INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

NASLOVNA STRAN NAČRTA

OSNOVNI PODATKI O GRADNJI

naziv gradnje: VEČNAMENSKI OBJEKT

kratek opis gradnje: Izgradnja novega večnamenskega objekta – gasilskega doma za garažo za gasilske avtomobile na Planini pri Sevnici

vrste gradnje:
- ☑ novogradnja - novozgrajen objekt
- ☐ novogradnja - prizidava
- ☐ rekonstrukcija
- ☐ sprememba namembnosti
- ☐ odstranitev

DOKUMENTACIJA

vrsta dokumentacije: PZI

številka projekta: 06/2021

☐ sprememba dokumentacije

PODATKI O NAČRTU

strokovno področje načrta: NAČRT S PODROČJA GRADBENIŠTVA
GRADBENE KONSTRUKCIJE / POSNETEK STANJA

številka načrta: 62/21-K

datum izdelave: marec 2022

PODATKI O IZDELOVALCU NAČRTA

ime in priimek pooblaščenega inženirja: Uroš Žvan, univ. dipl. inž. gr.

identifikacijska številka: IZS G - 0028

podpis pooblaščenega inženirja:

UROŠ ŽVAN
univ. dipl. inž. grad.
IZS G-0028

PODATKI O PROJEKTANTU

projektant (naziv družbe): ENGENERIJA, VID ŽOGAN s.p.

naslov: Zdraviliški trg 15, 3250 Rogaška Slatina

vodja projekta: Vid Žogan, univ. dipl. inž. gr.

identifikacijska številka: IZS G - 3879

podpis vodja projekta:

odg. oseba projektanta: Vid Žogan

podpis odg. osebe projektanta

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

KAZALO VSEBINE NAČRTA

NASLOVNA STRAN NAČRTA ... 1
KAZALO VSEBINE NAČRTA ... 2
TEHNIČNO POROČILO ... 3
STATIČNI RAČUN ... 5
- ŠPIROVCI ... 6
  - PODATKI O RAČUNSKEM MODELU ... 6
  - OBTEŽBA ... 8
  - STATIČNA ANALIZA ... 15
  - DIMENZIONIRANJE ... 20
- STOPNICE ... 21
  - PODATKI O RAČUNSKEM MODELU ... 21
  - OBTEŽBA ... 22
  - STATIČNA ANALIZA ... 25
  - DIMENZIONIRANJE ... 26
- IZRAČUN 3D MODELA ... 28
  - PODATKI O RAČUNSKEM MODELU ... 28
  - OBTEŽBA ... 42
  - MODALNA ANALIZA ... 50
  - SEIZMIČNA ANALIZA ... 51
  - STATIČNA ANALIZA ... 54
  - DIMENZIONIRANJE (BETON) ... 84

RISBE:
- OPAŽNO ARMATURNA RISBA TEMELJNE PLOŠČE S PROTIZMRZLINSKIM ZOBOM ... list 1
- KOSOVNICA ARMATURE K LISTU 1
- OPAŽNO ARMATURNA RISBA STOPNIŠČA ... list 2
- KOSOVNICA ARMATURE K LISTU 2
- OPAŽNO ARMATURNA RISBA AB STEBROV IN VERTIKALNIH VEZI ... list 3
- KOSOVNICA ARMATURE K LISTU 3
- OPAŽNO ARMATURNA RISBA AB STEN V PRITLIČJU ... list 4
- KOSOVNICA ARMATURE K LISTU 4
- OPAŽNO ARMATURNA RISBA AB PLOŠČE IN NOSILCEV NAD PRITLIČJEM ... list 5
- KOSOVNICA ARMATURE K LISTU 5
- OPAŽNO ARMATURNA RISBA AB PLOŠČE NAD GARAŽO IN ATIKE ... list 6
- KOSOVNICA ARMATURE K LISTU 6
- OPAŽNO ARMATURNA RISBA AB VERTIKALNIH ELEMENTOV V NADSTROPJU IN MANSARDI ... list 7
- OPAŽNO ARMATURNA RISBA AB STEN V 1. NADSTROPJU ... list 8
- OPAŽNO ARMATURNA RISBA AB PLOŠČE IN NOSILCEV NAD NADSTROPJEM ... list 9
- KOSOVNICA ARMATURE K LISTOM 7, 8 IN 9
- OPAŽNO ARMATURNA RISBA AB NOSILCEV IN POŠEVNIH VEZI ZATREPNIH ZIDOV ... list 10
- KOSOVNICA ARMATURE K LISTU 10
- REKAPITULACIJA ARMATURE
- RISBA LESENEGA OSTREŠJA ... list 11

PRILOGA:
- GEOTEHNIČNO POROČILO

TEHNIČNO POROČILO

1 PODATKI O INVESTITORJU IN OBJEKTU

Investitor PGD Planina pri Sevnici ima namen na Planini pri Sevnici zgraditi nov Gasilski dom

2 OPIS

UMESTITEV OBJEKTA IN TEMELJNA TLA

Stavba bo zgrajena na blagem pobočju ob glavni cesti proti Brdu. Pritličje bo na zaledni strani vkopano, ob cesti pa bo tlak pritličja na nivoju zunanje ureditve.

Za širše območje je bilo v fazi priprave OPPN izdelano geološko-geomehansko poročilo, ki ga je izdelalo podjetje Geogaia d.o.o., ki omenja nevarnost plazenja pobočja na mestu gradnje. Poročilo predvideva tudi potrebne podrobnejše preiskave v nadaljnjih fazah projektiranja.

V fazi PZI je bilo izdelano poročilo »Izvedba temeljenja gasilskega doma Planina nad Sevnico«, ki ga je izdelalo podjetje GEOEKSPERT PODJETJE ZA UPORABNO GEOTEHNIKO, Igor Resanovič, dipl. inž. geotehnike s.p. Poročilo predvideva izvedbo plitkega temeljenja na pasovnih temeljih ali temeljni plošči.

V peščenih meljih na globini 80 cm je pričakovati nosilnost temeljnih tal $R_d/A' = 140$ kPa. Dodatni pogoj geomehanskega poročila je, da se temelji izvedejo v homogenih in stabilnih tleh.

Med izvedbo zemeljskih del in temeljenja je nujno zagotoviti geomehanski nadzor, ki naj z vpisom v gradbeni dnevnik potrdi ustreznost temeljenja oziroma poda dodatne zahteve.

KONSTRUKCIJA OBJEKTA

Objekt bo temeljen na temeljni plošči karakteristične debeline 30 cm. V območju garaž, kjer bo zgornja površina temeljne plošče predstavljala hkrati povozno površino bo plošča izvedena z zgornjim robom v naklonu in bo njena debelina znašala od 30 do 36 cm.

Na obodu, kjer pritličje ni vkopano v teren bo plošči dodan protizmrzlinski zob, ki bo segal pod mejo zamrzovanja.

V garažah bo površina temeljne plošče finalno zaglajena in obdelana z epoxi premazom.

Temeljna plošča bo izdelana iz betona C30/37 XD2/XM1. Armirana bo s palično in mrežno armatiro S500B.

Obodne stene pritličja, ki bodo zasute in obremenjene z zemeljskimi pritiski bodo izdelane iz armiranega betona v debelini 30 cm. Enake debeline bodo stebri oziroma slopi v pritličju na cestni fasadi.

Notranji zidovi bodo zidani iz opeke deklarirane tlačne trdnosti 10 MPa z malto MM5. Opečni zidovi bodo debeline 20 in 30 cm in bodo ojačani z armiranobetonskimi zidnimi vezmi različnih presekov.

Obodne armiranobetonske stene bodo izdelane iz betona C25/30 XC1, stebri in vertikalne vezi pa iz betona C25/30 XC1/XD2. Stebri bodo armirani s palično, stene pa tudi z mrežno armaturo S500B.

Nad pritličjem bo izvedena armiranobetonska plošča debeline 20 cm, ki bo podprta z opečnimi zidovi in armiranobetonskimi stenami v pritličju ter stebri in nosilci nad stebri v pritličju.

Nad garažo, ki obsega samo pritličje in je prekrita z zeleno streho bo izveden sistem prečnih nosilcev preseka 30×70 cm, preko njih pa armiranobetonska plošča debeline 27 cm.

Plošča in nosilci bodo izdelani iz betona C25/30 XC2 in armirani z mrežasti in palično armaturo S500B.

Del oboda nadstropja in mansarde bodo tvorili AB okvirji del pa armiranobetonske stene ki bodo, prav tako kot v pritličju ,izvedene iz armiranega betona v debelini 30 cm. Notranji zidovi bodo zidani z opeko deklarirane tlačne trdnosti 10 MPa in z malto MM5. Ojačani bodo z vertikalnimi in poševnimi zidnimi vezmi.

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

V vzdolžni smeri bodo vmesne in slemenska strešna lega podprte z armiranobetonskimi nosilci. Lege bodo konstruktivnega preseka, sidrane v AB nosilce z navojnimi palicami Ø16 mm na razmiku največ 2 m.

AB nosilci bodo izdelani iz betona C25/30 XC1 in armirani z armaturo S500B.

Špirovci bodo preseka 10/20 cm. V lege bodo sidrani s po dvema lesnima vijakoma Ø8 mm na spoj.

Vse lesene konstrukcije bodo izdelane iz lesa iglavcev trdnostnega razreda C24.

3 RAČUNSKI MODEL IN UPORABLJENI STANDARDI

Konstrukcija je preračunana kot tri dimenzionalni model, ki odraža realno obnašanje konstrukcije. Izračun je izveden s programom Tower 8.

Upoštevani so naslednji vplivi: stalna obtežba, koristna obtežba, obtežba snega, vplivi vetra in seizmični vplivi.

Izvedena je modalna analiza konstrukcije in seizmični preračun.

Pri modalni analizi je upoštevan polovični modul elastičnosti, ki odraža razpokanost konstrukcije. Mase so pri modalni analizi razporejene na nivoju medetažnih plošč.

Pri seizmični analizi je upoštevana IV. kategorija pomembnosti objekta (faktor pomembnosti 1,4). Upoštevan je tip tal C, pospešek temeljnih tal 0,15×g, faktor obnašanja 1,5 in dodatna ekscentričnost 0,05×Li.

Pri izračunu temeljenja je upoštevan modul reakcije tal 10.000 kN/m^3. Zemeljski pritiski na stene so izračunani za specifično težo zemljine 19,5 kN/m^3 in strižni kot 28,5°.

Vsi vplivi na konstrukcijo, kombinacije vplivov, izračuni in dimenzioniranje je izvedeno skladno s standardi družine Evrokod SIST EN 1990 do SIST EN 1998.

4 ZAKLJUČEK

Stavba zgrajena skladno s tem načrtom gradbene konstrukcije bo, ob solidni izvedbi, izpolnjevala bistveni zahtevi mehanske odpornosti in stabilnosti.

v Mariboru, marec 2022

sestavil:

Uroš Žvan, u.d.i.g.

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

STATIČNI RAČUN

ŠPIROVCI 6
PODATKI O RAČUNSKEM MODELU 6
OBTEŽBA 8
STATIČNA ANALIZA 15
DIMENZIONIRANJE 20
STOPNICE 21
PODATKI O RAČUNSKEM MODELU 21
OBTEŽBA 22
STATIČNA ANALIZA 25
DIMENZIONIRANJE 26
IZRAČUN 3D MODELA 28
PODATKI O RAČUNSKEM MODELU 28
OBTEŽBA 42
MODALNA ANALIZA 50
SEIZMIČNA ANALIZA 51
STATIČNA ANALIZA 54
DIMENZIONIRANJE (BETON) 84

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

SPIROVCI 10/20 cm

Basic model properties, Input data - Structure

GEOMETRIC DATA

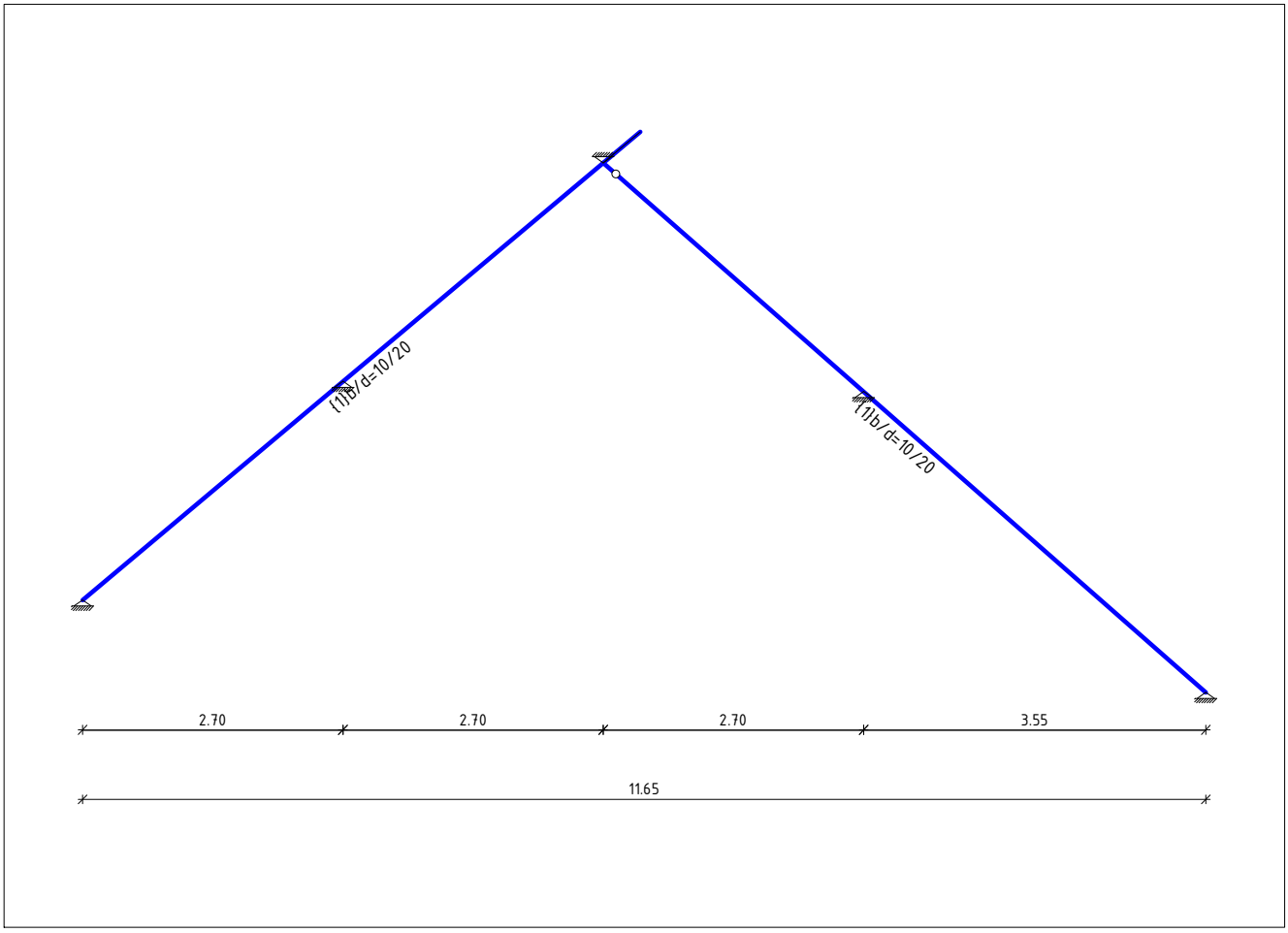


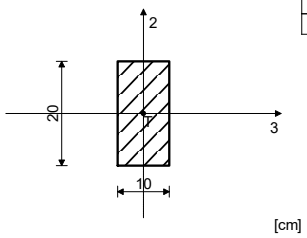
Table of materials

No	Material name	E[kN/m2]	μ	γ[kN/m3]	αt[1/C]	Em[kN/m2]	μm
1	Les-Listavci-Lamelirani	1.350e+7	0.20	7.00	1.000e-5	1.350e+7	0.20

Beam sets

Set: 1 Section: b/d=10/20, Approx. eccentricity

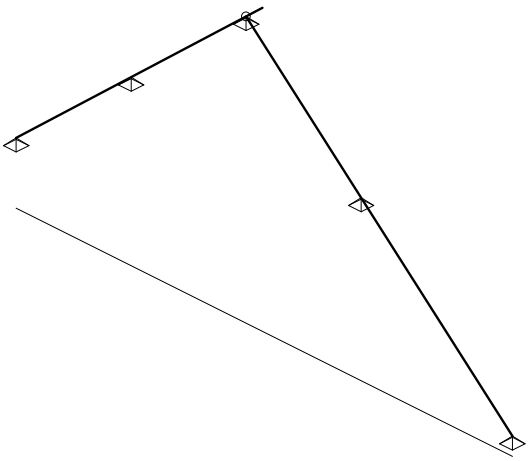
Mat.	A1	A2	A3	I1	I2	I3
1 - Les-Listavci-...	2.000e-2	1.667e-2	1.667e-2	4.578e-5	1.667e-5	6.667e-5



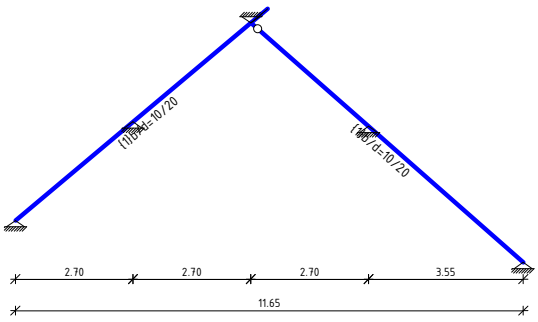
Point support sets

Set	K,R1	K,R2	K,R3	K,M1	K,M2	K,M3
1	1.000e+10	1.000e+10	1.000e+10			

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR



Isometric



Frame disposition

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Input data - Load

LOAD ANALYSIS

VPLIVI NA KONSTRUKCIJO - STREHA

STALNI VPLIVI:

- opečna kritina.....0,45 kN/m^2
- prečne letve 5 x 4 cm
  vzdolžne letve 8 x 5 cm.....0,10 kN/m^2
- paropropustna folija
  lesen opaž .....0,08 kN/m^2
- špirovec 10 x 20 cm .....avtomatično
- toplotna izolacija .....0,1 kN/m^2
- parna zapora
- ALU podkonstrukcija 5 cm .....
- mavčnokartonske plošče 1,25 cm .....0,3 kN/m^2
- SKUPAJ .....1,03 kN/m^2

SPREMENLJIVI VPLIVI:

- sneg (565m n.m.v., cona A2, μ1=0,8 .....1,66 kN/m^2
- koristna obtežba (kategorija strehe H).....0,40 kN/m^2
- veter (cona 1, 565m n.m.v., kat. Terena III)....glej izrčun vetrne obtežbe

LOAD COMBINATIONS

Different envelopes of combinations are also used in the processing of results. They are specially marked with the number of load cases that constitute the envelope.

Load cases list

LC	Name
1	Permanent structural + non structural (g)
2	Variable (category H)
3	Snow 1
4	Snow 2
5	Wind 1 (pressure)
6	Wind 2 (suction)
7	Comb.: ULS1 - dominant imapct snow 1 (1.35xI+1.5xIII+ +0.9xV)
8	Comb.: ULS2 - dominant imapct snow 2 (1.35xI+1.5xIV+ +0.9xV)

LC	Name
9	Comb.: ULS3 - dominant imapct H (1.35xI+1.5xII)
10	Comb.: ULS4 - dominant imapct wind 1 (1.35xI+ +0.75xIII+1.5xV)
11	Comb.: ULS5 - dominant imapct wind 2 (I+1.5xVI)
12	Comb.: SLS1 - dominant imapct snow 1 (I+III+0.6xV)
13	Comb.: SLS2 - dominant imapct snow 2 (I+IV+0.6xV)
14	Comb.: SLS3- dominant impact H (I+II)
15	Comb.: SLS4 - dominant imapct wind 1 (I+0.5xIII+V)
16	Comb.: SLS 5- dominant impact wind 2 (I+VI)

OSNOVNE VREDNOSTI OBTEŽBE SNEGA

V SKLADU S SIST EN 1991-1-3:2005

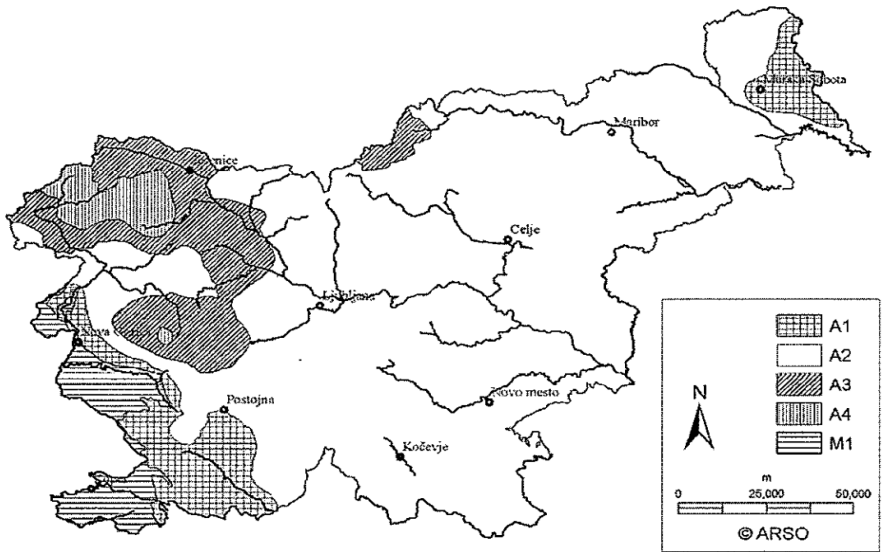
Nadmorska višina	A	565.0	m	
Naklon strehe	α	40.0	°	Tip strehe: DVOKAPNICA
Vrsta terena: OBIČAJEN				Zdrs snega: NE

Karakteristična obtežba snega na tleh

CONA A2 — s_k 2.07 kN/m^2

Obtežba snega

Koeficient izpostavljenosti	C_e	1	
Toplotni koeficient	C_t	1	
Oblikovni koeficient strehe	μ1	0.80	
Obtežba snega na strehi	**s**	**1.66**	kN/m^2



STREHE, KI MEJIJO NA VIŠJE OBJEKTE ALI SO BLIZU NJIH [KOPIČENJE SNEGA]

V SKLADU S SIST EN 1991-1-3:2005

Geometrijski podatki

Dolžina višjega dela objekta	b_1	20.30	m	Tip strehe, ki meji na višji objekt
Dolžina nižjega dela objekta	b_2	15.30	m	ENOKAPNICA
Višinska razlika med višjim in nižjim delom	h	1.54	m	Možnost zdrsa snega?
Naklon strehe, ki meji na višji objekt	α	40.00	°	NE

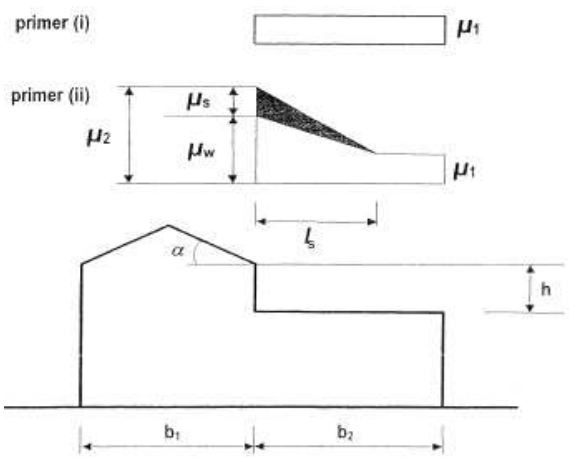
Oblikovni koeficienti

Prostorninska teža snega	γ	2.00	kN/m^3
Karakteristična obtežba snega na tleh	s_k	2.07	kN/m^2
Oblikovni koeficient zaradi zdrsa iz višje etaže	μ_S	0.00	
Oblikovni koeficient zaradi vetra	μ_W	1.49	
Osnovni oblikovni koeficient strehe, ki meji na v	μ_1	0.80	
Oblikovni koeficient strehe, ki meji na višji obje	μ_2	1.49	

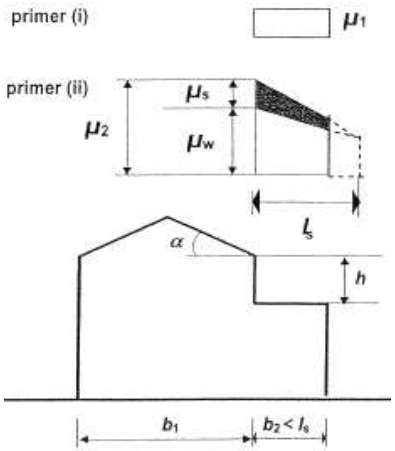
Obtežba snega

Dolžina snežnega nanosa	l_s	3.08	m
b2<ls?	NE glej spodnjo shemo 2		
Obtežba snega (l=0m)	**s_1**	**3.08**	kN/m^2
Obtežba snega (l=max)	**s_2**	**1.66**	kN/m^2

shema 1



shema 2



Ta primer velja, kjer je $b_2 < l_s$.

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

OSNOVNE VREDNOSTI OBTEŽBE VETRA

V SKLADU S SIST EN 1991-1-4:2005

Osnovna hitrost vetra:

Področje

	večina Slovenije

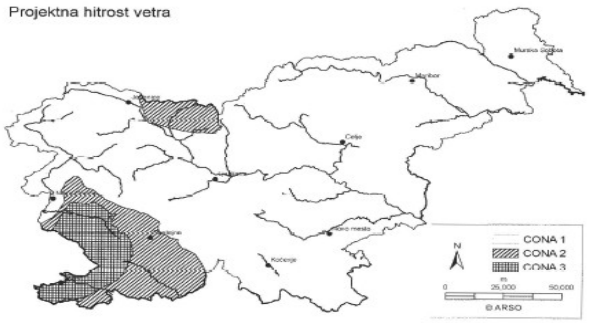
Nadmorska višina **565** m

Temeljna osnovna hitrost vetra

Vb,0=	**20,00**	**m/s**
Cdir=	1,00	faktor smeri
Csesaon=	1,00	faktor letnega časa

Osnovna hitrost vetra je:

Vb=	**20,00**	**m/s**



Hitrosti vetra:

Cona 1 (večina Slovenije):
20 m/s pod 800m
25 m/s od 800 m do 1600 m
30 m/s od 1600 m do 2000 m
40 m/s nad 2000 m

Cona 2 (Trnovski gozd, Notranjska, Karavanke):
25m/s pod 1600 m
30 m/s od 1600 do 2000 m
40 m/s nad 2000 m

Cona 3 (Primorje, Kras in del Vipavske doline):
30 m/s

Srednji veter

Kategorija terena

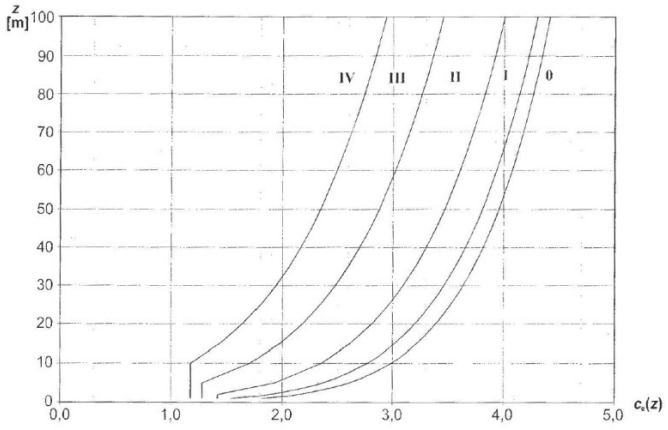
	#VALUE!

Višina nad tlemi [h]	z_e =	**11,00** m
Kat II, refer. vrednost	$z_{0,II}$=	0,05 m
Hrapavostna dolžina	z_0=	0,050 m
Najmanjša višina	z_{min}=	2,00 m
Največja višina	z_{max}=	200,00 m
Faktor terena	k_r=	0,19
Faktor hrapavosti	$C_r(z)$=	**1,02**
Srednja hitrost vetra	$v_m(z)$=	**20,50** m/s

Vetrna turbolenca	$I_v(z)$=	**0,19**
Osnovni tlak	q_b=	**0,25** kN/m^2
Tlak pri največjih sunkih	$q_p(z)$=	**0,60** kN/m^2
Faktor izpostavljenosti	$C_e(z)$=	**2,41**

Preglednica 4.1: Kategorije terena in terenski parametri

	Kategorija terena	z_0 m	z_{min} m
0	Morsko ali obalno področje, izpostavljeno proti odprtemu morju	0,003	1
I	Jezersko ali ravninsko področje z zanemarljivim rastlinjem in brez ovir	0,01	1
II	Področje z nizkim rastlinjem (trava) in posameznimi ovirami (drevesi, stavbami) na razdalji najmanj 20 višin ovir	0,05	2
III	Področja z običajnim rastlinjem ali stavbami ali s posameznimi ovirami na razdalji največ 20 višin ovir (vasi, podeželsko okolje, stalni gozd)	0,3	5
IV	Področje, kjer je najmanj 15 % površine pokrite s stavbami s povprečno višino več kot 15 m	1,0	10
OPOMBA: Kategorije terena so ilustrirane v A.1.			



Slika 4.2: Diagrami faktorja izpostavljenosti $c_e(z)$ za $c_0 = 1,0$, $k_l = 1,0$

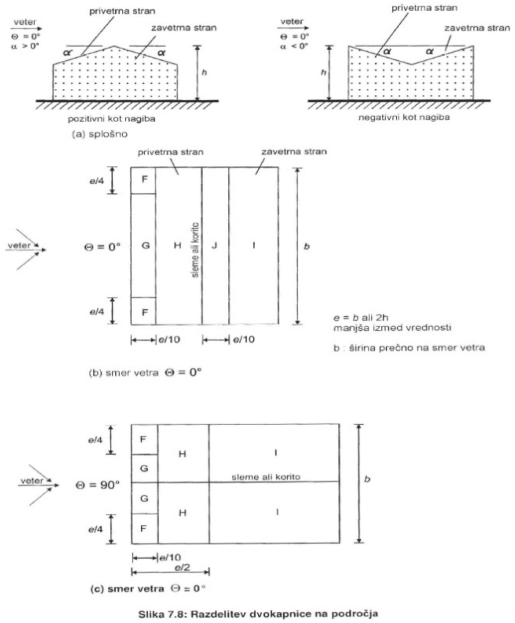
PRITISK VETRA NA STREHO DVOKAPNICO — WIND PRESSURE ON THE ROOF OF A TWO-DROP

V SKLADU S SIST EN 1991-1-4:2005

Referenčna višina nad tlemi	$Z_e = h =$	**11,00** *m*
Višina objekta	***h =***	11,00 *m*
Širina prečno na veter	***b =***	35,00 *m*
Dolžina v smeri vetra	***d =***	12,00 *m*
Tlak pri največjih sunkih vetra	$q_p(Z)$	**0,60** *kN/m²*

Nagib strehe	***α =***	**40,00** °

Dimenzije con	***e =***	22,00 *m*
	e/4 =	5,50 *m*
	b - 2 • e/4 =	24,00 *m*
	e/10 =	2,20 *m*
	e/2 =	11,00 *m*



Slika 7.8: Razdelitev dvokapnice na področja

Veter pravokotno na kap

Θ = 0°

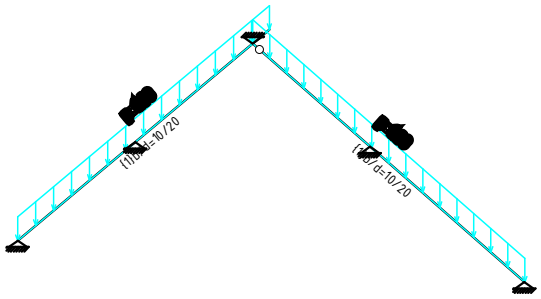
Zunanji pritiski vetra po conah		F		G		H		I		J	
		srk	pritisk	srk	pritisk	srk	pritisk	srk	srk	srk	srk
Nagib strehe α = 40	$C_{pe,10}$	-0,17	0,70	-0,17	0,53	-0,07	0,53	-0,27	0,00	-0,37	0,00
$w_e = Cp_e \cdot q_p(Z)$ [kN/m2]	$w_e =$	**-0,10**	**0,42**	**-0,10**	**0,32**	**-0,04**	**0,32**	**-0,16**	/	**-0,22**	/

Veter vzporedno s kapom

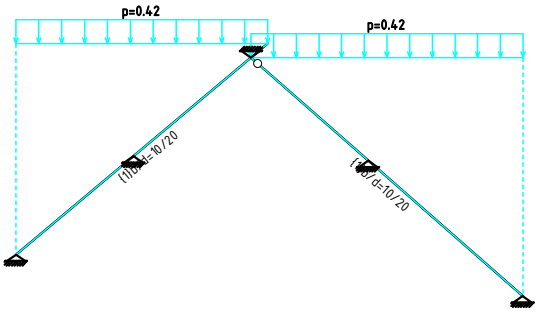
Θ = 90°

Zunanji pritiski vetra po conah		F	G	H	I
		srk	srk	srk	srk
Nagib strehe α = 40	$C_{pe,10}$	-1,10	-1,40	-0,87	-0,50
$w_e = Cp_e \cdot q_p(Z)$ [kN/m2]	$w_e =$	**-0,10**	**-0,10**	**-0,04**	**-0,16**

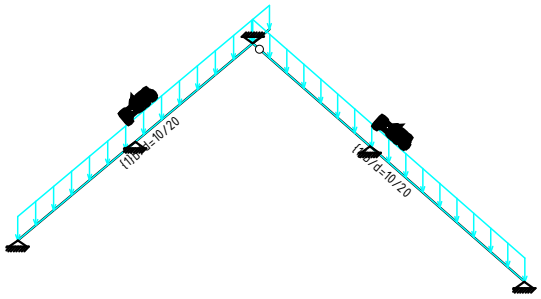
Load 1: Permanent structural + non structural (g)



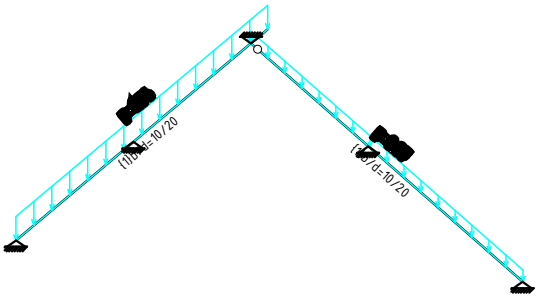
Load 2: Variable (category H)



Load 3: Snow 1

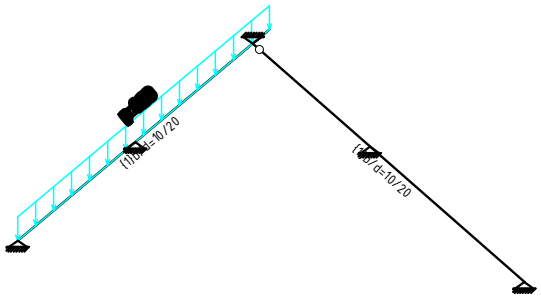


Load 4: Snow 2

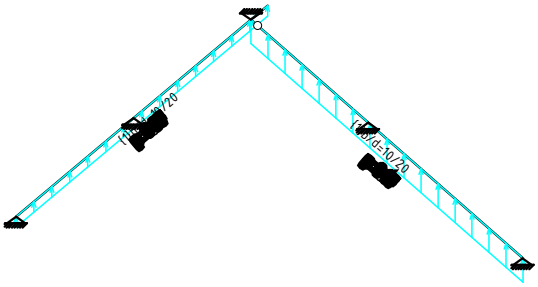


UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 5: Wind 1 (pressure)



Load 6: Wind 2 (suction)

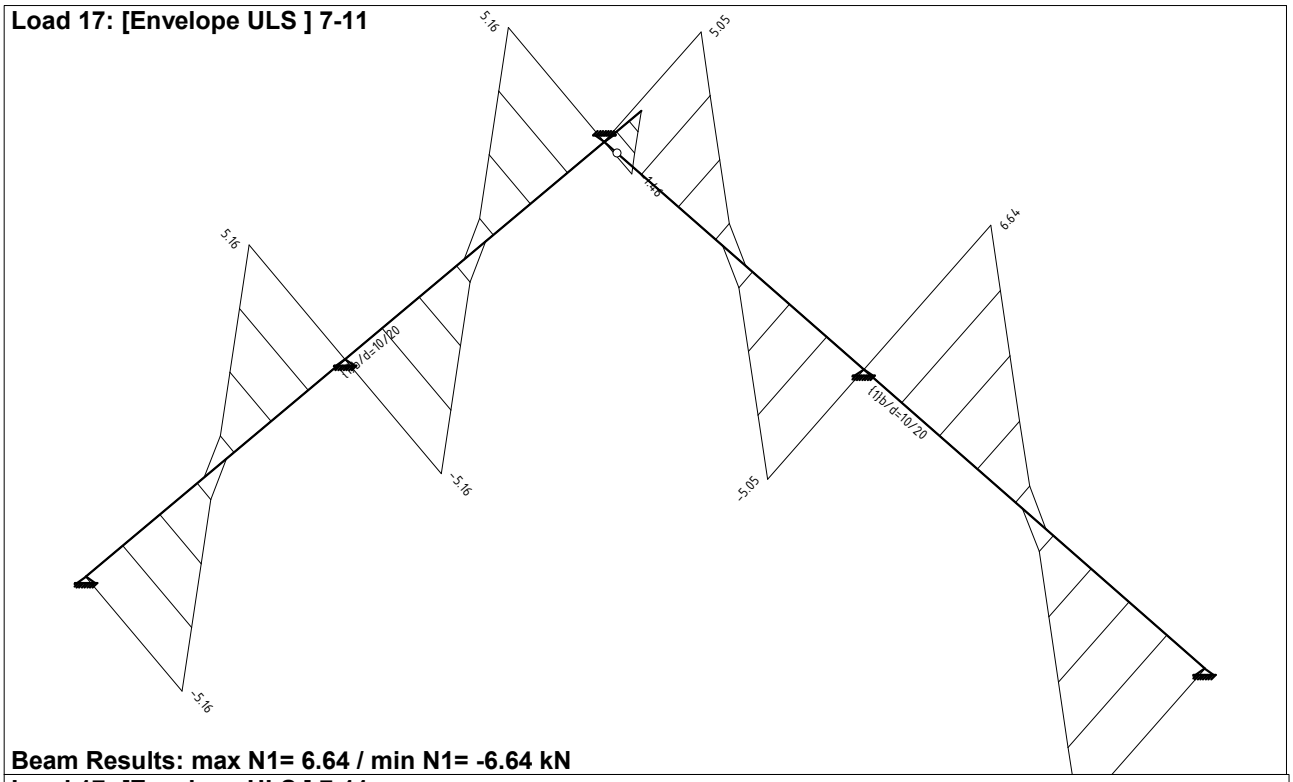


UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Structural analysis

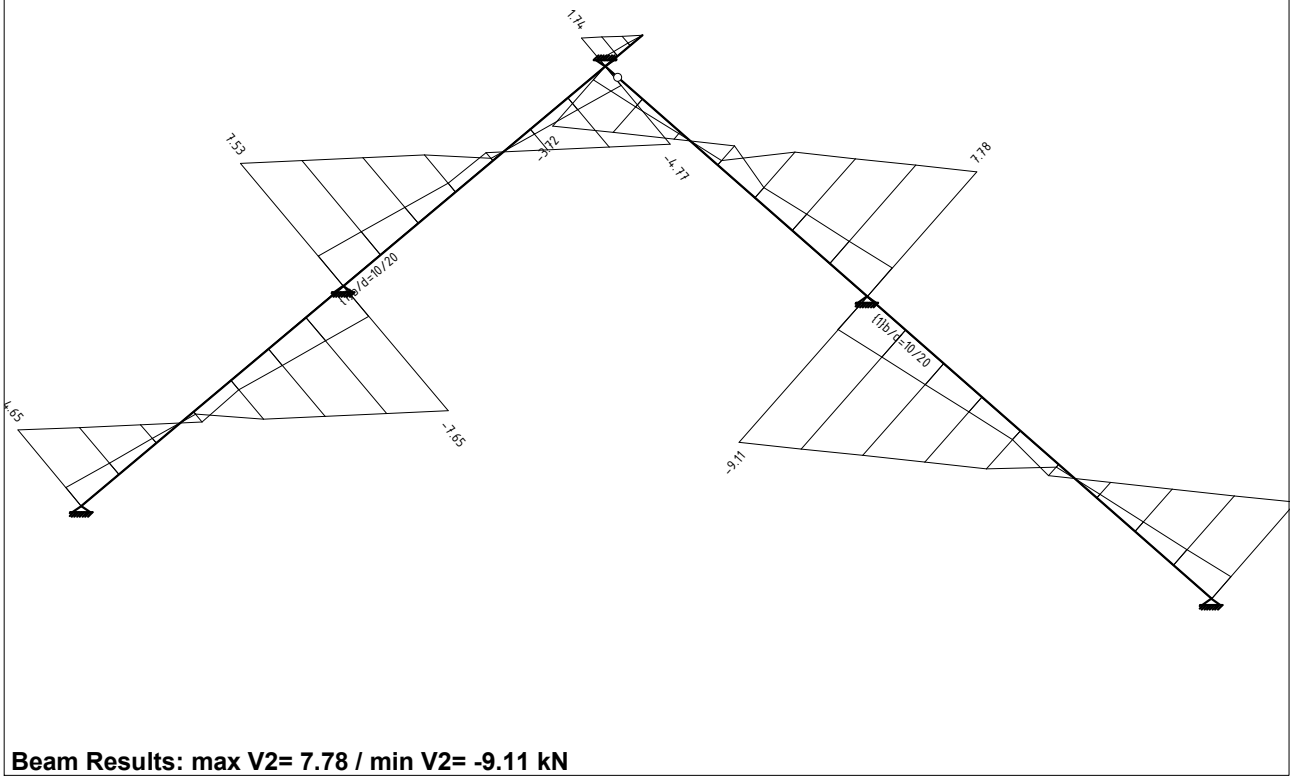
STATIC SOLECITATIONS

Load 17: [Envelope ULS] 7-11



Beam Results: max N1= 6.64 / min N1= -6.64 kN

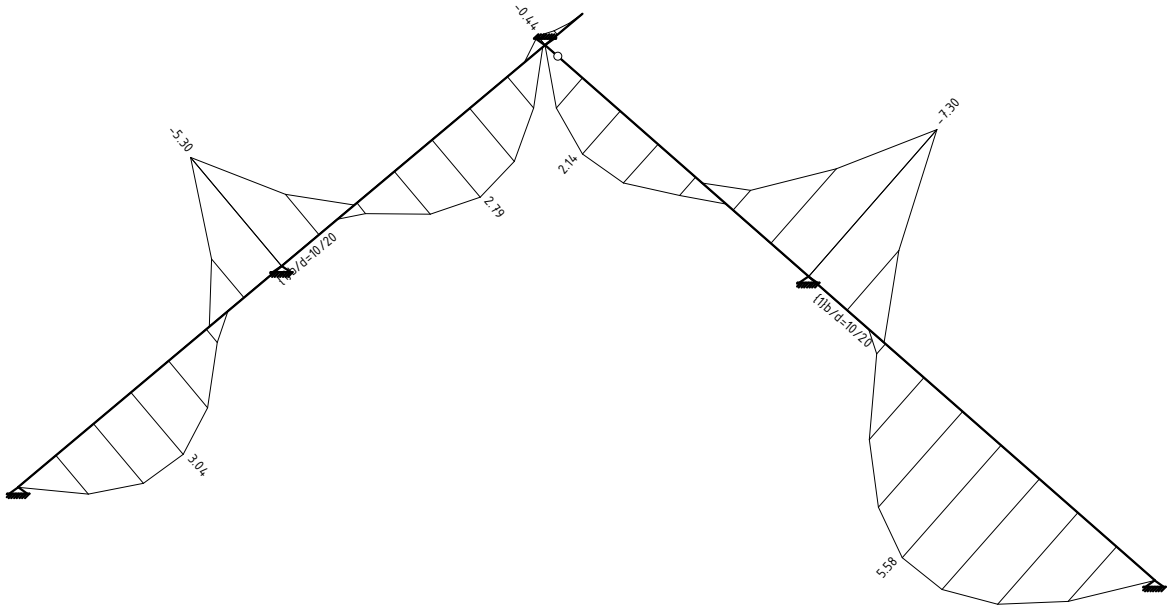
Load 17: [Envelope ULS] 7-11



Beam Results: max V2= 7.78 / min V2= -9.11 kN

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 17: [Envelope ULS] 7-11

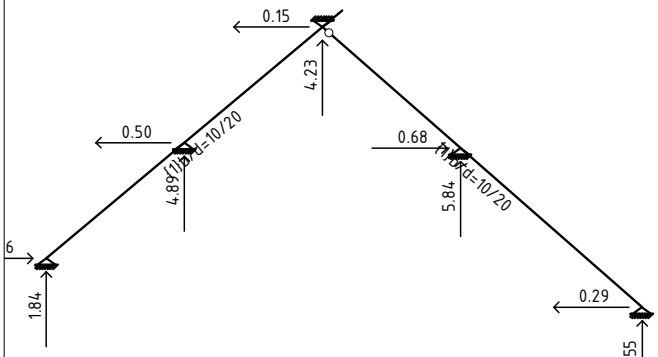


Beam Results: max M3= 5.58 / min M3= -7.30 kNm

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

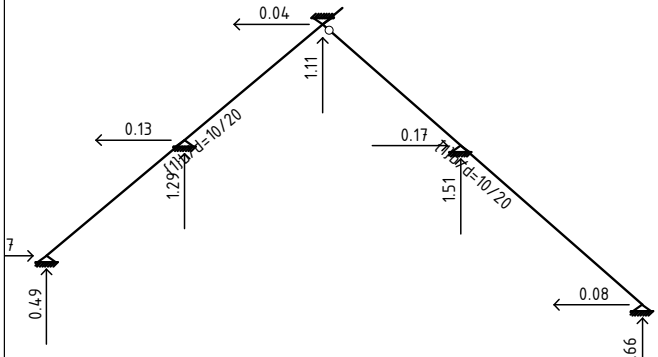
SUPPORT REACTIONS

Load 1: Permanent structural + non structural (g)



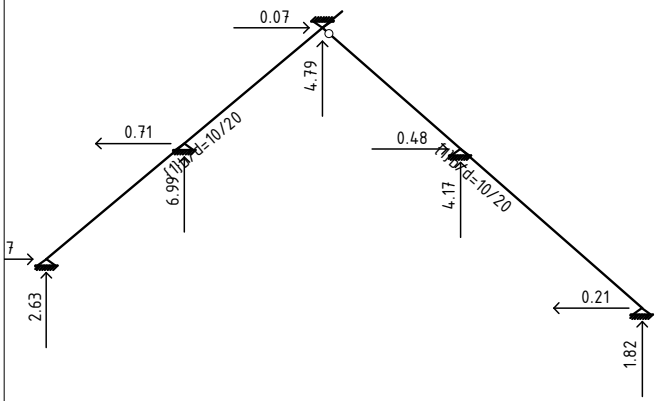
Support Reactions

Load 2: Variable (category H)



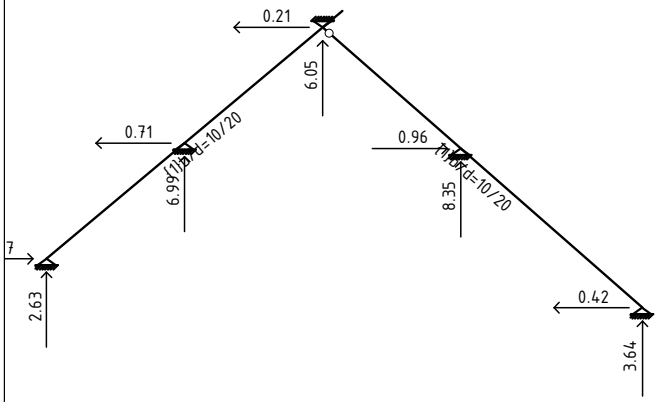
Support Reactions

Load 4: Snow 2



Support Reactions

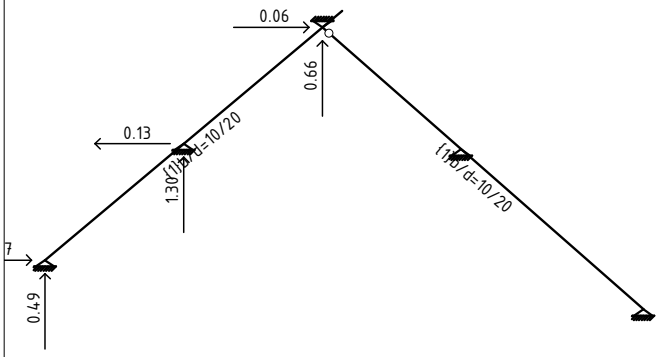
Load 3: Snow 1



Support Reactions

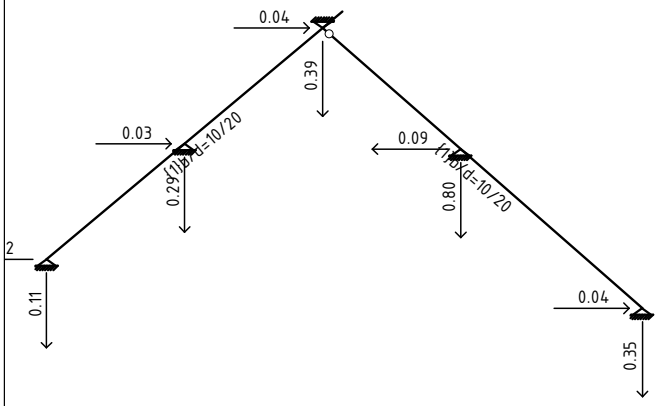
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 5: Wind 1 (pressure)



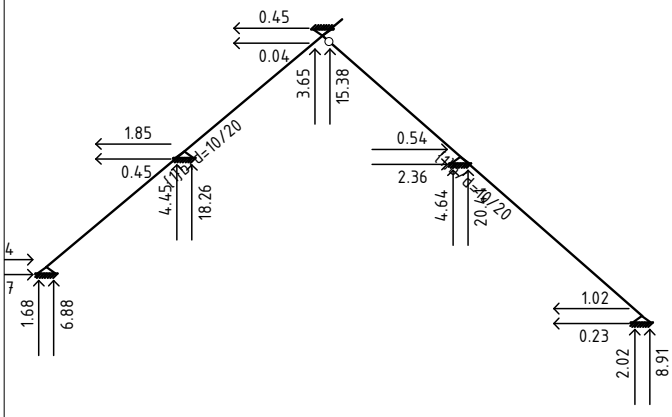
Support Reactions

Load 6: Wind 2 (suction)



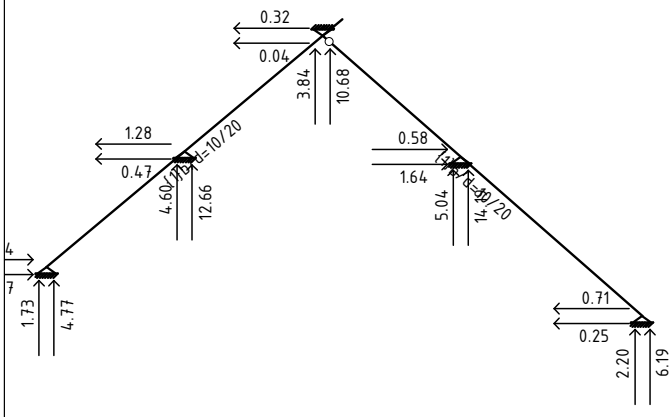
Support Reactions

Load 17: [Envelope ULS] 7-11



Support Reactions (Min/Max)

Load 18: [Envelope SLS] 12-16



Support Reactions (Min/Max)

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

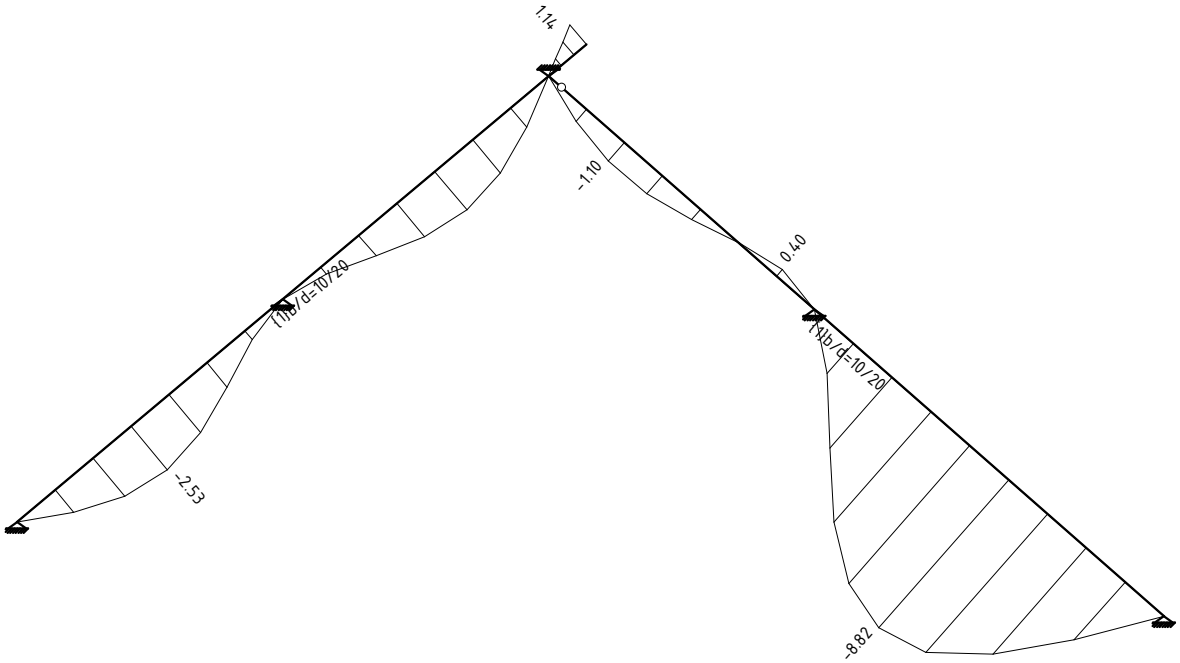
DEFLECTION CONTROL

$\delta_{z,calc} \leq \delta_{z,max}$ $\delta_{z,max} \leq L/250$

$\delta_{z,max}$ = 4700 mm/250 = 18,8 mm $\delta_{z,calc}$ = 8,82 mm

$\delta_{z,calc} < \delta_{z,max}$

Load 17: [Envelope ULS] 7-11

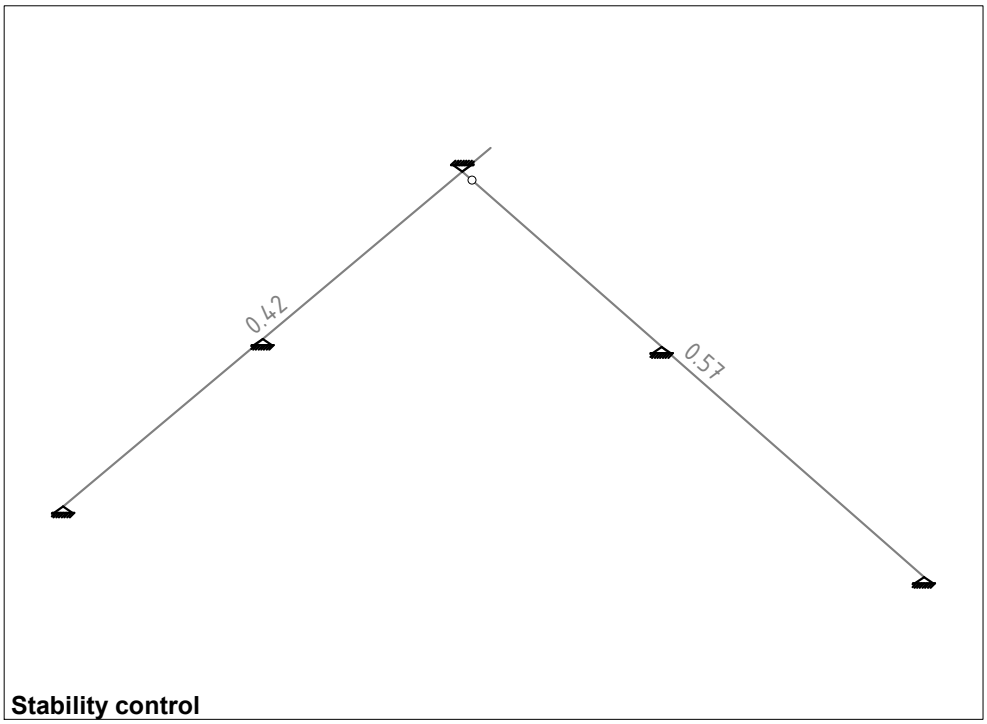


Beam Results: max Zd= 1.14 / min Zd= -8.82 m / 1000

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

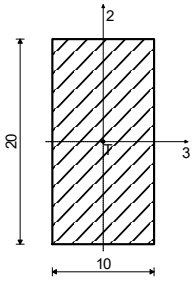
Design (timber)

DIMENSIONING OF RAFTERS b/h=10/20cm, C24



Stability control

BEAM 3-6
Solid timber - softwood - C24
Service class 1
EUROCODE (EN 1995-1-1)



[cm]

UTILISATION FACTORS FOR ALL LOAD CASE COMBINATIONS

7. γ=0.57	12. γ=0.40	10. γ=0.40
8. γ=0.40	9. γ=0.35	13. γ=0.28
15. γ=0.28	14. γ=0.25	16. γ=0.14
11. γ=0.13		

AXIAL STRESSES CONTROL
(load 7, at 359.4 cm from the start of the member)

The axial force design value	Ned =	-5.053 kN
Transversal Force in Axis 2 Direction	V2ed =	7.784 kN
Bending Moment around Axis 3	M3ed =	7.295 kNm

STRESS CONTROL - COMPRESSION AND BENDING
Load type: basic - instantaneous

Rectification Coefficient	Kmod =	1.100
Partial factor for material properties	γm =	1.300
Depth factor - axis 2	Kh_2 =	1.084
Depth factor - axis 3	Kh_3 =	1.000
Factor considering re-distribution of bending stresses	km =	0.700
Characteristic compressive strength	fc,0,k =	21.000 MPa
Design compressive strength	fc,0,d =	17.769 MPa
Characteristic bending strength	fm,k =	24.000 MPa
Design bending strength - axis 2	fm,2,d =	22.023 MPa
Design bending strength about axis 3	fm,3,d =	20.308 MPa
Relative slenderness	λrel,2 =	2.773
Relative slenderness	λrel,3 =	1.386
Design compressive stress	σc,0,d =	0.253 MPa
Section modulus	W3 =	666.67 cm3
Axial Stress Bending around Axis 3	σm3,d =	10.943 MPa

σm3,d <= fm,3,d (10.943 <= 20.308)
Section utilization is 53.9%

COMPRESSION AND BENDING - BIG SLENDERNESS

Deviation from straightness factor	βc =	0.200
Coefficient	k3 =	1.569
Coefficient	k2 =	4.591
Coefficient	kc,3 =	0.434
Coefficient	kc,2 =	0.121

(σc,0,d / (kc_2 x fc,0,d)) + km x (σm3,d / fm,3,d) +
+ σm2,d / fm,2,d <= 1 (0.494 <= 1)
Section utilization is 49.4%

(σc,0,d / (kc_3 x fc,0,d)) + σm3,d / fm,3,d +
+ km x (σm2,d / fm,2,d) <= 1 (0.572 <= 1)
Section utilization is 57.2%

STABILITY CONTROL
Load type: basic - instantaneous

Rectification Coefficient	Kmod =	1.100
Partial factor for material properties	γm =	1.300
Length between lateral restr.points	lef =	472.00 cm
fifth percentile value of the modulus E parallel to the grain	E0.05 =	7400.0 MPa
fifth percentile value of shear modulus parallel to grain	G0.05 =	460.00 MPa
Torsional section modulus	Itor =	4545.5 cm4
Moment of inetrtia	I2 =	1666.7 cm4
Section modulus	W3 =	666.67 cm3
Critical bending stress	σm,crit =	50.700 MPa
Relative buckling slenderness	λrel =	0.688
Coefficient	k_krit =	1.000

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Axial Stress Bending around Axis 3	σm3,d =	10.943 MPa

σm,3,d <= k_krit x fm,3,d (10.943 <= 20.308)

Section utilization is 53.9%

SHEAR STRESSES CONTROL
(load 7, at 359.4 cm from the start of the member)

Transversal Force in Axis 2 Direction	V2ed =	-9.108 kN

STRESS CONTROL – SHEAR		
Load type: basic - instantaneous		
Rectification Coefficient	Kmod =	1.100
Partial factor for material properties	γm =	1.300
Characteristic shear strength	fv,k =	4.000 MPa
Design shear strength	fv,d =	3.385 MPa
Cross Section Surface	A =	200.00 cm2
Actual Shear Stress(Axis 2)	τ2,d =	0.683 MPa

τ2,d <= fv,d (0.683 <= 3.385)

Section utilization is 20.2%

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

STOPNICE

Input data - Structure

Level scheme

Name	z [m]	h [m]
2	3.10	3.10

Name	z [m]	h [m]
1	0.00	

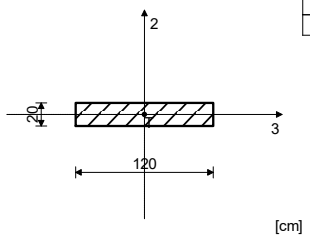
Table of materials

No	Material name	E[kN/m2]	μ	γ[kN/m3]	αt[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

Beam sets

Set: 1 Section: b/d=120/20, Approx. eccentricity

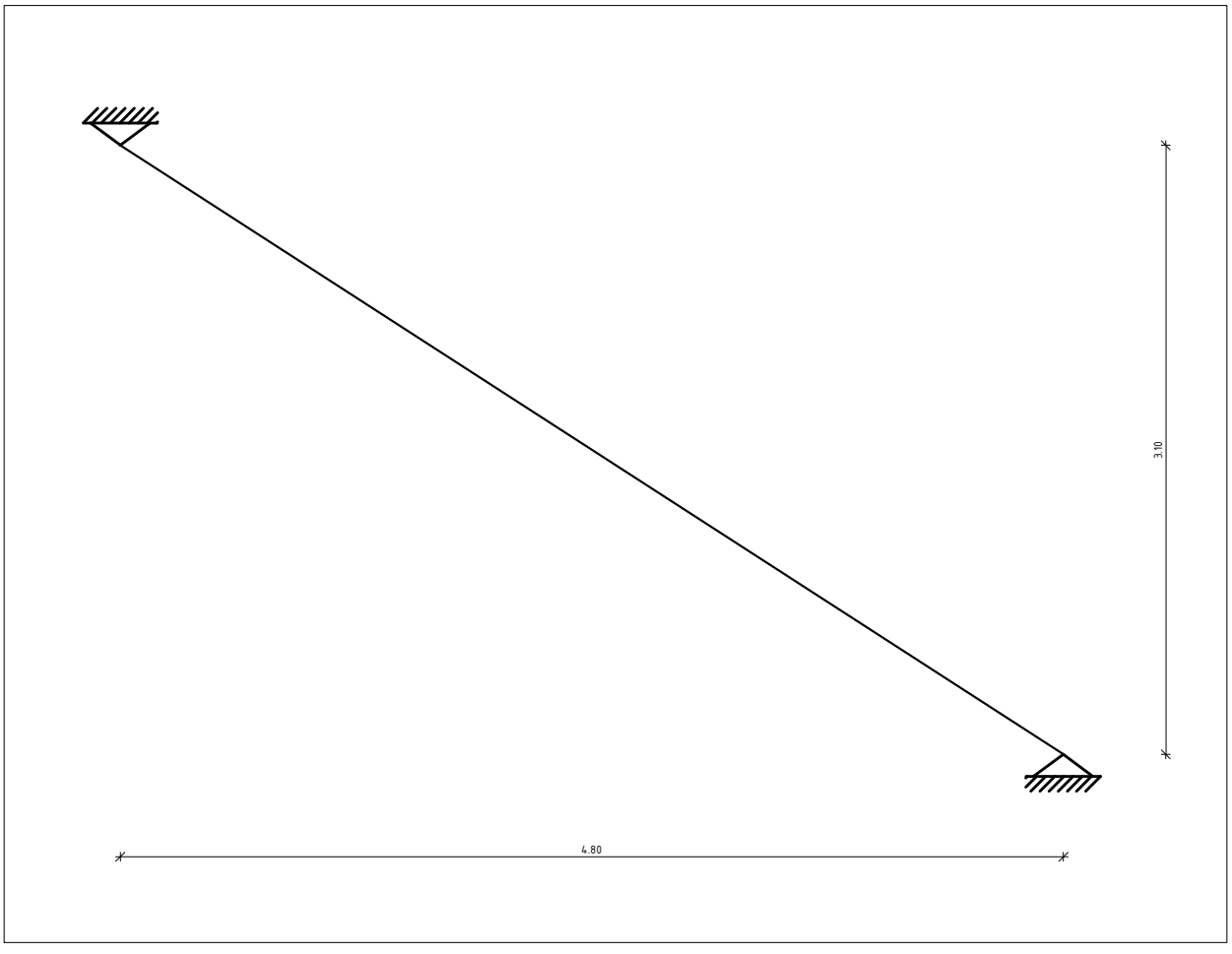
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.400e-1	2.000e-1	2.000e-1	2.864e-3	2.880e-2	8.000e-4



Point support sets

Set	K,R1	K,R2	K,R3	K,M1	K,M2	K,M3
1	1.000e+10	1.000e+10	1.000e+10			

MODEL



INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

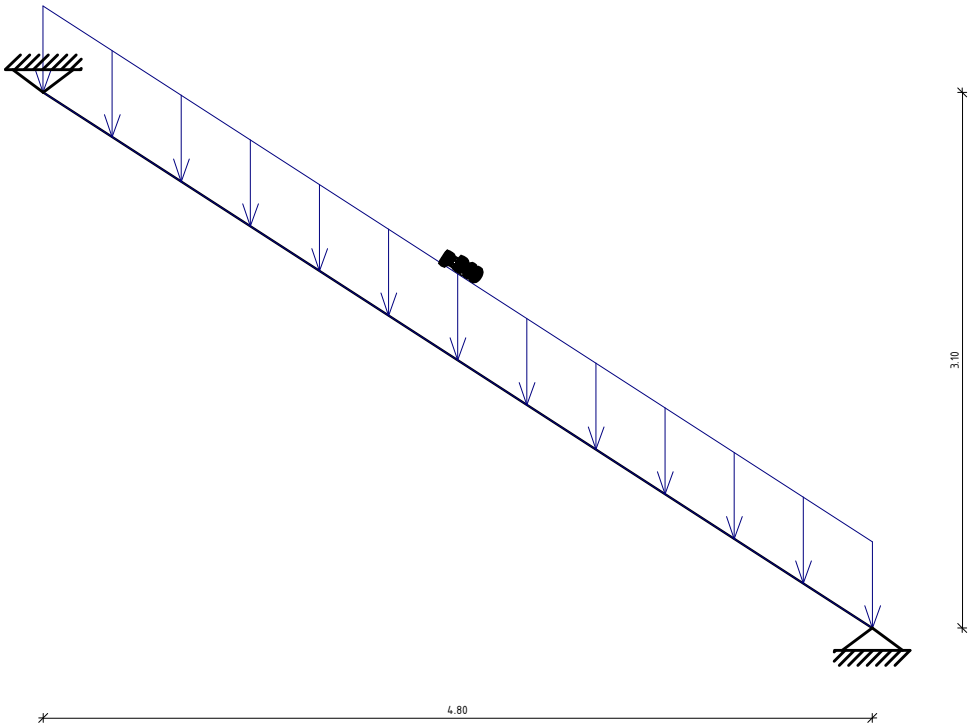
Input data - Load

Load cases list

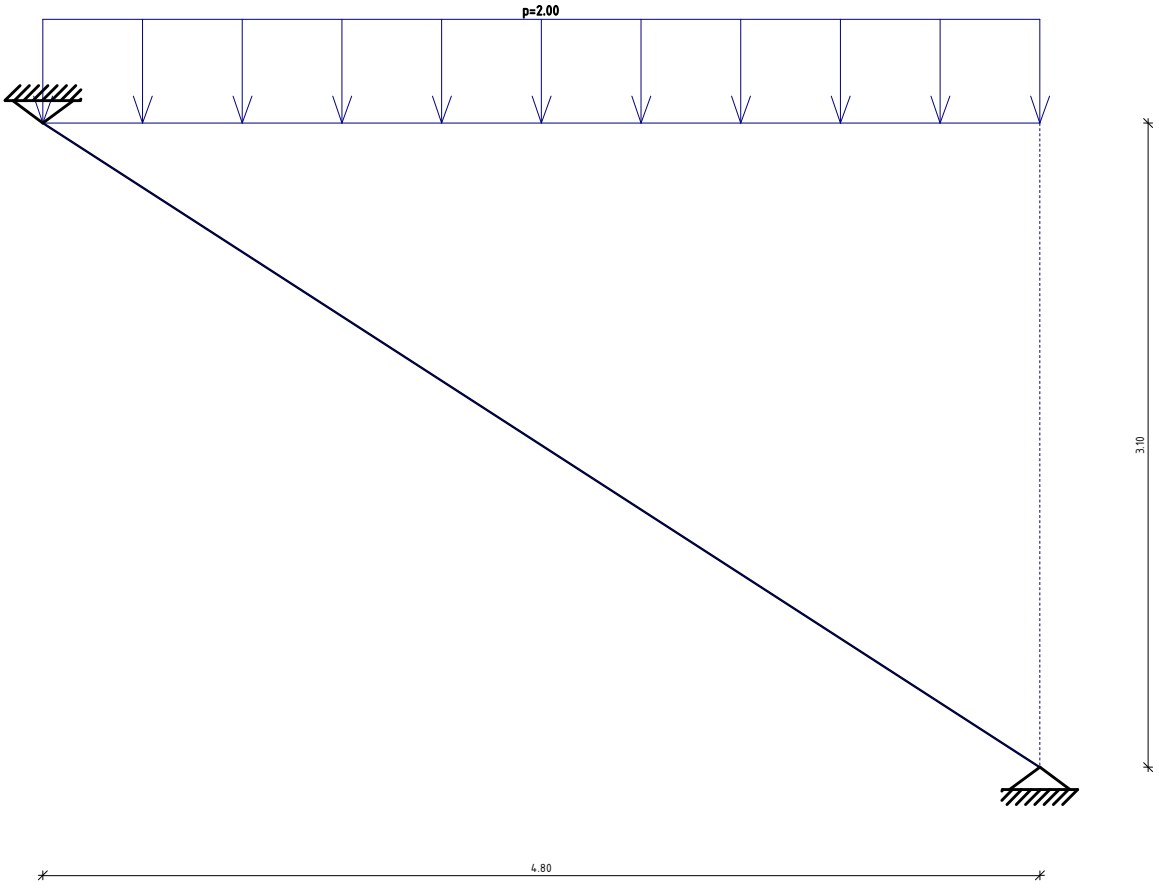
LC	Name
1	G (g)
2	Q

LC	Name
3	Comb.: ULS (1.3xI+1.5xII)
4	Comb.: SLS (I+II)

Load 1: G (g)



Load 2: Q

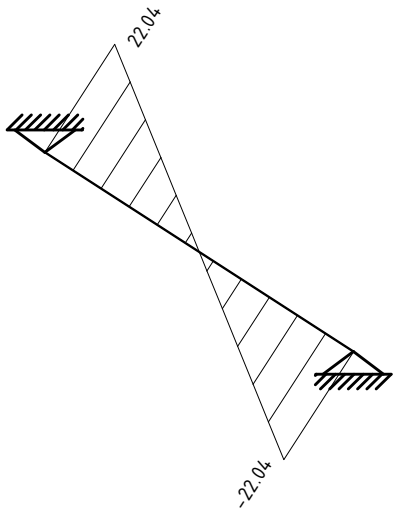


INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Structural analysis

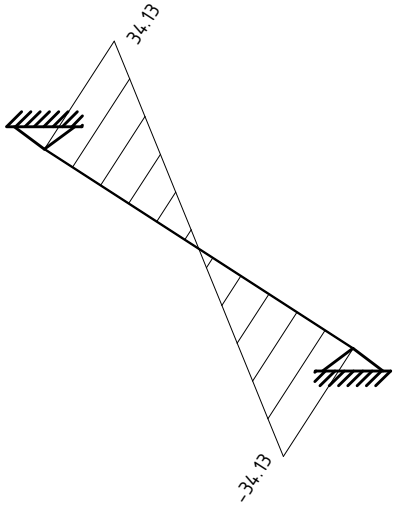
INNER STATIC FORCES

Load 3: ULS



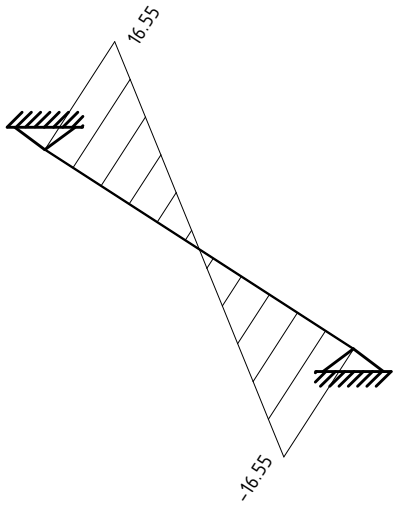
Beam Results: max N1= 22.04 / min N1= -22.04 kN

Load 3: ULS



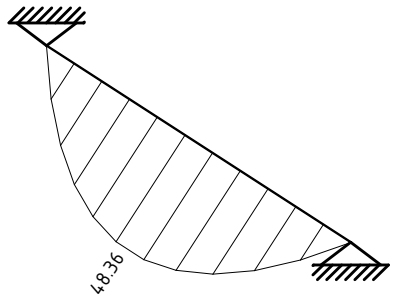
Beam Results: max V2= 34.13 / min V2= -34.13 kN

Load 4: SLS



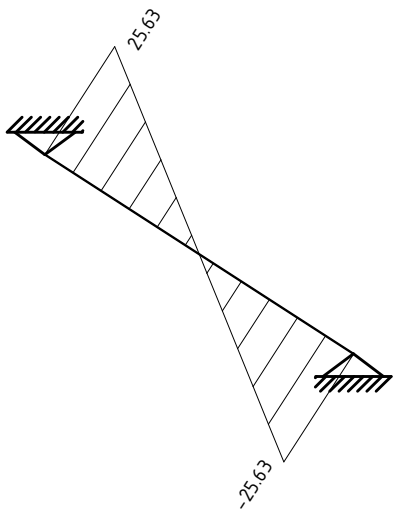
Beam Results: max N1= 16.55 / min N1= -16.55 kN

Load 3: ULS



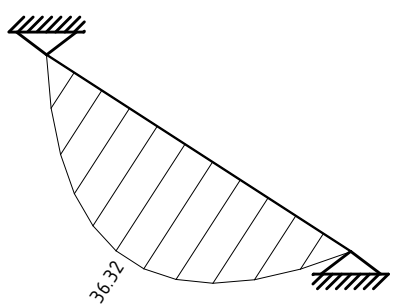
Beam Results: max M3= 48.36 / min M3= 0.01 kNm

Load 4: SLS



Beam Results: max V2= 25.63 / min V2= -25.63 kN

Load 4: SLS

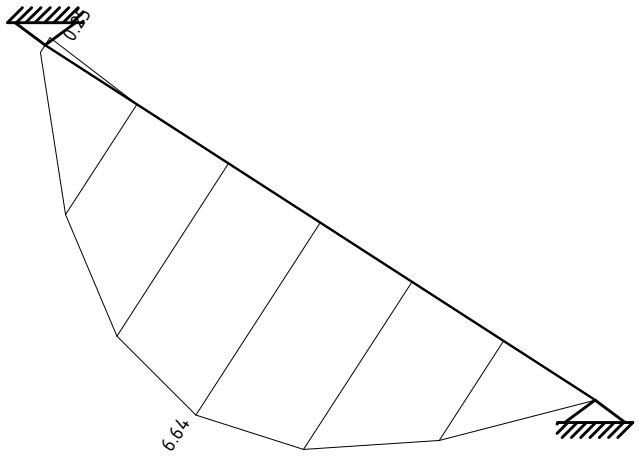


Beam Results: max M3= 36.32 / min M3= 0.01 kNm

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

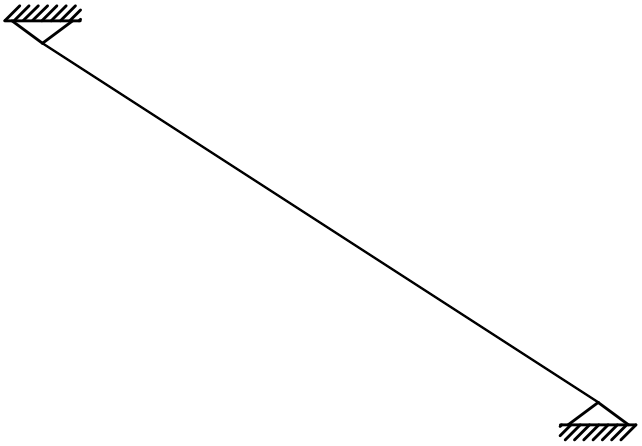
Design (concrete)

Governing load: 1.30xI+1.50xII
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



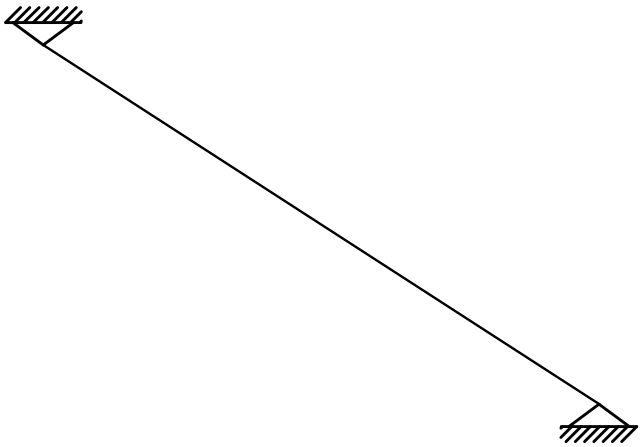
Beam reinforcement: max Aa2/Aa1= 0.25 / 6.64 cm²

