



Residential Decks

Planning and Development Services Department, **Building Safety**

913/ 895-6225

www.opkansas.org

Note: The information provided includes general requirements that should be considered as part of a project to construct, repair or replace a deck. This should not be considered as a complete list of code requirements. Complete information is available in the codes and ordinances adopted by the City. Code books can be obtained at City Hall or are available for review at the local public library. Some materials and construction methods may require the use of an architect, engineer or other design professional.

Plans and Permits

A building permit is required to construct or replace a deck. A site plan drawn to scale showing the location of the deck and setbacks from property lines and a construction plan showing the columns, beams and joists sizes, spacing and connections is required to be submitted for review and approval with the permit application.

Inspections

Footings or pier holes are not required to be inspected for open decks. A separate framing (rough-in) inspection is required if the under-floor framing and connections cannot be easily inspected during the final inspection. A final inspection is required after all work is complete.

- Scheduling an inspection - Inspections can be requested by contacting the Building Safety Division at 913/895-6220, option 2. Inspections are scheduled for the next day unless a later date is requested.

Setbacks

The following setbacks only apply to R-1, RP-1, R-2 and RP-2 Zoning Districts:

- **Front Yard:** The setback for a front yard is 30 feet from the deck to the front property line.
- **Rear Yard:** The setback for a rear yard is 25 feet from the deck to the rear property line.
- **Side Yard:** The setback for a side yard is a minimum of 7 feet, and the total width of both side yards must not be less than 20 percent of the width of the lot; 20 feet must be provided on the street side of a corner lot. Generally, decks shall not extend beyond platted building setback lines or into a platted landscape easement.

Exceptions include the following:

- Decks with a maximum height of less than 30 inches may be as close as 3 feet to the rear property line, provided a platted building setback line or a landscape easement is not encroached upon.
- Open decks and porches may project 6 feet into the front or rear yard setback, provided the area of the encroachment does not exceed 60 square feet.
- Detached decks are permitted to be 3 feet from the rear property line, provided they are at least 20 feet from any street right-of-way. A deck that is a distance of 5 feet or more is considered to be detached.

Note: Some homes associations may have requirements other than those established by the City. Please contact your homes association if you have questions regarding its requirements.

Building Codes

- **Materials** - The deck shall be constructed of either a naturally decay-resistant lumber or a preservative-treated lumber. It is acceptable to use composite materials for the decking. The deck shall be designed to support a live load of 40 psf (see Span Table).
- **Electrical** - All overhead power lines must be located at least 10 feet above the deck floor or be at least 3 feet horizontally away from the floor's surface. An exterior light for illumination of any steps is required.
- **Footings/Soil bearing** - All decks must sit on footing or piers that are adequately designed to support the imposed loads (maximum assumed bearing capacity is 1500 pounds per square foot). Footings or piers shall extend 36 inches below the finished ground level.
- **Guardrails** - Porches, balconies or raised floor surfaces located more than 30 inches above the floor or grade below shall have guardrails not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guardrails not less than 34 inches in height measured vertically from the nosing of the treads. Required guardrails on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of an object 4 inches or more in diameter. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway shall not allow passage of an object 6 inches or more in diameter.
- **Handrails** - Handrail grip size shall have a circular cross-section with a minimum 1 ¼ inch and maximum 2 inch diameter. Handrails shall be mounted a minimum 34 inches and a maximum 38 inches above the nosing of the treads and be continuous for the run of the stair.
- **Stairways** - If steps are provided the maximum rise of each step is 7 ¾ inches and the minimum depth of each tread is 10 inches. The width of the stairs must be at least 36 inches. A maximum 3/8-inch variation is permitted between the greatest and smallest rise and the greatest and smallest run of each flight of stairs. If four or more risers are provided on the stairs, a handrail/guardrail must be provided on both sides with a height of 34 to 38 inches above the nosing of the treads.
- **Framing** - Maximum span for decking shall comply with the decking span chart.
- **Ledger** - Where the ledger is attached directly to the house, care is required to provide an attachment method that will not cause deterioration of the house siding. Over standard panel siding we recommend adding the ledger directly over the batten board or for walls without batten boards; 1x furring strips be added at each lag screws or bolts location. This will minimize the potential for water accumulation. Where 1x-furring strips are added, they should be full depth of the ledger and beveled directing water away from the house (edges should be caulked prior to attachment). Where the house has stucco or lap siding the siding should be removed and the ledger attached directly to the rim joist. Flashing should be added to extend a minimum 1-1/2 inches under the siding and over the ledger. To eliminate the ledger, a beam line can be added 3 feet from the house and the deck cantilevered back towards the house. See detail "A". The bottom of piers cannot bear in the foundation back fill.

