

Bauwerk I + II

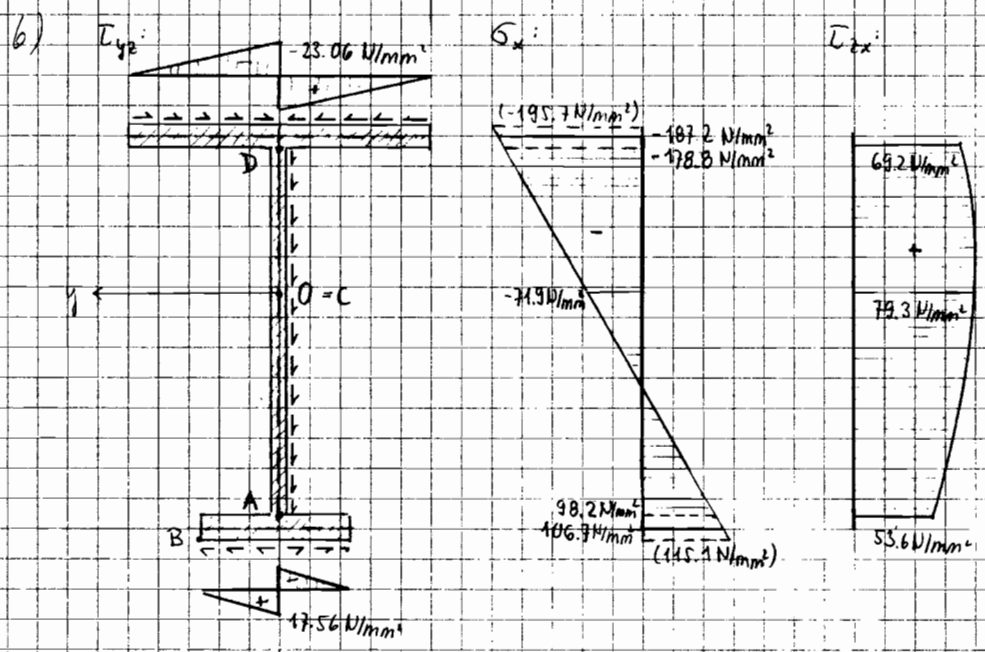
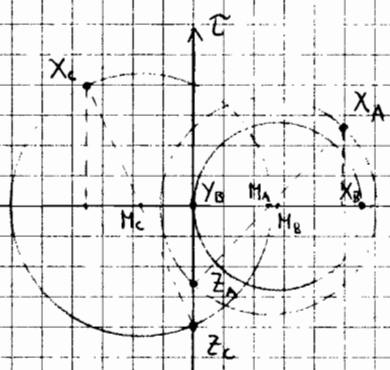
Lösung der Festenprüfung

Herbst 03

1a) Punkt A: $\sigma_{x(A)} = 98,18 \text{ N/mm}^2$
 $\tau_{zx(A)} = 53,58 \text{ N/mm}^2$

Punkt B: $\sigma_{x(B)} = 115,14 \text{ N/mm}^2$
 $\tau_{yx(B)} = 0$

Punkt C: $\sigma_{x(C)} = -71,94 \text{ N/mm}^2$
 $\tau_{zx(C)} = 79,27 \text{ N/mm}^2$



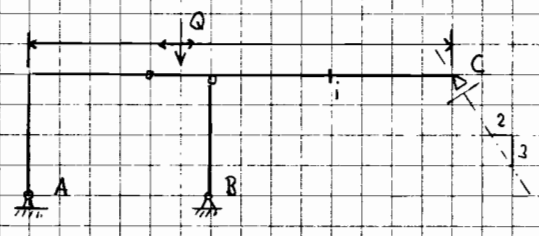
c) Punkt D maßgebend $\rightarrow k^2(\sigma_x^2 + 3\tau_{xz}^2) = f_y^2 \rightarrow k_{min}^2 = 1,19$