Governing load: 1.30xI+1.50xII
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Beam reinforcement: max Aa3/Aa4= 0.00 cm²

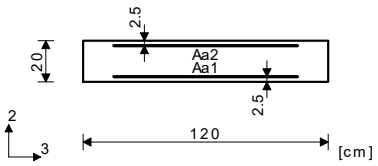
Governing load: 1.30xI+1.50xII
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Beam reinforcement: max Aa,br= 0.00 cm²

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Beam 2-1
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Design performed for single load
case: 1.30xI+1.50xII



Section 1-1 x = 2.86m
M3ed = 48.35 kNm

εb/εa = -2.980/25.000 ‰
Aa1 = 6.64 cm²
Aa2 = 0.00 cm²
Aa3 = 0.00 cm²
Aa4 = 0.00 cm²
Aa,br = 0.00 cm²/m (m=2)

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

IZRACUN 3D MODELA

Basic model properties, Input data - Structure

Database: 62_21_3D_Model.v10_foundationplate.twp
Analysis date: 4.3.2022

Analysis type: 3D model

☒ Linear theory ☒ Modal Analysis ☐ Stability

☐ Non-linear theory ☒ Seismic analysis ☐ Stage Construction

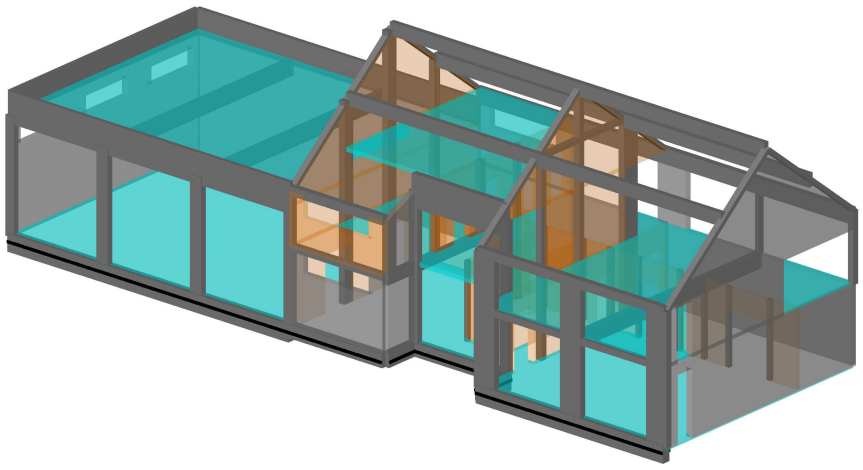
☐ Non linear analysis

Model size

Number of nodes:	22555
Number of area elements:	17797
Number of beams:	1168
Number of boundary elements:	57177
Number of primary load cases:	7
Number of load case combinations:	35

Units

Length:	m [cm,mm]
Force:	kN
Temperature:	Celsius



Isometric

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Level scheme

Name	z [m]	h [m]
Roof	10.70	4.36
Level 4	6.34	0.79
Level 554	5.54	0.68

Name	z [m]	h [m]
Level 3	4.87	1.77
Level 2	3.10	3.55
Foundation plate	-0.45	

Table of materials

No	Material name	E[kN/m2]	μ	γ[kN/m3]	αt[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	Opeka fo=10 / fm=5 [MPa]	4.900e+6	0.50	15.00	1.000e-5	4.900e+6	0.25

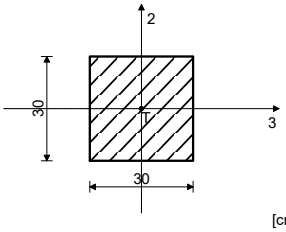
Slab sets

No	t[m]	e[m]	Material	Analysis type	Orthotropy	E2[kN/m2]	G[kN/m2]	α
<1>	0.200	0.100	1	Thin slab	Isotrophy			
<3>	0.300	0.150	1	Thin slab	Isotrophy			
<4>	0.300	0.150	2	Masonry	Unisotrophy	0.000e+0	0.000e+0	90.00
<5>	0.270	0.135	1	Thin slab	Isotrophy			
<6>	0.200	0.100	2	Masonry	Unisotrophy	0.000e+0	0.000e+0	90.00

Beam sets

Set: 1 Section: b/d=30/30, Approx. eccentricity, Offset included

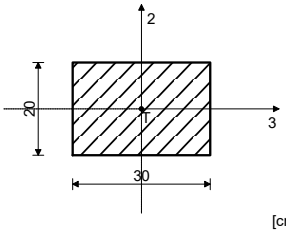
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	9.000e-2	7.500e-2	7.500e-2	1.141e-3	6.750e-4	6.750e-4



[cm]

Set: 2 Section: b/d=30/20, Approx. eccentricity

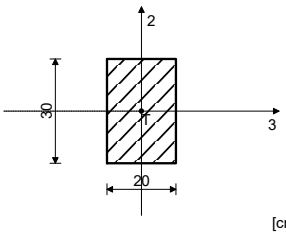
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	6.000e-2	5.000e-2	5.000e-2	4.695e-4	4.500e-4	2.000e-4



[cm]

Set: 3 Section: b/d=20/30, Approx. eccentricity

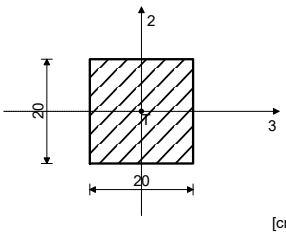
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	6.000e-2	5.000e-2	5.000e-2	4.695e-4	2.000e-4	4.500e-4



[cm]

Set: 4 Section: b/d=20/20, Approx. eccentricity

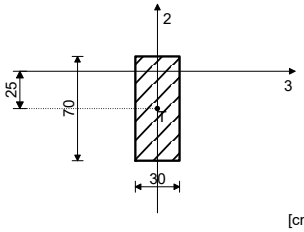
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	4.000e-2	3.333e-2	3.333e-2	2.253e-4	1.333e-4	1.333e-4



[cm]

Set: 8 Section: b/d=30/70, Approx. eccentricity

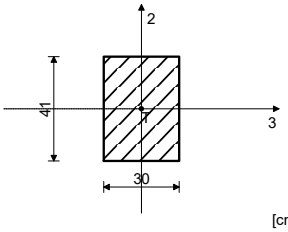
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.100e-1	1.750e-1	1.750e-1	4.604e-3	1.575e-3	8.575e-3



[cm]

Set: 9 Section: b/d=30/41, Approx. eccentricity

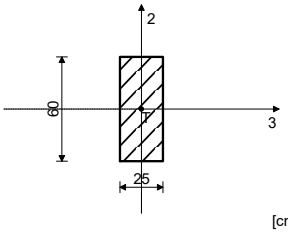
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.230e-1	1.025e-1	1.025e-1	2.030e-3	9.225e-4	1.723e-3



[cm]

Set: 14 Section: b/d=25/60, Approx. eccentricity

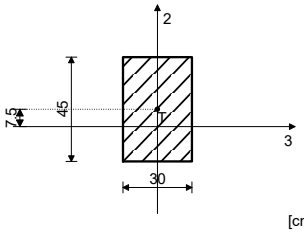
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.500e-1	1.250e-1	1.250e-1	2.307e-3	7.812e-4	4.500e-3



[cm]

Set: 15 Section: b/d=30/45, Approx. eccentricity

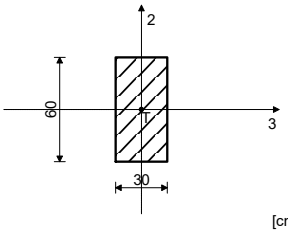
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.350e-1	1.125e-1	1.125e-1	2.377e-3	1.012e-3	2.278e-3



[cm]

Set: 16 Section: b/d=30/60, Approx. eccentricity

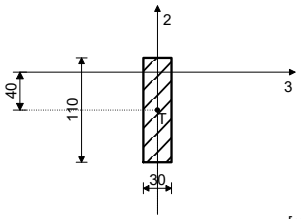
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.800e-1	1.500e-1	1.500e-1	3.708e-3	1.350e-3	5.400e-3



[cm]

Set: 18 Section: b/d=30/110, Approx. eccentricity

Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	3.300e-1	2.750e-1	2.750e-1	8.200e-3	2.475e-3	3.328e-2

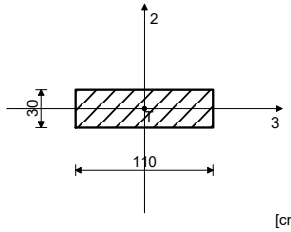


[cm]

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Set: 19 Section: b/d=110/30, Approx. eccentricity

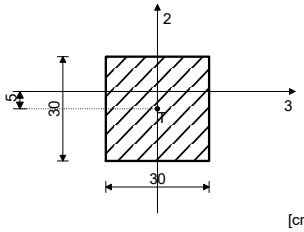
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	3.300e-1	2.750e-1	2.750e-1	8.200e-3	3.328e-2	2.475e-3



[cm]

Set: 20 Section: b/d=30/30, Approx. eccentricity

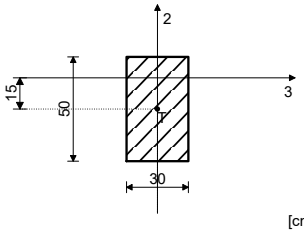
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	9.000e-2	7.500e-2	7.500e-2	1.141e-3	6.750e-4	6.750e-4



[cm]

Set: 22 Section: b/d=30/50, Approx. eccentricity

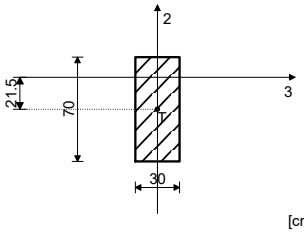
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.500e-1	1.250e-1	1.250e-1	2.817e-3	1.125e-3	3.125e-3



[cm]

Set: 23 Section: b/d=30/70, Approx. eccentricity

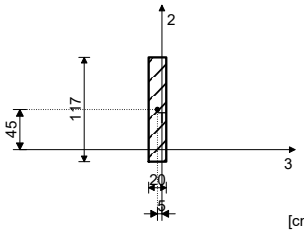
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.100e-1	1.750e-1	1.750e-1	4.604e-3	1.575e-3	8.575e-3



[cm]

Set: 25 Section: b/d=20/117, Approx. eccentricity

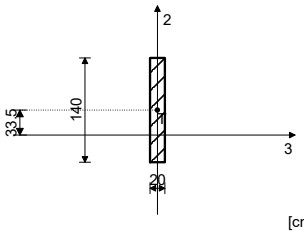
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.340e-1	1.950e-1	1.950e-1	2.784e-3	7.800e-4	2.669e-2



[cm]

Set: 26 Section: b/d=20/140, Approx. eccentricity

Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.800e-1	2.333e-1	2.333e-1	3.397e-3	9.333e-4	4.573e-2

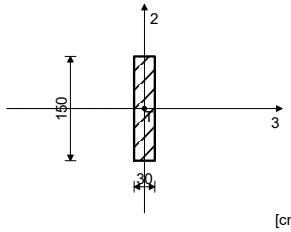


[cm]

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Set: 27 Section: b/d=30/150, Approx. eccentricity

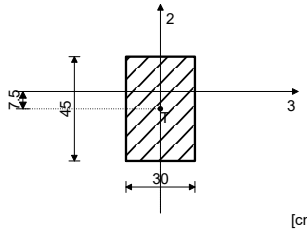
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	4.500e-1	3.750e-1	3.750e-1	1.180e-2	3.375e-3	8.437e-2



[cm]

Set: 28 Section: b/d=30/45, Approx. eccentricity

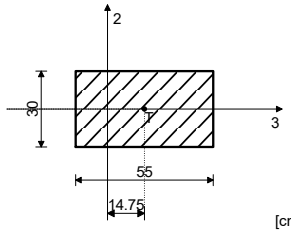
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.350e-1	1.125e-1	1.125e-1	2.377e-3	1.012e-3	2.278e-3



[cm]

Set: 31 Section: b/d=55/30, Approx. eccentricity

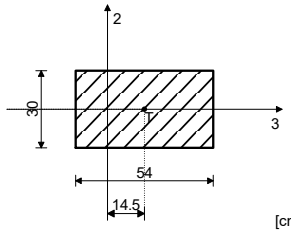
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.650e-1	1.375e-1	1.375e-1	3.262e-3	4.159e-3	1.238e-3



[cm]

Set: 32 Section: b/d=54/30, Approx. eccentricity

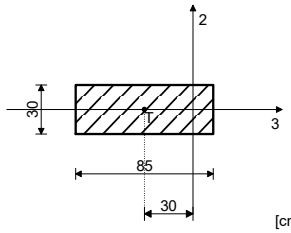
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.620e-1	1.350e-1	1.350e-1	3.173e-3	3.937e-3	1.215e-3



[cm]

Set: 33 Section: b/d=85/30, Approx. eccentricity

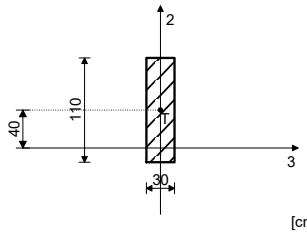
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.550e-1	2.125e-1	2.125e-1	5.951e-3	1.535e-2	1.912e-3



[cm]

Set: 35 Section: b/d=30/110, Approx. eccentricity

Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	3.300e-1	2.750e-1	2.750e-1	8.200e-3	2.475e-3	3.328e-2

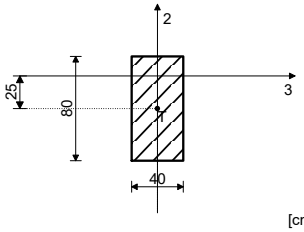


[cm]

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Set: 36 Section: b/d=40/80, Approx. eccentricity

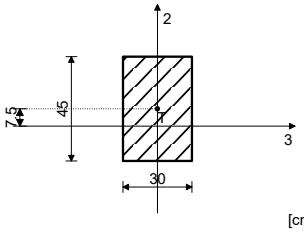
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	3.200e-1	2.667e-1	2.667e-1	1.172e-2	4.267e-3	1.707e-2



[cm]

Set: 37 Section: b/d=30/45, Approx. eccentricity

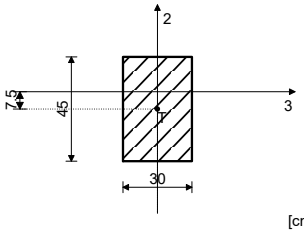
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.350e-1	1.125e-1	1.125e-1	2.377e-3	1.012e-3	2.278e-3



[cm]

Set: 38 Section: b/d=30/45, Approx. eccentricity

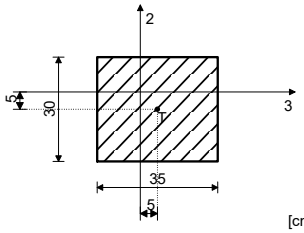
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.350e-1	1.125e-1	1.125e-1	2.377e-3	1.012e-3	2.278e-3



[cm]

Set: 40 Section: b/d=35/30, Approx. eccentricity

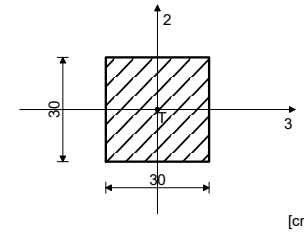
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	1.050e-1	8.750e-2	8.750e-2	1.526e-3	1.072e-3	7.875e-4



[cm]

Set: 41 Section: b/d=30/30, Approx. eccentricity

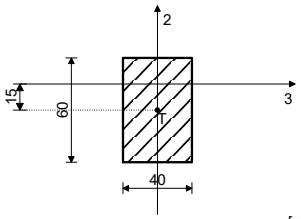
Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	9.000e-2	7.500e-2	7.500e-2	1.141e-3	6.750e-4	6.750e-4



[cm]

Set: 43 Section: b/d=40/60, Approx. eccentricity

Mat.	A1	A2	A3	I1	I2	I3
1 - C 25/30	2.400e-1	2.000e-1	2.000e-1	7.512e-3	3.200e-3	7.200e-3



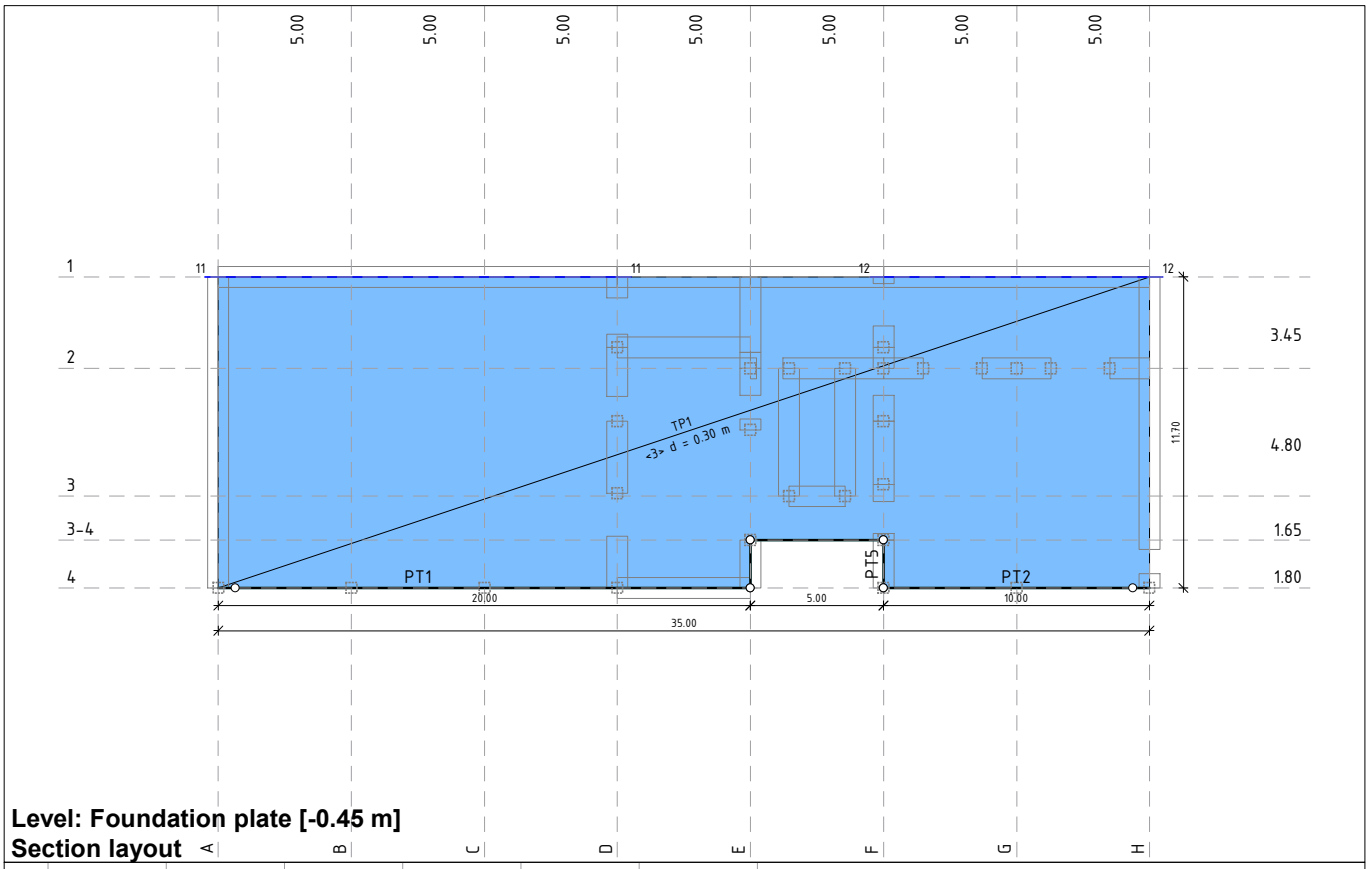
[cm]

Area support sets

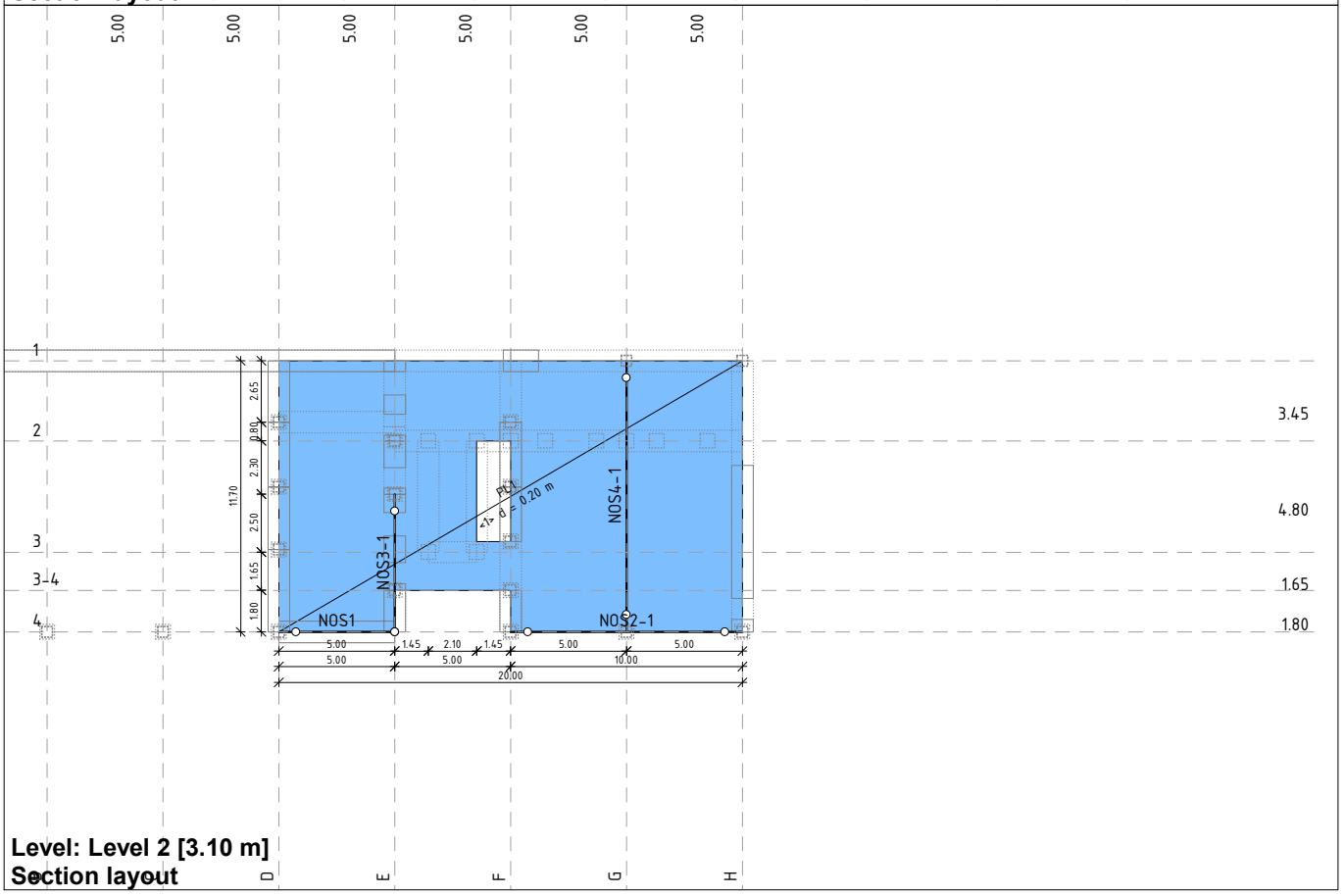
Set	K,R1	K,R2	K,R3
1	6.667e+3	6.667e+3	1.000e+4

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

HORIZONTAL ELEMENTS DISPOSITION

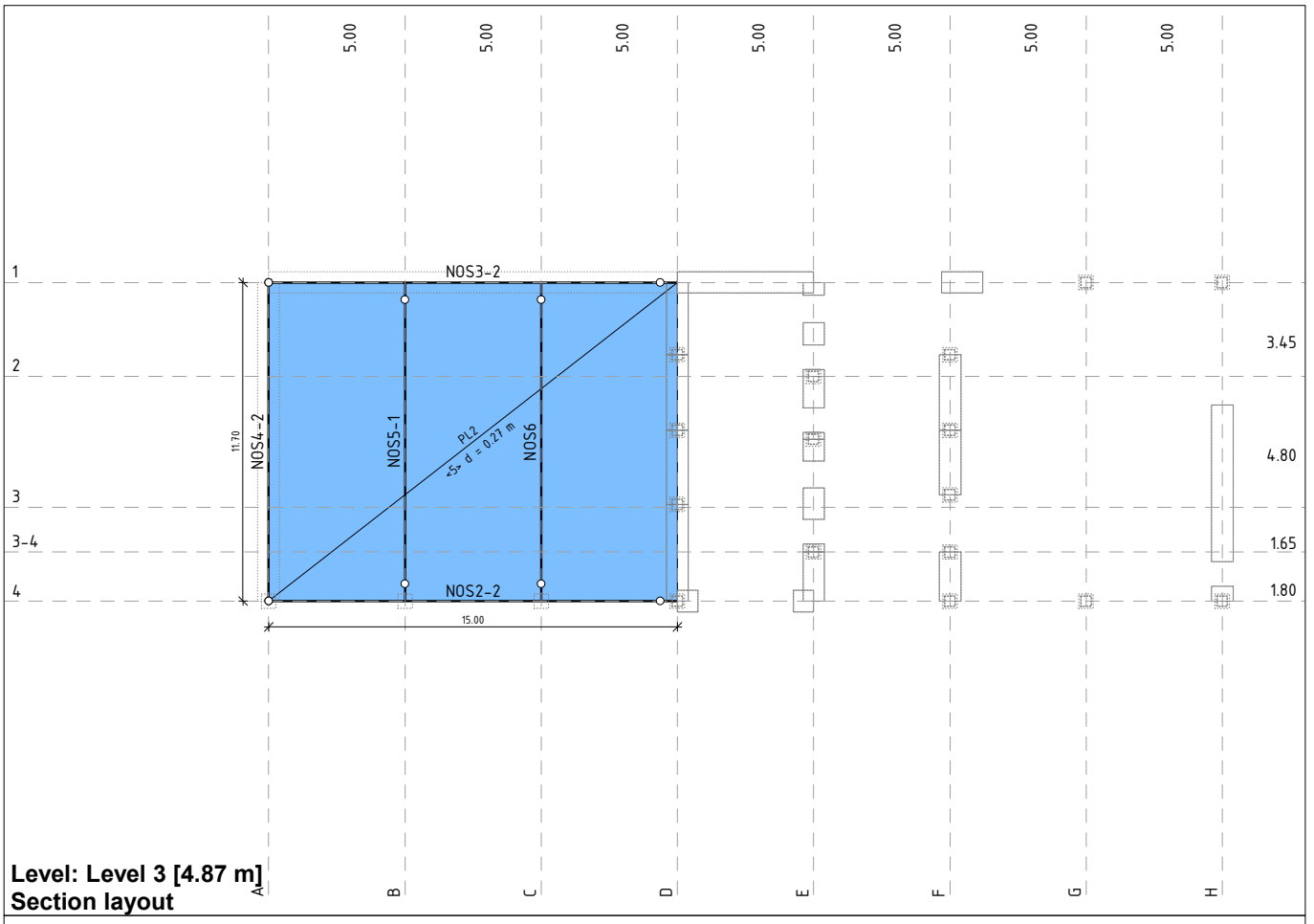


Level: Foundation plate [-0.45 m]
Section layout

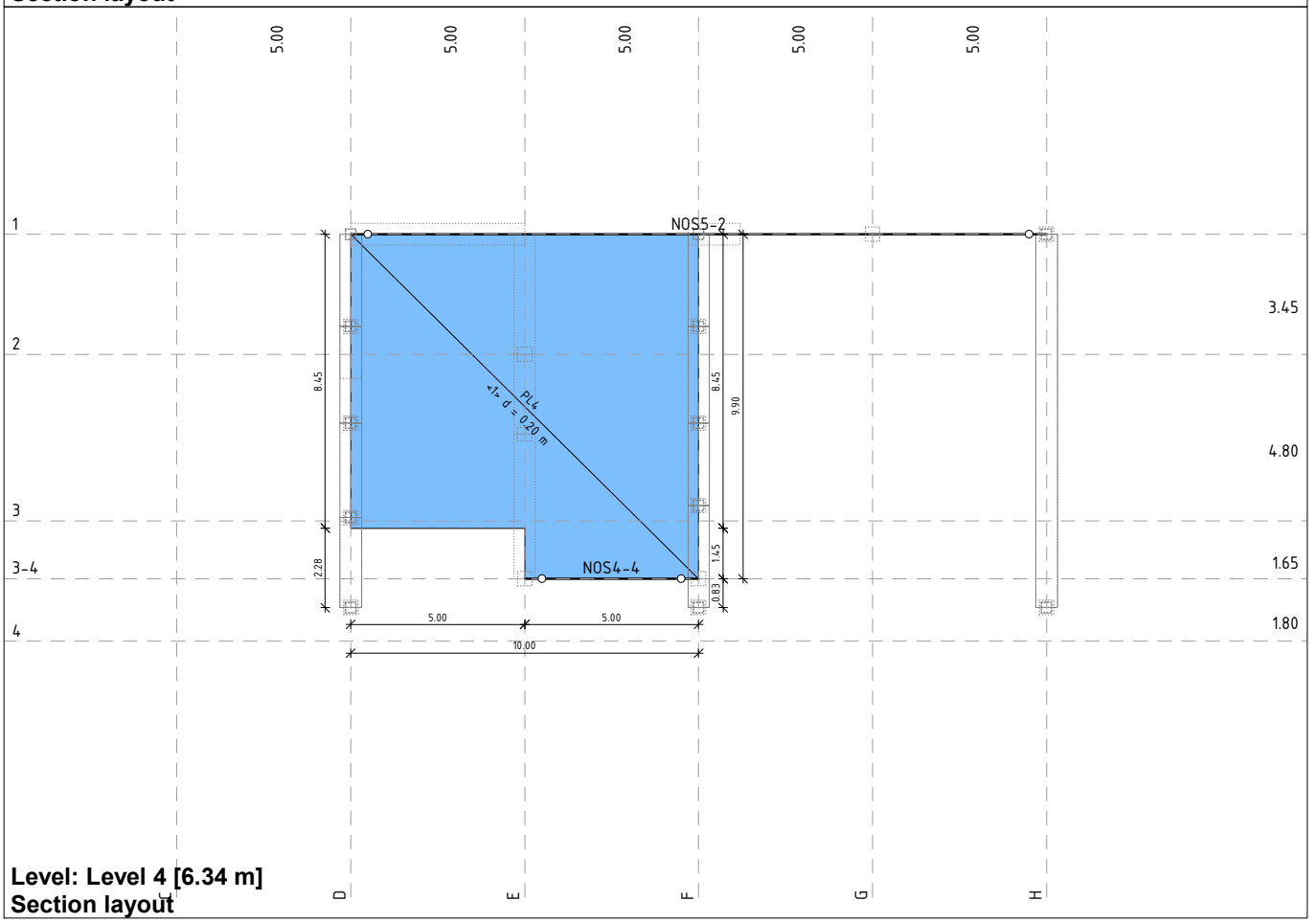


Level: Level 2 [3.10 m]
Section layout

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR



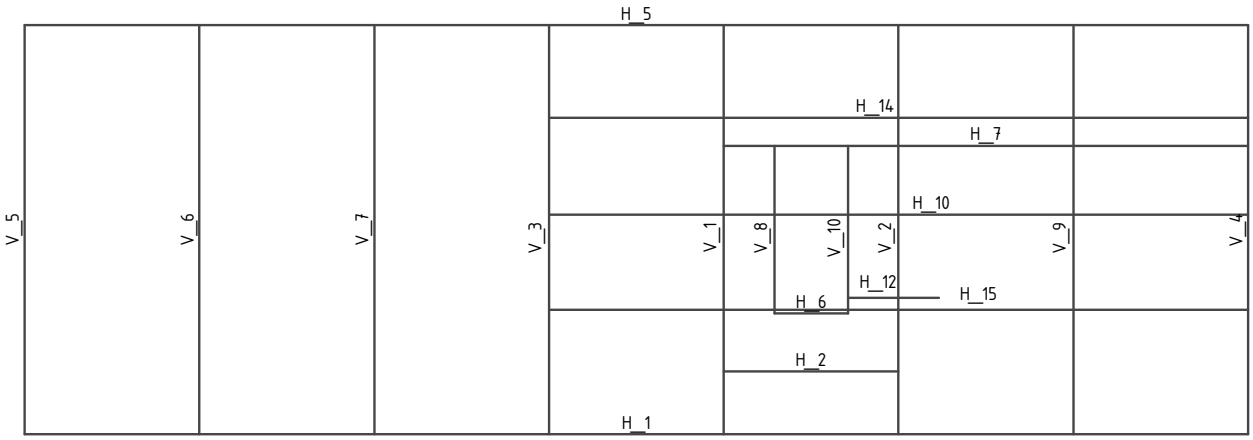
Level: Level 3 [4.87 m]
Section layout



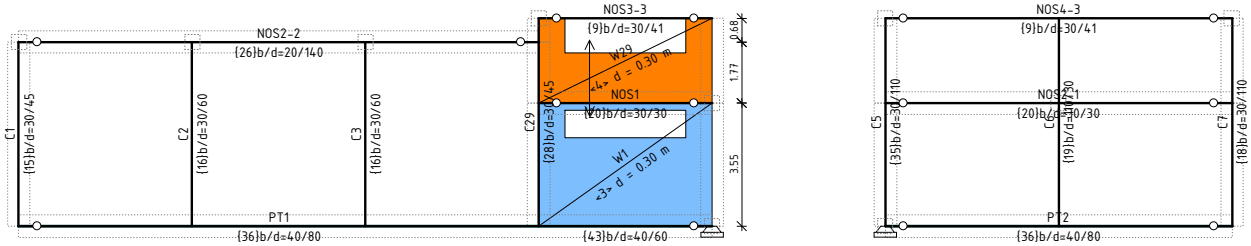
Level: Level 4 [6.34 m]
Section layout

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

VERTICAL ELEMENT DISPOSITION

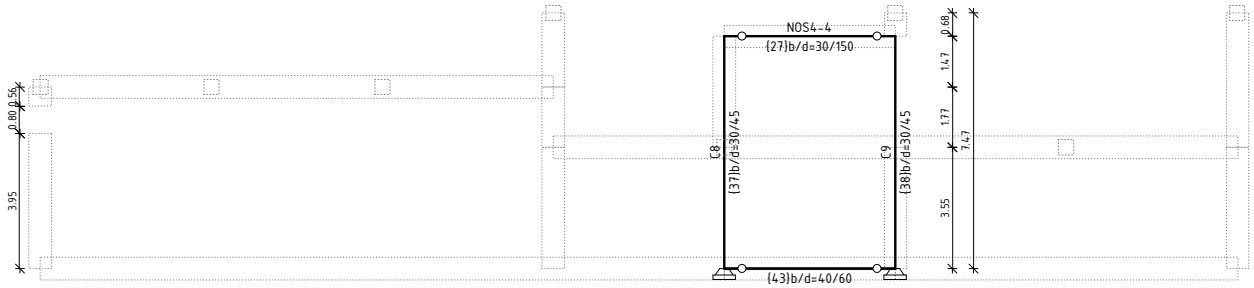


Frame disposition

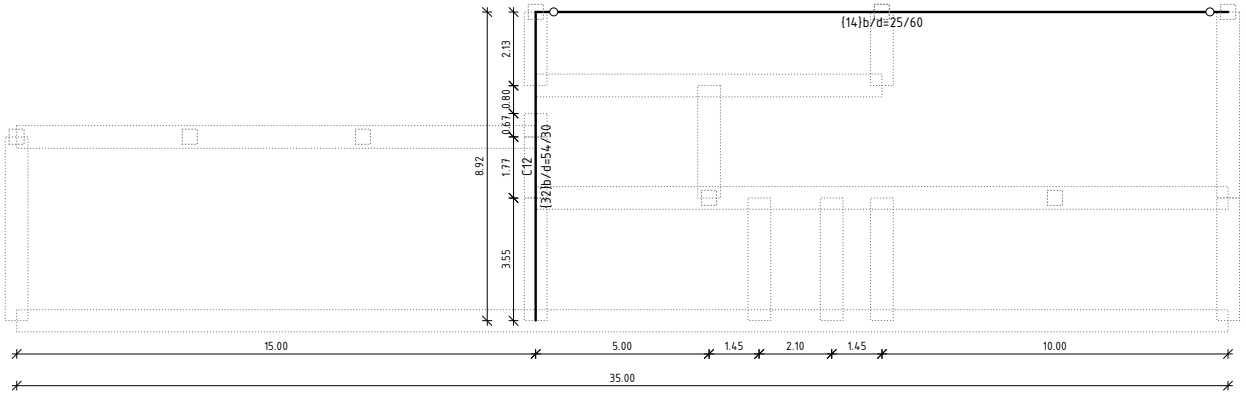


Frame: H_1

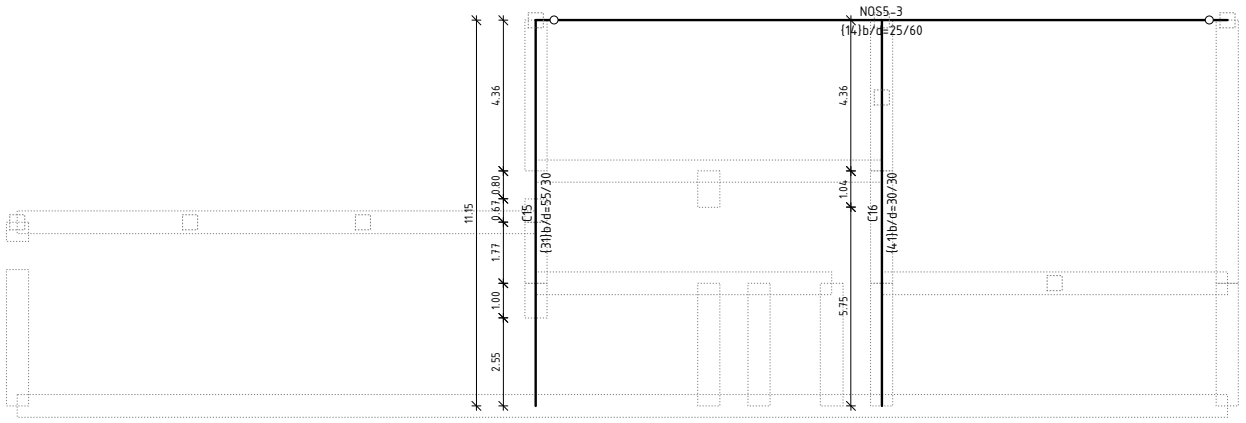
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR



Frame: H_2

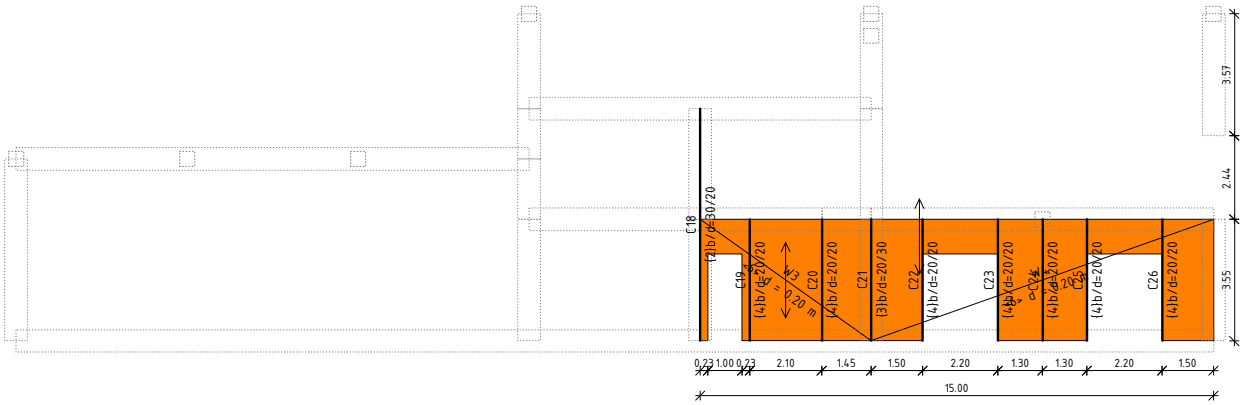


Frame: H_15

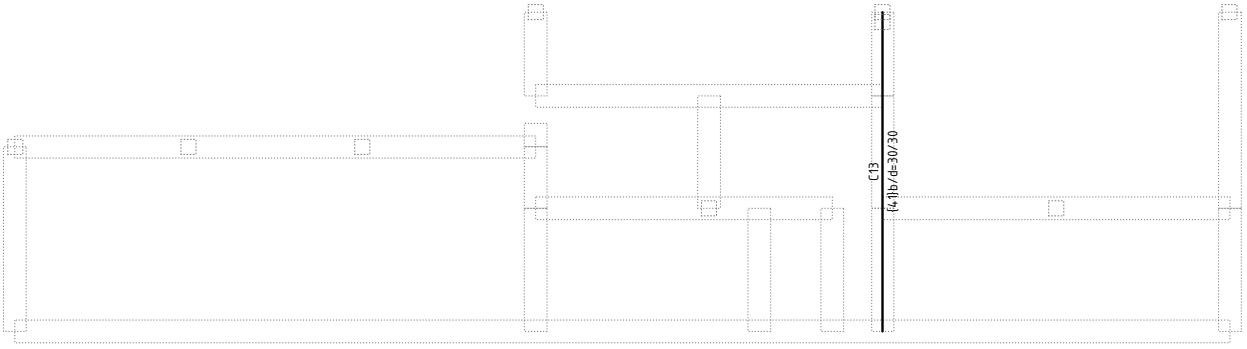


Frame: H_10

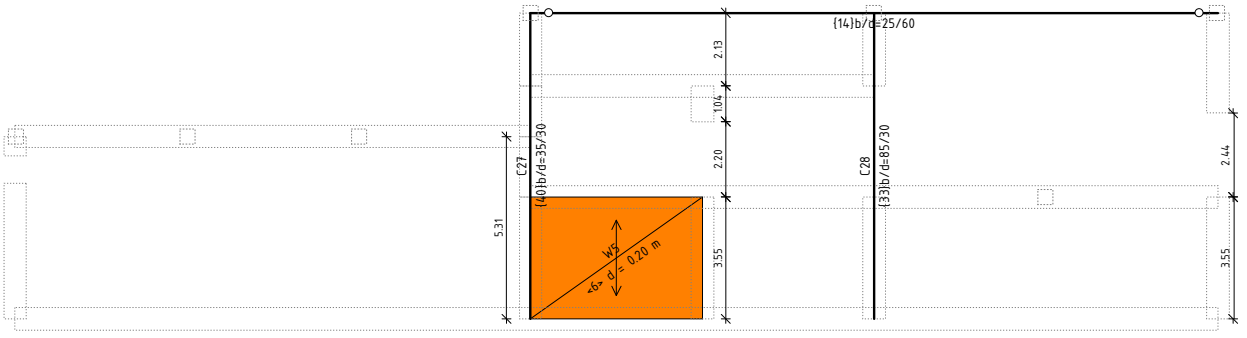
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR



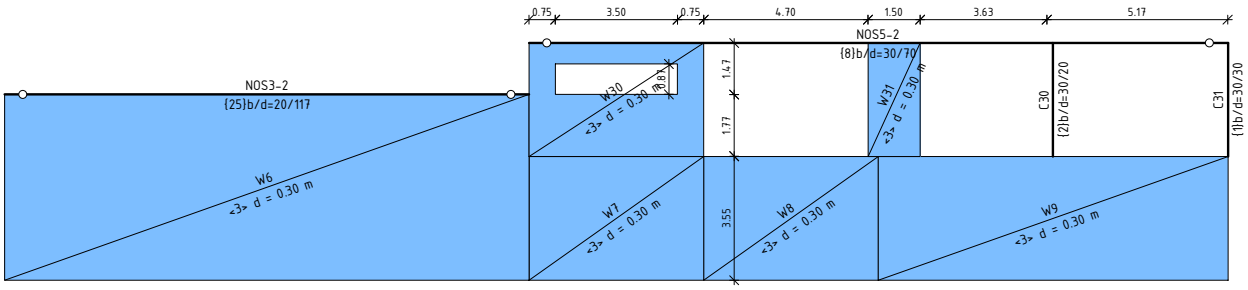
Frame: H_7



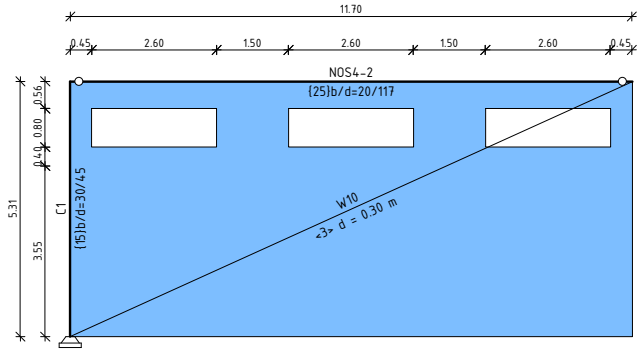
Frame: H_12



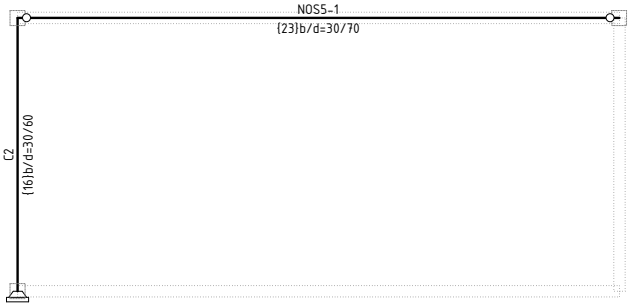
Frame: H_14



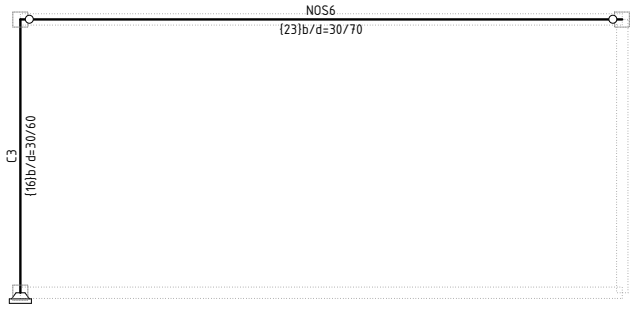
Frame: H_5



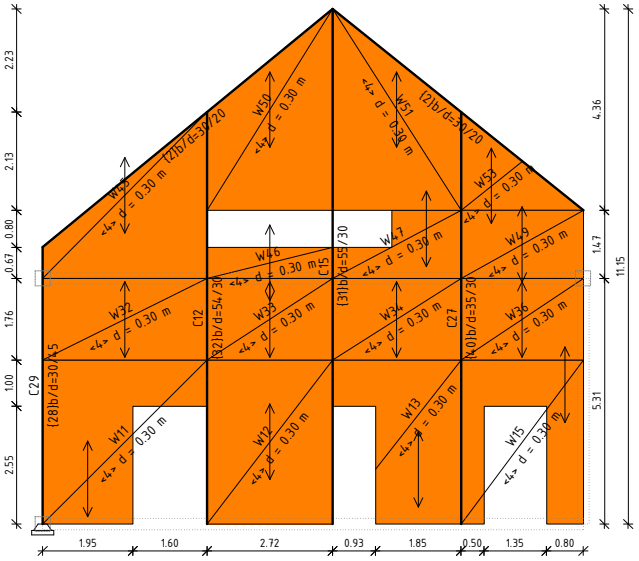
Frame: V_5



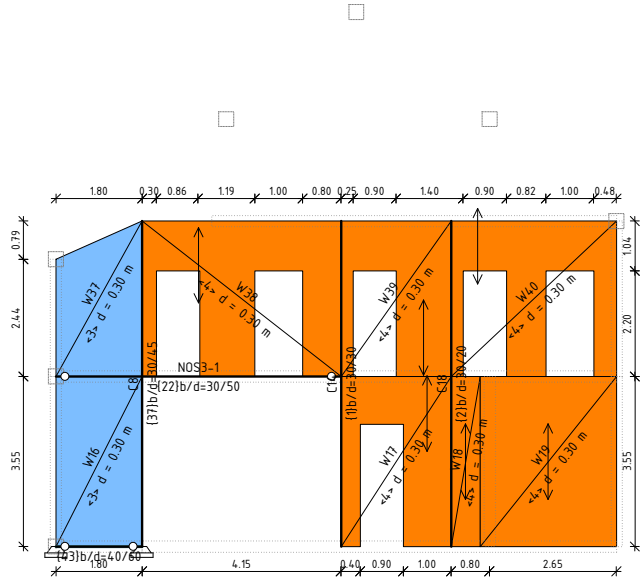
Frame: V_6



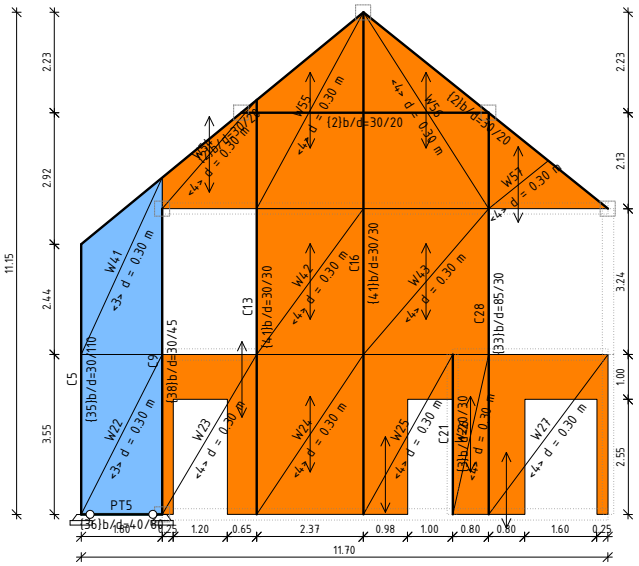
Frame: V_7



Frame: V_3

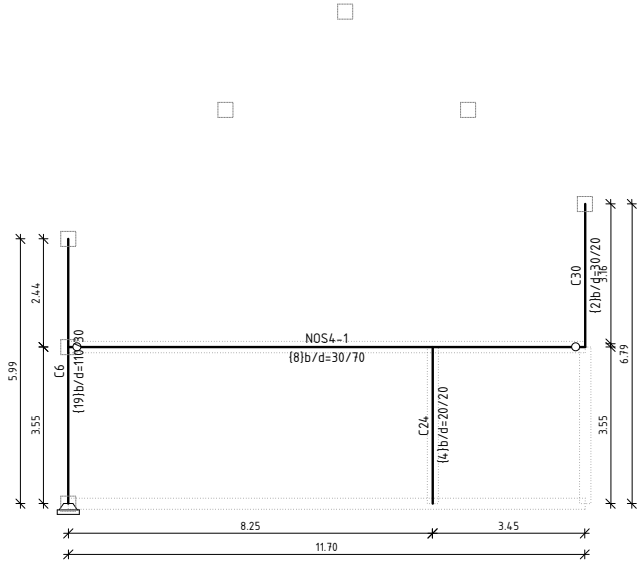


Frame: V_1

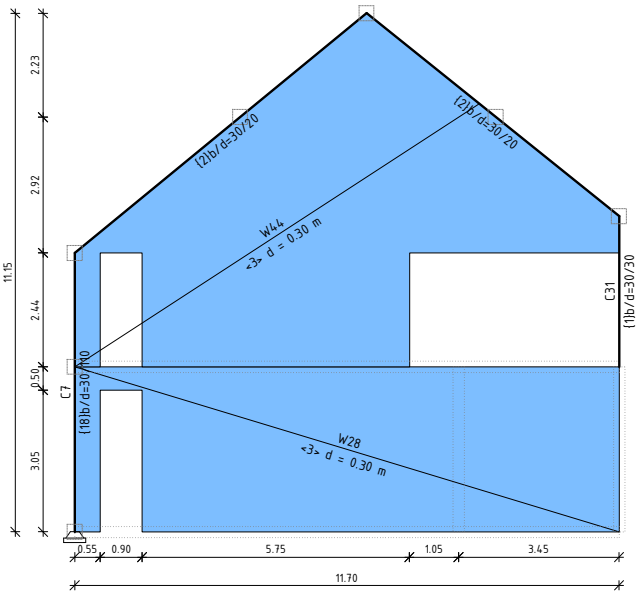


Frame: V_2

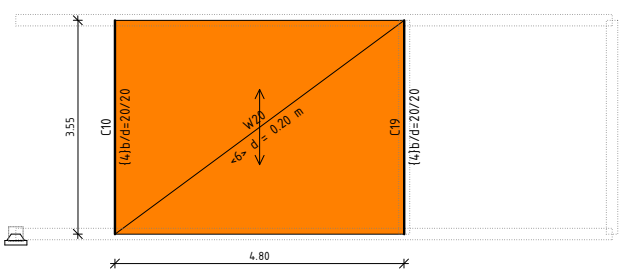
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR



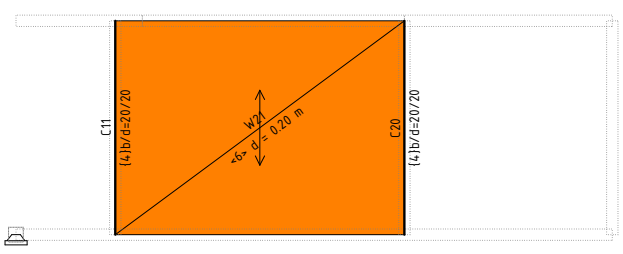
Frame: V_9



Frame: V_4



Frame: V_8



Frame: V_10

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Input data - Load

LOADS ON THE STRUCTURE

PLIVI NA KONSTRUKCIJO - *STREHA*

STALNI VPLIVI:

- opečna kritina.....0,45 kN/m^2
- prečne letve 5 x 4 cm
  vzdolžne letve 8 x 5 cm.....0,10 kN/m^2
- paropropustna folija
  lesen opaž .....0,08 kN/m^2
- špirovec 10 x 20 cm .....avtomatično
- toplotna izolacija .....0,1 kN/m^2
- parna zapora
- ALU podkonstrukcija 5 cm .....
- mavčnokartonske plošče 1,25 cm .....0,3 kN/m^2
- SKUPAJ .....1,03 kN/m^2

SPREMENLJIVI VPLIVI:

- sneg (565m n.m.v., cona A2, μ1=0,8 .....1,66 kN/m^2

PLIVI NA KONSTRUKCIJO - ETAŽNA PLOŠČA

STALNI VPLIVI:

- laminat 1 cm .....0,20 kN/m^2
- betonski estri 6 cm .....1,44 kN/m^2
- sistemska plošča za talno gretje 3,3 cm .....0,10 kN/m^2
- zvočna izolacija 4 cm .....0,05 kN/m^2
- AB plošča 20 cm.....5,00 kN/m^2
- SKUPAJ brez lastne teže.....1,79 kN/m^2
- SKUPAJ z lastno težo.....6,79 kN/m^2

SPREMENLJIVI VPLIVI:

- koristna obtežba (kategorija C5).....5,00 kN/m^2

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

PLIVI NA KONSTRUKCIJO **-** ETAŽNA PLOŠČA NA GARAŽO

STALNI VPLIVI:

- ekstenzivna zazelenitev
- humus (10 cm.....1,25 kN/m^2
- filtrirni filc
- drenažni sloj (6,0 cm).....0,23 kN/m^2
- zaščitni sloj
- ločilni in zdrsni sloj
- hidroizolacijska UV strešna folija (1,0 cm)
- filc 600 g
- toplotna izolacija (2,0 - 14,0 cm)
- toplotna izolac (20 cm)
- parna zapora - PE folija (0,3) cm
- AB plošča (20,0) cm .....avtomatično

- SKUPAJ brez lastne teže.....2,00 kN/m^2

SPREMENLJIVI VPLIVI:

- koristna obtežba (kategorija H).....0,40 kN/m^2
- sneg (565m n.m.v., cona A2, μ1=0,8 .....glej izrčun

LINIJSKA OBTEŽBA PREDELNIH STEN:
-d=20cm
g =3,04m × 0,2m × 16 kN/m^3 = 9,73 kN/m'
g =2,6m × 0,2m × 16 kN/m^3 = 8,32 kN/m'
g =3,32m × 0,2m × 16 kN/m^3 = 10,62 kN/m'

LOAD COMBINATIONS

Different envelopes of combinations are also used in the processing of results. They are specially marked with the

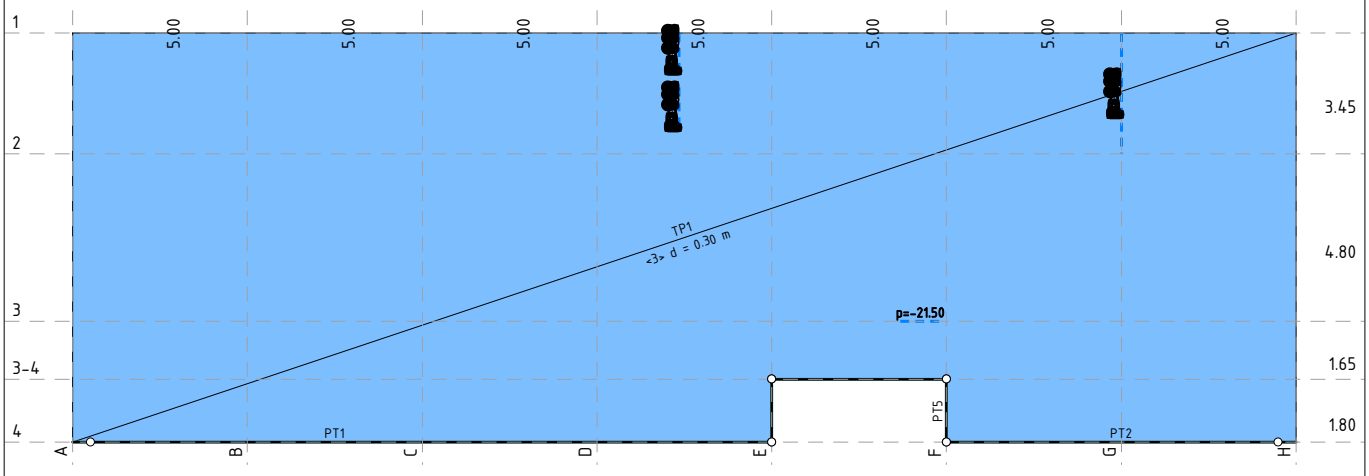
Load cases list

LC	Name
1	Permanent Load (g)
2	Variable Load
3	Snow
4	Potres X (+e)
5	Potres X (-e)
6	Potres Y (+e)
7	Potres Y (-e)
8	Comb.: 1.35xI+1.05xII+1.5xIII
9	Comb.: 1.35xI+1.5xII+0.75xIII
10	Comb.: I+1.05xII+1.5xIII
11	Comb.: I+1.5xII+0.75xIII
12	Comb.: 1.35xI+1.5xIII
13	Comb.: 1.35xI+1.5xII
14	Comb.: I+1.5xIII
15	Comb.: I+1.5xII
16	Comb.: 1.35xI
17	Comb.: I
18	Comb.: 1.35xI+1.05xII+1.5xIII
19	Comb.: 1.35xI+1.5xII+0.75xIII
20	Comb.: I+1.05xII+1.5xIII
21	Comb.: I+1.5xII+0.75xIII

LC	Name
22	Comb.: 1.35xI+1.5xIII
23	Comb.: 1.35xI+1.5xII
24	Comb.: I+1.5xIII
25	Comb.: I+1.5xII
26	Comb.: SLS (I+II+III) (I+II+III)
27	Comb.: I+0.6xII-1xIV
28	Comb.: I+0.6xII-1xV
29	Comb.: I+0.6xII-1xVI
30	Comb.: I+0.6xII-1xVII
31	Comb.: I+0.6xII+VII
32	Comb.: I+0.6xII+VI
33	Comb.: I+0.6xII+V
34	Comb.: I+0.6xII+IV
35	Comb.: I-1xIV
36	Comb.: I-1xV
37	Comb.: I-1xVI
38	Comb.: I-1xVII
39	Comb.: I+VII
40	Comb.: I+VI
41	Comb.: I+V
42	Comb.: I+IV

GRAPHICAL REPRESENTATION OF THE LOADS ON THE STRUCTURE

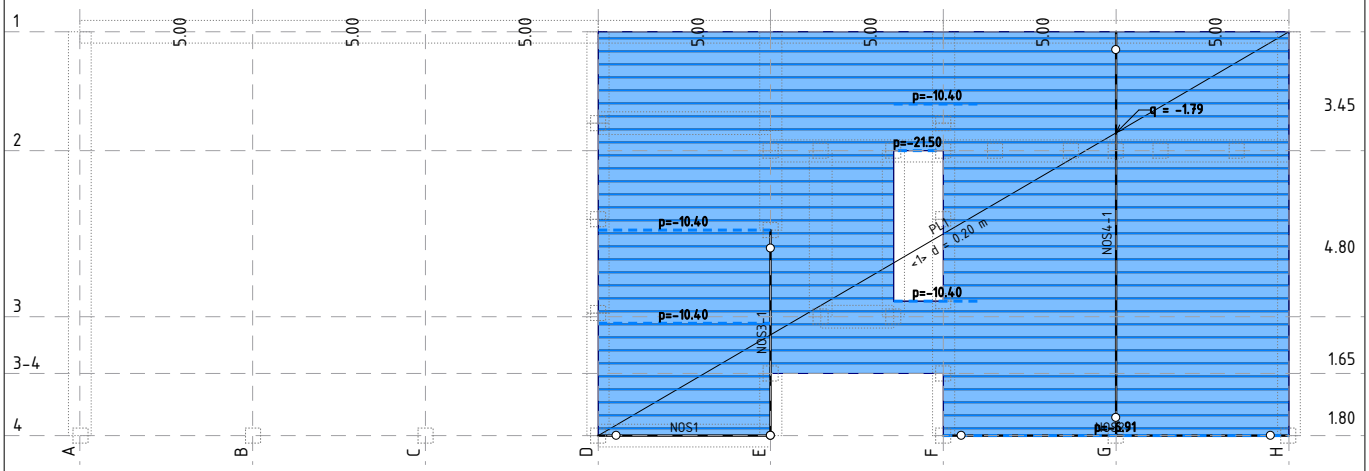
Load 1: Permanent Load (g)



Level: Foundation plate [-0.45 m]

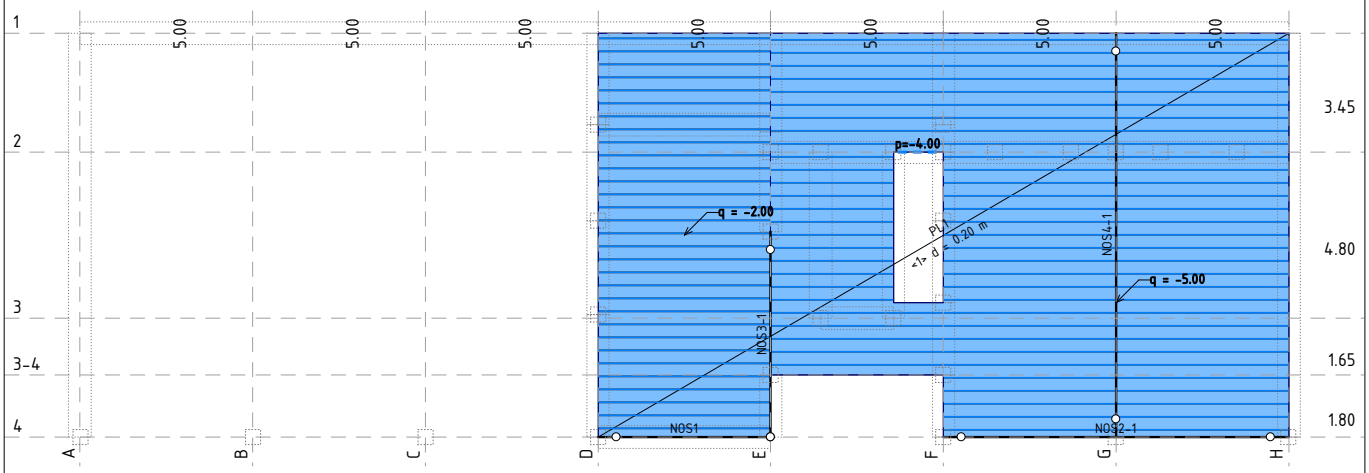
INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 1: Permanent Load (g)



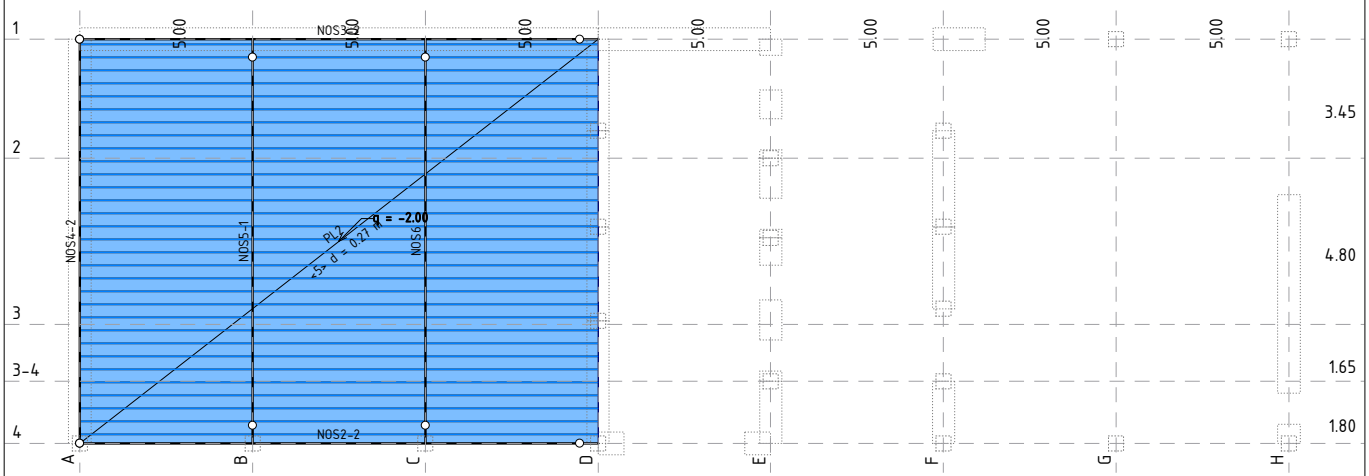
Level: Level 2 [3.10 m]

Load 2: Variable Load



Level: Level 2 [3.10 m]

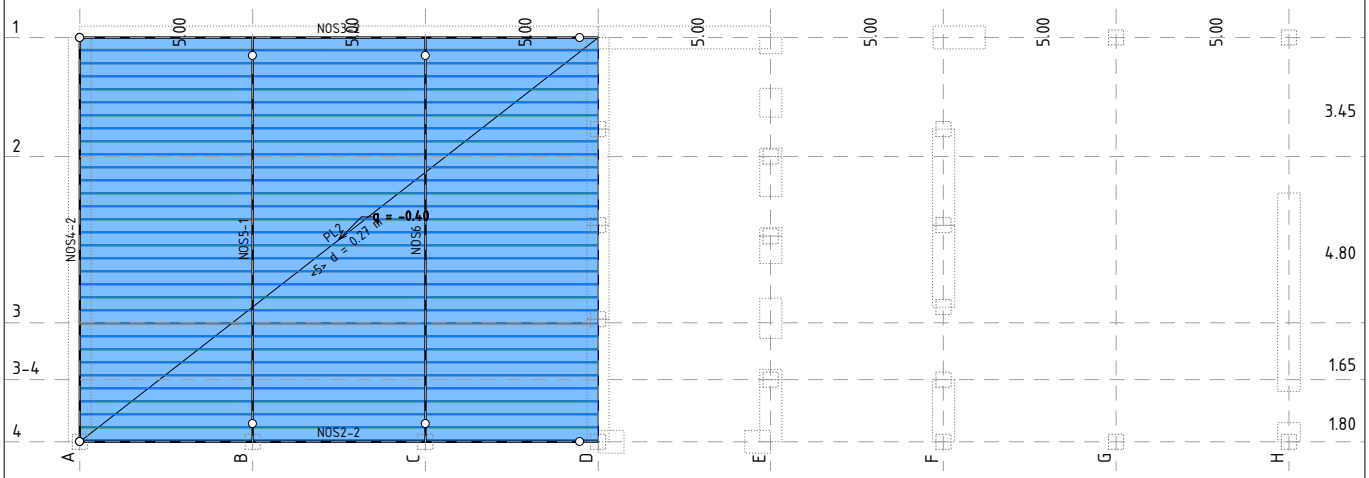
Load 1: Permanent Load (g)



Level: Level 3 [4.87 m]

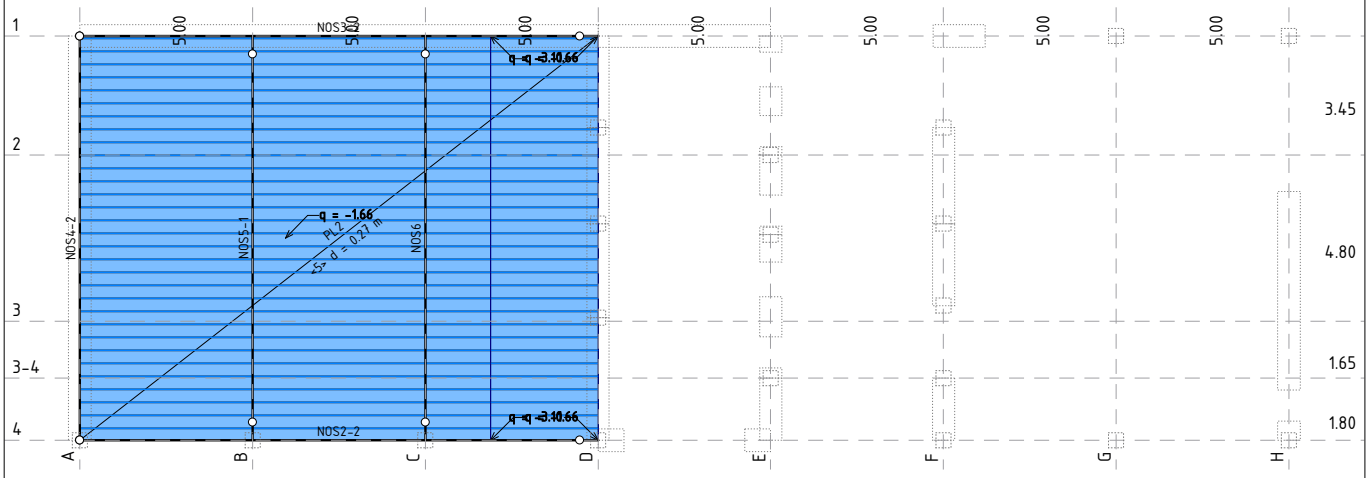
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 2: Variable Load



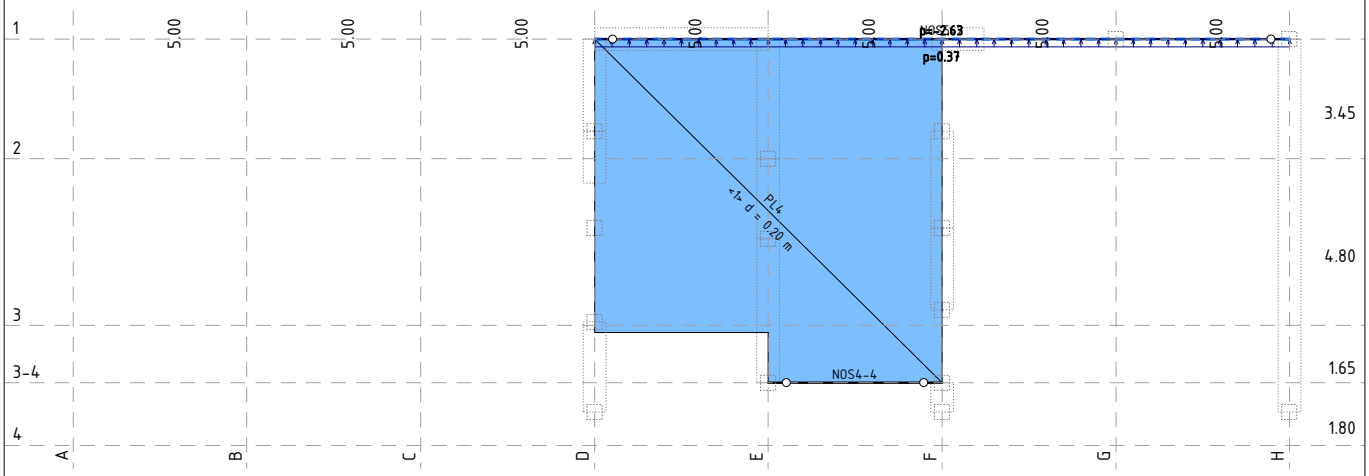
Level: Level 3 [4.87 m]

Load 3: Snow



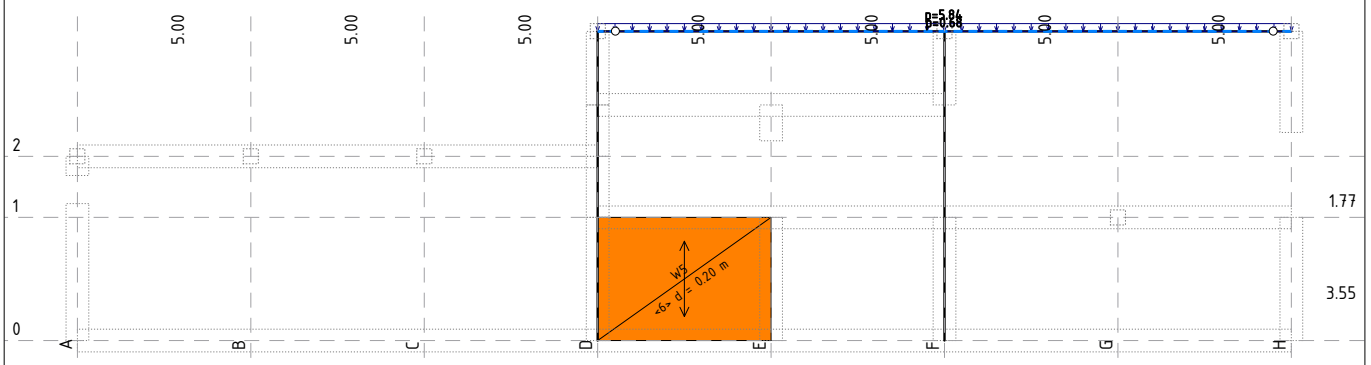
Level: Level 3 [4.87 m]

Load 3: Snow



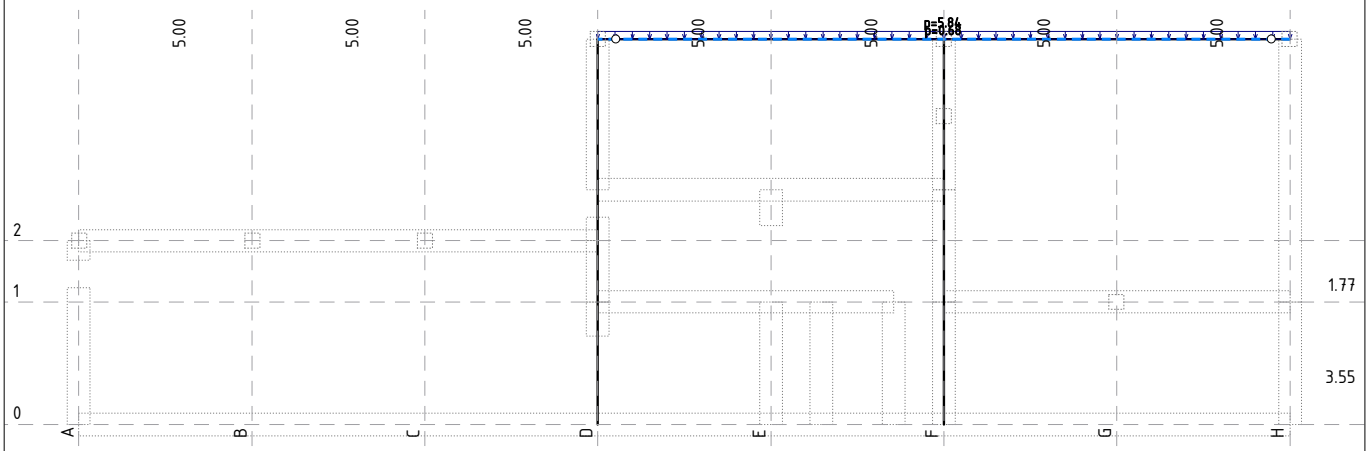
Level: Level 4 [6.34 m]

Load 1: Permanent Load (g)



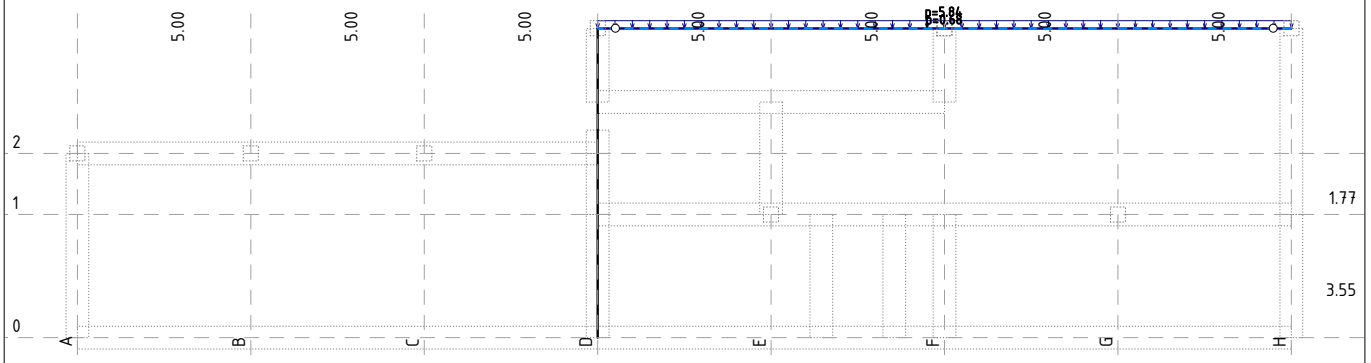
Frame: H_14

Load 1: Permanent Load (g)



