

# COMMERCIAL FLOOR LOADS

## COMMERCIAL FLOOR LOADS: SIMPLE-SPAN JOIST: ALLOWABLE LOADS FOR PRI OR SSI JOISTS (PLF)

Joist Span (ft)	PRI 20								SSI 36X				PRI 40															
	9 1/2"				11 7/8"				14"				9 1/2"				11 7/8"				14"				16"			
	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total
6	-	-	-	309	-	-	-	342	-	-	-	374	-	-	-	364	-	-	-	424	-	-	-	457	-	-	-	486
7	-	-	-	265	-	-	-	293	-	-	-	321	-	-	-	312	-	-	-	364	-	-	-	391	-	-	-	416
8	202	-	-	232	-	-	-	257	-	-	-	281	253	-	-	273	-	-	-	318	-	-	-	343	-	-	-	364
9	148	185	-	206	-	-	-	228	-	-	-	250	187	234	-	243	-	-	-	283	-	-	-	304	-	-	-	324
10	111	139	-	185	185	-	-	205	-	-	-	225	142	177	-	219	228	-	-	255	-	-	-	274	-	-	-	291
11	86	107	143	167	143	179	-	187	203	-	-	204	110	137	-	181	178	223	-	232	-	-	-	249	-	-	-	265
12	67	84	112	140	113	141	-	171	161	-	-	187	87	108	145	152	142	177	-	197	199	-	-	228	-	-	-	243
13	54	67	89	119	91	113	151	155	130	162	-	173	70	87	116	129	114	143	-	168	161	202	-	202	213	-	-	224
14	43	54	72	103	74	92	123	133	106	133	-	159	57	71	94	112	93	117	-	145	132	165	-	174	175	-	-	202
15	36	45	60	89	61	76	101	116	88	109	-	138	47	58	78	97	77	96	-	126	110	137	-	152	146	-	-	176
16	30	37	49	74	51	63	84	102	73	91	-	122	39	48	65	85	64	81	107	111	92	115	-	133	122	153	-	155
17					43	53	71	90	62	77	103	108					54	68	91	98	78	97	-	118	104	130	-	137
18					36	45	60	81	52	66	87	96					46	58	77	88	66	83	-	105	89	111	-	122
19					31	39	52	72	45	56	75	86					40	50	66	79	57	71	-	95	76	95	-	110
20					27	33	44	65	39	48	65	78					34	43	57	71	49	62	82	85	66	83	-	99
21									34	42	56	71								43	54	71	77	58	72	-	90	
22									29	37	49	64								38	47	63	71	50	63	-	82	
23									26	32	43	59								33	41	55	65	44	56	74	75	
24									23	29	38	54								29	37	49	59	39	49	66	69	
25																												
26																												
27																												
28																												
29																												
30																												
31																												
32																												

### Notes:

- Table values apply to uniformly loaded floor joists.
- Span is measured to the center of each support.
- 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.
- Table values do not account for stiffness added by glued or nailed sheathing.
- Provide at least 1 3/4" of bearing length at end supports and 3 1/2" 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. different bearing lengths, 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 COMMERCIAL FLOOR LOAD TABLES

- Choose a joist spacing and convert the live and total design loads specified in pounds per square foot (psf) to joist loads in pounds per lineal foot (plf). Joist Spacing (ft) x Design Load (psf) = Joist Load (plf)

### JOIST LOAD (PLF)

Joist Spacing		Design Load (psf)								
Inches	Feet	20	30	40	50	60	70	80	90	100
12	1	20	30	40	50	60	70	80	90	100
16	1.33	27	40	53	67	80	93	106	120	133
19.2	1.6	32	48	64	80	96	112	128	144	160
24	2	40	60	80	100	120	140	160	180	200

- Choose deflection limits. The values in the Total columns are based on L/240. Building codes typically require L/360 for live load. Experience has shown that live load deflection limits of L/480 at 40 psf for residential floors and L/600 at 50 psf for commercial floors do a better job than L/360 of meeting most performance expectations.
- Choose a span and scan across the Span row to find a joist size with sufficient Live and Total Load capacities. Both requirements must be satisfied. When no value is shown in a Live column, Total Load governs.
- Formatting in the Total column indicates where web stiffeners are required:  
**123** = All Supports    **123** = Intermediate Supports Only    **123** = End Supports Only    123 = Not Required
- See *Web Stiffener Requirements* on page 81 for more details.

