

GdL: 21 GdV: 21

La struttura è labile?

Si No

1 + 2 labile: $C_2 \in a \equiv \overline{C_1 C_{12}}$

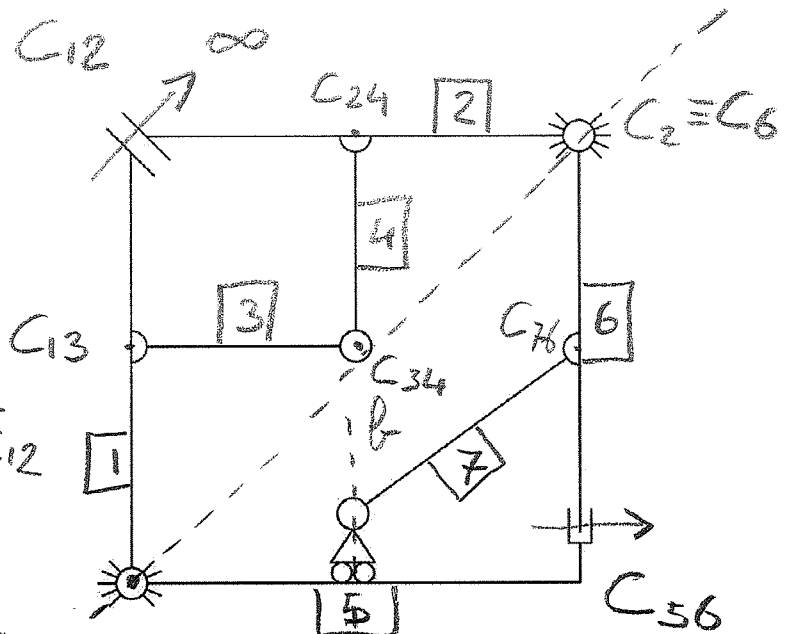
3 + 4 isostatico:

$C_{24} \notin \overline{C_{13} C_{34}}$

$a, C_1 \equiv C_5$

5 + 6 isostatico: $C_6 \notin \text{retta } \overline{C_5 C_{56}}$

7 isostatico: $C_{76} \notin b$

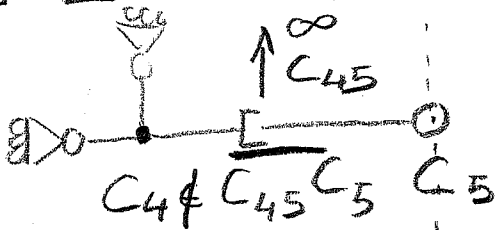


GdL: 24 GdV: 24

La struttura è labile?