Frame: H_10

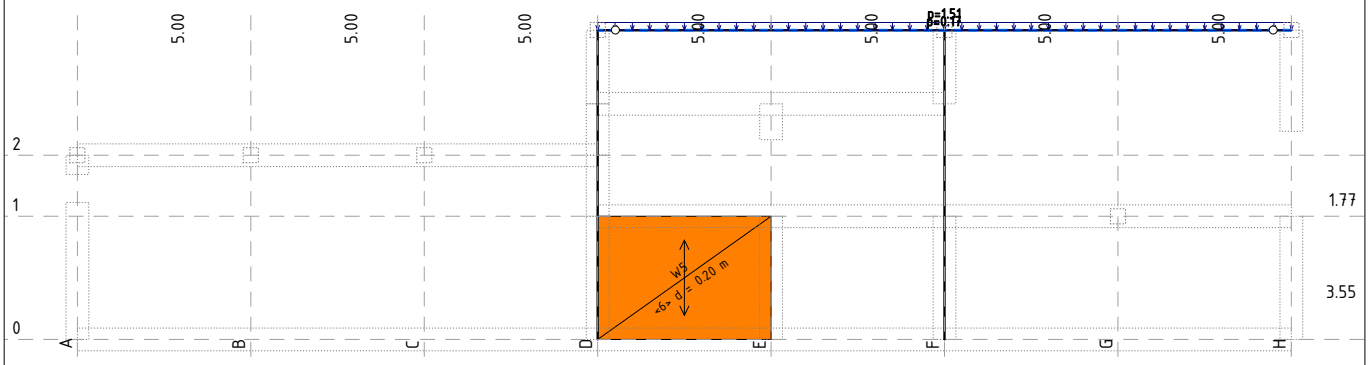
Load 1: Permanent Load (g)



Frame: H_15

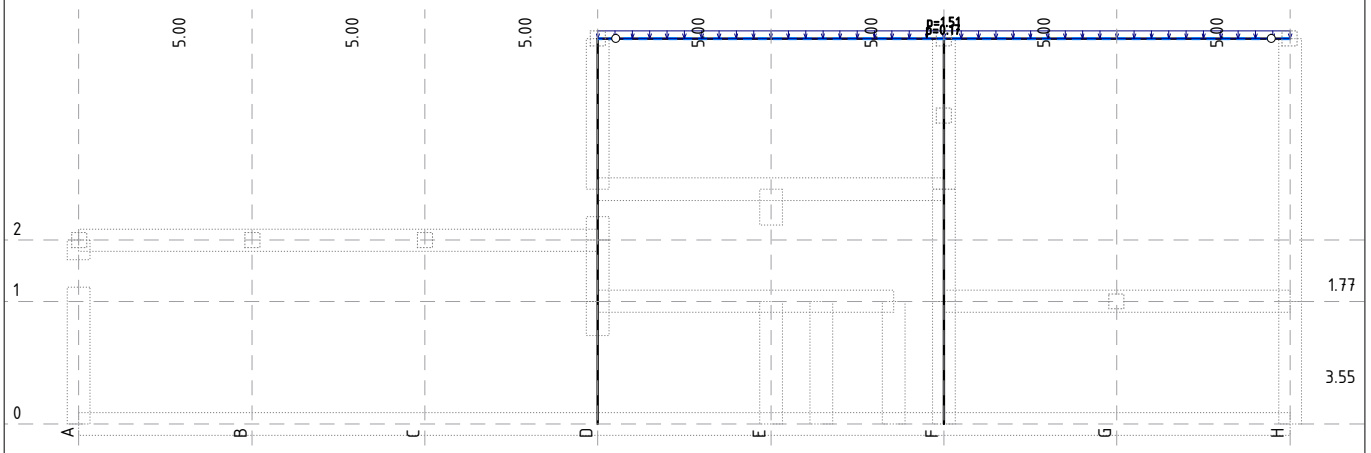
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 2: Variable Load



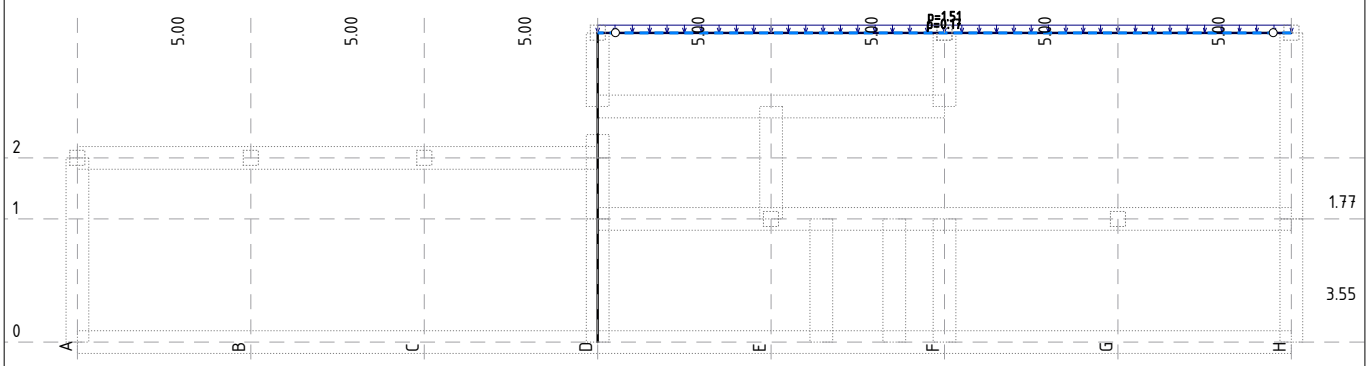
Frame: H_14

Load 2: Variable Load



Frame: H_10

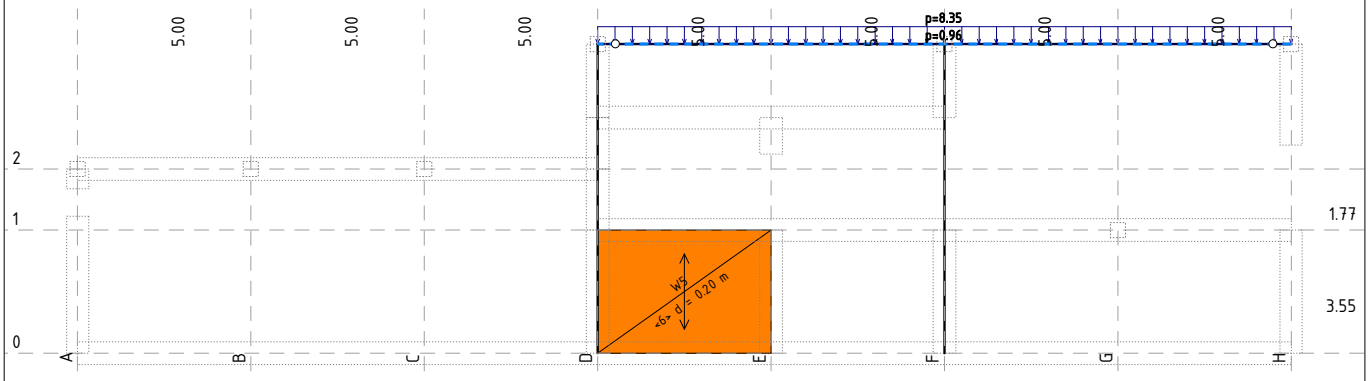
Load 2: Variable Load



Frame: H_15

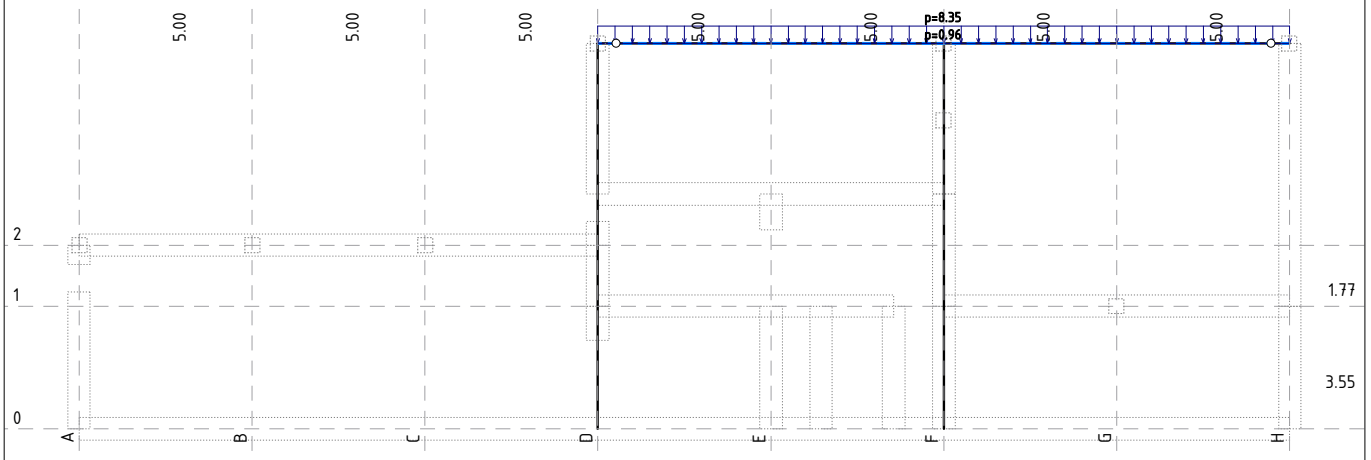
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 3: Snow



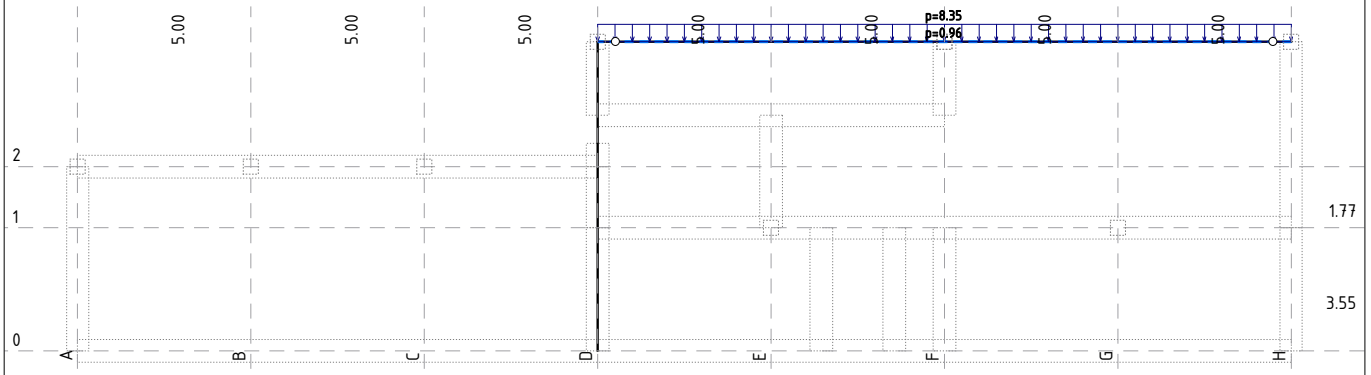
Frame: H_14

Load 3: Snow



Frame: H_10

Load 3: Snow



Frame: H_15

Modal Analysis

Advanced options of seismic analysis:

Masses grouped in the selected ceilings levels	
Beams - reduction of bending stiffness:	0.500
Walls - reduction of bending stiffness:	0.500
Columns - bending stiffness reduction:	0.500
Suppres oscilation in Z direction	

Load factors for mass calculations

No	Name	Factor	
1	Permanent Load (g)	1.00	
2	Variable Load	0.60	φ
3	Snow	0.00	

Floor mass distribution multipliers

Level	Z [m]	φ
Roof	10.70	1.00
Level 4	6.34	0.80
Level 3	4.87	0.80
Level 2	3.10	0.80
Foundation plate	-0.45	0.80

Mass distribution per levels

Level	Z [m]	X [m]	Y [m]	Mass [T]	T/m²
Roof	10.70	25.22	6.27	34.87	
Level 4	6.34	23.32	6.95	190.18	2.07
Level 3	4.87	9.53	5.35	263.86	1.50
Level 2	3.10	23.74	6.45	407.41	1.86
Foundation plate	-0.45	17.96	6.06	481.07	1.20
Total:	2.84	18.98	6.17	1377.40	

Position of rigidity centers (exact method)

Level	Z [m]	X [m]	Y [m]
Roof	10.70		
Level 4	6.34	22.36	11.90
Level 3	4.87	11.44	9.84
Level 2	3.10	22.99	10.21
Foundation plate	-0.45	17.49	5.45

Eccentricity per levels (exact method)

Level	Z [m]	eox [m]	eoy [m]
Roof	10.70		
Level 4	6.34	0.97	4.96
Level 3	4.87	1.91	4.49
Level 2	3.10	0.75	3.76
Foundation plate	-0.45	0.47	0.60

Natural frequency of structure

No	T [s]	f [Hz]
1	0.3990	2.5063
2	0.2852	3.5063
3	0.2301	4.3452
4	0.1642	6.0897

No	T [s]	f [Hz]
5	0.1507	6.6357
6	0.1321	7.5707
7	0.1159	8.6264

No	T [s]	f [Hz]
8	0.1094	9.1399
9	0.0837	11.9481
10	0.0818	12.2211

Regularity in the plan

Z [m]	e_{ox} [m]	e_{oy} [m]	r_x [m]	r_y [m]	l_s [m]	$e_{ox}<=0.3r_x$	$e_{oy}<=0.3r_y$	$r_x>l_s$	$r_y>l_s$
10.70	*	*	*	*	*	*	*	*	*
6.34	0.97	4.96	11.96	11.50	7.03	Yes	No	Yes	Yes
4.87	1.91	4.49	11.09	9.63	7.45	Yes	No	Yes	Yes
3.10	0.75	3.76	13.14	10.19	7.75	Yes	No	Yes	Yes
-0.45	0.47	0.60	10.40	10.63	11.12	Yes	Yes	No	No

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Seismic analysis

Seismic analysis: EC8 (EN 1998) SLO

Soil category:	C
Importance factor:	IV (γ=1.4)
Ratio agR/g:	0.15
Dumping coefficient:	0.05
Accidental torsional effects:	ei = ± 0.050 x Li

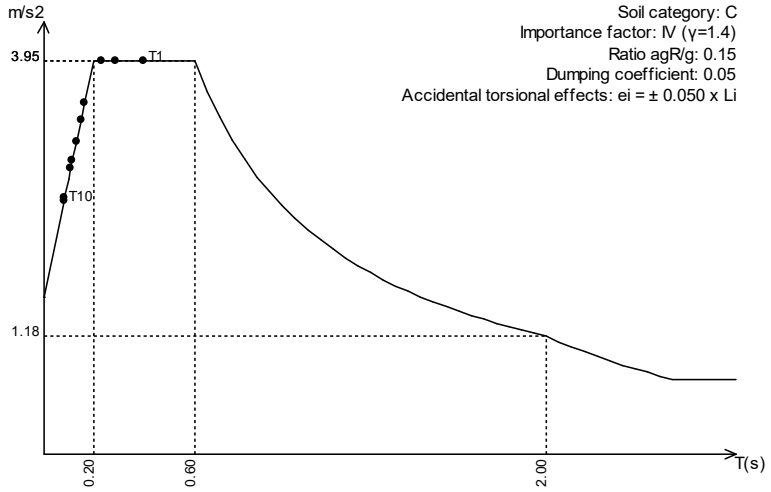
Earthquake directional factors:

Load case	Angle α[°]	k,α	k,α+90°	kz	q
Potres X	0	1.000	0.300	0.000	1.500
Potres Y	90	1.000	0.300	0.000	1.500

Type of spectrum

Load case	S	Tb	Tc	Td	avg/ag
Potres X	1.150	0.200	0.600	2.000	1.000
Potres Y	1.150	0.200	0.600	2.000	1.000

Design spectrum



S=1.15, Tb=0.20, Tc=0.60, Td=2.00

Distribution of seismic forces along height of structure - Potres X (+e)

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	251.38	8.21	-0.75	-11.03	79.36	0.47	-84.80	38.07	-2.42
Level 4	6.34	122.99	22.63	-5.69	25.13	335.99	-12.02	386.63	59.80	-28.02
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	44.36	-36.06	14.04	64.77	303.13	9.39	504.98	-493.24	75.48
Level 2	3.10	54.67	25.36	-4.96	3.63	426.18	-2.69	488.40	77.70	-17.23
Foundation plate	-0.45	19.89	1.07	-0.07	5.40	97.28	-3.06	171.40	-35.76	0.48
	Σ=	493.29	21.21	2.56	87.90	1241.9	-7.91	1466.6	-353.43	28.30

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-1.83	2.30	-1.56	-22.92	-38.48	-9.01	8.89	-2.13	-0.41
Level 4	6.34	57.12	-51.56	-9.37	284.91	-58.03	-30.52	-56.23	1.85	-0.78
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	119.00	81.83	24.62	285.40	329.04	84.54	65.23	-9.38	5.38
Level 2	3.10	100.31	18.90	-15.74	328.27	-272.42	-61.90	7.77	-7.87	-2.07
Foundation plate	-0.45	92.84	11.26	-0.83	389.41	-44.71	2.49	15.79	-10.55	0.12
	Σ=	367.44	62.73	-2.88	1265.1	-84.60	-14.38	41.45	-28.08	2.25

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	4.98	6.27	0.98	3.51	-4.79	0.56	0.68	-0.94	-0.06
Level 4	6.34	2.67	-32.30	-7.34	-73.22	-14.89	0.17	3.81	-2.66	0.02
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-110.60	104.23	-2.69	41.54	22.21	-1.98	-3.30	-3.40	1.10
Level 2	3.10	239.88	10.04	-5.08	55.80	19.29	1.43	-0.95	8.24	-0.29
Foundation plate	-0.45	132.24	75.48	-1.06	27.67	27.97	-1.24	1.43	11.36	0.32
	Σ=	269.16	163.72	-15.20	55.30	49.80	-1.06	1.68	12.60	1.10

Level	Z [m]	Mode 10		
		Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-1.10	-25.92	-1.09
Level 4	6.34	19.64	-50.60	6.23
Level 554	5.54	0.00	0.00	0.00
Level 3	4.87	10.61	-4.48	4.53
Level 2	3.10	-26.42	93.51	-1.63
Foundation plate	-0.45	22.84	199.44	3.49
	Σ=	25.57	211.96	11.52

Distribution of seismic forces along height of structure - Potres X (-e)

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	251.38	8.21	-0.75	-11.03	79.36	0.47	-84.80	38.07	-2.42
Level 4	6.34	122.99	22.63	-5.69	25.13	335.99	-12.02	386.63	59.80	-28.02
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	44.36	-36.06	14.04	64.77	303.13	9.39	504.98	-493.24	75.48
Level 2	3.10	54.67	25.36	-4.96	3.63	426.18	-2.69	488.40	77.70	-17.23
Foundation plate	-0.45	19.89	1.07	-0.07	5.40	97.28	-3.06	171.40	-35.76	0.48
	Σ=	493.29	21.21	2.56	87.90	1241.9	-7.91	1466.6	-353.43	28.30

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-1.83	2.30	-1.56	-22.92	-38.48	-9.01	8.89	-2.13	-0.41
Level 4	6.34	57.12	-51.56	-9.37	284.91	-58.03	-30.52	-56.23	1.85	-0.78
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	119.00	81.83	24.62	285.40	329.04	84.54	65.23	-9.38	5.38
Level 2	3.10	100.31	18.90	-15.74	328.27	-272.42	-61.90	7.77	-7.87	-2.07
Foundation plate	-0.45	92.84	11.26	-0.83	389.41	-44.71	2.49	15.79	-10.55	0.12
	Σ=	367.44	62.73	-2.88	1265.1	-84.60	-14.38	41.45	-28.08	2.25

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	4.98	6.27	0.98	3.51	-4.79	0.56	0.68	-0.94	-0.06
Level 4	6.34	2.67	-32.30	-7.34	-73.22	-14.89	0.17	3.81	-2.66	0.02
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-110.60	104.23	-2.69	41.54	22.21	-1.98	-3.30	-3.40	1.10
Level 2	3.10	239.88	10.04	-5.08	55.80	19.29	1.43	-0.95	8.24	-0.29
Foundation plate	-0.45	132.24	75.48	-1.06	27.67	27.97	-1.24	1.43	11.36	0.32
	Σ=	269.16	163.72	-15.20	55.30	49.80	-1.06	1.68	12.60	1.10

Level	Z [m]	Mode 10		
		Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-1.10	-25.92	-1.09
Level 4	6.34	19.64	-50.60	6.23
Level 554	5.54	0.00	0.00	0.00
Level 3	4.87	10.61	-4.48	4.53
Level 2	3.10	-26.42	93.51	-1.63
Foundation plate	-0.45	22.84	199.44	3.49
	Σ=	25.57	211.96	11.52

Distribution of seismic forces along height of structure - Potres Y (+e)

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-63.78	-2.08	0.19	-29.12	209.49	1.24	49.45	-22.20	1.41
Level 4	6.34	-31.21	-5.74	1.44	66.34	886.96	-31.73	-225.46	-34.87	16.34
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-11.26	9.15	-3.56	170.98	800.21	24.80	-294.47	287.63	-44.02
Level 2	3.10	-13.87	-6.43	1.26	9.58	1125.0	-7.11	-284.81	-45.31	10.05
Foundation plate	-0.45	-5.05	-0.27	0.02	14.25	256.79	-8.07	-99.95	20.85	-0.28
	Σ=	-125.16	-5.38	-0.65	232.03	3278.5	-20.87	-855.24	206.10	-16.50

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	0.23	-0.28	0.19	8.58	14.41	3.37	-10.91	2.62	0.50
Level 4	6.34	-7.02	6.34	1.15	-106.66	21.73	11.43	68.98	-2.27	0.96
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-14.63	-10.06	-3.03	-106.85	-123.19	-31.65	-80.02	11.51	-6.60
Level 2	3.10	-12.34	-2.32	1.94	-122.90	101.99	23.17	-9.53	9.66	2.53
Foundation plate	-0.45	-11.42	-1.38	0.10	-145.79	16.74	-0.93	-19.37	12.94	-0.15
	Σ=	-45.18	-7.71	0.35	-473.62	31.67	5.39	-50.85	34.45	-2.75

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	1.30	1.64	0.25	1.66	-2.26	0.27	1.51	-2.07	-0.13
Level 4	6.34	0.69	-8.42	-1.91	-34.62	-7.04	0.08	8.44	-5.89	0.05
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-28.83	27.17	-0.70	19.64	10.50	-0.94	-7.30	-7.53	2.44
Level 2	3.10	62.54	2.62	-1.32	26.38	9.12	0.68	-2.10	18.26	-0.65
Foundation plate	-0.45	34.47	19.68	-0.28	13.08	13.22	-0.59	3.17	25.16	0.71
	Σ=	70.17	42.68	-3.96	26.14	23.54	-0.50	3.72	27.93	2.43

Level	Z [m]	Mode 10		
		Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-2.52	-59.39	-2.50
Level 4	6.34	45.01	-115.94	14.27
Level 554	5.54	0.00	0.00	0.00
Level 3	4.87	24.31	-10.27	10.39
Level 2	3.10	-60.55	214.28	-3.74
Foundation plate	-0.45	52.33	457.00	7.99
	Σ=	58.59	485.67	26.41

Distribution of seismic forces along height of structure - Potres Y (-e)

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-63.78	-2.08	0.19	-29.12	209.49	1.24	49.45	-22.20	1.41
Level 4	6.34	-31.21	-5.74	1.44	66.34	886.96	-31.73	-225.46	-34.87	16.34
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-11.26	9.15	-3.56	170.98	800.21	24.80	-294.47	287.63	-44.02
Level 2	3.10	-13.87	-6.43	1.26	9.58	1125.0	-7.11	-284.81	-45.31	10.05
Foundation plate	-0.45	-5.05	-0.27	0.02	14.25	256.79	-8.07	-99.95	20.85	-0.28
	Σ=	-125.16	-5.38	-0.65	232.03	3278.5	-20.87	-855.24	206.10	-16.50

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	0.23	-0.28	0.19	8.58	14.41	3.37	-10.91	2.62	0.50
Level 4	6.34	-7.02	6.34	1.15	-106.66	21.73	11.43	68.98	-2.27	0.96
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-14.63	-10.06	-3.03	-106.85	-123.19	-31.65	-80.02	11.51	-6.60
Level 2	3.10	-12.34	-2.32	1.94	-122.90	101.99	23.17	-9.53	9.66	2.53
Foundation plate	-0.45	-11.42	-1.38	0.10	-145.79	16.74	-0.93	-19.37	12.94	-0.15
	Σ=	-45.18	-7.71	0.35	-473.62	31.67	5.39	-50.85	34.45	-2.75

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	1.30	1.64	0.25	1.66	-2.26	0.27	1.51	-2.07	-0.13
Level 4	6.34	0.69	-8.42	-1.91	-34.62	-7.04	0.08	8.44	-5.89	0.05
Level 554	5.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level 3	4.87	-28.83	27.17	-0.70	19.64	10.50	-0.94	-7.30	-7.53	2.44
Level 2	3.10	62.54	2.62	-1.32	26.38	9.12	0.68	-2.10	18.26	-0.65
Foundation plate	-0.45	34.47	19.68	-0.28	13.08	13.22	-0.59	3.17	25.16	0.71
	Σ=	70.17	42.68	-3.96	26.14	23.54	-0.50	3.72	27.93	2.43

Level	Z [m]	Mode 10		
		Px [kN]	Py [kN]	Pz [kN]
Roof	10.70	-2.52	-59.39	-2.50
Level 4	6.34	45.01	-115.94	14.27
Level 554	5.54	0.00	0.00	0.00
Level 3	4.87	24.31	-10.27	10.39
Level 2	3.10	-60.55	214.28	-3.74
Foundation plate	-0.45	52.33	457.00	7.99
	Σ=	58.59	485.67	26.41

Distribution factors - relative share

Mode \ Name	1. Potres X (	2. Potres X (	3. Potres Y (	4. Potres Y (
1	0.112	0.112	0.007	0.007
2	0.103	0.103	0.719	0.719
3	0.305	0.305	0.104	0.104
4	0.087	0.087	0.001	0.001
5	0.278	0.278	0.039	0.039
6	0.007	0.007	0.011	0.011
7	0.071	0.071	0.005	0.005
8	0.016	0.016	0.004	0.004
9	0.001	0.001	0.006	0.006
10	0.020	0.020	0.105	0.105

Distribution factors - mass involvement

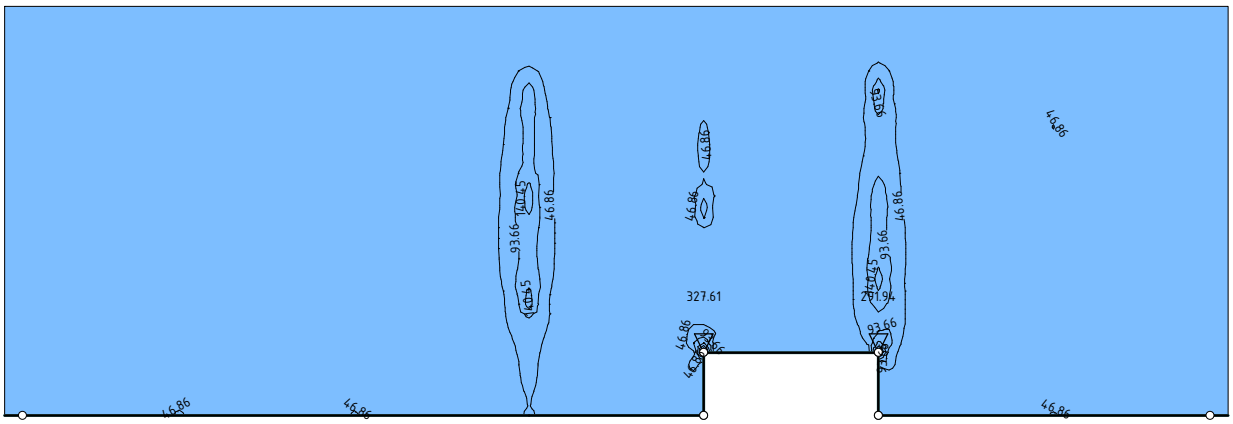
Mode	U [α=0°]	U [α=90°]
1	9.00	0.02
2	0.34	68.02
3	33.17	1.93
4	7.28	0.21
5	29.46	0.13
6	1.24	0.57

Mode	U [α=0°]	U [α=90°]
7	6.36	2.35
8	1.14	0.93
9	0.01	0.83
10	0.30	20.51
ΣU (%)	88.31	95.50

Structural analysis

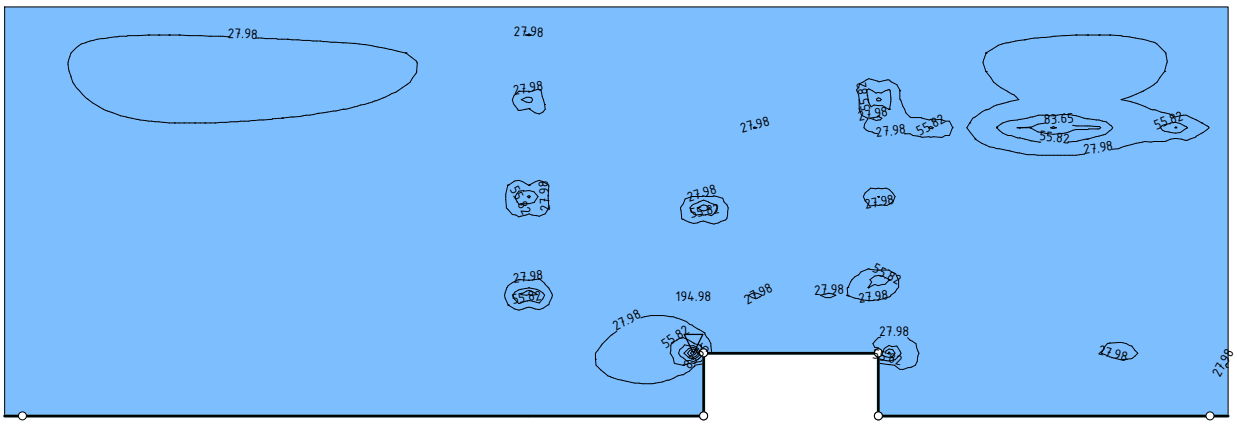
INNER FORCES IN THE SLABS

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



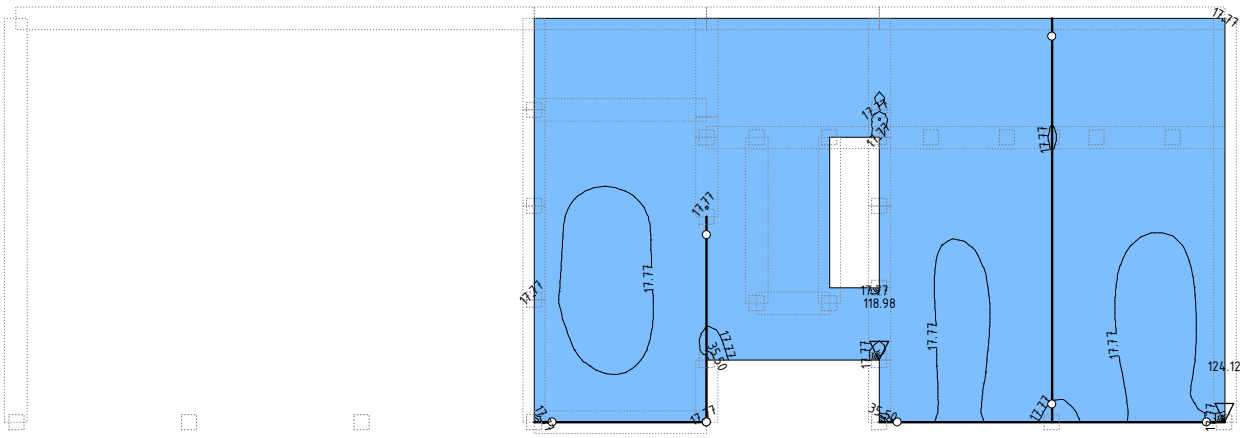
Level: Foundation plate [-0.45 m]
Slab Results: max Mx= 327.61 / min Mx= 0.08 kNm/m

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



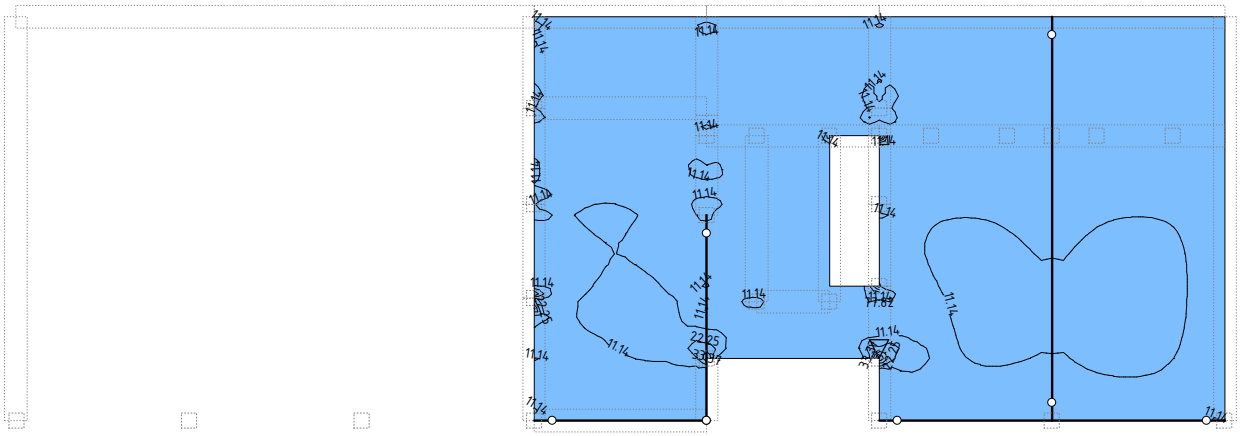
Level: Foundation plate [-0.45 m]
Slab Results: max My= 194.98 / min My= 0.15 kNm/m

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



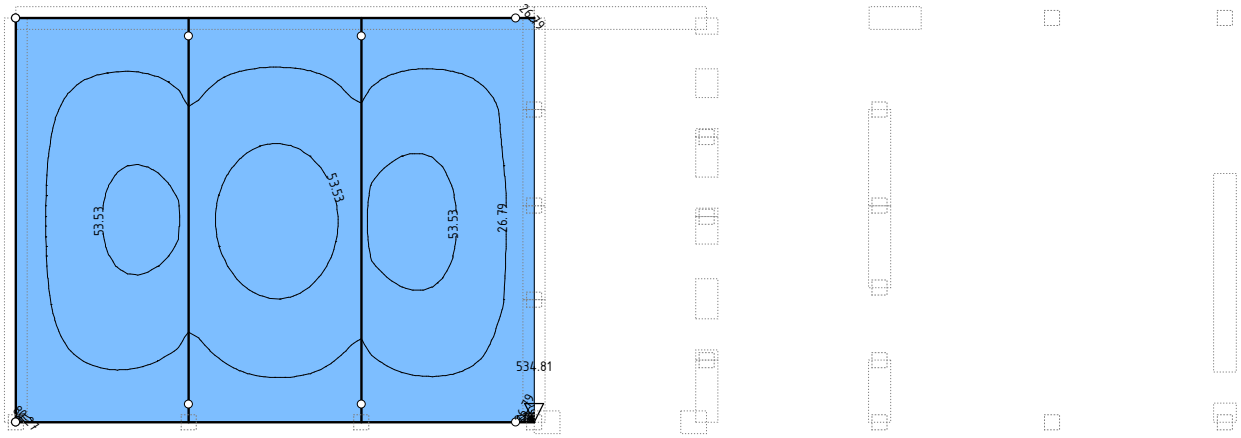
Level: Level 2 [3.10 m]
Slab Results: max Mx= 124.12 / min Mx= 0.06 kNm/m

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



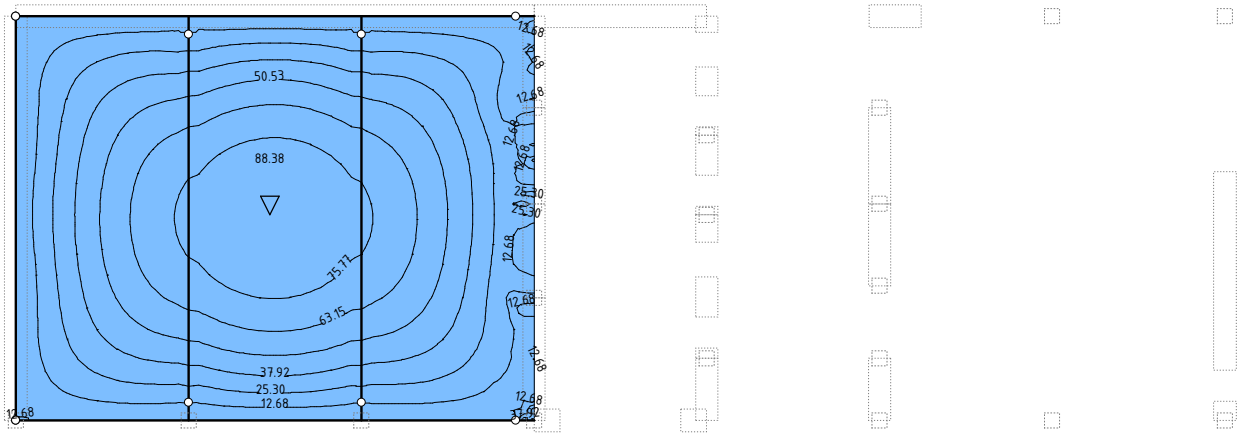
Level: Level 2 [3.10 m]
Slab Results: max My= 77.82 / min My= 0.02 kNm/m

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Level: Level 3 [4.87 m]
Slab Results: max Mx= 534.81 / min Mx= 0.05 kNm/m

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

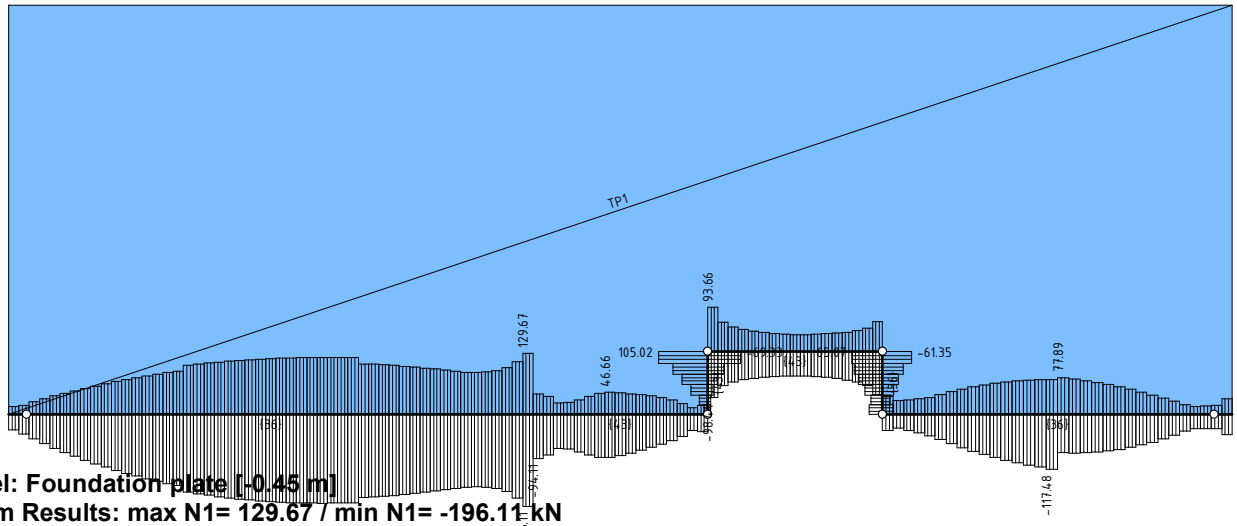


Level: Level 3 [4.87 m]
Slab Results: max My= 88.38 / min My= 0.06 kNm/m

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

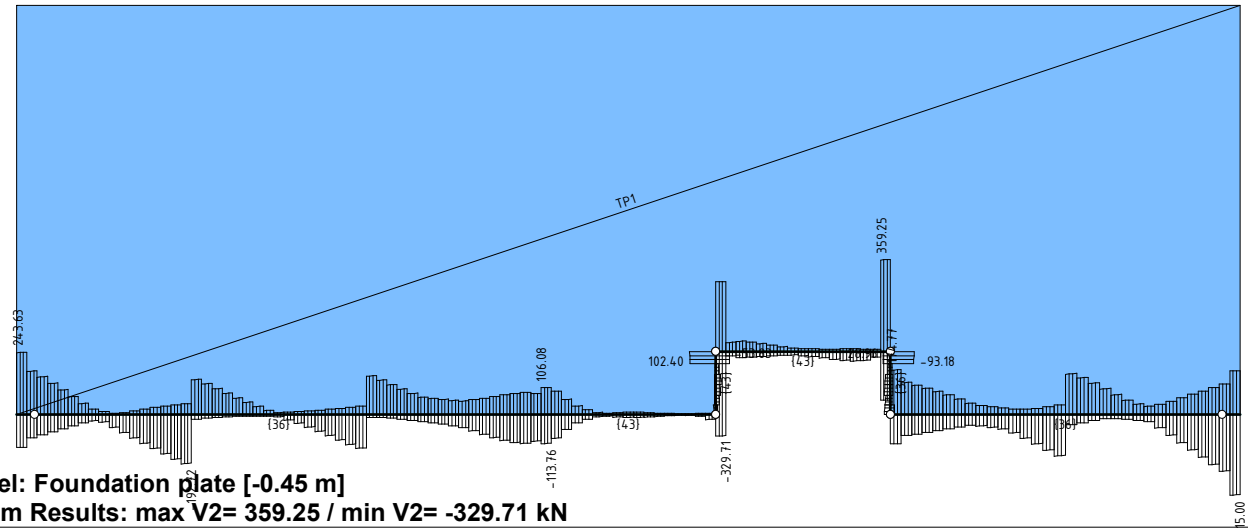
INNER FORCES IN BEAMS

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



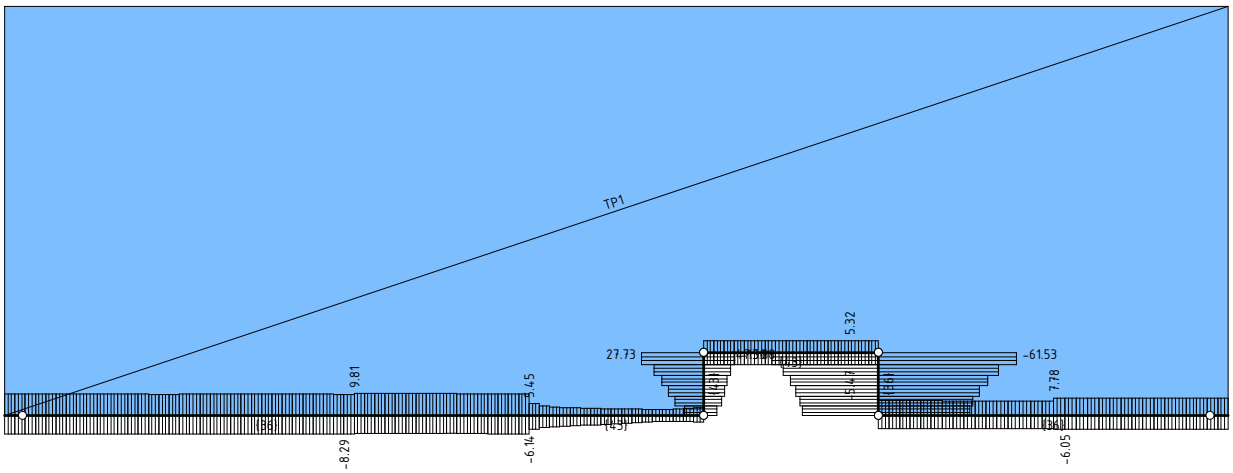
Level: Foundation plate [-0.45 m]
Beam Results: max N1= 129.67 / min N1= -196.11 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



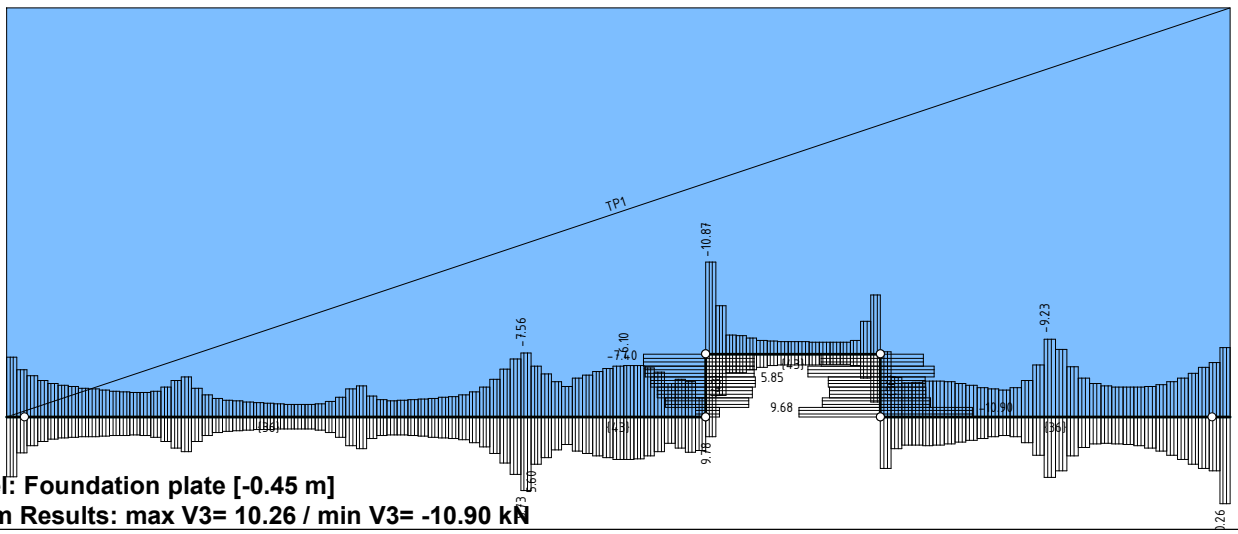
Level: Foundation plate [-0.45 m]
Beam Results: max V2= 359.25 / min V2= -329.71 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



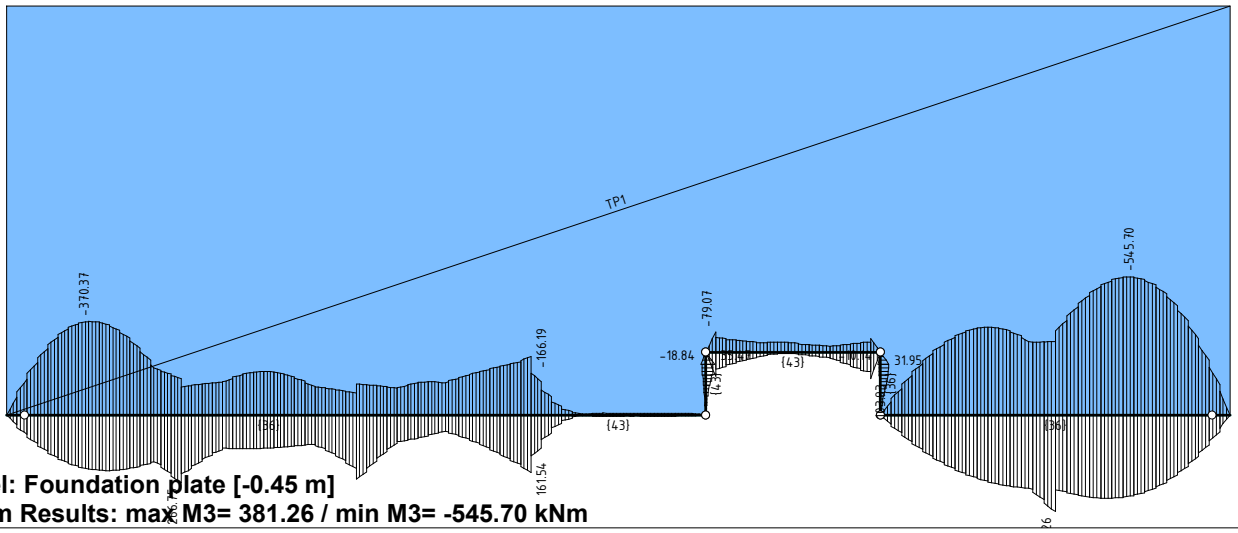
Level: Foundation plate [-0.45 m]
Beam Results: max M1= 47.50 / min M1= -61.53 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



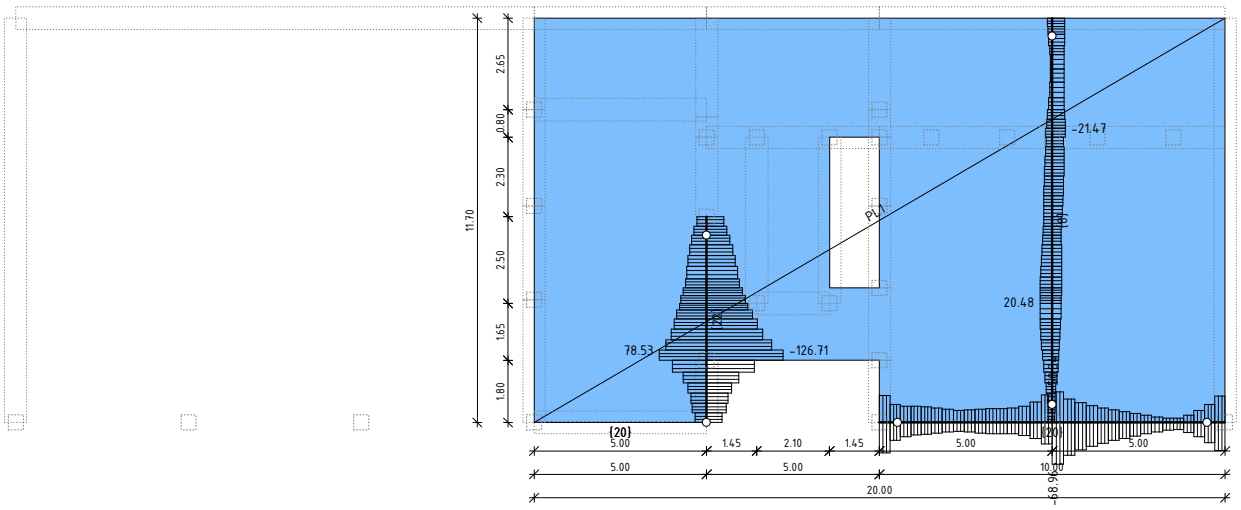
Level: Foundation plate [-0.45 m]
Beam Results: max V3= 10.26 / min V3= -10.90 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



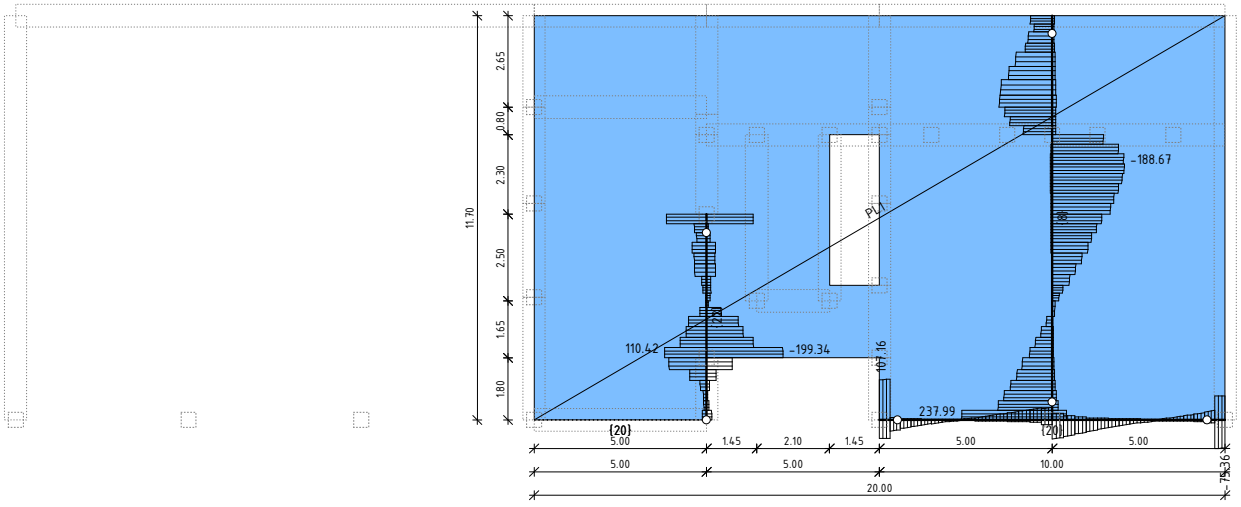
Level: Foundation plate [-0.45 m]
Beam Results: max M3= 381.26 / min M3= -545.70 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



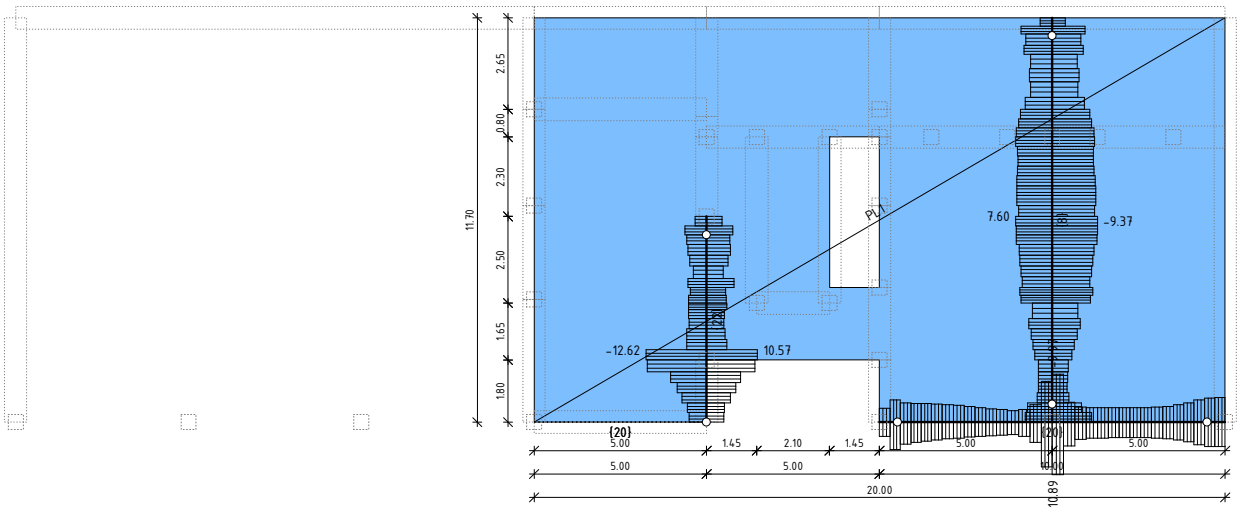
Level: Level 2 [3.10 m]
Beam Results: max N1= 226.15 / min N1= -218.07 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



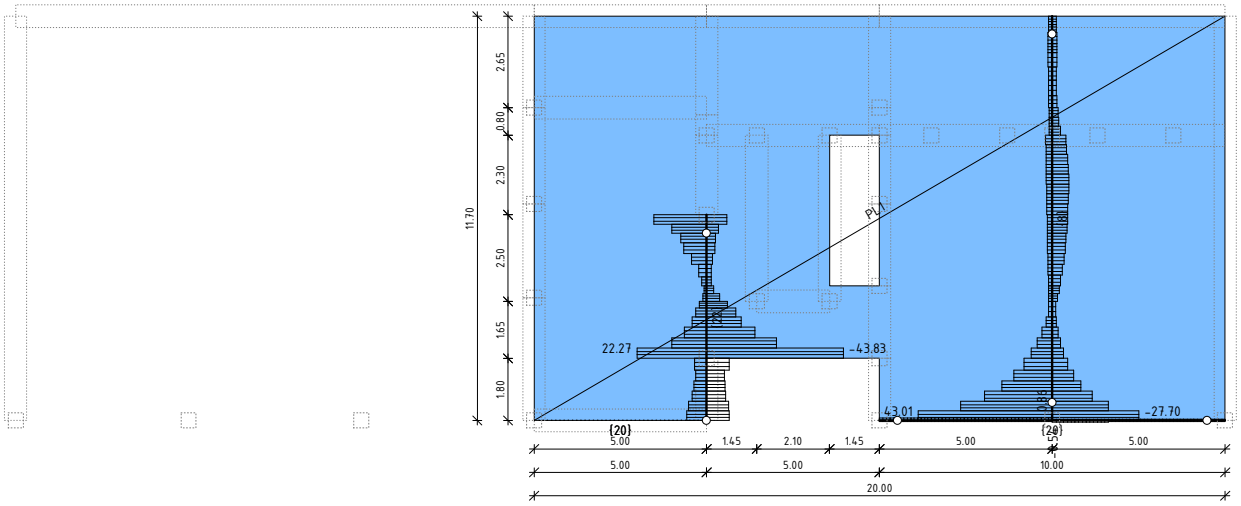
Level: Level 2 [3.10 m]
Beam Results: max V2= 237.99 / min V2= -199.34 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



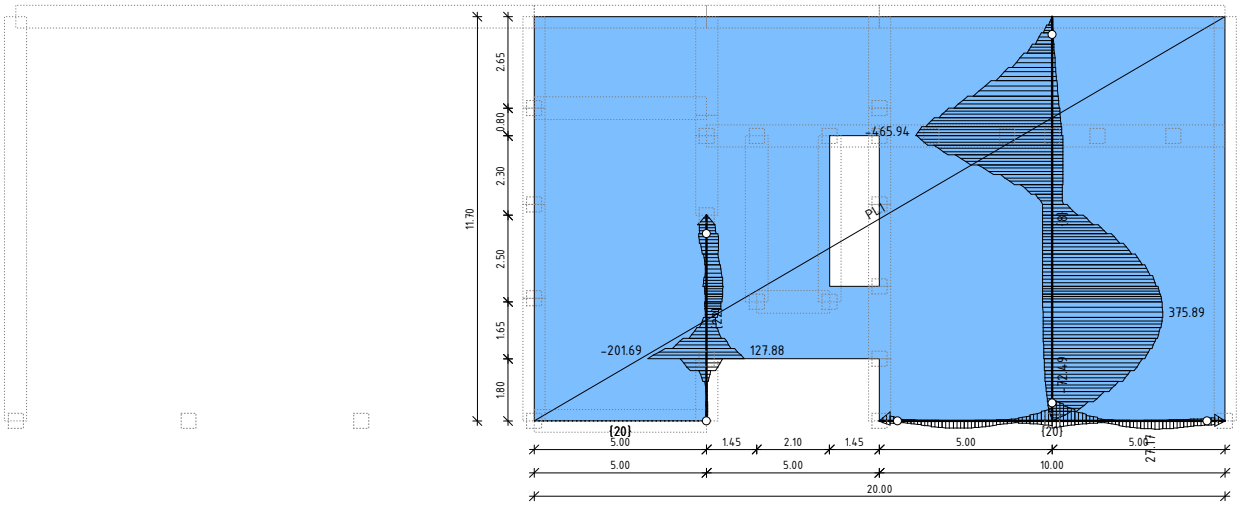
Level: Level 2 [3.10 m]
Beam Results: max V3= 12.35 / min V3= -12.62 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



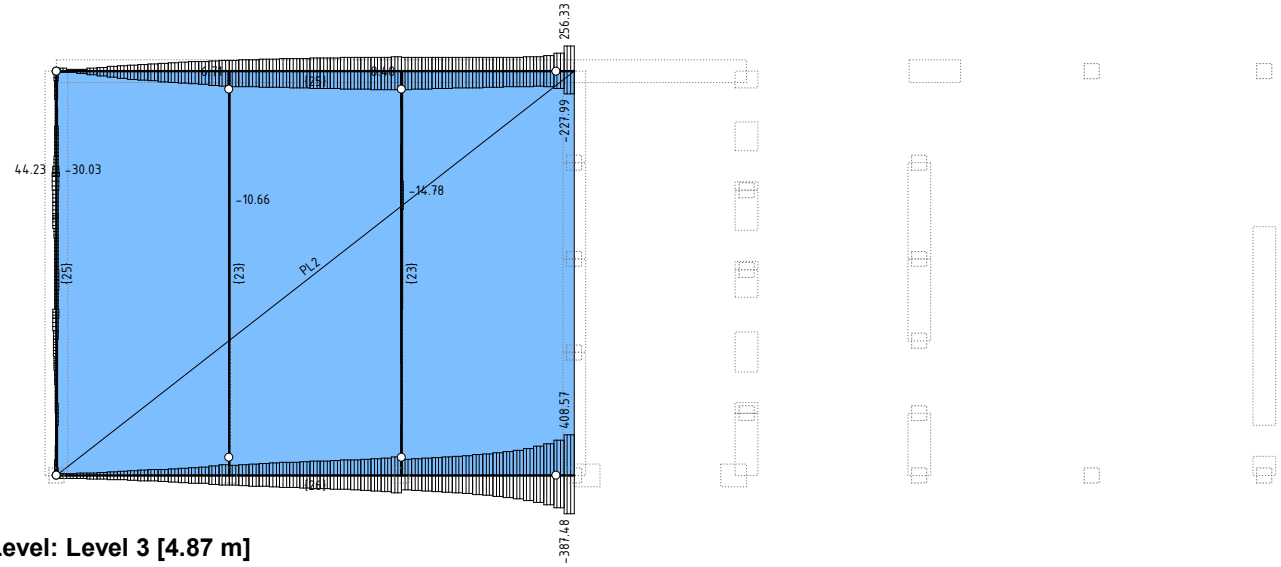
Level: Level 2 [3.10 m]
Beam Results: max M1= 43.01 / min M1= -43.83 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



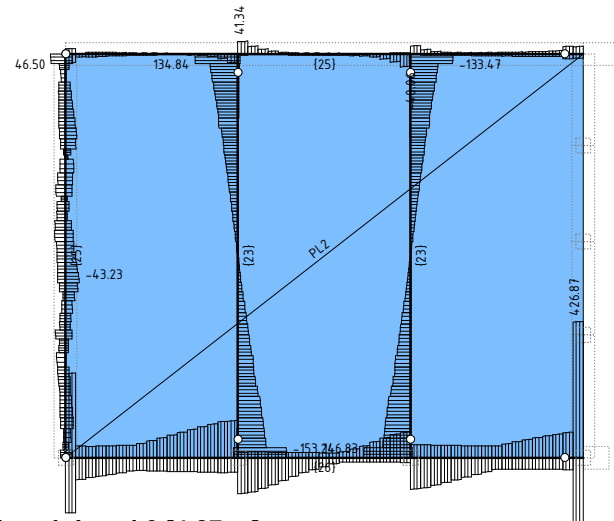
Level: Level 2 [3.10 m]
Beam Results: max M3= 375.89 / min M3= -465.94 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



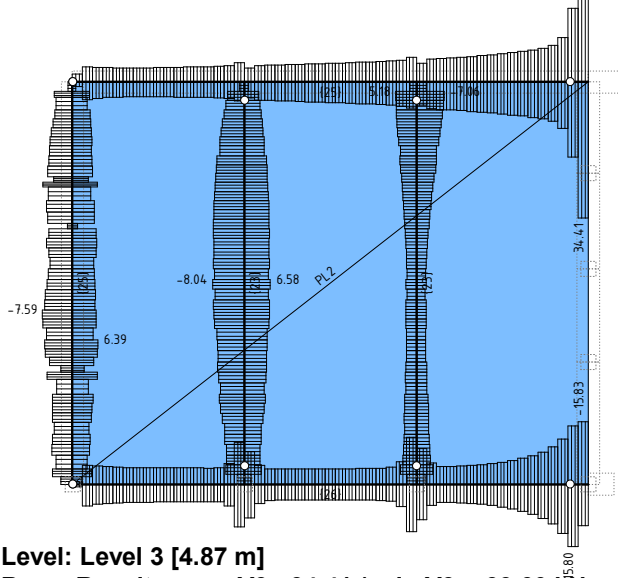
Level: Level 3 [4.87 m]
Beam Results: max N1= 408.57 / min N1= -387.48 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



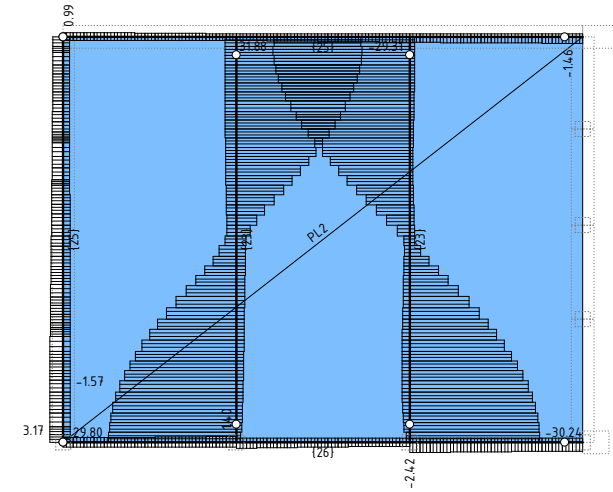
Level: Level 3 [4.87 m]
Beam Results: max V2= 426.87 / min V2= -414.10 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



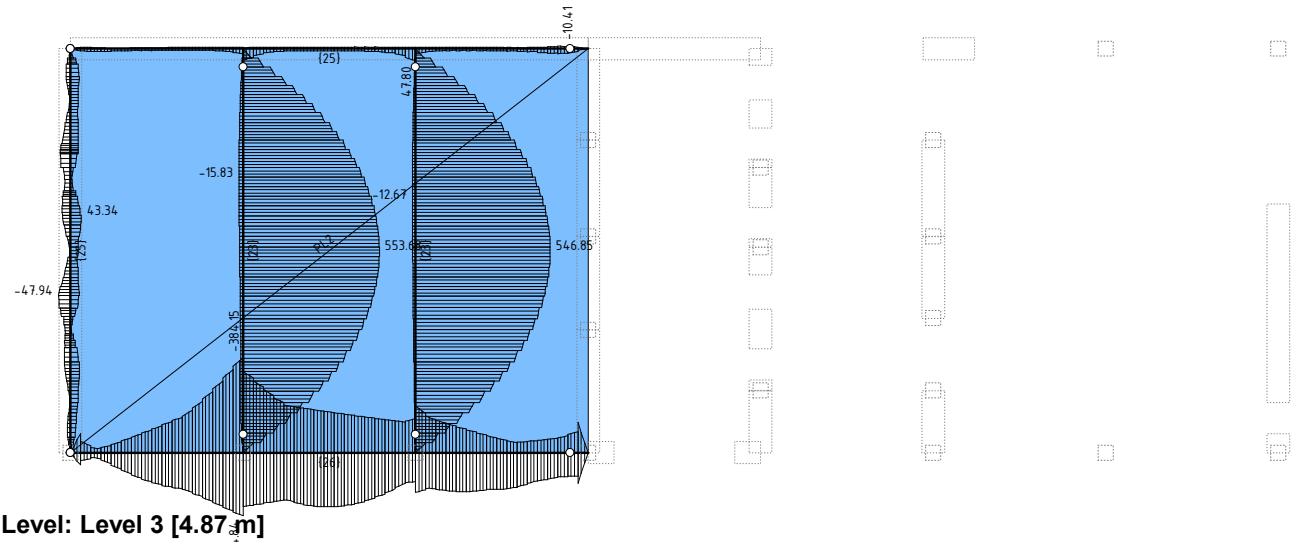
Level: Level 3 [4.87 m]
Beam Results: max V3= 34.41 / min V3= -33.60 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



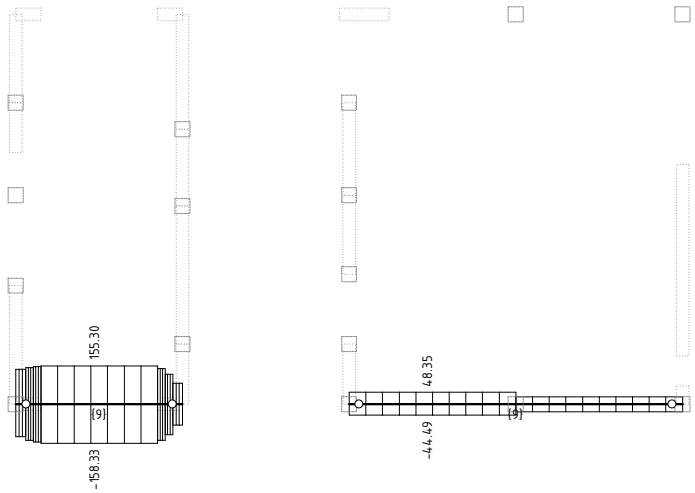
Level: Level 3 [4.87 m]
Beam Results: max M1= 31.88 / min M1= -30.24 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



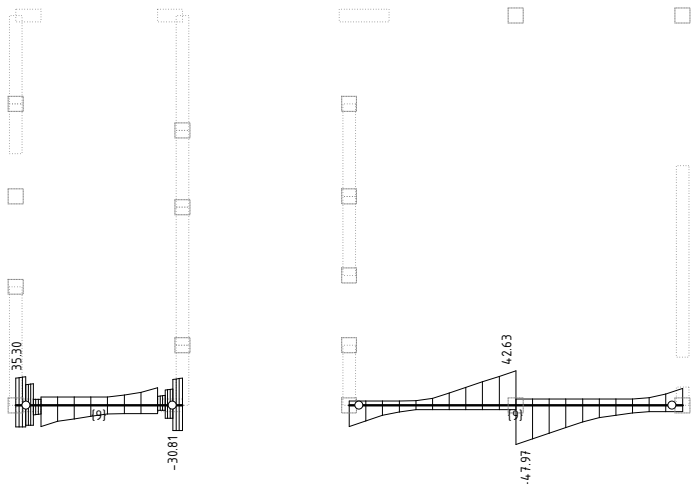
Level: Level 3 [4.87 m]
Beam Results: max M3= 553.68 / min M3= -384.15 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



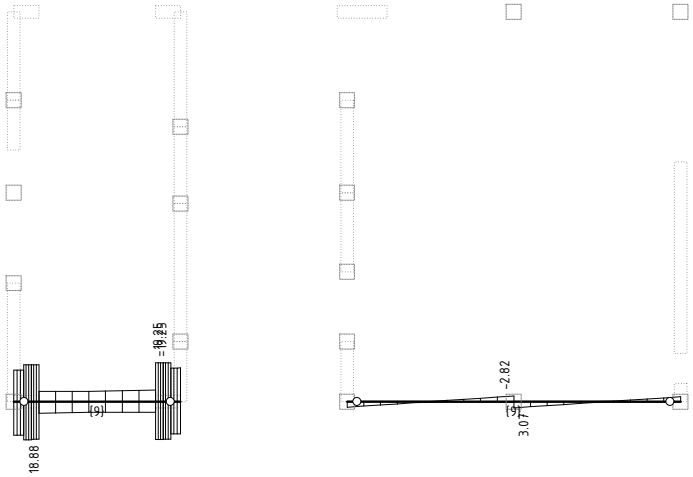
Level: Level 554 [5.54 m]
Beam Results: max N1= 155.30 / min N1= -158.33 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



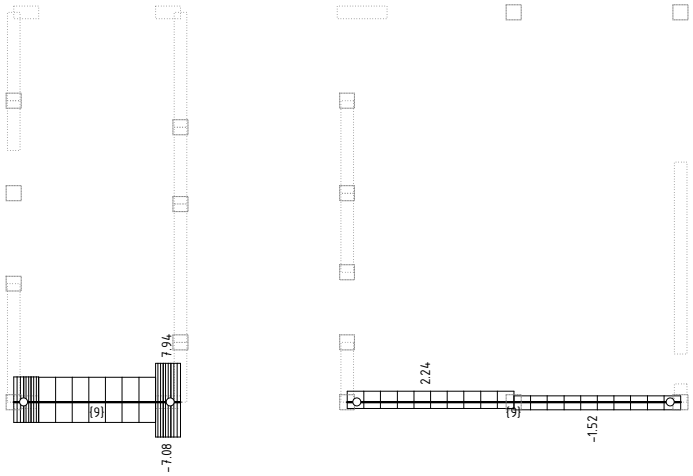
Level: Level 554 [5.54 m]
Beam Results: max V2= 42.63 / min V2= -47.97 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



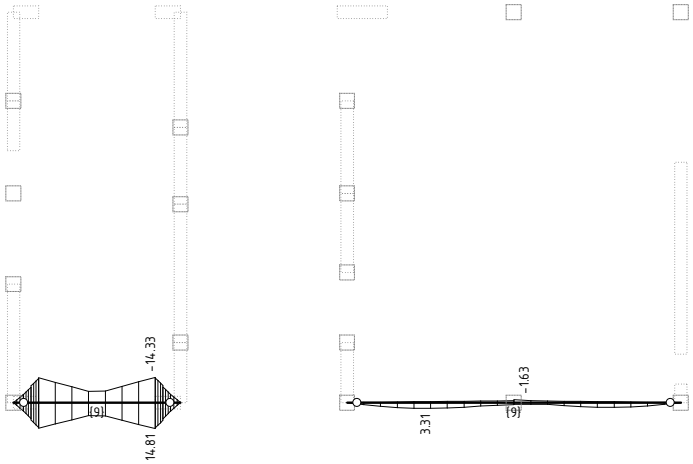
Level: Level 554 [5.54 m]
Beam Results: max V3= 18.88 / min V3= -19.25 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



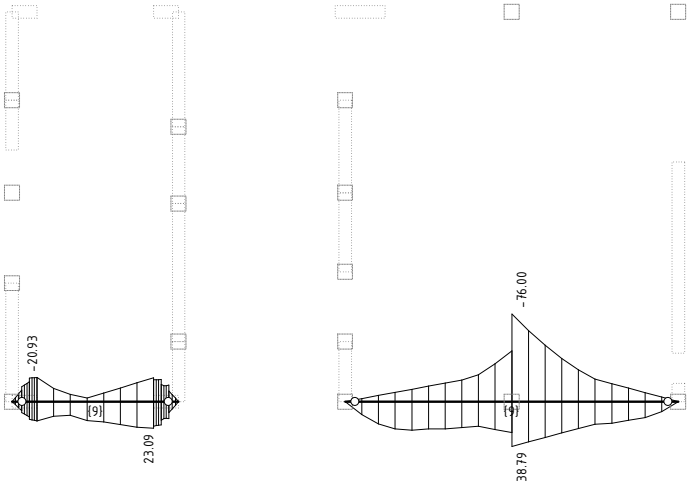
Level: Level 554 [5.54 m]
Beam Results: max M1= 7.94 / min M1= -7.08 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



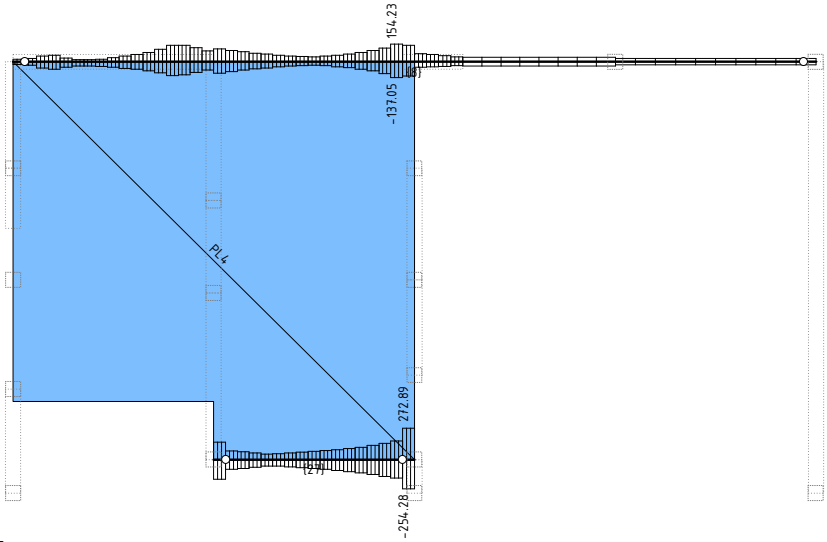
Level: Level 554 [5.54 m]
Beam Results: max M2= 14.81 / min M2= -14.33 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



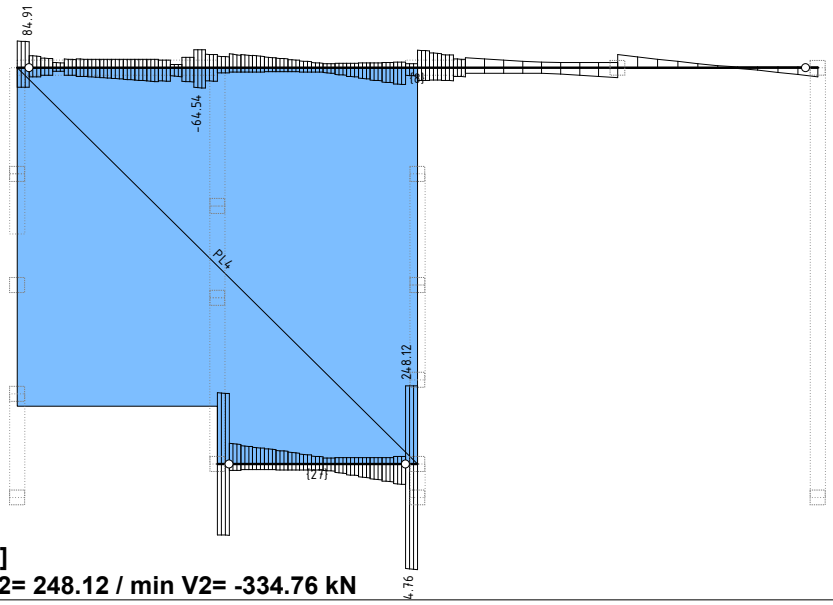
Level: Level 554 [5.54 m]
Beam Results: max M3= 38.79 / min M3= -76.00 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



