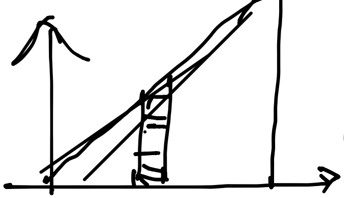
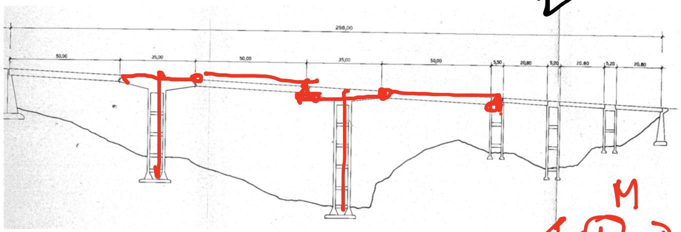
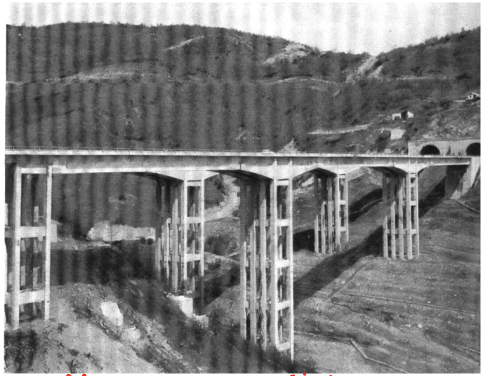
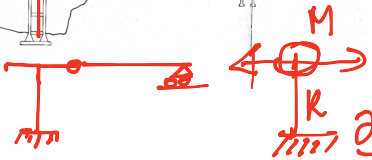
$\frac{F}{A} = \sigma$ F



