

Residential Decks

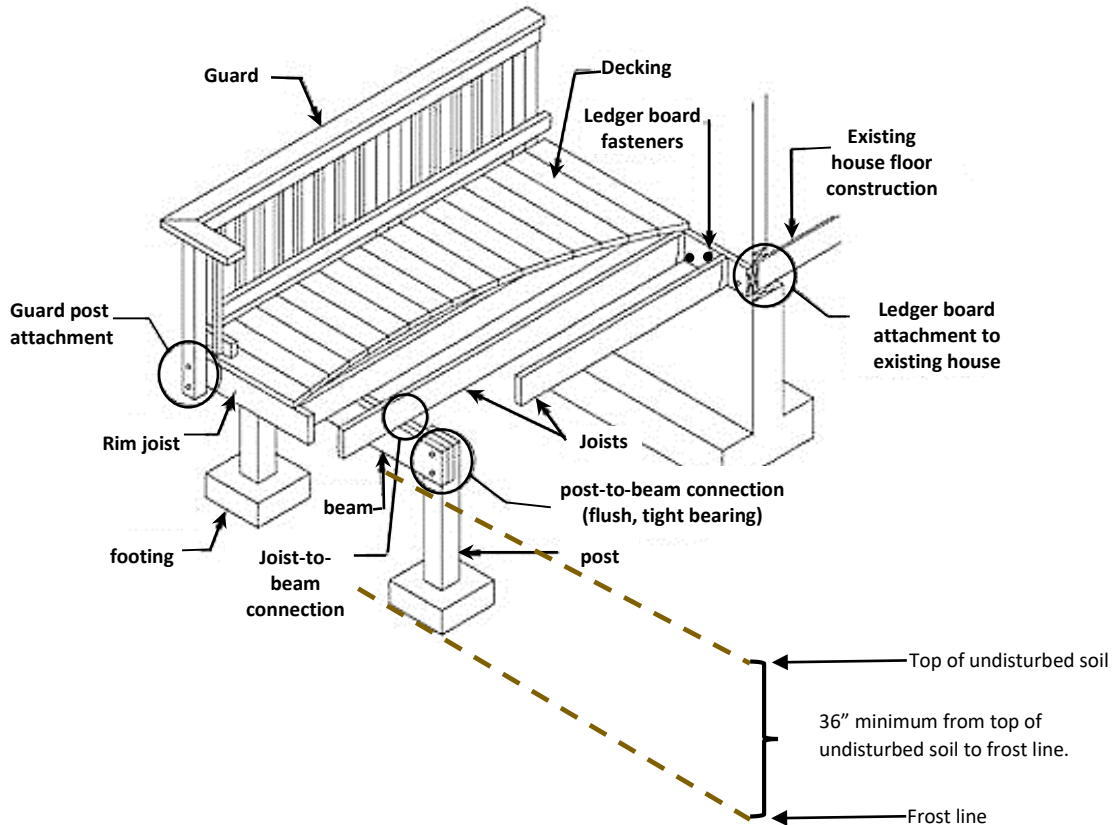
Constructions Guidelines and Permit Information

Contractors, builders and homeowners shall obtain a permit prior to constructing, altering or replacing a deck or front porch.

It shall be the purpose of this document to provide the public, contractors and homeowners with the minimum construction guidelines per the 2015 International Residential Code for the construction of a residential deck. This guideline does not contain all of the local jurisdiction requirements for obtaining permits, fees or the procedures for inspections. This guide does not prevent Emporia's Code Service Department from asking for additional information or varying from specific requirements based on our locally adopted codes and ordinance requirements. This guide is not intended to prevent the use of other construction methods or building materials which may be above minimal requirements and materials which may be approved by the authority having jurisdiction.

A building permit will not be required for your project, if your deck, porch or patio can meet **ALL** four (4) of the following requirements below. If you cannot check all four below, you need a building permit.

