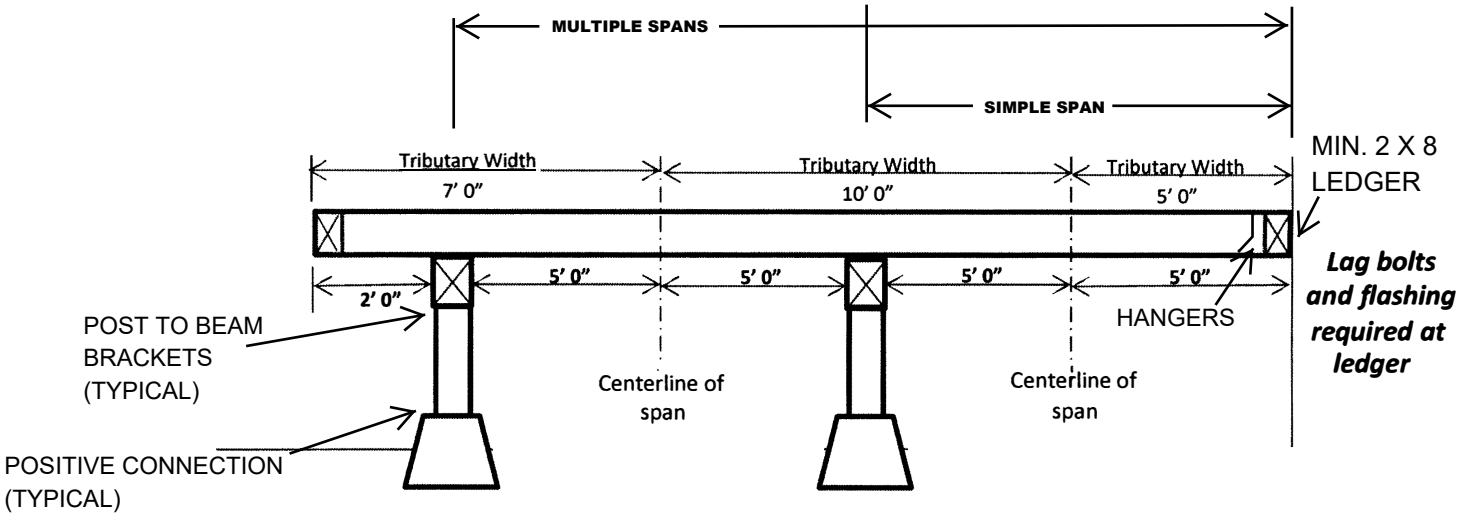
LEWIS COUNTY BUILDING DEPARTMENT

DECK DESIGN WORKSHEET

Follow the steps below to complete your deck worksheet

1. On ***page 2*** draw a plan view of your deck showing all dimensions, beam lines and post locations.
2. On ***page 3*** circle the cross section that best resembles your deck and fill in the appropriate blanks with the sizes of your beams and joists. Following the steps below will help you determine adequate sizes and spacing for structural members on your deck.

   a. ***Use TABLE R507.5 to determine an adequate size for your joists.***
   (FOR SIMPLE SPANS ONLY. CONTACT BUILDING DEPT. FOR MULTIPLE SPANS)



   b. ***Determine the tributary widths for your beams.***

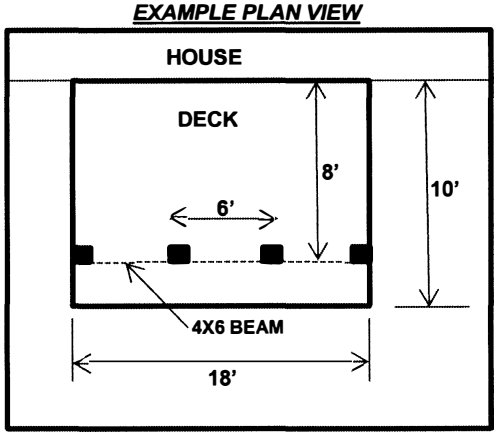
   c. ***Use TABLE R507.6 to determine adequate sizes for your beams.***
   (FOR SIMPLE SPANS ONLY. CONTACT BUILDING DEPT. FOR MULTIPLE SPANS)

