City of Byron
Deck Information Packet

REQUIREMENTS

A building permit is required to construct a deck if attached to a structure or more than 30” above grade. To obtain a permit, the following items must be submitted:

1. A signed, completed building permit application form
2. Two copies of a site plan showing property lines, existing buildings and the proposed structure location with distances to property lines
3. Two copies of building plans. The following pages may be used in designing your deck. If there are any overhead wires in the vicinity of your proposed deck, contact the state electrical inspector for required clearances. The following items must be included with the deck plans:
   - All dimensions drawn to scale
   - Size & depth of footings
   - Size & spacing of posts
   - Size of beams & headers
   - Stair location (if applicable)
   - Size, direction and spacing of joists
   - One elevation showing deck height and guard design
   - Size, direction and type of decking
   - Type and size of all materials used

PERMIT PROCESS

Your application will be reviewed for code compliance and setback requirements. Permit fees will be calculated based on the valuation of your deck. You will be notified when the permit is ready to be picked up.

Before digging, call **GOPHER STATE ONE CALL** 48 hours in advance at (800) 252-1166 to locate utilities.

REQUIRED INSPECTIONS

Please call (507) 356-8709 to schedule inspections.

1. **Footing** - After holes are dug, loose dirt and water removed and prior to pouring concrete
2. **Framing** - Only if deck joists are lower than 36” above grade
3. **Final** - After work is complete

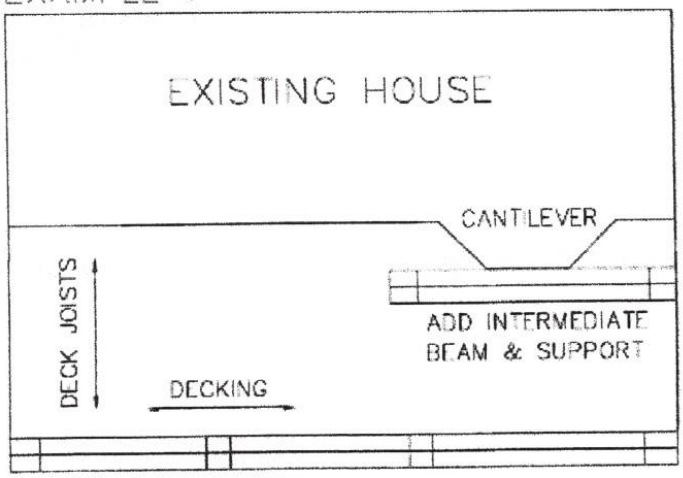
- Structural members of exterior decks must be cedar, redwood, treated wood or an approved composite material.
- Hangers, connectors and fasteners used in conjuction with ACQ treated lumber are required to be ACQ compatable.
- Special designs or engineering may be required for a 3-season porch or if spas/whirlpool tubs will be placed/located on decks.
- Revised plan review fees shall be incurred in the event an additional plan review becomes necessary due to revised building plans.

- **4x4"** posts (when used for rails and guards) may only be notched a maximum of 7/8 of an inch. **6x6"** posts (when used for rails and guards) may be notched up to ½ of the thickness of the post.

- Decks cannot bear on cantilevered floors. Additional framing will be required.

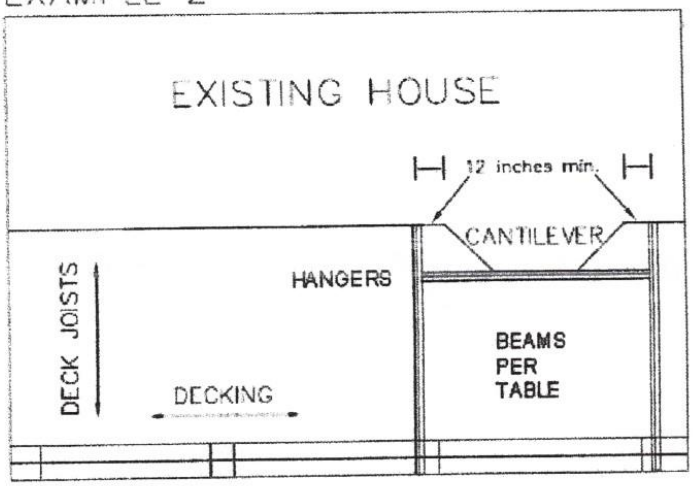
Many house designs have cantilevered (extensions) from the main structure and which typically contain patio doors for future deck additions. The reinforcement selected will be based on the type of floor framing member presently in the house. We have diagrammed two possible solutions for providing such reinforcement.

