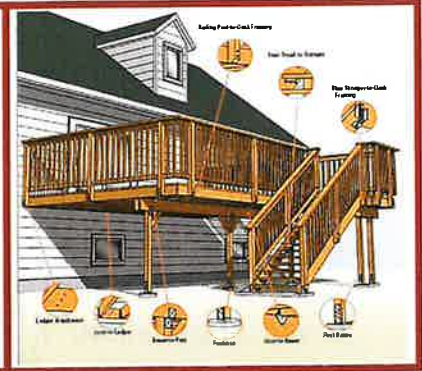


Residential Deck Guide

1 & 2 Family Dwellings and Townhouses



Responsibility for compliance with applicable codes and ordinances falls on the owner or contractor. For specific questions regarding code requirements, refer to the applicable codes or contact your local Building Department.

Building Permits Requirements:

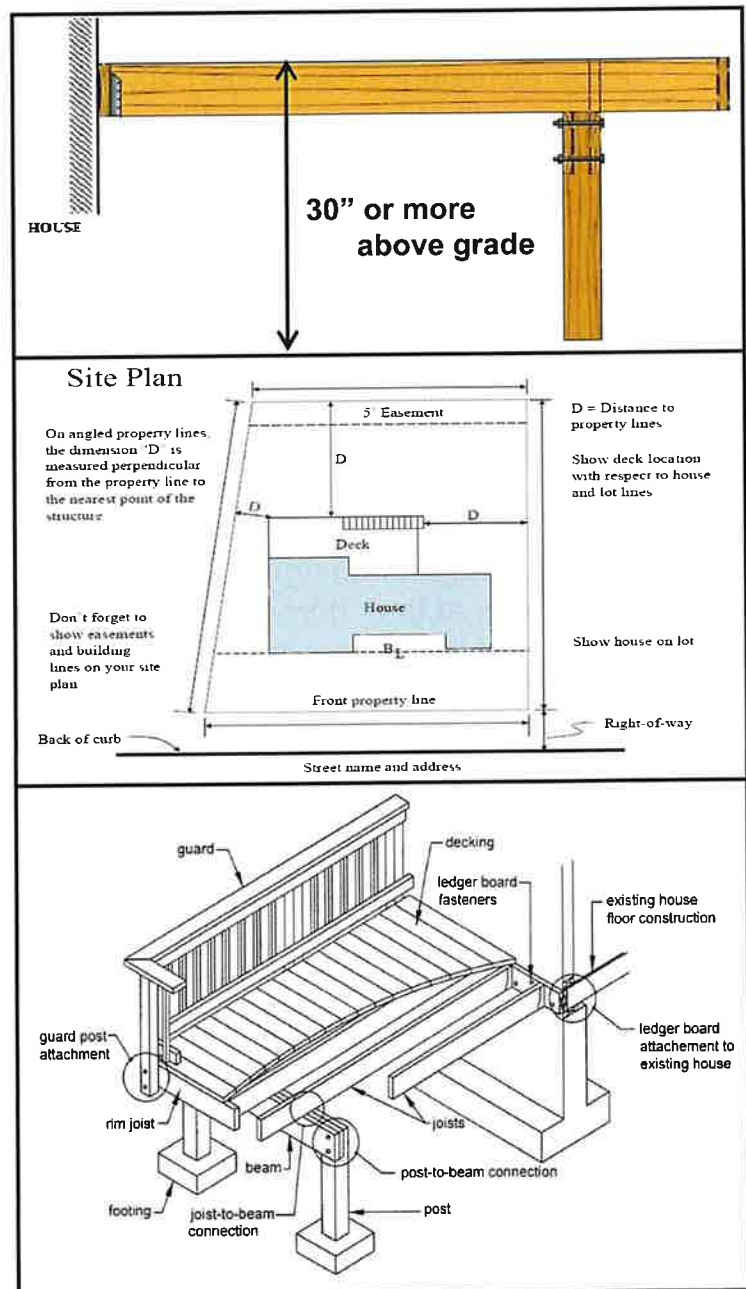
Building permits are required for the construction of all attached or freestanding decks that are elevated 30" or more above grade. Deck construction shall meet the requirements of the 2015 International Residential Code.