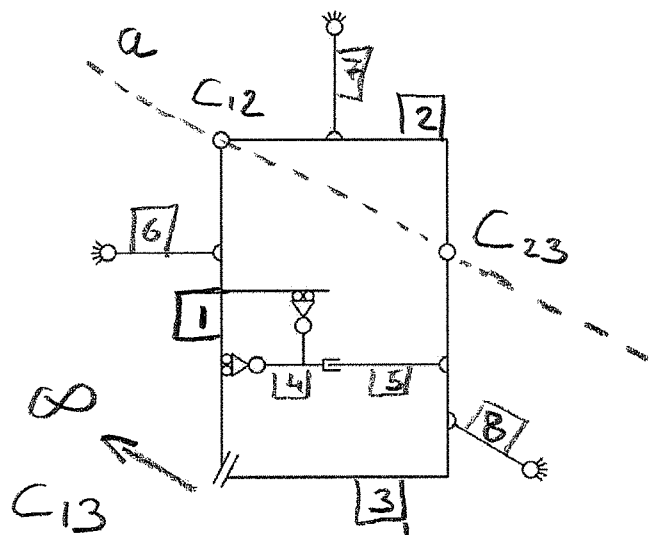
Si No

4 + 5 isostatico

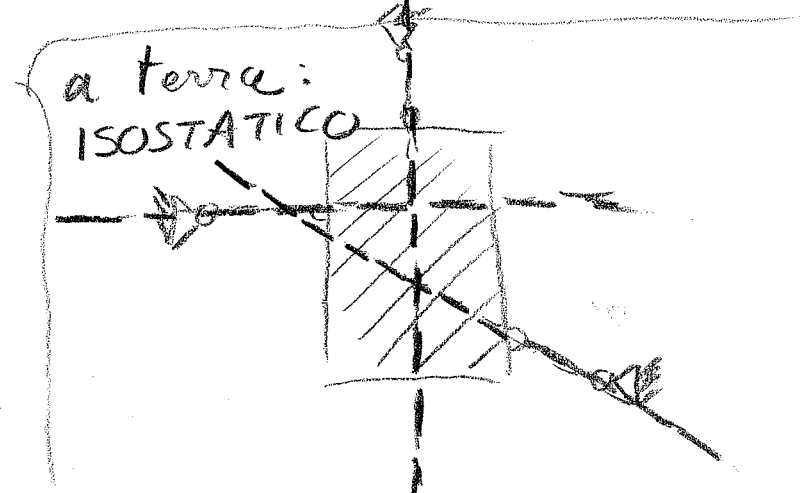


1 + 2 + 3 anello internamente labile

$C_{12} \in a \equiv \text{retta } \overline{C_{13} C_{23}}$



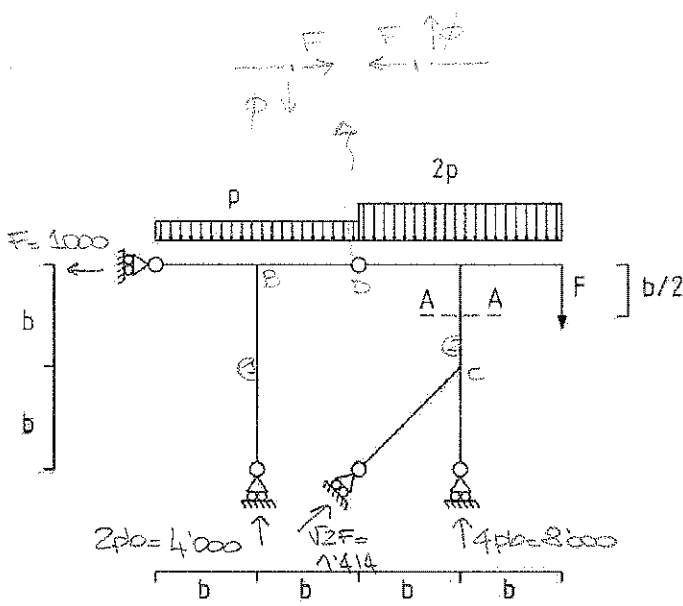
a terra:
ISOSTATICO



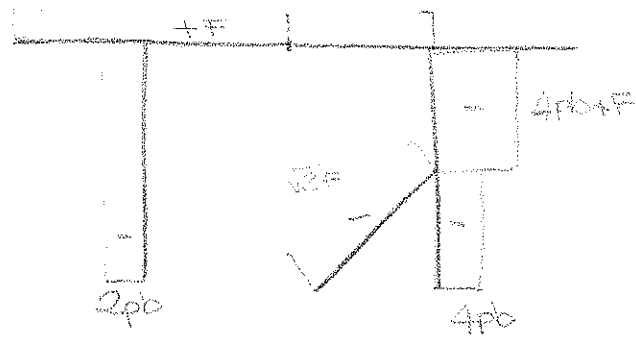
FCM: Esercizio 2. Effettuare l'analisi cinematica della seguente struttura. Calcolare, inoltre, le reazioni vincolari e diagrammare le azioni interne (indicare la convenzione scelta).

Handwritten notes: $\sum M = 0$ $\sum F_x = 0$ $\sum F_y = 0$

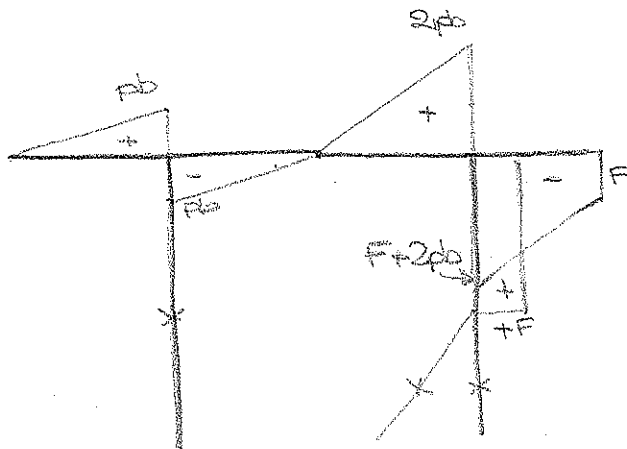
Handwritten notes:
 $\sum M = 0$
 $\sum F_x = 0$
 $\sum F_y = 0$
 \rightarrow NON LABILE



