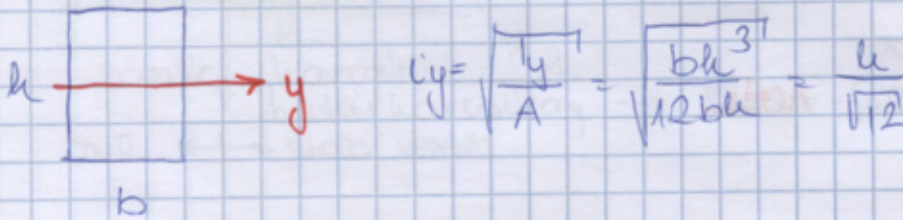
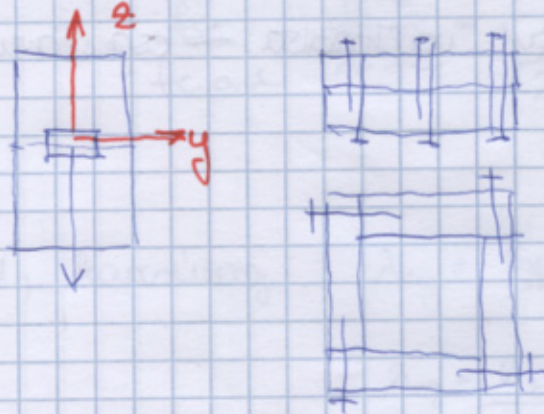


NYOMOTT FA OSZLOPOK KN.

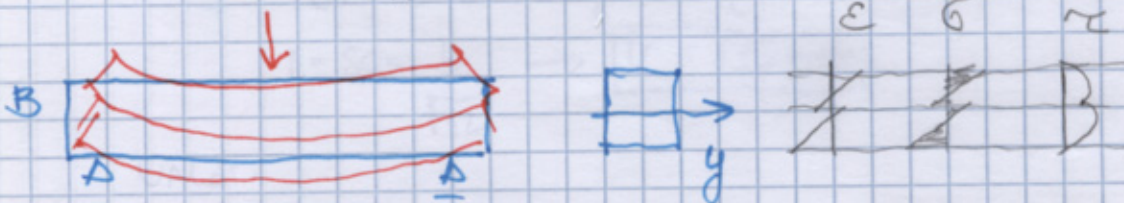
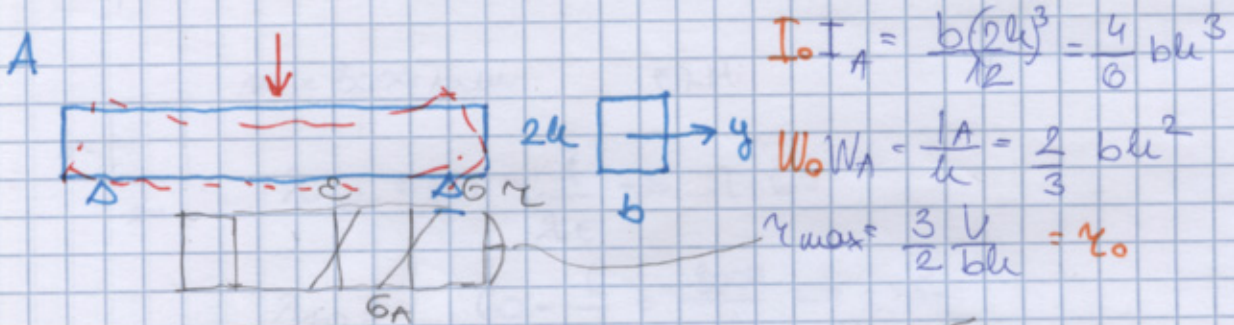
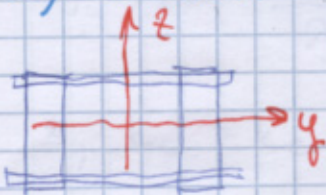
1., TÖMÖR, EGYSEGES



