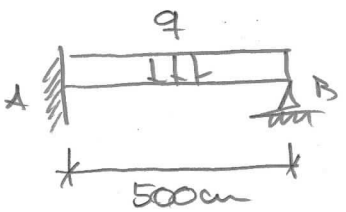
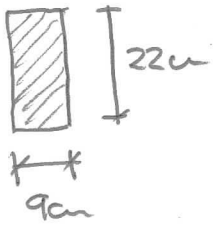
B2T5MA0930A — 0,4 PONTO



SEÇÃO



- → DICOTILEDÔNEA C60
- → kmod = 0,56
- → COMB. NORMAL ELU;
- → COMB. ELUT: DE LONGA DURAÇÃO;
- → VIGA TRAVADA LATERALMENTE;
- → EDIFICAÇÃO TIPO GARAGEM;

CARGAS:

PERM. q_1 = 3kN/m

ACID. q_2 = ??? kN/m

Q01) $q_{2K\,MÁX}$ P/ FLEXÃO; Q02) $q_{2K\,MÁX}$ P/ FLECHA;

① PROPRIEDADES DA MADEIRA:

$f_{cod} = 0,56 \times 6\,kN/cm^2 / 1,4 = 2,4\,kN/cm^2$

$E_{cod} = 956 \times 2450\,kN/cm^2 = 1372\,kN/cm^2$

② COMBINAÇÕES DE AÇÕES:

ELU: $M_{q1} = 3kN/m \times (5m)^2/8 = 9,375\,kNm = 937,5\,kNcm$

$M_{q2} = q_2 \times 5m^2/8 = 3,125\,q_2 = 31250\,q_2\,kNcm$

$M_{sd} = 1,4 \times 937,5\,kNcm + 1,4 \times 31250\,q_2\,kNcm$

$M_{sd} = 13125\,kNcm + 43750\,q_2\,kNcm$

ELUTI: $I = 9cm \times (22cm)^3/12 = 7986\,cm^4$

$$\delta_{q1} = \frac{3}{554} \frac{0,01 \times 3kN/m \times (500cm)^4}{1372\,kN/cm^2 \times 7986\,cm^4} = 0,92668\,cm$$

$$\delta_{q2} = \frac{3}{554} \frac{q_2\,(500cm)^4}{1372\,kN/cm^2 \times 7986\,cm^4} = 30,88992\,cm$$

$\psi_2 = 0,6$

$\delta_{eluti} = 0,92668\,cm + 0,6 \times 30,88992\,cm =$

$0,92668\,cm + 18,533\,q_2\,cm$

(3) VERIFICAÇÃO de FLEXÃO:

$$\frac{6Msd}{bh^2} = fcod \qquad Msd = \frac{bh^2}{6} \times fcod$$

$$1312,5\ kN/cm + 43750\, q_2 = 9cm \times (22cm)^2/6 \times 2,4\ kN/cm^2$$

$$q_2 = \left(\frac{9}{6}\, 22^2 \times 2,4 - 1312,5\right) / 43750 = 0,0098263\ kN/cm$$

$$R\ Q01 = 0,98263\ kN/m$$

(4) VERIFICAÇÃO DE FLECHA:

$$\delta_{LIM} = L/200 = 500/200 = 2,5cm$$

$$\delta_{efetiva} = \delta_{LIM}$$

$$0,92668cm + 18,533 q_2\, cm = 2,5cm$$

$$q_2 = \frac{(2,5cm - 0,92668cm)}{18,533} = 0,084892\ kN/cm$$

$$R\ Q02 = 8,4892\ kN/m$$