EXAMPLE 1



Example 1
Add an intermediate beam, supports and footings. Size beam and footings.

EXAMPLE 2



Example 2
Size beams per handout. Provide adequate hangers from all connections. Design center beam per chart. Also lag bolt to cantilever ledger board.

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST[a]
(Deck live load = 40 psf, deck dead load = 10 psf

CONNECTION DETAILS	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′
	On-center spacing of fasteners						
1/2-inch diameter lag screw with 1/2-inch maximum sheathing[b, c]	30	23	18	15	13	11	10
1/2-inch diameter bolt with 1/2-inch maximum sheathing[c]	36	36	34	29	24	21	19
1/2-inch diameter bolt with 1-inch maximum sheathing[d]	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.

a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.

b. The tip of the lag screw shall fully extend beyond the inside face of the band joist.

c. Sheathing shall be wood structural panel or solid sawn lumber.

d. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber, or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

TABLE R507.9.1.3(2)
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]	3/4 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]

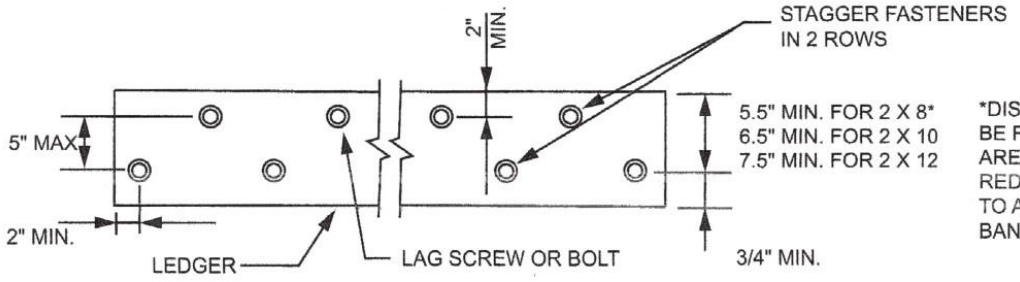
For SI: 1 inch = 25.4 mm.

a. 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 R507.9.1.3(1).

b. Maximum 5 inches.

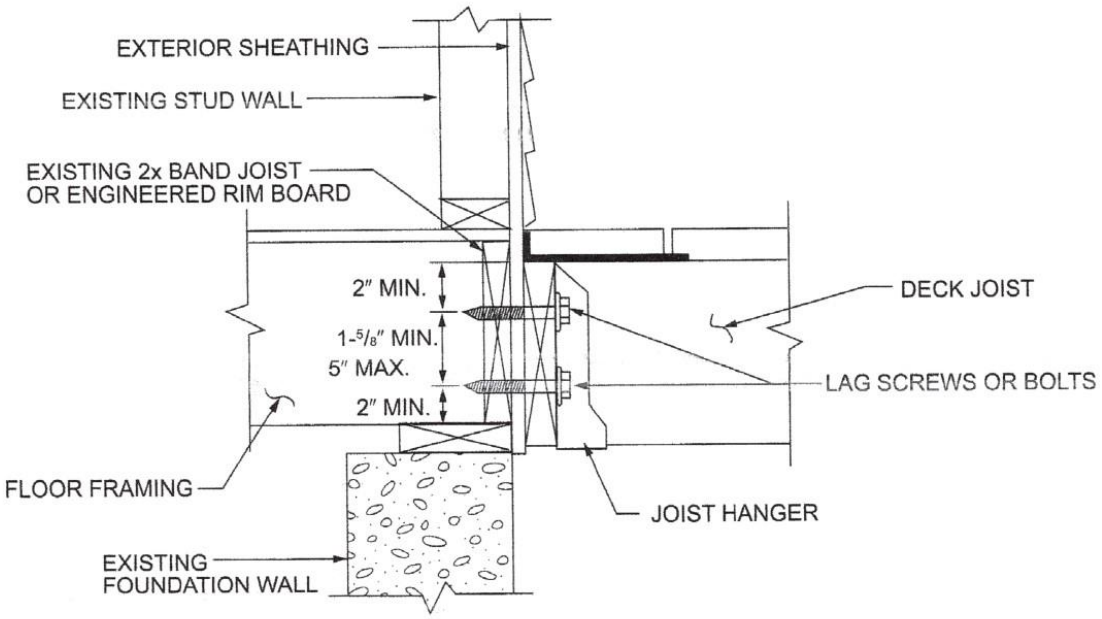
c. For engineered rim joists, the manufacturer's recommendations shall govern.