δ $\frac{\delta}{\ell} = \varepsilon$

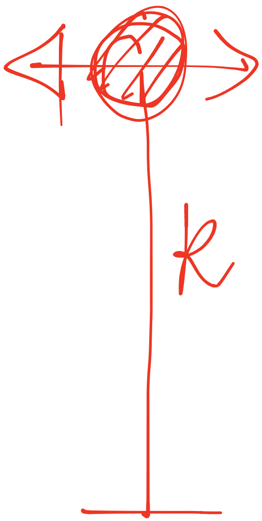


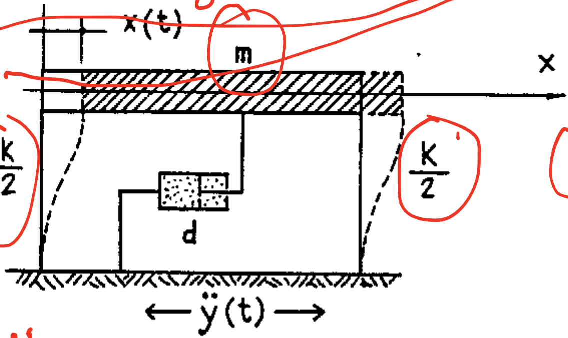




$$\frac{\partial^2 u}{\partial t^2} = \ddot{u} = \ddot{u}_g + \ddot{x}$$

$$u = u_g + x$$





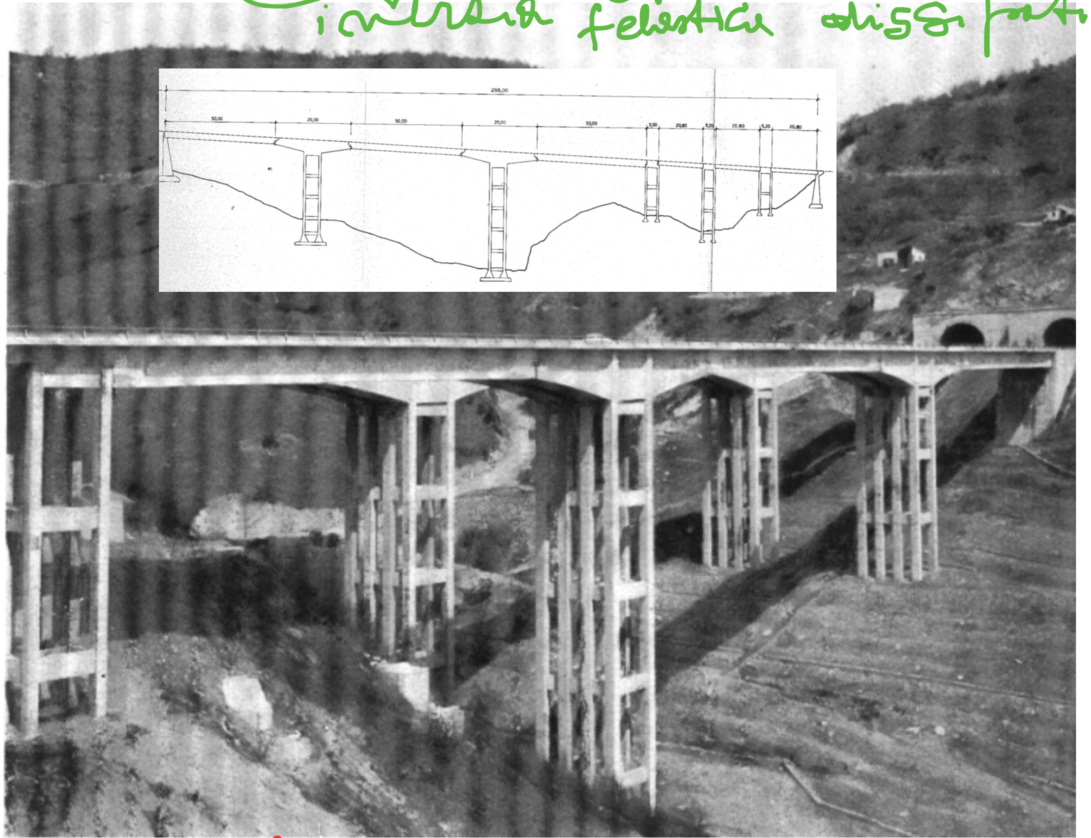
F

Se c'è forza esterna F (vento o altro)

$$\ddot{u} = \ddot{y} + \ddot{x}$$

$F_i = m(\ddot{y} + \ddot{x})$ $F_e = Kx$ $F_d = d\dot{x}$

$$\cancel{0}\ \cancel{F} = \underbrace{m(\ddot{y}+\ddot{x})}_{\text{inerzia}} + \underbrace{kx}_{\text{elastica}} + \underbrace{d\dot{x}}_{\text{dissipativa}}$$

