

## **Statický výpočet**

Liberec, květen 2022

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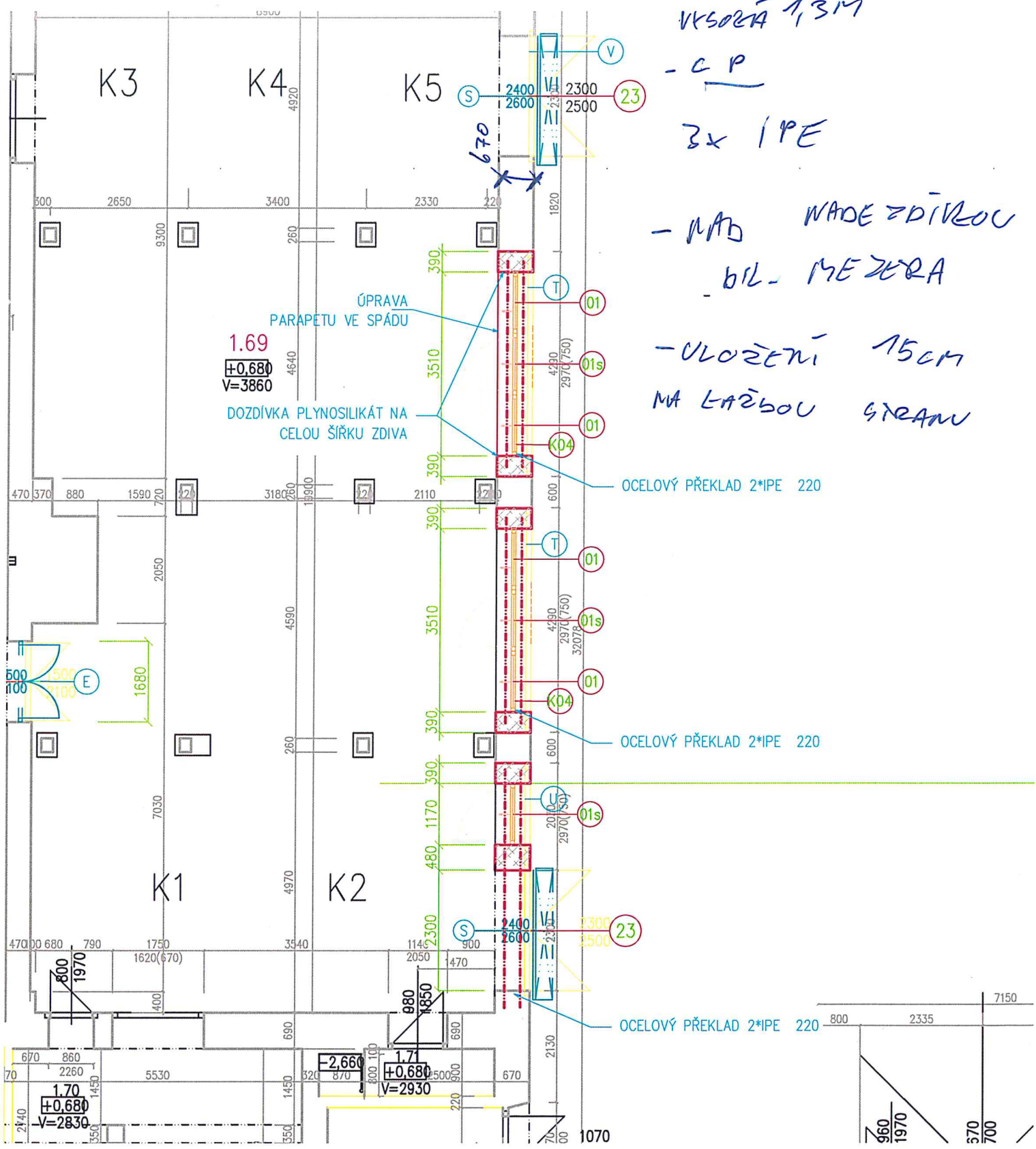
MADE Z BÍVLA  
VRSOTA 1,317

- C P

3x IPE

- MAB MADE ZDÍVELOU  
BIL - MEŽERA

- VLOŽENÍ 15cm  
NA LAŽBOU STĚNY



ZATÍŽENÍ:

