

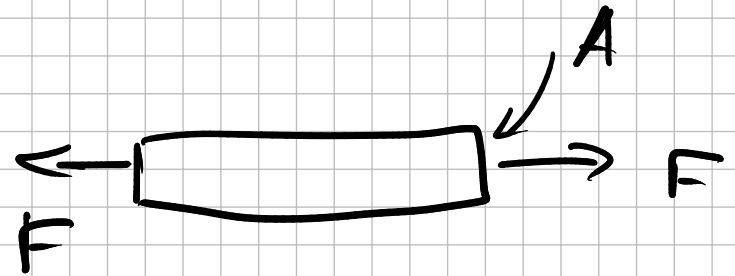
Stress:

$$\frac{\text{Force}}{\text{Area}} = \sigma = \left[\frac{\text{N}}{\text{m}^2} \right] = [\text{Pa}]$$

Compression

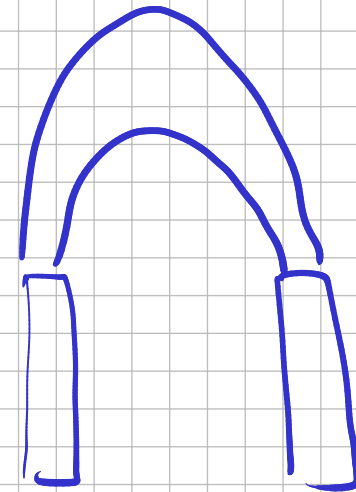
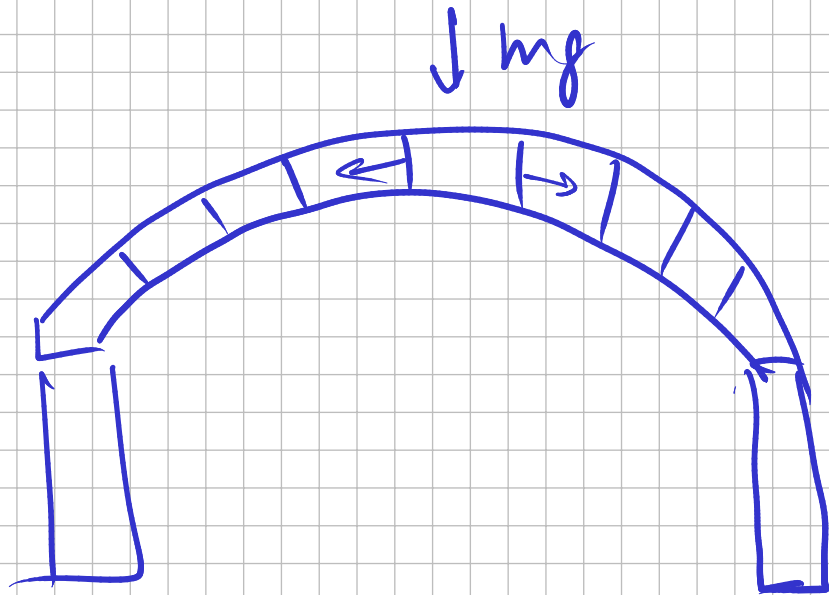
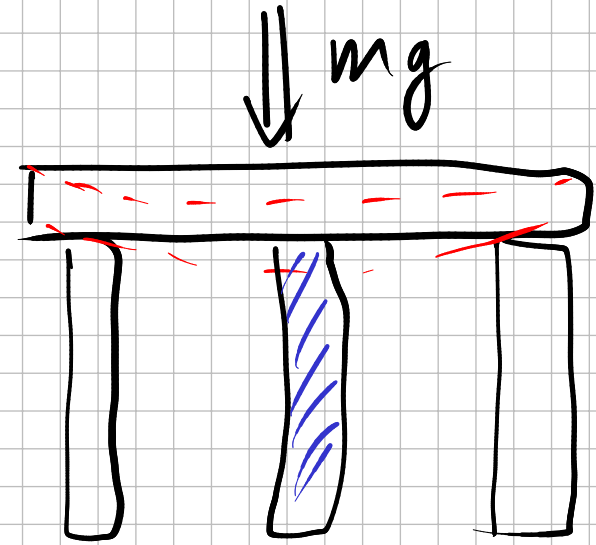
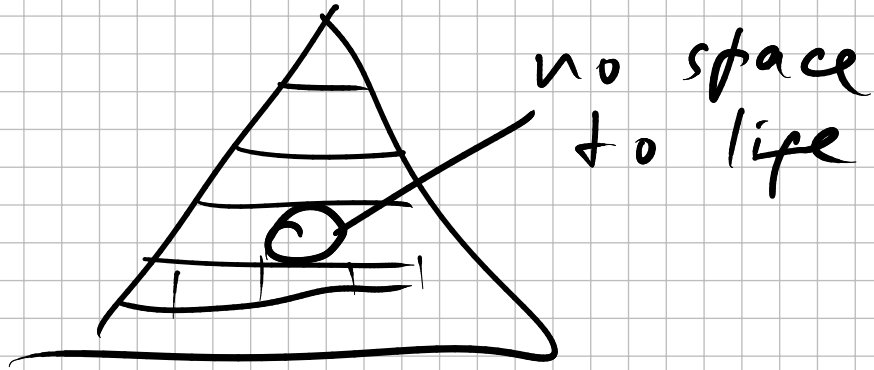


