



# Deck Requirements

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

## OBTAINING A PERMIT

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

- Permit Application
- Permit cost determined by sq.ft. or valuation
- Site plan showing location, easements and measurements of rear & side yard, and lot lines

## PROPERTY LINES

The City of Chariton does not locate property lines.

The Building Department can provide you with a plat map showing a property's dimensions.

The Building Department can be reached at (641) 774-5991 or [codeofficer@chariton.org](mailto:codeofficer@chariton.org)

## INSPECTIONS

An inspection is required for footings, framing, and a final inspection once the structure is complete.

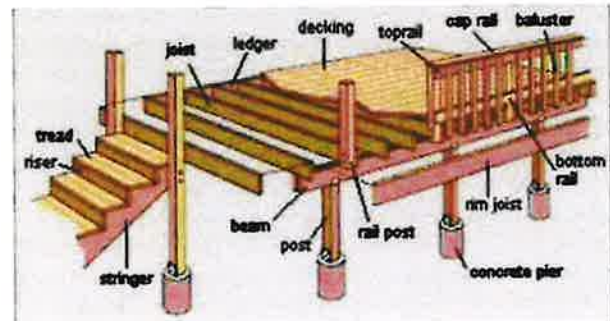
Inspections require 48hr notice. To schedule an inspection, call (641) 774-5991.



City of Chariton  
Building Department  
115 South Main Street  
Ph: (641) 774-5991  
<https://www.chariton.org>

## GENERAL GUIDELINES

1. All decks require a building permit from the Building Department, 115 S. Main Street, located in City Hall.
2. An exterior floor system supported on at least two opposing sides by an adjoining structure and/or posts, piers, or other independent supports.
3. A deck is NOT permitted to encroach over or otherwise impede an easement on file with the applicable county recorder.
4. If Restrictive Covenants for your plat are on file with the applicable county recorder, some additional requirements may apply.
5. A guardrail is required if deck height is 30" or more above grade.
6. If a guardrail and stair railings are required, they shall have intermediate railings or an ornamental pattern such that a sphere 4" in diameter cannot pass through.
7. Stairs with 4 (four) or more risers require gripable handrails that shall not be less than 34 inches and not more than 38 inches.
8. Minimum 10" run and maximum 7 ¾" rise required for stairs.
9. Pounds per square foot must be increased for hot tubs.



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How many business days?  
Call before you dig.

### Step 1: Design and 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.

Use a treated lumber and rated fasteners.

### 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

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

$$\text{_____} \times \text{_____} = \text{_____} \times 50 = \text{_____}$$

#### Equation 2

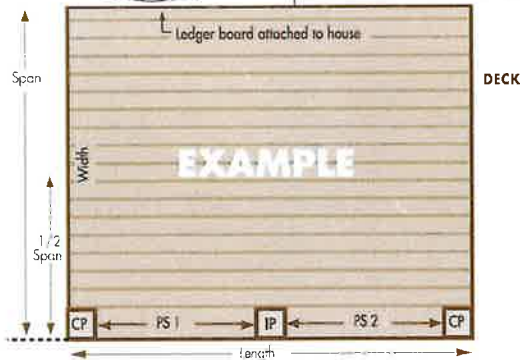
$$(1/2 \text{ PS } 1 + 1/2 \text{ PS } 2) \times (1/2 \text{ span}) = \text{Load Area} \times (50 \text{ psf}) = \text{Load (psf)}$$

$$(\text{_____} + \text{_____}) \times \text{_____} = \text{_____} \times 50 = \text{_____}$$

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



Load (psf)	Posthole Diameter
500 or less	8 inches
501 to 1000	10 inches
1001 to 1500	12 inches
1501 to 2000	14 inches
2001 to 2500	16 inches



- CP = Corner Posts
- IP = Intermediate Posts
- PS = Measurement between centers of posts
- Span = Outside width of
- psf = Pounds per square foot
- Total Loads = Live Load + Dead load
- Total Loads = 50 psf
- Cantilever = Where joist and decking extend over posts

### Step 3: Find the Post Size

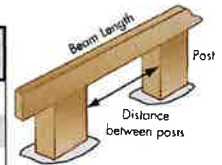
To find the appropriate post size, use the chart below for each post. Embed the post in the concrete footing or attach with approved connectors.

