A Appendix

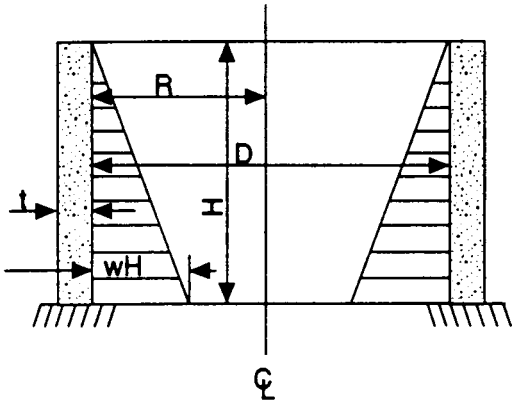

Table A-1— Tension in circular rings

T = coef. × wHR lb per ft
Positive sign indicates tension

	Coefficients at point									
$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	+0.149	+0.134	+0.120	+0.101	+0.082	+0.066	+0.049	+0.029	+0.014	+0.004
0.8	+0.263	+0.239	+0.215	+0.190	+0.160	+0.130	+0.096	+0.063	+0.034	+0.010
1.2	+0.283	+0.271	+0.254	+0.234	+0.209	+0.180	+0.142	+0.099	+0.054	+0.016
1.6	+0.265	+0.268	+0.268	+0.266	+0.250	+0.226	+0.185	+0.134	+0.075	+0.023
2.0	+0.234	+0.251	+0.273	+0.285	+0.285	+0.274	+0.232	+0.172	+0.104	+0.031
3.0	+0.134	+0.203	+0.267	+0.322	+0.357	+0.362	+0.330	+0.262	+0.157	+0.052
4.0	+0.067	+0.164	+0.256	+0.339	+0.403	+0.429	+0.409	+0.334	+0.210	+0.073
5.0	+0.025	+0.137	+0.245	+0.346	+0.428	+0.477	+0.469	+0.398	+0.259	+0.092
6.0	+0.018	+0.119	+0.234	+0.344	+0.441	+0.504	+0.514	+0.447	+0.301	+0.112
8.0	-0.011	+0.104	+0.218	+0.335	+0.443	+0.534	+0.575	+0.530	+0.381	+0.151
10.0	-0.011	+0.098	+0.208	+0.323	+0.437	+0.542	+0.608	+0.589	+0.440	+0.179
12.0	-0.005	+0.097	+0.202	+0.312	+0.429	+0.543	+0.628	+0.633	+0.494	+0.211
14.0	-0.002	+0.098	+0.200	+0.306	+0.420	+0.539	+0.639	+0.666	+0.541	+0.241
16.0	0.000	+0.099	+0.199	+0.304	+0.412	+0.531	+0.641	+0.687	+0.582	+0.265

Supplemental Coefficients

	Coefficients at point				
$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+0.716	+0.654	+0.520	+0.325	+0.115
24	+0.746	+0.702	+0.577	+0.372	+0.137
32	+0.782	+0.768	+0.663	+0.459	+0.182
40	+0.800	+0.805	+0.731	+0.530	+0.217
48	+0.791	+0.828	+0.785	+0.593	+0.254
56	+0.763	+0.838	+0.824	+0.636	+0.285

Table A-2— Moments in cylindrical wall

Mom. = coef. × wH^3 ft-lb per ft
Positive sign indicates tension in the outside

	Coefficients at point									
$\frac{H^2}{Dt}$	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H	1.0H
0.4	+.0005	+.0014	+.0021	+.0007	-.0042	-.0150	-.0302	-.0529	-.0816	-.1205
0.8	+.0011	+.0037	+.0063	+.0080	+.0070	+.0023	-.0068	-.0224	-.0465	-.0795
1.2	+.0012	+.0042	+.0077	+.0103	+.0112	+.0090	+.0022	-.0108	-.0311	-.0602
1.6	+.0011	+.0041	+.0075	+.0107	+.0121	+.0111	+.0058	-.0051	-.0232	-.0505
2.0	+.0010	+.0035	+.0068	+.0099	+.0120	+.0115	+.0075	-.0021	-.0185	-.0436
3.0	+.0006	+.0024	+.0047	+.0071	+.0090	+.0097	+.0077	+.0012	-.0119	-.0333
4.0	+.0003	+.0015	+.0028	+.0047	+.0066	+.0077	+.0069	+.0023	-.0080	-.0268
5.0	+.0002	+.0008	+.0016	+.0029	+.0046	+.0059	+.0059	+.0028	-.0058	-.0222
6.0	+.0001	+.0003	+.0008	+.0019	+.0032	+.0046	+.0051	+.0029	-.0041	-.0187
8.0	.0000	+.0001	+.0002	+.0008	+.0016	+.0028	+.0038	+.0029	-.0022	-.0146
10.0	.0000	.0000	+.0001	+.0004	+.0007	+.0019	+.0029	+.0028	-.0012	-.0122
12.0	.0000	-.0000	+.0001	+.0002	+.0003	+.0013	+.0023	+.0026	-.0005	-.0104
14.0	.0000	.0000	.0000	.0000	+.0001	+.0008	+.0019	+.0023	-.0001	-.0090
16.0	.0000	.0000	-.0001	-.0002	-.0001	+.0004	+.0013	+.0019	+.0001	-.0079

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.80H	.85H	.90H	95H	1.00H
20	+.0015	+.0014	+.0005	-.0018	-.0063
24	+.0012	+.0012	+.0007	-.0013	-.0053
32	+.0007	+.0009	+.0007	-.0008	-.0040
40	+.0002	+.0005	+.0006	-.0005	-.0032
48	.0000	+.0001	+.0006	-.0003	-.0026
56	.0000	.0000	+.0004	-.0001	-.0023

