

# Floor Spans

## ALLOWABLE RESIDENTIAL FLOOR SPANS – 40 PSF LIVE LOAD AND 10 PSF DEAD LOAD

Joist Series	Joist Depth	Simple Spans				Multiple Spans				Simple or Multiple Spans			
		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 20	9½"	16'-7"	15'-3"	14'-5"	13'-6"	18'-6"	16'-11"	15'-7"	13'-11"	16'-7"	15'-3"	14'-5"	13'-6"
	11½"	19'-11"	18'-3"	17'-3"	16'-0"	22'-2"	19'-6"	17'-10"	15'-8"	19'-11"	18'-3"	17'-3"	15'-8"
	14"	22'-8"	20'-9"	19'-6"	17'-5"	24'-8"	21'-4"	19'-6"	15'-8"	22'-8"	20'-9"	19'-6"	15'-8"
PWI 45	9½"	18'-0"	16'-5"	15'-6"	14'-6"	20'-0"	18'-3"	17'-3"	16'-1"	18'-0"	16'-5"	15'-6"	14'-6"
	11½"	21'-5"	19'-7"	18'-6"	17'-3"	23'-11"	21'-10"	20'-6"	17'-9"	21'-5"	19'-7"	18'-6"	17'-3"
	14"	24'-4"	22'-3"	21'-0"	19'-5"	27'-2"	24'-7"	22'-3"	17'-9"	24'-4"	22'-3"	21'-0"	17'-9"
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"
	11½"	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"
PWI 50	9½"	17'-10"	16'-3"	15'-4"	14'-4"	19'-10"	18'-1"	17'-1"	15'-11"	17'-10"	16'-3"	15'-4"	14'-4"
	11½"	21'-3"	19'-6"	18'-5"	17'-2"	23'-9"	21'-8"	20'-2"	16'-1"	21'-3"	19'-6"	18'-5"	16'-1"
	14"	24'-3"	22'-2"	21'-0"	19'-7"	27'-1"	24'-3"	20'-2"	16'-1"	24'-3"	22'-2"	20'-2"	16'-1"
PWI 60	9½"	18'-11"	17'-3"	16'-3"	15'-2"	21'-1"	19'-2"	18'-1"	16'-10"	18'-11"	17'-3"	16'-3"	15'-2"
	11½"	22'-7"	20'-7"	19'-5"	18'-2"	25'-2"	22'-11"	21'-7"	18'-5"	22'-7"	20'-7"	19'-5"	18'-2"
	14"	25'-8"	23'-5"	22'-1"	20'-7"	28'-8"	26'-1"	23'-0"	18'-5"	25'-8"	23'-5"	22'-1"	18'-5"
PWI 70	9½"	18'-11"	17'-3"	16'-3"	15'-2"	21'-1"	19'-2"	18'-1"	16'-10"	18'-11"	17'-3"	16'-3"	15'-2"
	11½"	22'-7"	20'-7"	19'-5"	18'-2"	25'-2"	22'-11"	21'-7"	18'-5"	22'-7"	20'-7"	19'-5"	18'-2"
	14"	25'-8"	23'-5"	22'-1"	20'-7"	28'-8"	26'-1"	23'-0"	18'-5"	25'-8"	23'-5"	22'-1"	18'-5"
PWI 77	9½"	19'-8"	18'-0"	17'-0"	15'-10"	21'-11"	20'-1"	18'-11"	17'-8"	19'-8"	18'-0"	17'-0"	15'-10"
	11½"	23'-5"	21'-5"	20'-3"	18'-11"	26'-2"	23'-10"	22'-6"	21'-0"	23'-5"	21'-5"	20'-3"	18'-11"
	14"	26'-7"	24'-4"	23'-0"	21'-5"	29'-8"	27'-1"	25'-7"	21'-4"	26'-7"	24'-4"	23'-0"	21'-4"
PWI 90	9½"	19'-8"	18'-0"	17'-0"	15'-10"	21'-11"	20'-1"	18'-11"	17'-8"	19'-8"	18'-0"	17'-0"	15'-10"
	11½"	23'-5"	21'-5"	20'-3"	18'-11"	26'-2"	23'-10"	22'-6"	21'-0"	23'-5"	21'-5"	20'-3"	18'-11"
	14"	26'-7"	24'-4"	23'-0"	21'-5"	29'-8"	27'-1"	25'-7"	21'-4"	26'-7"	24'-4"	23'-0"	21'-4"
PWI 90	9½"	22'-3"	20'-3"	19'-1"	17'-9"	24'-9"	22'-6"	21'-3"	19'-9"	22'-3"	20'-3"	19'-1"	17'-9"
	11½"	26'-5"	24'-1"	22'-8"	21'-2"	29'-6"	26'-10"	25'-3"	23'-6"	26'-5"	24'-1"	22'-8"	21'-2"
	14"	30'-0"	27'-4"	25'-9"	24'-0"	33'-5"	30'-5"	28'-8"	26'-7"	30'-0"	27'-4"	25'-9"	24'-0"
PWI 90	16"	33'-2"	30'-3"	28'-6"	26'-6"	37'-0"	33'-8"	31'-9"	26'-7"	33'-2"	30'-3"	28'-6"	26'-6"
	18"	36'-3"	33'-0"	31'-1"	27'-10"	40'-6"	36'-10"	33'-3"	26'-7"	36'-3"	33'-0"	31'-1"	26'-7"
	20"	39'-3"	35'-9"	33'-8"	27'-10"	43'-9"	39'-10"	33'-3"	26'-7"	39'-3"	35'-9"	33'-8"	26'-7"
PWI 90	22"	42'-1"	38'-4"	36'-2"	33'-8"	47'-0"	42'-9"	40'-3"	36'-7"	42'-1"	38'-4"	36'-2"	33'-8"
	24"	44'-11"	40'-11"	38'-7"	35'-11"	50'-2"	45'-8"	43'-0"	36'-7"	44'-11"	40'-11"	38'-7"	35'-11"

