PRILOGA 1C

NASLOVNA STRAN NAČRTA

2 - GRADBENE KONSTRUKCIJE

PODATKI O GRADNJI		
naziv gradnje		**UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA**
kratek opis gradnje		**INVESTITOR: ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska cesta 97, 3000 CELJE** **V obstoječem šolskem kompleksu se izvedejo posamezni posegi za zagotovitev univerzalne uporabnosti in dostopnosti objekta in sicer:** **- izvedba dvigala na severnem delu vzhodnega dela kompleksa šole,** **- ureditev sanitarij za invalide v 1. nadstropju vzhodnega dela,** **- izvedba nadstreška (čakalnica za invalide) ob parkirnem prostoru za invalide pri glavnem vhodu šole,** **ZUNANJA UREDITEV:** **- ureditev ploščadi (novo tlakovanje) pred glavnim vhodom z označbo parkirnega prostora za invalide,** **- ureditev tlakovane poti ob vzhodni in severni strani šole,** **- izvedba osvetlitve peš poti od vhodov v šolo do avtobusne postaje,** **OPREMA:** **- izvedba premične klančine pri glavnem vhodu,** **- izvedba premične klančine v osrednjem delu kot povezava osrednjega pritličnega hodnika z rastlinjakom.**
VRSTE GRADNJE *označiti vse ustrezne vrste gradnje*	☐	**NOVOGRADNJA - NOVOZGRAJEN OBJEKT**
	☐	**NOVOGRADNJA - PRIZIDAVA**
	☐	**REKONSTRUKCIJA**
	☐	**SPREMEMBA NAMEMBNOSTI**
	☐	**ODSTRANITEV CELOTNEGA OBJEKTA**
	☑	**VZDRŽEVALNA DELA**
	☑	**MANJŠA REKONSTRUKCIJA**
PODATKI O PROJEKTNI DOKUMENTACIJI		
vrsta dokumentacije		**PZI (projektna dokumentacija za izvedbo gradnje)**
številka projekta		**211-1/24**
PODATKI O NAČRTU		
strokovno področje načrta		**2 Načrt s področja gradbeništva**
naziv načrta		**2 - GRADBENE KONSTRUKCIJE**
številka načrta		**23/24**
datum izdelave		**MAJ 2024**
datum spremembe		
PODATKI O PROJEKTANTU NAČRTA		
projektant načrta (naziv družbe)		**PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE, IVAN RAMŠAK s.p.**
naslov		**Prešernova cesta 8, 3320 VELENJE**
odgovorna oseba projektanta načrta		**IVAN RAMŠAK**
podpis odgovorne osebe projektanta načrta		PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE Ivan RAMŠAK s.p. Prešernova cesta 8, 3320 Velenje
PODATKI O IZDELOVALCU NAČRTA		
ime in priimek pooblaščenega arhitekta, pooblaščenega inženirja		**IVAN RAMŠAK, u.d.i.g.**
identifikacijska številka		**IZS G-0011**
podpis pooblaščenega arhitekta, pooblaščenega inženirja		IVAN RAMŠAK univ. dipl. inž. grad. IZS G-0011

INVESTITOR: ŠOLA ZA HORTIKULTURO IN VIZUALNE UMETNOSTI CELJE
Ljubljanska cesta 97
3000 CELJE

OBJEKT: UNIVERZALNA UPORABNOT IN DOSTOPNOST OBJEKTA

ŠT. PROJ.: 211-1/24

ŠT. NAČRTA: 23/24

FAZA: PZI

GRADBENE KONSTRUKCIJE

INVESTITOR: ŠOLA ZA HORTIKULTURO IN VIZUALNE UMETNOSTI CELJE
Ljubljanska cesta 97
3000 CELJE

OBJEKT: UNIVERZALNA UPORABNOT IN DOSTOPNOST OBJEKTA

ŠT. PROJ.: 211-1/24

ŠT. NAČRTA: 23/24

FAZA: PZI

TEHNIČNO POROČILO

1.0 SPLOŠNO

Investitor želi v sklopu vzdrževalnih del in manjše rekonstrukcije ob obstoječem objektu zgraditi novo nadstrešnico in osebno dvigalo.
Ker gre za konstrukcijsko samostojna objekta, le ta ne vplivata na obstoječo globalno in lokalno stabilnost in nosilnost obstoječega objekta.

2.0 KONSTRUKCIJA

2.1 Dvigalo

Konstrukcija novega dvigala je armiranobetonske izvedbe.
Medetažne plošče so klasične armiranobetonske plošče, prav tako vertikalni nosilni elementi - stene in stebri.
Temeljenje je izvedeno na armiranobetonski temeljni plošči, katere spodnja kota mora biti enaka spodnji koti obstoječih temeljev obstoječega objekta.
Klančina je armiranobetonske izvedbe.

2.2 Nastrešek

je konstrukcijsko zasnovan kot kombinacija lesenih, jeklenih in armiranobetonskih konstrukcij.
Sekundarni strešni nosilci so lesene izvedbe, in prenašajo obtežbo na dva glavna vzdolžna jeklena nosilca škatlastega prereza.
Glavna okvirja, ki potekata pravokotno na obstoječ objektz sta jeklene izvedbe iz škatlatih profilov.
Spoj prečka steber jeizveden kot togi spoj, sidranje o objektu je členkasto, na drugi strani pa vpeta podpora.
V strehi je izvedeno horizontalno zavetrovanje, v vzdolžni smeri ob obstoječem objektu pa vertikalno zavetrovanje.
Temeljenje je izvedeno na armiranobetonski temeljni plošči, katere spodnja kota mora biti enaka spodnji koti obstoječih temeljev obstoječega objekta.

3.0 OBTEŽBE

Objekt je kontroliran na vertikalne in horizontalne obtežbe skladno z EC0, EC1 in EC8.
Horizontalna obtežba je potres a/ag =0.200, ter horiziontalne komponente delovanja dvigala.

4.0 MATERIALI

Vsi vgrajeni materiali morajo ustrezati veljavnim standardom in predpsiom, za kar imajo izvajalci dokazila o ustreznosti.
Konstrukcijsko jeklo je S 355 J2, vijaki so kvalitetet 8.8, zvari so II. kvalitete.
Betoni so kvalitete C 30/37, armatura je S 500B.
Posebne zahteve za beton so pri zunanjem nezaščitenem betonu odpornost na za betone so .

5.0 TEMELJENJE

Oba konstrukcijska sklopa sta temeljena na armiranobetonski plošči, ki je statično tretirana kot plošča na elastični podlagi.
Glede na predhodne raziskave je upoštevan modul reakcije temeljnih tal v višini 10000 kN/m^3.
Temeljna tla mora pred izdelavo temeljnih konstrukcij prevzeti pooblaščen geolog.

6.0 IZRAČUN

Izračun za nosilne konstrukcije je izveden s pomočjo računalniškega programa »Tower 8«.
Dimenzioniranje posameznih konstrukcijskih sklopov je izvedeno skladno z EC2, EC3, EC5, EC7 in EC8.

7.0 POŽARNA ZAŠČITA KONSTRUKCIJE

vsi konstrukcijski elementi so dimenzionirani tako, da imajo požarno odpornost skladno z zahtevami požarnega elaborata.

8.0. IZDELAVA IN MONTAŽA JEKLENIH KONSTRUKCIJ

Izdelovalec in montažer jeklenih konstrukcij morata upoštevati SIST EN 1090-2, razred konstrukcije EXC2, ter izdelati načrt montaže jeklenih konstrukcij glede na uporabljena montažna sredstva (mehanizacijo).

9.0 ZAKLJUČEK

Kot je omenjeno že v točki 4.0 morajo vsi vgrajeni materiali sutrezati veljavnim standardom in predpisom, za kar imajo izvajalci dokazila o ustreznosti.

Velenje maj 2024

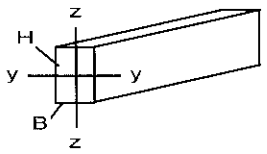
J. Ramšak

POZ 01N - LEESN NOSILEC NADSTREŠNICE; e < 65 cm

Vhodni podatki::

Lastnosti prereza

B =	60	mm
H =	100	mm
W_y =	1,00 E+5	mm^3
W_z =	6,00 E+4	mm^3



Oslabitev prereza

ΔW_y =	0,00 E+0	mm^3
ΔW_z =	0,00 E+0	mm3

Merodajna obtežba:

$M_{y,d}$ =	1,02	kNm
$M_{z,d}$ =	0,00	kNm

% vlage =	2
u ≤ 12%	1
u ≤ 20%	2
20% < u	3
obtežba =	3
P=	1
L=	2
M=	3
S=	4

Vrsta lesa	5
C14	1
C16	2
C18	3
C22	4
C24	5
C27	6
C30	7
C35	8
C40	9
D30	10
D35	11
D40	12
D50	13
D60	14
D70	15

Kontrola:

upogib(1): $\frac{\sigma_{m,y,d}}{f_{m,y,d}} + k_m \cdot \frac{\sigma_{m,z,d}}{f_{m,z,d}} \le 1$

upogib(2): $k_m \cdot \frac{\sigma_{m,y,d}}{f_{m,y,d}} + \frac{\sigma_{m,z,d}}{f_{m,z,d}} \le 1$

Upogib (1):	0,69	+	0,00	=	0,69	< 1
Upogib (2):	0,48	+	0,00	=	0,48	< 1

Podatki iz baze:

k_{mod} = 0,80 γ_M = 1,3 k_m = 0,7 za prereze pravokotnih oblik

Upogib okrog y - osi

$\sigma_{m,y,d} = M_{y,d} / W_{y,netto}$ =	10,2	N/mm²
$f_{m,y,k}$ =	24,0	N/mm²
$f_{m,y,d} = k_{mod} \cdot f_{m,y,k} / \gamma_M$ =	14,8	N/mm²

Upogib okrog z - osi

$\sigma_{m,z,d} = M_{z,d} / W_{z,netto}$ =	-	N/mm²
$f_{m,z,k}$ =	-	N/mm²
$f_{m,z,d} = k_{mod} \cdot f_{m,z,k} / \gamma_M$ =	-	N/mm²

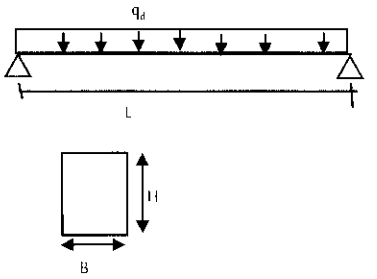
KONTROLA POVESA - MSU

q_d=kombinacija v MSU - $\gamma_g=\gamma_q=1,0$

Vhodni podatki::

Lastnosti elementa:

L=	1,8	m
B =	60	mm
H =	100	mm
A =	6000	mm^2
I=	5000000	mm^4



Merodajna obtežba:

qd =	2,10	kN/m

% vlage =	1,75
u ≤ 12%	1
u ≤ 20%	2
20% < u	3
obtežba =	3
P=	1
L=	2
M=	3
S=	4

Vrsta lesa:	5
C14	1
C16	2
C18	3
C22	4
C24	5
C27	6
C30	7
C35	8
C40	9
D30	10
D35	11
D40	12
D50	13
D60	14
D70	15

Kontrola:

$$f_{INST} = \frac{5 * q_d * l^4}{384 * E_{o,mean} * I} \leq f_{INST,DIV} = \frac{l}{250}$$

f_{inst}= 5,218977273 mm < 7,2 mm

Podatki iz baze:

Lastnosti materiala:

$E_{o,mean}$= 11000 N/mm^2

Vhodni podatki - Konstrukcija

Tabele materialov

No	Naziv materiala	E[kN/m2]	μ	γ[kN/m3]	α[1/C]	Em[kN/m2]	μm
1	Jeklo	2.100e+8	0.30	78.50	1.000e-5	2.100e+8	0.30

Vhodni podatki - Obtežba

Lista obtežnih primerov

LC	Naziv
1	STALNA (g)
2	SNEG + VETER
3	SNEG SAMO NA KONZOLI
4	Komb.: 1.35xI+1.5xIII
5	Komb.: 1.35xI+1.5xII
6	Komb.: I+1.5xIII
7	Komb.: I+1.5xII
8	Komb.: 1.35xI
9	Komb.: I+II
10	Komb.: I+III

Statični preračun

Obt. 1: STALNA (g)



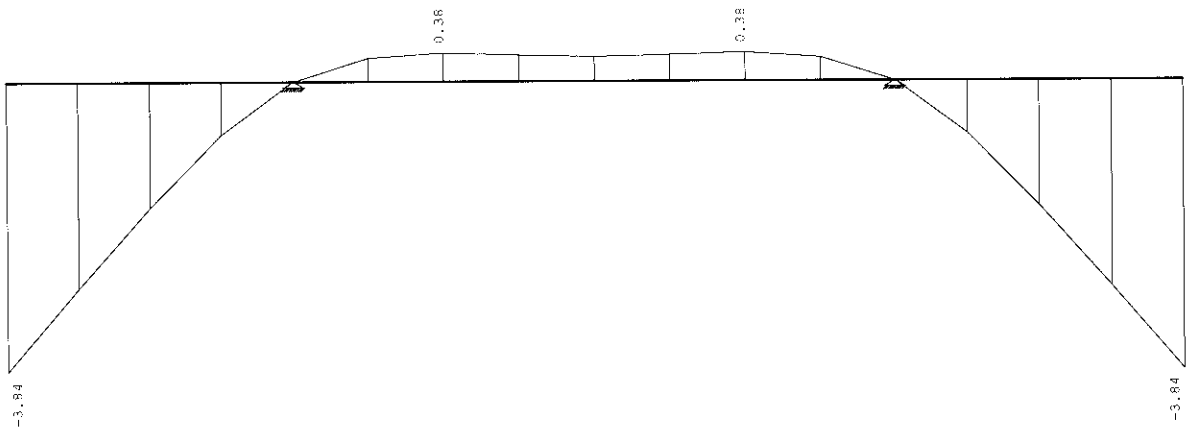
Reakcije podpor

Obt. 2: SNEG + VETER



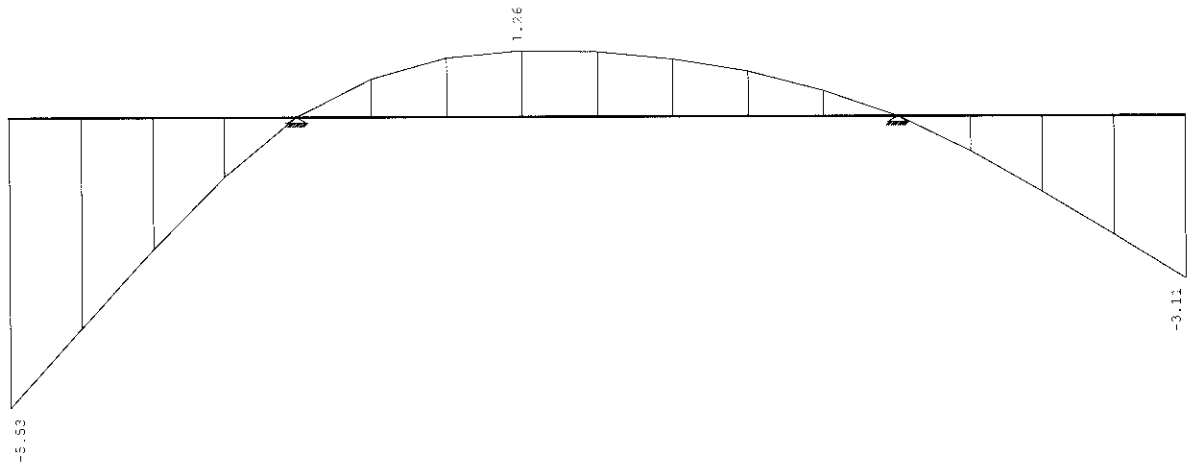
Reakcije podpor

Obt. 9: I+II



Vplivi v gredi: max Zp= 0.38 / min Zp= -3.84 m / 1000

Obt. 10: I+III

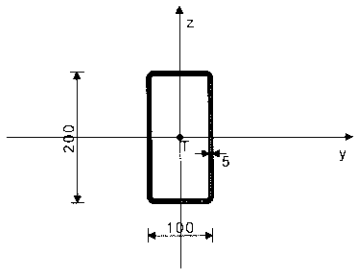


Vplivi v gredi: max Zp= 1.26 / min Zp= -5.53 m / 1000

Dimenzioniranje (jeklo)

PALICA 3-2
PREČNI PREREZ: HOP [] 200x100x5 [S 355] [Set: 1]
EUROCODE 3 (EN 1993-1-1:2005)

GEOMETRIJSKE KARAKTERISTIKE prereza



[mm]

Ax =	28.360 cm2
Ay =	9.453 cm2
Az =	18.907 cm2
Ix =	1203.9 cm4
Iy =	1438.3 cm4
Iz =	487.60 cm4
Wy =	143.82 cm3
Wz =	97.520 cm3
Wy,pl =	187.75 cm3
Wz,pl =	115.25 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 35.5 kN/cm2, fu = 51.0 kN/cm2)

FAKTORJI IZKORIŠČENOSTI PO KOMBINACIJAH OBTEŽB

4. γ=0.14	5. γ=0.14	6. γ=0.12
7. γ=0.12	10. γ=0.10	9. γ=0.09
8. γ=0.06		

PALICA IZPOSTAVLJENA UPOGIBU
(obtežni primer 4, začetek palice)

Prečna sila v z smeri	$V_{Ed,z}$ =	-4.538 kN
Upogibni moment okoli y osi	$M_{Ed,y}$ =	-7.801 kNm
Sistemska dolžina palice	L =	420.00 cm

5.5 KLASIFIKACIJA PREČNIH PREREZOV
Razred prereza 1

6.2 NOSILNOST PREČNIH PREREZOV
6.2.5 Upogib y-y

Plastični odpornostni moment	$W_{y,pl}$ =	187.75 cm3
Računska nosilnost na upogib	$M_{c,Rd}$ =	60.592 kNm

Pogoj 6.12: $M_{Ed,y}$ <= $M_{c,Rd,y}$ (7.80 <= 60.59)

6.2.6 Strig

Računska strižna nosilnost	$V_{pl,Rd,z}$ =	352.28 kN
Računska strižna nosilnost	$V_{c,Rd,z}$ =	352.28 kN

Pogoj 6.17: $V_{Ed,z}$ <= $V_{c,Rd,z}$ (4.54 <= 352.28)

6.2.8 Upogib in strig
Ni potrebno zmanjšanje upogibne nosilnosti
Pogoj: $V_{Ed,z}$ <= 50%$V_{pl,Rd,z}$

6.3 NOSILNOST ELEMENTA NA UKLON
6.3.2.1 Nosilnost na bočno-torzijski uklon

Koeficient	C1 =	1.132
Koeficient	C2 =	0.459
Koeficient	C3 =	0.525
Koef.ukl.dolžine za uklon	k =	1.000
Koef.ukl.dolžine za vbočenje	kw =	1.000
Koordinata	zg =	0.000 cm
Koordinata	zj =	0.000 cm
Razmak med bočnimi podporami	L =	420.00 cm
Sektorski vztrajnostni moment	Iw =	0.000 cm6
Krit.moment bočne zvrnitve	Mcr =	844.91 kNm
Ustrezni odpornostni moment	W_y =	187.75 cm3
Koeficient imperf.	αLT =	0.760
Brezdimenz.vitkost	λLT_ =	0.281
Koeficient zmanjšanja (6.3.2.2.)	χLT =	0.938
Računska uklonska nosilnost	$M_{b,Rd}$ =	56.821 kNm

Pogoj 6.54: $M_{Ed,y}$ <= $M_{b,Rd}$ (7.80 <= 56.82)

KONTROLA STRIŽNE NOSILNOSTI
(obtežni primer 5, začetek palice)

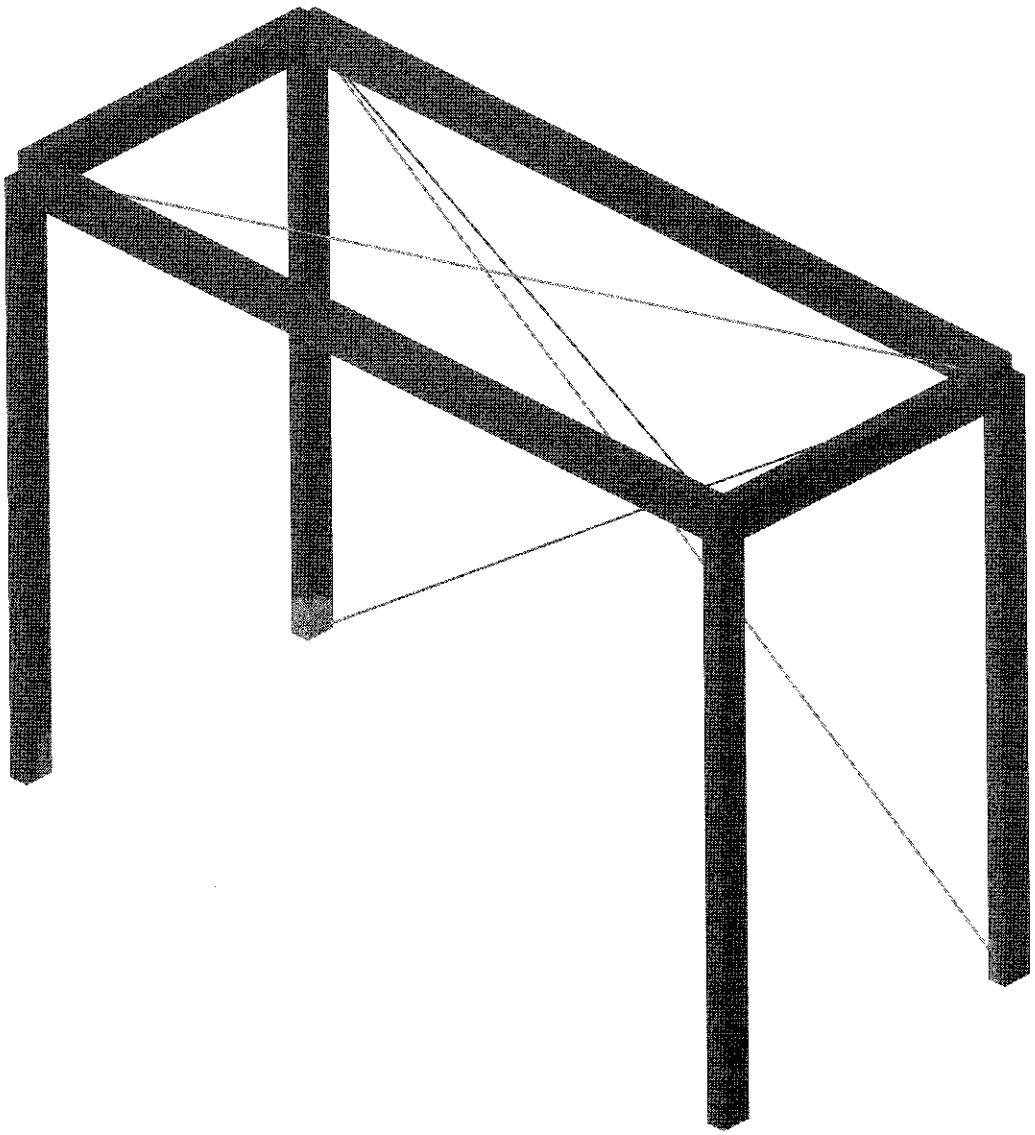
Prečna sila v z smeri	$V_{Ed,z}$ =	-8.191 kN
Upogibni moment okoli y osi	$M_{Ed,y}$ =	-7.801 kNm
Sistemska dolžina palice	L =	420.00 cm

6.2 NOSILNOST PREČNIH PREREZOV
6.2.6 Strig

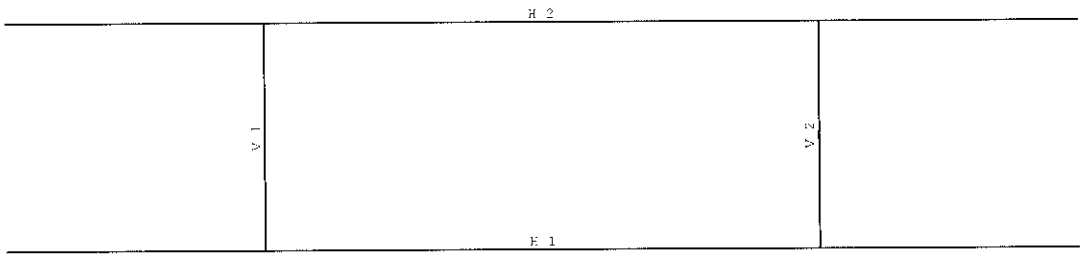
Računska strižna nosilnost	$V_{pl,Rd,z}$ =	352.28 kN
Računska strižna nosilnost	$V_{c,Rd,z}$ =	352.28 kN

Pogoj 6.17: $V_{Ed,z}$ <= $V_{c,Rd,z}$ (8.19 <= 352.28)

