

VIGAS GERBER

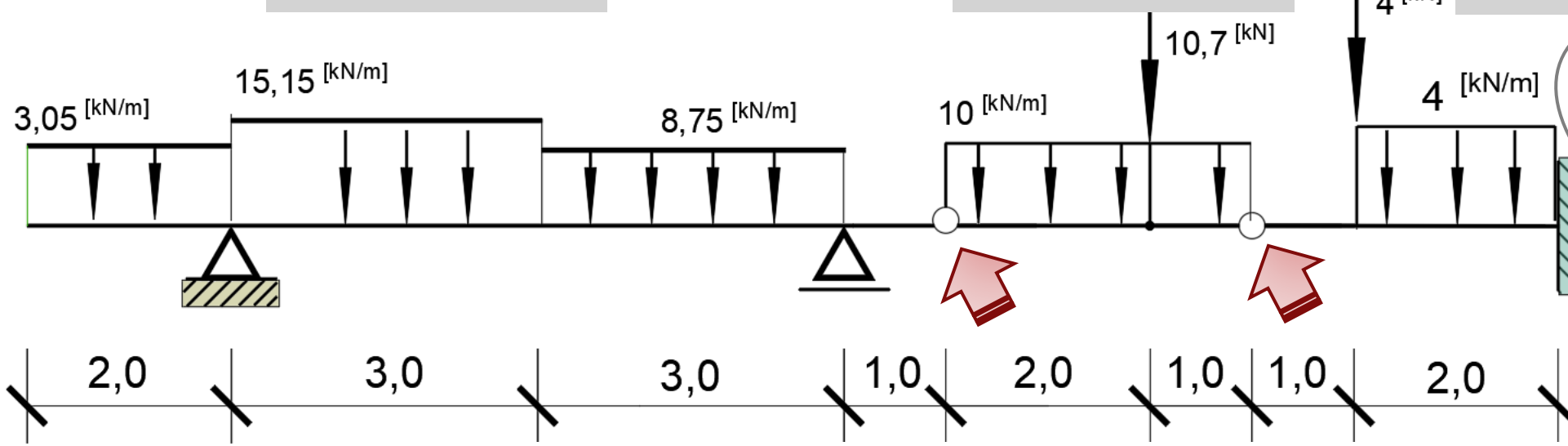
ATIVIDADE DE ISOLAMENTO SOCIAL_01

MODELO: $x = 4 \text{ kN/m}$ e $y = 10 \text{ kN/m}$

VIGA 1

VIGA 2

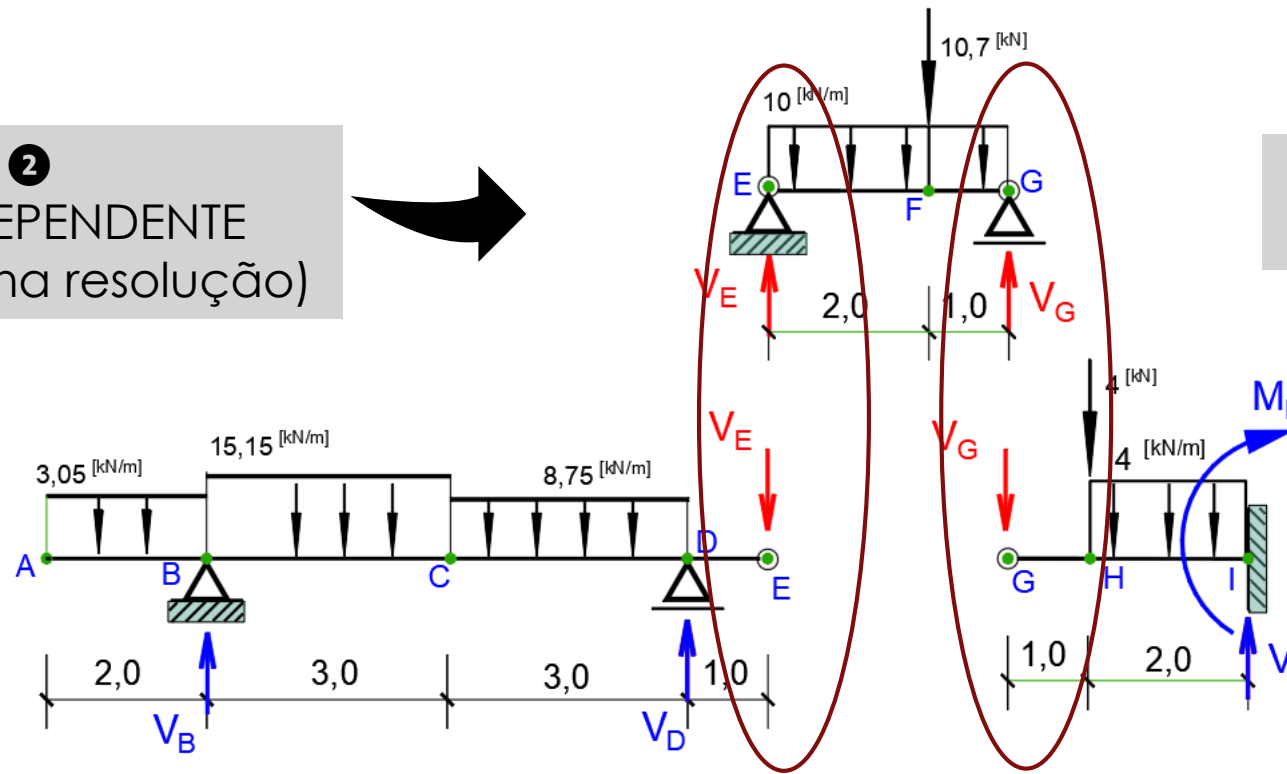
VIGA 3



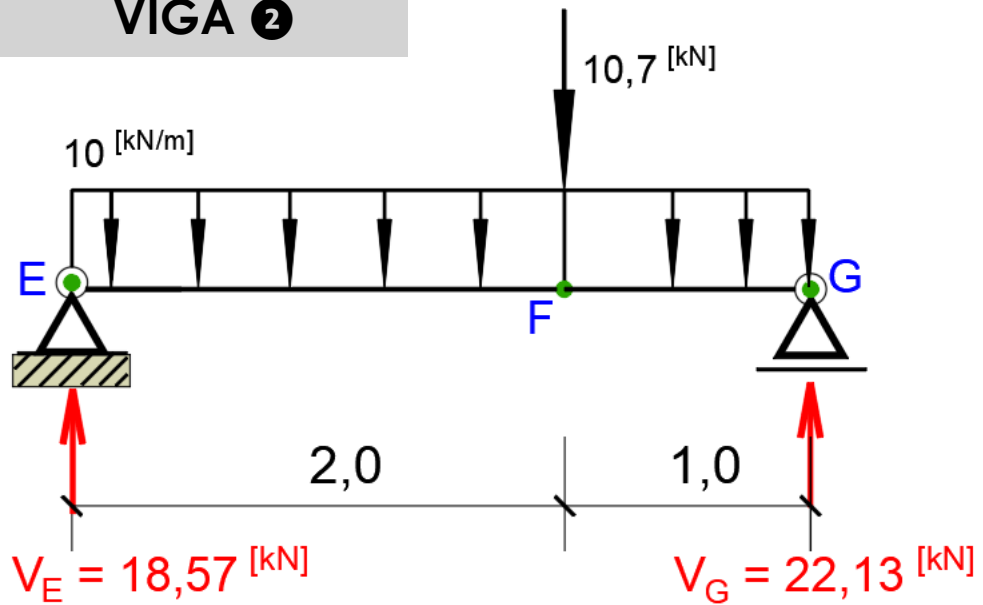
Combinação de 3
VIGAS
1, 2 e 3

VIGA 2
Totalmente DEPENDENTE
(tem prioridade na resolução)

VIGA 1 e 3
(AUTO-SUFICIENTES)



VIGA 2



ESFORÇO CORTANTE

$$V_E \rightarrow \begin{cases} V_E^a = 0 \\ V_E^d = 18,57 \text{ [kN]} \end{cases}$$

$$V_F \rightarrow \begin{cases} V_F^a = 18,57 - 10 \cdot 2 = -1,43 \text{ [kN]} \\ V_F^d = -1,43 - 10,7 = -12,13 \text{ [kN]} \end{cases}$$

$$V_G \rightarrow \begin{cases} V_G^a = -12,13 - 10 \cdot 1,0 = -22,13 \text{ [kN]} \\ V_G^d = -22,13 + 22,13 = 0 \end{cases}$$