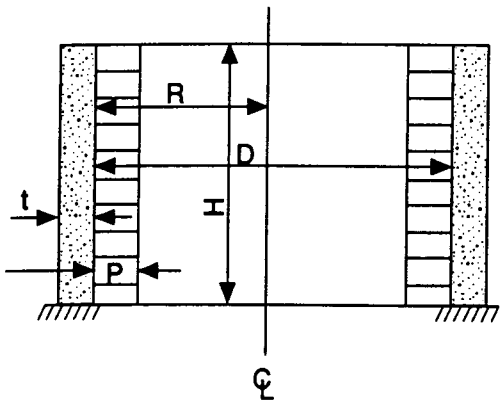

Table A-3— Tension in circular rings

T = coef. × pR lb per ft
Positive sign indicates tension

	Coefficients at point									
$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	+0.582	+0.505	+0.431	+0.353	+0.277	+0.206	+0.145	+0.092	+0.046	+0.013
0.8	+1.052	+0.921	+0.796	+0.669	+0.542	+0.415	+0.289	+0.179	+0.089	+0.024
1.2	+1.218	+1.078	+0.946	+0.808	+0.665	+0.519	+0.378	+0.246	+0.127	+0.034
1.6	+1.257	+1.141	+1.009	+0.881	+0.742	+0.600	+0.449	+0.294	+0.153	+0.045
2.0	+1.253	+1.144	+1.041	+0.929	+0.806	+0.667	+0.514	+0.345	+0.186	+0.055
3.0	+1.160	+1.112	+1.061	+0.998	+0.912	+0.796	+0.646	+0.459	+0.258	+0.081
4.0	+1.085	+1.073	+1.057	+1.029	+0.977	+0.887	+0.746	+0.553	+0.322	+0.105
5.0	+1.037	+1.044	+1.047	+1.042	+1.015	+0.949	+0.825	+0.629	+0.379	+0.128
6.0	+1.010	+1.024	+1.038	+1.045	+1.034	+0.986	+0.879	+0.694	+0.430	+0.149
8.0	+0.989	+1.005	+1.022	+1.036	+1.044	+1.026	+0.953	+0.788	+0.519	+0.189
10.0	+0.989	+0.998	+1.010	+1.023	+1.039	+1.040	+0.996	+0.859	+0.591	+0.226
12.0	+0.994	+0.997	+1.003	+1.014	+1.031	+1.043	+1.022	+0.911	+0.652	+0.262
14.0	+0.997	0.998	+1.000	+1.007	+1.022	+1.040	+1.035	+0.949	+0.705	+0.294
16.0	+1.000	0.999	+0.999	+1.003	+1.015	+1.032	+1.040	+0.975	+0.750	+0.321

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+0.949	+0.825	+0.629	+0.379	+0.128
24	+0.986	+0.879	+0.694	+0.430	+0.149
32	+1.026	+0.953	+0.788	+0.519	+0.189
40	+1.040	+0.996	+0.859	+0.591	+0.226
48	+1.043	+1.022	+0.911	+0.652	+0.262
56	+1.040	+1.035	+0.949	+0.705	+0.294

Table A-4— Moments in cylindrical wall

Mom. = coef. × pH^2 ft-lb per ft
Positive sign indicates tension in the outside

	Coefficients at point									
$\frac{H^2}{Dt}$	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H	1.0H
0.4	-.0023	-.0093	-.0227	-.0439	-.0710	-.1018	-.1455	-.2000	-.2593	-.3310
0.8	.0000	-.0006	-.0025	-.0083	-.0185	-.0362	-.0594	-.0917	-.1325	-.1835
1.2	+.0008	+.0026	+.0037	+.0029	-.0009	-.0089	-.0227	-.0468	-.0815	-.1178
1.6	+.0011	+.0036	+.0062	+.0077	+.0068	+.0011	-.0093	-.0267	-.0529	-.0876
2.0	+.0010	+.0036	+.0066	+.0088	+.0089	+.0059	-.0019	-.0167	-.0389	-.0719
3.0	+.0007	+.0026	+.0051	+.0074	+.0091	+.0083	+.0042	-0053	-.0223	-.0483
4.0	+.0004	+.0015	+.0033	+.0052	+.0068	+.0075	+.0053	-.0013	-.0145	-.0365
5.0	+.0002	+.0008	+.0019	+.0035	+.0051	+.0061	+.0052	+.0007	-.0101	-.0293
6.0	+.0001	+.0004	+.0011	+.0022	+.0036	+.0049	+.0048	+.0017	-.0073	-.0242
8.0	.0000	+.0001	+.0003	+.0008	+.0018	+.0031	+.0038	+.0024	-.0040	-.0184
10.0	.0000	-.0001	.0000	+.0002	+.0009	+.0021	+.0030	+.0026	-.0022	-.0147
12.0	.0000	.0000	-.0001	.0000	+.0004	+.0014	+.0024	+.0022	-.0012	-.0123
14.0	.0000	.0000	.0000	.0000	+.0002	+.0010	+.0018	+.0021	-.0007	-.0105
16.0	.0000	.0000	.0000	-.0001	+.0001	+.0006	+.0012	+.0020	-.0005	-.0091

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.80H	.85H	.90H	95H	1.00H
20	+.0015	+.0013	+.0002	-.0024	-.0073
24	+.0012	+.0012	+.0004	-.0018	-.0061
32	+.0008	+.0009	+.0006	-.0010	-.0046
40	+.0005	+.0007	+.0007	-.0005	-.0037
48	+.0004	+.0006	+.0006	-.0003	-.0031
56	+.0002	+.0004	+.0005	-.0001	-.0026