Vhodni podatki - Konstrukcija



Izometrija


H 2
V 1
V 2
H 1

Tabele materialov

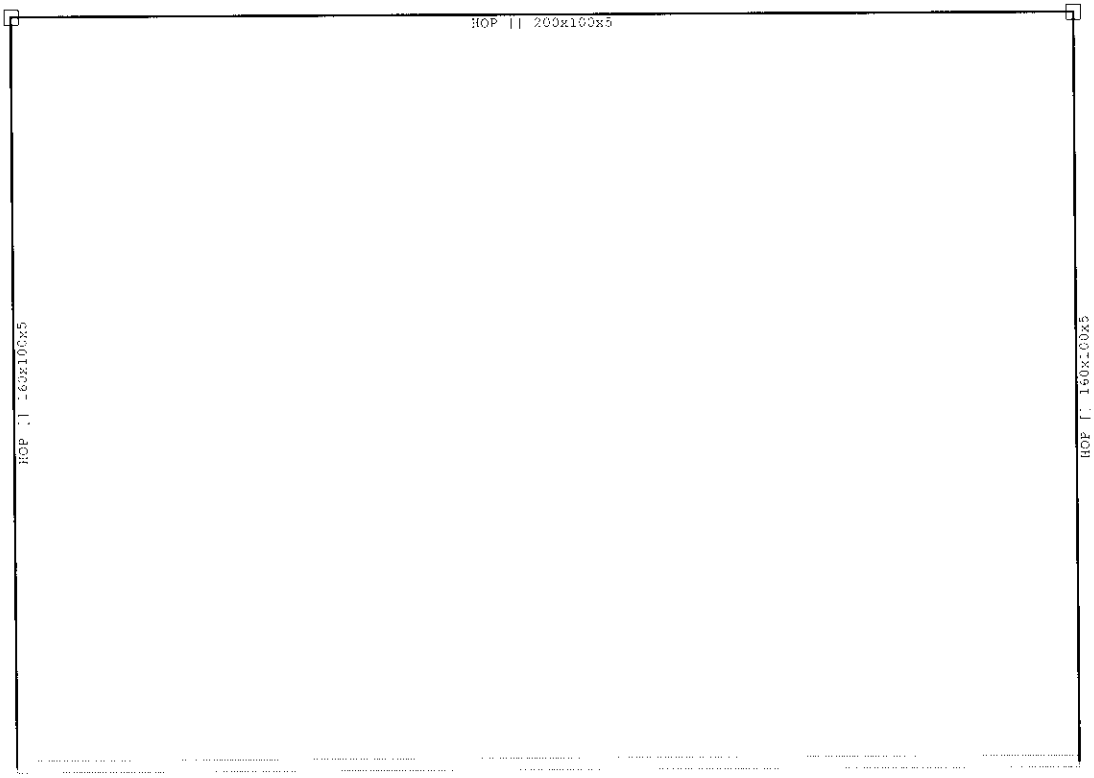
No	Naziv materiala	E[kN/m2]	μ	γ[kN/m3]	α[1/C]	Em[kN/m2]	μm
1	C 25/30	3.100e+7	0.20	25.00	1.000e-5	3.100e+7	0.20
2	Jeklo	2.100e+8	0.30	0.00	1.000e-5	2.100e+8	0.30
3	Jeklo	2.100e+8	0.30	78.50	1.000e-5	2.100e+8	0.30

Seti plošč

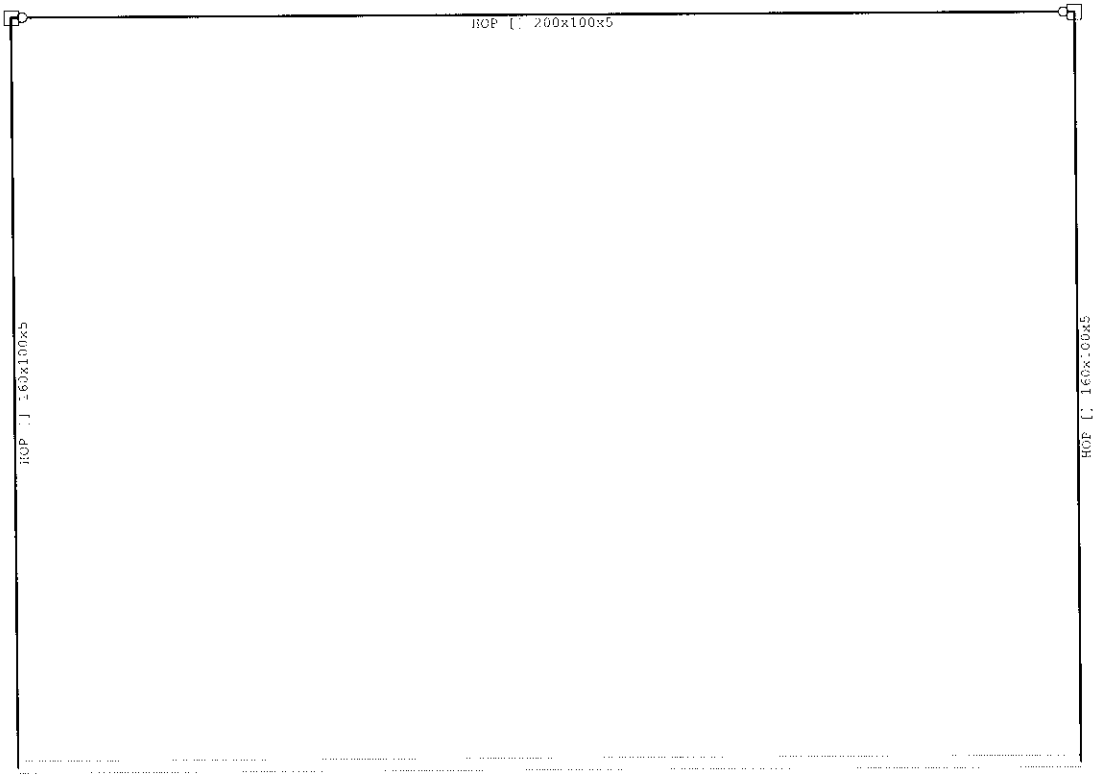
No	d[m]	e[m]	Material	Tip preračuna	Ortotropija	E2[kN/m2]	G[kN/m2]	α
<1>	0.400	0.200	1	Tanka plošča	Izotropna			

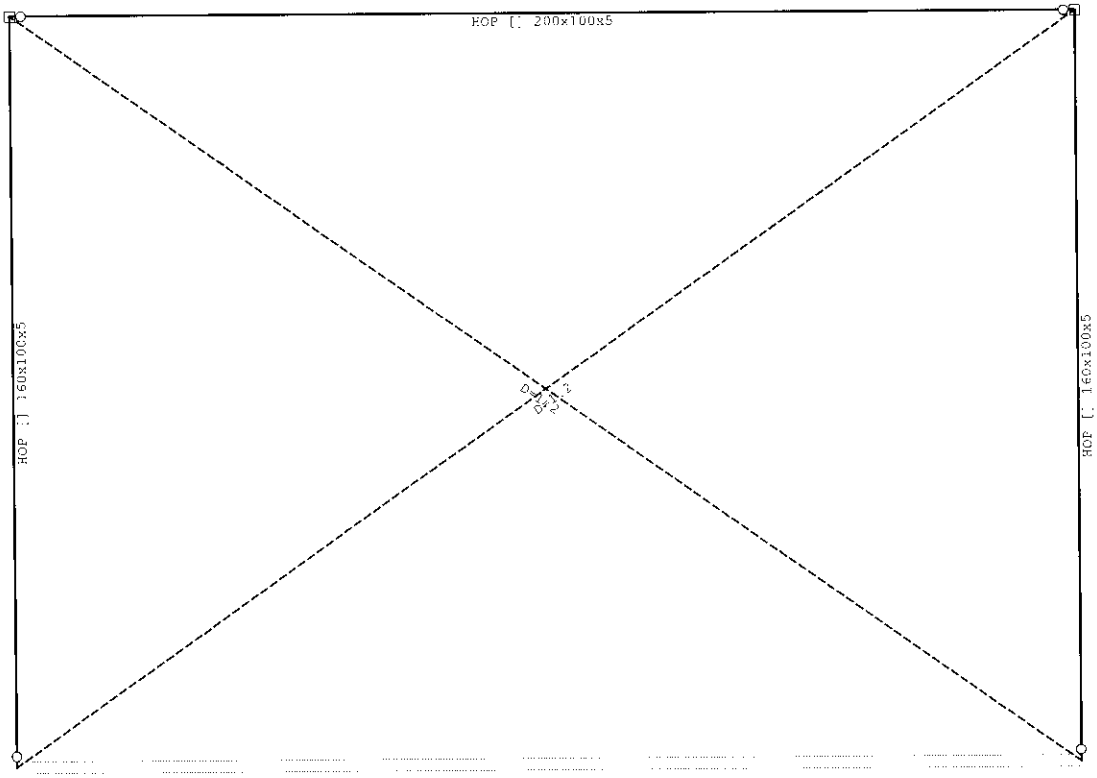
Seti površinskih podpor

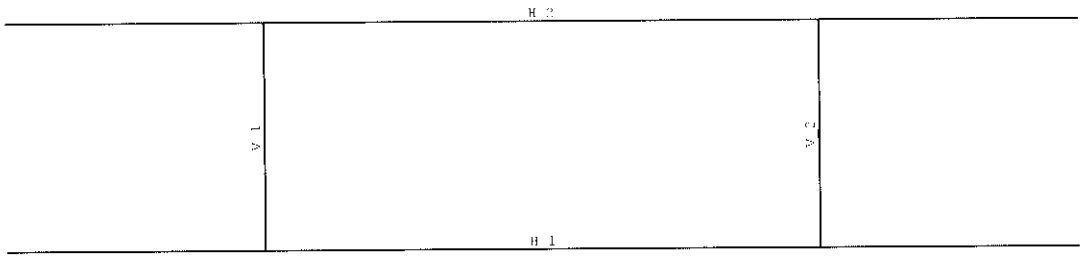
Set	K,R1	K,R2	K,R3
1	7.500e+3	7.500e+3	1.000e+4

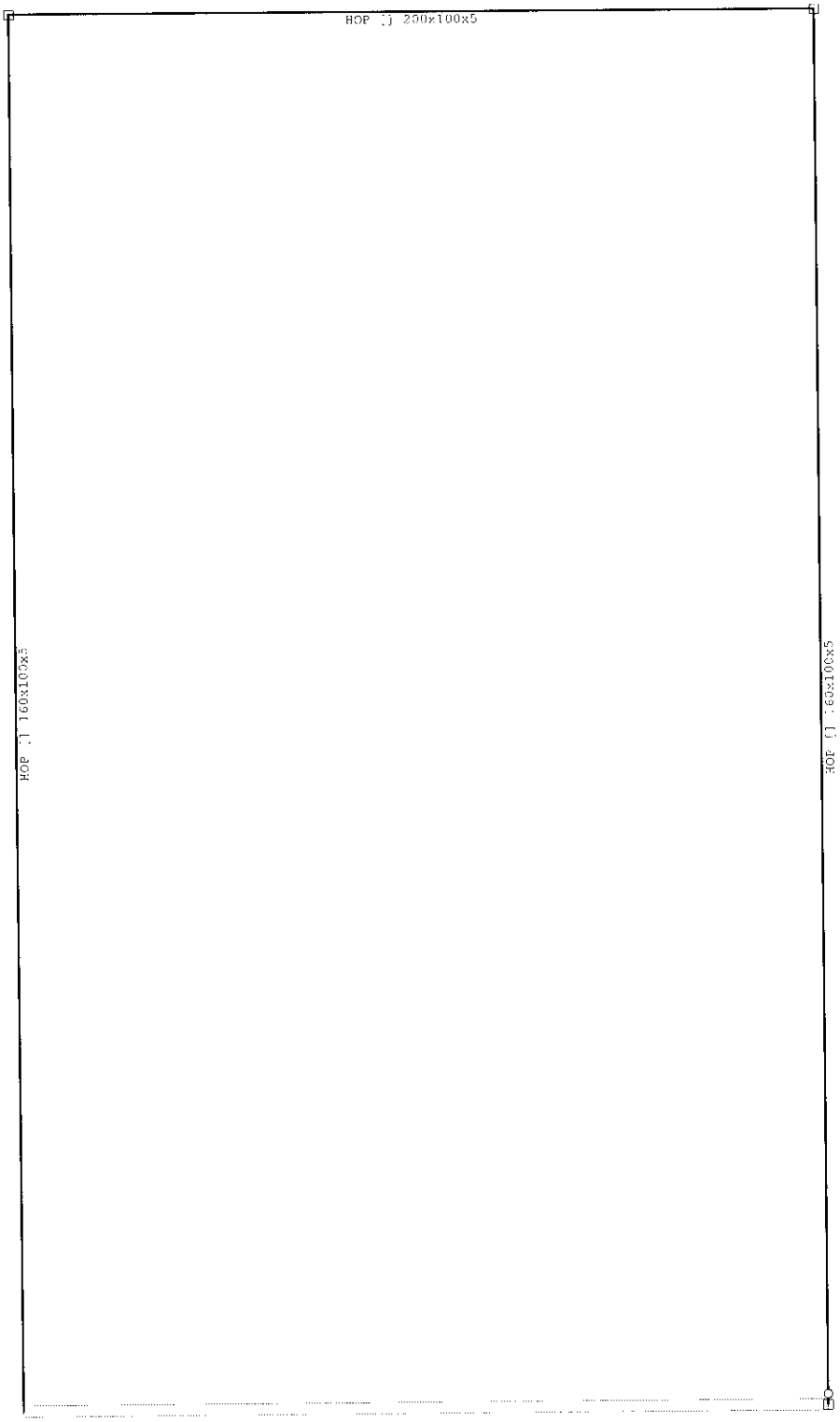


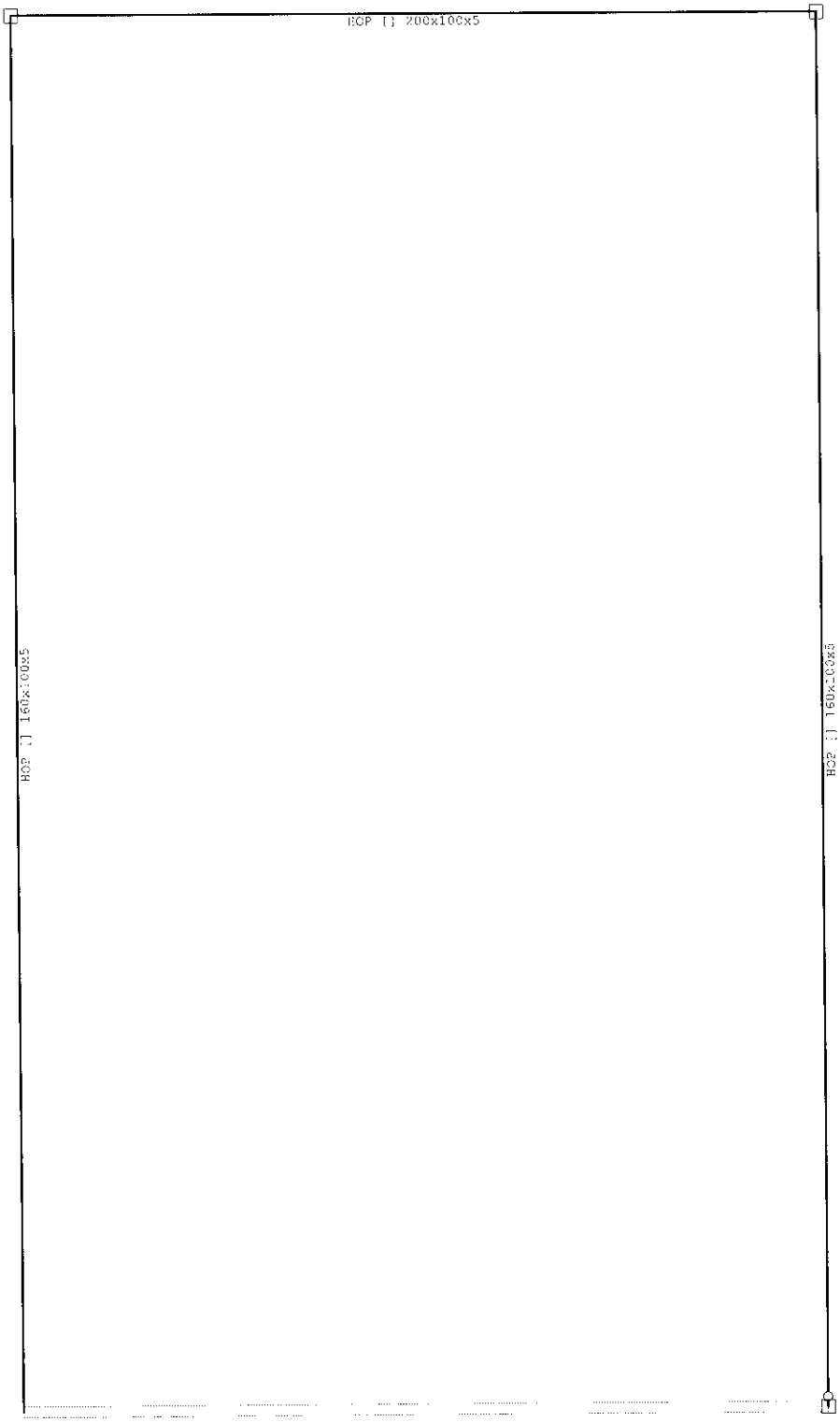
Okvir: H_1


HOP [200x100x5
HOP [160x100x5
HOP [160x100x5


HOP [200x100x5
HOP [160x100x5
HOP [160x100x5


H 2
V 1
V 2
H 1


HOP [] 200x100x5
HOP [] 160x100x5
HOP [] 160x100x5


HOP [] 200x100x5
HOP [] 160x100x5
HOP [] 160x100x5

Vhodni podatki - Obtežba

Lista obtežnih primerov

LC	Naziv
1	STALNA (g)
2	SNEG
3	KORISTNA
4	VETER X
5	VETER Y
6	Komb.: 1.35xI+1.5xII+1.05xIII+0.9xV
7	Komb.: 1.35xI+1.5xII+1.05xIII+0.9xIV
8	Komb.: 1.35xI+0.75xII+1.05xIII+1.5xV
9	Komb.: 1.35xI+0.75xII+1.05xIII+1.5xIV
10	Komb.: 1.35xI+0.75xII+1.5xIII+0.9xV
11	Komb.: 1.35xI+0.75xII+1.5xIII+0.9xIV
12	Komb.: I+1.5xII+1.05xIII+0.9xV
13	Komb.: I+1.5xII+1.05xIII+0.9xIV
14	Komb.: I+0.75xII+1.05xIII+1.5xV
15	Komb.: I+0.75xII+1.05xIII+1.5xIV
16	Komb.: I+0.75xII+1.5xIII+0.9xV
17	Komb.: I+0.75xII+1.5xIII+0.9xIV
18	Komb.: 1.35xI+1.05xIII+1.5xV
19	Komb.: 1.35xI+1.05xIII+1.5xIV
20	Komb.: 1.35xI+1.5xII+1.05xIII
21	Komb.: 1.35xI+1.5xIII+0.9xV
22	Komb.: 1.35xI+1.5xIII+0.9xIV
23	Komb.: 1.35xI+1.5xII+0.9xV
24	Komb.: 1.35xI+1.5xII+0.9xIV

LC	Naziv
25	Komb.: 1.35xI+0.75xII+1.5xV
26	Komb.: 1.35xI+0.75xII+1.5xIV
27	Komb.: 1.35xI+0.75xII+1.5xIII
28	Komb.: I+1.05xIII+1.5xV
29	Komb.: I+1.05xIII+1.5xIV
30	Komb.: I+1.5xII+1.05xIII
31	Komb.: I+1.5xIII+0.9xV
32	Komb.: I+1.5xIII+0.9xIV
33	Komb.: I+1.5xII+0.9xV
34	Komb.: I+1.5xII+0.9xIV
35	Komb.: I+0.75xII+1.5xV
36	Komb.: I+0.75xII+1.5xIV
37	Komb.: I+0.75xII+1.5xIII
38	Komb.: 1.35xI+1.5xV
39	Komb.: 1.35xI+1.5xIV
40	Komb.: 1.35xI+1.5xIII
41	Komb.: 1.35xI+1.5xII
42	Komb.: I+1.5xV
43	Komb.: I+1.5xIV
44	Komb.: I+1.5xIII
45	Komb.: I+1.5xII
46	Komb.: 1.35xI
47	Komb.: I+II+III

Statični preračun

Deformacije vozlišč: max. |Xp|

Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
69	4	**1.586**	-0.506	0.128
147	4	**1.548**	0.516	-0.124
125	4	**0.996**	-0.509	0.142
148	4	**0.905**	0.515	-0.147
29	4	**0.070**	0.000	0.140

Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
37	4	**0.069**	0.000	0.123
45	4	**0.069**	0.000	0.106
22	4	**0.069**	0.000	0.139
30	4	**0.069**	0.000	0.121
1	4	**0.069**	0.000	0.129

Deformacije vozlišč: max. |Yp|

Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
147	5	0.000	**5.314**	0.496
69	5	0.000	**5.314**	0.496
148	5	0.000	**5.307**	-0.491
125	5	0.000	**5.307**	-0.491
147	4	1.548	**0.516**	-0.124

Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
148	4	0.905	**0.515**	-0.147
125	4	0.996	**-0.509**	0.142
69	4	1.586	**-0.506**	0.128
117	5	0.001	**0.093**	0.489
1	5	-0.001	**0.093**	0.489

Deformacije vozlišč: max. |Zp|

Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
148	1	0.000	0.030	**-1.658**
125	1	0.000	0.030	**-1.658**
147	1	0.000	0.031	**-1.658**
69	1	0.000	0.031	**-1.658**
146	1	0.000	0.000	**-1.611**

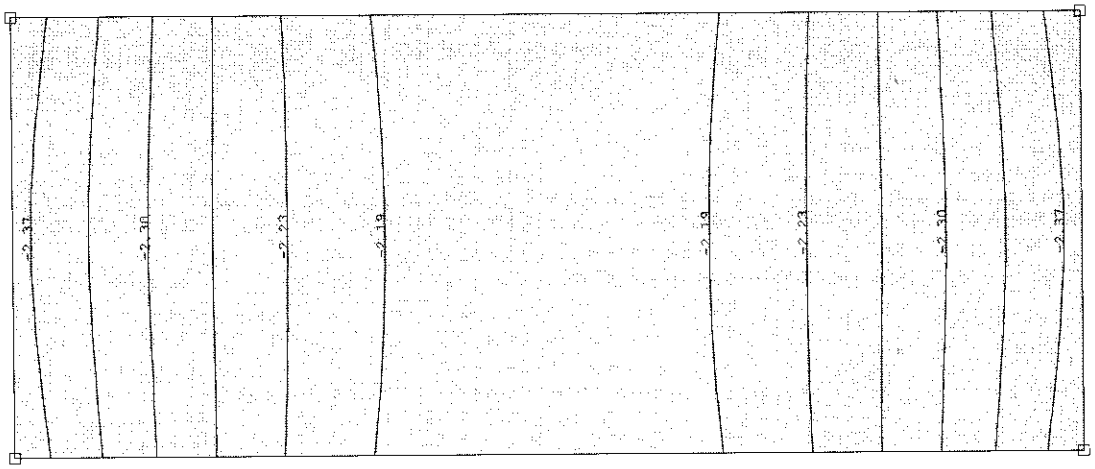
Vozlišče	LC	Xp [mm]	Yp [mm]	Zp [mm]
29	1	0.000	0.000	**-1.611**
117	1	0.000	0.000	**-1.611**
1	1	0.000	0.000	**-1.611**
145	1	0.000	0.000	**-1.608**
22	1	0.000	0.000	**-1.608**

Obt. 47: I+II+III



Nivo: NIVO TEMELJI [0.00 m]
Vplivi v pov.podpori: σ,tal

Obt. 47: I+II+III

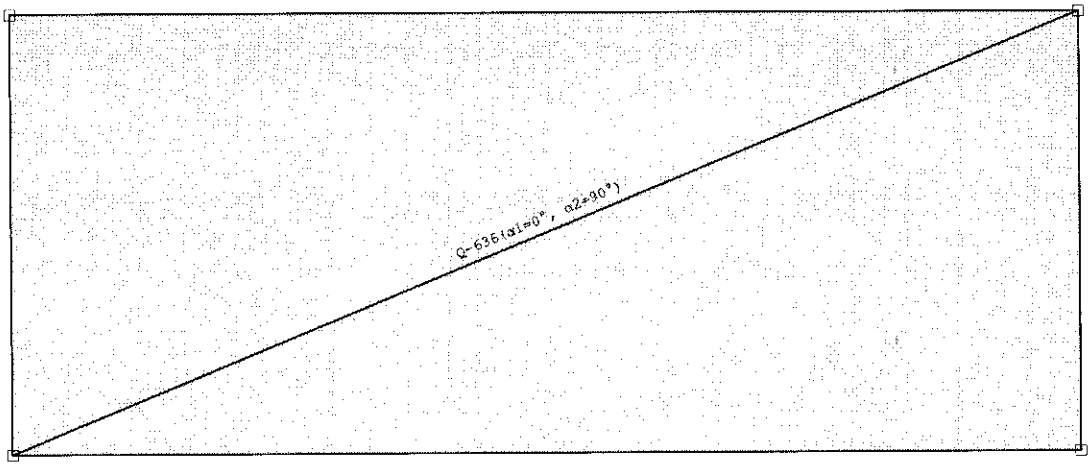


Nivo: NIVO TEMELJI [0.00 m]
Vplivi v pov.podpori: s,tal

Dimenzioniranje (beton)

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=5.00 cm

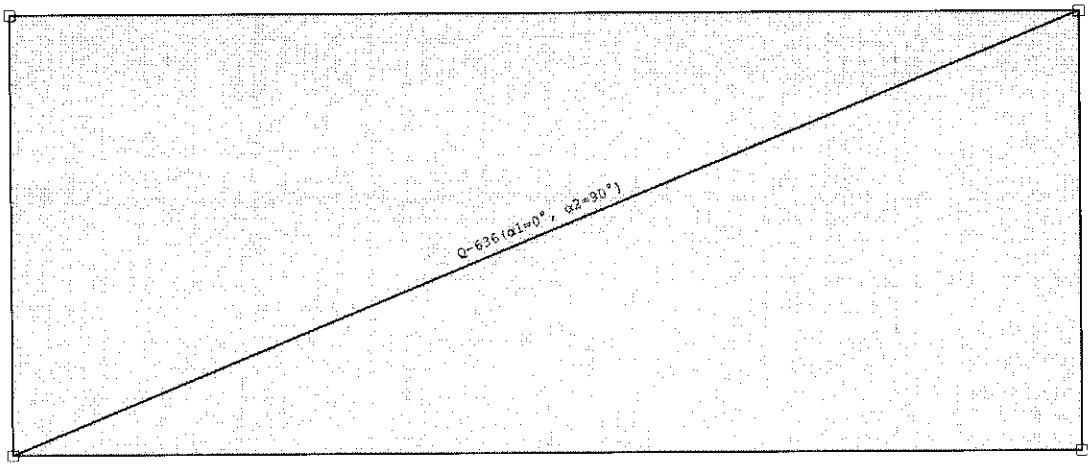
Aa - sp.cona [cm²/m]
0.00
0.11
0.22



Nivo: NIVO TEMELJI [0.00 m]
Aa - sp.cona

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=5.00 cm

Aa - zg.cona [cm²/m]
-1.79
-0.90
0.00

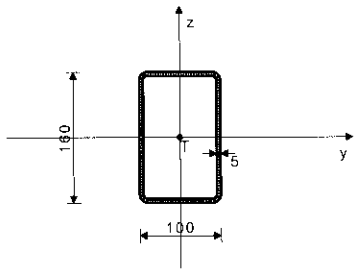


Nivo: NIVO TEMELJI [0.00 m]
Aa - zg.cona

Dimenzioniranje (jeklo)