d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.9.1.3(1).



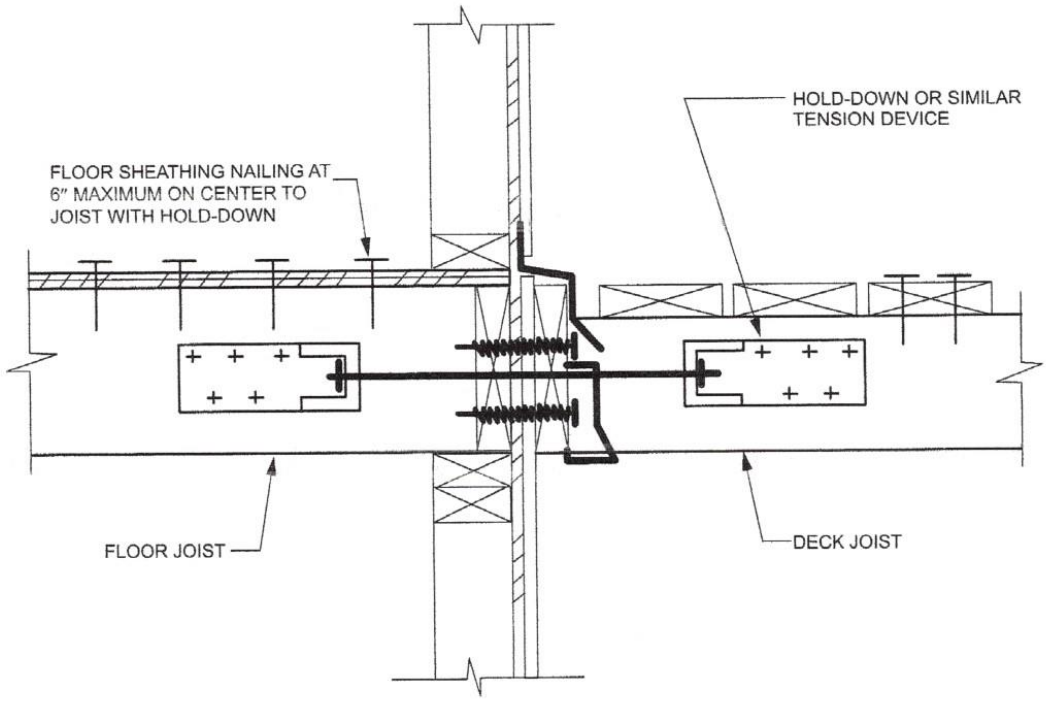
For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.2(1)
DECK ATTACHMENT FOR LATERAL LOADS

TABLE R507.6
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)

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 × 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 × 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 × 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 × 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d],	2 × 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 × 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 × 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 × 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 × 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 × 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 × 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 × 12	17-5	15-1	12-4	3-10	3-9	3-1

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.