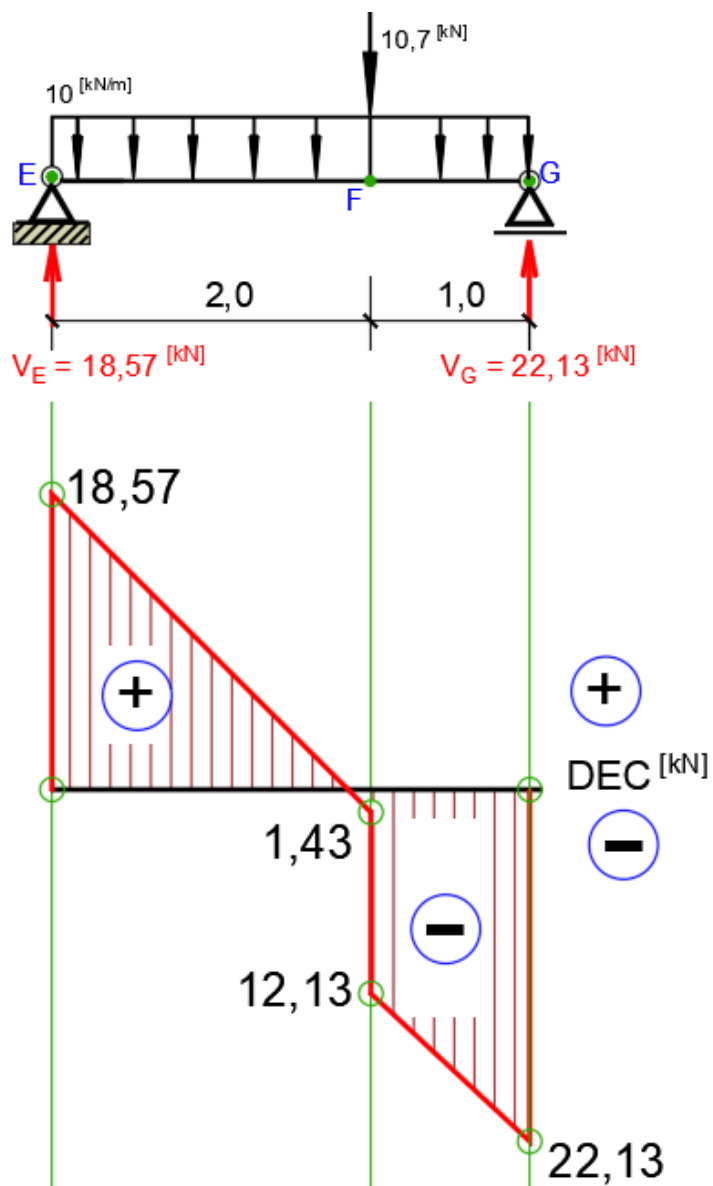
MOMENTO FLETOR

$$M_E = 0$$

$$M_F = 18,57 \cdot 2,0 - 10,0 \cdot 2,0 \cdot 1,0 = 17,14 \text{ [kN.m]}$$

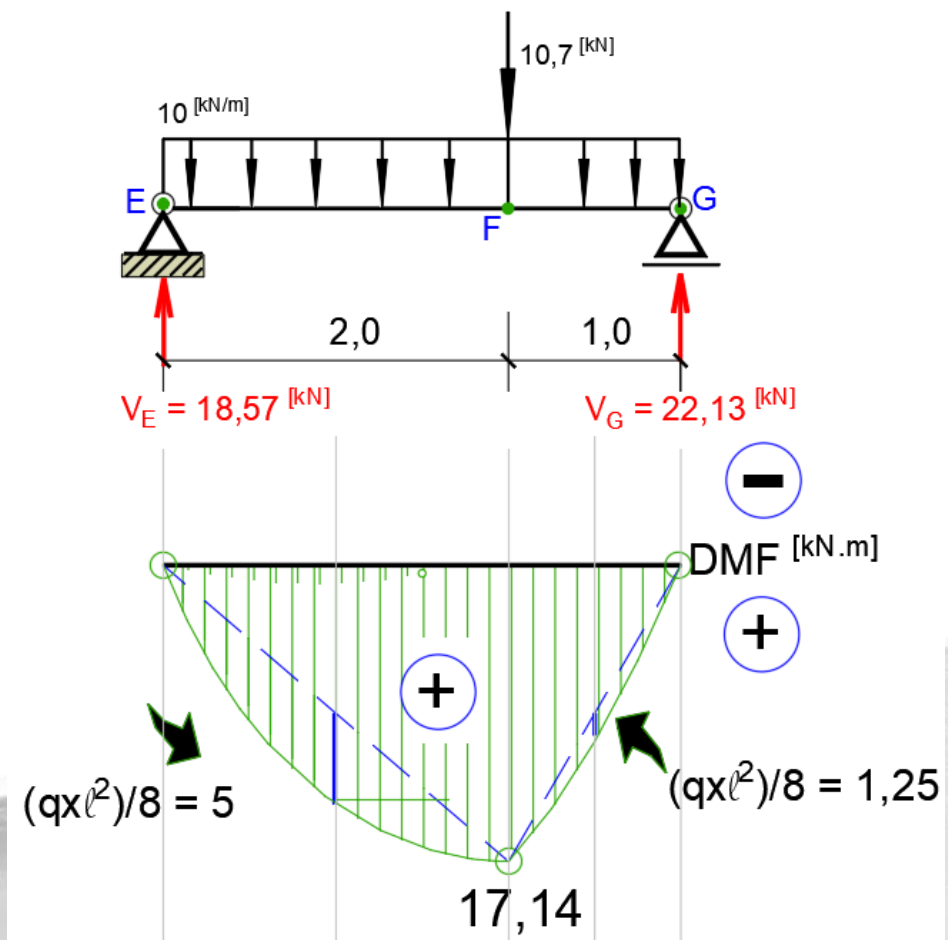
$$M_G = 18,57 \cdot 3 - 10 \cdot 3 \cdot 1,5 - 10,7 \cdot 1,0 = 0$$