Zoning Requirements:

Any deck construction requires a property survey and will need to meet the land use and setback requirements of the Municipal zoning code. (See example)

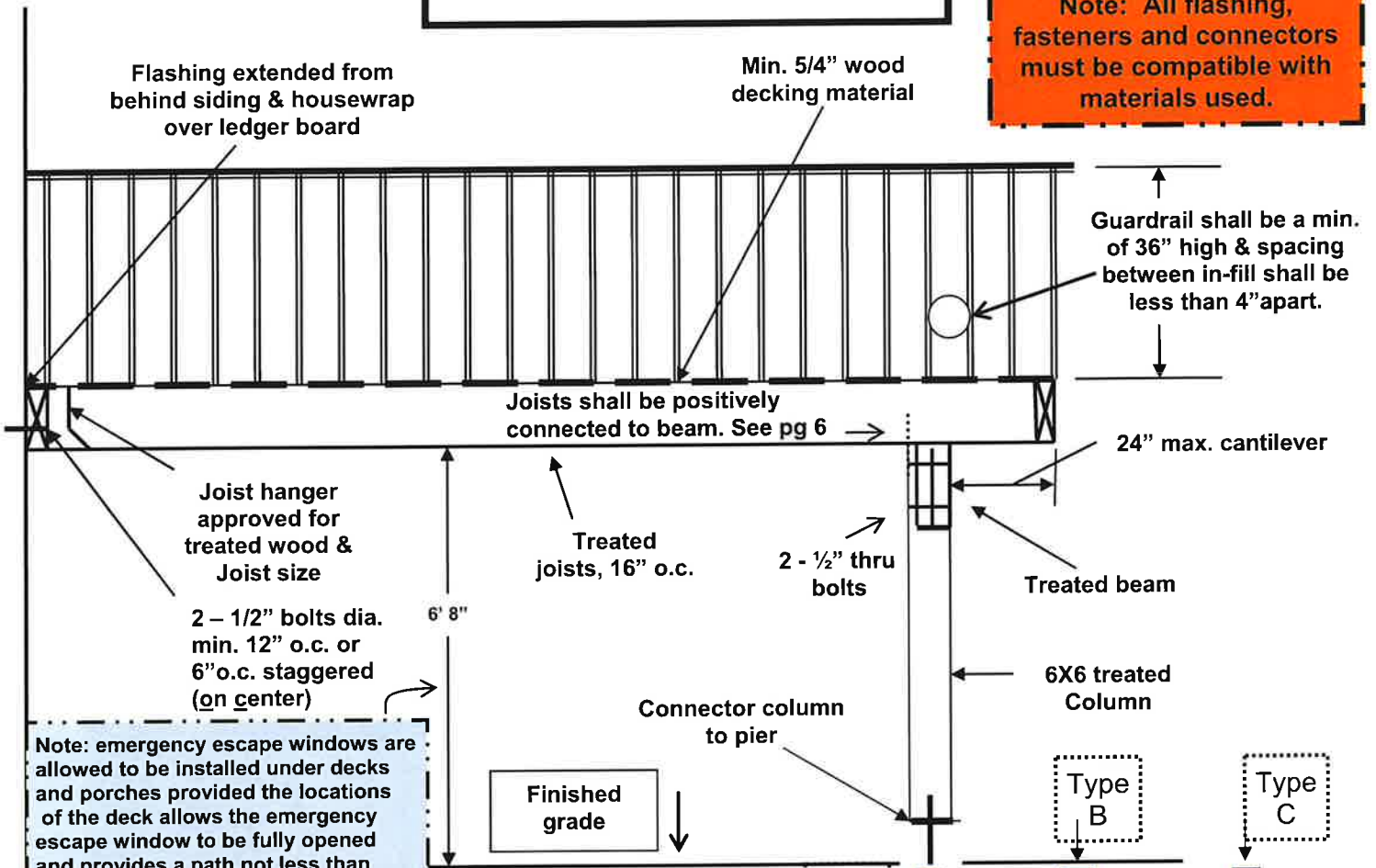
Plan Review & Inspections:

The plan is reviewed by the plans examiner in order to identify potential problems that may arise prior to construction. Construction inspections will be done during the project to ensure code compliance and that the materials used are installed correctly.



TYPICAL DECK CROSS SECTION

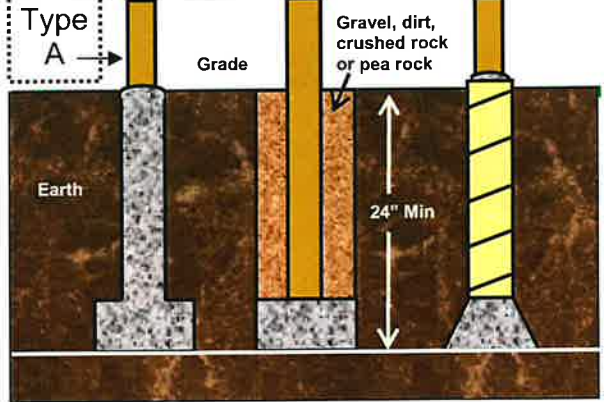
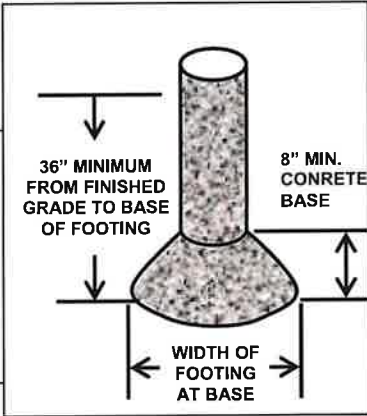
Note: All flashing, fasteners and connectors must be compatible with materials used.



Note: emergency escape windows are allowed to be installed under decks and porches provided the locations of the deck allows the emergency escape window to be fully opened and provides a path not less than 36" in height to a yard or court. 6'8" required for walk out basements or patios.

FOOTINGS

BeFore you Dig Call 811 for utility locations at least two working days **before you dig**



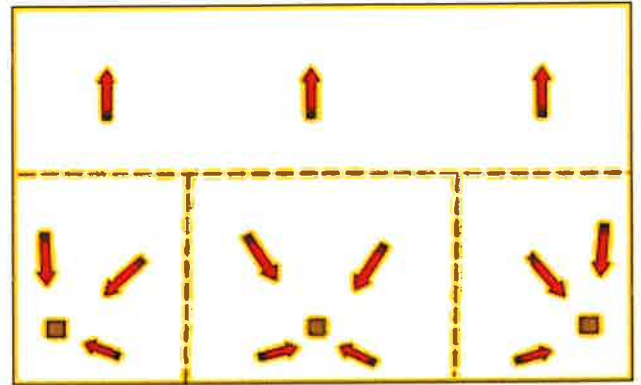
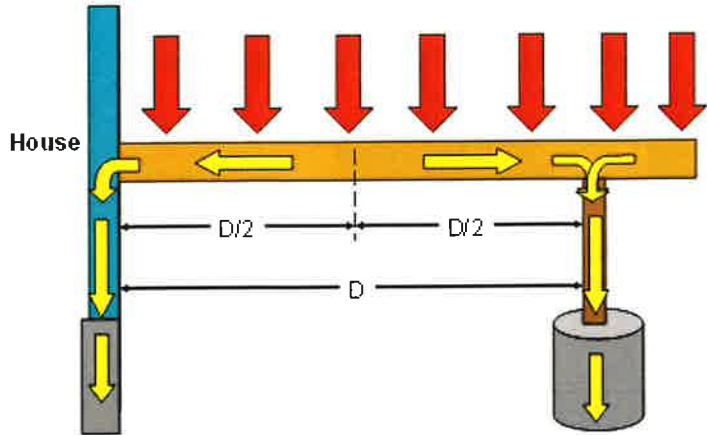
To accurately size footings, beams and joist refer to tables on pgs 16.

