PRILOGA 1C

NASLOVNA STRAN NAČRTA

NAČRT GRADBENIŠTVA

PODATKI O GRADNJI		
naziv gradnje		**Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci**
kratek opis gradnje		Novogradnja objekta iz armiranegabetona in opečnih zidakov. Objekt je temeljen na pasovnih temeljih, medetažne plošče so klasične armiranobetonske. Izdelane so vertikalne potresne vezi.
VRSTE GRADNJE	☐	**NOVOGRADNJA - NOVOZGRAJEN OBJEKT**
označiti vse ustrezne vrste gradnje	☑	**NOVOGRADNJA - PRIZIDAVA**
	☐	**REKONSTRUKCIJA**
	☐	**SPREMEMBA NAMEMBNOSTI**
	☐	**ODSTRANITEV CELOTNEGA OBJEKTA**
	☐	**LEGALIZACIJA**
	☐	**MANJŠA REKONSTRUKCIJA**
PODATKI O PROJEKTNI DOKUMENTACIJI		
vrsta dokumentacije		**PZI (projektna dokumentacija za izvedbo gradnje)**
številka projekta		**206/2024**
PODATKI O NAČRTU		
strokovno področje načrta		
naziv načrta		**Načrt gradbeništva**
številka načrta		**95/24**
datum izdelave		**6.12.2024**
datum spremembe		
PODATKI O PROJEKTANTU NAČRTA		
projektant načrta (naziv družbe)		**STATIK D.O.O.**
naslov		**PREŠERNOVA 2, 5280 IDRIJA**
odgovorna oseba projektanta načrta		**Matevž Govekar, u.d.i.g.**
podpis odgovorne osebe projektanta načrta		STATIK d.o.o. Projektiranje in svetovanje Prešernova ul. 2, 5280 Idrija
PODATKI O IZDELOVALCU NAČRTA		
ime in priimek pooblaščenega arhitekta, pooblaščenega inženirja		**Matevž Govekar, u.d.i.g.**
identifikacijska številka		**IZS G - 3743**
podpis pooblaščenega arhitekta, pooblaščenega inženirja		MATEVŽ GOVEKAR univ.dipl.inž.grad. IZS G-3743

PRILOGA 2C

IZJAVA PROJEKTANTA NAČRTA IN POOBLAŠČENEGA STOKOVNJAKA, KI JE IZDELAL NAČRT V PZI IN PID

PROJEKTANT NAČRTA	
projektant načrta (naziv družbe)	**STATIK D.O.O.**
naslov	**Prešernova 2, 5280 Idrija**
odgovorna oseba projektanta načrta	**Matevž Govekar, u.d.i.g.**

IN POOBLAŠČENI STROKOVNJAK, KI JE IZDELAL NAČRT	
pooblaščeni strokovnjak	**Matevž Govekar, u.d.i.g.**

IZJAVLJAVA:

da načrt

vrsta dokumentacije	
strokovno področje načrta	**Načrt gradbeništva**
naziv načrta	**PZI (projektna dokumentacija za izvedbo gradnje)**
številka načrta	**95/24**
datum izdelave	**6.12.2024**

upošteva relevantne predpise in druge normativne dokumente ter da so upoštevane ustrezne bistvene in druge zahteve.

pooblaščeni strokovnjak	**Matevž Govekar, u.d.i.g.**
identifikacijska številka	**IZS G - 3743**
podpis pooblaščenega strokovnjaka	MATEVŽ GOVEKAR univ.dipl.inž.grad. IZS G-3743
odgovorna oseba projektanta načrta	**Matevž Govekar, u.d.i.g.**
podpis odgovorne osebe projektanta načrta	STATIK d.o.o. Projektiranje in svetovanje Prešernova ul. 2, 5280 Idrija

STATIK d.o.o

OBJEKT	:	Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci
NAROČNIK	:	Občina Križevci – Križevci pri Ljutomeru 11 9252 Križevci pri Ljutomeru
PROJEKTANTSKO PODJETJE	:	STATIK d.o.o., podjetje za projektiranje in svetovanje Prešernova 2, 5280 Idrija
NAČRT	:	**T E H N I Č N O P O R O Č I L O** **S T A T I Č N I R A Č U N**

številka projekta	številka načrta
206/2024	95/24

ODGOVORNI PROJEKTANT : MATEVŽ GOVEKAR, univ. dipl. inž. grad.

IZS * G - 3743 *

PROJEKTANT : MATEVŽ GOVEKAR, univ. dipl. inž. grad.

KRAJ in DATUM: Idrija, december 2024

STATIK d.o.o

V S E B I N A

1.0. TEHNIČNO POROČILO

2.0. A.B. PLOŠČE in ZIDANA KONSTRUKCIJA, TEMELJI

3.0. POTRESNA ANALIZA

STATIK d.o.o

T E H N I Č N O P O R O Č I L O

Rekonstrukcija in prizidava telovadnice je samostojen, dvo-nadstropni objekt:

- Telovadnica (P + N)

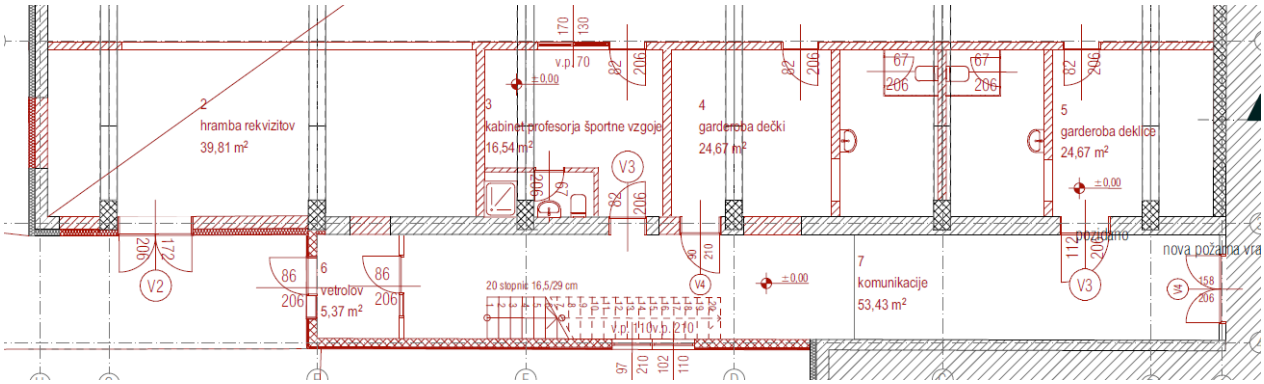
Rekonstrukcija in prizidava telovadnice je sestavljena iz:

- novogradnje prizidave nove telovadnice
- rekonstrukcije obstoječe telovadnice

Rekonstrukcija obstoječe telovadnice

V obstoječi telovadnici se izvede rekonstrukcija. Odstranijo se notranje stene in notranja medetažna plošča ter zunanje stopnišče.

Vse rušitve se izvedejo z rezanjem betona z diamantno žago.



Slika rušitev v obstoječem objektu

Pri izvedbi novih odprtin v nadstropju v obstoječi steni v osi 3, se med obstoječe armiranobetonske stebre vgradijo nosilci HEA 200.

Pred izvedbo rušitev je potrebno odstraniti vse zaključne sloje in pregledati obstoječo konstrukcijo ter se v primeru neskladnosti z načrti uskladiti z projektanti.

Ob začetku del in postopnih rušitvah se bo izvedelo, ali bo potrebno rušiti tudi notranjo zidano steno in temelje pod njo.

Novogradnja nove telovadnice

Strešna konstrukcija

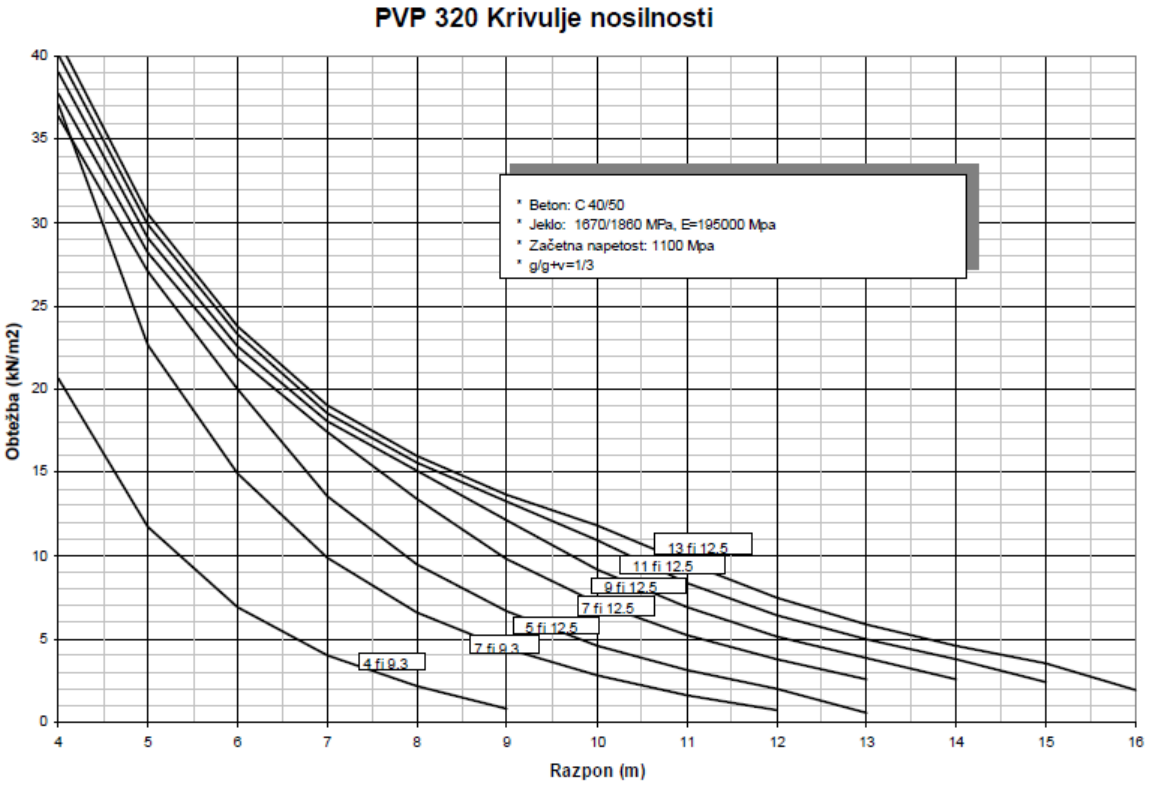
Je razdeljena na dva dela in sicer:

- desni del med osjo J in M je klasična armiranobetonska plošča, debeline d = 20cm (strešna plošča),

