

Deck Guidelines



IN ORDER TO BUILD A DECK IN THE CITY OF JOHNSTON, YOU MUST OBTAIN A PERMIT, PASS AN INSPECTION, AND LOCATE PROPERTY LINES.

OBTAINING A PERMIT

To obtain a permit, you will need the following information:

- Building Permit Application from our office.
- Site plan showing arrow pointing north & labeled **N** or **North**, location of house, deck, accessory structures, septic & laterals, easements and measurements from deck to rear & side yard(s) to lot lines.
- One drawing of deck showing height from ground to top of floor at the highest point, joist/beams/post sizes and spacing, post footing depth from ground level, steps rise & tread, railing detail.
- **After submitting the Building Permit to the city, the Permit Application Review can take up to five (5) working days.**

PROPERTY LINES

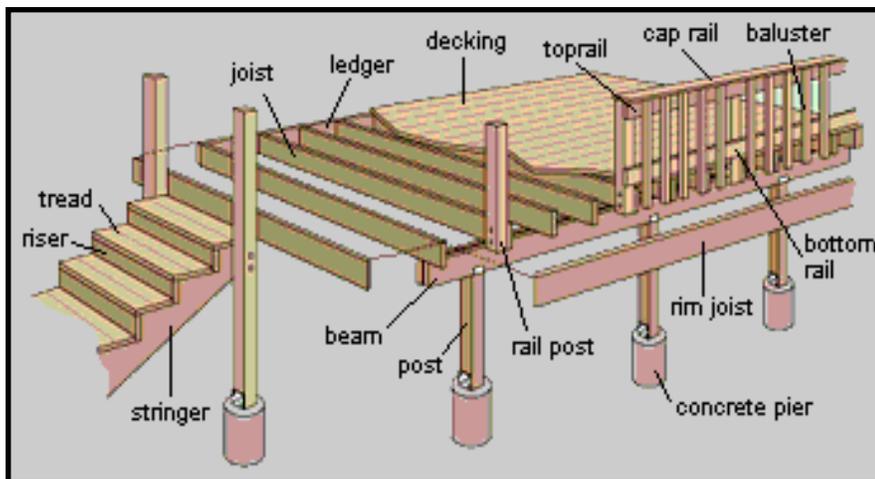
- The City of Johnston does not locate property lines.
- The Building Department can provide you with a plat map showing a property's dimensions.

INSPECTIONS

- Generally, inspections are required for footings and a final when deck is done. Other inspections may be required and determined by the building inspector.
- Inspections can be scheduled by calling (515) 727-7778.

GENERAL GUIDELINES

1. A deck is considered an unroofed platform.
2. All decks require a building permit from the Building Department.
3. Decks 30 inches or more above ground are required to meet all building setbacks for side & rear yards.
4. Decks 30 inches or more above the ground, are to have the required 25 feet minimum rear yard setback.
5. Compliance with any limitations of materials by restrictive covenants is the responsibility of the property owner.
6. A guard rail is required if deck height is 30 inches or more above grade.
7. If guard rail and stair railings are required, they shall have intermediate railings or an ornamental pattern such that a sphere 4 inches in diameter cannot pass through.
8. Stairs with 3 (three) or more risers require grip-able hand rails.
9. A minimum 10 inch tread and maximum 7 3/4 inch rise is required for stairs.
10. Engineered drawings **are required** when a **hot tub** will be placed on a deck as additional support is required to hold the extreme weight.



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buildingdepartment@ci.johnston.ia.us



Call Before You Dig!
1-800-292-8989

Notification service for locating underground

STEP 1: PLAN YOUR DECK

If you do not have a ready-made design you'll have to design a plan yourself.

First, draw a simple sketch of the deck—decking, rails, footing, posts and beams, then insert the dimension. To save money, stick to standard lumber sizes and lengths.

STEP 2: FIND THE FOOTING SIZE

To find the footing size, use the equations below to calculate the load on the corner posts (equation 1) and on the intermediate posts (equation 2). **Neither equation is designed for hot tub loads.**

Equation 1

$$(1/2 \text{ PS } 1) \times (1/2 \text{ span}) = \text{Load Area} \times (50 \text{ psf}) = \text{Load (psf)}$$

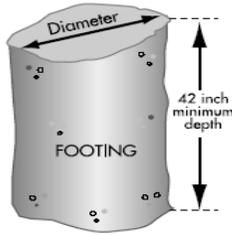
$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \times 50 = \underline{\hspace{1cm}}$$

