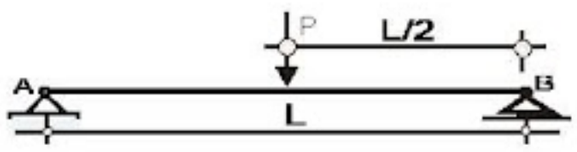
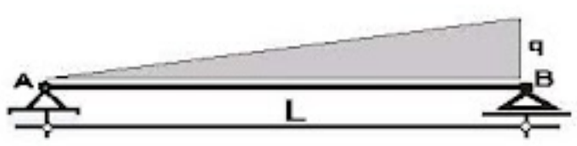
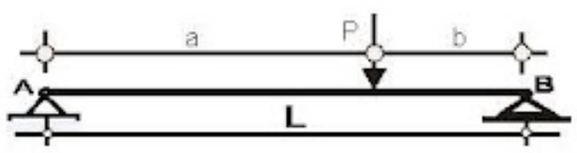
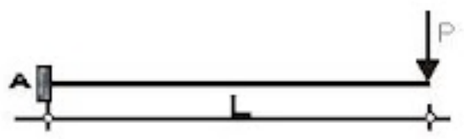
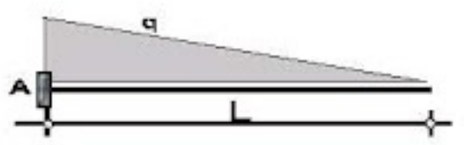
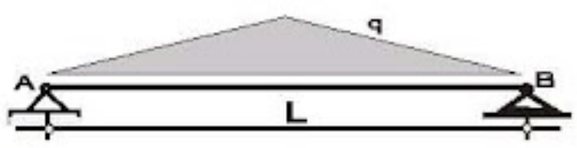
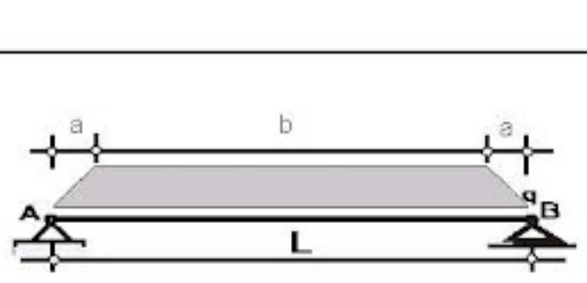
VIGAS DE EJE RECTO ISOSTÁTICAS

TABLAS DE M_0 - R - f

TIPO DE VIGA Y CARGA ACTUANTE	REACCIONES DE VÍNCULO	M_0 max en x_0	FLECHA MÁX. en x_1
	$R_A = R_B = q \frac{L}{2}$	$\frac{q L^2}{8}$ $x_0 = \frac{L}{2}$	$f_{max} = \frac{5}{384} q \frac{L^4}{EI}$ $x_1 = \frac{L}{2}$
	$R_A = R_B = \frac{P}{2}$	$\frac{P L}{4}$ $x_0 = \frac{L}{2}$	$f_{max} = \frac{1}{48} \frac{PL^3}{EI}$ $x_1 = \frac{L}{2}$
	$R_A = R_B = P$	P . a x_0 = de a hasta L - 2a	$f_{max} = \frac{Pa(3L^2 - 4a^2)}{24 EI}$ $x_1 = \frac{L}{2}$
	$R_A = \frac{1}{6} q L$ $R_B = \frac{1}{3} q L$	q $\frac{qL^2}{2}$ $x_0 = 0{,}577\ L$	$f_{max} = \frac{0{,}00652\ qL^4}{EI}$ $x_1 = 0{,}519\ L$
	$R_A = \frac{P b}{L}$ $R_B = \frac{P a}{L}$	$P \frac{ab}{L}$ $x_0 = a$	
	$R_A = P$	P . L $x_0 = 0$	$f_{max} = \frac{1}{3} \frac{P L^3}{EI}$ $x_1 = L$
	$R_A = qL$	$\frac{q L^2}{2}$ $x_0 = 0$	$f_{max} = \frac{1}{8} \frac{q L^4}{EI}$ $x_1 = L$
	$R_A = \frac{q L}{2}$	$\frac{q L^2}{6}$ $x_0 = 0$	$f_{max} = \frac{1}{30} \frac{q L^4}{E I}$ $x_1 = L$
	$R_A = R_B = \frac{q L}{4}$	$\frac{q L^2}{12}$ $x_0 = \frac{L}{2}$	$f_{max} = \frac{1}{60} \frac{P L^3}{E I}$ $x_1 = \frac{L}{2}$
	$R_A = R_B = q \frac{(L - a)}{2}$	$\frac{q L^2}{24} (3 - 4\alpha^2)$ $x_0 = \frac{L}{2}$ $\alpha = \frac{a}{L}$	