Height in Feet	Load area supported by post				
	48 sf	72 sf	96 sf	120 sf	144 sf
Up to 6	4 x 4	4 x 4	6 x 6	6 x 6	6 x 6
Up to 8	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6

### Step 4: Find the Beam Size

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

If the distance between posts:	Use:
is less than or equal to 4 feet	(2) 2 x 6
Is more than 4' or less than 6'	(2) 2 x 8
Is more than 6' or less than 8'	(2) 2 x 10
Is more than 8' or less than 10'	(2) 2 x 12
Is greater than 10 feet	Consult Designer



### Step 5: Find the Joist Span

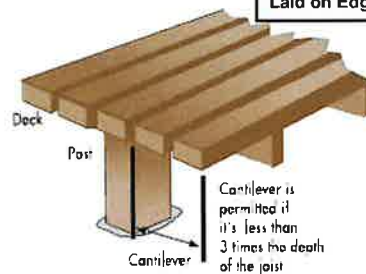
To find the joist size and span, use the chart below. Notice that the span allowed by different joist sizes is dependent on 16 inch or 24 inch spacing between joists. Attach each joist to the ledger board that is attached to the house and rest the other end on the beam.

Joist Size in Inches	Max Joist Spacing		Your Deck Span
	16" o/c	24" o/c	
2 x 6	9 ft. 4 in.	8 ft. 2 in.	
2 x 8	12 ft. 3 in.	10 ft. 9 in.	
2 x 10	15 ft. 8 in.	13 ft. 8 in.	
2 x 12	19 ft. 1 in.	16 ft. 8 in.	

### Step 6: Find the Decking Material Span

Next you need to determine the appropriate deck surface material. Shrinkage will occur when treated materials dry out. To ensure the spacing will be no more than 1/4" between boards AFTER the material dries out, install deck surface boards tightly together—with no more than 1/8" spacing.

Laid Flat	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"
Laid on Edge	2 x 4	48"

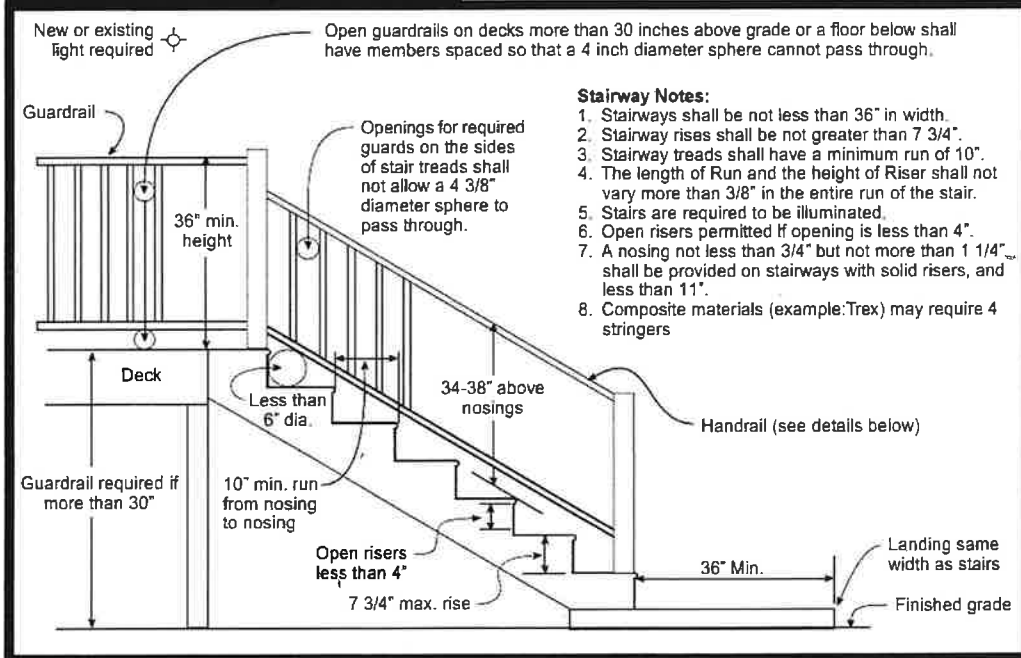


### Step 7: Design the Railing

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 shall be arranged so that a ladder effect is not created.