Note: See following diagrams.

Span Tables

Tables are based on the 2006 *International Residential Code (IRC)* for the species and grade of lumber shown. For other situations consult the tables in the code.

Table 1

Floor Joists - 40# LL & 10 #DL			
Decks			
Member	Species/grade	Spacing	Max. span
2x6	SP#2 cca	12" o.c.	10'9"
2x6	SP#2 cca	16" o.c.	9'9"
2x6	SP#2 cca	24" o.c.	8'6"
2x8	SP#2 cca	12" o.c.	14'2"
2x8	SP#2 cca	16" o.c.	12'10"
2x8	SP#2 cca	24" o.c.	11'
2x10	SP#2 cca	12" o.c.	18'
2x10	SP#2 cca	16" o.c.	16'1"
2x10	SP#2 cca	24" o.c.	13'1"
2x12	SP#2 cca	12" o.c.	21'9"
2x12	SP#2 cca	16" o.c.	18'10"
2x12	SP#2 cca	24" o.c.	15'5"
2x6	Cedar#2	12" o.c.	9'2"
2x6	Cedar#2	16" o.c.	8'4"
2x6	Cedar#2	24" o.c.	7'3"
2x8	Cedar#2	12" o.c.	12'1"
2x8	Cedar#2	16" o.c.	11'
2x8	Cedar#2	24" o.c.	9'2"
2x10	Cedar#2	12" o.c.	15'5"
2x10	Cedar#2	16" o.c.	13'9"
2x10	Cedar#2	24" o.c.	11'3"
2x12	Cedar#2	12" o.c.	18'5"
2x12	Cedar#2	16" o.c.	15'11"
2x12	Cedar#2	24" o.c.	13'
2x12	Cedar#2	24" o.c.	13'

Use the proper fasteners for joist hangers or other metal clips (no screws, roofing nails, non-galvanized fasteners). ACQ lumber requires the use of galvanized, stainless steel, or special-coated fasteners

Table 2

Decking - 300# Concentrated Load		
Member	Species/grade	Max. span
2x6	SP #2 CCA	3'-0"
2x6	Cedar #2	2'-6"
5/4x6	SP #2 CCA	2'-3"
5/4x6	trex	1'-4"

**Table 3
Deck Beam - Span Chart**

Maximum Beam Span – Residential Decks (40psf live load - /10psf deal load)								
Southern Pine CCA #2	Tributary Load Width (Tributary width is the portion of the joist span supported by the beam) ¹							
	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width
Beam size	4'	5'	6'	7'	8'	9'	10'	11'
2x8	6' 5"	5' 2"	4' 3"	3' 8"	3' 2"	2' 10"	2' 7"	2' 4"
2-2x8	10' 1"	9' 1"	8' 3"	7' 4"	6' 5"	5' 8"	5' 2"	4' 8"
3-2x8	12' 10"	11' 10"	10' 10"	10'	9' 5"	8' 6"	7' 8"	7'
2x10	8' 2"	6' 6"	5' 5"	4' 8"	4' 1"	3' 8"	3' 3"	3'
2-2x10	12' 0"	10' 9"	9' 10"	9' 2"	8' 2"	7' 3"	6' 6"	5' 11"
3-2x10	15' 8"	14' 1"	12' 10"	11' 11"	11' 2"	10' 7"	9' 9"	8' 11"
2x12	9' 11"	7' 11"	6' 7"	5' 8"	5'	4' 5"	4'	3' 7"
2-2x12	14' 0"	12' 7"	11' 6"	10' 8"	9' 11"	8' 10"	7' 11"	7' 3"

1. For simple spans the tributary width is ½ the joist length – for a center beam the tributary width is the sum of ½ the span from each side of the beam.

