



ESTRUTURAS METÁLICAS

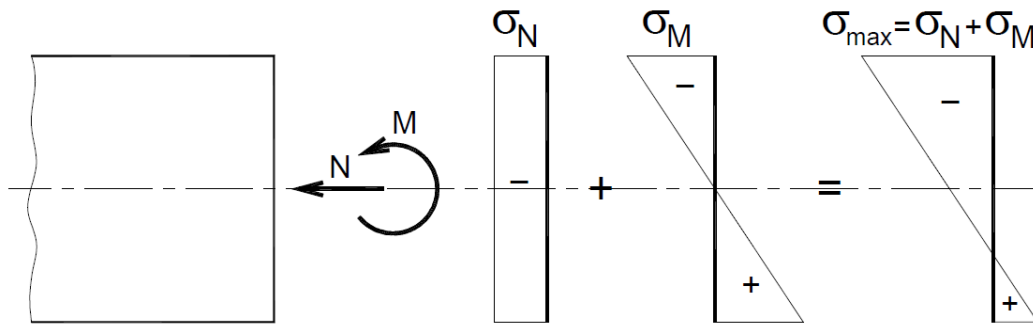
DIMENSIONAMENTO SEGUNDO A
NBR-8800:2008

Barras em Flexão Composta

Prof Moniz de Aragão – Maj

Peças em Flexão Composta

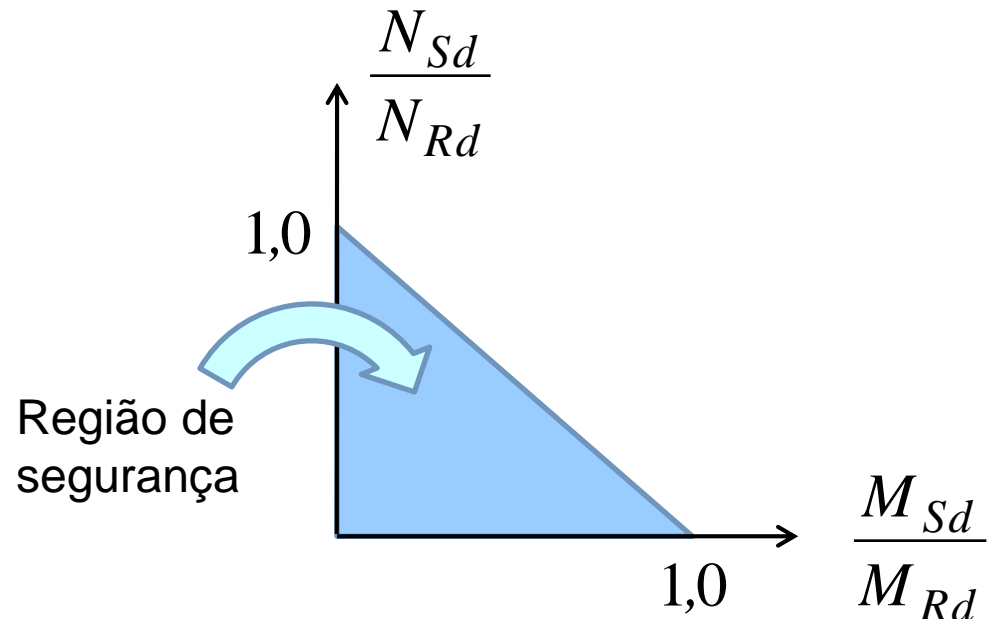
Flexão Composta: **MODELO ELÁSTICO**



$$\Rightarrow \sigma_N + \sigma_M \leq f_y$$

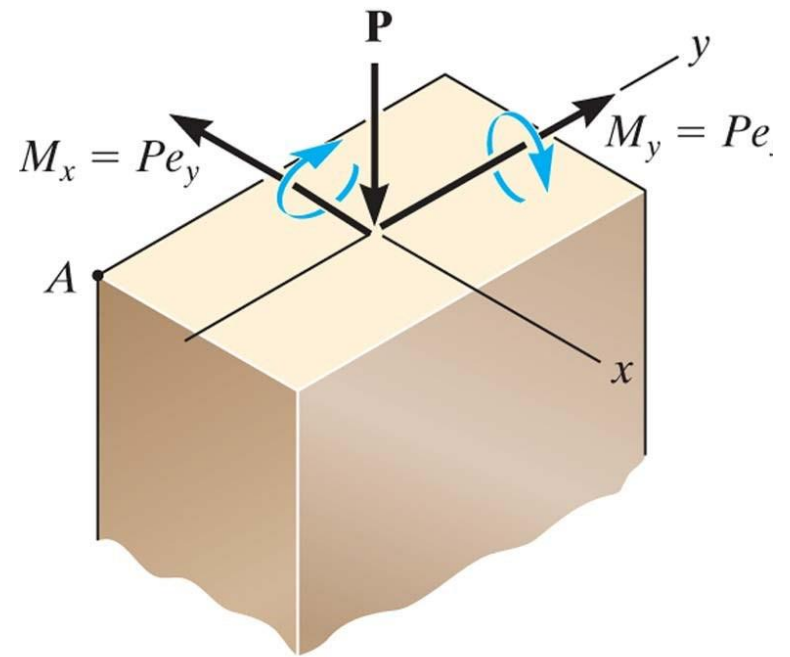
