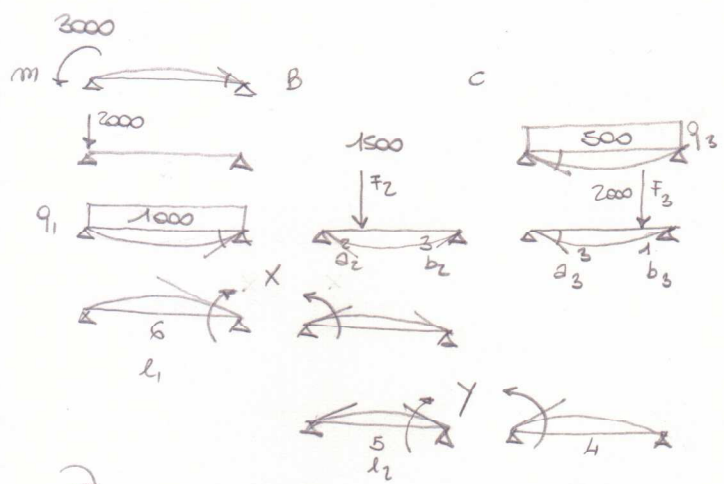
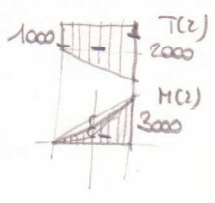
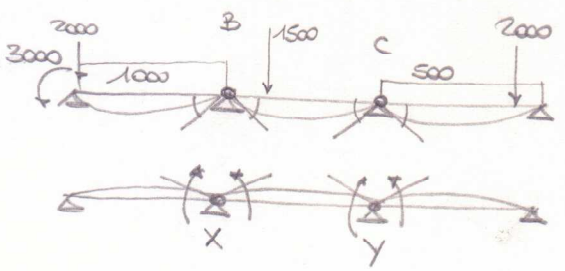


ISOSTATICA ASSOCIATA



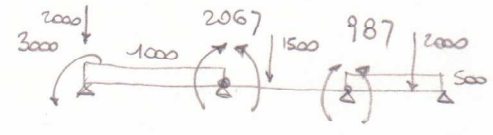
VERIFICA : $x = 2067 \text{ kgm}$ $y = 987 \text{ kgm}$

$$\varphi_{Bs} = \frac{3000 \cdot 6}{6} - \frac{1000 \cdot 6^3}{24} + \frac{2067 \cdot 6^2}{3} = -1867 \text{ OK!}$$

$$\varphi_{Bd} = \frac{1500 \cdot 3(25-9)}{6 \times 5} - \frac{2067 \cdot 5}{3} - \frac{987 \cdot 5}{6} = -1867 \text{ OK!}$$

$$\varphi_{Cs} = \frac{-1500 \cdot 2(25-4)}{5 \times 6} + \frac{2067 \cdot 5}{6} + \frac{987 \cdot 5}{3} = +1267 \text{ OK!}$$

$$\varphi_{Cd} = \frac{500 \cdot 4^3}{24} + \frac{2000 \cdot 1(16-1)}{6 \times 4} - \frac{987 \cdot 4}{3} = +1267 \text{ OK!}$$



Δ MEMBRI EST :

$$\varphi_{Bs} = \frac{m \cdot l_1}{6EI} + \theta - \frac{q_1 \cdot l_1^3}{24EI} + \frac{x \cdot l_1}{3EI} = \frac{3000 \cdot 6}{6} - \frac{1000 \cdot 6^3}{24} + \frac{x \cdot 6}{3} = 3000 - 9000 + 2x = 2x - 6000$$

$$\varphi_{Bd} = \frac{F_2 \cdot b_2 \cdot (l_2^2 - b_2^2)}{6EI \cdot l_2} - \frac{x \cdot l_2}{3EI} - \frac{y \cdot l_2}{6EI} = \frac{1500 \cdot 3(5^2 - 3^2)}{6 \cdot 5} - \frac{x \cdot 5}{3} - \frac{y \cdot 5}{6} = 2400 - 1.6x - 0.83y$$

