Bar Dia (inch) = Bar No. / 8

Table-1: Diameter and Area of Reinforcing Bars

Bar No.	Bar Dia. (in)	Area (Sq.in)
#3	3/8	0.11
#4	1/2	0.20
#5	5/8	0.31
#6	3/4	0.44
#7	7/8	0.60
#8	1	0.79
#9	9/8	1.00
#10	10/8	1.27
#11	11/8	1.56

Table 2: Minimum Required Beam width (b) inches.
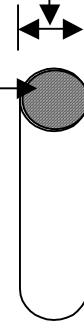
No. of bars in single layer	Bar Numbers							
	#3 & #4	#5	#6	#7	#8	#9	#10	#11
2	6.00	6.00	6.50	6.50	7.00	7.50	8.00	8.00
3	7.50	8.00	8.00	8.50	9.00	9.50	10.50	11.00
4	9.00	9.50	10.00	10.50	11.00	12.00	13.00	14.00
5	10.50	11.00	11.50	12.50	13.00	14.00	15.50	16.50
6	12.00	12.50	13.50	14.00	15.00	16.50	18.00	19.00
7	13.50	14.50	15.00	16.00	17.00	18.50	20.50	22.50
8	15.00	16.00	17.00	18.00	19.00	21.00	23.00	25.00
9	16.50	17.50	18.50	20.00	21.00	23.00	25.50	28.00
10	18.00	19.00	20.50	21.50	23.00	25.50	28.00	31.00

Note: Tabulated minimum beam width (b) based on #3 stirrups, bar to bar clear gap of 1", and clear cover of 1.5"

Table 3: Cross-sectional Area of Reinforcing Bars per foot of Slab (Sq. in.)				
Bar Spacing	Bar number			
(in)	#3	#4	#5	#6
2	0.66	1.20	1.86	
2.5	0.53	0.96	1.49	2.11
3	0.44	0.80	1.24	1.76
3.5	0.38	0.69	1.06	1.51
4	0.33	0.60	0.93	1.32
4.5	0.29	0.53	0.83	1.17
5	0.26	0.48	0.74	1.06
5.5	0.24	0.44	0.68	0.96
6	0.22	0.40	0.62	0.88
6.5	0.20	0.37	0.57	0.81
7	0.19	0.34	0.53	0.75
7.5	0.18	0.32	0.50	0.70
8	0.17	0.30	0.47	0.66
8.5	0.16	0.28	0.44	0.62
9	0.15	0.27	0.41	0.59
9.5	0.14	0.25	0.39	0.56
10	0.13	0.24	0.37	0.53
10.5	0.13	0.23	0.35	0.50
11	0.12	0.22	0.34	0.48
11.5	0.11	0.21	0.32	0.46
12	0.11	0.20	0.31	0.44
12.5	0.11	0.19	0.30	0.42
13	0.10	0.18	0.29	0.41
13.5	0.10	0.18	0.28	0.39
14	0.09	0.17	0.27	0.38
14.5	0.09	0.17	0.26	0.36
15	0.09	0.16	0.25	0.35
15.5	0.09	0.15	0.24	0.34
16	0.08	0.15	0.23	0.33
16.5	0.08	0.15	0.23	0.32
17	0.08	0.14	0.22	0.31
17.5	0.08	0.14	0.21	0.30
18	0.07	0.13	0.21	0.29

Table 4: Minimum and Maximum Steel Ratio		
fc' (psi)	ρ_{min}	ρ_{max}
fy =	40000	psi
3000	0.0050	0.0278
4000	0.0050	0.0371
5000	0.0053	0.0437
6000	0.0058	0.0491
fy =	50000	psi
3000	0.0040	0.0206
4000	0.0040	0.0275
5000	0.0042	0.0324
6000	0.0046	0.0364
fy =	60000	psi
3000	0.0033	0.0160
4000	0.0033	0.0214
5000	0.0035	0.0252
6000	0.0039	0.0283
fy =	75000	psi
3000	0.0027	0.0116
4000	0.0027	0.0155
5000	0.0028	0.0183
6000	0.0031	0.0205