Tensile

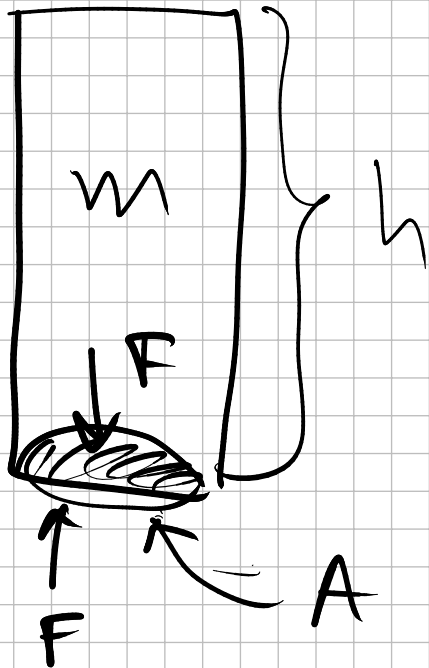


Just before a crash / breakage
=> ultimate stress

Buildings



Height of the Mountains.



$$\frac{F}{A} = \frac{mg}{A} < S_{\text{ultimate}}$$

\downarrow density $\rho \cdot A \cdot h$

$$\frac{\rho A h}{A} g < S_u$$

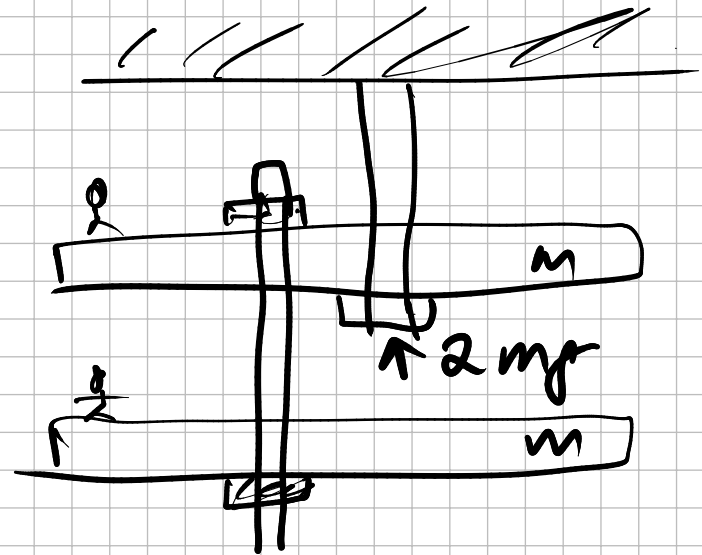
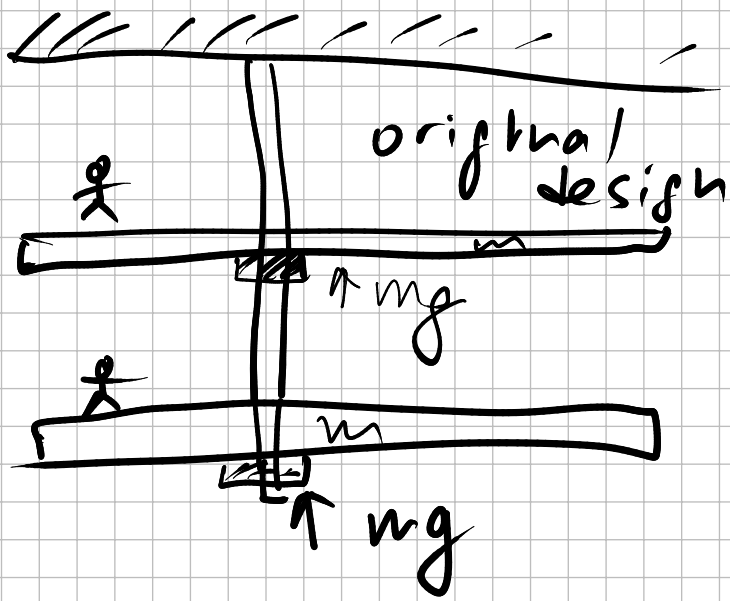
$$h < \frac{S_u}{\rho \cdot g}$$