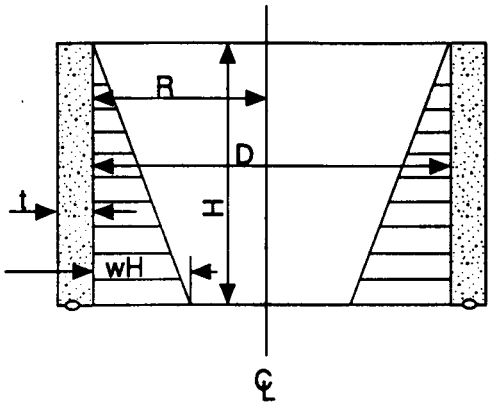

Table A-5— Tension in circular rings

T = coef. × wHR lb per ft
Positive sign indicates tension

	Coefficients at point									
$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	+0.474	+0.440	+0.395	+0.352	+0.308	+0.264	+0.215	+0.165	+0.111	+0.057
0.8	+0.423	+0.402	+0.381	+0.358	+0.330	+0.297	+0.249	+0.202	+0.145	+0.076
1.2	+0.350	+0.355	+0.361	+0.362	+0.358	+0.343	+0.309	+0.256	+0.186	+0.098
1.6	+0.271	+0.303	+0.341	+0.369	+0.385	+0.385	+0.362	+0.314	+0.233	+0.124
2.0	+0.205	+0.260	+0.321	+0.373	+0.411	+0.434	+0.419	+0.369	+0.280	+0.151
3.0	+0.074	+0.179	+0.281	+0.375	+0.449	+0.506	+0.519	+0.479	+0.375	+0.210
4.0	+0.017	+0.137	+0.253	+0.367	+0.469	+0.545	+0.579	+0.553	+0.447	+0.256
5.0	-0.008	+0.114	+0.235	+0.356	+0.469	+0.562	+0.617	+0.606	+0.503	+0.294
6.0	-0.011	+0.103	+0.223	+0.343	+0.463	+0.566	+0.639	+0.643	+0.547	+0.327
8.0	-0.015	+0.096	+0.208	+0.324	+0.443	+0.564	+0.661	+0.697	+0.621	+0.386
10.0	-0.008	+0.095	+0.200	+0.311	+0.428	+0.552	+0.666	+0.730	+0.678	+0.433
12.0	-0.002	+0.097	+0.197	+0.302	+0.417	+0.541	+0.664	+0.750	+0.720	+0.477
14.0	0.000	+0.098	+0.197	+0.299	+0.408	+0.531	+0.659	+0.761	+0.752	+0.513
16.0	+0.002	+0.100	+0.198	+0.299	+0.403	+0.521	+0.650	+0.764	+0.776	+0.536

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+0.812	+0.817	+0.756	+0.603	+0.344
24	+0.816	+0.839	+0.793	+0.647	+0.377
32	+0.814	+0.861	+0.847	+0.721	+0.436
40	+0.802	+0.866	+0.880	+0.778	+0.483
48	+0.791	+0.864	+0.900	+0.820	+0.527
56	+0.781	+0.859	+0.911	+0.852	+0.563

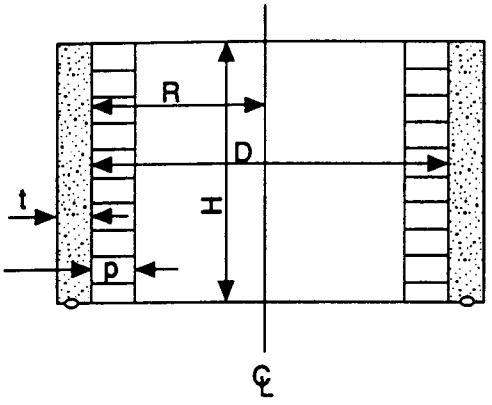

Table A-6— Tension in circular rings

T = coef. × pR lb per ft
Positive sign indicates tension

	Coefficients at point									
$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	+1.474	+1.340	+1.195	+1.052	+0.908	+0.764	+0.615	+0.465	+0.311	+0.154
0.8	+1.423	+1.302	+1.181	+1.058	+0.930	+0.797	+0.649	+0.502	+0.345	+0.166
1.2	+1.350	+1.255	+1.161	+1.062	+0.958	+0.843	+0.709	+0.556	+0.386	+0.198
1.6	+1.271	+1.203	+1.141	+1.069	+0.985	+0.885	+0.756	+0.614	+0.433	+0.224
2.0	+1.205	+1.160	+1.121	+1.073	+1.011	+0.934	+0.819	+0.669	+0.480	+0.251
3.0	+1.074	+1.079	+1.081	+1.075	+1.049	+1.006	+0.919	+0.779	+0.575	+0.310
4.0	+1.017	+1.037	+1.053	+1.067	+1.069	+1.045	+0.979	+0.853	+0.647	+0.356
5.0	+0.992	+1.014	+1.035	+1.056	+1.069	+1.062	+1.017	+0.906	+0.703	+0.394
6.0	+0.989	+1.003	+1.023	+1.043	+1.063	+1.066	+1.039	+0.943	+0.747	+0.427
8.0	+0.985	+0.996	+1.008	+1.024	+1.043	+1.064	+1.061	+0.997	+0.821	+0.486
10.0	+0.992	+0.995	+1.000	+1.011	+1.028	+1.052	+1.066	+1.030	+0.878	+0.533
12.0	+0.998	+0.997	+0.997	+1.002	+1.017	+1.041	+1.064	+1.050	+0.920	+0.577
14.0	+1.000	+0.998	+0.997	+0.999	+1.008	+1.031	+1.059	+1.060	+0.952	+0.613
16.0	+1.002	+1.000	+0.998	+0.999	+1.003	+1.021	+1.050	+1.064	+0.976	+0.636

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+1.062	+1.017	+0.906	+0.703	+0.394
24	+1.066	+1.039	+0.943	+0.747	+0.427
32	+1.064	+1.061	+0.997	+0.821	+0.486
40	+1.052	+1.066	+1.030	+0.878	+0.533
48	+1.041	+1.064	+1.050	+0.920	+0.577
56	+1.021	+1.059	+1.061	+0.952	+0.613

