply
- Location of new structure
- Structure distance to lot lines
- Distance to other buildings
- *For townhomes – please include the dimensions to adjacent units

NOTE: If Site Plan is incomplete, the plan review process will be delayed.

Gopher State One Call

(for utility locations)
(651) 454-0002

Jack & Jill Smith
 9895 89th Avenue

Footings Sizes, Beam and Joist Spans

Minimum Footing Size for Decks – Table R507.3.1

Live Load ^b (psf)	Tributary Area (square feet) ^e	Load bearing value of soils ^{a, c, d} (psf)					
		1500 ^c			2000 ^e		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	20	12	14	6	12	14	6
	40	14	16	6	12	14	6
	60	17	19	6	15	17	6
	80	20	22	7	17	19	6
	100	22	25	8	19	21	6
	120	24	27	9	21	23	7
	140	26	29	10	22	25	8
	160	28	31	11	24	27	9

For SI: 1 inch = 25.4 mm 1 square foot = 0.0929 m² 1 pound per square foot = 0.0479 kPa

- Interpolation permitted, extrapolation not permitted.
- Live load = 40 psf, dead load = 10 psf.
- Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 post.
- If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
- Area, in square feet, of deck surface supported by post and footings.

2020 MNRC Table R507.5

Deck Beam Span Lengths^{a, b, g} (feet – inches)

Species ^c	Size ^d	Deck joist span less than or equal to: (feet)						
		6	8	10	12	14	16	18
Southern Pine	1 – 2 x 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 x 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 x 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 x 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 x 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 x 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 x 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 x 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 x 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 x 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 x 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 x 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

For SI: 1 inch = 25.4 mm 1 foot = 304.8 mm 1 pound per square foot = 0.0479 kPa 1 pound = 0.454 kg

- 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.
- Beams supporting deck joists from one side only.
- No. 2 grade, wet service factor.
- Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.

2020 MNRC Table R507.6

Deck Joist Spans for Common Lumber Species (feet – inches)

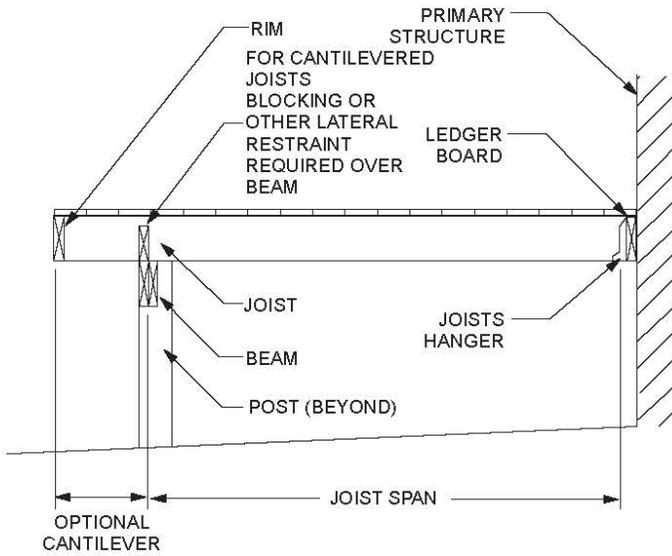
Species ^a	Size	Allowable Joist Span ^b			Maximum Cantilever ^{c, f}		
		Spacing of Deck Joists (inches)			Spacing of Deck Joists with Cantilevers ^c (inches)		
		12	16	24	12	16	24
Southern Pine	2 x 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 x 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 x 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 x 12	18-0	16-6	13-6	4-6	4-2	3-4

For SI: 1 inch = 25.4 mm 1 foot = 304.8 mm 1 pound per square foot = 0.0479 kPa 1 pound = 0.454 kg

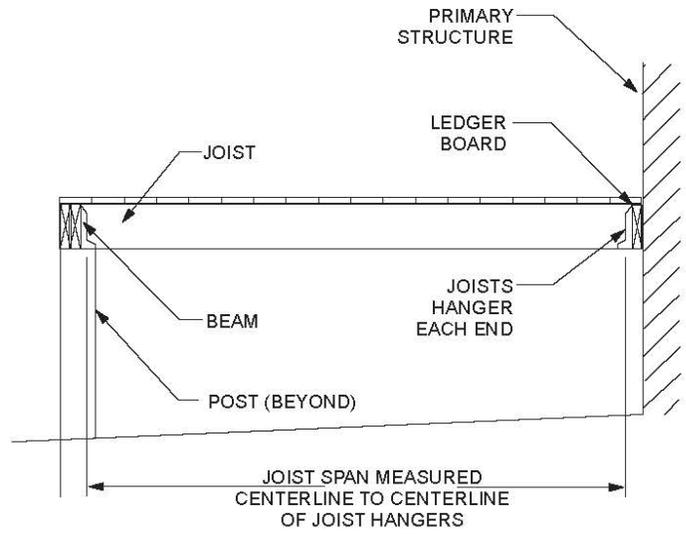
- No. 2 grade with wet service factor.
- Live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$
- Live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied at the end.
- Cantilevered spans not exceeding the nominal depth of the joist are permitted.

