

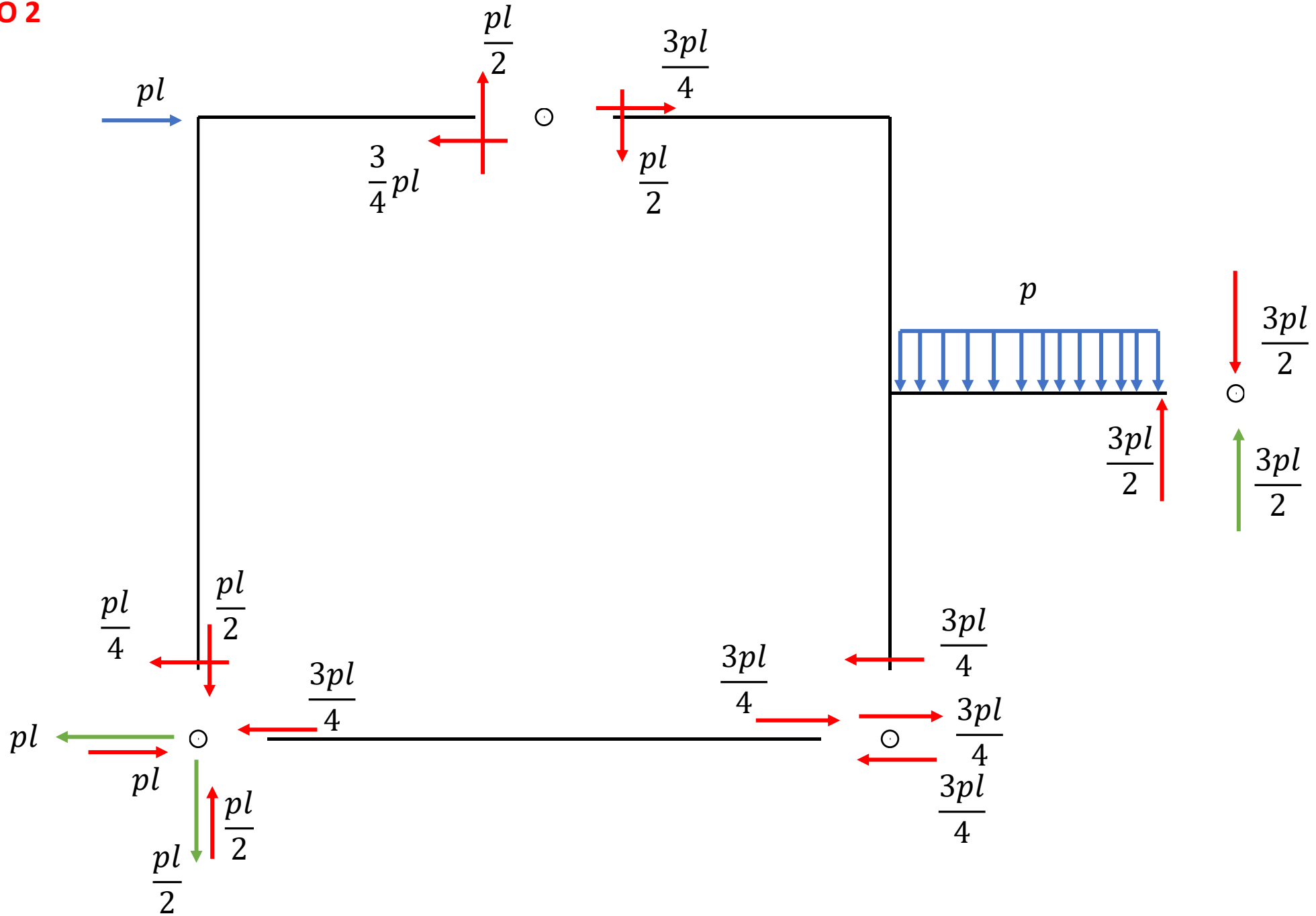
## ESERCIZIO 1 – soluzione con carrello



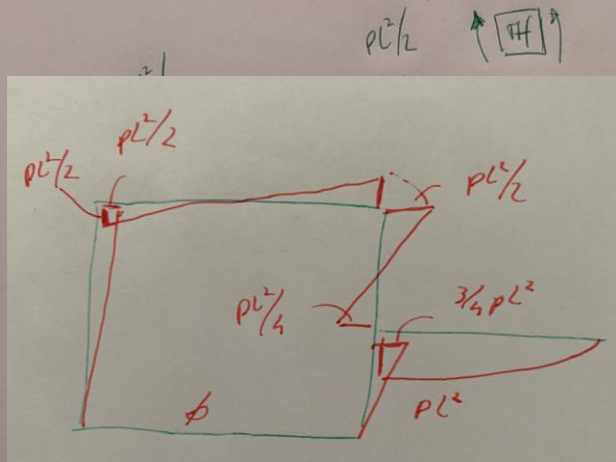
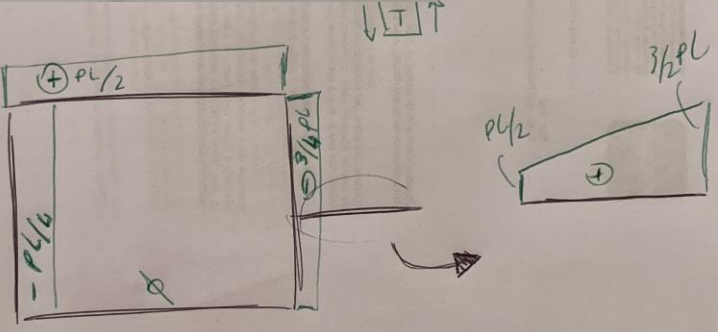
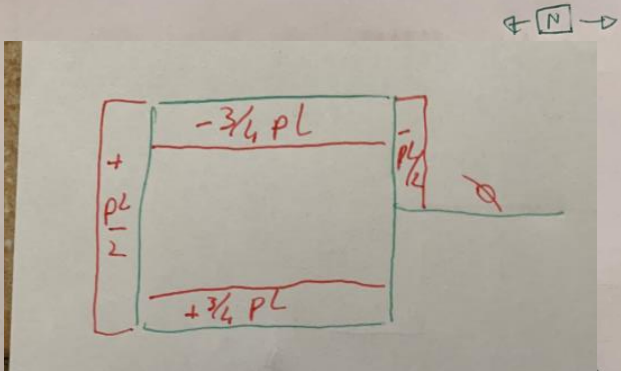
$$\left\{ \begin{array}{l} w(x)'' = -\frac{M_A + V_A \cdot x - \frac{p \cdot x^2}{2}}{E \cdot I} \\ w(0) = 0 \\ w(0)' = 0 \end{array} \right. \rightarrow w(x) = -\frac{12 \cdot M_A \cdot l^2 + 4 \cdot V_A \cdot l^3 - p \cdot l^4}{24 \cdot E \cdot I}$$

$$\left\{ \begin{array}{l} w(L) = 0 \\ V_A + V_B - p \cdot l = 0 \\ M_A + \frac{p \cdot l^2}{2} - V_B \cdot l = 0 \end{array} \right. \rightarrow \left\{ \begin{array}{l} V_A = \frac{5}{8} \cdot l \cdot p \\ V_B = \frac{3}{8} \cdot l \cdot p \\ M_A = -\frac{p \cdot l^2}{8} \end{array} \right. \rightarrow w(x) = \frac{p \cdot x^4 - \frac{5}{2} \cdot p \cdot l \cdot x^3 + \frac{3}{2} \cdot p \cdot l^2 \cdot x^2}{24 \cdot E \cdot I}$$