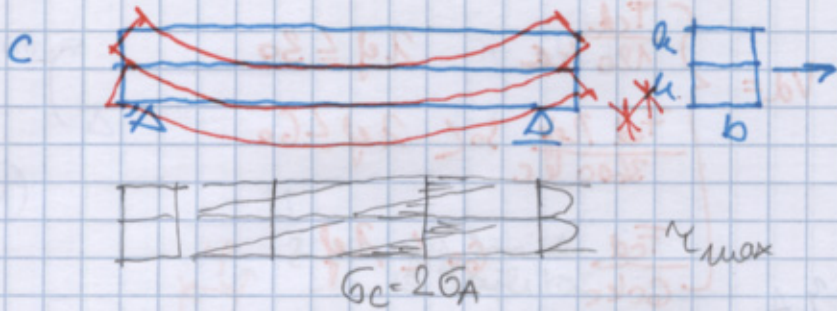
2., TÖMÖR, ÖSSZETETT



3., ÖSSZETETT BÜLVÉNY



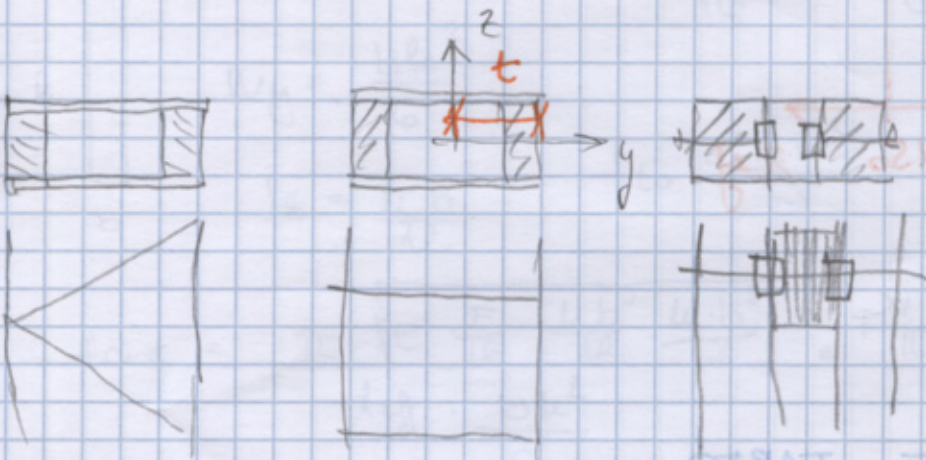
$I_{y_{eff}} = \alpha_I I_o$      $W_{y_{eff}} = \alpha_w \cdot W_o$      $\tau = \alpha_T \tau_o$   
 $i_y = \sqrt{\frac{\alpha_I I_o}{A}} = \sqrt{\alpha_I} \cdot \frac{l}{\sqrt{12}}$



$$I_c = \frac{2 \cdot b h^3}{12} = \frac{1}{6} b h^3$$

$$W_c = \frac{I_c}{\frac{h}{2}} = \frac{1}{8} b h^2$$

	A tip	B tip admensio	B tip gami	C tip
$d_w$	1,0	0,5	0,82	0,5
$d_I$	1,0	0,75	0,6	0,25
$d_T$	1,0	0,67	0,774	0



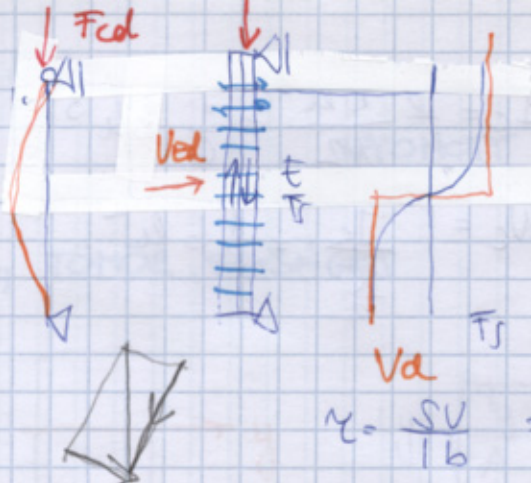
$$I_z = 2 \left( \frac{a b^3}{12} + b h t^2 \right)$$

$$r_{eff} = \sqrt{r_2^2 + 3 \frac{\mu}{2} r_1^2}$$

$\mu$ . összerapolt elemek száma

BETÉTEL

	RAG.	SEG.	CSAV.
AU. KÖRÖK	1	4	35
KÖZEP. RÖVID			

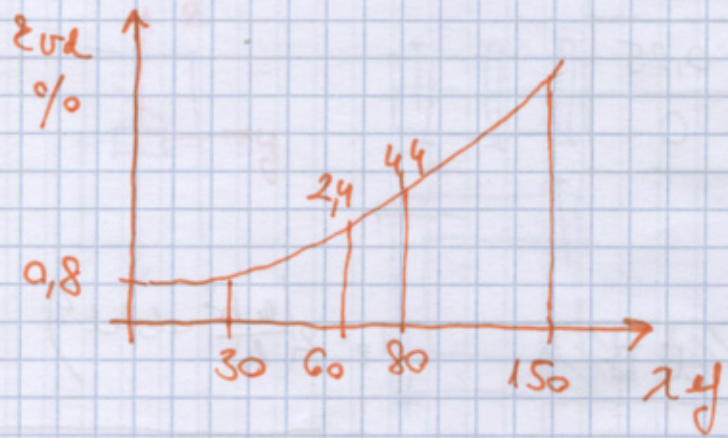


lözselikt

$$V_d = \begin{cases} \frac{F_{cd}}{120 \text{ kN}} & \lambda_{ef} \leq 30 \\ \frac{F_{cd} \lambda_{ef}}{3600 \text{ kN}} & 30 < \lambda_{ef} \leq 60 \\ \frac{F_{cd}}{60 \text{ kN}} & 60 < \lambda_{ef} \end{cases}$$