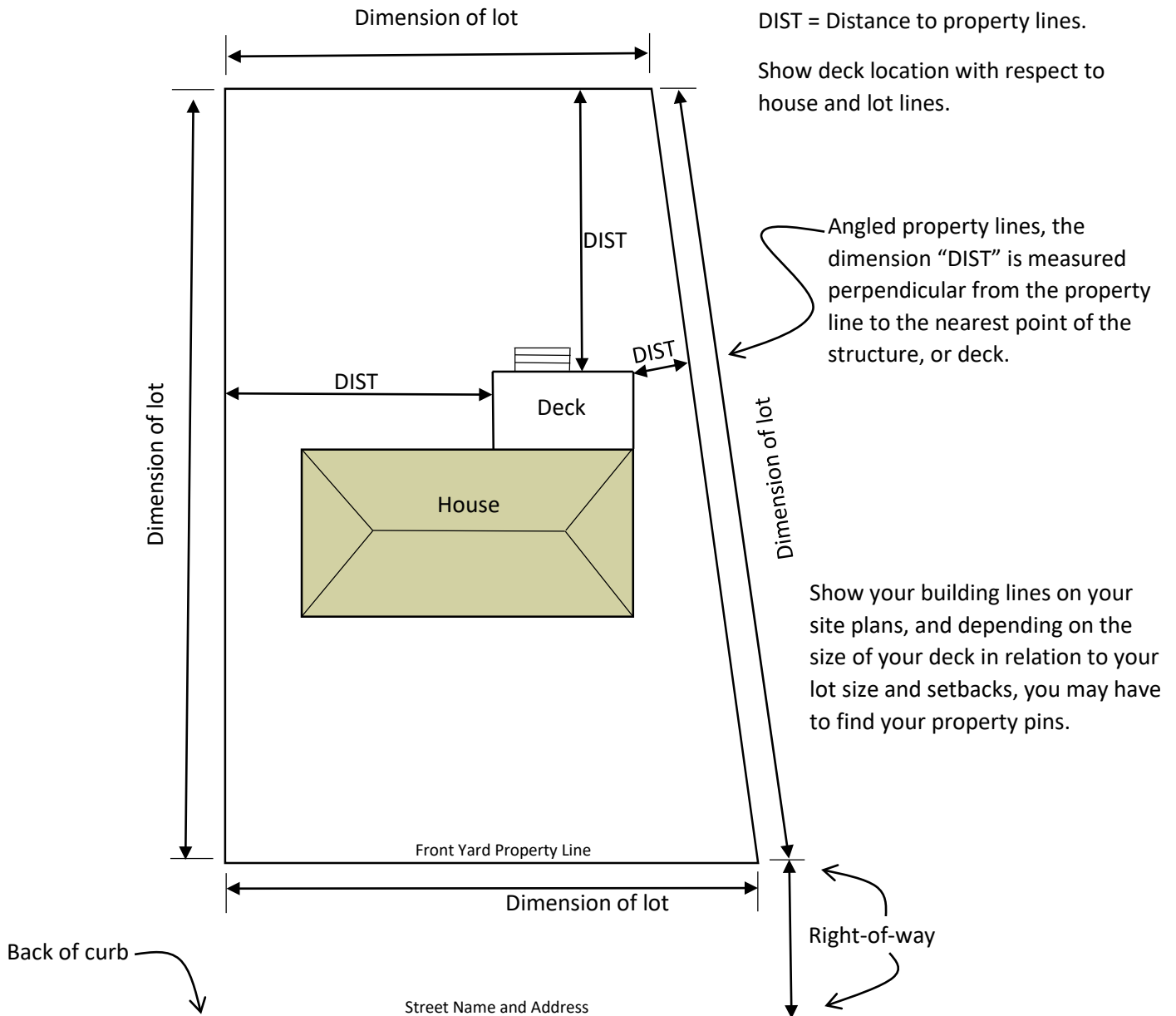
- Not exceeding 200 square feet in area.
- Not more than 30 inches above grade at any point, even 3 feet beyond the edge of the deck.
- Not attached to the dwelling/structure.
- Not serving an egress door. (Front or rear exit door leading to the outside)



A building permit application must be completed by a licensed contractor unless the homeowner (who resides at this location) is doing the work; in which case the homeowner will be required to submit the application. Building permit application forms are provided by the Code Services Department.