R507.6: The Maximum joist cantilever shall be limited to one-fourth of the supported joist span or the maximum cantilever length specified in Table R507.6, whichever is less.

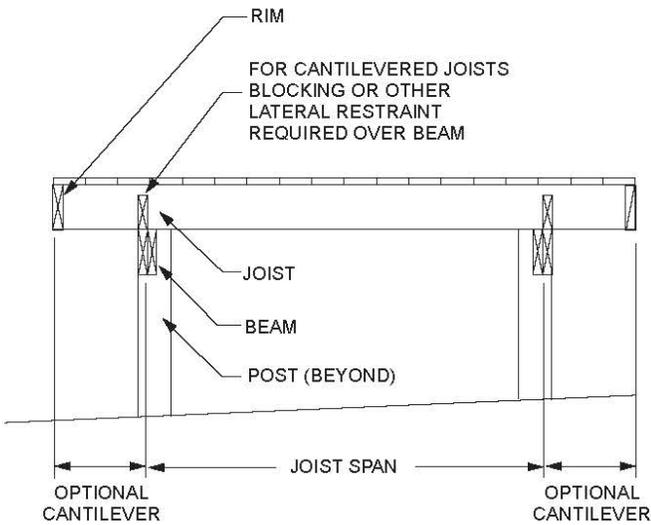
Joist Spans



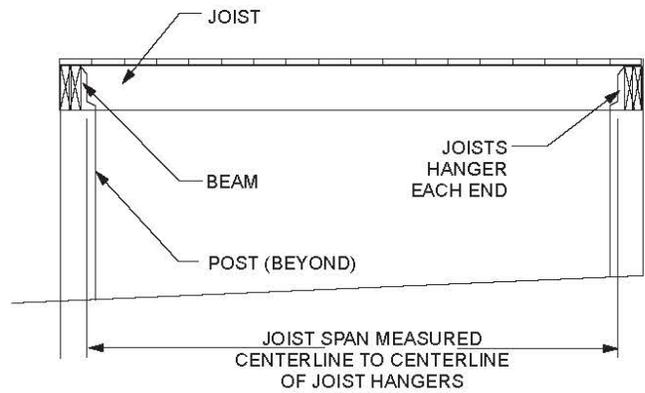
CANTILEVERED JOISTS WITH DROPPED BEAM



JOISTS WITH FLUSH BEAM



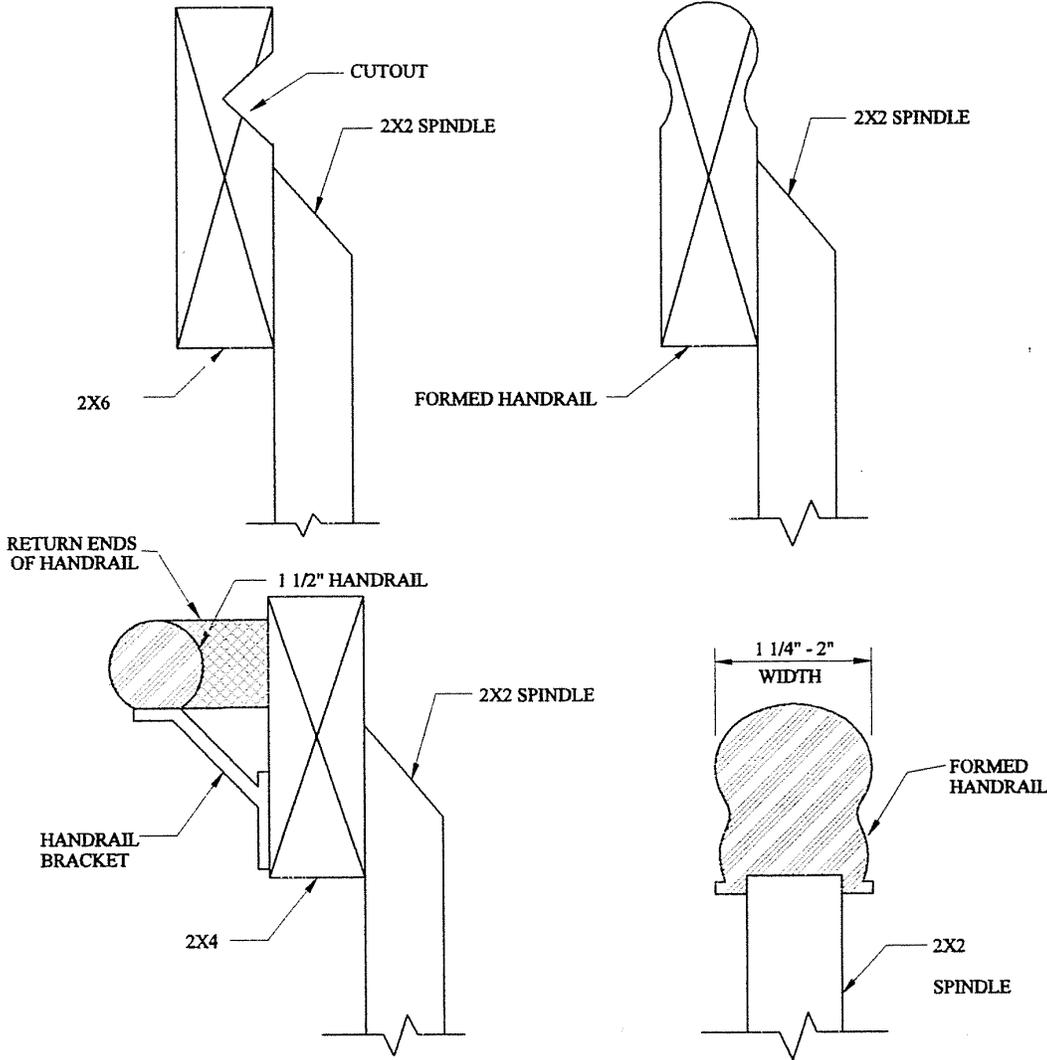
JOISTS ON FREE-STANDING DECK WITH DROPPED BEAM



