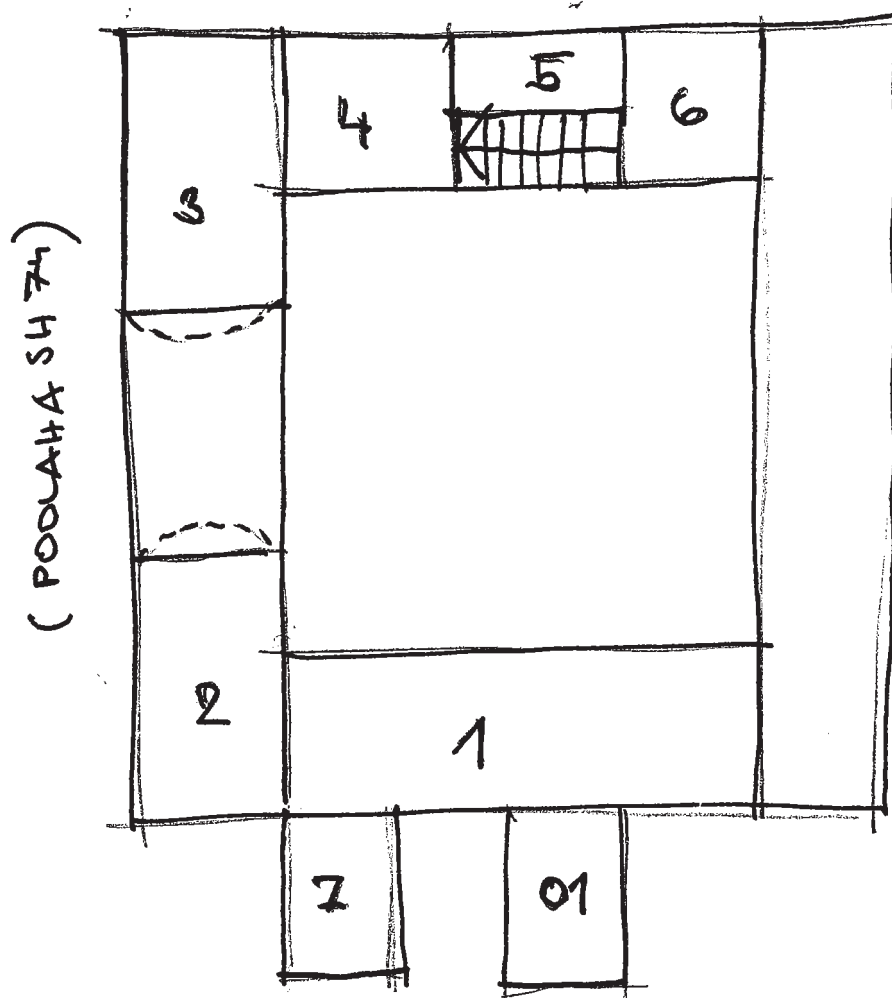


SEZNAM PŘÍLOH

1)	SCHEMA OZNAČENÍ STROPŮCH KCI	STR 2
2)	SKLADBY KONSTRUKCE	STR 3-4
3)	VÝPOČET ZATÍŽENÍ	STR 5-7
4)	STROP S01	STR 8-9
5)	STROP S1	STR 10-11
6)	STROP S2	STR 12-15
7)	STROP S3	STR 16-18
8)	STROP S4	STR 17-18
9)	STROP S5, S6	STR 19-20
10)	STROP S7	STR 21-22

(PODLAHA SH 76)

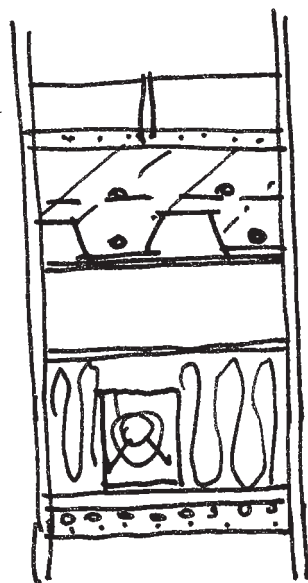


(PODLAHA SH 64)

SCHEMA OZNAČENÍ
STROPNÍCH KCI

1, SKLADBA
KCI

SH 64



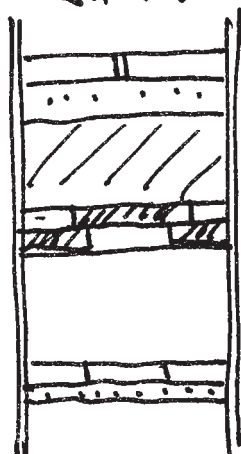
STATICKÝ ÚPOČET STROPŮ
KLÁSTER ČESKÝ HRADČOV K 1

SKLADBA KONSTRUKCE STROPŮ
NAD CHODBOU K 1-1-002

CIHELNÁ DLÁŽBA	30 mm
LEPIDLO	10 mm
ŽB DESKA	80 mm
TRAPÉZ PLECH	50 mm
OCELOVÝ NOSIČ	IC. 140
MINERÁLNÍ VATA	260 mm
PODHLAVÍ STŘEŠNÍ	25 mm
PRŮVA	
OMÍTKA NÁVŠOVÁ	20 mm

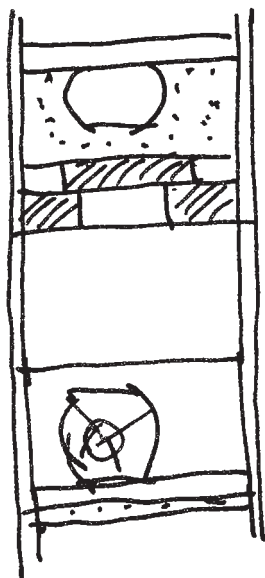
SKLADBA KONSTRUKCE STROPŮ
NAD CHODBOU K 1-1-012

SH 74



CIHELNÁ DLÁŽBA	30 mm
VÁPENNÁ MALTA	30 mm
NÁŠYP ŽESTĚČÍ PÍSKU A VÁPNA	120
FOSF 300/35	70
TRÁVY	260
PODHLAVÍ PRŮVA	25 mm
NÁVŠOVÁ OMÍTKA	35 mm
Σ	570 mm

SH 76



SULADDA MOUTRULCE STROPH

STR24

KAD PROSTOREN K 1-1-037

FOSWJ SHW	30 ~
POLSTARE 130/80	80 ~
NASHP SPES VAPNA + TITEL	100 ~
ZALLOP FOSWJ 30/3T	70 ~
GRANTY 220/240	210 ~
RANOSUJW	25 ~
POOHVED PRMA	
KANOSQUA OHITUA	85 ~