### Notes:

- Table values apply to uniformly loaded, residential floor joists.
- Span is measured from face to face of supports.
- Deflection is limited to L/240 at total load and L/480 at live load.
- 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.
- Provide at least 1¼" of bearing length at end supports and 3½" at intermediate supports.
- 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).
- 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.

## How to Use Floor Span Tables

- Choose the appropriate live and dead load combination as well as a joist spacing.
- Scan down the spacing column to find a span that exceeds the design span.
- Scan to the left from that span to determine the joist size required.
- Web stiffeners are required at all supports for 22" and 24" joists. See *Web Stiffener Requirements* on page 94 for more details.

# Floor Spans

## ALLOWABLE RESIDENTIAL FLOOR SPANS – 40 PSF LIVE LOAD AND 20 PSF DEAD LOAD

Joist Series	Joist Depth	Simple Spans				Multiple Spans				Simple or Multiple Spans			
		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 20	9½"	16'-7"	15'-3"	14'-4"	12'-9"	18'-1"	15'-7"	14'-3"	12'-8"	16'-7"	15'-3"	14'-3"	12'-8"
	11½"	19'-11"	17'-11"	16'-4"	14'-7"	20'-7"	17'-10"	16'-3"	13'-0"	19'-11"	17'-10"	16'-3"	13'-0"
	14"	22'-7"	19'-6"	17'-10"	15'-1"	22'-6"	19'-6"	16'-4"	13'-0"	22'-6"	19'-6"	16'-4"	13'-0"
PWI 45	9½"	18'-0"	16'-5"	15'-6"	14'-6"	20'-0"	18'-0"	16'-5"	14'-8"	18'-0"	16'-5"	15'-6"	14'-6"
	11½"	21'-5"	19'-7"	18'-6"	16'-2"	23'-9"	20'-6"	18'-6"	14'-9"	21'-5"	19'-7"	18'-6"	14'-9"
	14"	24'-4"	22'-3"	20'-3"	16'-2"	25'-11"	22'-3"	18'-6"	14'-9"	24'-4"	22'-3"	18'-6"	14'-9"
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"
	11½"	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"
PWI 50	9½"	17'-10"	16'-3"	15'-4"	14'-4"	19'-10"	18'-1"	16'-9"	13'-4"	17'-10"	16'-3"	15'-4"	13'-4"
	11½"	21'-3"	19'-6"	18'-5"	16'-9"	23'-9"	20'-2"	16'-9"	13'-4"	21'-3"	19'-6"	16'-9"	13'-4"
	14"	24'-3"	22'-2"	21'-0"	16'-9"	26'-11"	20'-2"	16'-9"	13'-4"	24'-3"	20'-2"	16'-9"	13'-4"
PWI 60	9½"	18'-11"	17'-3"	16'-3"	15'-2"	21'-1"	19'-2"	17'-6"	14'-8"	18'-11"	17'-3"	16'-3"	14'-8"
	11½"	22'-7"	20'-7"	19'-5"	17'-10"	25'-2"	21'-11"	19'-2"	15'-3"	22'-7"	20'-7"	19'-2"	15'-3"