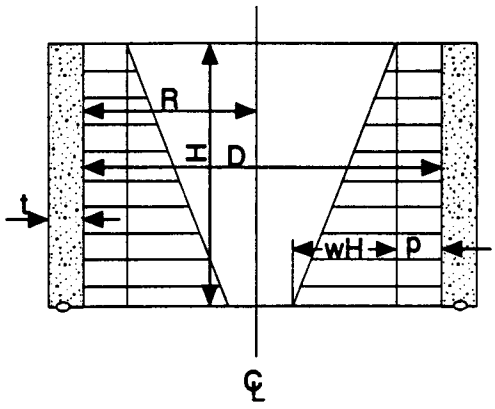

Table A-7— Moments in cylindrical wall

Mom. = coef. × ($wH^3 + pH^2$) ft-lb per ft

Positive sign indicates tension in the outside

	Coefficients at point									
$\frac{H^2}{Dt}$	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H	1.0H
0.4	+.0020	+.0072	+.0151	+.0230	+.0301	+.0348	+.0357	+.0312	+.0197	0
0.8	+.0019	+.0064	+.0133	+.0207	+.0271	+.0319	+.0329	+.0292	+.0187	0
1.2	+.0016	+.0058	+.0111	+.0177	+.0237	+.0280	+.0296	+.0263	+.0171	0
1.6	+.0012	+.0044	+.0091	+.0145	+.0195	+.0236	+.0255	+.0232	+.0155	0
2.0	+.0009	+.0033	+.0073	+.0114	+.0158	+.0199	+.0219	+.0205	+.0145	0
3.0	+.0004	+.0018	+.0040	+.0063	+.0092	+.0127	+.0152	+.0153	+.0111	0
4.0	+.0001	+.0007	+.0016	+.0033	+.0057	+.0083	+.0109	+.0118	+.0092	0
5.0	.0000	+.0001	+.0006	+.0016	+.0034	+.0057	+.0080	+.0094	+.0078	0
6.0	.0000	.0000	+.0002	+.0008	+.0019	+.0039	+.0062	+.0078	+.0068	0
8.0	.0000	.0000	-.0002	.0000	+.0007	+.0020	+.0038	+.0057	+.0054	0
10.0	.0000	.0000	-.0002	-.0001	+.0002	+.0011	+.0025	+.0043	+.0045	0
12.0	.0000	.0000	-.0001	-.0002	.0000	+.0005	+.0017	+.0032	+.0039	0
14.0	.0000	.0000	-.0001	-.0001	-.0001	.0000	+.0012	+.0026	+.0033	0
16.0	.0000	.0000	.0000	-.0001	.0002	-.0004	+.0008	+.0022	+.0029	0

Supplemental Coefficients

	Coefficient at point				
$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+.0008	+.0014	+.0020	+.0024	+.0020
24	+.0005	+.0010	+.0015	+.0020	+.0017
32	.0000	+.0005	+.0009	+.0014	+.0013
40	.0000	+.0003	+.0006	+.0011	+.0011
48	.0000	+.0001	+.0004	+.0008	+.0010
56	.0000	.0000	+.0003	+.0007	+.0008

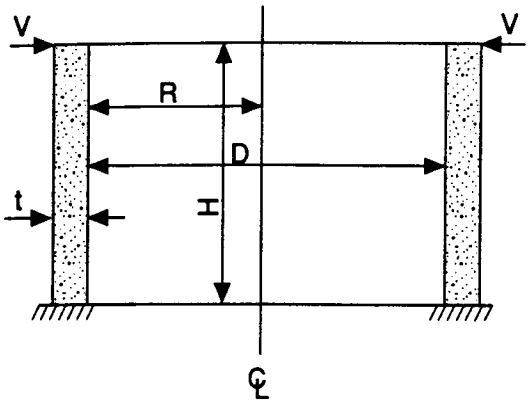

Table A-8— Tension in circular rings

T = coef. × VR/H lb per ft
Positive sign indicates tension

$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	-1.57	-1.32	-1.08	-0.86	-0.65	-0.47	-0.31	-0.18	-0.08	-0.02
0.8	-3.09	-2.55	-2.04	-1.57	-1.15	-0.80	-0.51	-0.28	-0.13	-0.03
1.2	-3.95	-3.17	-2.44	-1.79	-1.25	-0.81	-0.48	-0.25	-0.10	-0.02
1.6	-4.57	-3.54	-2.60	-1.80	-1.17	-0.69	-0.36	-0.16	-0.05	-0.01
2.0	-5.12	-3.83	-2.68	-1.74	-1.02	-0.52	-0.21	-0.05	+0.01	+0.01
3.0	-6.32	-4.37	-2.70	-1.43	-0.58	-0.02	+0.15	+0.19	+0.13	+0.04
4.0	-7.34	-4.73	-2.60	-1.10	-0.19	+0.26	+0.38	+0.33	+0.19	+0.06
5.0	-8.22	-4.99	-2.45	-0.79	+0.11	+0.47	+0.50	+0.37	+0.20	+0.06
6.0	-9.02	-5.17	-2.27	-0.50	+0.34	+0.59	+0.53	+0.35	+0.17	+0.01
8.0	-10.42	-5.36	-1.85	-0.02	+0.63	+0.66	+0.46	+0.24	+0.09	+0.01
10.0	-11.67	-5.43	-1.43	+0.36	+0.78	+0.62	+0.33	+0.12	+0.02	0.00
12.0	-12.76	-5.41	-1.03	+0.63	+0.83	+0.52	+0.21	+0.04	-0.02	0.00
14.0	-13.77	-5.34	-0.68	+0.80	+0.81	+0.42	+0.13	0.00	-0.03	-0.01
16.0	-14.74	-5.22	-0.33	+0.96	+0.76	+0.32	+0.05	-0.04	-0.05	-0.02

When this table is used for shear applied at the base while the top is fixed, 0.0H is the bottom of the wall and 1.0H is the top. Shear acting inward is positive, outward is negative.

Supplemental Coefficients

$\frac{H^2}{Dt}$	.00H	.05H	.10H	.15H	.20H
20	-16.44	-9.98	-4.90	-1.59	+0.22
24	-18.04	-10.34	-4.54	-1.00	+0.68
32	-20.84	-10.72	-3.70	-0.04	+1.26
40	-23.34	-10.86	-2.86	+0.72	+1.56
48	-25.52	-10.82	-2.06	+1.26	+1.66
56	-27.54	-10.68	-1.36	+1.60	+1.62