   d. ***Use TABLE R507.2 for deck ledger board fasteners size and spacing***

3. If your deck has a cover complete ***page 4***.

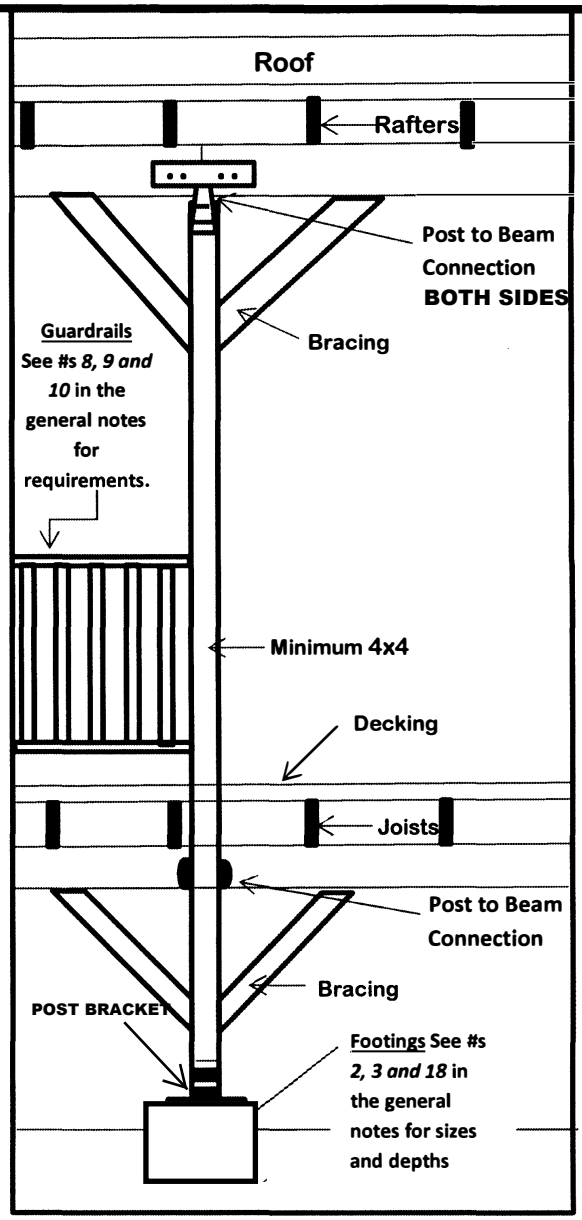
1. Draw a plan view of your deck in the area provided below. The drawing should be fully dimensioned and should include all beam lines and post locations. If the deck is attached to a manufactured home or house, please include in the drawing.