In addition to the building permit application being submitted, a plot plan drawn to scale is required to be prepared and submitted to include the following information:

- Property dimensions (size of the lot)
- Location of existing structures and distances to property lines
- Location of gas & electric services
- Easements
- Proposed location of the deck and distances away from property lines
- The dimensions of the deck





CONSTRUCTION REQUIREMENTS

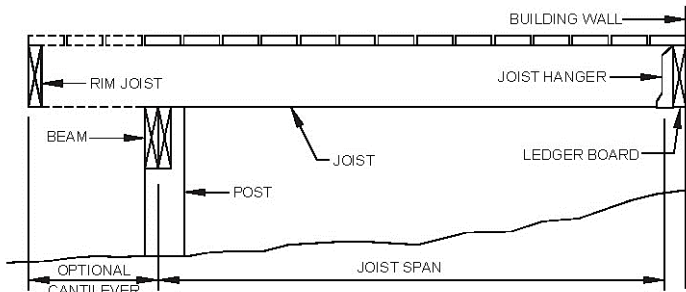
- Setbacks from property lines must be according to the Zoning Regulations and approved by the Zoning Administrator before permit is approved.
- Footings and piers must extend a minimum of 36" below grade & 12" in diameter & bear on undisturbed soil. Each pier shall contain three (3) #4 rebar vertical in each pier.
- Maximum allowed cantilever spans are the depth of the framing member being cantilevered unless professional engineered designed.
- Structural requirements for decks are based upon the following loads: 40 psf live load, 10 psf dead load.
- Guardrails are required for any portion of the deck which exceeds 30" above grade and open sides of stairways.
- Guardrails shall have intermediate rails or ornamental patterns such that a 4" ball cannot pass through. This includes spaces around and under seats.
- A handrail is required on stairways with 4 or more risers and shall be placed not less than 34" nor more than 38" in height above the nosing of treads.
- Minimum required stairway width is 36", minimum stair tread depth 10", and maximum rise 7 3/4".

**TABLE R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES' (ft. - in.)**

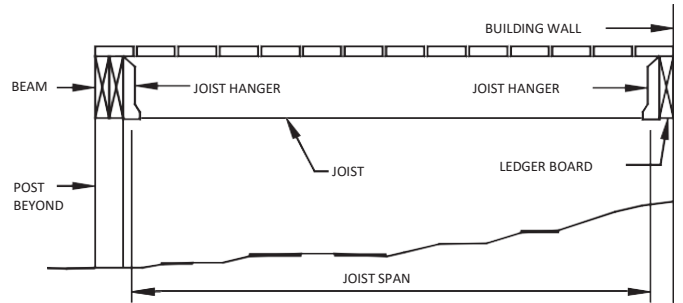
| SPECIES ^a | SIZE | SPACING OF DECK JOISTS WITH NO CANTILEVER ^b (inches) | | | SPACING OF DECK JOISTS WITH CANTILEVERS ^c (inches) | | |
|--|--------|--|-------|-------|--|------|-------|
| | | 12 | 16 | 24 | 12 | 16 | 24 |
| Southern pine | 2 x 6 | 9-11 | 9-0 | 7-7 | 6-8 | 6-8 | 6-8 |
| | 2 x 8 | 13-1 | 11-10 | 9-8 | 10-1 | 10-1 | 9-8 |
| | 2 x 10 | 16-2 | 14-0 | 11-5 | 14-6 | 14-0 | 11-5 |
| | 2 x 12 | 18-0 | 16-6 | 13-6 | 18-0 | 16-6 | 13-6 |
| Douglas fir-larch ^d , hem-fir ^d spruce-pine-fir ^d | 2 x 6 | 9-6 | 8-8 | 7-2 | 6-3 | 6-3 | 6-3 |
| | 2 x 8 | 12-6 | 11-1 | 9-1 | 9-5 | 9-5 | 9-1 |
| | 2 x 10 | 15-8 | 13-7 | 11-1 | 13-7 | 13-7 | 11-1 |
| | 2 x 12 | 18-0 | 15-9 | 12-10 | 18-0 | 15-9 | 12-10 |
| Redwood, western cedars, ponderosa pine ^e , red pine ^e | 2 x 6 | 8-10 | 8-0 | 7-0 | 5-7 | 5-7 | 5-7 |
| | 2 x 8 | 11-8 | 10-7 | 8-8 | 8-6 | 8-6 | 8-6 |
| | 2 x 10 | 14-11 | 13-0 | 10-7 | 12-3 | 12-3 | 10-7 |
| | 2 x 12 | 17-5 | 15-1 | 12-4 | 16-5 | 15-1 | 12-4 |

