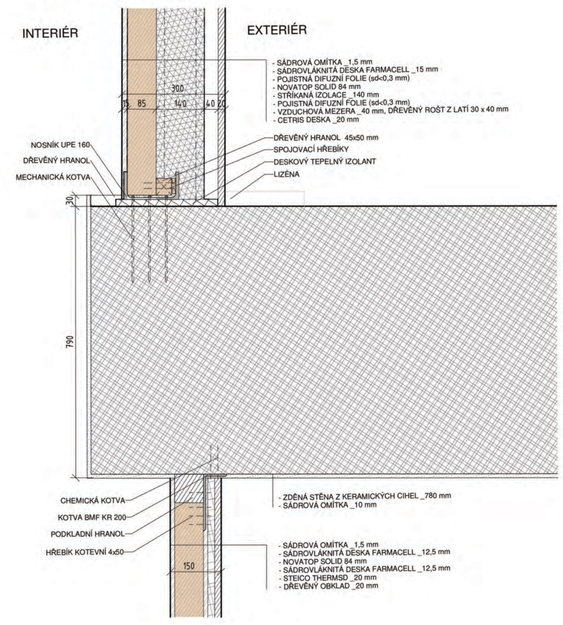
REVITALIZACE OBJEKTU SLADOVNY_ZÁMEK LOBKOVICE

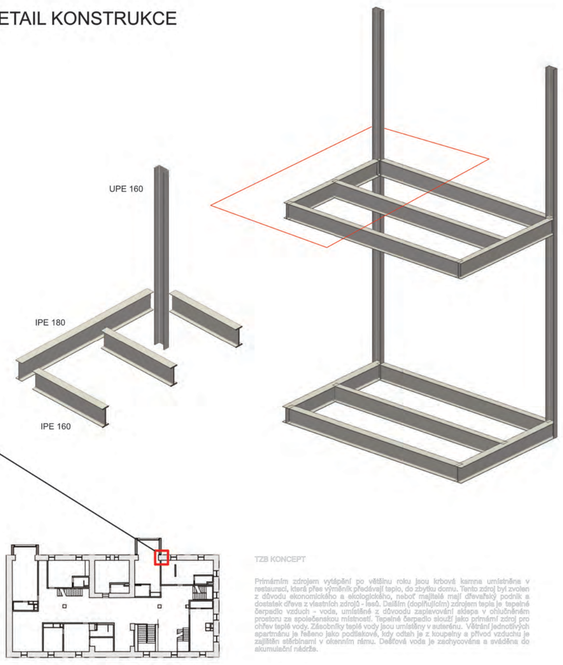
UBYTOVACÍ SLUŽBY_RESTAURACE

ELIŠKA PTÁČKOVÁ
ATV4 | ZS 2020/2021
ATELIER KROFTOVÁ | POŠMOURNÝ | SKÁLA
A+S FSv ČVUT v Praze

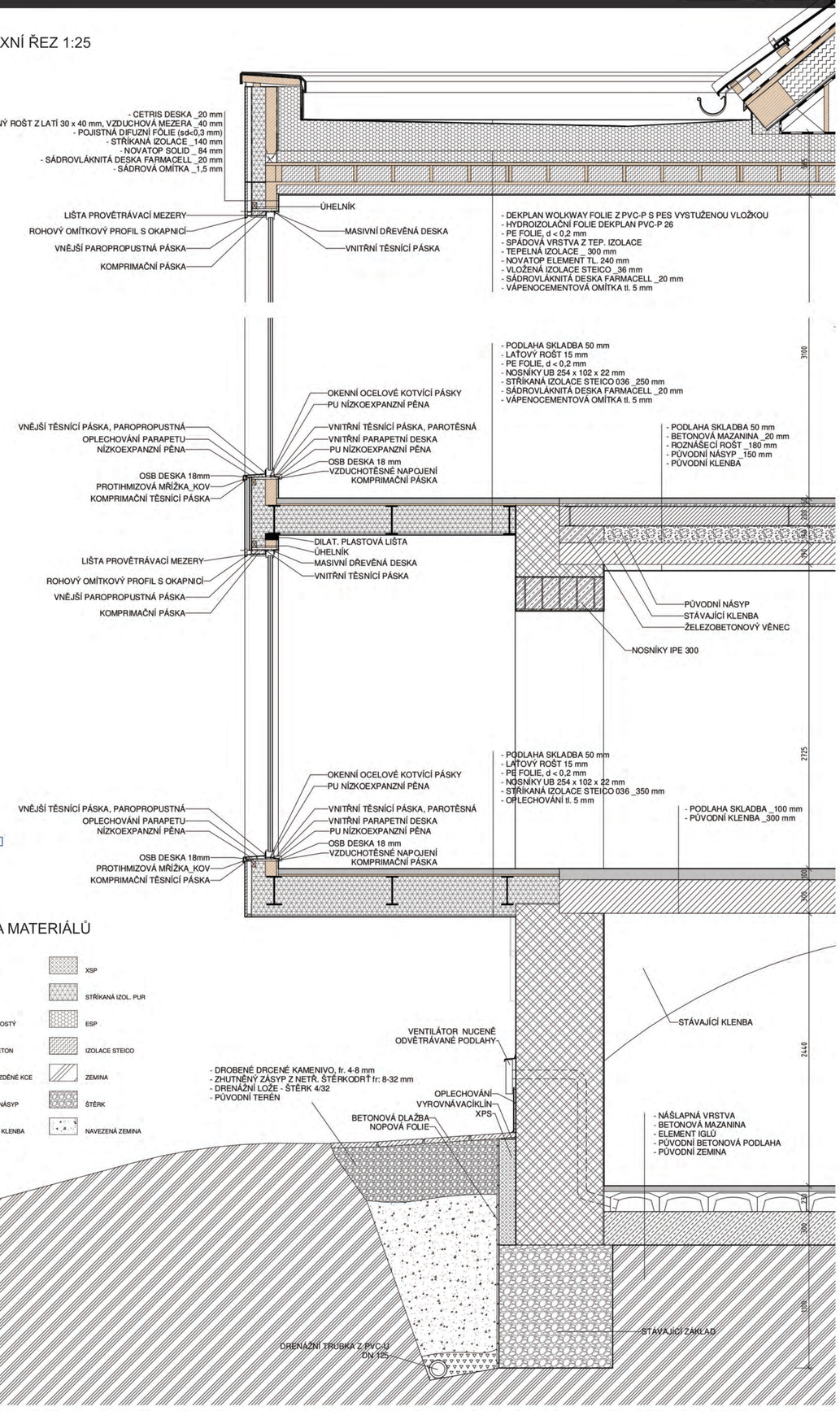
DETAIL NAPOJENÍ 1:10



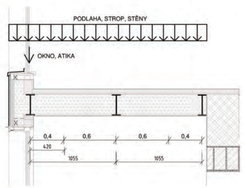
DETAIL KONSTRUKCE



KOMPLEXNÍ ŘEZ 1:25



VÝPOČET



1. Zatížení

Stálé

	g_k [kN/m²]	z.š. [m]	g_k [kN/m]	γ_G	g_d [kN/m]
podlaha	2,329	0,422	0,983	1,35	1,33
strop	4,19	0,422	1,77	1,35	2,39
stěna	2*4,285	0,422	3,616	1,35	4,88
atika	0,844	3,19	2,693	1,35	3,64
okno	-	-	0,98	1,35	1,32
Σ	**15,933**	**-**	**10,05**	**-**	**13,57**

Proměnné

Kategorie zatěžovaných ploch					
Kategorie A - obytné plochy			1,5		
