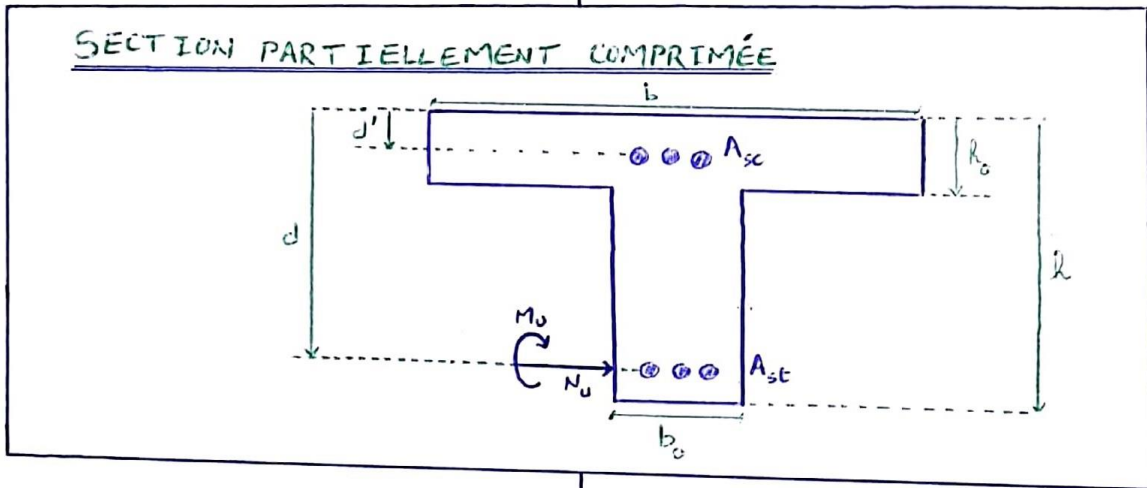


# Flexion composée - section en T



$$M_B^T = b \cdot h_o \cdot \left(d - \frac{h_o}{2}\right) \cdot \sigma_{bc}$$

NON

$$M_u \leq M_B^T$$

OUI

Section en T

$$M_r = M_u - (b - b_o) \cdot h_o \cdot \left(d - \frac{h_o}{2}\right) \cdot \sigma_{bc}$$

$$\mu = \frac{M_r}{b_o \cdot d^2 \cdot \sigma_{bc}}$$

NON

$$\mu \leq \mu_R$$

Armatures comprimées

$$\epsilon_{sc} = (3,5 \cdot 10^{-3} + \epsilon_e) \cdot \left(\frac{d-d'}{d}\right) - \epsilon_e$$

$$M_R = \mu_R \cdot b_o \cdot d^2 \cdot \sigma_{bc}$$

$$Z_R = d \cdot (1 - 0,4 \cdot \mu_R)$$

$$M_1^F = M_R + (b - b_o) \cdot h_o \cdot \left(d - \frac{h_o}{2}\right) \cdot \sigma_{bc}$$

$$M_2^F = M_u - M_1^F$$

$$A_{sc} = \frac{M_2^F}{(d-d') \cdot \sigma_{sc}}$$

$$A_{st} = \left[ \frac{M_R}{Z_R} + (b - b_o) \cdot h_o \cdot \sigma_{bc} - N_u \right] \cdot \frac{\gamma_s}{b_e} + A_{sc} \cdot \frac{\sigma_{sc}}{b_e} \cdot \gamma_s$$

STP

Section sans armatures comprimées

$$\alpha = 1,25 (1 - \sqrt{1 - 2\mu'})$$

$$Z = d (1 - 0,4\alpha)$$

$$A_{st} = \left[ \frac{M_r}{Z} + (b - b_o) \cdot h_o \cdot \sigma_{bc} - N_u \right] \cdot \frac{\gamma_s}{b_e}$$

STP

Section rectangulaire

$$\mu = \frac{M_u}{b \cdot d^2 \cdot \sigma_{bc}}$$

$$\alpha = 1,25 (1 - \sqrt{1 - 2\mu'})$$

$$Z = d \cdot (1 - 0,4\alpha)$$

$$A_{st} = \left[ \frac{M_u}{Z} - N_u \right] \cdot \frac{\gamma_s}{b_e}$$

STP