2) VÝPOČET ZATÍŽENÍ

VÝPOČET ZATÍŽENÍ

STR 5

SHG4

A) STÁLÉ

$$q^N \times n = q^R$$

SURCHNÍ
ČÁST

CIHELNÁ DLAŽBA $0,05 \times 7600 = 48 \times 7,35 = 354 \text{ kg/m}^2$

LEPIDLO $0,07 \times 2700 = 27 \times 7,35 = 199 \text{ kg/m}^2$

ZÍS DEKNA $0,17 \times 2800 = 250 \times 7,35 = 338 \text{ kg/m}^2$

TRAPÉZ $120 \times 7,35 = 882 \text{ kg/m}^2$

OCEL NOSNÁ I.C. 140 $14,3 \times 7,35 = 105 \text{ kg/m}^2$

PODLAŽ

CELKEM $q^N = 350 \text{ kg/m}^2$ $q^R = 422 \text{ kg/m}^2$

IZOLACE MINER $0,26 \times 750 = 39 \times 7,35 = 538 \text{ kg/m}^2$

TRAPÉZ $0,7 \times 0,12 \times 600 = 7,2 \times 7,35 = 105 \text{ kg/m}^2$

PRUHA $0,027 \times 600 = 15 \times 7,35 = 20,8 \text{ kg/m}^2$

OMÍTA $0,015 \times 7600 = 56 \times 7,35 = 764 \text{ kg/m}^2$

STŘEP
CELKEM
STÁLÉ

CELKEM $q^N = 172 \text{ kg/m}^2$ $q^R = 159 \text{ kg/m}^2$

$q^N = 467 \text{ kg/m}^2$ $q^R = 637 \text{ kg/m}^2$

B) NAHODILÉ ZATÍŽENÍ

$$v^N \times n = v^R$$

PROVOZEN $400 \times 1,5 = 600 \text{ kg/m}^2$

ZATÍŽENÍ CELKEM

$q^N = q^N + v^N = 467 + 400 = 867 \text{ kg/m}^2$

$q^R = q^R + v^R = 637 + 600 = 1237 \text{ kg/m}^2$

SWADDA

SH 74

$$q^N \times n = q^R \text{ STRG}$$

CIHELNA DLAZNA $0,01 \times 1600 = 48 \times 1,17 = 67 \text{ g/L}^2$

VAPENNA FALTA $0,01 \times 1600 = 48 \times 1,17 = 67 \text{ g/L}^2$

NASHP ZESTESI PITUM $0,12 \times 1600 = 198 \times 1,17 = 267 \text{ g/L}^2$

A VAPNA $0,12 \times 1600 = 198 \times 1,17 = 267 \text{ g/L}^2$

FOSWITL.10 PIELL. $0,07 \times 600 = 30 \times 1,17 = 40 \text{ g/L}^2$

THADIM $0,18 \times 0,126 \times 600 = 28 \times 1,17 = 38 \text{ g/L}^2$

POCHLED PRUNA TL.24 $17 \times 1,17 = 20 \text{ g/L}^2$

OPTIMA $56 \times 1,17 = 76 \text{ g/L}^2$

STARE CELLEN $q^N = 423 \text{ g/L}^2 \quad q^R = 577 \text{ g/L}^2$

NAHODILE

$$v^N \times n = v^R$$

PROVOZEN

$$400 \times 1,17 = 600 \text{ g/L}^2$$

ZATIREVI CELLEN

$$q^N = q^N + v^N = 423 + 400 = 823 \text{ g/L}^2$$

$$q^R = q^R + v^R = 577 + 600 = 1177 \text{ g/L}^2$$

SWADDA

SH 76

POSWIT STIEL $0,01 \times 600 = 28 \times 1,17 = 38 \text{ g/L}^2$

POUSTARE $0,13 \times 0,17 \times 600 = 2,8 \times 1,17 = 11 \text{ g/L}^2$

STES VAP. + PITUM $0,12 \times 1600 = 167 \times 1,17 = 223 \text{ g/L}^2$

ZAMOT $0,07 \times 600 = 30 \times 1,17 = 40 \text{ g/L}^2$

TRAGIM $0,22 \times 0,14 \times 600 = 32 \times 1,17 = 43 \text{ g/L}^2$

SUREHVI
CAST

CELLEN

$$q^N = 252 \text{ g/L}^2 \quad q^R = 342 \text{ g/L}^2$$

POCHLED

RAHAWITUM $0,17 \times 0,16 \times 600 = 10 \times 1,17 = 14 \text{ g/L}^2$

POCHLED PRUNA 24 $17 \times 1,17 = 20 \text{ g/L}^2$

OPTIMA

$$56 \times 1,17 = 76 \text{ g/L}^2$$

CELLEN

$$q^N = 814 \text{ g/L}^2 \quad q^R = 1106 \text{ g/L}^2$$

$$\text{ΝΑΗΘΙΛΕ ΖΑΤΙΖΕΥΙΤ} \quad v^N + n = v^R \quad \text{STR}$$

$$\text{ΦΡΟΝΟΖΕΩ} \quad 400 \times 1.5 = 600 \text{ yL}^2$$