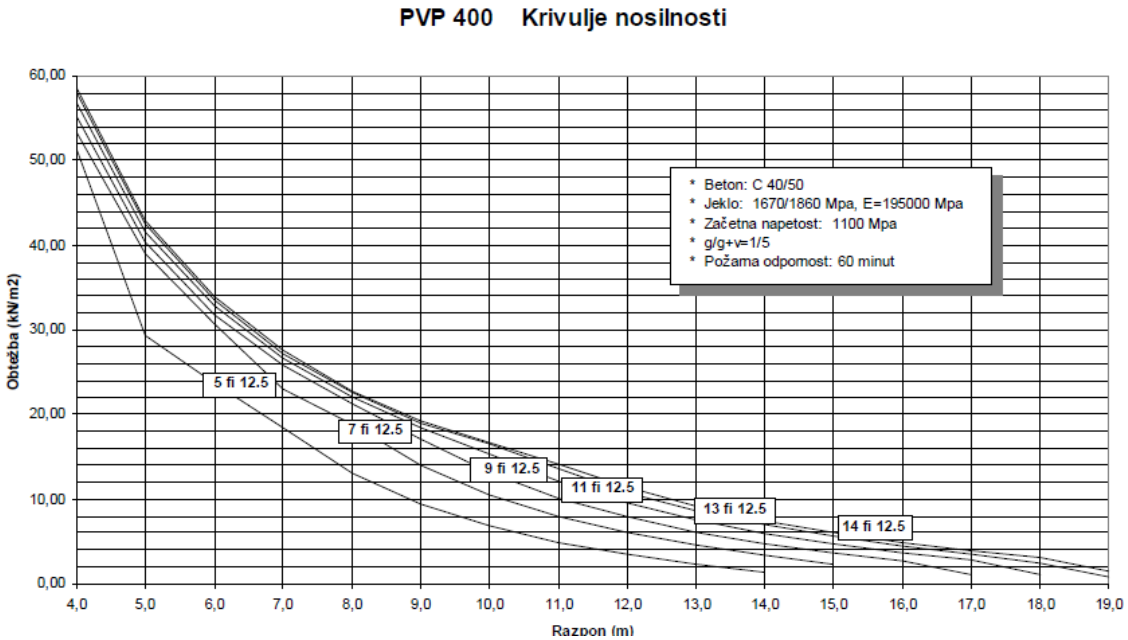
- levi del med osjo K in J je montažna prednapeta votla plošča (PVP plošča), debeline d = 32 ali 40cm (strešna PVP plošča).

Monolitna plošča je narejena iz betona kvalitete C25/30 in armirana z rebrasto armaturo S500 ter mrežno armaturo kvalitete MAG S500.

Prednapeta votla plošča je narejena iz betona kvalitete po izbiri ponudnika in armirana skladno s statičnim računom ponudnika.



Graf nosilnosti PVP plošča, debeline 32cm



Graf nosilnosti PVP plošča, debeline 40cm

V armaturnih načrtih je upoštevana debelina 40cm. V kolikor ponudnik izbere manjšo ploščo, je potrebno za razliko v debelini zvišati koto konzole na stenah.

Nad PVP ploščami se ne izvede tlačna plošča. PVP plošče se samo monolitizirajo.

Medetažna konstrukcija

Desni del med osjo J in M je klasična armiranobetonska plošča, debeline d = 20cm (plošča nad pritličjem).

Levi del med osjo K in J je dvovišinski prostor brez medetažne plošče.

Vse plošče so narejene iz betona kvalitete C25/30 in armirane z rebrasto armaturo S500 ter mrežno armaturo kvalitete MAG S500.

STATIK d.o.o

Nosilna konstrukcija objekta

Nosilna konstrukcija pritličja in nadstropja so zidane in armiranobetonske stene:

- zunanje stene pritličja in nadstropja so armiranobetonske, debeline d = 20cm
- notranje stene pritličja in nadstropja so zidane iz zidakov, debeline d = 25 cm,

Zidani zidovi so narejeni iz opečnega zidaka v podaljšani cementni malti.

Zidane stene so po višini vsake etaže konstrukcije ojačane z vertikalnimi potresnimi a.b. vezmi dimenzij b/h = 25/25cm (opečni vogalnik) narejene iz betona kvalitete C25/30, armirane z rebrasto armaturo kvalitete S 500
(4 x Φ14 in stremeni Φ8/20 cm).

V višini a.b. plošče etaže so stene ojačane z horizontalno vezjo, ki je vključena v a.b. ploščo. Vez je narejena iz betona kvalitete C25/30, armiranimi z rebrasto armaturo kvalitete S 500 (4 x Φ12 in stremeni Φ8/20 cm).

Temelji

Nosilna konstrukcija objekta je temeljena na armiranobetonskih pasovnih temeljih, višine h = 80cm in različnih širin (POZ T).

Nad pasovnimi temelji se izvede armiranobetonska talna plošča, debeline d = 20cm (POZ Tpl).

Pasovni temelji in talna plošča so narejeni iz betona kvalitete C25/30 in armirani z rebrasto armaturo kvalitete S 500 ter mrežno armaturo kvalitete MAG S500.

Temeljna tla se dobro skomprimirajo (nasutje debeline d = 30 - 40cm,
Evd = 40MPa) ter utrdijo s podbetoniranjem z pustim betonom, kvalitete C10, višine 10cm.

Pasovni temelji so dimenzionirani na dopustno obremenitev temeljnih tal:
S_{tla} = 150 kN/m^2 (MSN).

Objekt mora biti temeljen v raščen teren.

Po odkopu gradbene jame je potrebno preveriti dejansko nosilnost temeljnih tal in po potrebi prilagoditi dimenzije temeljev.

Obvezen geomehanski nadzor pri izkopu gradbene jame.

STATIK d.o.o

Predpis

Načrt gradbenih konstrukcij je izdelan v skladu s Pravilnikom o mehanski odpornosti in stabilnosti objektov.

Račun konstrukcije je izveden na podlagi pravil evrokodov, veljavnih predpisov in zahtevanih standardov, ki veljajo na območju Republike Slovenije.

Obtežbe konstrukcij:

- lastna teža

- stalna obtežba	g	=	1,80 kN/m^2 (strešna plošča os J - M)
		=	2,00 kN/m^2 (plošča nad pritličjem os J - M)
		=	3,00 kN/m^2 (strešna plošča os K - J)
- koristna obtežba	q	=	3,00 kN/m^2 (plošča nad pritličjem)
- sneg	s	=	1,40 kN/m^2 (A = 185m, Cona A2)
- veter	w	=	0,50 kN/m^2 (Cona 1, 20m/s)
- potres			a_g = 010g, teren kategorije D

Za izračun nosilne konstrukcije je bil uporabljen program:

- Dlubal RFEM - A.B. konstrukcija, temelji
- Dlubal RFEM - Potresna analiza

2.0. POZ T, Tpl, 100, 200 - A.B. PLOŠČE

2.1. Zasnova

plošča (POZ Tpl)	d	=	20 cm
plošča (POZ 101)	d	=	20 cm
plošča (POZ 201)	d	=	20 cm
plošča (POZ 202)	d	=	40 cm

2.2. Obtežba

POZ 202 (strešna plošča med osjo K - J)

stalna obtežba

Fotovoltaika (opcija)		=	0,60 kN/m^2
Nasutje (5cm)		=	0,80 kN/m^2
TI (30cm)		=	0,25 kN/m^2
Omet (2cm)		=	0,15 kN/m^2
Oprema (opcija)		=	0,15 kN/m^2
	g	=	3,00 kN/m^2
sneg	s	=	1,10 kN/m^2

POZ 201 (strešna plošča med osjo J - M)

stalna obtežba

Fotovoltaika (opcija)		=	0,60 kN/m^2
Nasutje (5cm)		=	0,80 kN/m^2
TI (30cm)		=	0,25 kN/m^2
Omet (2cm)		=	0,15 kN/m^2
	g	=	1,80 kN/m^2
sneg	s	=	1,10 kN/m^2

POZ 101 (plošča nad pritličjem)

stalna obtežba

Zaključni sloj		=	0,30 kN/m^2
estrih (6cm)		=	1,45 kN/m^2
TI (10cm)		=	0,10 kN/m^2
omet (2cm)		=	0,15 kN/m^2
	g	=	2,00 kN/m^2
koristna obtežba	q	=	3,00 kN/m^2

2.3. Obremenitev in dimenzioniranje

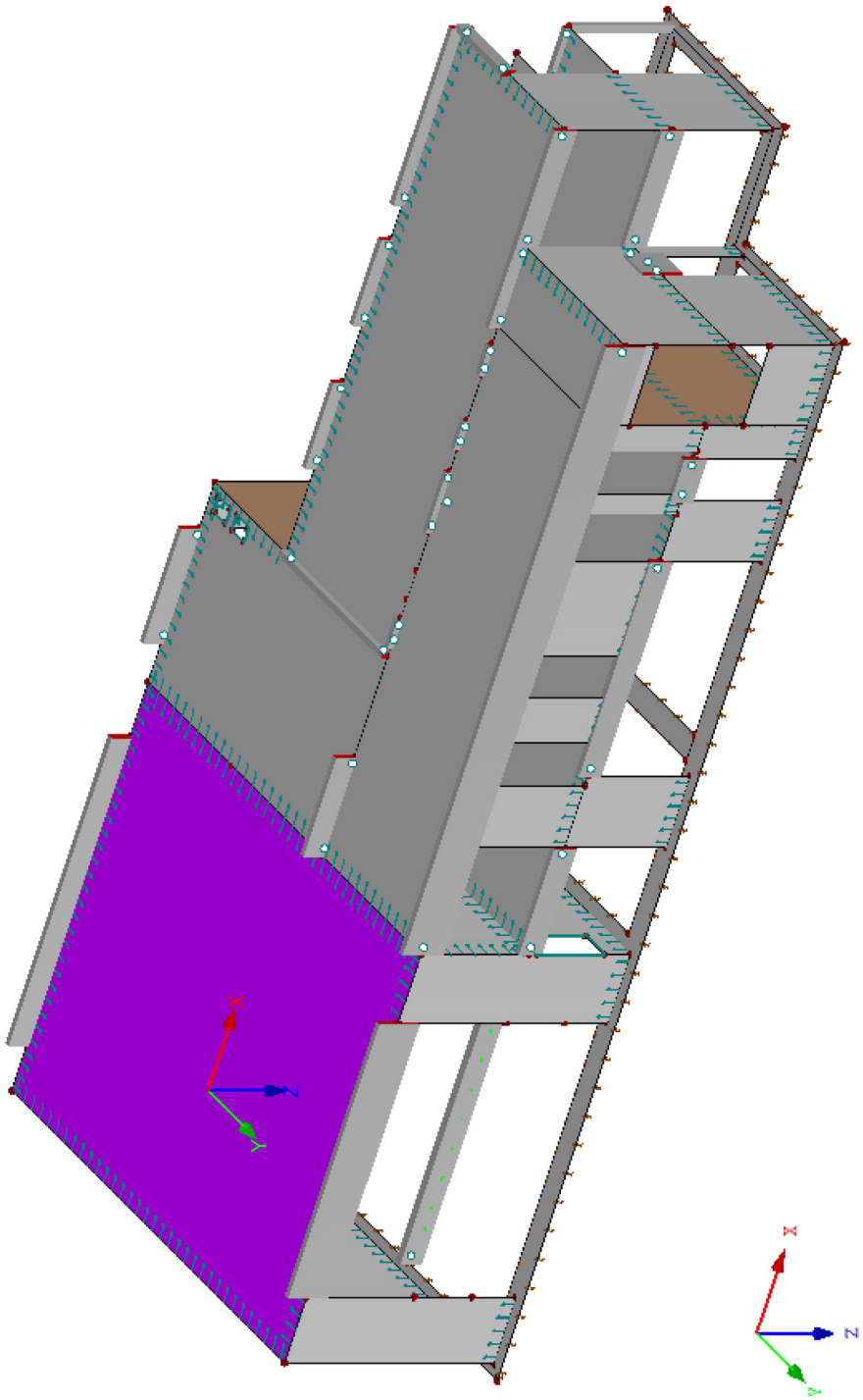
Obremenitve in dimenzionirane AB konstrukcije ter izračun armature so narejene s programom Dlubal » RFEM «

