



# Deck Construction Guidelines

IN ORDER TO BUILD A DECK IN THE CITY OF JOHNSTON, PERMITS AND INSPECTIONS ARE REQUIRED.

## OBTAINING A PERMIT

To obtain a permit, you will need the following:

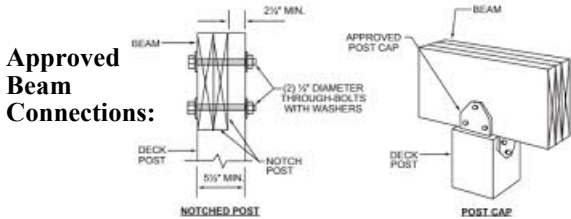
- Building Permit Application available from the website or City Hall.
- Site plan showing arrow pointing north & labeled **N** or **North**, location of house, deck, accessory structures, septic & laterals, easements and measurements from deck to rear & side yard(s) to lot lines.
- One drawing of deck 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.
- Submit the Building Permit items to the city by email to: [buildingdepartment@cityofjohnston.com](mailto:buildingdepartment@cityofjohnston.com)
- Permit Application Review usually take (5-10) working days.

## PROPERTY LINES

- Property lines are required to be identified.
- 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

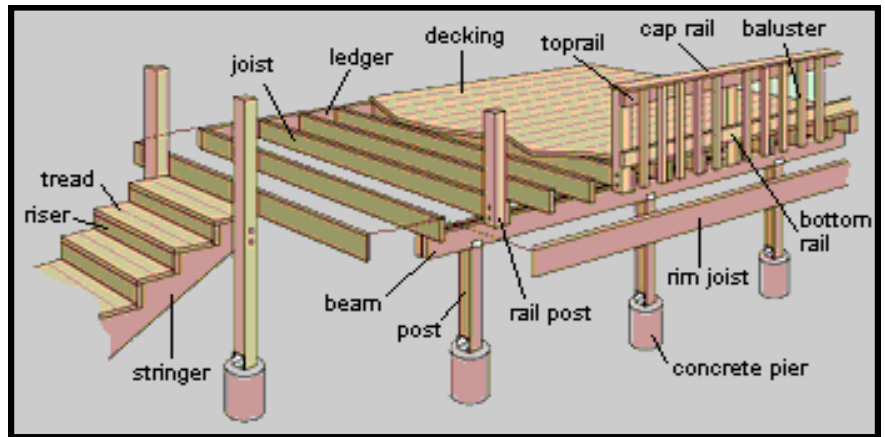
- Generally, inspections are required for footings and a final when deck is done. Other



### 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.

VISIT American Wood Council's Design for Code Acceptance, Prescriptive Residential Wood Deck Construction Guide. <https://awc.org/codes-standards/publications/dca6>.



**Johnston**  
 City of Johnston  
 Building Department  
 6221 Merle Hay Road  
 PO Box 410  
 Johnston, IA 50131-0410  
 Ph: (515) 727-7778

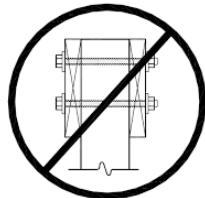
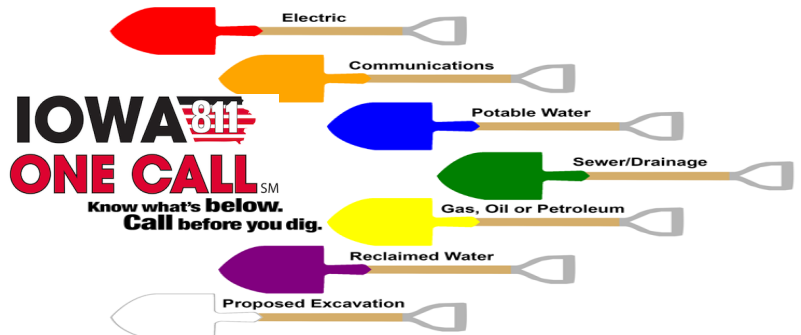


FIGURE 10: PROHIBITED POST-TO-BEAM ATTACHMENT



[www.cityofjohnston.com](http://www.cityofjohnston.com)

[buildingdepartment@cityofjohnston.com](mailto:buildingdepartment@cityofjohnston.com)

### STEP 1: PLANNING

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 dimensions.