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. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360.
- c. Ground snow load, 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 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.



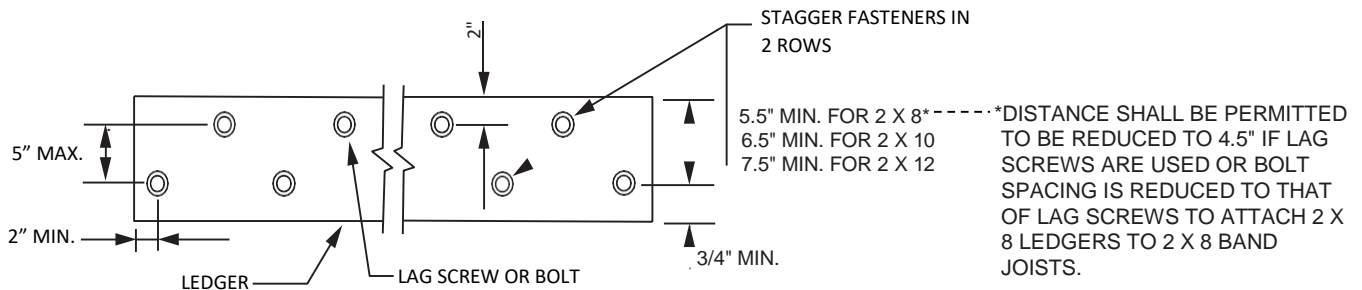
JOISTS WITH DROPPED BEAM



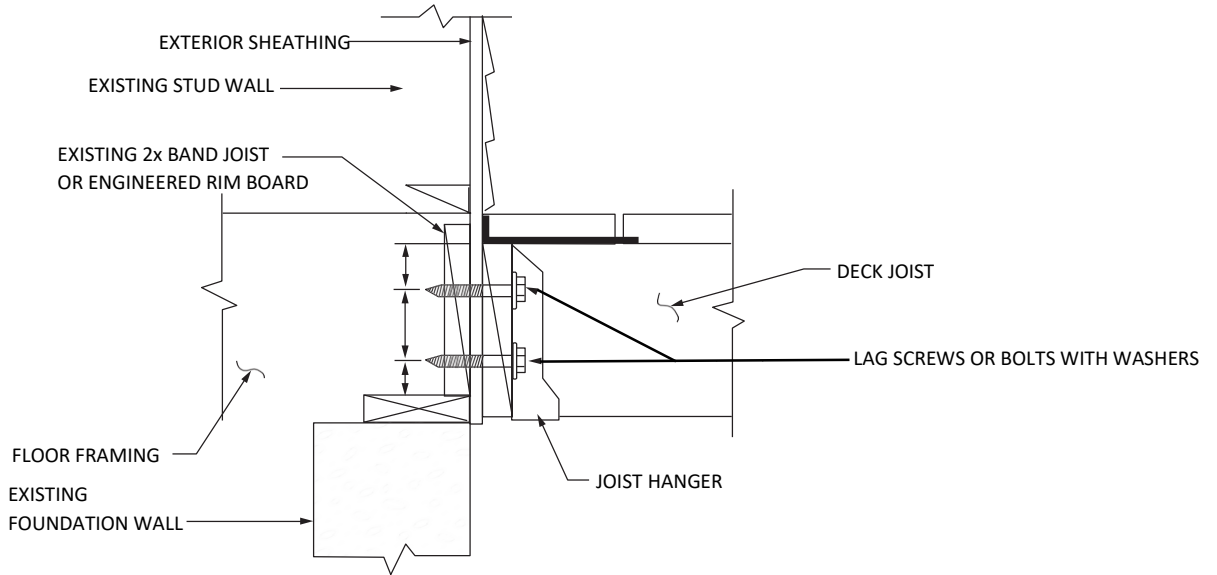
JOISTS WITH FLUSH BEAM

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

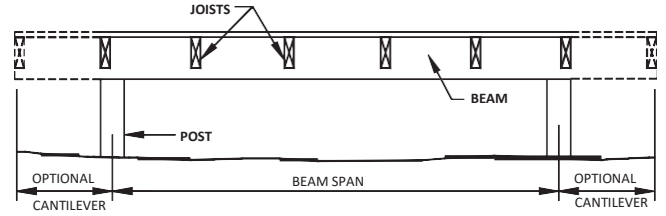
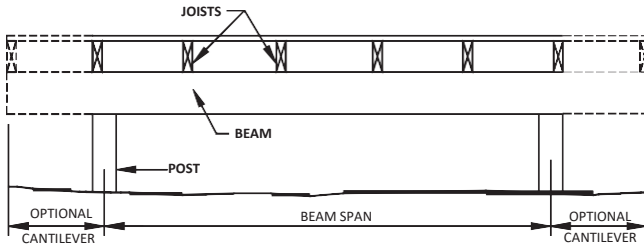
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS



For SI: 1 inch = 25.4 mm.



PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS



The table below are the values for the maximum allowable spans for wood deck beams.

**TABLE R507.6
DECK BEAM SPAN LENGTHS^{a, b} (ft. - in.)**

| SPECIES ^c | SIZE ^d | DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet) | | | | | | |
|---|----------------------|--|------|------|------|------|------|------|
| | | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| Southern pine | 2 – 2 x 6 | 6-11 | 5-11 | 5-4 | 4-10 | 4-6 | 4-3 | 4-0 |
| | 2 – 2 x 8 | 8-9 | 7-7 | 6-9 | 6-2 | 5-9 | 5-4 | 5-0 |