EXAMPLE PLAN VIEW

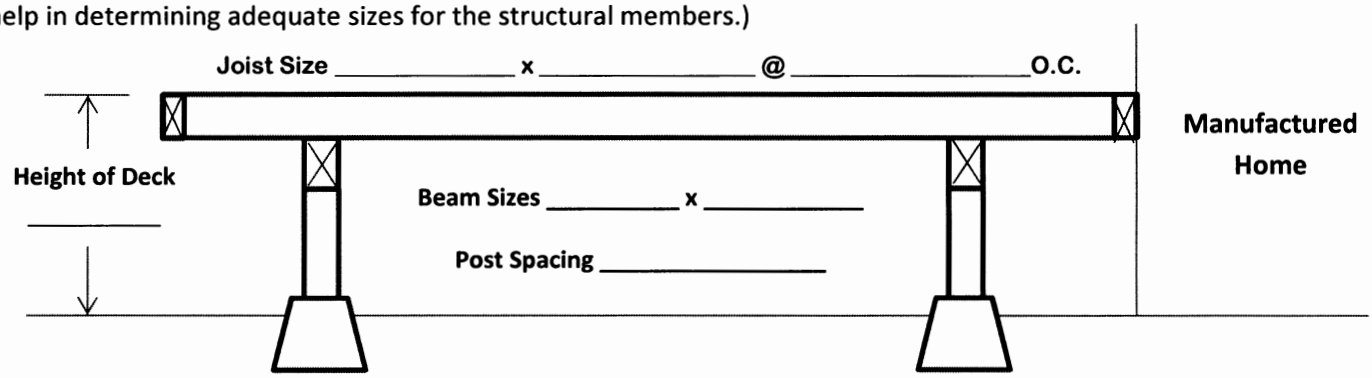


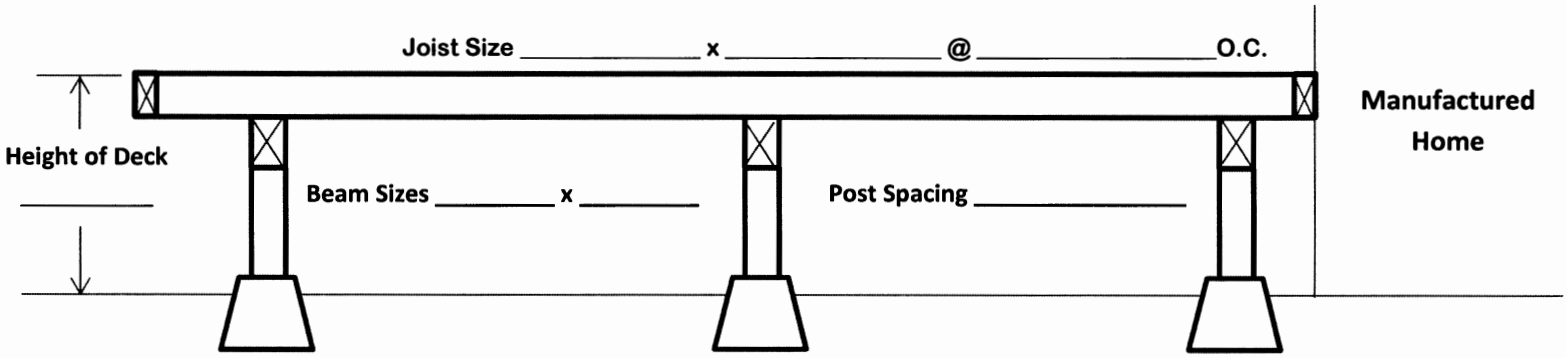
GENERAL NOTES:

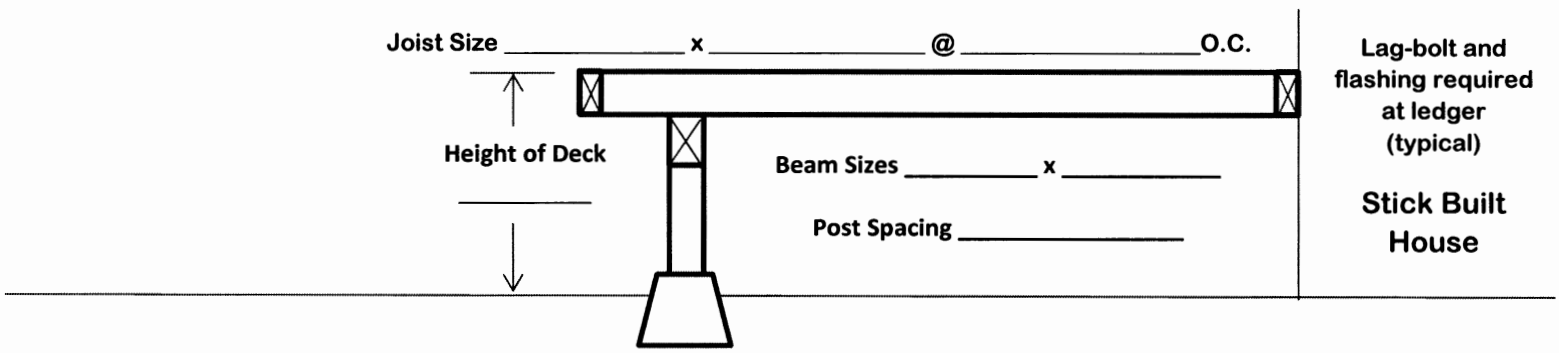
1. Decks over four feet (4') in height will be required to be cross braced.
2. A minimum deck footing of 12"x12"x8" is required for all decks.
3. Decks over 4' in height will require and 18"x18"x8" footing.
4. Covered decks may require large footings.
5. Decks may not be supported by manufactured homes.
6. Wood exposed to moisture shall be treated for such application or shall be of natural resistance to decay.
7. Landings at stairs shall have a minimum length of travel of not less than 36". (Top and Bottom of stairway)
8. Guardrails are required on walking surfaces more than 30" above grade.
9. Guardrails shall have a minimum height of 36"
10. Guardrails shall be designed so a 4" sphere may not pass through at any point.
11. Handrails are required on stairways with 4 or more risers.
12. Handrails shall be located 34"-38" above the nose of the tread.
13. Handrails shall not have open ends.
14. Handrails shall be 1-1/4" to 2" in diameter
15. If using a 2x4 or 2x6 on edge for handrail it must be grooved to create a grip-able surface.
16. Provide a positive connection between all posts and beams and between all posts and footings.
17. All deck covers are required to be braced.
18. All deck covers require an 18"x18"x8" (min.) footing pad positioned 12" below grade and having a positive connection to the post. A rebar grid may be required.