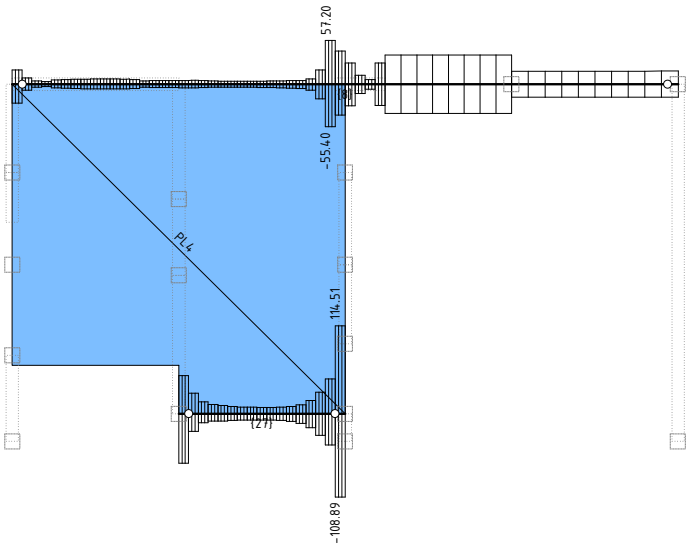
Level: Level 4 [6.34 m]
Beam Results: max N1= 272.89 / min N1= -254.28 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



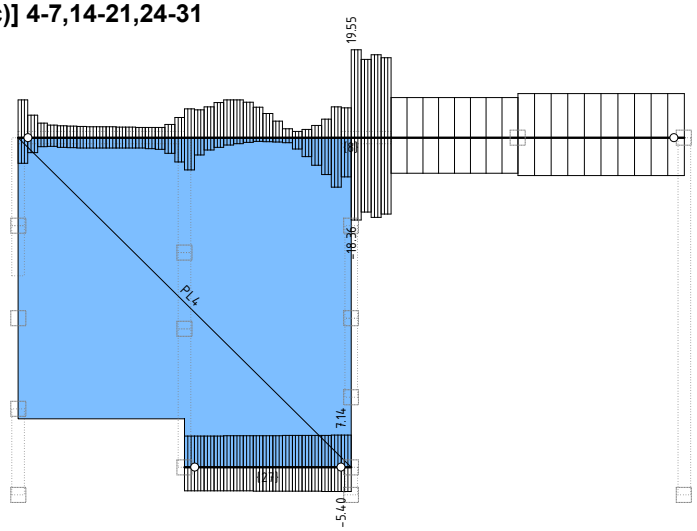
Level: Level 4 [6.34 m]
Beam Results: max V2= 248.12 / min V2= -334.76 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



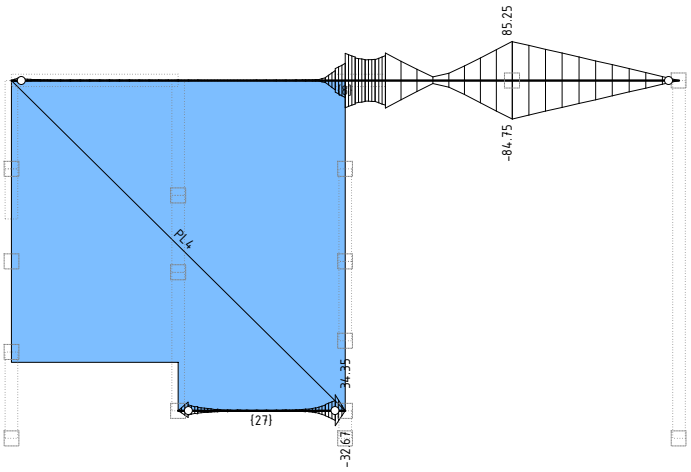
Level: Level 4 [6.34 m]
Beam Results: max V3= 114.51 / min V3= -108.89 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



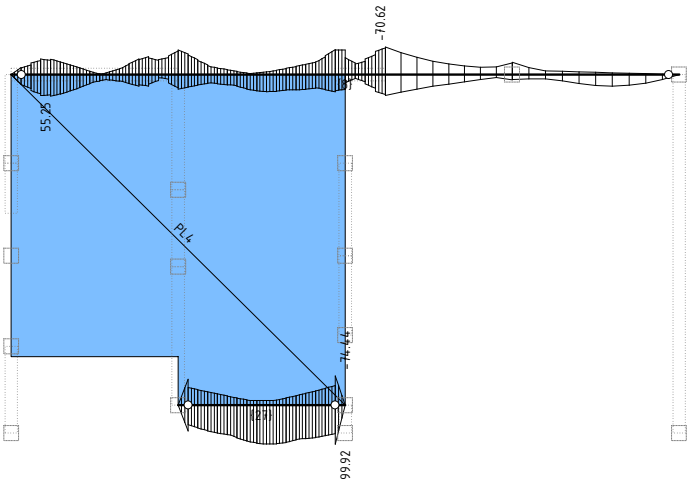
Level: Level 4 [6.34 m]
Beam Results: max M1= 19.55 / min M1= -18.36 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



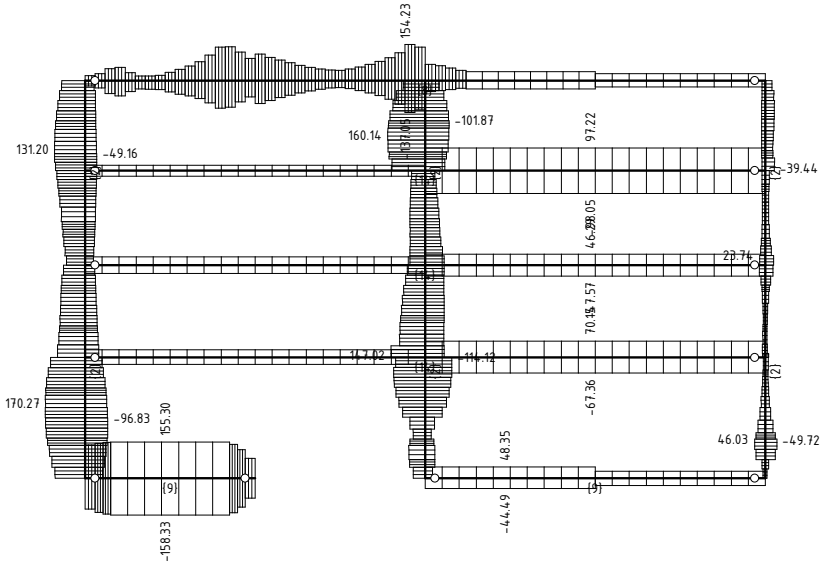
Level: Level 4 [6.34 m]
Beam Results: max M2= 85.25 / min M2= -84.75 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



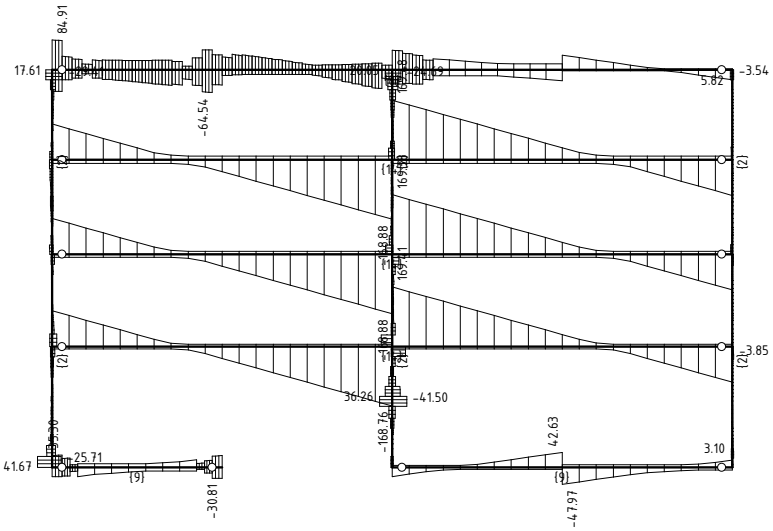
Level: Level 4 [6.34 m]
Beam Results: max M3= 99.92 / min M3= -74.44 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



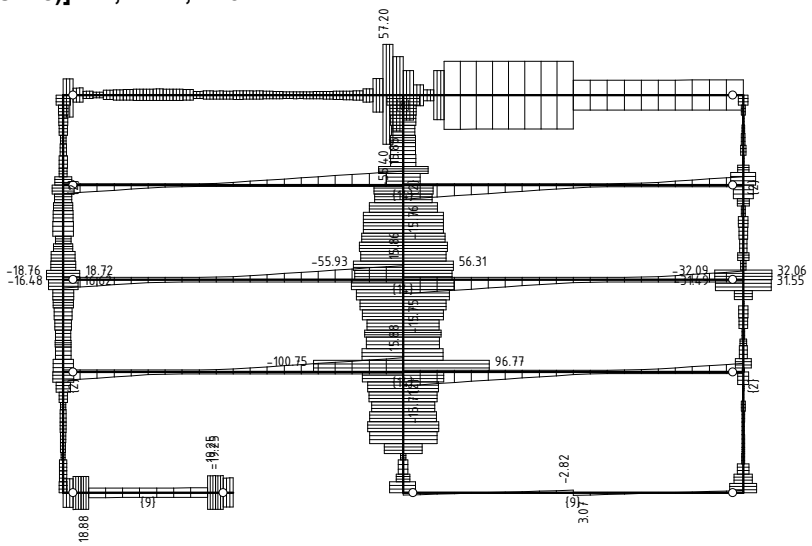
View: Roof
Beam Results: max N1= 170.27 / min N1= -158.33 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



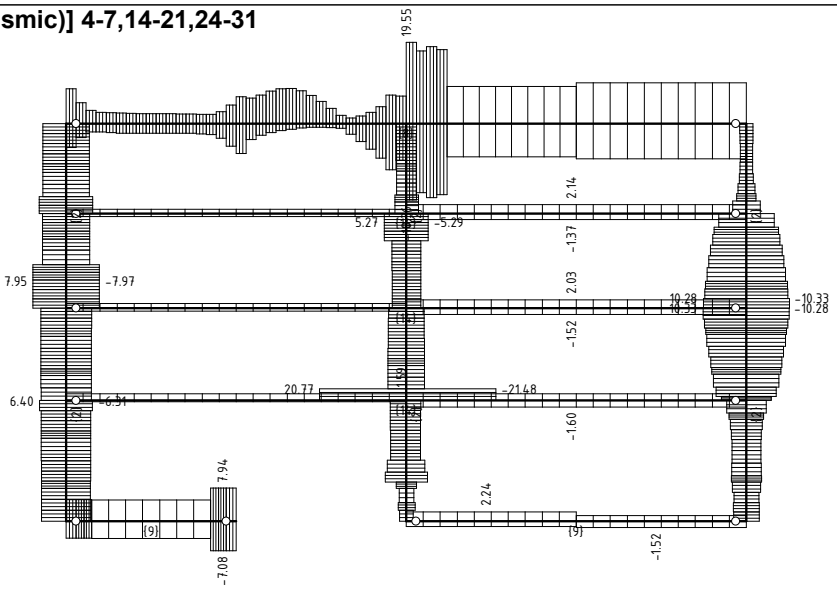
View: Roof
Beam Results: max V2= 169.48 / min V2= -168.88 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



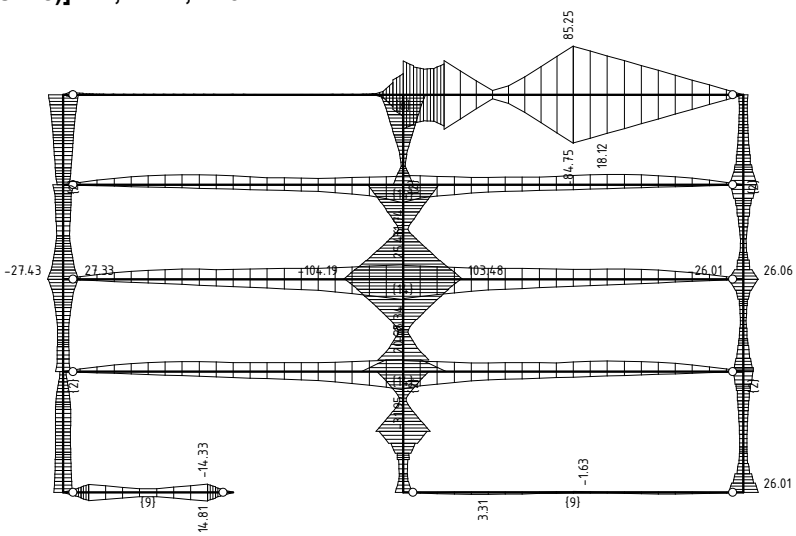
View: Roof
Beam Results: max V3= 96.77 / min V3= -100.75 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



View: Roof
Beam Results: max M1= 20.77 / min M1= -21.48 kNm

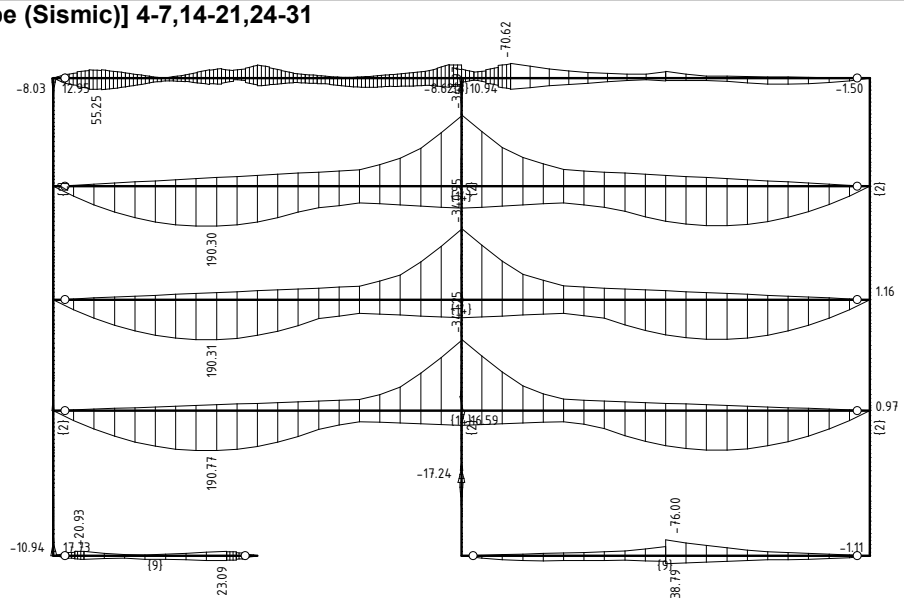
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



View: Roof
Beam Results: max M2= 103.48 / min M2= -104.19 kNm

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

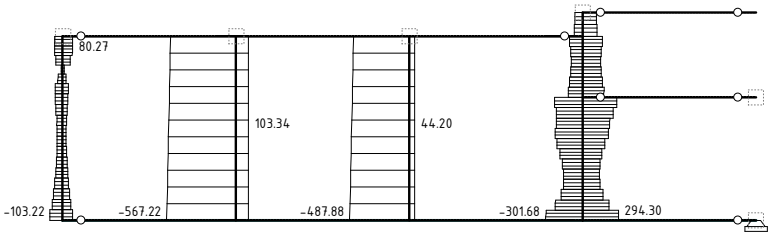


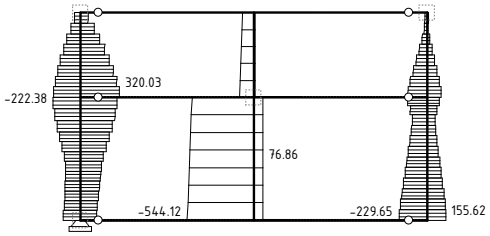
View: Roof
Beam Results: max M3= 190.77 / min M3= -341.97 kNm

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

INNER FORCES IN COLUMNS

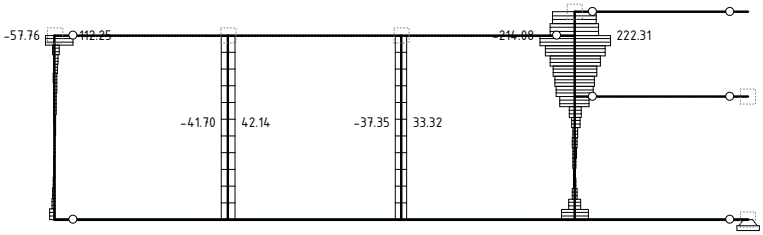
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

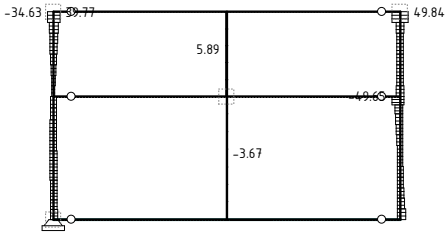




Frame: H_1
Beam Results: max N1= 408.57 / min N1= -567.22 kN

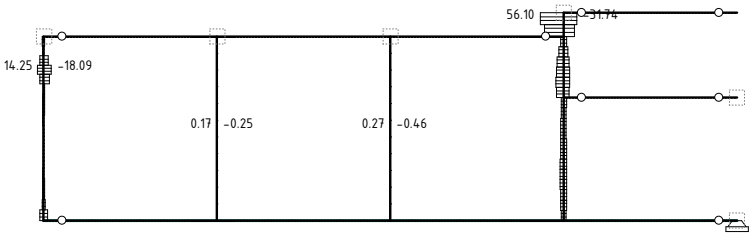
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

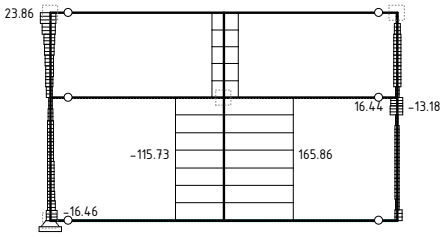




Frame: H_1
Beam Results: max V2= 426.87 / min V2= -414.10 kN

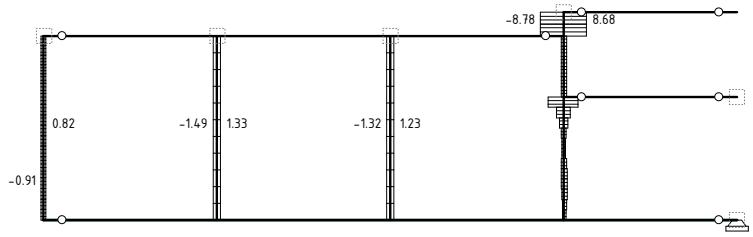
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

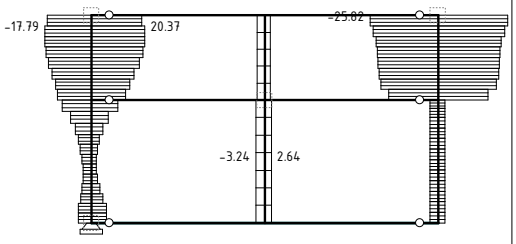




Frame: H_1
Beam Results: max V3= 165.86 / min V3= -115.73 kN

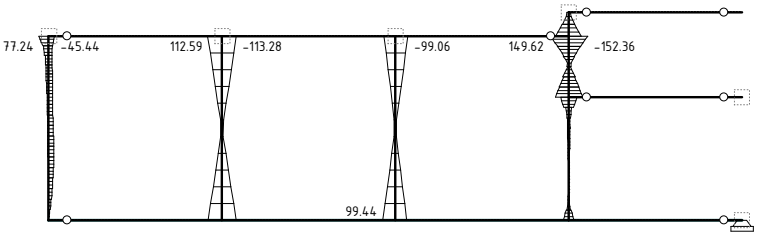
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31

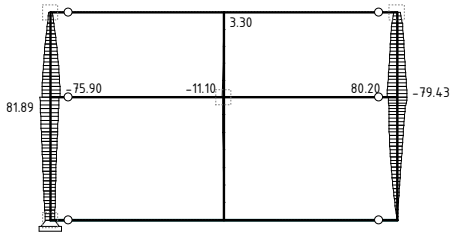




Frame: H_1
Beam Results: max M1= 26.39 / min M1= -25.82 kNm

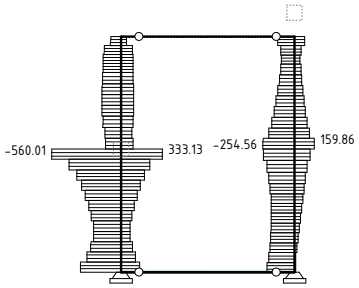
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31





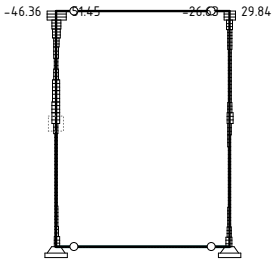
Frame: H_1
Beam Results: max M3= 381.26 / min M3= -545.70 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



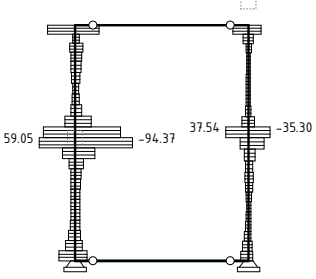
Frame: H_2
Beam Results: max N1= 333.13 / min N1= -560.01 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



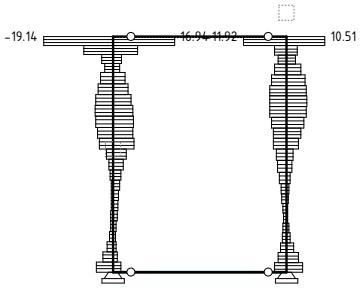
Frame: H_2
Beam Results: max V2= 359.25 / min V2= -334.76 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



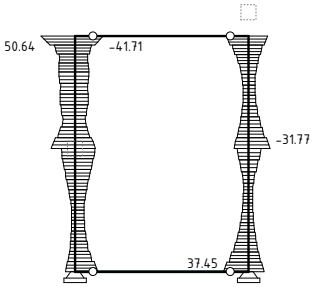
Frame: H_2
Beam Results: max V3= 114.51 / min V3= -108.89 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: H_2
Beam Results: max M1= 16.94 / min M1= -19.14 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



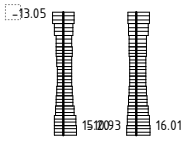
Frame: H_2
Beam Results: max M3= 103.93 / min M3= -79.07 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



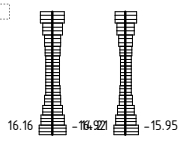
Frame: H_6
Beam Results: max N1= 105.71 / min N1= -170.64 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



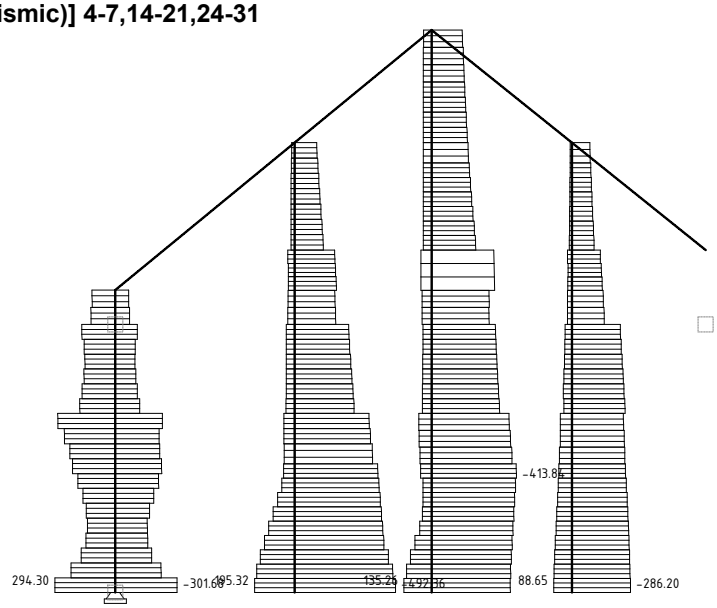
Frame: H_6
Beam Results: max V2= 16.01 / min V2= -13.05 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



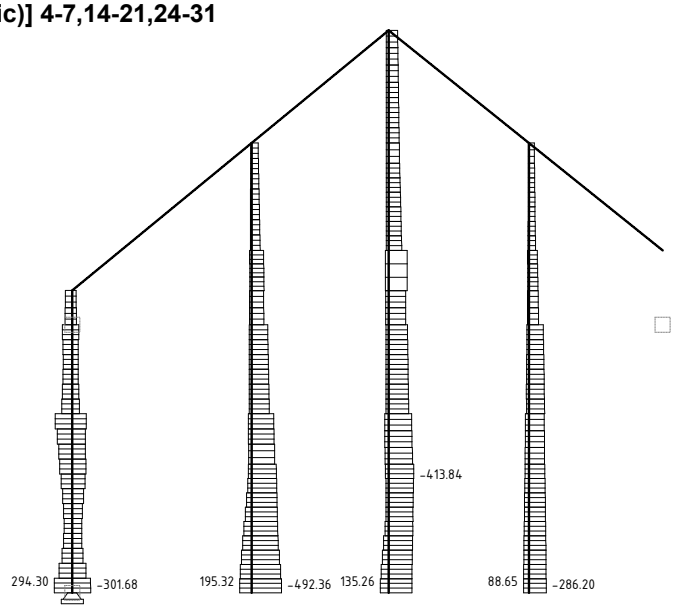
Frame: H_6
Beam Results: max V3= 16.16 / min V3= -16.92 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



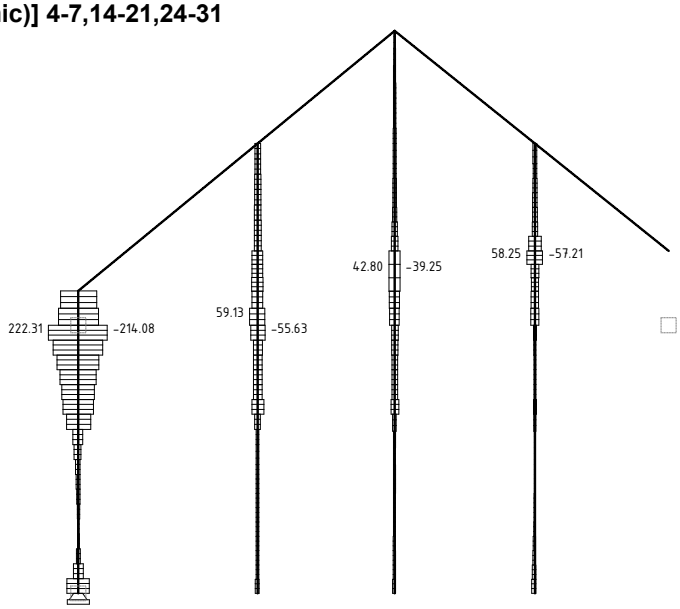
Frame: V_3
Beam Results: max N1= 294.30 / min N1= -492.36 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



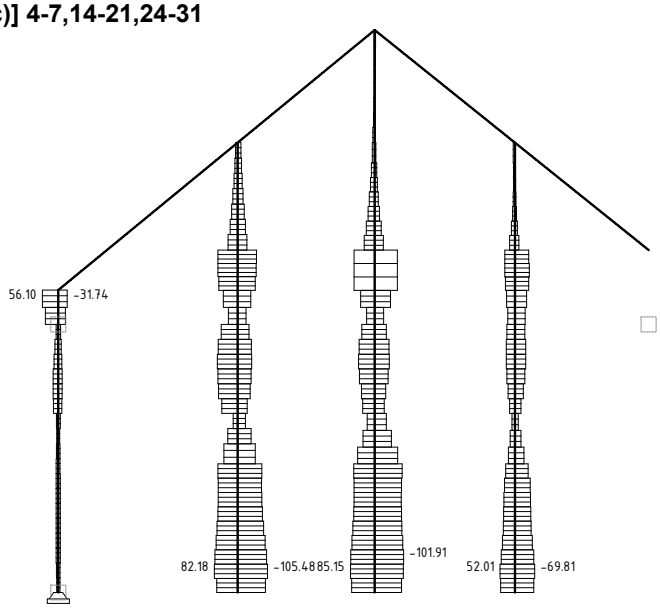
Frame: V_3
Beam Results: max N1= 294.30 / min N1= -492.36 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_3
Beam Results: max V2= 222.31 / min V2= -214.08 kN

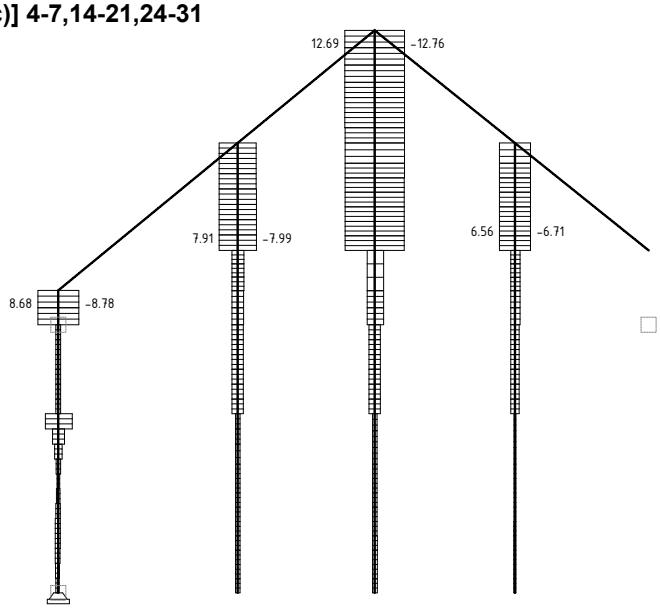
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_3
Beam Results: max V3= 85.15 / min V3= -105.48 kN

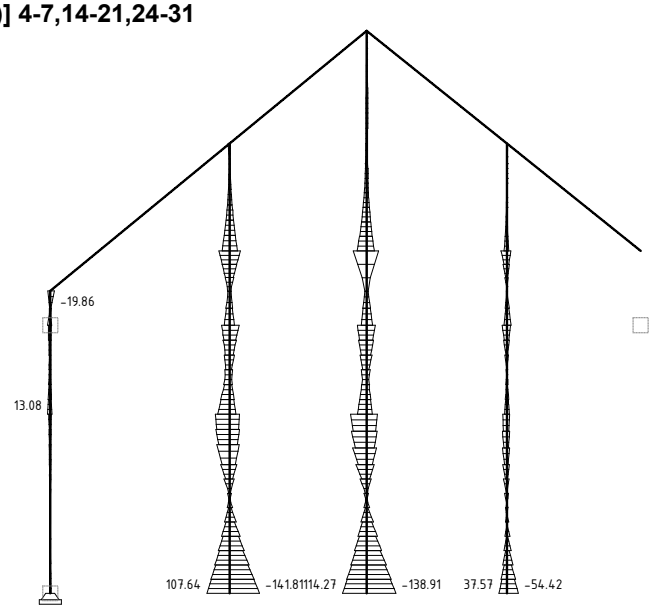
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



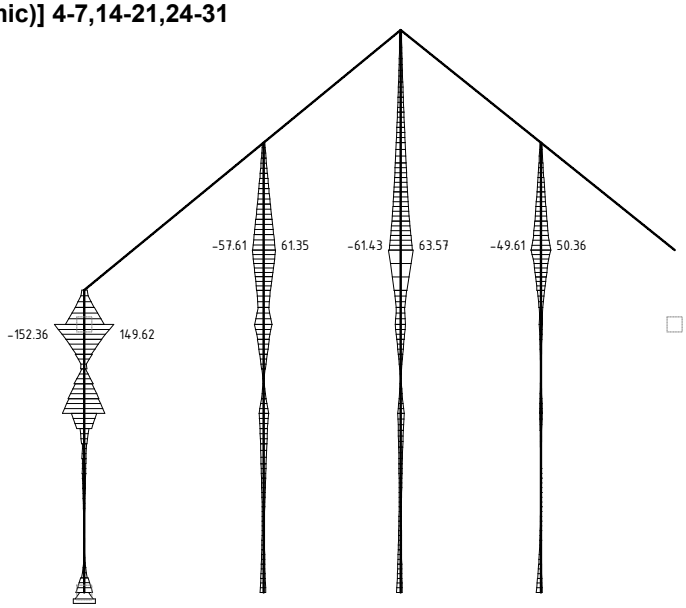
Frame: V_3
Beam Results: max M1= 12.69 / min M1= -12.76 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_3
Beam Results: max M2= 114.27 / min M2= -141.81 kNm

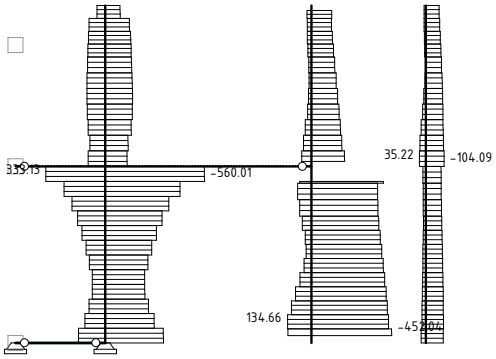
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_3
Beam Results: max M3= 149.62 / min M3= -152.36 kNm

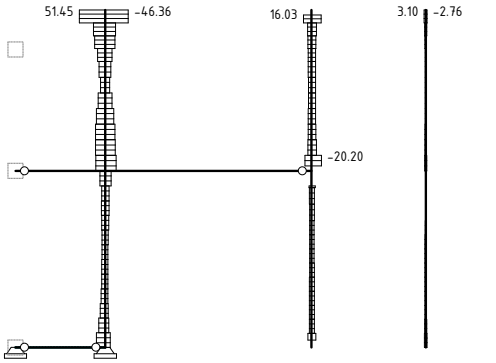
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



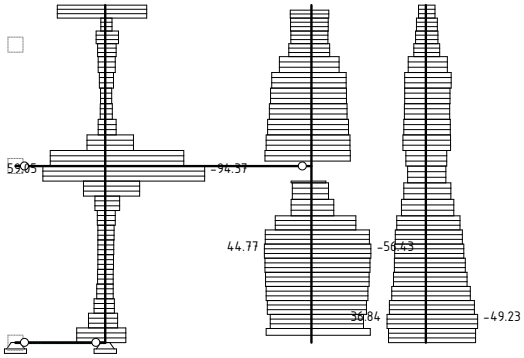
Frame: V_1
Beam Results: max N1= 333.13 / min N1= -560.01 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_1
Beam Results: max V2= 110.42 / min V2= -199.34 kN

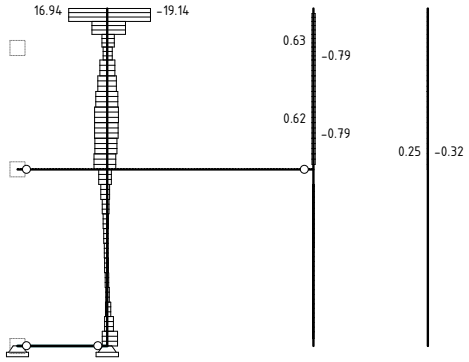
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_1
Beam Results: max V3= 59.05 / min V3= -94.37 kN

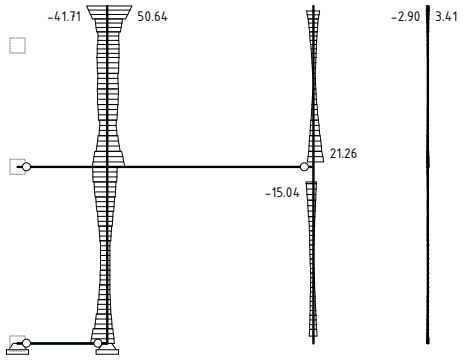
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



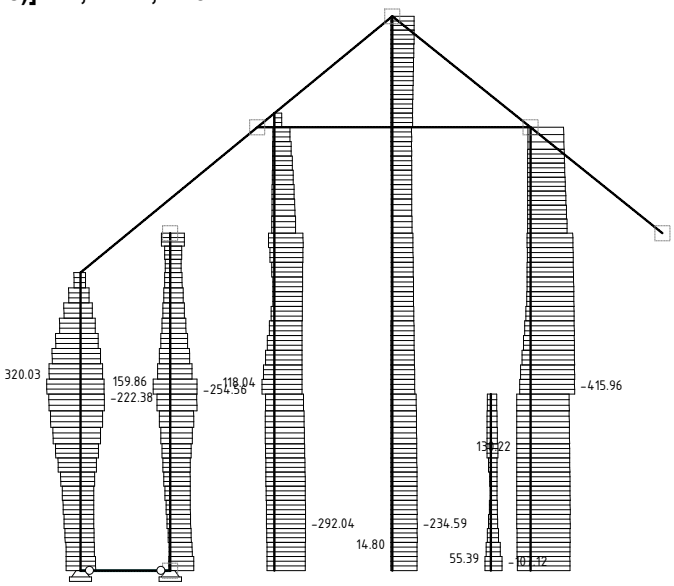
Frame: V_1
Beam Results: max M1= 27.73 / min M1= -43.83 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_1
Beam Results: max M3= 127.88 / min M3= -201.69 kNm

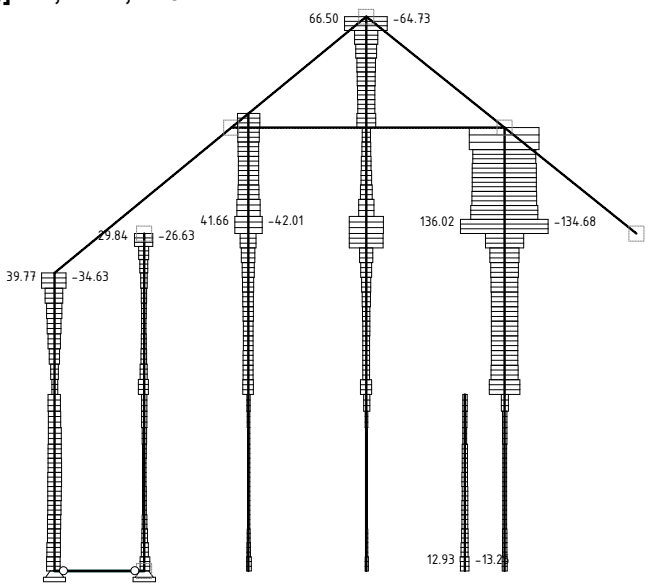
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_2
Beam Results: max N1= 320.03 / min N1= -415.96 kN

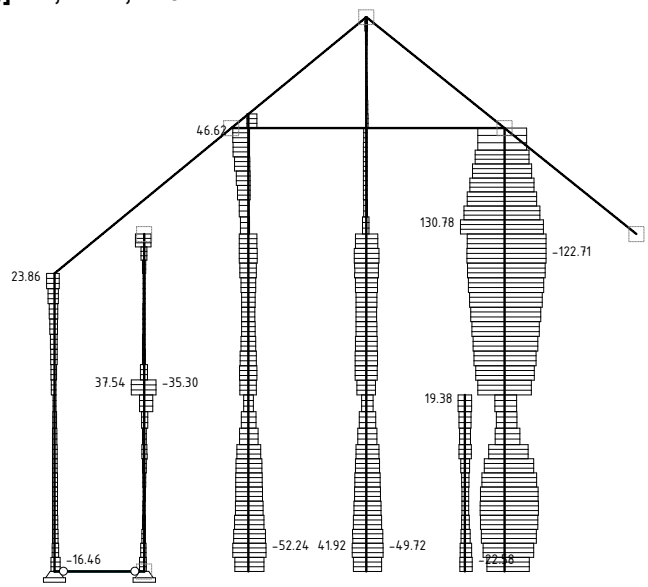
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



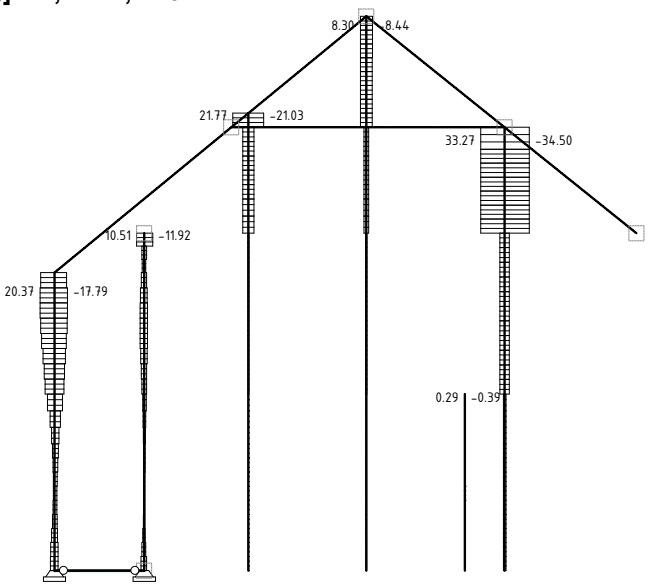
Frame: V_2
Beam Results: max V2= 136.02 / min V2= -134.68 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_2
Beam Results: max V3= 130.78 / min V3= -122.71 kN

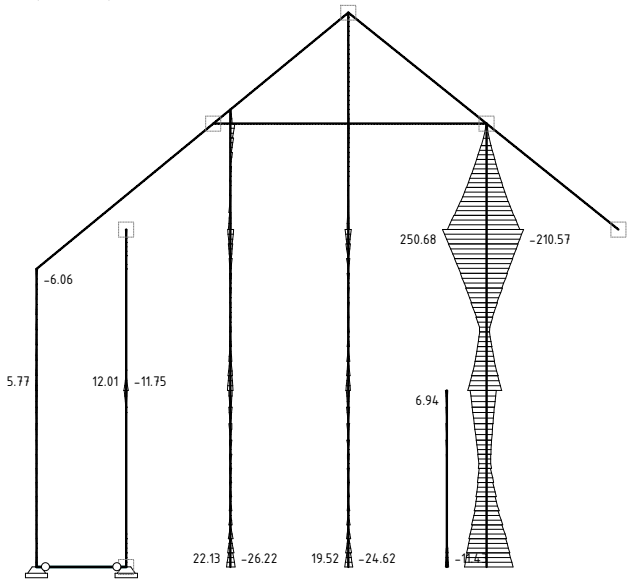
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_2
Beam Results: max M1= 47.50 / min M1= -61.53 kNm

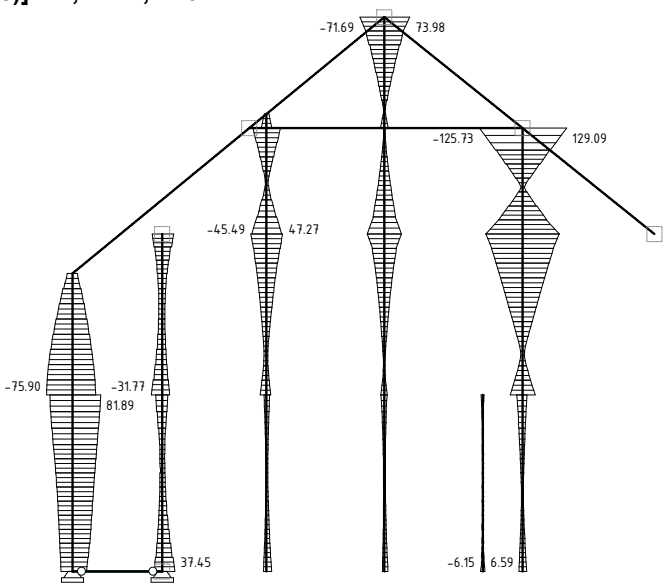
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



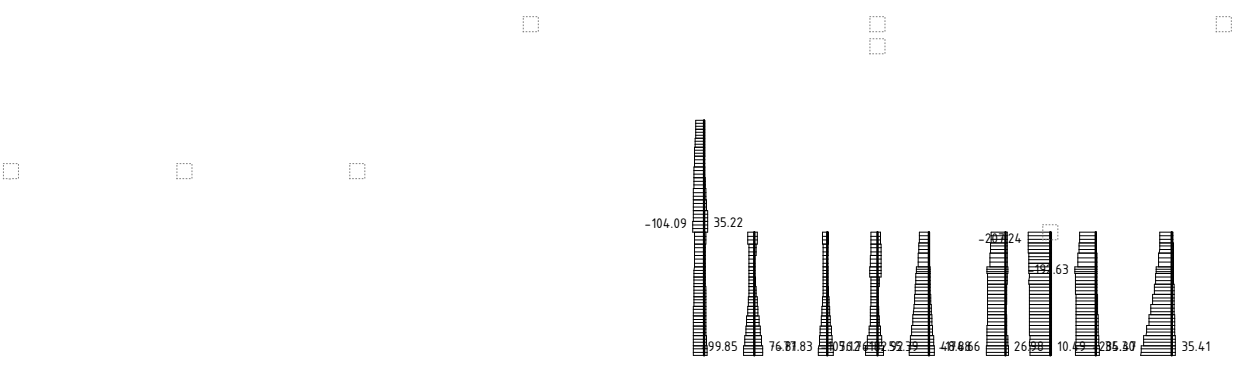
Frame: V_2
Beam Results: max M2= 250.68 / min M2= -210.57 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: V_2
Beam Results: max M3= 129.09 / min M3= -125.73 kNm

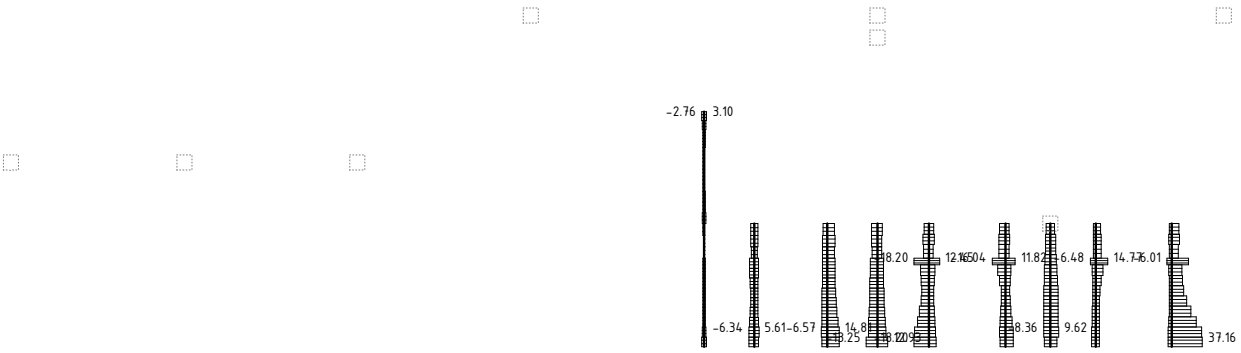
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: H_7
Beam Results: max N1= 76.81 / min N1= -285.30 kN

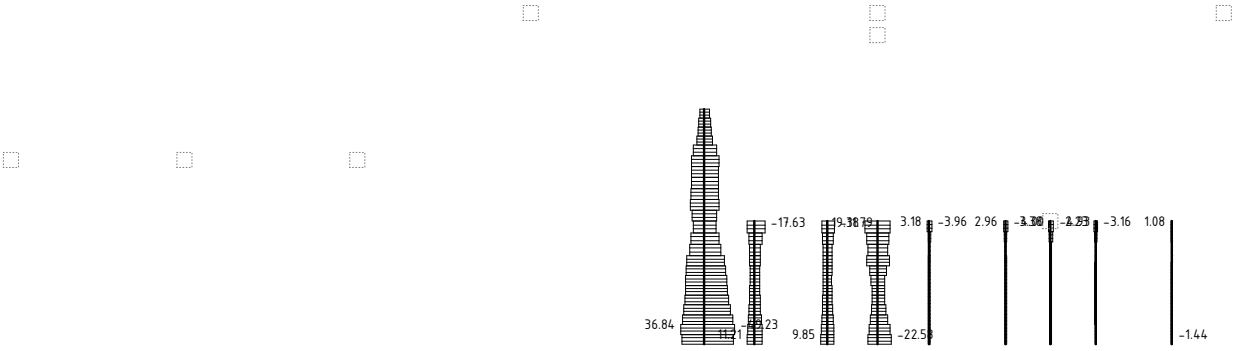
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



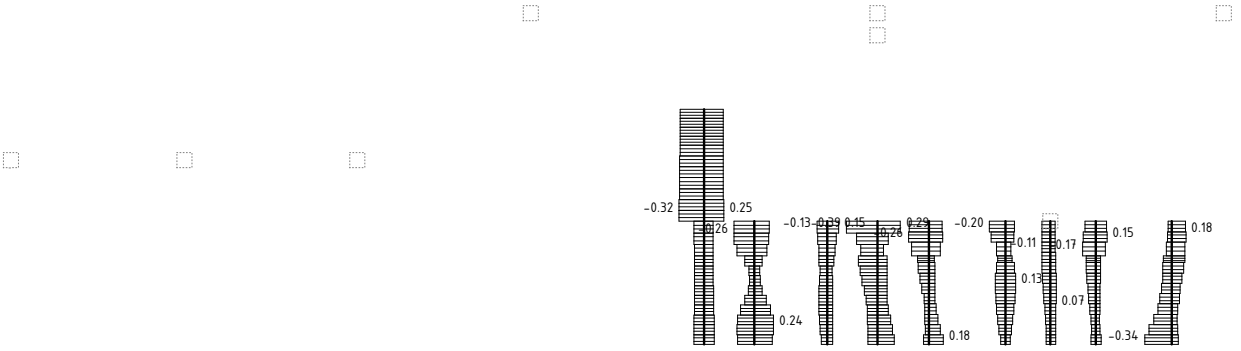
Frame: H_7
Beam Results: max V2= 37.16 / min V2= -18.20 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: H_7
Beam Results: max V3= 36.84 / min V3= -49.23 kN

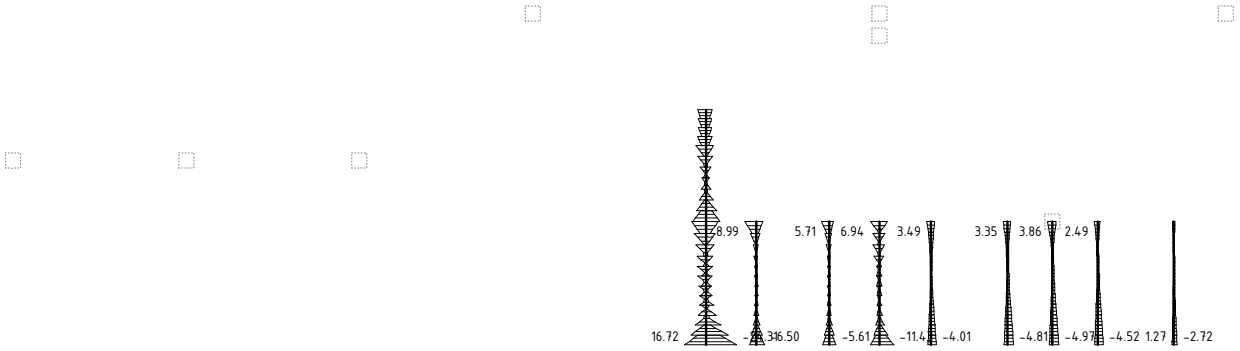
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: H_7
Beam Results: max M1= 0.29 / min M1= -0.39 kNm

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

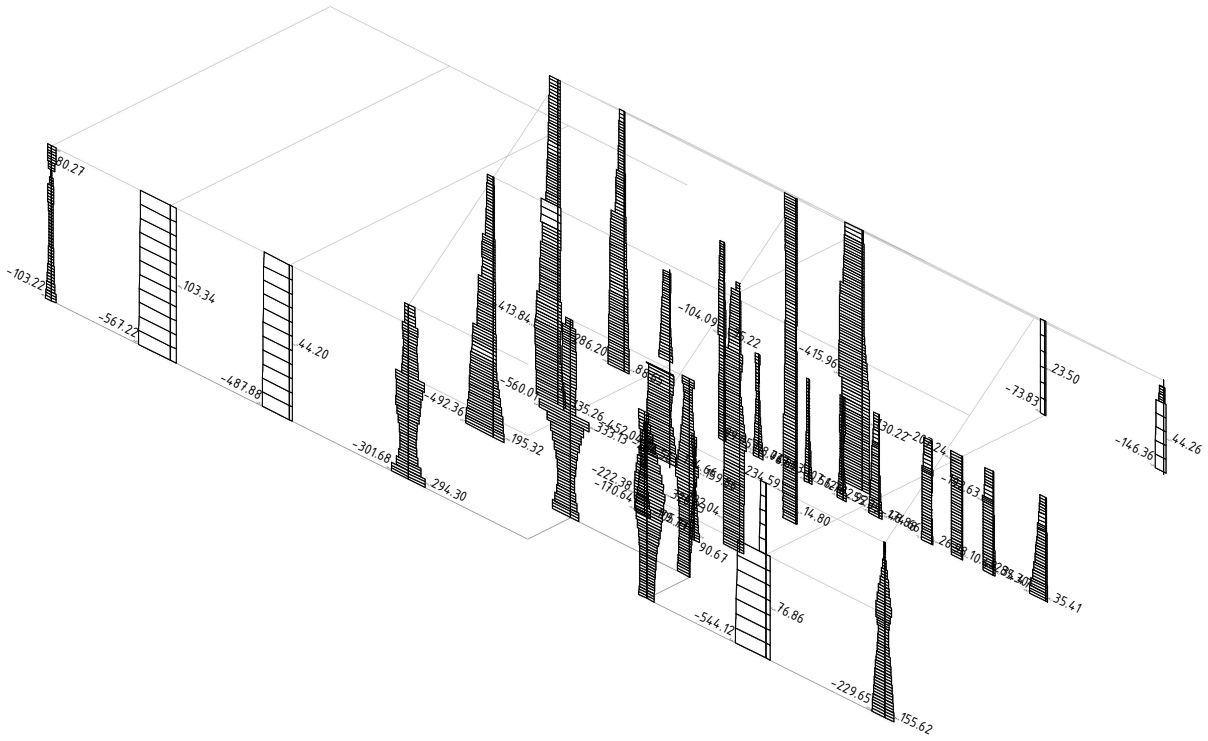
Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Frame: H_7
Beam Results: max M2= 16.72 / min M2= -24.31 kNm

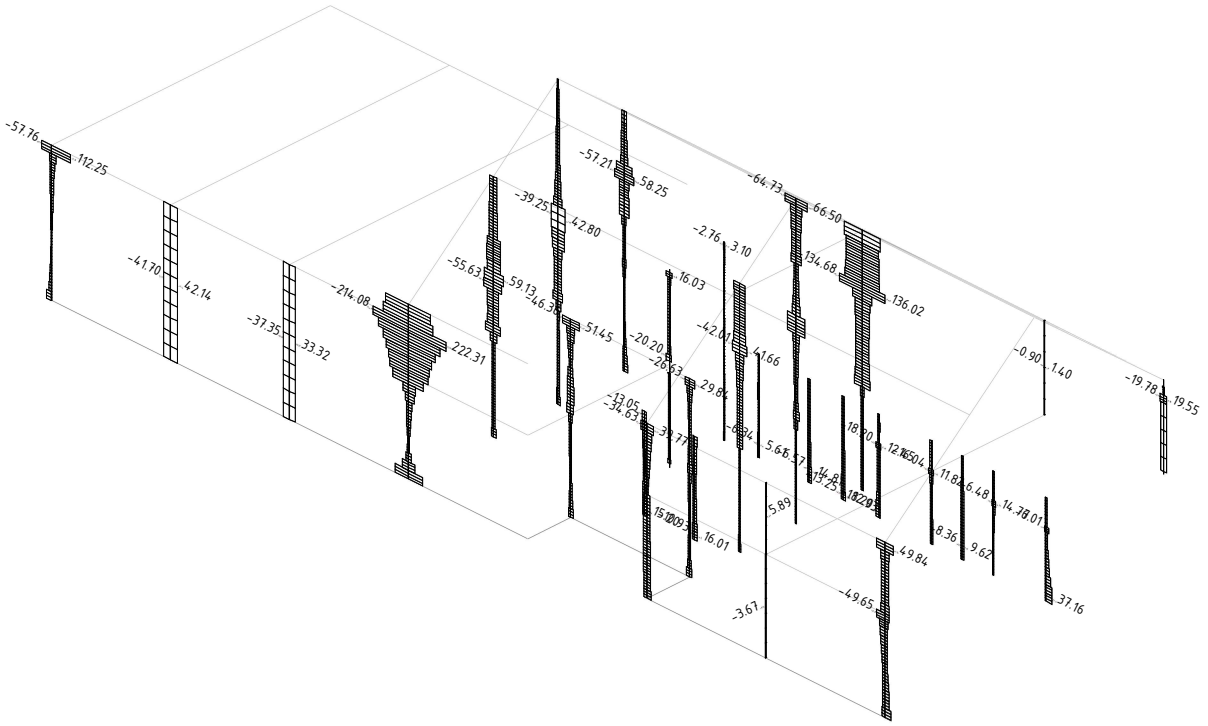
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



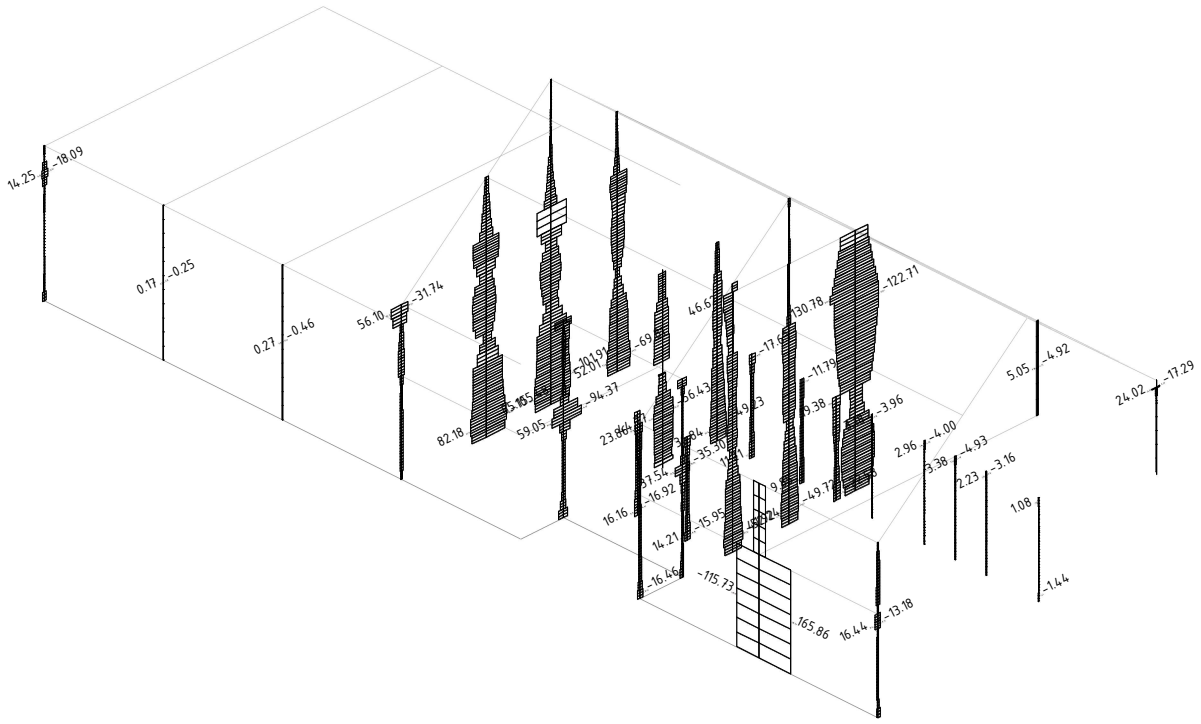
Isometric
Beam Results: max N1= 408.57 / min N1= -567.22 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



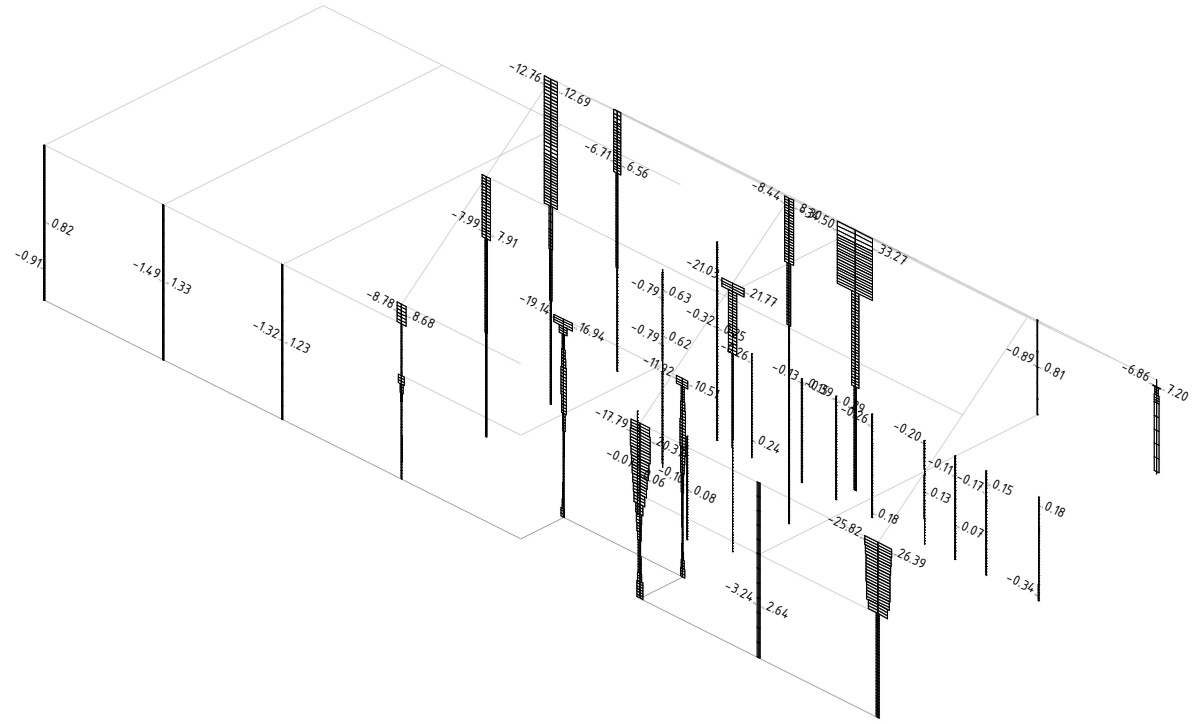
Isometric
Beam Results: max V2= 426.87 / min V2= -414.10 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



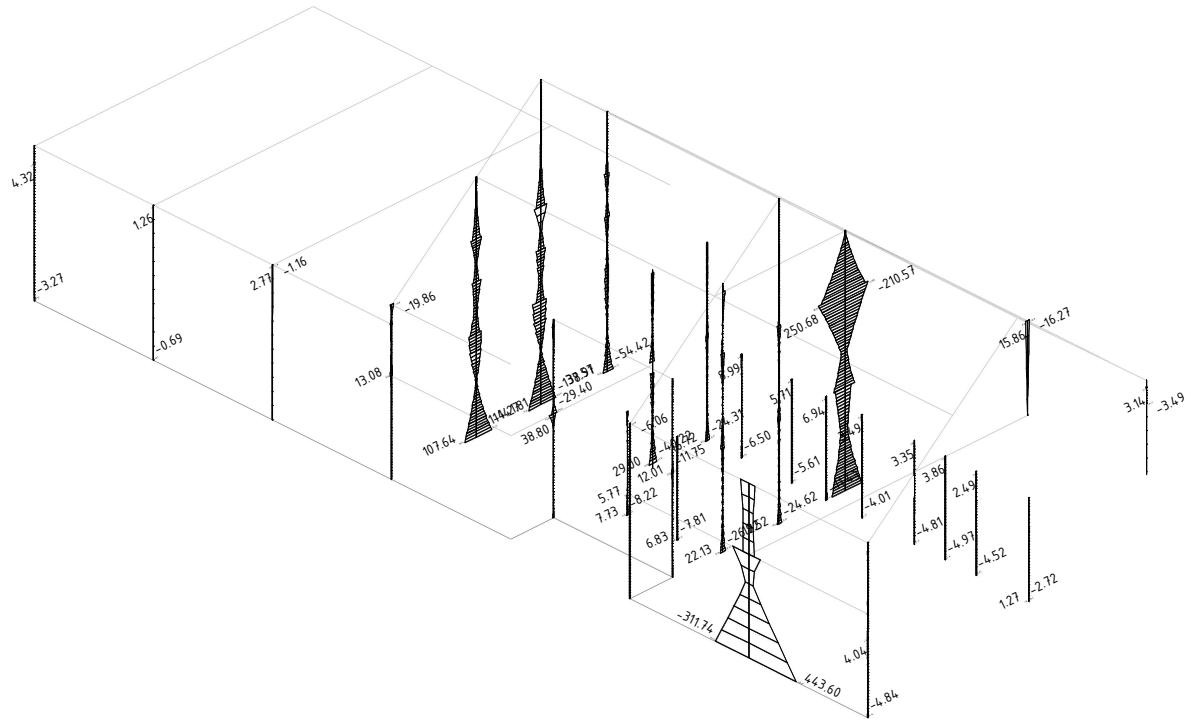
Isometric
Beam Results: max V3= 165.86 / min V3= -122.71 kN

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



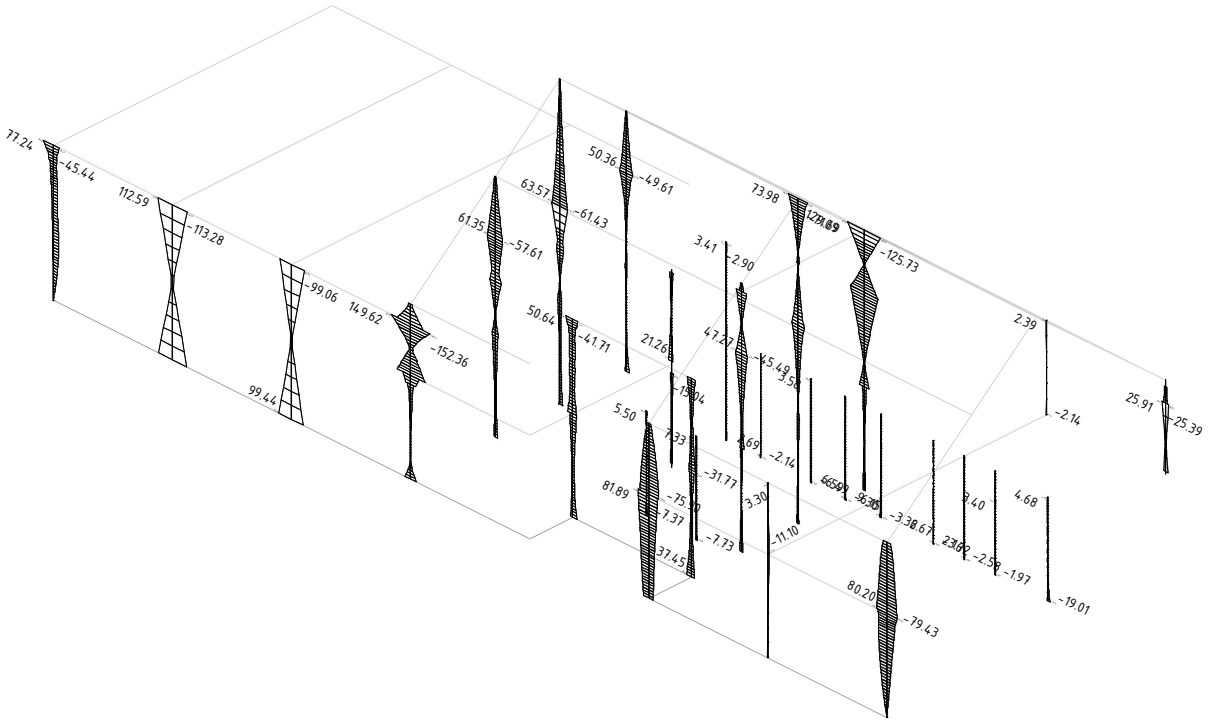
Isometric
Beam Results: max M1= 47.50 / min M1= -61.53 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



Isometric
Beam Results: max M2= 443.60 / min M2= -311.74 kNm

Load 44: [Envelope (Sismic)] 4-7,14-21,24-31



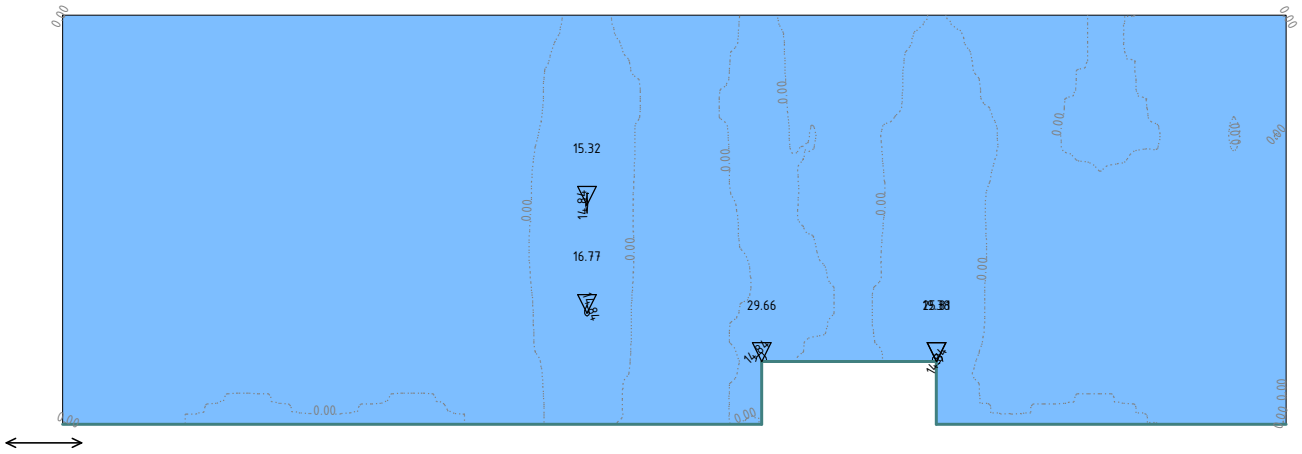
Isometric
Beam Results: max M3= 553.68 / min M3= -545.70 kNm

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Design (concrete)

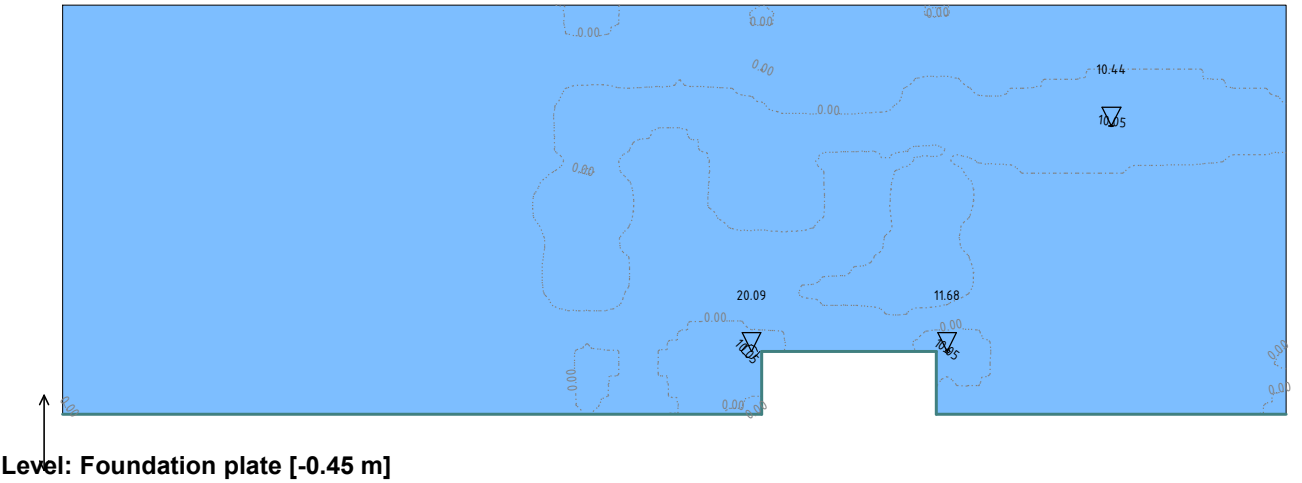
DESIGN OF SLAB ELEMENTS

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=5.00 cm



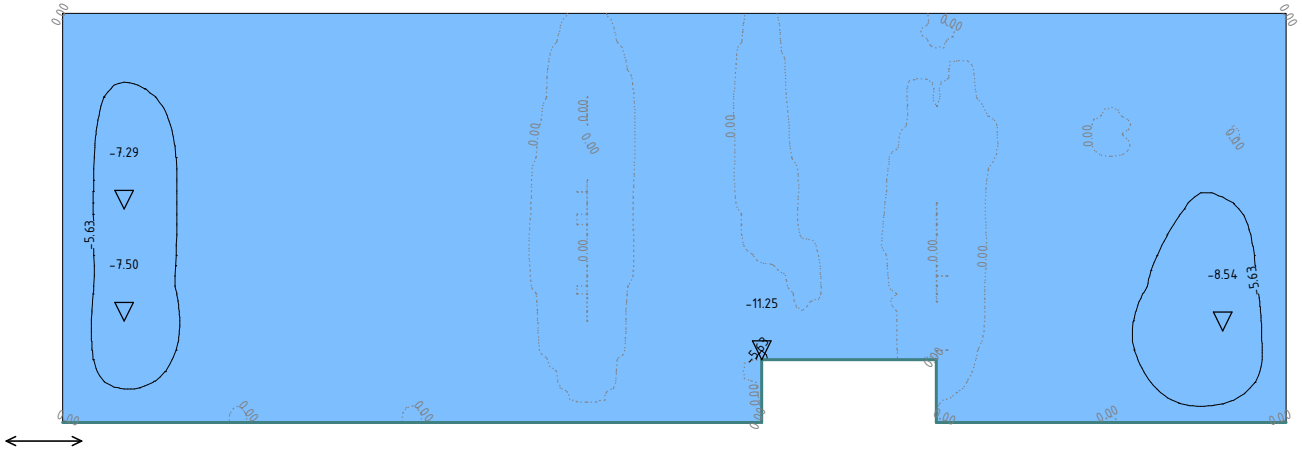
Level: Foundation plate [-0.45 m]
Aa - bottom zone - Direction 1 - max Aa1,d= 29.66 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=5.00 cm



Level: Foundation plate [-0.45 m]
Aa - bottom zone - Direction 2 - max Aa2,d= 20.09 cm²/m

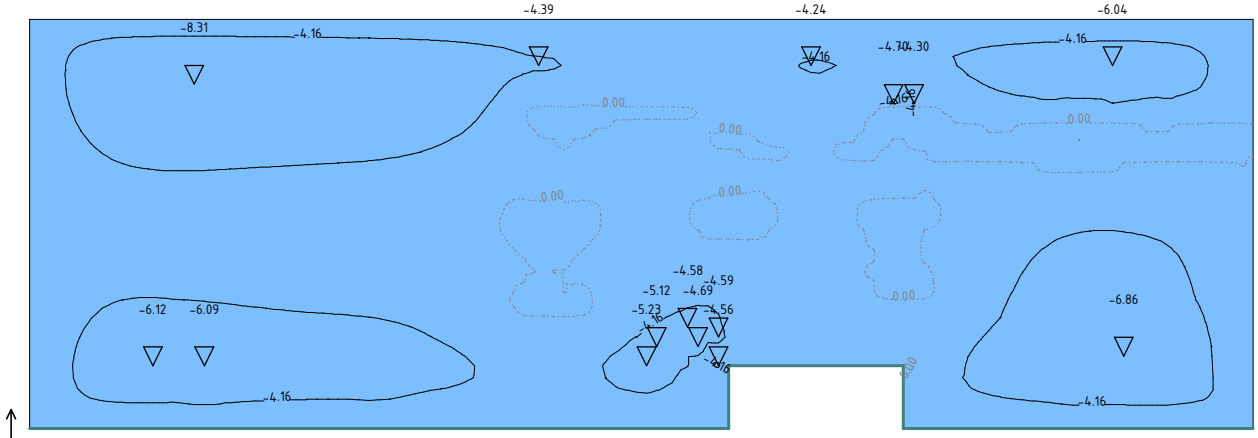
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=5.00 cm



Level: Foundation plate [-0.45 m]
Aa - top zone - Direction 1 - max Aa1,u= -11.25 cm²/m

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=5.00 cm



Level: Foundation plate [-0.45 m]
Aa - top zone - Direction 2 - max Aa2,u= -8.31 cm²/m

Level: Foundation plate [-0.45 m]
EC 2 (EN 1992-1-1:2004)
TP1 (slab depth h=30.0 cm)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
Top zone: S500B (a=5.0 cm)
Bottom zone: S500B (a=5.0 cm)
Full load pattern

Point 1
X=5.29 m; Y=1.80 m; Z=-0.45 m
Direction 1: (α=0°)
Critical combination:
1.00xI+0.60xII-1.00xVII
Med = -26.24 kNm
Nd = 0.00 kN
εb/εa = -1.318/25.000 ‰
Ag1 = 2.46 cm²/m
Ad1 = 0.00 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = -63.74 kNm
Nd = 0.00 kN
εb/εa = -2.410/25.000 ‰
Ag2 = 6.07 cm²/m
Ad2 = 0.00 cm²/m

