

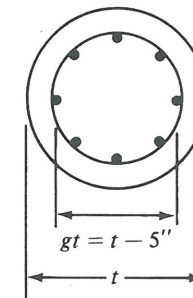
Table A.13 (Continued)

ρ	$\frac{M_u}{\phi b d^2}$	ρ	$\frac{M_u}{\phi b d^2}$	ρ	$\frac{M_u}{\phi b d^2}$	ρ	$\frac{M_u}{\phi b d^2}$
0.0110	595.7	0.0128	681.0	0.0146	762.8	0.0164	841.2
0.0111	600.6	0.0129	685.6	0.0147	767.2	0.0165	845.4
0.0112	605.4	0.0130	690.3	0.0148	771.7	0.0166	849.7
0.0113	610.2	0.0131	694.9	0.0149	776.1	0.0167	853.9
0.0114	615.0	0.0132	699.5	0.0150	780.5	0.0168	858.1
0.0115	619.8	0.0133	704.1	0.0151	784.9	0.0169	862.3
0.0116	624.5	0.0134	708.6	0.0152	789.3	0.0170	866.5
0.0117	629.3	0.0135	713.2	0.0153	793.7	0.0171	870.7
0.0118	634.1	0.0136	717.8	0.0154	798.1	0.0172	874.9
0.0119	638.8	0.0137	722.3	0.0155	802.4	0.0173	879.1
0.0120	643.5	0.0138	726.9	0.0156	806.8	0.0174	883.2
0.0121	648.2	0.0139	731.4	0.0157	811.1	0.0175	887.4
0.0122	653.0	0.0140	735.9	0.0158	815.4	0.0176	891.5
0.0123	657.7	0.0141	740.4	0.0159	819.7	0.0177	895.6
0.0124	662.3	0.0142	744.9	0.0160	824.1	0.0178	899.7
0.0125	667.0	0.0143	749.4	0.0161	828.3	0.0179	903.9
0.0126	671.7	0.0144	753.9	0.0162	832.6	0.0180	907.9
0.0127	676.3	0.0145	758.3	0.0163	836.9	0.0181	912.0

Table A.14 Size and Pitch of Spirals, ACI Code—U.S. Customary Units

Diameter of column (in.)	Out to out of spiral (in.)	f'_c			
		2500	3000	4000	5000
$f_y = 40,000$:					
14, 15	11, 12	$\frac{3}{8}-2$	$\frac{3}{8}-1\frac{3}{4}$	$\frac{1}{2}-2\frac{1}{2}$	$\frac{1}{2}-1\frac{3}{4}$
16	13	$\frac{3}{8}-2$	$\frac{3}{8}-1\frac{3}{4}$	$\frac{1}{2}-2\frac{1}{2}$	$\frac{1}{2}-2$
17-19	14-16	$\frac{3}{8}-2\frac{1}{4}$	$\frac{3}{8}-1\frac{3}{4}$	$\frac{1}{2}-2\frac{1}{2}$	$\frac{1}{2}-2$
20-23	17-20	$\frac{3}{8}-2\frac{1}{4}$	$\frac{3}{8}-1\frac{3}{4}$	$\frac{1}{2}-2\frac{1}{2}$	$\frac{1}{2}-2$
24-30	21-27	$\frac{3}{8}-2\frac{1}{4}$	$\frac{3}{8}-2$	$\frac{1}{2}-2\frac{1}{2}$	$\frac{1}{2}-2$
$f_y = 60,000$:					
14, 15	11, 12	$\frac{1}{4}-1\frac{3}{4}$	$\frac{3}{8}-2\frac{3}{4}$	$\frac{3}{8}-2$	$\frac{1}{2}-2\frac{3}{4}$
16-23	13-20	$\frac{1}{4}-1\frac{3}{4}$	$\frac{3}{8}-2\frac{3}{4}$	$\frac{3}{8}-2$	$\frac{1}{2}-3$
24-29	21-26	$\frac{1}{4}-1\frac{3}{4}$	$\frac{3}{8}-3$	$\frac{3}{8}-2\frac{1}{4}$	$\frac{1}{2}-3$
30	17	$\frac{1}{4}-1\frac{3}{4}$	$\frac{3}{8}-3$	$\frac{3}{8}-2\frac{1}{4}$	$\frac{1}{2}-3\frac{1}{4}$

Table A.15 Weights, Areas, and Moments of Inertia of Circular Columns and Moments of Inertia of Column Verticals Arranged in a Circle 5 In. Less Than the Diameter of Column: U.S. Customary Units



Diameter of column h (in.)	Weight per foot (lb)	Area (in. ²)	I (in. ⁴)	A_s , where $\rho_g = 0.01^*$	I_s (in. ⁴) [†]
12	118	113	1,018	1.13	6.92
13	138	133	1,402	1.33	10.64
14	160	154	1,886	1.54	15.59
15	184	177	2,485	1.77	22.13
16	210	201	3,217	2.01	30.40
17	237	227	4,100	2.27	40.86
18	265	255	5,153	2.55	53.87
19	295	284	6,397	2.84	69.58
20	327	314	7,854	3.14	88.31
21	361	346	9,547	3.46	110.7
22	396	380	11,500	3.80	137.2
23	433	416	13,740	4.16	168.4
24	471	452	16,290	4.52	203.9
25	511	491	19,170	4.91	245.5
26	553	531	22,430	5.31	292.7
27	597	573	26,090	5.73	346.7
28	642	616	30,170	6.16	407.3
29	688	661	34,720	6.61	475.9
30	736	707	39,760	7.07	552.3

*For other values of ρ_g , multiply the value by $100 \rho_g$.

†The bars are assumed transformed into a thin-walled cylinder having the same sectional area as the bars. Then $I_s = A_s(\gamma t)^2/8$.