

TABLA 12.3

Coefficientes para momentos negativos en losas^a

$$M_{a,neg} = C_{a,neg} w l_a^2$$

donde w = carga muerta más viva uniforme total

$$M_{b,neg} = C_{b,neg} w l_b^2$$

Relación $m = \frac{l_a}{l_b}$	Caso 1	Caso 2	Caso 3	Caso 4	Caso 5	Caso 6	Caso 7	Caso 8	Caso 9
1.00 $C_{a,neg}$ $C_{b,neg}$		0.045 0.045	0.076	0.050 0.050	0.075	0.071	0.071	0.033 0.061	0.061 0.033
0.95 $C_{a,neg}$ $C_{b,neg}$		0.050 0.041	0.072	0.055 0.045	0.079	0.075	0.067	0.038 0.056	0.065 0.029
0.90 $C_{a,neg}$ $C_{b,neg}$		0.055 0.037	0.070	0.060 0.040	0.080	0.079	0.062	0.043 0.052	0.068 0.025
0.85 $C_{a,neg}$ $C_{b,neg}$		0.060 0.031	0.065	0.066 0.034	0.082	0.083	0.057	0.049 0.046	0.072 0.021
0.80 $C_{a,neg}$ $C_{b,neg}$		0.065 0.027	0.061	0.071 0.029	0.083	0.086	0.051	0.055 0.041	0.075 0.017
0.75 $C_{a,neg}$ $C_{b,neg}$		0.069 0.022	0.056	0.076 0.024	0.085	0.088	0.044	0.061 0.036	0.078 0.014
0.70 $C_{a,neg}$ $C_{b,neg}$		0.074 0.017	0.050	0.081 0.019	0.086	0.091	0.038	0.068 0.029	0.081 0.011
0.65 $C_{a,neg}$ $C_{b,neg}$		0.077 0.014	0.043	0.085 0.015	0.087	0.093	0.031	0.074 0.024	0.083 0.008
0.60 $C_{a,neg}$ $C_{b,neg}$		0.081 0.010	0.035	0.089 0.011	0.088	0.095	0.024	0.080 0.018	0.085 0.006
0.55 $C_{a,neg}$ $C_{b,neg}$		0.084 0.007	0.028	0.092 0.008	0.089	0.096	0.019	0.085 0.014	0.086 0.005
0.50 $C_{a,neg}$ $C_{b,neg}$		0.086 0.006	0.022	0.094 0.006	0.090	0.097	0.014	0.089 0.010	0.088 0.003

^a Un borde achurado indica que la losa continúa a través o se encuentra empotrada en el apoyo; un borde sin marcas indica un apoyo donde la resistencia torsional es despreciable.










TABLA 12.4

Coefficientes para momentos positivos debidos a carga muerta en losas^a

$$M_{a, pos, dl} = C_{a, dl} w l_a^2$$

donde w = carga muerta uniforme total

$$M_{b, pos, dl} = C_{b, dl} w l_b^2$$

Relación $m = \frac{l_a}{l_b}$	Caso 1	Caso 2	Caso 3	Caso 4	Caso 5	Caso 6	Caso 7	Caso 8	Caso 9
									