Beam and Footing Sizes

Maximum Joist Span

WARNING: THIS IS AN ILLUSTRATION ONLY. IT IS INTENDED TO SHOW SOME OF THE INFORMATION THAT SHOULD BE INCLUDED ON YOUR DECK PLANS. IT IS NOT INTENDED TO SHOW COMPLIANCE WITH ANY CODES THAT MAY APPLY. CHANGES IN THE HEIGHT AND SIZE OF A DECK WILL CAUSE VARIATIONS IN CODE REQUIREMENTS.

Understanding Load Paths

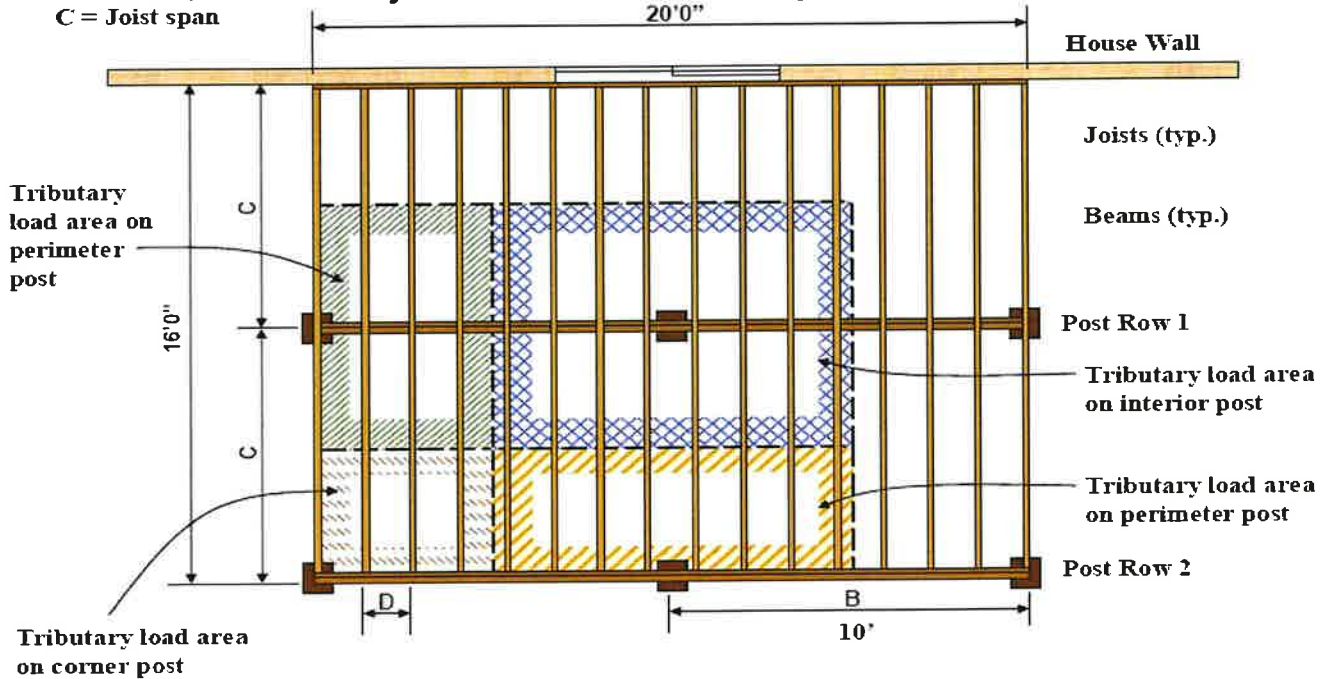


Loads are assumed to be uniform across the floor

Tributary load area for posts

B = Beam span
C = Joist span