JOISTS ON FREE-STANDING DECK WITH FLUSH BEAM

FIGURE R507.6
TYPICAL DECK JOIST SPANS

HANDRAIL DESIGNS



- NOTES:**
- 1. OTHER SHAPES MAY BE ACCEPTABLE IF THEY PROVIDE AN EQUIVALENT GRIPPING SURFACE.
 - 2. FLAT 2X4 OR 2X6 HANDRAILS ARE NOT ACCEPTABLE.
 - 3. APPROVED WOOD OF NATURAL RESISTANCE TO DECAY OR TREATED WOOD SHALL BE USED.
 - 4. RETURN ENDS OF HANDRAILS AT TOP AND BOTTOM OF STAIRS TO POST OR NEWELL.
 - 5. 1-1/2" MINIMUM SPACE BETWEEN HANDRAIL AND GUARDRAIL OR WALL.

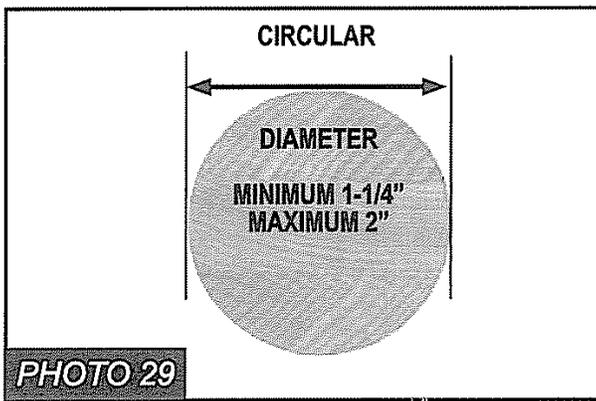


PHOTO 29

R311.7.8.5 Grip size.

Required handrails shall be of one of the following types or provide equivalent graspability.

Type I. Handrails with a circular cross section shall have an outside diameter of not less than 1-1/4 inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular, it shall have a perimeter of not less than 4 inches (102 mm) and not greater than 6-1/4 inches (160 mm) and a cross section of not more than 2-1/4 inches (57 mm). Edges shall have a radius of not less than 0.01 inch (0.25 mm).

Type II. Handrails with a perimeter greater than 6-1/4 inches (160 mm) shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within 3/4 inch (19 mm) measured vertically from the tallest portion of the profile and have a depth of not less than 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. This required depth shall continue for not less than 3/8 inch (10 mm) to a level that is not less than 1-3/4 inches (45 mm) below the tallest portion of the profile. The width of the handrail above the recess shall be not less than 1-1/4 inches (32 mm) and not more than 2-3/4 inches (70 mm). Edges shall have a radius of not less than 0.01 inch (0.25 mm).