DIAGRAMA MOMENTO FLETOR

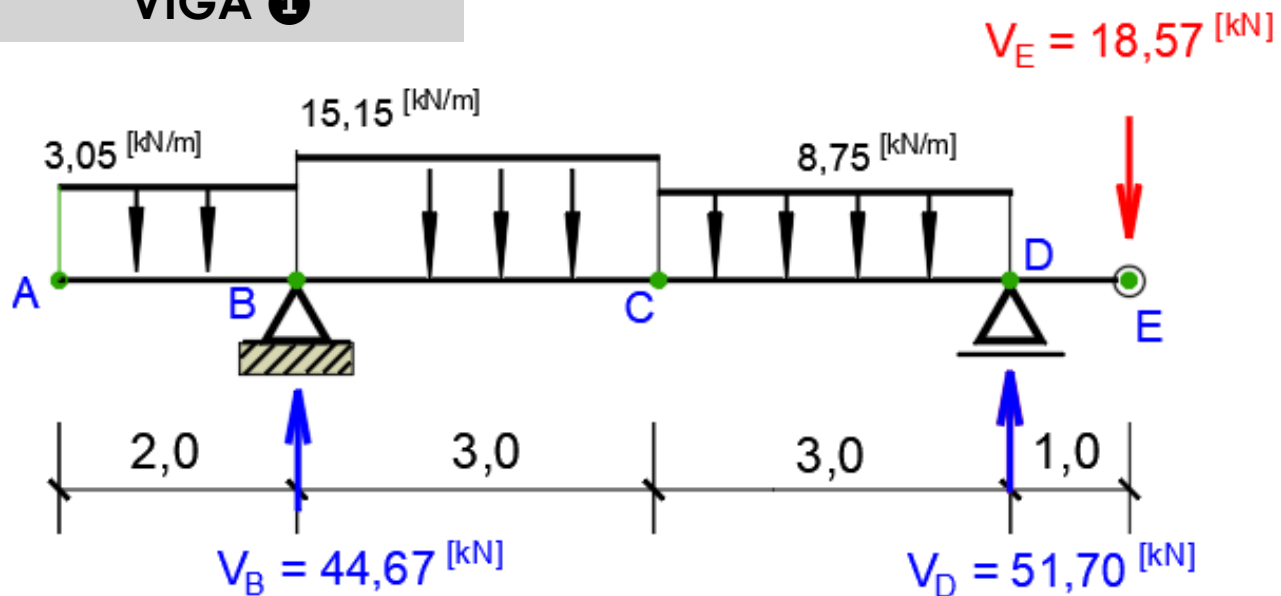


VIGA 2

DIAGRAMA ESFORÇO CORTANTE



VIGA 1



MOMENTO FLETOR

$$M_A = 0$$
$$M_B = -3,05 \cdot 2,0 \cdot 1,0 = -6,10 \text{ [kN.m]}$$
$$M_C = -3,05 \cdot 2,0 \cdot 4,0 + 44,67 \cdot 3,0 - 15,15 \cdot 3,0 \cdot 1,5 = 41,44 \text{ [kN.m]}$$
$$M_D = -3,05 \cdot 2,0 \cdot 7,0 + 44,67 \cdot 6,0 - 15,15 \cdot 3,0 \cdot 4,5 - 8,75 \cdot 3,0 \cdot 1,5 = -18,58 \text{ [kN.m]}$$
$$M_E = -3,05 \cdot 2,0 \cdot 8,0 + 44,67 \cdot 7,0 - 15,15 \cdot 3,0 \cdot 5,5 - 8,75 \cdot 3,0 \cdot 2,5 + 51,7 \cdot 1 = 0$$

ESFORÇO CORTANTE

$$V_A = 0$$

$$V_B \rightarrow \begin{cases} V_B^a = -3,05 \cdot 2 = -6,10 \text{ [kN]} \\ V_B^d = -6,1 + 44,67 = 38,57 \text{ [kN]} \end{cases}$$