| | 2 – 2 x 10 | 10-4 | 9-0 | 8-0 | 7-4 | 6-9 | 6-4 | 6-0 |
| | 2 – 2 x 12 | 12-2 | 10-7 | 9-5 | 8-7 | 8-0 | 7-6 | 7-0 |
| | 3 – 2 x 6 | 8-2 | 7-5 | 6-8 | 6-1 | 5-8 | 5-3 | 5-0 |
| | 3 – 2 x 8 | 10-10 | 9-6 | 8-6 | 7-9 | 7-2 | 6-8 | 6-4 |
| | 3 – 2 x 10 | 13-0 | 11-3 | 10-0 | 9-2 | 8-6 | 7-11 | 7-6 |
| Douglas fir-larch ^e , hem-fir ^e , spruce-pine-fir ^e , redwood, western cedars, ponderosa pine ¹ , red pine ^f | 3 x 6 or 2 – 2 x 6 | 5-5 | 4-8 | 4-2 | 3-10 | 3-6 | 3-1 | 2-9 |
| | 3 x 8 or 2 – 2 x 8 | 6-10 | 5-11 | 5-4 | 4-10 | 4-6 | 4-1 | 3-8 |
| | 3 x 10 or 2 – 2 x 10 | 8-4 | 7-3 | 6-6 | 5-11 | 5-6 | 5-1 | 4-8 |
| | 3 x 12 or 2 – 2 x 12 | 9-8 | 8-5 | 7-6 | 6-10 | 6-4 | 5-11 | 5-7 |
| | 4 x 6 | 6-5 | 5-6 | 4-11 | 4-6 | 4-2 | 3-11 | 3-8 |
| | 4 x 8 | 8-5 | 7-3 | 6-6 | 5-11 | 5-6 | 5-2 | 4-10 |
| | 4 x 10 | 9-11 | 8-7 | 7-8 | 7-0 | 6-6 | 6-1 | 5-8 |
| | 4 x 12 | 11-5 | 9-11 | 8-10 | 8-1 | 7-6 | 7-0 | 6-7 |
| | 3 – 2 x 6 | 7-4 | 6-8 | 6-0 | 5-6 | 5-1 | 4-9 | 4-6 |
| | 3 – 2 x 8 | 9-8 | 8-6 | 7-7 | 6-11 | 6-5 | 6-0 | 5-8 |
| | 3 – 2 x 10 | 12-0 | 10-5 | 9-4 | 8-6 | 7-10 | 7-4 | 6-11 |
| 3 – 2 x 12 | 13-11 | 12-1 | 10-9 | 9-10 | 9-1 | 8-6 | 8-1 | |