ESERCIZIO 2



**ESERCIZIO 2**

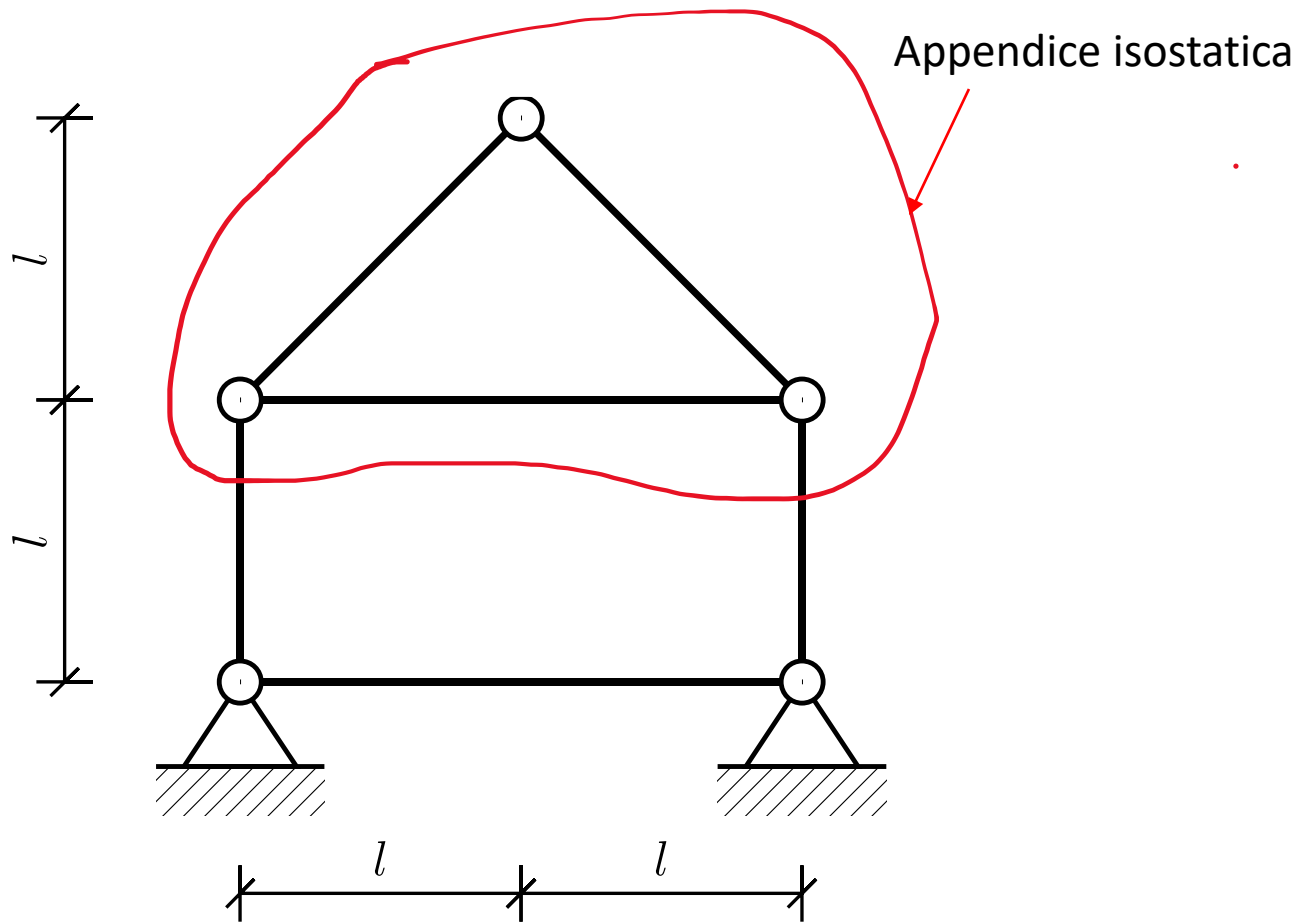


### ESERCIZIO 3A