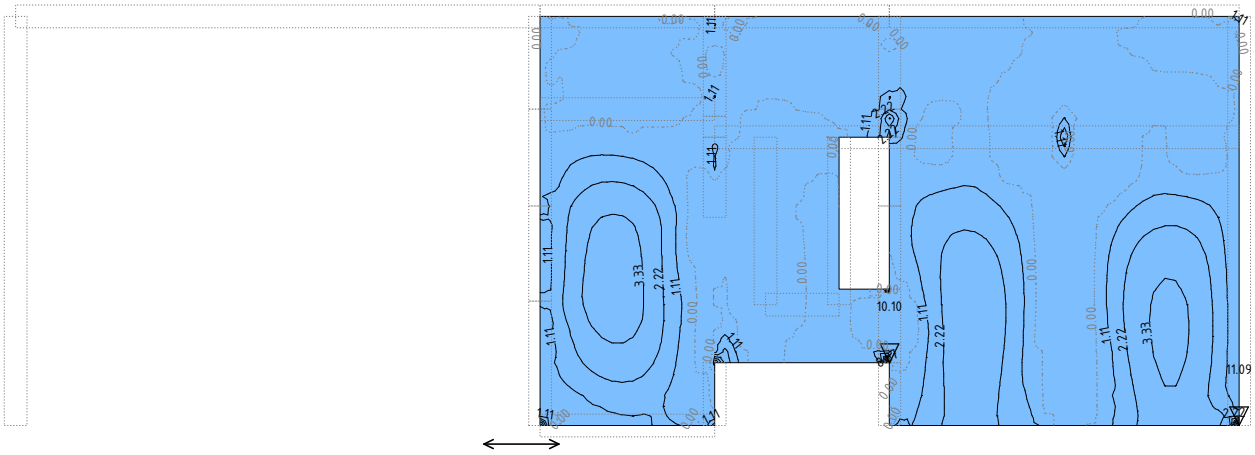
Point 2
X=20.29 m; Y=5.95 m; Z=-0.45 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.50xII
Med = 38.69 kNm
Nd = 0.00 kN
εb/εa = -1.683/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 3.64 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.50xII
Med = 68.46 kNm
Nd = 0.00 kN
εb/εa = -2.554/25.000 ‰
Ag2 = 0.00 cm²/m
Ad2 = 6.53 cm²/m

Point 3
X=30.97 m; Y=9.05 m; Z=-0.45 m
Direction 1: (α=0°)
Critical combination:
1.00xI-1.00xVI
Med = -18.68 kNm
Nd = 0.00 kN
εb/εa = -1.183/25.000 ‰
Ag1 = 1.68 cm²/m
Ad1 = 0.38 cm²/m

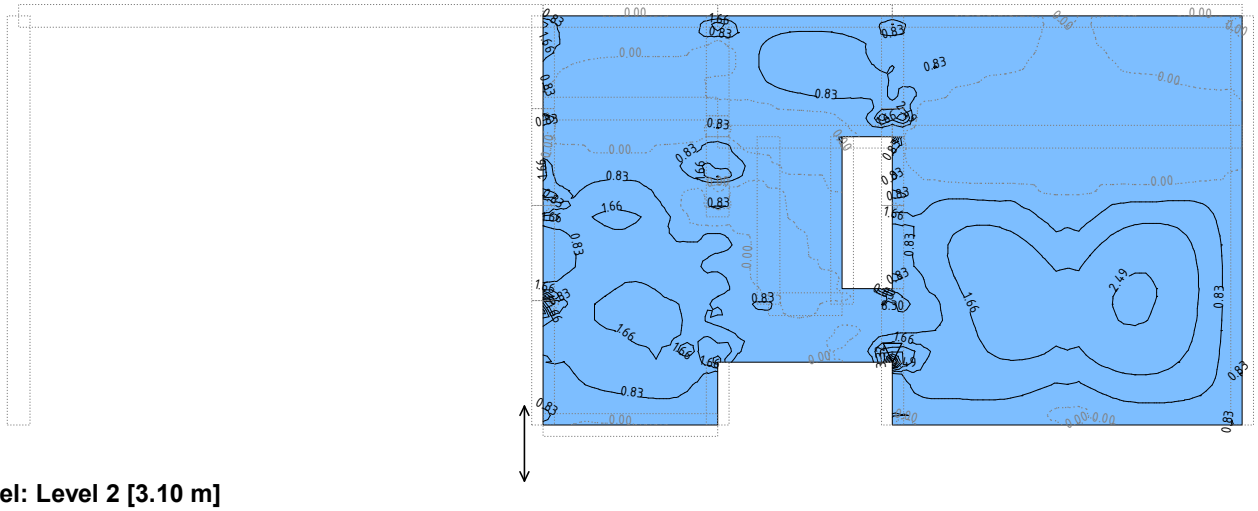
Direction 2: (α=90°)
Critical combination:
1.00xI-1.00xVI
Med = -31.30 kNm
Nd = 0.00 kN
εb/εa = -2.200/25.000 ‰
Ag2 = 2.46 cm²/m
Ad2 = 2.94 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



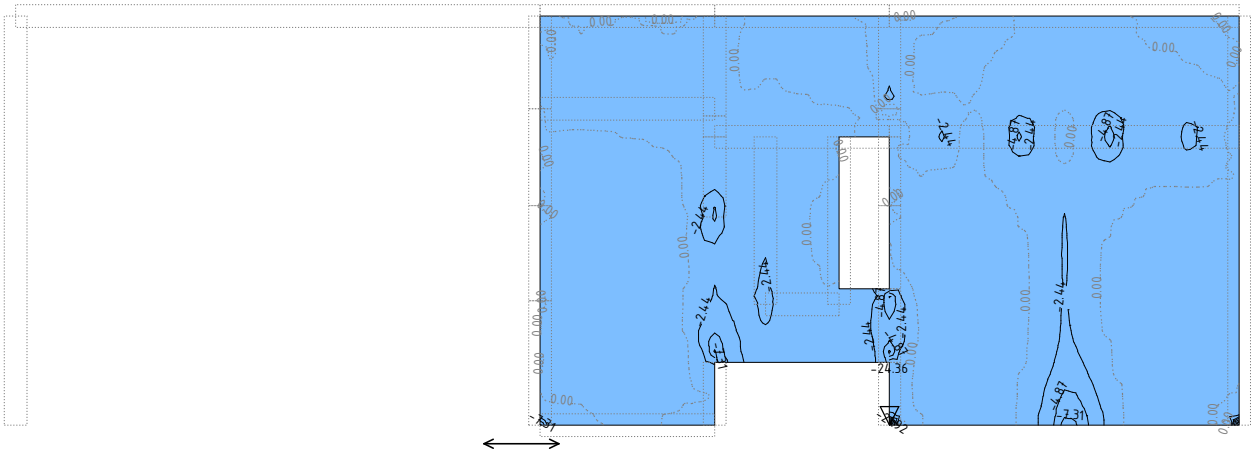
Level: Level 2 [3.10 m]
Aa - bottom zone - Direction 1 - max Aa1,d= 11.09 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



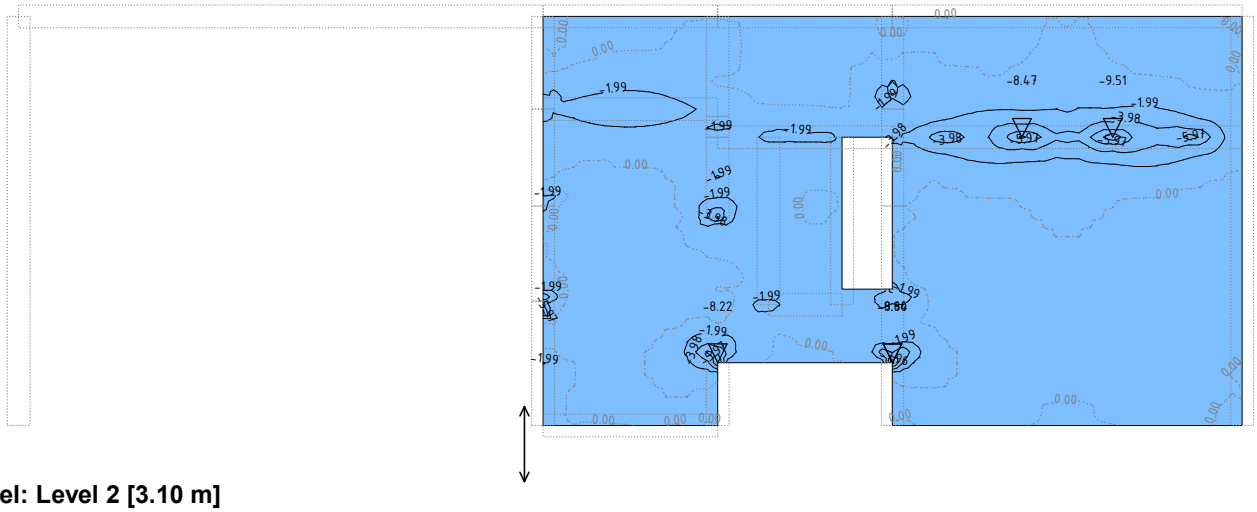
Level: Level 2 [3.10 m]
Aa - bottom zone - Direction 2 - max Aa2,d= 8.30 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 2 [3.10 m]
Aa - top zone - Direction 1 - max Aa1,u= -24.36 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 2 [3.10 m]
Aa - top zone - Direction 2 - max Aa2,u= -9.94 cm²/m

Level: Level 2 [3.10 m]
EC 2 (EN 1992-1-1:2004)
PL1 (slab depth h=20.0 cm)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
Top zone: S500B (a=2.5 cm)
Bottom zone: S500B (a=2.5 cm)
Full load pattern

Point 1
X=19.71 m; Y=2.10 m; Z=3.10 m
Direction 1: (α=0°)
Critical combination:
1.00xI+0.60xII-1.00xVI
Med = -20.53 kNm
Nd = 0.00 kN
εb/εa = -1.774/25.000 ‰
Ag1 = 2.76 cm²/m
Ad1 = 0.00 cm²/m

Direction 2: (α=90°)
Critical combination:
1.00xI+0.60xII-1.00xVI
Med = -45.68 kNm
Nd = 0.00 kN
εb/εa = -3.500/24.391 ‰
Ag2 = 6.28 cm²/m
Ad2 = 2.38 cm²/m

Point 2
X=20.29 m; Y=5.95 m; Z=3.10 m
Direction 1: (α=0°)
Critical combination:
1.00xI+0.60xII-1.00xIV
Med = -15.42 kNm
Nd = 0.00 kN
εb/εa = -1.475/25.000 ‰
Ag1 = 2.07 cm²/m
Ad1 = 0.00 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = -21.21 kNm
Nd = 0.00 kN
εb/εa = -1.814/25.000 ‰
Ag2 = 2.86 cm²/m
Ad2 = 0.00 cm²/m

Point 3
X=27.44 m; Y=8.78 m; Z=3.10 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.50xII
Med = 2.63 kNm
Nd = 0.00 kN
εb/εa = -0.541/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 0.35 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.50xII+0.75xIII
Med = -19.58 kNm
Nd = 0.00 kN
εb/εa = -1.719/25.000 ‰
Ag2 = 2.63 cm²/m
Ad2 = 0.00 cm²/m

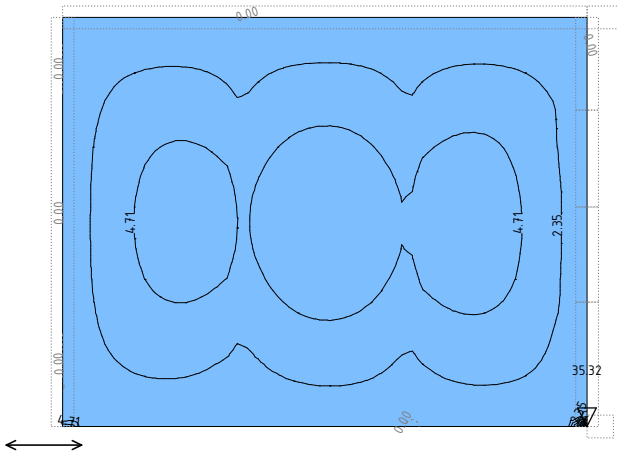
Point 4
X=32.24 m; Y=7.70 m; Z=3.10 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.50xIII
Med = -4.28 kNm
Nd = 0.00 kN
εb/εa = -0.736/25.000 ‰
Ag1 = 0.56 cm²/m
Ad1 = 0.06 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.50xII+0.75xIII
Med = -23.41 kNm
Nd = 0.00 kN
εb/εa = -1.941/25.000 ‰
Ag2 = 3.16 cm²/m
Ad2 = 0.00 cm²/m

Point 5
X=25.60 m; Y=2.10 m; Z=3.10 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.50xII
Med = -4.32 kNm
Nd = 0.00 kN
εb/εa = -0.776/25.000 ‰
Ag1 = 0.56 cm²/m
Ad1 = 0.13 cm²/m

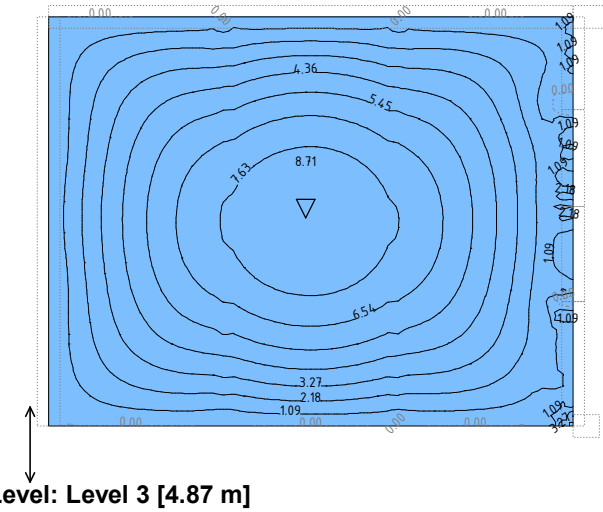
Direction 2: (α=90°)
Critical combination:
1.00xI+0.60xII-1.00xVI
Med = -23.96 kNm
Nd = 0.00 kN
εb/εa = -2.597/25.000 ‰
Ag2 = 3.09 cm²/m
Ad2 = 2.58 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



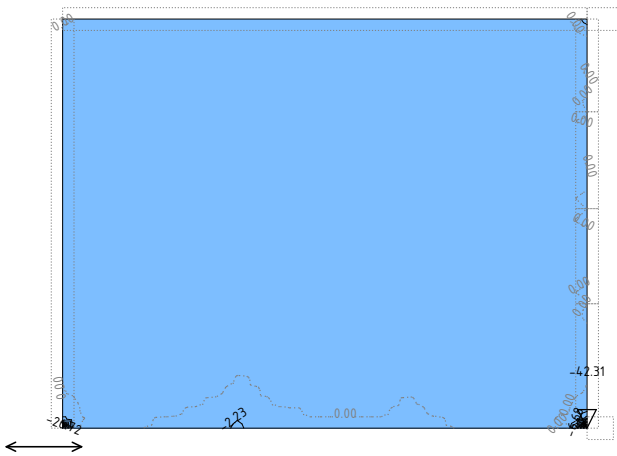
Level: Level 3 [4.87 m]
Aa - bottom zone - Direction 1 - max Aa1,d= 35.32 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 3 [4.87 m]
Aa - bottom zone - Direction 2 - max Aa2,d= 8.71 cm²/m

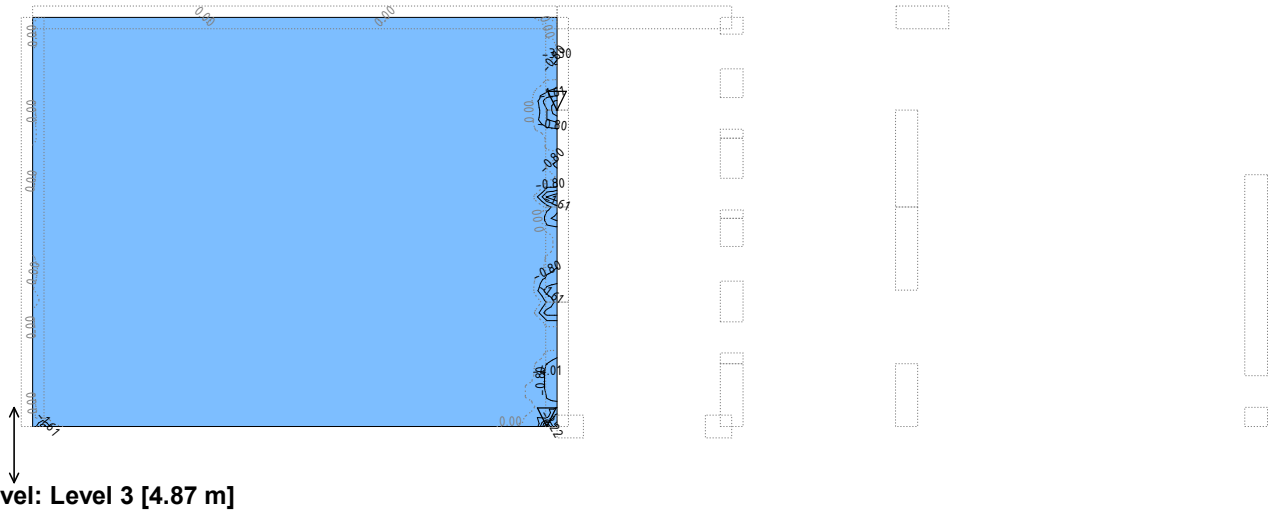
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 3 [4.87 m]
Aa - top zone - Direction 1 - max Aa1,u= -42.31 cm²/m

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 3 [4.87 m]
Aa - top zone - Direction 2 - max Aa2,u= -4.01 cm²/m

Level: Level 3 [4.87 m]
EC 2 (EN 1992-1-1:2004)
PL2 (slab depth h=27.0 cm)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
Top zone: S500B (a=2.5 cm)
Bottom zone: S500B (a=2.5 cm)
Full load pattern

Point 1
X=7.35 m; Y=5.68 m; Z=4.87 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 62.34 kNm
Nd = 0.00 kN
εb/εa = -2.439/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 6.06 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 88.33 kNm
Nd = 0.00 kN
εb/εa = -3.288/25.000 ‰
Ag2 = 0.00 cm²/m
Ad2 = 8.71 cm²/m

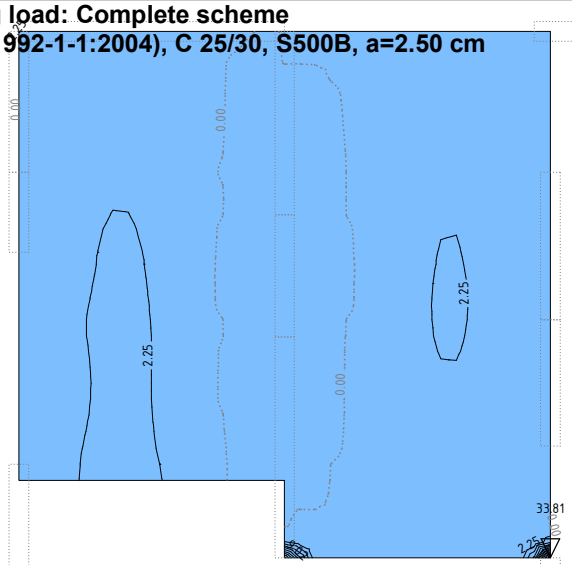
Point 2
X=2.35 m; Y=5.68 m; Z=4.87 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 52.17 kNm
Nd = 0.00 kN
εb/εa = -2.127/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 5.05 cm²/m

Direction 2: (α=90°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 49.24 kNm
Nd = 0.00 kN
εb/εa = -2.039/25.000 ‰
Ag2 = 0.00 cm²/m
Ad2 = 4.76 cm²/m

Point 3
X=11.76 m; Y=5.95 m; Z=4.87 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 59.87 kNm
Nd = 0.00 kN
εb/εa = -2.362/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 5.81 cm²/m

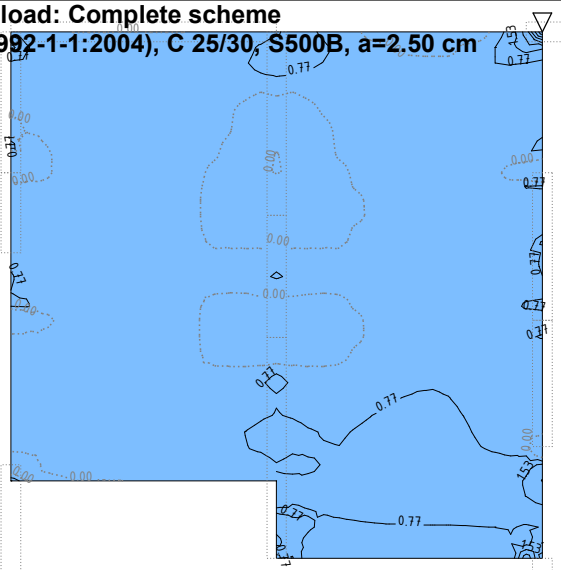
Direction 2: (α=90°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = 61.33 kNm
Nd = 0.00 kN
εb/εa = -2.408/25.000 ‰
Ag2 = 0.00 cm²/m
Ad2 = 5.96 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



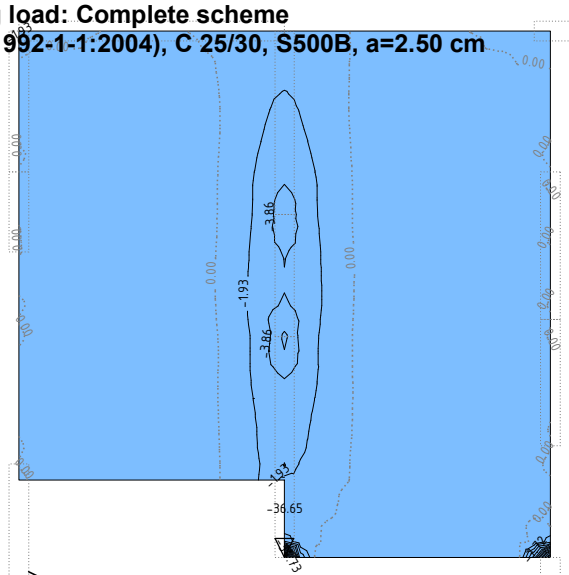
Level: Level 4 [6.34 m]
Aa - bottom zone - Direction 1 - max Aa1,d= 33.81 cm²/m

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 4 [6.34 m]
Aa - bottom zone - Direction 2 - max Aa2,d= 6.12 cm²/m

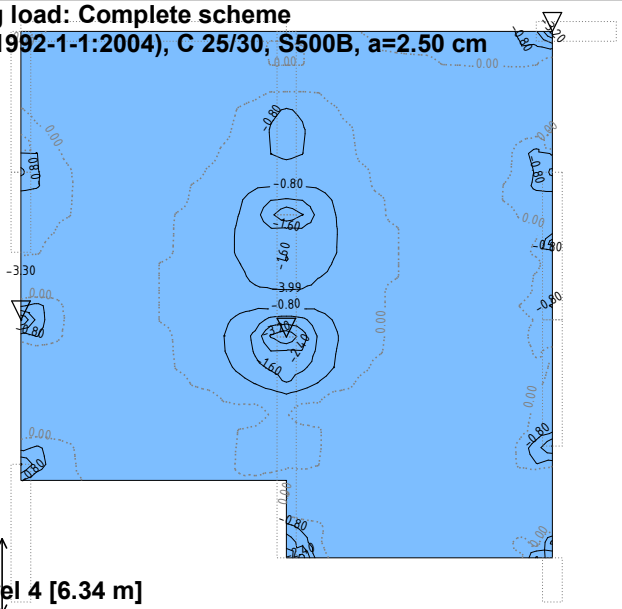
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 4 [6.34 m]
Aa - top zone - Direction 1 - max Aa1,u= -36.65 cm²/m

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B, a=2.50 cm



Level: Level 4 [6.34 m]
Aa - top zone - Direction 2 - max Aa2,u= -3.99 cm²/m

Level: Level 4 [6.34 m]
EC 2 (EN 1992-1-1:2004)
PL4 (slab depth h=20.0 cm)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
Top zone: S500B (a=2.5 cm)
Bottom zone: S500B (a=2.5 cm)
Full load pattern

Point 1
X=17.94 m; Y=5.68 m; Z=6.34 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.50xII
Med = 13.20 kNm
Nd = 0.00 kN
εb/εa = -1.339/25.000 ‰
Ag1 = 0.00 cm²/m
Ad1 = 1.77 cm²/m

Direction 2: (α=90°)
Critical combination:
1.00xI-1.00xIV
Med = -1.26 kNm
Nd = 0.00 kN
εb/εa = -0.616/25.000 ‰
Ag2 = 0.12 cm²/m
Ad2 = 0.32 cm²/m

Point 2
X=19.41 m; Y=9.40 m; Z=6.34 m
Direction 1: (α=0°)
Critical combination:
1.35xI+1.05xII+1.50xIII
Med = -12.29 kNm
Nd = 0.00 kN
εb/εa = -1.283/25.000 ‰
Ag1 = 1.64 cm²/m
Ad1 = 0.00 cm²/m

Direction 2: (α=90°)
Critical combination:
1.00xI-1.00xVI
Med = -3.94 kNm
Nd = 0.00 kN
εb/εa = -0.673/25.000 ‰
Ag2 = 0.52 cm²/m
Ad2 = 0.00 cm²/m

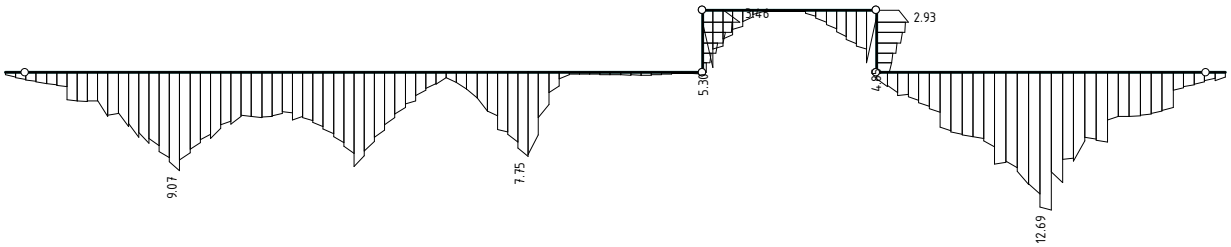
Point 3
X=20.88 m; Y=4.17 m; Z=6.34 m
Direction 1: (α=0°)
Critical combination:
1.00xI+0.60xII-1.00xIV
Med = -5.76 kNm
Nd = 0.00 kN
εb/εa = -0.829/25.000 ‰
Ag1 = 0.77 cm²/m
Ad1 = 0.00 cm²/m

Direction 2: (α=90°)
Critical combination:
1.00xI+0.60xII+1.00xVI
Med = 5.41 kNm
Nd = 0.00 kN
εb/εa = -0.801/25.000 ‰
Ag2 = 0.00 cm²/m
Ad2 = 0.72 cm²/m

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

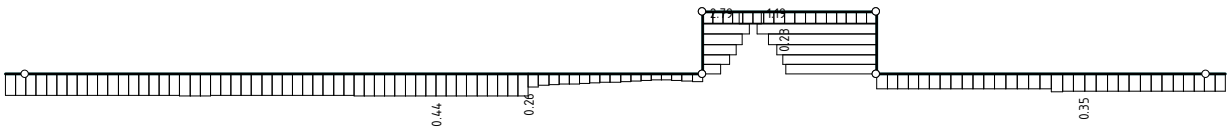
DESIGN OF BEAMS

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



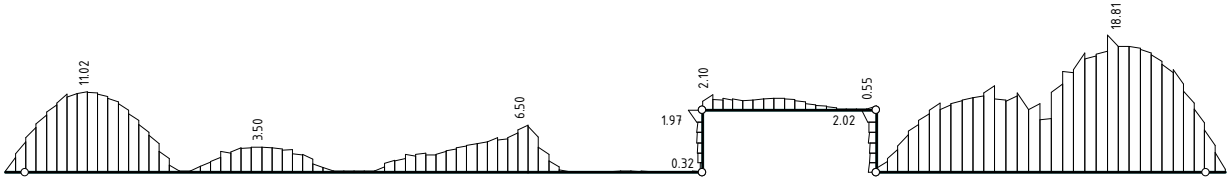
Level: Foundation plate [-0.45 m]
Beam reinforcement: max Aa1= 12.69 / 0.08 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



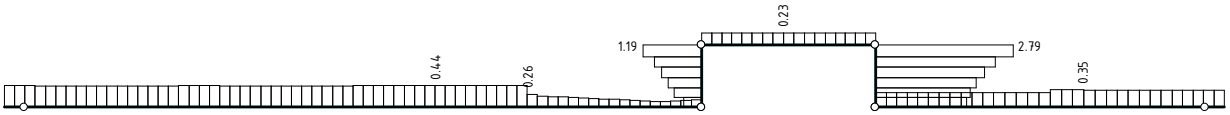
Level: Foundation plate [-0.45 m]
Beam reinforcement: max Aa4= 2.79 / 0.11 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Foundation plate [-0.45 m]
Beam reinforcement: max Aa2= 18.81 / 0.10 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



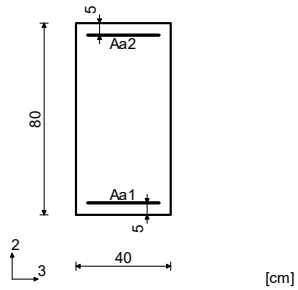
Level: Foundation plate [-0.45 m]
Beam reinforcement: max Aa3= 2.79 / 0.11 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Foundation plate [-0.45 m]
Beam reinforcement: max Aa,br= 8.79 cm²

PT1 (3-3145)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



Section 1-1 x = 11.47m
Critical load for bending: 1.00xI +1.00xVII
N1ed = 33.19 kN
M2ed = 0.00 kNm
M3ed = 74.69 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xVI
M1ed = 9.76 kNm

Critical load for shear: 1.00xI +0.60xII+1.00xVI
V2ed = 66.17 kN
V3ed = 1.43 kN
M1ed = 9.76 kNm

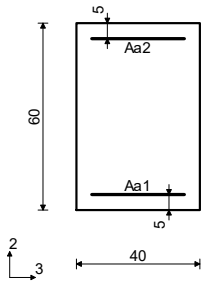
Vrd,max,2 = 1215.00 kN
Vrd,max,3 = 1166.40 kN
εb/εa = -1.195/25.000 ‰

Aa1 =	2.70	+	0.20`	=	2.90 cm²
Aa2 =	2.25	+	0.20`	=	2.46 cm²
Aa3 =	0.00	+	0.44`	=	0.44 cm²
Aa4 =	0.00	+	0.44`	=	0.44 cm²
Aa,br =		0.00 cm²/m			(m=2)

`) - additional longitudinal reinforcement for torsion.

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Beam 6486-9447
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 2.35m
Critical load for bending: 1.35xI +1.05xII+1.50xIII
N1ed = -20.95 kN
M2ed = 0.00 kNm
M3ed = -38.27 kNm

Critical load for torsion: 1.00xI -1.00xIV
M1ed = -5.49 kNm

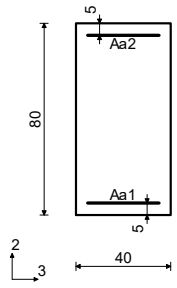
Critical load for shear: 1.00xI +0.60xII-1.00xIV
V2ed = -17.25 kN
V3ed = -0.92 kN
M1ed = -5.46 kNm

Vrd,max,2 = 891.00 kN
Vrd,max,3 = 874.80 kN
εb/εa = -1.200/25.000 ‰

Aa1 =	0.00	+	0.15`	=	0.15 cm²
Aa2 =	1.37	+	0.15`	=	1.52 cm²
Aa3 =	0.00	+	0.24`	=	0.24 cm²
Aa4 =	0.00	+	0.24`	=	0.24 cm²
Aa,br =			0.00 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

PT5 (9447-8266)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 0.95m
Critical load for bending: 1.00xI +0.60xII+1.00xIV
N1ed = 51.44 kN
M2ed = 0.00 kNm
M3ed = 17.68 kNm

Critical load for torsion: 1.00xI +0.60xII-1.00xIV
M1ed = -48.53 kNm

Critical load for shear: 1.00xI +0.60xII-1.00xIV
V2ed = 6.76 kN
V3ed = -2.30 kN
M1ed = -48.53 kNm

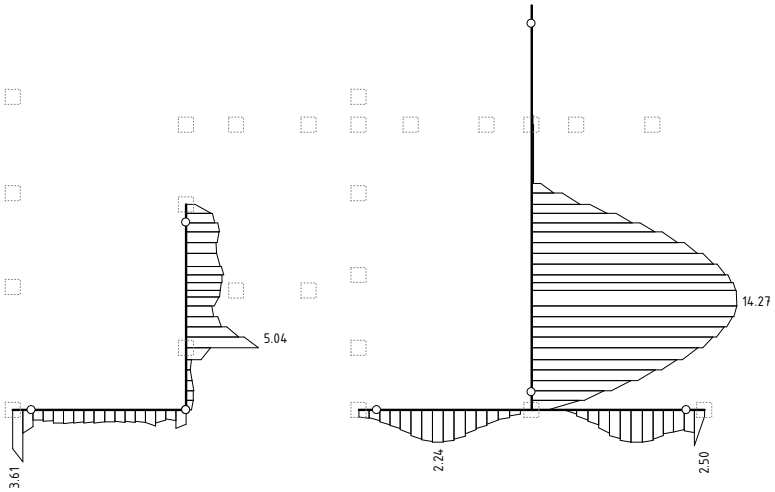
Vrd,max,2 = 1215.00 kN
Vrd,max,3 = 1166.40 kN
εb/εa = -0.177/25.000 ‰

Aa1 =	1.17	+	1.00`	=	2.17 cm²
Aa2 =	0.12	+	1.00`	=	1.13 cm²
Aa3 =	0.00	+	2.20`	=	2.20 cm²
Aa4 =	0.00	+	2.20`	=	2.20 cm²
Aa,br =			0.00 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

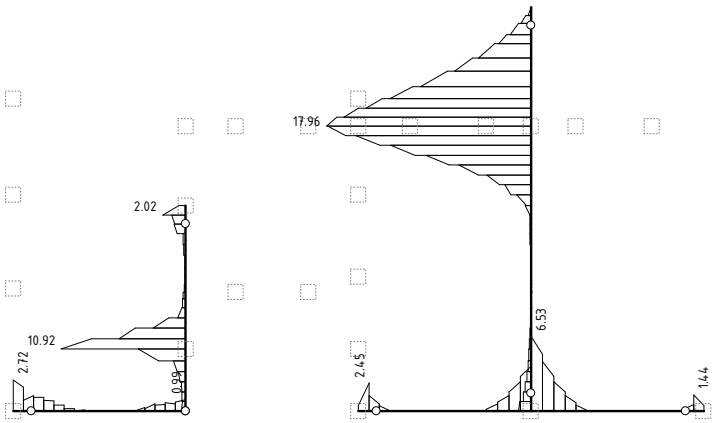
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



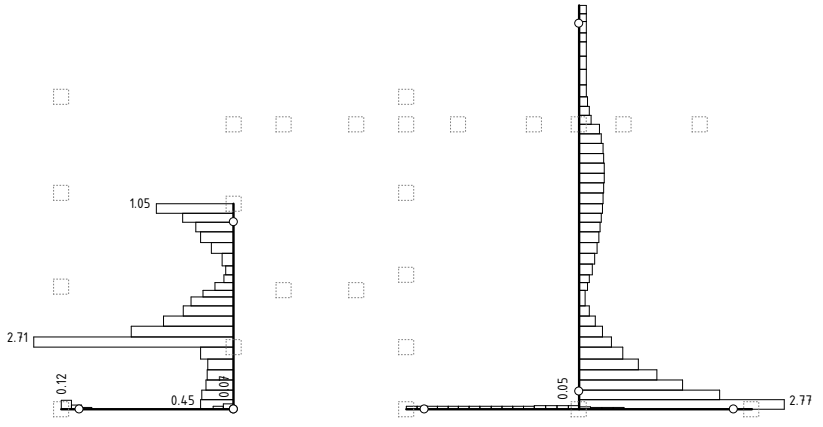
Level: Level 2 [3.10 m]
Beam reinforcement: max Aa1= 14.27 / 0.03 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



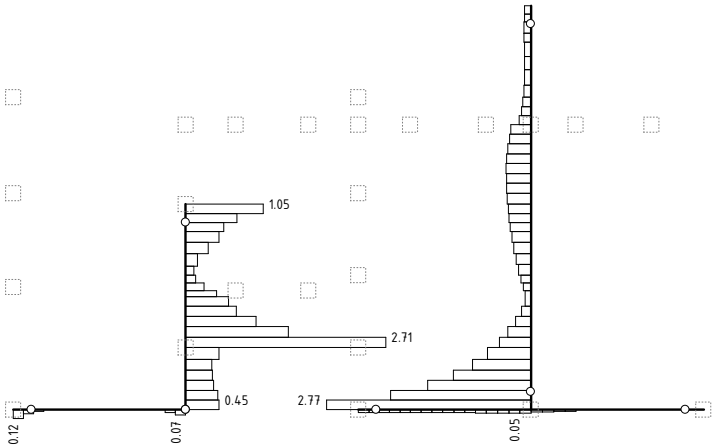
Level: Level 2 [3.10 m]
Beam reinforcement: max Aa2= 17.96 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



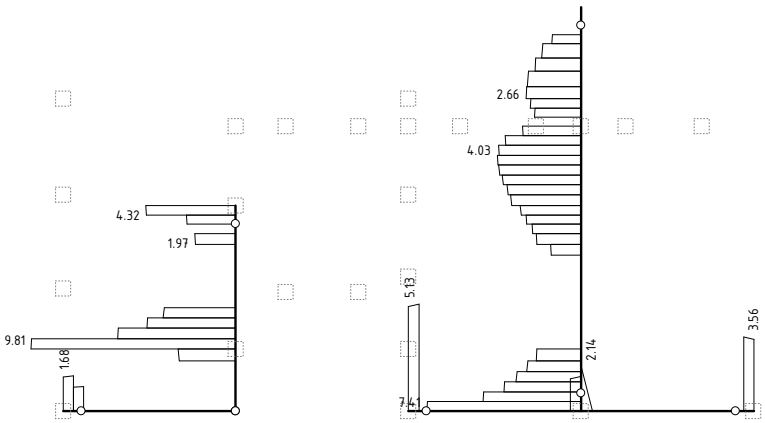
Level: Level 2 [3.10 m]
Beam reinforcement: max Aa3= 2.77 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



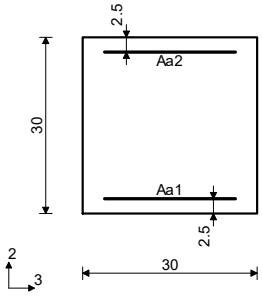
Level: Level 2 [3.10 m]
Beam reinforcement: max Aa4= 2.77 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Level 2 [3.10 m]
Beam reinforcement: max Aa,br= 9.81 cm²

NOS1 (4696-7456)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



Section 1-1 x = 2.65m
Critical load for bending: 1.00xI
+0.60xII+1.00xVII
N1ed = 30.06 kN
M2ed = 0.00 kNm
M3ed = 5.33 kNm

Critical load for torsion: 1.00xI
+1.00xV
M1ed = 0.28 kNm

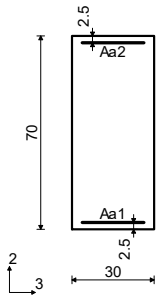
Critical load for shear: 1.00xI
+1.00xIV
V2ed = 5.23 kN
V3ed = 2.70 kN
M1ed = 0.27 kNm

Vrd,max,2 = 334.13 kN
Vrd,max,3 = 328.05 kN
εb/εa = -0.488/25.000 ‰

Aa1 =	0.82 cm²	
Aa2 =	0.00 cm²	
Aa3 =	0.00 cm²	
Aa4 =	0.00 cm²	
Aa,br =	0.00 cm²/m	(m=2)

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

NOS4-1 (21488-15331)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 4.86m
Critical load for bending: 1.35xI +1.50xIII
N1ed = -4.77 kN
M2ed = 0.00 kNm
M3ed = -109.73 kNm

Critical load for torsion: 1.00xI +0.60xII-1.00xIV
M1ed = -5.23 kNm

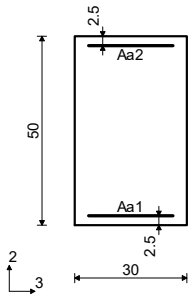
Critical load for shear: 1.35xI +1.50xII+0.75xIII
V2ed = -173.52 kN
V3ed = -2.40 kN
M1ed = -4.99 kNm

Vrd,max,2 = 820.13 kN
Vrd,max,3 = 765.45 kN
εb/εa = -2.022/25.000 ‰

Aa1 =	0.00	+	0.12`	=	0.12 cm²
Aa2 =	3.79	+	0.12`	=	3.92 cm²
Aa3 =	0.00	+	0.34`	=	0.34 cm²
Aa4 =	0.00	+	0.34`	=	0.34 cm²
Aa,br =			3.78 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

NOS3-1 (7456-11711)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 3.26m
Critical load for bending: 1.00xI +0.60xII+1.00xV
N1ed = 23.64 kN
M2ed = 0.00 kNm
M3ed = 35.11 kNm

Critical load for torsion: 1.00xI +0.60xII-1.00xV
M1ed = -9.37 kNm

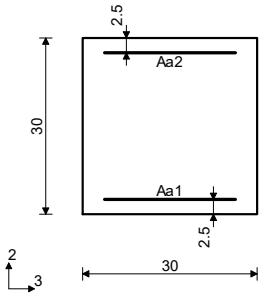
Critical load for shear: 1.00xI +0.60xII-1.00xV
V2ed = -28.46 kN
V3ed = -2.30 kN
M1ed = -9.37 kNm

Vrd,max,2 = 577.13 kN
Vrd,max,3 = 546.75 kN
εb/εa = -1.353/25.000 ‰

Aa1 =	2.01	+	0.31`	=	2.32 cm²
Aa2 =	0.00	+	0.31`	=	0.31 cm²
Aa3 =	0.00	+	0.58`	=	0.58 cm²
Aa4 =	0.00	+	0.58`	=	0.58 cm²
Aa,br =			0.00 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

NOS2-1 (10837-18613)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 4.35m
Critical load for bending: 1.00xI +0.60xII-1.00xVII
N1ed = -12.15 kN
M2ed = 0.00 kNm
M3ed = -17.12 kNm

Critical load for torsion: 1.35xI +1.05xII+1.50xIII
M1ed = 0.82 kNm

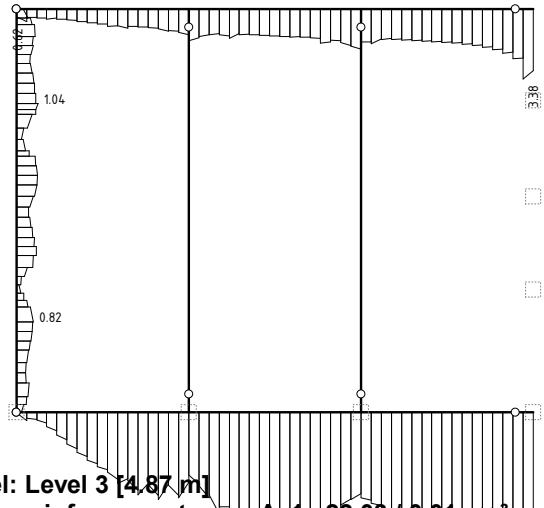
Critical load for shear: 1.35xI +1.50xII+0.75xIII
V2ed = 27.06 kN
V3ed = 0.45 kN
M1ed = 0.71 kNm

Vrd,max,2 = 334.13 kN
Vrd,max,3 = 328.05 kN
εb/εa = -2.109/25.000 ‰

Aa1 =	0.50	+	0.04`	=	0.55 cm²
Aa2 =	1.32	+	0.04`	=	1.37 cm²
Aa3 =	0.00	+	0.05`	=	0.05 cm²
Aa4 =	0.00	+	0.05`	=	0.05 cm²
Aa,br =			0.00 cm²/m		(m=2)

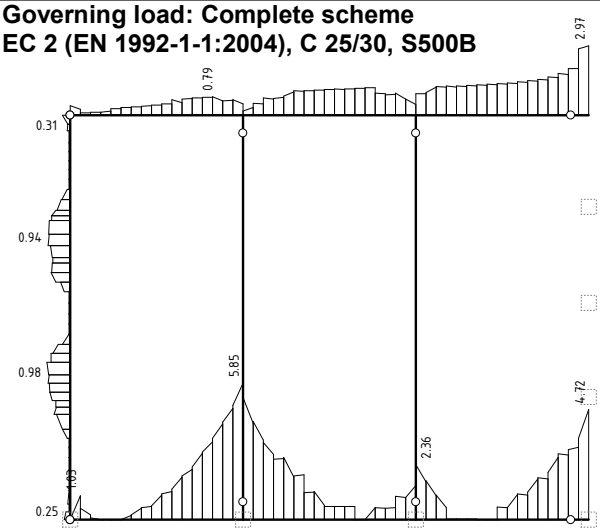
`) - additional longitudinal reinforcement for torsion.

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



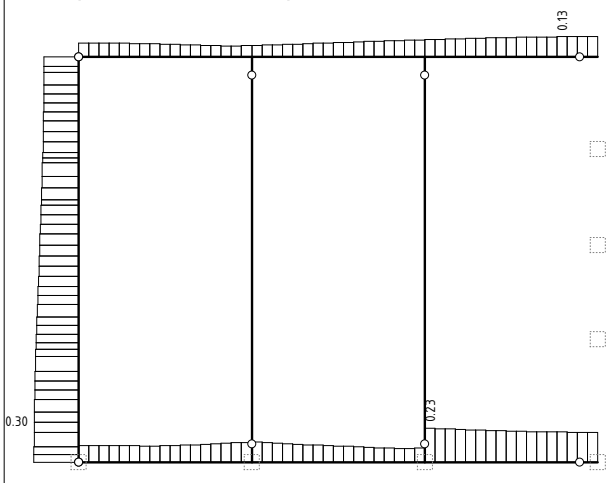
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa1= 22.08 / 0.01 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



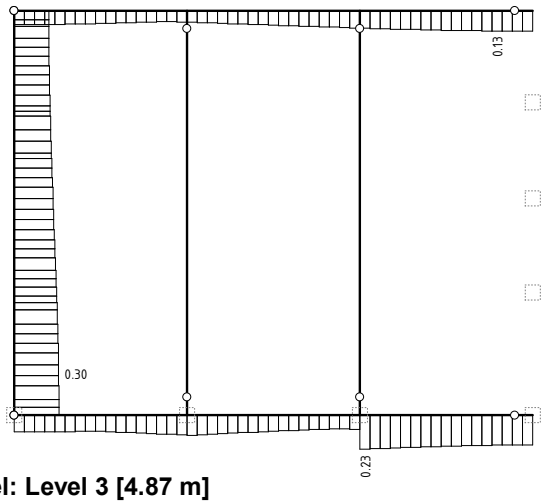
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa2= 5.85 / 0.01 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



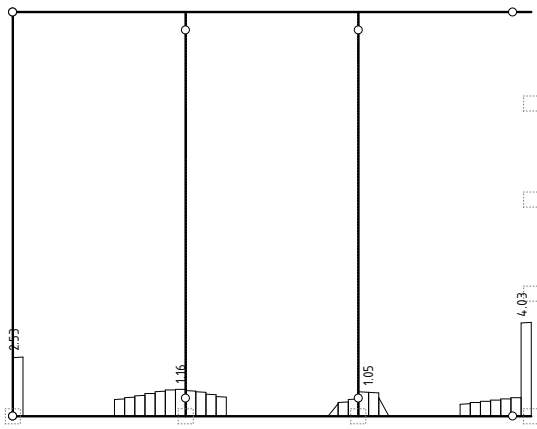
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa3= 2.05 / 0.07 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



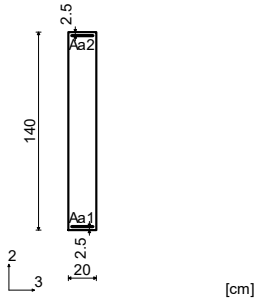
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa4= 2.05 / 0.07 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Level 3 [4.87 m]
Beam reinforcement: max Aa,br= 5.86 cm²

NOS2-2 (492-5642)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



Section 1-1 x = 7.65m
Critical load for bending: 1.00xI
+0.60xII+1.00xVII
N1ed = 145.03 kN
M2ed = 0.00 kNm
M3ed = 219.43 kN

Critical load for torsion: 1.00xI
+0.60xII-1.00xVI
M1ed = -1.11 kNm

Critical load for shear: 1.00xI
-1.00xVI
V2ed = -19.93 kN
V3ed = -2.26 kN
M1ed = -1.09 kNm

Vrd,max,2 = 1113.75 kN
Vrd,max,3 = 992.25 kN
εb/εa = -1.072/25.000 ‰

Aa1 =	5.40	+	0.00`	=	5.40 cm²
Aa2 =	0.57	+	0.00`	=	0.57 cm²
Aa3 =	0.00	+	0.10`	=	0.10 cm²
Aa4 =	0.00	+	0.10`	=	0.10 cm²
Aa,br =		0.00 cm²/m			(m=2)

`) - additional longitudinal reinforcement for torsion.

NOS4-2 (492-3985)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 2-2 x = 5.95m
Critical load for bending: 1.00xI
+0.60xII+1.00xV
N1ed = 8.13 kN
M2ed = 0.00 kNm
M3ed = 22.11 kNm

Critical load for torsion: 1.00xI
+0.60xII+1.00xVII
M1ed = 2.79 kNm

Critical load for shear: 1.00xI
+0.60xII+1.00xVII
V2ed = 20.82 kN
V3ed = 1.26 kN
M1ed = 2.79 kNm

Vrd,max,2 = 927.45 kN
Vrd,max,3 = 829.24 kN
εb/εa = -0.473/25.000 ‰

Aa1 =	0.54	+	0.04`	=	0.58 cm²
Aa2 =	0.00	+	0.04`	=	0.04 cm²
Aa3 =	0.00	+	0.26`	=	0.26 cm²
Aa4 =	0.00	+	0.26`	=	0.26 cm²

Aa,br = 0.00 cm²/m (m=2)
`) - additional longitudinal reinforcement for torsion.

NOS3-2 (3985-14058)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 3-3 x = 7.65m
Critical load for bending: 1.00xI
+0.60xII+1.00xVII
N1ed = 99.10 kN
M2ed = 0.00 kNm
M3ed = 8.11 kNm

Critical load for torsion: 1.00xI
+0.60xII-1.00xIV
M1ed = -1.05 kNm

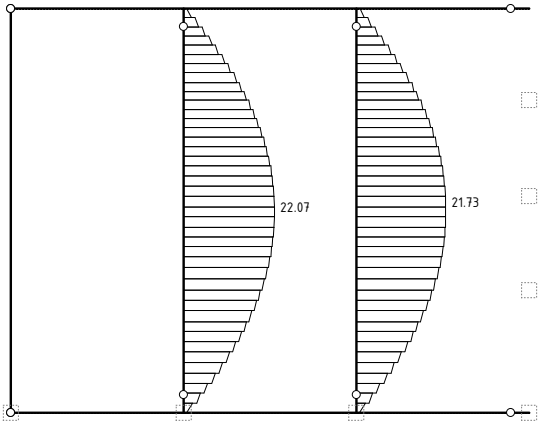
Critical load for shear: 1.00xI
+0.60xII-1.00xIV
V2ed = -3.17 kN
V3ed = -1.93 kN
M1ed = -1.05 kNm

Vrd,max,2 = 927.45 kN
Vrd,max,3 = 829.24 kN
εb/εa = 1.425/25.000 ‰

Aa1 =	1.31	+	0.00`	=	1.31 cm²
Aa2 =	1.09	+	0.00`	=	1.09 cm²
Aa3 =	0.00	+	0.10`	=	0.10 cm²
Aa4 =	0.00	+	0.10`	=	0.10 cm²

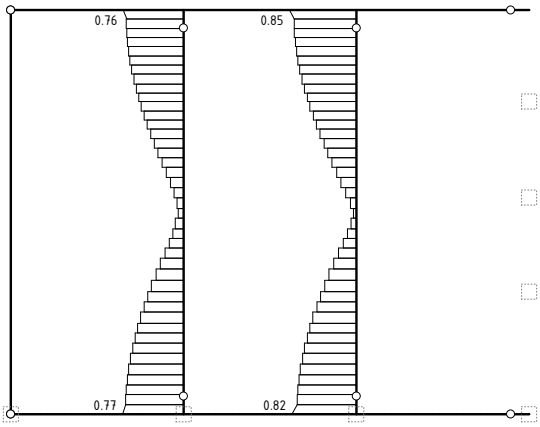
Aa,br = 0.00 cm²/m (m=2)
`) - additional longitudinal reinforcement for torsion.

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



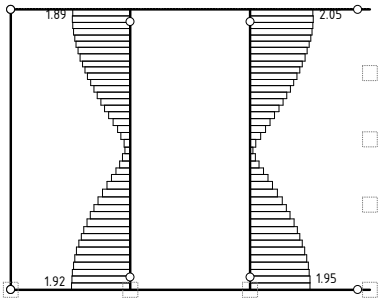
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa1= 22.08 / 0.01 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



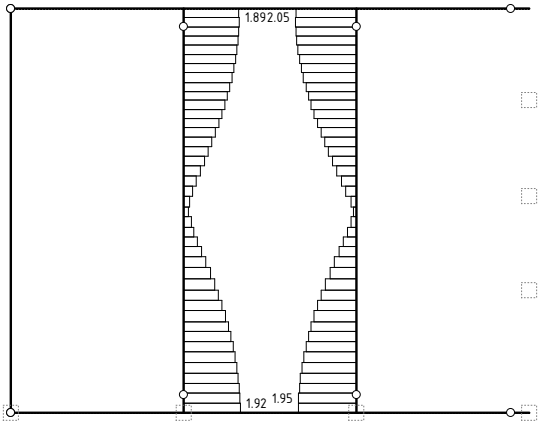
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa2= 5.85 / 0.01 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



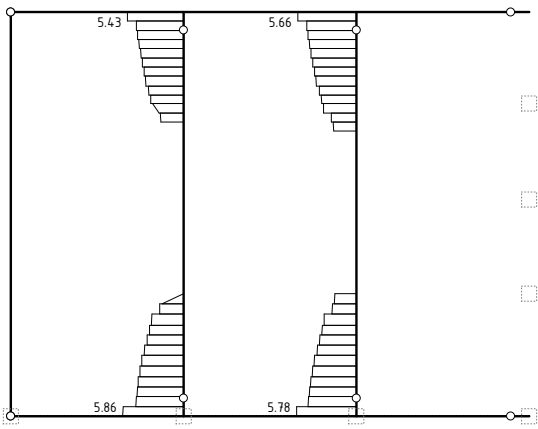
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa3= 2.05 / 0.07 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



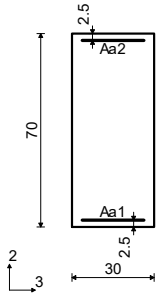
Level: Level 3 [4.87 m]
Beam reinforcement: max Aa4= 2.05 / 0.07 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Level 3 [4.87 m]
Beam reinforcement: max Aa,br= 5.86 cm²

NOS5-1 (1590-6583)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 5.95m
Critical load for bending: 1.35xI +1.05xII+1.50xIII
N1ed = -6.40 kN
M2ed = 0.00 kNm
M3ed = 553.65 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xIV
M1ed = 2.69 kNm

Critical load for shear: 1.00xI +1.00xVII
V2ed = 2.19 kN
V3ed = 3.20 kN
M1ed = 2.57 kNm

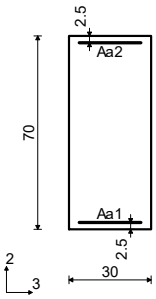
Vrd,max,2 = 820.13 kN
Vrd,max,3 = 779.63 kN
εb/εa = -3.500/6.476 ‰

Aa1 =	22.01	+	0.07`	=	22.08 cm²
Aa2 =	0.00	+	0.07`	=	0.07 cm²
Aa3 =	0.00	+	0.17`	=	0.17 cm²
Aa4 =	0.00	+	0.17`	=	0.17 cm²
Aa,br =		0.00 cm²/m			(m=2)

`) - additional longitudinal reinforcement for torsion.

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

NOS6 (9626-3269)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 2-2 x = 5.75m
Critical load for bending: 1.35xI +1.05xII+1.50xIII
N1ed = -6.59 kN
M2ed = 0.00 kNm
M3ed = 546.84 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xIV
M1ed = 1.32 kNm

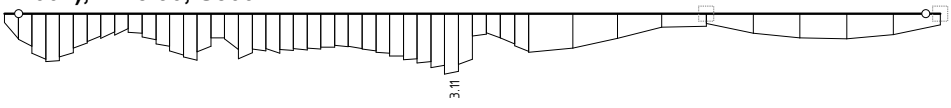
Critical load for shear: 1.00xI +0.60xII+1.00xIV
V2ed = 0.26 kN
V3ed = 1.49 kN
M1ed = 1.32 kNm

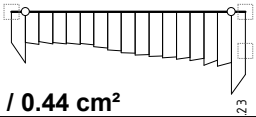
Vrd,max,2 = 820.13 kN
Vrd,max,3 = 779.63 kN
εb/εa = -3.500/6.623 ‰

Aa1 =	21.68	+	0.03`	=	21.72 cm²
Aa2 =	0.00	+	0.03`	=	0.03 cm²
Aa3 =	0.00	+	0.09`	=	0.09 cm²
Aa4 =	0.00	+	0.09`	=	0.09 cm²
Aa,br =			0.00 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

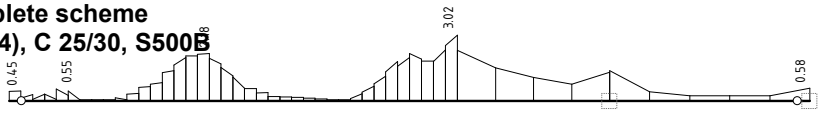
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B

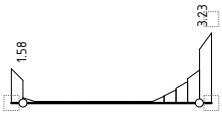




Level: Level 4 [6.34 m]
Beam reinforcement: max Aa1= 4.23 / 0.44 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B

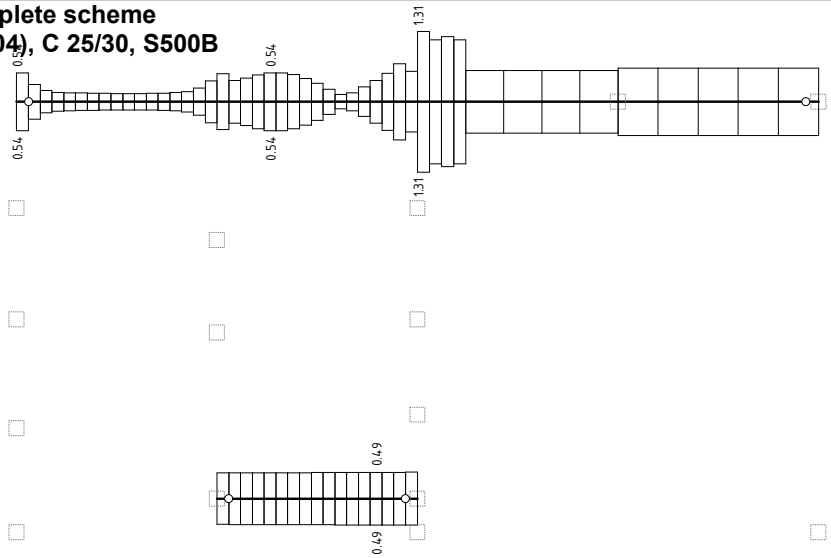




Level: Level 4 [6.34 m]
Beam reinforcement: max Aa2= 3.23 / 0.05 cm²

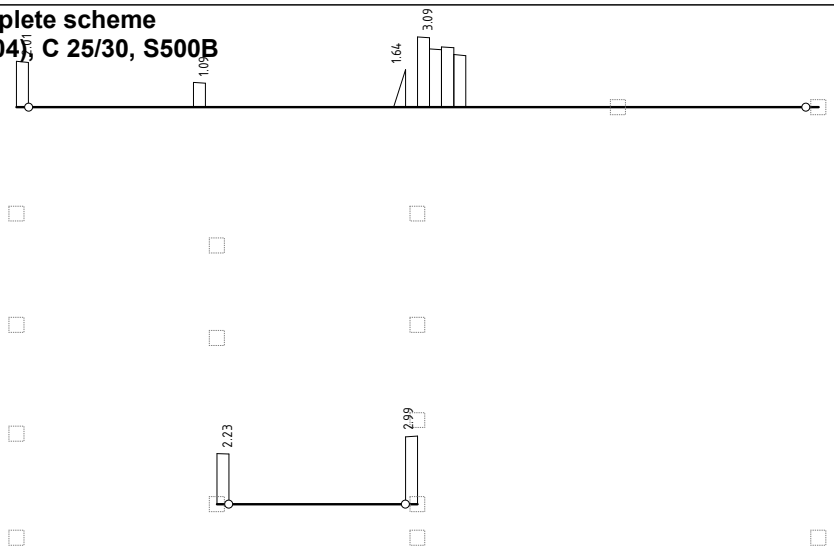
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



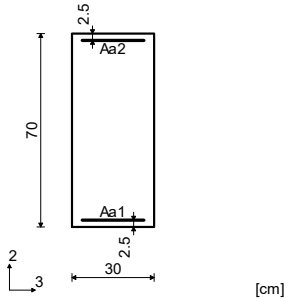
Level: Level 4 [6.34 m]
Beam reinforcement: max Aa3/Aa4= 1.31 / 1.31 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Level: Level 4 [6.34 m]
Beam reinforcement: max Aa,br= 3.09 cm²

NOS5-2 (22555-15276)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 10.00m
Critical load for bending: 1.00xI +1.00xIV
N1ed = 68.43 kN
M2ed = 0.00 kNm
M3ed = -4.34 kNm

Critical load for torsion: 1.00xI +1.00xVI
M1ed = 20.40 kNm

Critical load for shear: 1.00xI +1.00xVI
V2ed = 56.41 kN
V3ed = 14.19 kN
M1ed = 20.40 kNm

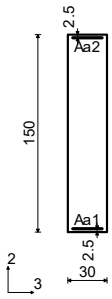
Vrd,max,2 = 820.13 kN
Vrd,max,3 = 779.63 kN
εb/εa = 0.310/25.000 ‰

Aa1 =	0.63	+	0.51`	=	1.14 cm²
Aa2 =	1.67	+	0.51`	=	2.18 cm²
Aa3 =	0.00	+	1.31`	=	1.31 cm²
Aa4 =	0.00	+	1.31`	=	1.31 cm²
Aa,br =			3.09 cm²/m		(m=2)

`) - additional longitudinal reinforcement for torsion.

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

NOS4-4 (15354-10862)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 2-2 x = 4.71m
Critical load for bending: 1.00xI +0.60xII+1.00xIV
N1ed = 59.69 kN
M2ed = 0.00 kNm
M3ed = 50.52 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xVI
M1ed = 6.95 kNm

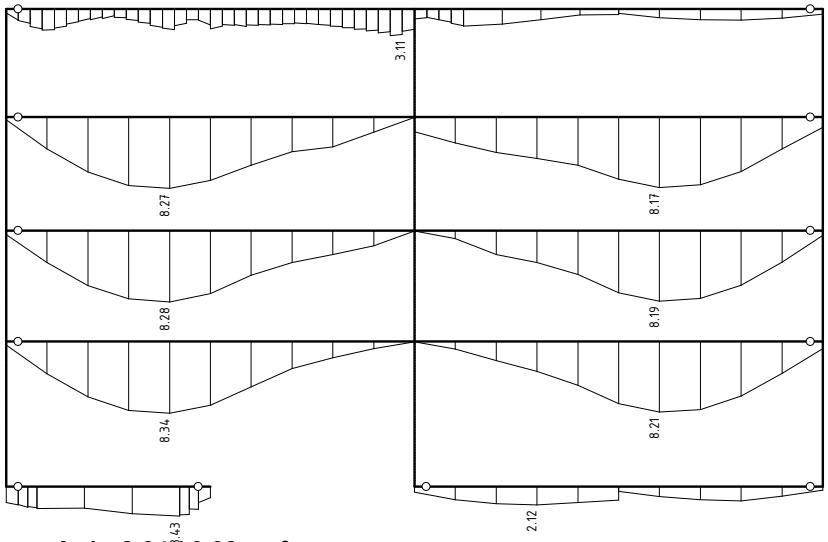
Critical load for shear: 1.00xI +0.60xII+1.00xVI
V2ed = 61.40 kN
V3ed = 16.14 kN
M1ed = 6.95 kNm

Vrd,max,2 = 1792.13 kN
Vrd,max,3 = 1670.63 kN
εb/εa = -0.199/25.000 ‰

Aa1 =	1.49	+	0.08`	=	1.57 cm²
Aa2 =	0.16	+	0.08`	=	0.24 cm²
Aa3 =	0.00	+	0.48`	=	0.48 cm²
Aa4 =	0.00	+	0.48`	=	0.48 cm²
Aa,br =		0.00 cm²/m			(m=2)

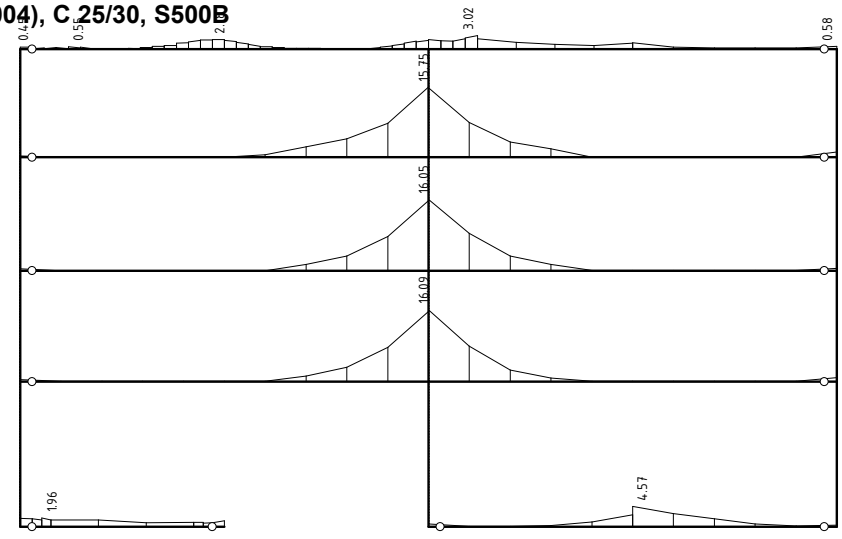
`) - additional longitudinal reinforcement for torsion.

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



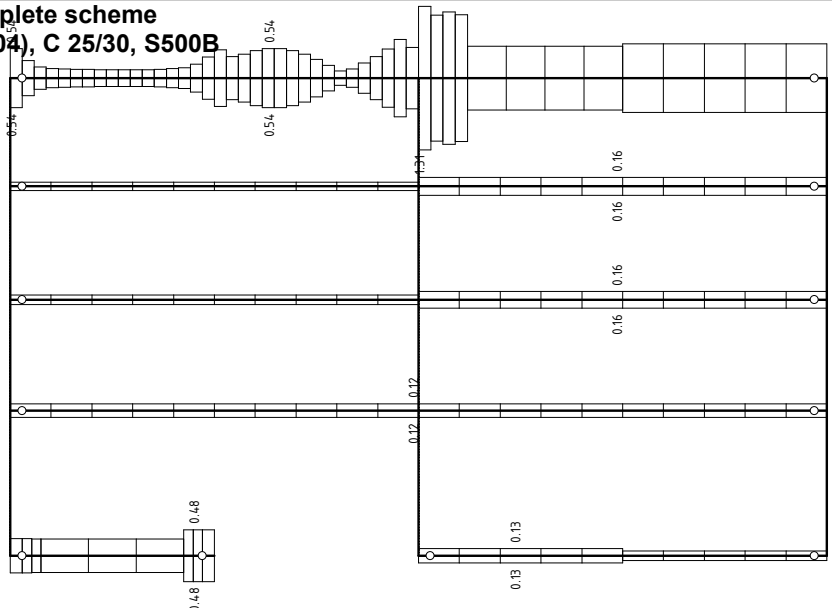
View: Roof
Beam reinforcement: max Aa1= 8.34 / 0.03 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



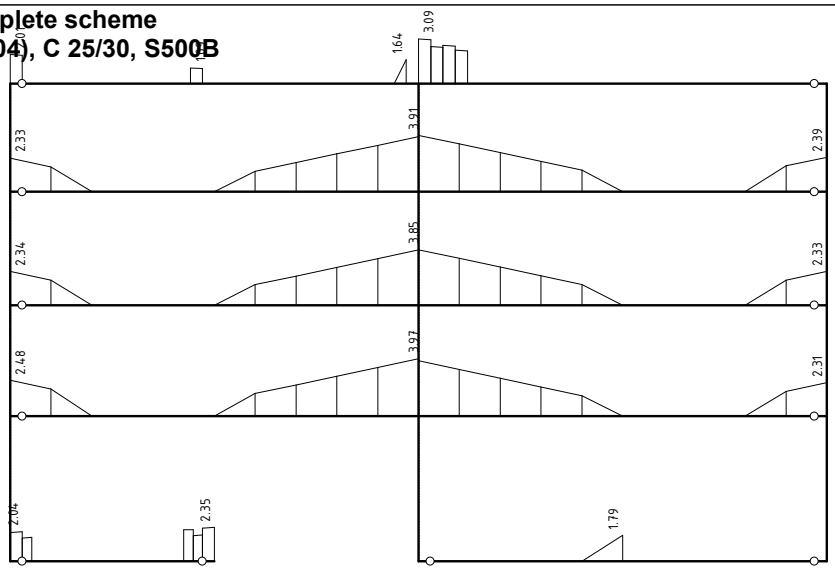
View: Roof
Beam reinforcement: max Aa2= 16.09 / 0.03 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



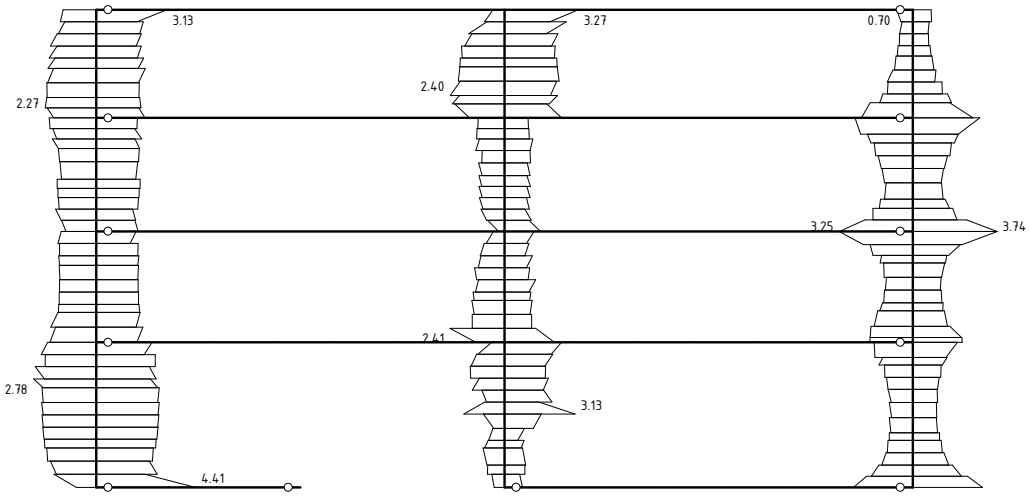
View: Roof
Beam reinforcement: max Aa3/Aa4= 1.31 / 1.31 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



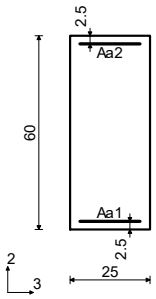
View: Roof
Beam reinforcement: max Aa,br= 4.96 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



View: Roof
Beam reinforcement: max Aa2/Aa1= 16.09 / 8.34 cm²

Beam 22010-9991
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 10.00m
Critical load for bending: 1.35xI +1.05xII+1.50xIII
N1ed = 2.66 kN
M2ed = 0.00 kNm
M3ed = -341.25 kNm

Critical load for torsion: 1.00xI +1.00xVI
M1ed = 1.61 kNm

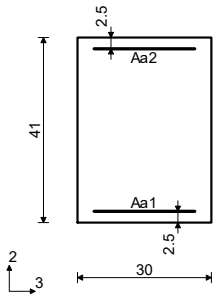
Critical load for shear: 1.35xI +1.05xII+1.50xIII
V2ed = 169.41 kN
V3ed = -15.71 kN
M1ed = -0.44 kNm

Vrd,max,2 = 582.19 kN
Vrd,max,3 = 546.75 kN
εb/εa = -3.500/6.319 ‰

Aa1 =	0.00	+	0.04`	=	0.04 cm²
Aa2 =	16.04	+	0.04`	=	16.09 cm²
Aa3 =	0.00	+	0.12`	=	0.12 cm²
Aa4 =	0.00	+	0.12`	=	0.12 cm²
Aa,br =	3.83 cm²/m				(m=2)

`) - additional longitudinal reinforcement for torsion.

NOS3-3 (6040-8905)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 3.08m
Critical load for bending: 1.00xI +0.60xII+1.00xVII
N1ed = 152.27 kN
M2ed = 0.00 kNm
M3ed = 18.56 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xVI
M1ed = 5.08 kNm

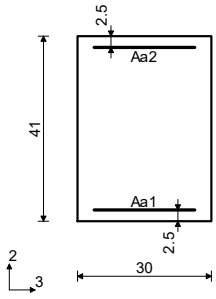
Critical load for shear: 1.00xI +0.60xII+1.00xVI
V2ed = 11.86 kN
V3ed = 4.93 kN
M1ed = 5.08 kNm

Vrd,max,2 = 467.77 kN
Vrd,max,3 = 456.64 kN
εb/εa = 0.236/25.000 ‰

Aa1 =	2.94	+	0.21`	=	3.15 cm²
Aa2 =	0.67	+	0.21`	=	0.88 cm²
Aa3 =	0.00	+	0.30`	=	0.30 cm²
Aa4 =	0.00	+	0.30`	=	0.30 cm²
Aa,br =	0.00 cm²/m				(m=2)

`) - additional longitudinal reinforcement for torsion.

NOS4-3 (13147-19850)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 2-2 x = 4.00m
Critical load for bending: 1.00xI +0.60xII+1.00xVII
N1ed = 48.35 kN
M2ed = 0.00 kNm
M3ed = 19.64 kNm

Critical load for torsion: 1.35xI +1.05xII+1.50xIII
M1ed = 2.24 kNm

Critical load for shear: 1.35xI +1.05xII+1.50xIII
V2ed = 28.89 kN
V3ed = -1.72 kN
M1ed = 2.24 kNm

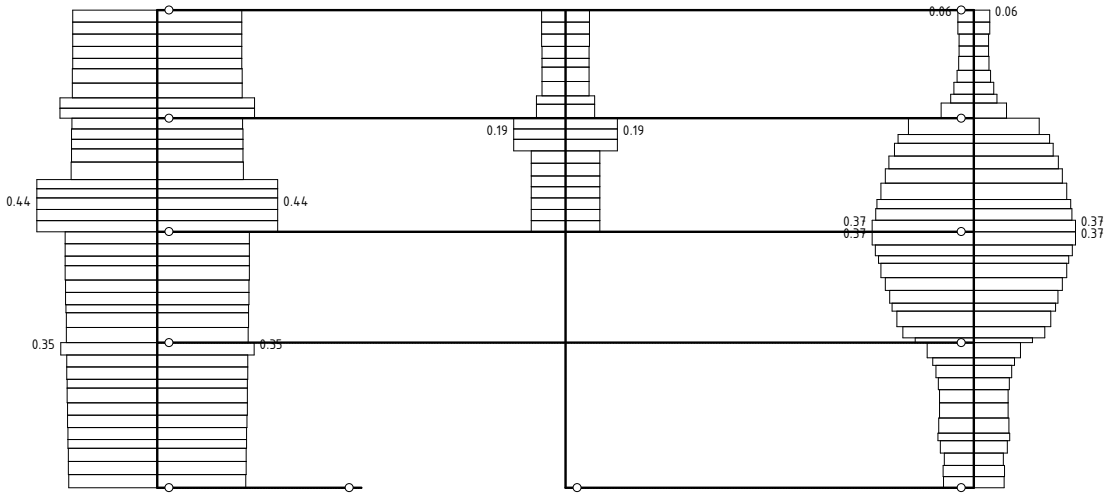
Vrd,max,2 = 467.77 kN
Vrd,max,3 = 456.64 kN
εb/εa = -1.151/25.000 ‰

Aa1 =	1.76	+	0.09`	=	1.86 cm²
Aa2 =	1.01	+	0.09`	=	1.11 cm²
Aa3 =	0.00	+	0.13`	=	0.13 cm²
Aa4 =	0.00	+	0.13`	=	0.13 cm²
Aa,br =	0.00 cm²/m				(m=2)

`) - additional longitudinal reinforcement for torsion.

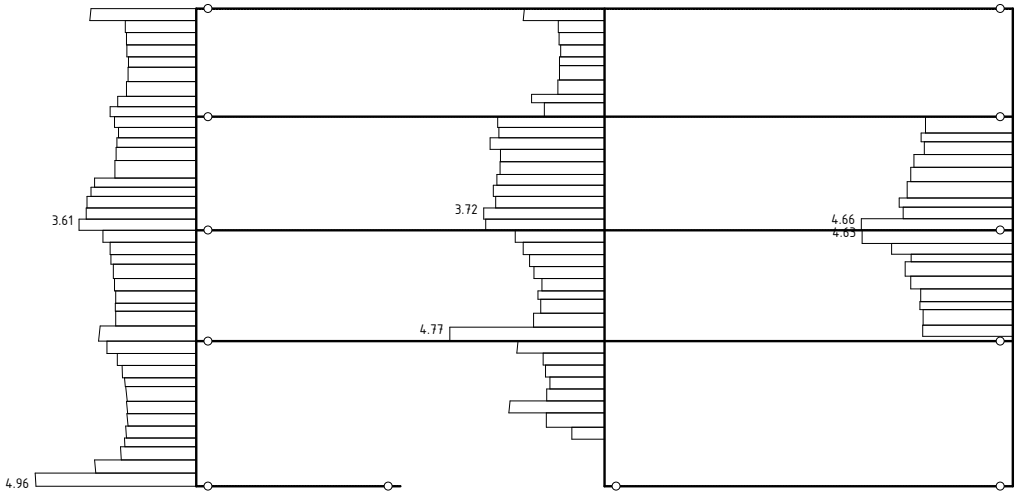
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



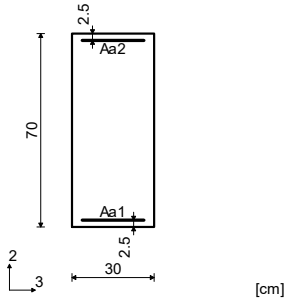
View: Roof
Beam reinforcement: max Aa3/Aa4= 1.31 / 1.31 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



View: Roof
Beam reinforcement: max Aa,br= 4.96 cm²

NOS5-2 (22555-15276)
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



[cm]

Section 1-1 x = 12.36m
Critical load for bending: 1.00xI +0.60xII+1.00xV
N1ed = 48.15 kN
M2ed = 0.00 kNm
M3ed = 33.68 kNm

Critical load for torsion: 1.35xI +1.05xII+1.50xIII
M1ed = 3.68 kNm

Critical load for shear: 1.00xI +0.60xII+1.00xV
V2ed = 11.61 kN
V3ed = 2.89 kN
M1ed = 2.47 kNm

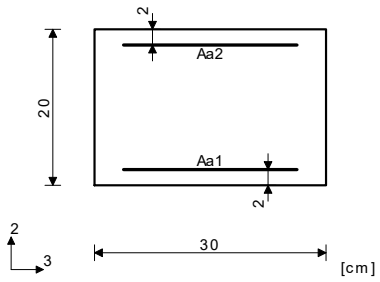
Vrd,max,2 = 820.13 kN
Vrd,max,3 = 779.63 kN
εb/εa = -0.681/25.000 ‰

Aa1 =	1.73	+	0.09`	=	1.82 cm²
Aa2 =	0.00	+	0.09`	=	0.09 cm²
Aa3 =	0.00	+	0.24`	=	0.24 cm²
Aa4 =	0.00	+	0.24`	=	0.24 cm²
Aa,br =		0.00 cm²/m			(m=2)

`) - additional longitudinal reinforcement for torsion.

