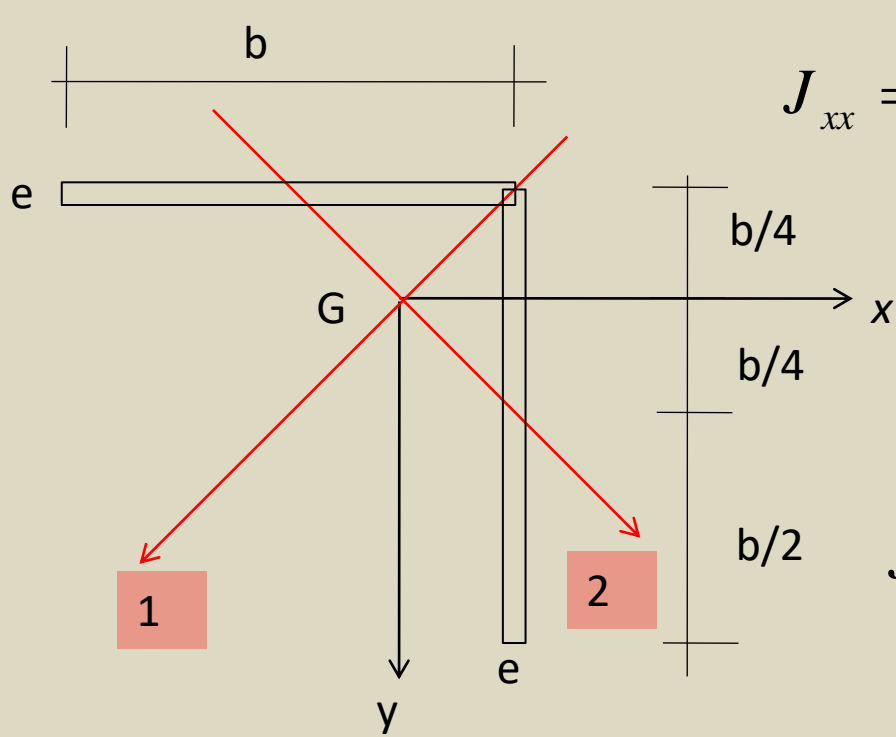


Ejercicio Flexión y Corte

Perfil ángulo de alas iguales



$$J_{xx} = J_{yy} = 2be \left(\frac{b}{4} \right)^2 + \frac{b^3 e}{12} = b^3 e \left(\frac{1}{8} + \frac{1}{12} \right)$$

$$J_{xx} = J_{yy} = \frac{5}{24} b^3 e$$

$$J_{xy} = 2be \left(\frac{b}{4} \right)^2$$

$$J_{xy} = \frac{1}{8} b^3 e$$

$$J_{1-2} = \frac{J_{xx} + J_{yy}}{2} \pm \sqrt{\left(\frac{J_{xx} - J_{yy}}{2} \right)^2 + J_{xy}^2}$$

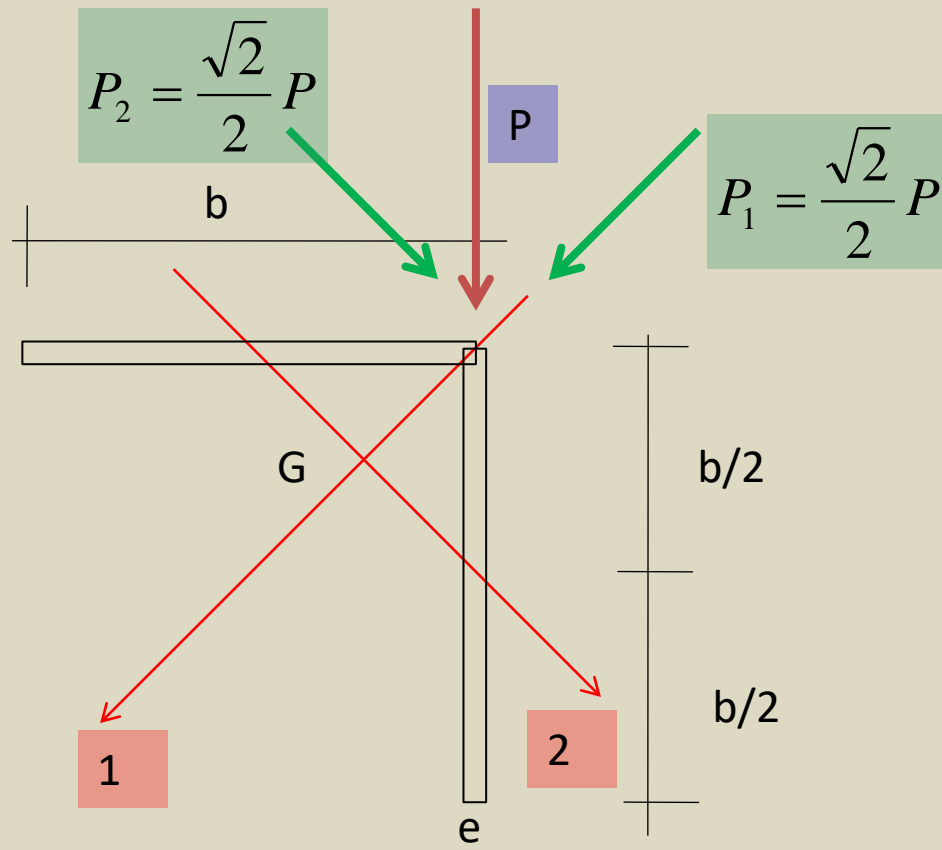
Como $J_{xx} = J_{yy} \Rightarrow J_{1-2} = J_{xx} \pm J_{xy}$