VALORES ADMISIBLES DE FLECHAS

MADERAS

Vigas para entrepisos de viviendas, oficinas: $f \leq \frac{L}{300}$

Vigas para techos (correas, cabios): $f \leq \frac{L}{200}$

Vigas en voladizo: $f \leq \frac{L}{500}$

ACERO

Vigas para entrepisos: $f \leq \frac{L}{400}$

Vigas para techos: $f \leq \frac{L}{300}$

Vigas en voladizo $f \leq \frac{L}{200}$

HORMIGÓN ARMADO

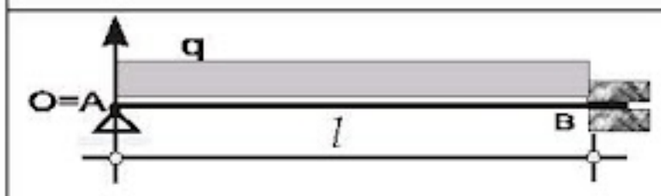
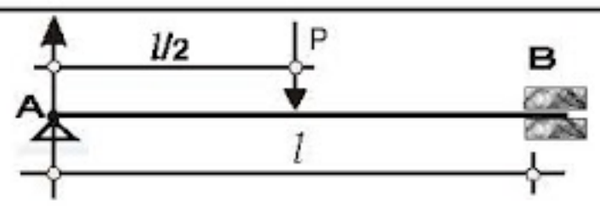
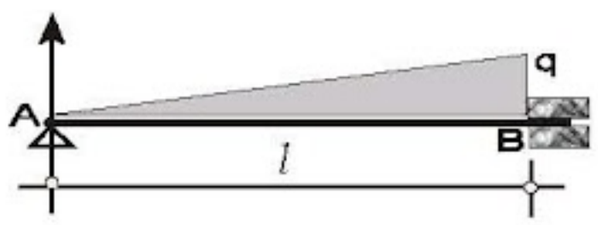
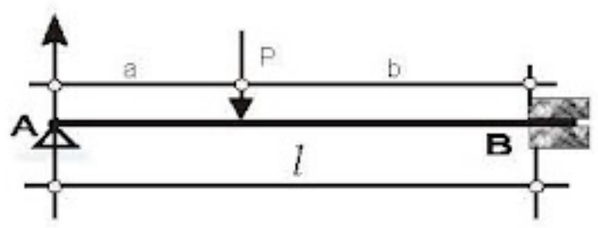
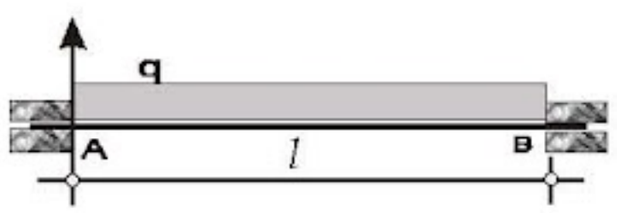
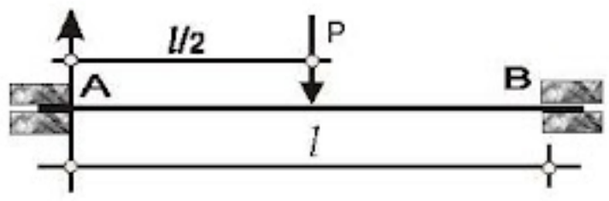
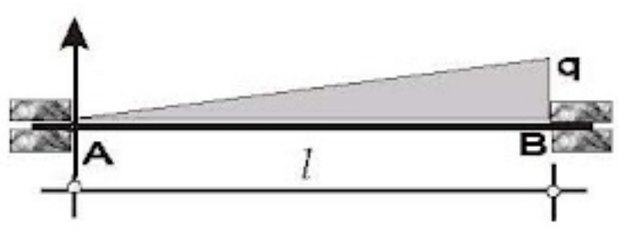
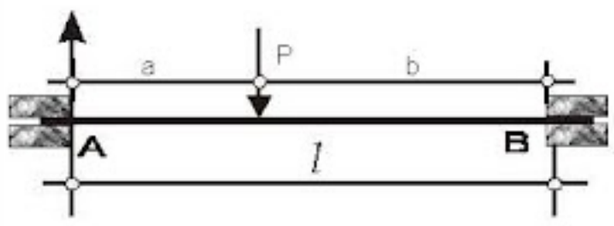
Vigas y losas para techos con cielorrasos aplicados o entrepisos que soportan tabiques u otras construcciones: $f \leq \frac{L}{300}$ a $\frac{L}{500}$

La adopción de uno u otro valor de flecha estará dada por la importancia del local y por la necesidad de preservarlas de deformaciones que las afecten en exceso.

