DISEÑO A TRACCIÓN

Cuantía de balance, máxima y mínima

f'c (MPa)	β_1	fy (MPa)							
		420				280			
		ρ_b	ρ_{max} $\varepsilon_t = 0.004$	ρ $\varepsilon_t = 0.005$	ρ_{min}	ρ_b	ρ_{max} $\varepsilon_t = 0.004$	ρ $\varepsilon_t = 0.005$	ρ_{min}
20	0.85	0.0202	0.0147	0.0129	0.0033	0.0352	0.0221	0.0194	0.0050
25	0.85	0.0253	0.0184	0.0161	0.0033	0.0440	0.0276	0.0242	0.0050
30	0.85	0.0304	0.0221	0.0194	0.0033	0.0528	0.0332	0.0290	0.0050
35	0.81	0.0338	0.0246	0.0215	0.0035	0.0587	0.0369	0.0323	0.0053
40	0.77	0.0367	0.0267	0.0234	0.0038	0.0638	0.0401	0.0351	0.0056
45	0.73	0.0391	0.0285	0.0249	0.0040	0.0680	0.0427	0.0374	0.0060
50	0.69	0.0411	0.0299	0.0262	0.0042	0.0714	0.0449	0.0393	0.0063
55	0.65	0.0426	0.0310	0.0271	0.0044	0.0740	0.0465	0.0407	0.0066
60	0.65	0.0464	0.0338	0.0296	0.0046	0.0807	0.0507	0.0444	0.0069

$$\beta_1 = \begin{cases} 0.85 & f'_c \le 30 MPa \\ 0.85 - 0.008 \cdot (f'_c - 30) & 30 MPa < f'_c \le 55 MPa \\ 0.65 & f'_c > 55 MPa \end{cases}$$

$$\rho_b = 0.85 \cdot \beta_1 \cdot \frac{f'_c}{f_y} \cdot \frac{600}{600 + f_y}$$

$$\rho = 0.85 \cdot \beta_1 \cdot \frac{f'_c}{f_y} \cdot \frac{\varepsilon_u}{\varepsilon_u + \varepsilon_t}$$

$$\rho_{\min} = \frac{0.25\sqrt{f'_c}}{f_y} \ge \frac{1.4}{f_y} \qquad (f_y \text{ en } MPa)$$