# COMMERCIAL FLOOR LOADS

## COMMERCIAL FLOOR LOADS: SIMPLE-SPAN JOIST: ALLOWABLE LOADS FOR PRI OR SSI JOISTS (PLF)

Joist Span (ft)	PRI 60																PRI 80												
	9 1/2"				11 7/8"				14"				16"				11 7/8"				14"				16"				
	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	Live L/600	Live L/480	Live L/360	Total	
6	-	-	-	364	-	-	-	424	-	-	-	457	-	-	-	486	-	-	-	442	-	-	-	474	-	-	-	503	
7	-	-	-	312	-	-	-	364	-	-	-	391	-	-	-	416	-	-	-	379	-	-	-	407	-	-	-	431	
8	-	-	-	273	-	-	-	318	-	-	-	343	-	-	-	364	-	-	-	332	-	-	-	356	-	-	-	378	
9	215	-	-	243	-	-	-	283	-	-	-	304	-	-	-	324	-	-	-	295	-	-	-	316	-	-	-	336	
10	164	205	-	219	-	-	-	255	-	-	-	274	-	-	-	291	-	-	-	265	-	-	-	285	-	-	-	302	
11	128	160	-	199	206	-	-	232	-	-	-	249	-	-	-	265	-	-	-	241	-	-	-	259	-	-	-	275	
12	101	127	169	182	165	206	-	212	-	-	-	228	-	-	-	243	212	-	-	221	-	-	-	237	-	-	-	252	
13	81	102	136	168	133	167	-	196	189	-	-	211	-	-	-	224	173	-	-	204	-	-	-	219	-	-	-	232	
14	66	83	111	154	109	137	-	182	155	194	-	196	205	-	-	208	143	179	-	190	200	-	-	203	-	-	-	216	
15	55	68	91	134	91	113	151	170	129	162	-	183	171	-	-	194	119	149	-	177	167	-	-	190	-	-	-	201	
16	46	57	76	114	76	95	126	153	109	136	-	171	144	181	-	182	100	125	-	166	142	177	-	178	186	-	-	189	
17					64	80	107	136	92	115	153	161	123	153	-	171	85	106	142	156	121	151	-	167	159	-	-	178	
18					55	68	91	121	79	98	131	146	105	131	-	162	73	91	121	147	103	129	-	158	137	-	-	168	
19					47	59	78	109	68	85	113	131	91	113	151	151	63	78	104	140	89	112	149	150	119	148	-	159	
20					41	51	68	98	59	73	98	118	79	98	131	137	54	68	91	133	78	97	129	142	103	129	-	151	
21									51	64	85	107	69	86	115	124					68	85	113	136	90	113	-	144	
22									45	56	75	97	60	75	101	113					60	75	100	129	80	100	133	137	
23									39	49	66	89	53	67	89	103					53	66	88	124	70	88	117	131	
24									35	44	58	82	47	59	79	95					47	58	78	116	63	78	104	126	
25													42	53	70	87										56	70	93	121
26													38	47	63	81										50	63	83	115
27													34	42	56	75										45	56	75	106
28													30	38	51	70										41	51	68	99
29																													
30																													
31																													
32																													

See notes on page 58

Formatting in the Total column indicates where web stiffeners are required:

**123** = All Supports      **123** = Intermediate Supports Only      **123** = End Supports Only      123 = Not Required

## PSF TO PLF CONVERSION – LOAD IN POUNDS PER LINEAL FOOT (PLF)

O.C. Spacing		Load in Pounds per Square Foot (psf)											
(inches)	(feet)	20	25	30	35	40	45	50	55	60	65	70	75
12	1.00	20	25	30	35	40	45	50	55	60	65	70	75
16	1.33	27	33	40	47	53	60	67	73	80	87	93	100
19.2	1.60	32	40	48	56	64	72	80	88	96	104	112	120
24	2.00	40	50	60	70	80	90	100	110	120	130	140	150

o.c. spacing (ft) x load (psf) = load (plf)