CONTENTS

Graphic	Konstrukcija - pogled , Isometric	2
Graphic	Konstrukcija - pogled 2, Isometric	3
1	**Model**	
1.3	Materials	4
1.6	Openings	4
1.9	Surface Supports	4
1.13	Cross-Sections	4
1.14	Member Hinges	4
1.19	Member Elastic Foundations	5
2	**Load Cases and Combinations**	
2.1	Load Cases	5
2.1.1	Load Cases - Calculation Parameters	5
2.5	Load Combinations	5
2.5.2	Load Combinations - Calculation Parameters	5
3	**Loads**	
	LC2 - stalna obtezba - 3.4 Surface Loads	7
Graphic	LC2 - LC2: stalna obtezba, Isometric	7
	LC3 - koristna obtezba - 3.4 Surface Loads	8
Graphic	LC3 - LC3: koristna obtezba, Isometric	8
	LC4 - sneg - 3.4 Surface Loads	9
Graphic	LC4 - LC4: sneg, Isometric	9
4	**Results - Load Cases, Load Combinations**	
Graphic	Napetosti v temeljnih tleh, CO4: obtezba 4, In Z-direction	10
Graphic	Plosca nad pritlicjem - moment m-x, CO3: obtezba 3, In Z-direction	11
Graphic	Plosca nad pritlicjem - moment m-y, CO3: obtezba 3, In Z-direction	12
Graphic	Nosilci plosce nad pritlicjem - precna sila V, CO3: obtezba 3, Isometric	13
Graphic	Nosilci plosce nad pritlicjem - upogibni moment M, CO3: obtezba 3, Isometric	13
Graphic	Stresna plosca - moment m-x, CO3: obtezba 3, In Z-direction	14
Graphic	Stresna plosca - moment m-y, CO3: obtezba 3, In Z-direction	14
Graphic	Nosilci stresne plosce - precna sila V, CO4: obtezba 4, Isometric	15
Graphic	Nosilci stresne plosce - upogibni moment M, CO4: obtezba 4, Isometric	16
	RF-CONCRETE Surfaces	
	CA1 - Reinforced concrete design	
1.1	General Data	17
1.2	Materials	17
1.2.1	Material Parameters	17
1.3	Surfaces	18
1.4	Reinforcement Group No. 1 - plošèe	18
1.4	Reinforcement Group No. 2 - stene	19
2.2	Required Reinforcement by Surface	21
Graphic	RF-CONCRETE Surfaces CA1 - Plosca nad pritlicjem - armatura spodaj, smer 1, In Z-direction	24
Graphic	RF-CONCRETE Surfaces CA1 - Plosca nad pritlicjem - armatura spodaj, smer 1, In Z-direction	25
Graphic	RF-CONCRETE Surfaces CA1 - Plosca nad pritlicjem - armatura zgoraj, smer 1, In Z-direction	26
Graphic	RF-CONCRETE Surfaces CA1 - Plosca nad pritlicjem - armatura zgoraj, smer 2, In Z-direction	27
Graphic	RF-CONCRETE Surfaces CA1 - Stresna plosca - armatura spodaj, smer 1, In Z-direction	28
Graphic	RF-CONCRETE Surfaces CA1 - Stresna plosca - armatura spodaj, smer 2, In Z-direction	29
Graphic	RF-CONCRETE Surfaces CA1 - Stresna plosca - armatura zgoraj, smer 1, In Z-direction	30
Graphic	RF-CONCRETE Surfaces CA1 - Stresna plosca - armatura zgoraj, smer 2, In Z-direction	31
	RF-CONCRETE Members	
	CA1 - Design of concrete members	
1.1	General Data	32
1.1	Settings - Nonlinear Calculation (State II)	32
1.2	Materials	32
1.2.1	Material Parameters	32
1.3	Cross-Sections	33
1.6	Reinforcement Group No. 1 - nosilci	33
2.3	Required Reinforcement by Member	33
Graphic	RF-CONCRETE Members CA1 - Nosilci plosce nad pritlicjem - armatura spodaj, Isometric	37
Graphic	RF-CONCRETE Members CA1 - Nosilci plosce nad pritlicjem - armatura zgoraj, Isometric	37
Graphic	RF-CONCRETE Members CA1 - Nosilci stresne plosce - armatura spodaj, Isometric	38
Graphic	RF-CONCRETE Members CA1 - Nosilci stresne plosce - armatura zgoraj, Isometric	39

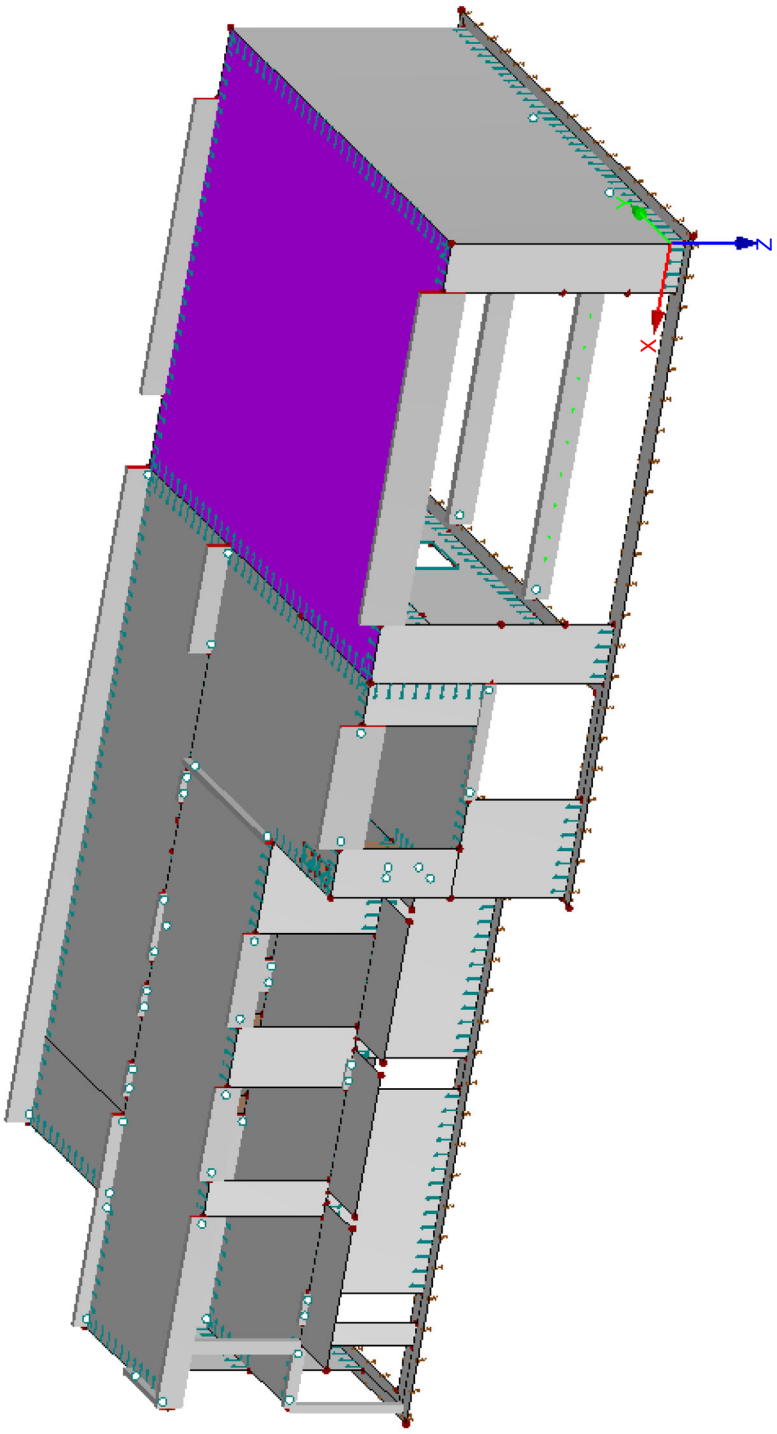
KONSTRUKCIJA - POGLED

Isometric



KONSTRUKCIJA - POGLED 2

Isometric



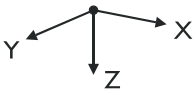
1.3 MATERIALS

Matl. No.	Modulus E [kN/cm²]	Modulus G [kN/cm²]	Poisson's Ratio ν [-]	Spec. Weight γ [kN/m³]	Coeff. of Th. Ex α [1/°C]	Partial Factor γM [-]	Material Model
1	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic
2	Opeèni zid						
	365.00	165.91	0.100	13.73	6.00E-06	1.00	Isotropic Linear Elastic
	User-Defined Material						
3	Poplar and Softwood Timber C24 | EN 338:2016-04						
	1100.00	69.00	6.971	4.20	5.00E-06	1.30	Isotropic Linear Elastic
4	Glulam Timber GL24h | EN 14080:2013-08						
	1150.00	65.00	7.846	4.20	5.00E-06	1.25	Isotropic Linear Elastic
5	Steel S 235 | EN 10025-2:2004-11						
	21000.00	8076.92	0.300	78.50	1.20E-05	1.00	Isotropic Linear Elastic
6	Concrete C30/37 | EN 1992-1-1:2004/A1:2014						
	3300.00	1375.00	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic
7	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic

1.6 OPENINGS

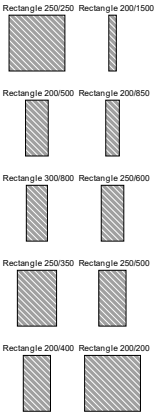
Opening No.	Boundary Lines No.	In Surface No.	Area A [m²]	Comment
1	336,338,239,337	20	2.750	
2	341,339,342,340	19	4.500	
3	187,55,346,38	59	0.350	
4	353,355,356,354	59	0.350	

1.9 SURFACE SUPPORTS



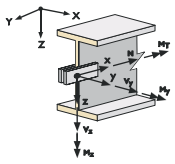
Found. No.	On Surfaces No.	Spring Constants RF-SOILIN	Translation Support or Spring [kN/m³] u_x	u_y	u_z	Shear Spring [kN/m] v_{xz}	v_{yz}
1	69-75	-	5000.000	5000.000	3000.000	1000.000	1000.000

1.13 CROSS-SECTIONS



Section No.	Matl. No.	J [cm⁴] A [cm²]	I_y [cm⁴] A_y [cm²]	I_z [cm⁴] A_z [cm²]	Principal Axes α [°]	Rotation α' [°]	Overall Dimensions [mm] Width b	Height h
1	Rectangle 250/250							
	1	54947.92	32552.08	32552.08	0.00	0.00	250.0	250.0
		625.00	520.83	520.83				
2	Rectangle 200/1500							
	1	366400.88	5625000.50	100000.00	0.00	0.00	200.0	1500.0
		3000.00	2500.00	2500.00				
3	Rectangle 200/500							
	1	99804.33	208333.33	33333.33	0.00	0.00	200.0	500.0
		1000.00	833.33	833.33				
4	Rectangle 200/850							
	7	193075.17	1023541.69	56666.67	0.00	0.00	200.0	850.0
		1700.00	1416.67	1416.67				
6	Rectangle 300/800							
	1	550177.63	1280000.00	180000.00	0.00	0.00	300.0	800.0
		2400.00	2000.00	2000.00				
7	Rectangle 250/600							
	1	230672.83	450000.03	78125.00	0.00	0.00	250.0	600.0
		1500.00	1250.00	1250.00				
8	Rectangle 250/350							
	1	102022.92	89322.91	45572.92	0.00	0.00	250.0	350.0
		875.00	729.17	729.17				
11	Rectangle 250/500							
	1	178808.59	260416.67	65104.17	0.00	0.00	250.0	500.0
		1250.00	1041.67	1041.67				
12	Rectangle 200/400							
	1	73240.00	106666.67	26666.67	0.00	0.00	200.0	400.0
		800.00	666.67	666.67				
13	Rectangle 200/200							
	1	22506.67	13333.33	13333.33	0.00	0.00	200.0	200.0
		400.00	333.33	333.33				

1.14 MEMBER HINGES



Release No.	Reference System	Axial/Shear Release or Spring[kN/m] u_x	u_y	u_z	Moment Release or Spring[kNm/rad] φ_x	φ_y	φ_z	Comment
1	Local x,y,z	☐	☐	☐	☐	☒	☐	
2	Local x,y,z	☐	☐	☐	☐	☒	☒	
3	Local x,y,z	☐	☐	☐	☐	☒	☐	



1.19 MEMBER ELASTIC FOUNDATIONS

Found. No.	Member No.	$C_{1,x}$ [kN/m²]	$C_{1,y}$ [kN/m²]	$C_{1,z}$ [kN/m²]	$C_{2,x}$ [kN]	$C_{2,y}$ [kN]	$C_{2,z}$ [kN]	C_{φ} [kNm/rad/m]
1	68,69	1000.000	1000.000	5000.000	1000.000	1000.000	5000.000	0.000

2.1 LOAD CASES

Load Case	Load Case Description	EN 1990 | SIST Action Category	Self-Weight - Factor in Direction Active	X	Y	Z
LC1	lastna teža	Permanent	☒	0.000	0.000	1.000
LC2	stalna obtezba	Permanent/Imposed	☐			
LC3	koristna obtezba	Imposed - Category A: domestic, residential areas	☐			
LC4	sneg	Snow (H ≤ 1000 m a.s.l.)	☐			

2.1.1 LOAD CASES - CALCULATION PARAMETERS

Load Case	Load Case Description	Calculation Parameters	
LC1	lastna teža	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC2	stalna obtezba	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC3	koristna obtezba	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC4	sneg	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)

2.5 LOAD COMBINATIONS

Load Combin.	DS	Load Combination Description	No.	Factor	Load Case
CO1		obtezba 1	1	1.35	LC1 lastna teža
			2	1.35	LC2 stalna obtezba
			3	1.50	LC3 koristna obtezba
CO2		obtezba 2	1	1.35	LC1 lastna teža
			2	1.35	LC2 stalna obtezba
			3	1.50	LC4 sneg
CO3		obtezba 3	1	1.35	LC1 lastna teža
			2	1.35	LC2 stalna obtezba
			3	1.50	LC3 koristna obtezba
			4	0.75	LC4 sneg
CO4		obtezba 4	1	1.35	LC1 lastna teža
			2	1.35	LC2 stalna obtezba
			3	1.05	LC3 koristna obtezba
			4	1.50	LC4 sneg

2.5.2 LOAD COMBINATIONS - CALCULATION PARAMETERS

Load Combin.	Description	Calculation Parameters	
CO1	obtezba 1	Method of analysis	: ⊙ Second order analysis (P-Delta)
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
CO2	obtezba 2	Method of analysis	: ⊙ Second order analysis (P-Delta)
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
CO3	obtezba 3	Method of analysis	: ⊙ Second order analysis (P-Delta)

2.5.2 LOAD COMBINATIONS - CALCULATION PARAMETERS

Load Combin.	Description	Calculation Parameters	
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
CO4	obtezba 4	Method of analysis	: ⊙ Second order analysis (P-Delta)
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)

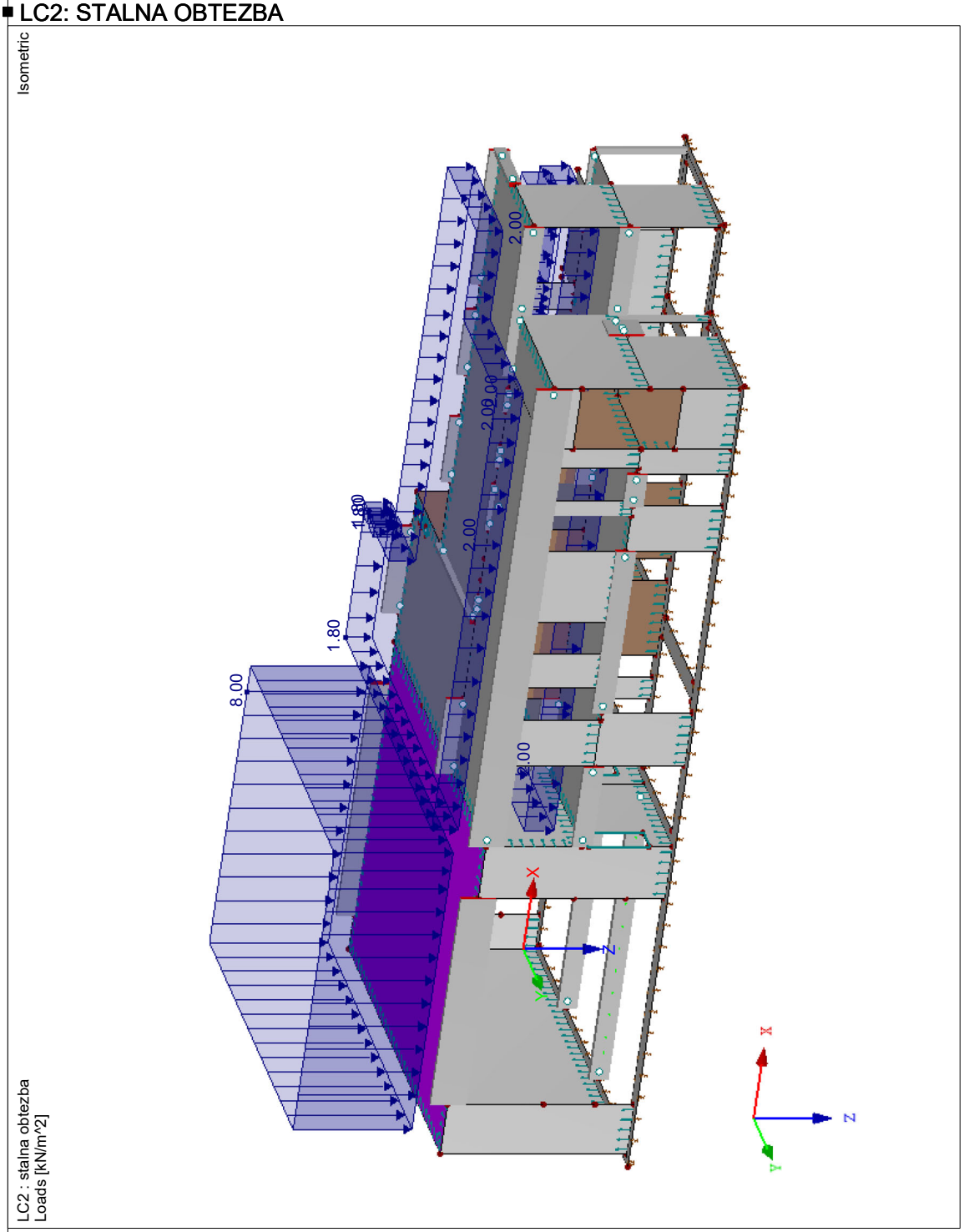
LC2
stalna obtezba

3.4 SURFACE LOADS

LC2: stalna obtezba

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
2	58,61-64	Force	Uniform	ZL	p	2.00	kN/m²
3	60	Force	Uniform	ZL	p	8.00	kN/m²
4	59	Force	Uniform	ZL	p	1.80	kN/m²

LC2: STALNA OBTEZBA



LC3
koristna obtezba

3.4 SURFACE LOADS

LC3: koristna obtezba

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	58,61-64	Force	Uniform	ZL	p	3.00	kN/m²