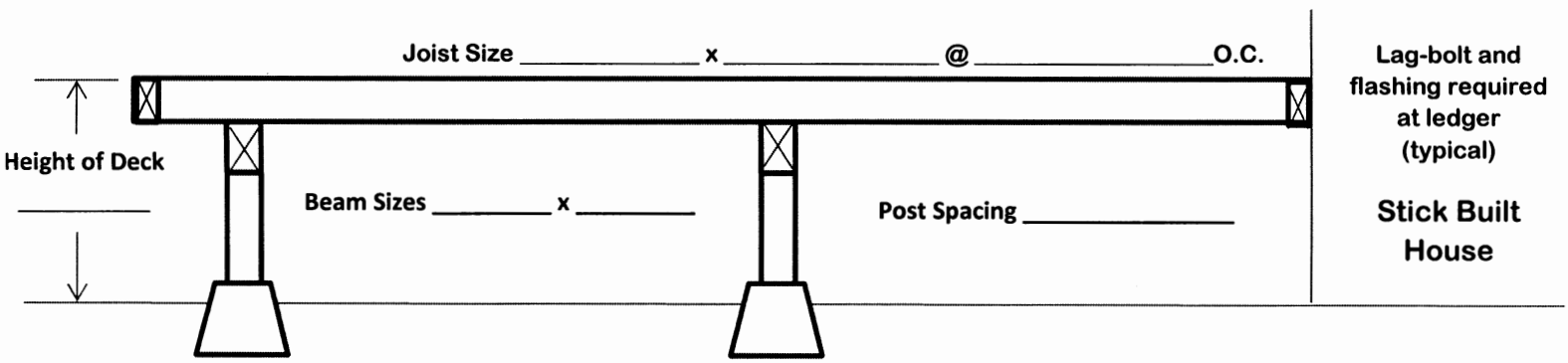


2. Circle the cross-section below that best represents your deck and then fill in the joist sizes, beam sizes, post spacing and maximum height for the cross-section you have circled. (See page 1 for help in determining adequate sizes for the structural members.)