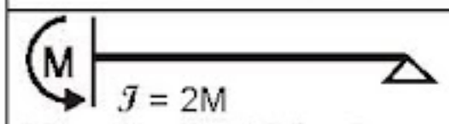
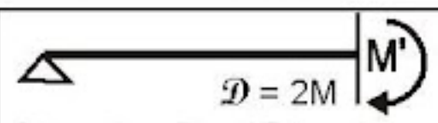
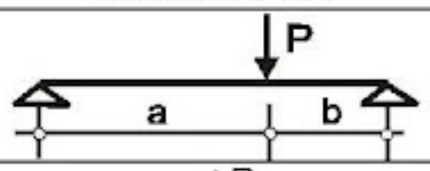
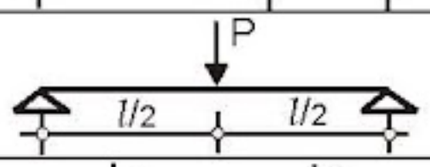
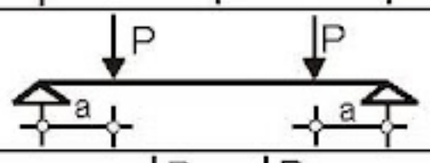
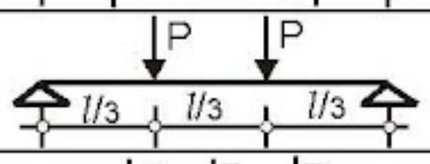
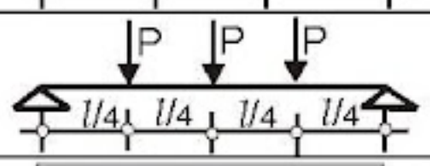
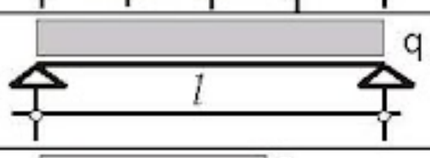
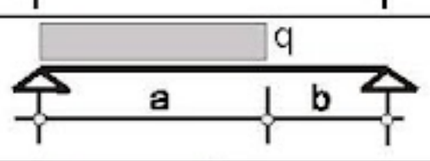
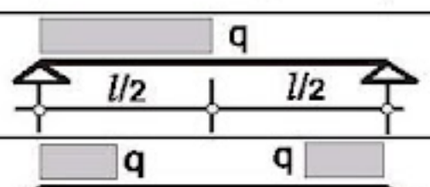
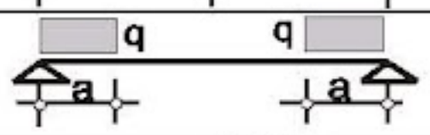
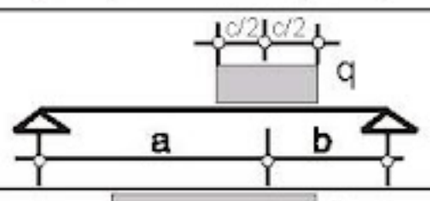
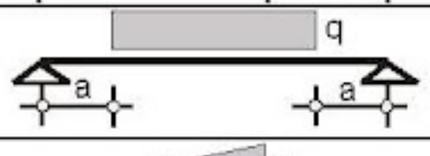
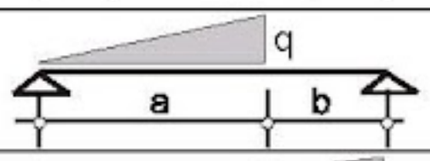
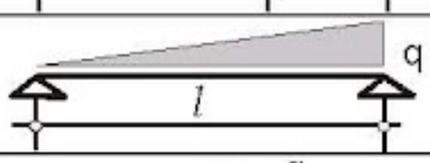
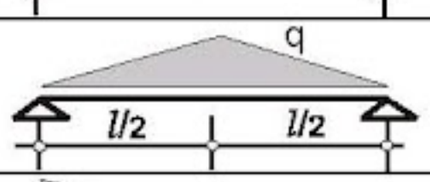
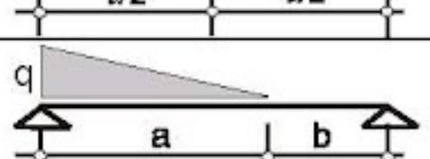
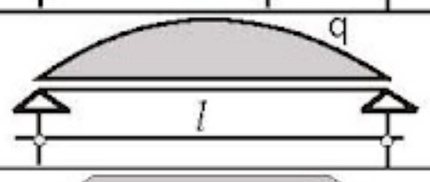
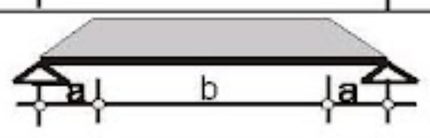
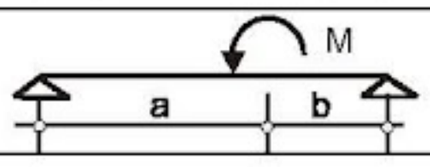
Bibliografía: Goldenhorn

