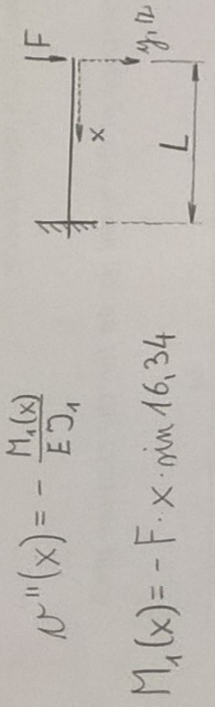


4

Določimo ne deformacijsko stanje nosilca. Ker je prazen & pri upogibu (tako pri čistem kot tudi pri prazenem upogibu) vedno pravokoten glede na neutralsko os imamo pri prazenem upogibu prazen "N" v smeri y osi in prazen "W" v smeri x osi. Velja:



$$W''(x) = + \frac{M_2(x)}{EJ_2}$$

$$M_2(x) = F \cdot x \cdot \cos 16,34$$

$$W''(x) = \frac{F \cdot x \cdot \cos 16,34}{EJ_2}$$

$$W'(x) = \frac{F \cdot x^2 \cdot \cos 16,34}{2EJ_2} + C_3$$

$$W(x) = \frac{F \cdot x^3 \cdot \cos 16,34}{6EJ_2} + C_3 \cdot x + C_4$$

Robna pogoja:

$$W(L) = 0 \Rightarrow \frac{FL^3 \sin 16,34}{6EJ_2} + C_1 \cdot L + C_2 = 0$$

$$W'(L) = 0 \Rightarrow C_1 = - \frac{FL^2 \sin 16,34}{2EJ_2}$$

$$C_2 = \frac{FL^3 \sin 16,34}{3EJ_2} = W(x=0)$$

Robna pogoja:

$$W(L) = 0 \Rightarrow \frac{FL^3 \cos 16,34}{6EJ_2} + C_3 \cdot L + C_4 = 0$$

$$W'(L) = 0 \Rightarrow C_3 = - \frac{FL^2 \cos 16,34}{2EJ_2}$$

$$C_4 = \frac{FL^3 \cos 16,34}{3EJ_2} = W(x=0)$$

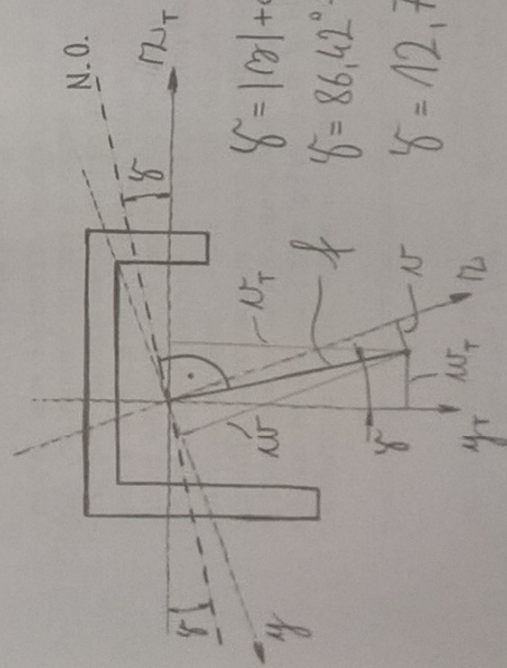
Za krajšo pisanost prejemo na prazen na koncu nosilca:

$$W = \frac{FL^3 \sin 16,34}{3EJ_2}$$

$$W = \frac{FL^3 \cos 16,34}{3EJ_2}$$

$$W = \frac{9,81 \cdot 360^3 \cdot \sin 16,34}{3 \cdot 55200 \cdot 5847,33} = 0,133 \text{ mm}$$

$$W = \frac{9,81 \cdot 360^3 \cdot \cos 16,34}{3 \cdot 55200 \cdot 1247,146} = 2,127 \text{ mm}$$



celoten prazen f:

$$f = \sqrt{W^2 + W_T^2} = 2,131 \text{ mm}$$

Na lab. vajah smo merili W_T in W_T .

Velja: $W_T = f \cdot \cos \gamma = 2,131 \cdot \cos 12,76 = 2,078 \text{ mm}$

$W_T = f \cdot \sin \gamma = 2,131 \cdot \sin 12,76 = 0,471 \text{ mm}$

POVES KOT ČISTI UPOGIB:

$$W_T = \frac{FL^3}{3EJ_2} = \frac{9,81 \cdot 360^3}{3 \cdot 55200 \cdot 1641,238}$$

$$W_T = 1,7154 \text{ mm} \quad W_T = 0$$

NA LAB. VAJAH SMO IZMERILI: $W_T = 2,05 \text{ mm}$ do $2,20 \text{ mm}$
 $W_T = 0,42 \text{ mm}$ do $0,50 \text{ mm}$