LC3: KORISTNA OBTEZBA



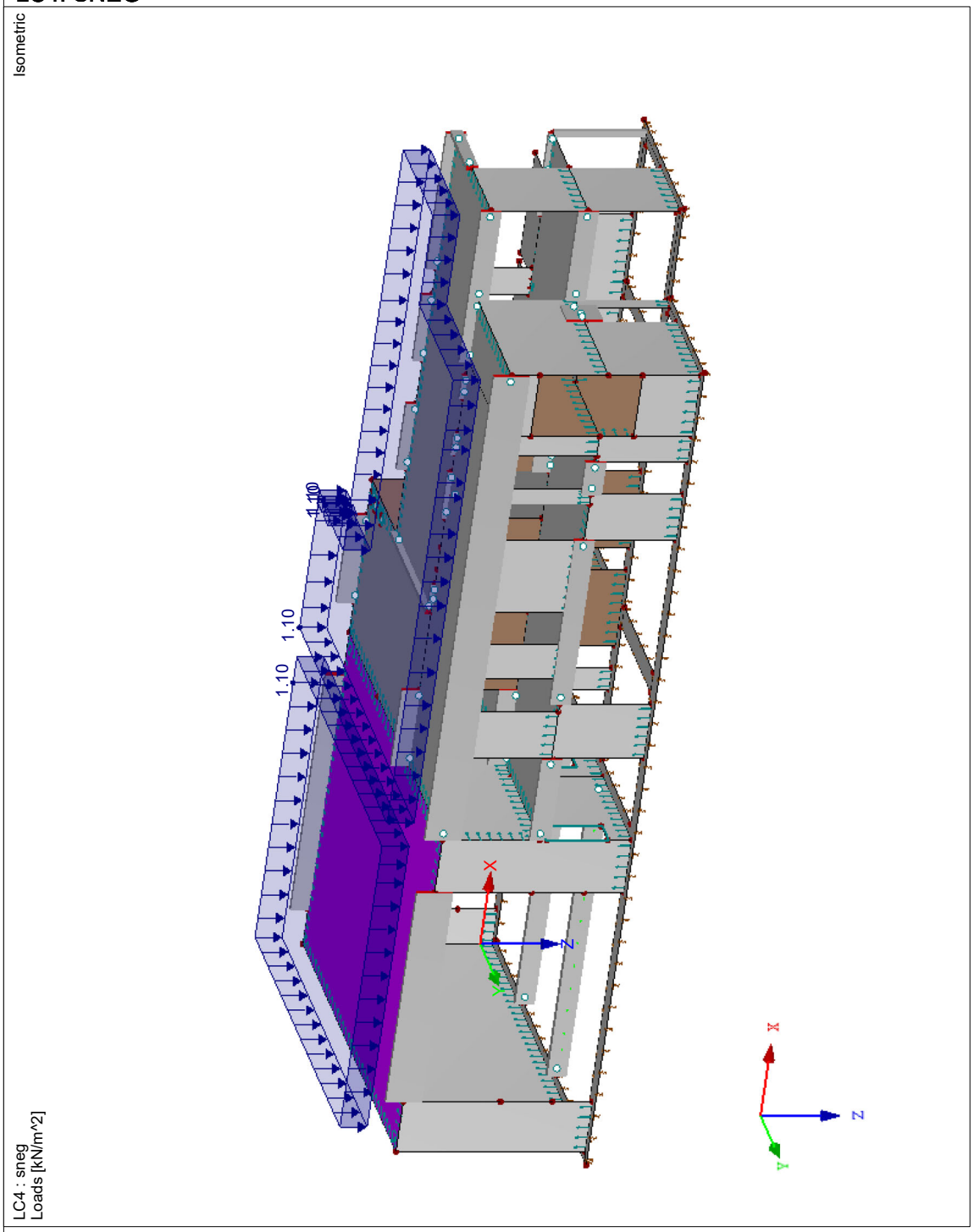
LC4
sneg

3.4 SURFACE LOADS

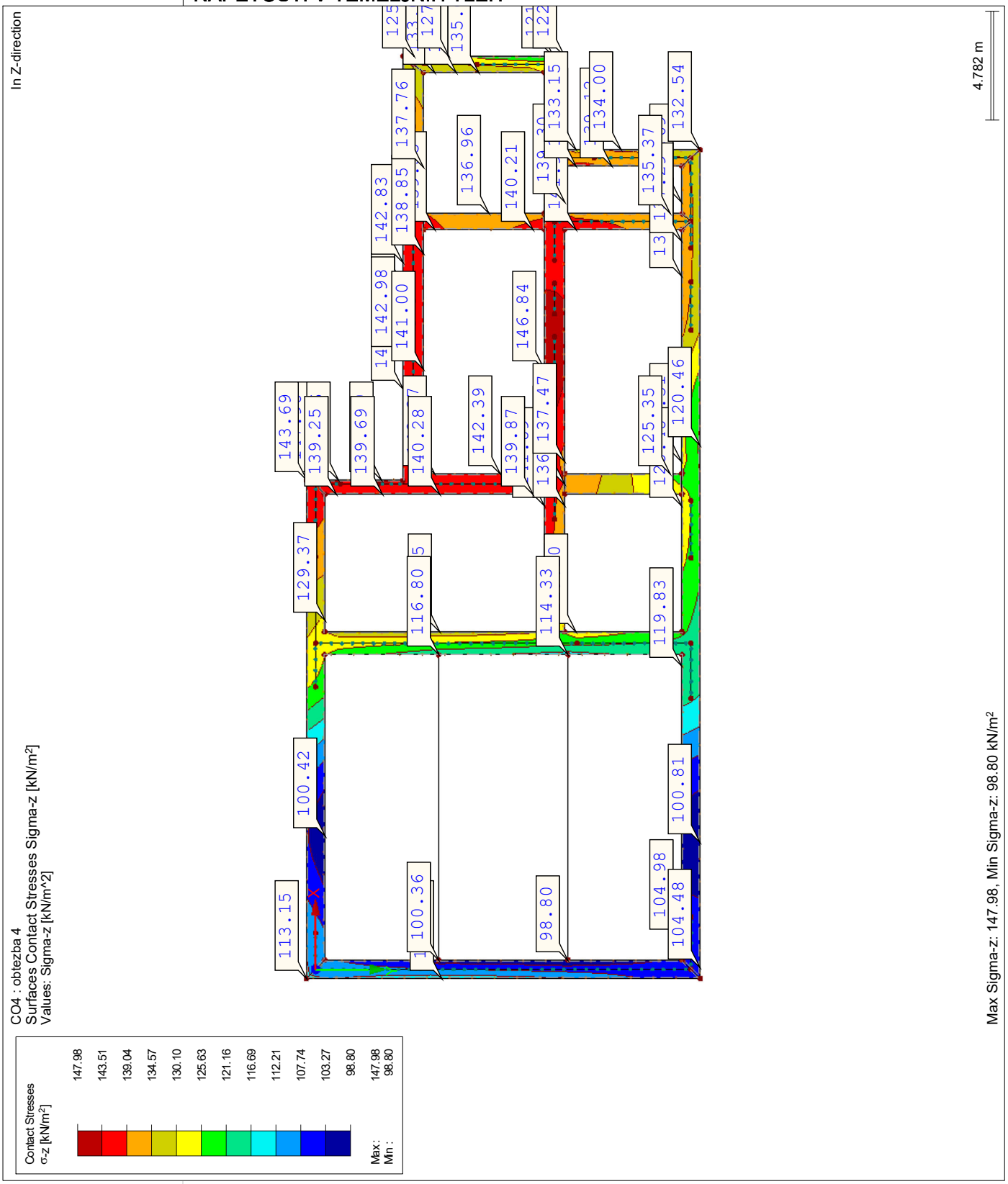
LC4: sneg

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	59,60	Force	Uniform	ZL	p	1.10	kN/m²

LC4: SNEG



NAPETOSTI V TEMELJNIH TLEH



PLOSCA NAD PRITLICJEM - MOMENT M-X



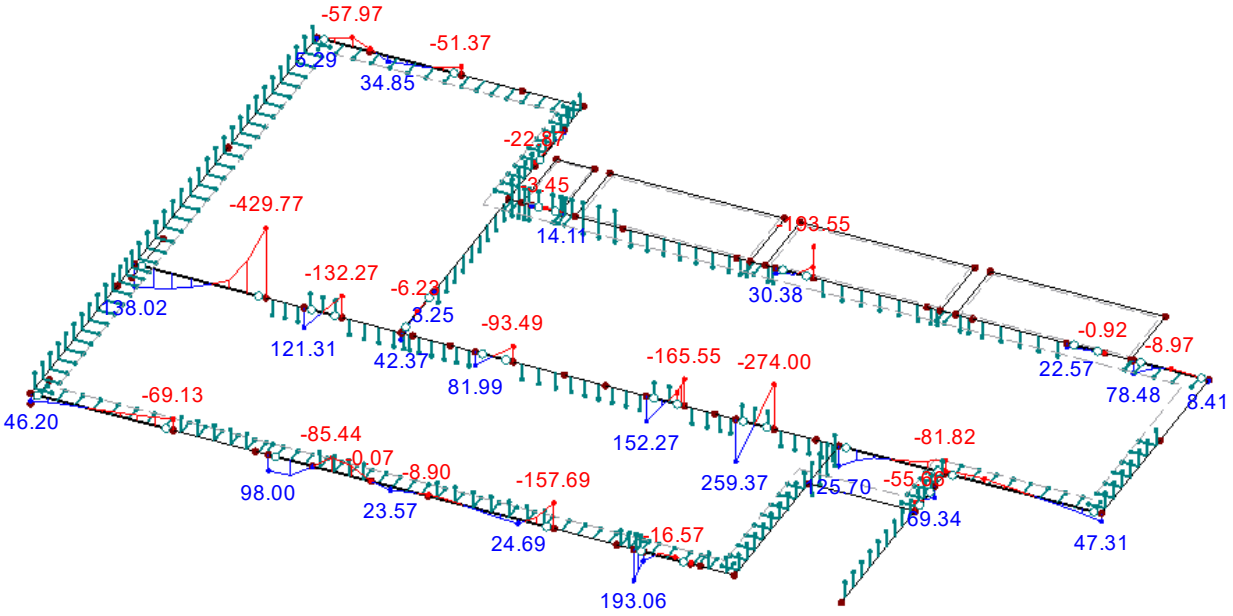
PLOSCA NAD PRITLICJEM - MOMENT M-Y



NOSILCI PLOSCE NAD PRITLICJEM - PRECNA SILA V

CO3 : obtezba 3
Members Internal Forces V-z

Isometric

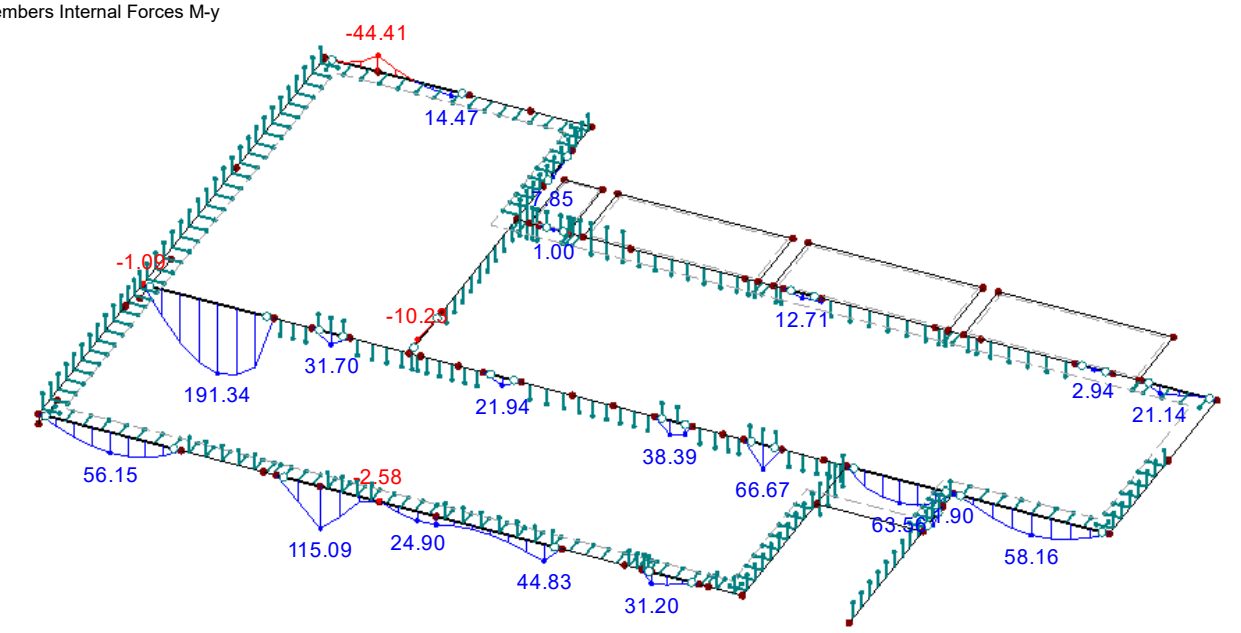


Members Max V-z: 259.37, Min V-z: -429.77 [kN]