	14"	25'-8"	23'-5"	22'-0"	17'-10"	27'-9"	23'-0"	19'-2"	15'-3"	25'-8"	23'-0"	19'-2"	15'-3"
PWI 70	9½"	28'-6"	25'-11"	22'-4"	17'-10"	29'-11"	23'-0"	19'-2"	15'-3"	28'-6"	23'-0"	19'-2"	15'-3"
	11½"	23'-4"	21'-3"	20'-1"	18'-8"	25'-11"	23'-8"	20'-3"	16'-2"	23'-4"	21'-3"	20'-1"	16'-2"
	14"	26'-5"	24'-1"	22'-9"	19'-2"	29'-6"	24'-4"	20'-3"	16'-2"	26'-5"	24'-1"	20'-3"	16'-2"
PWI 77	9½"	29'-3"	26'-8"	24'-0"	19'-2"	32'-6"	24'-4"	20'-3"	16'-2"	29'-3"	24'-4"	20'-3"	16'-2"
	11½"	32'-0"	28'-10"	24'-0"	19'-2"	32'-6"	24'-4"	20'-3"	16'-2"	32'-0"	24'-4"	20'-3"	16'-2"
	14"	34'-8"	28'-10"	24'-0"	19'-2"	32'-6"	24'-4"	20'-3"	16'-2"	32'-6"	24'-4"	20'-3"	16'-2"
PWI 90	9½"	19'-8"	18'-0"	17'-0"	15'-10"	21'-11"	20'-1"	18'-11"	17'-8"	19'-8"	18'-0"	17'-0"	15'-10"
	11½"	23'-5"	21'-5"	20'-3"	18'-11"	26'-2"	23'-10"	22'-2"	17'-8"	23'-5"	21'-5"	20'-3"	17'-8"
	14"	26'-7"	24'-4"	23'-0"	21'-3"	29'-8"	26'-8"	22'-2"	17'-8"	26'-7"	24'-4"	22'-2"	17'-8"
PWI 90	16"	29'-6"	26'-11"	25'-5"	21'-3"	32'-11"	26'-8"	22'-2"	17'-8"	29'-6"	26'-8"	22'-2"	17'-8"
	18"	32'-3"	29'-5"	26'-7"	21'-3"	35'-8"	26'-8"	22'-2"	17'-8"	32'-3"	26'-8"	22'-2"	17'-8"
	20"	34'-11"	31'-10"	26'-7"	21'-3"	35'-8"	26'-8"	22'-2"	17'-8"	34'-11"	26'-8"	22'-2"	17'-8"
PWI 90	22"	37'-6"	34'-3"	32'-1"	28'-8"	40'-7"	35'-1"	32'-0"	27'-3"	37'-6"	34'-3"	32'-0"	27'-3"
	24"	40'-1"	36'-7"	33'-6"	29'-11"	42'-4"	36'-8"	33'-5"	27'-3"	40'-1"	36'-7"	33'-5"	27'-3"
	9½"	22'-3"	20'-3"	19'-1"	17'-9"	24'-9"	22'-6"	21'-3"	18'-10"	22'-3"	20'-3"	19'-1"	17'-9"
PWI 90	11½"	26'-5"	24'-1"	22'-8"	21'-2"	29'-6"	26'-10"	25'-3"	22'-1"	26'-5"	24'-1"	22'-8"	21'-2"
	14"	30'-0"	27'-4"	25'-9"	23'-2"	33'-5"	30'-5"	27'-8"	22'-1"	30'-0"	27'-4"	25'-9"	23'-2"
	16"	33'-2"	30'-3"	28'-6"	23'-2"	37'-0"	33'-3"	27'-8"	22'-1"	33'-2"	30'-3"	27'-8"	22'-1"
PWI 90	18"	36'-3"	33'-0"	29'-0"	23'-2"	40'-6"	33'-3"	27'-8"	22'-1"	36'-3"	33'-0"	27'-8"	22'-1"
	20"	39'-3"	34'-10"	29'-0"	23'-2"	43'-9"	33'-3"	27'-8"	22'-1"	39'-3"	33'-3"	27'-8"	22'-1"
	22"	42'-1"	38'-4"	36'-2"	33'-8"	47'-0"	42'-9"	38'-1"	30'-5"	42'-1"	38'-4"	36'-2"	30'-5"
24"	44'-11"	40'-11"	38'-7"	35'-11"	50'-2"	45'-6"	38'-1"	30'-5"	44'-11"	40'-11"	38'-1"	30'-5"	

See notes on page 10