$$\varphi_{Bs} = \varphi_{Bd} \rightarrow 2x - 6000 = 2400 - 1.6x - 0.83y$$

I EQ.) $3.6x + 0.83y = 8400$

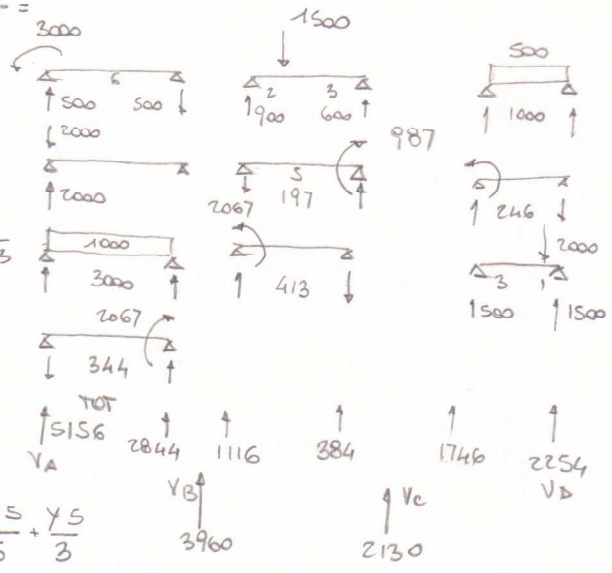
$$\varphi_{Cs} = \frac{F_3 \cdot a_3 \cdot (l_3^2 - a_3^2)}{6EI \cdot l_3} + \frac{x \cdot l_3}{6EI} + \frac{y \cdot l_3}{3EI} = -\frac{1500 \cdot 2(5^2 - 2^2)}{6 \cdot 5} + \frac{x \cdot 5}{6} + \frac{y \cdot 5}{3} = -2100 + 0.83x + y \cdot 1.6$$

$$\varphi_{Cd} = \frac{q_3 \cdot l_3^3}{24EI} + \frac{F_3 \cdot b_3 \cdot (l_3^2 - b_3^2)}{6EI \cdot l_3} - \frac{y \cdot l_3}{3EI} = \frac{500 \cdot 4^3}{24} + \frac{2000 \cdot 1(4^2 - 1^2)}{6 \times 4} - \frac{y \cdot 4}{3} = 1333.3 + 1250 - y \cdot 1.3 = 2583.3 - y \cdot 1.3$$

$$\varphi_{Cs} = \varphi_{Cd} \rightarrow -2100 + 0.83x + y \cdot 1.6 = 2583.3 - y \cdot 1.3$$

II EQ.) $0.83x + 3y = 4683$

$$\rightarrow -0.189y + 1909 + 3y = 4683 \rightarrow y = \frac{2774}{2.811} = 987 \text{ kgm} \rightarrow x = \frac{-0.83 \cdot 987 + 8400}{3.6} = 2067 \text{ kgm}$$



$$\text{TOT } V = 5156 + 3960 + 2130 + 2254 = 13500 \text{ kg}$$

$$A = 2000 + 6000 + 1500 + 2000 + 2000 = 13500 \text{ kg}$$

$$\text{TOT } A = \text{TOT } V$$

1) CAMPATA A-B

$$T(z) = V_A - q_1 \cdot z - V$$

$$= 5156 - 1000 \cdot z - 2000 = 3156 - 1000 \cdot z$$

$$T(0) = T_A = 3156 \text{ kg}$$

$$T(6) = T_B = 3156 - 6000 = -2844 \text{ kg}$$

$$z_{T=0} = \frac{T_A}{q_1} = \frac{3156}{1000} = 3,16 \text{ m}$$

$$M(z) = -m - V_A \cdot z - q_1 \frac{z^2}{2} + V_A \cdot z$$

$$= -3000 - 2000 \cdot z - 500 \cdot z^2 + 5156 \cdot z$$

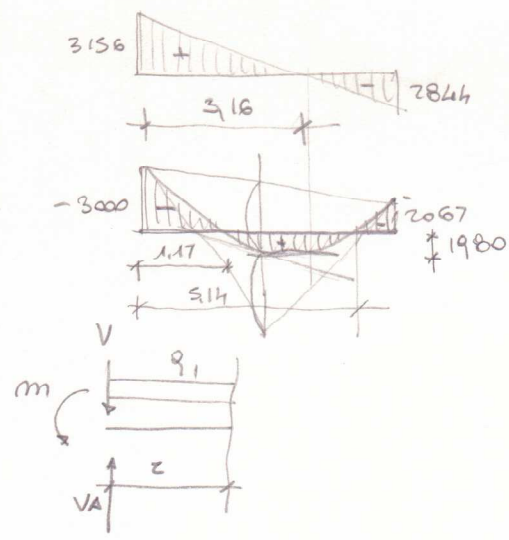
$$= -500 \cdot z^2 + 3156 \cdot z - 3000$$

$$M_A = M(0) = -3000 \text{ kgm}$$

$$M_B = M(6) = -500 \cdot 36 + 3156 \cdot 6 - 3000 = 2067 \text{ kgm}$$

$$M(3,16) = M_{MAX} = -500 \cdot 3,16^2 + 3156 \cdot 3,16 - 3000 = 1980 \text{ kgm}$$

$$= \frac{T_A^2}{2q} - M_A = \frac{3156^2}{2000} - 3000 = 1980 \text{ kgm}$$



1.1728880011!