Table 4

Maximum Beam Spans - Residential Decks (40 psf live load - 10 psf dead load)								
Western Cedar	Tributary Load Width (for simple spans the tributary width is 1/2 the joist length - for a center beam the tributary width is the sum of 1/2 the span from each side)							
	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width	Tributary width
Beam size	4'	5'	6'	7'	8'	9'	10'	11'
4x10	11' 7"	10' 5"	9' 6"	8' 10"	7' 11"	7'	6' 4"	5' 9"
6x10	12' 8"	11' 5"	10' 6"	9' 9"	9' 1"	8' 7"	8' 2"	7' 10"
6x12	15' 3"	13' 9"	12' 7"	11' 9"	11' 0"	10' 5"	9' 10"	9' 5"

Table 5

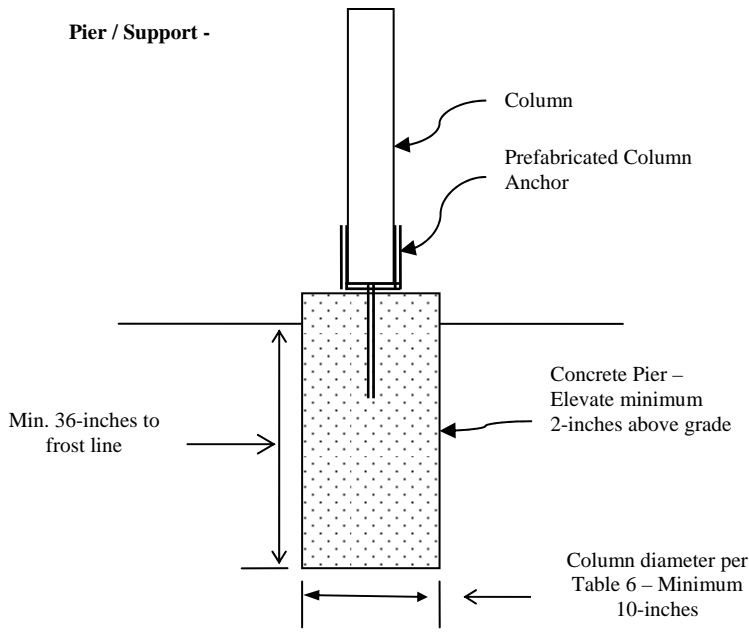
On-center spacing of lag screws (inches)					
Lag size	Joist span (feet)				
	0-5 ft	6-7 ft	7-10 ft	11-14 ft	15-18 ft
½" Dia. Lag	32" o.c.	24" o.c.	16" o.c.	12" o.c.	8" o.c.
Equivalent spacing joists @ 16" o.c.	Every other joist space	Two every third joist spaces	Each joist space	Each joist space with two every other space	Two in each joist space
3/8" Dia. Lag	0-4 ft	5-6 ft	7-8 ft	9-12 ft	13-18 ft
Equivalent spacing joists @ 16" o.c.	24" o.c.	16" o.c.	12" o.c.	8" o.c.	6" o.c.
	Every other joist space	Each joist space	Each joist space with two every other space	Two in each joist space	Two each joist space with three every other space

Table 6

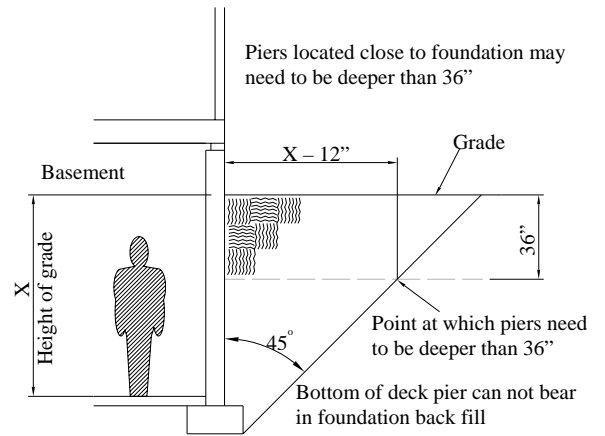
Pier sizes required for supporting decks

Pier diameter	Maximum load (pounds)	Square footage of deck that can be supported (tributary area)
8"	525	11
10"	825	17
12"	1200	24
14"	1600	32
16"	2100	42
18"	2650	53
20"	3300	66
22"	4000	80
24"	4700	94

