Trecho $A C^-$: $0 \leq x_1 \leq 1$

$N = +H_A$

$N = 150\ kN$

$V = +V_a$

$V = 17,75\ kN$

$M = -M_1 + V_a x_1$

$\begin{cases} x_1 = 0 \Rightarrow M = -10\ kNm \\ x_1 = 1 \Rightarrow M = -10 + 17,75 \end{cases}$

$M = 7,75\ kNm$

Trecho $C^+ D^-$: $0 \leq x_2 \leq 1$

$N = +H_a - P_1$

$N = 0$

$V = V_a - P_1$

$= 17,75 - 15$

$V = 2,75\ kN$

$M = V_a (x_2 + 1) - P_1 (x_2) - M_1$

$\begin{cases} x_2 = 0 \rightarrow 17,75 - 10 \Rightarrow M = 7,75\ kNm \\ x_2 = 1 \rightarrow 17,75(2) - 15 - 10 \rightarrow M = 10,5\ kNm \end{cases}$

Trecho $B D^+$: $0 \leq x_3 \leq 2$

$N = 0$

$V = (+w_1 x_3) - V_b$

$\begin{cases} x_3 = 0 \rightarrow 8.0 - 13,25 \Rightarrow V = -13,25\ kN \\ x_3 = 2 \rightarrow 8.2 - 13,25 \rightarrow 16 - 13,25 \rightarrow V = 2,75\ kN \end{cases}$

$M = V_b . x_3 - w_1 . x_3 . \frac{x_3}{2}$

$\begin{cases} x_3 = 0 \rightarrow M = 0 \\ x_3 = 2 \rightarrow M = 26,5 - 16 \end{cases}$

$M = 10,5\ kNm$

$\frac{dV}{dx} \Rightarrow 13,25 - 8 x_V = 0$

$8 x_V = 13,25$

$x_V = 1,65$

$M_{máx} = 13,25.(1,65) - \frac{8}{2}.(1,65)^2$

$= 21,842 - 10,969$

$M_{máx} = 10,87\ kNm$