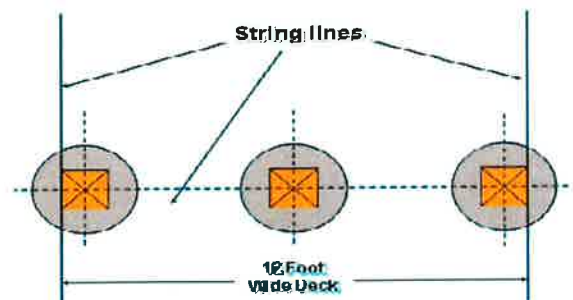
Tributary is half the distance: of the joist or to the post.



THE REQUIRED AREA OF THE COLUMN SHOULD FULLY BEAR ON THE FOOTING

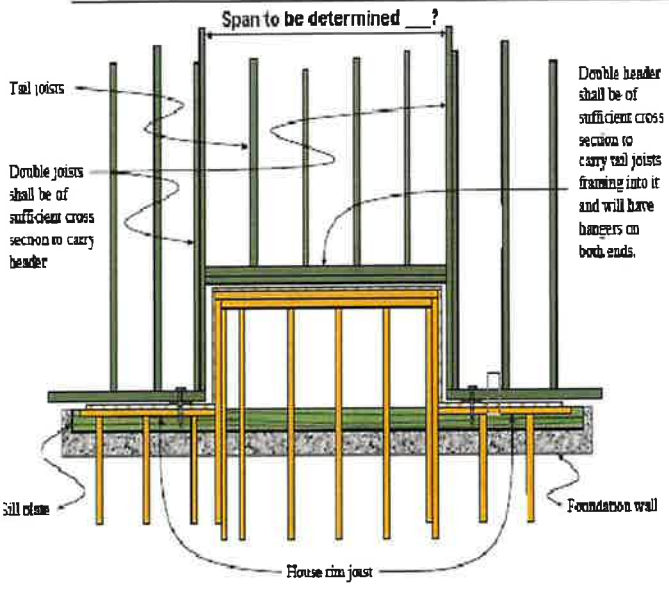


HINT: PLACING A SLIGHT CROWN ON THE TOP OF THE FOOTING PREVENTS WATER ACCUMULATIONS AND PREMATURE COLUMN FAILURE.

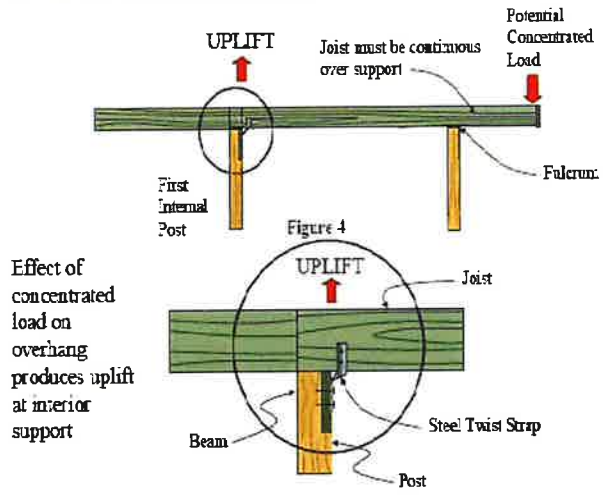


Note that the intersection of your string lines is not the center of the footing. Adjust according to the location and size of your column.