Table A-9— Moments in cylindrical wall

Mom. = coef. × VH ft-lb per ft
Positive sign indicates tension in the outside

$\frac{H^2}{Dt}$	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H	1.0H
0.4	+0.093	+0.172	+0.240	+0.300	+0.354	+0.402	+0.448	+0.492	+0.535	+0.578
0.8	+0.085	+0.145	+0.185	+0.208	+0.220	+0.224	+0.223	+0.219	+0.214	+0.208
1.2	+0.082	+0.132	+0.157	+0.164	+0.159	+0.145	+0.127	+0.106	+0.084	+0.062
1.6	+0.079	+0.122	+0.139	+0.138	+0.125	+0.105	+0.081	+0.056	+0.030	+0.004
2.0	+0.077	+0.115	+0.126	+0.119	+0.103	+0.080	+0.056	+0.031	+0.006	-0.019
3.0	+0.072	+0.100	+0.100	+0.086	+0.066	+0.044	+0.025	+0.006	-0.010	-0.024
4.0	+0.068	+0.088	+0.081	+0.063	+0.043	+0.025	+0.010	-0.001	-0.010	-0.019
5.0	+0.064	+0.078	+0.067	+0.047	+0.028	+0.013	+0.003	-0.003	-0.007	-0.011
6.0	+0.062	+0.070	+0.056	+0.036	+0.018	+0.006	0.000	-0.003	-0.005	-0.006
8.0	+0.057	+0.058	+0.041	+0.021	+0.007	0.000	-0.002	-0.003	-0.002	-0.001
10.0	+0.053	+0.049	+0.029	+0.012	+0.002	-0.002	-0.002	-0.002	-0.001	0.000
12.0	+0.049	+0.042	+0.022	+0.007	+0.000	-0.002	-0.002	-0.001	0.000	0.000
14.0	+0.046	+0.036	+0.017	+0.004	-0.001	-0.002	-0.001	-0.001	0.000	0.000
16.0	+0.044	+0.031	+0.012	+0.001	-0.002	-0.002	-0.001	0.000	0.000	0.000

When this table is used for shear applied at the base while the top is fixed, 0.0H is the bottom of the wall and 1.0H is the top. Shear acting inward is positive, outward is negative.

Supplemental Coefficients

$\frac{H^2}{Dt}$	.05H	.10H	.15H	.20H	.25H
20	+0.032	+0.039	+0.033	+0.023	+0.014
24	+0.031	+0.035	+0.028	+0.018	+0.009
32	+0.028	+0.029	+0.020	+0.011	+0.004
40	+0.026	+0.025	+0.015	+0.006	+0.001
48	+0.024	+0.021	+0.011	+0.003	0.000
56	+0.023	+0.018	+0.008	+0.002	0.000

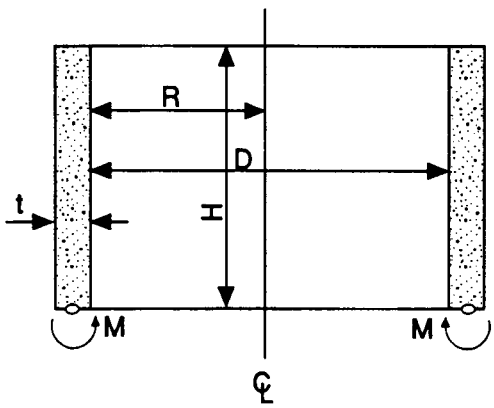

Table A-10— Tension in circular rings

T = coef. × MR/H^2 lb per ft
Positive sign indicates tension

$\frac{H^2}{Dt}$	0.0H	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H
0.4	+2.70	+2.50	+2.30	+2.12	+1.91	+1.69	+1.41	+1.13	+0.80	+0.44
0.8	+2.02	+2.06	+2.10	+2.14	+2.10	+2.02	+1.95	+1.75	+1.39	+0.80
1.2	+1.06	+1.42	+1.79	+2.03	+2.46	+2.65	+2.80	+2.60	+2.22	+1.37
1.6	+0.12	+0.79	+1.43	+2.04	+2.72	+3.25	+3.56	+3.59	+3.13	+2.01
2.0	-0.68	+0.22	+1.10	+2.02	+2.90	+3.69	+4.30	+4.54	+4.08	+2.75
3.0	-1.78	-0.71	+0.43	+1.60	+2.95	+4.29	+5.66	+6.58	+6.55	+4.73
4.0	-1.87	-1.00	-0.08	+1.04	+2.47	+4.31	+6.34	+8.19	+8.82	+6.81
5.0	-1.54	-1.03	-0.42	+0.45	+1.86	+3.93	+6.60	+9.41	+11.03	+9.02
6.0	-1.04	-0.86	-0.59	-0.05	+1.21	+3.34	+6.54	+10.28	+13.08	+11.41
8.0	-0.24	-0.53	-0.73	-0.67	-0.02	+2.05	+5.87	+11.32	+16.52	+16.06
10.0	+0.21	-0.23	-0.64	-0.94	-0.73	+0.82	+4.79	+11.63	+19.48	+20.87
12.0	+0.32	-0.05	-0.46	-0.96	-1.15	-0.18	+3.52	+11.27	+21.80	+25.73
14.0	+0.26	+0.04	-0.28	-0.76	-1.29	-0.87	+2.29	+10.55	+23.50	+30.34
16.0	+0.22	+0.07	-0.08	-0.64	-1.28	-1.30	+1.12	+9.67	+24.53	+34.65

Supplemental Coefficients

$\frac{H^2}{Dt}$	.75H	.80H	.85H	.90H	.95H
20	+15.30	+25.9	+36.9	+43.3	+35.3
24	+13.20	+25.9	+40.7	+51.8	+45.3
32	+8.10	+23.2	+45.9	+65.4	+63.6
40	+3.28	+19.2	+46.5	+77.9	+83.5
48	-0.70	+14.1	+45.1	+87.2	+103.0
56	-3.40	+9.2	+42.2	+94.0	+121.0

When this table is used for moment applied at the top, while the top is hinged, 0.0H is the bottom of the wall and 1.0H is the top. Moment applied at an edge is positive when it causes outward rotation at that edge.