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Beam 6040-14411
EC 2 (EN 1992-1-1:2004)
C 25/30 (γC = 1.50, γS = 1.15) [PT]
S500B
Full load pattern



Section 1-1 x = 5.08m
Critical load for bending: 1.00xI +0.60xII+1.00xIV
N1ed = 118.60 kN
M2ed = 0.00 kNm
M3ed = 0.27 kNm

Critical load for torsion: 1.00xI +0.60xII+1.00xIV
M1ed = 6.02 kNm

Critical load for shear: 1.00xI +0.60xII-1.00xIV
V2ed = -12.79 kN
V3ed = -11.21 kN
M1ed = -6.01 kNm

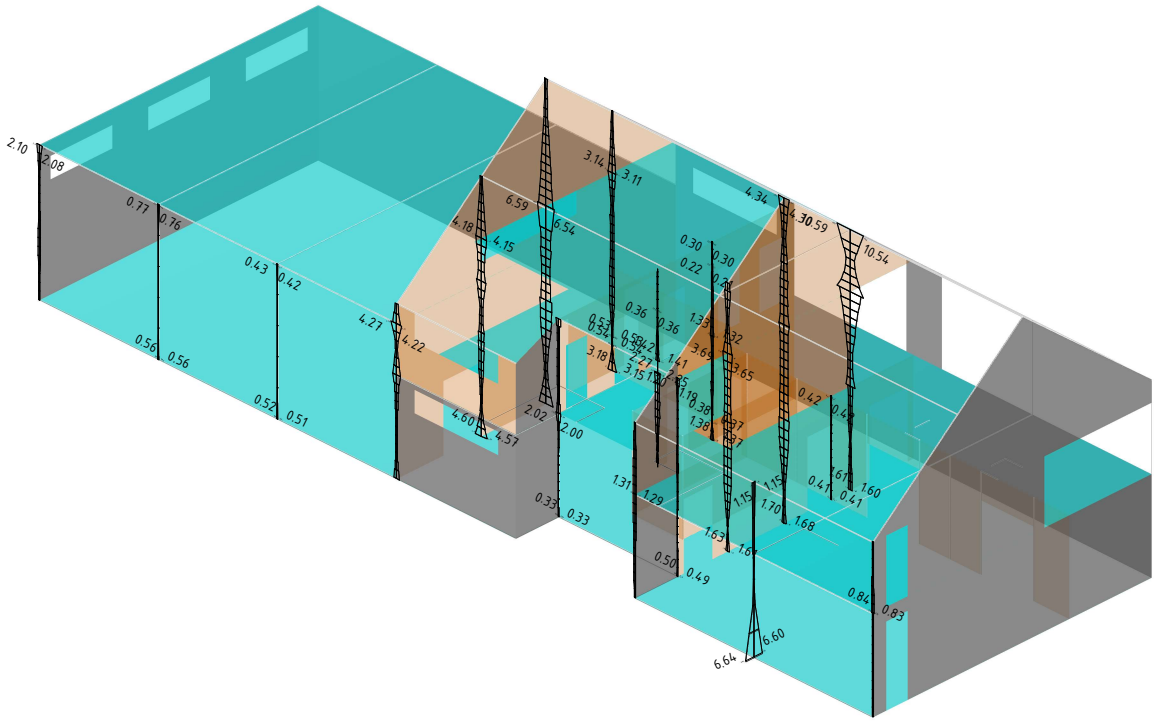
Vrd,max,2 = 218.70 kN
Vrd,max,3 = 218.70 kN
εb/εa = -0.640/25.000 ‰

Aa1 =	1.57	+	0.49`	=	2.06 cm²
Aa2 =	1.31	+	0.49`	=	1.80 cm²
Aa3 =	0.00	+	0.33`	=	0.33 cm²
Aa4 =	0.00	+	0.33`	=	0.33 cm²

Aa,br = 2.96 cm²/m (m=2)
`) - additional longitudinal reinforcement for torsion.

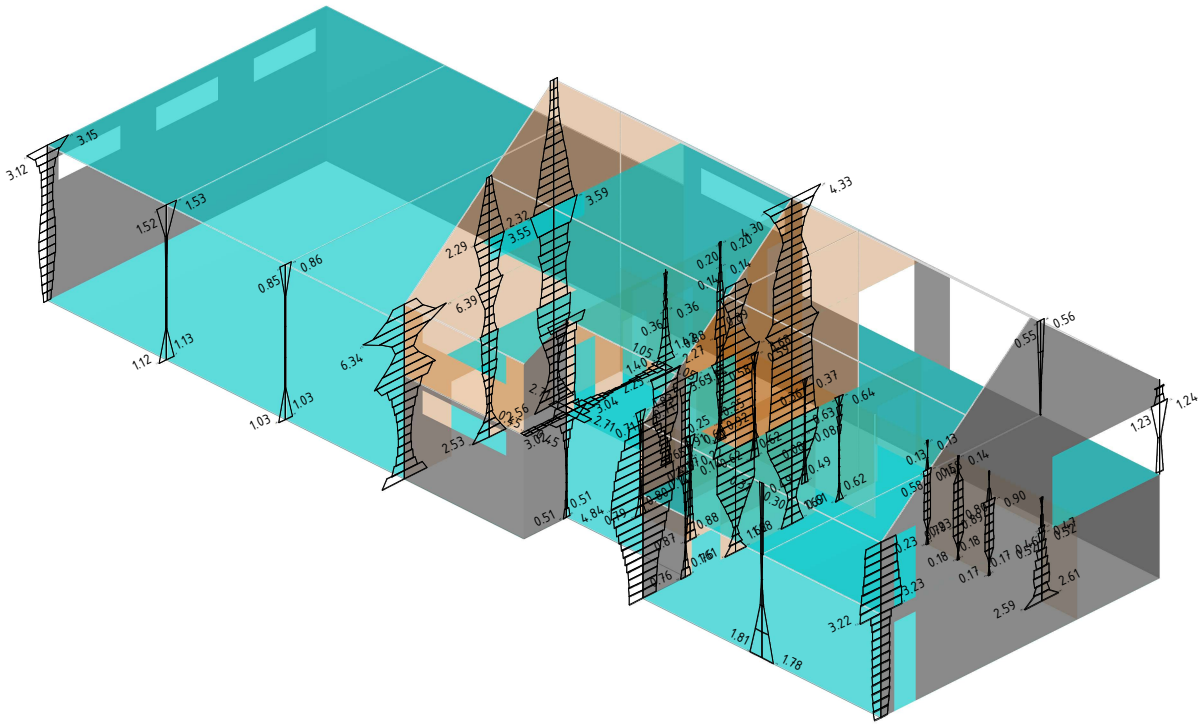
DESIGN OF COLUMNS

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



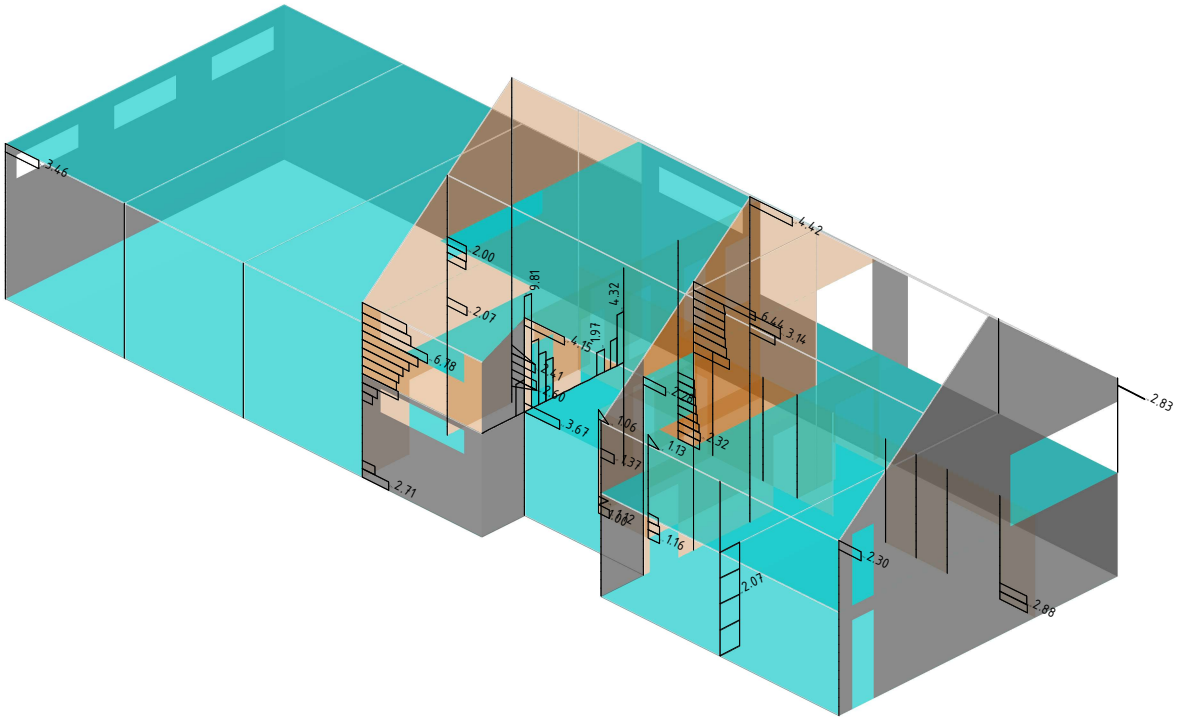
Isometric
Beam reinforcement: Aa2/Aa1

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



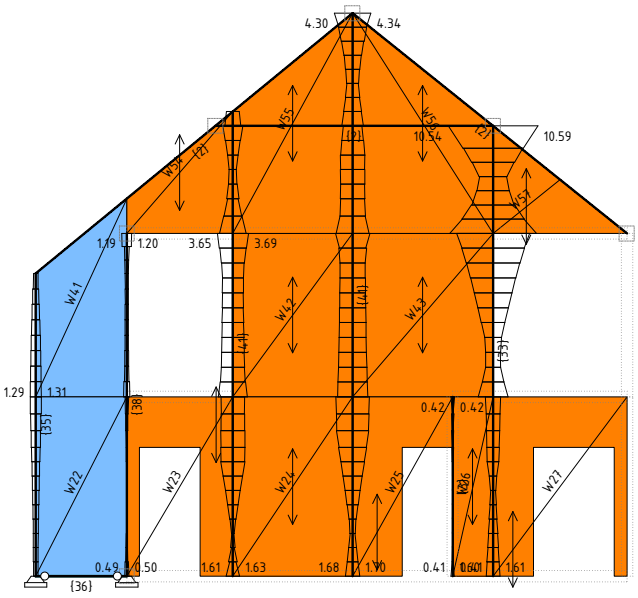
Isometric
Beam reinforcement: Aa3/Aa4

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



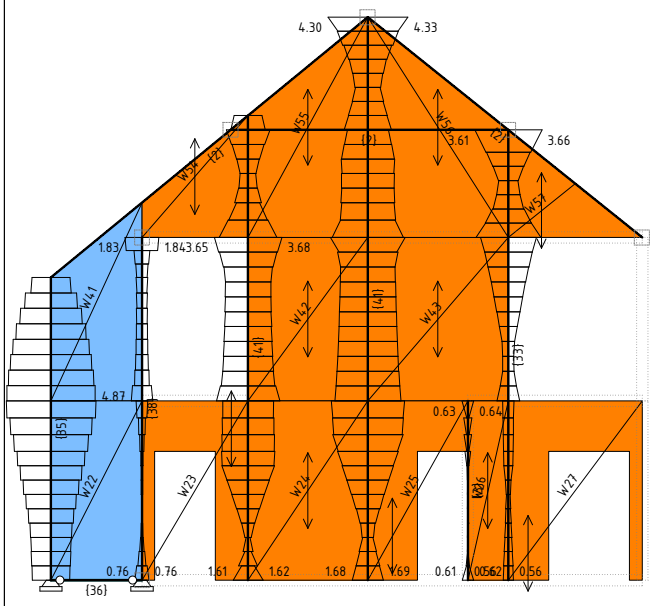
Isometric
Beam reinforcement: Aa,br

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



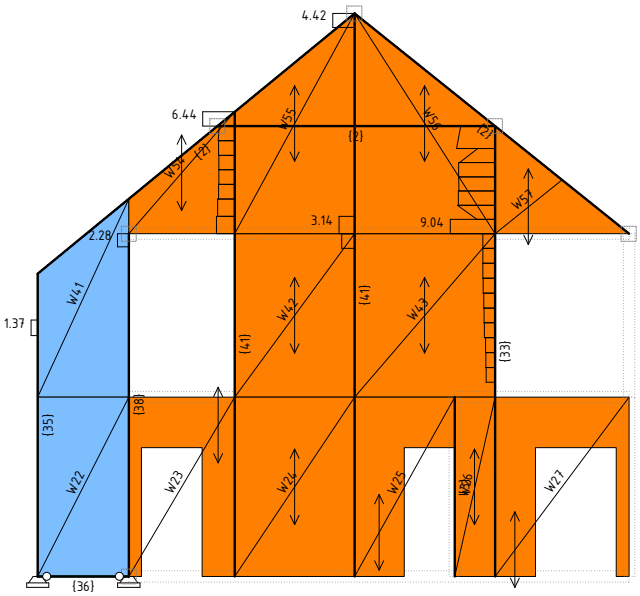
Frame: V_2
Beam reinforcement: max Aa2/Aa1= 10.54 / 10.59 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



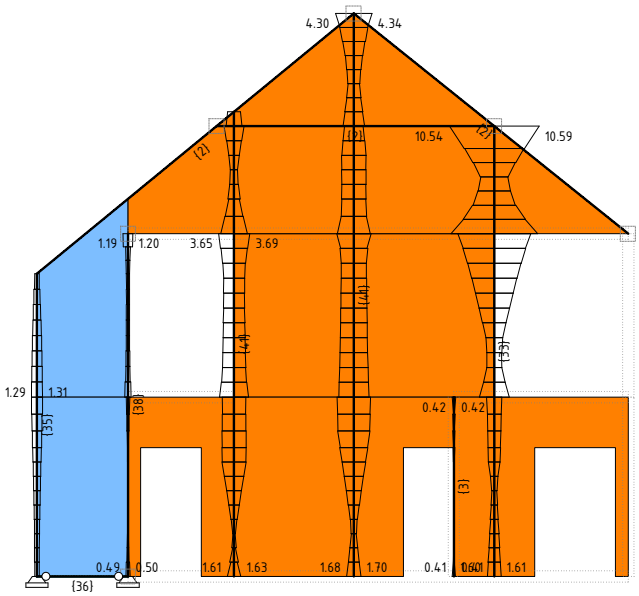
Frame: V_2
Beam reinforcement: max Aa3/Aa4= 4.87 / 4.84 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



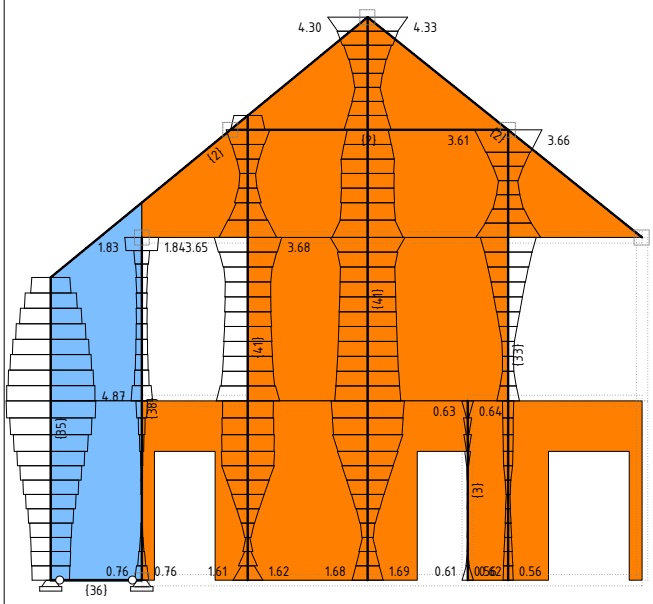
Frame: V_2
Beam reinforcement: max Aa,br= 9.04 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



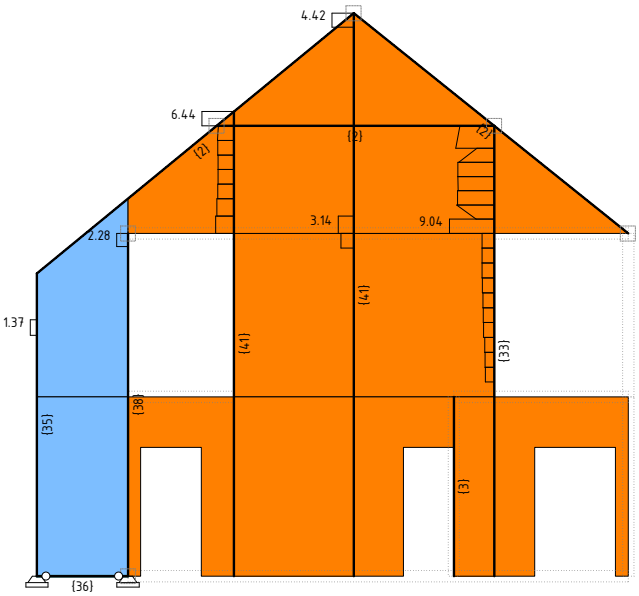
Frame: V_2
Beam reinforcement: max Aa2/Aa1= 10.54 / 10.59 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: V_2
Beam reinforcement: max Aa3/Aa4= 4.87 / 4.84 cm²

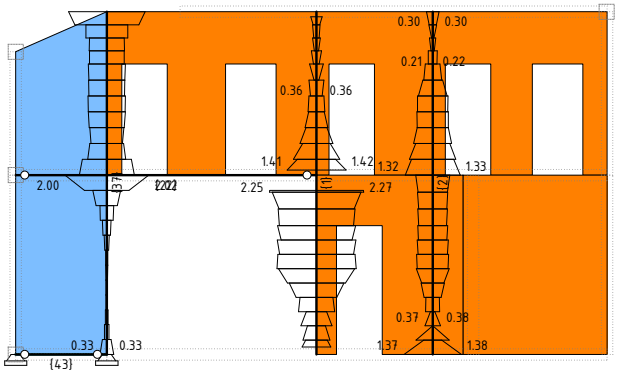
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: V_2
Beam reinforcement: max Aa,br= 9.04 cm²

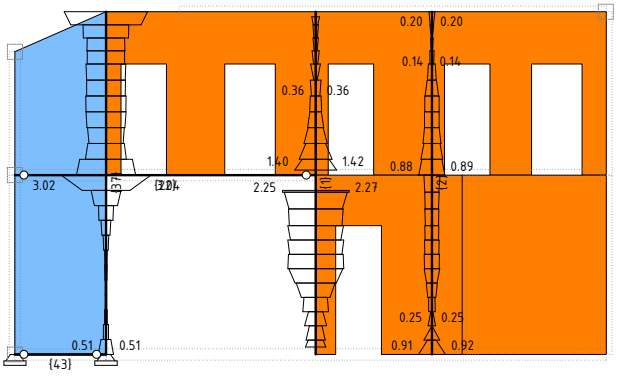
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



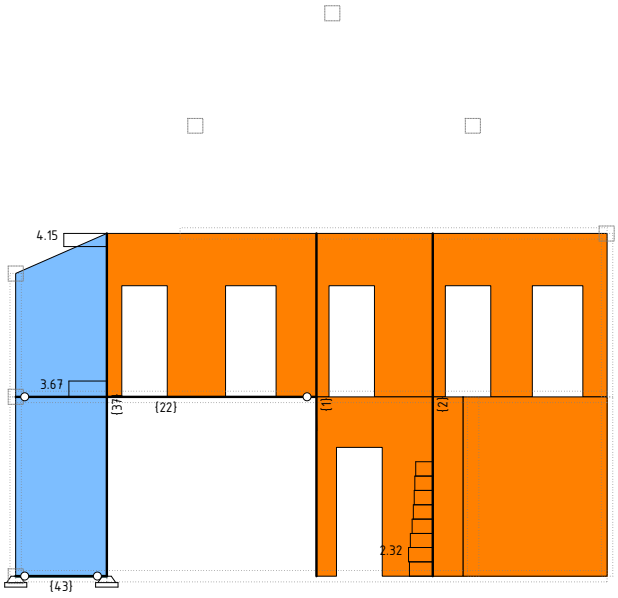
Frame: V_1
Beam reinforcement: max Aa2/Aa1= 10.92 / 5.04 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



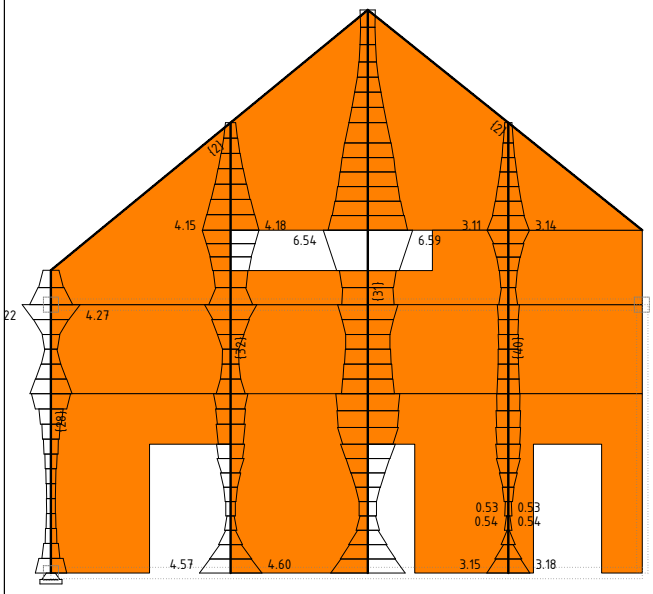
Frame: V_1
Beam reinforcement: max Aa3/Aa4= 3.04 / 3.02 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: V_1
Beam reinforcement: max Aa,br= 9.81 cm²

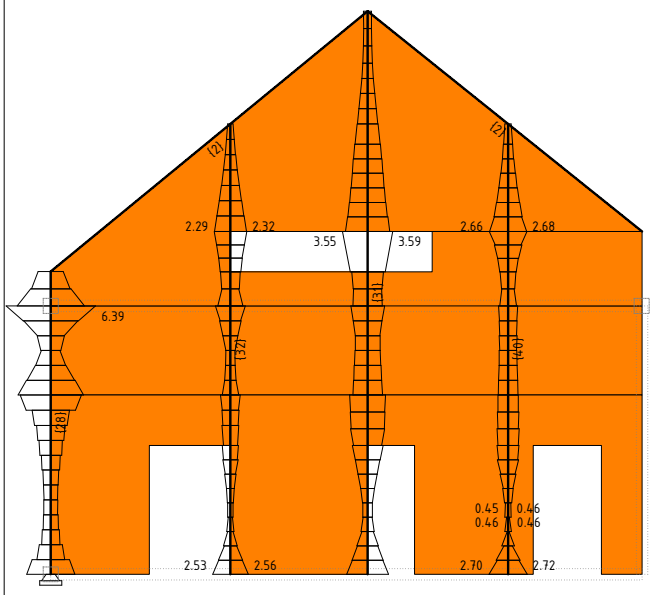
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: V_3
Beam reinforcement: max Aa2/Aa1= 6.54 / 6.59 cm²

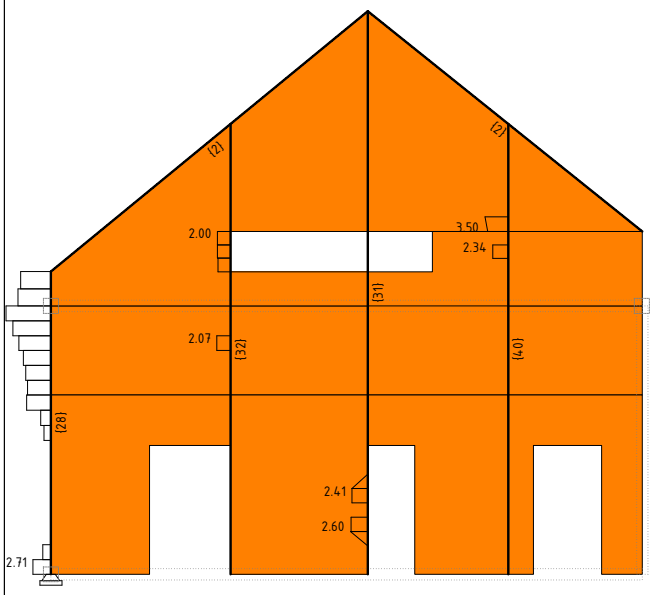
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



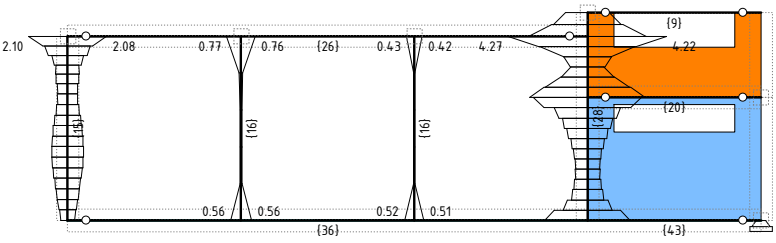
Frame: V_3
Beam reinforcement: max Aa3/Aa4= 6.39 / 6.34 cm²

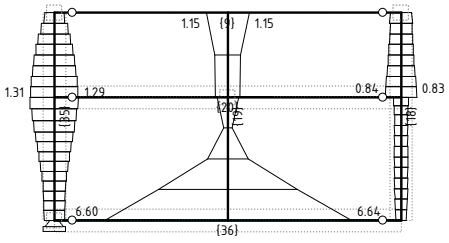
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: V_3
Beam reinforcement: max Aa,br= 6.78 cm²

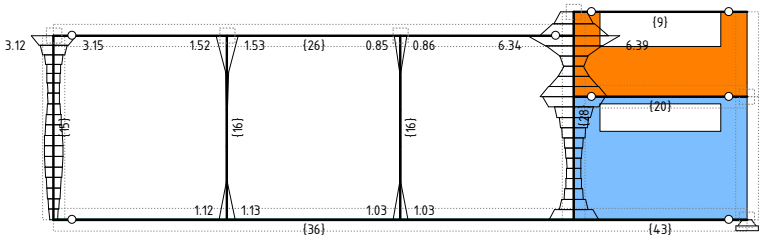
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B

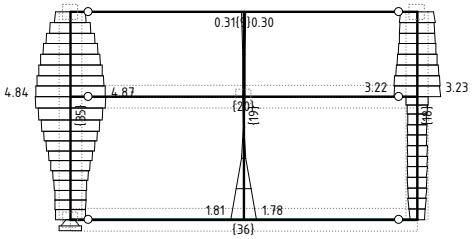




Frame: H_1
Beam reinforcement: max Aa2/Aa1= 18.81 / 12.69 cm²

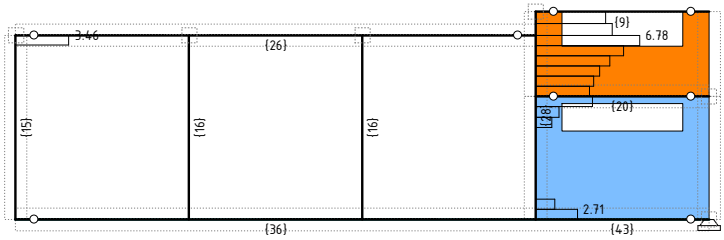
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B

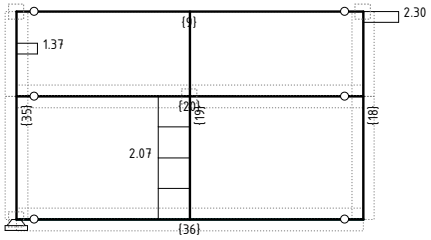




Frame: H_1
Beam reinforcement: max Aa3/Aa4= 6.39 / 6.34 cm²

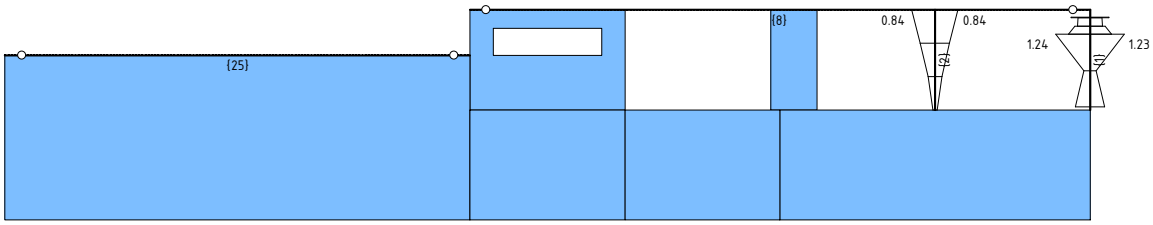
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B





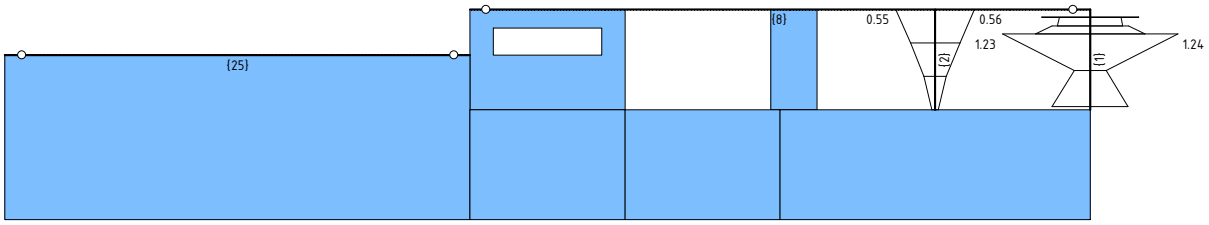
Frame: H_1
Beam reinforcement: max Aa,br= 6.78 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



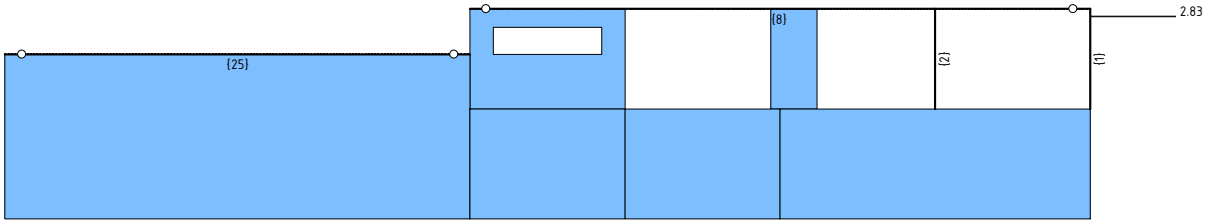
Frame: H_5
Beam reinforcement: max Aa2/Aa1= 3.02 / 3.38 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



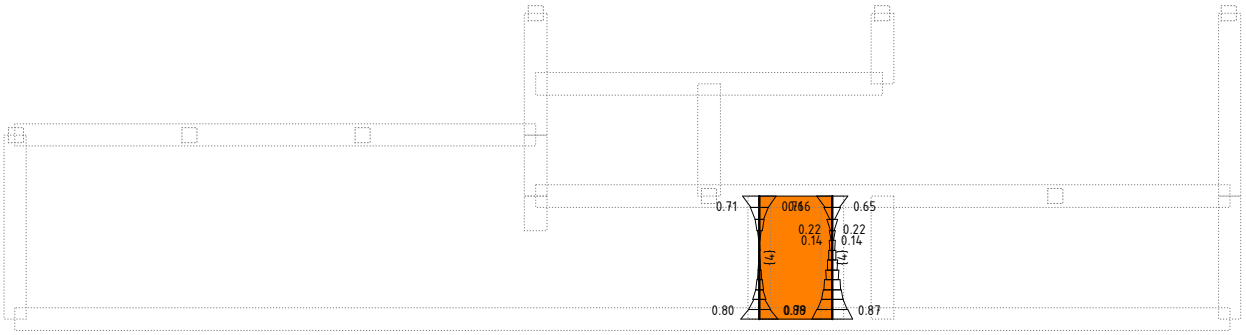
Frame: H_5
Beam reinforcement: max Aa3/Aa4= 1.31 / 1.31 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: H_5
Beam reinforcement: max Aa,br= 3.09 cm²

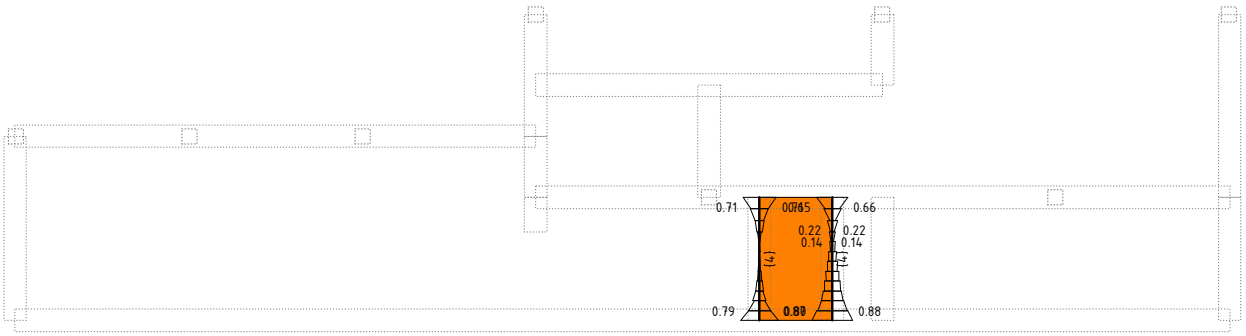
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: H_6
Beam reinforcement: max Aa2/Aa1= 0.87 / 0.88 cm²

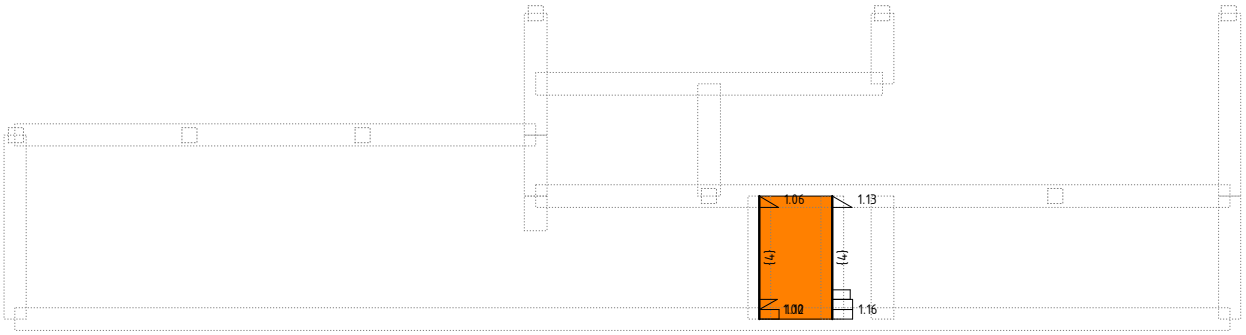
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



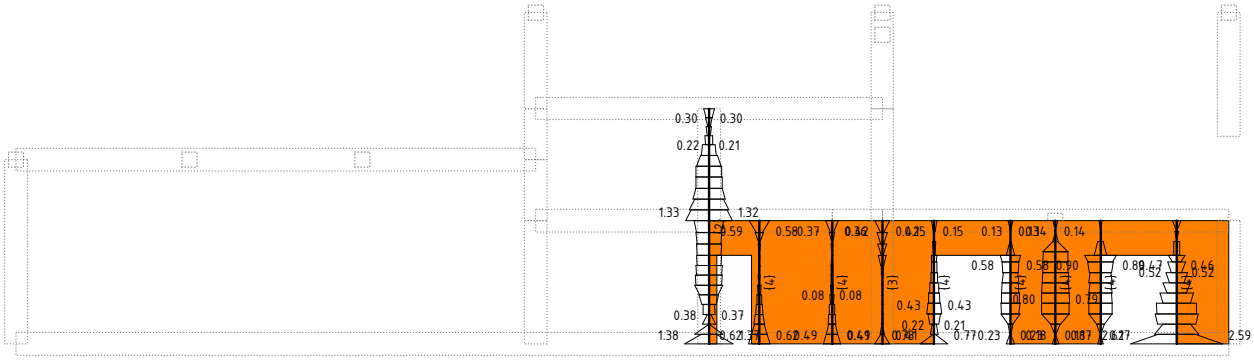
Frame: H_6
Beam reinforcement: max Aa3/Aa4= 0.88 / 0.87 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



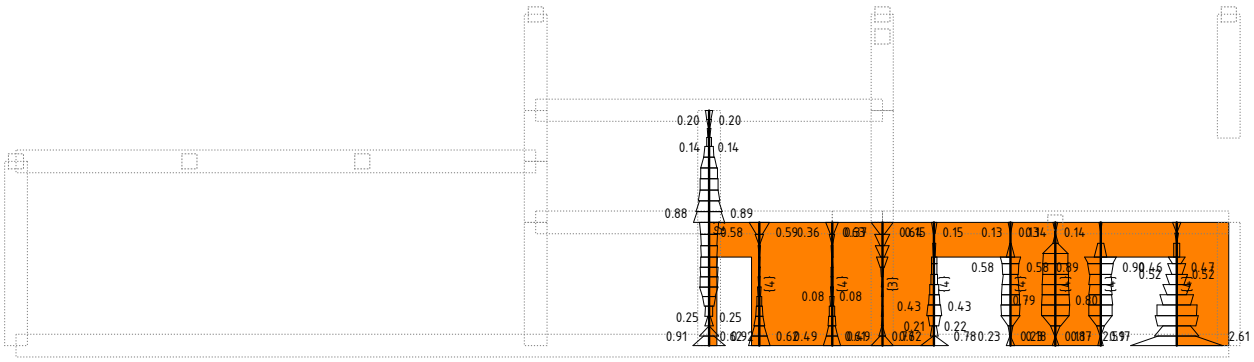
Frame: H_6
Beam reinforcement: max Aa,br= 1.16 cm²

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: H_7
Beam reinforcement: max Aa2/Aa1= 2.59 / 2.62 cm²

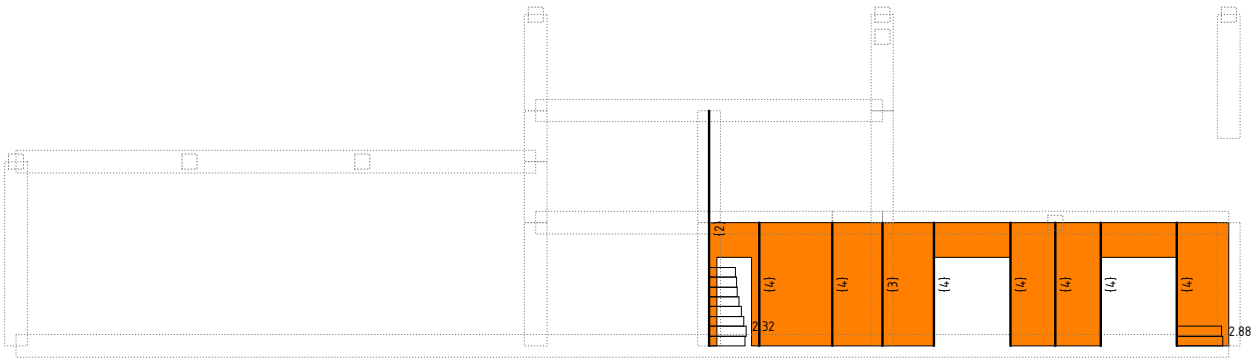
Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



Frame: H_7
Beam reinforcement: max Aa3/Aa4= 2.61 / 2.59 cm²

UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

Governing load: Complete scheme
EC 2 (EN 1992-1-1:2004), C 25/30, S500B



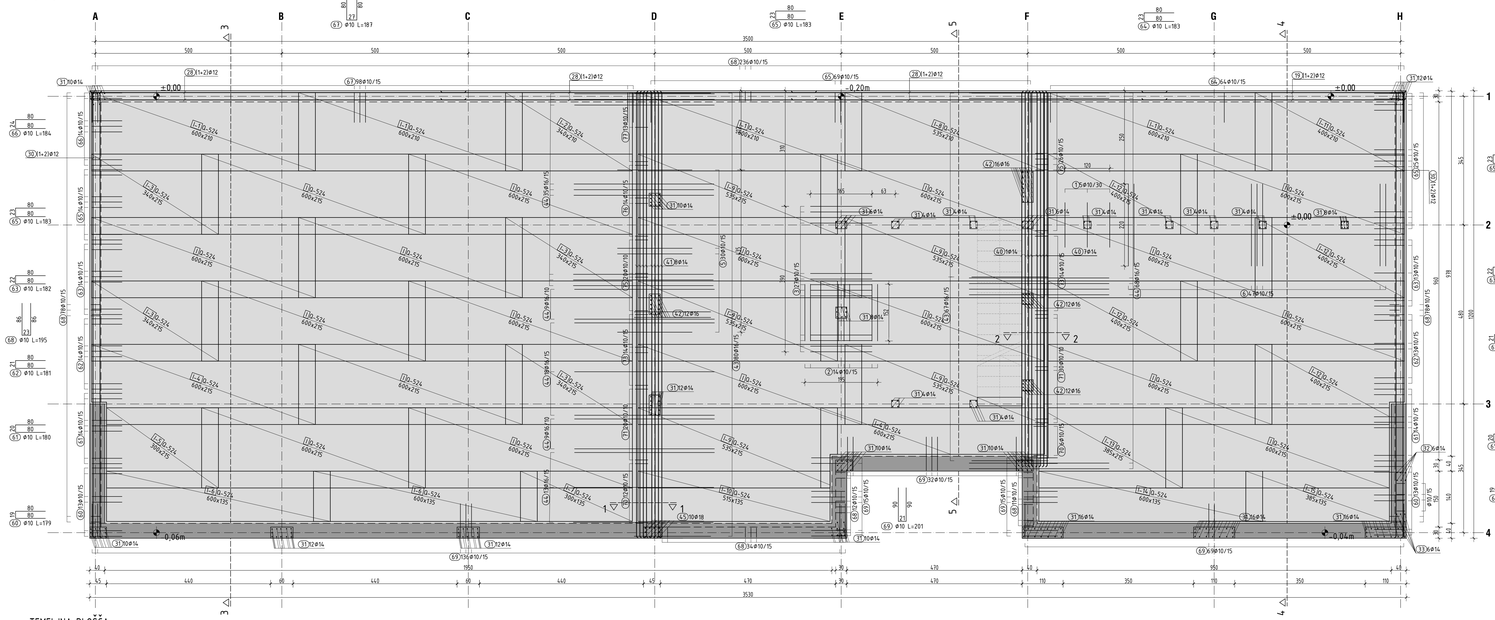
Frame: H_7
Beam reinforcement: max Aa,br= 2.88 cm²

INŽENIRING BIRO ARMATURA
UROŠ ŽVAN s.p., ZRKOVSKA 75, 2000 MARIBOR

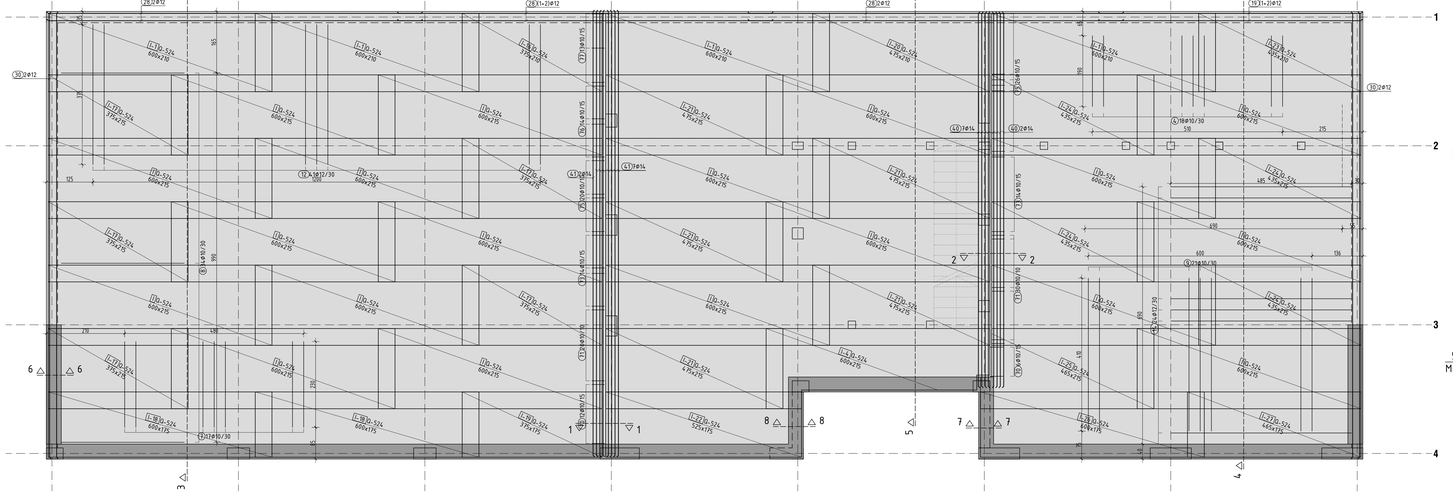
RISBE

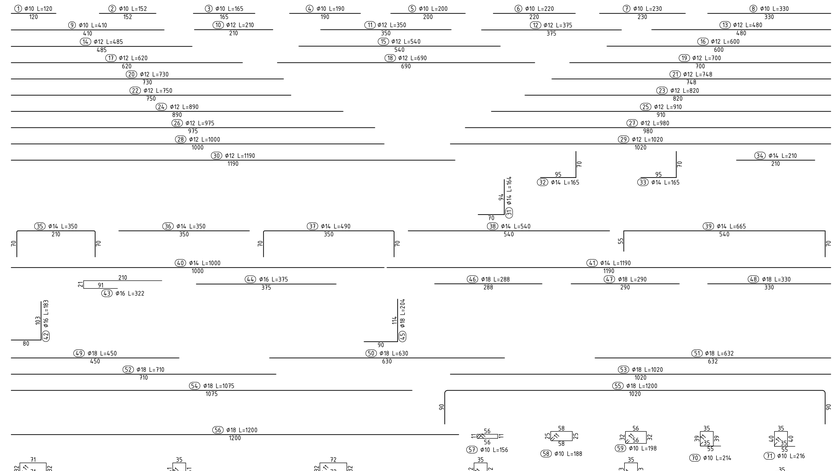
OPAŽNO ARMATURNA RISBA TEMELJNE PLOŠČE S PROTIZMRZLINSKIM ZOBOM.....list 1
KOSOVNICA ARMATURE K LISTU 1
OPAŽNO ARMATURNA RISBA STOPNIŠČA.....list 2
KOSOVNICA ARMATURE K LISTU 2
OPAŽNO ARMATURNA RISBA AB STEBROV IN VERTIKALNIH VEZI.....list 3
KOSOVNICA ARMATURE K LISTU 3
OPAŽNO ARMATURNA RISBA AB STEN V PRITLIČJU.....list 4
KOSOVNICA ARMATURE K LISTU 4
OPAŽNO ARMATURNA RISBA AB PLOŠČE IN NOSILCEV NAD PRITLIČJEM.....list 5
KOSOVNICA ARMATURE K LISTU 5
OPAŽNO ARMATURNA RISBA AB PLOŠČE NAD GARAŽO IN ATIKE.....list 6
KOSOVNICA ARMATURE K LISTU 6
OPAŽNO ARMATURNA RISBA AB VERTIKALNIH ELEMENTOV V NADSTROPJU IN MANSARDI..list 7
OPAŽNO ARMATURNA RISBA AB STEN V 1. NADSTROPJU.....list 8
OPAŽNO ARMATURNA RISBA AB PLOŠČE IN NOSILCEV NAD NADSTROPJEM.....list 9
KOSOVNICA ARMATURE K LISTOM 7, 8 IN 9
OPAŽNO ARMATURNA RISBA AB NOSILCEV IN POŠEVNIH VEZI ZATREPNIH ZIDOV.....list 10
KOSOVNICA ARMATURE K LISTU 10
RISBA LESENEGA OSTREŠJA.....list 11

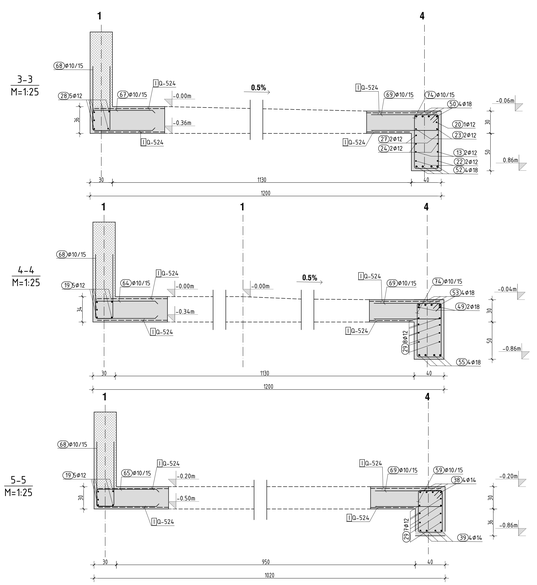
TEMELJNA PLOŠČA S.R. -0.36/0.50 m
M 1:50
Spodnja cona

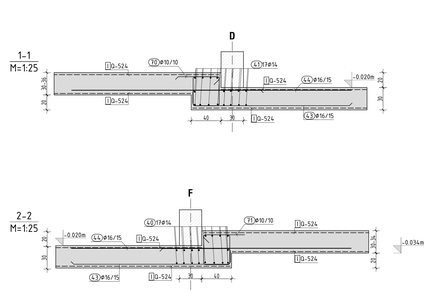


TEMELJNA PLOŠČA
M 1:50
Zgornja cona

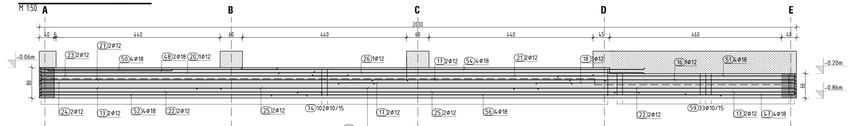




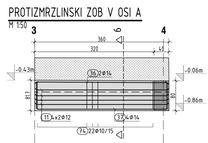




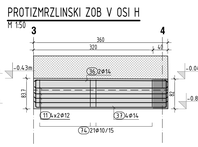
PROTIZMRZLINSKI ZOB V OSI 4
M 1:50



PROTIZMRZLINSKI ZOB V OSI A
M 1:50



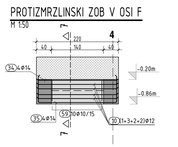
PROTIZMRZLINSKI ZOB V OSI H
M 1:50



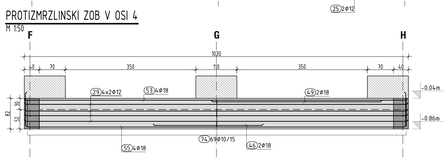
PROTIZMRZLINSKI ZOB V OSI E
M 1:50
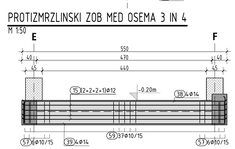


PROTIZMRZLINSKI ZOB V OSI F
M 1:50



PROTIZMRZLINSKI ZOB V OSI 4
M 1:50



PROTIZMRZLINSKI ZOB MED OSEMA 3 IN 4
M 1:50



UPORABLJENI MATERIALI:

-BETON

temeljna plošča	C30/37 XD2/XM1	Cl 0,2 Dmax16 S4
med osema A in D	Cnom,z.c.= 5 cm	Cnom,s.c.= 4 cm
med osema D in F	Cnom,z.c.= 2.5 cm	Cnom,s.c.= 4 cm
med osema F in H	Cnom,z.c.= 5 cm	Cnom,s.c.= 4 cm
protizmrzlinski zob	C30/37 XD2	Cl 0,2 Dmax16 S4
	Cnom,z.c.= 5 cm	Cnom,s.c.= 4 cm

-JEKLO S500B

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

-Vse mere potrebno preveriti na licu mesta!

-Priključna armatura za stopnice prikazana na listu št. 10

-Vse projektantske mere preveriti z načrti arhitekture.

datum	spremembe

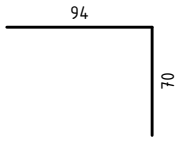
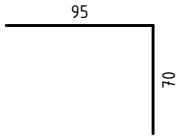
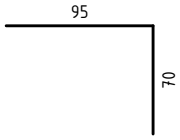
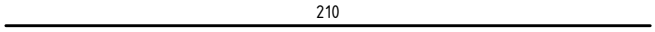
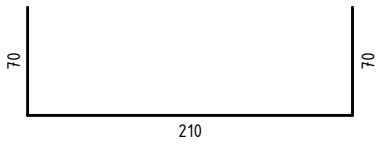
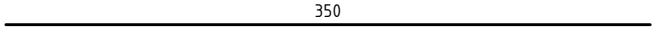
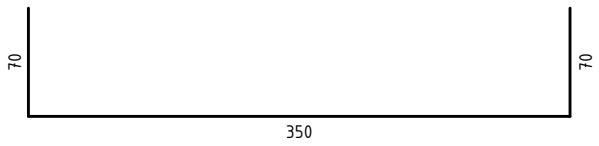
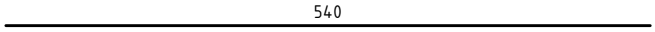
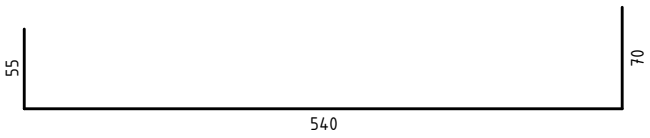
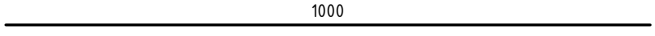
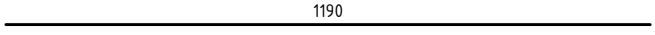
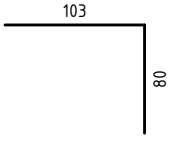
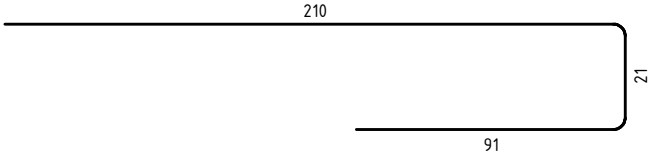
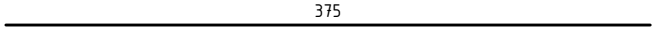
projektiral:
ARMATURA
inženiring za armiranje d.o.o.
slovenska ulica 40a/1a, 4202 Duplje ss, Zbilje ss, Zbilje ss 1, 4, Radovljica
www.armatura.si.si info@armatura.si.si GSM: 040 435 161

št. projekta:	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ŽIGAN, univ. dipl. ing. grad. IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-0028
sodelavec:	
načrt, st.načrta	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo	OPAŽNO-ARMATURN RISBA TEMELJNE PLOŠČE S PROTIZMRZLINSKIM ZOBOM 1:25 150
datum, št. lista	MAREC 2022 1

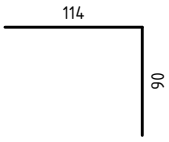
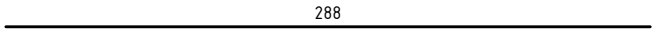
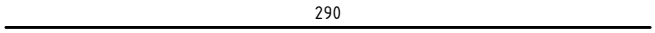
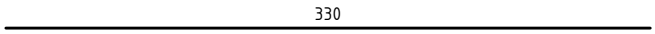
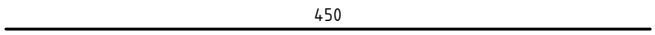
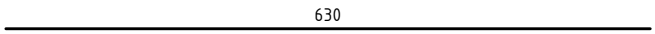
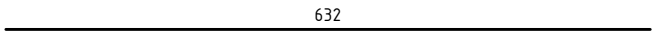
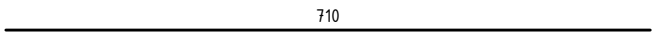
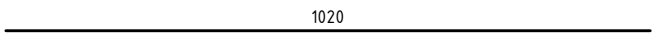
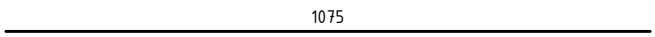
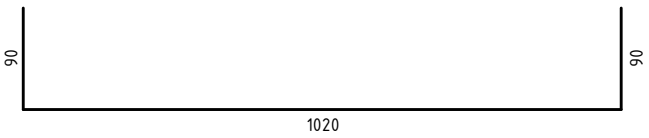
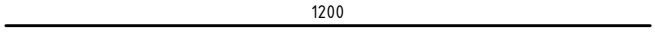
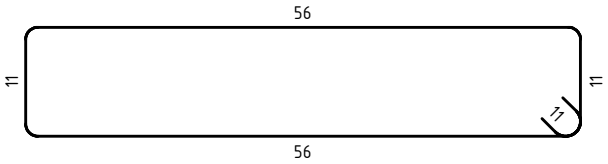
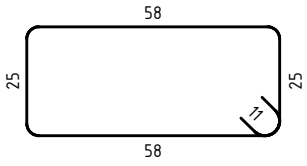
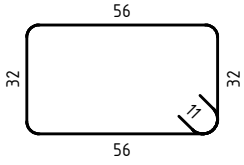
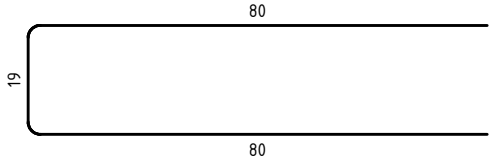
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
Foundation Slab / Temeljna plošča (1 pcs.)					
1	120	10	1.20	5	6.00
2	152	10	1.52	14	21.28
3	165	10	1.65	27	44.55
4	190	10	1.90	18	34.20
5	200	10	2.00	30	60.00
6	220	10	2.20	47	103.40
7	230	10	2.30	17	39.10
8	330	10	3.30	34	112.20
9	410	10	4.10	21	86.10
10	210	12	2.10	18	37.80
11	350	12	3.50	16	56.00
12	375	12	3.75	41	153.75
13	480	12	4.80	4	19.20
14	485	12	4.85	24	116.40
15	540	12	5.40	7	37.80
16	600	12	6.00	1	6.00
17	620	12	6.20	4	24.80
18	690	12	6.90	3	20.70
19	700	12	7.00	6	42.00
20	730	12	7.30	1	7.30
21	748	12	7.48	2	14.96
22	750	12	7.50	4	30.00
23	820	12	8.20	2	16.40
24	890	12	8.90	2	17.80
25	910	12	9.10	4	36.40
26	975	12	9.75	1	9.75
27	980	12	9.80	2	19.60
28	1000	12	10.00	16	160.00
29	1020	12	10.20	8	81.60
30	1190	12	11.90	10	119.00

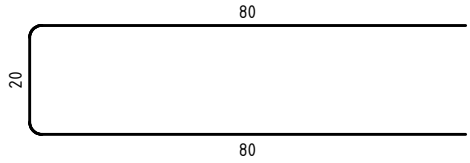
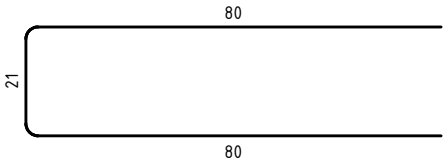
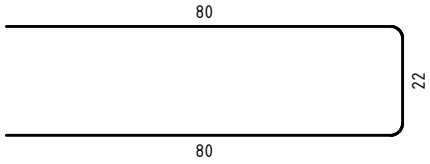
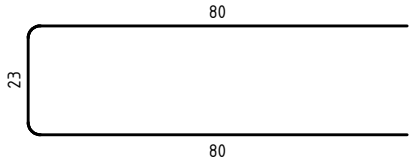
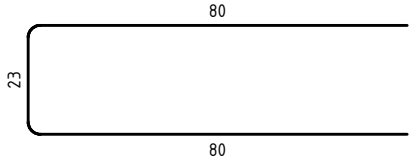
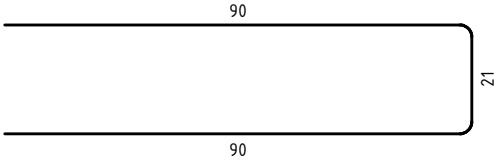
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
31		14	1.64	216	354.24
32		14	1.65	6	9.90
33		14	1.65	6	9.90
34		14	2.10	8	16.80
35		14	3.50	8	28.00
36		14	3.50	4	14.00
37		14	4.90	8	39.20
38		14	5.40	4	21.60
39		14	6.65	4	26.60
40		14	10.00	17	170.00
41		14	11.90	17	202.30
42		16	1.83	52	95.16
43		16	3.22	147	473.34
44		16	3.75	152	570.00

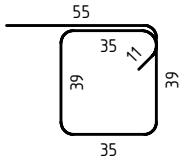
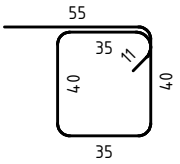
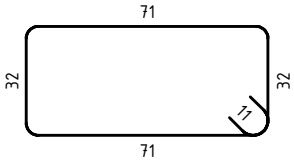
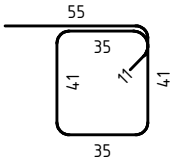
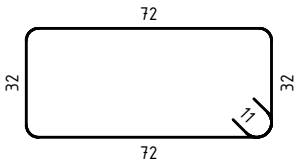
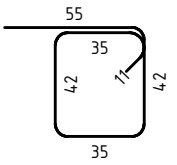
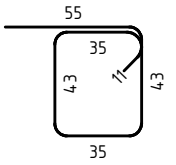
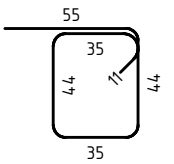
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
45		18	2.04	10	20.40
46		18	2.88	2	5.76
47		18	2.90	4	11.60
48		18	3.30	2	6.60
49		18	4.50	2	9.00
50		18	6.30	4	25.20
51		18	6.32	4	25.28
52		18	7.10	4	28.40
53		18	10.20	4	40.80
54		18	10.75	4	43.00
55		18	12.00	4	48.00
56		18	12.00	4	48.00
57		10	1.56	12	18.72
58		10	1.88	6	11.28
59		10	1.98	80	158.40
60		10	1.79	26	46.54

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
61		10	1.80	28	50.40
62		10	1.81	27	48.87
63		10	1.82	27	49.14
64		10	1.83	64	117.12
65		10	1.83	108	197.64
66		10	1.84	14	25.76
67		10	1.87	98	183.26
68		10	1.95	449	875.55
69		10	2.01	267	536.67

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
70		10	2.14	18	38.52
71		10	2.16	50	108.00
72		10	2.28	10	22.80
73		10	2.18	28	61.04
74		10	2.30	214	492.20
75		10	2.20	46	101.20
76		10	2.22	14	31.08
77		10	2.24	13	29.12

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
10	3710.14	0.62	2289.16
12	1027.26	0.89	912.21
Skupaj (S500B, Ø <= 12 mm)			3201.36
S500B, Ø > 12 mm			
14	892.54	1.21	1079.97
16	1138.50	1.58	1798.83
18	312.04	2.02	630.32
Skupaj (S500B, Ø > 12 mm)			3509.12
Skupaj			6710.49

Mreže - specifikacija

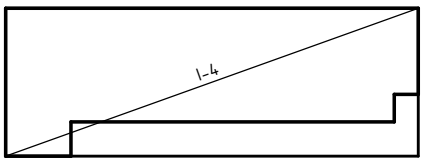
Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
Foundation Slab / Temeljna plošča (1 pcs.)						
I	Q-524	215	600	37	8.41	4014.09
I-1	Q-524	210	600	8	8.41	847.73
I-2	Q-524	210	340	1	8.41	60.05
I-3	Q-524	215	340	4	8.41	245.91
I-4	Q-524	215	600	3	8.41	325.47
I-5	Q-524	215	300	1	8.41	54.24
I-6	Q-524	135	600	2	8.41	136.20
I-7	Q-524	135	300	1	8.41	34.05
I-8	Q-524	210	535	1	8.41	94.49
I-9	Q-524	215	535	5	8.41	483.68
I-10	Q-524	135	515	1	8.41	58.45
I-11	Q-524	210	400	1	8.41	70.64
I-12	Q-524	215	400	4	8.41	289.30
I-13	Q-524	215	385	1	8.41	69.61
I-14	Q-524	135	600	1	8.41	68.10
I-15	Q-524	135	385	1	8.41	43.70
I-16	Q-524	210	375	1	8.41	66.23
I-17	Q-524	215	375	5	8.41	339.03
I-18	Q-524	175	600	2	8.41	176.56
I-19	Q-524	175	375	1	8.41	55.18
I-20	Q-524	210	475	1	8.41	83.89
I-21	Q-524	215	475	5	8.41	429.44
I-22	Q-524	175	525	1	8.41	77.25
I-23	Q-524	210	435	1	8.41	76.83
I-24	Q-524	215	435	4	8.41	314.62
I-25	Q-524	215	465	1	8.41	84.08
I-26	Q-524	175	600	1	8.41	88.28
I-27	Q-524	175	465	1	8.41	68.42
Skupaj						8755.50

Mreže - izvleček

Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]
Q-524	215	600	95	8.41	10306.45
Skupaj					10306.45

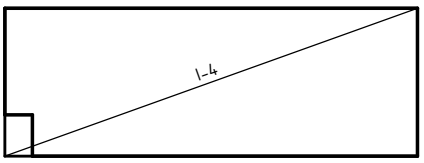
Mreže - načrt razreza
Foundation Slab / Temeljna plošča
Q-524 (600 cm x 215 cm)

1x



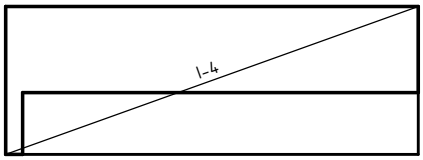
I-4 600 x 215

1x



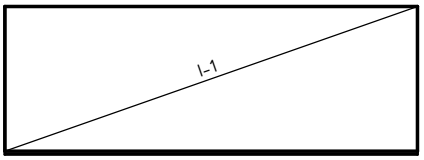
I-4 600 x 215

1x



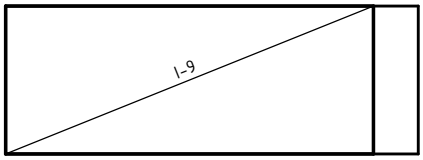
I-4 600 x 215

8x



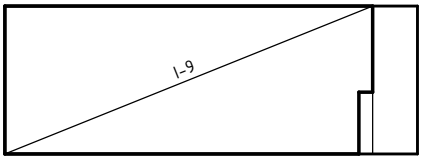
I-1 600 x 210

4x



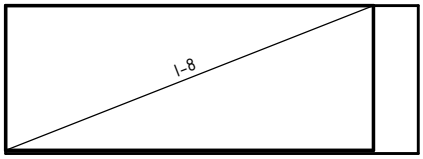
I-9 535 x 215

1x



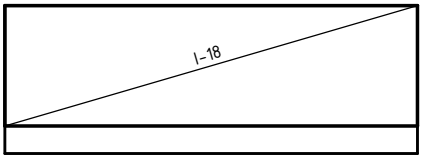
I-9 535 x 215

1x



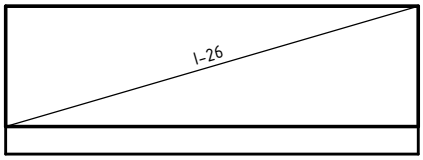
I-8 535 x 210

2x



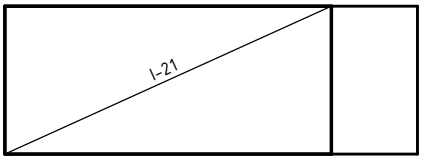
I-18 600 x 175

1x



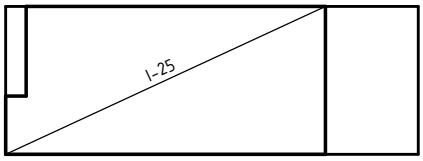
I-26 600 x 175

5x



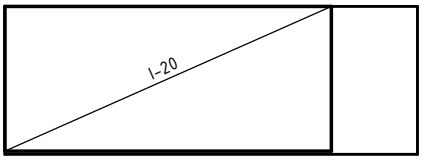
I-21 475 x 215

1x



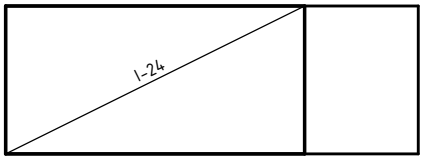
I-25 465 x 215

1x



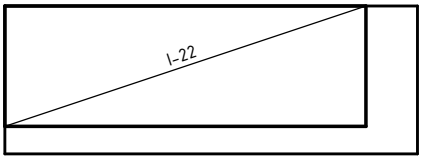
I-20 475 x 210

4x



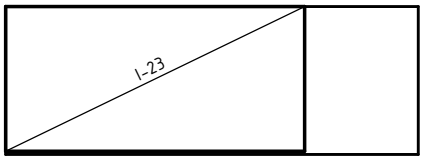
I-24 435 x 215

1x



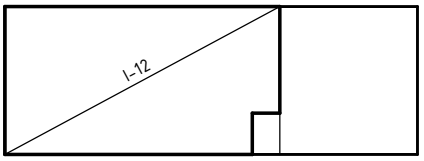
I-22 525 x 175

1x



I-23 435 x 210

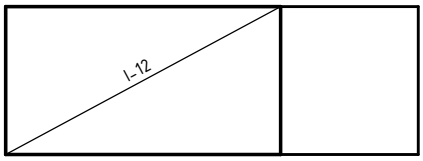
1x



I-12 400 x 215

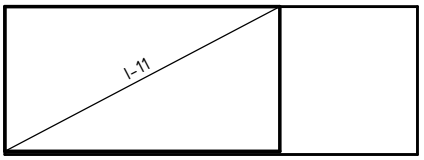
Mreže - načrt razreza

3x



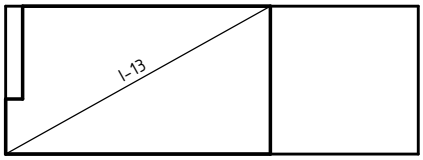
I-12 400 x 215

1x



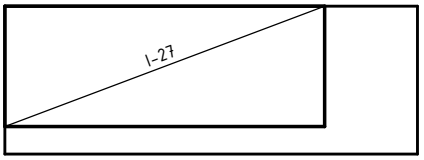
I-11 400 x 210

1x



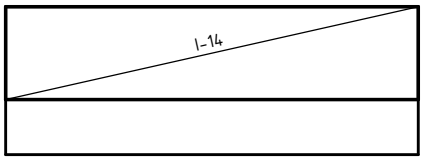
I-13 385 x 215

1x



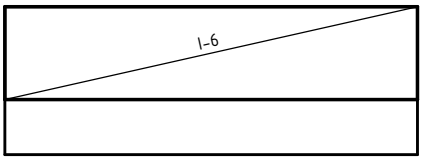
I-27 465 x 175

1x



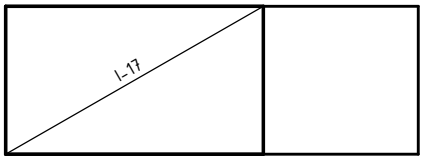
I-14 600 x 135

2x



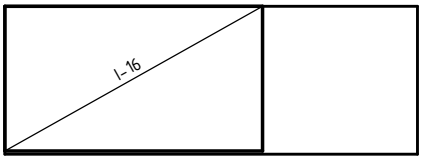
I-6 600 x 135

5x



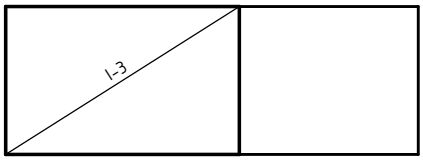
I-17 375 x 215

1x



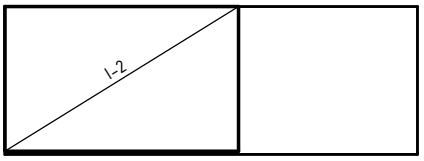
I-16 375 x 210

4x



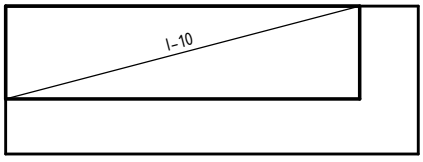
I-3 340 x 215

1x



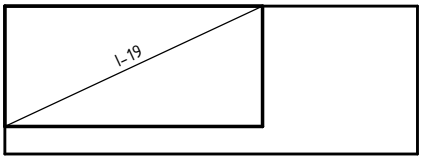
I-2 340 x 210

1x



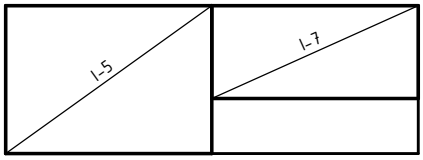
I-10 515 x 135

1x



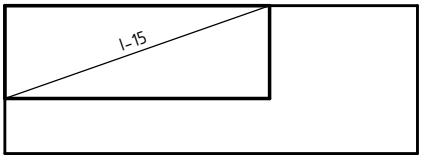
I-19 375 x 175

1x



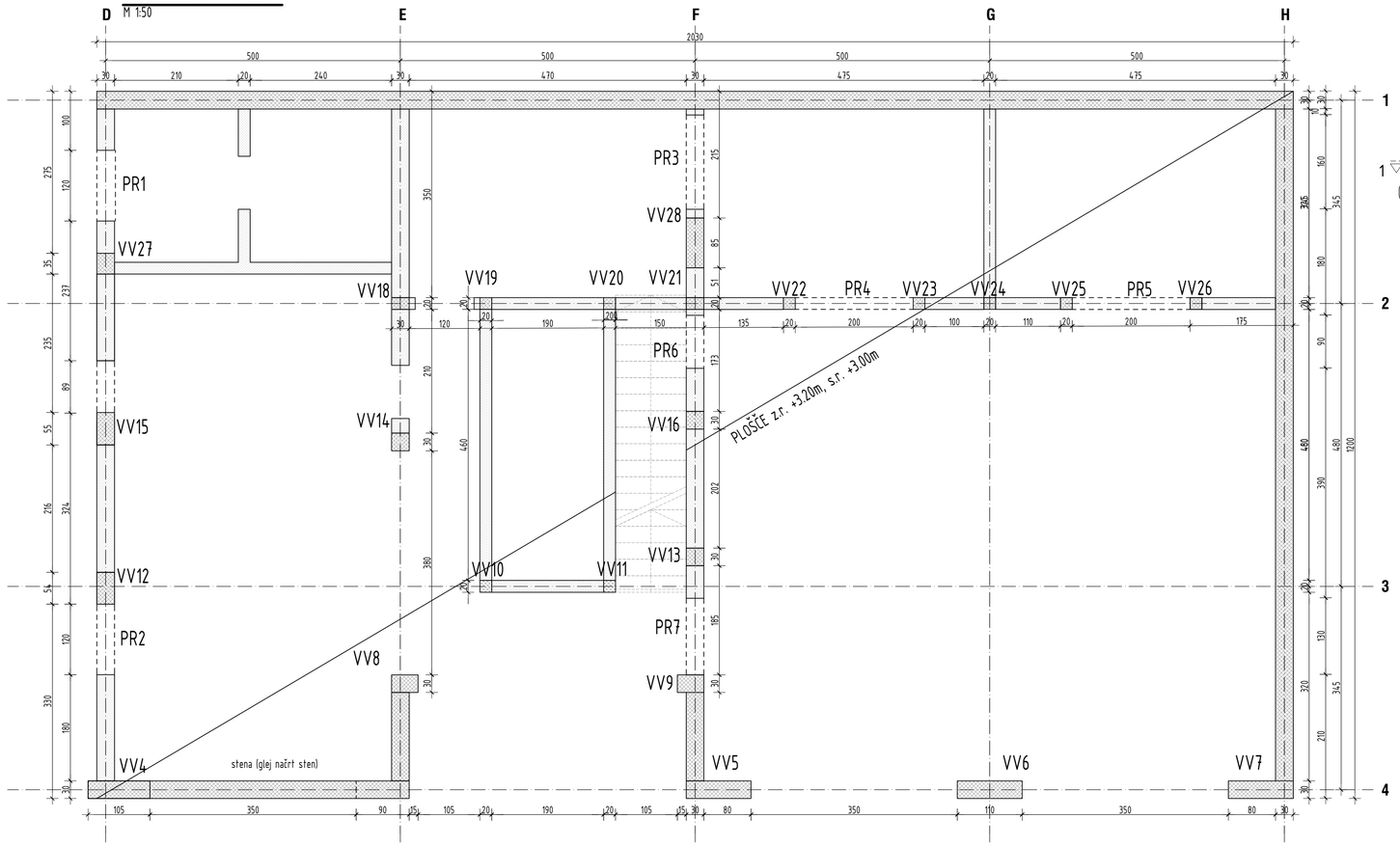
I-5 300 x 215
I-7 300 x 135

1x

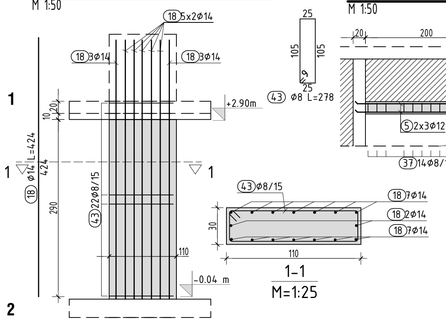


I-15 385 x 135

AB ELEMENTI PRITLIČJA
M 1:50

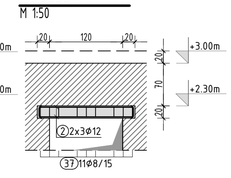


POGLED NA VERTIKLANO VEZ VV6
M 1:50

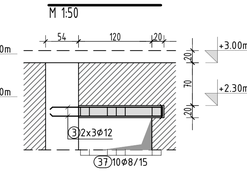


POGLED NA PR4, PR5
M 1:50

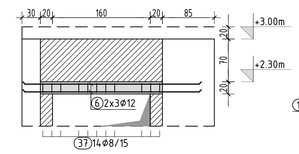
POGLED NA PR1
M 1:50



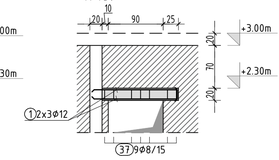
POGLED NA PR2
M 1:50



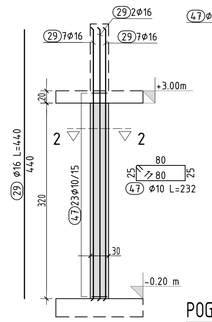
POGLED NA PR3
M 1:50

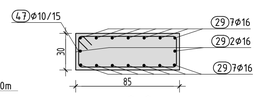


POGLED NA PR6
M 1:50

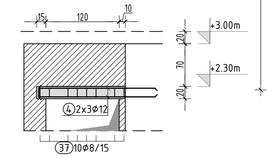


POGLED NA VERTIKLANO VEZ VV28
M 1:50

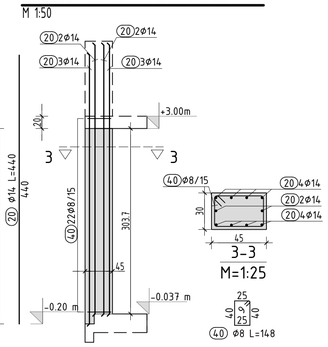




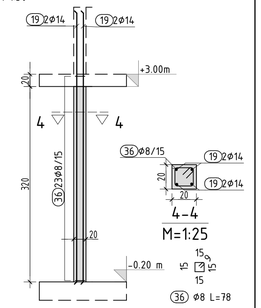
POGLED NA PR7
M 1:50



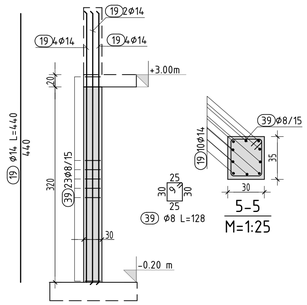
POGLED NA VERTIKLANO VEZ VV9
M 1:50



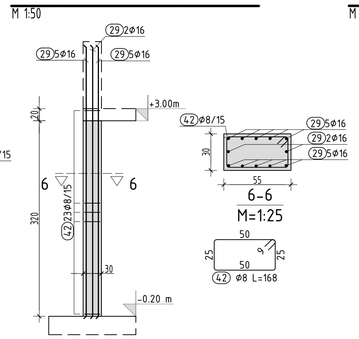
POGLED NA VERTIKLANO VEZ VV19,VV20
M 1:50



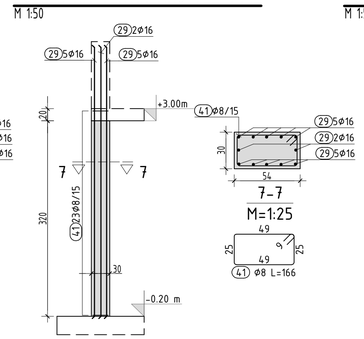
POGLED NA VERTIKLANO VEZ VV27
M 1:50



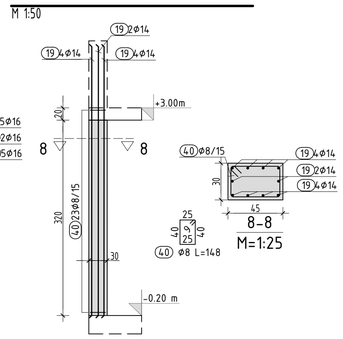
POGLED NA VERTIKLANO VEZ VV15
M 1:50



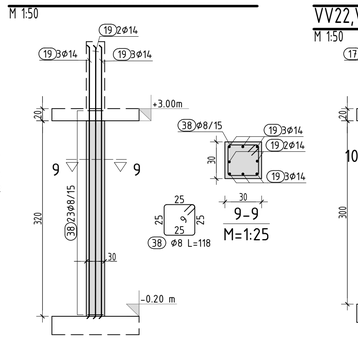
POGLED NA VERTIKLANO VEZ VV12
M 1:50



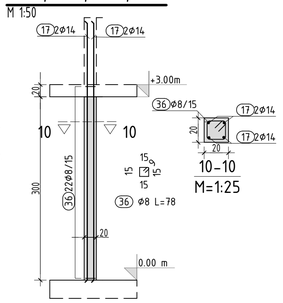
POGLED NA VERTIKLANO VEZ VV8
M 1:50



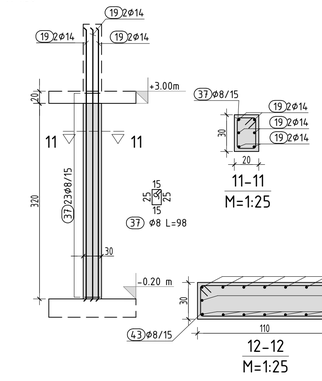
POGLED NA VERTIKLANO VEZ VV14
M 1:50



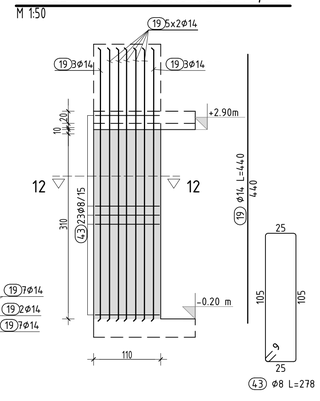
POGLED NA VERTIKLANO VEZ VV22,VV23,VV24,VV25
M 1:50



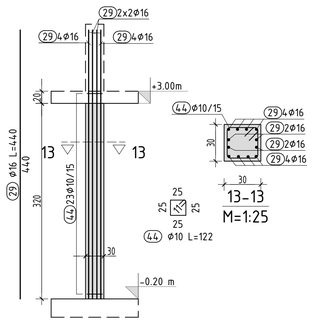
POGLED NA VERTIKLANO VEZ VV18, VV21
M 1:50



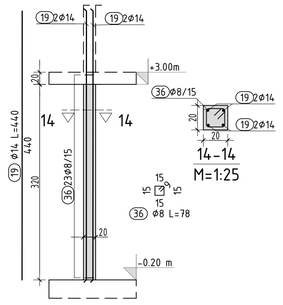
POGLED NA VERTIKLANO VEZ VV5,VV7
M 1:50



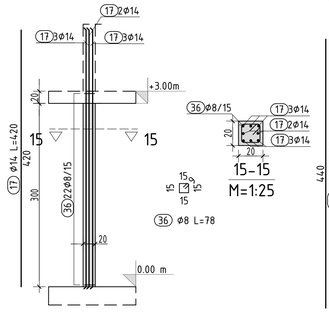
POGLED NA VERTIKLANO VEZ VV16, VV13
M 1:50



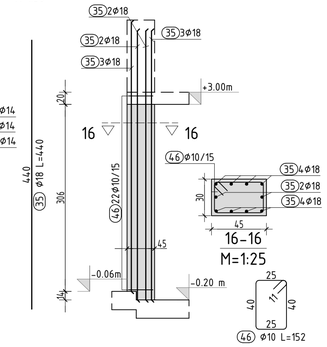
POGLED NA VERTIKLANO VEZ VV10,VV11
M 1:50



POGLED NA VERTIKLANO VEZ VV26
M 1:50



POGLED NA VERTIKLANO VEZ VV4
M 1:50



UPORABLJENI MATERIALI:

-BETONI

stebri in vertikalne vezi	C25/30 XC1 XD2 Cl 0,2 Dmax16 S4	Cnom = 2,5 cm
AB preklade	C25/30 XC1 XD2 Cl 0,2 Dmax16 S4	Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

-Vse projektantske mere preveriti z načrti arhitekture.