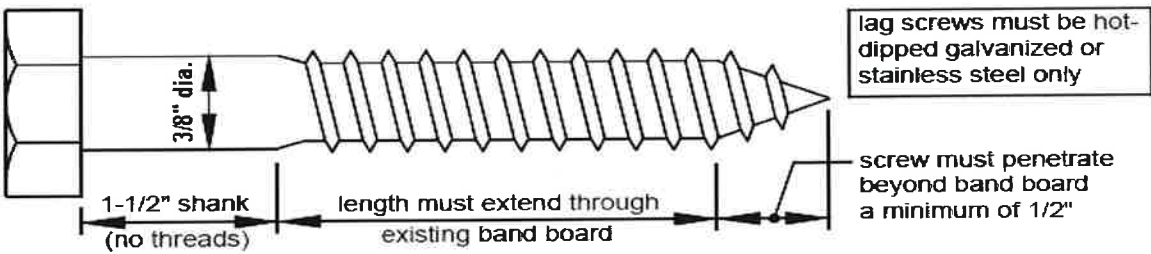
Cantilever Options



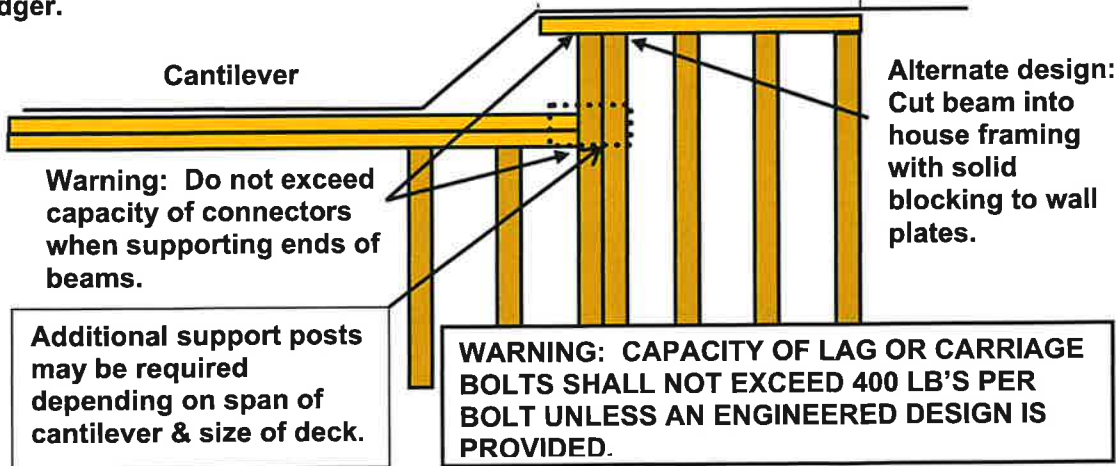
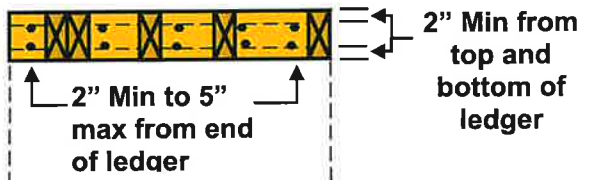
Cantilevered connection

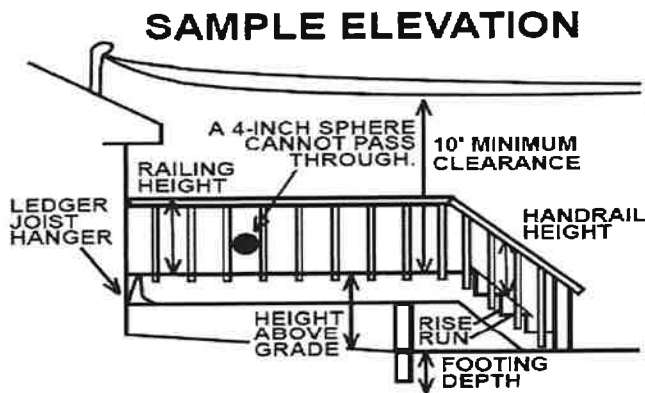


All thru bolts and lag screws shall be installed with washers.