Table A-11— Moments in cylindrical wall

Mom. = coef. × M ft-lb per ft
Positive sign indicates tension in the outside

$\frac{H^2}{Dt}$	0.1H	0.2H	0.3H	0.4H	0.5H	0.6H	0.7H	0.8H	0.9H	1.0H
0.4	+0.013	+0.051	+0.109	+0.196	+0.296	+0.414	+0.547	+0.692	+0.843	+1.000
0.8	+0.009	+0.040	+0.090	+0.164	+0.253	+0.375	+0.503	+0.659	+0.824	+1.000
1.2	+0.006	+0.027	+0.063	+0.125	+0.206	+0.316	+0.454	+0.616	+0.802	+1.000
1.6	+0.003	+0.011	+0.035	+0.078	+0.152	+0.253	+0.393	+0.570	+0.775	+1.000
2.0	-0.002	-0.002	+0.012	+0.034	+0.096	+0.193	+0.340	+0.519	+0.748	+1.000
3.0	-0.007	-0.022	-0.030	-0.029	+0.010	+0.087	+0.227	+0.426	+0.692	+1.000
4.0	-0.008	-0.026	-0.044	-0.051	-0.034	+0.023	+0.150	+0.354	+0.645	+1.000
5.0	-0.007	-0.024	-0.045	-0.061	-0.057	-0.015	+0.095	+0.296	+0.606	+1.000
6.0	-0.005	-0.018	-0.040	-0.058	-0.065	-0.037	+0.057	+0.252	+0.572	+1.000
8.0	-0.001	-0.009	-0.022	-0.044	-0.068	-0.062	+0.002	+0.178	+0515	+1.000
10.0	0.000	-0.002	-0.009	-0.028	-0.053	-0.067	-0.031	+0.123	+0.467	+1.000
12.0	0.000	0.000	-0.003	-0.016	-0.040	-0.064	-0.049	+0.081	+0.424	+1.000
14.0	0.000	0.000	0.000	-0.008	-0.029	-0.059	-0.060	+0.048	+0.387	+1.000
16.0	0.000	0.000	+0.002	-0.003	-0.021	-0.051	-0.066	+0.025	+0.354	+1.000

Supplemental Coefficients

$\frac{H^2}{Dt}$	.80H	.85H	.90H	.95H	1.00H
20	-0.015	+0.095	+0.296	+0.606	+1.000
24	-0.037	+0.057	+0.250	+0.572	+1.000
32	-0.062	+0.002	+0.178	+0.515	+1.000
40	-0.067	-0.031	+0.123	+0.467	+1.000
48	-0.064	-0.049	+0.081	+0.424	+1.000
56	-0.059	-0.060	+0.048	+0.387	+1.000

When this table is used for moment applied at the top, while the top is hinged, 0.0H is the bottom of the wall and 1.0H is the top. Moment applied at an edge is positive when it causes outward rotation at that edge.

Shear at Base of Cylindrical Wall

Table A-12—Shear at base of cylindrical wall

$$V = \text{coef.} \times \begin{cases} wH^2 \text{ lb. (triangular)} \\ pH \text{ lb. (rectangular)} \\ M/H \text{ lb. (moment at base)} \end{cases}$$

Positive sign indicates shear acting inward

$\frac{H^2}{Dt}$	Triangular load, fixed base	Rectangular load, fixed base	Triangular or rectangular load, hinged base	Moment at edge
0.4	+0.436	+0.755	+0.245	-1.58
0.8	+0.374	+0.552	+0.234	-1.75
1.2	+0.339	+0.460	+0.220	-2.00
1.6	+0.317	+0.407	+0.204	-2.28
2.0	+0.299	+0.370	+0.189	-2.57
3.0	+0.262	+0.310	+0.158	-3.18
4.0	+0.236	+0.271	+0.137	-3.68
5.0	+0.213	+0.243	+0.121	-4.10
6.0	+0.197	+0.222	+0.110	-4.49
8.0	+0.174	+0.193	+0.096	-5.18
10.0	+0.158	+0.172	+0.087	-5.81
12.0	+0.145	+0.158	+0.079	-6.38
14.0	+0.135	+0.147	+0.073	-6.88
16.0	+0.127	+0.137	+0.068	-7.36
20.0	+0.114	+0.122	+0.062	-8.20
24.0	+0.102	+0.111	+0.055	-8.94
32.0	+0.089	+0.096	+0.048	-10.36
40.0	+0.080	+0.086	+0.043	-10.62
48.0	+0.072	+0.079	+0.039	-12.76
56.0	+0.067	+0.074	+0.036	-13.76

Load on Center Support for Circular Slab

Table A-13—Load on center support for circular slab

$$\text{Load} = \text{coef.} \times \begin{cases} pR^2 \text{ (hinged and fixed)} \\ M \text{ (moment at edge)} \end{cases}$$

c/D	0.05	0.10	0.15	0.20	0.25
Hinged	1.320	1.387	1.463	1.542	1.625
Fixed	0.839	0.919	1.007	1.101	1.200
M at edge	8.16	8.66	9.29	9.99	10.81

Moments in Circular Slab Without Center Support

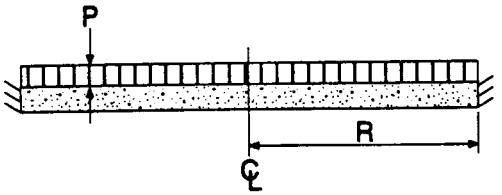

Table A-14— Moments in circular slab without center support

Mom. = coef. × pR^2 ft-lb per ft
Positive sign indicates compression in surface loaded

Coefficients at point										
0.00R	0.10R	0.20R	0.30R	0.40R	0.50R	0.60R	0.70R	0.80R	0.90R	1.00R
Radial Moments, M_r										
+.075	+.073	+.067	+.057	+.043	+.025	+.003	-.023	-.053	-.087	-.125
Tangential Moments, M_t										
+.075	+.074	+.071	+.066	+.059	+.050	+.039	+.026	+.011	-.006	-.025

Stiffness of Cylindrical Wall

Table A-15— Stiffness of cylindrical wall, near edge hinged, far edge free

k = coef. × Et^3/H

$\frac{H^2}{Dt}$	Coefficient	$\frac{H^2}{Dt}$	Coefficient
0.4	0.139	10	1.010
0.8	0.270	12	1.108
1.2	0.345	14	1.198
1.6	0.399	16	1.281
2.0	0.445	20	1.430
3.0	0.548	24	1.566
4.0	0.635	32	1.810
5.0	0.713	40	2.025
6.0	0.783	48	2.220
8.0	0.903	56	2.400