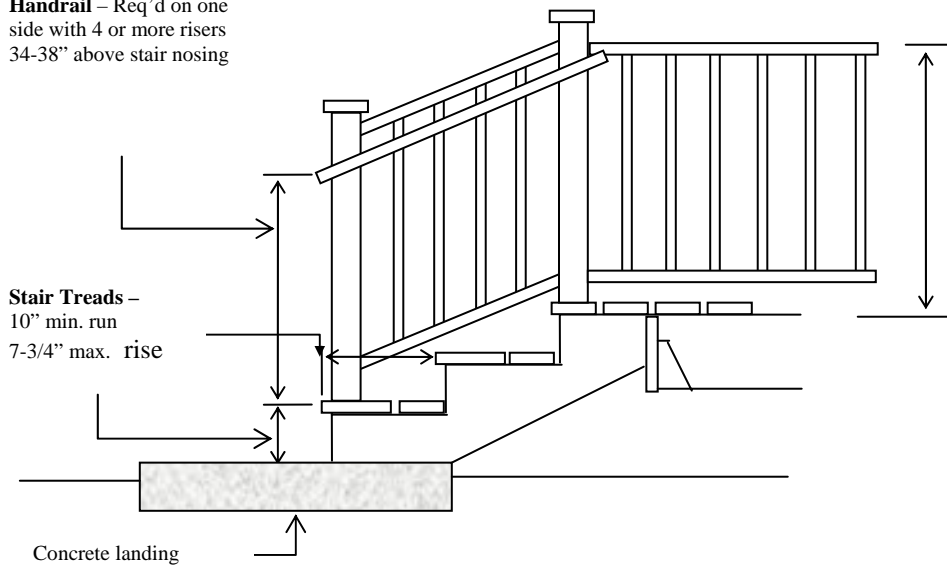
Pier / Support -



Pier Location Diagram

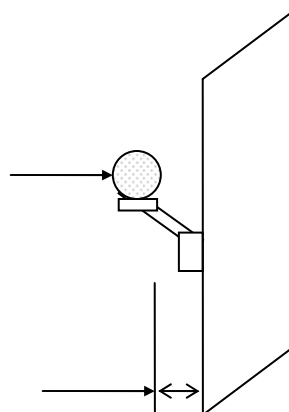


Handrail - Req'd on one side with 4 or more risers 34-38'' above stair nosing

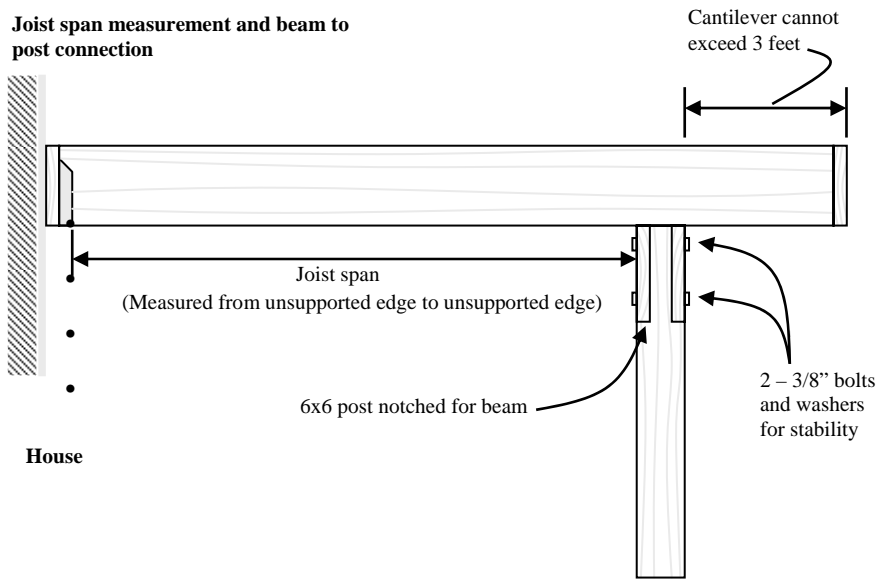


Handrail Geometry - Handrails shall have circular cross-section with diameter between 1-1/4 and 2-5/8 inches.