$$\eta = \frac{S_V}{I_b} \equiv \eta_A$$

Fcd. önd → uyulmuş keleszeret



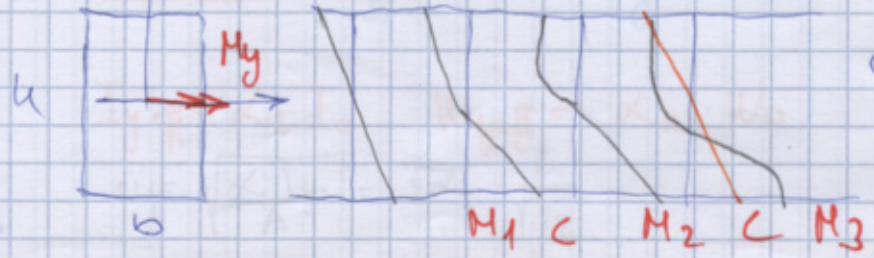
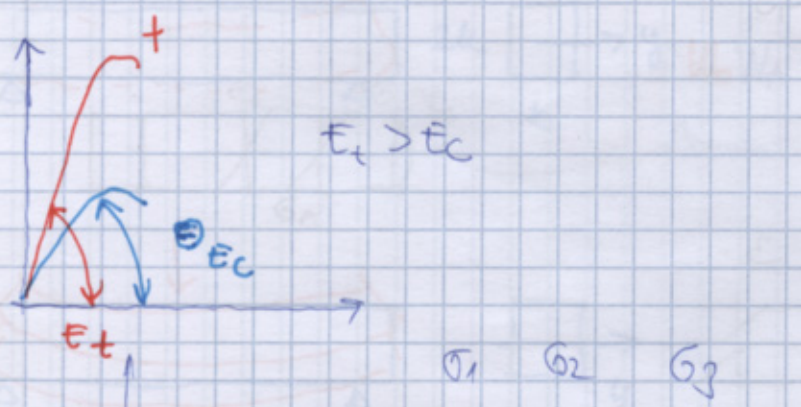
$$V_d = k_{vd} \cdot F_{cd}$$

$$k_{vd} = k_{vd}(\lambda_{ef})$$

$$E = \eta A = \frac{S_V}{I_b} A \cdot c \cdot \alpha_f$$

### HASJÚTOTT TARTÓ

- gerekségek
- nyomaték + uyulmuş

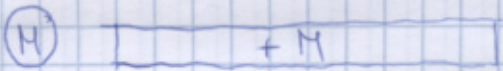
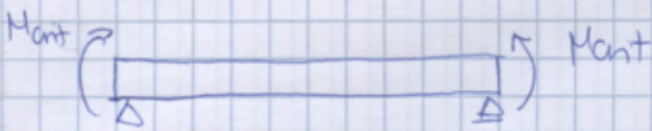


$$\sigma_{ma} = \frac{M_{ged}}{W_y} \leq f_{md} = k_{red} \cdot \frac{f_{yk}}{\gamma_{ax}}$$

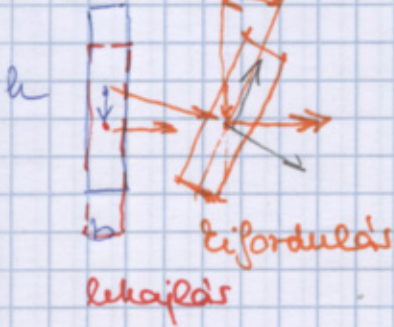
# KIFORDULÁS

A3.F

19.01.2017



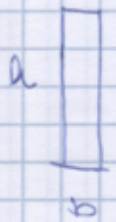
2 tengely körüli  
is hajlítás!



$$M_{\text{crit}} = \frac{\pi \sqrt{E I_z G I_{\text{tor}}}}{l_{\text{eff}}}$$

$$f_{\text{crit}} = \frac{\pi \sqrt{E I_z G I_{\text{tor}}}}{W_y l_{\text{eff}}}$$

$$G = \frac{E}{10} \text{ fenyőfánál}$$



$$W_y = \frac{b a^2}{6}$$

$$I_z = \frac{a b^3}{12}$$

$$I_{\text{tor}} = \frac{a b^3}{3}$$

$$f_{\text{crit}} = \frac{\pi \sqrt{E \cdot \frac{E}{10} \cdot \frac{a b^3}{12} \cdot \frac{a \cdot b^3}{3}}}{l_{\text{eff}} \cdot \frac{b a^2}{6}} = \frac{\pi \cdot E b^2}{4 \cdot l_{\text{eff}} a} = \frac{\pi E}{4} \cdot \frac{b^2}{l_{\text{eff}} \cdot a}$$