1.00	$C_{a, dl}$ 0.036	$C_{a, dl}$ 0.018	$C_{a, dl}$ 0.018	$C_{a, dl}$ 0.027	$C_{a, dl}$ 0.027	$C_{a, dl}$ 0.033	$C_{a, dl}$ 0.027	$C_{a, dl}$ 0.020	$C_{a, dl}$ 0.023
	$C_{b, dl}$ 0.036	$C_{b, dl}$ 0.018	$C_{b, dl}$ 0.027	$C_{b, dl}$ 0.027	$C_{b, dl}$ 0.018	$C_{b, dl}$ 0.027	$C_{b, dl}$ 0.033	$C_{b, dl}$ 0.023	$C_{b, dl}$ 0.020
0.95	$C_{a, dl}$ 0.040	$C_{a, dl}$ 0.020	$C_{a, dl}$ 0.021	$C_{a, dl}$ 0.030	$C_{a, dl}$ 0.028	$C_{a, dl}$ 0.036	$C_{a, dl}$ 0.031	$C_{a, dl}$ 0.022	$C_{a, dl}$ 0.024
	$C_{b, dl}$ 0.033	$C_{b, dl}$ 0.016	$C_{b, dl}$ 0.025	$C_{b, dl}$ 0.024	$C_{b, dl}$ 0.015	$C_{b, dl}$ 0.024	$C_{b, dl}$ 0.031	$C_{b, dl}$ 0.021	$C_{b, dl}$ 0.017
0.90	$C_{a, dl}$ 0.045	$C_{a, dl}$ 0.022	$C_{a, dl}$ 0.025	$C_{a, dl}$ 0.033	$C_{a, dl}$ 0.029	$C_{a, dl}$ 0.039	$C_{a, dl}$ 0.035	$C_{a, dl}$ 0.025	$C_{a, dl}$ 0.026
	$C_{b, dl}$ 0.029	$C_{b, dl}$ 0.014	$C_{b, dl}$ 0.024	$C_{b, dl}$ 0.022	$C_{b, dl}$ 0.013	$C_{b, dl}$ 0.021	$C_{b, dl}$ 0.028	$C_{b, dl}$ 0.019	$C_{b, dl}$ 0.015
0.85	$C_{a, dl}$ 0.050	$C_{a, dl}$ 0.024	$C_{a, dl}$ 0.029	$C_{a, dl}$ 0.036	$C_{a, dl}$ 0.031	$C_{a, dl}$ 0.042	$C_{a, dl}$ 0.040	$C_{a, dl}$ 0.029	$C_{a, dl}$ 0.028
	$C_{b, dl}$ 0.026	$C_{b, dl}$ 0.012	$C_{b, dl}$ 0.022	$C_{b, dl}$ 0.019	$C_{b, dl}$ 0.011	$C_{b, dl}$ 0.017	$C_{b, dl}$ 0.025	$C_{b, dl}$ 0.017	$C_{b, dl}$ 0.013
0.80	$C_{a, dl}$ 0.056	$C_{a, dl}$ 0.026	$C_{a, dl}$ 0.034	$C_{a, dl}$ 0.039	$C_{a, dl}$ 0.032	$C_{a, dl}$ 0.045	$C_{a, dl}$ 0.045	$C_{a, dl}$ 0.032	$C_{a, dl}$ 0.029
	$C_{b, dl}$ 0.023	$C_{b, dl}$ 0.011	$C_{b, dl}$ 0.020	$C_{b, dl}$ 0.016	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.015	$C_{b, dl}$ 0.022	$C_{b, dl}$ 0.015	$C_{b, dl}$ 0.010
0.75	$C_{a, dl}$ 0.061	$C_{a, dl}$ 0.028	$C_{a, dl}$ 0.040	$C_{a, dl}$ 0.043	$C_{a, dl}$ 0.033	$C_{a, dl}$ 0.048	$C_{a, dl}$ 0.051	$C_{a, dl}$ 0.036	$C_{a, dl}$ 0.031
	$C_{b, dl}$ 0.019	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.018	$C_{b, dl}$ 0.013	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.012	$C_{b, dl}$ 0.020	$C_{b, dl}$ 0.013	$C_{b, dl}$ 0.007
0.70	$C_{a, dl}$ 0.068	$C_{a, dl}$ 0.030	$C_{a, dl}$ 0.046	$C_{a, dl}$ 0.046	$C_{a, dl}$ 0.035	$C_{a, dl}$ 0.051	$C_{a, dl}$ 0.058	$C_{a, dl}$ 0.040	$C_{a, dl}$ 0.033
	$C_{b, dl}$ 0.016	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.016	$C_{b, dl}$ 0.011	$C_{b, dl}$ 0.005	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.017	$C_{b, dl}$ 0.011	$C_{b, dl}$ 0.006
0.65	$C_{a, dl}$ 0.074	$C_{a, dl}$ 0.032	$C_{a, dl}$ 0.054	$C_{a, dl}$ 0.050	$C_{a, dl}$ 0.036	$C_{a, dl}$ 0.054	$C_{a, dl}$ 0.065	$C_{a, dl}$ 0.044	$C_{a, dl}$ 0.034
	$C_{b, dl}$ 0.013	$C_{b, dl}$ 0.006	$C_{b, dl}$ 0.014	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.004	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.014	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.005
0.60	$C_{a, dl}$ 0.081	$C_{a, dl}$ 0.034	$C_{a, dl}$ 0.062	$C_{a, dl}$ 0.053	$C_{a, dl}$ 0.037	$C_{a, dl}$ 0.056	$C_{a, dl}$ 0.073	$C_{a, dl}$ 0.048	$C_{a, dl}$ 0.036
	$C_{b, dl}$ 0.010	$C_{b, dl}$ 0.004	$C_{b, dl}$ 0.011	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.003	$C_{b, dl}$ 0.006	$C_{b, dl}$ 0.012	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.004
0.55	$C_{a, dl}$ 0.088	$C_{a, dl}$ 0.035	$C_{a, dl}$ 0.071	$C_{a, dl}$ 0.056	$C_{a, dl}$ 0.038	$C_{a, dl}$ 0.058	$C_{a, dl}$ 0.081	$C_{a, dl}$ 0.052	$C_{a, dl}$ 0.037
	$C_{b, dl}$ 0.008	$C_{b, dl}$ 0.003	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.005	$C_{b, dl}$ 0.002	$C_{b, dl}$ 0.004	$C_{b, dl}$ 0.009	$C_{b, dl}$ 0.005	$C_{b, dl}$ 0.003
0.50	$C_{a, dl}$ 0.095	$C_{a, dl}$ 0.037	$C_{a, dl}$ 0.080	$C_{a, dl}$ 0.059	$C_{a, dl}$ 0.039	$C_{a, dl}$ 0.061	$C_{a, dl}$ 0.089	$C_{a, dl}$ 0.056	$C_{a, dl}$ 0.038
	$C_{b, dl}$ 0.006	$C_{b, dl}$ 0.002	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.004	$C_{b, dl}$ 0.001	$C_{b, dl}$ 0.003	$C_{b, dl}$ 0.007	$C_{b, dl}$ 0.004	$C_{b, dl}$ 0.002