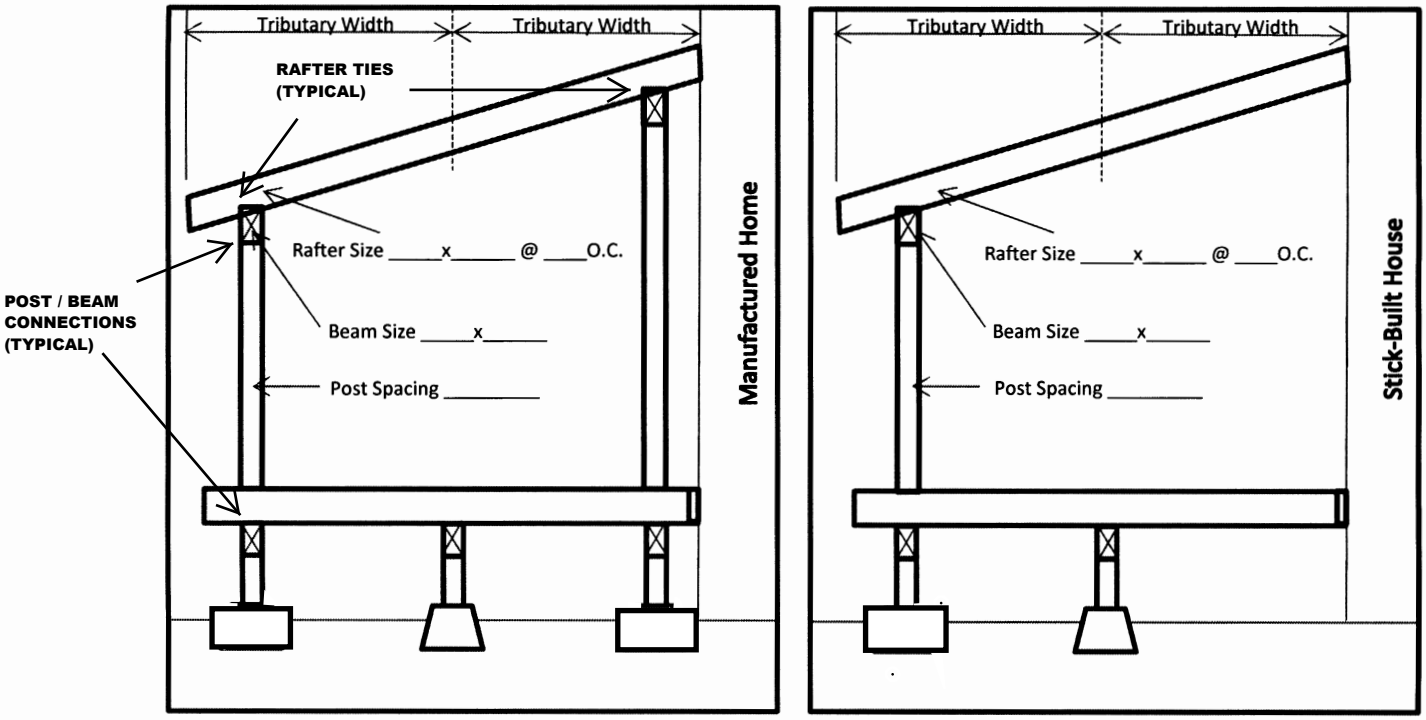








3. If your deck has a cover, circle the cross-section below that best represents your cover and rill in the rafter sizes, beam sizes and post spacing using the tables below.



a. Use the table below to determine the size of your beams. (Verify Snow Loads)

Post Spacing/Beam Span Table (Doug-Fir #2)

Tributary Width		2	3	4	5	6	7	8	9	10
Beam Size	4x6	14'-0"	11'-6"	10'-0"	9'-0"	8'-3"	7'-6"	7'-0"	6'-9"	6'-6"
	4x8	18'-3"	15'-0"	13'-3"	11'-9"	10'-9"	10'-0"	9'-3"	8'-9"	8'-6"
	4x10	22'-3"	18'-6"	16'-0"	14'-6"	13'-3"	12'-3"	11'-6"	10'-9"	10'-3"
	4x12	25'-6"	21'-3"	18'-6"	16'-9"	15'-3"	14'-3"	13'-3"	12'-6"	12'-0"

b. Use the table below to determine the size of your rafters. (Verify Snow Loads)

RAFTER SPANS – based on a 25# Snow Load

		16" O.C.	*24" O.C*
RAFTER SIZE	*2X6*	*12'-0"*	*10'-0"*
	2X8	*15'-9"*	*12'-6"*
	2X10	*19'-3"*	*15'-9"*
	2X12	*22'-3"*	*18'-3"*

c. If attaching the cover to a stick-built house (not a manufactured home), select the method of attachment from below.

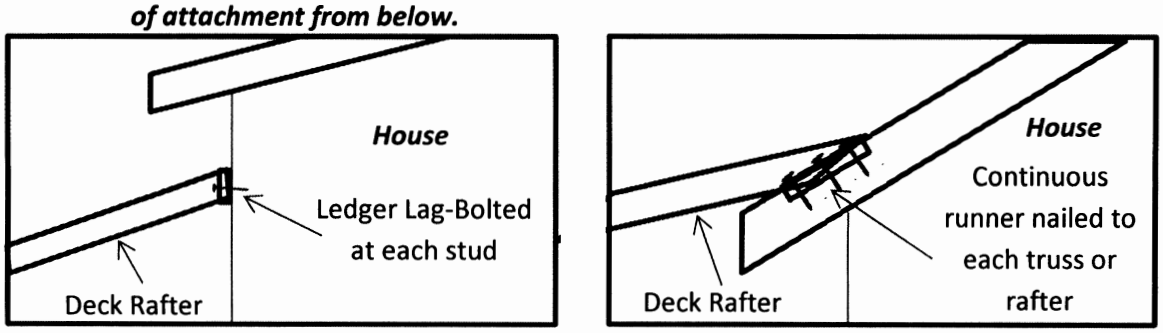


TABLE R507.6
DECK BEAM SPAN LENGTHS[a, b] (ft. - in.) SIMPLE SPAN ONLY

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

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 = 60 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.