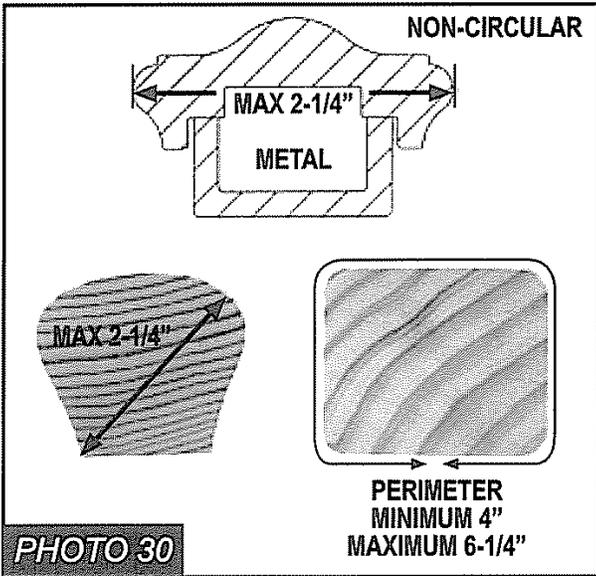


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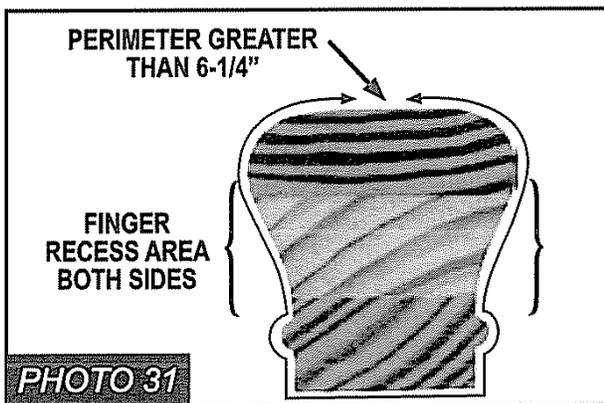


PHOTO 31

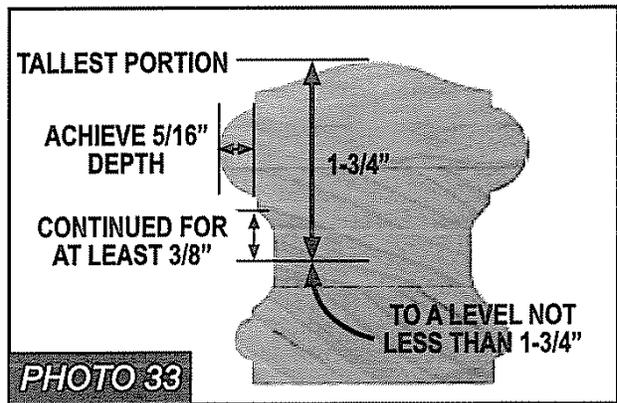


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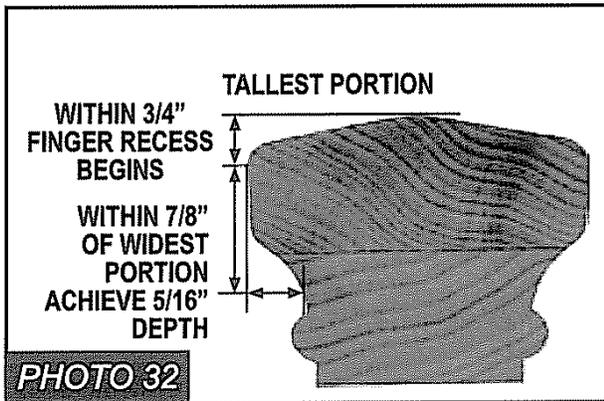


