

$Sf_{max} := 710 \text{ MPa}$ assumed value

$n_b := 24$

$f := 1.141$

$t := 109 \text{ mm}$

$g_1 := 18 \text{ mm}$

$A_b := 745.2 \text{ mm}^2$

$Y := 9.004$

$B := 900 \text{ mm}$

$f_2 := 0.332$

$h_G := 40.374$

$Z := 4.645$

$E := 201000 \text{ MPa}$

Guess Values

$Sf_{max} := 710 \text{ MPa}$

how to do the calculation like
goal seek

Constraints

$$n_b \cdot A_b \cdot Sf_{max} = W$$

$$W \cdot h_G = M_o$$

$$\frac{f \cdot M_o}{L \cdot g_1^2 \cdot B} = 1$$

$$S_R = \frac{Sf_{max} \cdot (1.33 \cdot t \cdot e + 1) \cdot M_o}{L \cdot t^2 \cdot B}$$

$$S_T = \frac{Y \cdot M_o}{t^2 \cdot B} - Z \cdot S_R$$

$$S_{TO} = \frac{f_2}{f} \cdot S_H$$

$$\frac{\max(S_H, S_R, S_T, S_{TO})}{Sf_{max}} = 1$$

$$\theta f_{max} = \frac{52.14 \cdot V \cdot M_o}{L \cdot E \cdot g_o^2 \cdot h_o} \text{ deg}$$

Solver

$$sol := \mathbf{find}(Sf_{max}) = ?$$

$$Sf_{max} = \max(S_H, S_R, S_T, S_{TO})$$

and accordingly the sf
max vale need to
modify automatically
like goal seek in excel