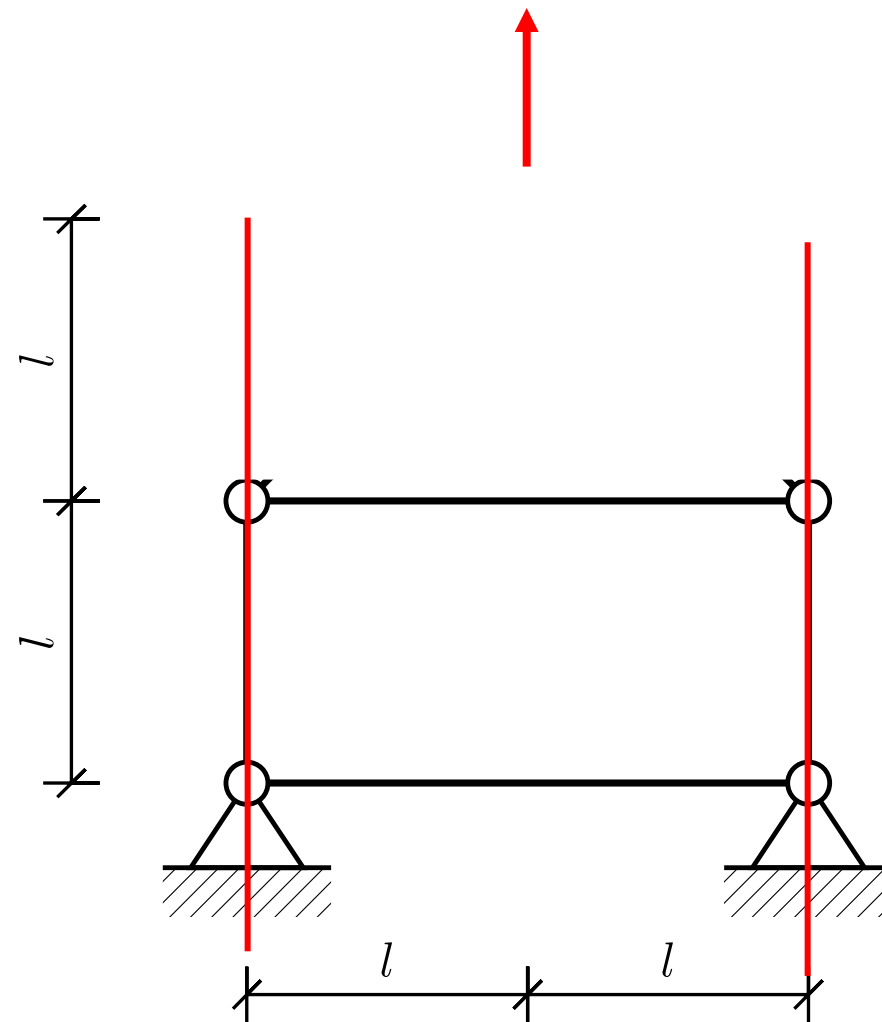
$$GdV = 4 \text{ (esterni)} + 2 + 4 + 2 + 2 + 4 = 18$$

