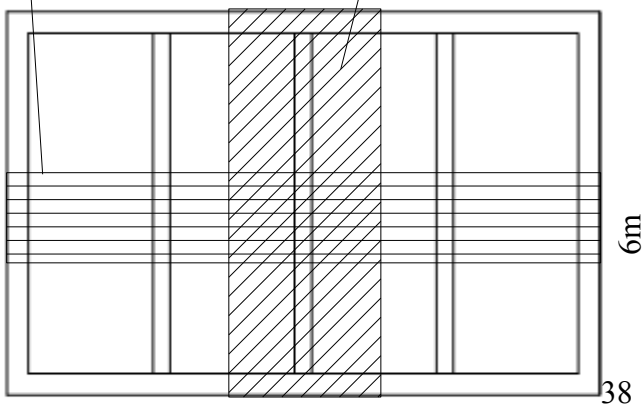
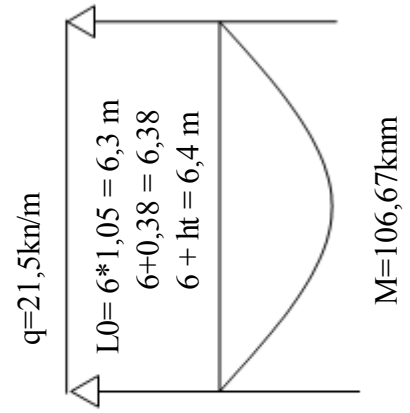
Lemezre jutó tehet Mindig 1 m

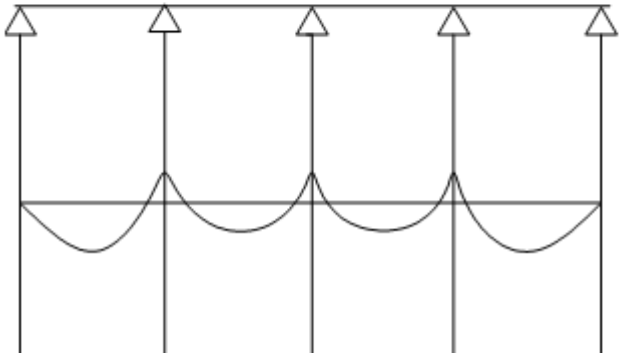
Sz = 1,10 + 0,3 + 1,10 = 2,5 m
qm=6,5+2,1*sz= 21,5 kn/m

T=2,2m

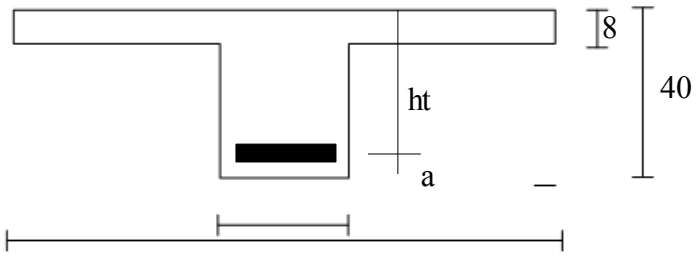
Gerendára jutó teher t + bg







$$M_m = \frac{q * l^2}{6} = \frac{21,5 * 6,3^2}{8} = 106,67\,kNm$$



c= 2 cm
feltételezek 6 mm kengyel
20 mm fövas

$$a = c + d_k + \frac{d_s}{2} + 1 = 2 + 0,6 + 1 + 1 = 4,6\,cm \qquad h = ht - a = 40 - 4,6 = 35,4\,cm$$

Négyszög keresztmetszetet feltételezünk

$$x = h - \sqrt{h^2 - 2\frac{M_m}{bf * \sigma_{bh}}} = 35,4 - \sqrt{35,4^2 - \frac{2 * 10667}{30 * 1,15}} = 2,15\,cm$$

x< v tehát nyégyszög

B 60 40

$\sigma_{sh} = 35 \frac{kN}{cm^2}$ $\xi_0 = 0,48$ C- 16 $\sigma_{sb} = 1,15 \frac{kN}{cm^2}$

N=H

$$b_f * x * \sigma_{bh} = A_s * \sigma_{sh} \Rightarrow A_s = \frac{b_f * x * \sigma_{bh}}{\sigma_{sh}} = \frac{126 * 2,15 * 1,15}{35} = 8,9\,cm^2$$

As alk 3 db 20 mm As= 9,42 cm^2

Ellenörzés

$$x = \frac{As * \sigma_{sh}}{b * \sigma_{bh}} = 9, \frac{42 * 35}{126 * 1,15} = 2,28\,cm$$

$$H_h = b_f * x * \sigma_{bh} * (h - \frac{x}{2}) = 126 * 2,28 * (35,4 - \frac{2,28}{2}) = 113,18\,kNm$$ megfelel

Lemez méretezése

qm=6,5+2,1*1= 11,23 kn/m

$$M_b = M_c = M_d = M_1 = M_4 = \frac{q * t^2}{11,6} = \frac{11,23 * 2,2^2}{11,6} = 4,68\, kNm$$

$$a = c + \frac{d_s}{2} + 1 = 1,5 + 0,5 + 1 = 3\, cm \qquad h = v - a = 8 - 3 = 5\, cm$$

B 60 40

$$\sigma_{sh} = 35 \frac{kN}{cm^2} \qquad \xi_0 = 0,48 \quad \text{C- 16} \quad \sigma_{sb} = 1,15 \frac{kN}{cm^2} \qquad x_0 = \xi * h = 0,48 * 5 = 2,4\, cm$$

$$x = h - \sqrt{h^2 - 2 \frac{M_m}{bf * \sigma_{bh}}} = 5 - \sqrt{5^2 - \frac{2 * 468}{100 * 1,15}} = 0,89\, cm$$

$$b_f * x * \sigma_{bh} = A_s * \sigma_{sh} \Rightarrow A_s = \frac{b_f * x * \sigma_{bh}}{\sigma_{sh}} = \frac{100 * 0,89 * 1,15}{35} = 2,94\, cm^2$$

Alkalmazott vasalás 10/200 3 ,93 cm^2 a
Ellenörzés
A smin 0,003*100*8 = 2,4 cm^2

Középső lemez

$$M_2 = M_3 = \frac{q * t^2}{23,2} = \frac{11,23 * 2,2^2}{23,2} = 2,34\, kNm$$

ellenőrzés