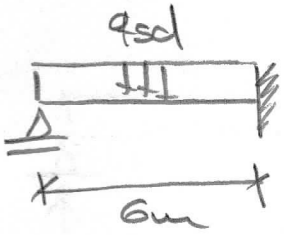
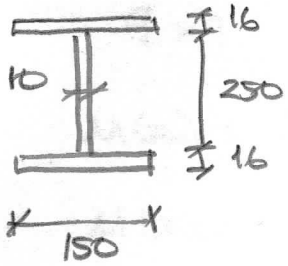
B2T5NA0527 06 PONTOS

- VIGA CONTIDA SOMENTE NOS APOIOS;
- AÇO MR 250 EM PERFIL SOLDADO;





Q01) Cb

Q02) qsd MÁX P/ VERIF. FLT;

• VERIF. Mrd FLT:

$I_x = 9803\ cm^4$ $I_y = 902{,}08\ cm^4$ $J = 49{,}293\ cm^4$

$W_x = 695{,}25\ cm^3$ $Z_x = 794{,}65\ cm^3$ $A_g = 73\ cm^2$

$$r_y = \sqrt{\frac{90208}{73}} = 3{,}515\ cm$$

$$\lambda_{FLT} = L_b / r_y = \frac{600}{3{,}515} = \underline{170{,}69}$$

$$\lambda_{PFLT} = 1{,}76\sqrt{\frac{20000}{25}} = \underline{49{,}780}$$

$$C_w = 902{,}08\,(28{,}2 - 1{,}6)^2/4 = 159569\ cm^6$$

$$\beta_1 = 0{,}7 \times 25 \times 695{,}25 / 20000 \times 49{,}293 = 0{,}01234/cm$$

$$\lambda_{rFLT} = \frac{1{,}38\sqrt{902{,}08 \times 49{,}293}}{3{,}515 \times 49{,}293 \times 0{,}01234}\sqrt{1+\sqrt{1+\frac{27 \times 159569 \times 0{,}01234^2}{902{,}08}}}$$

$$\lambda_{rFLT} = \underline{207{,}05}$$

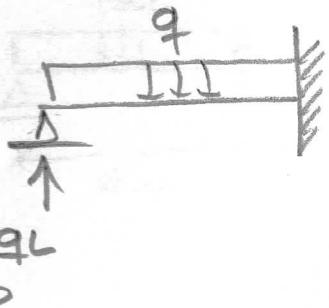
* VIGA INTERMEDIÁRIA

$M_{pl} = 794{,}65 \times 25 = 19866\ kN\,cm = 198{,}66\ kN\,m$

$M_r = 0{,}7 \times 25 \times 695{,}25 = 12167\ kN\,cm = 121{,}67\ kN\,m$

FATOR Cb

$$M(x) = \frac{3}{8}qLx - \frac{qx^2}{2}$$



$q = 1 \quad L = 6$

$$M(x) = \frac{3}{8} \times 6x - \frac{1}{2}x^2$$

$$M(x) = \frac{9}{4}x - \frac{1}{2}x^2$$

$M(1/4\,6) = M(1,5) = 2,25$

$M(2/4\,6) = M(3) = 2,25$

$M(3/4\,6) = M(4,5) = 0$

$M(6) = M(6) = |-4,5|$

$$C_b = \frac{12,5(4,5)}{2,5(4,5) + 3 \times 2,25 + 4 \times 2,25 + 3 \times 0} = \boxed{2,0833}$$ Q01

$$M_{Rd\ FLT} = \frac{2,0833}{1,1}\left[198,66 + (121,67 - 198,66)\frac{(170,69 - 49,78)}{(207,05 - 49,78)}\right]$$

$M_{Rd\ FLT} = 264,78$ kNm

$$\frac{M_{pl}}{\gamma_{a1}} = \frac{198,66}{1,1} = 180,6 \text{ kNm} \quad \boxed{M_{Rd}}$$

$$M_{Sd}^{MÁX} = \frac{qL^2}{8} = \frac{q \times 6^2}{8} = 4,5\,q_{sd}$$

IGUALANDO $M_{Sd} = M_{Rd}$

$4,5\,q_{sd} = 180,6$ kNm

$$q_{sd} = 180,6/4,5 = \boxed{40,133 \text{ kN/m}}$$ Q02