TABLE R507.5

DECK JOIST SPANS FOR COMMON LUMBER SPECIES[f] (ft. - in.) **SIMPLE SPAN ONLY**

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
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d]	2 × 6	8-1	7-0	5-9	7-5	6-9	5-9
	2 × 8	10-10	9-5	7-8	9-7	8-8	7-7
	2 × 10	13-3	11-6	9-4	13-3	11-6	9-5
	2 × 12	15-4	13-4	10-10	15-5	13-4	10-11

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 = 60 psf, dead load = 10 psf, L/Δ = 360.
c. Ground snow load, live load = 60 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.

TABLE R507.2

DECK LEDGER CONNECTION TO BAND JOIST[a, b] (Deck live load = 60 psf, deck dead load = 10 psf, snow load ≤ 60 psf)

CONNECTION DETAILS	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 inch diameter lag screw with ½ inch maximum sheathing[c,d]	22	16	13	11	9	8	7
½ inch diameter bolt with ½ inch maximum sheathing[d]	30	22	18	15	13	11	10
½ inch diameter bolt with 1 inch maximum sheathing[e]	26	19	16	13	11	10	9

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
b. Snow load shall not be assumed to act concurrently with live load.
c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
d. Sheathing shall be wood structural panel or solid sawn lumber.
e. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to ½-inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

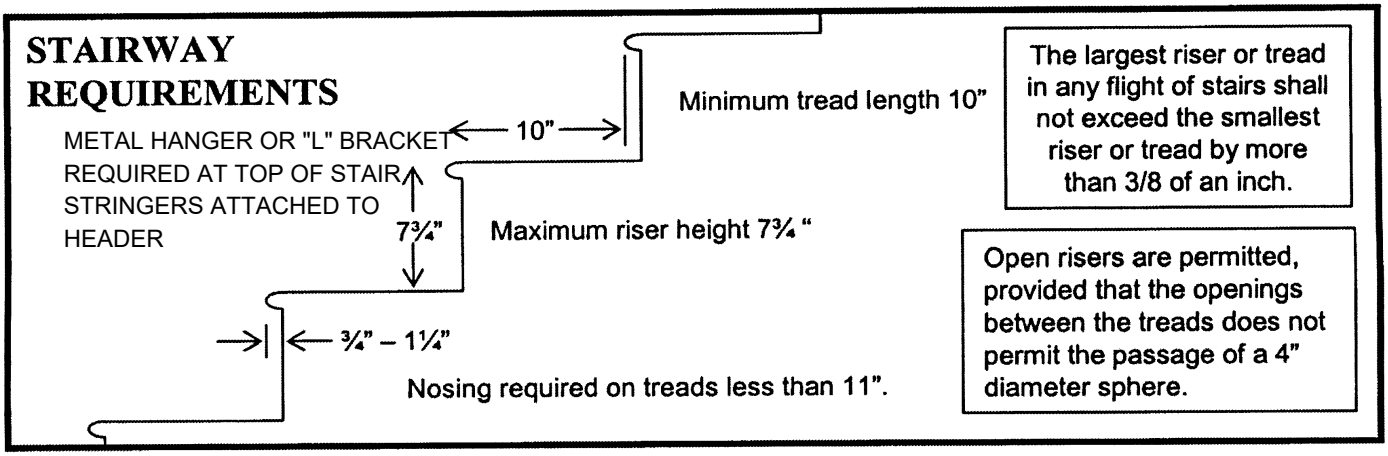
LEWIS COUNTY
Washington's First County
est. 1845

Community Development

2025 NE Kresky Avenue
Chehalis WA 98532

STAIRS, EXITS, HANDRAILS AND GUARDRAILS

STAIRWAY REQUIREMENTS

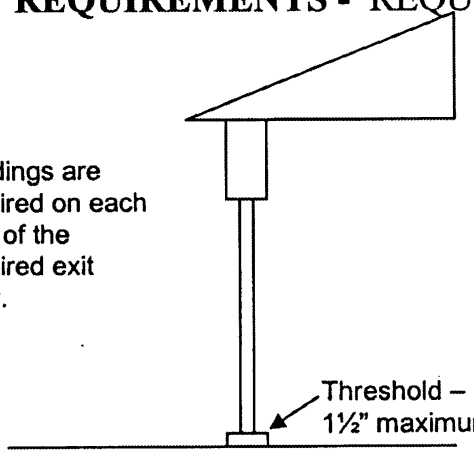


The largest riser or tread in any flight of stairs shall not exceed the smallest riser or tread by more than 3/8 of an inch.