Formula: <u>T- Beam (For positive moment; flange is in compression)</u>

$$A_{s\ min} = \text{larger of} \begin{cases} \left[\dfrac{3\sqrt{f_c'}}{f_y}\right] b_w\ d \\[4mm] \left[\dfrac{200}{f_y}\right] b_w\ d \end{cases}$$

f_c', f_y are in psi
b_w, d, h_f are in inch

$$A_{s\ max} = \left[\frac{0.638}{f_y}\right]\left[f_c'\ h_f\right]\left\{ b + b_w\left[\left(\frac{\beta_1}{h_f}\right)\left(\frac{87000\ (d)}{87000 + f_y}\right) - 1\right]\right\}$$

β_1 = 0.85 for fc' $\leq$ 4000 psi; is reduced continuously at the rate of 0.05 for each 1000 psi of strength in excess of 4000 psi; β_1 can not be less than 0.65

Table 5: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

(f_c' = 3,000 psi; f_y = 40,000 psi)

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$
0.0010	0.0397	0.0051	0.1958	0.0092	0.3414	0.0133	0.4765
0.0011	0.0436	0.0052	0.1995	0.0093	0.3449	0.0134	0.4797
0.0012	0.0475	0.0053	0.2032	0.0094	0.3483	0.0135	0.4828
0.0013	0.0515	0.0054	0.2069	0.0095	0.3517	0.0136	0.4860
0.0014	0.0554	0.0055	0.2105	0.0096	0.3551	0.0137	0.4891
0.0015	0.0593	0.0056	0.2142	0.0097	0.3585	0.0138	0.4923
0.0016	0.0632	0.0057	0.2178	0.0098	0.3619	0.0139	0.4954
0.0017	0.0671	0.0058	0.2214	0.0099	0.3653	0.0140	0.4985
0.0018	0.0710	0.0059	0.2251	0.0100	0.3686	0.0141	0.5016
0.0019	0.0749	0.0060	0.2287	0.0101	0.3720	0.0142	0.5047
0.0020	0.0787	0.0061	0.2323	0.0102	0.3754	0.0143	0.5079
0.0021	0.0826	0.0062	0.2359	0.0103	0.3787	0.0144	0.5109
0.0022	0.0865	0.0063	0.2395	0.0104	0.3821	0.0145	0.5140
0.0023	0.0903	0.0064	0.2432	0.0105	0.3854	0.0146	0.5171
0.0024	0.0942	0.0065	0.2467	0.0106	0.3888	0.0147	0.5202
0.0025	0.0980	0.0066	0.2503	0.0107	0.3921	0.0148	0.5233
0.0026	0.1019	0.0067	0.2539	0.0108	0.3954	0.0149	0.5264
0.0027	0.1057	0.0068	0.2575	0.0109	0.3987	0.0150	0.5294
0.0028	0.1095	0.0069	0.2611	0.0110	0.4020	0.0151	0.5325
0.0029	0.1134	0.0070	0.2646	0.0111	0.4053	0.0152	0.5355
0.0030	0.1172	0.0071	0.2682	0.0112	0.4086	0.0153	0.5386
0.0031	0.1210	0.0072	0.2717	0.0113	0.4119	0.0154	0.5416
0.0032	0.1248	0.0073	0.2753	0.0114	0.4152	0.0155	0.5446
0.0033	0.1286	0.0074	0.2788	0.0115	0.4185	0.0156	0.5477
0.0034	0.1324	0.0075	0.2824	0.0116	0.4218	0.0157	0.5507
0.0035	0.1362	0.0076	0.2859	0.0117	0.4251	0.0158	0.5537
0.0036	0.1399	0.0077	0.2894	0.0118	0.4283	0.0159	0.5567
0.0037	0.1437	0.0078	0.2929	0.0119	0.4316	0.0160	0.5597
0.0038	0.1475	0.0079	0.2964	0.0120	0.4348	0.0161	0.5627
0.0039	0.1512	0.0080	0.2999	0.0121	0.4381	0.0162	0.5657
0.0040	0.1550	0.0081	0.3034	0.0122	0.4413	0.0163	0.5687
0.0041	0.1587	0.0082	0.3069	0.0123	0.4445	0.0164	0.5716
0.0042	0.1625	0.0083	0.3104	0.0124	0.4478	0.0165	0.5746
0.0043	0.1662	0.0084	0.3139	0.0125	0.4510	0.0166	0.5776
0.0044	0.1699	0.0085	0.3173	0.0126	0.4542	0.0167	0.5805
0.0045	0.1736	0.0086	0.3208	0.0127	0.4574	0.0168	0.5835
0.0046	0.1774	0.0087	0.3243	0.0128	0.4606	0.0169	0.5864
0.0047	0.1811	0.0088	0.3277	0.0129	0.4638	0.0170	0.5893
0.0048	0.1848	0.0089	0.3312	0.0130	0.4670	0.0171	0.5923
0.0049	0.1885	0.0090	0.3346	0.0131	0.4702	0.0172	0.5952
0.0050	0.1922	0.0091	0.3380	0.0132	0.4733	0.0173	0.5981