^a Un borde achurado indica que la losa continúa a través o se encuentra empotrada en el apoyo; un borde sin marcas indica un apoyo donde la resistencia torsional es despreciable.










TABLA 12.5

Coefficientes para momentos positivos debidos a carga viva en losas^a

$$M_{a, pos, ll} = C_{a, ll} w l_a^2$$

donde w = carga viva uniforme total










$$M_{b, pos, ll} = C_{b, ll} w l_b^2$$

Relación $m = \frac{l_a}{l_b}$	Caso 1	Caso 2	Caso 3	Caso 4	Caso 5	Caso 6	Caso 7	Caso 8	Caso 9
									
1.00	$C_{a, ll}$ 0.036	$C_{a, ll}$ 0.027	$C_{a, ll}$ 0.027	$C_{a, ll}$ 0.032	$C_{a, ll}$ 0.032	$C_{a, ll}$ 0.035	$C_{a, ll}$ 0.032	$C_{a, ll}$ 0.028	$C_{a, ll}$ 0.030
	$C_{b, ll}$ 0.036	$C_{b, ll}$ 0.027	$C_{b, ll}$ 0.032	$C_{b, ll}$ 0.032	$C_{b, ll}$ 0.027	$C_{b, ll}$ 0.032	$C_{b, ll}$ 0.035	$C_{b, ll}$ 0.030	$C_{b, ll}$ 0.028
0.95	$C_{a, ll}$ 0.040	$C_{a, ll}$ 0.030	$C_{a, ll}$ 0.031	$C_{a, ll}$ 0.035	$C_{a, ll}$ 0.034	$C_{a, ll}$ 0.038	$C_{a, ll}$ 0.036	$C_{a, ll}$ 0.031	$C_{a, ll}$ 0.032
	$C_{b, ll}$ 0.033	$C_{b, ll}$ 0.025	$C_{b, ll}$ 0.029	$C_{b, ll}$ 0.029	$C_{b, ll}$ 0.024	$C_{b, ll}$ 0.029	$C_{b, ll}$ 0.032	$C_{b, ll}$ 0.027	$C_{b, ll}$ 0.025
0.90	$C_{a, ll}$ 0.045	$C_{a, ll}$ 0.034	$C_{a, ll}$ 0.035	$C_{a, ll}$ 0.039	$C_{a, ll}$ 0.037	$C_{a, ll}$ 0.042	$C_{a, ll}$ 0.040	$C_{a, ll}$ 0.035	$C_{a, ll}$ 0.036
	$C_{b, ll}$ 0.029	$C_{b, ll}$ 0.022	$C_{b, ll}$ 0.027	$C_{b, ll}$ 0.026	$C_{b, ll}$ 0.021	$C_{b, ll}$ 0.025	$C_{b, ll}$ 0.029	$C_{b, ll}$ 0.024	$C_{b, ll}$ 0.022
0.85	$C_{a, ll}$ 0.050	$C_{a, ll}$ 0.037	$C_{a, ll}$ 0.040	$C_{a, ll}$ 0.043	$C_{a, ll}$ 0.041	$C_{a, ll}$ 0.046	$C_{a, ll}$ 0.045	$C_{a, ll}$ 0.040	$C_{a, ll}$ 0.039
	$C_{b, ll}$ 0.026	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.024	$C_{b, ll}$ 0.023	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.022	$C_{b, ll}$ 0.026	$C_{b, ll}$ 0.022	$C_{b, ll}$ 0.020
0.80	$C_{a, ll}$ 0.056	$C_{a, ll}$ 0.041	$C_{a, ll}$ 0.045	$C_{a, ll}$ 0.048	$C_{a, ll}$ 0.044	$C_{a, ll}$ 0.051	$C_{a, ll}$ 0.051	$C_{a, ll}$ 0.044	$C_{a, ll}$ 0.042
	$C_{b, ll}$ 0.023	$C_{b, ll}$ 0.017	$C_{b, ll}$ 0.022	$C_{b, ll}$ 0.020	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.023	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.017