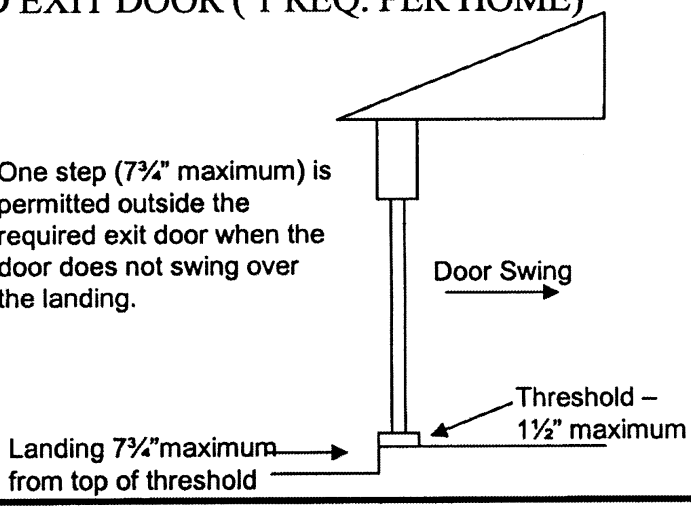
Open risers are permitted, provided that the openings between the treads does not permit the passage of a 4" diameter sphere.

EXIT REQUIREMENTS - REQUIRED EXIT DOOR (1 REQ. PER HOME)

Landings are required on each side of the required exit door.

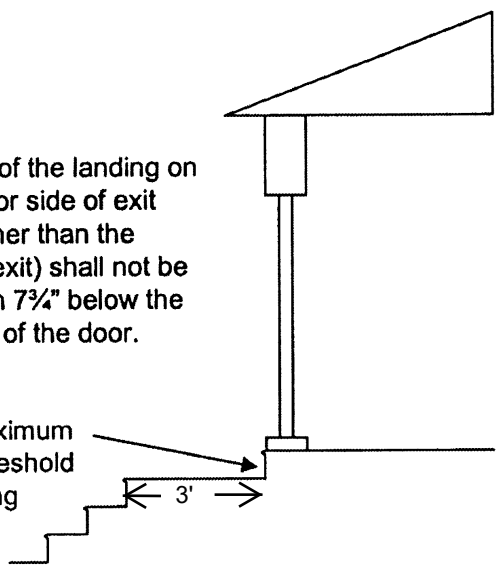


One step (7¾" maximum) is permitted outside the required exit door when the door does not swing over the landing.

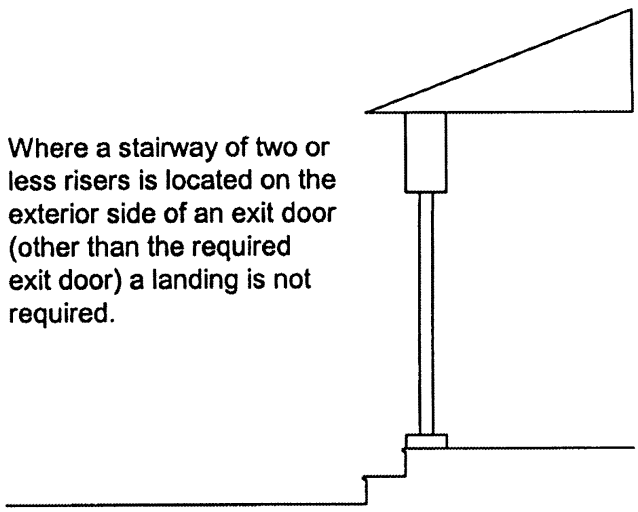


EXIT REQUIREMENTS - DOORS OTHER THAN THE REQUIRED EXIT DOOR

The floor of the landing on the exterior side of exit doors (other than the required exit) shall not be more than 7¾" below the threshold of the door.



Where a stairway of two or less risers is located on the exterior side of an exit door (other than the required exit door) a landing is not required.