a. No. 2 grade with wet service factor.

b. Live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$.

c. 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.

d. Includes incising factor.

e. Northern species with no incising factor.

f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

TABLE R507.7
MAXIMUM JOIST SPACING FOR DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking diagonal to joist[a]
$1^1/_4$-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.2	In accordance with Section R507.2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

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

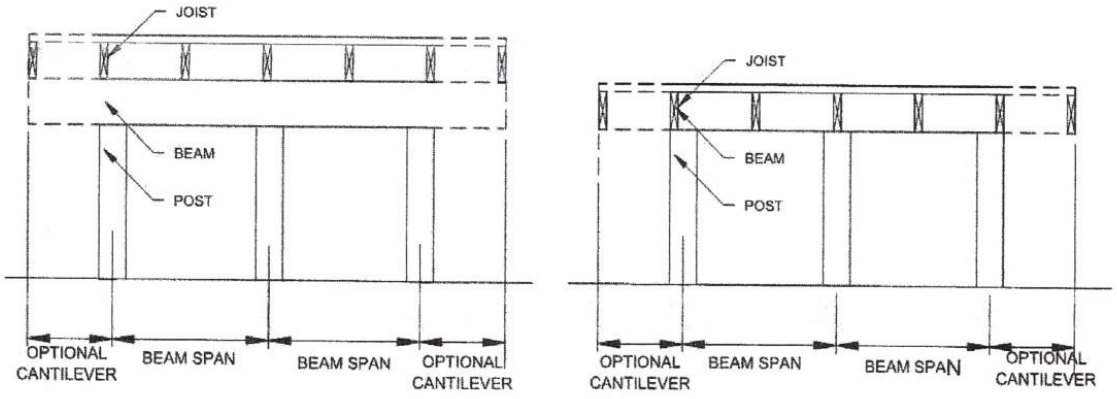


FIGURE R507.5
TYPICAL DECK JOIST SPANS

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 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir-larch[e], hem-fir[e], spruce-pine-fir[e], redwood, western cedars, ponderosa pine[f], red pine[f]	3 × 6 or 2 – 2 x 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 – 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 – 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 – 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 – 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 – 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 – 2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 – 2 × 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

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.

MN a. Live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.

b. Beams supporting deck joists from one side only.

c. No. 2 grade, wet service factor.

d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.

e. Includes incising factor.

f. Northern species. Incising factor not included.

g. Beam cantilevers are limited to the adjacent beam's span divided by 4.

TABLE R507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE LOAD[b] (psf)	TRIBUTARY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS [a, c, d] (psf)											
		1500[e]			2000[e]			2500[e]			≥ 3000[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)	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	12	14	6	12	14	6
	40	14	16	6	12	14	6	12	14	6	12	14	6
	60	17	19	6	15	17	6	13	15	6	12	14	6
	80	20	22	7	17	19	6	15	17	6	14	16	6
	100	22	25	8	19	21	6	17	19	6	15	17	6
	120	24	27	9	21	23	7	19	21	6	17	19	6
	140	26	29	10	22	25	8	20	23	7	18	21	6
	160	28	31	11	24	27	9	21	24	8	20	22	7

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa.

a. Interpolation permitted, extrapolation not permitted.

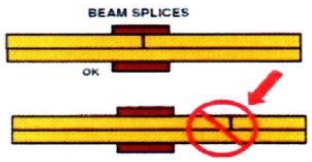
b. Live load = 40 psf, dead load = 10 psf.

c. Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 post.