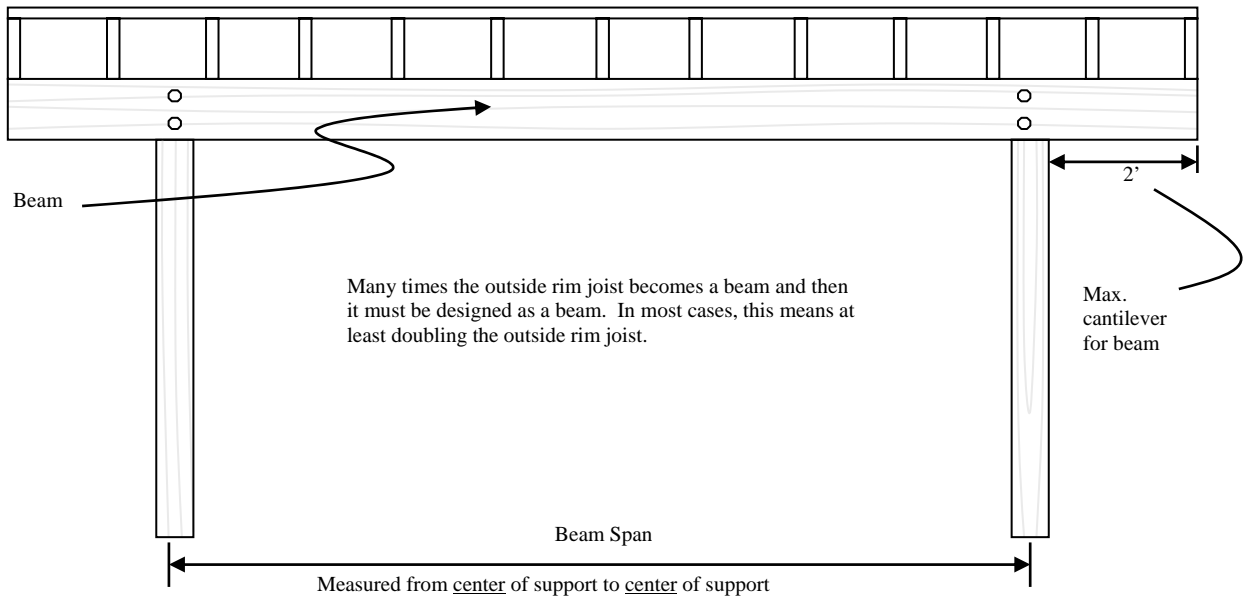
Minimum 1 1/2'' clearance between handrail and adjacent framing.



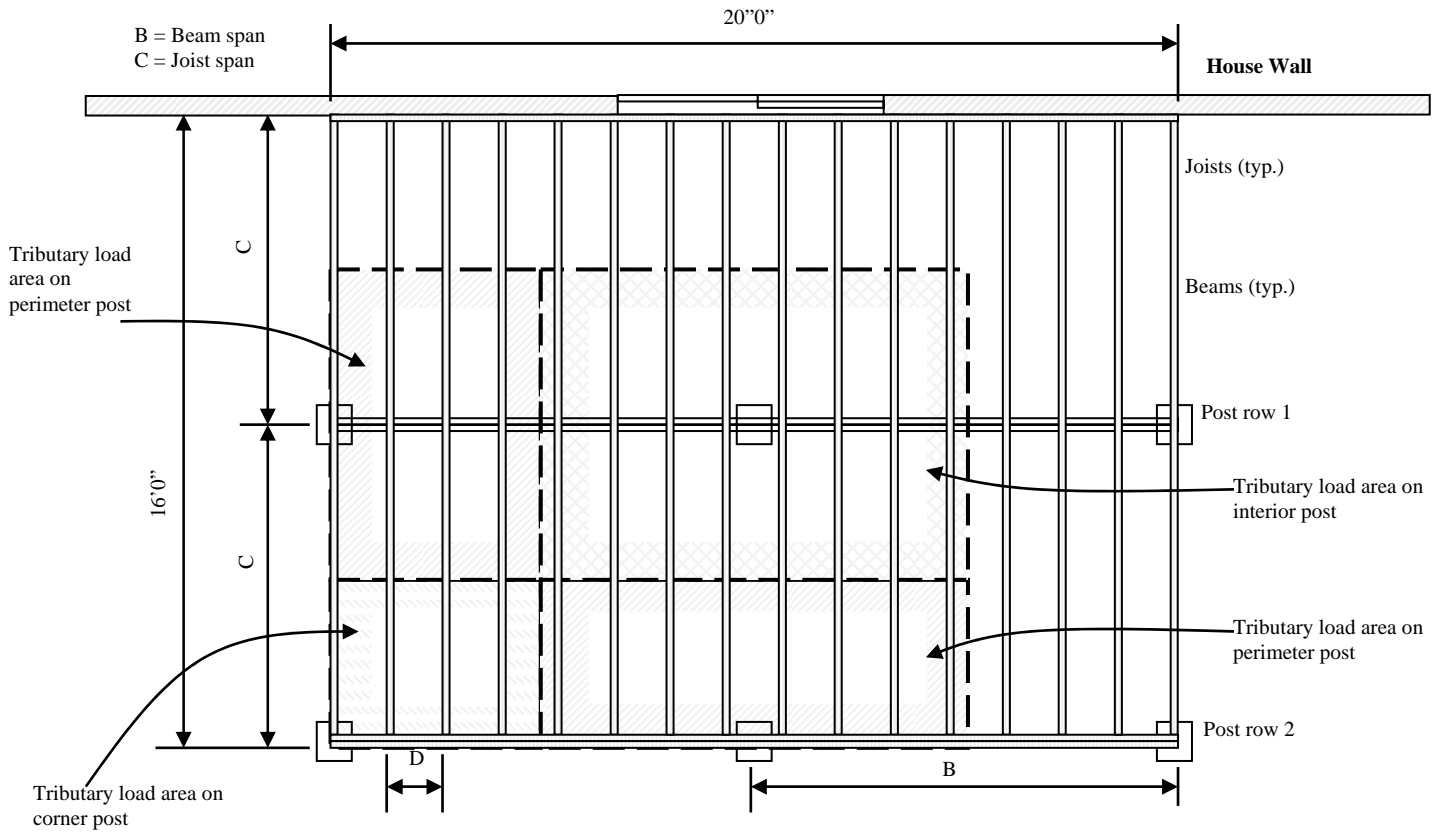
Joist span measurement and beam to post connection