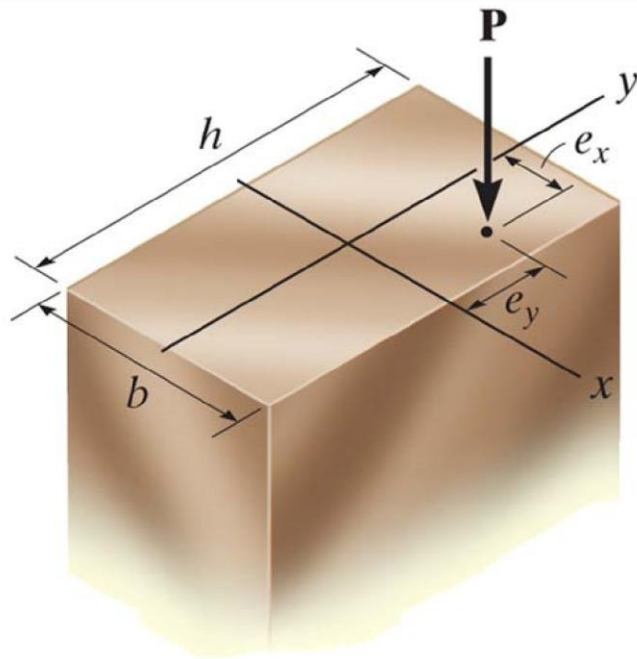
$$\Rightarrow \frac{N_{Sd}}{Af_y} + \frac{M_{Sd}}{Wf_y} \leq 1,0$$

$$\Rightarrow \frac{N_{Sd}}{N_{Rd}} + \frac{M_{Sd}}{M_{Rd}} \leq 1,0$$



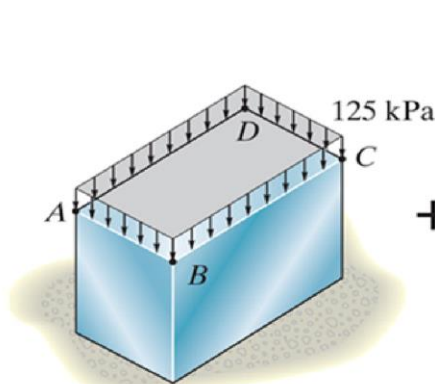
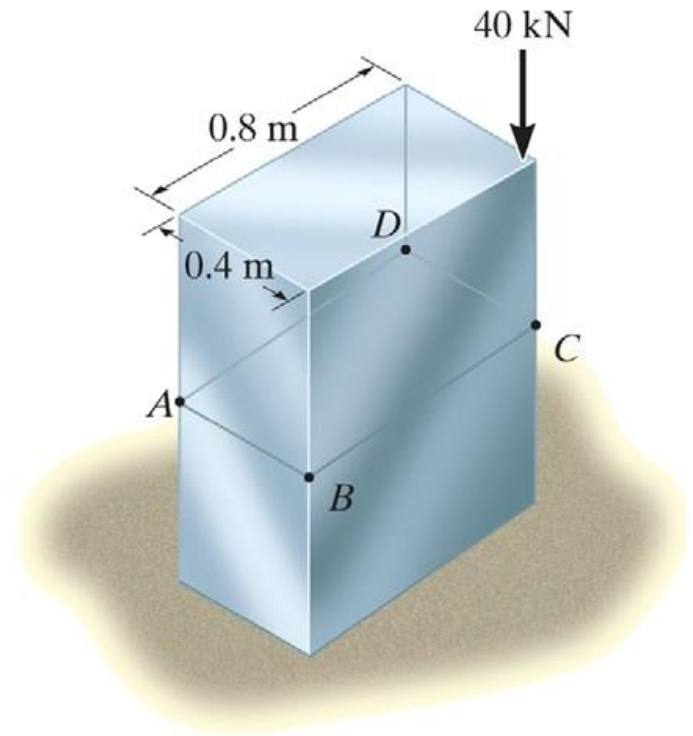
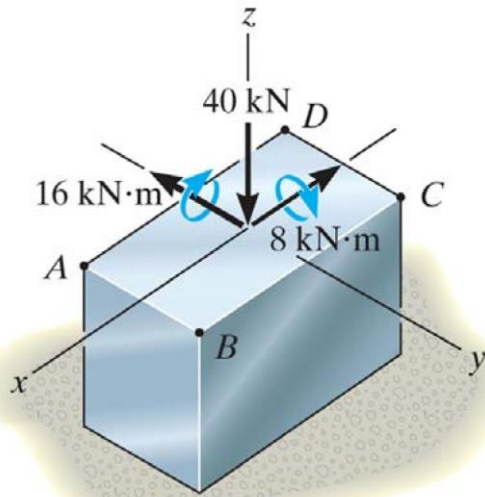
Peças em Flexão Composta

