PACIFIC WOODTECH

PWI JOIST SERIES
PWI-47

LVL Flange I-joists for
Residential Construction

PWI-47 Joist Series

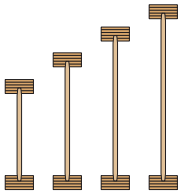
Reference Design Values

REFERENCE DESIGN VALUES [1]

Joist Series	Joist Depth	EI[2] (x 10^6 lb-in^2)	k[3] (x 10^6 lb)	M[4] (ft-lb)	V[5] (lb)	ER[6] (lb)	IR[7] (lb)	Vertical Load[8] (plf)	Weight (plf)
PWI 47	9½"	206	4.94	3335	1330	875	1860	2000	2.2
	11⅞"	344	6.18	4280	1705	885	1930	2000	2.5
	14"	499	7.28	5075	1955	900	1995	2000	2.7
	16"	674	8.32	5790	2190	910	2060	2000	2.9

PWI 47

⅜" OSB Web
2⅝" x 1⅛" Flange



9½" 11⅞" 14" 16"

1. 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.
2. Bending stiffness (EI).
3. 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:
δ = calculated deflection [in]
w = uniform load [lb/in]
l = design span [in]
P = concentrated load [lb]
EI = bending stiffness of the I-joist [lb-in^2]
k = coefficient of shear deflection [lb]

4. Moment capacity (M). The tabulated values shall not be increased by any code-allowed repetitive member factor.
5. Shear capacity (V).
6. End reaction capacity (ER) of the I-joist without web stiffeners and a minimum bearing length of 1¾ inches.
7. Intermediate reaction capacity (IR) of the I-joist without web stiffeners and a minimum bearing length of 3½ inches.
8. Blocking panel and rim joist vertical load capacity.
9. Web stiffeners required. See *Web Stiffener Requirements* on page 4.

Floor Spans

ALLOWABLE RESIDENTIAL FLOOR SPANS FOR PWI JOISTS – 40 PSF LIVE LOAD AND 10 PSF DEAD LOAD

Joist Series	Joist Depth	Simple Span				Multiple Span				Simple *or* Multiple Span			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
PWI 47	9½"	18'-4"	16'-9"	15'-9"	14'-9"	20'-5"	18'-7"	17'-6"	14'-7"	18'-4"	16'-9"	15'-9"	14'-7"
	11⅞"	21'-8"	19'-10"	18'-8"	17'-5"	24'-2"	22'-0"	19'-0"	15'-2"	21'-8"	19'-10"	18'-8"	15'-2"
	14"	24'-6"	22'-5"	21'-2"	17'-10"	27'-4"	23'-8"	19'-8"	15'-8"	24'-6"	22'-5"	19'-8"	15'-8"
	16"	27'-2"	24'-9"	22'-7"	18'-0"	30'-2"	24'-6"	20'-4"	16'-3"	27'-2"	24'-6"	20'-4"	16'-3"

ALLOWABLE RESIDENTIAL FLOOR SPANS FOR PWI JOISTS – 40 PSF LIVE LOAD AND 20 PSF DEAD LOAD

Joist Series	Joist Depth	Simple Span				Multiple Span				Simple *or* Multiple Span			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
PWI 47	9½"	18'-4"	16'-9"	15'-9"	14'-5"	20'-5"	18'-0"	15'-3"	12'-2"	18'-4"	16'-9"	15'-3"	12'-2"
	11⅞"	21'-8"	19'-10"	18'-3"	14'-7"	23'-8"	19'-0"	15'-10"	12'-7"	21'-8"	19'-0"	15'-10"	12'-7"
	14"	24'-6"	22'-4"	18'-7"	14'-10"	25'-9"	19'-8"	16'-4"	13'-0"	24'-6"	19'-8"	16'-4"	13'-0"
	16"	27'-2"	22'-7"	18'-9"	15'-0"	27'-2"	20'-4"	16'-11"	13'-6"	27'-2"	20'-4"	16'-11"	13'-6"

Notes:

1. Table values apply to uniformly loaded, residential floor joists.
2. Span is measured from face to face of supports.
3. Deflection is limited to L/240 at total load and L/480 at live load.
4. Table values are based on glued and nailed sheathing panels (23/32" for 24" o.c., 19/32" otherwise). Use an ASTM D3498 adhesive in accordance with the manufacturer's recommendations. Reduce spans by 12" if sheathing is nailed only.
5. Provide at least 1¾" of bearing length at end supports and 3½" at intermediate supports.
6. Provide lateral restraint at supports (e.g. blocking panels, rim board) and along the compression flange of each joist (e.g. floor sheathing, gypsum board ceiling).
7. Use sizing software or consult a professional engineer to analyze conditions outside the scope of this table (e.g. commercial floors, different bearing conditions, concentrated loads) or for multiple span joists if the length of any span is less than half the length of an adjacent span.