PALICA 1-69
PREČNI PREREZ: HOP [] 160x100x5 [S 355] [Set: 5]
EUROCODE 3 (EN 1993-1-1:2005)

GEOMETRIJSKE KARAKTERISTIKE prereza



Ax =	24.360 cm2
Ay =	9.369 cm2
Az =	14.991 cm2
Ix =	884.40 cm4
Iy =	825.52 cm4
Iz =	397.27 cm4
Wy =	103.19 cm3
Wz =	79.454 cm3
Wy,pl =	133.75 cm3
Wz,pl =	96.250 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 35.5 kN/cm2, fu = 51.0 kN/cm2)

FAKTORJI IZKORIŠČENOSTI PO KOMBINACIJAH OBTEŽB

18. γ=0.11	28. γ=0.11	38. γ=0.11
42. γ=0.11	14. γ=0.11	35. γ=0.11
8. γ=0.11	25. γ=0.11	23. γ=0.07
6. γ=0.07	24. γ=0.07	7. γ=0.07
33. γ=0.07	12. γ=0.07	10. γ=0.07
21. γ=0.07	16. γ=0.07	31. γ=0.07
9. γ=0.06	26. γ=0.06	34. γ=0.06
13. γ=0.06	36. γ=0.06	15. γ=0.06
41. γ=0.06	20. γ=0.06	11. γ=0.05
19. γ=0.05	39. γ=0.05	30. γ=0.05
29. γ=0.05	43. γ=0.05	45. γ=0.05
17. γ=0.05	27. γ=0.04	22. γ=0.04
47. γ=0.04	37. γ=0.03	32. γ=0.03
46. γ=0.03	40. γ=0.03	44. γ=0.02

PALICA IZPOSTAVLJENA PRITISKU IN UPOGIBU
(obtežni primer 42, konec palice)

Računska osna sila	N_{Ed} =	-6.250 kN
Prečna sila v y smeri	$V_{Ed,y}$ =	-0.022 kN
Prečna sila v z smeri	$V_{Ed,z}$ =	-3.306 kN
Upogibni moment okoli y osi	$M_{Ed,y}$ =	4.756 kNm
Upogibni moment okoli z osi	$M_{Ed,z}$ =	0.063 kNm
Sistemska dolžina palice	L =	300.00 cm

5.5 KLASIFIKACIJA PREČNIH PREREZOV
Razred prereza 1

6.2 NOSILNOST PREČNIH PREREZOV
6.2.4 Tlak

Računska nosilnost na tlak	$N_{c,Rd}$ =	786.16 kN

Pogoj 6.9: N_{Ed} <= $N_{c,Rd}$ (6.25 <= 786.16)

6.2.5 Upogib y-y

Plastični odpornostni moment	$W_{y,pl}$ =	133.75 cm3
Računska nosilnost na upogib	$M_{c,Rd}$ =	43.165 kNm

Pogoj 6.12: $M_{Ed,y}$ <= $M_{c,Rd,y}$ (4.76 <= 43.16)

6.2.5 Upogib z-z

Plastični odpornostni moment	$W_{z,pl}$ =	96.250 cm3
Računska nosilnost na upogib	$M_{c,Rd}$ =	31.063 kNm

Pogoj 6.12: $M_{Ed,z}$ <= $M_{c,Rd,z}$ (0.06 <= 31.06)

6.2.6 Strig

Računska strižna nosilnost	$V_{pl,Rd,z}$ =	279.32 kN
Računska strižna nosilnost	$V_{c,Rd,z}$ =	279.32 kN

Pogoj 6.17: $V_{Ed,z}$ <= $V_{c,Rd,z}$ (3.31 <= 279.32)

Računska strižna nosilnost	$V_{pl,Rd,y}$ =	174.57 kN
Računska strižna nosilnost	$V_{c,Rd,y}$ =	174.57 kN

Pogoj 6.17: $V_{Ed,y}$ <= $V_{c,Rd,y}$ (0.02 <= 174.57)

6.2.10 Upogib z osno in prečno silo
Ni potrebno zmanjšanje upogibne nosilnosti
Pogoj: $V_{Ed,z}$ <= 50%$V_{pl,Rd,z}$; $V_{Ed,y}$ <= 50%$V_{pl,Rd,y}$

6.2.9 Upogib in osna sila

Razmerje N_{Ed} / $N_{pl,Rd}$		0.008
Zmanjšana plast.upogibna nosilnost	$M_{N,y,Rd}$ =	43.165 kNm
Koeficient	α =	1.660
Razmerje ($M_{y,Ed}$ / $M_{N,y,Rd}$)^α		0.026

Pogoj 6.41: (0.03 <= 1)

6.3 NOSILNOST ELEMENTA NA UKLON
6.3.1.1 Nosilnost na uklon

Uklonska dolžina y-y	l,y =	300.00 cm
Relativna vitkost y-y	λ_y =	0.674
Uklonska krivulja za os y-y: C	α =	0.490
Elastična kritična sila	$N_{cr,y}$ =	1901.1 kN
Koeficient nepopolnosti	χ,y =	0.740
Računska uklonska nosilnost	$N_{b,Rd,y}$ =	582.11 kN

Pogoj 6.46: N_{Ed} <= $N_{b,Rd,y}$ (6.25 <= 582.11)

Uklonska dolžina z-z	l,z =	300.00 cm
Relativna vitkost z-z	λ_z =	0.972
Uklonska krivulja za os z-z: C	α =	0.490
Koeficient nepopolnosti	χ,z =	0.556
Računska uklonska nosilnost	$N_{b,Rd,z}$ =	437.27 kN

Pogoj 6.46: N_{Ed} <= $N_{b,Rd,z}$ (6.25 <= 437.27)

6.3.2.1 Nosilnost na bočno-torzijski uklon

Koeficient	C1 =	2.494
Koeficient	C2 =	0.000
Koeficient	C3 =	0.765
Koef.ukl.dolžine za uklon	k =	1.000
Koef.ukl.dolžine za vbočenje	kw =	1.000
Koordinata	zg =	0.000 cm
Koordinata	zj =	0.000 cm
Razmak med bočnimi podporami	L =	300.00 cm
Sektorski vztrajnostni moment	Iw =	0.000 cm6
Krit.moment bočne zvrnitve	Mcr =	2016.4 kNm
Ustrezni odpornostni moment	W_y =	133.75 cm3
Koeficient imperf.	αLT =	0.760
Brezdimenz.vitkost	λLT_ =	0.153
Koeficient zmanjšanja (6.3.2.2.)	χLT =	1.000
Računska uklonska nosilnost	$M_{b,Rd}$ =	43.165 kNm

Pogoj 6.54: $M_{Ed,y}$ <= $M_{b,Rd}$ (4.76 <= 43.16)

6.3.3. Elementi konstantnega prečnega prereza obremenjeni z upogibom in osnim tlakom
Preračun koeficienta interakcije je izvršen z alternativno metodo št.2 (Aneks B)

Koeficient oblike momenta	C_{my} =	0.450
Koeficient oblike momenta	C_{mz} =	0.582
Koeficient oblike momenta	C_{mLT} =	0.450
Koeficient interakcije	k_{yy} =	0.452
Koeficient interakcije	k_{yz} =	0.353
Koeficient interakcije	k_{zy} =	0.271
Koeficient interakcije	k_{zz} =	0.589

Koeficient nepopolnosti	χy =	0.740
N_{Ed} / (χy N_{Rk} / γM1)		0.011
kyy * (M_{yEd} + ΔMyEd) / ...		0.050
kyz * (M_{zEd} + ΔMzEd) / ...		0.001

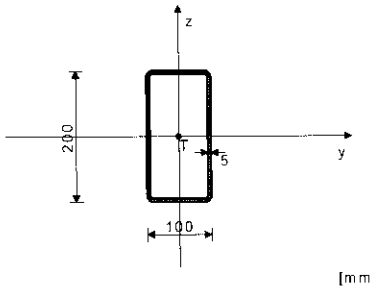
Pogoj 6.61: (0.06 <= 1)

Koeficient nepopolnosti	χz =	0.556
N_{Ed} / (χz N_{Rk} / γM1)		0.014
kzy * (M_{yEd} + ΔMyEd) / ...		0.030
kzz * (M_{zEd} + ΔMzEd) / ...		0.001

Pogoj 6.62: (0.05 <= 1)

PALICA 148-147
PREČNI PREREZ: HOP [] 200x100x5 [S 355] [Set: 6]
EUROCODE 3 (EN 1993-1-1:2005)

GEOMETRIJSKE KARAKTERISTIKE prereza



Ax =	28.360 cm2
Ay =	9.453 cm2
Az =	18.907 cm2
Ix =	1203.9 cm4
Iy =	1438.3 cm4
Iz =	487.60 cm4
Wy =	143.82 cm3
Wz =	97.520 cm3
Wy,pl =	187.75 cm3
Wz,pl =	115.25 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 35.5 kN/cm2, fu = 51.0 kN/cm2)

FAKTORJI IZKORIŠČENOSTI PO KOMBINACIJAH OBTEŽB

28. γ=0.04	42. γ=0.04	18. γ=0.04
25. γ=0.04	8. γ=0.04	35. γ=0.04
38. γ=0.04	14. γ=0.04	31. γ=0.02
21. γ=0.02	33. γ=0.02	16. γ=0.02
12. γ=0.02	10. γ=0.02	23. γ=0.02
6. γ=0.02	24. γ=0.01	7. γ=0.01
13. γ=0.01	34. γ=0.01	26. γ=0.01
9. γ=0.01	41. γ=0.01	20. γ=0.01
36. γ=0.01	11. γ=0.01	30. γ=0.01
15. γ=0.01	45. γ=0.01	17. γ=0.01
19. γ=0.01	27. γ=0.01	39. γ=0.01
47. γ=0.01	22. γ=0.01	43. γ=0.01
29. γ=0.01	37. γ=0.01	40. γ=0.00
46. γ=0.00	32. γ=0.00	44. γ=0.00

PALICA IZPOSTAVLJENA PRITISKU IN UPOGIBU
(obtežni primer 28, začetek palice)

Računska osna sila	N_{Ed} =	-0.602 kN
Prečna sila v z smeri	$V_{Ed,z}$ =	1.792 kN
Upogibni moment okoli y osi	$M_{Ed,y}$ =	2.432 kNm
Moment torzije	M_t =	0.010 kNm
Sistemska dolžina palice	L =	175.00 cm

5.5 KLASIFIKACIJA PREČNIH PREREZOV
Razred prereza 1

6.2 NOSILNOST PREČNIH PREREZOV
6.2.4 Tlak

Računska nosilnost na tlak	$N_{c,Rd}$ =	915.25 kN

Pogoj 6.9: N_{Ed} <= $N_{c,Rd}$ (0.60 <= 915.25)

6.2.5 Upogib y-y

Plastični odpornostni moment	Wy,pl =	187.75 cm3
Računska nosilnost na upogib	$M_{c,Rd}$ =	60.592 kNm

Pogoj 6.12: $M_{Ed,y}$ <= $M_{c,Rd,y}$ (2.43 <= 60.59)

6.2.6 Strig

Računska strižna nosilnost	$V_{pl,Rd,z}$ =	352.28 kN
Računska strižna nosilnost	$V_{c,Rd,z}$ =	352.28 kN

Pogoj 6.17: $V_{Ed,z}$ <= $V_{c,Rd,z}$ (1.79 <= 352.28)

6.2.10 Upogib z osno in prečno silo
Ni potrebno zmanjšanje upogibne nosilnosti
Pogoj: $V_{Ed,z}$ <= 50%$V_{pl,Rd,z}$

6.2.9 Upogib in osna sila

Razmerje N_{Ed} / $N_{pl,Rd}$		0.001
Zmanjšana plast.upogibna nosilnost	$M_{N,y,Rd}$ =	60.592 kNm
Koeficient	α =	1.000
Razmerje ($M_{y,Ed}$ / $M_{N,y,Rd}$)^α		0.040

Pogoj 6.41: (0.04 <= 1)

6.3 NOSILNOST ELEMENTA NA UKLON
6.3.1.1 Nosilnost na uklon

Uklonska dolžina y-y	l,y =	175.00 cm
Relativna vitkost y-y	λ_y =	0.322
Uklonska krivulja za os y-y: C	α =	0.490
Elastična kritična sila	$N_{cr,y}$ =	9733.7 kN
Koeficient nepopolnosti	χ,y =	0.938
Računska uklonska nosilnost	$N_{b,Rd,y}$ =	858.59 kN

Pogoj 6.46: N_{Ed} <= $N_{b,Rd,y}$ (0.60 <= 858.59)

Uklonska dolžina z-z	l,z =	175.00 cm
Relativna vitkost z-z	λ_z =	0.552
Uklonska krivulja za os z-z: C	α =	0.490
Koeficient nepopolnosti	χ,z =	0.813
Računska uklonska nosilnost	$N_{b,Rd,z}$ =	744.34 kN

Pogoj 6.46: N_{Ed} <= $N_{b,Rd,z}$ (0.60 <= 744.34)

6.3.2.1 Nosilnost na bočno-torzijski uklon

Koeficient	C1 =	2.921
Koeficient	C2 =	0.000
Koeficient	C3 =	0.374
Koef.ukl.dolžine za uklon	k =	1.000
Koef.ukl.dolžine za vbočenje	kw =	1.000
Koordinata	zg =	0.000 cm
Koordinata	zj =	0.000 cm
Razmak med bočnimi podporami	L =	175.00 cm
Sektorski vztrajnostni moment	Iw =	0.000 cm6
Krit.moment bočne zvrnitve	Mcr =	5233.3 kNm
Ustrezni odpornostni moment	W_y =	187.75 cm3
Koeficient imperf.	αLT =	0.760
Brezdimenz.vitkost	λLT_ =	0.113
Koeficient zmanjšanja (6.3.2.2.)	χLT =	1.000
Računska uklonska nosilnost	$M_{b,Rd}$ =	60.592 kNm

Pogoj 6.54: $M_{Ed,y}$ <= $M_{b,Rd}$ (2.43 <= 60.59)

6.3.3. Elementi konstantnega prečnega prereza obremenjeni z upogibom in osnim tlakom
Preračun koeficienta interakcije je izvršen z alternativno metodo št.2 (Aneks B)

Koeficient oblike momenta	C_{my} =	0.400
Koeficient oblike momenta	C_{mz} =	1.000
Koeficient oblike momenta	C_{mLT} =	0.400
Koeficient interakcije	k_{yy} =	0.400
Koeficient interakcije	k_{yz} =	0.600
Koeficient interakcije	k_{zy} =	0.240
Koeficient interakcije	k_{zz} =	1.000

Koeficient nepopolnosti	χy =	0.938
N_{Ed} / (χy N_{Rk} / γM1)		0.001
kyy * (M_{yEd} + ΔM_{yEd}) / ...		0.016

Pogoj 6.61: (0.02 <= 1)

Koeficient nepopolnosti	χz =	0.813
N_{Ed} / (χz N_{Rk} / γM1)		0.001
kzy * (M_{yEd} + ΔM_{yEd}) / ...		0.010

Pogoj 6.62: (0.01 <= 1)

KONTROLA STRIŽNE NOSILNOSTI
(obtežni primer 8, konec palice)

Računska osna sila	N_{Ed} =	-0.628 kN
Prečna sila v z smeri	$V_{Ed,z}$ =	3.806 kN
Upogibni moment okoli y osi	$M_{Ed,y}$ =	-1.886 kNm
Moment torzije	M_t =	0.022 kNm
Sistemska dolžina palice	L =	175.00 cm

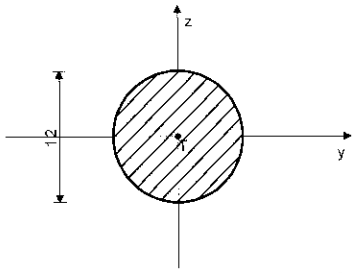
6.2 NOSILNOST PREČNIH PREREZOV
6.2.6 Strig

Računska strižna nosilnost	$V_{pl,Rd,z}$ =	352.28 kN
Računska strižna nosilnost	$V_{c,Rd,z}$ =	352.28 kN

Pogoj 6.17: $V_{Ed,z}$ <= $V_{c,Rd,z}$ (3.81 <= 352.28)

PALICA 148-29
PREČNI PREREZ: Krožni [S 355] [Set: 4]
EUROCODE 3 (EN 1993-1-1:2005)

GEOMETRIJSKE KARAKTERISTIKE prereza



[mm]

Ax =	1.131 cm2
Ay =	1.018 cm2
Az =	1.018 cm2
Ix =	0.204 cm4
Iy =	0.102 cm4
Iz =	0.102 cm4
Wy =	0.170 cm3
Wz =	0.170 cm3
Wy,pl =	0.288 cm3
Wz,pl =	0.288 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 35.5 kN/cm2, fu = 51.0 kN/cm2)

FAKTORJI IZKORIŠČENOSTI PO KOMBINACIJAH OBTEŽB

9. γ=0.10	15. γ=0.10	19. γ=0.10
26. γ=0.10	29. γ=0.10	36. γ=0.10
39. γ=0.10	43. γ=0.10	24. γ=0.06
13. γ=0.06	7. γ=0.06	32. γ=0.06
34. γ=0.06	17. γ=0.06	11. γ=0.06
22. γ=0.06	6. γ=0.00	23. γ=0.00
14. γ=0.00	25. γ=0.00	10. γ=0.00
27. γ=0.00	28. γ=0.00	16. γ=0.00
30. γ=0.00	31. γ=0.00	8. γ=0.00
33. γ=0.00	18. γ=0.00	35. γ=0.00
12. γ=0.00	37. γ=0.00	38. γ=0.00
20. γ=0.00	40. γ=0.00	41. γ=0.00
42. γ=0.00	21. γ=0.00	44. γ=0.00
45. γ=0.00	46. γ=0.00	47. γ=0.00

PALICA IZPOSTAVLJENA CENTRIČNEMU NATEGU
(obtežni primer 29, začetek palice)

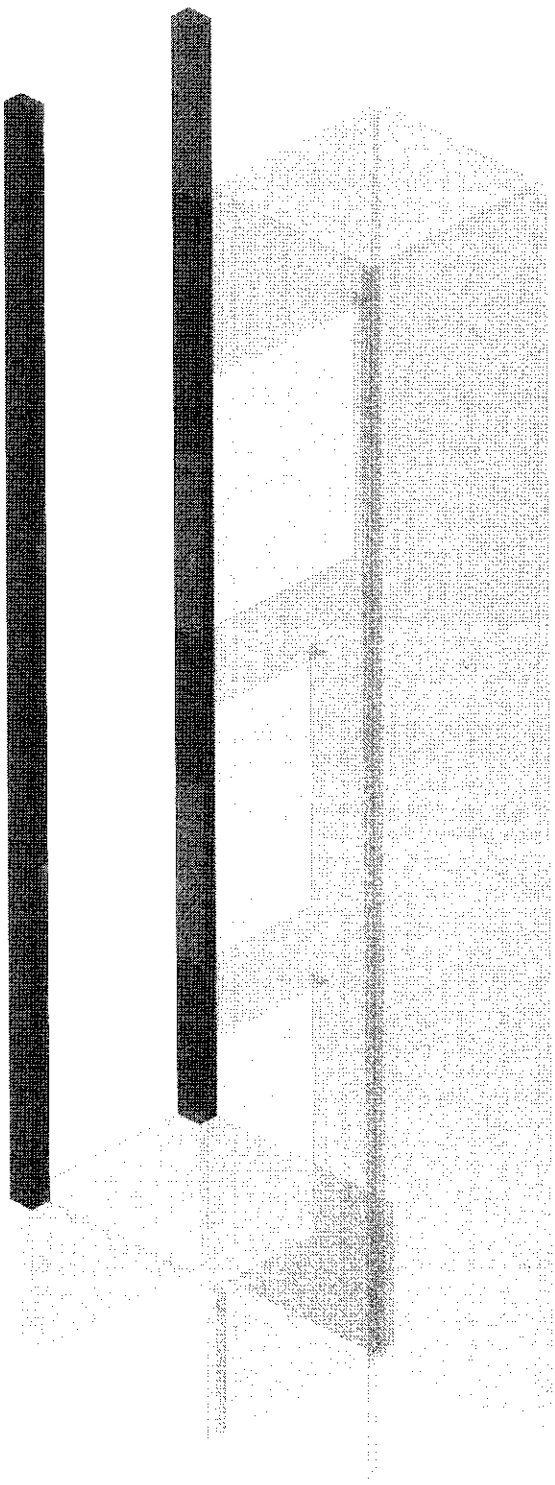
Računska osna sila	N_{Ed} =	3.568 kN
Sistemska dolžina palice	L =	524.31 cm

6.2 NOSILNOST PREČNIH PREREZOV
6.2.3 Nateg

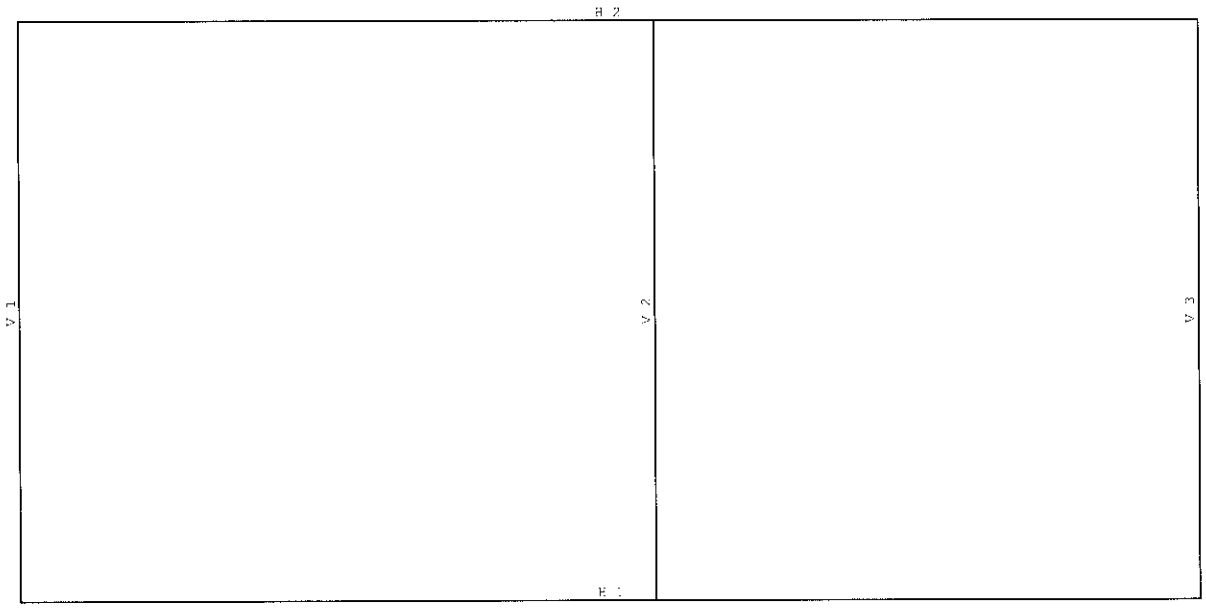
Plast.rač.nosilnost bruto prereza	$N_{pl,Rd}$ =	36.500 kN
Mejna rač.nosilnost neto prereza	$N_{u,Rd}$ =	37.376 kN
Računska nos. na nateg	$N_{t,Rd}$ =	36.500 kN

Pogoj 6.5: N_{Ed} <= $N_{t,Rd}$ (3.57 <= 36.50)

Vhodni podatki - Konstrukcija



Izometrija


H 2
V 1
V 2
V 3
H 1

Modalna analiza

Napredne opcije seizmičnega preračuna

Mase grupirane v nivojih izbranih etaž	
Plošče - redukcija togosti na upogib:	0.500
Grede - redukcija togosti na upogib:	0.500
Zidovi - redukcija togosti na upogib:	0.500
Zidovi - redukcija osne togosti:	0.500
Stebri - redukcija upogibne togosti:	0.500
Stebri - redukcija osne togosti:	0.500
Preprečeno nihanje v Z smeri	

Faktorji obtežb za preračun mas

No	Naziv	Koeficient
1	STALNA (g)	1.00
2	KORISTNA	0.50
3	SNEG	0.00

Razporeditev mas po višini objekta

Nivo	Z [m]	X [m]	Y [m]	Masa [T]	T/m²
NIVO STREHA	11.30	4.07	0.94	15.20	2.05
NIVO 6.00	7.30	4.08	0.97	15.57	3.90
NIVO 3.00	4.30	3.63	0.98	17.19	4.31
NIVO 0.00	1.30	3.58	0.95	32.93	8.25
Skupno:	4.97	3.78	0.96	80.90	

Položaj centra togosti po višini objekta (približna metoda)

Nivo	Z [m]	X [m]	Y [m]
NIVO STREHA	11.30	4.60	0.95
NIVO 6.00	7.30	5.01	0.95
NIVO 3.00	4.30	5.21	0.95
NIVO 0.00	1.30	3.97	0.95

Ekscentriciteta po višini objekta (približna metoda)

Nivo	Z [m]	eox [m]	eoy [m]
NIVO STREHA	11.30	0.53	0.01
NIVO 6.00	7.30	0.93	0.02
NIVO 3.00	4.30	1.58	0.03
NIVO 0.00	1.30	0.39	0.00

