PLANNING DEVELOPMENT & SUSTAINABILITY
BUILDING DIVISION

Residential Guidelines

Decks

Applicability: A building permit is required for any deck.

Plan Requirements: **S**ubmittal documents shall include the following information:

a) **Site Plan** – Show the structure to which the deck will be attached (if applicable) and include a north arrow for orientation. Draw the deck with a dimension line representing the proposed distance to the closest lot line(s).

b) **Plan View** – Draw the shape of the deck as it would appear from an overhead view, including dimensions. Label the distance between posts, the span of the joists from the house to the beam, and the amount of any cantilever past the beam. Label the size of all supporting footings. Show the location of any stairs.

c) **Cross Section View** – Draw a side view, showing all components from the bottom of the footing to the top of the guard rail. Label the depth of the footings, height of the deck above grade, and height of the guard rail above the deck.

Note: Label the drawings with as much detail as possible, indicating the size of beams, size and spacing of joists, and any other important information.

Footings: Frost protected footings shall be required for a deck that is attached to another structure. The minimum depth shall be 42". Footing diameter shall be calculated using the formula on the last page of this document.

Joist Supports: All joists shall be supported by an approved joist hanger or beam. Hangers shall be attached to a ledger board with joist hanger nails (screws are not allowed).

Ledger Board: Ledger boards shall be attached to the band joist with ½" lag screws or carriage bolts.

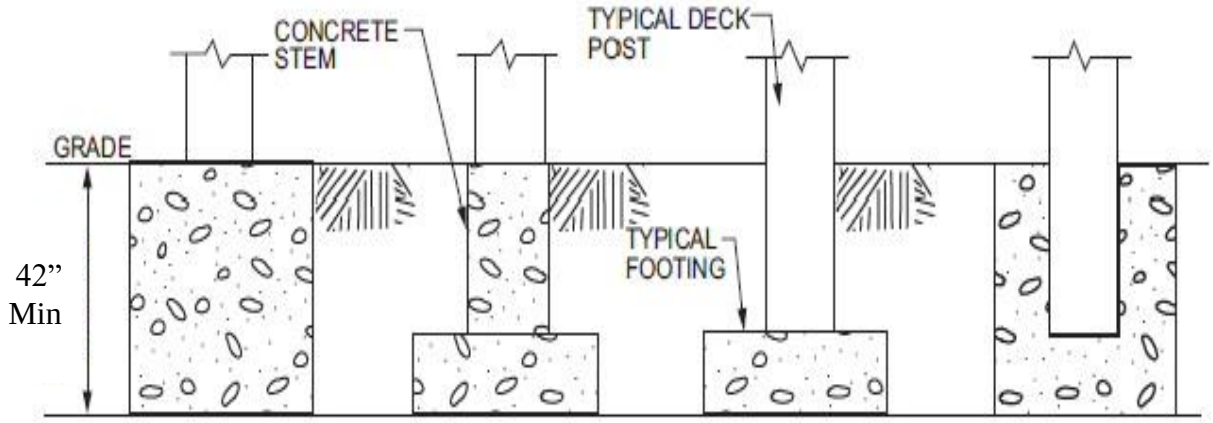
Wood Requirements: All exposed wood used in the construction of decks shall be of an approved species and grade of lumber, resistant to decay (redwood, cedar, etc.) or approved treated wood. This includes posts, beams, joists, decking, railings, and stair components.

Guardrails: All decks that are 30" or more above grade shall be protected by a guard. Such guards shall be 36" minimum in height. Guards with openings, such as spindles, shall not allow the passage of a 4" diameter sphere.

Stairs: Minimum stair width shall be 36". The maximum riser height shall be 7-3/4". The minimum tread depth shall be 10". The largest riser height or tread depth shall not exceed the smallest by more than 3/8" within any flight of stairs. No riser shall have an opening that will allow the passage of a 4" sphere.

Handrails: A continuous graspable handrail shall be required for stairs with 4 or more risers. It shall extend from the front of the top nosing to the front of the bottom nosing. Handrails shall be located between 34" to 38" above the nosing of the stairs. Handrail ends shall be returned to the supporting wall or terminated at a post.