VIGAS DE EJE RECTO HIPERESTÁTICAS

Tabla de Mmax, R y fadm

Tipo de viga y carga actuante	Reacciones de vínculo	Momento flector en x_0 y en empotramientos	Flecha en absisa x_1
	$R_A = 3/8\ ql$ $R_B = 5/8\ ql$	$M_{max} = \frac{9}{128} ql^2$ $x_0 = 3/8\,l$ $M_B = -ql^2/8$	$f_{max} = \frac{ql^4}{185\ EJ}$ $x_1 = 0{,}4215\,l$
	$R_A = \frac{5}{16}P$ $R_B = \frac{11}{16}P$	$M_{max} = \frac{5}{32}Pl$ $x_0 = 0{,}5\,l$ $M_B = -\frac{3}{16}\ Pl$	$f_{max} = \frac{7Pl^3}{751\ EJ}$ $x_1 = 0{,}447\,l$
	$R_A = \frac{ql}{10}$ $R_B = \frac{ql}{2{,}5}$	$M_{max} = \frac{ql^2}{33{,}6}$ $x_0 = 0{,}447\,l$ $M_B = -\frac{ql^2}{15}$	$f_{max} = \frac{ql^4}{419\ EJ}$ $x_1 = 0{,}447\,l$
	$R_A = \frac{P}{2l}(2l - 3a + \frac{a^3}{l^2})$ $R_B = \frac{P}{2l}(3a + \frac{a^3}{l^2})$	$M_{max} = R_A a$ $x_0 = a$ $M_B = -\frac{Pa(l^2 - a^2)}{2l^2}$	
	$R_A = R_B = \frac{ql}{2}$	$M_{max} = \frac{ql^2}{24}$ $x_0 = 0{,}5\,l$ $M_A = M_B = -\frac{ql^2}{12}$	$f_{max} = \frac{ql^4}{384\ EJ}$ $x_1 = 0{,}5\,l$
	$R_A = R_B = P/2$	$M_{max} = \frac{Pl}{8}$ $x_0 = 0{,}5\,l$ $M_A = M_B = -\frac{Pl}{8}$	$f_{max} = \frac{Pl^3}{192\ EJ}$ $x_1 = 0{,}5\,l$
	$R_A = 0{,}15ql$ $R_B = 0{,}35ql$	$M_{max} = 0{,}0215\ ql^2$ $x_0 = 0{,}558\,l$ $M_A = -\frac{ql}{30};\ M_B = -\frac{ql}{20}$	$f_{max} = \frac{ql^4}{764\ EJ}$ $x_1 = 0{,}515\,l$
	$R_A = \frac{Pb}{l^3}(l^2 - a^2 + ab)$ $R_B = \frac{Pa}{l^3}(l^2 - b^2 + ab)$	$M_{max} = \frac{2Pa^2b^2}{l^3}$ $x_0 = a$	$M_A = -\frac{Pab^2}{l^2}$ $M_B = -\frac{Pa^2b}{l^2}$

MOMENTOS DE EMPOTRAMIENTO PARA PIEZAS DE J CTE.