$$V_C = 38,57 - 15,15 \cdot 3,0 = -6,88 \text{ [kN]}$$

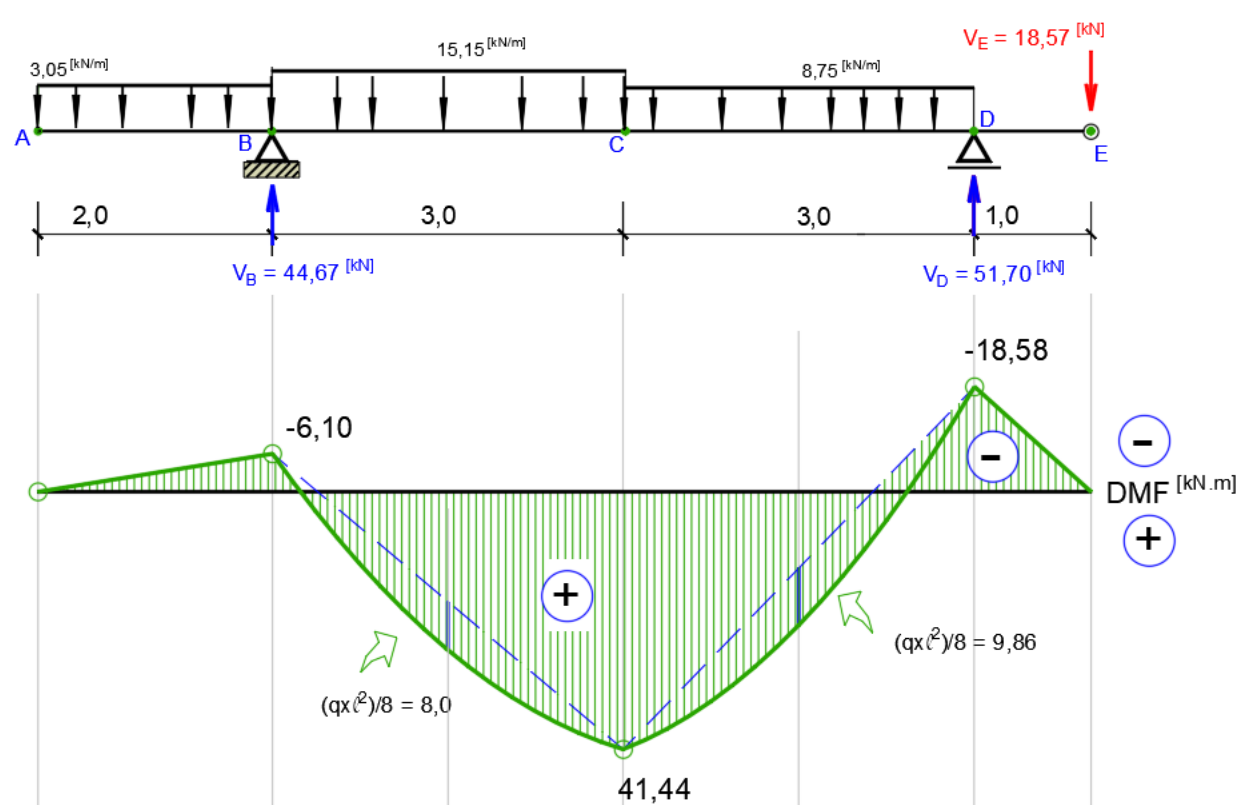
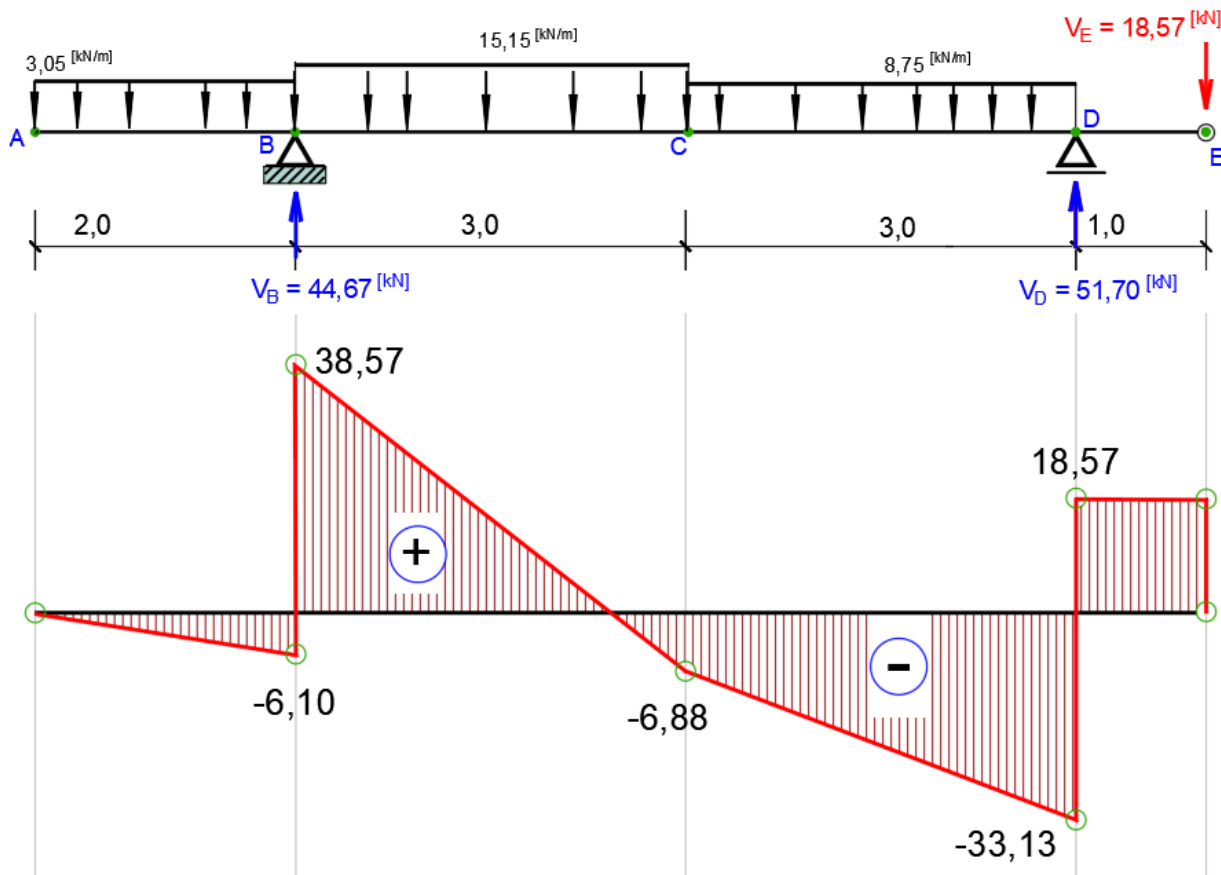
$$V_D \rightarrow \begin{cases} V_D^a = -6,88 - 8,75 \cdot 3 = -33,13 \text{ [kN]} \\ V_D^d = -33,13 + 51,70 = 18,57 \text{ [kN]} \end{cases}$$