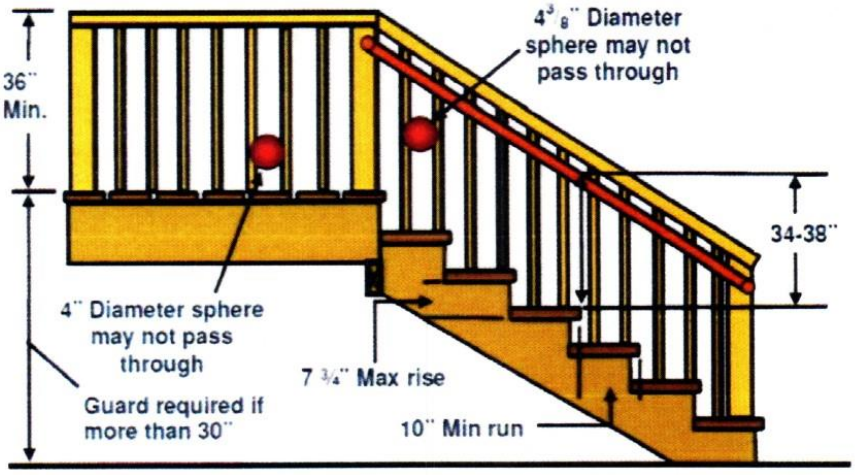
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.

e. Area, in square feet, of deck surface supported by post and footings.

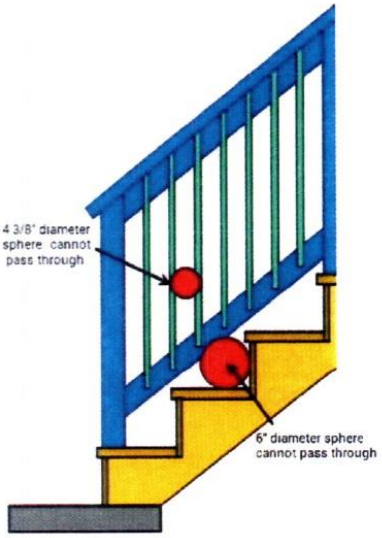
- Beam splices must be directly over posts, minimum of 1½" bearing.



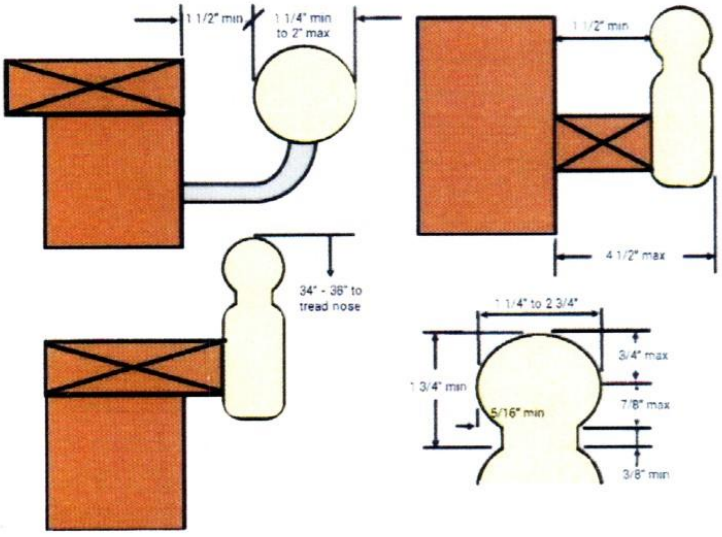
- Deck ledger boards must be secured and attached to the structure per table R507.2 and R507.2.1within this handout.
- Joist hangers are required wherever joists do not have at least 1½" of bearing. (Exceptions: cantilevered ends.)
- Galvanized connectors are required for footing to post, post to beam, and beam to joist connections.
- Guards are required on all decks more than 30" above grade. Guards must be 36" minimum in height. Open guards must have intermediate rails or an ornamental pattern that a 4" sphere cannot pass through. Guards must be able to withstand 200 lbs. of applied pressure.
- Stairways must be 36" between guards for the full length of the stairway.