Table 5: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

Continued ($f_c' = 3,000$ psi; $f_y = 40,000$ psi)

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$
0.0174	0.6010	0.0215	0.7150	0.0256	0.8184
0.0175	0.6039	0.0216	0.7176	0.0257	0.8208
0.0176	0.6068	0.0217	0.7203	0.0258	0.8232
0.0177	0.6097	0.0218	0.7229	0.0259	0.8256
0.0178	0.6126	0.0219	0.7255	0.0260	0.8279
0.0179	0.6155	0.0220	0.7282	0.0261	0.8303
0.0180	0.6184	0.0221	0.7308	0.0262	0.8327
0.0181	0.6212	0.0222	0.7334	0.0263	0.8350
0.0182	0.6241	0.0223	0.7360	0.0264	0.8374
0.0183	0.6269	0.0224	0.7386	0.0265	0.8397
0.0184	0.6298	0.0225	0.7412	0.0266	0.8420
0.0185	0.6326	0.0226	0.7438	0.0267	0.8444
0.0186	0.6355	0.0227	0.7464	0.0268	0.8467
0.0187	0.6383	0.0228	0.7489	0.0269	0.8490
0.0188	0.6411	0.0229	0.7515	0.0270	0.8513
0.0189	0.6439	0.0230	0.7540	0.0271	0.8536
0.0190	0.6468	0.0231	0.7566	0.0272	0.8559
0.0191	0.6496	0.0232	0.7592	0.0273	0.8582
0.0192	0.6524	0.0233	0.7617	0.0274	0.8605
0.0193	0.6551	0.0234	0.7642	0.0275	0.8628
0.0194	0.6579	0.0235	0.7668	0.0276	0.8650
0.0195	0.6607	0.0236	0.7693	0.0277	0.8673
0.0196	0.6635	0.0237	0.7718	0.0278	0.8696
0.0197	0.6663	0.0238	0.7743		
0.0198	0.6690	0.0239	0.7768		
0.0199	0.6718	0.0240	0.7793		
0.0200	0.6745	0.0241	0.7818		
0.0201	0.6773	0.0242	0.7843		
0.0202	0.6800	0.0243	0.7868		
0.0203	0.6827	0.0244	0.7892		
0.0204	0.6854	0.0245	0.7917		
0.0205	0.6882	0.0246	0.7942		
0.0206	0.6909	0.0247	0.7966		
0.0207	0.6936	0.0248	0.7991		
0.0208	0.6963	0.0249	0.8015		
0.0209	0.6990	0.0250	0.8039		
0.0210	0.7017	0.0251	0.8064		
0.0211	0.7043	0.0252	0.8088		
0.0212	0.7070	0.0253	0.8112		
0.0213	0.7097	0.0254	0.8136		
0.0214	0.7123	0.0255	0.8160		

Table 6: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

($f_c' = 3{,}000$ psi; $f_y = 60{,}000$ psi)