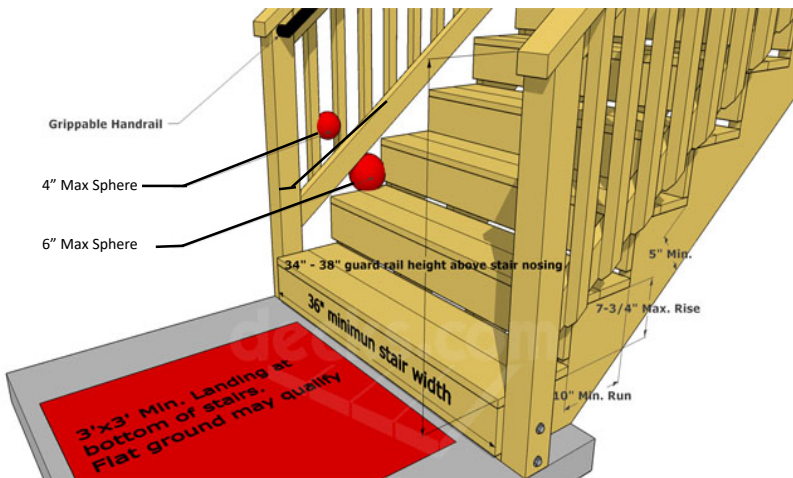
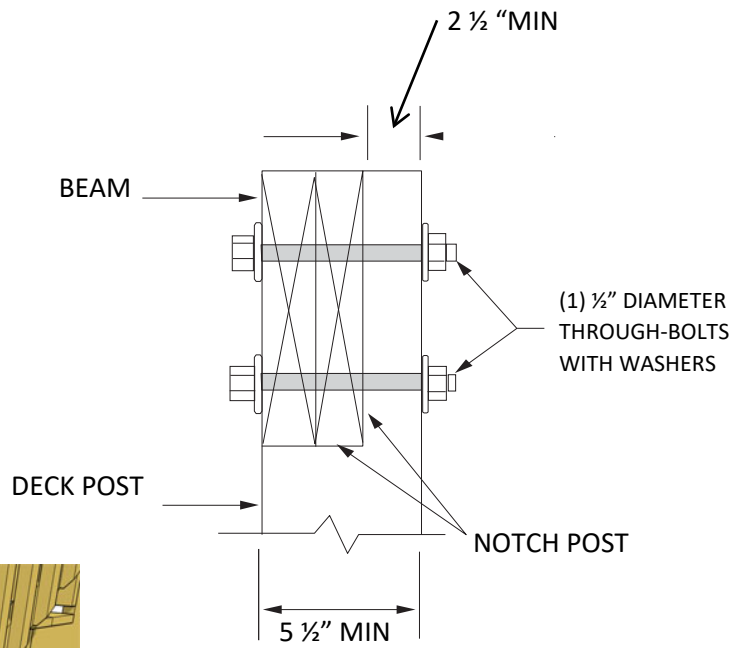
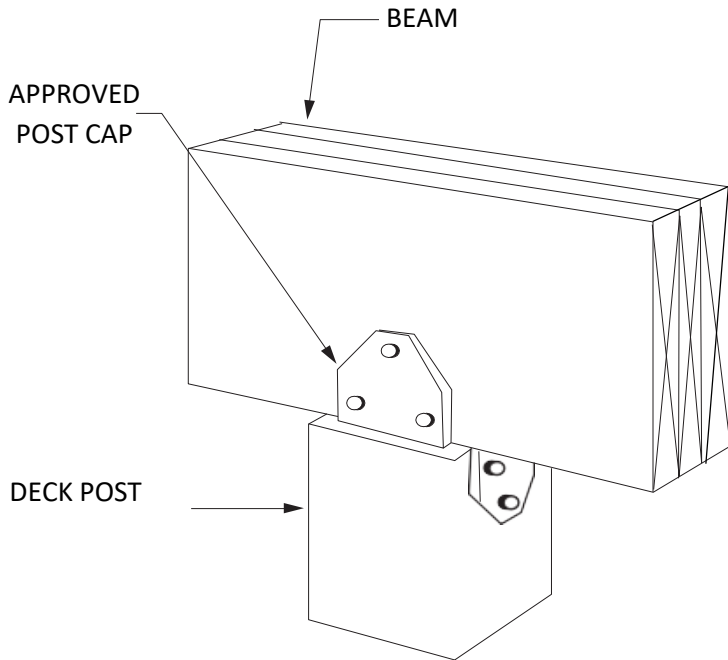
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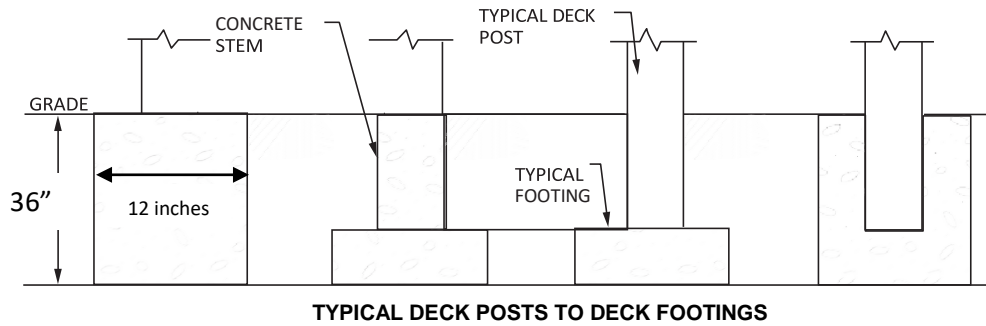
- a. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied at the end.
- b. Beams supporting deck joists from one side only.
- c. No. 2 grade, wet service factor.
- d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- e. Includes incising factor.
- f. Northern species. Incising factor not included.

MAXIMUM JOIST SPACING

| MATERIAL TYPE AND NOMINAL SIZE | MAXIMUM ON-CENTER JOIST SPACING | |
|--|--|---|
| | Perpendicular to joist | 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 Manufactures Instructions | In accordance with Manufactures Instuctions |

DECK BEAM TO POST CONNECTIONS





A building permit is not required if your deck, porch, or patio meets **ALL** four (4) of the following requirements:

- Not exceeding 200 square feet in area.
- Not more than 30 inches above grade at any point, even 3 feet beyond the edge of the deck.
- Not attached to the dwelling/structure.
- Not serving an egress door.

A permit is required if **you do not meet** all of the four (4) above items even if you are replacing/fixing a porch or patio with materials other than concrete or pavers.