$$\text{ΖΑΤΙΖΕΥΙΤ ΟΕΛΛΕΤ}$$

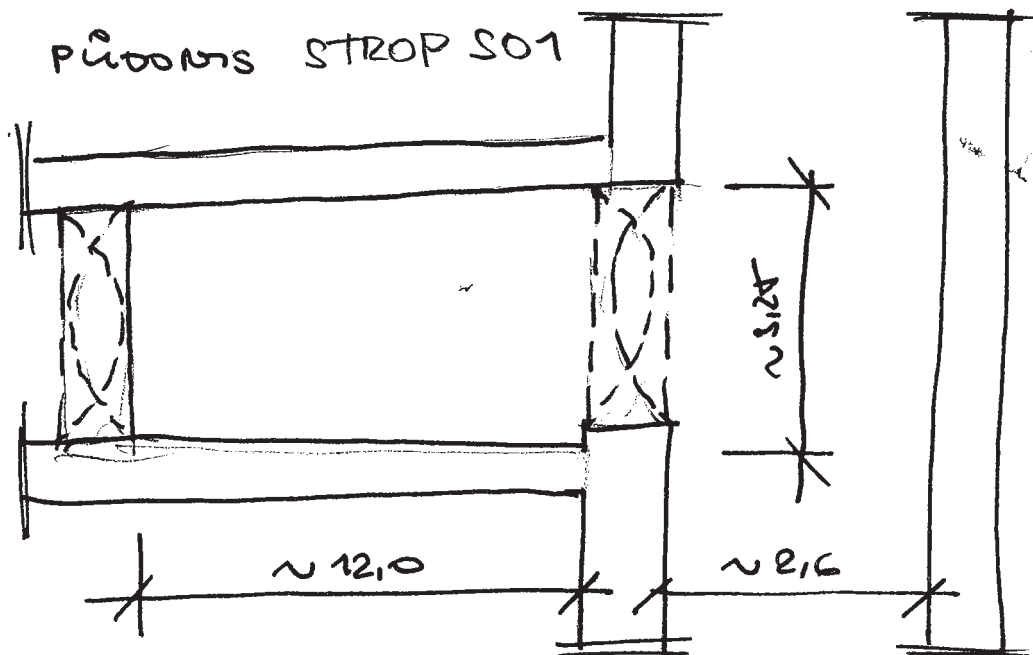
$$q^N = g^N + v^N = 333 \text{ yL}^2 + 400 = 733 \text{ yL}^2$$

$$q^R = g^R + v^R = 452 + 600 = 1052 \text{ yL}^2$$

NAVĚH STROPU V STR. K 1-1.002

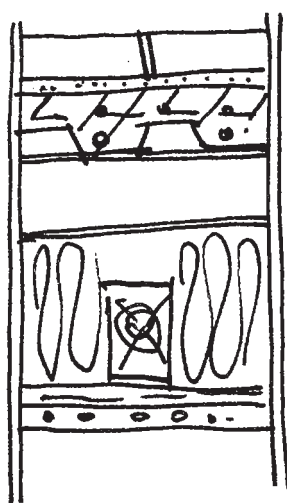
STR 8

PŮDOMS STROP SO1



SCHEMA SULAOKY STROPU

SH 64



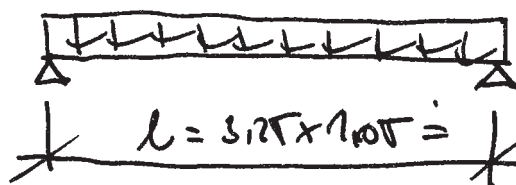
CITELNÁ DLÁŽKA	30 mm
LEPIDLO	10 mm
ZISOBILNÁ BET	80 mm
TRAPÉZ PLECH	10 mm
OCELOVÝ NOSIČ	Ic.
MINERÁLNÍ VATA	260 mm
POCHLEB STŘEŠNÍ PRUH	25 mm
OTRŮTNÁ POKRYVKA	20 mm

ZATÍŽENÍ STROPU KCE VIZ STR 3

$$q_N = 8,67 \text{ kN/m}^2$$

$$q_R = 12,17 \text{ kN/m}^2$$

STATICKÉ SCHEMA



$$q_R = 12,17 \text{ kN/m}^2$$

$$l = 3,125 \times 1,105 = 3,45 \text{ m}$$

$$\eta^R = \frac{1}{8} q^R l^2 = \frac{1}{8} \cdot 12,57 \cdot 3,45^2 = 18,3 \mu\text{N} \quad \text{STR.9}$$

$$W_{\text{out}} = \frac{\eta^R}{R} = \frac{18,3 \cdot 10^{-3}}{220} = 8,72 \cdot 10^{-5} \quad \text{W}$$

$$I_{\text{c}} \cdot 160 \quad W_x = 1,12 \cdot 10^{-4} \quad \text{W}$$

$$I_x = 9,34 \cdot 10^{-6} \quad \text{W}$$

POSOBE 1.95

$$\xi = \frac{\eta^R}{W_x} = \frac{18,3 \cdot 10^{-3}}{1,12 \cdot 10^{-4}} = 163 \text{ mPa} < R = 220 \text{ mPa}$$

VRLO MLE.

II AS

$$\gamma = \frac{\tau}{337} \cdot \frac{8,67 \cdot 10^{-3} \cdot 3,45^4}{2,1 \cdot 10^5 \cdot 9,34 \cdot 10^{-6}} = 8 \mu\text{m}$$

$$\gamma_{\text{DOV}} = \frac{l}{370} = \frac{345}{370} = 10 \mu\text{m}$$

VRLO MLE.

OSOVA V20AL

1,2 \mu\text{m}

$$\xi = 182 < 220$$

$$\gamma = 9,6 \mu\text{m}$$

VRLO MLE.

NAVRH POCHLEBU

ZATIRENI V12 STR.

$$q^N = 112 \mu\text{N}/\text{m}^2$$

$$q^R = 115 \mu\text{N}/\text{m}^2$$

$$\eta^R = \frac{1}{8} q^R l^2 = \frac{1}{8} \cdot 115 \cdot 3,45^2 = 2,25 \mu\text{N}$$

$$l = 3,45$$

$$W_{\text{out}} = \frac{\eta^R}{R} = \frac{2,25 \cdot 10^{-3}}{10 \text{ mPa}} = 2,25 \cdot 10^{-4}$$

$$h = \sqrt[3]{\frac{42 \cdot 2,25 \cdot 10^{-4}}{\tau}} = 0,12 \mu\text{m}$$

$$\text{TRAF 10/16} \quad W = 4,26 \cdot 10^{-2} \\ I = 3,47 \cdot 10^{-5}$$

BEZPECNE V HODU VE.

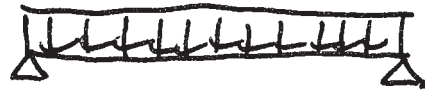
NAUSTR.

3) STATIQUE SCHEMA

SH 64

CHOIX K 1-1-002, STROP S1

STR 10



$$q^R = 12,17 \text{ kN/m}^2$$

$$q^N = 8,674 \text{ N/m}^2$$

$$l = 26 \cdot 1,05 = 27,7 \text{ m}$$

1) VARIANTE POCHUEO D'VETEU DO STROP

$$q_1^R = \frac{1}{2} q^R l^2 = \frac{1}{2} \cdot 12,17 \cdot 27,7^2 = 11,63 \text{ kNm}$$

OCEL NOSUITU IPE 140 $W_x = 2,2 \cdot 10^{-5} \text{ m}^3$
 $I_x = 5,17 \cdot 10^{-6} \text{ m}^4$

PRI VOAL. 1m

$$\sigma = \frac{q_1^R}{W_x} = \frac{11,63 \cdot 10^{-3}}{2,2 \cdot 10^{-5}} = 157 \text{ MPa} < 210 \text{ MPa}$$

$$\gamma = \frac{\int q^N dx}{\sigma \cdot W_x} = \frac{\int 8,67 \cdot 10^{-3} \cdot 27,7}{157 \cdot 2,2 \cdot 10^{-5} \cdot 5,17 \cdot 10^{-6}} = 6 \text{ mm}$$

$$\gamma_{\text{OVL}} = \frac{l}{210} = \frac{27,7}{210} = 1,1 \text{ m}$$

OK OK OK.