	q_k [kN/m²]	z.š. [m]	q_k [kN/m]	γ_Q	q_d [kN/m]
užitné	2,00	0,422	0,844	1,50	1,27
Σ	**2,00**	**-**	**0,844**	**-**	**1,27**

$f_d = g_d + q_d = 13{,}57 + 1{,}27 = 14{,}84$ kN/m´

$f_k = g_k + q_k = 10{,}05 + 0{,}844 = 10{,}89$ kN/m´

2. Výpočet vnitřních sil

$M_{x,Ed} = \frac{1}{8} \cdot f_d \cdot L_l^2 = \frac{1}{8} \cdot 14{,}84 \cdot 3{,}42^2 = 21{,}69$ kNm $= 21{,}69 \cdot 10^6$ Nmm

$V_{z,Ed} = R_{z,Ed} = \frac{1}{2} \cdot f_d \cdot L_n = \frac{1}{2} \cdot 14{,}84 \cdot 3{,}42 = 25{,}37$ kN $= 25\,376$ N

$M_{x,k} = \frac{1}{8} \cdot f_k \cdot L_l^2 = \frac{1}{8} \cdot 10{,}89 \cdot 3{,}42^2 = 15{,}92$ kNm $= 15{,}92 \cdot 10^6$ Nmm

3. Návrh

$W_{el,y,min} = 0{,}5 \cdot \frac{M_{Ed} \cdot \gamma_{M0}}{f_y} = 0{,}5 \cdot \frac{21{,}69 \cdot 10^6 \cdot 1{,}0}{235{,}00} = 46{,}148 \cdot 10^3$ mm³