NOSILCI PLOSCE NAD PRITLICJEM - UPOGIBNI MOMENT M

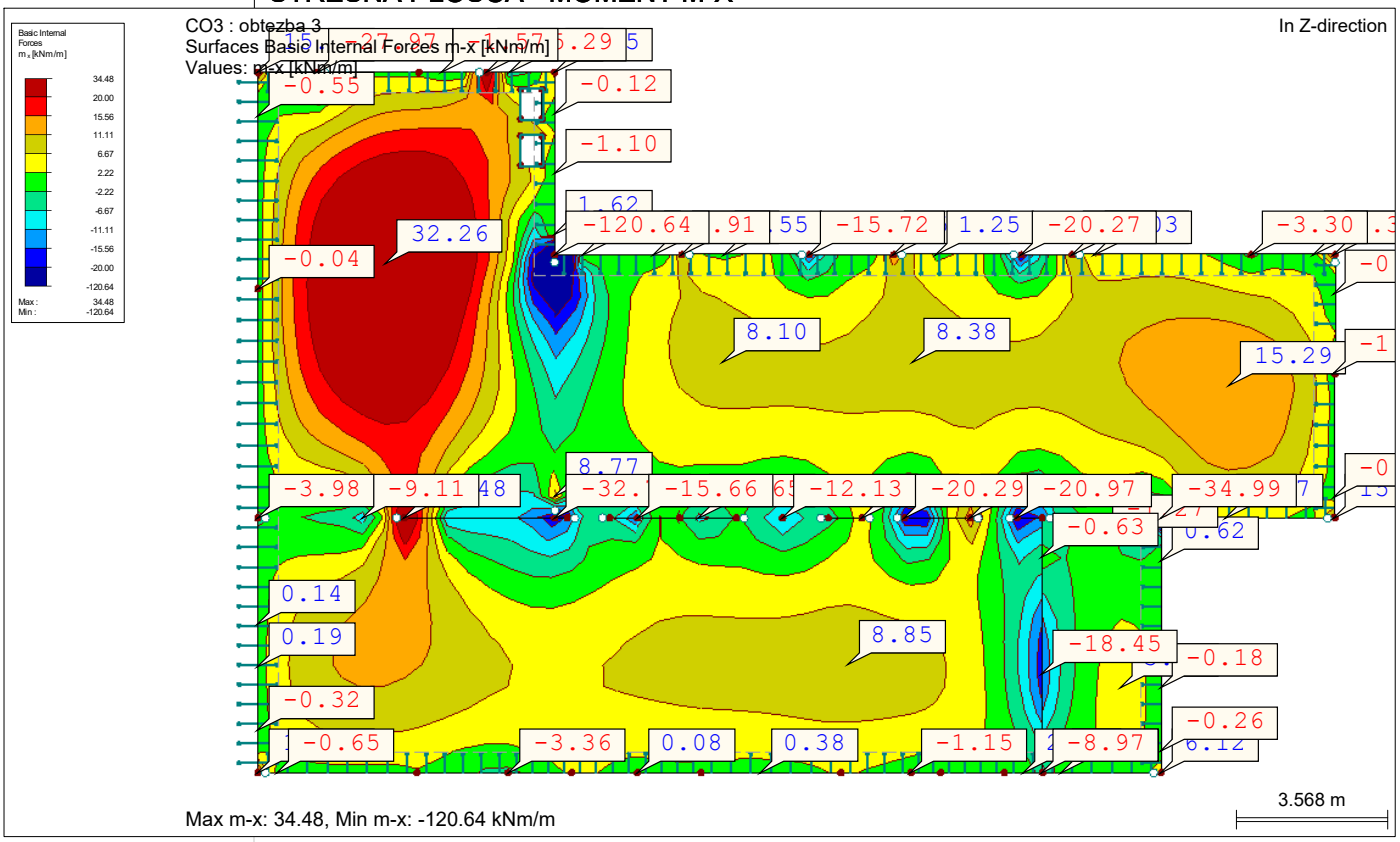
CO3 : obtezba 3
Members Internal Forces M-y

Isometric



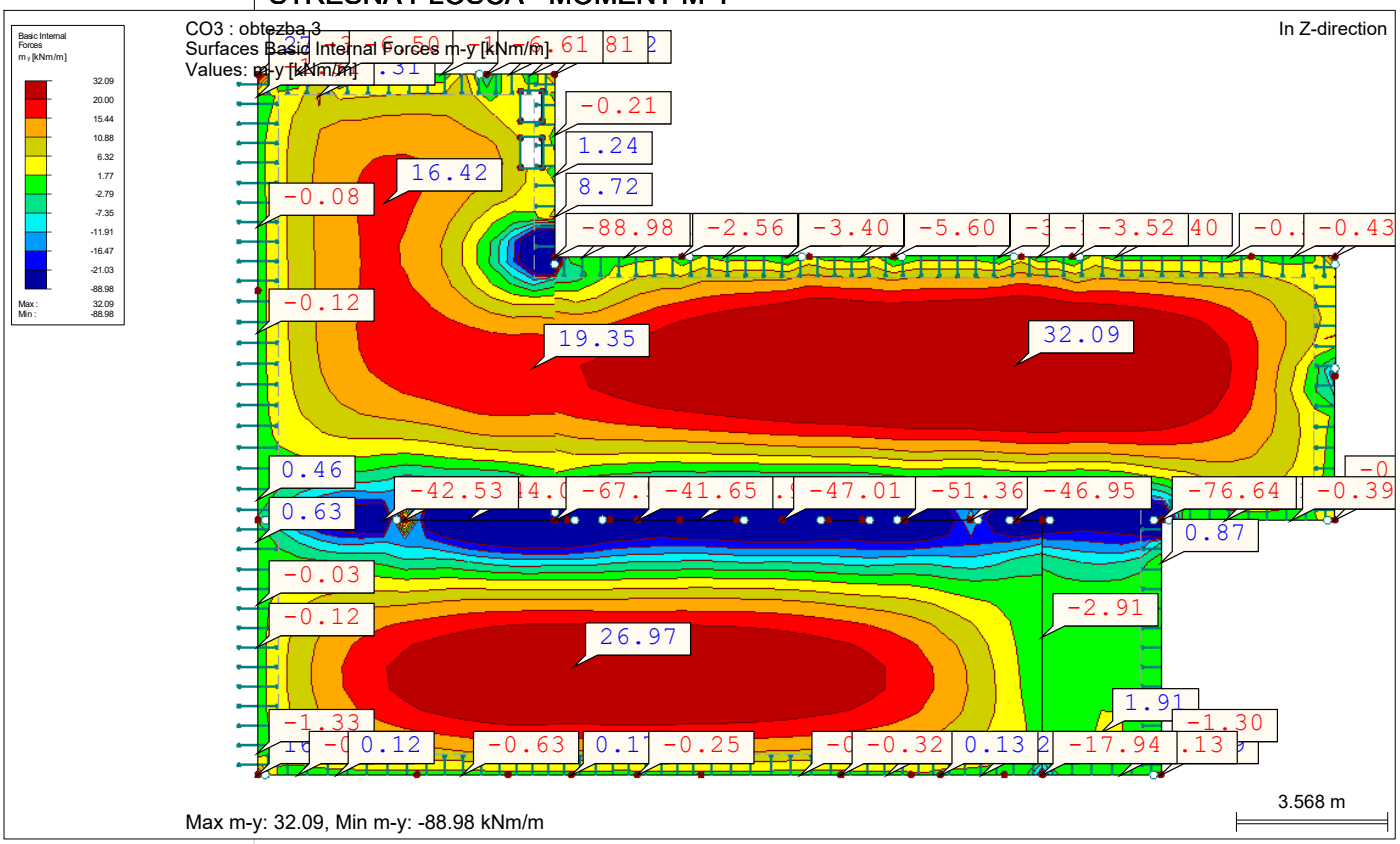
Members Max M-y: 191.34, Min M-y: -44.41 [kNm]