0.75	$C_{a, ll}$ 0.061	$C_{a, ll}$ 0.045	$C_{a, ll}$ 0.051	$C_{a, ll}$ 0.052	$C_{a, ll}$ 0.047	$C_{a, ll}$ 0.055	$C_{a, ll}$ 0.056	$C_{a, ll}$ 0.049	$C_{a, ll}$ 0.046
	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.014	$C_{b, ll}$ 0.019	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.013	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.020	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.013
0.70	$C_{a, ll}$ 0.068	$C_{a, ll}$ 0.049	$C_{a, ll}$ 0.057	$C_{a, ll}$ 0.057	$C_{a, ll}$ 0.051	$C_{a, ll}$ 0.060	$C_{a, ll}$ 0.063	$C_{a, ll}$ 0.054	$C_{a, ll}$ 0.050
	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.012	$C_{b, ll}$ 0.016	$C_{b, ll}$ 0.014	$C_{b, ll}$ 0.011	$C_{b, ll}$ 0.013	$C_{b, ll}$ 0.017	$C_{b, ll}$ 0.014	$C_{b, ll}$ 0.011
0.65	$C_{a, ll}$ 0.074	$C_{a, ll}$ 0.053	$C_{a, ll}$ 0.064	$C_{a, ll}$ 0.062	$C_{a, ll}$ 0.055	$C_{a, ll}$ 0.064	$C_{a, ll}$ 0.070	$C_{a, ll}$ 0.059	$C_{a, ll}$ 0.054
	$C_{b, ll}$ 0.013	$C_{b, ll}$ 0.010	$C_{b, ll}$ 0.014	$C_{b, ll}$ 0.011	$C_{b, ll}$ 0.009	$C_{b, ll}$ 0.010	$C_{b, ll}$ 0.014	$C_{b, ll}$ 0.011	$C_{b, ll}$ 0.009
0.60	$C_{a, ll}$ 0.081	$C_{a, ll}$ 0.058	$C_{a, ll}$ 0.071	$C_{a, ll}$ 0.067	$C_{a, ll}$ 0.059	$C_{a, ll}$ 0.068	$C_{a, ll}$ 0.077	$C_{a, ll}$ 0.065	$C_{a, ll}$ 0.059
	$C_{b, ll}$ 0.010	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.011	$C_{b, ll}$ 0.009	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.008	$C_{b, ll}$ 0.011	$C_{b, ll}$ 0.009	$C_{b, ll}$ 0.007
0.55	$C_{a, ll}$ 0.088	$C_{a, ll}$ 0.062	$C_{a, ll}$ 0.080	$C_{a, ll}$ 0.072	$C_{a, ll}$ 0.063	$C_{a, ll}$ 0.073	$C_{a, ll}$ 0.085	$C_{a, ll}$ 0.070	$C_{a, ll}$ 0.063
	$C_{b, ll}$ 0.008	$C_{b, ll}$ 0.006	$C_{b, ll}$ 0.009	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.005	$C_{b, ll}$ 0.006	$C_{b, ll}$ 0.009	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.006
0.50	$C_{a, ll}$ 0.095	$C_{a, ll}$ 0.066	$C_{a, ll}$ 0.088	$C_{a, ll}$ 0.077	$C_{a, ll}$ 0.067	$C_{a, ll}$ 0.078	$C_{a, ll}$ 0.092	$C_{a, ll}$ 0.076	$C_{a, ll}$ 0.067
	$C_{b, ll}$ 0.006	$C_{b, ll}$ 0.004	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.005	$C_{b, ll}$ 0.004	$C_{b, ll}$ 0.005	$C_{b, ll}$ 0.007	$C_{b, ll}$ 0.005	$C_{b, ll}$ 0.004