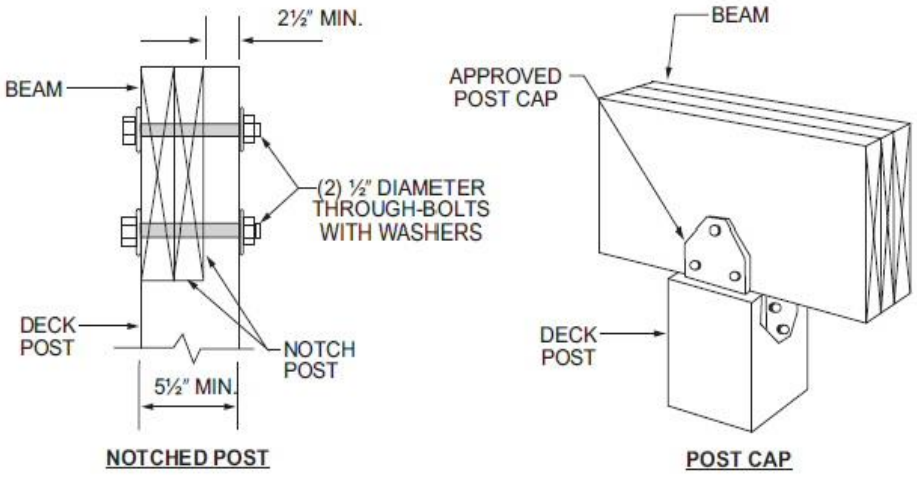
Deck posts shall bear on footings in accordance with one of the figures below. Lateral restraint of posts shall be provided by manufactured connectors or a minimum embedment of 12" in surrounding soils or concrete piers.



DECK POST HEIGHT

DECK POST SIZE	MAXIMUM HEIGHT
4 X 4	8'
4 X 6	8'
6 X 6	14'

Deck beams shall be attached to deck posts in accordance with the figure below or by other equivalent means capable to resist lateral displacement:



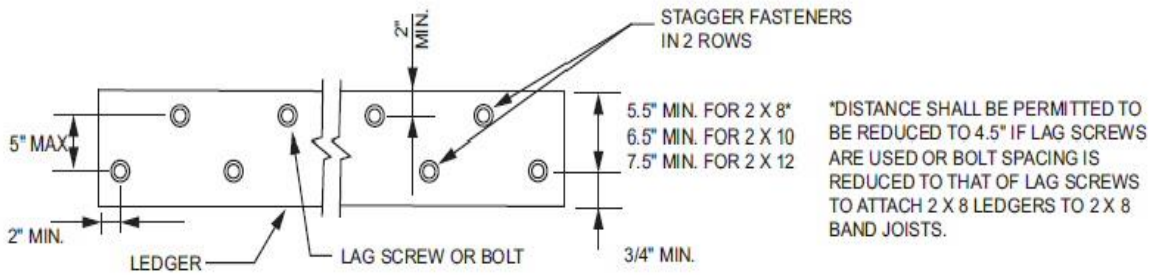
Ledger connections to band joists shall be in accordance to the tables and figures below:

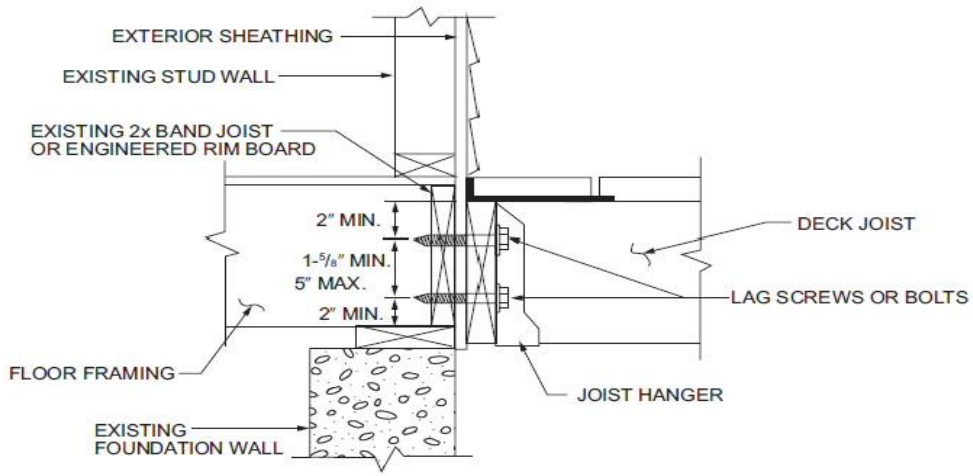
DECK LEDGER CONNECTION TO BAND JOIST

Connector Type	Joist Span						
	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
	On-center spacing of fasteners						
½" diameter lag screw	30"	23"	18"	15"	13"	11"	10"
½" diameter carriage bolt	36"	36"	34"	29"	24"	21"	19"

PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGER AND BAND JOISTS

	MINIMUM DISTANCE FROM TOP EDGE	MINIMUM DISTANCE FROM BOTTOM EDGE	MININMUM DISTANCE FROM ENDS	MINIMUMU SPACING BETWEEN ROWS
Ledger	2"	¾"	2"	1-5/8"
Band Joist	¾"	2"	2"	1-5/8"