Stiffness of Circular Plates

Table A-16— Stiffness of circular plates with center support

k = coef. × Et^3/R

c/D	0.05	0.10	0.15	0.20	0.25
Coef.	0.290	0.309	0.332	0.358	0.387

Without center support
Coef. = 0.104

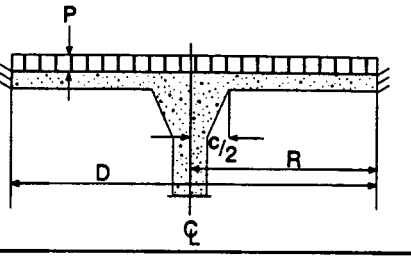

Table A-17—Uniform load, fixed edge

Mom. = coef. × pR^2 ft-lb per ft
Positive sign indicates compression in surface loaded

c/D	Coefficients at point												
	0.05R	0.10R	0.15R	0.20R	0.25R	0.30R	0.40R	0.50R	0.60R	0.70R	0.80R	0.90R	1.00R
	Radial Moments, M_r												
0.05	-0.2100	-0.0729	-0.0275	-0.0026	+0.0133	+0.0238	+0.0342	+0.0347	+0.0277	+0.0142	-0.0049	-0.0294	-0.0589
0.10		-0.1433	-0.0624	-0.0239	-0.0011	+0.0136	+0.0290	+0.0326	+0.0276	+0.0158	-0.0021	-0.0255	-0.0541
0.15			-0.1089	-0.0521	-0.0200	+0.0002	+0.0220	+0.0293	+0.0269	+0.0169	+0.0006	-0.0216	-0.0490
0.20				-0.0862	-0.0429	-0.0161	+0.0133	+0.0249	+0.0254	+0.0176	+0.0029	-0.0178	-0.0441
0.25					-0.0698	-0.0351	+0.0029	+0.0194	+0.0231	+0.0177	+0.0049	-0.0143	-0.0393
	Tangential Moments, M_t												
0.05	-0.0417	-0.0700	-0.0541	-0.0381	-0.0251	-0.0145	+0.0002	+0.0085	+0.0118	+0.0109	+0.0065	-0.0003	-0.0118
0.10		-0.0287	-0.0421	-0.0354	-0.0258	-0.0168	-0.0027	+0.0059	+0.0099	+0.0098	+0.0061	-0.0009	-0.0108
0.15			-0.0218	-0.0284	-0.0243	-0.0177	-0.0051	+0.0031	+0.0080	+0.0086	+0.0057	-0.0006	-0.0098
0.20				-0.0172	-0.0203	-0.0171	-0.0070	+0.0013	+0.0063	+0.0075	+0.0052	-0.0003	-0.0088
0.25					-0.0140	-0.0150	-0.0083	-0.0005	+0.0046	+0.0064	+0.0048	0.0000	-0.0078

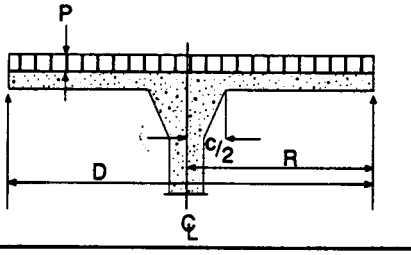

Table A-18—Uniform load, hinged edge

Mom. = coef. × pR^2 ft-lb per ft
Positive sign indicates compression in surface loaded

c/D	Coefficients at point												
	0.05R	0.10R	0.15R	0.20R	0.25R	0.30R	0.40R	0.50R	0.60R	0.70R	0.80R	0.90R	1.00R
	Radial Moments, M_r												
0.05	-0.3658	-0.1388	-0.0640	-0.0221	+0.0058	+0.0255	+0.0501	+0.0614	+0.0629	+0.0566	+0.0437	+0.0247	0
0.10		-0.2487	-0.1180	-0.0557	-0.0176	+0.0081	+0.0391	+0.0539	+0.0578	+0.0532	+0.0416	+0.0237	0
0.15			-0.1869	-0.0977	-0.0467	-0.0135	+0.0258	+0.0451	+0.0518	+0.0494	+0.0393	+0.0226	0
0.20				-0.1465	-0.0800	-0.0381	+0.0109	+0.0352	+0.0452	+0.0451	+0.0368	+0.0215	0
0.25					-0.1172	-0.0645	-0.0055	+0.0245	+0.0381	+0.0404	+0.0340	+0.0200	0
	Tangential Moments, M_t												
0.05	-0.0731	-0.1277	-0.1040	-0.0786	-0.0569	-0.0391	-0.0121	+0.0061	+0.0175	+0.0234	+0.0251	+0.0228	+0.0168
0.10		-0.0498	-0.0768	-0.0684	-0.0539	-0.0394	-0.0153	+0.0020	+0.0134	+0.0197	+0.0218	+0.0199	+0.0145
0.15			-0.0374	-0.0516	-0.0470	-0.0375	-0.0175	-0.0014	+0.0097	+0.0163	+0.0186	+0.0172	+0.0123
0.20				-0.0293	-0.0367	-0.0333	-0.0184	-0.0042	+0.0065	+0.0132	+0.0158	+0.0148	+0.0103
0.25					-0.0234	-0.0263	-0.0184	-0.0062	+0.0038	+0.0103	+0.0132	+0.0122	+0.0085

