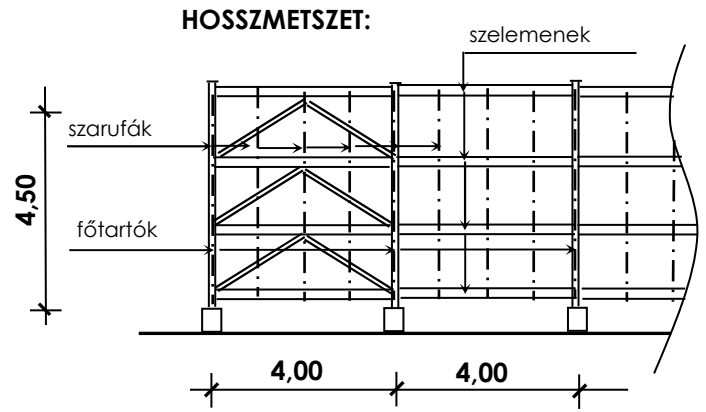
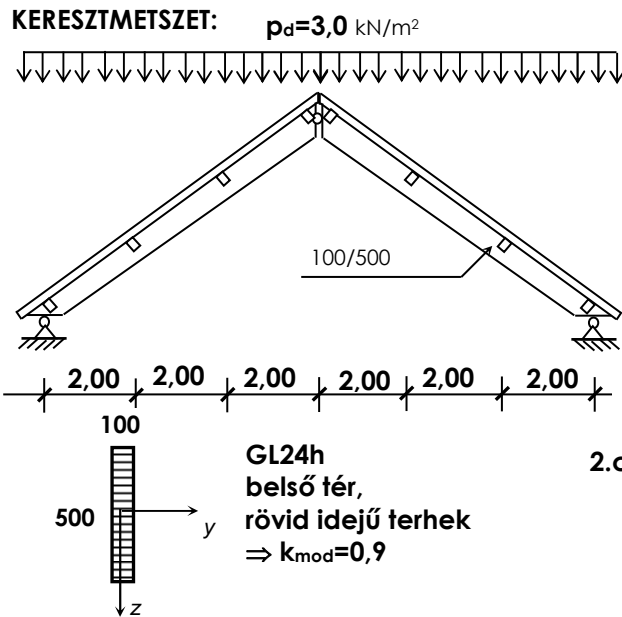
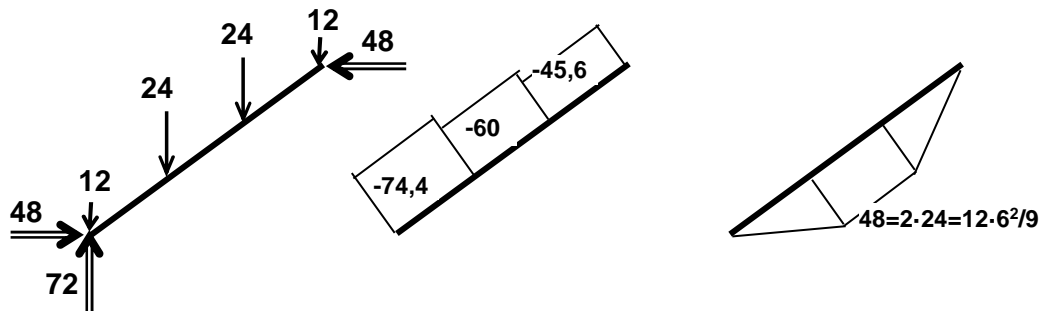


7. táblai gyakorlat kiegészítés/2.



2.c) Ellenőrizzük a főtartó teherbírását!



$$f_{c,d} = 17,28 \text{ N/mm}^2$$

$$f_{m,d} = 17,28 \text{ N/mm}^2$$

$$\sigma_c = \frac{N_E}{A} = \frac{74400 \text{ N}}{100 \text{ mm} \cdot 500 \text{ mm}} = 1,49 \text{ N/mm}^2$$

$$\sigma_{m,y} = \frac{M_{E,y}}{W_y} = \frac{48,0 \cdot 10^6 \text{ Nmm}}{(100 \text{ mm} \cdot 500^2 \text{ mm}^2)/6} = \frac{48,0 \cdot 10^6 \text{ Nmm}}{4,167 \cdot 10^6 \text{ mm}^3} = 11,5 \text{ N/mm}^2$$

$$\lambda_m^2 = \frac{l_{ef,m} \cdot h}{b^2} = \frac{2500 \text{ mm} \cdot 500 \text{ mm}}{100^2 \text{ mm}^2} = 125 < 140 \Rightarrow k_{crit} = 1$$

$$\lambda_y = \frac{l_{ef,y}}{i_y} = \frac{7500 \text{ mm}}{\sqrt{\frac{500^2}{12}} \text{ mm}} = \frac{7500}{144,3} = 52 \Rightarrow \lambda_{rel,y} = \frac{52,2}{62,2} = 0,84 \Rightarrow k_{c,y} = 0,876$$

$$\lambda_z = \frac{l_{ef,z}}{i_z} = \frac{2500 \text{ mm}}{\sqrt{\frac{100^2}{12}} \text{ mm}} = \frac{2500}{28,87} = 86,6 \Rightarrow \lambda_{rel,z} = \frac{86,6}{62,2} = 1,39 \Rightarrow k_{c,z} = 0,468$$

$$k_{//} = \frac{1}{1 - \frac{\sigma_c}{f_c} \cdot \lambda_{rel,y}^2} = \frac{1}{1 - \frac{1,49}{17,28} \cdot 0,84^2} = 1,065 \Rightarrow \sigma_{m//,y} = k_{//} \cdot \sigma_{m,y} = 1,065 \cdot 11,5 = 12,25 \text{ N/mm}^2$$

$$(B1) \frac{\sigma_c}{k_{c,y} \cdot f_c} + \frac{\sigma_{m//,y}}{f_m} = \frac{1,49}{0,876 \cdot 17,28} + \frac{1,065 \cdot 11,5}{17,28} = \frac{0,086}{0,876} + 1,065 \cdot 0,666 = 0,098 + 0,709 = 0,81 < 1 \text{ MF!}$$

$$(B2) \frac{\sigma_c}{k_{c,z} \cdot f_c} + k_m \cdot \frac{\sigma_{m//,y}}{f_m} = \frac{1,49}{0,468 \cdot 17,28} + 0,7 \cdot \frac{1,065 \cdot 11,5}{17,28} = 0,184 + 0,7 \cdot 0,709 = 0,68 < 1!$$