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$
0.0010	0.0593	0.0051	0.2876	0.0092	0.4923	0.0133	0.6731
0.0011	0.0651	0.0052	0.2929	0.0093	0.4970	0.0134	0.6773
0.0012	0.0710	0.0053	0.2982	0.0094	0.5016	0.0135	0.6814
0.0013	0.0768	0.0054	0.3034	0.0095	0.5063	0.0136	0.6854
0.0014	0.0826	0.0055	0.3086	0.0096	0.5109	0.0137	0.6895
0.0015	0.0884	0.0056	0.3139	0.0097	0.5156	0.0138	0.6936
0.0016	0.0942	0.0057	0.3191	0.0098	0.5202	0.0139	0.6976
0.0017	0.1000	0.0058	0.3243	0.0099	0.5248	0.0140	0.7017
0.0018	0.1057	0.0059	0.3294	0.0100	0.5294	0.0141	0.7057
0.0019	0.1115	0.0060	0.3346	0.0101	0.5340	0.0142	0.7097
0.0020	0.1172	0.0061	0.3397	0.0102	0.5386	0.0143	0.7137
0.0021	0.1229	0.0062	0.3449	0.0103	0.5431	0.0144	0.7176
0.0022	0.1286	0.0063	0.3500	0.0104	0.5477	0.0145	0.7216
0.0023	0.1343	0.0064	0.3551	0.0105	0.5522	0.0146	0.7255
0.0024	0.1399	0.0065	0.3602	0.0106	0.5567	0.0147	0.7295
0.0025	0.1456	0.0066	0.3653	0.0107	0.5612	0.0148	0.7334
0.0026	0.1512	0.0067	0.3703	0.0108	0.5657	0.0149	0.7373
0.0027	0.1569	0.0068	0.3754	0.0109	0.5701	0.0150	0.7412
0.0028	0.1625	0.0069	0.3804	0.0110	0.5746	0.0151	0.7451
0.0029	0.1681	0.0070	0.3854	0.0111	0.5790	0.0152	0.7489
0.0030	0.1736	0.0071	0.3904	0.0112	0.5835	0.0153	0.7528
0.0031	0.1792	0.0072	0.3954	0.0113	0.5879	0.0154	0.7566
0.0032	0.1848	0.0073	0.4004	0.0114	0.5923	0.0155	0.7604
0.0033	0.1903	0.0074	0.4053	0.0115	0.5967	0.0156	0.7642
0.0034	0.1958	0.0075	0.4103	0.0116	0.6010	0.0157	0.7680
0.0035	0.2014	0.0076	0.4152	0.0117	0.6054	0.0158	0.7718
0.0036	0.2069	0.0077	0.4202	0.0118	0.6097	0.0159	0.7756
0.0037	0.2123	0.0078	0.4251	0.0119	0.6140	0.0160	0.7793
0.0038	0.2178	0.0079	0.4299	0.0120	0.6184	0.0161	0.7830
0.0039	0.2233	0.0080	0.4348	0.0121	0.6227		
0.0040	0.2287	0.0081	0.4397	0.0122	0.6269		
0.0041	0.2341	0.0082	0.4445	0.0123	0.6312		
0.0042	0.2395	0.0083	0.4494	0.0124	0.6355		
0.0043	0.2449	0.0084	0.4542	0.0125	0.6397		
0.0044	0.2503	0.0085	0.4590	0.0126	0.6439		
0.0045	0.2557	0.0086	0.4638	0.0127	0.6482		
0.0046	0.2611	0.0087	0.4686	0.0128	0.6524		
0.0047	0.2664	0.0088	0.4733	0.0129	0.6565		
0.0048	0.2717	0.0089	0.4781	0.0130	0.6607		
0.0049	0.2771	0.0090	0.4828	0.0131	0.6649		
0.0050	0.2824	0.0091	0.4875	0.0132	0.6690		

Table 7: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

(f_c' = 4,000 psi; f_y = 40,000 psi)