Nihajne dobe konstrukcije

No	T [s]	f [Hz]
1	2.2449	0.4454
2	1.1667	0.8571
3	0.2890	3.4597
4	0.1549	6.4541
5	0.1507	6.6373

Seizmični preračun

Seizmični preračun: EC8 (SIST EN 1998)	
Kategorija tal:	E
Kategorija pomena:	II (γ=1.0)
Razmerje agR/g:	0.200
Koeficient dušenja:	0.05
Slučajna ekscentričnost mase etaže:	ei = ± 0.050 x Li

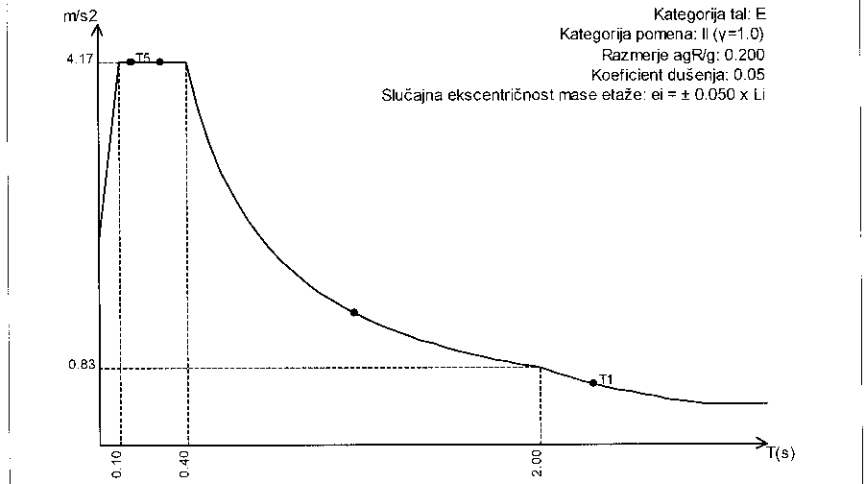
Faktorji smeri potresa:

Obtežni primer	Kot α[°]	k,α	k,α+90°	kz	Faktor Q.
POTRES X	0	1.000	0.300	0.000	2.000
POTRES Y	90	1.000	0.300	0.000	2.000

Tip spektra

Obtežni primer	S	Tb	Tc	Td	avg/ag
POTRES X	1.700	0.100	0.400	2.000	1.000
POTRES Y	1.700	0.100	0.400	2.000	1.000

Projektni spekter



S=1.70, Tb=0.10, Tc=0.40, Td=2.00

Razporeditev potresnih sil po višini objekta - POTRES X (+e)

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	0.00	4.31	0.00	30.31	0.00	-1.29	-0.01	0.02	-0.00
NIVO 6.00	7.30	0.00	2.86	-0.01	20.15	-0.01	-1.37	0.00	-0.06	-0.00
NIVO 3.00	4.30	-0.00	1.87	-0.01	13.26	-0.01	-0.24	0.01	0.06	0.00
NIVO 0.00	1.30	0.00	1.10	-0.00	8.41	-0.00	-0.18	0.01	0.01	0.00
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.00	10.14	-0.02	72.13	-0.02	-3.08	0.02	0.02	-0.00

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	-0.02	-9.88	-0.05	-29.95	0.11	1.34
NIVO 6.00	7.30	-0.01	2.89	-0.01	5.98	0.08	2.52
NIVO 3.00	4.30	0.01	11.26	0.02	33.12	-0.35	0.42
NIVO 0.00	1.30	0.19	31.42	0.01	103.62	-0.18	0.50
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.17	35.68	-0.03	112.76	-0.35	4.78

Razporeditev potresnih sil po višini objekta - POTRES X (-e)

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	0.00	4.31	0.00	30.31	0.00	-1.29	-0.01	0.02	-0.00
NIVO 6.00	7.30	0.00	2.86	-0.01	20.15	-0.01	-1.37	0.00	-0.06	-0.00
NIVO 3.00	4.30	-0.00	1.87	-0.01	13.26	-0.01	-0.24	0.01	0.06	0.00
NIVO 0.00	1.30	0.00	1.10	-0.00	8.41	-0.00	-0.18	0.01	0.01	0.00
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.00	10.14	-0.02	72.13	-0.02	-3.08	0.02	0.02	-0.00

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	-0.02	-9.88	-0.05	-29.95	0.11	1.34
NIVO 6.00	7.30	-0.01	2.89	-0.01	5.98	0.08	2.52
NIVO 3.00	4.30	0.01	11.26	0.02	33.12	-0.35	0.42
NIVO 0.00	1.30	0.19	31.42	0.01	103.62	-0.18	0.50
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.17	35.68	-0.03	112.76	-0.35	4.78

Razporeditev potresnih sil po višini objekta - POTRES Y (+e)

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	0.00	14.37	0.01	-9.10	-0.00	0.39	-0.01	0.01	-0.00
NIVO 6.00	7.30	0.00	9.53	-0.02	-6.05	0.00	0.41	0.00	-0.04	-0.00
NIVO 3.00	4.30	-0.00	6.22	-0.04	-3.98	0.00	0.07	0.01	0.04	0.00
NIVO 0.00	1.30	0.00	3.68	-0.01	-2.53	0.00	0.05	0.01	0.00	0.00
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.00	33.79	-0.06	-21.66	0.01	0.92	0.01	0.02	-0.00

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	-0.06	-32.37	-0.18	9.09	-0.03	-0.41
NIVO 6.00	7.30	-0.03	9.46	-0.02	-1.81	-0.02	-0.77
NIVO 3.00	4.30	0.04	36.88	0.08	-10.05	0.11	-0.13
NIVO 0.00	1.30	0.61	102.92	0.02	-31.43	0.05	-0.15
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.56	116.89	-0.10	-34.21	0.10	-1.45

Razporeditev potresnih sil po višini objekta - POTRES Y (-e)

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	0.00	14.37	0.01	-9.10	-0.00	0.39	-0.01	0.01	-0.00
NIVO 6.00	7.30	0.00	9.53	-0.02	-6.05	0.00	0.41	0.00	-0.04	-0.00
NIVO 3.00	4.30	-0.00	6.22	-0.04	-3.98	0.00	0.07	0.01	0.04	0.00
NIVO 0.00	1.30	0.00	3.68	-0.01	-2.53	0.00	0.05	0.01	0.00	0.00
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.00	33.79	-0.06	-21.66	0.01	0.92	0.01	0.02	-0.00

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
NIVO STREHA	11.30	-0.06	-32.37	-0.18	9.09	-0.03	-0.41
NIVO 6.00	7.30	-0.03	9.46	-0.02	-1.81	-0.02	-0.77
NIVO 3.00	4.30	0.04	36.88	0.08	-10.05	0.11	-0.13
NIVO 0.00	1.30	0.61	102.92	0.02	-31.43	0.05	-0.15
NIVO -1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Σ=	0.56	116.89	-0.10	-34.21	0.10	-1.45

Faktorji participacije - relativno sodelovanje

Ton \ Naziv	1. POTRES X	2(POTRES X	3(POTRES Y	4(POTRES Y	(
1	0.015	0.015	0.202	0.202	
2	0.363	0.363	0.039	0.039	
3	0.000	0.000	0.000	0.000	
4	0.055	0.055	0.697	0.697	
5	0.567	0.567	0.062	0.062	

Faktorji participacije - angažiranje mase

Ton	U [α=0°]	U [α=90°]
1	0.00	63.95
2	65.03	0.00
3	0.00	0.01
4	0.00	35.12
5	34.83	0.00
ΣU (%)	99.87	99.07

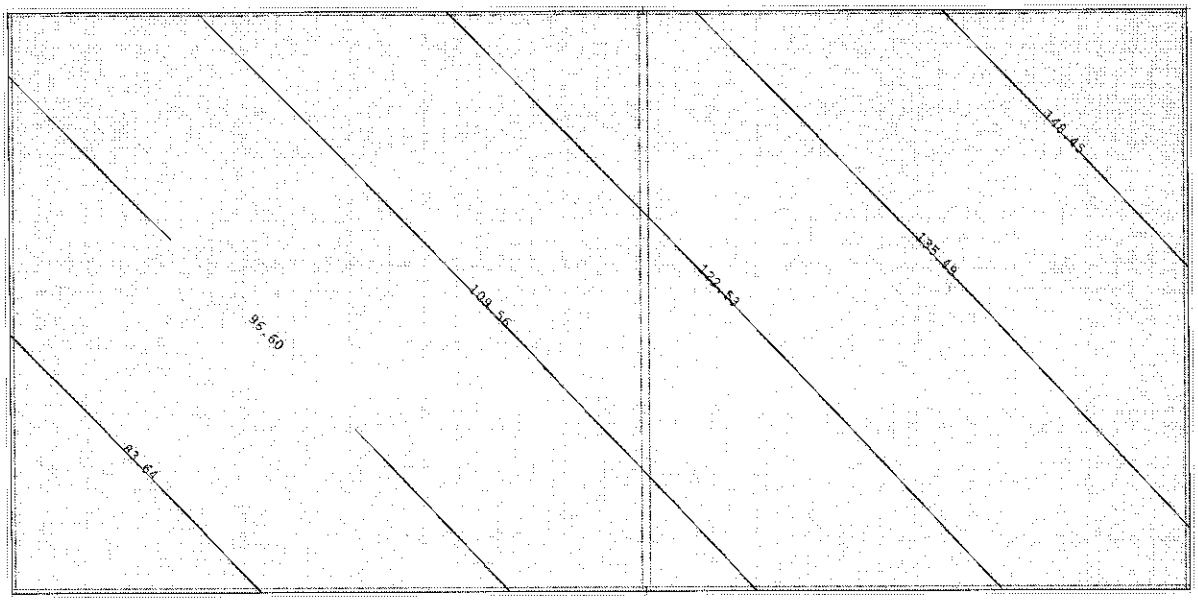
Upošteva se samo masa nad koto temelja
Kota temelja: 0.00 m
Skupna masa nad temeljem: 80.90 T
Skupna masa celega objekta: 80.90 T

Prečne sile v osnovi [0.00 m]

Obtežni primer	Kot α[°]	VtB[kN]
POTRES X	0	139.51
POTRES Y	90	123.27

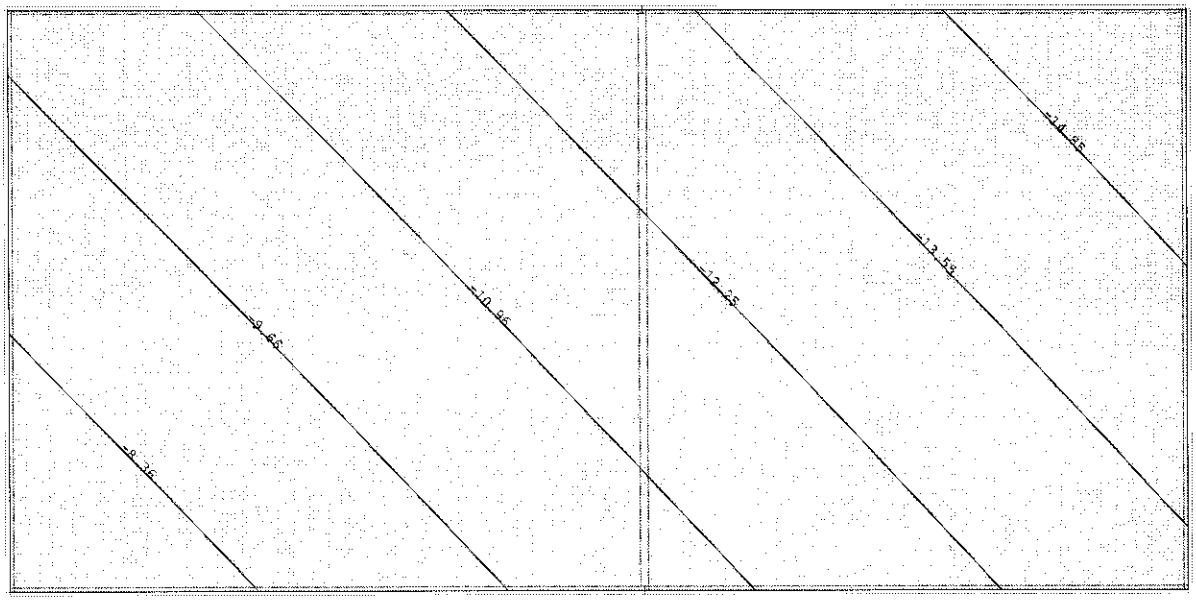
Statični preračun

Obt. 33: I+II+III



Nivo: NIVO -1.10 [0.00 m]
Vplivi v pov.podpori: σ,tal

Obt. 33: I+II+III

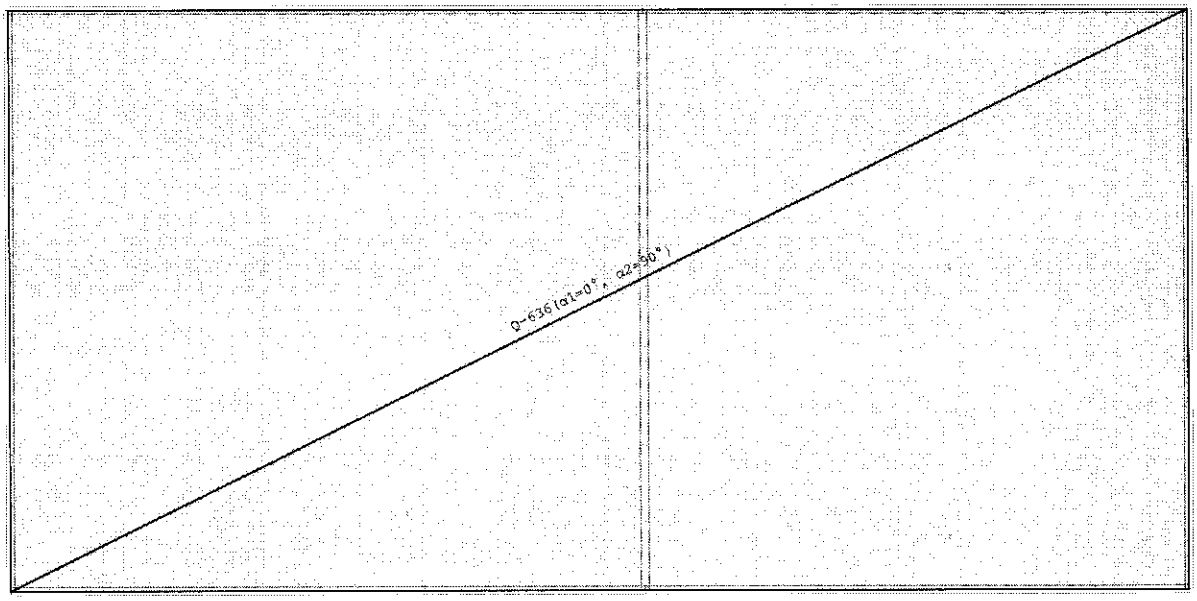


Nivo: NIVO -1.10 [0.00 m]
Vplivi v pov.podpori: s,tal

Dimenzioniranje (beton)

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=5.00 cm

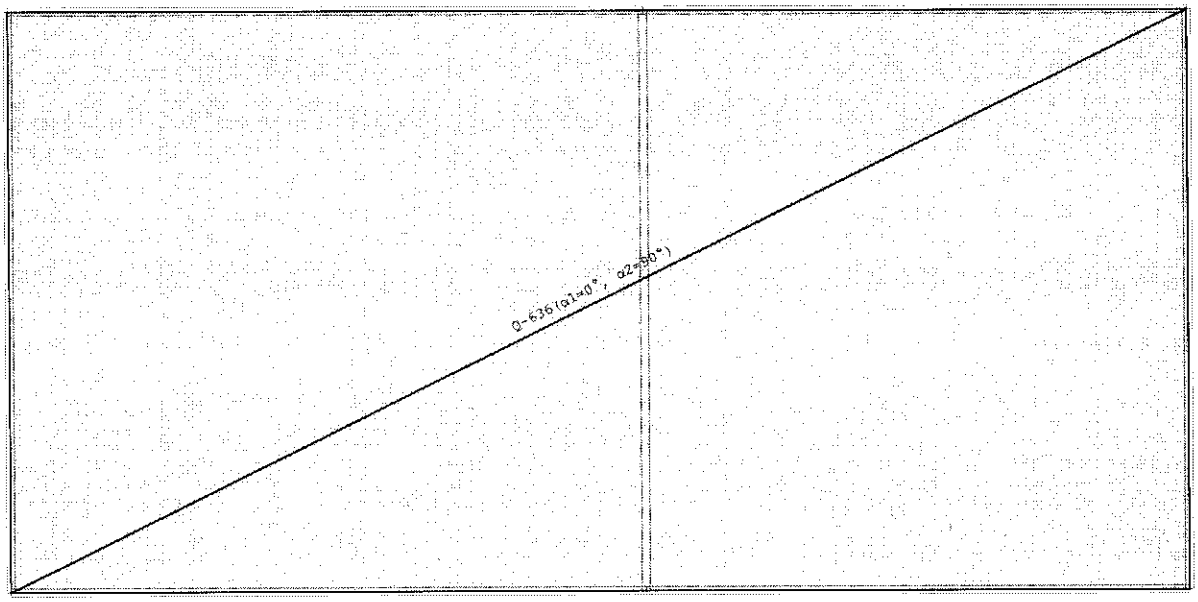
Aa - sp.cona [cm²/m]
0.00
0.71
1.41



Nivo: NIVO -1.10 [0.00 m]
Aa - sp.cona

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=5.00 cm

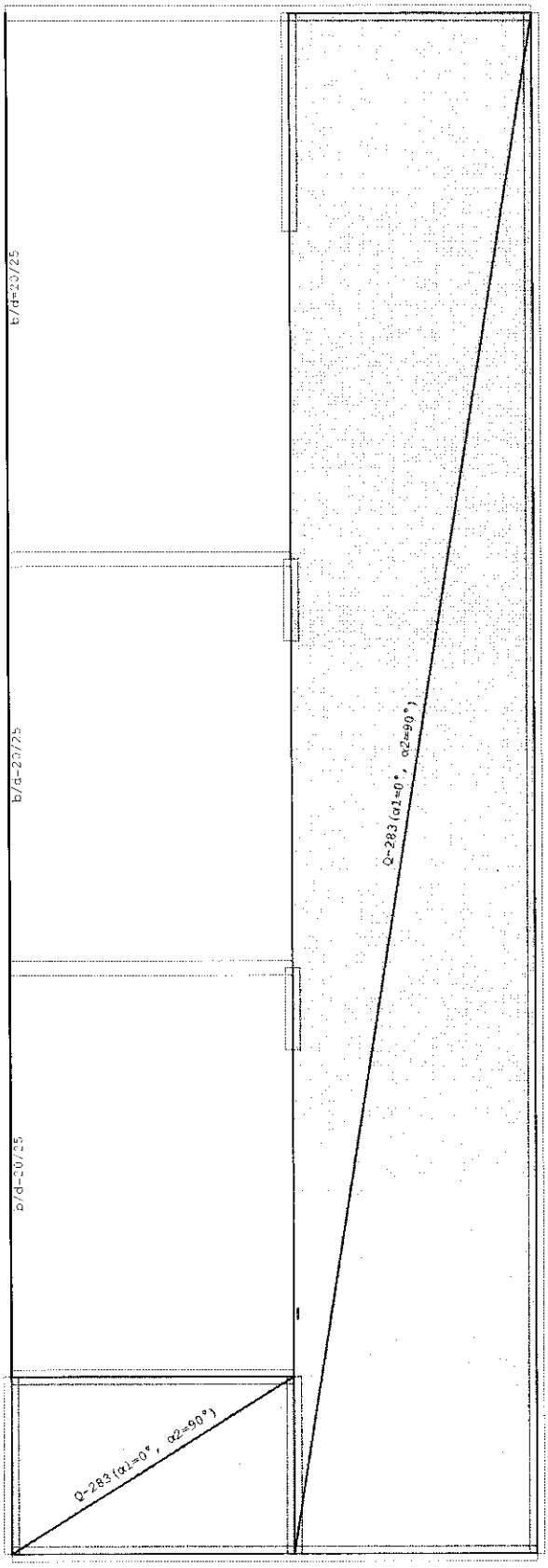
Aa - zg.cona [cm²/m]
-2.15
-1.08
0.00



Nivo: NIVO -1.10 [0.00 m]
Aa - zg.cona

Osvojena armatura
EC2 {EN 1992-1-1:2004}, C 30, S500N, a=3.00 cm

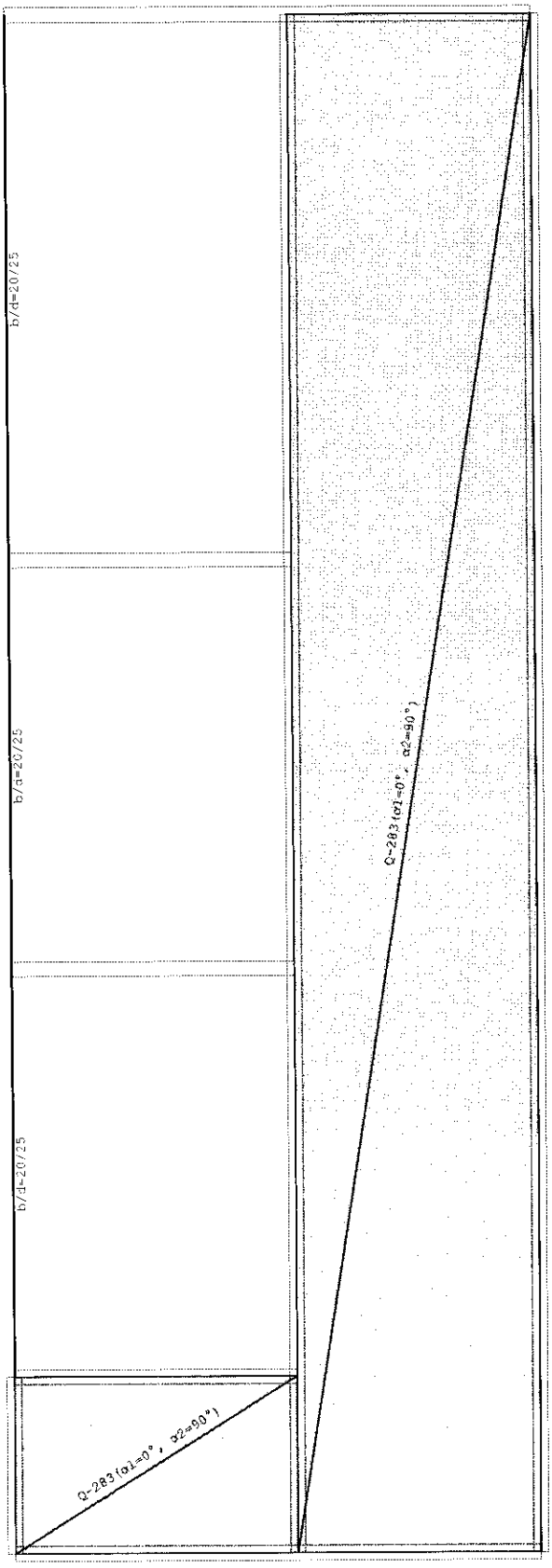
Aa - zg.cona [cm²/m]
-3.04
-1.52
0.00



Okvir: H_1
Aa - zg.cona

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=3.00 cm

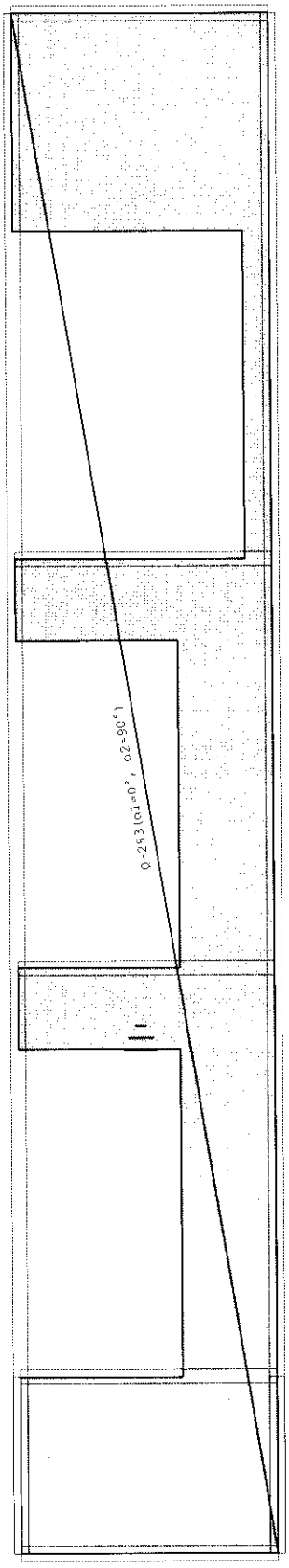
Aa - zg.cona [cm²/m]
-2.50
-1.25
0.00



Okvir: H_2
Aa - zg.cona

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=3.00 cm

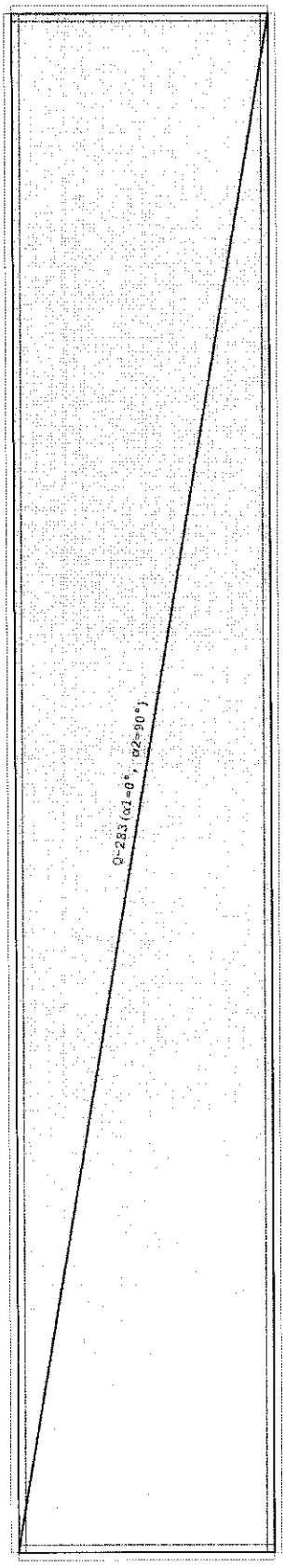
Aa - zg.cona [cm²/m]
-3.81
-1.91
0.00



Okvir: V_2
Aa - zg.cona

Osvojena armatura
EC2 (EN 1992-1-1:2004), C 30, S500N, a=3.00 cm

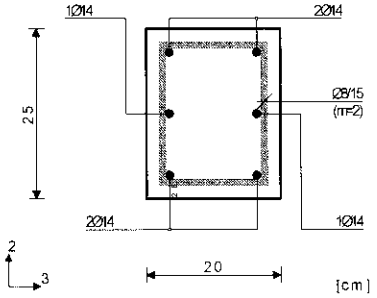
Aa - zg.cona [cm²/m]
-1.00
-0.50
0.00



Okvir: V_3
Aa - zg.cona

Greda 433-281
EC2 (EN 1992-1-1:2004)
C 30 (γC = 1.50, γS = 1.15) [SP]
S500N
Kompletna obtežna shema
li,2 = 4.00 m (λ2 = 69.28)
li,3 = 4.00 m (λ3 = 55.43)
Nepomična konstrukcija