PRI VOAL 1,2m

$$\sigma = 181 \text{ MPa} < 210$$

$$\gamma = 7,2 \text{ mm} < 1,1 \text{ m}$$

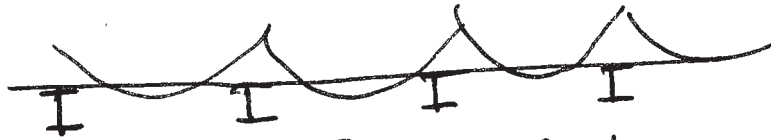
OK OK OK.

N'AURH STROPUI DESCH

$$\text{ZATIZELI } q^N = 337 + 400 = 737 \text{ N/m}^2$$

$$q^R = 450 + 600 = 1050 \text{ N/m}^2$$

STATICKÉ SCHÉMA



$$\max q_l = \pm \frac{1}{8} q l^2 \quad \text{---} \quad 1.2 \quad \text{---}$$

$$q_l = \frac{1}{8} 10,5 \cdot 1,2^2 = 1,9 \text{ kN/m}$$

NÁVRH TRAPĚM

$$W_{\text{LUT}} = \frac{q_l R}{R} = \frac{1,9 \cdot 10^{-3}}{190} = 9,94 \cdot 10^{-6} \text{ m}$$

TRAPĚZ RECH V. 80 mm 12001 TL. 0,8 mm

$$W = 1,13 \cdot 10^{-5} \text{ m}^3$$

$$I = 4,1 \cdot 10^{-2} \text{ m}^4$$

POKROČEN 1.915

$$\delta = \frac{q_l R}{W_x} = \frac{1,9 \cdot 10^{-3}}{1,13 \cdot 10^{-5}} = 1247 \text{ Pa} < 1907 \text{ Pa}$$

II.915

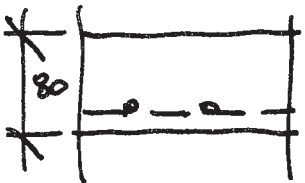
$$\delta = \frac{\gamma \cdot q l^4}{384 E I} = \frac{\gamma \cdot 2,45 \cdot 10^{-3} \cdot 1,2^4}{384 \cdot 2,1 \cdot 10^7 \cdot 4,1 \cdot 10^{-2}} = 2 \text{ mm}$$

$$\frac{l}{210} = \frac{1200}{210} \approx 7 \text{ mm} \quad \text{v } 40 \text{ mm PE.}$$

VÝZTUŽ

DESKA

2 POK. OBRÁZ



$$h_0 = 80 - 10 - 0,5 = 69,5 \text{ mm} \approx 60 \text{ mm}$$

NÁVRH VÝZTUŽI

VÝZTUŽ OCEL S1T Ø 6 100x100

$$F_{ar} = 2,83 \text{ mm}^2 \quad R_s = 374 \text{ MPa}$$

$$C_{20/25} (\delta 25) \quad R_{bt} = 14,5 \text{ MPa}$$

$$q_m = m \cdot 25 F_{ar} R_s$$

$$= 0,87 \cdot 0,005 \cdot 2,83 \cdot 10^{-4} \cdot 374 = 50,6 \text{ kN/m}$$

v 40 mm PE.

$$h_0 = 35 \text{ mm}$$

$$q_m = 0,8 \cdot 0,003 \cdot 2,83 \cdot 10^{-4} \cdot 374 = 2,14 \cdot 10^{-3} \text{ kN/m}$$

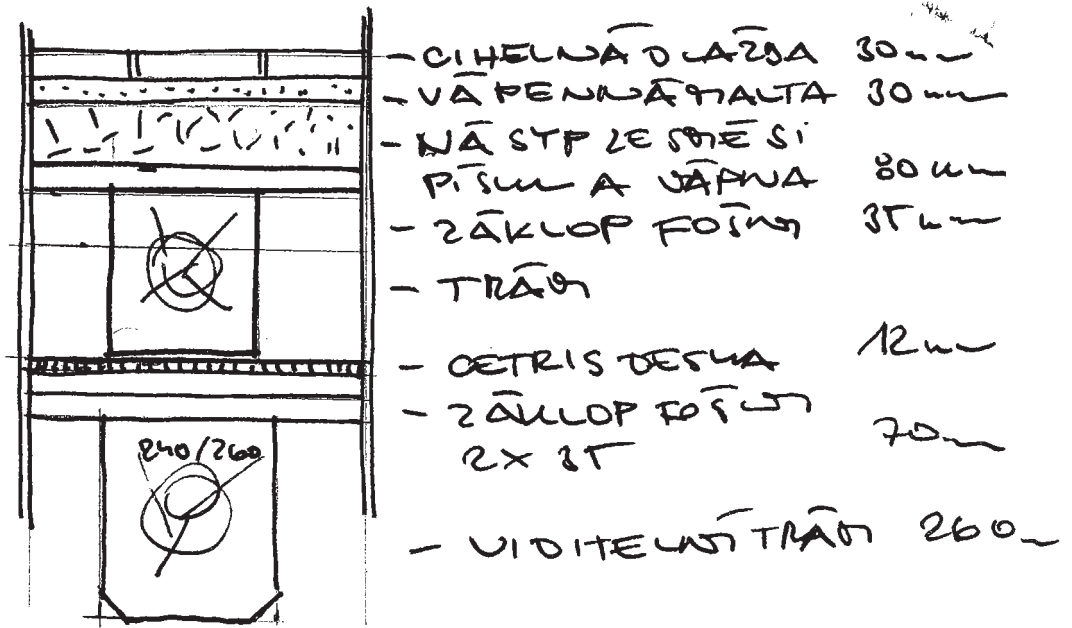
v 40 mm PE.