$N_x = -2184 \text{ kN} \quad (= k \cdot N_x)$

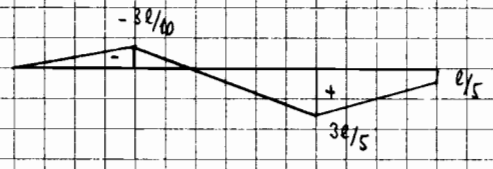
$M_y = 819 \text{ kNm} \quad (= k \cdot M_y)$

$V_z = 819 \text{ kNm} \quad (= k \cdot V_z)$

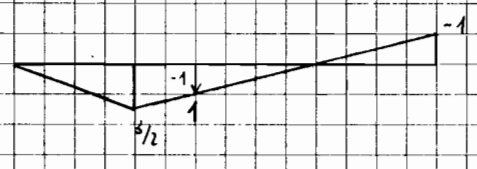
2a)



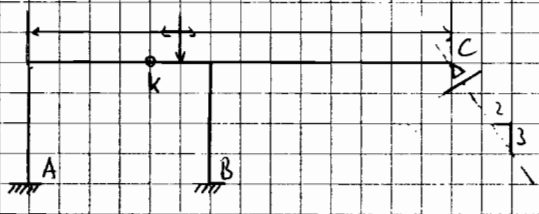
γ_{H_1} :



γ_{B_2} :



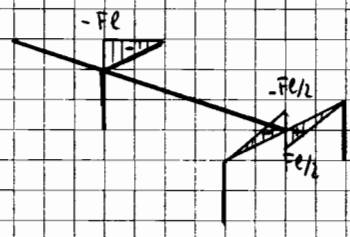
2b)



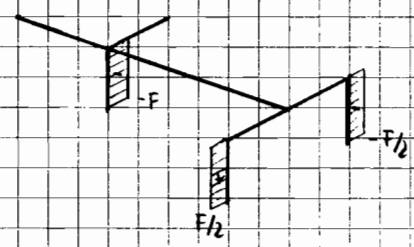
γ_{H_1} :



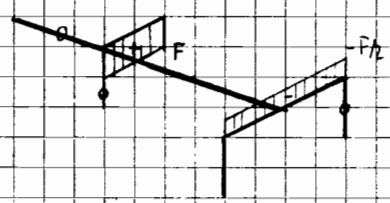
3a) M:



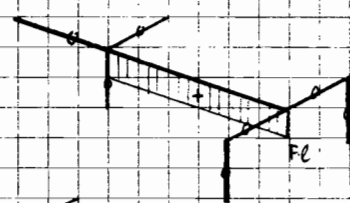
M:



V:

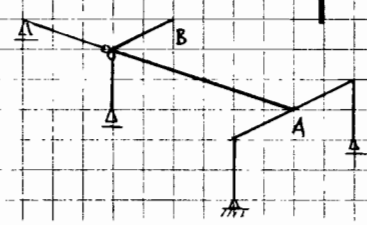


T:

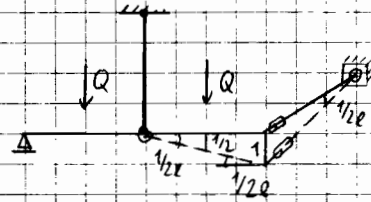


b) $\varphi_{x_A} = \frac{Fe^2}{6EI}$, $w_A = 0$

c) $w_B = \frac{5Fe^3}{2EI}$

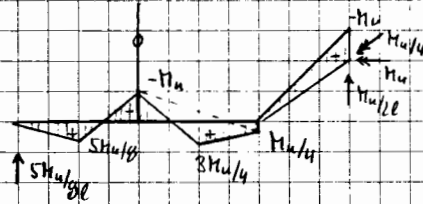


4) $Q_u = \frac{9M_u}{4e} = 9 \text{ kN}$



Plachizitätskontrolle:

M:

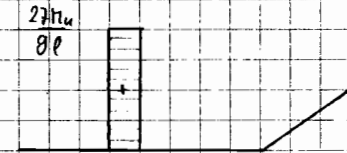


N:



→ Fließbedingungen nirgends verletzt

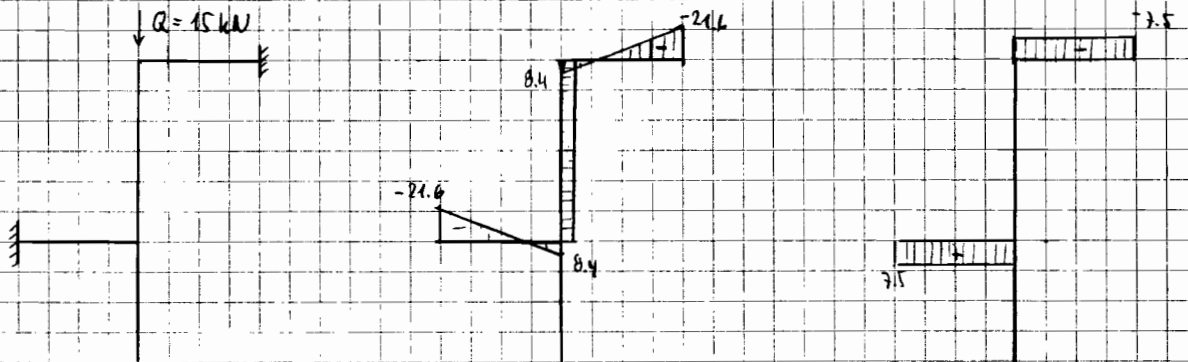
T:



5a) Lage + Beanspr.:

M [kNm]:

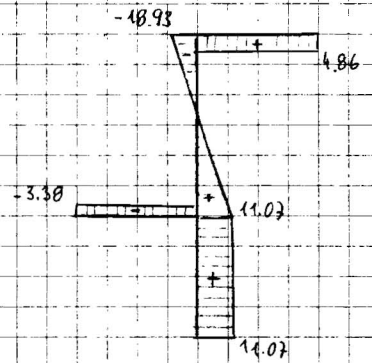
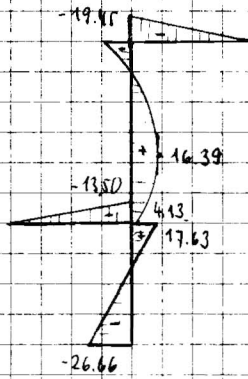
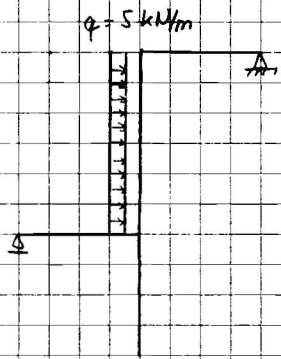
V [kN]:



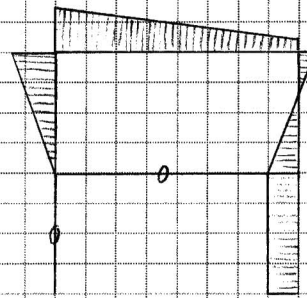
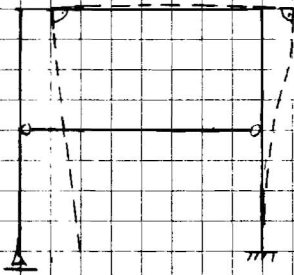
Lager + Beanspr.: $q = 5 \text{ kN/m}$

$M \text{ [kNm]}$:

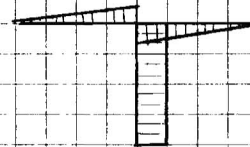
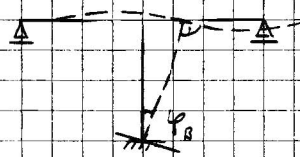
$V \text{ [kN]}$



b)



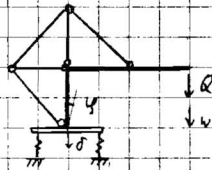
c)



6a)

$$\delta = \frac{Ql^3}{2EI}$$

$$y = \frac{4Ql^2}{EI}$$



b)

$$w_D = \frac{14.66 Ql^3}{EI}$$