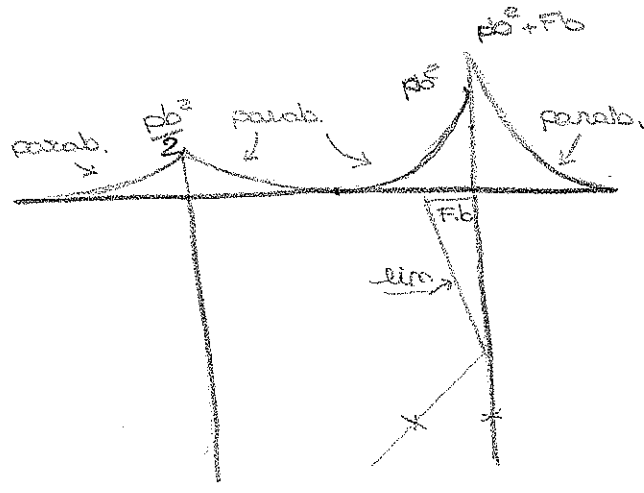
$b = 500 \text{ mm}$
 $p = 4 \text{ N/mm}$
 $F = 1000 \text{ N}$



Azione assiale $N \leftarrow \oplus \rightarrow$



Taglio $T \downarrow \oplus \uparrow$

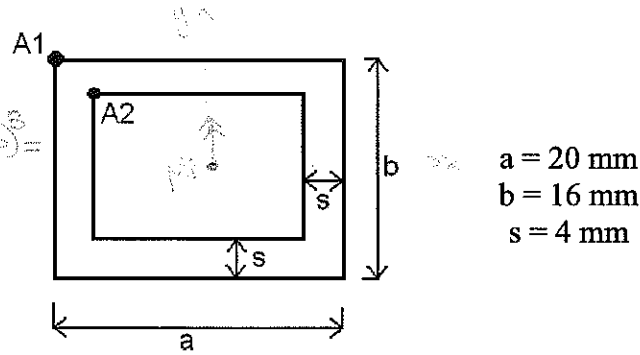


Momento flettente $M \curvearrowright \oplus \curvearrowleft$

FCM: Esercizio 3. Con riferimento alla struttura precedente, calcolare nella sezione A-A rettangolare cava, riportata nell'immagine seguente, lo stato di sforzo in corrispondenza dei punti A1 e A2.

$$A = ab - (a-2s)(a-2s) = 224 \text{ mm}^2$$

$$I = \frac{1}{12} a^3 - \frac{1}{12} (a-2s)^3 = 9515 \text{ mm}^4$$



$$\sigma_{\overline{AB}} = \frac{N}{A} = - \frac{(F+4ps)}{224} = - \frac{(1000+4 \cdot 500 \cdot 4)}{224} = -40,17 \text{ MPa}$$

$$\sigma_{\overline{AB}} = + \frac{M_x}{I_y} \cdot x \rightarrow \sigma_A = \frac{250000 \cdot a/2}{9515} = 262,75 \text{ MPa}$$

$$\rightarrow \sigma_B = \frac{250000 \cdot (a/2 - s)}{9515} = 157,65 \text{ MPa}$$

$$M_x = +F \cdot \frac{b}{2} = 1000 \cdot \frac{500}{2} = 250000 \text{ Nmm}$$

$$\sigma_{\text{tot}} = \sigma_N + \sigma_{Mx} \rightarrow \begin{cases} A: \sigma = 262,75 - 40,17 = 222,58 \text{ MPa} \\ B: \sigma = 157,65 - 40,17 = 117,48 \text{ MPa} \end{cases}$$