STRESNA PLOSCA - MOMENT M-X



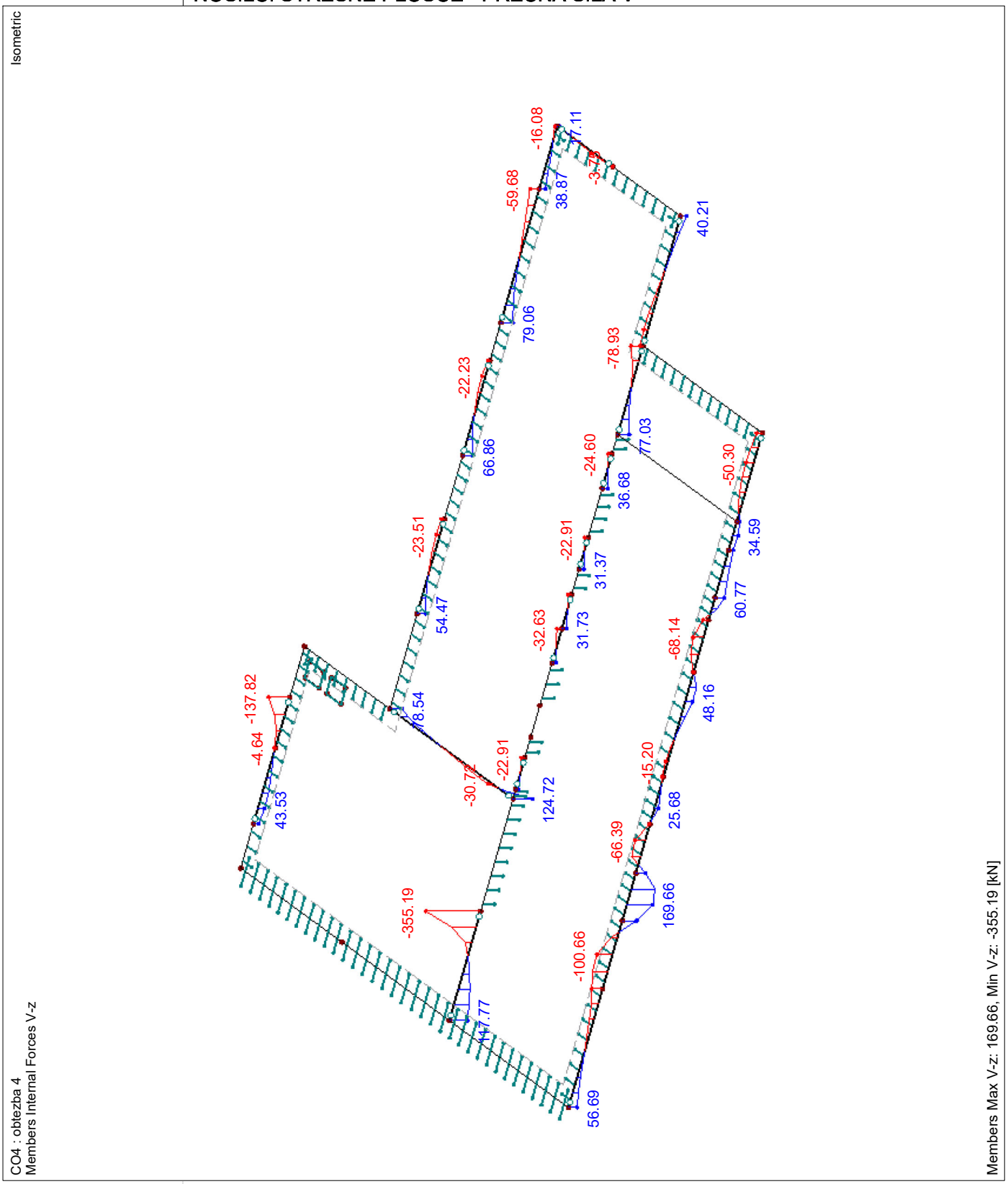
Max m-x: 34.48, Min m-x: -120.64 kNm/m

STRESNA PLOSCA - MOMENT M-Y

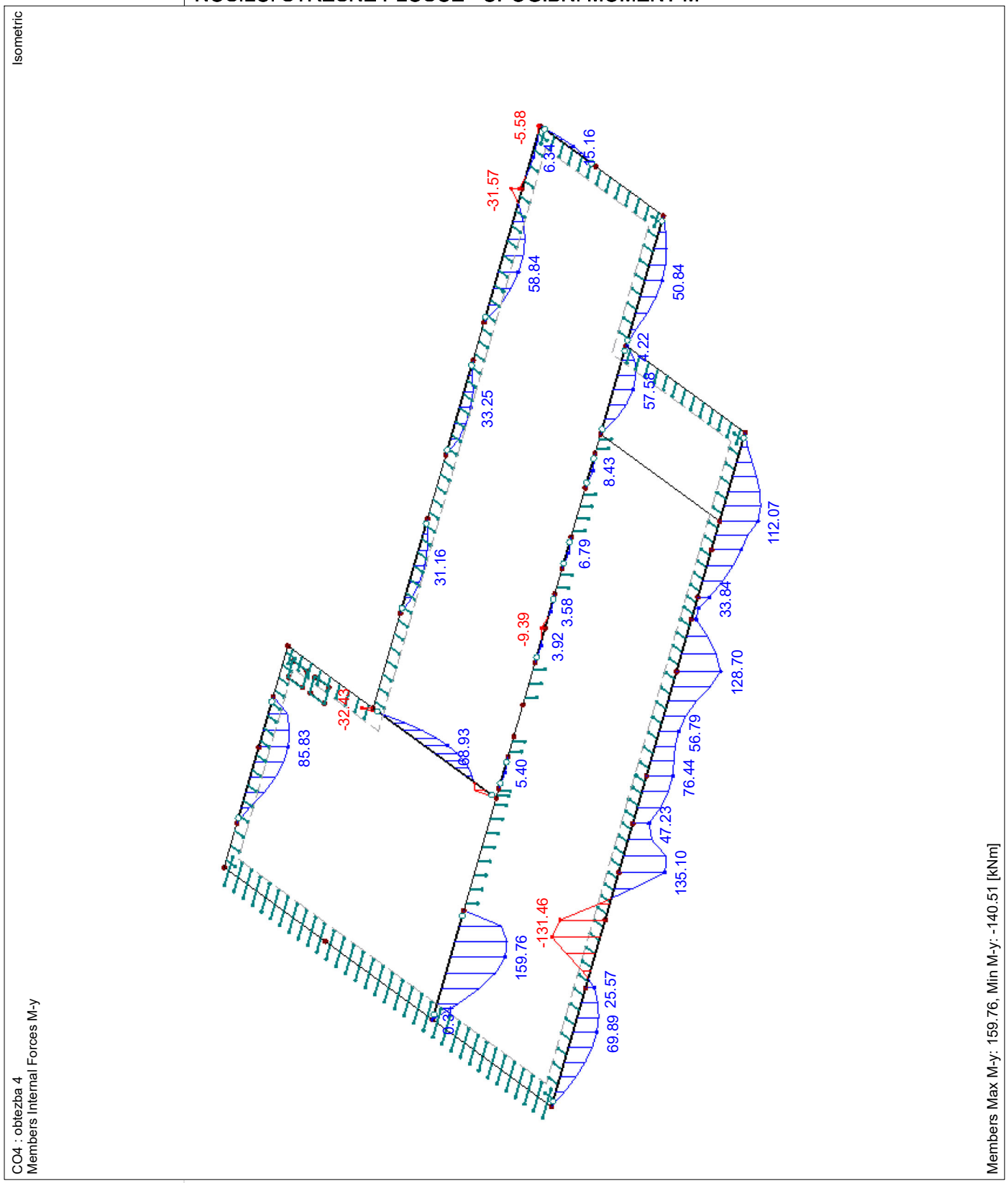


Max m-y: 32.09, Min m-y: -88.98 kNm/m

NOSILCI STRESNE PLOSCE - PRECNA SILA V



NOSILCI STRESNE PLOSCE - UPOGIBNI MOMENT M



STATIK d.o.o
RF-CONCRETE Surfaces
CA1
Reinforced concrete design

1.1 GENERAL DATA

Design according to Standard:	SIST EN 1992-1-1:2005/A101:2006	
ULTIMATE LIMIT STATE		
Load combinations for design:	CO1	obtezba 1
		Persistent and Transient
	CO2	obtezba 2
		Persistent and Transient
	CO3	obtezba 3
		Persistent and Transient
	CO4	obtezba 4
		Persistent and Transient
Definition of Provided Additional Reinforcement	Automatic arrangement according to the specifications in Table 1.4	
DETAILS		
Analysis Method for Reinforcement Envelope	Mixed	
Apply the internal forces without the rib components	☐	
Design Situation Settings for Serviceability Limit State Checks		
Load combination:		
Characteristic with direct load	Checks: k_1*f_{ck}, k_3*f_{yk}	
Characteristic with imposed deformation	Checks: k_1*f_{ck}, k_4*f_{yk}	
Frequent	Checks: w_k	
Quasi-permanent	Checks: k_2*f_{ck}, w_k, u_l	

1.2 MATERIALS

Material No.	Material Description: Concrete Strength Class	Material Description: Steel Description	Comment
1	Concrete C25/30	B 500 S (A)	
2	Opeèni zid	B 500 S (A)	
7	Concrete C25/30	B 500 S (A)	

1.2.1 MATERIAL PARAMETERS

Material No.	Description	Name	Size	Unit
1	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.80	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	31000.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.60	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{c1u}	-3.500	‰
	Shear Modulus	G	12916.70	N/mm^2
	Poisson's Ratio	ν	0.200	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2.000	-
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
2	**Concrete Strength Class: Opeèni zid**			
	Characteristic Cylinder Compressive Strength	f_{ck}	0.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	0.00	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	0.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	0.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	0.00	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	0.000	‰
	Ultimate Strain at Failure	ε_{c1u}	0.000	‰
	Shear Modulus	G	0.00	N/mm^2
	Poisson's Ratio	ν	0.000	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	0.000	‰
	Ultimate Strain at Failure	ε_{cu2}	0.000	‰
	Parabola Exponent	n	0.000	-
	Specific Weight	γ	0.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
7	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.80	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	31000.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.60	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰

1.2.1 MATERIAL PARAMETERS

Material No.	Description	Name	Size	Unit
	Ultimate Strain at Failure	ε_{c1u}	-3.500	‰
	Shear Modulus	G	12916.70	N/mm^2
	Poisson's Ratio	ν	0.200	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2.000	-
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰

1.3 SURFACES

Surface No.	Matl. No.	Thickness Type	Thickness [mm]	Notes	Comment
6	1	Constant	200.00		
11	1	Constant	200.00		
12	1	Constant	200.00		
13	1	Constant	200.00		
14	1	Constant	200.00		
15	1	Constant	200.00		
16	1	Constant	200.00		
17	1	Constant	200.00		
18	1	Constant	200.00		
19	1	Constant	200.00		
20	1	Constant	200.00		
21	1	Constant	200.00		
26	1	Constant	250.00		
28	1	Constant	200.00		
29	1	Constant	200.00		
31	1	Constant	200.00		
32	1	Constant	200.00		
33	1	Constant	200.00		
35	1	Constant	200.00		
37	1	Constant	200.00		
38	1	Constant	200.00		
39	7	Constant	200.00		
40	7	Constant	200.00		
42	1	Constant	200.00		
43	1	Constant	200.00		
44	1	Constant	200.00		
46	1	Constant	200.00		
47	1	Constant	200.00		
49	1	Constant	200.00		
56	1	Constant	200.00		
58	1	Constant	200.00		
59	1	Constant	200.00		
61	1	Constant	200.00		
62	1	Constant	200.00		
63	1	Constant	200.00		
64	1	Constant	200.00		
67	1	Constant	200.00		
68	1	Constant	200.00		
69	1	Constant	800.00		
70	1	Constant	800.00		
71	1	Constant	800.00		
72	1	Constant	800.00		
73	1	Constant	800.00		
74	1	Constant	800.00		
75	1	Constant	800.00		
78	1	Constant	200.00		
79	1	Constant	200.00		
86	1	Constant	200.00		
87	1	Constant	200.00		