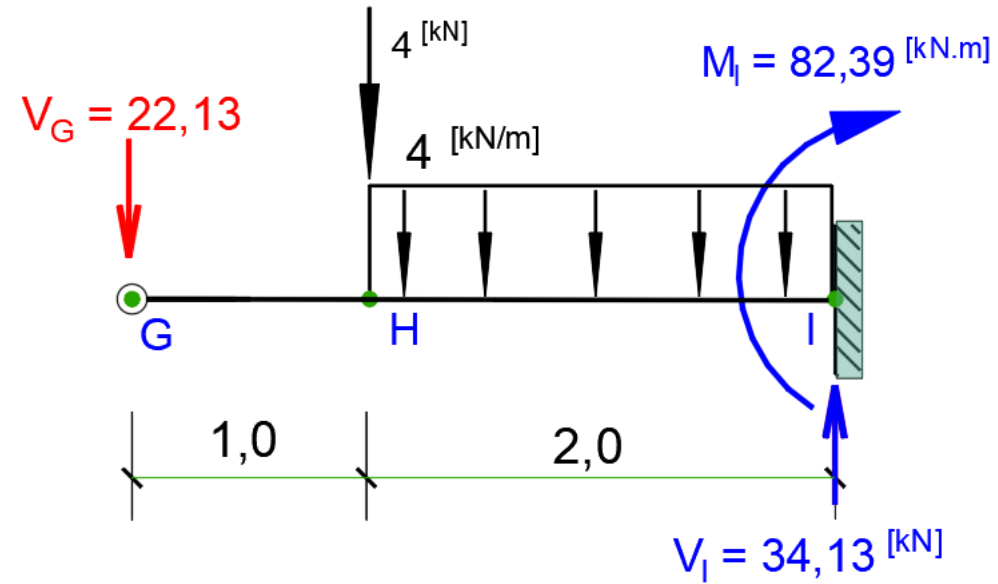
$$V_E \rightarrow \begin{cases} V_E^a = 18,57 \text{ [kN]} \\ V_E^d = 18,57 - 18,57 = 0 \end{cases}$$

DIAGRAMA MOMENTO FLETOR

VIGA 1

DIAGRAMA ESFORÇO CORTANTE





$$V_G \rightarrow \begin{cases} V_G^a = 0 \text{ [kN]} \\ V_G^d = -22,13 \text{ [kN]} \end{cases}$$

$$V_H \rightarrow \begin{cases} V_H^a = -22,13 \text{ [kN]} \\ V_H^d = -22,13 - 4 = -26,13 \text{ [kN]} \end{cases}$$