Lag screws or bolts shall be placed two inches from the bottom and top of deck ledgers and between two to five inches from the ends. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger.





Electrical service lines over or within 3' horizontally of the deck or stairs *must* have a minimum 10' vertical clearance.

GENERAL INFORMATION:

RAILINGS

Guardrails are required for portions of decks 30" or more above grade. The height of the rail must be a minimum of 36". Open guardrails must have intermediate rails or an ornamental pattern that a 4" sphere cannot pass through. Guardrails must continue down stairs where the stair is more than 30 inches above grade.

STAIRS

Stairs must have a maximum rise of 8 1/4 inches and a minimum run of 9 inches. *The run is measured from the nosing of one tread to the nosing of the next. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch.*

Maximum step down is 7 3/4" from interior finished floor to top of the deck platform at the patio door.

Open risers are permitted provided that a 4" diameter sphere will not pass thru the opening between the treads.

SAFTEY GLAZING

All glass (windows) shall be reviewed for tempered glazing requirements. Be sure to show location of all windows in relation to deck stairs, landings, top and bottom treads, and walking surfaces.

WOOD TREATMENT

Wood used above ground, in contact with the ground, or below ground requires different degrees of treatment. Check the labels of the material you are buying to determine where it can be used. ***Because the new preservative treatments are very corrosive, make sure that any metal connectors used in the construction of your deck are approved by the manufacturer for use with treated wood.***

DECKING

Caution – some manufactured deck products are approved for decking but not for stair treads. In some cases where manufactured decking is approved for stairs, the spacing of supports may be significantly reduced compared to use on the deck itself. Read the research report for further information.

CHECKLIST FOR DECK PLANS

(This information is to be provided on your plan.) Please Verify!

Site Plan

- Street address and/or legal description shown
- Size/location of existing buildings, easements and buffers
- All lot dimensions and pin locations shown
- Location and size of proposed deck shown
- Distance from all lot lines to proposed deck
- Locations of existing windows/doors (glass) and window wells if applicable [Tempered glass may be required at landings, walking surfaces, top or bottom tread and next to stairs.]

Construction Plans

- A complete set of plans submitted
- All measurements, distances, sizes and lumber dimensions have been noted on plan
- Plan neat and legible
- Is deck connected to a cantilever? If so indicate what type of floor system the cantilever is framed with.

Elevation

- Show side and/or front view of deck in relation to grade and dwelling
- Include railing height and design

Framing Plan

- Floor joist size and spacing including species and grade
- Orientation of floor joists
- Cantilever of joists beyond beam (max. 2 feet)
- Bearing points for all joists
- Size and location of all beams including species and grade
- Cantilever of beams beyond post
- Size and location of ledger board including species and grade
- Size and location of all columns/post
- Location of stairs
- Changes in elevation of deck floors or landings
- Unusual framing issues such as cantilevers of the dwelling floor

Footings

- Footing depth and design
- Footing width at base consistent with load for each footing location.

Section(s)

- Cross section or top view(s) from bottom of footing to top of guard to show railing details; floor framing orientation; joist/beam orientation and bearing; column locations; connections; footing design, size, and depth; and height of deck floor above grade.