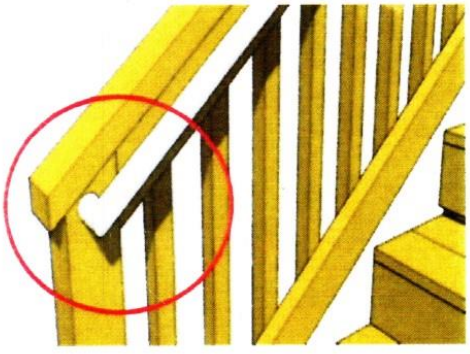


- The maximum rise is 7 ¾", the minimum run is 10". Treads, risers and nosing's shall be consistent within 3/8". Open risers on stairs with a total rise greater than 30" is not permitted to allow the passage of a 4" diameter sphere. A nosing not less than ¾ inch or greater than 1 ¼" shall be provided on stairways. Spiral stairs are to comply with Section R311.7.9.1.
- Stairways require a guard not less than 34" in height from the nose of the treads. Open guards shall have intermediate rails or an ornamental pattern such that a sphere 4 3/8" in diameter cannot pass through. The triangular openings formed by the riser, tread and bottom rail of guards shall be such that a sphere 6" in diameter cannot pass through.

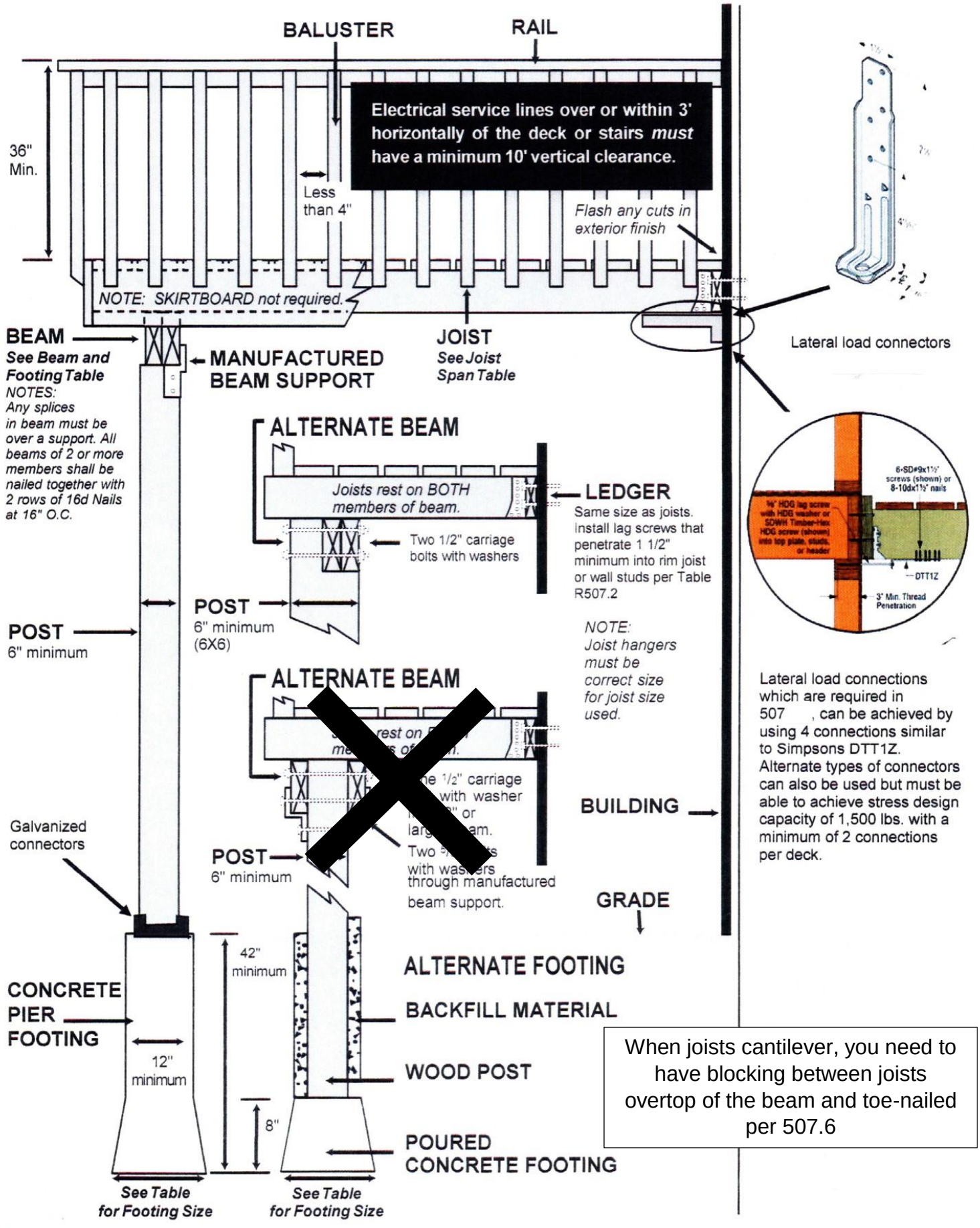


- Handrails are required on stairs with four or more risers.



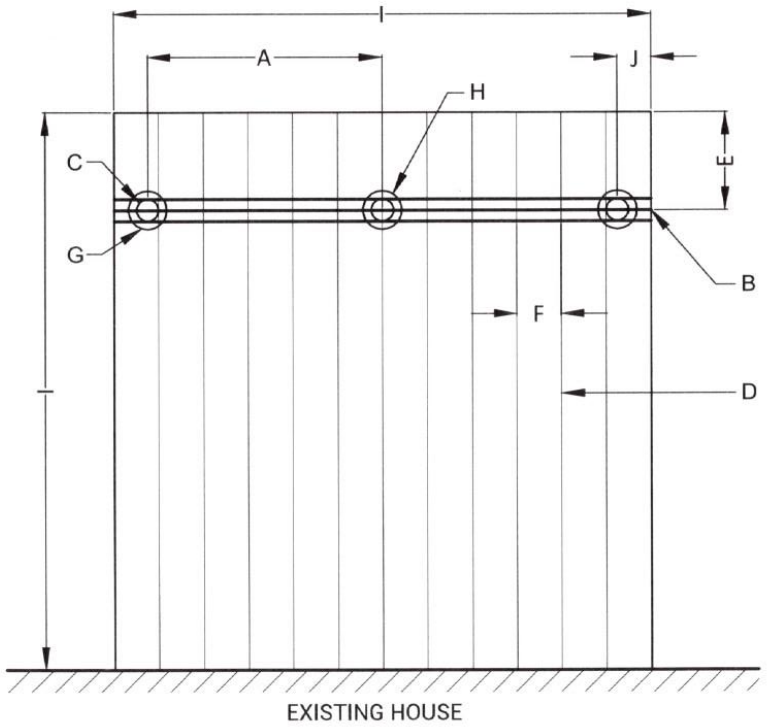