Flexão Composta Oblíqua:

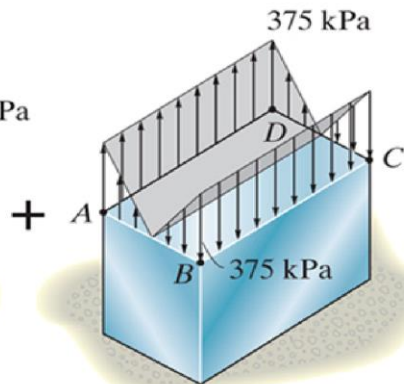


Peças em Flexão Composta Oblíqua

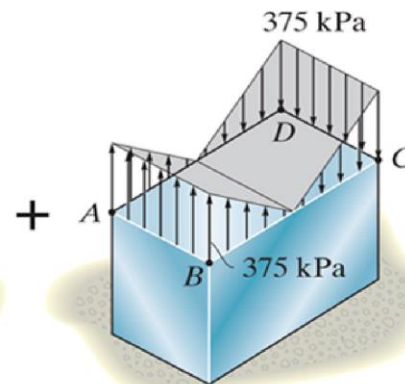
Tensões:



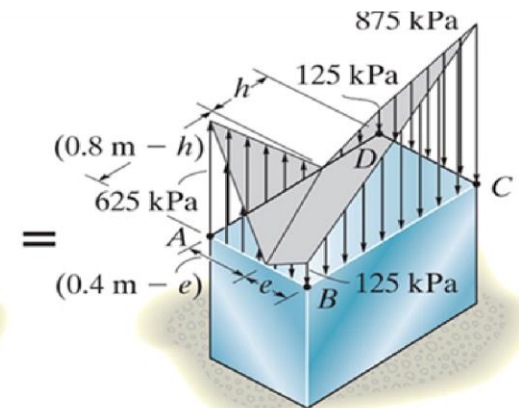
Normal force (40 kN)



Bending moment (8 kN·m)



Bending moment (16 kN·m)