^a Un borde achurado indica que la losa continúa a través o se encuentra empotrada en el apoyo; un borde sin marcas indica un apoyo donde la resistencia torsional es despreciable.

TABLA 12.6

Relación de la carga W que se transmite en las direcciones l_a y l_b para calcular el cortante en la losa y las cargas en los apoyos*

Relación $m = \frac{l_a}{l_b}$	Caso 1	Caso 2	Caso 3	Caso 4	Caso 5	Caso 6	Caso 7	Caso 8	Caso 9
									
1.00 $\frac{W_a}{W_b}$	0.50 0.50	0.50 0.50	0.17 0.83	0.50 0.50	0.83 0.17	0.71 0.29	0.29 0.71	0.33 0.67	0.67 0.33
0.95 $\frac{W_a}{W_b}$	0.55 0.45	0.55 0.45	0.20 0.80	0.55 0.45	0.86 0.14	0.75 0.25	0.33 0.67	0.38 0.62	0.71 0.29
0.90 $\frac{W_a}{W_b}$	0.60 0.40	0.60 0.40	0.23 0.77	0.60 0.40	0.88 0.12	0.79 0.21	0.38 0.62	0.43 0.57	0.75 0.25
0.85 $\frac{W_a}{W_b}$	0.66 0.34	0.66 0.34	0.28 0.72	0.66 0.34	0.90 0.10	0.83 0.17	0.43 0.57	0.49 0.51	0.79 0.21
0.80 $\frac{W_a}{W_b}$	0.71 0.29	0.71 0.29	0.33 0.67	0.71 0.29	0.92 0.08	0.86 0.14	0.49 0.51	0.55 0.45	0.83 0.17
0.75 $\frac{W_a}{W_b}$	0.76 0.24	0.76 0.24	0.39 0.61	0.76 0.24	0.94 0.06	0.88 0.12	0.56 0.44	0.61 0.39	0.86 0.14
0.70 $\frac{W_a}{W_b}$	0.81 0.19	0.81 0.19	0.45 0.55	0.81 0.19	0.95 0.05	0.91 0.09	0.62 0.38	0.68 0.32	0.89 0.11
0.65 $\frac{W_a}{W_b}$	0.85 0.15	0.85 0.15	0.53 0.47	0.85 0.15	0.96 0.04	0.93 0.07	0.69 0.31	0.74 0.26	0.92 0.08
0.60 $\frac{W_a}{W_b}$	0.89 0.11	0.89 0.11	0.61 0.39	0.89 0.11	0.97 0.03	0.95 0.05	0.76 0.24	0.80 0.20	0.94 0.06
0.55 $\frac{W_a}{W_b}$	0.92 0.08	0.92 0.08	0.69 0.31	0.92 0.08	0.98 0.02	0.96 0.04	0.81 0.19	0.85 0.15	0.95 0.05
0.50 $\frac{W_a}{W_b}$	0.94 0.06	0.94 0.06	0.76 0.24	0.94 0.06	0.99 0.01	0.97 0.03	0.86 0.14	0.89 0.11	0.97 0.03

* Un borde achurado indica que la losa continúa a través o se encuentra empotrada en el apoyo; un borde sin marcas indica un apoyo donde la resistencia torsional es despreciable.