Prerez 1-1 x = 0.00m



Merodajna kombinacija za upogib:
1.00xI+0.30xII+1.00xV
N1ed = -3.13 kN
M2ed = -0.15 kNm
M3ed = 2.40 kNm
Povečanje upogibnega momenta zaradi uklona
Δe2 = 2.0<e0> + 0.0<eII> = 2.0 cm
|ΔM2| = 0.06 kNm
Δe3 = 2.0<e0> + 0.0<eII> = 2.0 cm
|ΔM3| = 0.06 kNm

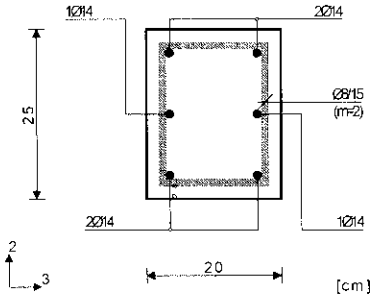
Merodajna kombinacija za torzijo:
1.00xI+0.30xII-1.00xVII
M1ed = -0.14 kNm

Merodajna kombinacija za strig:
1.00xI+0.30xII+1.00xVII
V2ed = 0.52 kN
V3ed = 0.77 kN
M1ed = 0.13 kNm

Vrd,max,2 = 209.09 kN
Vrd,max,3 = 201.96 kN
εb/εa = -1.443/25.000 ‰
Aa1 = 0.20 cm²
Aa2 = 0.20 cm²
Aa3 = 0.00 cm²
Aa4 = 0.00 cm²
Aa,st = 0.00 cm²/m (m=2)
[Osvojeno Aa,st = Ø8/15(m=2) = 3.35 cm²/m]

Procent armiranja: 1.85%

Prerez 2-2 x = 1.00m



Merodajna kombinacija za upogib:
1.00xI+0.30xII+1.00xV
N1ed = -4.38 kN
M2ed = -0.09 kNm
M3ed = 1.32 kNm
Povečanje upogibnega momenta zaradi uklona
Δe2 = 2.0<e0> + 0.0<eII> = 2.0 cm
|ΔM2| = 0.09 kNm
Δe3 = 2.0<e0> + 0.0<eII> = 2.0 cm
|ΔM3| = 0.09 kNm

Merodajna kombinacija za torzijo:
1.00xI+0.30xII-1.00xVII
M1ed = -0.14 kNm

Merodajna kombinacija za strig:
1.00xI+0.30xII+1.00xVII
V2ed = 0.52 kN
V3ed = 0.77 kN
M1ed = 0.13 kNm

Vrd,max,2 = 209.09 kN
Vrd,max,3 = 201.96 kN
εb/εa = -1.111/25.000 ‰
Aa1 = 0.00 cm²
Aa2 = 0.00 cm²
Aa3 = 0.08 cm²
Aa4 = 0.08 cm²
Aa,st = 0.00 cm²/m (m=2)
[Osvojeno Aa,st = Ø8/15(m=2) = 3.35 cm²/m]

Procent armiranja: 1.85%

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E-Mail:			

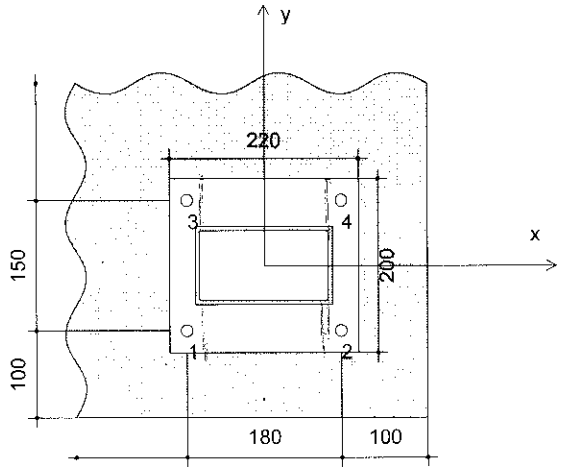
Specifier's comments: LINIJA "OD OBJEKTA"

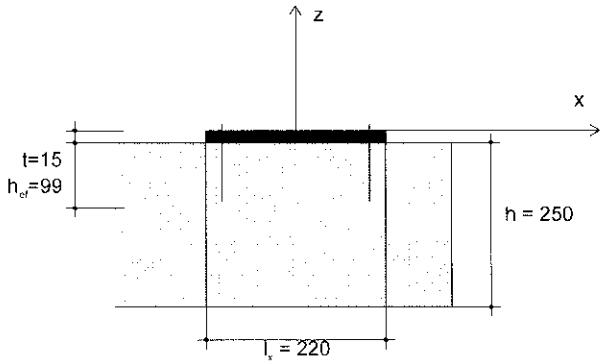
1. Input data

Anchor type and diameter:	**HIT-HY 150 MAX + HIT-V-HCR, M12**
Effective embedment depth:	$h_{ef,opti}$ = 99 mm ($h_{ef,limit}$ = 220 mm)
Material:	HCR
Evaluation Service Report::	ETA 08/0352
Issued I Valid:	18.12.2009 | 18.12.2013
Proof:	design method ETAG BOND; EOTA TR 029
Stand-off installation:	e_b = 0 mm (no stand-off); t = 15 mm
Anchor plate:	S235(St37); l_x x l_y x t = 220 x 200 x 15 mm (Recommended plate thickness: not calculated)
Profile	Rectangular hollow; (L x W x T) = 160 mm x 90 mm x 5 mm
Base material:	cracked concrete , C20/25, f_{cc} = 25.00 N/mm²; h = 250 mm, Temp. short/long: 40/24°C
Installation:	hammer drilled hole, installation condition: dry
Reinforcement:	no reinforcement or reinforcement spacing >= 150 mm (any Ø) or >= 100 mm (Ø <= 10 mm) no longitudinal edge reinforcement Reinforcement to control splitting according to EOTA TR 029, 5.2.2.6 present.



Geometry [mm]



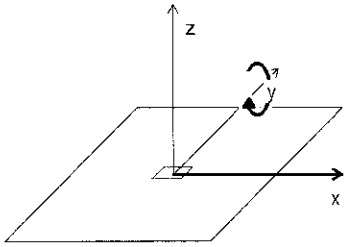


Loading [kN, kNm]

Resulting loads

N = 0.000
M_z = 0.000

V_y = 0.000
M_y = 3.000



V_x = 5.000
M_x = 0.000

Design loads (Load case 1)

N	0.000
V_x	5.000
V_y	0.000
M_x	0.000
M_y	3.000
M_z	0.000

Eccentricity (structural section) [mm]
e_x = 0; e_y = 0

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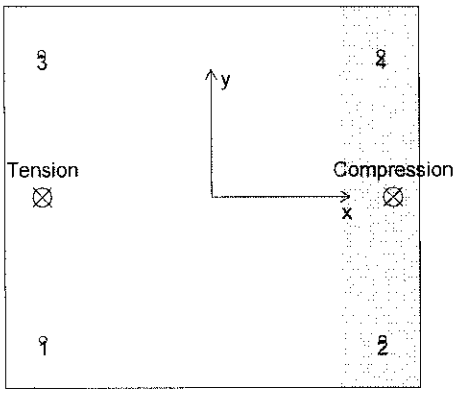
2. Load case/Resulting anchor forces

Load case (Design loads):

Anchor reactions [kN]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	8.066	1.250	1.250	0.000
2	0.000	1.250	1.250	0.000
3	8.066	1.250	1.250	0.000
4	0.000	1.250	1.250	0.000



max. concrete compressive strain [‰]: 0.13
max. concrete compressive stress [N/mm²]: 3.83
resulting tension force in (x/y)=(-90/0) [kN]: 16.130
resulting compression force in (x/y)=(96/0) [kN]: 16.130

3. Tension load (EOTA TR 029, Section 5.2.2)

Proof	Load [kN]	Capacity [kN]	Utilization β_N [%]	Status
Steel Strength*	8.066	44.667	18	OK
Combined pullout-concrete cone failure**	16.133	17.504	92	OK
Concrete Breakout Strength**	16.133	28.448	57	OK
Splitting failure**	N/A	N/A	N/A	N/A

* most unfavorable anchor **anchor group (anchors in tension)

Steel Strength

$N_{Rk,s}$ [kN]	$\gamma_{M,s}$	$N_{Rd,s}$ [kN]	N_{Sd} [kN]
67.000	1.500	44.667	8.066

Combined pullout-concrete cone failure

$A_{p,N}$ [mm²]	$A^0_{p,N}$ [mm²]	$\tau_{Rk,ucr,25}$ [N/mm²]	$s_{cr,Np}$ [mm]	$c_{cr,Np}$ [mm]	c [mm]
116922	86657	14.00	294	147	100

ψ_c	$\tau_{Rk,cr}$ [N/mm²]	k	$\psi^0_{g,Np}$	$\psi_{g,Np}$
1.000	5.50	2.300	1.232	1.058

$e_{c1,N}$ [mm]	$\psi_{ec1,Np}$	$e_{c2,N}$ [mm]	$\psi_{ec2,Np}$	$\psi_{s,Np}$	$\psi_{re,Np}$
0	1.000	0	1.000	0.904	1.000

$N^0_{Rk,p}$ [kN]	$N_{Rk,p}$ [kN]	$\gamma_{M,p}$	$N_{Rd,p}$ [kN]	N_{Sd} [kN]
20.346	26.255	1.500	17.504	16.133

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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Concrete Breakout Strength

$A_{c,N}$ [mm²]	$A^{0}_{c,N}$ [mm²]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]
116922	86657	147	294

$e_{c1,N}$ [mm]	$\psi_{ec1,N}$	$e_{c2,N}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$	k_1
0	1.000	0	1.000	0.904	1.000	7.200

$N^{0}_{Rk,c}$ [kN]	$\gamma_{M,c}$	$N_{Rd,c}$ [kN]	N_{Sd} [kN]
34.992	1.500	28.448	16.133

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4. Shear load (EOTA TR 029, Section 5.2.3)

Proof	Load [kN]	Capacity [kN]	Utilization β_V [%]	Status
Steel Strength (without lever arm)*	1.250	27.200	5	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	5.000	54.752	9	OK
Concrete edge failure in direction x+**	5.000	11.742	43	OK

* most unfavorable anchor **anchor group (relevant anchors)

Steel Strength (without lever arm)

$V_{Rk,s}$ [kN]	$\gamma_{M,s}$	$V_{Rd,s}$ [kN]	V_{Sd} [kN]
34.000	1.250	27.200	1.250

Pryout Strength (bond relevant)

$A_{p,N}$ [mm²]	$A^0_{p,N}$ [mm²]	$\tau_{Rk,ucr,25}$ [N/mm²]	$s_{cr,Np}$ [mm]	$c_{cr,Np}$ [mm]	c [mm]
169674	86657	14.00	294	147	100

ψ_c	$\tau_{Rk,cr}$ [N/mm²]	k	k-factor	$\psi^0_{g,Np}$	$\psi_{g,Np}$
1.000	5.50	2.300	2.000	1.559	1.140

$\psi_{s,Np}$	$e_{c1,V}$ [mm]	$\psi_{ec1,Np}$	$e_{c2,V}$ [mm]	$\psi_{ec2,Np}$	$\psi_{re,Np}$
0.904	0	1.000	0	1.000	1.000

$N^0_{Rk,p}$ [kN]	$N_{Rk,p}$ [kN]	$\gamma_{M,c,p}$	$V_{Rd,c1}$ [kN]	V_{Sd} [kN]
20.346	41.064	1.500	54.752	5.000

Concrete edge failure in direction x+

h_{ef} [mm]	d_{nom} [mm]	k_1	α	β
98	12	1.700	0.099	0.065

c_1 [mm]	$A_{c,V}$ [mm²]	$A^0_{c,V}$ [mm²]
100	60000	45000

$\psi_{s,V}$	$\psi_{h,V}$	$\psi_{\alpha,V}$	$e_{c,V}$ [mm]	$\psi_{ec,V}$	$\psi_{re,V}$
0.900	1.000	1.000	0	1.000	1.000

$V^0_{Rk,c}$ [kN]	$\gamma_{M,c}$	$V_{Rd,c}$ [kN]	V_{Sd} [kN]
14.678	1.500	11.742	5.000

5. Combined tension and shear loads (EOTA TR 029, Section 5.2.4)

β_N	β_V	α	Utilization $\beta_{N,V}$ [%]	Status
0.922	0.268	-	99	OK

$(\beta_N + \beta_V) / 1.2 <= 1$

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6. Displacements

The displacement of the highest loaded anchor should be calculated according to the relevant approval under the effect of the following characteristic loads.

N_{sk} = 5.975 [kN]

V_{sk} = 1.852 [kN]

The acceptable anchor displacements depend on the fastened construction and must be defined by the designer!

7. Warnings

- Bore hole cleaning must be performed according to instructions for use (blow 4 times with the hand pump, brush 4 times, blow again 4 times with the hand pump).
- Characteristic bond resistances depend on short- and long-term temperatures.
- Please contact Hilti to check feasibility of HIT-V rod supply.
- Checking the transfer of loads into the base material is required in accordance with EOTA TR 029, Section 7!
- The anchor plate is assumed to be sufficiently stiff in order to be not deformed when subjected to the actions!

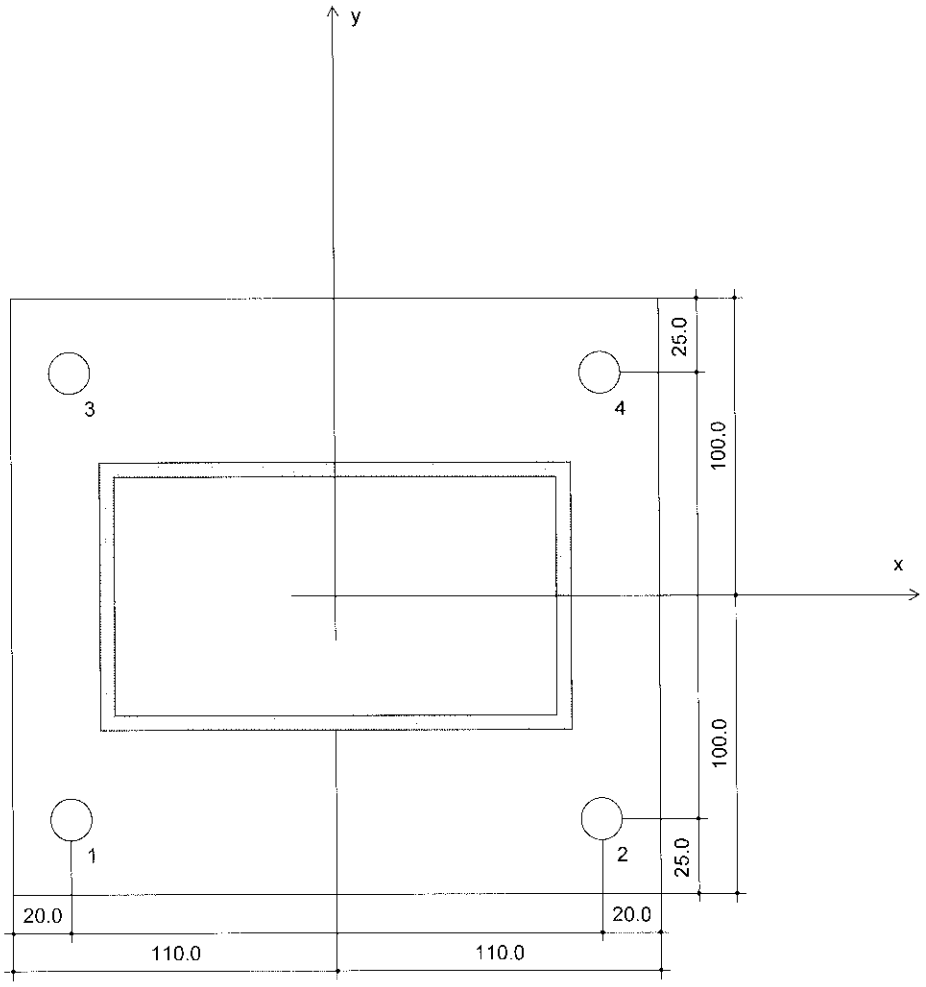
Fastening meets the design criteria!

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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8. Installation data

Anchor plate, steel: S235(St37)
Profile: Rectangular hollow, 160 mm x 90 mm x 5 mm
Hole diameter in the fixture: d_f = 14 mm
Plate thickness (input): 15 mm
Recommended plate thickness: not calculated
Anchor type and diameter: HIT-HY 150 MAX + HIT-V-HCR, M12
Installation torque: 0.040 kNm
Hole diameter in the base material: 14 mm
Hole depth in the base material: 99 mm
Minimum thickness of the base material: 129 mm
Cleaning: Manual cleaning of the drilled hole according to instructions for use is required.



Coordinates Anchor [mm]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-90	-75	-	280	100	-
2	90	-75	-	100	100	-
3	-90	75	-	280	250	-
4	90	75	-	100	250	-

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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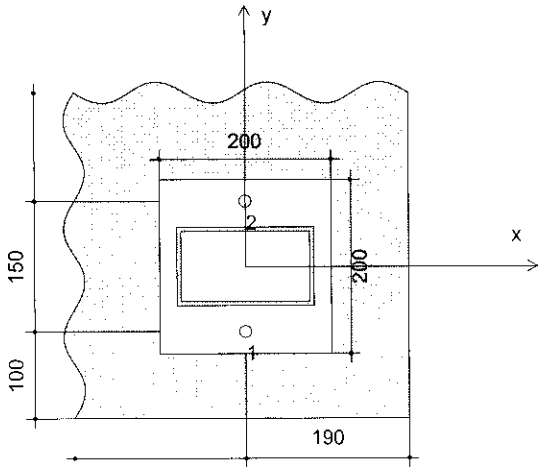
Specifier's comments: LINIJA "OB OBJEKTU"

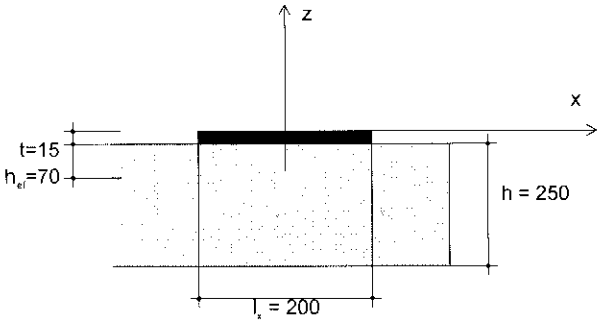
1. Input data

Anchor type and diameter:	**HIT-HY 150 MAX + HIT-V-HCR, M12**
Effective embedment depth:	$h_{ef,opti}$ = 70 mm ($h_{ef,limit}$ = 220 mm)
Material:	HCR
Evaluation Service Report::	ETA 08/0352
Issued I Valid:	18.12.2009 | 18.12.2013
Proof:	design method ETAG BOND; EOTA TR 029
Stand-off installation:	e_b = 0 mm (no stand-off); t = 15 mm
Anchor plate:	S235(St37); l_x x l_y x t = 200 x 200 x 15 mm (Recommended plate thickness: not calculated)
Profile	Rectangular hollow; (L x W x T) = 160 mm x 90 mm x 5 mm
Base material:	cracked concrete , C20/25, f_{cc} = 25.00 N/mm²; h = 250 mm, Temp. short/long: 40/24°C
Installation:	hammer drilled hole, installation condition: dry
Reinforcement:	no reinforcement or reinforcement spacing >= 150 mm (any Ø) or >= 100 mm (Ø <= 10 mm) no longitudinal edge reinforcement Reinforcement to control splitting according to EOTA TR 029, 5.2.2.6 present.



Geometry [mm]



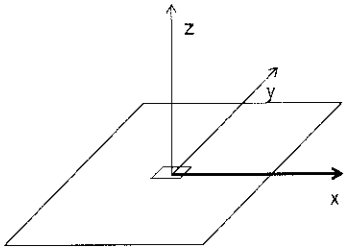


Loading [kN, kNm]

Resulting loads

N = 0.000
M_z = 0.000

V_y = 0.000
M_y = 0.000



Design loads (Load case 1)

N	0.000
V_x	5.000
V_y	0.000
M_x	0.000
M_y	0.000
M_z	0.000

Eccentricity (structural section) [mm]
e_x = 0; e_y = 0

V_x = 5.000
M_x = 0.000

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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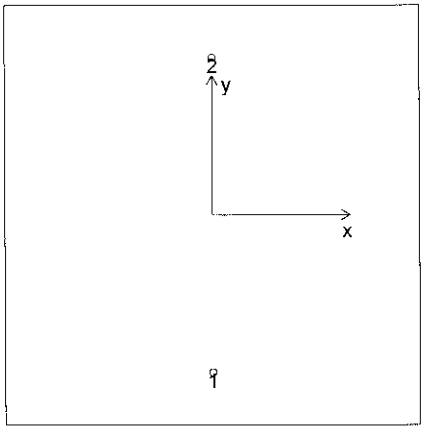
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2. Load case/Resulting anchor forces

Load case (Design loads):

Anchor reactions [kN]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0.000	2.500	2.500	0.000
2	0.000	2.500	2.500	0.000



max. concrete compressive strain [‰]: 0.00
max. concrete compressive stress [N/mm²]: 0.00
resulting tension force in (x/y)=(0/0) [kN]: 0.000
resulting compression force in (x/y)=(0/0) [kN]: 0.000

3. Tension load (EOTA TR 029, Section 5.2.2)

Proof	Load [kN]	Capacity [kN]	Utilization β_N [%]	Status
Steel Strength*	N/A	N/A	N/A	N/A
Combined pullout-concrete cone failure**	N/A	N/A	N/A	N/A
Concrete Breakout Strength**	N/A	N/A	N/A	N/A
Splitting failure**	N/A	N/A	N/A	N/A

* most unfavorable anchor **anchor group (anchors in tension)

4. Shear load (EOTA TR 029, Section 5.2.3)

Proof	Load [kN]	Capacity [kN]	Utilization β_V [%]	Status
Steel Strength (without lever arm)*	2.500	27.200	9	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	5.000	33.140	15	OK
Concrete edge failure in direction x+**	5.000	15.600	32	OK

* most unfavorable anchor **anchor group (relevant anchors)

Steel Strength (without lever arm)

$V_{Rk,s}$ [kN]	$\gamma_{M,s}$	$V_{Rd,s}$ [kN]	V_{Sd} [kN]
34.000	1.250	27.200	2.500

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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Pryout Strength (bond relevant)

$A_{p,N}$ [mm²]	$A^0_{p,N}$ [mm²]	$\tau_{Rk,ucr,25}$ [N/mm²]	$s_{cr,Np}$ [mm]	$c_{cr,Np}$ [mm]	c [mm]
74550	44100	14.00	210	105	100
ψ_c	$\tau_{Rk,cr}$ [N/mm²]	k	k-factor	$\psi^0_{g,Np}$	$\psi_{g,Np}$
1.000	5.50	2.300	2.000	1.179	1.028
$\psi_{s,Np}$	$e_{c1,V}$ [mm]	$\psi_{ec1,Np}$	$e_{c2,V}$ [mm]	$\psi_{ec2,Np}$	$\psi_{re,Np}$
0.986	0	1.000	0	1.000	1.000
$N^0_{Rk,p}$ [kN]	$N_{Rk,p}$ [kN]	$\gamma_{M,c\,p}$	$V_{Rd,c1}$ [kN]	V_{Sd} [kN]	
14.514	24.855	1.500	33.140	5.000	

Concrete edge failure in direction x+

h_{cf} [mm]	d_{nom} [mm]	k_1	α	β
70	12	1.700	0.061	0.058
c_1 [mm]	$A_{c,V}$ [mm²]	$A^0_{c,V}$ [mm²]		
190	133750	162450		
$\psi_{s,V}$	$\psi_{h,V}$	$\psi_{\alpha,V}$	$e_{c,V}$ [mm]	$\psi_{ec,V}$	$\psi_{ro,V}$
0.805	1.068	1.000	0	1.000	1.000
$V^0_{Rk,c}$ [kN]	$\gamma_{M,c}$	$V_{Rd,c}$ [kN]	V_{Sd} [kN]		
33.056	1.500	15.600	5.000		

5. Displacements

The displacement of the highest loaded anchor should be calculated according to the relevant approval under the effect of the following characteristic loads.

N_{Sk} = 0.000 [kN]

V_{Sk} = 1.852 [kN]

The acceptable anchor displacements depend on the fastened construction and must be defined by the designer!