PRÍ H=10 mm



UNĒSEVI STROPU K1-1-012 STR12 VIDITELNĀ POKLĒD STROPS2 SKLADĀ KCE

420-420



VIPOĒET ZATĪZĒNĪ

A) STĀLĒ

CIHELNĀ DLAZDA $0,01 \times 7600 = 48 \times 1,15 = 65 \text{ kg/m}^2$
 VĀPENNĀĢĀLTA $0,03 \times 7600 = 48 \times 7,15 = 65 \text{ kg/m}^2$
 NĀSTPĒSĒSĪ PĪŠU A VĀPNA $0,08 \times 7600 = 132 \times 7,15 = 178 \text{ kg/m}^2$
 FOŠŅĀ 35mm $0,05 \times 600 = 30 \times 7,15 = 40 \text{ kg/m}^2$
 NOSŪTNĀŅĀ $0,12 \times 600 = 37 \times 7,15 = 50 \text{ kg/m}^2$
 OETRIS DEŠĻĀ $0,012 \times 1200 = 14,4 \times 7,15 = 20 \text{ kg/m}^2$
 TRĀŅĀ $0,17 \times 600 = 35 \times 7,15 = 70 \text{ kg/m}^2$

STĀLĒ CELMĒN $q^N = 350 \text{ kg/m}^2$ $q^R = 420 \text{ kg/m}^2$

VAHODILĒ PROVOZĒŅĀ

$N^h \times n = v^R$

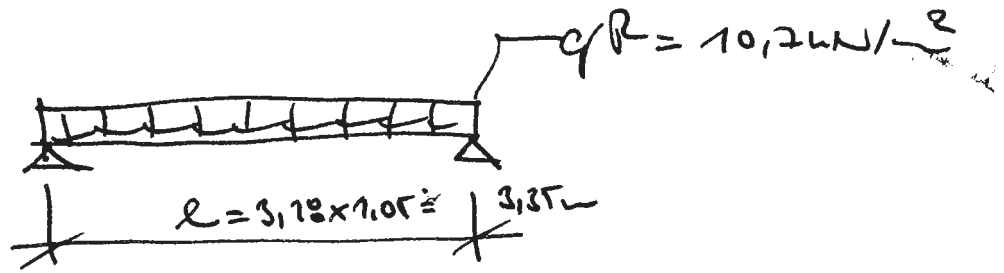
$400 \times 7,15 = 600 \text{ kg/m}^2$

ZATĪZĒNĪ CELMĒN

$q^N = q^N + v^N = 350 + 400 = 750 \text{ kg/m}^2$

$q^R = q^R + v^R = 420 + 600 = 1020 \text{ kg/m}^2$

CHODBA N 1-1 - 012



$$q_l = \frac{1}{8} q l^2 = \frac{1}{8} \cdot 10,7 \cdot 3,37^2 = 15,10 \text{ kNm}$$

$$W_{\text{out}} = \frac{q_l}{l} = \frac{15 \cdot 10^{-3}}{12 \times 0,33} = 1,4 \cdot 10^{-1} \text{ m}^3$$

CHRAŤEŤ
EXPOZICE

$$h = \sqrt[3]{\frac{42 \text{ W}}{5}} = 0,23 \text{ m}$$

$$\text{TRÁŤ 18/24 cm} \quad W = \frac{1}{6} b h^2 \\ = \frac{1}{6} 0,18 \times 0,24^2 = 1,73 \cdot 10^{-3} \text{ m}^3$$

$$I_x = \frac{1}{12} \cdot 0,18 \cdot 0,24^3 = 2,02 \cdot 10^{-4} \text{ m}^4$$

POSLUŤEN 1715

$$\sigma = \frac{q_l}{W_x} = \frac{15 \cdot 10^{-3}}{1,73 \cdot 10^{-3}} = 8,67 \text{ MPa} < 10,56$$

OK OK OK.

II 1715

$$\gamma = \frac{5}{334 \text{ E2}} \frac{q l^4}{1} = \frac{5 \cdot 215 \cdot 10^{-3} \cdot 3,37^4}{334 \cdot 10.000 \times 2,02 \cdot 10^{-4}} = 6 \text{ mm}$$

$$\delta_{00V} = \frac{l}{370} = \frac{337}{370} \approx 10 \text{ mm OK OK OK.}$$

NÁVRH 2A ULOŽENÍ PŮSOBÍ TL. 37 mm

$$q_{\Delta} \times q_l = \frac{1}{8} \cdot 9,1 \cdot 1,0^2 = 1,12 \text{ kNm}$$

$$W = \frac{1}{6} 1,0 \cdot 0,017^2 = 2,04 \cdot 10^{-5} \text{ m}^3$$

~~CHRAŤEŤ~~

POSUDU

$$Z = \frac{q_R}{W_X} = \frac{1,2 \cdot 10^{-1}}{2,04 \cdot 10^{-7}} = 5,97 R < 10,16 R$$

VÝHRADE

VARIANTA PŘI OSOVÉ VZDAL. TRÁTU

112m

$$q_R = 1,2 \times 15,04 N = 18,04 N$$

$$W_{\text{cent}} = \frac{18 \cdot 10^{-1}}{1016} = 1,7 \cdot 10^{-8}$$

$$\text{TRÁTU } 20/24 \text{ m} \quad W = \frac{1}{6} 0,12 \cdot 0,24^2 = 1,9 \cdot 10^{-3}$$

$$I = \frac{1}{12} 0,12 \cdot 0,24^3 = 2,1 \cdot 10^{-4}$$

$$Z = \frac{q_R}{W_X} = \frac{18 \cdot 10^{-3}}{1,9 \cdot 10^{-3}} = 9,47 R < 10,16$$

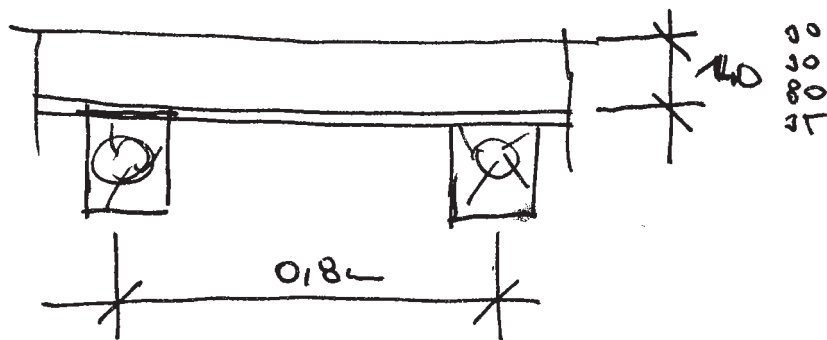
VÝHRADE.