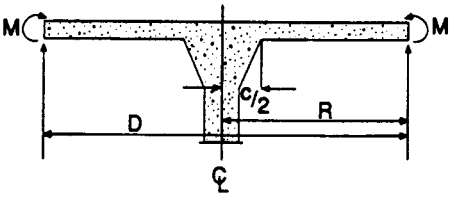

Table A-19—Moment per ft, M, applied at edge, hinged edge

Mom. = coef. × M ft-lb per ft
Positive sign indicates compression in top surface

c/D	Coefficients at point												
	0.05R	0.10R	0.15R	0.20R	0.25R	0.30R	0.40R	0.50R	0.60R	0.70R	0.80R	0.90R	1.00R
	Radial Moments, M_r												
0.05	-2.650	-1.121	-0.622	-0.333	-0.129	+0.029	+0.268	+0.450	+0.596	+0.718	+0.824	+0.917	+1.000
0.10		-1.950	-1.026	-0.584	-0.305	-0.103	+0.187	+0.394	+0.558	+0.692	+0.808	+0.909	+1.000
0.15			-1.594	-0.930	-0.545	-0.280	+0.078	+0.323	+0.510	+0.663	+0.790	+0.900	+1.000
0.20				-1.366	-0.842	-0.499	-0.057	+0.236	+0.451	+0.624	+0.768	+0.891	+1.000
0.25					-1.204	-0.765	-0.216	+0.130	+0.392	+0.577	+0.740	+0.880	+1.000
	Tangential Moments, M_t												
0.05	-0.530	-0.980	-0.847	-0.688	-0.544	-0.418	-0.211	-0.042	+0.095	+0.212	+0.314	+0.405	+0.486
0.10		-0.388	-0.641	-0.608	-0.518	-0.419	-0.233	-0.072	+0.066	+0.185	+0.290	+0.384	+0.469
0.15			-0.319	-0.472	-0.463	-0.404	-0.251	-0.100	+0.035	+0.157	+0.263	+0.363	+0.451
0.20				-0.272	-0.372	-0.368	-0.261	-0.123	+0.007	+0.129	+0.240	+0.340	+0.433
0.25					-0.239	-0.305	-0.259	-0.145	-0.020	+0.099	+0.214	+0.320	+0.414

Table A-20—Design Aid for Bending Moment Reinforcing

ω	.000	.001	.002	.003	.004	.005	.006	.007	.008	.009
0.0	0	.0010	.0020	.0030	.0040	.0050	.0060	.0070	.0080	.0090
0.01	.0099	.0109	.0119	.0129	.0139	.0149	.0159	.0168	.0178	.0188
0.02	.0197	.0207	.0217	.0226	.0236	.0246	.0256	.0266	.0275	.0285
0.03	.0295	.0304	.0314	.0324	.0333	.0343	.0352	.0362	.0372	.0381
0.04	.0391	.0400	.0410	.0420	.0429	.0438	.0448	.0457	.0467	.0476
0.05	.0485	.0495	.0504	.0513	.0523	.0532	.0541	.0551	.0560	.0569
0.06	.0579	.0588	.0597	.0607	.0616	.0625	.0634	.0643	.0653	.0662
0.07	.0671	.0680	.0689	.0699	.0708	.0717	.0726	.0735	.0744	.0753
0.08	.0762	.0771	.0780	.0789	.0798	.0807	.0816	.0825	.0834	.0843
0.09	.0852	.0861	.0870	.0879	.0888	.0897	.0906	.0915	.0923	.0932
0.10	.0941	.0950	.0959	.0967	.0976	.0985	.0994	.1002	.1011	.1020
0.11	.1029	.1037	.1046	.1055	.1063	.1072	.1081	.1089	.1098	.1106
0.12	.1115	.1124	.1133	.1141	.1149	.1158	.1166	.1175	.1183	.1192
0.13	.1200	.1209	.1217	.1226	.1234	.1243	.1251	.1259	.1268	.1276
0.14	.1284	.1293	.1301	.1309	.1318	.1326	.1334	.1342	.1351	.1359
0.15	.1367	.1375	.1384	.1392	.1400	.1408	.1416	.1425	.1433	.1441
0.16	.1449	.1457	.1465	.1473	.1481	.1489	.1497	.1506	.1514	.1522
0.17	.1529	.1537	.1545	.1553	.1561	.1569	.1577	.1585	.1593	.1601
0.18	.1609	.1617	.1624	.1632	.1640	.1648	.1656	.1664	.1671	.1679
0.19	.1687	.1695	.1703	.1710	.1718	.1726	.1733	.1741	.1749	.1756
0.20	.1764	.1772	.1779	.1787	.1794	.1802	.1810	.1817	.1825	.1832
0.21	.1840	.1847	.1855	.1862	.1870	.1877	.1885	.1892	.1900	.1907
0.22	.1914	.1922	.1929	.1937	.1944	.1951	.1959	.1966	.1973	.1981
0.23	.1988	.1985	.2002	.2010	.2017	.2024	.2031	.2039	.2046	.2053
0.24	.2060	.2067	.2075	.2082	.2089	.2096	.2103	.2110	.2117	.2124
0.25	.2131	.2138	.2145	.2152	.2159	.2166	.2173	.2180	.2187	.2194
0.26	.2201	.2208	.2215	.2222	.2229	.2236	.2243	.2249	.2256	.2263
0.27	.2270	.2277	.2284	.2290	.2297	.2304	.2311	.2317	.2324	.2331
0.28	.2337	.2344	.2351	.2357	.2364	.2371	.2377	.2384	.2391	.2397
0.29	.2404	.2410	.2417	.2423	.2430	.2437	.2443	.2450	.2456	.2463
0.30	.2469	.2475	.2482	.2488	.2495	.2501	.2508	.2514	.2520	.2527
0.31	.2533	.2539	.2546	.2552	.2558	.2565	.2571	.2577	.2583	.2590
0.32	.2596	.2602	.2608	.2614	.2621	.2627	.2633	.2639	.2645	.2651
0.33	.2657	.2664	.2670	.2676	.2682	.2688	.2694	.2670	.2706	.2712
0.34	.2718	.2724	.2730	.2736	.2742	.2748	.2754	.2760	.2766	.2771
0.35	.2777	.2783	.2789	.2795	.2801	.2807	.2812	.2818	.2824	.2830
0.36	.2835	.2841	.2847	.2853	.2858	.2864	.2870	.2875	.2881	.2887
0.37	.2892	.2898	.2904	.2909	.2915	.2920	.2926	.2931	.2937	.2943
0.38	.2948	.2954	.2959	.2965	.2970	.2975	.2981	.2986	.2992	.2997
0.39	.3003	.3003	.3013	.3019	.3024	.3029	.3035	.3040	.3045	.3051

Design: Using factored moment M_u, enter table with $M_u/\phi f'_c bd^2$; find ω and compute steel percentage ρ from $\rho = \omega f'_c / f_y$

Investigation: Enter table with ω from $\omega = \rho f_y / f'_c$; find value of $M_n / f'_c bd^2$ and solve for nominal strength M_n.