6. Warnings

- Bore hole cleaning must be performed according to instructions for use (blow 4 times with the hand pump, brush 4 times, blow again 4 times with the hand pump).
- Characteristic bond resistances depend on short- and long-term temperatures.
- Please contact Hilti to check feasibility of HIT-V rod supply.
- Checking the transfer of loads into the base material is required in accordance with EOTA TR 029, Section 7!
- The anchor plate is assumed to be sufficiently stiff in order to be not deformed when subjected to the actions!

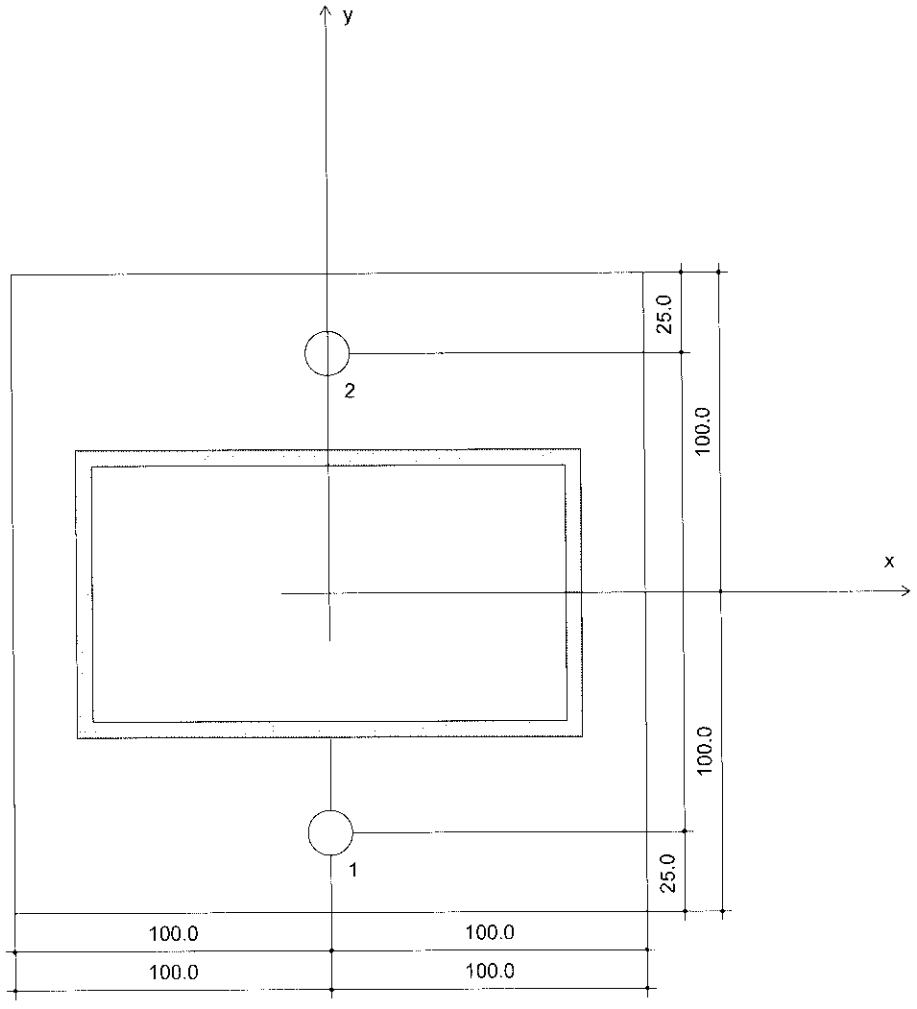
Fastening meets the design criteria!

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7. Installation data

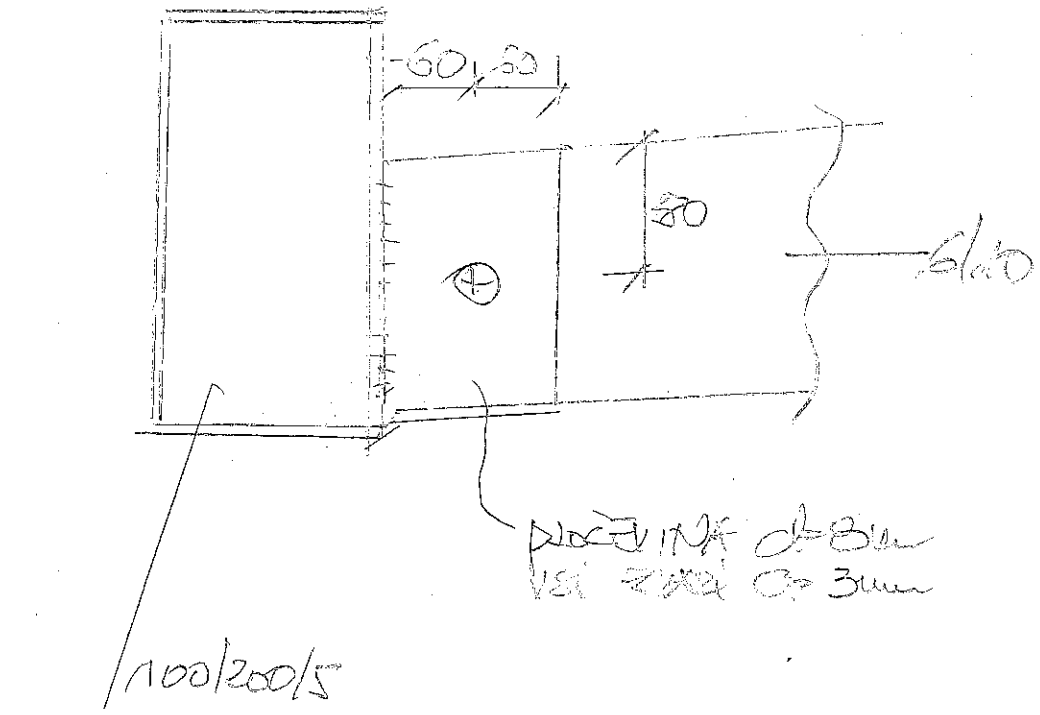
Anchor plate, steel: S235(St37)
Profile: Rectangular hollow, 160 mm x 90 mm x 5 mm
Hole diameter in the fixture: d_f = 14 mm
Plate thickness (input): 15 mm
Recommended plate thickness: not calculated
Anchor type and diameter: HIT-HY 150 MAX + HIT-V-HCR, M12
Installation torque: 0.040 kNm
Hole diameter in the base material: 14 mm
Hole depth in the base material: 70 mm
Minimum thickness of the base material: 100 mm
Cleaning: Manual cleaning of the drilled hole according to instructions for use is required.

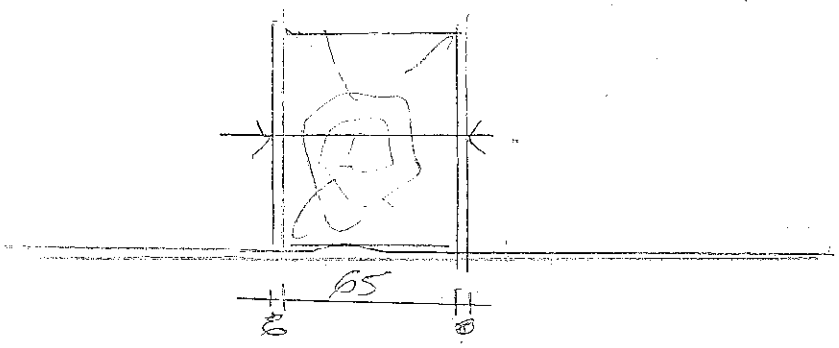


Coordinates Anchor [mm]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0	-75	-	190	100	-
2	0	75	-	190	250	-

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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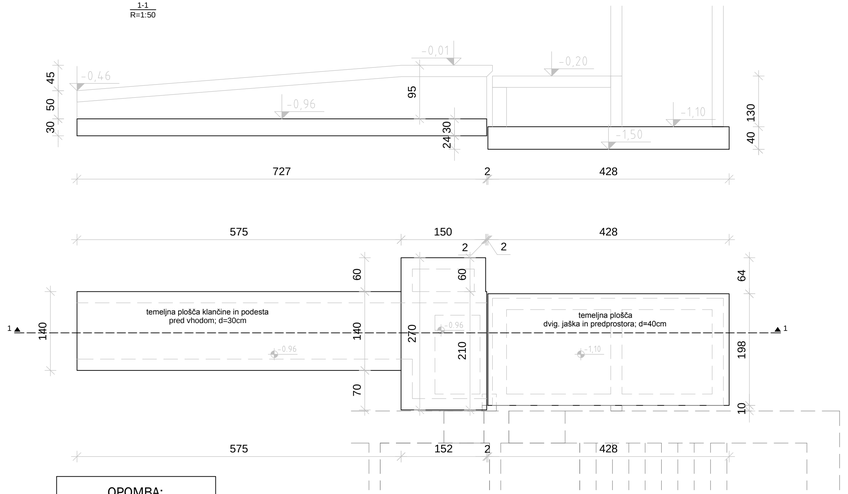

60
80
100/200/5


65

OPAŽNI NAČRT TEMELJNIH PLOŠČ

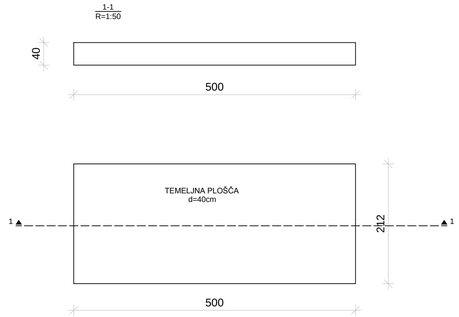
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Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=5,00cm

OPAŽNI NAČRT TEMELJNE PLOŠČE KLANČINE, PODESTA; d=30cm, DVIGALNEGA JAŠKA IN PREDPROSTORA; d=40cm



OPOMBA:
priključno armaturo za
AB stene glej načrte sten

OPAŽNI NAČRT TEMELJNE PLOŠČE NADSTREŠKA; d=40cm



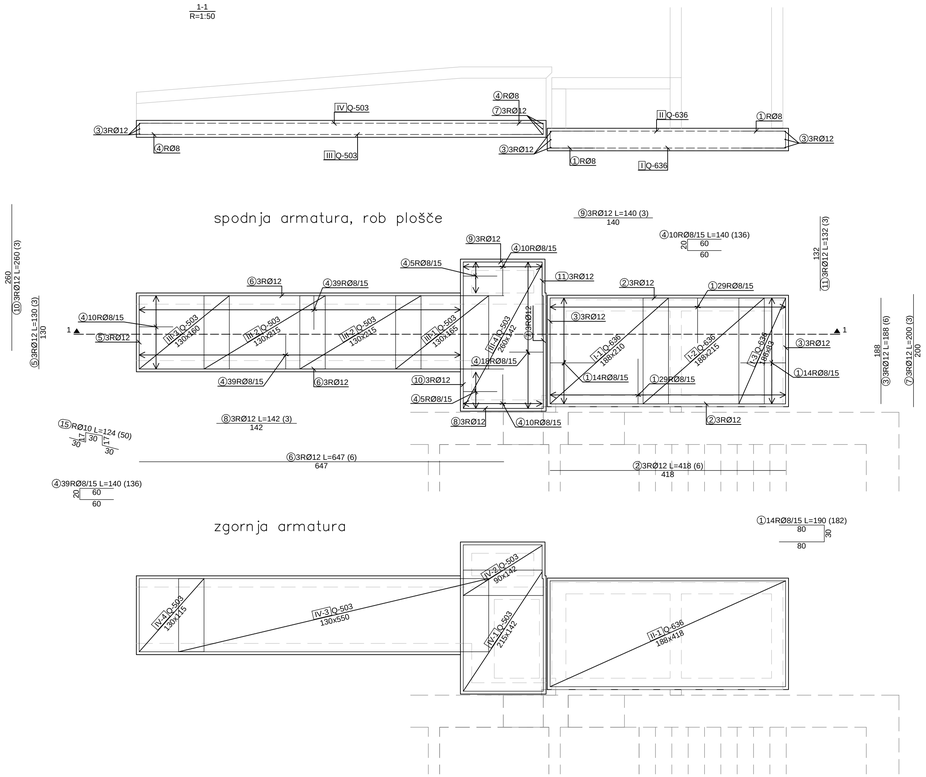
PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

vodja projekta: ZAPS PA-0038 — ime in priimek, podpis
MARIJAN ČEBELA u.d.i.g.
podpisani inženir: G-0011
IVAN RAMŠAK u.d.i.g.

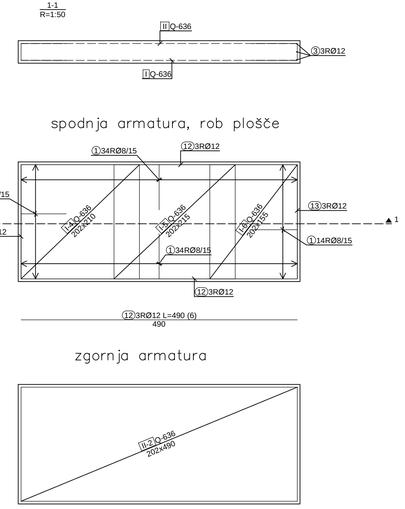
obdelal

investitor: ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
objekt, lokacija: UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
načrt: PZI
2 – GRADBENE KONSTRUKCIJE
OPAŽNI NAČRT
TEMELJEV
list: A01
merilo: 1:50
št.proj.: 211-1/24
št.načrta: 23/24
datum: MAJ 24

OPAŽNI NAČRT TEMELJNE PLOŠČE KLANČINE, PODESTA;
d=30cm,
DVIGALNEGA JAŠKA IN PREDPROSTORA; d=40cm



ARMATURNI NAČRT TEMELJNE PLOŠČE
NADSTREŠKA; d=40cm



beton: C 30/37, XC2,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=5,00cm

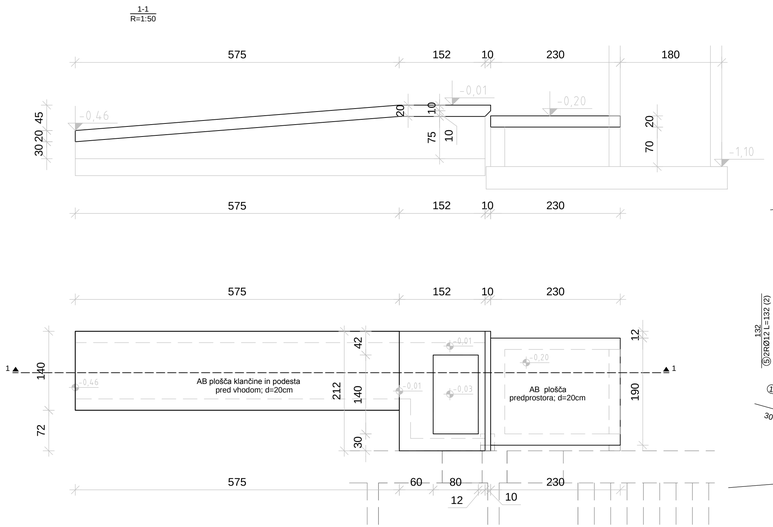
ARMATURNI NAČRT TEMELJNIH PLOŠČ

PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

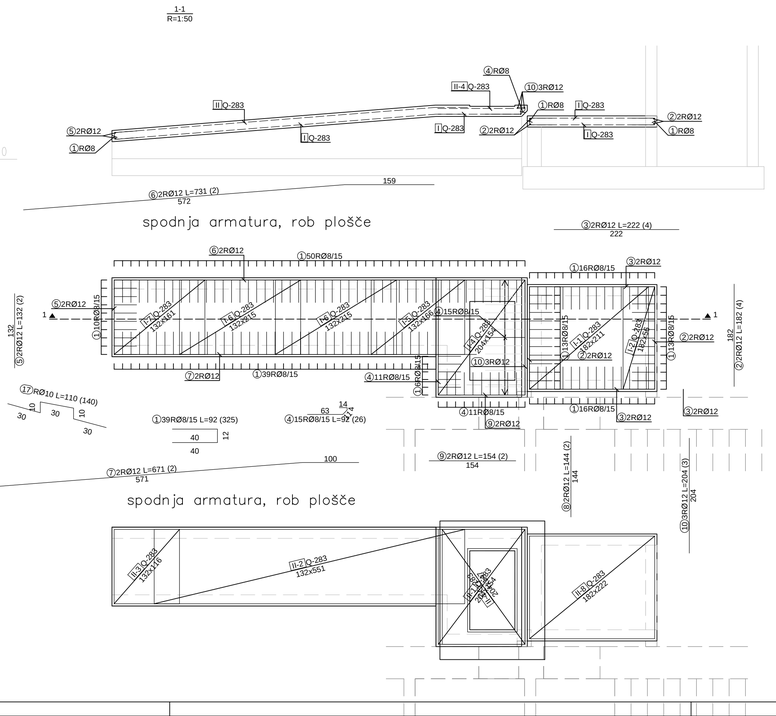
vodja projekta: ZAPS PA-0098 (podpis)
MARIJAN ČEBELA u.d.i.g.
podsklopni inženir: G-0011
IVAN RAMŠAK u.d.i.g.

investitor: ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
objekt lokacija: UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
načrt: PZI
2 – GRADBENE KONSTRUKCIJE
ARMATURNI NAČRT TEMELJEV
list: A02
merilo: 1:50
št.proj.: 211–1/24
št.načrta: 23/24
datum: MAJ 24
območje:

OPAŽNI NAČRT AB PLOŠČE KLANČINE, PODESTA IN PREDPROSTORA; d=20cm



ARMATURNI NAČRT AB PLOŠČE KLANČINE, PODESTA IN PREDPROSTORA; d=20cm



beton: C 30/37, XC2,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=4,00cm

PLOŠČA KLANČINE:

beton: C 30/37, XC2, XF3
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=4,00cm

OPAŽNI IN ARMATURNI NAČRT AB PLOŠČE KLANČINE, PODESTA IN PREDPROSTORA

PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

vodja projekta: ZAPS PA-0038 — podp. — podpis
MARIJAN ČEBELA u.d.i.g.
podpisnik inženir: G-0011
IVAN RAMŠAK u.d.i.g.

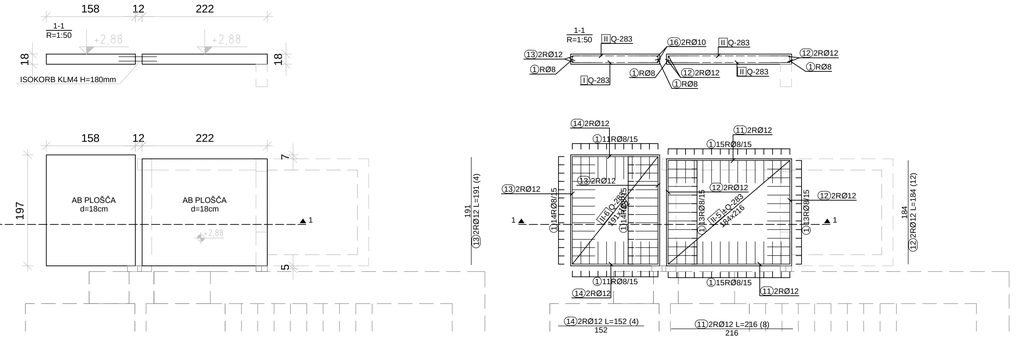
obdelal

investitor: ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
objekt lokacija: UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
načrt: PZI
2 – GRADBENE KONSTRUKCIJE
OPAŽNI IN ARMATURNI NAČRT KLANČINE, PODESTA, PREDPROSTORA
list: A03
št.proj.: 211-1/24
št.načrta: 23/24
datum: MAJ 24
merilo: 1:50

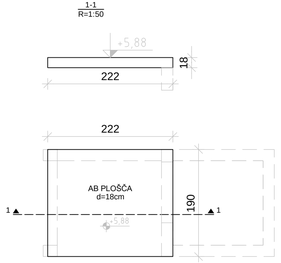
OPAŽNI IN ARMATURNI NAČRT AB PLOŠČE KPREDPROSTORA IN DVIGALA

beton: C 30/37, XC1,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=4,00cm

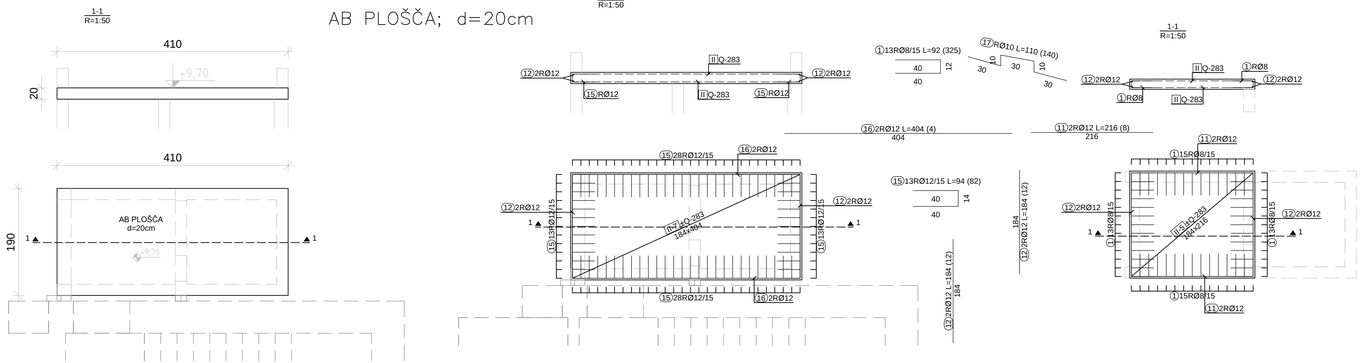
AB PLOŠČA; d=21-18cm, d=18cm



AB PLOŠČA; d=18cm



AB PLOŠČA; d=20cm



OPAŽNI IN ARMATURNI NAČRT AB PLOŠČ PREDPROSTORA IN DVIGALA

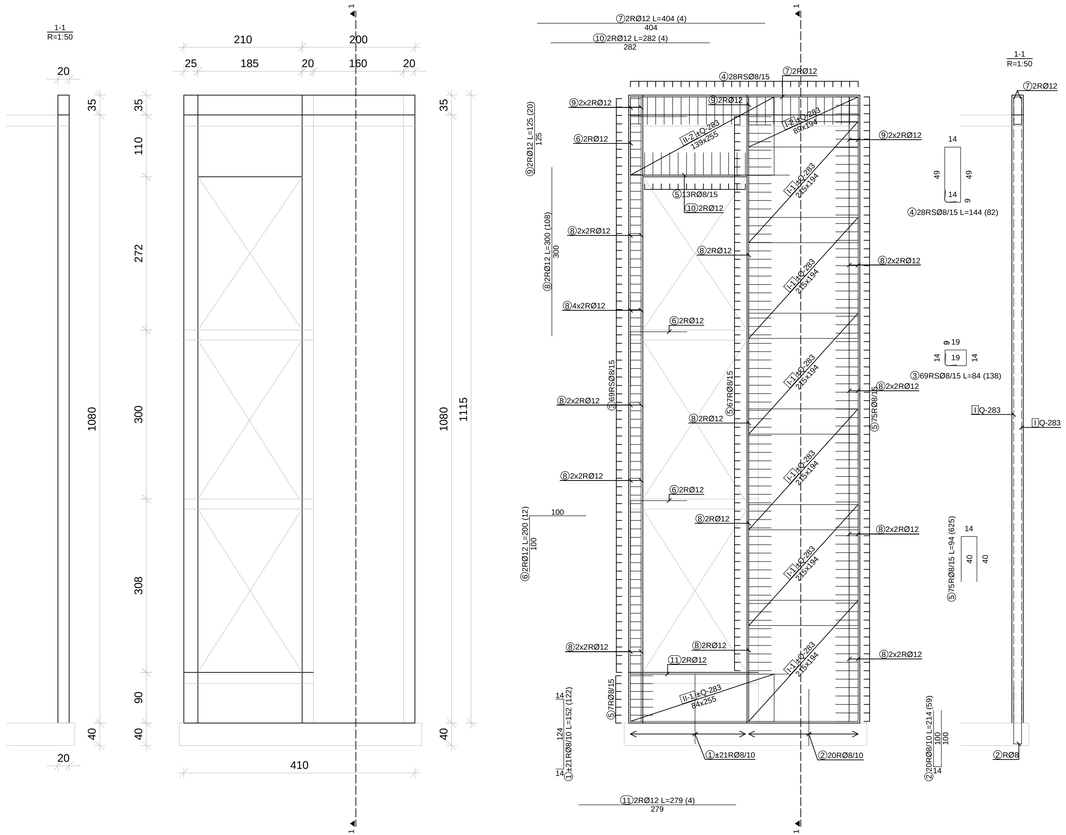
PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

vodja projekta: ZAPS PA-0058 pod. podpis
MARIJAN ČEBELA u.d.i.g.
pooblaščeni inženir: G-0011
IVAN RAMŠAK u.d.i.g.