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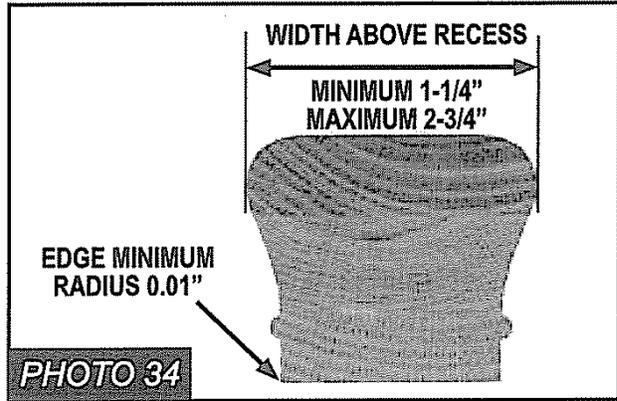
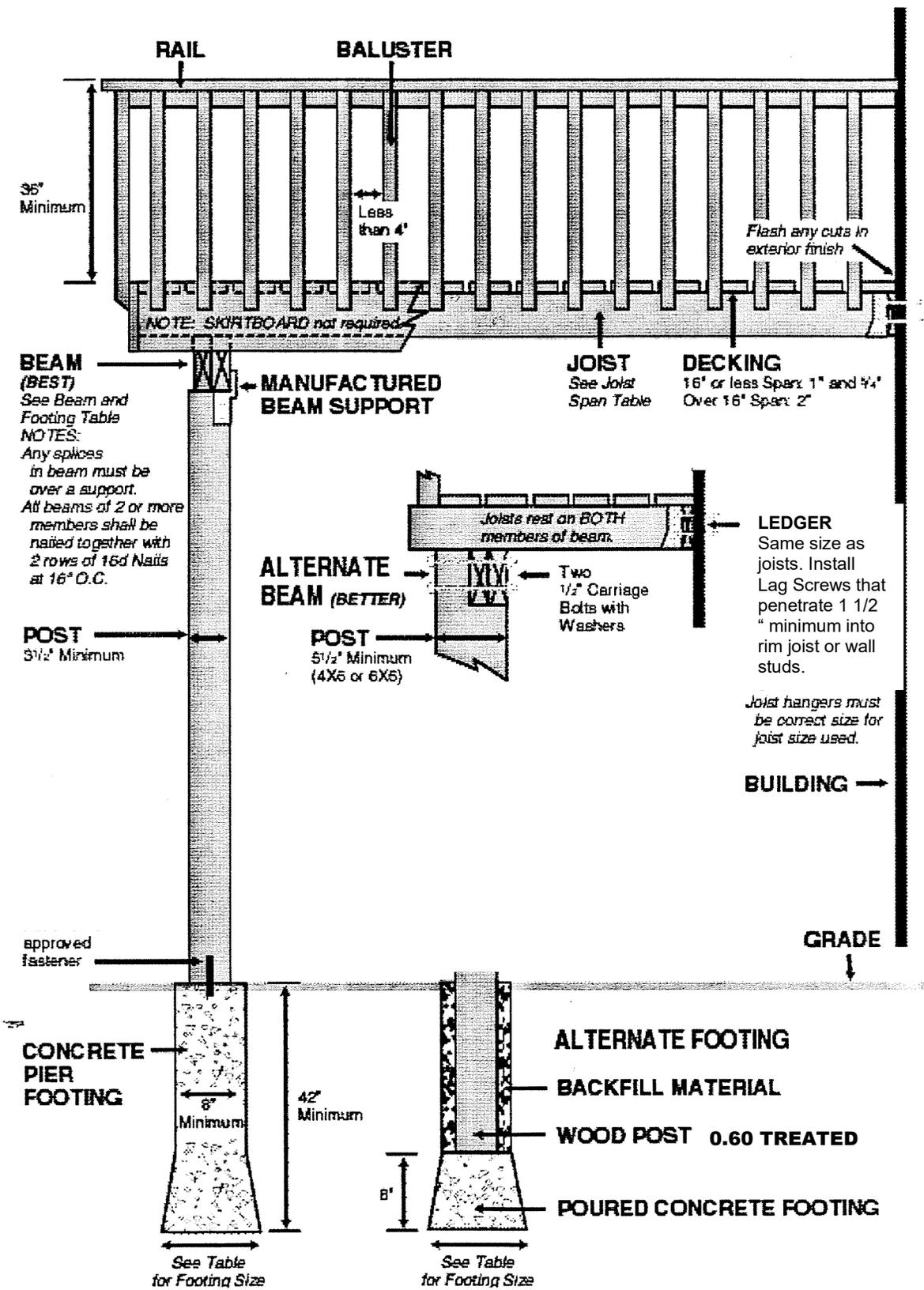
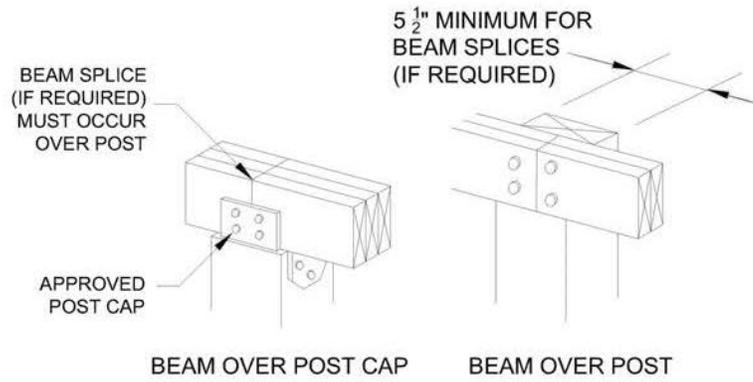


PHOTO 34

R311.7.9 Illumination All stairs shall be provided with illumination in accordance with Section R306.