$$\gamma = \frac{5 \times 12 \times 75 \cdot 10^{-3} \cdot \dots \cdot 0,12^4}{334 \cdot 1 \cdot 10^4 \cdot 2,1 \cdot 10^{-4}} \approx 8 \text{ m}$$

$$< \frac{l}{3R} = \frac{35}{30} \approx 10 \text{ m} \quad \text{VÝHRADE.}$$

VARIANTA PŘI OSOVÉ VZDAL. TRÁTU

0,8m



$$q_R = 0,18 \times 1510 = 12,0 \text{ nN}$$

$$W_{\text{cut}} = \frac{q_R}{R} = \frac{12,0 \cdot 10^{-9}}{10,156} = 1,13 \cdot 10^{-9} \text{ J}$$

$$h = \sqrt[3]{\frac{42 \cdot 115 \cdot 10^{-9}}{5}} = 0,22 \text{ m}$$

TRAGEN 18/22 m

$$W = \frac{1}{6} 0,18 \times 0,22^2 = 1,45 \cdot 10^{-3} \text{ J}$$

$$I = \frac{1}{12} 0,18 \cdot 0,22^3 = 1,19 \cdot 10^{-4} \text{ m}^4$$

POSUDEN 1.775

$$z = \frac{q_R}{W_x} = \frac{12,0 \cdot 10^{-9}}{1,45 \cdot 10^{-3}} = 8,77 \text{ MPa} < 10,156 \text{ MPa}$$

STARKER.

II 7.5

$$\gamma = \frac{5 \times 98 \times 7 \cdot 10^{-3} \cdot 3,35}{337 \cdot 1 \cdot 10^4 \cdot 1,19 \cdot 10^{-4}} = 6 \text{ m}$$

$$< \frac{e}{370} = \frac{335}{370} \approx 10 \text{ m} \quad \text{STARKER.}$$

4) STATICKÉ
SCHEMA

SH 74

CHRAŇENÁ
EXPOZICE

V NÁVRHU

CHOBA K 1-1-012 STROP S3 STRIS

$$q_N = 8,23 \text{ kN/m}^2$$

$$q_R = 11,71 \text{ kN/m}^2$$



$$l = 3,0 \times 1,05 = 3,15 \text{ m}$$

$$q_k = \frac{1}{8} q_R l^2 = \frac{1}{8} 11,71 \cdot 3,15^2 = 14,52 \text{ kNm}$$

$$W_{k, \text{ext}} = \frac{q_k}{R_{oi}} = \frac{14,52 \cdot 10^{-3}}{12,0 \times 0,8} = 1,37 \cdot 10^{-3} \text{ m}^3$$

$$h = \sqrt[3]{\frac{W_{k, \text{ext}}}{\gamma}} = 0,22 \text{ m}$$

UVAZOVANÍ TRÁŇI V. 260 mm

$$b = \frac{5}{7} h = \frac{5}{7} \cdot 26 = 18,6$$

$$\text{TRÁŇI } 18/24 \quad W = \frac{1}{6} b l^2$$

$$= \frac{1}{6} 0,18 \cdot 0,24^2 = 1,23 \cdot 10^{-3} \text{ m}^3$$

$$I_x = \frac{1}{12} 0,18 \cdot 0,24^3 = 2,02 \cdot 10^{-4} \text{ m}^4$$

POSLUŽENÍ 195

$$z = \frac{q_k}{W_x} = \frac{14,52 \cdot 10^{-3}}{1,23 \cdot 10^{-3}} = 8,59 \text{ MPa} < 10,1 \text{ MPa}$$

UPOVĚ.

II MS

$$\gamma = \frac{5}{38,7} \frac{q_k l^4}{E I} = \frac{5 \cdot 8,23 \cdot 10^{-3} \cdot 3,15^4}{38,7 \cdot 10.000 \times 2,02 \cdot 10^{-4}} = 7,1 \text{ mm}$$

$$\gamma_{\text{pov}} = \frac{l}{350} = \frac{315}{350} = 0,9 \text{ mm} \text{ OK}$$

NÁVRH ZÁKLADY FOSAT TL. 85 mm

$$q_A \times q_I = \frac{1}{8} \cdot 10,27 \times 1,0^2 = 1,34 \text{ kNm}$$

$$W = \frac{1}{6} \cdot 1,0 \cdot 0,085^2 = 2,07 \cdot 10^{-4} \text{ m}^3$$



POSUDEM

$$z = \frac{q_l R}{W_X} = \frac{1,35 \cdot 10^{-3}}{2,05 \cdot 10^{-4}} = 6,57 \text{ MPa} < 10,56$$

VÝHODNĚ.

5) STATIONNĚ
SCHEMA

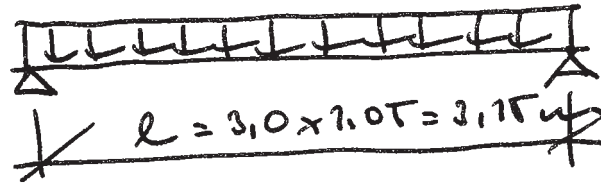
SH 76

CHOODA K 1-1-031

STROP SH

$$q_N = 7,33 \text{ kN/m}^2$$

$$q_R = 10,52 \text{ kN/m}^2$$



$$M_R = \frac{1}{8} q l^2 = \frac{1}{8} \cdot 10,52 \cdot 3,15^2 = 13,04 \text{ kNm}$$

$$\text{TRÁVA 18/24} \quad W = \frac{1}{6} \cdot 0,18 \cdot 0,24^2 = 1,73 \cdot 10^{-3} \text{ m}^3$$

$$I = \frac{1}{12} \cdot 0,18 \cdot 0,24^3 = 2,02 \cdot 10^{-4} \text{ m}^4$$

POSUDEM 1.9.5

$$z = \frac{M_R}{W_X} = \frac{13,0 \cdot 10^{-3}}{1,73 \cdot 10^{-3}} = 7,54 \text{ MPa} < 10,56 \text{ MPa}$$

VÝHODNĚ.