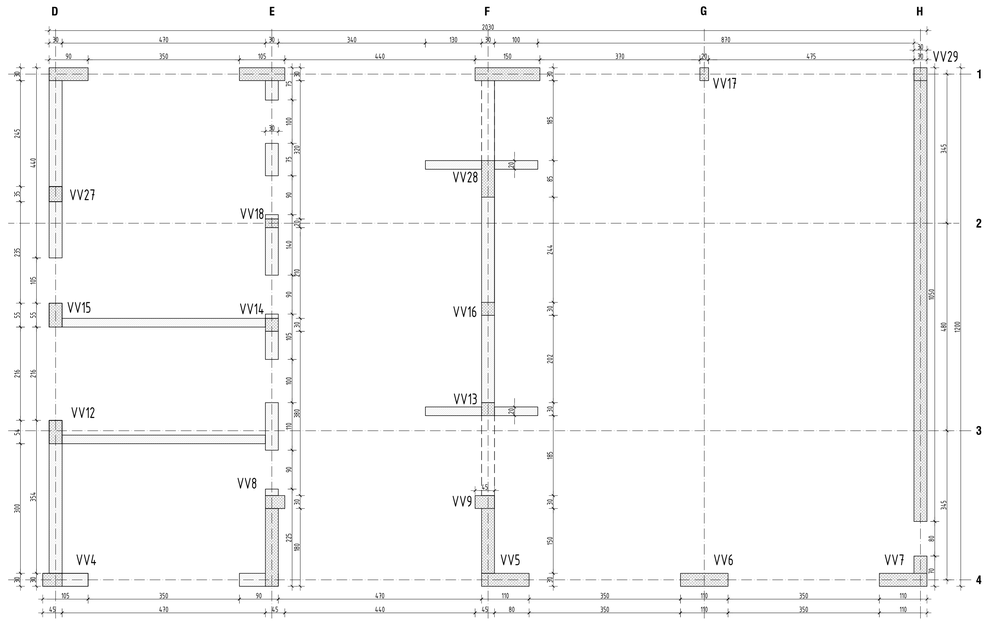
-Armatura in dispozicija sten prikzno na listu 4.

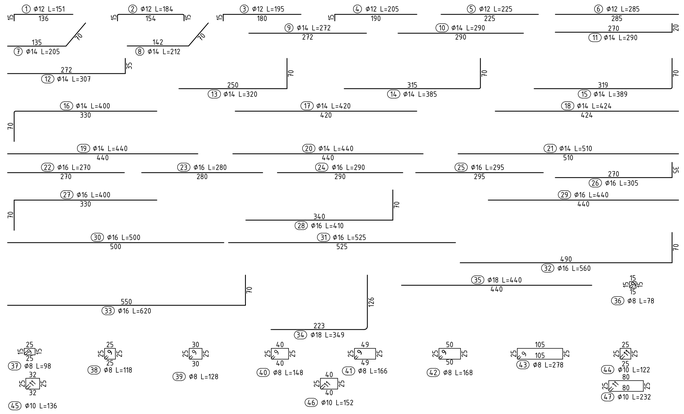
datum:	sprememba:

projektant:
INŽENIRING BIRO ARMATURA
INŽENIRING BIRO ARMATURA, UROŠ ŽVAN s.p., ZRKOVSKA C. 75, MARIBOR
www.armatura-uz.si +386 (0)41 625 341 info@armatura-uz.si

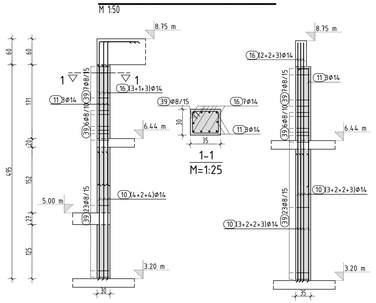
št. projekta:	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad. IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-0028
sodelavec:	
načrt, št.načrta:	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA AB STEBROV IN VERTIKALNIH ZIDNIH VEZI 1:25, 1:50
datum, št. lista:	MAREC 2022 2

AB VERTIKALNI ELEMENTI V NADSTROPJU IN MANSARDI
M 1:50

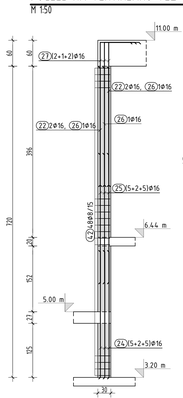


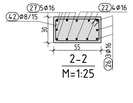


POGLED NA VERTIKLANO VEZ VV27
M 1:50

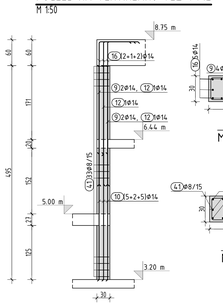


POGLED NA VERTIKLANO VEZ VV15
M 1:50

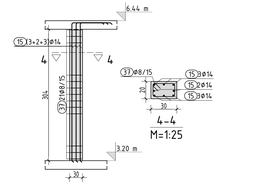




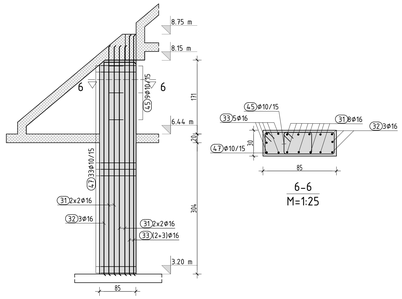
POGLED NA VERTIKLANO VEZ VV12
M 1:50



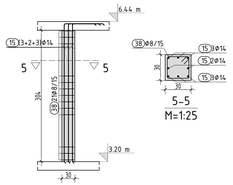
POGLED NA VERTIKLANO VEZ VV18
M 1:50



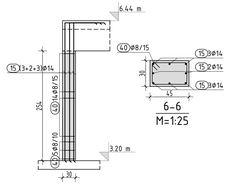
POGLED NA VERTIKLANO VEZ VV28
M 1:50



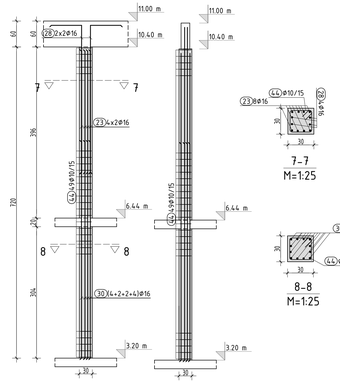
POGLED NA VERTIKLANO VEZ VV14
M 1:50



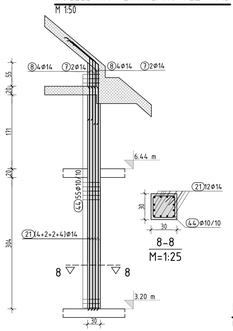
POGLED NA VERTIKLANO VEZ VV8, VV9
M 1:50



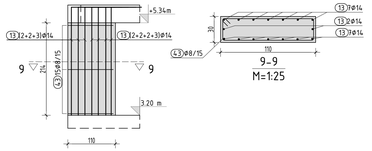
POGLED NA VERTIKLANO VEZ VV16
M 1:50



POGLED NA VERTIKLANO VEZ VV13
M 1:50

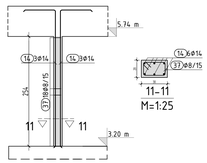


POGLED NA VERTIKLANO VEZ VV5, VV7
M 1:50

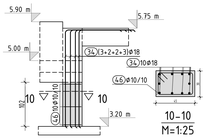


POGLED NA VERTIKLANO VEZ VV6
M 1:50

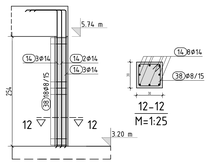
POGLED NA VERTIKLANO VEZ VV17
M 1:50

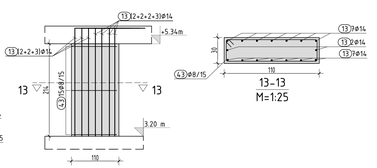


POGLED NA VERTIKLANO VEZ VV4
M 1:50



POGLED NA VERTIKLANO VEZ VV29
M 1:50





UPORABLJENI MATERIALI:

-BETONI
AB stebri in zidne vezi C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

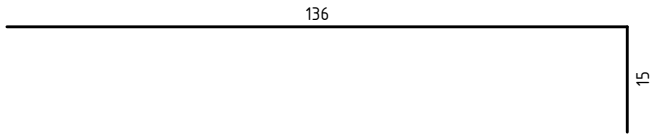
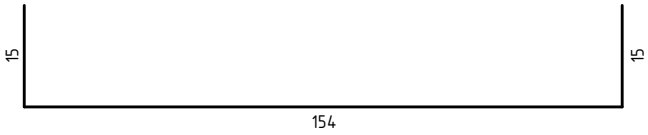
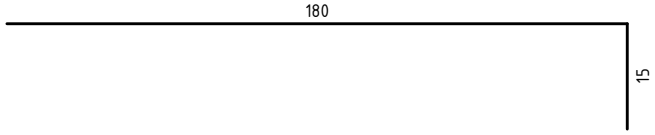
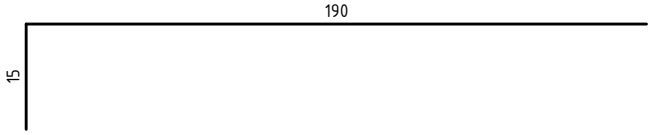
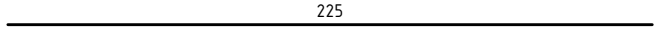
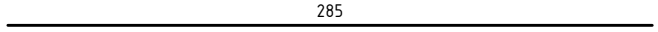
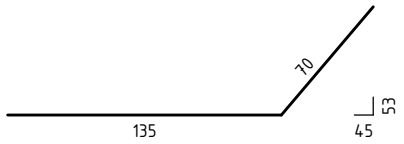
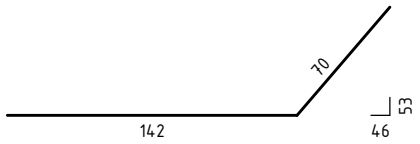
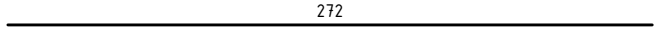
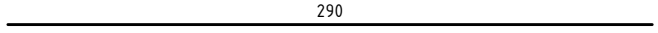
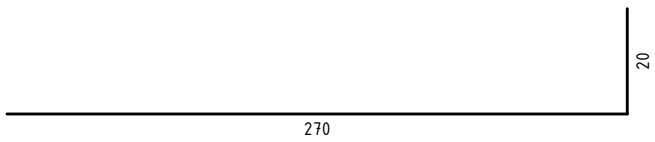
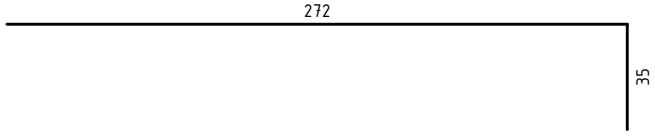
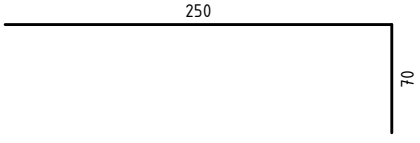
-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:

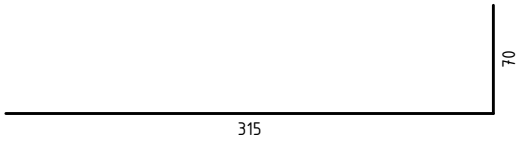
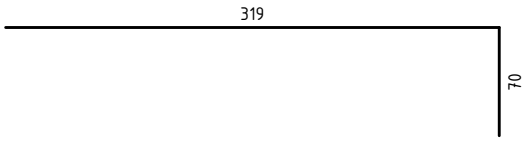
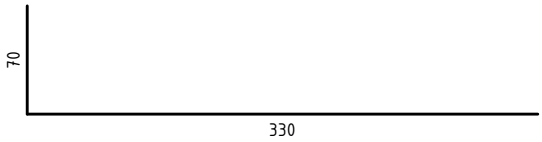
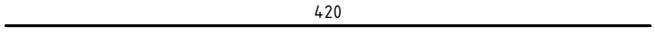
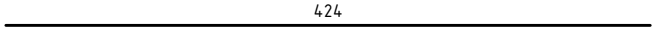
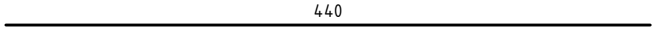
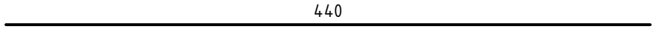
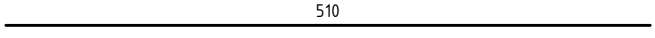
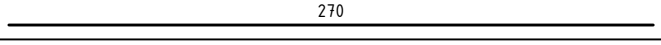
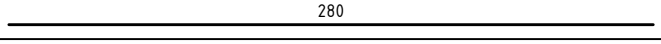
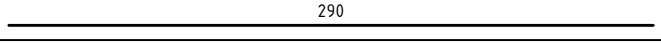
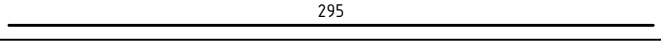
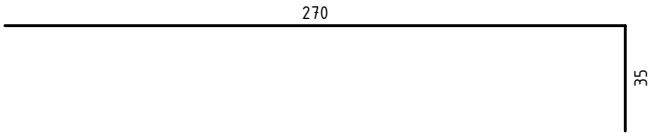
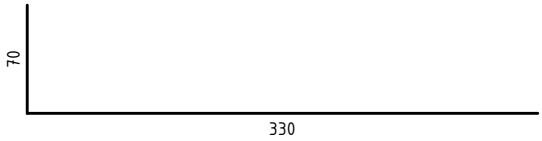
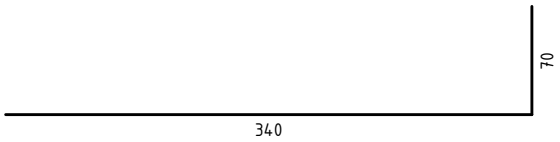
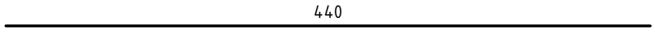
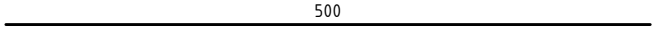
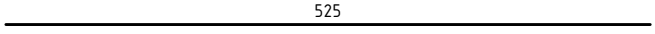
projektant:
inženirska pisarna
ARMATURA
ključavničarstvo armiranje, ukvarjanje s.p. ZAVRTNIKA 17, 5270 AJDOVŠČINA
www.armatura.si info@armatura.si GSM: 040 427 427

št. projekta:	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad. IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-0028
sodelavec:	
načrt. strukture:	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA AB VERTIKALNIH ELEMENTOV V NADSTROPJU IN MANSARDI 1:25 1:50
datum, št. lista:	MAREC 2022 3

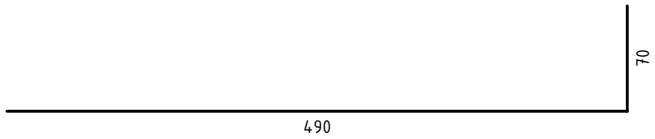
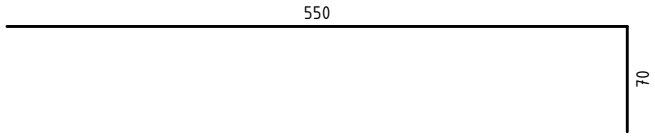
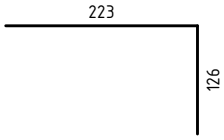
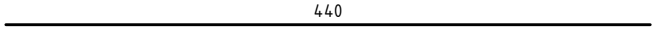
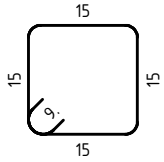
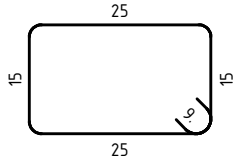
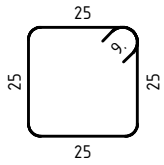
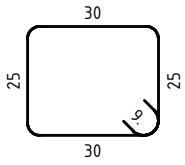
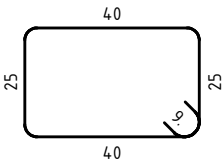
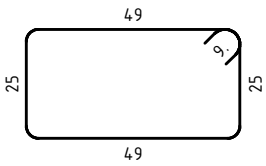
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
	Columns / Stebri (1 pcs.)				
1		12	1.51	6	9.06
2		12	1.84	6	11.04
3		12	1.95	6	11.70
4		12	2.05	6	12.30
5		12	2.25	12	27.00
6		12	2.85	6	17.10
7		14	2.05	4	8.20
8		14	2.12	8	16.96
9		14	2.72	4	10.88
10		14	2.90	22	63.80
11		14	2.90	3	8.70
12		14	3.07	3	9.21
13		14	3.20	48	153.60

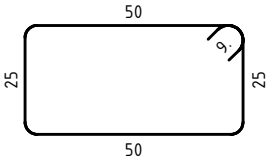
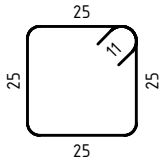
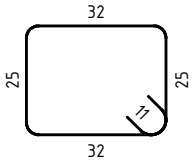
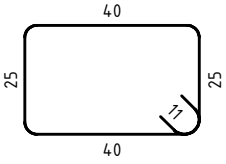
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
14		14	3.85	14	53.90
15		14	3.89	32	124.48
16		14	4.00	12	48.00
17		14	4.20	24	100.80
18		14	4.24	16	67.84
19		14	4.40	88	387.20
20		14	4.40	10	44.00
21		14	5.10	12	61.20
22		16	2.70	4	10.80
23		16	2.80	8	22.40
24		16	2.90	12	34.80
25		16	2.95	12	35.40
26		16	3.05	1	3.05
27		16	4.00	5	20.00
28		16	4.10	4	16.40
29		16	4.40	64	281.60
30		16	5.00	12	60.00
31		16	5.25	8	42.00

Palice - specifikacija

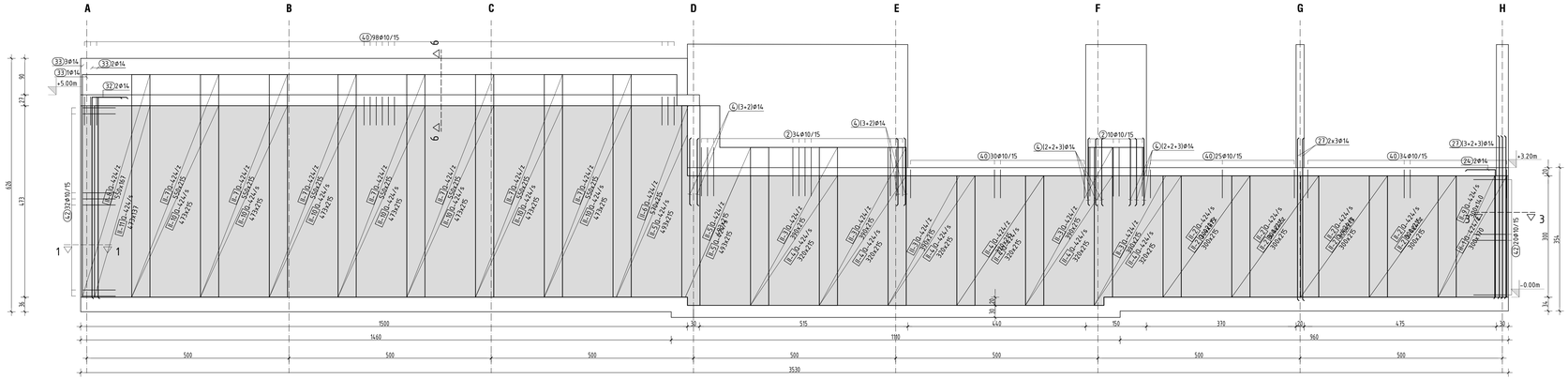
ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
32		16	5.60	3	16.80
33		16	6.20	5	31.00
34		18	3.49	10	34.90
35		18	4.40	10	44.00
36		8	0.78	200	156.00
37		8	0.98	167	163.66
38		8	1.18	62	73.16
39		8	1.28	95	121.60
40		8	1.48	83	122.84
41		8	1.66	56	92.96

Palice - specifikacija

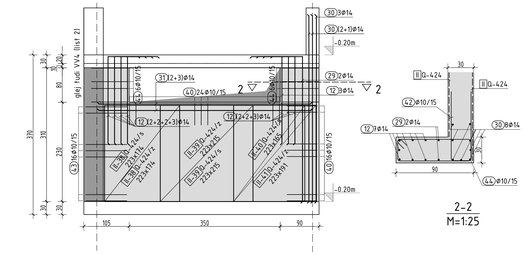
ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
42		8	1.68	71	119.28
43		8	2.78	111	308.58
44		10	1.22	199	242.78
45		10	1.36	9	12.24
46		10	1.52	32	48.64
47		10	2.32	56	129.92

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	1158.08	0.40	457.44
10	433.58	0.62	267.52
12	88.20	0.89	78.32
Skupaj (S500B, Ø <= 12 mm)			803.28
S500B, Ø > 12 mm			
14	1158.77	1.21	1402.11
16	574.25	1.58	907.32
18	78.90	2.02	159.38
Skupaj (S500B, Ø > 12 mm)			2468.80
Skupaj			3272.09

POGLED NA STENO V OSI 1
M 1:50

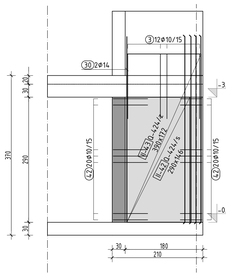


POGLED NA STENO V OSI 4
M 1:50

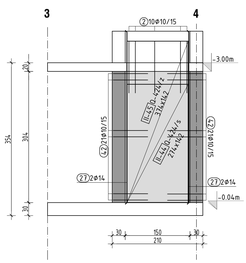


2–2
M=1:25

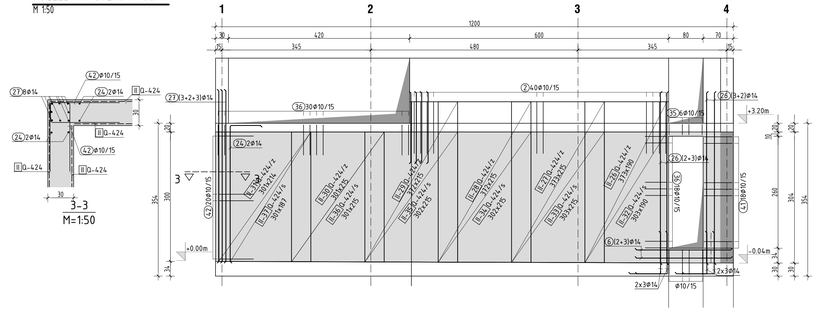
POGLED NA STENO V OSI E
M 1:50



POGLED NA STENO V OSI F
M 1:50

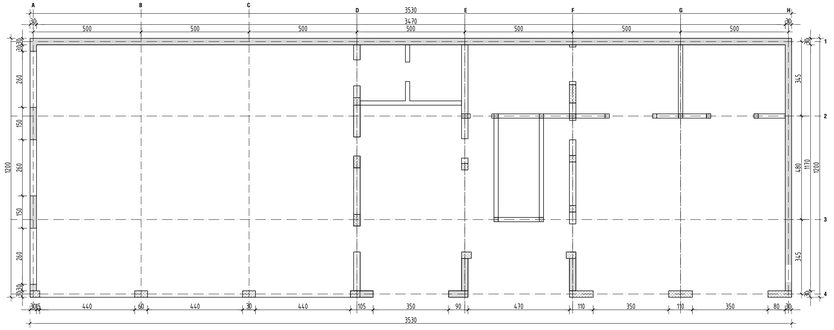


POGLED NA STENO V OSI H
M 1:50

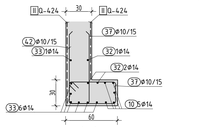


3–3
M=1:50

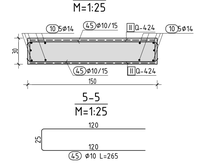
DISPOZICIJA STENE PRITLIČJA
M 1:100



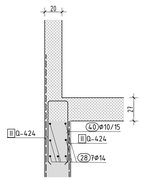
4–4
M=1:25



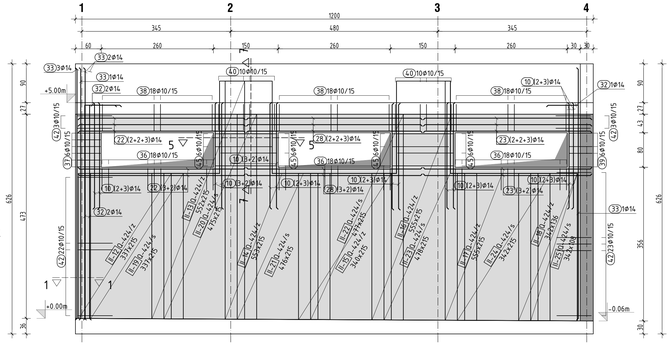
5–5
M=1:25



7–7
M=1:25



POGLED NA STENO V OSI A
M 1:50



UPORABLJENI MATERIALI:

-BETONI

AB stene v pritličju — C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:

- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

-Vse projektantske mere preveriti z načrti arhitekture.

-Armatura in dispozicija stebrov prikazno na listu 3.

datum:	sprememba:

projektant:

ARMATURA

inženirska pisarna d.o.o.

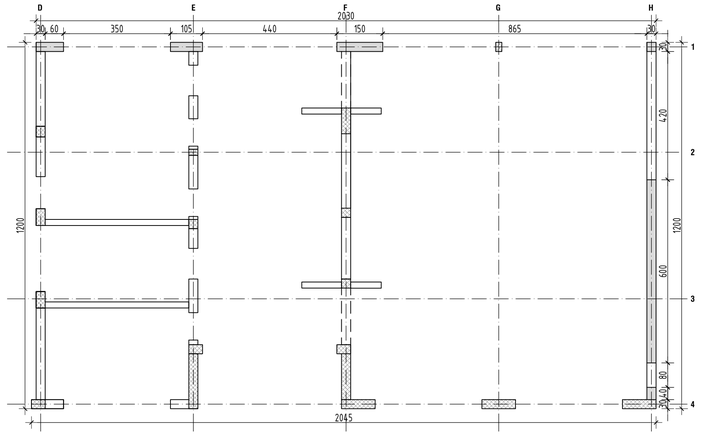
inženiring gradbenih konstrukcij, ustvarjalna dejavnost s področja arhitekture in gradbeništva, urejanje prostora, druge tehnične dejavnosti

Ajdovščina 4a, 1000 Ljubljana, tel.: 01 / 426 10 00, fax: 01 / 426 10 01

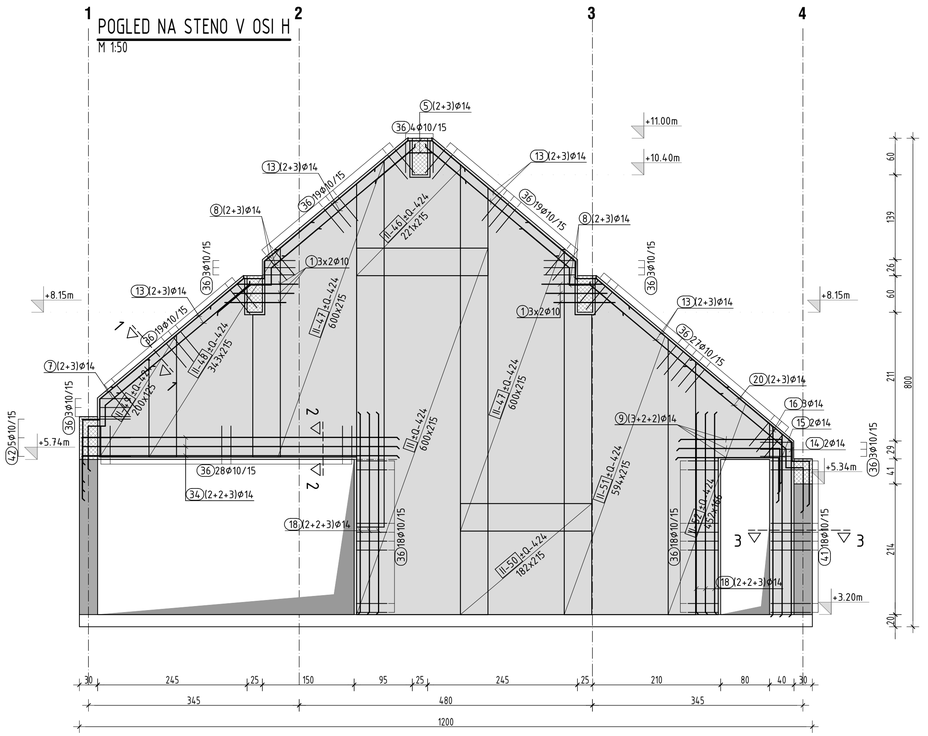
www.armatura.si.si info@armatura.si.si ID DDV SI 15 761 761

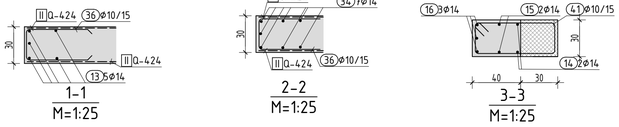
št. projekta:	06/2021	
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI	
objekt:	VEČNAMENSKI OBJEKT	
vrsta projekta:	PZI	
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad.	IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad.	IZS G-0028
sodelavec:		
načrt, str.načrta:	GRADBENE KONSTRUKCIJE	62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA AB STEN V PRITLIČJU	1:25 1:50 1:100
datum, št. lista:	MAREC 2022	5

DISPOZICIJA STENE V NADSTROPJU
M 1:100

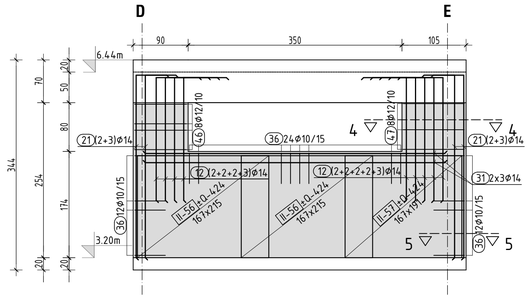


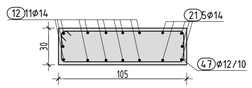
POGLED NA STENO V OSI H
M 1:50

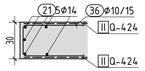


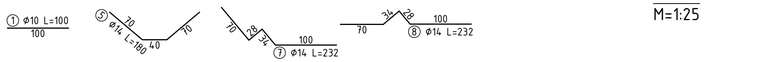


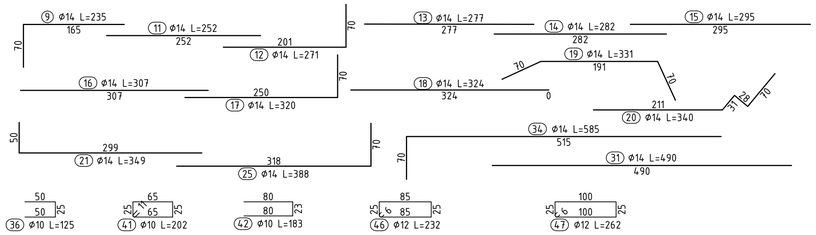
POGLED NA STENO V OSI 1
M 1:50



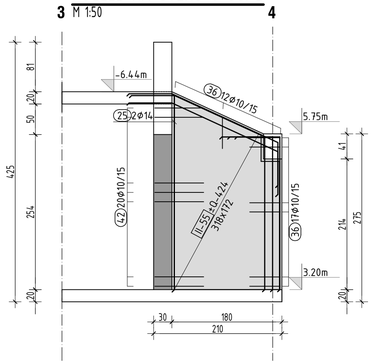




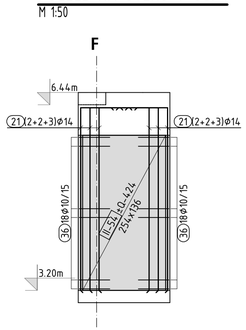




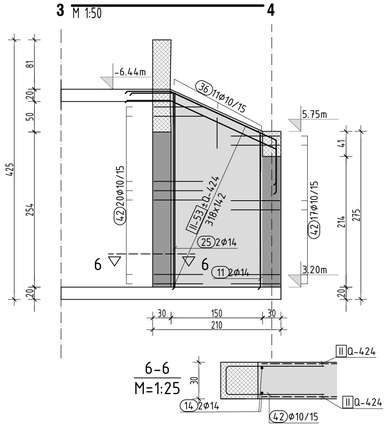
POGLED NA STENO V OSI E
M 1:50



POGLED NA STENO V OSI 1
M 1:50



POGLED NA STENO V OSI F
M 1:50



UPORABLJENI MATERIALI:

-BETONI
AB stene v nadstropju C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xϕ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

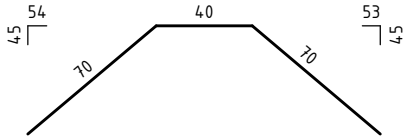
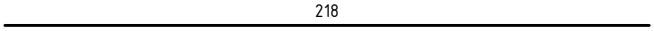
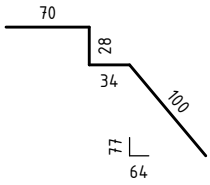
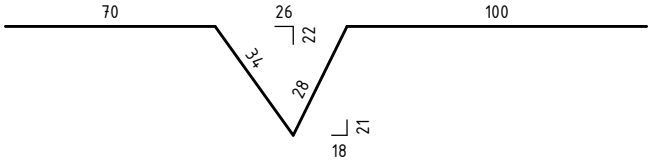
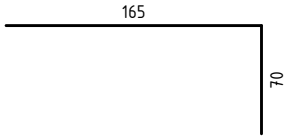
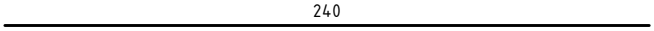
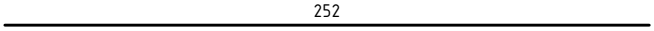
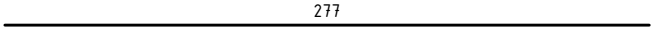
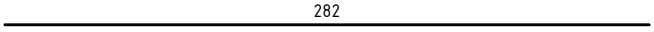
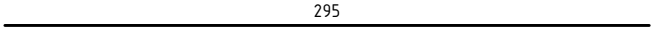
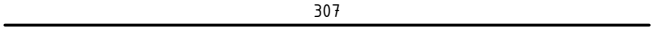
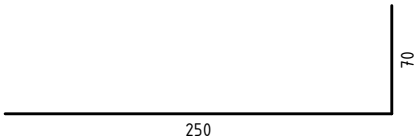
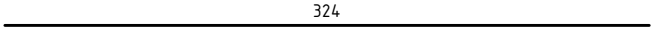
-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:

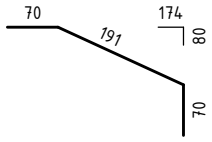
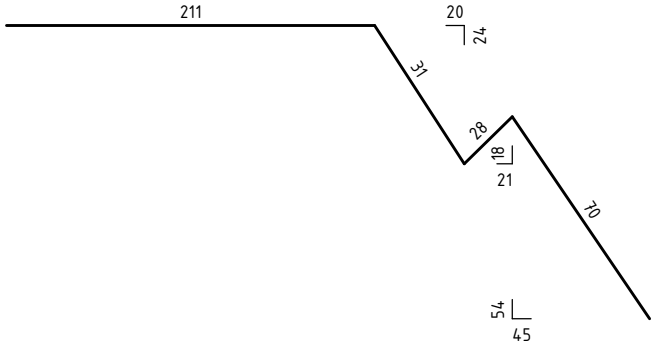
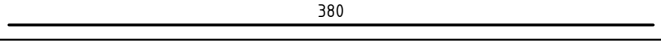
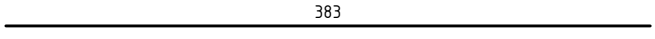
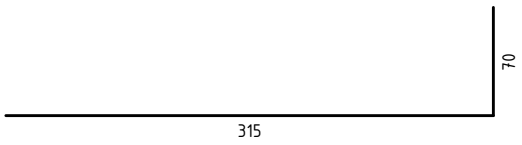
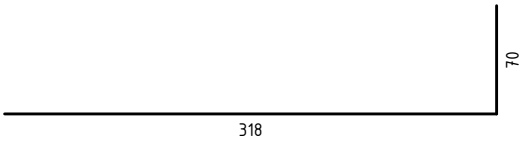
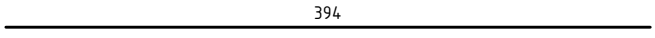
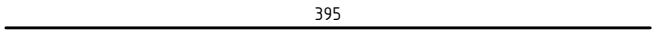
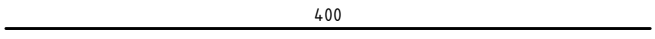
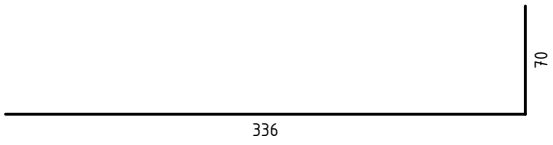
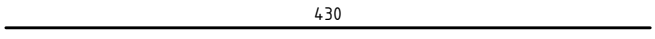
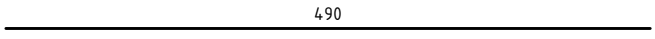
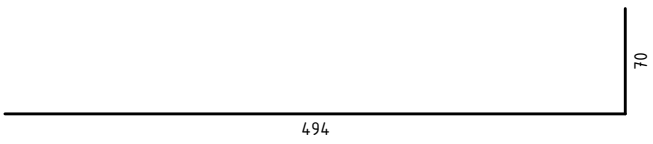
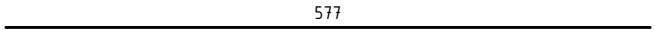
projektant:
INŽENIRING BIRO
ARMATURA
INŽENIRNI BIRO ARMATURA, GROŠ ŽVAN s.p. ZBOROVSKA C. 70, MARIBOR
www.armatura-ce.si info@armatura-ce.si +386 (0)43 525 341

št. projekta:	06/2021	
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI	
objekt:	VEČNAMENSKI OBJEKT	
vrsta projekta:	PZI	
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad.	IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad.	IZS G-0028
sodelavec:		
načrt, št.načrta:	GRADBENE KONSTRUKCIJE	62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA AB STEN V 1. NADSTROPJU	1:50
datum, št. lista:	MAREC 2022	5

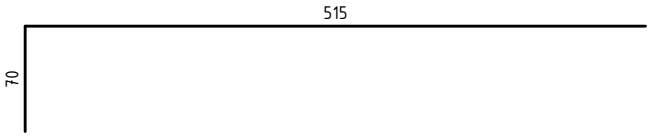
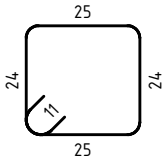
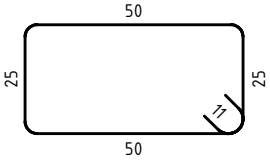
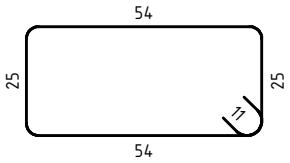
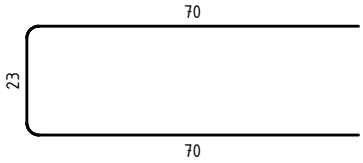
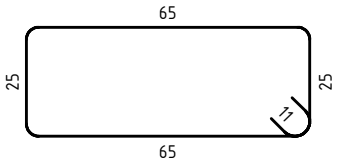
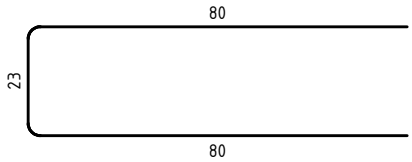
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
	Walls / Stene (1 pcs.)				
1		10	1.00	12	12.00
2		10	1.20	94	112.80
3		10	1.50	12	18.00
4		14	1.60	32	51.20
5		14	1.80	5	9.00
6		14	2.18	5	10.90
7		14	2.32	5	11.60
8		14	2.32	10	23.20
9		14	2.35	7	16.45
10		14	2.40	30	72.00
11		14	2.52	2	5.04
12		14	2.71	36	97.56
13		14	2.77	20	55.40
14		14	2.82	2	5.64
15		14	2.95	2	5.90
16		14	3.07	3	9.21
17		14	3.20	7	22.40
18		14	3.24	14	45.36

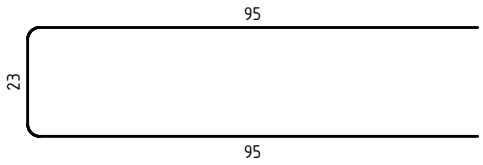
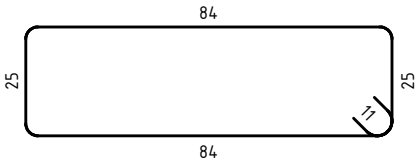
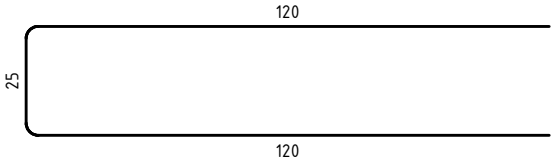
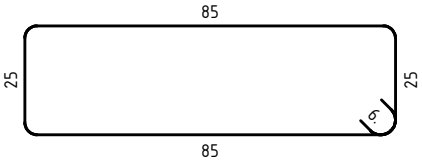
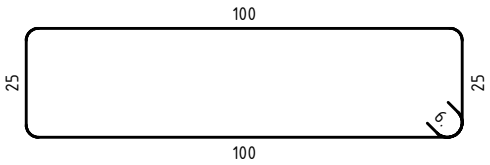
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
19		14	3.31	10	33.10
20		14	3.40	5	17.00
21		14	3.49	24	83.76
22		14	3.80	12	45.60
23		14	3.83	12	45.96
24		14	3.85	4	15.40
25		14	3.88	4	15.52
26		14	3.94	10	39.40
27		14	3.95	18	71.10
28		14	4.00	12	48.00
29		14	4.06	2	8.12
30		14	4.30	10	43.00
31		14	4.90	11	53.90
32		14	5.64	6	33.84
33		14	5.77	14	80.78

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
34		14	5.85	7	40.95
35		10	1.20	6	7.20
36		10	1.25	390	487.50
37		10	1.72	6	10.32
38		10	1.76	54	95.04
39		10	1.80	6	10.80
40		10	1.63	247	402.61
41		10	2.02	36	72.72
42		10	1.83	267	488.61

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
43		10	2.13	16	34.08
44		10	2.40	12	28.80
45		10	2.65	24	63.60
46		12	2.32	8	18.56
47		12	2.62	8	20.96

Palice - izvleček

Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
10	1844.08	0.62	1137.80
12	39.52	0.89	35.09
Skupaj (S500B, Ø <= 12 mm)			1172.89
S500B, Ø > 12 mm			
14	1116.29	1.21	1350.71
Skupaj (S500B, Ø > 12 mm)			1350.71
Skupaj			2523.60

Mreže - specifikacija

Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
Walls / Stene (1 pcs.)						
II-1	Q-424	170	300	1	6.81	34.72
II-2	Q-424	215	300	8	6.81	351.24
II-3	Q-424	215	390	5	6.81	285.38
II-4	Q-424	215	320	7	6.81	327.83
II-5	Q-424	215	493	3	6.81	216.45
II-6	Q-424	215	570	1	6.81	83.42
II-7	Q-424	215	550	7	6.81	563.45
II-8	Q-424	167	550	1	6.81	62.59
II-9	Q-424	140	300	1	6.81	28.60
II-10	Q-424	215	473	7	6.81	484.57
II-11	Q-424	137	473	1	6.81	44.17
II-12	Q-424	215	337	1	6.81	49.34
II-13	Q-424	215	552	1	6.81	80.78
II-14	Q-424	215	553	1	6.81	80.90
II-15	Q-424	215	340	1	6.81	49.71
II-16	Q-424	215	555	1	6.81	81.15
II-17	Q-424	215	555	1	6.81	81.28
II-18	Q-424	136	342	1	6.81	31.63
II-19	Q-424	215	337	1	6.81	49.36
II-20	Q-424	215	475	1	6.81	69.53
II-21	Q-424	215	476	1	6.81	69.66
II-22	Q-424	215	477	1	6.81	69.78
II-23	Q-424	215	478	1	6.81	69.90
II-24	Q-424	215	342	1	6.81	49.98
II-25	Q-424	108	342	1	6.81	25.12
II-26	Q-424	190	373	1	6.81	48.29
II-27	Q-424	215	373	1	6.81	54.58
II-28	Q-424	215	372	1	6.81	54.50
II-29	Q-424	215	372	1	6.81	54.41
II-30	Q-424	215	301	1	6.81	44.09

Mreže - specifikacija

Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
II-31	Q-424	214	301	1	6.81	43.78
II-32	Q-424	190	303	1	6.81	39.24
II-33	Q-424	215	303	1	6.81	44.33
II-34	Q-424	215	302	1	6.81	44.25
II-35	Q-424	215	302	1	6.81	44.17
II-36	Q-424	215	301	1	6.81	44.09
II-37	Q-424	187	301	1	6.81	38.27
II-38	Q-424	174	223	2	6.81	52.83
II-39	Q-424	215	223	2	6.81	65.27
II-40	Q-424	165	223	1	6.81	25.05
II-41	Q-424	191	223	1	6.81	28.99
II-42	Q-424	146	290	1	6.81	28.83
II-43	Q-424	172	390	1	6.81	45.67
II-44	Q-424	142	274	1	6.81	26.49
II-45	Q-424	142	374	1	6.81	36.16
II-53	Q-424	142	318	2	6.81	61.59
II-54	Q-424	136	254	2	6.81	47.02
II-55	Q-424	172	318	2	6.81	74.41
II-56	Q-424	215	167	4	6.81	97.77
II-57	Q-424	191	167	2	6.81	43.43
Skupaj						4528.04

Mreže - izvleček

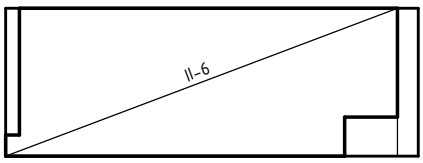
Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]
Q-424	215	600	69	6.81	6058.91
Skupaj					6058.91

Mreže - načrt razreza

Walls / Stene

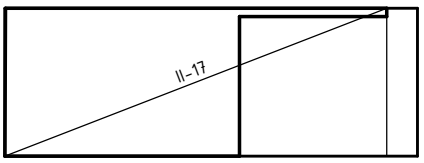
Q-424 (600 cm x 215 cm)

1x



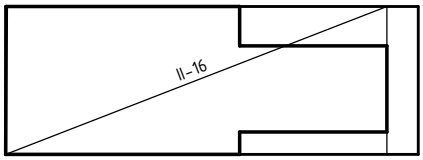
II-6 570 x 215

1x



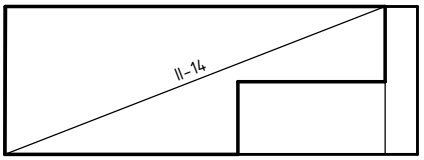
II-17 555 x 215

1x



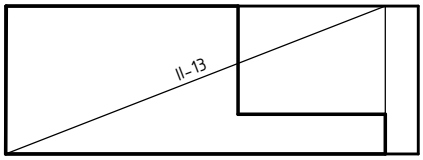
II-16 555 x 215

1x



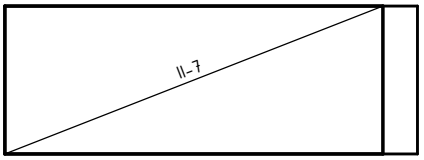
II-14 553 x 215

1x



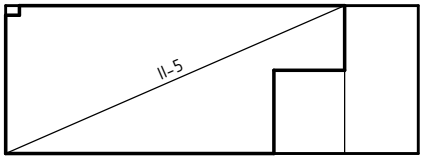
II-13 552 x 215

7x



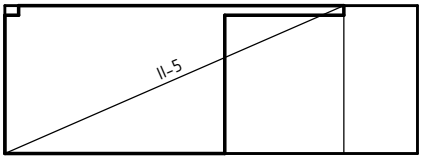
II-7 550 x 215

1x



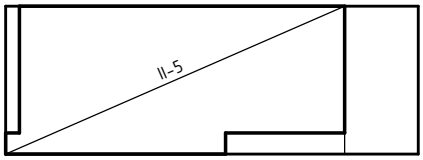
II-5 493 x 215

1x



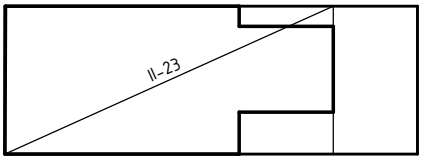
II-5 493 x 215

1x



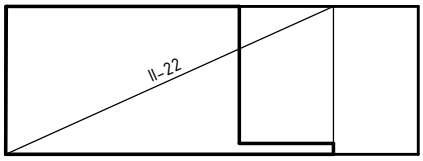
II-5 493 x 215

1x



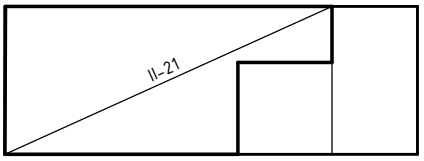
II-23 478 x 215

1x



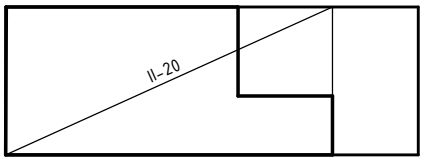
II-22 477 x 215

1x



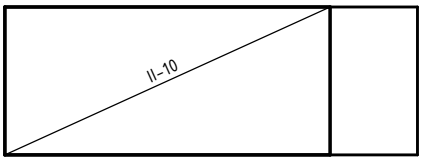
II-21 476 x 215

1x



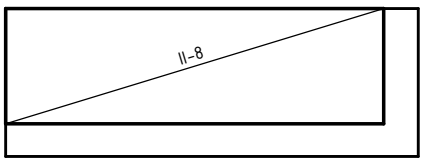
II-20 475 x 215

7x



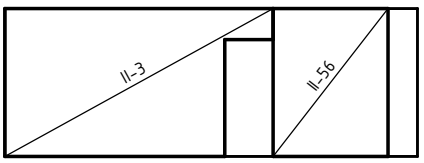
II-10 473 x 215

1x



II-8 550 x 167

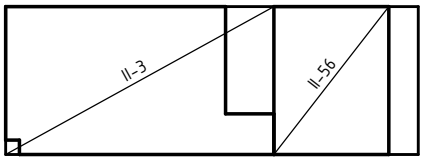
1x



II-3 390 x 215
II-56 167 x 215

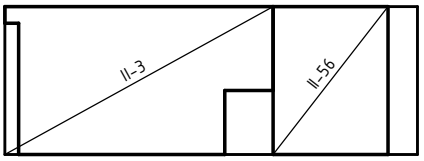
Mreže - načrt razreza

1x



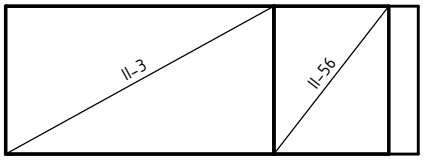
II-3 390 x 215
II-56 167 x 215

1x



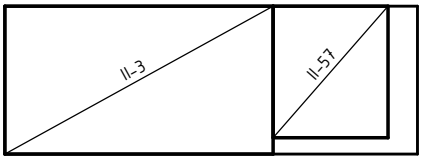
II-3 390 x 215
II-56 167 x 215

1x



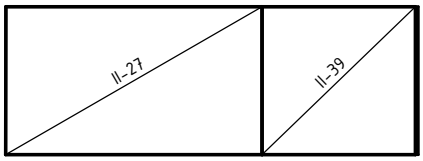
II-3 390 x 215
II-56 167 x 215

1x



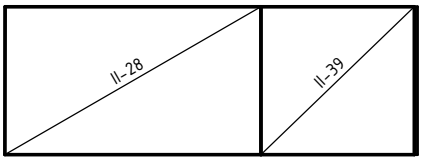
II-3 390 x 215
II-57 167 x 191

1x



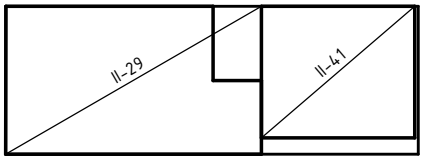
II-27 373 x 215
II-39 223 x 215

1x



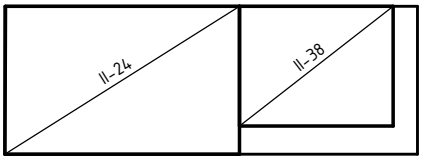
II-28 372 x 215
II-39 223 x 215

1x



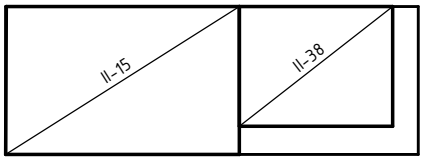
II-29 372 x 215
II-41 223 x 191

1x



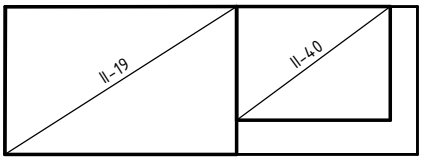
II-24 342 x 215
II-38 223 x 174

1x



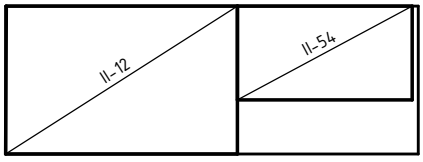
II-15 340 x 215
II-38 223 x 174

1x



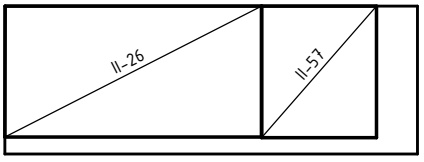
II-19 337 x 215
II-40 223 x 165

1x



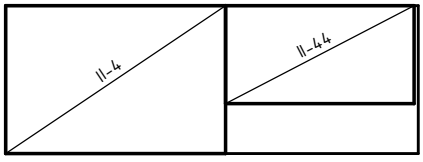
II-12 337 x 215
II-54 254 x 136

1x



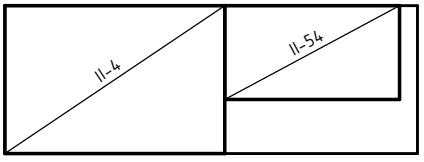
II-26 373 x 190
II-57 167 x 191

1x



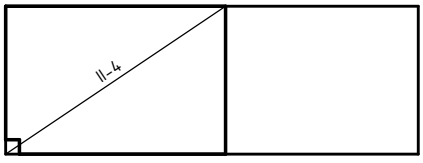
II-4 320 x 215
II-44 274 x 142

1x



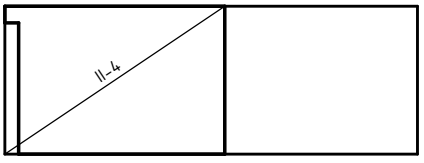
II-4 320 x 215
II-54 254 x 136

1x



II-4 320 x 215

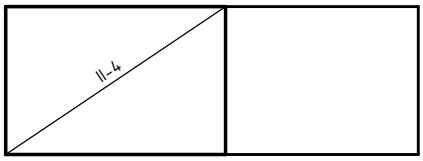
1x



II-4 320 x 215

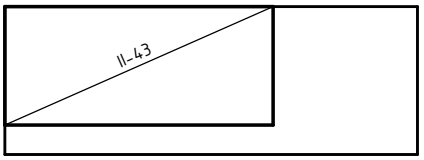
Mreže - načrt razreza

3x



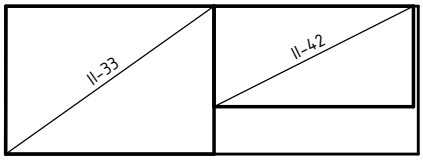
II-4 320 x 215

1x



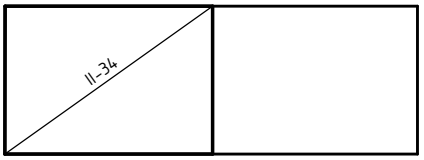
II-43 390 x 172

1x



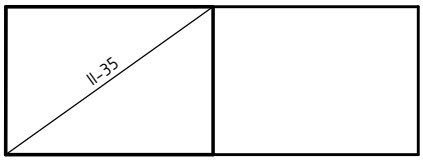
II-33 303 x 215
II-42 290 x 146

1x



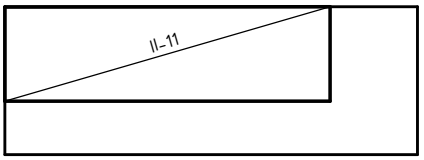
II-34 302 x 215

1x



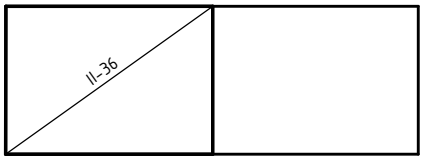
II-35 302 x 215

1x



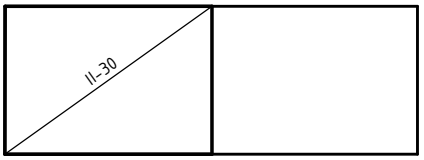
II-11 473 x 137

1x



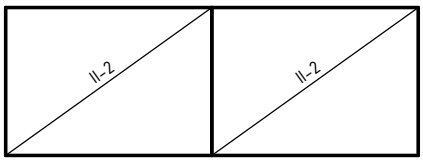
II-36 301 x 215

1x



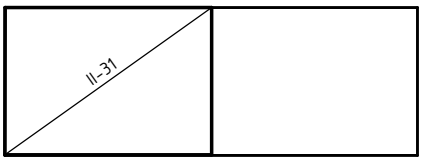
II-30 301 x 215

4x



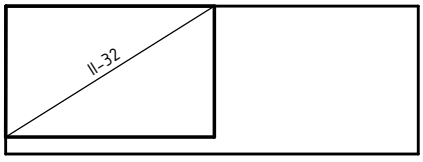
II-2 300 x 215
II-2 300 x 215

1x



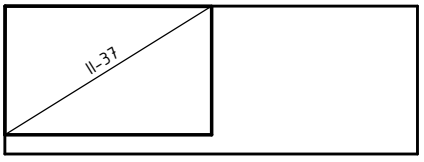
II-31 301 x 214

1x



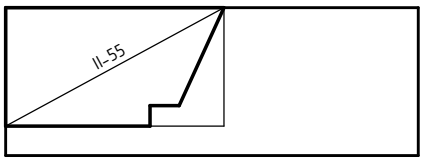
II-32 303 x 190

1x



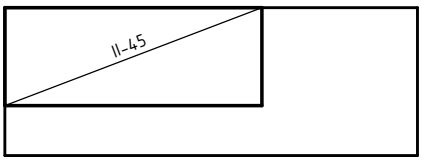
II-37 301 x 187

2x



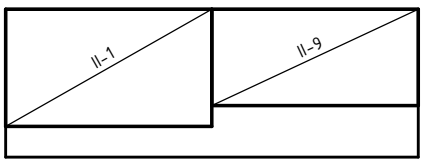
II-55 318 x 172

1x



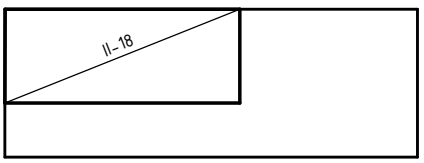
II-45 374 x 142

1x



II-1 300 x 170
II-9 300 x 140

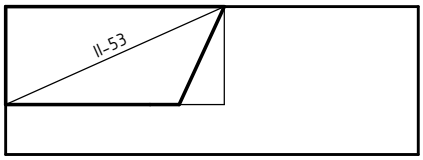
1x



II-18 342 x 136

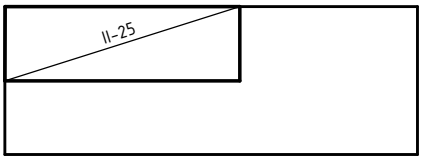
Mreže - načrt razreza

2x



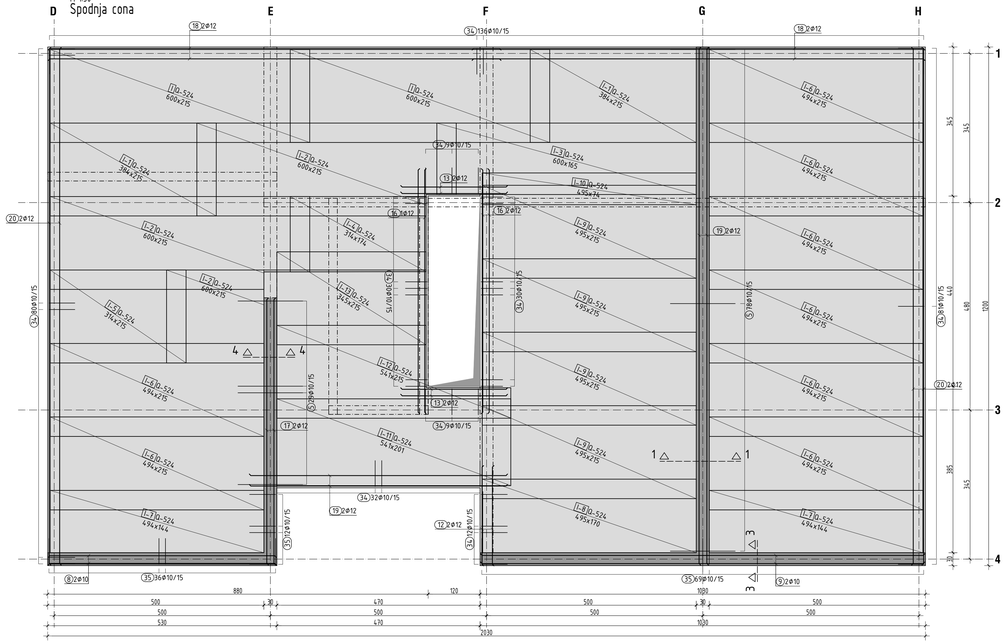
II-53 318 x 142

1x

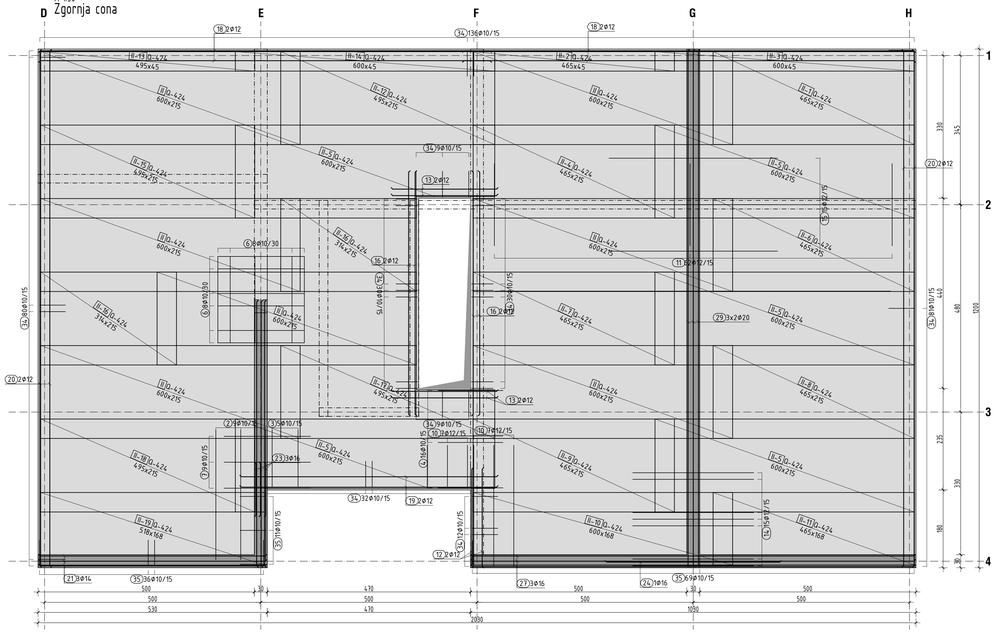


II-25 342 x 108

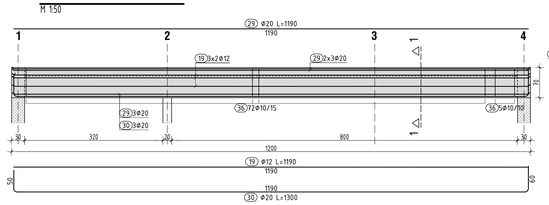
PLOŠČA NAD PRITLIČJEM: z.r. +3.20m, s.r. +3.00m
M 1:50
Spodnja cona



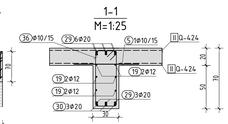
PLOŠČA NAD PRITLIČJEM: z.r. +3.20m, s.r. +3.00m
M 1:50
Zgornja cona



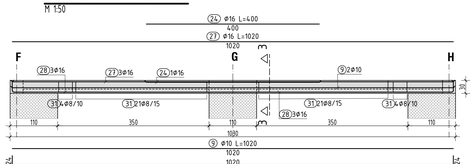
POGLED NA NOSILEC V OSI G
M 1:50



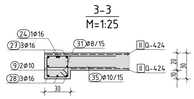
1-1
M=1:25



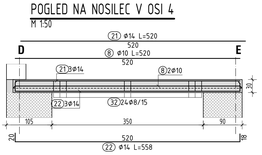
POGLED NA NOSILEC V OSI 4
M 1:50



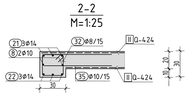
3-3
M=1:25



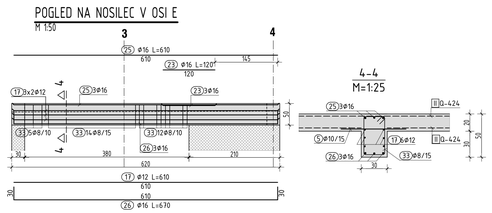
POGLED NA NOSILEC V OSI 4
M 1:50



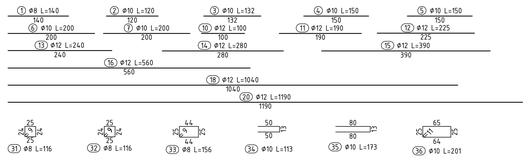
2-2
M=1:25



POGLED NA NOSILEC V OSI E
M 1:50



4-4
M=1:25



UPORABLJENI MATERIALI:

-BETON!

plošča nad pritličjem	C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm
nosilci nad pritličjem	C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:

- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

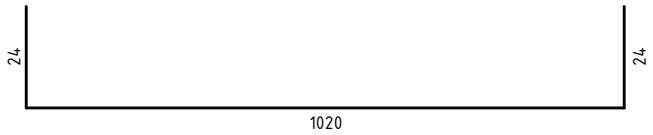
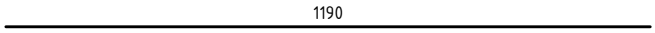
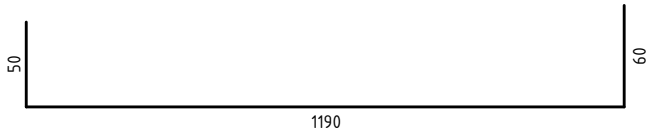
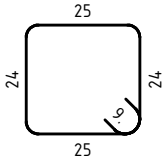
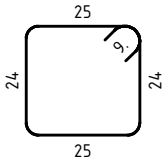
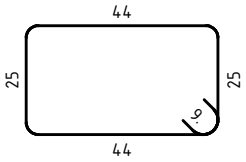
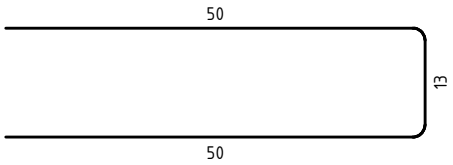
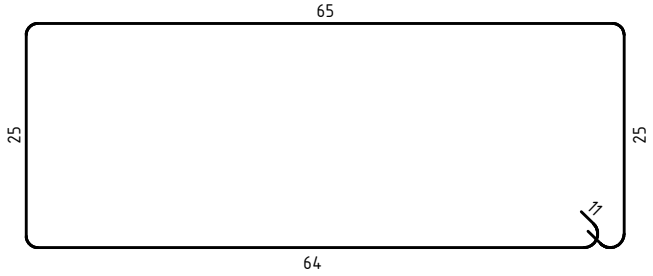
-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:	
projektant:	ARMATURA	
št. projekta:	06/2021	
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI	
objekt:	VEČNAMENSKI OBJEKT	
vrsta projekta:	PZI	
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad.	IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad.	IZS G-0028
sodelavec:		
načrt, struktura:	GRADBENE KONSTRUKCIJE	62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA PLOŠČE IN NOSILCEV NAD PRITLIČJEM	1:25 1:50
datum, št. lista:	MAREC 2022	6

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
Slab / Plošča +3.10m (1 pcs.)					
1	140	8	1.40	7	9.80
2	120	10	1.20	9	10.80
3	132	10	1.32	5	6.60
4	150	10	1.50	16	24.00
5	150	10	1.50	107	160.50
6	200	10	2.00	16	32.00
7	200	10	2.00	9	18.00
8	520	10	5.20	2	10.40
9	1020	10	10.20	2	20.40
10	100	12	1.00	14	14.00
11	190	12	1.90	62	117.80
12	225	12	2.25	4	9.00
13	240	12	2.40	8	19.20
14	280	12	2.80	15	42.00
15	390	12	3.90	15	58.50
16	560	12	5.60	8	44.80
17	610	12	6.10	6	36.60
18	1040	12	10.40	8	83.20
19	1190	12	11.90	6	71.40
20	1190	12	11.90	8	95.20
21	520	14	5.20	3	15.60
22	20 / 18 / 520	14	5.58	3	16.74
23	120	16	1.20	3	3.60
24	400	16	4.00	1	4.00
25	610	16	6.10	3	18.30
26	30 / 30 / 610	16	6.70	3	20.10
27	1020	16	10.20	3	30.60