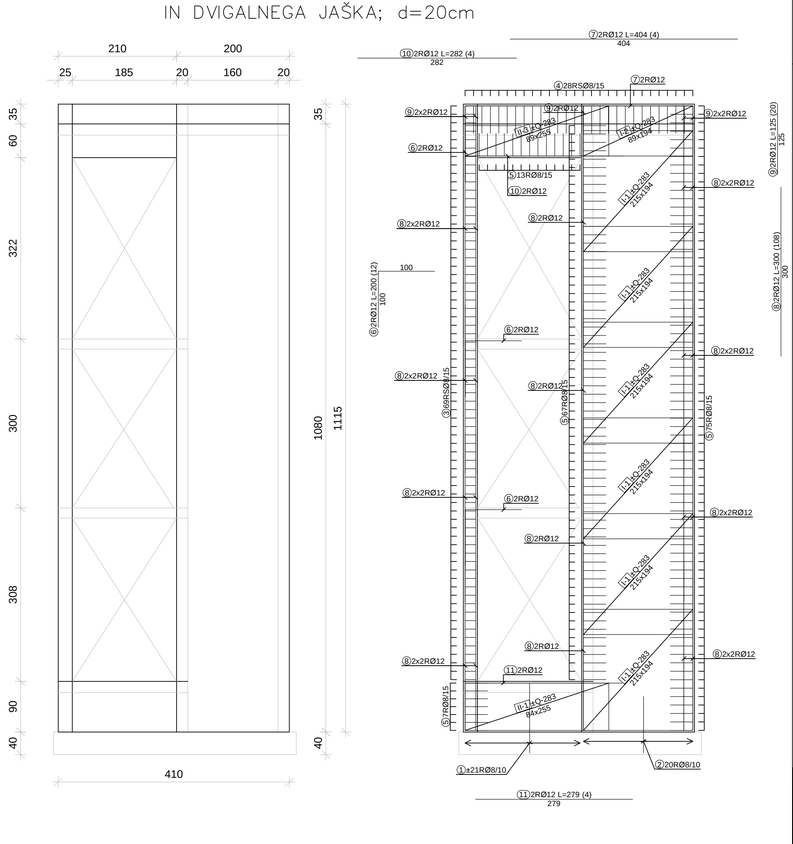
odgovorni projektant

investitor	ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
objekt lokacija	UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
načrt	PZI 2 – GRADBENE KONSTRUKCIJE OPAŽNI IN ARMATURNI NAČRT DVIGALA
list	A04
merilo	1:50
št.proj.	211-1/24
št.načrta	23/24
datum	MAJ 24

OPAŽNI IN ARMATURNI NAČRT AB STENE PREDPROSTORA
IN DVIGALNEGA JAŠKA; d=20cm



OPAŽNI IN ARMATURNI NAČRT AB STENE PREDPROSTORA
IN DVIGALNEGA JAŠKA; d=20cm



beton: C 30/37, XC1,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=3,00cm

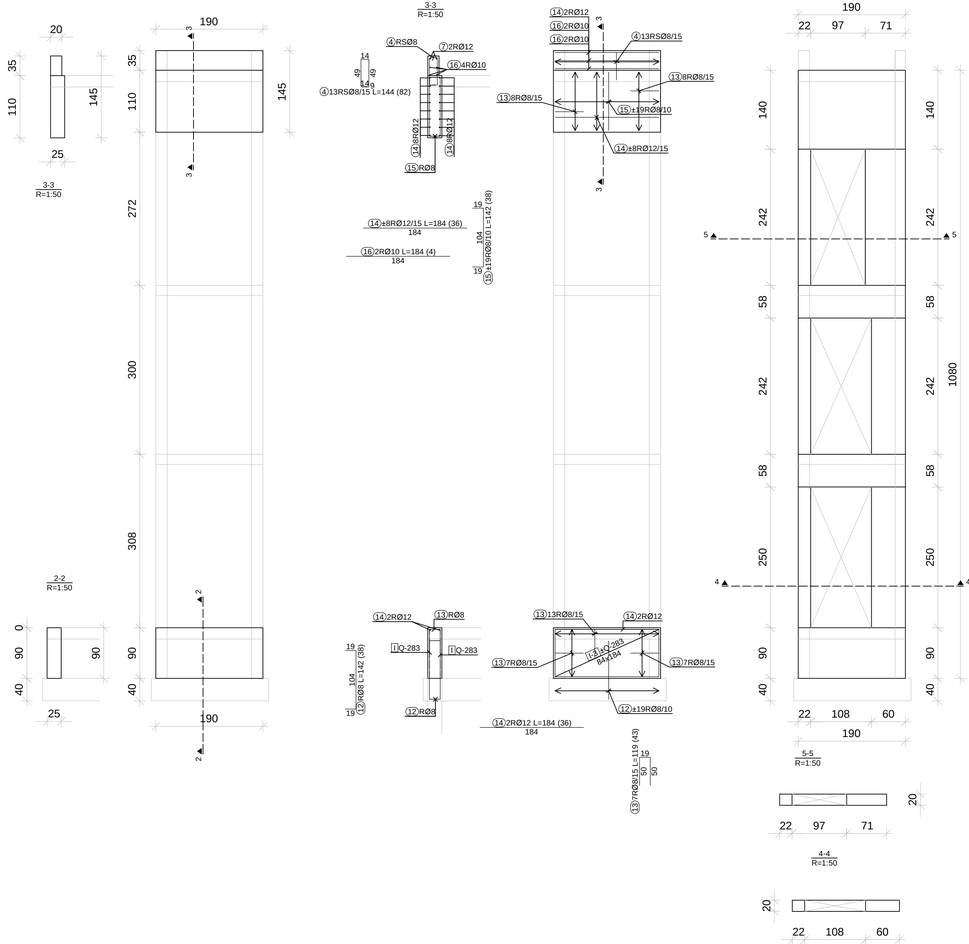
OPAŽNI IN ARMATURNI NAČRT AB STEN PREDPROSTORA IN DVIGALA

PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

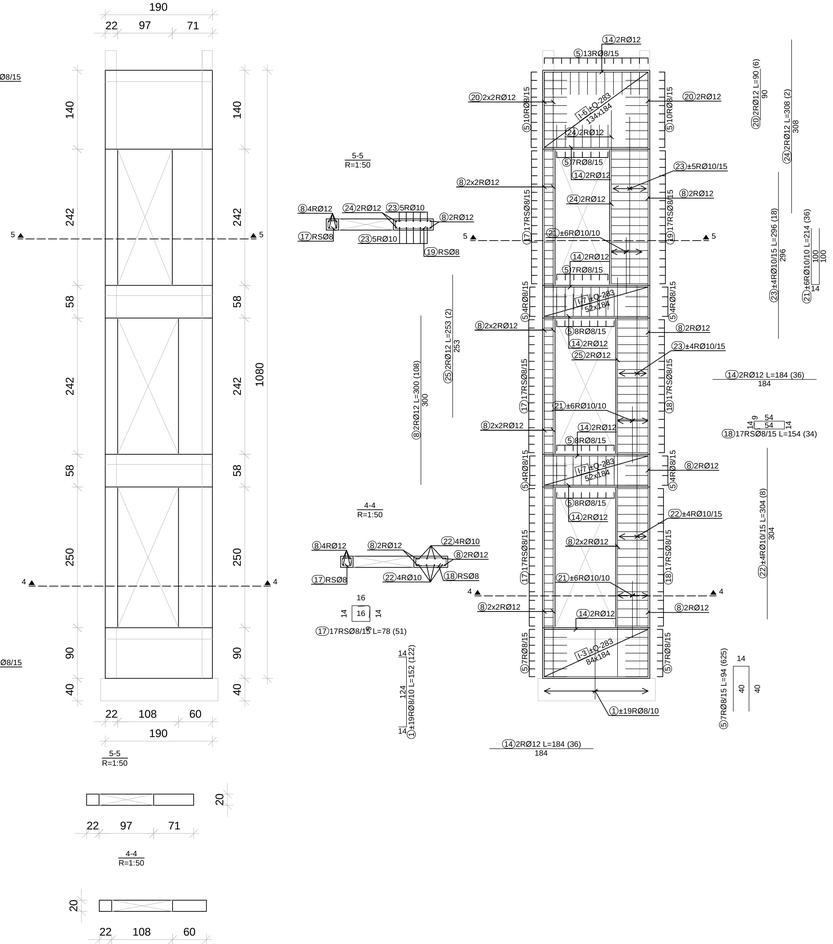
vodja projekta	ZAPS PA-0098	podp.	podpis
MARJAN ČEBELA u.d.i.g.			
pooblaščeni inženir	G-0011		
IVAN RAMŠAK u.d.i.g.			
obdelal			

investitor	ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
objekt lokacija	UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
načrt	PZI 2 – GRADBENE KONSTRUKCIJE OPAŽNI IN ARMATURNI NAČRT STEN DVIGALA
list	A05
merilo	1:50
št.proj.	211–1/24
št.načrta	23/24
datum	MAJ 24

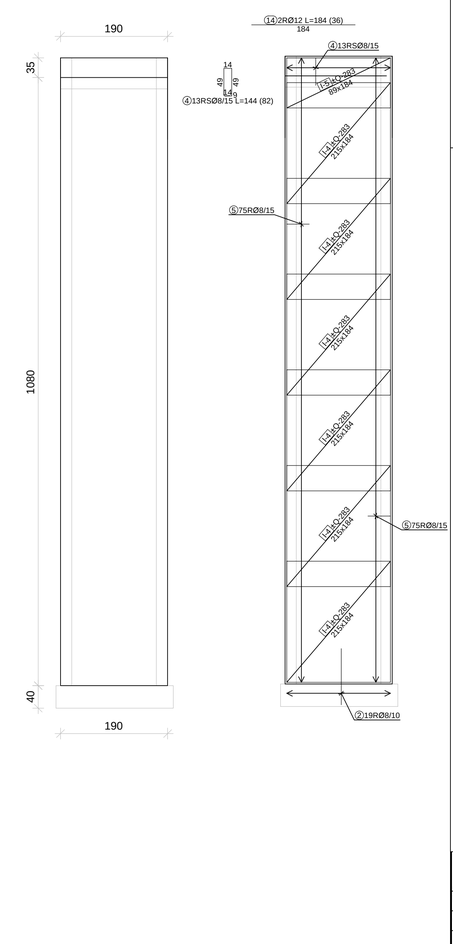
OPAŽNI IN ARMATURNI NAČRT AB STENE; d=25cm



OPAŽNI IN ARMATURNI NAČRT AB STENE; d=20cm



OPAŽNI IN ARMATURNI NAČRT AB STENE; d=20cm



beton: C 30/37, XC1,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=3,00cm

OPAŽNI IN ARMATURNI NAČRT AB STEN PREDPROSTORA IN DVIGALA

PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE
Ivan RAMŠAK s.p.
Preširnova cesta 8, 3320 VELENJE

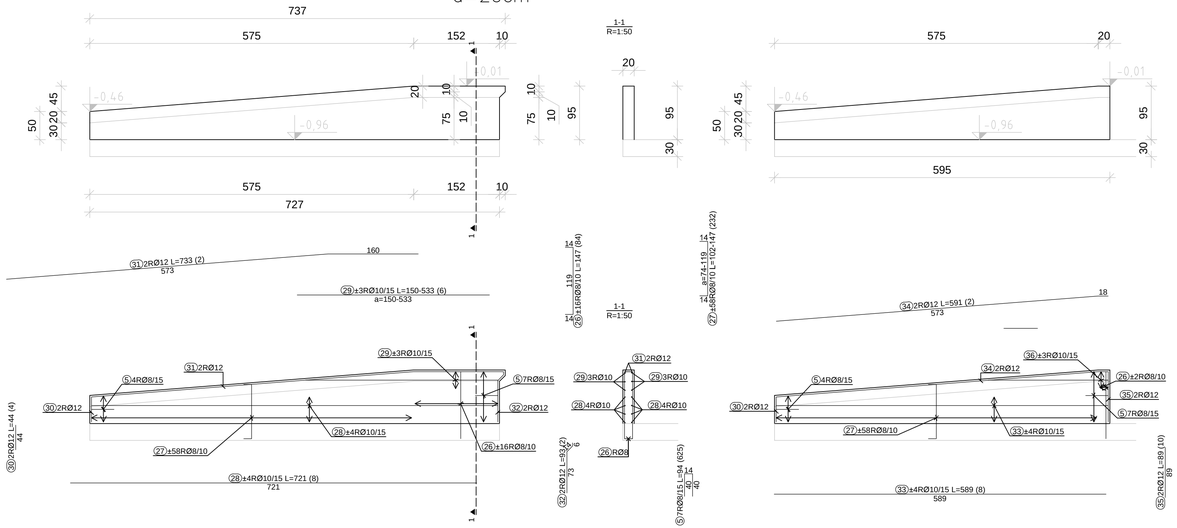
vodja projekta	ZAPS PA-0098	podp.	podpis
MARIJAN ČEBELA u.d.i.g.			
pooblaščeni inženir	G-0011		
IVAN RAMŠAK u.d.i.g.			
obdelal			

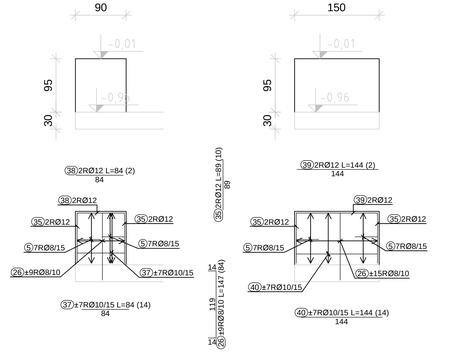
investitor	ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE		
objekt lokacija	UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA		
načrt	PZI 2 – GRADBENE KONSTRUKCIJE OPAŽNI IN ARMATURNI NAČRT STEN DVIGALA		list A06
št.proj. št.načrta	211-1/24 23/24	datum MAJ 24	merilo 1:50

OPAŽNI IN ARMATURNI NAČRT AB STEN KLANČINE IN PODESTA

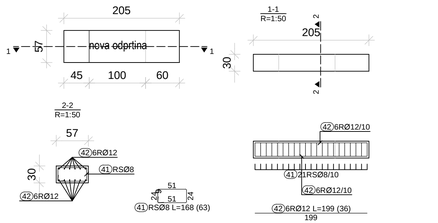
beton: C 30/37, XC1,
Cl 02, Dmax 16, S3
armatura: S 500 (palice)
armatura: S 500 (mreže)
zaščitni sloj: a=3,00cm

OPAŽNI IN ARMATURNI NAČRT AB STEN KLANČINE IN PODESTA; d=20cm



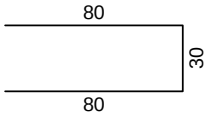
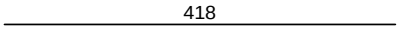
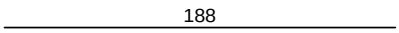
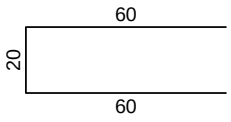
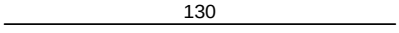
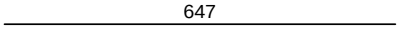
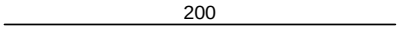
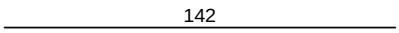
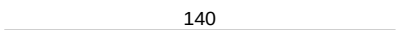
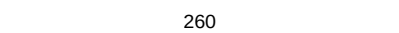
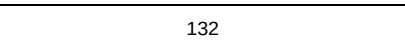
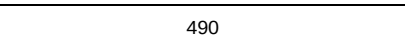
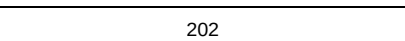
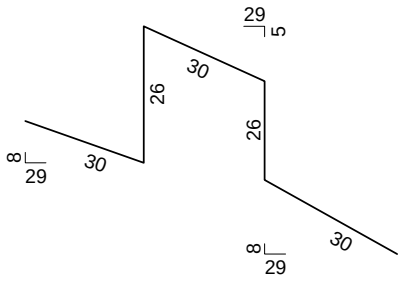
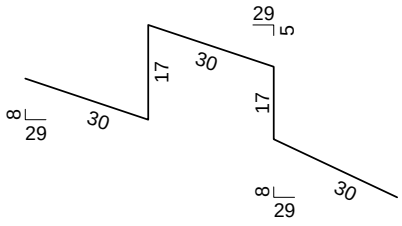
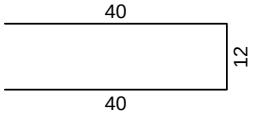
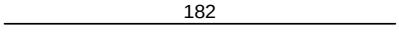
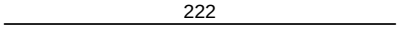


OPAŽNI IN ARMATURNI NAČRT AB PREKLADE NAD NOVO ODPRTINO – 3kom

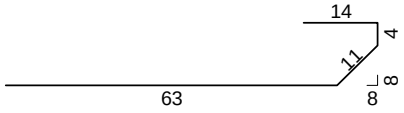
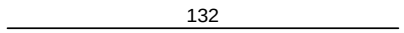
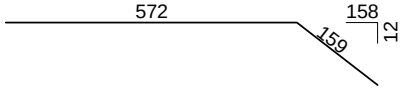
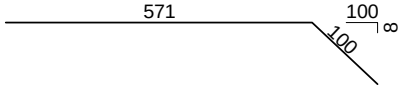
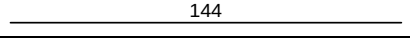
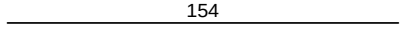
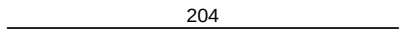
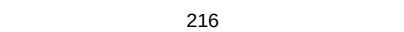
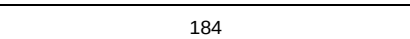
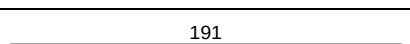
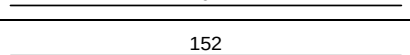
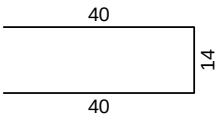
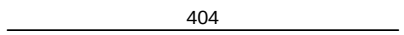
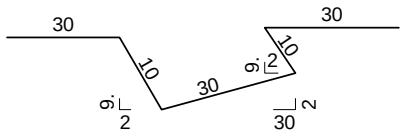
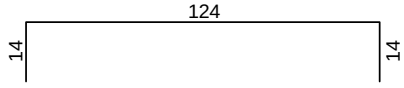
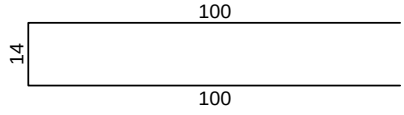
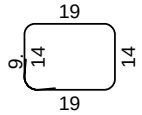
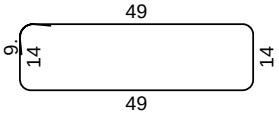


PROJEKTIRANJE IN TEHNIČNO SVETOVANJE, CENITVE Ivan RAMŠAK s.p. Prešernova cesta 8, 3320 VELENJE	investitor: ŠOLA ZA HORTUKULTURO IN VIZUALNE UMETNOSTI CELJE, Ljubljanska 97,3000 CELJE
vodja projekta: ZAPS PA-0058 ime priim podpis MARIJAN ČEBELA u.d.i.g.	objekt lokacija: UNIVERZALNA UPORABNOST IN DOSTOPNOST OBJEKTA
podpisani inženir: G-0011 IVAN RAMŠAK u.d.i.g.	načrt: PZI 2 – GRADBENE KONSTRUKCIJE OPAŽNI IN ARMATURNI NAČRT STEN KLANČINE IN PODESTA list: A07
odelal	št.proj. 211-1/24 datum MAJ 24 št.načrta 23/24 merilo: 1:50

ŠOLA HVU CELJE

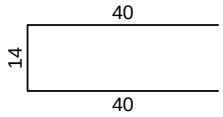
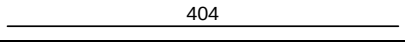
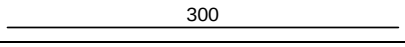
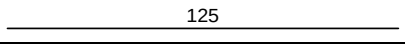
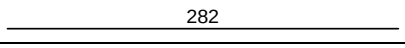
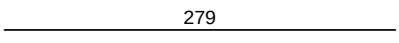
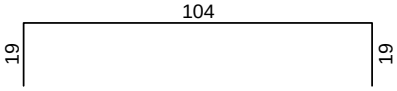
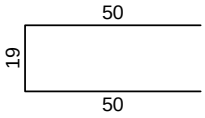
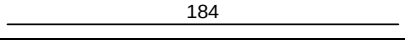
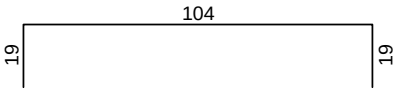
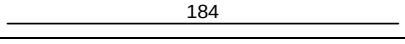
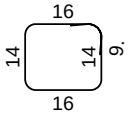
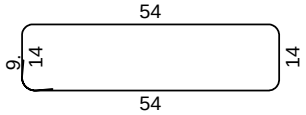
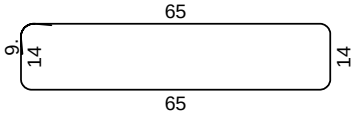
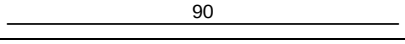
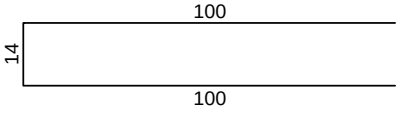
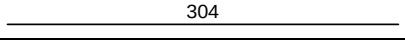
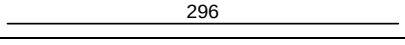
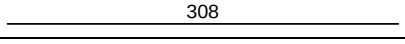
Palice - specifikacija						
ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]	Opomba
TEMELJNE PLOŠČE (1 kos)						
1		8	1.90	182	345.80	
2		12	4.18	6	25.08	
3		12	1.88	6	11.28	
4		8	1.40	136	190.40	
5		12	1.30	3	3.90	
6		12	6.47	6	38.82	
7		12	2.00	3	6.00	
8		12	1.42	3	4.26	
9		12	1.40	3	4.20	
10		12	2.60	3	7.80	
11		12	1.32	3	3.96	
12		12	4.90	6	29.40	
13		12	2.02	6	12.12	
14		10	1.42	75	106.50	
15		10	1.24	50	62.00	
AB PLOŠČE (1 kos)						
1		8	0.92	325	299.00	
2		12	1.82	4	7.28	
3		12	2.22	4	8.88	

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]	Opomba
4		8	0.92	26	23.92	
5		12	1.32	2	2.64	
6		12	7.31	2	14.62	
7		12	6.71	2	13.42	
8		12	1.44	2	2.88	
9		12	1.54	2	3.08	
10		12	2.04	3	6.12	
11		12	2.16	8	17.28	
12		12	1.84	12	22.08	
13		12	1.91	4	7.64	
14		12	1.52	4	6.08	
15		12	0.94	82	77.08	
16		12	4.04	4	16.16	
17		10	1.10	140	154.00	
AB STENE (1 kos)						
1		8	1.52	122	185.44	
2		8	2.14	59	126.26	
3		8	0.84	138	115.92	
4		8	1.44	82	118.08	

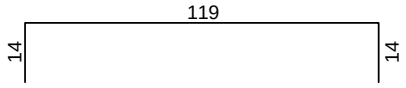
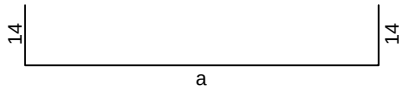
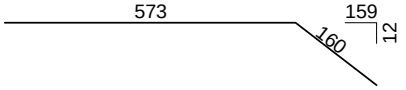
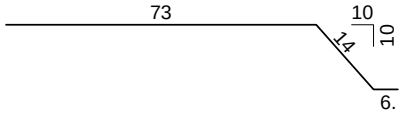
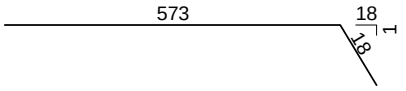
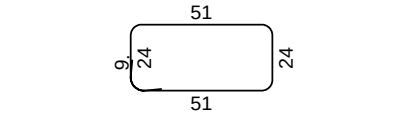
ŠOLA HVU CELJE

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]	Opomba
5		8	0.94	625	587.50	
6		12	2.00	12	24.00	
7		12	4.04	4	16.16	
8		12	3.00	108	324.00	
9		12	1.25	20	25.00	
10		12	2.82	4	11.28	
11		12	2.79	4	11.16	
12		8	1.42	38	53.96	
13		8	1.19	43	51.17	
14		12	1.84	36	66.24	
15		8	1.42	38	53.96	
16		10	1.84	4	7.36	
17		8	0.78	51	39.78	
18		8	1.54	34	52.36	
19		8	1.76	17	29.92	
20		12	0.90	6	5.40	
21		10	2.14	36	77.04	
22		10	3.04	8	24.32	
23		10	2.96	18	53.28	
24		12	3.08	2	6.16	

ŠOLA HVU CELJE

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]	Opomba
25	253	12	2.53	2	5.06	
26		8	1.47	84	123.48	
27	 4 x : a = 74, 75, 76, 77, 77, 78, 79, 80, 80, 81, 82, 83, 84, 84, 85, 86, 87, 88, 88, 89, 90, 91, 91, 92, 93, 94, 95, 95, 96, 97, 98, 98, 99, 100, 101, 102, 102, 103, 104, 105, 105, 106, 107, 108, 109, 109, 110, 111, 112, 113, 113, 114, 115, 116, 116, 117, 118, 119	8	*1.25	4 x 58	288.84	
28	721	10	7.21	8	57.68	
29	a 2 x : a = 150, 341, 533	10	*3.41	2 x 3	20.48	
30	44	12	0.44	4	1.76	
31		12	7.33	2	14.66	
32		12	0.93	2	1.86	
33	589	10	5.89	8	47.12	
34		12	5.91	2	11.82	
35	89	12	0.89	10	8.90	
36	a 2 x : a = 25, 213, 401	10	*2.13	2 x 3	12.78	
37	84	10	0.84	14	11.76	
38	84	12	0.84	2	1.68	
39	144	12	1.44	2	2.88	
40	144	10	1.44	14	20.16	
41		8	1.68	63	105.84	
42	199	12	1.99	36	71.64	

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500			
8	2791.63	0.41	1141.78
10	654.48	0.65	424.76
12	961.72	0.92	884.78
Skupaj (S500)			2451.32
Skupaj			2451.32