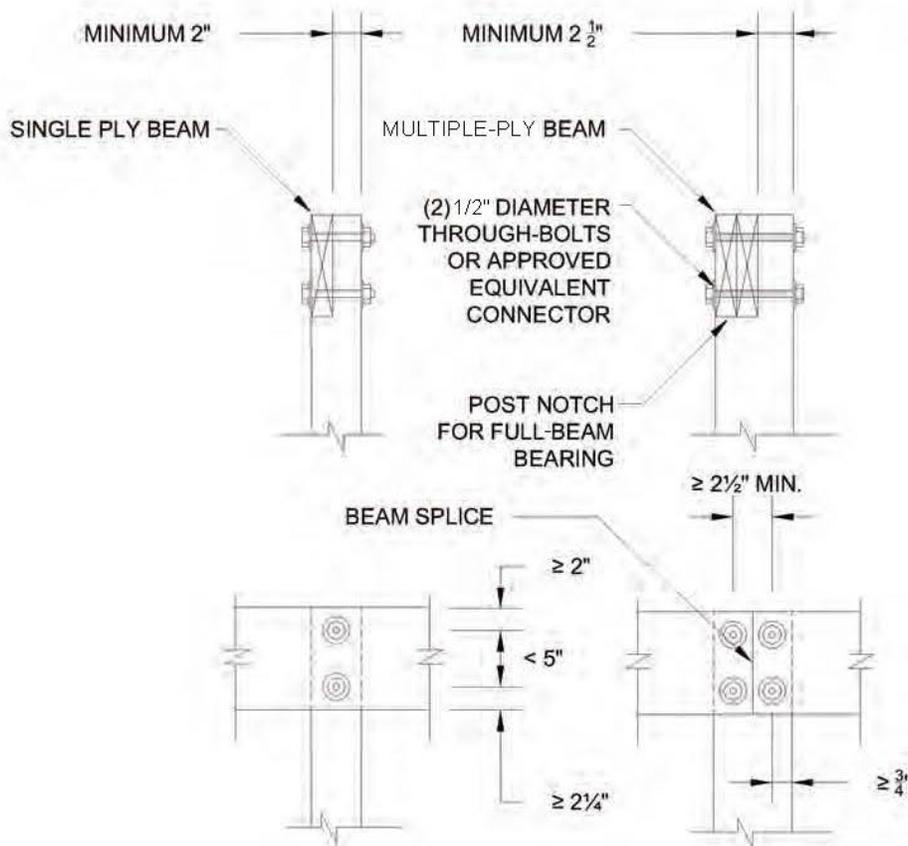


Post to Beam Connection



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(1)
DECK BEAM TO DECK POST



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(2)
NOTCHED POST-TO-BEAM CONNECTION

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^{c, f, g}
 (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 ^{d, e}						
1/2 inch 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

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

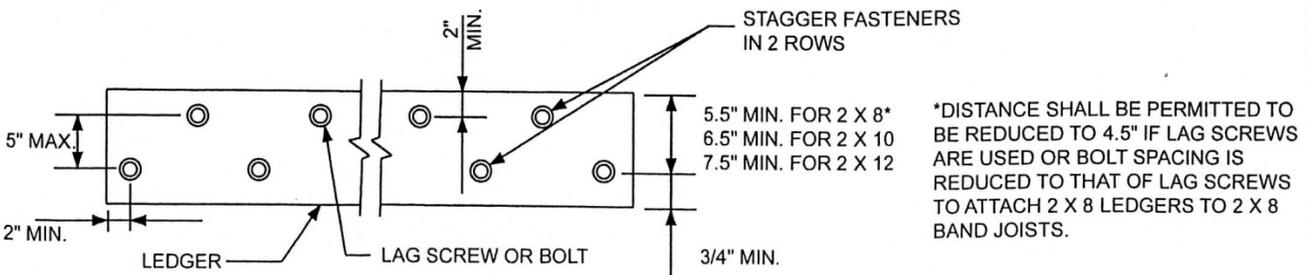
- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2 inch.
- Ledgers shall be flashed to prevent water from contacting the house band joist.
- Lag screws and bolts shall be staggered in accordance with Section R507.2.1.
- Deck ledger shall be minimum 2 x 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- 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.
- A minimum 1 x 9 1/2 Douglas Fir laminated veneer lumber 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 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.

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 ^a	2 inches ^d	1/4 inch	2 inches ^b	1 5/8 inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 5/8 inches ^b

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).



For SI: 1 inch = 25.4 mm.

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

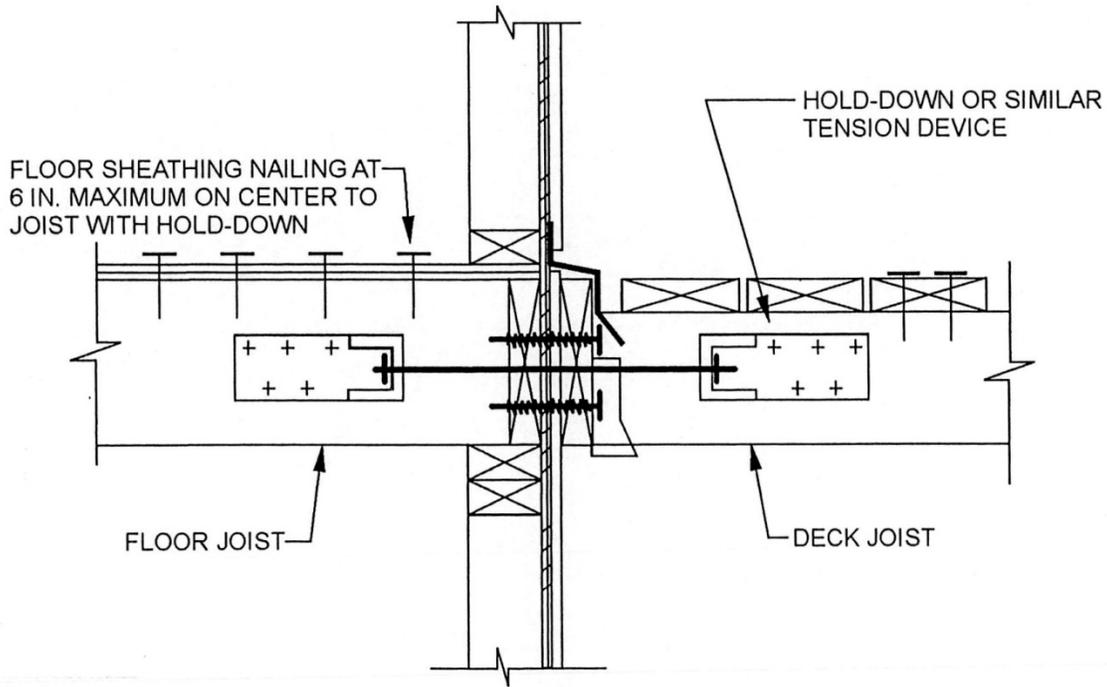
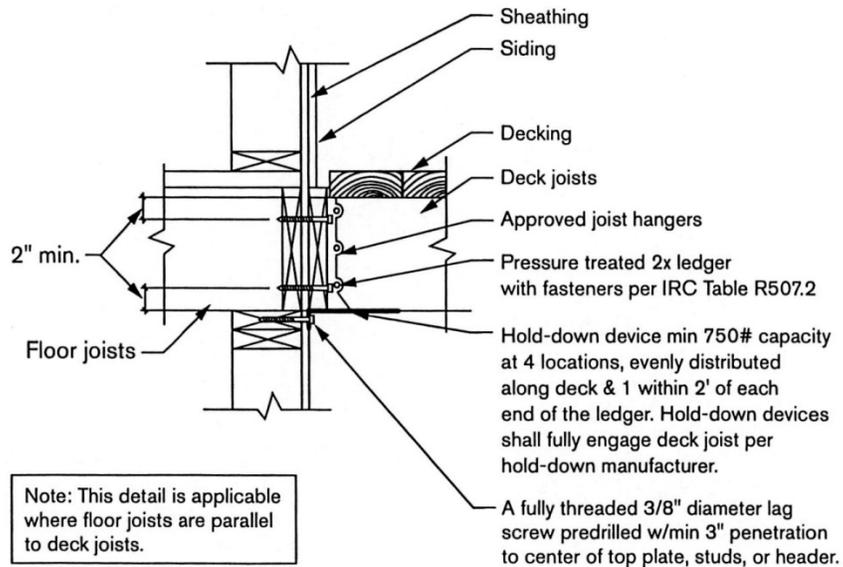