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$
0.0010	0.0398	0.0051	0.1979	0.0092	0.3481	0.0133	0.4904
0.0011	0.0437	0.0052	0.2016	0.0093	0.3517	0.0134	0.4938
0.0012	0.0477	0.0053	0.2054	0.0094	0.3552	0.0135	0.4971
0.0013	0.0516	0.0054	0.2091	0.0095	0.3588	0.0136	0.5005
0.0014	0.0555	0.0055	0.2129	0.0096	0.3623	0.0137	0.5038
0.0015	0.0595	0.0056	0.2166	0.0097	0.3659	0.0138	0.5072
0.0016	0.0634	0.0057	0.2204	0.0098	0.3694	0.0139	0.5105
0.0017	0.0673	0.0058	0.2241	0.0099	0.3729	0.0140	0.5139
0.0018	0.0712	0.0059	0.2278	0.0100	0.3765	0.0141	0.5172
0.0019	0.0752	0.0060	0.2315	0.0101	0.3800	0.0142	0.5206
0.0020	0.0791	0.0061	0.2352	0.0102	0.3835	0.0143	0.5239
0.0021	0.0830	0.0062	0.2390	0.0103	0.3870	0.0144	0.5272
0.0022	0.0869	0.0063	0.2427	0.0104	0.3906	0.0145	0.5305
0.0023	0.0908	0.0064	0.2464	0.0105	0.3941	0.0146	0.5338
0.0024	0.0946	0.0065	0.2501	0.0106	0.3976	0.0147	0.5372
0.0025	0.0985	0.0066	0.2538	0.0107	0.4011	0.0148	0.5405
0.0026	0.1024	0.0067	0.2574	0.0108	0.4046	0.0149	0.5438
0.0027	0.1063	0.0068	0.2611	0.0109	0.4080	0.0150	0.5471
0.0028	0.1102	0.0069	0.2648	0.0110	0.4115	0.0151	0.5504
0.0029	0.1140	0.0070	0.2685	0.0111	0.4150	0.0152	0.5536
0.0030	0.1179	0.0071	0.2721	0.0112	0.4185	0.0153	0.5569
0.0031	0.1217	0.0072	0.2758	0.0113	0.4220	0.0154	0.5602
0.0032	0.1256	0.0073	0.2795	0.0114	0.4254	0.0155	0.5635
0.0033	0.1294	0.0074	0.2831	0.0115	0.4289	0.0156	0.5667
0.0034	0.1333	0.0075	0.2868	0.0116	0.4323	0.0157	0.5700
0.0035	0.1371	0.0076	0.2904	0.0117	0.4358	0.0158	0.5733
0.0036	0.1410	0.0077	0.2941	0.0118	0.4392	0.0159	0.5765
0.0037	0.1448	0.0078	0.2977	0.0119	0.4427	0.0160	0.5798
0.0038	0.1486	0.0079	0.3013	0.0120	0.4461	0.0161	0.5830
0.0039	0.1524	0.0080	0.3049	0.0121	0.4496	0.0162	0.5863
0.0040	0.1562	0.0081	0.3086	0.0122	0.4530	0.0163	0.5895
0.0041	0.1600	0.0082	0.3122	0.0123	0.4564	0.0164	0.5927
0.0042	0.1638	0.0083	0.3158	0.0124	0.4598	0.0165	0.5959
0.0043	0.1676	0.0084	0.3194	0.0125	0.4632	0.0166	0.5992
0.0044	0.1714	0.0085	0.3230	0.0126	0.4666	0.0167	0.6024
0.0045	0.1752	0.0086	0.3266	0.0127	0.4701	0.0168	0.6056
0.0046	0.1790	0.0087	0.3302	0.0128	0.4735	0.0169	0.6088
0.0047	0.1828	0.0088	0.3338	0.0129	0.4768	0.0170	0.6120
0.0048	0.1866	0.0089	0.3374	0.0130	0.4802	0.0171	0.6152
0.0049	0.1904	0.0090	0.3409	0.0131	0.4836	0.0172	0.6184
0.0050	0.1941	0.0091	0.3445	0.0132	0.4870	0.0173	0.6216