Mreže - specifikacija							
Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]	Opomba
TEMELJNE PLOŠČE (1 kos)							
I-1	Q-636	210	188	1	13.24	52.27	
I-2	Q-636	215	188	1	13.24	53.52	
I-3	Q-636	83	188	1	13.24	20.66	
I-4	Q-636	210	202	1	13.24	56.30	
I-5	Q-636	215	202	1	13.24	57.64	
I-6	Q-636	155	202	1	13.24	41.56	
II-1	Q-636	418	188	1	13.24	104.05	
II-2	Q-636	490	202	1	13.24	131.37	
III-1	Q-503	165	130	1	10.30	22.09	
III-2	Q-503	215	130	2	10.30	57.57	
III-3	Q-503	160	130	1	10.30	21.42	
III-4	Q-503	142	260	1	10.30	38.02	
IV-1	Q-503	142	215	1	10.30	31.44	
IV-2	Q-503	142	90	1	10.30	13.16	
IV-3	Q-503	550	130	1	10.30	73.64	
IV-4	Q-503	115	130	1	10.30	15.40	
Skupaj						790.12	
AB PLOŠČE (1 kos)							
I-1	Q-283	211	182	1	5.79	22.25	
I-2	Q-283	56	182	1	5.79	5.91	
I-4	Q-283	154	204	1	5.79	18.20	
I-5	Q-283	166	132	1	5.79	12.70	
I-6	Q-283	215	132	2	5.79	32.89	
I-7	Q-283	161	132	1	5.79	12.31	
II-1	Q-283	154	204	1	5.79	18.20	
II-2	Q-283	551	132	1	5.79	42.14	
II-3	Q-283	116	132	1	5.79	8.87	
II-4	Q-283	147	204	1	5.79	17.37	
II-5	Q-283	216	184	4	5.79	92.11	
II-6	Q-283	152	191	1	5.79	16.82	
II-7	Q-283	404	184	2	5.79	86.14	
II-8	Q-283	222	182	1	5.79	23.41	
Skupaj						409.32	
AB STENE (1 kos)							
I-1	Q-283	194	215	24	5.79	580.00	

Mreže - specifikacija

Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]	Opomba
I-2	Q-283	194	89	4	5.79	40.02	
I-3	Q-283	184	84	4	5.79	35.82	
I-4	Q-283	184	215	12	5.79	275.05	
I-5	Q-283	184	89	2	5.79	18.98	
I-6	Q-283	184	134	2	5.79	28.57	
I-7	Q-283	184	52	4	5.79	22.17	
II-1	Q-283	255	84	4	5.79	49.64	
II-2	Q-283	255	139	2	5.79	41.07	
II-3	Q-283	255	89	2	5.79	26.30	
Skupaj						1117.63	

Mreže - izvleček						
Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]	Neto vgrajena teža [kg]
Q-283	215	600	20	5.79	1494.85	1104.87
Q-283	600	215	9	5.79	672.68	414.54
Q-503	215	600	2	10.30	265.71	138.98
Q-503	600	215	2	10.30	265.71	133.48
Q-636	215	600	2	13.24	341.59	281.95
Q-636	600	215	2	13.24	341.59	235.42
Skupaj					3382.15	2309.25

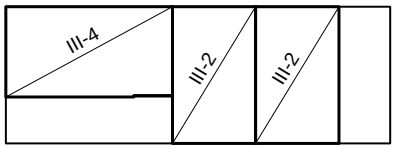
ŠOLA HVU CELJE

Mreže - načrt razreza

TEMELJNE PLOŠČE

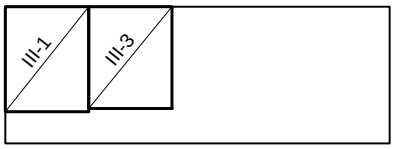
Q-503 (600 cm x 215 cm)

1x



III-4 260 x 142
III-2 130 x 215
III-2 130 x 215

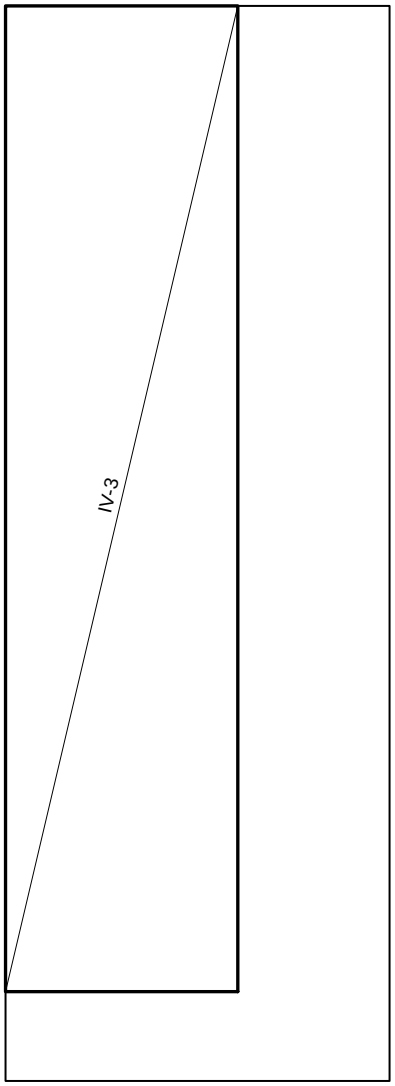
1x



III-1 130 x 165
III-3 130 x 160

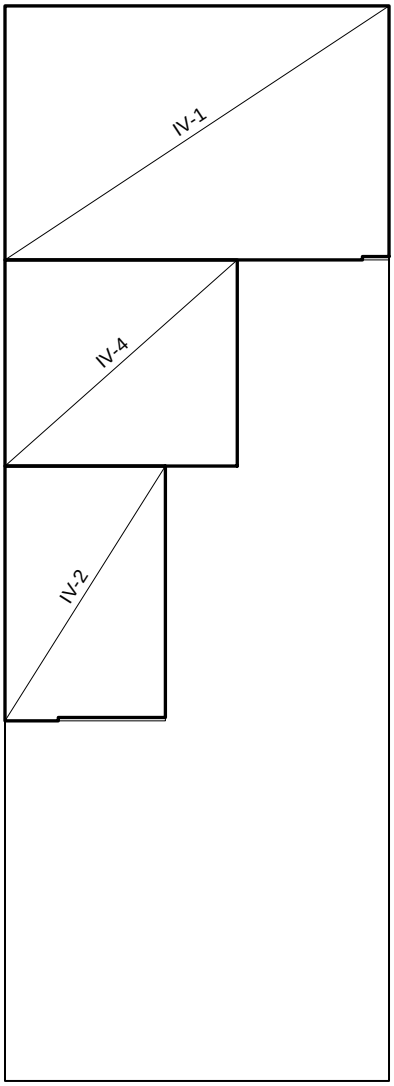
Q-503 (215 cm x 600 cm)

1x



IV-3 130 x 550

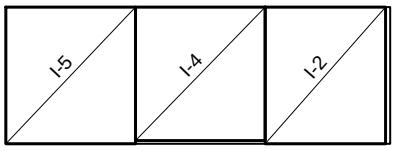
1x



IV-1 215 x 142
IV-4 130 x 115
IV-2 90 x 142

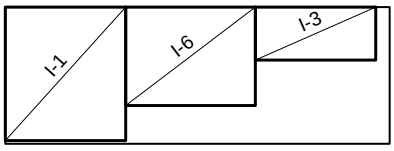
Q-636 (600 cm x 215 cm)

1x



I-5 202 x 215
I-4 202 x 210
I-2 188 x 215

1x

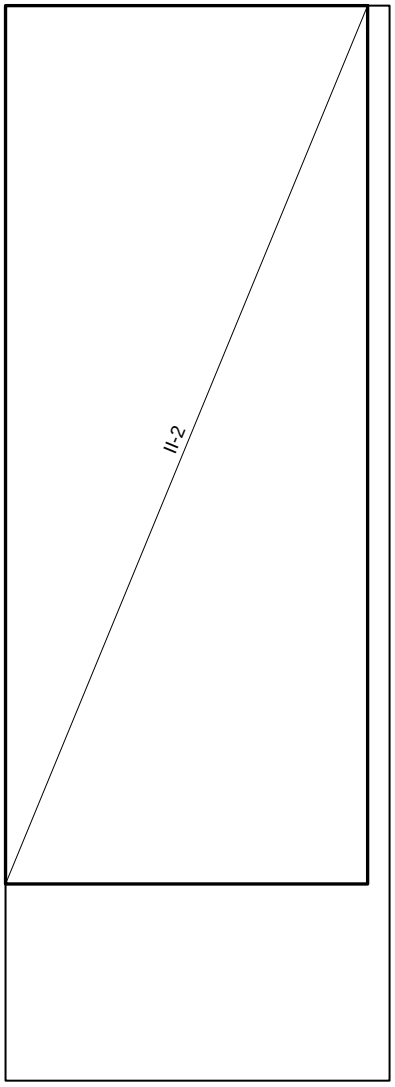


I-1 188 x 210
I-6 202 x 155
I-3 188 x 83

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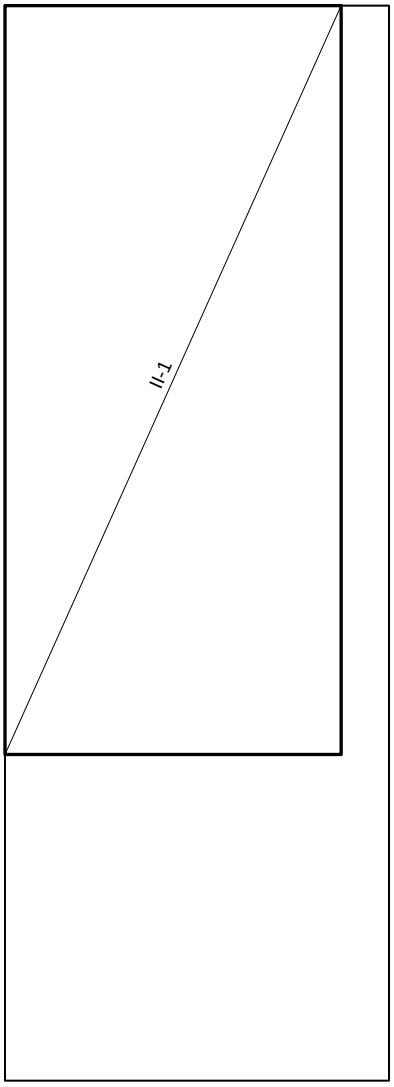
Mreže - načrt razreza
Q-636 (215 cm x 600 cm)

1x



II-2 202 x 490

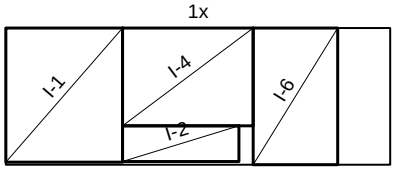
1x



II-1 188 x 418

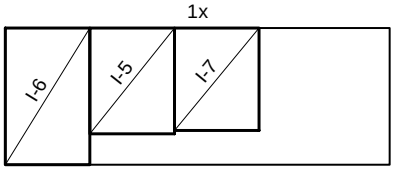
AB PLOŠČE
Q-283 (600 cm x 215 cm)

1x



I-1 182 x 211
I-4 204 x 154
I-6 132 x 215
I-2 182 x 56

1x



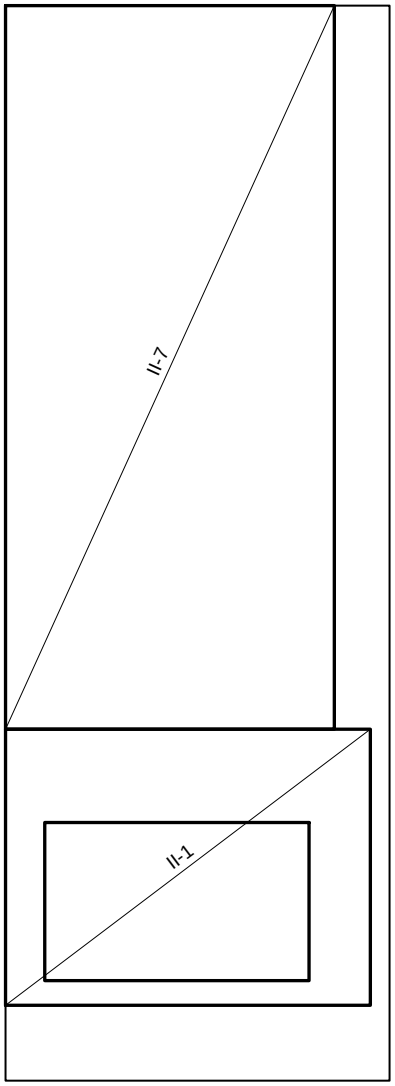
I-6 132 x 215
I-5 132 x 166
I-7 132 x 161

ŠOLA HVU CELJE

Mreže - načrt razreza
Q-283 (215 cm x 600 cm)

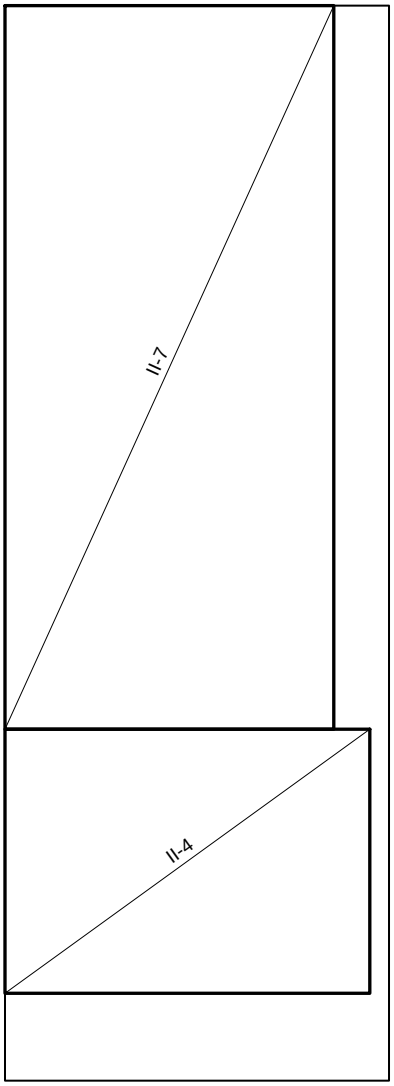
1x

II-7 184 x 404
II-1 204 x 154



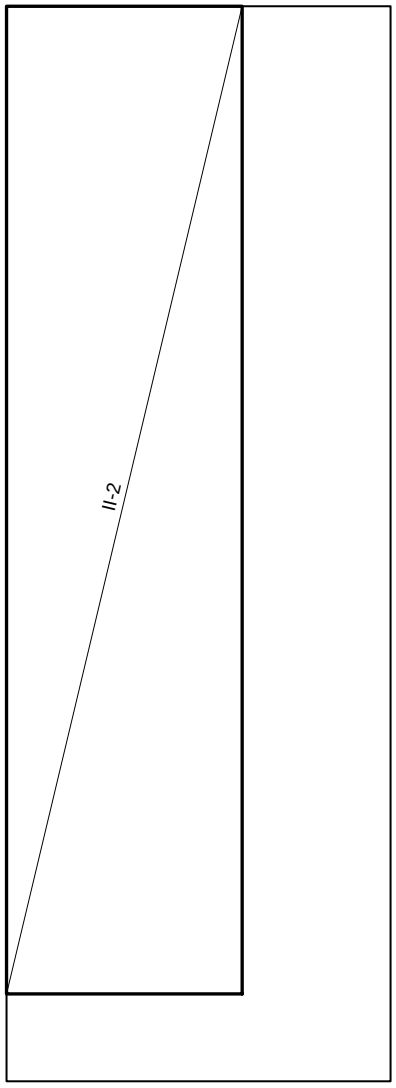
1x

II-7 184 x 404
II-4 204 x 147



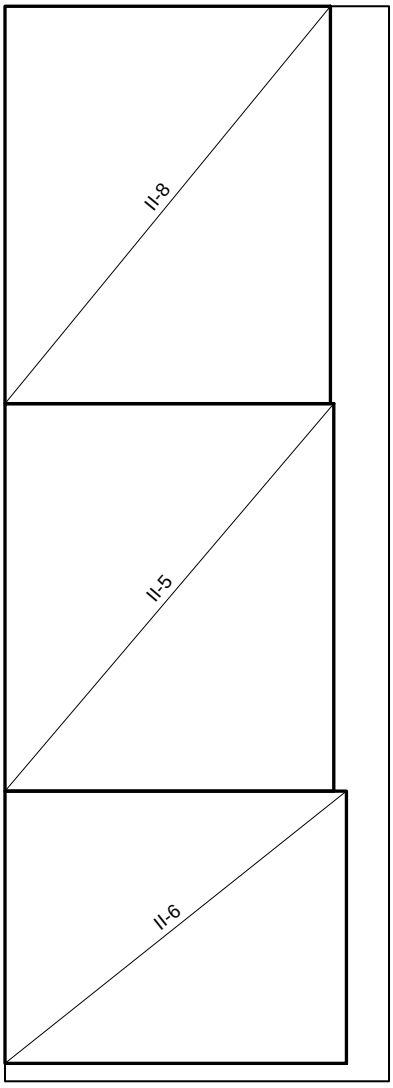
Mreže - načrt razreza

1x



II-2 132 x 551

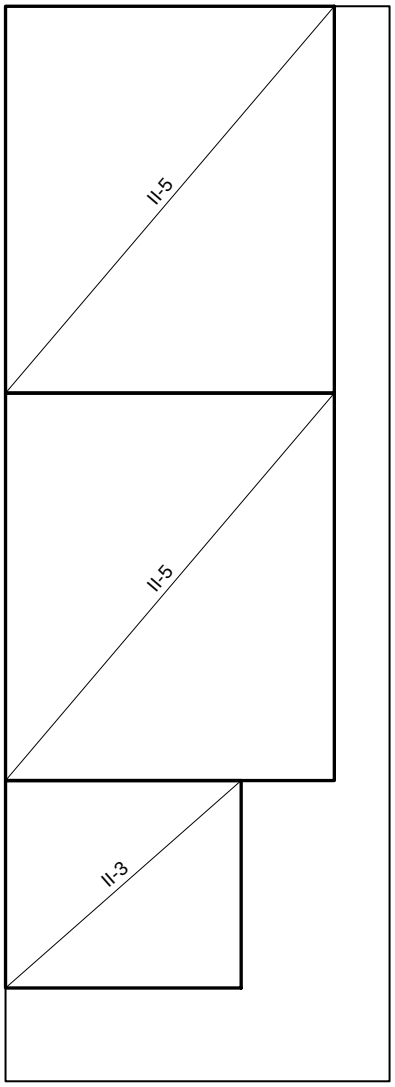
1x



II-8 182 x 222
II-5 184 x 216
II-6 191 x 152

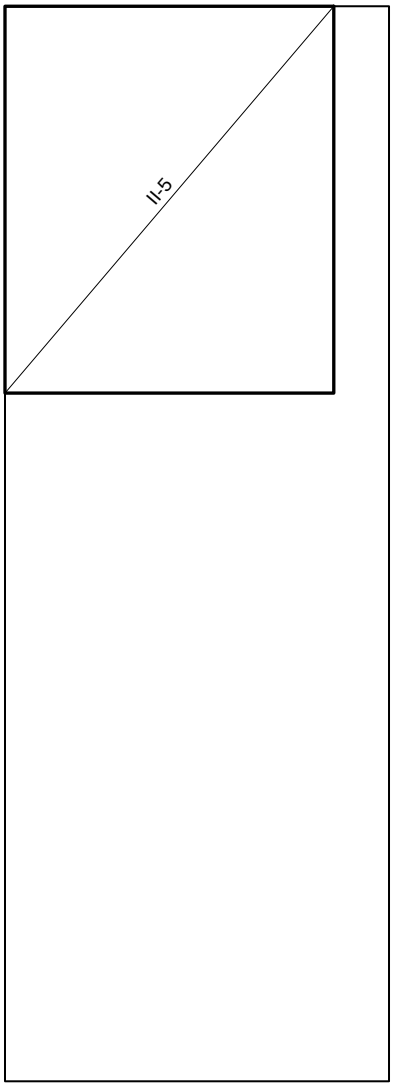
Mreže - načrt razreza

1x



II-5 184 x 216
II-5 184 x 216
II-3 132 x 116

1x

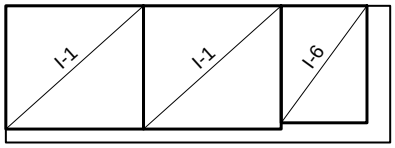


II-5 184 x 216

AB STENE

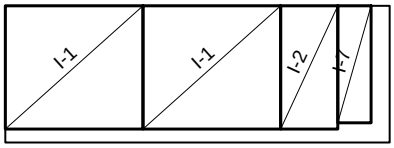
Q-283 (600 cm x 215 cm)

2x



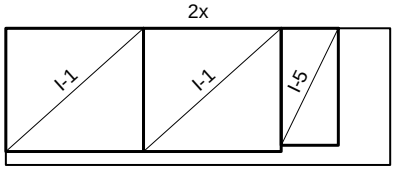
I-1 215 x 194
I-1 215 x 194
I-6 134 x 184

4x



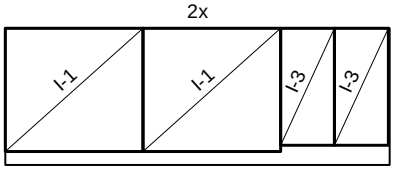
I-1 215 x 194
I-1 215 x 194
I-2 89 x 194
I-7 52 x 184

2x



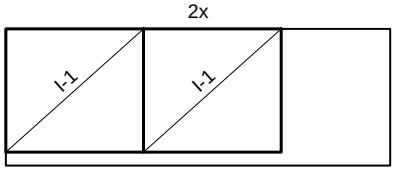
I-1 215 x 194
I-1 215 x 194
I-5 89 x 184

2x



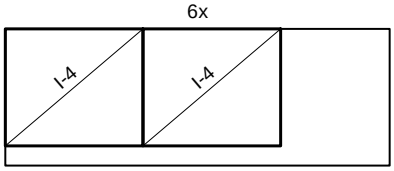
I-1 215 x 194
I-1 215 x 194
I-3 84 x 184
I-3 84 x 184

2x



I-1 215 x 194
I-1 215 x 194

6x



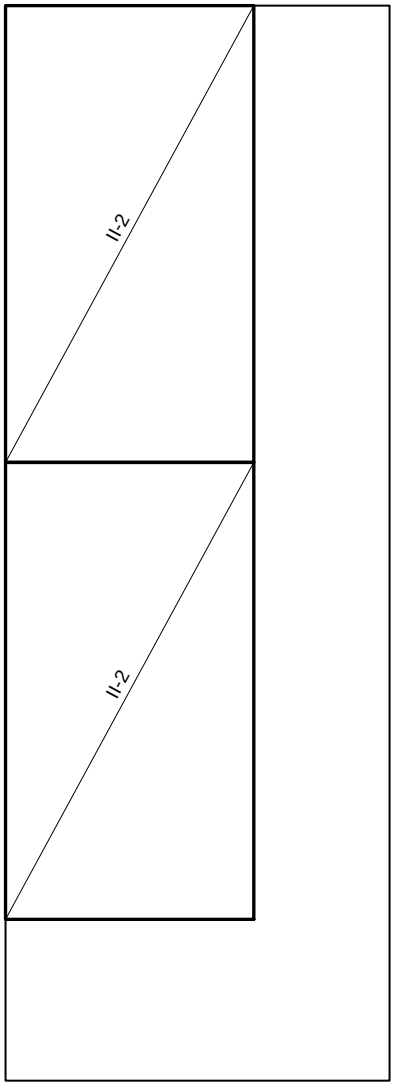
I-4 215 x 184
I-4 215 x 184

ŠOLA HVU CELJE

Mreže - načrt razreza
Q-283 (215 cm x 600 cm)

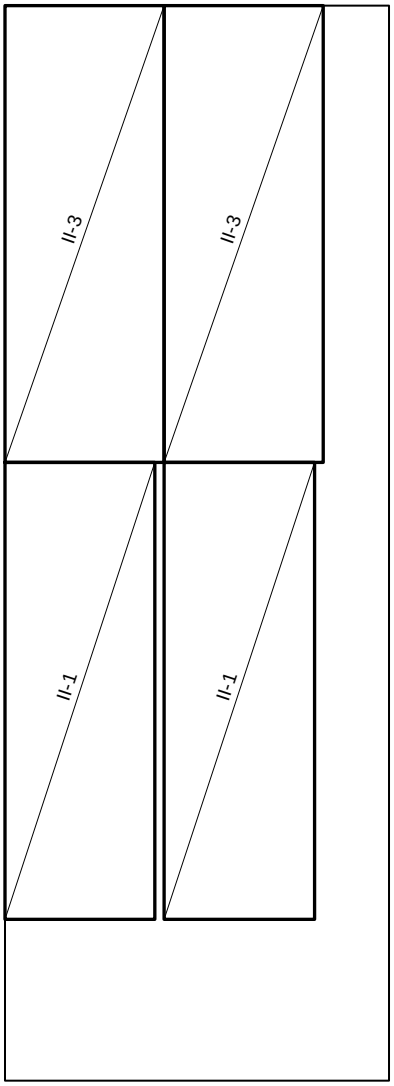
1x

II-2 139 x 255
II-2 139 x 255

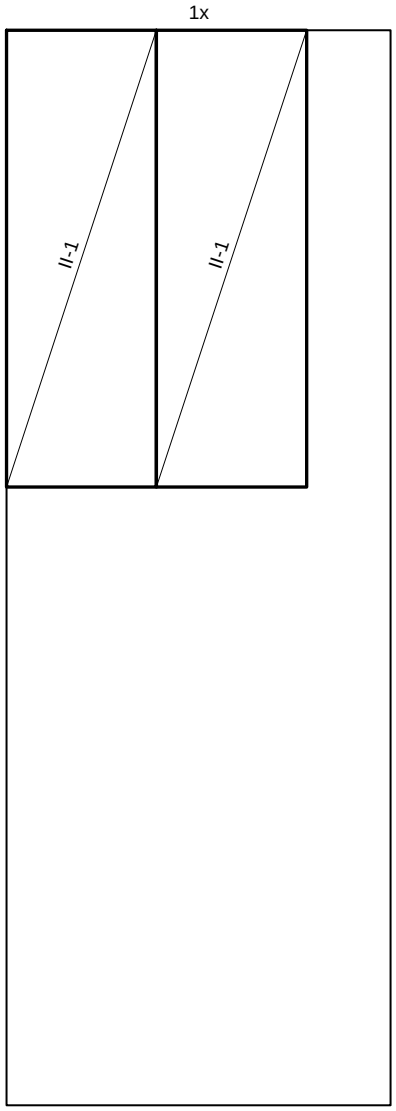


1x

II-3 89 x 255
II-3 89 x 255
II-1 84 x 255
II-1 84 x 255



Mreže - načrt razreza



II-1 84 x 255
II-1 84 x 255