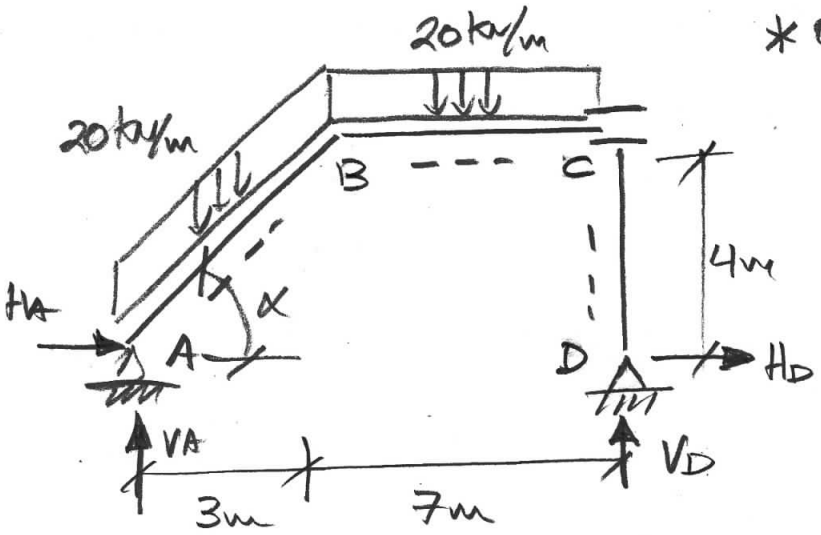
TE1-6.4



* O VÍNCULO C É PANTOGRÁFICO
RESTRIÇÃO À GIRO E
RESTRIÇÃO À TRANSLAÇÃO
VERTICAL;

$\Sigma M_A = 0 \circlearrowleft \quad -20kN/m \times 7m \times (3m + 3{,}5m)$
$- 20kN/m \times 5m \times 1{,}5m + V_D \times 10m = 0$

$V_D = \frac{1}{10}(20 \times 7 \times 6{,}5 + 20 \times 5 \times 1{,}5) = \underline{106\,kN \uparrow}$

$\Sigma F_V = 0 \uparrow \quad V_A + 106kN - 20kN/m \times 7m - 20kN/m \times 5m = 0$

$V_A = -106 + 140 + 100 = \underline{134\,kN \uparrow}$

$\Sigma F_H^{ABC} = 0 \rightarrow \quad H_A = 0$ VÍNCULO C NÃO RESISTE
* TRANSLAÇÃO HORIZONTAL

$\Sigma F_H = 0 \rightarrow \quad H_D = 0$

$M_B = 134kN \times 3m - 20kN/m \times 5m \times 1{,}5m = \underline{+252{,}0\,kN\,m}$

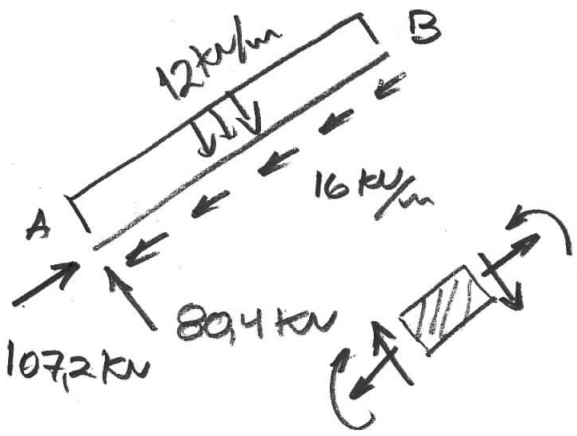
$\cos\alpha = 3/5 \quad \text{sen}\,\alpha = 4/5$

$q_{PP} = 20kN/m \cos\alpha = 20 \times 3/5 = 12\,kN/m \searrow$

$q_{PL} = 20kN/m\ \text{sen}\,\alpha = 20 \times 4/5 = 16\,kN/m \swarrow$

$Q_A = V_A \cos\alpha = 134\,kN \times 3/5 = +80{,}4\,kN$

$N_A = -V_A \operatorname{sen}\alpha = -134\,kN \times 4/5 = -107{,}2\,kN$



$Q_B^{AB} = 80{,}4\,kN - 12\,kN/m \times 5m$

$Q_B^{AB} = +20{,}4\,kN$

$N_B^{AB} = -107{,}2\,kN + 16\,kN/m \times 5m$

$N_B^{AB} = -27{,}2\,kN$

$M_{\overline{AB}} = 80{,}4\,kN \times 2{,}5m - 12\,kN/m \times (2{,}5m)^2/2 = +163{,}5\,kNm$

$Q_B^{BC} = 134\,kN - 20\,kN/m \times 5m = +34\,kN$

$N_B^{BC} = 0\,kN$

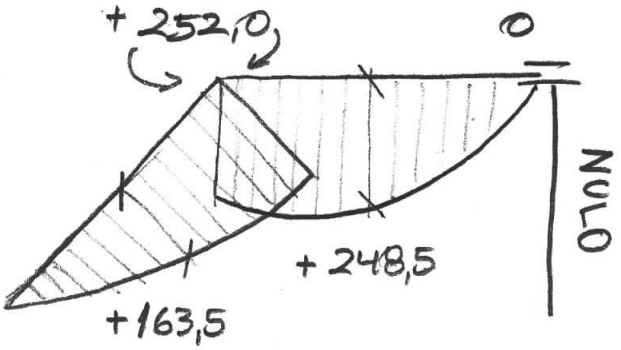
$M_C = 134\,kN \times 10m - 20\,kN/m \times 5m \times (7m + 1{,}5m) - 20\,kN/m \times (7m)^2/2$

$M_C = 0\,kNm$

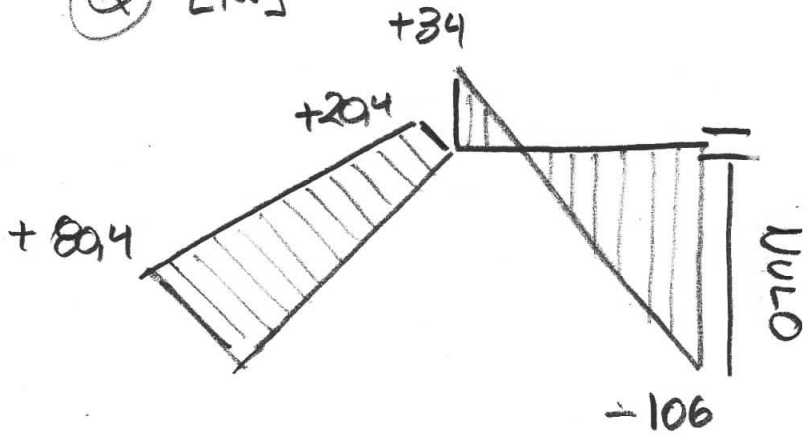
$Q_C^{BC} = 134\,kN - 20\,kN/m \times 5m - 20\,kN/m \times 7m = -106\,kN$

$M_{\overline{BC}} = 106\,kN \times 3{,}5m - 20\,kN/m \times (3{,}5m)^2/2 = +248{,}5\,kNm$

(M) [kNm]



(Q) [kN]



(N) [kN]