- Handrails must have a continuous graspable surface and be 34" to 38" above the tread nosing and run the full length of the stairs with ends returned. Handrails shall have a space of not less than 1½" between the handrail and the wall or guard. The handrails shall be not less than 1¼" or more than 2" in diameter.



Revised February 2015

SIMPLE DECK PLAN



FILL IN THE BLANKS

A. SPACING IN BETWEEN POSTS: _____

B. BEAM SIZE (2 - 2x10, ETC.): _____

C. POST SIZE (6x6, ETC.): _____

D. JOIST LENGTH AND SIZE: _____

E. JOIST OVERHANG (2' MAX): _____

F. SPACING BETWEEN JOISTS (16", 24" O.C.): G. _____

G. CORNER FOOTING SIZE: _____

H. INTERMEDIATE FOOTING SIZE: _____

I. OVERALL DECK SIZE: _____

J. BEAM OVERHANG: (1' MAX) _____

TYPE OF RAILING OR GUARD

MATERIAL (CEDAR, TREATED, ETC.): _____

HEIGHT ABOVE GROUND: _____

TYPE OF DECKING: _____

SPECIAL NOTE:
A COMPLETE AND DETAILED DECK PLAN WILL RESULT IN A COMPLETE AN DETAILED PLAN REVIEW.

NOT TO SCALE