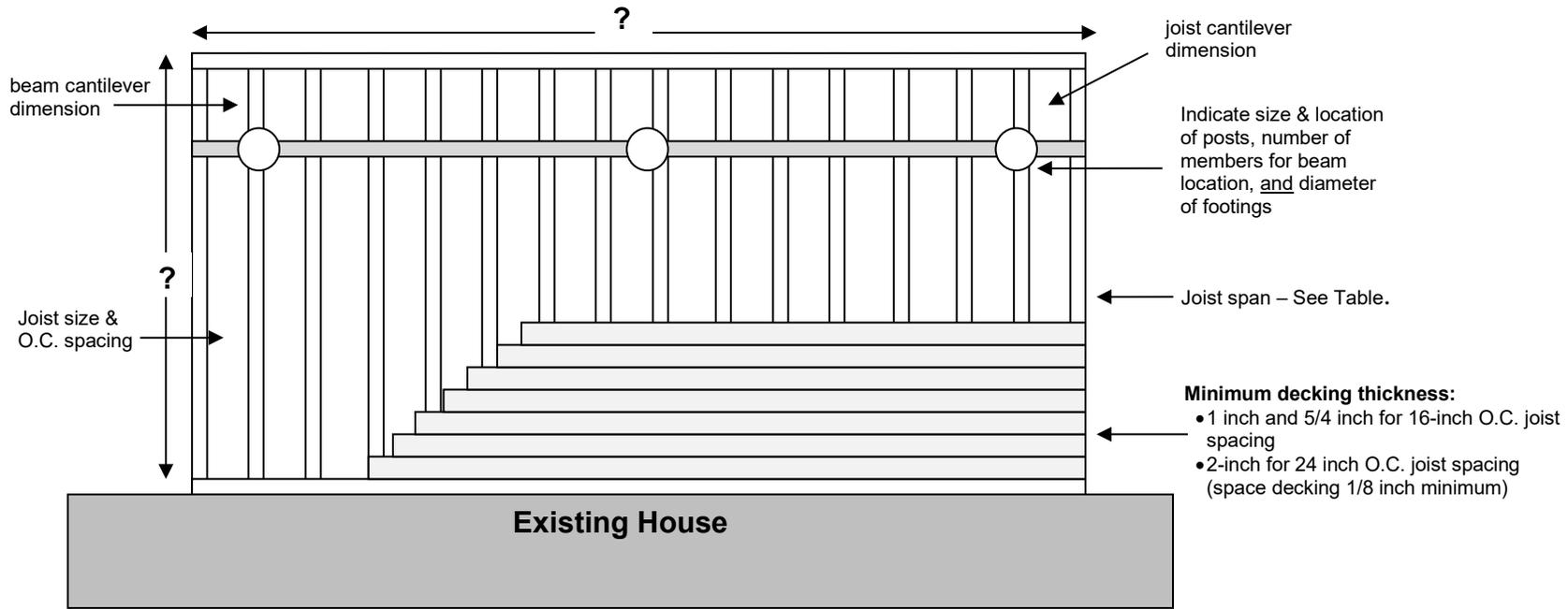
FIGURE 507.2.3
DECK ATTACHMENT FOR LATERAL LOADS

