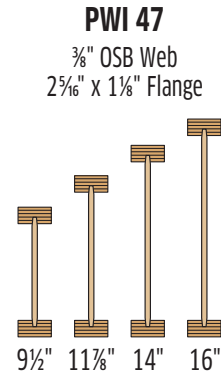


# PWI-47 Joist Series Reference Design Values

**REFERENCE DESIGN VALUES (1)**

Joist Series	Joist Depth	EI <sup>(2)</sup> (x 10 <sup>6</sup> lb-in <sup>2</sup> )	k <sup>(3)</sup> (x 10 <sup>6</sup> lb)	M <sup>(4)</sup> (ft-lb)	V <sup>(5)</sup> (lb)	ER <sup>(6)</sup> (lb)	IR <sup>(7)</sup> (lb)	Vertical Load <sup>(8)</sup> (plf)	Weight (plf)
<b>PWI-47</b>	9½"	207	4.94	3510	1330	930	2145	2000	2.2
	11½"	345	6.18	4500	1705	960	2150	2000	2.5
	14"	501	7.28	5335	1955	990	2155	2000	2.7
	16"	674	8.32	5790	2190	910	2060	2000	2.9

- Values apply to normal load duration. All values except EI, k and Vertical Load may be adjusted for other load durations as permitted by the code.
- Bending stiffness (EI).
- Coefficient of shear deflection (k). Use Equations 1 or 2 to calculate uniform load or center point load deflections in a simple-span application.  
 Uniform Load:  $[1] \delta = \frac{5wL^4}{384EI} + \frac{wl^2}{k}$       Center Point Load:  $[2] \delta = \frac{Pl^3}{48EI} + \frac{2Pl}{k}$       Where:  
 $\delta$  = calculated deflection [in]      P = concentrated load [lb]  
 w = uniform load [lb/in]      EI = bending stiffness of the I-joist [lb-in<sup>2</sup>]  
 l = design span [in]      k = coefficient of shear deflection [lb]
- Moment capacity (M). The tabulated values shall not be increased by any code-allowed repetitive member factor.
- Shear capacity (V).
- End reaction capacity (ER) of the I-joist without web stiffeners and a minimum bearing length of 1¼ inches.
- Intermediate reaction capacity (IR) of the I-joist without web stiffeners and a minimum bearing length of 3½ inches.
- Blocking panel and rim joist vertical load capacity.
- Web stiffeners required. See *Web Stiffener Requirements* below.



## Web Stiffener Requirements

Web stiffeners are pairs of small blocks, cut from panels or 2x4s, that are nailed to the joist web to stiffen a deep web, increase reaction capacity or accommodate a special connector. Web stiffeners are not required when joists are sized by means of the tables in this guide, with the following exceptions:

- Web stiffeners are required at the ends of joists set in hangers that are not deep enough to laterally support the top flanges of the joists. Refer to the hanger manufacturer's installation instructions.
- Web stiffeners are required to accommodate special connector nailing requirements. Refer to the connector manufacturer's installation instructions.
- Web stiffeners are required at birdsmouth cuts at the low end supports of sloped joists.
- Web stiffeners are required at all supports on 22- and 24-inch joists.

When joists are sized by means of sizing software, or otherwise engineered for an application, web stiffeners are required as follows:

- Web stiffeners are required for high reactions at supports. Refer to a code report.
- Web stiffeners are required under concentrated loads applied to the tops of joists between supports, or along cantilevers beyond the support, when the concentrated load exceeds 1500 pounds.

**NUMBER OF WEB STIFFENER NAILS REQUIRED**

Joist Depth	24" & 20"	18" & 16"	14" & Less
All Other Conditions	10	6	4

**WEB STIFFENER SIZE REQUIRED**

Flange Width	Minimum Dimensions		Nails
	Web Stiffeners		
	Thickness	Width	
1¾"	19/32"	2 5/16"	2 ½" x 0.131"
2 1/16"	23/32"	2 5/16"	2 ½" x 0.131"
2 5/16"	23/32"	2 5/16"	2 ½" x 0.131"
3 ½"	1 ½"	3 ½"	3 ¼" x 0.131"

Web stiffener length is approximately 1/8" less than the clear distance between flanges.