DŘEVO
CHRÁŤEJ
EXPOZICE

$$R_i = 12 \times 0,83 = 9,96 \text{ MPa}$$

II. 9.5

$$\gamma = \frac{I}{334} \cdot \frac{7,33 \cdot 10^{-3} \cdot 3,15^4}{1 \cdot 10^7 \cdot 2,02 \cdot 10^{-4}} = 4,5 \text{ mm} <$$

$$z_{\text{DOU}} = \frac{l}{150} = \frac{3,15}{150} = 21 \text{ mm} \quad \text{VÝHODNĚ}$$

NÁVZÁJNÁ SITUACE TRÁVY

ZATÍŽENÍ V 2 STR.

STĚLÉ

$$q_N = 818 \text{ kN/m}^2$$

$$q_R = 1098 \text{ kN/m}^2$$

NÁHODNĚ

EL. LOUVOST. STON.

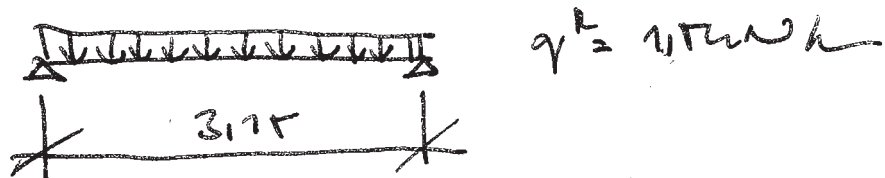
$$308 \text{ kN/m}^2$$

$$409 \text{ kN/m}^2$$

CELKOVĚ

$$1126 \text{ kN/m}^2$$

$$1507 \text{ kN/m}^2$$



$$q_1^R = \frac{1}{6} q^L l^2 = \frac{1}{6} 1.17 \cdot 3.15^2 = 1.94 \text{ kN} \sim 2$$

TRÄGER 100/180

$$W = \frac{1}{6} b h^3 = \frac{1}{6} 0.11 \cdot 0.12^3 = 2.4 \cdot 10^{-4} \text{ m}^3$$

$$I = 144 \cdot 10^{-4} \text{ m}^4$$

POSITIVE 1.915

$$\zeta = \frac{q_1^R}{W x} = \frac{1.9 \cdot 10^{-4}}{2.4 \cdot 10^{-4}} = 7.916 < 10.17 \text{ kN/m}$$

WILLIGKEIT.

II 915

$$\gamma = \frac{\tau}{\sigma_{94}} \cdot \frac{1.1 \cdot 10^{-3} \cdot 1.15^3}{1 \cdot 10^4 \times 1.44 \cdot 10^5} = 10 \text{ mm}$$

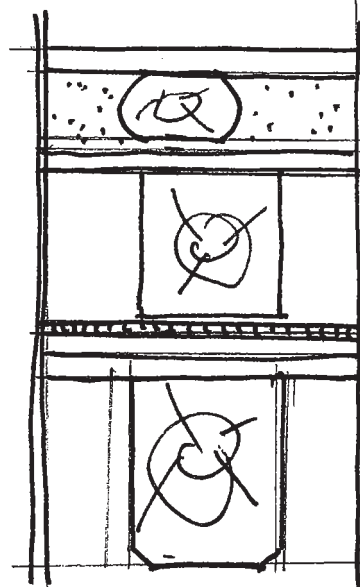
$$\gamma_{\text{DOU}} = \frac{l}{570} = \frac{315}{570} = 9 \text{ mm}$$

WILLIGKEIT.

STROP S5, S6

STR 19

~ 130mm



- FOIŢĂ 30mm
- POLITARE 80mm
- UĂLP STĂES PÎMUL A UĂPNA 100mm
- ZĂULOP FOIŢĂ 30mm
- TRĂŢI
- CETRIS DECUA 12mm
- ZĂULOP 2xIT = 70mm
- TRĂŢI 260mm
- GOTIUA

ȚIPŢCET ZATȚZEL

A) STĂLE

$$\begin{aligned}
 \text{FOIŢĂ STROP } 0,03 \times 600 &= 18 \times 1,15 = 20,7 \text{ m}^2 \\
 \text{POLITARE } 0,13 \times 0,11 \times 600 &= 2,19 \times 1,15 = 2,52 \text{ m}^2 \\
 \text{STĂES UĂP + PÎMUL } 0,1 \times 1650 &= 165 \times 1,15 = 190 \text{ m}^2 \\
 \text{ZĂULOP } 0,035 \times 600 &= 21 \times 1,15 = 24,15 \text{ m}^2 \\
 \text{TRĂŢI } 0,2 \times 0,12 \times 600 &= 24 \times 1,15 = 27,6 \text{ m}^2 \\
 \text{CETRIS } 0,01 \times 1200 &= 12 \times 1,15 = 13,8 \text{ m}^2 \\
 \text{ZĂULOP } 42 \times 1,15 &= 48,3 \text{ m}^2 \\
 \text{TRĂŢI } 0,125^2 \times 600 &= 9,375 \times 1,15 = 10,78 \text{ m}^2
 \end{aligned}$$

$$\text{STĂLE CELULEN } q^N = 330 \text{ kg/m}^2 \quad q^R = 450 \text{ kg/m}^2$$

NAHODILE

$$\begin{aligned}
 v^N + u &= v^R \\
 400 \times 1,15 &= 460 \text{ kg/m}^2
 \end{aligned}$$

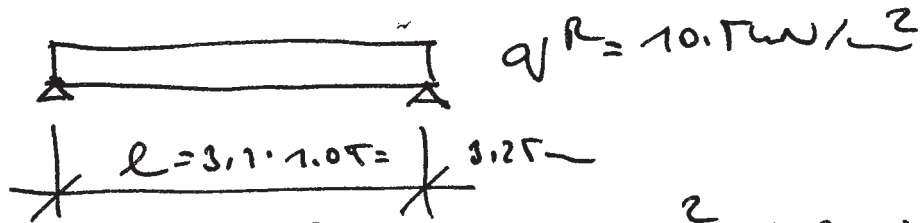
ZATȚZEL CELULEN

$$q^N = q^N + v^N = 330 + 400 = 730 \text{ kg/m}^2$$

$$q^R = q^R + v^R = 450 + 600 = 1050 \text{ kg/m}^2$$

MAX TOTAL STRAIN + RESERVE 20% STEEL
 RESERVE 20% TRANS 18/18
 $W = \frac{1}{6} b h^3 = \frac{1}{6} 0,18^3 = 9,72 \cdot 10^{-4} \text{ m}^3$
 ($M_R = 10,26 \text{ kNm}$)

STATIC SCHEMA



$$q_R = \frac{1}{2} q l^2 = \frac{1}{2} 10,17 \cdot 3,27^2 = 13,9 \text{ kNm}$$

18/18

$$M_R = 10,26 \text{ kNm} \Rightarrow q_R = 7,7 \text{ kN/m}$$

$$\text{VZDAL. TRANS} \quad \frac{2,7}{10,17} = 0,27 \text{ m}$$

$$q_R = \frac{1}{2} \cdot 0,27 \cdot 10,17 \cdot 3,27^2 = 10,59 \text{ kNm}$$

$$\text{TRANS 20/20} \quad W = 1,133 \cdot 10^{-3} \text{ m}^3$$

$$I = 1,133 \cdot 10^{-4} \text{ m}^4$$

POSUDEX

$$\sigma = \frac{M_R}{W_x} = \frac{10,59 \cdot 10^{-3}}{1,133 \cdot 10^{-3}} = 2,8 \text{ MPa}$$

$$\frac{13,9}{1,133} = 10,45 \text{ MPa}$$

$$< 10,12$$

UNIFORME.