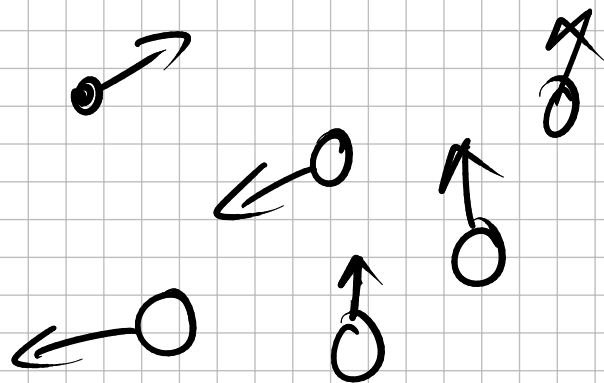
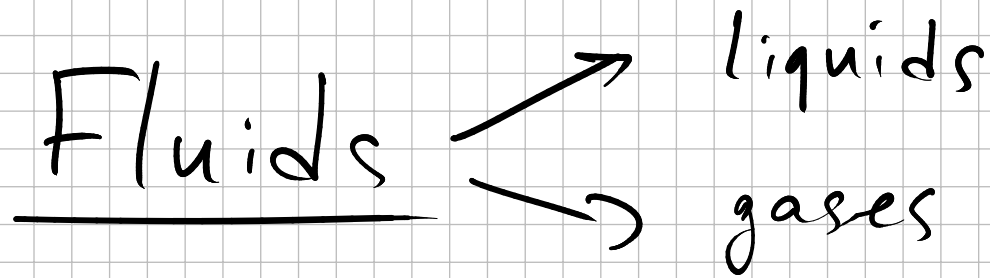
granite

$$h < \frac{130 \cdot 10^6 \text{ Pa}}{2400 \frac{\text{kg}}{\text{m}^3} \cdot 10} \approx 0.5 \cdot \frac{10^7}{10^3}$$

$\approx 0.5 \cdot 10^4 \approx 5 \cdot 10^3$
 $\approx 5 \text{ km}$

Building mistakes



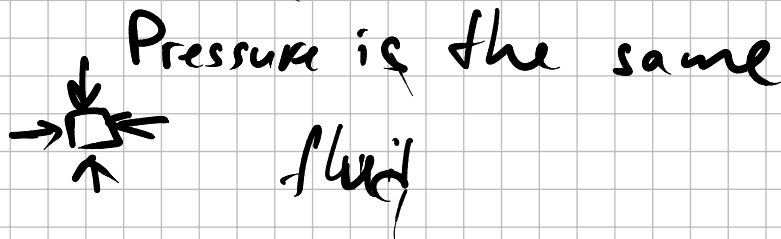


density of fluids

← condensed or solid material

ρ - density

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



$F_{\text{drag}} = \frac{1}{2} A \rho v^2 \cdot C$
 ↑
 shape related