Table 7: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

Continued **(f_c' = 4,000 psi; f_y = 40,000 psi)**

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	k	ρ	$\overline{k}$	ρ	k
0.0174	0.6248	0.0215	0.7512	0.0256	0.8698	0.0297	0.9805	0.0338	1.0832
0.0175	0.6279	0.0216	0.7542	0.0257	0.8726	0.0298	0.9831	0.0339	1.0856
0.0176	0.6311	0.0217	0.7572	0.0258	0.8754	0.0299	0.9857	0.0340	1.0880
0.0177	0.6343	0.0218	0.7602	0.0259	0.8782	0.0300	0.9882	0.0341	1.0904
0.0178	0.6375	0.0219	0.7632	0.0260	0.8810	0.0301	0.9908	0.0342	1.0928
0.0179	0.6406	0.0220	0.7661	0.0261	0.8837	0.0302	0.9934	0.0343	1.0952
0.0180	0.6438	0.0221	0.7691	0.0262	0.8865	0.0303	0.9960	0.0344	1.0976
0.0181	0.6469	0.0222	0.7720	0.0263	0.8893	0.0304	0.9986	0.0345	1.1000
0.0182	0.6501	0.0223	0.7750	0.0264	0.8920	0.0305	1.0011	0.0346	1.1023
0.0183	0.6532	0.0224	0.7779	0.0265	0.8948	0.0306	1.0037	0.0347	1.1047
0.0184	0.6563	0.0225	0.7809	0.0266	0.8975	0.0307	1.0063	0.0348	1.1071
0.0185	0.6595	0.0226	0.7838	0.0267	0.9003	0.0308	1.0088	0.0349	1.1094
0.0186	0.6626	0.0227	0.7868	0.0268	0.9030	0.0309	1.0114	0.0350	1.1118
0.0187	0.6657	0.0228	0.7897	0.0269	0.9057	0.0310	1.0139	0.0351	1.1141
0.0188	0.6688	0.0229	0.7926	0.0270	0.9085	0.0311	1.0164	0.0352	1.1165
0.0189	0.6720	0.0230	0.7955	0.0271	0.9112	0.0312	1.0190	0.0353	1.1188
0.0190	0.6751	0.0231	0.7985	0.0272	0.9139	0.0313	1.0215	0.0354	1.1212
0.0191	0.6782	0.0232	0.8014	0.0273	0.9166	0.0314	1.0240	0.0355	1.1235
0.0192	0.6813	0.0233	0.8043	0.0274	0.9194	0.0315	1.0265	0.0356	1.1258
0.0193	0.6844	0.0234	0.8072	0.0275	0.9221	0.0316	1.0291	0.0357	1.1281
0.0194	0.6875	0.0235	0.8101	0.0276	0.9248	0.0317	1.0316	0.0358	1.1305
0.0195	0.6905	0.0236	0.8130	0.0277	0.9275	0.0318	1.0341	0.0359	1.1328
0.0196	0.6936	0.0237	0.8158	0.0278	0.9302	0.0319	1.0366	0.0360	1.1351
0.0197	0.6967	0.0238	0.8187	0.0279	0.9329	0.0320	1.0391	0.0361	1.1374
0.0198	0.6998	0.0239	0.8216	0.0280	0.9355	0.0321	1.0416	0.0362	1.1397
0.0199	0.7028	0.0240	0.8245	0.0281	0.9382	0.0322	1.0441	0.0363	1.1420
0.0200	0.7059	0.0241	0.8273	0.0282	0.9409	0.0323	1.0465	0.0364	1.1443
0.0201	0.7089	0.0242	0.8302	0.0283	0.9436	0.0324	1.0490	0.0365	1.1465
0.0202	0.7120	0.0243	0.8331	0.0284	0.9462	0.0325	1.0515	0.0366	1.1488
0.0203	0.7150	0.0244	0.8359	0.0285	0.9489	0.0326	1.0540	0.0367	1.1511
0.0204	0.7181	0.0245	0.8388	0.0286	0.9516	0.0327	1.0564	0.0368	1.1534
0.0205	0.7211	0.0246	0.8416	0.0287	0.9542	0.0328	1.0589	0.0369	1.1556
0.0206	0.7242	0.0247	0.8445	0.0288	0.9568	0.0329	1.0613	0.0370	1.1579
0.0207	0.7272	0.0248	0.8473	0.0289	0.9595	0.0330	1.0638	0.0371	1.1602
0.0208	0.7302	0.0249	0.8501	0.0290	0.9621	0.0331	1.0662	0.0372	1.1624
0.0209	0.7332	0.0250	0.8529	0.0291	0.9648	0.0332	1.0687		
0.0210	0.7362	0.0251	0.8558	0.0292	0.9674	0.0333	1.0711		
0.0211	0.7393	0.0252	0.8586	0.0293	0.9700	0.0334	1.0735		
0.0212	0.7423	0.0253	0.8614	0.0294	0.9726	0.0335	1.0760		
0.0213	0.7453	0.0254	0.8642	0.0295	0.9752	0.0336	1.0784		
0.0214	0.7483	0.0255	0.8670	0.0296	0.9779	0.0337	1.0808		

Table 8: Coefficient of Resistance ($\overline{k}$) versus Reinforcement Ratio (ρ)

