



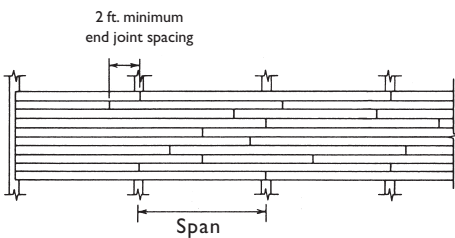
# Lock-Deck Design

## Allowable Uniform Loads

The table on page 5 provides allowable loads for random length continuous applications and simple spans.

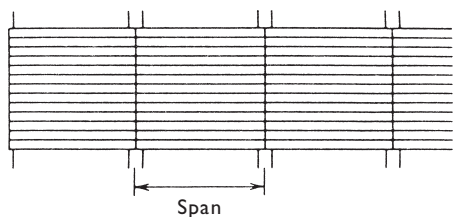
*Random Length Continuous*--A random length continuous configuration is applied over three or more spans. It is the most common method of applying Lock-Deck decking and the most economical. This configuration allows the use of mixed lengths of material on a variety of span conditions, providing high structural efficiency as well as attractive appearance.

$$\Delta = \frac{wL^4}{130EI} \quad F_b = \frac{wL^2}{6.67S}$$



*Simple Spans*--This configuration requires specified length decking and provides shorter spans for the same thickness decking than the random length layout.

$$\Delta = \frac{5}{384} \frac{wL^4}{EI} \quad F_b = \frac{wL^2}{8S}$$



- ▲ = Deflection, inches<sup>2</sup>
- E = Modulus of elasticity of the decking, lbs. per inches<sup>2</sup>
- I = Moment of inertia for a 1-foot wide strip, inches<sup>4</sup>
- S = Section modulus for a 1-foot wide strip, inches<sup>3</sup>
- F<sub>b</sub> = Allowable unit stress for extreme fiber bending, lbs. per inch<sup>2</sup>
- L = Span, inches
- W = Unit load along a 1-foot wide strip, lbs. per inch

## Estimating Factors and Footage Conversion

Nominal Size (Inches)	Actual Sizes (Inches)	Bd. Ft./ Sq. Ft.	Bd. Ft./ Lineal Ft.
2 x 6	1 7/16 x 5	2.40	1.000
2 x 8	1 7/16 x 6 3/4	2.37	1.334
3 x 6	2 3/16 x 5 1/4	3.43	1.500
3 x 8	2 3/16 x 7	3.43	2.000
4 x 6	2 7/8 x 5 1/4	4.57	2.000
4 x 8	2 7/8 x 7	4.57	2.667
5 x 6	3 21/32 x 5 1/4	5.71	2.500
5 x 8	3 21/32 x 7	5.71	3.334

Factors are exact and do not include waste or trim loss.

## Section Properties -- One Foot Section<sup>1</sup>

Nominal Thickness Inches	Actual Thickness Inches	Area Sq. in.	Moment of Inertia in. <sup>4</sup>	Section Modulus in. <sup>3</sup>
2"	1 7/16	17.26	2.97	4.14
3"	2 3/16	25.88	10.29	9.39
4"	2 7/8	33.95	23.44	16.30
5"	3 21/32	43.13	48.04	26.26

1. Cross sectional properties per running foot.

## Design Weights (lbs/ft<sup>2</sup>)

Species	2" Nominal	3" Nominal	4" Nominal	5" Nominal	Shipping Wgts. lbs./MBF
Western Red Cedar <sup>1</sup>	3	4	6	7	1300
Cedar face with whitewood core	4	5	7	8	1450
White Fir, Ponderosa Pine	4	5	7	9	1550
Douglas Fir/Larch	4	6	8	11	1750
Southern Pine	5	7	9	12	2000

1. Includes Inland Red Cedar.

## Allowable Stresses

Species	Modulus of Elasticity (E) psi	Extreme Fiber In Bending (F <sub>b</sub> )		Shear Parallel to the Grain (F <sub>v</sub> ) psi
		Roof psi	Floor psi	
Western Red Cedar	1,200,000	1590	1380	150
Ponderosa Pine	1,300,000	1590	1380	150
Inland White Fir	1,500,000	1850	1610	130
Idaho White Pine	1,500,000	1850	1610	150
Douglas Fir/Larch	1,800,000	2640	2300	165
Southern Pine	1,800,000	2640	2300	200