Visit: AWC-DCA6 pdf at <https://awc/codes-standards/publications/dca6>. To help with material sizing questions.

### 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

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

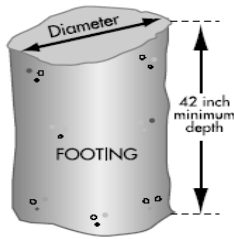
\_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ x 50 = \_\_\_\_\_

#### Equation 2

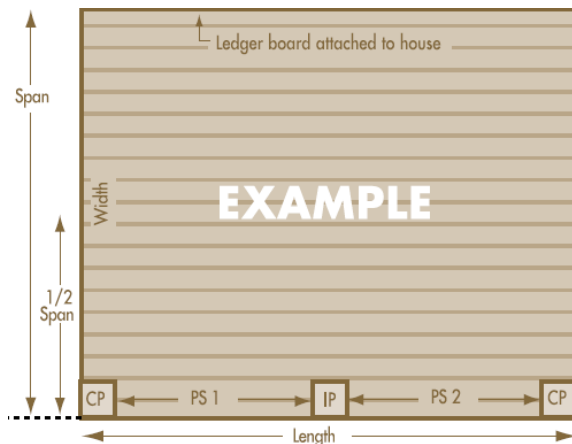
$(1/2 \text{ PS } 1 + 1/2 \text{ PS } 2) \times (1/2 \text{ span}) = \text{Load Area} \times (50 \text{ psf}) = \text{Load (psf)}$

(\_\_\_\_\_ + \_\_\_\_\_) x \_\_\_\_\_ = \_\_\_\_\_ x 50 = \_\_\_\_\_

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

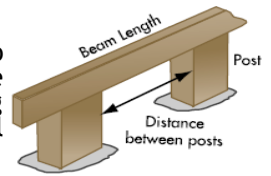
### STEP 3: SUPPORT POST SIZE

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: BEAM SIZE; TABLE R507.5(1)

To find the beam size on which to support the floor joist, refer to the chart below. For center bearing beams, the joist span shall be equal to the sum of both spans.



Deck Joist Span Less Than Or Equal To:					
Beam Size	6'	8'	10'	12'	14'
2- 2 X 6	6-1	5-3	4-9	4-4	3-11
2- 2 X 8	8-2	7-1	6-4	5-9	5-2
2- 2 X 10	10-0	8-7	7-9	7-0	6-6
2- 2 X 12	11-7	10-0	8-11	8-2	7-7
3- 2 X 8	10-3	8-10	7-11	7-3	6-8
3- 2 X 10	12-6	10-10	9-8	8-10	8-2
3- 2 X 12	14-6	12-7	11-3	10-3	9-6

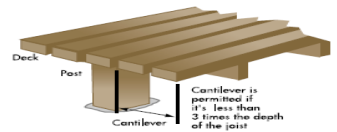
### STEP 5: FLOOR JOIST SPAN; TABLE R507.6

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		Cantilevers/ Req. Joist Back Spacing per foot					
	16" o/c	24" o/c	4'	6'	8'	10'	12'	14'
2 x 6	8-4	6-10	1-0	1-6	1-4	/	/	/
2 x 8	11-1	9-1	1-0	1-6	2-0	2-3	2-0	/
2 x 10	13-7	11-1	1-0	1-6	2-0	2-6	3-0	3-3
2 x 12	15-9	12-10	1-0	1-6	2-0	2-6	3-0	3-6

### STEP 6: DECKING MATERIAL SPAN. TABLE 507.7

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



Material Size	Joist Spacing	Diagonal to Joist
5/4 x 4	16"	8/12"
5/4 x 6	16/24"	8/12"
2 x 4	16/24"	18/24"
2 x 6	16/24"	18/24"
Composites	Manf. Spec.	Manf. Spec.

### STEP 7: STAIRS & RAILINGS

- Maximum riser height is 7-3/4", Minimum tread width 10"; all rises must be equal height within the flight of stairs.
- Graspable handrails are required with 3 or more rises in the flight of stairs.
- Graspable handrail must be between 34-38" above the nosing of the stair below.
- A guard railing is required if the deck/walking surface is elevated 30 inches or more above the ground.
- All guardrails shall be design and constructed to withstand the lateral load force of 200#,
- Opening between members or balusters shall not allow a 4" sphere to pass through.
- Refer to the pdf AWC-DCA6 guide at <https://awc/codes-standards/publications/dca6>.