(f_c' = 4,000 psi; f_y = 60,000 psi)

ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$	ρ	$\overline{k}$
0.0010	0.0595	0.0051	0.2922	0.0092	0.5072	0.0133	0.7044	0.0174	0.8837
0.0011	0.0654	0.0052	0.2977	0.0093	0.5122	0.0134	0.7089	0.0175	0.8879
0.0012	0.0712	0.0053	0.3031	0.0094	0.5172	0.0135	0.7135	0.0176	0.8920
0.0013	0.0771	0.0054	0.3086	0.0095	0.5222	0.0136	0.7181	0.0177	0.8962
0.0014	0.0830	0.0055	0.3140	0.0096	0.5272	0.0137	0.7226	0.0178	0.9003
0.0015	0.0888	0.0056	0.3194	0.0097	0.5322	0.0138	0.7272	0.0179	0.9044
0.0016	0.0946	0.0057	0.3248	0.0098	0.5372	0.0139	0.7317	0.0180	0.9085
0.0017	0.1005	0.0058	0.3302	0.0099	0.5421	0.0140	0.7362	0.0181	0.9126
0.0018	0.1063	0.0059	0.3356	0.0100	0.5471	0.0141	0.7408	0.0182	0.9166
0.0019	0.1121	0.0060	0.3409	0.0101	0.5520	0.0142	0.7453	0.0183	0.9207
0.0020	0.1179	0.0061	0.3463	0.0102	0.5569	0.0143	0.7497	0.0184	0.9248
0.0021	0.1237	0.0062	0.3517	0.0103	0.5618	0.0144	0.7542	0.0185	0.9288
0.0022	0.1294	0.0063	0.3570	0.0104	0.5667	0.0145	0.7587	0.0186	0.9329
0.0023	0.1352	0.0064	0.3623	0.0105	0.5716	0.0146	0.7632	0.0187	0.9369
0.0024	0.1410	0.0065	0.3676	0.0106	0.5765	0.0147	0.7676	0.0188	0.9409
0.0025	0.1467	0.0066	0.3729	0.0107	0.5814	0.0148	0.7720	0.0189	0.9449
0.0026	0.1524	0.0067	0.3782	0.0108	0.5863	0.0149	0.7765	0.0190	0.9489
0.0027	0.1581	0.0068	0.3835	0.0109	0.5911	0.0150	0.7809	0.0191	0.9529
0.0028	0.1638	0.0069	0.3888	0.0110	0.5959	0.0151	0.7853	0.0192	0.9568
0.0029	0.1695	0.0070	0.3941	0.0111	0.6008	0.0152	0.7897	0.0193	0.9608
0.0030	0.1752	0.0071	0.3993	0.0112	0.6056	0.0153	0.7941	0.0194	0.9648
0.0031	0.1809	0.0072	0.4046	0.0113	0.6104	0.0154	0.7985	0.0195	0.9687
0.0032	0.1866	0.0073	0.4098	0.0114	0.6152	0.0155	0.8028	0.0196	0.9726
0.0033	0.1922	0.0074	0.4150	0.0115	0.6200	0.0156	0.8072	0.0197	0.9766
0.0034	0.1979	0.0075	0.4202	0.0116	0.6248	0.0157	0.8115	0.0198	0.9805
0.0035	0.2035	0.0076	0.4254	0.0117	0.6295	0.0158	0.8158	0.0199	0.9844
0.0036	0.2091	0.0077	0.4306	0.0118	0.6343	0.0159	0.8202	0.0200	0.9882
0.0037	0.2148	0.0078	0.4358	0.0119	0.6390	0.0160	0.8245	0.0201	0.9921
0.0038	0.2204	0.0079	0.4410	0.0120	0.6438	0.0161	0.8288	0.0202	0.9960
0.0039	0.2259	0.0080	0.4461	0.0121	0.6485	0.0162	0.8331	0.0203	0.9998
0.0040	0.2315	0.0081	0.4513	0.0122	0.6532	0.0163	0.8373	0.0204	1.0037
0.0041	0.2371	0.0082	0.4564	0.0123	0.6579	0.0164	0.8416	0.0205	1.0075
0.0042	0.2427	0.0083	0.4615	0.0124	0.6626	0.0165	0.8459	0.0206	1.0114
0.0043	0.2482	0.0084	0.4666	0.0125	0.6673	0.0166	0.8501	0.0207	1.0152
0.0044	0.2538	0.0085	0.4718	0.0126	0.6720	0.0167	0.8544	0.0208	1.0190
0.0045	0.2593	0.0086	0.4768	0.0127	0.6766	0.0168	0.8586	0.0209	1.0228
0.0046	0.2648	0.0087	0.4819	0.0128	0.6813	0.0169	0.8628	0.0210	1.0265
0.0047	0.2703	0.0088	0.4870	0.0129	0.6859	0.0170	0.8670	0.0211	1.0303
0.0048	0.2758	0.0089	0.4921	0.0130	0.6905	0.0171	0.8712	0.0212	1.0341
0.0049	0.2813	0.0090	0.4971	0.0131	0.6952	0.0172	0.8754	0.0213	1.0378
0.0050	0.2868	0.0091	0.5022	0.0132	0.6998	0.0173	0.8796	0.0214	1.0416