	EMPOTRAMIENTO EN UN APOYO		EMPOTRAMIENTO EN AMBOS APOYOS	
	 $\mathcal{I} = 2M$ Siendo $\mathcal{I}$ el término de carga izquierdo.	 $\mathcal{D} = 2M$ Siendo $\mathcal{D}$ el término de carga derecho.		
CARGAS	M	M'	M	M'
	$\frac{P\,ab}{2\,l^2}(l+b)$	$\frac{P\,ab}{2\,l^2}(l+a)$	$\frac{P\,ab}{l^2}b$	$\frac{P\,ab}{l^2}a$
	$\frac{3}{16}Pl$	$\frac{3}{16}Pl$	$\frac{1}{8}Pl$	$\frac{1}{8}Pl$
	$\frac{3}{2}Pa\,(1-\frac{a}{l})$	$\frac{3}{2}Pa\,(1-\frac{a}{l})$	$Pa\,(1-\frac{a}{l})$	$Pa\,(1-\frac{a}{l})$
	$\frac{1}{3}Pl$	$\frac{1}{3}Pl$	$\frac{2}{9}Pl$	$\frac{2}{9}Pl$
	$\frac{15}{32}Pl$	$\frac{15}{32}Pl$	$\frac{5}{16}Pl$	$\frac{5}{16}Pl$
	$\frac{1}{8}ql^2$	$\frac{1}{8}ql^2$	$\frac{1}{12}ql^2$	$\frac{1}{12}ql^2$
	$\frac{q\,a^2}{8}(2-\frac{a}{l})^2$	$\frac{q\,a^2}{8}(2-\frac{a^2}{l^2})$	$\frac{q\,a^2}{12}(6-8\frac{a}{l}+3\frac{a^2}{l^2})$	$\frac{q\,a^2}{12}(4\frac{a}{l}-3\frac{a^2}{l^2})$
	$\frac{9}{128}ql^2$	$\frac{7}{128}ql^2$	$\frac{11}{192}ql^2$	$\frac{5}{192}ql^2$
	$\frac{qa^2}{4}(3-2\frac{a}{l})$	$\frac{qa^2}{4}(3-2\frac{a}{l})$	$\frac{qa^2}{6}(3-2\frac{a}{l})$	$\frac{qa^2}{6}(3-2\frac{a}{l})$
	$\frac{q\,abc}{2\,l^2}(l+b-\frac{1}{4}\frac{c^2}{a})$	$\frac{q\,abc}{2\,l^2}(l+a-\frac{1}{4}\frac{c^2}{a})$	$\frac{q\,c}{l^2}\left[ab^2+\frac{c^2}{12}(l-3b)\right]$	$\frac{q\,c}{l^2}\left[a^2b+\frac{c^2}{12}(l-3a)\right]$
	$\frac{q\,la}{16}(3-\frac{a^2}{l^2})$	$\frac{q\,la}{16}(3-\frac{a^2}{l^2})$	$\frac{q\,la}{24}(3-\frac{a^2}{l^2})$	$\frac{q\,la}{24}(3-\frac{a^2}{l^2})$
	$\frac{q\,a^2}{120}(40-45\frac{a}{l}+12\frac{a^2}{l^2})$	$\frac{q\,a^2}{60}(10-6\frac{a^2}{l^2})$	$\frac{q\,a^2}{30}(10-15\frac{a}{l}+6\frac{a^2}{l^2})$	$\frac{q\,a^2}{20}(5\frac{a}{l}-4\frac{a^2}{l^2})$
	$\frac{7}{120}q\,l^2$	$\frac{1}{15}q\,l^2$	$\frac{1}{30}q\,l^2$	$\frac{1}{20}q\,l^2$
	$\frac{5}{64}q\,l^2$	$\frac{5}{64}q\,l^2$	$\frac{5}{94}q\,l^2$	$\frac{5}{94}q\,l^2$
	$\frac{q\,a^2}{120}(20-15\frac{a}{l}+3\frac{a^2}{l^2})$	$\frac{q\,a^2}{120}(10-3\frac{a^2}{l^2})$	$\frac{q\,a^2}{60}(10-10\frac{a}{l}+3\frac{a^2}{l^2})$	$\frac{q\,a^2}{60}(5\frac{a}{l}-3\frac{a^2}{l^2})$
	$\frac{1}{10}q\,l^2$	$\frac{1}{10}q\,l^2$	$\frac{1}{15}q\,l^2$	$\frac{1}{15}q\,l^2$
	$\frac{q\,l}{64}(l+b)(5-\frac{b^2}{l^2})$	$\frac{q\,l}{64}(l+b)(5-\frac{b^2}{l^2})$	$\frac{q\,l}{96}(l+b)(5-\frac{b^2}{l^2})$	$\frac{q\,l}{96}(l+b)(5-\frac{b^2}{l^2})$
	$\frac{M}{2}(1-3\frac{b^2}{l^2})$	$\frac{M}{2}(1-3\frac{a^2}{l^2})$	$\frac{M\,b}{l}(2-3\frac{b}{l})$	$\frac{M\,a}{l}(2-3\frac{a}{l})$