3.9　Rectangular Beam Load Tables
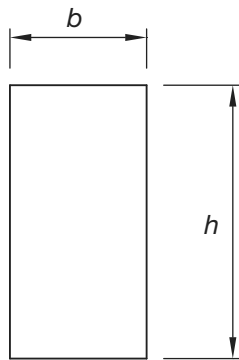
Normalweight concrete

3

f'_c = 5000 psi
f_{pu} = 270,000 psi
½ in. diameter,
low-relaxation strand

Section Properties

Designation	b in.	h in.	A in.²	I in.⁴	y_b in.	S in.³	wt lb/ft
12RB16	12	16	192	4096	8	512	200
12RB20	12	20	240	8000	10	800	250
12RB24	12	24	288	13,824	12	1152	300
12RB28	12	28	336	21,952	14	1568	350
12RB32	12	32	384	32,768	16	2048	400
12RB36	12	36	432	46,656	18	2592	450
16RB24	16	24	384	18,432	12	1536	400
16RB28	16	28	448	29,269	14	2091	467
16RB32	16	32	512	43,691	16	2731	533
16RB36	16	36	576	62,208	18	3456	600
16RB40	16	40	640	85,333	20	4267	667

1. Check local area for availability of other sizes.
2. Loads shown include 50% superimposed dead load and 50% live load. Top tension stress at transfer has been allowed to exceed $6\sqrt{f'_c}$; therefore, top reinforcement is required.
3. Loads can be significantly increased by use of structural composite topping.

Key
3550 – Superimposed service load capacity, lb/ft
　0.4 – Estimated camber at erection, in.
　0.2 – Estimated long-time camber, in.

Table of superimposed service load capacity, lb/ft, and cambers, in.

Designation	Number strand	y_s in.	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
12RB16	5	3.00	3550	2770	2210	1790	1480	1230	1040											
			0.4	0.5	0.6	0.8	0.9	1.0	1.1											
			0.2	0.2	0.2	0.2	0.3	0.3	0.3											
12RB20	8	3.00	6160	4820	3860	3150	2620	2200	1860	1600	1380	1190	1040							
			0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.3	1.4	1.5	1.7							
			0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5							
12RB24	10	3.60	8950	7010	5630	4610	3830	3230	2740	2360	2040	1780	1560	1370	1210	1070	960			
			0.4	0.4	0.5	0.7	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.6	1.8	1.9	2.0			
			0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.6			
12RB28	12	4.00		9780	7860	6440	5370	4530	3860	3320	2890	2520	2220	1960	1740	1550	1380	1240	1110	1000
				0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.1	2.2
				0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8
12RB32	13	4.77				8320	6930	5850	5000	4310	3750	3280	2890	2560	2270	2030	1820	1630	1470	1330
						0.5	0.6	0.7	0.8	0.9	1.0.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
						0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6
12RB36	15	5.07					9010	7620	6520	5630	4900	4290	3790	3360	2990	2680	2410	2170	1960	1780
							0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
							0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7
16RB24	13	3.54		9390	7540	6170	5130	4320	3680	3160	2730	2380	2090	1840	1620	1440	1280	1140	1020	
				0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	
				0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.5	
16RB28	14	3.71				8730	7270	6130	5230	4510	3910	3420	3010	2660	2360	2100	1880	1680	1510	1360
						0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.9
						0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
16RB32	18	4.67					9340	7890	6740	5810	5050	4420	3890	3450	3070	2740	2450	2210	1990	1800
							0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8	1.9	2.0
							0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7
16RB36	20	5.40						9940	8600	7340	6390	5600	4940	4380	3900	3490	3130	2820	2550	2310
								0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
								0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
16RB40	22	6.00								9120	7940	6970	6160	5470	4880	4370	3930	3550	3210	2910
										0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
										0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6

Strength is based on strain compatibility; bottom tension is limited to $12\sqrt{f'_c}$; see pages 3–8 through 3–11 for explanation.