18

- STÁLE: - ZÁVOD Z CP =  $19 \times 1,3 \times 0,67 \times 1 = 16,549 \text{ kN/m}^2$
- VL. TÍHA PROV =  $3 \times 0,15 = 0,45 \text{ kN/m}^2$

- CELKEM STÁLE

$$= 17 \times 1,35 = 22,95$$

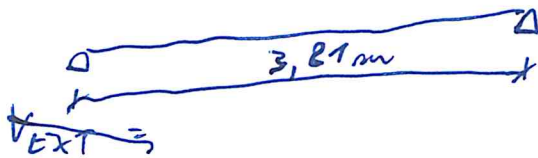
- VŽI TÍHĚ

$$0 \times 1,5 = 0$$

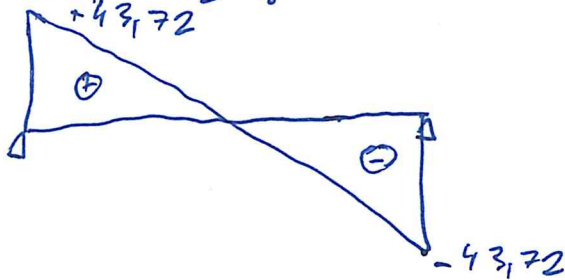
$$17 \quad \quad = 22,95$$

x 25

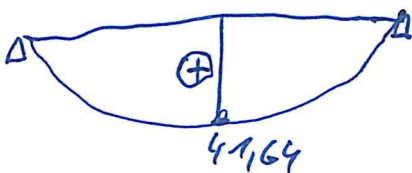
OCEL S 235



$$V_{EXT} = \frac{1}{2} \times f \times l = \frac{1}{2} \times 22,95 \times 3,81 = \underline{43,72 \text{ kN}}$$



$$M_{EXT} = \frac{1}{8} \times f \times l^2 = \frac{1}{8} \times 22,95 \times 3,81^2 = 41,64 \text{ kNm}$$



MAVRH PROJEZU

$$W_{NUT} = \frac{M_{Ed}}{f_{y3}} = \frac{41,64 \times 10^6}{235} = 177\,191 \text{ mm}^3 : 3 \\ \Rightarrow 1 \text{ PE } 59\,063$$

$\Rightarrow$  MAVRH  $> 1$   $3 \times 1 \text{ PE } 140$

$$W_{SLT} = 231\,900 \text{ mm}^3$$

POSOUZENÍ  
MSÚ

1) OHYB  $M_{Ed} = W_{SLT} \times f_{y3} = 231\,900 \times 235 = 54,5 \text{ kNm}$

$$54,5 > 41,64 \Rightarrow \underline{V_{KHOU} > E!}$$

2) SMYK

$$V_{Ed} = \frac{A_{v2} \times f_{y3}}{\sqrt{3} \times 1} = \frac{2292 \times 235}{\sqrt{3}} = 311 \text{ kN} > 43,72 \text{ kN} \\ \Rightarrow \underline{V_{KHOU} > E!}$$

MSP

1) PR. DEFORMACE

$$u_L = \frac{5}{384} \times \frac{f_L \times l^4}{E \times I_y} = \frac{5}{384} \times \frac{17 \times 3810^4}{210\,000 \times 16236000} = 13,68 \text{ mm}$$

$$LIMITA = \frac{l}{250} = \frac{3810}{250} = 15,24 > 13,68 \text{ mm} \\ 10,89 < 13,68$$

$$= \frac{l}{350} = \frac{3810}{350} = 10,89 \Rightarrow \underline{V_{KHOU} > E!}$$

$\Rightarrow$   $3 \times 1 \text{ PE } 140$  NEVKHOUJE NA MSÚ + MSP.  
PRŮHRA



3x IPE 160

$$\frac{5}{384} \times \frac{17 \times 3810^4}{210000 \times 26079000} = 6,52 \text{ mm} < 10,89 \text{ mm}$$

LIMITNÍ

$$\frac{l}{350} = \frac{3810}{350} = 10,89 \text{ mm}$$

$\Rightarrow$  ZMĚNA NÁVRHU NA 3x IPE 160