Floor Loads

ALLOWABLE UNIFORM FLOOR LOAD (PLF)

Joist Span (ft)	PWI 47 – Simple Span Joist															
	9½"		11⅞"		14"		16"		9½"		11⅞"		14"		16"	
	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%	Live L/480	Total 100%
6	-	292	-	295	-	300	-	303	-	248	-	257	-	266	-	275
7	-	250	-	253	-	257	-	260	-	213	-	221	-	228	-	235
8	-	219	-	221	-	225	-	228	-	186	-	193	-	200	-	206
9	-	194	-	197	-	200	-	202	-	165	-	172	-	177	-	183
10	-	175	-	177	-	180	-	182	-	149	-	154	-	160	-	165
11	145	159	-	161	-	164	-	165	-	135	-	140	-	145	-	150
12	115	146	-	148	-	150	-	152	-	124	-	129	-	133	-	137
13	92	135	-	136	-	138	-	140	-	114	-	119	-	123	-	127
14	75	125	121	126	-	129	-	130	100	106	-	110	-	114	-	118
15	62	117	100	118	-	120	-	121	83	99	-	103	-	106	-	110
16	51	103	84	111	-	113	-	114	70	93	-	97	-	100	-	103
17			71	104	100	106	-	107			-	91	-	94	-	97
18			60	98	85	100	-	101			81	86	-	89	-	92
19			51	93	73	95	-	96			70	81	-	84	-	87
20			44	86	64	90	84	91			61	77	-	80	-	82
21					55	86	74	87					75	76	-	78
22					48	82	65	83					66	73	-	75
23					43	77	57	79					58	69	-	72
24					38	70	50	76					52	67	69	69
25							45	73							61	66
26							40	69							55	63
27							36	64							49	61
28							32	59							44	59
29																
30																
31																
32																
33																
34																
35																

Notes:

1. Table values apply to uniformly loaded floor joists.
2. Span is measured to the center of each support.
3. The values in the Total columns are based on an L/240 total load deflection limit. Building codes typically require L/360 for live load. Experience has shown that a live load deflection limit of L/480 at 40 psf for residential floors does a better job than L/360 of meeting most performance expectations.
4. Table values do not account for stiffness added by glued or nailed sheathing.

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:

1. 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.
2. Web stiffeners are required to accommodate special connector nailing requirements. Refer to the connector manufacturer's installation instructions.
3. Web stiffeners are required at birdsmouth cuts at the low end supports of sloped joists.
4. 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:

1. Web stiffeners are required for high reactions at supports. Refer to an evaluation report.
2. 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.

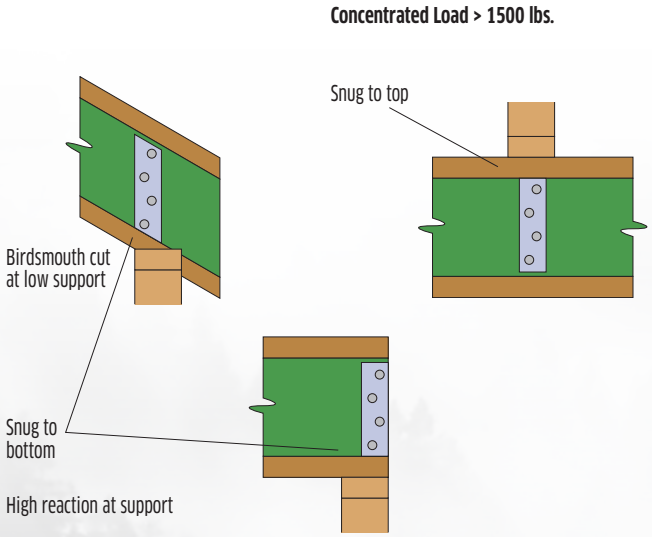
NUMBER OF WEB STIFFENER NAILS REQUIRED

Joist Depth	24" & 20"	18" & 16"	14" & Less
All Conditions	10	8	4

WEB STIFFENER SIZE REQUIRED

Flange Width	Minimum Dimensions		
	Web Stiffeners		Nails
	Thickness	Width	
1½"	15/32"	2 5/16"	2½" x 0.131"
1¾"	19/32"	2 5/16"	2½" x 0.131"
2 1/16"	23/32"	2 5/16"	2½" x 0.131"
2 5/16"	23/32"	2 5/16"	2½" x 0.131"
2½"	23/32"	2 5/16"	2½" x 0.131"
3½"	1½"	3½"	3¼" x 0.131"

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



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