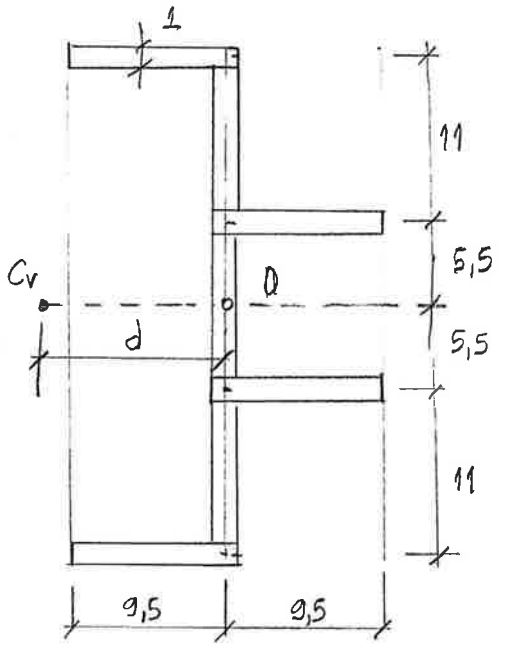
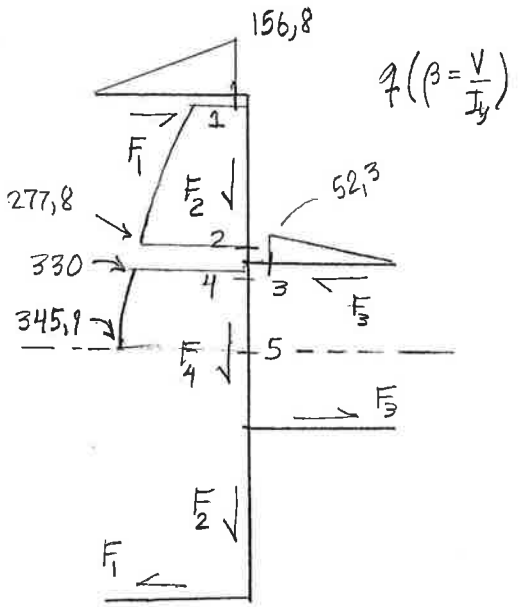
U4-5

2007 jun 20





$$I_y = 2\left(\frac{10\times1^3}{12} + 10\times1\times16{,}5^2\right) + 2\left(\frac{9\times1^3}{12} + 9\times1\times5{,}5^2\right) + \frac{1\times32^3}{12}$$

$$= 5446{,}67 + 546 + 2730{,}67 = 8723{,}33\ cm^4$$

ou

$$I_y = 2\times9{,}5\times1\times16{,}5^2 + 2\times9{,}5\times5{,}5^2 + \frac{1\times33^3}{12}$$

$$= 5172{,}75 + 574{,}75 + 2994{,}75 = \underline{8742{,}25\ cm^4}\ (\text{ST delapda})$$

$\bar{S}_1 = 1\times9{,}5\times16{,}5 = 156{,}75\ cm^3$

$\bar{S}_2 = \bar{S}_1 + 11\times11 = 277{,}75\ cm^3$

$\bar{S}_3 = 9{,}5\times5{,}5 = 52{,}25$

$\bar{S}_4 = \bar{S}_2 + \bar{S}_3 = 330\ cm^3$

$S_5 = \bar{S}_4 + 5{,}5\times\frac{5{,}5}{2} = 345{,}13\ cm^3$

a) Resistência da cola $\quad \tau = \bar{\tau} \Rightarrow \frac{q_4}{1} = \frac{\tau_R}{1{,}6} \Rightarrow \frac{25\times330}{8742{,}25} = \frac{\tau_R}{1{,}6}$

$$\underline{\tau_R = 1{,}51\ kN/cm^2}$$

b) Cv $\quad F_1 = \frac{1}{2}156{,}8\times9{,}5 = 744{,}8\beta = 0{,}0852\,V$

$F_3 = \frac{1}{2}52{,}3\times9{,}5 = 248{,}4\beta = 0{,}0284\,V$

$V.d \equiv -2F_1\times16{,}5 + 2F_3\times5{,}5$

$\underline{d = -2{,}50\ cm}$

(justificativa resposta HBC

$F_1^* = \frac{1}{2}(10\times16{,}5)\times10 = 825\beta$

$F_2^* = \frac{1}{2}(10\times5{,}5)\times\underline{\underline{10}} = 275\beta$

$V.d \equiv -33\times825\beta + 11\times275\beta$

$d = -2{,}768$)