Navrhuji IPE 120 $I_{y,y} = 317{,}8 \cdot 10^4$ mm⁴

$W_{el,y} = 60{,}73 \cdot 10^3$ mm³

$A_{v,z} = 631$ mm²

$A_n = 1\,321$ mm²

Ohyb

$M_{Rd} = W_{pl,y} \cdot f_y \cdot \frac{1}{\gamma_{M0}} = 60{,}73 \cdot 10^3 \cdot 235{,}00 \cdot 1 = 14\,271\,550 \geq M_{ED} = 21\,690\,000$ N

NEVYHOVUJE

Navrhuji IPE 160 $I_{y,y} = 869{,}3 \cdot 10^4$ mm⁴

$W_{el,y} = 123{,}9 \cdot 10^3$ mm³

$A_{v,z} = 966$ mm²

$A_n = 2009$ mm²

Ohyb

$M_{Rd} = W_{pl,y} \cdot f_y \cdot \frac{1}{\gamma_{M0}} = 123{,}9 \cdot 10^3 \cdot 235{,}00 \cdot 1 = 29\,116\,500 \geq M_{ED} = 21\,690\,000$ N

VYHOVUJE

Smyk

$V_{Rd,Rd} = \frac{A_{v,z} \cdot f_{yd}}{\gamma_{M0} \cdot \sqrt{3}} = \frac{966 \cdot 235{,}00}{1{,}0 \cdot \sqrt{3}} = 131\,064$ N $\geq V_{z,Ed} = 25\,376$ N

VYHOVUJE

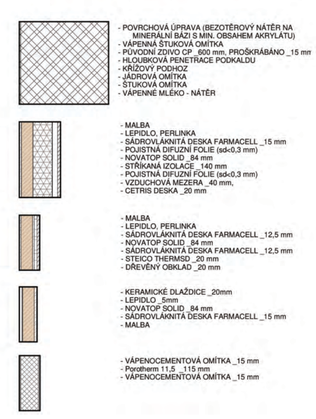
Průhyb

$\delta = \frac{5}{384} \cdot \frac{f_k \cdot l^4}{E \cdot I_y} = \frac{5}{384} \cdot \frac{10{,}05 \cdot 3{,}42^4}{210\,000 \cdot 869{,}3 \cdot 10^4} \rightarrow 7{,}532 \cdot 10^{-11} < \frac{1}{250} = \frac{3{,}42}{250} = 0{,}0137$ mm

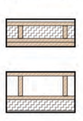
VYHOVUJE

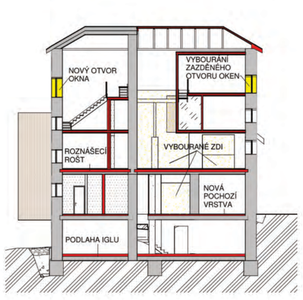
Navržený profil na MSP VYHOVUJE.

SKLADBA STĚN 1:25

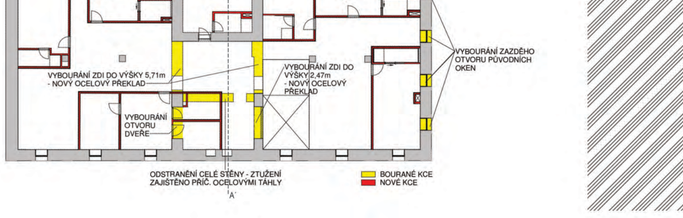


SKLADBA PODLAH 1:25

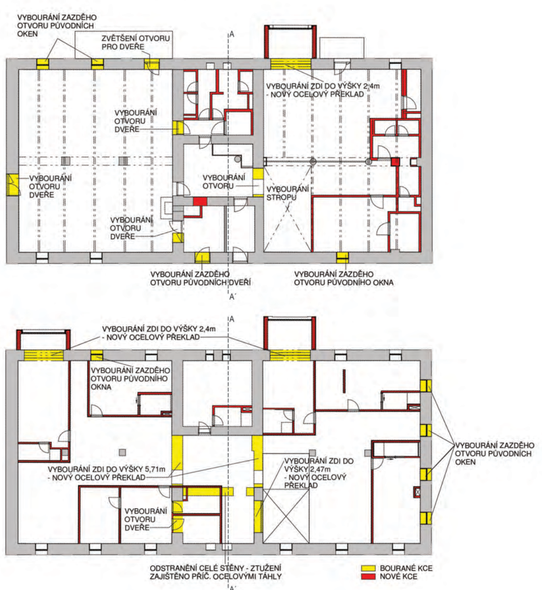




KONCEPT TZB



BOURACÍ VÝKRES 1:250



LEGENDA MATERIÁLŮ