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Table 9: Preferred maximum number of bars in one row for <u>Circular Spiral Column</u>

Recommended Spiral	Column Diameter (in)	Core Size = [Column size - 2x1.5"]	Circular Area (Sq.in)	Reinforcing Bar Number						
				#5	#6	#7	#8	#9	#10	#11
#3 (# 3 for longitudinal bars smaller than #11) **#4** (# 4 for longitudinal bars #11 or greater)	12	9	63.62	8	7	7	6	-	-	-
	13	10	78.54	10	9	8	7	6	-	-
	14	11	95.03	11	10	9	8	7	6	-
	15	12	113.10	13	12	11	10	8	7	6
	16	13	132.73	13	12	11	10	8	7	6
	17	14	153.94	14	13	12	11	9	8	7
	18	15	176.71	15	14	13	12	10	9	8
#4	19	16	201.06	16	15	14	12	11	9	8
	20	17	226.98	18	16	15	13	12	10	9
	21	18	254.47	19	17	15	14	12	11	10
	22	19	283.53	20	18	16	15	13	11	10
	23	20	314.16	21	19	17	16	14	12	11
	24	21	346.36	22	20	18	17	15	13	11
	25	22	380.13	23	21	19	18	15	14	12
#5	26	23	415.48	24	22	21	19	16	14	13
	27	24	452.39	25	23	21	20	17	15	13
	28	25	490.87	26	24	22	20	18	16	14
	29	26	530.93	28	25	23	21	19	16	15
	30	27	572.56	29	26	24	22	19	17	15

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Table 10: Preferred maximum number of bars in one row for Square Tied Column

Recommended Tie size	Square Column Size (in)	Core Size = [Column size - 2x1.5"]	Cross-sectional Area (Sq.in)	Reinforcing Bar Number						
				#5	#6	#7	#8	#9	#10	#11
#3 (# 3 for longitudinal bars smaller than #11)	12X12	9X9	81	8	8	8	8	4	4	4
	13X13	10X10	100	12	8	8	8	8	4	4
	14X14	11X11	121	12	12	8	8	8	8	4
#4 (# 4 for longitudinal bars #11 or greater)	15X15	12X12	144	12	12	12	8	8	8	8
	16X16	13X13	169	16	12	12	12	8	8	8
	17X17	14X14	196	16	16	12	12	12	8	8
	18X18	15X15	225	16	16	16	12	12	12	8
#4	19X19	16X16	256	20	16	16	16	12	12	8
	20X20	17X17	289	20	20	16	16	12	12	8
	21X21	18X18	324	20	20	16	16	16	12	12
	22X22	19X19	361	24	20	20	16	16	12	12
	23X23	20X20	400	24	24	20	20	16	12	12
	24X24	21X21	441	28	24	20	20	16	16	12
	25X25	22X22	484	28	24	24	20	20	16	12
#5	26X26	23X23	529	28	28	24	24	20	16	16
	27X27	24X24	576	32	28	24	24	20	16	16
	28X28	25X25	625	32	28	28	24	20	20	16
	29X29	26X26	676	32	32	28	24	24	20	16
	30X30	27X27	729	36	32	28	28	24	20	16

More Tables to be added