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
28		16	10.68	3	32.04
29		20	11.90	9	107.10
30		20	13.00	3	39.00
31		8	1.16	50	58.00
32		8	1.16	24	27.84
33		8	1.56	31	48.36
34		10	1.13	419	473.47
35		10	1.73	117	202.41
36		10	2.01	77	154.77

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	144.00	0.40	56.88
10	1113.35	0.62	686.94
12	591.70	0.89	525.43
Skupaj (S500B, Ø <= 12 mm)			1269.25
S500B, Ø > 12 mm			
14	32.34	1.21	39.13
16	108.64	1.58	171.65
20	146.10	2.47	360.87
Skupaj (S500B, Ø > 12 mm)			571.65
Skupaj			1840.90

Mreže - specifikacija

Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
Slab / Plošča +3.10m (1 pcs.)						
I	Q-524	215	600	2	8.41	216.98
I-1	Q-524	215	384	2	8.41	138.87
I-2	Q-524	215	600	3	8.41	325.47
I-3	Q-524	165	600	1	8.41	83.51
I-4	Q-524	174	314	1	8.41	46.00
I-5	Q-524	215	314	1	8.41	56.78
I-6	Q-524	215	494	8	8.41	714.58
I-7	Q-524	144	494	2	8.41	119.65
I-8	Q-524	170	495	1	8.41	70.77
I-9	Q-524	215	495	4	8.41	358.01
I-10	Q-524	74	495	1	8.41	30.60
I-11	Q-524	201	541	1	8.41	91.45
I-12	Q-524	215	541	1	8.41	97.82
I-13	Q-524	215	345	1	8.41	62.38
II	Q-424	215	600	7	6.81	614.67
II-1	Q-424	215	465	1	6.81	68.11
II-2	Q-424	45	465	1	6.81	14.27
II-3	Q-424	45	600	1	6.81	18.42
II-4	Q-424	215	465	1	6.81	68.11
II-5	Q-424	215	600	5	6.81	439.05
II-6	Q-424	215	465	1	6.81	68.11
II-7	Q-424	215	465	1	6.81	68.12
II-8	Q-424	215	465	1	6.81	68.12
II-9	Q-424	215	465	1	6.81	68.12
II-10	Q-424	168	600	1	6.81	68.57
II-11	Q-424	168	465	1	6.81	53.20
II-12	Q-424	215	495	1	6.81	72.45
II-13	Q-424	45	495	1	6.81	15.16
II-14	Q-424	45	600	1	6.81	18.38
II-15	Q-424	215	495	1	6.81	72.45

Mreže - specifikacija

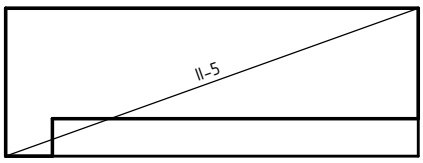
Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
II-16	Q-424	215	314	2	6.81	91.91
II-17	Q-424	215	495	1	6.81	72.45
II-18	Q-424	215	495	1	6.81	72.45
II-19	Q-424	168	518	1	6.81	59.24
Skupaj						4504.22

Mreže - izvleček

Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]
Q-424	215	600	28	6.81	2458.69
Q-524	215	600	29	8.41	3146.18
Skupaj					5604.87

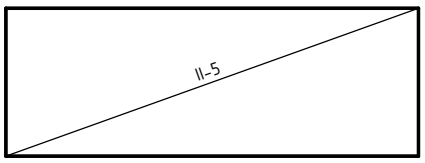
Mreže - načrt razreza
Slab / Plošča +3.10m
Q-424 (600 cm x 215 cm)

1x



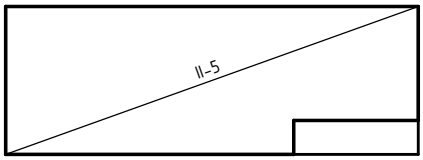
II-5 600 x 215

3x



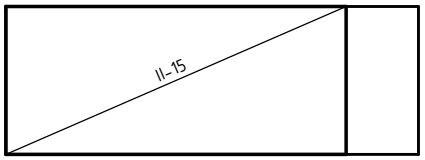
II-5 600 x 215

1x



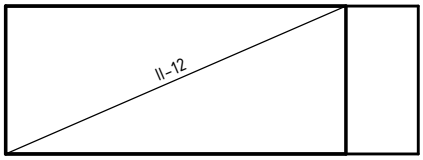
II-5 600 x 215

1x



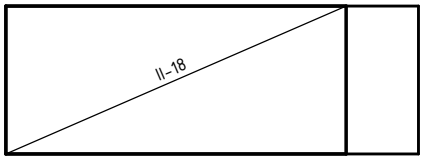
II-15 495 x 215

1x



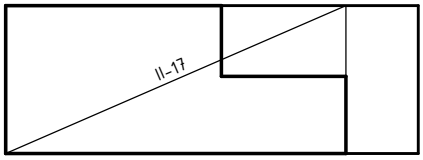
II-12 495 x 215

1x



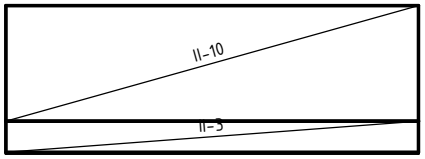
II-18 495 x 215

1x



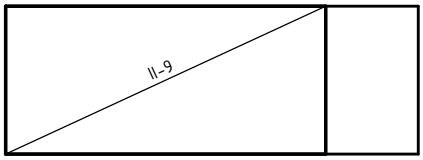
II-17 495 x 215

1x



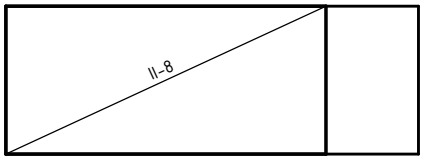
II-10 600 x 168
II-3 600 x 45

1x



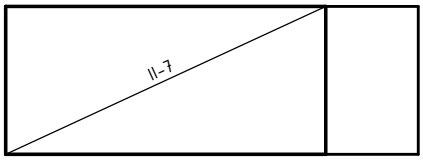
II-9 465 x 215

1x



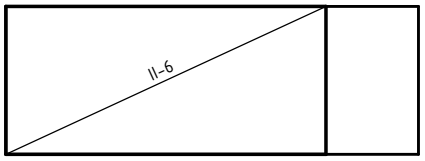
II-8 465 x 215

1x



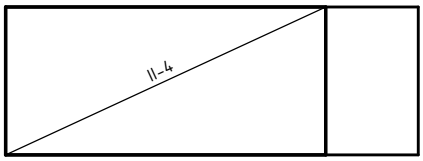
II-7 465 x 215

1x



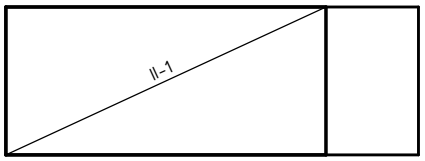
II-6 465 x 215

1x



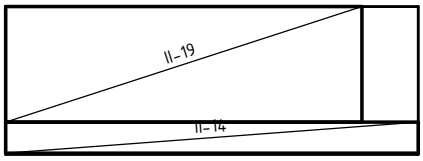
II-4 465 x 215

1x



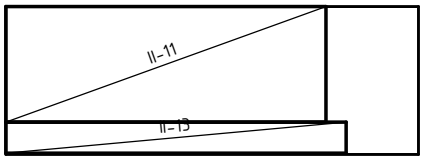
II-1 465 x 215

1x



II-19 518 x 168
II-14 600 x 45

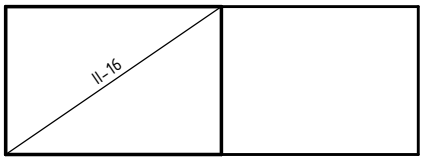
1x



II-11 465 x 168
II-13 495 x 45

Mreže - načrt razreza

2x



II-16 314 x 215

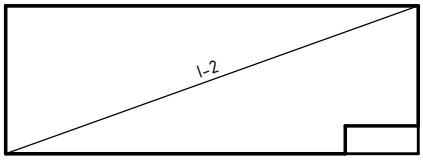
1x



II-2 465 x 45

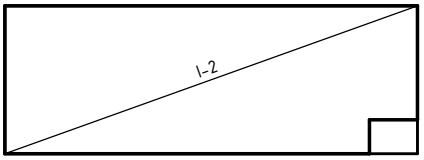
Q-524 (600 cm x 215 cm)

1x



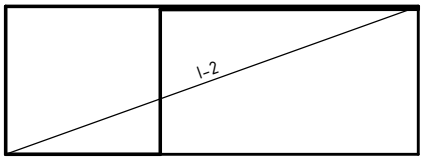
I-2 600 x 215

1x



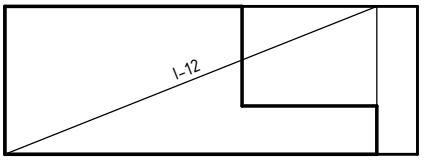
I-2 600 x 215

1x



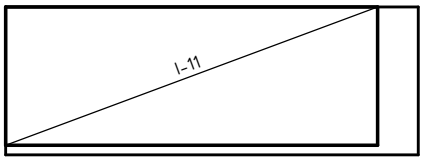
I-2 600 x 215

1x



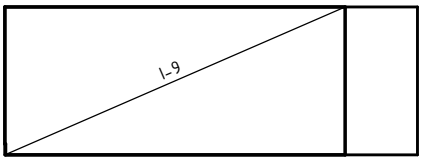
I-12 541 x 215

1x



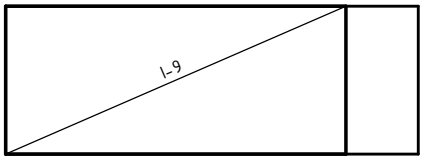
I-11 541 x 201

1x



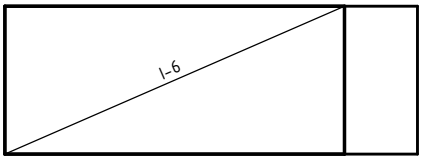
I-9 495 x 215

3x



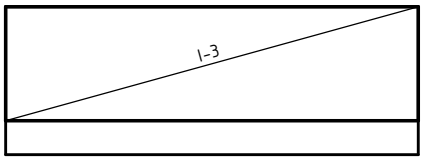
I-9 495 x 215

8x



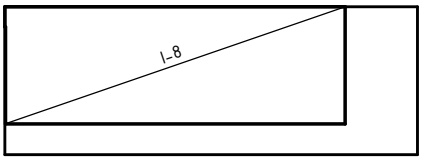
I-6 494 x 215

1x



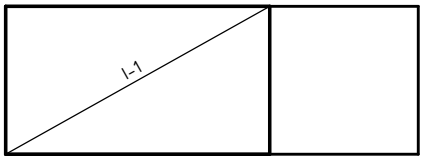
I-3 600 x 165

1x



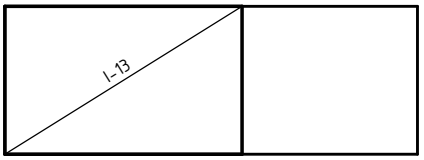
I-8 495 x 170

2x



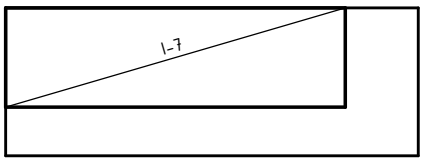
I-1 384 x 215

1x



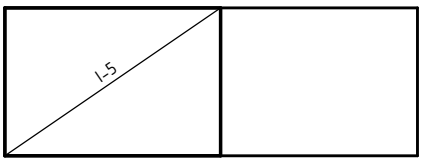
I-13 345 x 215

2x



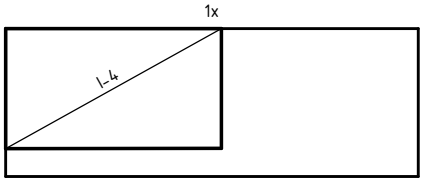
I-7 494 x 144

1x

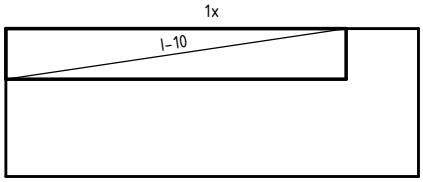


I-5 314 x 215

Mreže - načrt razreza

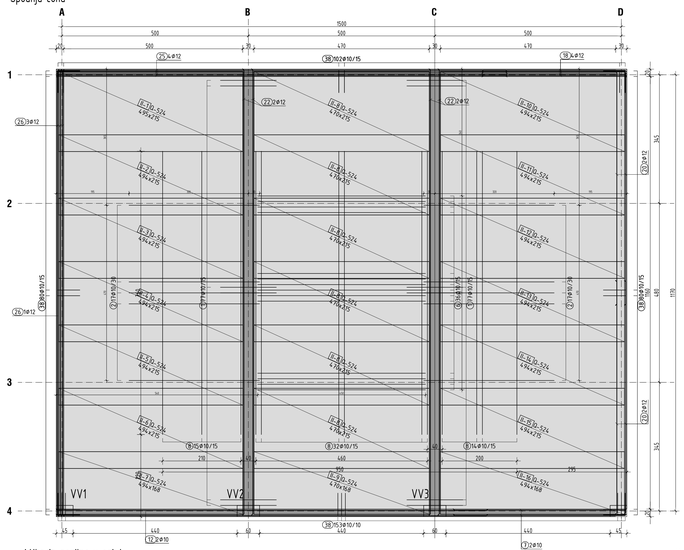


I-4 314 x 174

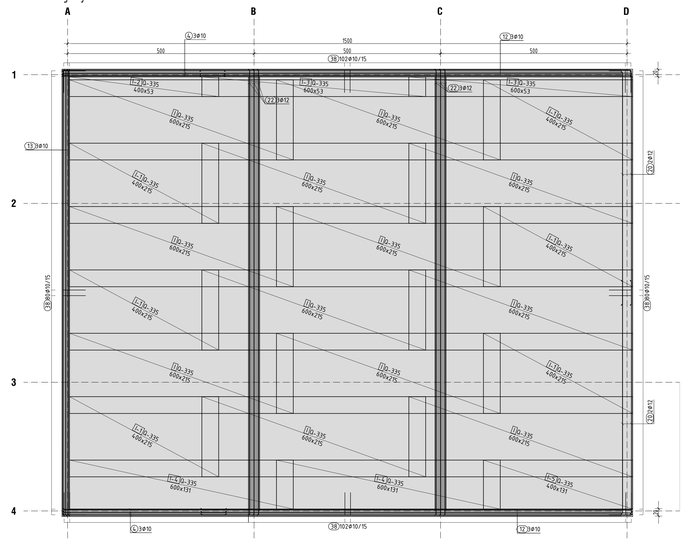


I-10 495 x 74

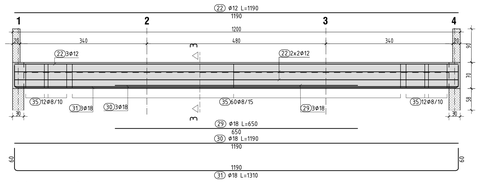
PLOŠČA NAD GARAŽO: z.r. +4.73m, s.r. +5.00m
M 1:50
Spodnja cona



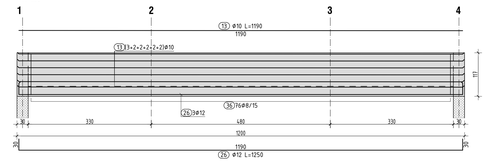
PLOŠČA NAD GARAŽO: z.r. +4.73m, s.r. +5.00m
M 1:50
Zgornja cona



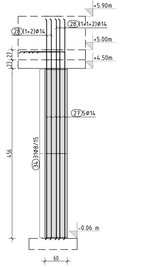
Vzdolžni pogled na nosilec v oseh B in C, 2 kom
M 1:50



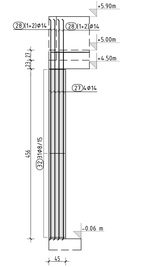
Atika v osi A
M 1:50

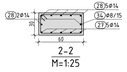


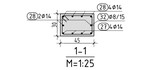
POGLED NA VERTIKALNO VEZ VV2, VV3
M 1:50

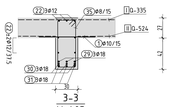


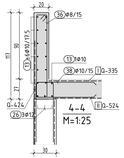
POGLED NA VERTIKALNO VEZ VV1
M 1:50



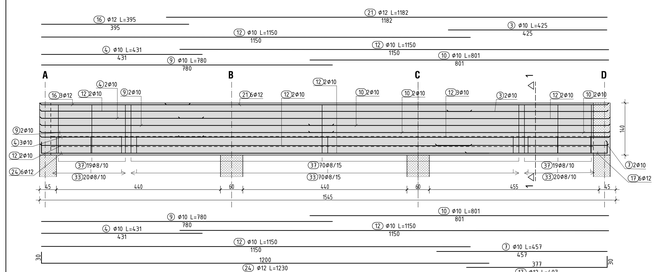




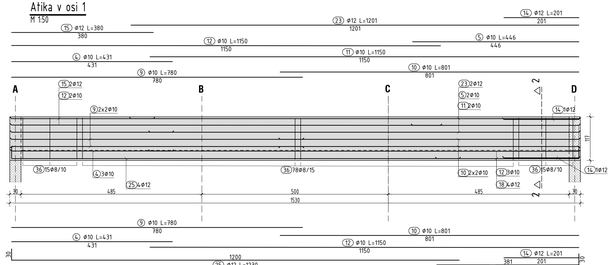


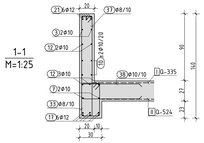


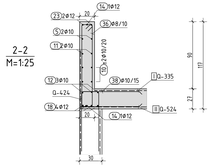
Atika in nosilec v osi 4
M 1:50

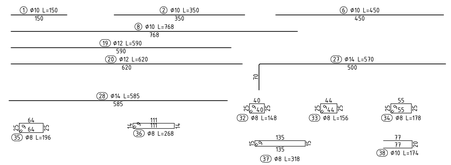


Atika v osi 1
M 1:50









UPORABLJENI MATERIALI:

-BETONI

plošča nad garažo	C25/30 XC2	Cl 0,2 Dmax16 S4	Cnom = 2,5 cm
nosilci	C25/30 XC2	Cl 0,2 Dmax16 S4	Cnom = 2,5 cm
atika	C25/30 XC2	Cl 0,2 Dmax16 S4	Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xΦ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

-Vse projektantske mere preveriti z načrti arhitekture.

datum	sprememba

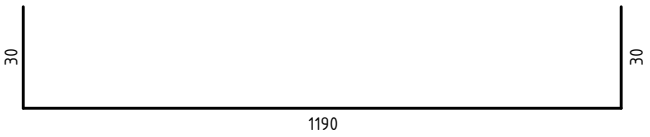
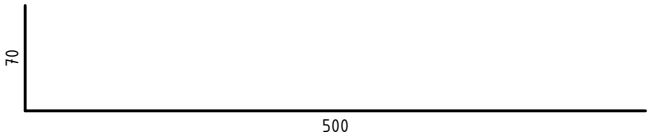
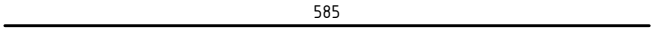
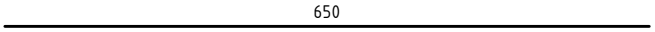
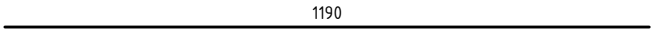
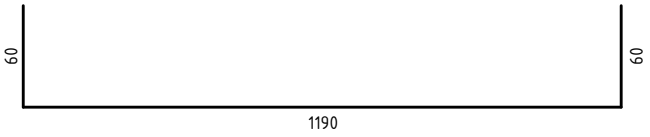
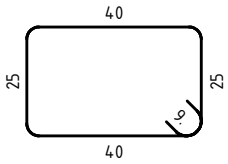
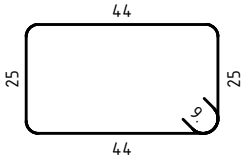
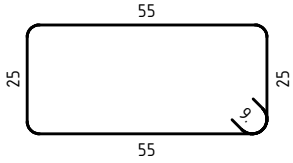
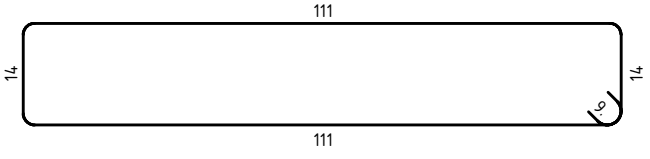
projektant:
ARMATURA
Jožef Zidanšek s.p., Ulica Ivana Cankarja 1, 3000 Celje
www.armatura.si info@armatura.si +386 (0)3 425 24 42

št. projekta	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ŽUGAN, univ. dipl. ing. grad. IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-3328
sodelavec:	
načrt. arhitekta:	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo:	OPAŽNO-ARMATURNI RISBA PLOŠČE NAD GARAŽO IN ATIKE 1:25 1:50
datum, št. lista	MAREC 2022 1

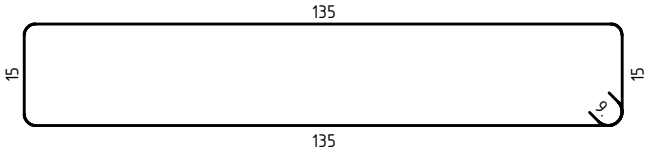
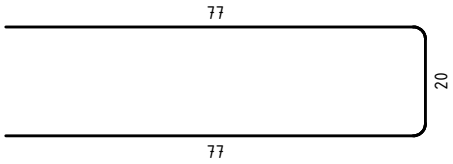
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
Slab / Plošča +4.90m (1 pcs.)					
1	150	10	1.50	154	231.00
2	350	10	3.50	34	119.00
3	425	10	4.25	2	8.50
4	431	10	4.31	10	43.10
5	446	10	4.46	2	8.92
6	450	10	4.50	36	162.00
7	457	10	4.57	2	9.14
8	768	10	7.68	61	468.48
9	780	10	7.80	8	62.40
10	801	10	8.01	8	64.08
11	1150	10	11.50	2	23.00
12	1150	10	11.50	17	195.50
13	1190	10	11.90	13	154.70
14	201	12	2.01	2	4.02
15	380	12	3.80	2	7.60
16	395	12	3.95	3	11.85
17	377 30	12	4.07	6	24.42
18	381 30	12	4.11	4	16.44
19	590	12	5.90	4	23.60
20	620	12	6.20	8	49.60
21	1182	12	11.82	6	70.92
22	1190	12	11.90	18	214.20
23	1201	12	12.01	2	24.02
24	30 1200	12	12.30	6	73.80

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
25		12	12.30	4	49.20
26		12	12.50	3	37.50
27		14	5.70	14	79.80
28		14	5.85	20	117.00
29		18	6.50	6	39.00
30		18	11.90	6	71.40
31		18	13.10	6	78.60
32		8	1.48	31	45.88
33		8	1.56	110	171.60
34		8	1.78	62	110.36
35		8	1.96	168	329.28
36		8	2.68	184	493.12

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
37		8	3.18	108	343.44
38		10	1.74	677	1177.98

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	1493.68	0.40	590.00
10	2727.80	0.62	1683.05
12	607.17	0.89	539.17
Skupaj (S500B, Ø <= 12 mm)			2812.22
S500B, Ø > 12 mm			
14	196.80	1.21	238.13
18	189.00	2.02	381.78
Skupaj (S500B, Ø > 12 mm)			619.91
Skupaj			3432.13

Mreže - specifikacija

Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
Slab / Plošča +4.90m (1 pcs.)						
I	Q-335	215	600	12	5.38	832.82
I-1	Q-335	215	400	6	5.38	277.57
I-2	Q-335	53	400	1	5.38	11.40
I-3	Q-335	53	600	2	5.38	34.21
I-4	Q-335	131	600	2	5.38	84.85
I-5	Q-335	131	400	1	5.38	28.28
II-1	Q-524	215	495	1	8.41	89.42
II-2	Q-524	215	494	1	8.41	89.41
II-3	Q-524	215	494	1	8.41	89.39
II-4	Q-524	215	494	1	8.41	89.38
II-5	Q-524	215	494	1	8.41	89.36
II-6	Q-524	215	494	1	8.41	89.35
II-7	Q-524	168	494	1	8.41	69.81
II-8	Q-524	215	470	6	8.41	509.90
II-9	Q-524	168	470	1	8.41	66.41
II-10	Q-524	215	494	1	8.41	89.32
II-11	Q-524	215	494	1	8.41	89.31
II-12	Q-524	215	494	1	8.41	89.29
II-13	Q-524	215	494	1	8.41	89.28
II-14	Q-524	215	494	1	8.41	89.27
II-15	Q-524	215	494	1	8.41	89.25
II-16	Q-524	168	494	1	8.41	69.73
Skupaj						3057.02

Mreže - izvleček

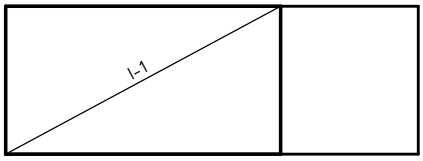
Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]
Q-335	215	600	21	5.38	1457.44
Q-524	215	600	21	8.41	2278.27
Skupaj					3735.71

Mreže - načrt razreza

Slab / Plošča +4.90m

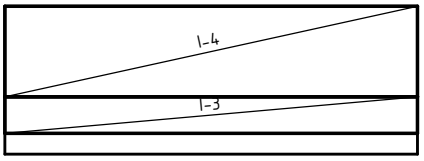
Q-335 (600 cm x 215 cm)

6x



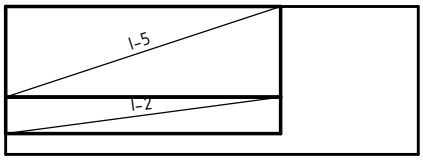
I-1 400 x 215

2x



I-4 600 x 131
I-3 600 x 53

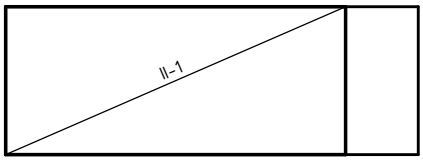
1x



I-5 400 x 131
I-2 400 x 53

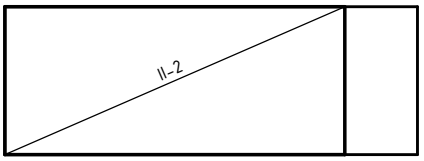
Q-524 (600 cm x 215 cm)

1x



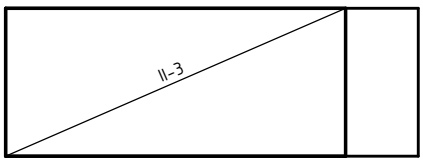
II-1 495 x 215

1x



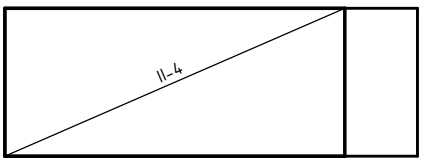
II-2 494 x 215

1x



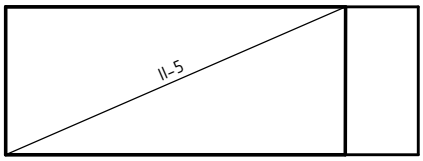
II-3 494 x 215

1x



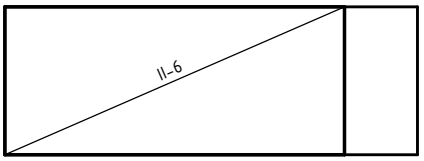
II-4 494 x 215

1x



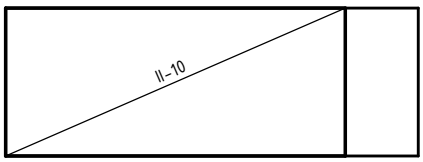
II-5 494 x 215

1x



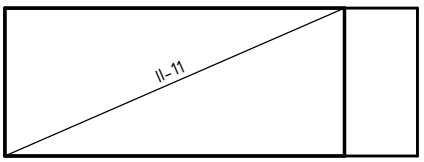
II-6 494 x 215

1x



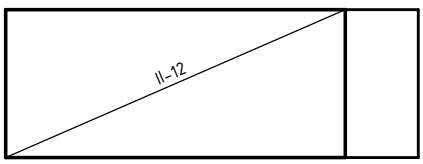
II-10 494 x 215

1x



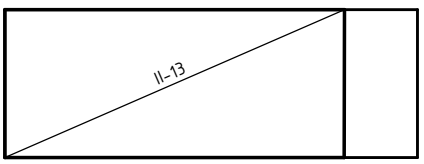
II-11 494 x 215

1x



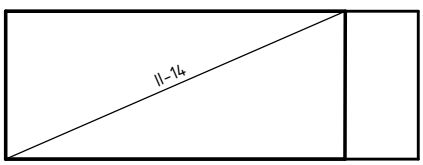
II-12 494 x 215

1x



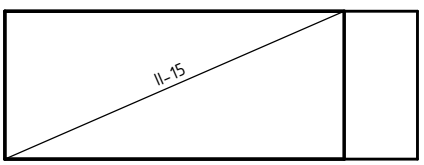
II-13 494 x 215

1x



II-14 494 x 215

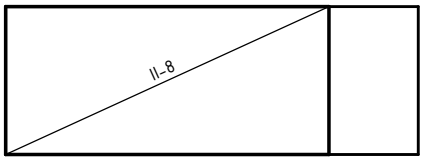
1x



II-15 494 x 215

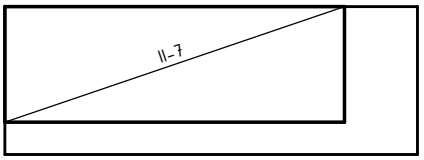
Mreže - načrt razreza

6x



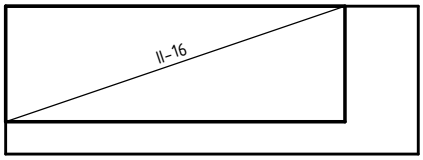
II-8 470 x 215

1x



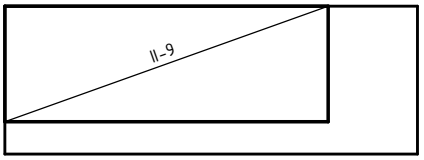
II-7 494 x 168

1x



II-16 494 x 168

1x

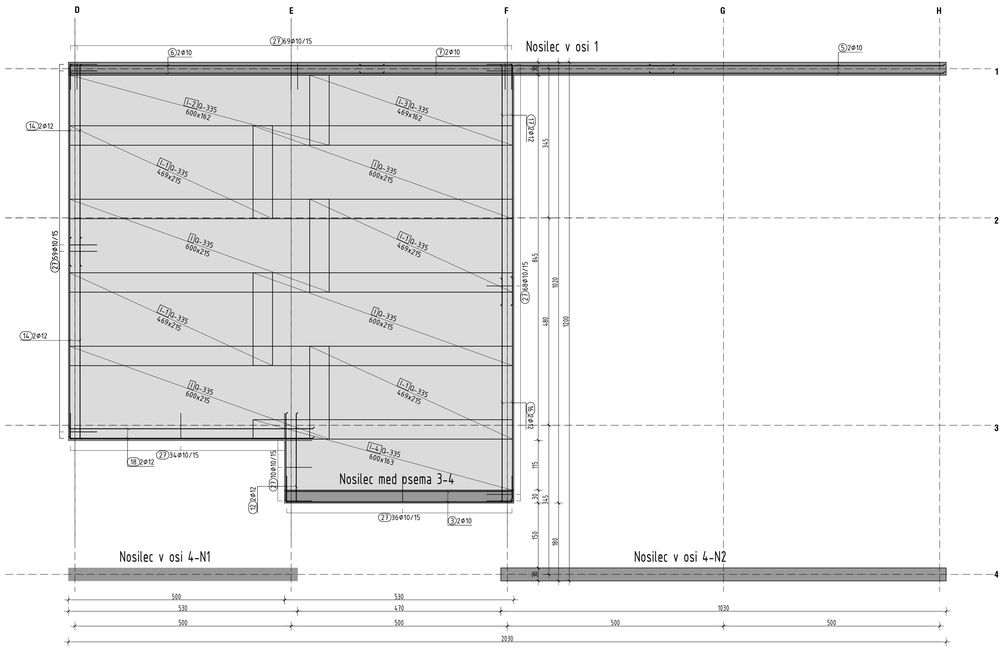


II-9 470 x 168

PLOŠČA NAD NADSTROPJEM: z.r. +6.24m, s.r. +6.44m

M 1:50

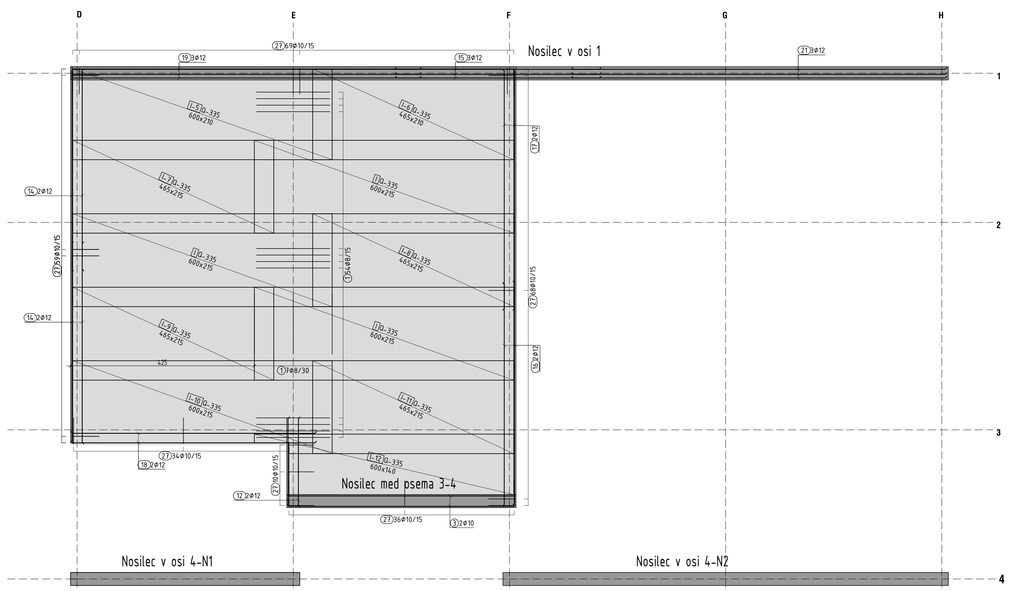
Spodnja cona



PLOŠČA NAD NADSTROPJEM: z.r. +6.24m, s.r. +6.44m

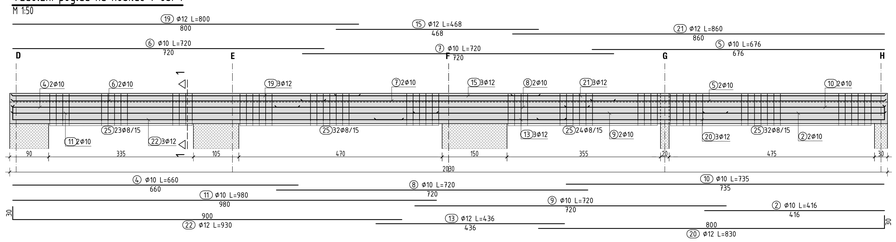
M 1:50

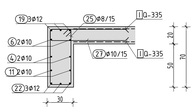
Zgornja cona



Vzdolzni pogled na nosilec v osi 1

M 1:50



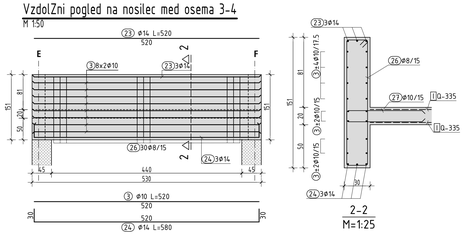


1-1

M=1:25

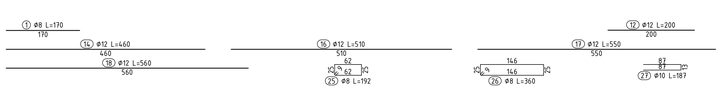
VzdolZni pogled na nosilec med osema 3-4

M 1:50



2-2

M=1:25



UPORABLJENI MATERIALI:

-BETONI

plošča nad nadstropjem	C25/30 XC2 Cl 0,2 Dmax16 S4	Cnom = 2,5 cm
nosilec	C25/30 XC2 Cl 0,2 Dmax16 S4	Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:

- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

-Nosilca v osi 4, nosileca N1 in N2 sta prikazana na listu št. 9.

-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:

projektant:

ARMATURA

inženiring pri armaturi, d.o.o. Ivan sv., Zminica I, 5, 4248 Lesce

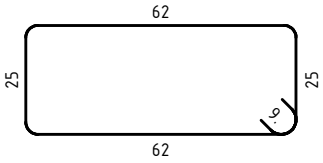
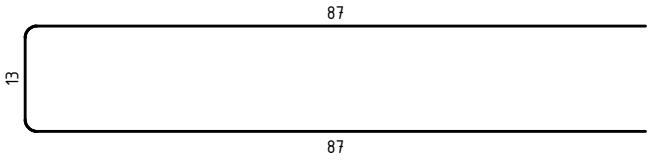
www.armatura.si info@armatura.si +386 (0)4 53 42 000

št. projekta:	06/2021	
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI	
objekt:	VEČNAMENSKI OBJEKT	
vrsta projekta:	PZI	
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad.	IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad.	IZS G-0028
sodelavec:		
načrt. str.načrta:	GRADBENE KONSTRUKCIJE	62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA PLOŠČE NAD NADSTROPJEM IN NOSILCEV	1:25 1:50
datum, št. lista:	MAREC 2022	8

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
Slab / Plošča +6.34m (1 pcs.)					
1	170	8	1.70	54	91.80
2	416	10	4.16	2	8.32
3	520	10	5.20	16	83.20
4	660	10	6.60	2	13.20
5	676	10	6.76	2	13.52
6	720	10	7.20	2	14.40
7	720	10	7.20	2	14.40
8	720	10	7.20	2	14.40
9	720	10	7.20	2	14.40
10	735	10	7.35	2	14.70
11	980	10	9.80	2	19.60
12	200	12	2.00	4	8.00
13	436	12	4.36	3	13.08
14	460	12	4.60	8	36.80
15	468	12	4.68	3	14.04
16	510	12	5.10	4	20.40
17	550	12	5.50	4	22.00
18	560	12	5.60	4	22.40
19	800	12	8.00	3	24.00
20	800 30	12	8.30	3	24.90
21	860	12	8.60	3	25.80
22	30 900	12	9.30	3	27.90
23	520	14	5.20	3	15.60
24	30 30 520	14	5.80	3	17.40

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
25		8	1.92	111	213.12
26		8	3.60	30	108.00
27		10	1.87	394	736.78

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	412.92	0.40	163.10
10	946.92	0.62	584.25
12	239.32	0.89	212.52
Skupaj (S500B, Ø <= 12 mm)			959.87
S500B, Ø > 12 mm			
14	33.00	1.21	39.93
Skupaj (S500B, Ø > 12 mm)			39.93
Skupaj			999.80

Mreže - specifikacija

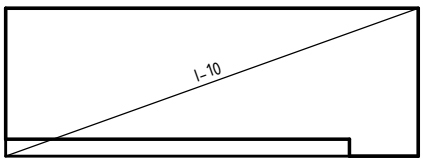
Pozicija	Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna teža [kg]
Slab / Plošča +6.34m (1 pcs.)						
I	Q-335	215	600	7	5.38	485.81
I-1	Q-335	215	469	4	5.38	217.00
I-2	Q-335	162	600	1	5.38	52.31
I-3	Q-335	162	469	1	5.38	40.89
I-4	Q-335	163	600	1	5.38	52.60
I-5	Q-335	210	600	1	5.38	67.79
I-6	Q-335	210	465	1	5.38	52.53
I-7	Q-335	215	465	1	5.38	53.79
I-8	Q-335	215	465	1	5.38	53.79
I-9	Q-335	215	465	1	5.38	53.79
I-10	Q-335	215	600	1	5.38	69.40
I-11	Q-335	215	465	1	5.38	53.79
I-12	Q-335	140	600	1	5.38	45.19
Skupaj						1298.67

Mreže - izvleček

Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]
Q-335	215	600	22	5.38	1526.84
Skupaj					1526.84

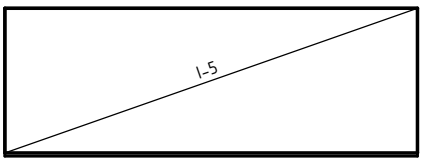
Mreže - načrt razreza
Slab / Plošča +6.34m
Q-335 (600 cm x 215 cm)

1x



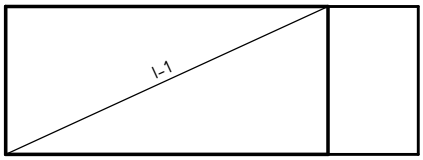
I-10 600 x 215

1x



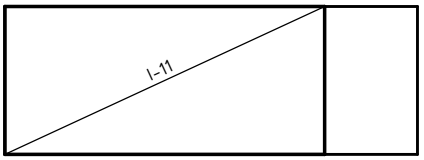
I-5 600 x 210

4x



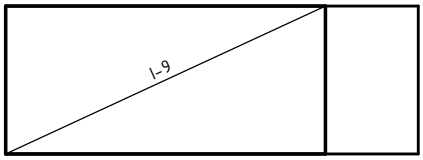
I-1 469 x 215

1x



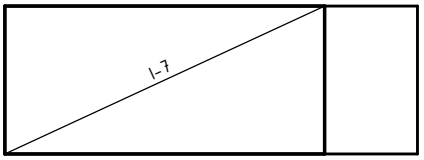
I-11 465 x 215

1x



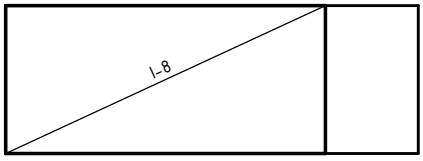
I-9 465 x 215

1x



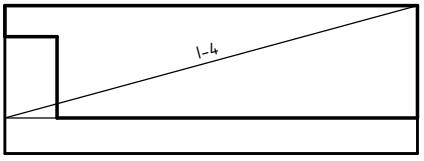
I-7 465 x 215

1x



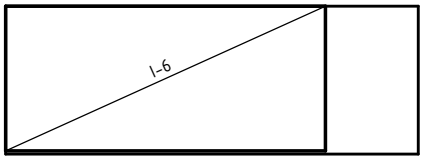
I-8 465 x 215

1x



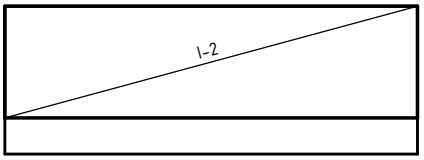
I-4 600 x 163

1x



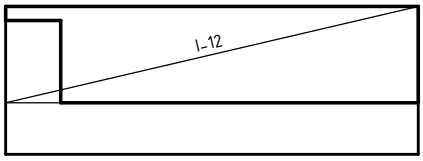
I-6 465 x 210

1x



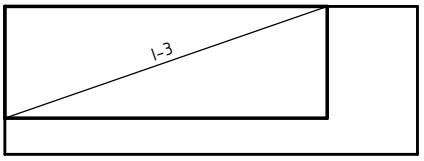
I-2 600 x 162

1x



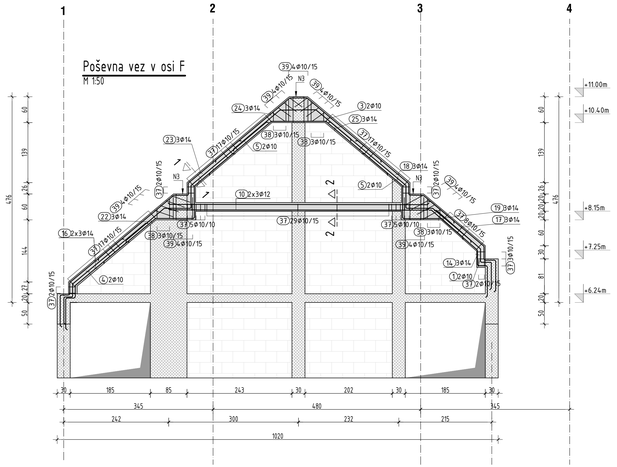
I-12 600 x 140

1x

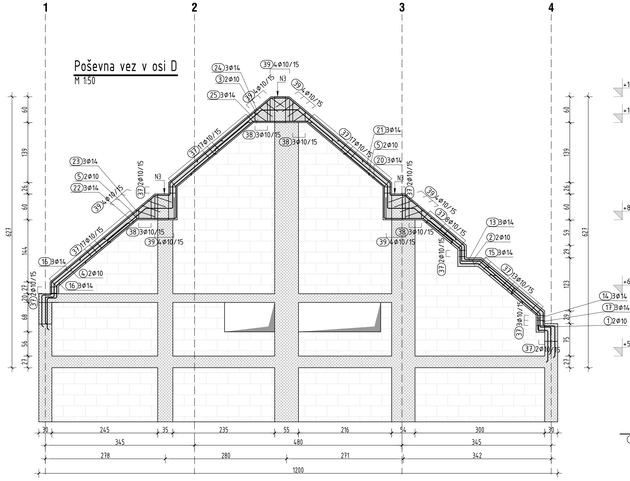


I-3 469 x 162

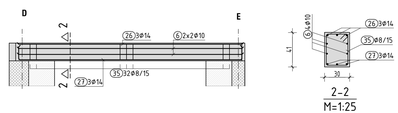
Poševna vez v osi F
M 1:50



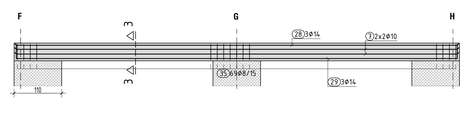
Poševna vez v osi D
M 1:50



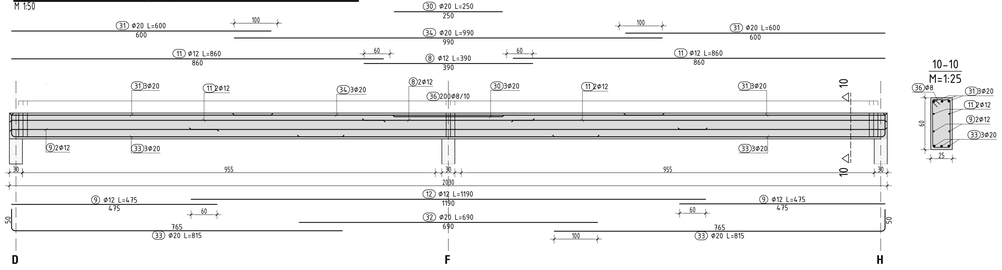
Vzdolžni pogled na nosilec v osi 4-N1, z.r. 6.44 s.r. 5.74m
M 1:50

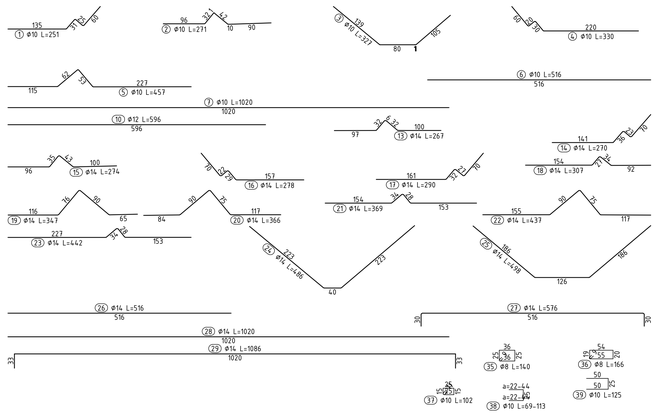


Vzdolzni pogled na nosilec v osi 4-N2, z.r. 6.44 s.r. 5.74m
M 1:50



Nosilec strešne konstrukcije N3, s.r. +8.15 (2. kom.) in +10.40 (1 kom.)
M 1:50





UPORABLJENI MATERIALI:

-BETONI
Strešni nosilci in zidne vezi C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

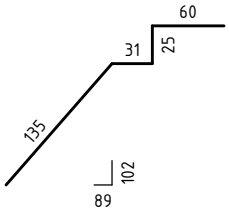
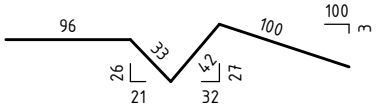
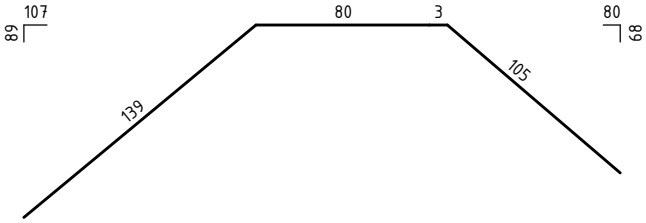
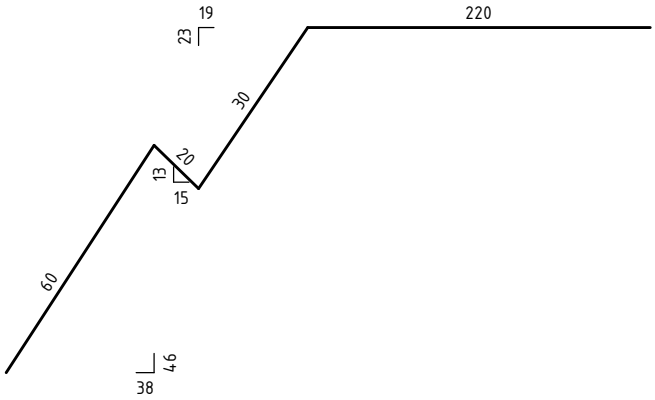
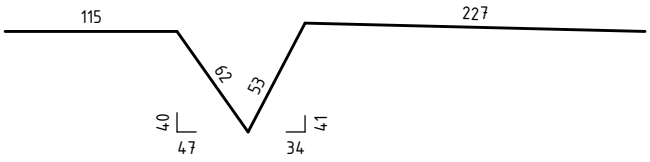
-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

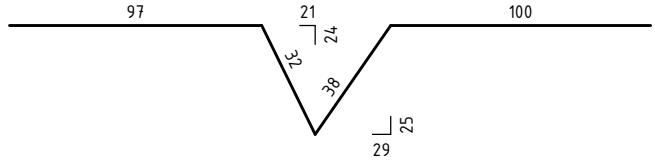
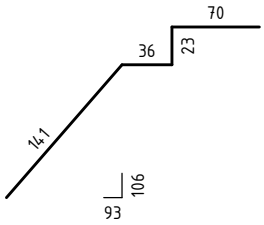
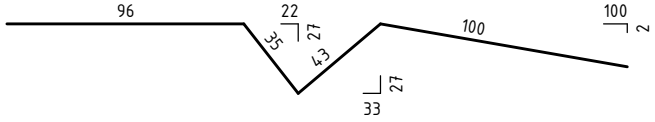
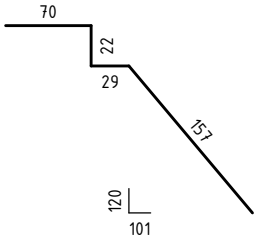
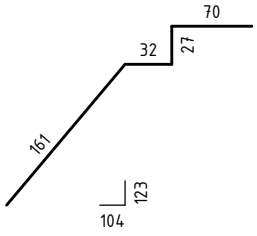
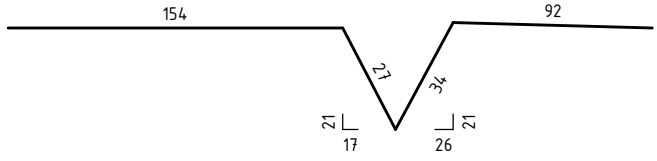
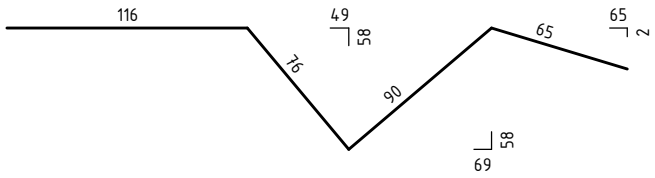
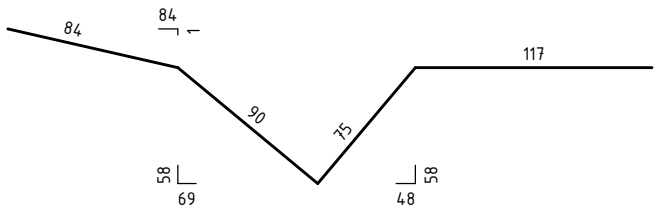
-Vse projektantske mere preveriti z načrti arhitekture.

datum	sprememba
projektant:	ARMATURA
	inženiring d.o.o., Ulica 1. maja 1, 2000 Maribor, SLOVENIJA
	www.armatura.si.si info@armatura.si.si +386 (0)41 435 261
št. projekta	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ZOGAN, univ. dipl. ing. grad. IZS G-3899
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-0028
sodelavec:	
načrt. št.načrta:	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo:	OPAŽNO-ARMATURNA RISBA NOSILCEV IN POŠEVNIH VEZI ZATREPNIH ZIDOV 1:25 1:50
datum, št. lista:	MAREC 2022 9

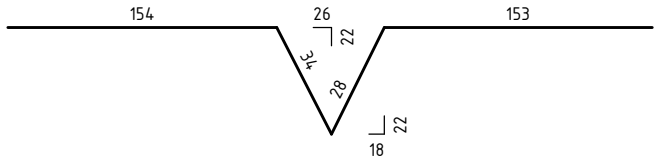
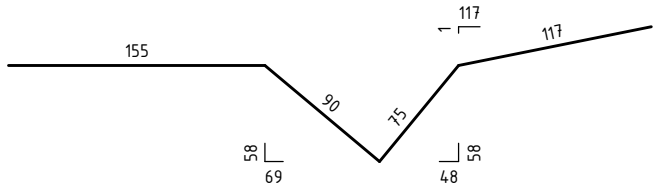
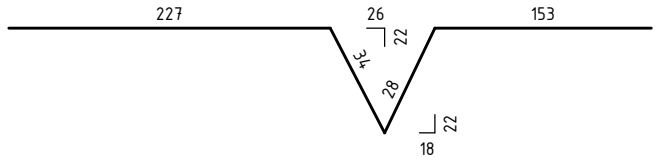
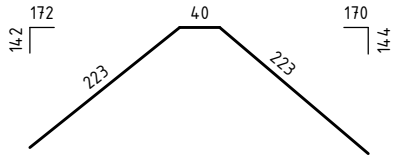
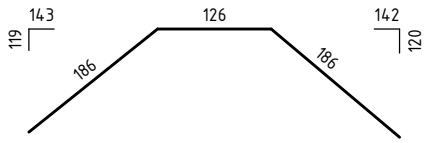
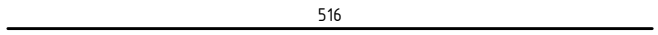
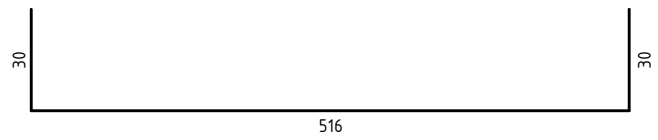
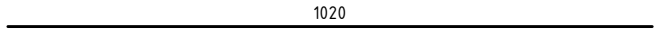
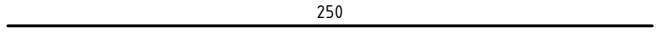
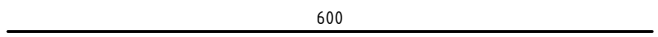
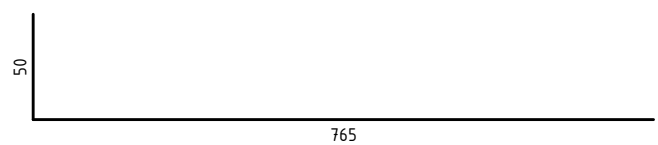
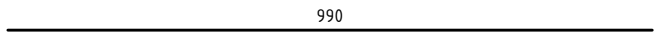
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
Roof beam / Strešni nosilci (1 pcs.)					
1		10	2.51	4	10.04
2		10	2.71	2	5.42
3		10	3.27	4	13.08
4		10	3.30	4	13.20
5		10	4.57	8	36.56
6	516	10	5.16	4	20.64
7	1020	10	10.20	4	40.80
8	390	12	3.90	6	23.40
9	475	12	4.75	12	57.00
10	596	12	5.96	6	35.76
11	860	12	8.60	12	103.20
12	1190	12	11.90	6	71.40

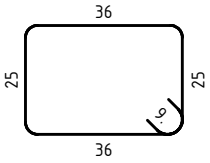
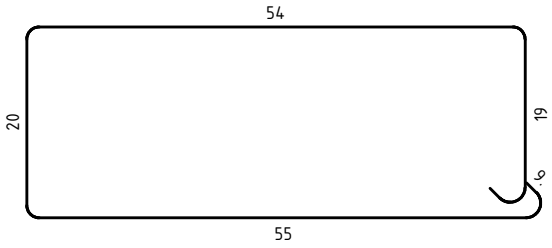
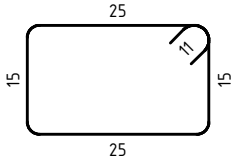
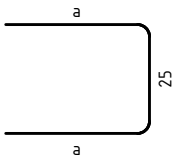
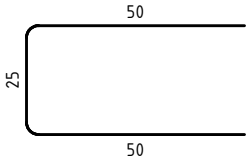
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
13		14	2.67	3	8.01
14		14	2.70	6	16.20
15		14	2.74	3	8.22
16		14	2.78	12	33.36
17		14	2.90	6	17.40
18		14	3.07	3	9.21
19		14	3.47	3	10.41
20		14	3.66	3	10.98

Palice - specifikacija

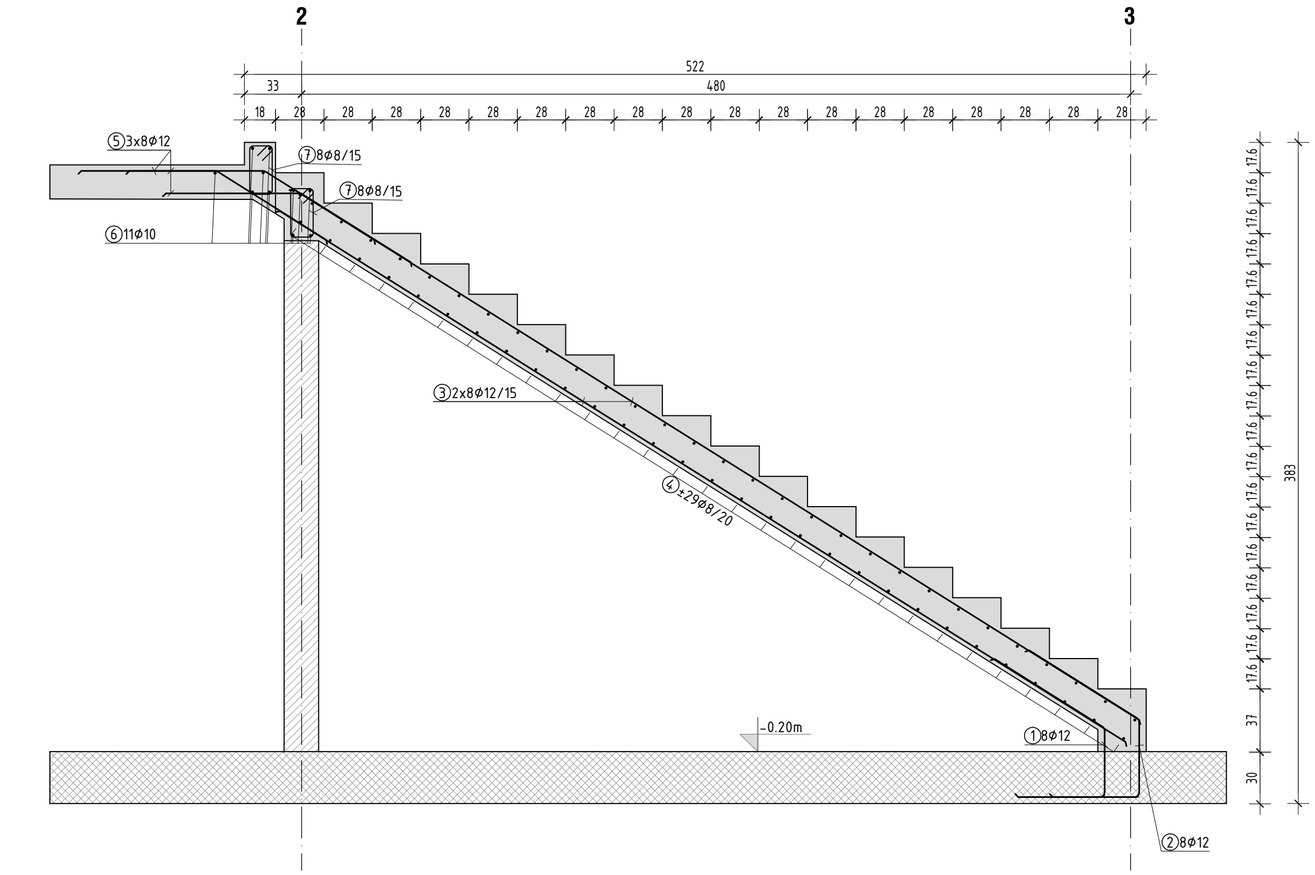
ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
21		14	3.69	3	11.07
22		14	4.37	6	26.22
23		14	4.42	6	26.52
24		14	4.86	6	29.16
25		14	4.98	6	29.88
26		14	5.16	3	15.48
27		14	5.76	3	17.28
28		14	10.20	3	30.60
29		14	10.86	3	32.58
30		20	2.50	9	22.50
31		20	6.00	18	108.00
32		20	6.90	9	62.10
33		20	8.15	18	146.70
34		20	9.90	9	89.10

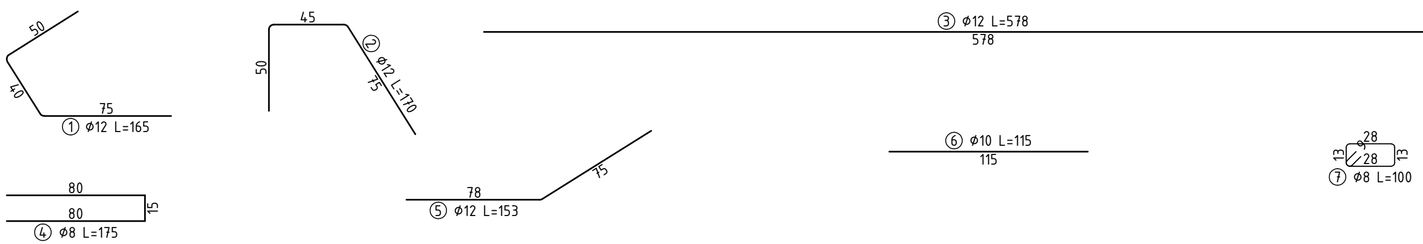
Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
35		8	1.40	101	141.40
36		8	1.66	600	996.00
37		10	1.02	194	197.88
38	 8 x : a = 44, 33, 22	10	*0.91	8 x 3	21.84
39		10	1.25	56	70.00

Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	1137.40	0.40	449.27
10	429.46	0.62	264.98
12	290.76	0.89	258.19
Skupaj (S500B, Ø <= 12 mm)			972.44
S500B, Ø > 12 mm			
14	332.58	1.21	402.42
20	428.40	2.47	1058.15
Skupaj (S500B, Ø > 12 mm)			1460.57
Skupaj			2433.01

Stopnice:
M 1:25





UPORABLJENI MATERIALI:

-BETONI
stopnisce C25/30 XC1 Cl 0,2 Dmax16 S4 Cnom = 2,5 cm

-JEKLO S500B

Vse mere potrebno preveriti na licu mesta!

OPOMBE:

Če preklopi niso kotirani je potrebno upoštevati naslednje preklopne dolžine:
- -Preklopi armaturnih palic: 50xØ palice
- -Preklopi armaturnih mrež min. 45 cm.

-Distančniki in nosilci zgornje armature po izbiri izvajalca.

-Potrebno je gledat vse načrte armature za pravilno polaganej priključne armature med elementi.

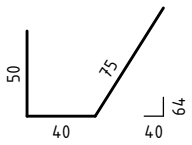
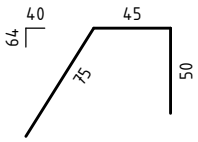
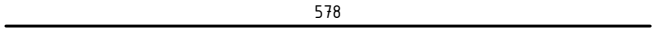
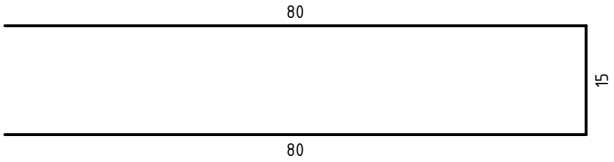
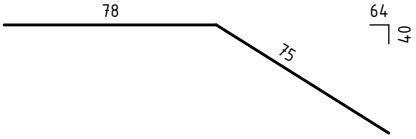
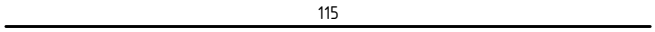
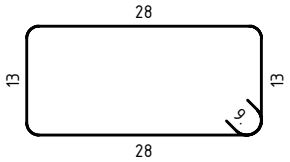
-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:

projektant:
INŽENIRING BIRO ARMATURA
INŽENIRING BIRO ARMATURA, UROŠ ŽVAN s.p., ZRKOVSKA C. 75, MARIBOR
www.armatura-uz.si info@armatura-uz.si +386 (041) 425 341

št. projekta:	06/2021	
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI	
objekt:	VEČNAMENSKI OBJEKT	
vrsta projekta:	PZI	
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad.	IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad.	IZS G-0028
sodelavec:		
načrt, st.načrta:	GRADBENE KONSTRUKCIJE	62/21-K
risba, merilo:	OPAŽNO-ARMATURN RISBA STOPNIŠČA	1:25
datum, št. lista:	MAREC 2022	10

Palice - specifikacija

ozn	oblika in mere [cm]	Ø	lg [m]	n [kos]	lgn [m]
	Stairs / Stopnice (1 pcs.)				
1		12	1.65	8	13.20
2		12	1.70	8	13.60
3		12	5.78	16	92.48
4		8	1.75	58	101.50
5		12	1.53	24	36.72
6		10	1.15	11	12.65
7		8	1.00	16	16.00

Palice - izvleček

Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	117.50	0.40	46.41
10	12.65	0.62	7.81
12	156.00	0.89	138.53
Skupaj (S500B, Ø <= 12 mm)			192.75
Skupaj			192.75

REKAPITULACIJA ARMATURE

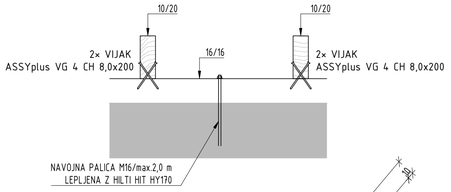
Palice - izvleček

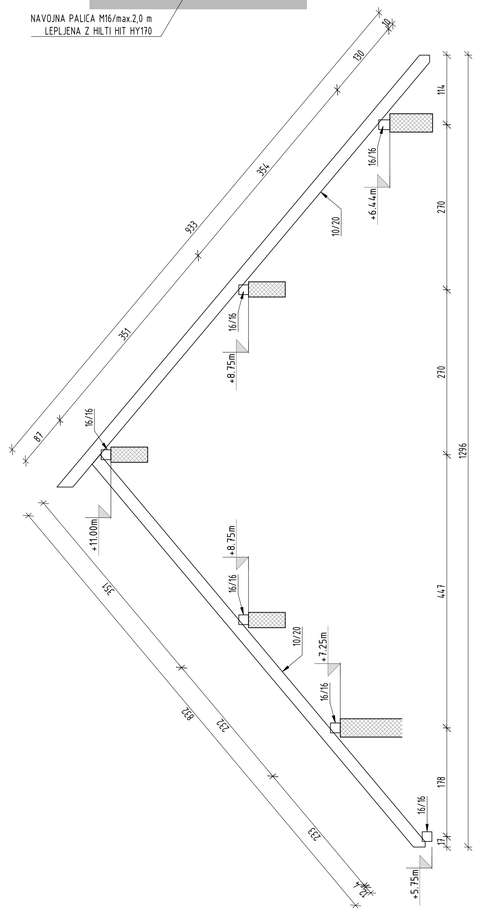
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500B, Ø <= 12 mm			
8	4463.58	0.40	1763.11
10	11217.98	0.62	6921.49
12	3039.93	0.89	2699.46
Skupaj (S500B, Ø <= 12 mm)			11384.07
S500B, Ø > 12 mm			
14	3762.32	1.21	4552.41
16	1821.39	1.58	2877.80
18	579.94	2.02	1171.48
20	574.50	2.47	1419.02
Skupaj (S500B, Ø > 12 mm)			10020.70
Skupaj			21404.76

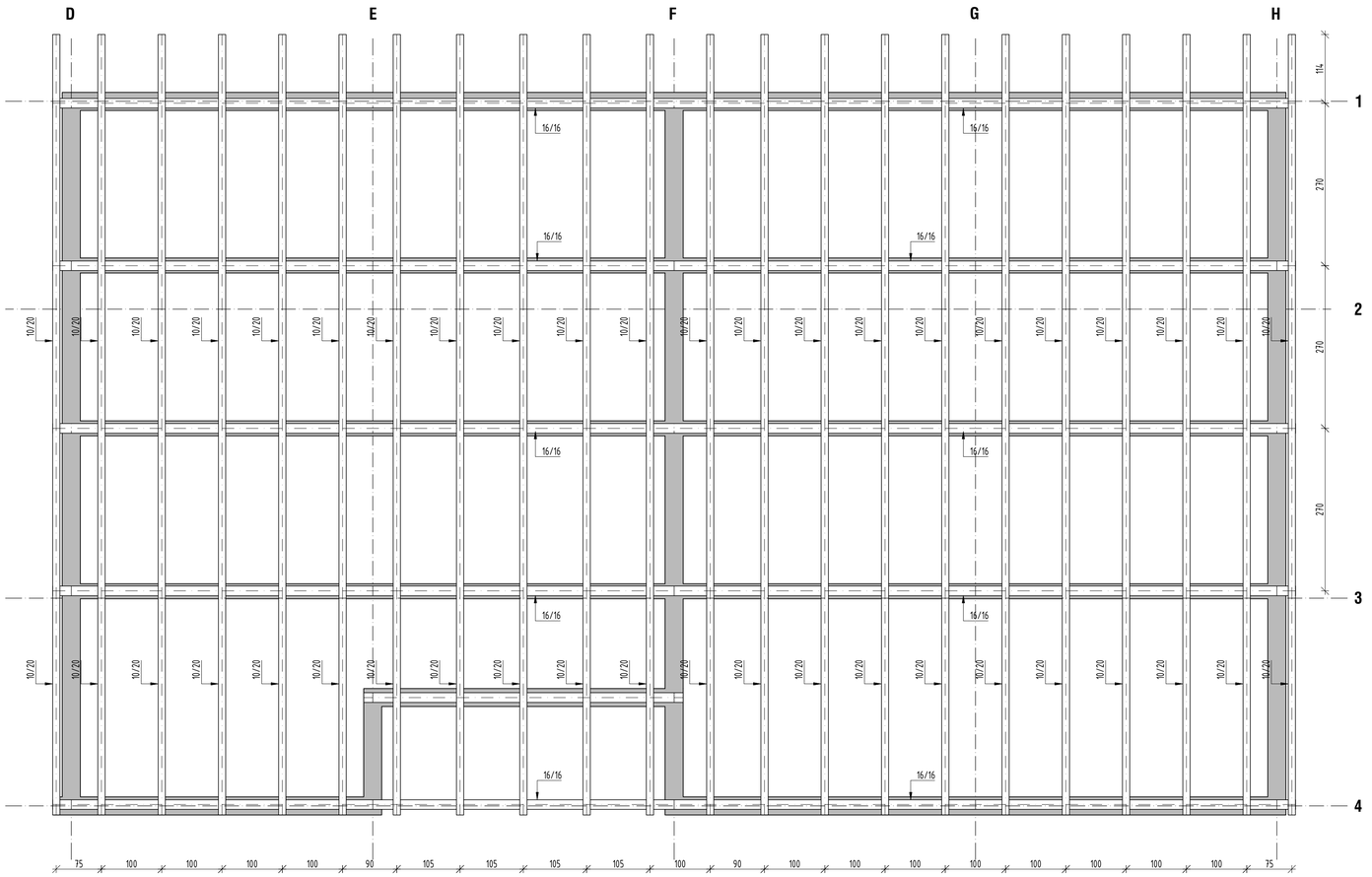
Mreže - izvleček

Oznaka mreže	B [cm]	L [cm]	n	Teža enote [kg/m2]	Skupna bruto teža nerazrezane mreže [kg]	Skupaj neto teža vgrajenih mrež [kg]
Q-335	215	600	43	5.38	2984.29	2551.11
Q-424	215	600	97	6.81	8517.60	6354.58
Q-524	215	600	145	8.41	15730.90	12781.44
Skupaj					27232.79	21687.12

DETAJLI SPOJEV







UPORABLJENI MATERIALI:

LES IGLAVCEV C24

OPOMBE:

-Vse projektantske mere preveriti z načrti arhitekture.

datum:	sprememba:
projektant:	INŽENIRING BIRO ARMATURA
	INŽENIRING BIRO ARMATURA, UROŠ ŽVAN s.p., ZIKOVSKA C. 70, MARIBOR www.armatura-uz.si info@armatura-uz.si +386 (0)41 425 241
št. projekta:	06/2021
investitor:	PGD PLANINA PRI SEVNICI PLANINA PRI SEVNICI 70, 3225 PLANINA PRI SEVNICI
objekt:	VEČNAMENSKI OBJEKT
vrsta projekta:	PZI
vodja projekta:	V. ŽOGAN, univ. dipl. ing. grad. IZS G-3879
pooblaščen inženir:	U. ŽVAN, univ. dipl. ing. grad. IZS G-0028
sodelavec:	
načrt, št.načrta:	GRADBENE KONSTRUKCIJE 62/21-K
risba, merilo:	RISBA LESENEGA OSTREŠJA 1:50
datum, št. lista:	MAREC 2022 11

PRILOGA

GEOTEHNIČNO POROČILO

GEOEKSPERT
PODJETJE ZA UPORABNO GEOTEHNIKO
Igor Resanovič dipl.inž.geotehnike s.p.
Ob Koprivnici 57, Celje tel/faks 03 4922040/1
gsm 041 644 636
d.š. 30041635

naš znak: 02/22
datum: 27.01.2022

Zadeva: Izvedba temeljenja gasilskega doma Planina na d Sevnico

1. SMERNICE IN POGOJI ZA IZVEDBO

Glede na zatečeno konfiguracijo terena lahko sklepamo, da je območje predvidenega objekta v svojem naravnem stanju stabilno. Pri izdelavi projektne dokumentacije in pri izvedbi objekta je potrebno upoštevati:

- Glede na sestavo temeljnih tal in predvidene obtežbe se objekt sme temeljiti plitvo na betonski plošči ali pasovnem ali točkastim temeljem, s čimer se lahko v veliki meri kompenzira nehomogenost v sestavi tal.
- Temelji novogradnje naj se armirajo in v celotnem tlorisu izvedejo v homogenih in stabilnih tleh, ker gre za zelo heterogeno sestavo hitro menjajočih se plati, ki se lahko od točke do toče zelo spominja, smo izvedli izračun za najmanj ugodne karakteristike. Nosilnost temeljnih tal na globini 0,80 m (peščeni melj) doseže vrednost okoli 100kPa, Rd/A' = 140 kPA (pd =100 kPa).

- Globlje začasne izkope (> 1,50 m) je potrebno varovati ali izvesti v odprtem izkopu v nagibu 1:1 jih izvajati kampadno in to v sušnem obdobju! Izkope je prepovedano pustiti nezavarovane in nepodprte več dni.

- Upošteva naj se vertikalna dopustna nosilnost temeljnih tal Pd = 100 kPa ter koeficient modula reakcije temeljnih tal 10.000 kN/m3 . Za dimenzioniranje dostopnih cest in parkirišč naj projektant uporabi CBR 4% kot trenutno vrednost nosilnosti planuma tal spodnjega ustroja.

- Kletni oziroma vkopani objekti naj se dimenzionirajo na zemeljske pritiske, pri čemer se naj upoštevajo naslednje geofizikalne karakteristike. katere potrebno ustrezno korigirati za varnostni koeficient:

  γ = 19,5 kN/m3 , φ = 28,5°, c = 0,0 kN/m2

- Glede na sestavo temeljnih tal in predvidene obtežbe ocenjujemo izvršitev minimalnih posedkov že v času gradnje (v rangu do 15 mm), le ti glede na geologijo terena in ustrezno pripravo temeljnih tal upoštevajoč zgornje navedbe, zmerne obtežbe ter izbrano tehnologijo temeljenja, ne bodo diferenčni (oz. v dopustnih mejah) in tako mejno stanje uporabnosti in stabilnosti ne bosta presežena.

- S točkastimi ponikovalnicami prereza 1,2 m (perforirane betonske cevi) m in globine 2,5 – 3,0 m. Za vertikalno prepustnost privzamemo vrednost ca. 1×10-5 m/sec. Glede na količino padavinskih voda in predvideno predhodno zajetje le-teh preko zadrževalnika, zadostujeta 2 ponikovalnici.

  Stalni vkopi pri izvedbi ceste ali objekta se morajo izvesti v nagibu 1:2, ali je nujno izdelati projekte

Lep pozdrav

Igor RESANOVIČ univ.dipl.inž.rud.

IGOR RESANOVIĆ
univ. dipl. inž. rud. in geotehnol.
IZS RG0[illegible]1