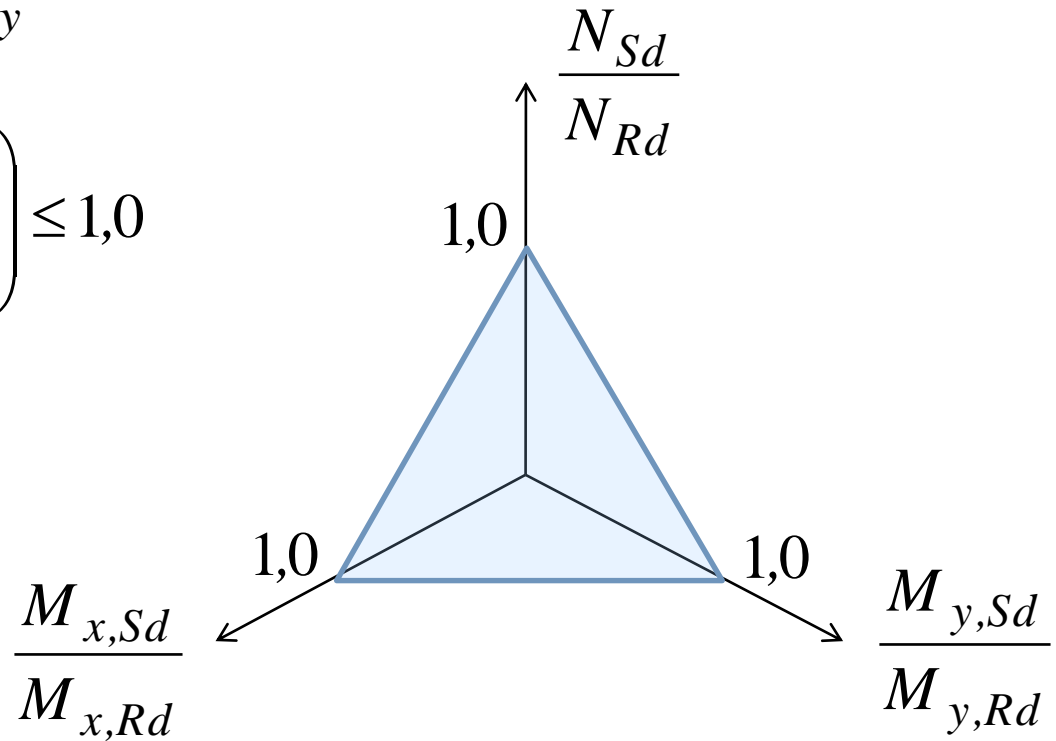
Combined loading

Peças em Flexão Composta

Flexão Composta Oblíqua: **MODELO ELÁSTICO**

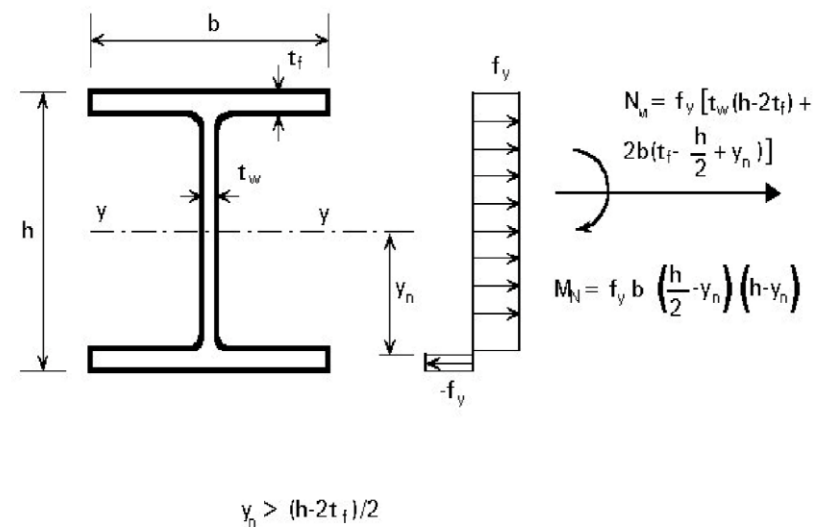
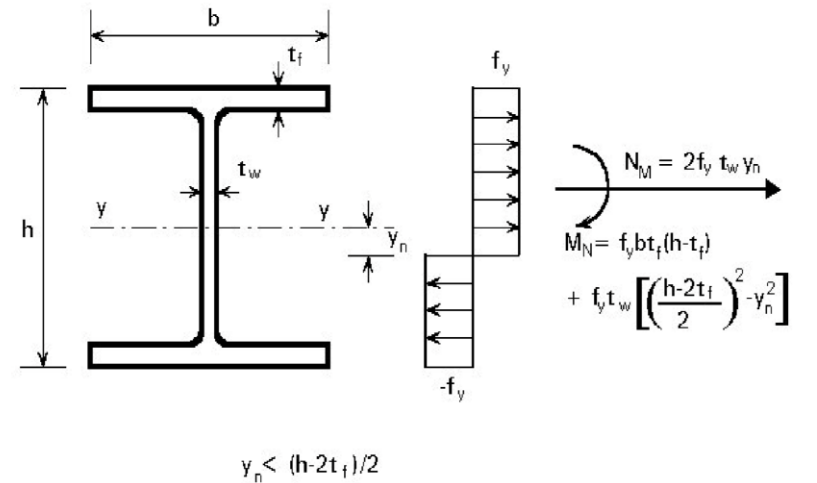
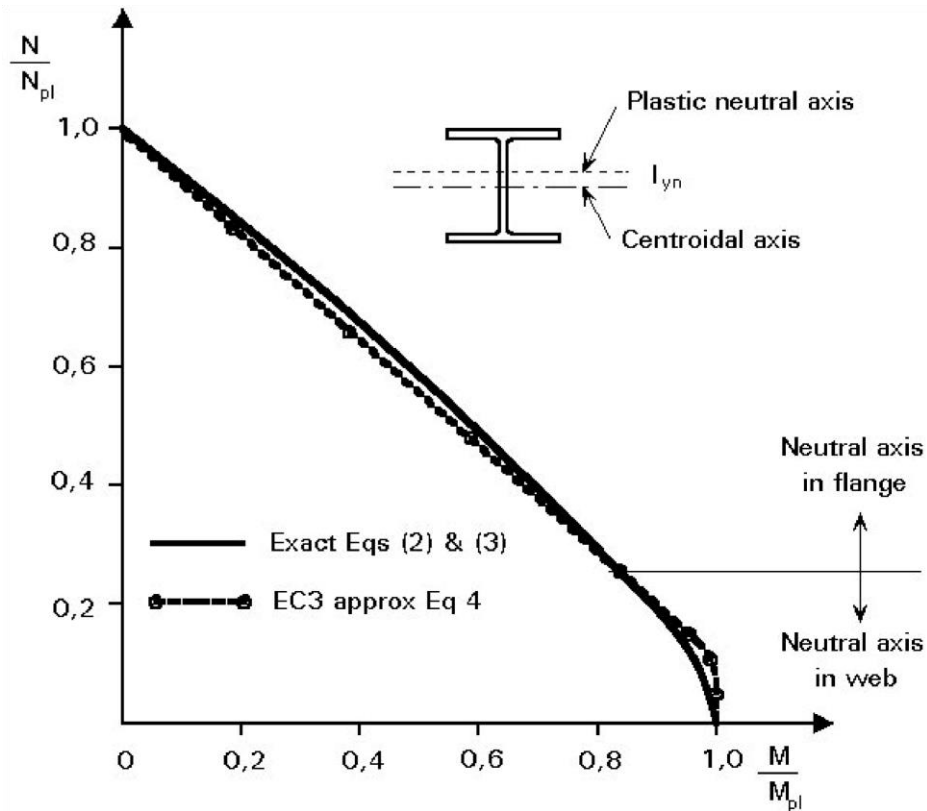
$$\Rightarrow \sigma_N + \sigma_{M_x} + \sigma_{M_y} \leq f_y$$

