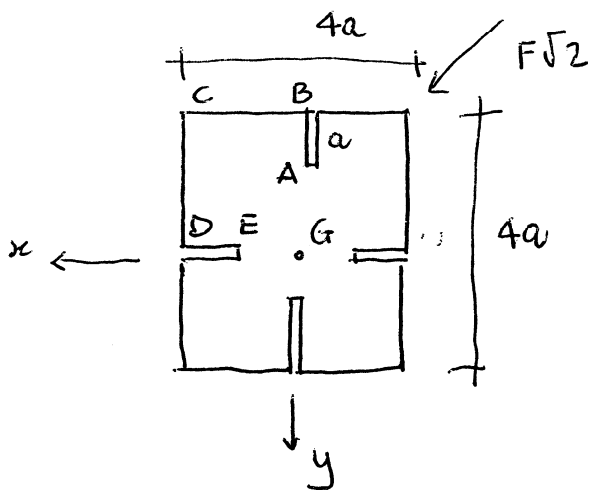


(Aerosp.)



$$J_x = 2 \cdot \frac{1}{12} (4a)^3 t + 2 \cdot \frac{1}{12} a^3 \cdot 2t + 2 \cdot 4at \cdot (2a)^2 + 2 \cdot (a \cdot 2t) \left(\frac{3a}{2}\right)^2 =$$
$$= \left(\frac{32}{3} + \frac{1}{3} + 32 + 9\right) a^3 t = 52 a^3 t$$

Taglio lungo y ( $T_y = F$ )

$$AB) \quad \tau_{zy} = - \frac{F}{2J_x} (y^2 - a^2)$$

$$BC) \quad \tau_{zx} = - \frac{F}{tJ_x} \left(-\frac{3a^2}{2} - tx \cdot 2a\right) = + \frac{F}{2J_x} (3a^2 + 4ax)$$

$$CD) \quad \tau_{zy} = - \frac{F}{tJ_x} \left(-\frac{11a^2}{2} + (y+2a)(y-2a)t\right) = \frac{F}{2J_x} (15a^2 - y^2)$$

$$DE) \quad \tau_{zx} = - \frac{F}{2J_x} \cdot 15a^2$$

Taglio lungo x ( $T_x = F$ )

$$AB) \quad \tau_{zy} = - \frac{F}{2J_x} \cdot 15a^2$$

$$BC) \quad \tau_{zx} = \frac{F}{2J_x} (15a^2 - x^2)$$

$$CD) \quad \tau_{zy} = \frac{F}{2J_x} (3a^2 - 4ay)$$

$$DE) \quad \tau_{zx} = - \frac{F}{2J_x} (x^2 - a^2)$$

Tensioni tangenziali calcolate con Jourawski

$$AB) \quad \tau_{zy} = -\frac{F}{2J_x} (14a^2 + y^2)$$

$$\tau_{zy}(A) = -\frac{15}{104} \frac{F}{ab}; \quad \tau_{zy}(B) = -\frac{18}{104} \frac{F}{ab}$$