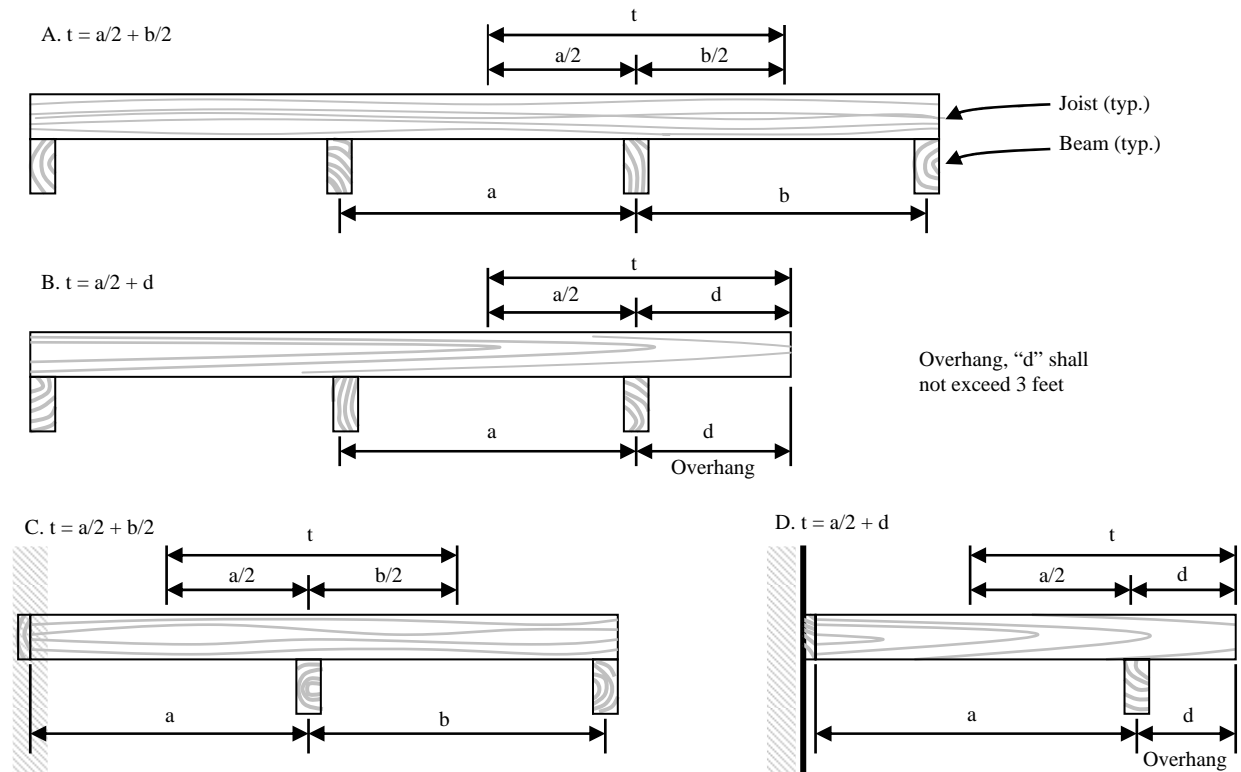
Measuring a beam span



Tributary load area for posts



Tributary load width (t) for deck beams



House