$$\Rightarrow \frac{N_{Sd}}{N_{Rd}} + \left(\frac{M_{x,Sd}}{M_{x,Rd}} + \frac{M_{y,Sd}}{M_{y,Rd}} \right) \leq 1,0$$



Peças em Flexão Composta

MODELO PLÁSTICO

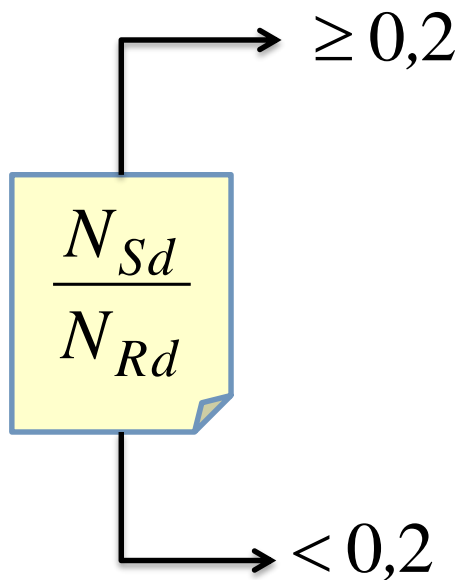


Peças em Flexão Composta

NBR 8800:2008

- Item 5.5.1.2 – Atuação simultânea de momento fletor e carga axial

Estados limites: **Plastificação e Flambagem**



$$\Rightarrow \frac{N_{Sd}}{N_{Rd}} + \frac{8}{9} \left(\frac{M_{x,Sd}}{M_{x,Rd}} + \frac{M_{y,Sd}}{M_{y,Rd}} \right) \leq 1,0$$

$$\Rightarrow \frac{N_{Sd}}{2N_{Rd}} + \left(\frac{M_{x,Sd}}{M_{x,Rd}} + \frac{M_{y,Sd}}{M_{y,Rd}} \right) \leq 1,0$$

Peças em Flexão Composta

NBR 8800:2008

- Item 5.5.1.2 – Atuação simultânea de momento fletor e carga axial