$$-500z^2 + 3156z - 3000 = 0$$

$$z = \frac{1.17 \text{ m}}{5.14}$$

3) CAMPATA CD

$$0 \leq z < 3$$

$$T(z) = V_c - qz$$

$$= 1746 - 500 \cdot z$$

$$T(0) = T_c = 1746 \text{ kg}$$

$$T(3) = T_a = 1746 - 1500 = +246 \text{ kg}$$

$$M(z) = -\gamma + V_c \cdot z - qz^2/2 = -987 + 1746 \cdot z - 250z^2$$

$$M(0) = M_c = -987 \text{ kgm}$$

$$M_a = M(3) = -987 + 1746 \cdot 3 - 250 \cdot 9 = +2001 \text{ kgm}$$

$$T(z) = V_c - qz - F = 1746 - 500 \cdot z - 2000 = -254 - 500z$$

$$T(3) = T_{40} = -254 - 1500 = -1754 \text{ kg}$$

$$T(5) = T_b = -254 - 2000 = -2254 \text{ kg}$$

T CAMBIA SEGNO per z = 3 m

$$3 \leq z < 4$$

$$M(z) = -\gamma + V_c \cdot z - qz^2/2 - F(z-3) = -987 + 1746z - 250z^2 - 2000(z-3)$$

$$= -250z^2 - 254z + 5013$$

$$M(3) = M_a = -250 \cdot 9 - 254 \cdot 3 + 5013 = +2001 \text{ kgm} = M_{MAX}$$

$$M(4) = -250 \cdot 16 - 254 \cdot 4 + 5013 = 0 \text{ kgm}$$

2) CAMPATA BC

$$0 \leq z < 2$$

$$T(z) = V_B = 1116 \text{ kg} = \text{cost}$$

$$M(z) = -x + V_B z = -2067 + 1116z \quad 0 \leq z \leq 2$$

$$M(0) = M_B = -2067 \text{ kgm}$$

$$M(z) = M_{MAX} = -2067 + 1116z = +165 \text{ kgm}$$

$$2 < z \leq 5$$

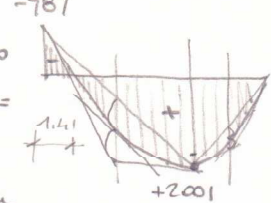
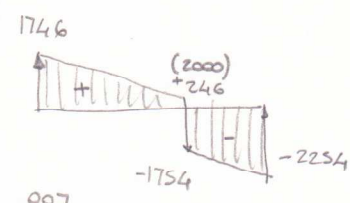
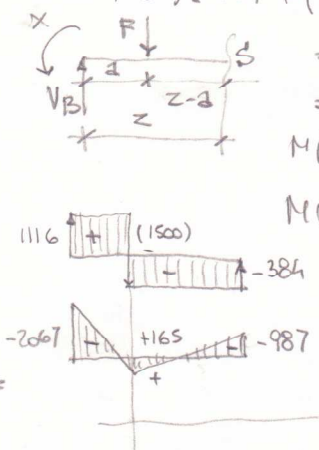
$$T(z) = V_B - F = 1116 - 1500 = -384 \text{ kg} = \text{cost}$$

$$M(z) = -x + F(z-2) + V_B z = -2067 - 1500(z-2) + 1116z$$

$$= -2067 - 1500z + 3000 + 1116z = +933 - 384z \quad 2 \leq z \leq 5$$

$$M(z) = 933 - 384z = +165 \text{ kgm} = M_{MAX}$$

$$M(5) = 933 - 384 \cdot 5 = -987$$



$$\frac{500 \cdot 3^2}{8} = 563 \text{ kgm}$$

$$\frac{500 \cdot 1^2}{8} = 63$$

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$$-250z^2 + 1746z - 987 = 0$$

$$z_1 = \frac{1.41 \text{ m}}{5.27}$$