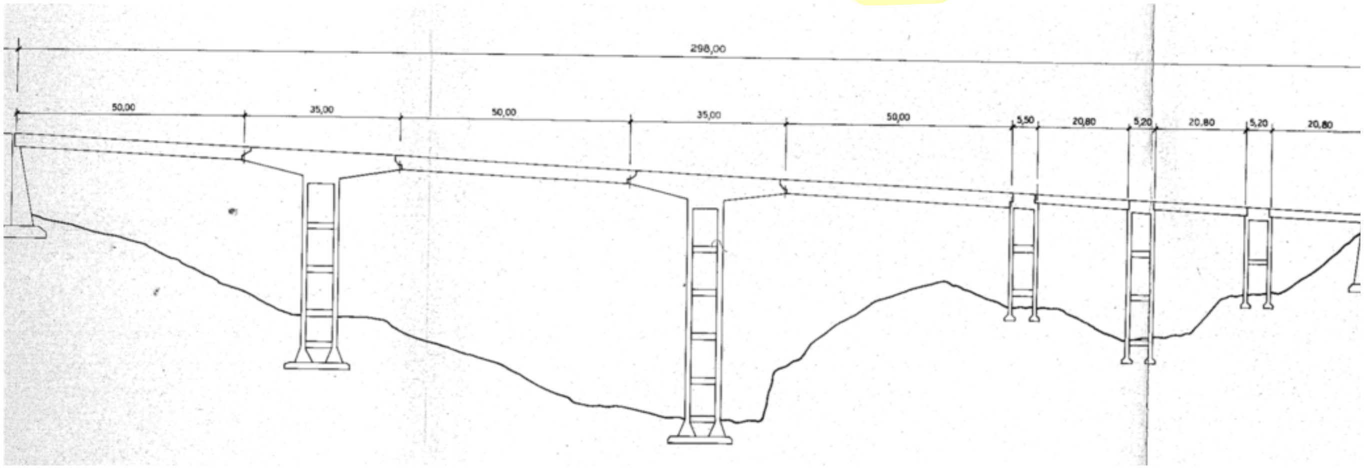


$$m\ddot{x} + d\dot{x} + kx = -m\ddot{y}$$

$$\ddot{x} + d/m\,\dot{x} + k/m\,x = -\ddot{y}$$

$$\ddot{x} + 2\nu\omega\dot{x} + \omega^2 x = -\ddot{y}$$

$$\frac{d}{m} = 2\nu\omega \qquad \omega^2 = \frac{k}{m} \Rightarrow \omega = \sqrt{\frac{k}{m}}$$



$$k \cdot x_{max} = m\,(a(t) + \ddot{x}(t))_{max}$$

$$x_{max} = \frac{m}{k}\,(a(t) + \ddot{x}(t))_{max}$$

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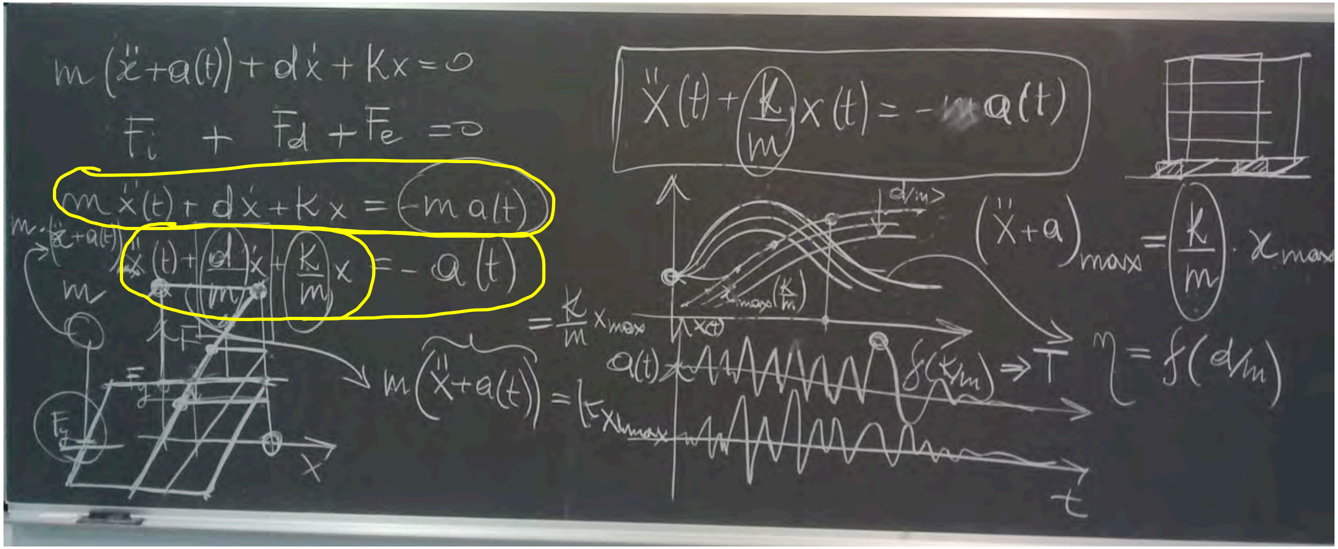

Il parametro che controlla la risposta dinamica è K/m rapporto tra massa e rigidezza

Si dimostra che:

$T=2\pi(m/k)^{0.5}$ è il periodo proprio della struttura