

FOR EQUATIONS SEE NATIONAL DESIGN STANDARD

``SPAN OF FLOOR JOIST`` EXAMPLE

Southern Yellow Pine Reference Design Values:

wood = No 1 Standard Southern Pine

load duration factor (CD) = 1.6 for 10 minute loads

Possible Values: 1.6 for ten minutes  
1.25 for seven days  
0.9 for dead load

deflection limit = span/360

design bearing length = 1.5 inches

TO GET ALLOWED WEIGHT PER SQUARE FOOT,  
TAKE ALLOWED WEIGHT FOR ONE STRINGER PER FOOT,  
MULTIPLY BY THE NUMBER OF STRINGERS,  
AND DIVIDE BY THE LENGTH OF THE TREAD IN FEET.

- (1) ALLOWED WEIGHT IN LBF/FT BY MOMENT CAPACITY
- (2) ALLOWED WEIGHT IN LBF/FT BY SHEAR
- (3) ALLOWED WEIGHT IN LBF/FT BY DEFLECTION
- (4) ALLOWED WEIGHT IN LBF/FT FOR 1.5 INCH BEARING
- (5) MINIMUM OF ABOVE ALLOWED WEIGHTS IN LBF/FT

Allowable

Weight Is Proportional To

- (1) stringer width, CD, 1/span-squared
- (2) stringer width, CD, 1/span
- (3) stringer width, deflection limit/span, 1/span-cubed
- (4) stringer width, bearing length, 1/span

SPAN FT		4x4	2x6	4x6	2x8	2x10	2x12
6	(1)	269.95	257.12	599.96	413.69	665.49	937.50
	(2)	739.36	497.93	1161.84	656.37	837.43	1018.50
	(3)	123.51	205.40	479.27	470.47	977.10	1757.81
	(4)	662.46	283.91	662.46	283.91	283.91	283.91
	(5)	123.51	205.40	479.27	283.91	283.91	283.91
8	(1)	151.85	144.63	337.48	232.70	374.34	527.34
	(2)	554.52	373.45	871.38	492.28	628.08	763.88
	(3)	52.11	86.65	202.19	198.48	412.22	741.58
	(4)	496.85	212.93	496.85	212.93	212.93	212.93
	(5)	52.11	86.65	202.19	198.48	212.93	212.93
10	(1)	97.18	92.56	215.98	148.93	239.57	337.50
	(2)	443.61	298.76	697.11	393.82	502.46	611.10
	(3)	26.68	44.37	103.52	101.62	211.05	379.69
	(4)	397.48	170.35	397.48	170.35	170.35	170.35
	(5)	26.68	44.37	103.52	101.62	170.35	170.35
12	(1)	67.49	64.28	149.99	103.42	166.37	234.38
	(2)	369.68	248.97	580.92	328.18	418.72	509.25
	(3)	15.44	25.68	59.91	58.81	122.14	219.73
	(4)	331.23	141.96	331.23	141.96	141.96	141.96
	(5)	15.44	25.68	59.91	58.81	122.14	141.96
14	(1)	49.58	47.23	110.20	75.98	122.23	172.19
	(2)	316.87	213.40	497.93	281.30	358.90	436.50
	(3)	9.72	16.17	37.73	37.03	76.91	138.37
	(4)	283.91	121.68	283.91	121.68	121.68	121.68
	(5)	9.72	16.17	37.73	37.03	76.91	121.68
16	(1)	37.96	36.16	84.37	58.17	93.58	131.84
	(2)	277.26	186.73	435.69	246.14	314.04	381.94
	(3)	6.51	10.83	25.27	24.81	51.53	92.70
	(4)	248.42	106.47	248.42	106.47	106.47	106.47
	(5)	6.51	10.83	25.27	24.81	51.53	92.70

SPAN FT		4x4	2x6	4x6	2x8	2x10	2x12	NOTES:
18	(1)	29.99	28.57	66.66	45.97	73.94	104.17	(1) LRDF for pedestrian bridges requires 90 lbf / sqft, deflection limit = span/360
	(2)	246.45	165.98	387.28	218.79	279.14	339.50	(2) For two-stringer boardwalk sections with 3 ft treads, this is met by
	(3)	4.57	7.61	17.75	17.42	36.19	65.10	2x6's for 6 ft span
	(4)	220.82	94.64	220.82	94.64	94.64	94.64	2x8's for 8 ft span
	(5)	4.57	7.61	17.75	17.42	36.19	65.10	2x10's for 10 ft span
20	(1)	24.30	23.14	54.00	37.23	59.89	84.38	2x12's for 12 ft span
	(2)	221.81	149.38	348.55	196.91	251.23	305.55	(3) For 4 ft treads this is met by the spans just given if the design bearing length is increased to 2.5 inches for 2x10's and 2x12's
	(3)	3.33	5.55	12.94	12.70	26.38	47.46	(4) If you double the number of stringers (to 4) you can increase the span by a factor of the cube root of 2 = 1.26.
	(4)	198.74	85.17	198.74	85.17	85.17	85.17	(5) If you triple the number of stringers (to 6) you can increase the span by a factor of the cube root of 3 = 1.44.
	(5)	3.33	5.55	12.94	12.70	26.38	47.46	
22	(1)	20.08	19.12	44.62	30.77	49.50	69.73	
	(2)	201.64	135.80	316.87	179.01	228.39	277.77	
	(3)	2.51	4.17	9.72	9.54	19.82	35.66	
	(4)	180.67	77.43	180.67	77.43	77.43	77.43	
	(5)	2.51	4.17	9.72	9.54	19.82	35.66	
24	(1)	16.87	16.07	37.50	25.86	41.59	58.59	
	(2)	184.84	124.48	290.46	164.09	209.36	254.62	
	(3)	1.93	3.21	7.49	7.35	15.27	27.47	
	(4)	165.62	70.98	165.62	70.98	70.98	70.98	
	(5)	1.93	3.21	7.49	7.35	15.27	27.47	