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

# Stair & Handrail Specifications



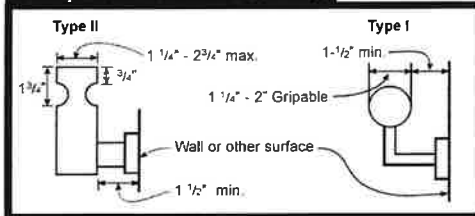
### Stairway Notes:

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".
8. Composite materials (example: Trex) may require 4 stringers

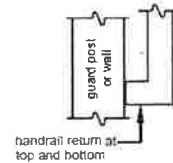
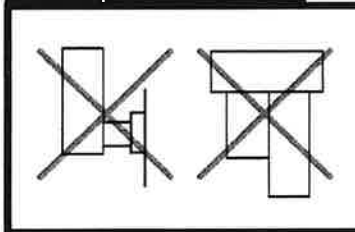
### Handrail Notes:

1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings.
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.
5. Handrails to be returned to wall, post or safety terminal (per 311.5.6.2 IRC)

### Acceptable Handrail Details

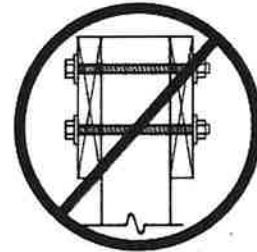
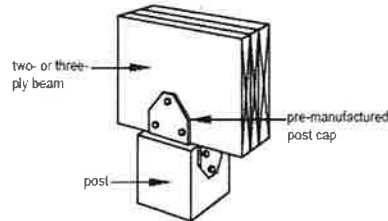
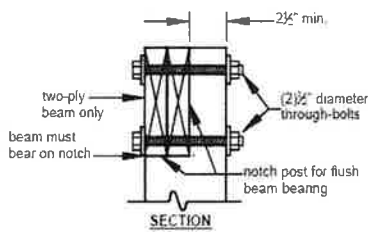


### Unacceptable Handrails

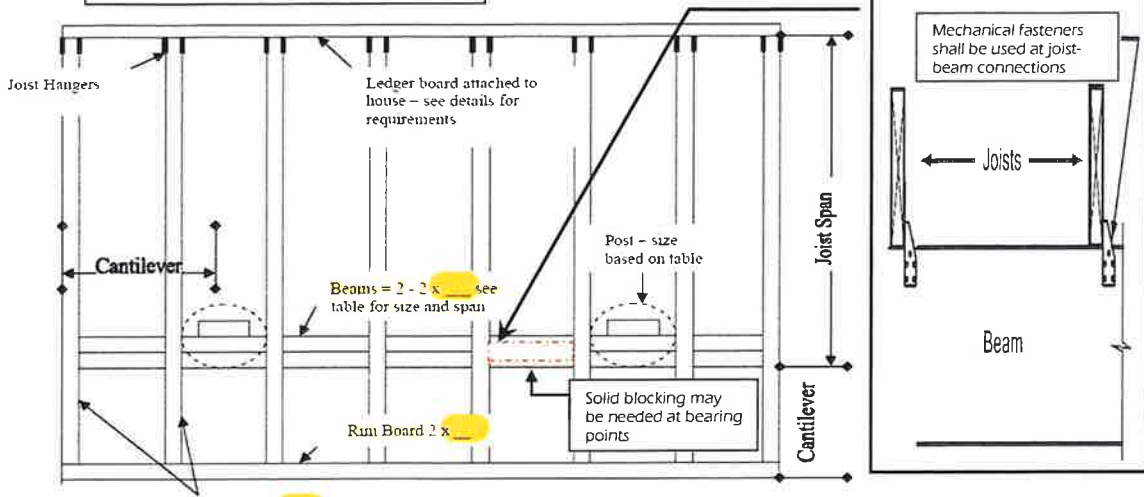


Handrail Return Example

### Post/ Beam Connection



# Deck Structural Design



Joist 2 x ... space 16" or 24" on center - see table for size of joist based on spacing and span.