2015 IRC Lateral Load Detail

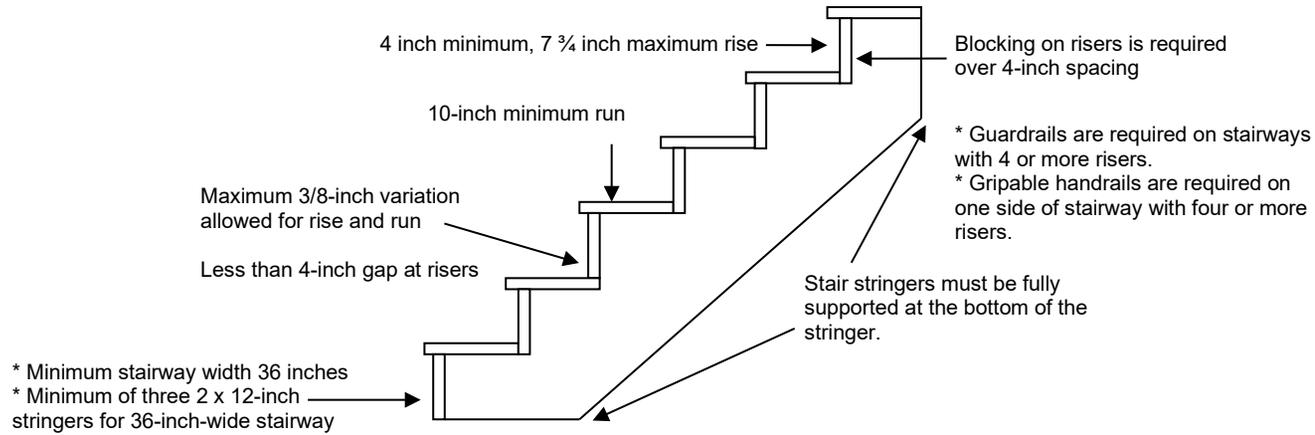


The new "permitted" lateral-load connection detail in the 2015 IRC won't require invasive interior remodeling to install, just hardware that connects the bottom of a joist back to the wall plates, foundation, studs, or window or door headers. Currently there is no widely distributed hardware for this detail, but expect to see some prior to publication of the code in early 2015. Four evenly-spaced connections are required, each of which must resist 750 pounds.

Plan View



Stairway Requirements



Required Information for Deck Permits

Include on plans

- | | |
|---|---|
| <input checked="" type="checkbox"/> Dimensions of deck: _____
<input type="checkbox"/> Size of posts: _____
<input type="checkbox"/> Footing diameter: _____
*If sizes vary, leave blank and indicate individual sizes on plans.

<input type="checkbox"/> Size of beam(s): _____
*Example: 2 – 2" x 12"

<input type="checkbox"/> Cantilever on beam(s): _____
<input type="checkbox"/> Size of joists: _____
<input type="checkbox"/> Species of lumber for framing: _____
<input type="checkbox"/> Dimensions of floorboards: _____
<input type="checkbox"/> Pattern of floorboards: _____
*i.e: perpendicular (90 degrees) to joists, 30/45/or 60 degrees to joists

<input type="checkbox"/> Stair width: _____
<input type="checkbox"/> Stair length: _____
<input type="checkbox"/> Will the deck be built around a cantilevered area? (i.e., a bay with a patio door) _____
<input type="checkbox"/> What type of floor framing will the ledger be attached to? (i.e., I-joist, floor truss, 2" x 10", etc.) _____ | <input type="checkbox"/> Height of deck from ground: _____
<input type="checkbox"/> Spacing of posts: _____
<input type="checkbox"/> Footing depth: _____
*42" minimum for traditional concrete footing. Specify if using engineered footings (i.e., Diamond Pier) and provide installation instructions.
<input type="checkbox"/> Drop or flush beam(s): _____

<input type="checkbox"/> Spacing of joists: _____

<input type="checkbox"/> Floorboard type: _____

<input type="checkbox"/> Stair stringer spacing: _____

<p style="text-align: right;">Yes / No</p> |
|---|---|

Include on site survey

- Distance to property lines:**
- | | |
|--|---|
| <input type="checkbox"/> Side 1: _____
<input type="checkbox"/> Side 2: _____ | <input type="checkbox"/> Rear: _____
<input type="checkbox"/> Other: _____ |
|--|---|

Provide all that apply

- Type of hardware to be used:**
- Ledger board:**
- Ledger board connection: _____
- Lateral load connection: _____
- Beam to posts:**
- Post cap (manufacturer/model) _____
- Through bolts (size) _____
- Other approved type _____
- Joist to beam:**
- Joist hanger _____
- Other _____
- Any other hardware used: _____

Final Checklist for Permit Submittal

Two (2) copies of plans that include:

- Cross section view
- Plan view
- Stair framing view
- Applicable supplemental information

Site plan, drawn to scale on survey or plat map, including:

- Deck dimensions
- Distance to property lines