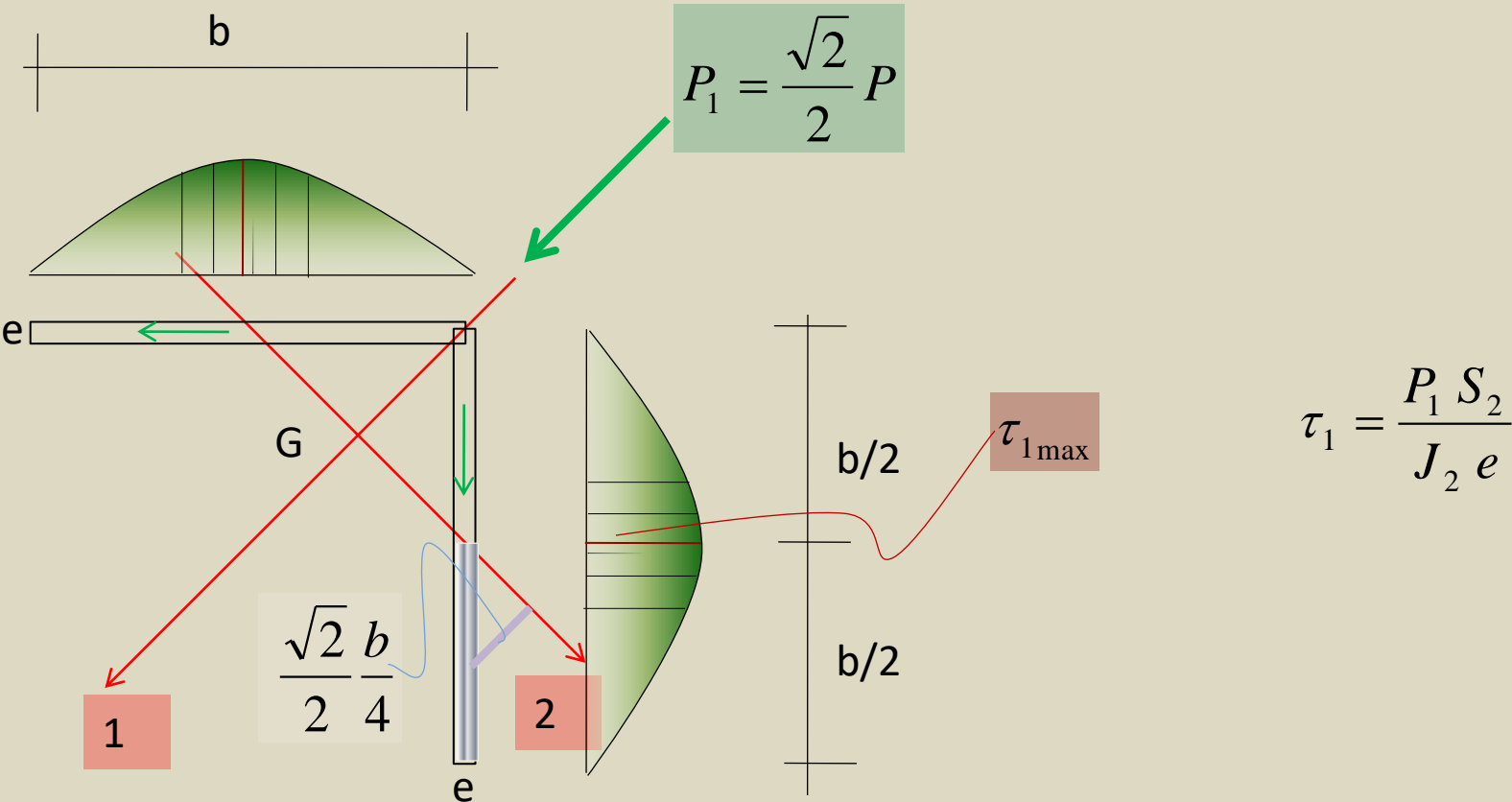
$$J_1 = \frac{8}{24} b^3 e$$

$$J_1 = \frac{1}{3} b^3 e$$

$$J_2 = \frac{2}{24} b^3 e$$

$$J_2 = \frac{1}{12} b^3 e$$

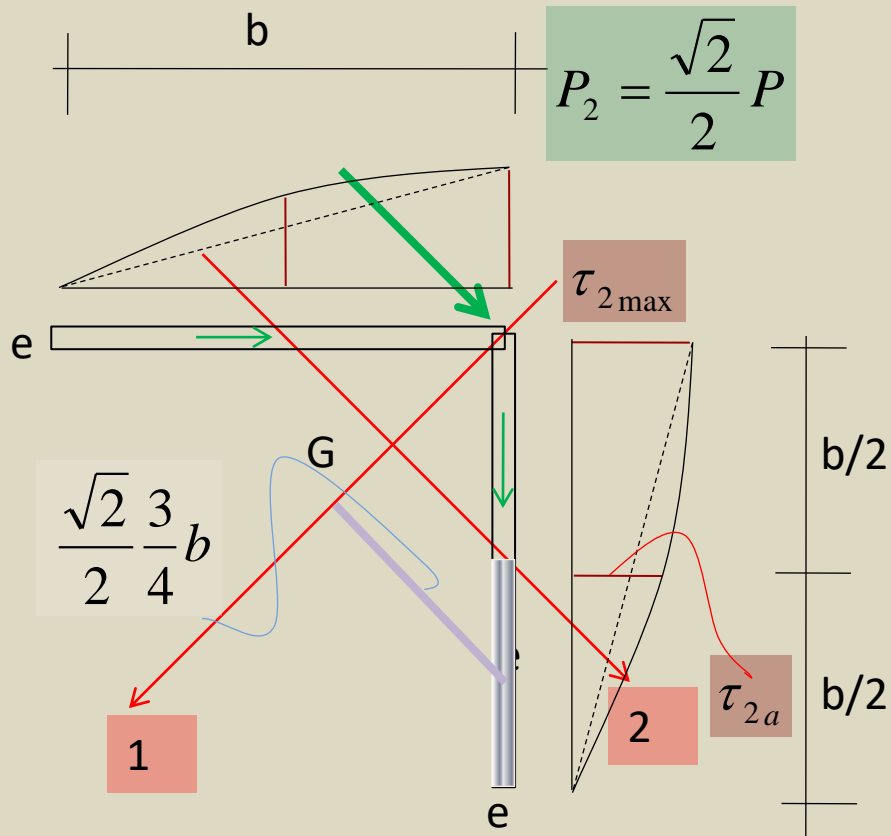




$$\tau_{1\max} = \frac{\frac{\sqrt{2}}{2} P \cdot \frac{b}{2} e \cdot \frac{\sqrt{2} b}{2 \cdot 4}}{\frac{1}{12} b^3 e \cdot e} = \frac{\frac{1}{16} P b^2}{\frac{1}{12} b^3 e}$$

$$\tau_{1\max} = \frac{3 P}{4 b e}$$

en cada ala $\int \tau_1 dA = \frac{2}{3} \tau_{1\max} b e$ $\int \tau_1 dA = \frac{2}{3} \frac{3 P}{4 b e} b e$ $\int \tau_1 dA = \frac{P}{2}$



$$\tau_2 = \frac{P_2 S_1}{J_1 e}$$

$$\tau_{2_{max}} = \frac{\frac{\sqrt{2}}{2} P \quad b e \quad \frac{\sqrt{2} b}{2}}{\frac{1}{3} b^3 e \quad e}$$

$$\tau_{2_{max}} = \frac{3 P}{4 b e}$$