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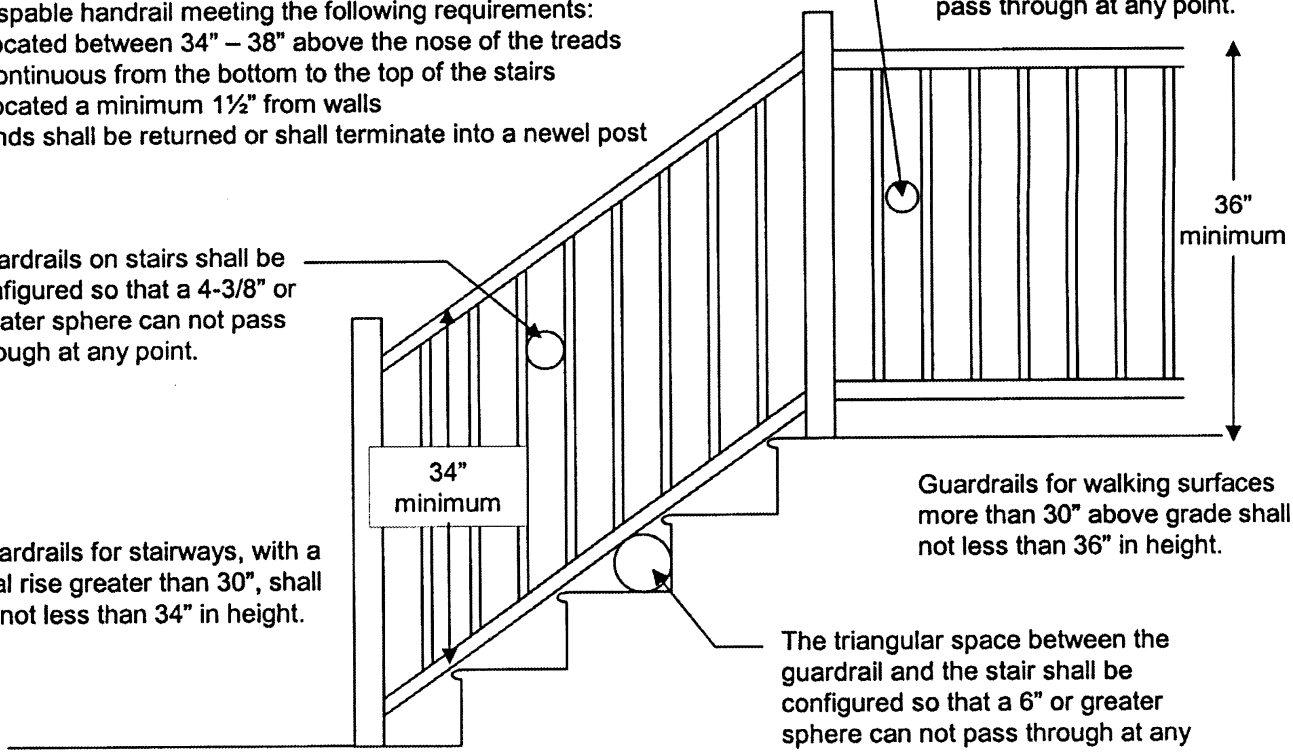
STAIRS, EXITS, HANDRAILS AND GUARDRAILS

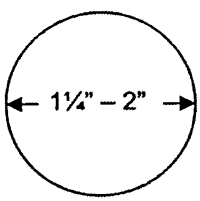
GUARDRAIL AND HANDRAILS

Stairways with four or more risers are required to have a graspable handrail meeting the following requirements:
- Located between 34" – 38" above the nose of the treads
- Continuous from the bottom to the top of the stairs
- Located a minimum 1½" from walls
- Ends shall be returned or shall terminate into a newel post

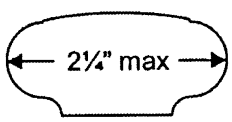


HANDRAIL CONFIGURATIONS

Type I Handrails



Circular cross-section –
Diameter: 1¼" – 2"



Non-circular –
Perimeter: 4" – 6¼"
Cross-section: 2¼" max.

Type II Handrails – Perimeter greater than 6¼" with graspable finger recesses

Cross-section: 1¼" – 2¾" above the finger recess

Finger recess depth: 5/16" minimum

Finger recess location:
- Must begin a maximum of ¾" from top
- Must extend at least to 1¾" from the top