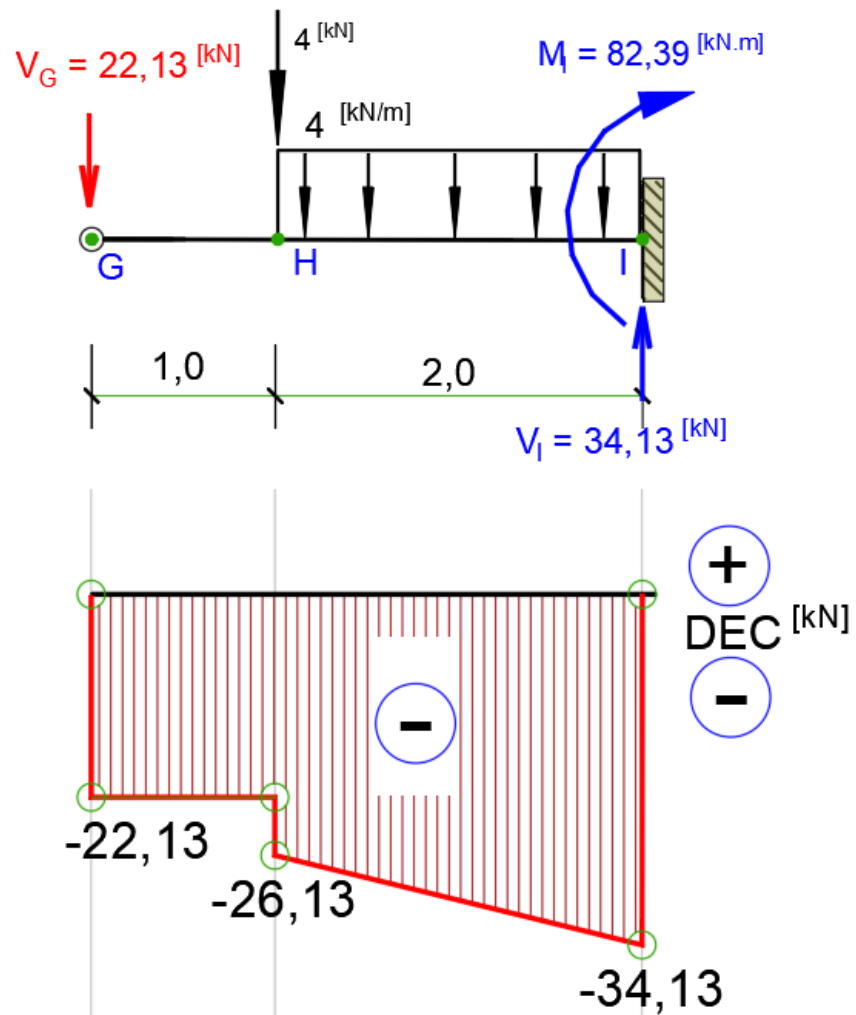
$$V_I \rightarrow \begin{cases} V_I^a = -26,13 - 4 \cdot 2,0 = -34,13 \text{ [kN]} \\ V_I^d = -34,13 + 34,13 = 0 \end{cases}$$

$$M_G = 0$$

$$M_H = -22,13 \cdot 1,0 = -22,13 \text{ [kN.m]}$$

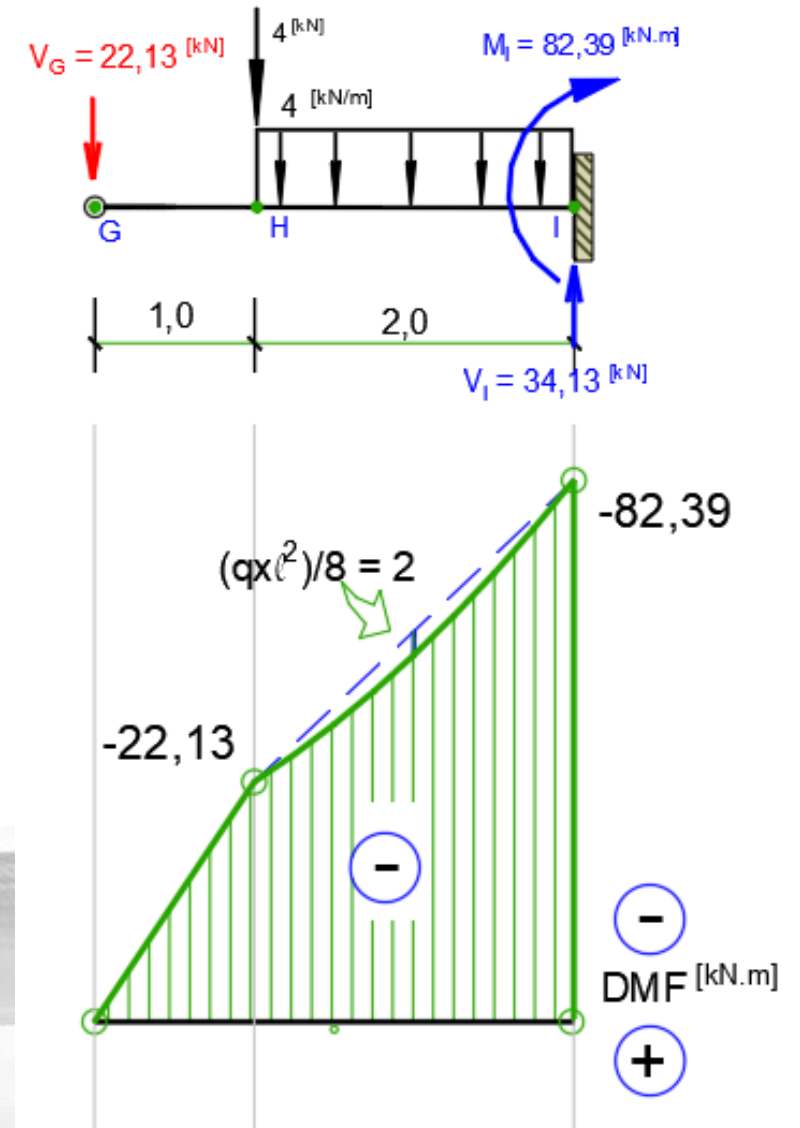
$$M_I \rightarrow \begin{cases} M_I^a = -22,13 \cdot 3,0 - 4 \cdot 2,0 - 4 \cdot 2,0 \cdot 1,0 = -82,39 \text{ [kN.m]} \\ M_I^d = -82,39 + 82,39 = 0 \end{cases}$$