$$BC) \quad \tau_{zx} = \frac{F}{2J_x} (18a^2 + 4ax - x^2)$$

$$\tau_{zx}(C) = \frac{22}{104} \frac{F}{ab}$$

$$CD) \quad \tau_{zy} = \frac{F}{2J_x} (18a^2 - 4ay - y^2)$$

$$\tau_{zy}(D) = \frac{18}{104} \frac{F}{ab}$$

$$DE) \quad \tau_{zx} = -\frac{F}{2J_x} (14a^2 + x^2)$$

$$\tau_{zx}(E) = -\frac{15}{104} \frac{F}{ab}$$

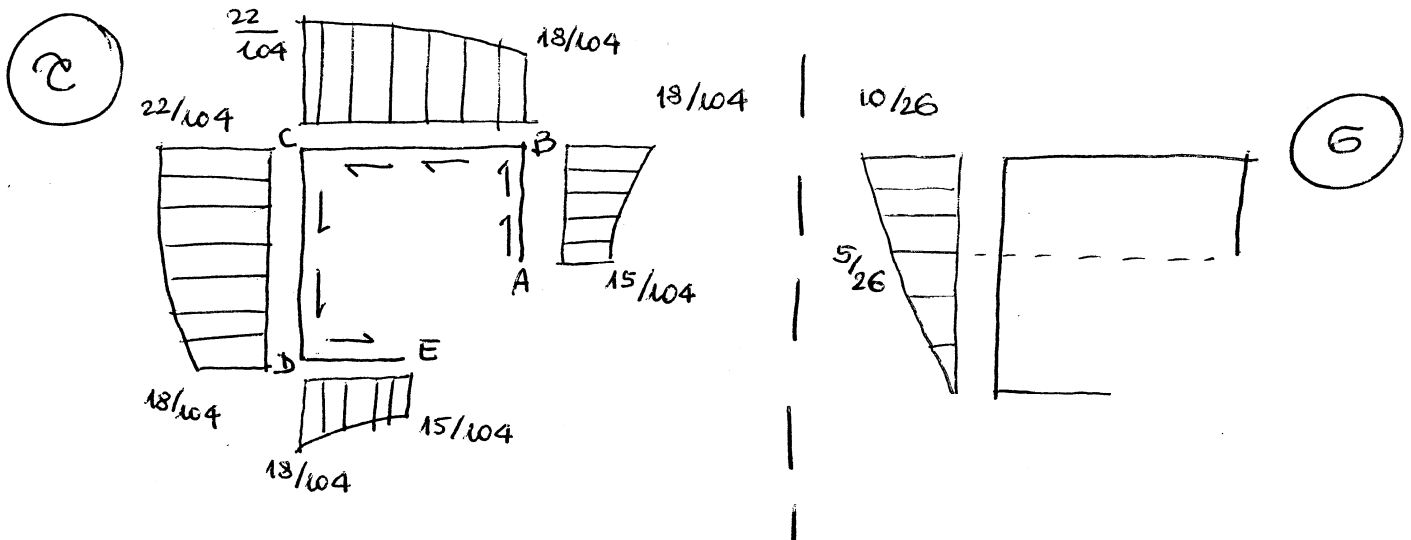
Tensioni normali

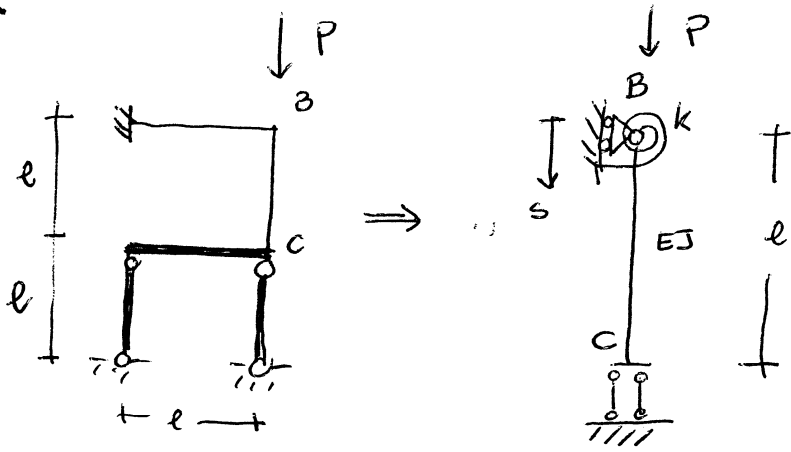
$$AB \text{ \& } CD) \quad \sigma_z = \frac{M_x y}{J_x} = \frac{10Fay}{52a^3b} = \frac{5}{26} \frac{Fy}{a^2b}$$

$$\sigma_z(A) = -\frac{5}{26} \frac{F}{ab}$$

$$\sigma_z(B) = -\frac{10}{26} \frac{F}{ab}$$

$$BC) \quad \sigma_z = \sigma_z(B); \quad DE) \quad \sigma_z = 0$$





$$\left( k = \frac{4EJ}{e} \right) \text{ non richiesto}$$

$$\left\{ \begin{array}{l} v(0) = 0 \\ -EJv''(0) = -kv'(0) \\ v'(e) = 0 \\ v'''(e) = 0 \end{array} \right.$$