Equation 2

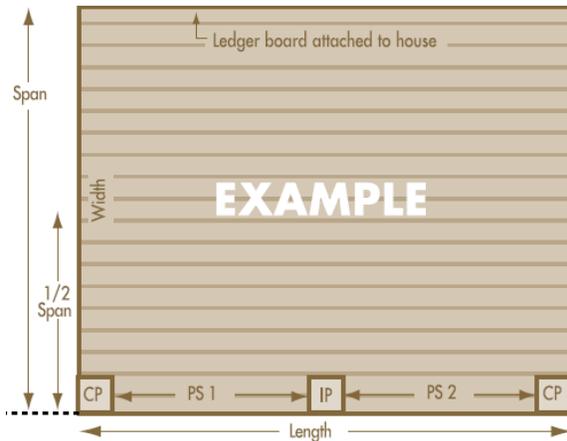
$$(1/2 \text{ PS } 1 + 1/2 \text{ PS } 2) \times (1/2 \text{ span}) = \text{Load Area} \times (50 \text{ psf}) = \text{Load (psf)}$$

$$(\underline{\hspace{1cm}} + \underline{\hspace{1cm}}) \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \times 50 = \underline{\hspace{1cm}}$$

Using Equation 1 and Equation 2, refer to the chart to determine the footing size for each post.



Load (psf)	Posthole Diameter
1000 or less	12 inches
1001 to 1500	14 inches
1501 to 2000	16 inches
2001 to 2500	18 inches
2501 to 3000	20 inches
Covered Deck/Patio	24 inches min.



CP = Corner Posts

IP = Intermediate Posts

PS = Measurement between centers of posts

Span = Outside width of deck

psf = Pounds per square foot

Total Loads = Live Load + Dead load

Cantilever = Where joist and decking

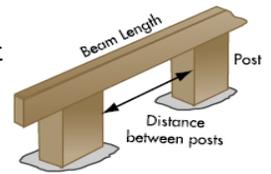
STEP 3: FIND THE POST SIZE

To find the appropriate post size, use the chart below for each post. Embed the post in the concrete footing or attach with approved connectors.

Deck Post Size	Height in Feet to Underside of Beam
4 X 4	Up to 8'
4 X 6	Up to 8'
6 X 6	14'

STEP 4: FIND THE BEAM SIZE

To find the beam size on which to rest the joint, refer to the chart below.



Deck Joist Span Less Than Or Equal To:					
Beam Size	6'	8'	10'	12'	14'
2- 2 X 6	6-11	5-11	5-4	4-10	4-6
2- 2 X 8	8-9	7-7	6-9	6-2	5-9
2- 2 X 10	10-4	9-0	8-0	7-4	6-9
2- 2 X 12	12-2	10-7	9-5	8-7	8-0
3- 2 X 8	10-10	9-6	8-6	7-9	7-2
3- 2 X 10	13-0	11-3	10-0	9-2	8-6
3- 2 X 12	15-3	13-3	11-10	10-9	10-0

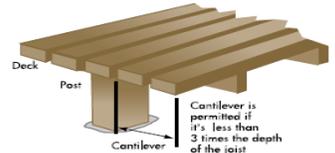
STEP 5: FIND THE JOIST SPAN

To find the joist size and span, use the chart below. Notice that the span allowed by different joist sizes is dependent on 16 inch or 24 inch spacing between joists. Attach each joist to the ledger board at the house and the other end to the beam.

Joist Size	Max Joist Spacing w/o Cantilever		With Cantilever	
	16" o/c	24" o/c	16" o/c	24" o/c
2 x 6	9 ft.	7 ft. 7 in.	6 ft. 8 in.	6 ft. 8 in.
2 x 8	11 ft. 10 in.	9 ft. 8 in.	10 ft. 1 in.	9 ft. 8 in.
2 x 10	14 ft.	11 ft. 5 in.	14 ft.	11 ft. 5 in.
2 x 12	16 ft. 6 in.	13 ft. 6 in.	16 ft. 6 in.	13 ft. 6 in.

STEP 6: FIND THE DECKING MATERIAL SPAN

Next, you need to determine the appropriate deck surface material. Be sure to plan for shrinkage when materials dry out.



Material Size	Joist Spacing
5/4 x 4	16"
5/4 x 6	16/24"
2 x 4	16/24"
2 x 6	16/24"
Composites	Manf. Spec.

STEP 7: DESIGN THE RAILING

The last step is to design the railing. A guard railing is required if the decking surface is more than 30 inches off the ground. A 4" sphere shall not be able to pass through any openings and the rails.

Distance Between Posts	Post Size	Cap Size
2 ft. to 3 ft.	2 x 4	2 x 4
3 ft. to 4 ft.	2 x 4, 4 x 4	2 x 4, 2 x 6
4 ft. to 6 ft.	2 x 6, 4 x 4	2 x 6

Sizing information is based on tables in Chapter 5 of the 2015 International Residential Code