DIAGRAMA MOMENTO FLETOR



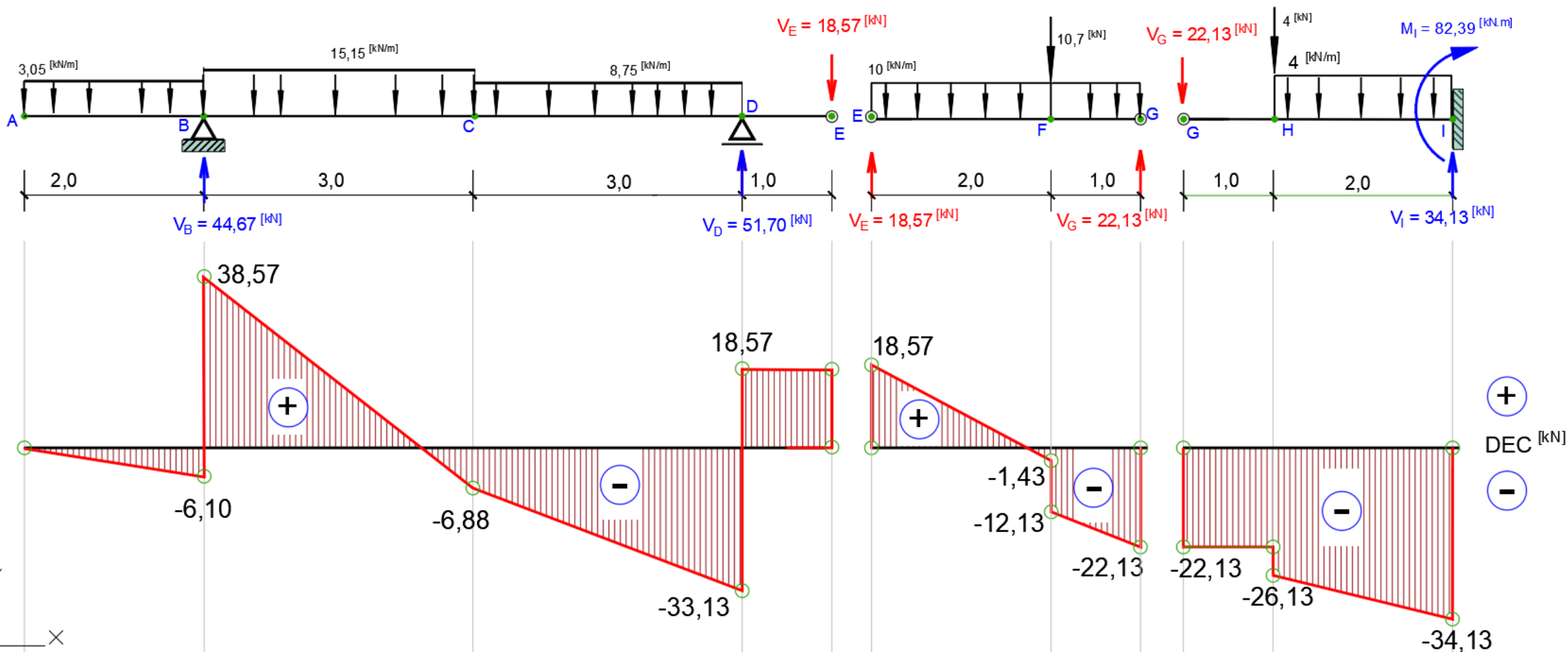
VIGA 3

DIAGRAMA ESFORÇO CORTANTE



VIGA GERBER

ESFORÇO CORTANTE



VIGA GERBER

MOMENTO FLETOR