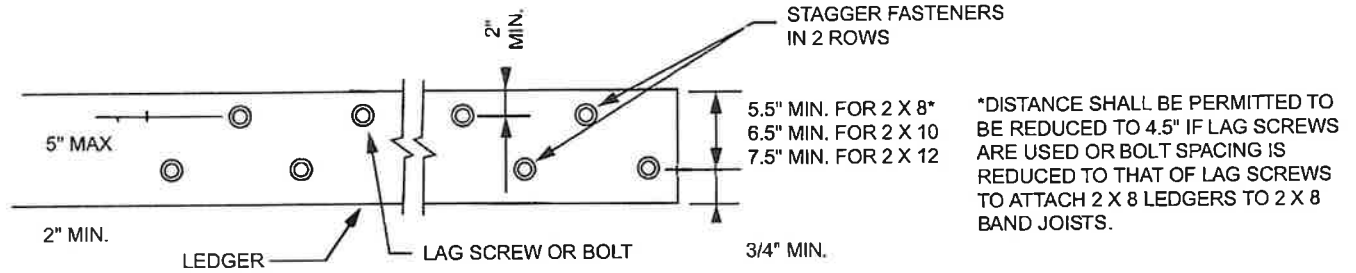
Details

- Flashing at the ledger
- Joist bearing/hangers
- Ledger connection (Caution for dwelling floor cantilevers)
- Column/beam connection
- Column/footing connection
- Type of decking and orientation (Caution for 5/4 or composite decking for spans more than 16" o.c. or installed diagonally)
- Provide stair stringer connection detail
- See examples**
- Lateral bracing is required when the deck platform is 12 feet and greater measured from finished grade (see page 8)
- Width of stairs (36" minimum width)
- Rise/run w/tolerance shown
- Number and size of stringers (see page 8)
- Open riser design (less than 30" above grade)
- Type and size of tread consistent with stringer spacing (Caution for decking use)
- Circle handrail detail that will be used
- Handrail height shown on plan (see page 8)
- Landing at bottom of stair (grade is acceptable when within rise tolerance)

Guards

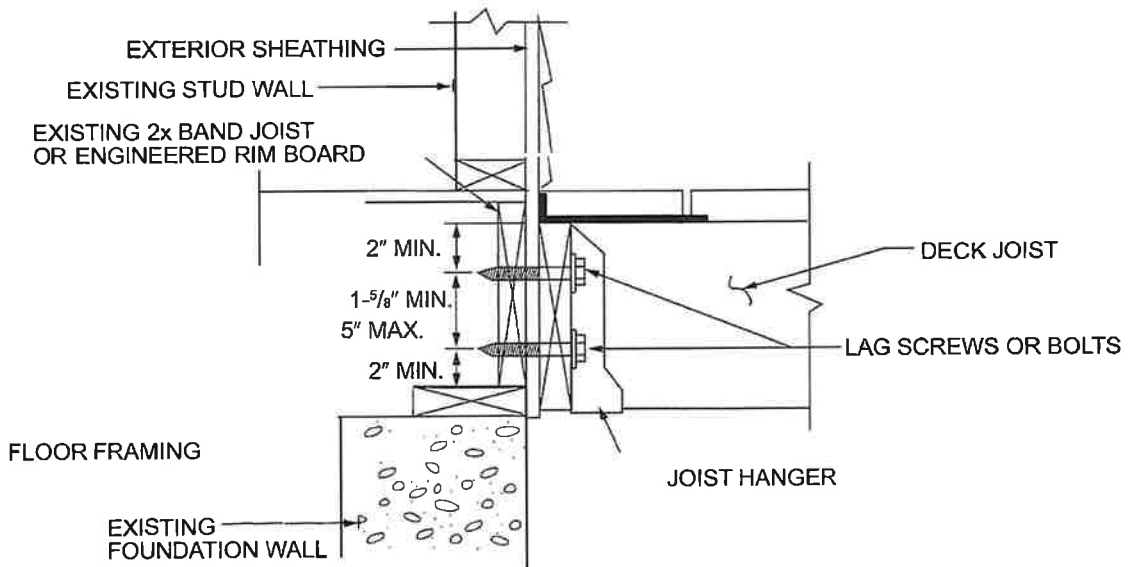
- Guard height and opening dimensions
- Guard design/materials
- Guard attachment

DETAILS



For SI: 1 inch = 25.4 mm.

PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS



For SI: 1 inch = 25.4 mm.

PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

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 ^f , 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

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. 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 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.

DECK JOIST SPANS FOR COMMON LUMBER SPECIES^f (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.