Joist Size and Spacing	Joist Spans		
	Spacing (inches)	Allowable Joist Span (feet-inches)	Max. Cantilever * (feet-inches)
2 x 6	12" o.c.	9-11	1-3
	16" o.c.	9-0	1-4
	24" o.c.	7-7	1-6
2 x 8	12" o.c.	13-1	2-1
	16" o.c.	11-10	2-3
	24" o.c.	9-8	2-5
2 x 10	12" o.c.	16-2	3-4
	16" o.c.	14-0	3-6
	24" o.c.	11-5	2-10
2 x 12	12" o.c.	18-0	4-6
	16" o.c.	16-6	4-2
	24" o.c.	13-6	3-4

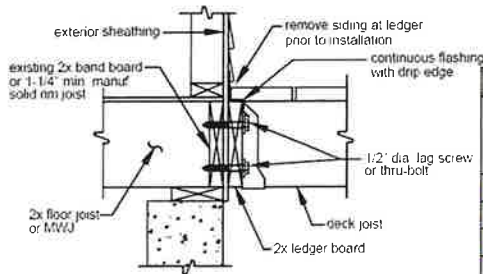
\*Max. Cantilever 1/4 joist span or table value, whichever is less

Beam Size	Deck Joist Span Less than or Equal To: (feet)						
	6	8	10	12	14	16	18
Beam Spans (Feet-Inches)							
1-2x6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
1-2x8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
1-2x10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
1-2x12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
(2) 2x6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
(2) 2x8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
(2) 2x10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
(2) 2x12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
(3) 2x6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
(3) 2x8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
(3) 2x10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
(3) 2x12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

Beams may cantilever 1/4 of the adjacent beam span

## Deck Ledger Detail

Minimum Ledger size 2x8

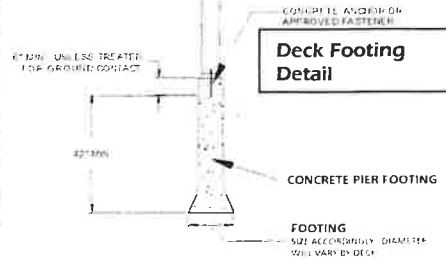


Material	Max Joist Spacing	
	Perpendicular	Diagonal
5/4 Decking	16"	12"
Nominal 2" Decking	24"	16"
Composite Decking	Follow Manufacturers Specs	

## Deck Post Height

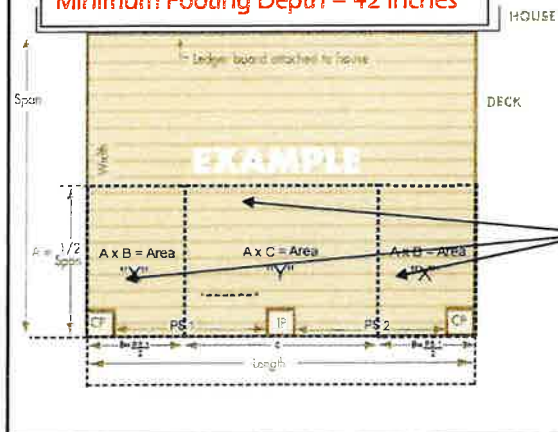
Deck Post Size	Maximum Height (feet-in)
4x4	8'*
4x6	8'
6x6	14'

\*6'-9" for 3-ply beam



## Sizing Deck Footings

Minimum Footing Depth - 42 inches



## Footing Size Table

40 psf Live Load	Tributary Area (Sq. Ft)							
	10	20	30	40	50	60	70	80
Diameter of a Round Footing (inches)								
	8	10	12	14	16	18	18	20

Minimum thickness is 12 inches for all footings. Frost depth is 42 inches

Assumed 2000 psf soil bearing

Free-standing deck footing size shall be determined by this table.

Minimum footing depth is 12 inches for free-standing decks.