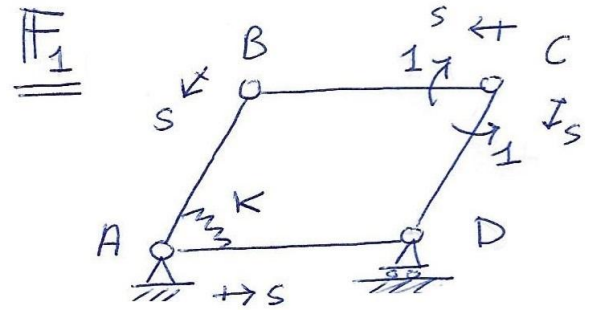
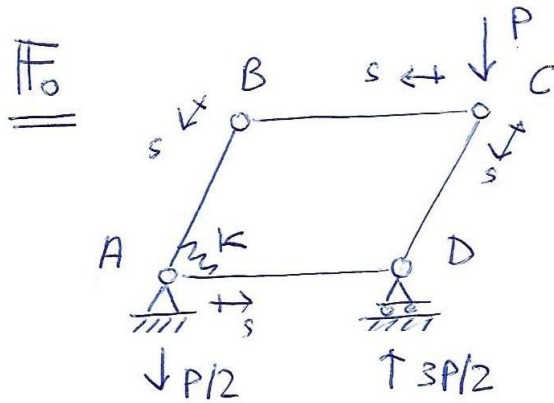


Prova scritta (telematica) del 11 gennaio 2021 – Sintesi soluzione



①

$$N_{AB} = \frac{P}{2\sqrt{3}}$$

$$T_{AB} = \frac{P}{2}$$

$$M_{AB} = \frac{Ps}{2}$$

$$N_{BC} = \frac{P}{\sqrt{3}}$$

$$T_{BC} = M_{BC} = 0$$

$$N_{CD} = -\frac{2P}{\sqrt{3}}$$

$$T_{CD} = M_{CD} = 0$$

$$N_{AD} = -\frac{P}{\sqrt{3}}$$

$$T_{AD} = -\frac{P}{2}$$

$$M_{AD} = \frac{Pe}{2} - \frac{Ps}{2}$$

$$N_{AB} = \frac{1}{\sqrt{3}e}$$

$$T_{AB} = -\frac{1}{e}$$

$$M_{AB} = -\frac{s}{e}$$

$$N_{BC} = -\frac{1}{\sqrt{3}e}$$

$$T_{BC} = -\frac{1}{e}$$

$$M_{BC} = 1 - \frac{s}{e}$$

$$N_{CD} = -\frac{1}{\sqrt{3}e}$$

$$T_{CD} = \frac{1}{e}$$

$$M_{CD} = -1 + \frac{s}{e}$$

$$N_{AD} = \frac{1}{\sqrt{3}e}$$

$$T_{AD} = \frac{1}{e}$$

$$M_{AD} = -1 + \frac{s}{e}$$

$$\eta_1 = \eta_{10} + X_1 \cdot \eta_{11} = -\frac{X_1}{k}$$

da cui:

$$1 \cdot \eta_{11} - 1 \cdot \frac{1}{k} = \int_{\substack{AB \\ BC \\ CD \\ DA}} \frac{M_1^2}{EJ} = \frac{4\ell}{3EJ}$$

$$X_1 = \frac{P\ell}{4}$$

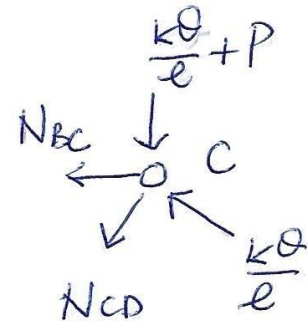
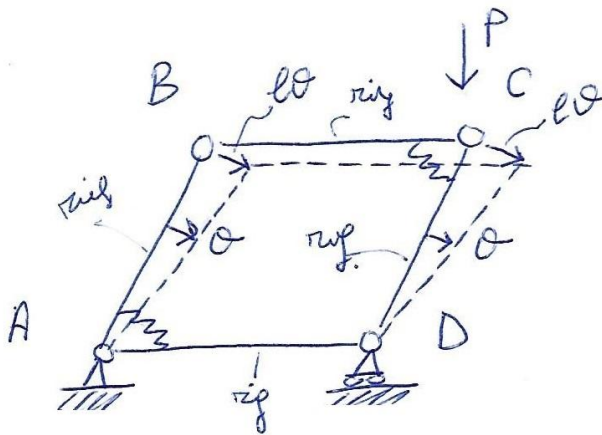
$$1 \cdot \eta_{10} + 1 \cdot \frac{P\ell}{2k} = \int_{\substack{AB \\ BC \\ CD \\ DA}} \frac{M_0 M_1}{EJ} = -\frac{P\ell^2}{3EJ}$$

$$\max |N| = \frac{3\sqrt{3}}{4} P$$

$$\max |T| = \frac{P}{4}$$

$$\max |M| = \frac{P\ell}{4}$$

②



$$N_{CD} = -\frac{k\theta}{\sqrt{3}\ell} - \frac{2P}{\sqrt{3}}$$

$$N_{BC} = -\frac{k\theta}{\sqrt{3}\ell} + \frac{P}{\sqrt{3}}$$

$$k\theta + \frac{k\theta}{\ell\sqrt{3}} \frac{\ell\sqrt{3}}{2} - \frac{P}{\sqrt{3}} \frac{\ell\sqrt{3}}{2} + \frac{k\theta}{\ell} \frac{\ell}{2} = 0$$

da cui: $\theta = \frac{P\ell}{4k}$