$\sim 1,0 \text{ m}$.

II. TS

$$\delta = \frac{\sigma}{E} \cdot \frac{7,3 \cdot 10^{-3} \cdot 3,27^4}{1 \cdot 10^7 \cdot 1,133 \cdot 10^{-4}} = 8 \text{ mm}$$

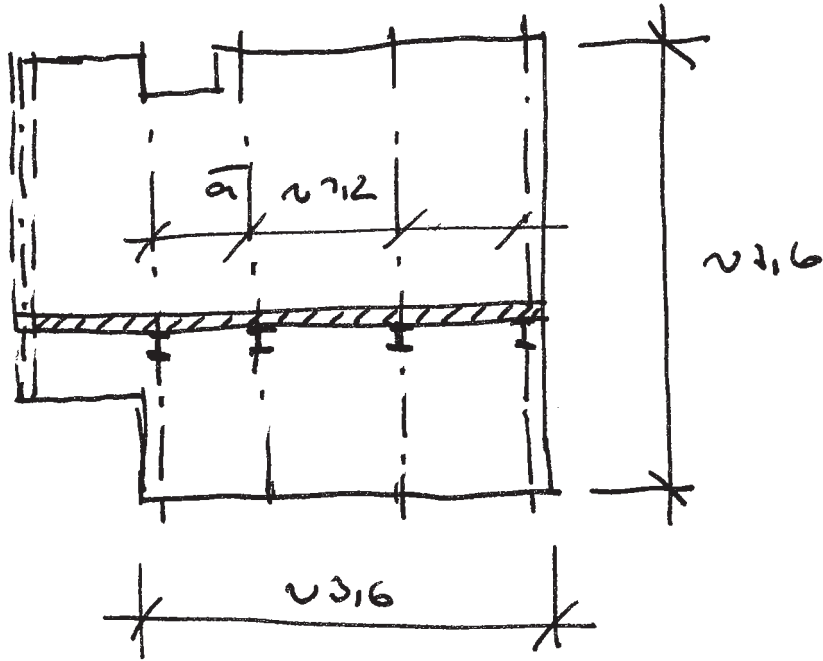
$$\gamma_{000} = \frac{l}{J_{TO}} = \frac{327}{J_{TO}} = 9 \text{ mm}$$

UNIFORME.

5) STATISCHE
SCHEMA

PRESALI K1-1-00T STROP S7

SH64



$$q_N = 8.67 \text{ kN/m}^2$$

$$q_R = 12.07 \text{ kN/m}^2$$

$$l = 3.6 \times 1.07 = 3.8 \text{ m}$$

$$M_R = \frac{1}{8} q_R l^2 = \frac{1}{8} \cdot 12.07 \times 3.8^2 = 26.7 \text{ kNm}$$

$$W_{\text{ent}} = \frac{M_R}{R} = \frac{26.7 \cdot 10^{-3}}{220} = 1.22 \cdot 10^{-4} \text{ m}^3$$

$$I_{\text{c}} \cdot 180 \text{ Wx} = 1.6 \cdot 10^{-4} \text{ m}^3$$

$$I_x = 1.44 \cdot 10^{-7} \text{ m}^4$$

POSUŁEK

I. PRZ.

$$\sigma = \frac{q_R}{W_x} = \frac{26.7 \cdot 10^{-3}}{1.6 \cdot 10^{-4}} = 167 \text{ MPa} < 220 \text{ MPa}$$

OK

II PRZ.

$$\delta = \frac{\gamma}{285} \cdot \frac{8.67 \cdot 10^{-3} \cdot 1.2 \cdot 3.8^4}{2.7 \cdot 10^7 \cdot 1.44 \cdot 10^{-7}} = 9 \text{ mm}$$

$$\delta_{\text{DOP}} = \frac{l}{170} = \frac{380}{170} = 2.2 \text{ mm}$$

OK

НАУРН ПОДУЕД
 ЗАТИЗЕЛ ВИЗ СТРА
 $q^R = 1,1 \text{ kV/m}^2$
 $q^N = 1,1 \text{ kV/m}^2$

$$g^R = \frac{1}{\rho} q^R = \frac{1}{\rho} \cdot 1,1 \cdot 1,2 \times 3,8^2 = 3,27 \text{ kV/m}$$

$$W_{act} = \frac{g^R}{R} = \frac{3,27 \cdot 10^{-3}}{10,16} = 3,07 \cdot 10^{-5}$$

$$h = \sqrt[3]{\frac{42 \cdot 3,07 \cdot 10^{-5}}{\Gamma}} = 14 \text{ cm}$$

ТРАН 10/16 $W = \frac{1}{6} 0,17 \cdot 0,16^2 = 4,26 \cdot 10^{-5}$

$$I = \frac{1}{12} 0,17 \cdot 0,16^3 = 3,41 \cdot 10^{-7}$$

ПОДУЕД

1.915

$$\delta = \frac{g^R}{W_x} = \frac{3,27 \cdot 10^{-3}}{4,26 \cdot 10^{-5}} = 7,62 \text{ MPa} < 10,16 \text{ MPa}$$

УЧОУЕ.

II.915

$$\gamma = \frac{\Gamma}{\delta^3} \cdot \frac{11 \cdot 10^{-3} \times 1,2 \times 3,8^4}{1 \cdot 10^{-4} \times 3,41 \cdot 10^{-7}} = 1 \text{ cm}$$

$$\gamma_{000} = \frac{l}{\delta^3} = \frac{300}{\delta^3} = 1 \text{ cm}$$

УЧОУЕ.