$$GdL = 6 \cdot 3 = 18$$

Struttura isostatica labile



CIR all'infinito  $\rightarrow$  traslazione orizzontale concessa

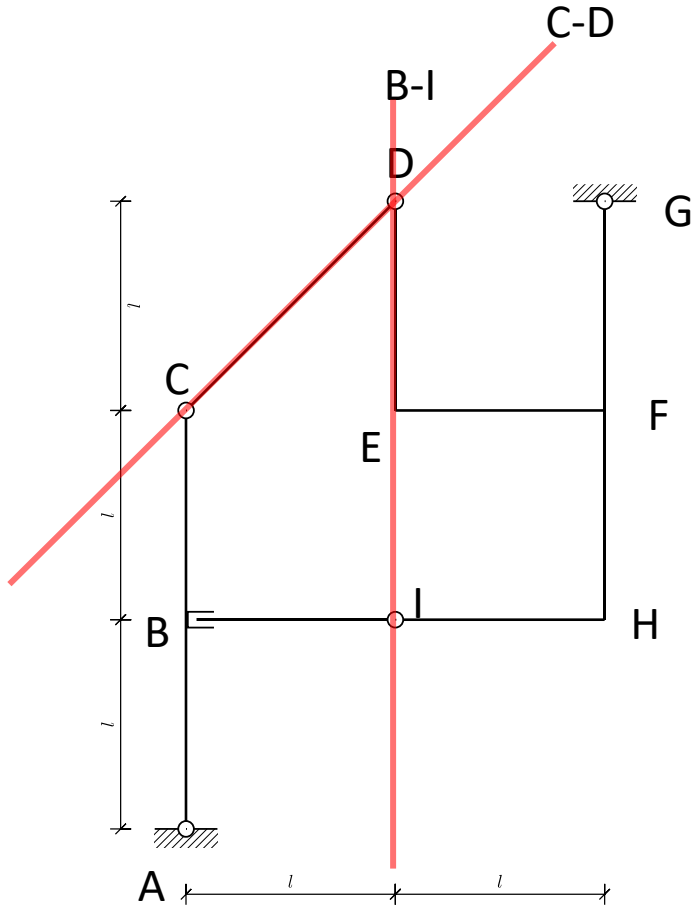


### ESERCIZIO 3B

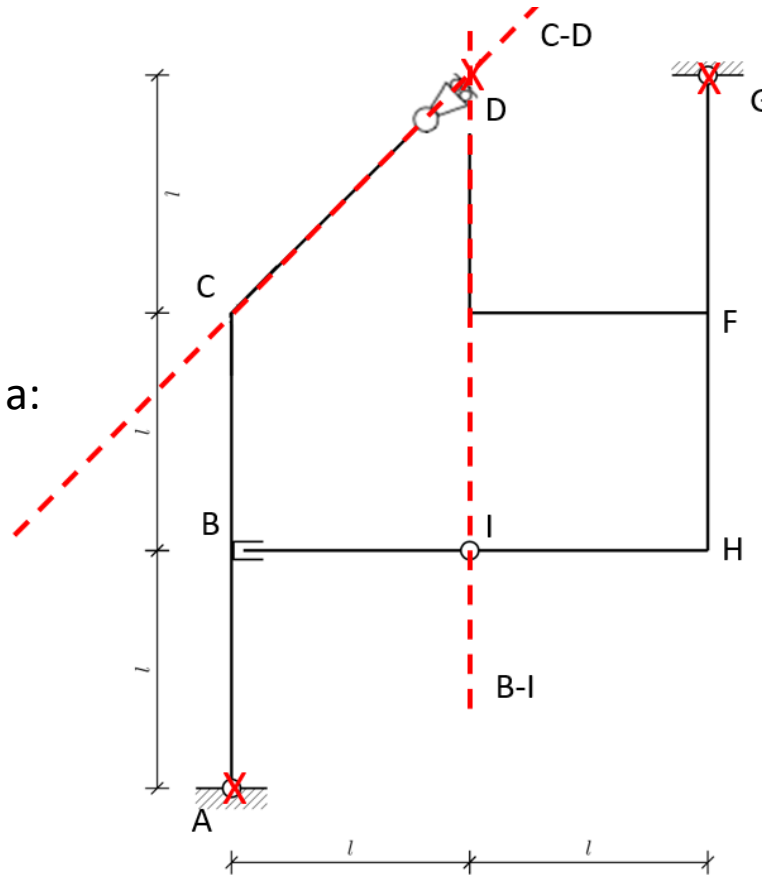
$$GdV = 4 \text{ (esterni)} + 2 + 2 + 2 + 2 = 12$$

$$GdL = 4 * 3 = 12$$

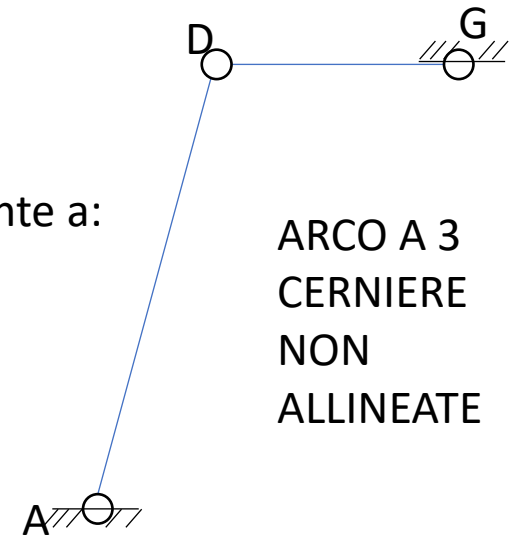
Struttura isostatica non labile



Equivalente a:



Equivalente a:



Ci sono 3 CIR distinti. Non esiste un unico CIR, pertanto la struttura non è labile