Maximum allowable spans for wood deck joists shall be in accordance with table listed below:

MAXIMUM ALLOWABLE JOIST SPANS

SPECIES	SIZE	SPACING OF DECK JOIST WITH NO CANTILEVER			SPACING OF DECK JOISTS WITH CANTILEVER		
		12”	16”	24”	12”	16”	24”
Southern Pine (#2 or better grade)	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”

Maximum allowable spans for wood deck beams shall be in accordance with the table listed below:

MAXIMUM ALLOWABLE BEAM SPANS

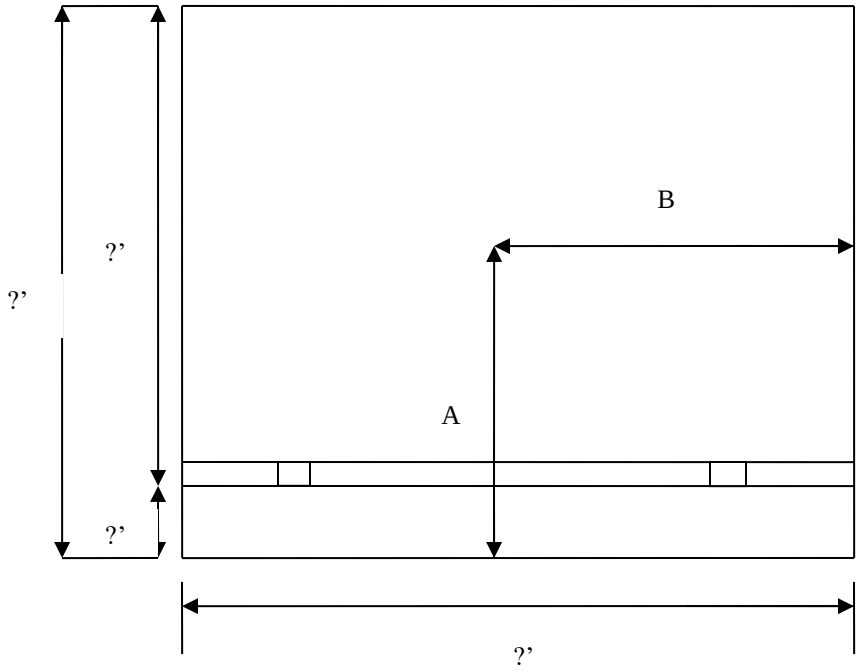
SPECIES	SIZE	DECK JOIST SPAN LESS THAN OR EQUAL TO:						
		6’	8’	10’	12’	14’	16’	18’
Southern Pine (#2 or better grade)	2-2 X 6	6’-11”	5’-11”	5’-4”	4’-10”	4’-6”	4’-3”	4’-0”
	2-2 X 8	8’-9”	7’-7”	6’-9”	6’-2”	5’-9”	5’-4”	5’-0”
	2-2 X 10	10’-4”	9’-0”	8’-0”	7’-4”	6’-9”	6’-4”	6’-0”
	2-2 X 12	12’-2”	10’-7”	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”
	3-2 X 12	15’-3”	13’-3”	11’-10”	10’-9”	10’-0”	9’-4”	8’-10”

Maximum allowable spacing for joists supporting decking shall be in accordance with table listed below:

MAXIMUM SPACING FOR JOISTS SUPPORTING DECKING

MATERIAL	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist
1-1/4” thick wood decking	16”	12”
2” thick wood decking	24”	16”
Plastic composite	In accordance with ASTM D 7032	In accordance with ASTM D 7032

HOW TO CALCULATE FOOTINGS FOR A DECK OR PORCH



Step 1: Find the Area Supported by each Footing in Square Feet = (A x B).
Step 2: Determine the type of Load supported by each post.
*Load for open decks shall be 50# PSF based on a floor load only.
*Load for covered decks, porches and three season rooms shall be 90# PSF based on a floor load of 50# PSF plus a roof load of 40# PSF.
Step 3: Find the Total Load (T.L.) supported by each footing by multiplying the Area by the Load.
Step 4: Divide the Total Load by 2000, which is the presumed soil bearing capacity of local soil.
Step 5: Use the resulting value (Footing PSF) to find the proper footing size on the table below. Each Footing PSF will require a Footing Diameter with the minimum size listed below it on the table. Any fraction of a number larger than the Footing PSF listed shall be supported by a footing of the next larger diameter.

FORMULA: [(A x B) x T.L.]/2000 = Footing PSF

	Minimum Area Required for a Round Pier Footing								
Footing PSF (from calculation)	0.35	0.55	0.79	1.07	1.39	1.77	2.18	2.63	3.12
Minimum Footing Diameter	8"	10"	12"	14"	16"	18"	20"	22"	24"