$$\tau_{2_a} = \frac{\frac{\sqrt{2}}{2} P \quad \frac{b}{2} e \quad \frac{\sqrt{2} 3}{2} \frac{b}{4}}{\frac{1}{3} b^3 e \quad e}$$

$$\tau_{2_a} = \frac{9 P}{16 b e}$$

$$\tau_{2_a} - \frac{\tau_{2_{max}}}{2} = \left(\frac{9}{16} - \frac{3}{8} \right) \frac{P}{b e} = \frac{3 P}{16 b e}$$

en cada ala

$$\int \tau_2 dA = \frac{1}{2} \frac{3 P}{4 b e} b e + \frac{2}{3} \frac{3 P}{16 b e} b e = \left(\frac{3}{8} + \frac{2}{16} \right) P$$

$$\int \tau_2 dA = \frac{P}{2}$$

$$P_2 = \frac{\sqrt{2}}{2} P$$

$$P_1 = \frac{\sqrt{2}}{2} P$$

$$\tau_{2_{\max}} = \frac{3 P}{4 b e}$$

$$\tau_{1_{\max}} = \frac{3 P}{4 b e}$$

$$\tau_{2_a} = \frac{9 P}{16 b e}$$

$$\tau = \frac{3 P}{4 b e}$$

$$\tau = \frac{3 P}{16 b e}$$

$$\tau = \frac{21 P}{16 b e}$$