1.4 REINFORCEMENT GROUP NO. 1 - PLOŠČE

Applied to surfaces:	58,59,61-64,69-75
REINFORCEMENT RATIO	
Minimum secondary reinforcement	20.0 %
Basic minimum reinforcement	0.0 %
Minimum compression reinforcement	0.0 %
Minimum tension reinforcement	0.0 %
Maximum reinforcement percentage	4.0 %
Minimum shear reinforcement percentage	0.0 %
Concrete cover acc. to Standard	☐
BASIC REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,-z (top): 0.00, As-2,-z (top): 0.00 cm^2/m
BASIC REINFORCEMENT LAYOUT - BOTTOM (+z)	

1.4 REINFORCEMENT GROUP NO. 1 - PLOŠČE

Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,+z (bottom): 0.00, As-2,+z (bottom): 0.00 cm ^{2}/m
ADDITIONAL REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
ADDITIONAL REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
LONGITUDINAL REINFORCEMENT FOR SHEAR FORCE DESIGN	
Apply the greater value resulting from either the required or provided reinforcement (basic and add. reinforcement) per reinforcement direction	
OPTIONS FOR SIST EN 1992-1-1:2005/A101:2006	
Minimum longitudinal reinforcement for plates acc. to 9.3.1	☒
Direction of minimum reinforcement	
Reinforcement direction with the main tensile force from top (-z) and bottom (+z) surfaces together:	☒
Minimum longitudinal reinforcement for walls acc. to 9.6	☐
Minimum shear reinforcement	☒
Neutral axis depth limitation	☒
Variable strut inclination - min	21.801 °
Variable concrete strut inclination - max	45.000 °
Partial safety factor γ_s	PT 1.15, AC 1.00, SLS 1.00
Partial safety factor γ_c	PT 1.50, AC 1.20, SLS 1.00
Consideration of long-term effects Alpha-cc	PT 1.00, AC 1.00, SLS 1.00
Consideration of long-term effects Alpha-ct	SLS 1.00

1.4 REINFORCEMENT GROUP NO. 2 - STENE

Applied to surfaces:	6,11-21,26,28,29,31-33,35,37-40,42-44,46,47,49, 56,67,68,78,79,86,87
REINFORCEMENT RATIO	
Minimum secondary reinforcement	20.0 %
Basic minimum reinforcement	0.0 %
Minimum compression reinforcement	0.0 %
Minimum tension reinforcement	0.0 %
Maximum reinforcement percentage	4.0 %
Minimum shear reinforcement percentage	0.0 %
Concrete cover acc. to Standard	☐
BASIC REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,-z (top): 0.00, As-2,-z (top): 0.00 cm ^{2}/m
BASIC REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,+z (bottom): 0.00, As-2,+z (bottom): 0.00 cm ^{2}/m
ADDITIONAL REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
ADDITIONAL REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
LONGITUDINAL REINFORCEMENT FOR SHEAR FORCE DESIGN	
Apply the greater value resulting from either the required or provided reinforcement (basic and add. reinforcement) per reinforcement direction	
OPTIONS FOR SIST EN 1992-1-1:2005/A101:2006	
Minimum longitudinal reinforcement for plates acc. to 9.3.1	☐
Minimum longitudinal reinforcement for walls acc. to 9.6	☒
Minimum shear reinforcement	☒
Neutral axis depth limitation	☒
Variable strut inclination - min	21.801 °
Variable concrete strut inclination - max	45.000 °
Partial safety factor γ_s	PT 1.15, AC 1.00, SLS 1.00

1.4 REINFORCEMENT GROUP NO. 2 - STENE

Partial safety factor γ_c	PT 1.50, AC 1.20, SLS 1.00
Consideration of long-term effects Alpha-cc	PT 1.00, AC 1.00, SLS 1.00
Consideration of long-term effects Alpha-ct	SLS 1.00

■ 2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
6	M6	39.700	7.100	-1.400	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M6	39.700	7.100	-1.400	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M6	39.700	7.100	-1.400	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M6	39.700	7.100	-1.400	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M6	39.700	7.100	-1.400	a_{sw}	0.00	-	-	-	cm²/m²	
11	M74	22.720	4.300	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M191	27.650	4.300	-3.300	$a_{s,2,-z\ (top)}$	6.06	0.00	6.06	6.06	cm²/m	
	M74	22.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	11.52	0.00	11.52	11.52	cm²/m	
	M74	22.720	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	20.15	0.00	20.15	20.15	cm²/m	
	M74	22.720	4.300	-3.300	a_{sw}	10.85	-	-	-	cm²/m²	
12	M8363	35.970	4.300	-3.300	$a_{s,1,-z\ (top)}$	6.27	0.00	6.27	6.27	cm²/m	
	M187	32.650	4.300	-3.300	$a_{s,2,-z\ (top)}$	7.88	0.00	7.88	7.88	cm²/m	
	M8363	35.970	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	6.00	0.00	6.00	6.00	cm²/m	
	M8363	35.970	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	7.53	0.00	7.53	7.53	cm²/m	
	M187	32.650	4.300	-3.300	a_{sw}	8.40	-	-	-	cm²/m²	
13	M28	35.600	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,2,-z\ (top)}$	3.39	0.00	3.39	3.39	cm²/m	
	M28	35.600	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M28	35.600	16.500	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M28	35.600	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
14	M34	35.600	10.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M34	35.600	10.500	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M34	35.600	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M34	35.600	10.500	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M34	35.600	10.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
15	M88	20.550	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M88	20.550	16.500	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M88	20.550	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M88	20.550	16.500	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M88	20.550	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
16	M84	30.150	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M748	28.600	16.500	-3.300	$a_{s,2,-z\ (top)}$	3.52	0.00	3.52	3.52	cm²/m	
	M84	30.150	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M748	28.600	16.500	-3.300	$a_{s,2,+z\ (bottom)}$	3.26	0.00	3.26	3.26	cm²/m	
	M84	30.150	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
17	M30	32.800	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M799	31.650	16.500	-1.875	$a_{s,2,-z\ (top)}$	8.06	0.00	8.06	8.06	cm²/m	
	M30	32.800	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M799	31.650	16.500	-1.875	$a_{s,2,+z\ (bottom)}$	8.13	0.00	8.13	8.13	cm²/m	
	M30	32.800	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
18	M22	14.300	0.000	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M838	14.300	0.000	0.025	$a_{s,2,-z\ (top)}$	4.00	0.00	4.00	4.00	cm²/m	
	M8021	14.300	0.000	0.500	$a_{s,1,+z\ (bottom)}$	4.24	0.00	4.24	4.24	cm²/m	
	M8021	14.300	0.000	0.500	$a_{s,2,+z\ (bottom)}$	8.79	0.00	8.79	8.79	cm²/m	
	M8021	14.300	0.000	0.500	a_{sw}	8.00	-	-	-	cm²/m²	
19	M24	14.300	5.100	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M24	14.300	5.100	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M24	14.300	5.100	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M24	14.300	5.100	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M24	14.300	5.100	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
20	M1039	14.300	15.950	-3.000	$a_{s,1,-z\ (top)}$	3.56	0.00	3.56	3.56	cm²/m	
	M237	14.300	16.500	-0.500	$a_{s,2,-z\ (top)}$	3.53	0.00	3.53	3.53	cm²/m	
	M26	14.300	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M7997	14.300	16.500	0.500	$a_{s,2,+z\ (bottom)}$	3.01	0.00	3.01	3.01	cm²/m	
	M26	14.300	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
21	M38	21.300	0.000	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M38	21.300	0.000	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M38	21.300	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M38	21.300	0.000	-3.300	$a_{s,2,+z\ (bottom)}$	2.97	0.00	2.97	2.97	cm²/m	
	M38	21.300	0.000	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
26	M8241	17.750	10.500	-3.300	$a_{s,1,-z\ (top)}$	10.95	0.00	10.95	10.95	cm²/m	
	M8056	18.750	10.500	0.500	$a_{s,2,-z\ (top)}$	4.94	0.00	4.94	4.94	cm²/m	
	M8241	17.750	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	11.04	0.00	11.04	11.04	cm²/m	
	M8056	18.750	10.500	0.500	$a_{s,2,+z\ (bottom)}$	4.99	0.00	4.99	4.99	cm²/m	
	M1362	17.750	10.500	-2.825	a_{sw}	0.00	-	-	-	cm²/m²	
28	M7912	0.000	0.000	0.500	$a_{s,1,-z\ (top)}$	5.71	0.00	5.71	5.71	cm²/m	
	M7912	0.000	0.000	0.500	$a_{s,2,-z\ (top)}$	11.32	0.00	11.32	11.32	cm²/m	
	M59	0.000	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M1932	0.000	0.000	0.013	$a_{s,2,+z\ (bottom)}$	5.21	0.00	5.21	5.21	cm²/m	
	M7912	0.000	0.000	0.500	a_{sw}	8.00	-	-	-	cm²/m²	
29	M61	0.000	16.500	-7.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M1899	0.000	16.500	0.013	$a_{s,2,-z\ (top)}$	2.87	0.00	2.87	2.87	cm²/m	
	M61	0.000	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M7951	0.000	16.500	0.500	$a_{s,2,+z\ (bottom)}$	5.20	0.00	5.20	5.20	cm²/m	
	M61	0.000	16.500	-7.300	a_{sw}	8.00	-	-	-	cm²/m²	
31	M26	14.300	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M237	14.300	16.500	-0.500	$a_{s,2,-z\ (top)}$	5.51	0.00	5.51	5.51	cm²/m	
	M7997	14.300	16.500	0.500	$a_{s,1,+z\ (bottom)}$	3.19	0.00	3.19	3.19	cm²/m	
	M7997	14.300	16.500	0.500	$a_{s,2,+z\ (bottom)}$	4.68	0.00	4.68	4.68	cm²/m	
	M26	14.300	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
32	M7912	0.000	0.000	0.500	$a_{s,1,-z\ (top)}$	3.66	0.00	3.66	3.66	cm²/m	
	M7912	0.000	0.000	0.500	$a_{s,2,-z\ (top)}$	9.49	0.00	9.49	9.49	cm²/m	
	M59	0.000	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M1932	0.000	0.000	0.013	$a_{s,2,+z\ (bottom)}$	5.26	0.00	5.26	5.26	cm²/m	
	M1932	0.000	0.000	0.013	a_{sw}	8.00	-	-	-	cm²/m²	
33	M8021	14.300	0.000	0.500	$a_{s,1,-z\ (top)}$	3.59	0.00	3.59	3.59	cm²/m	
	M8021	14.300	0.000	0.500	$a_{s,2,-z\ (top)}$	8.58	0.00	8.58	8.58	cm²/m	
	M22	14.300	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	

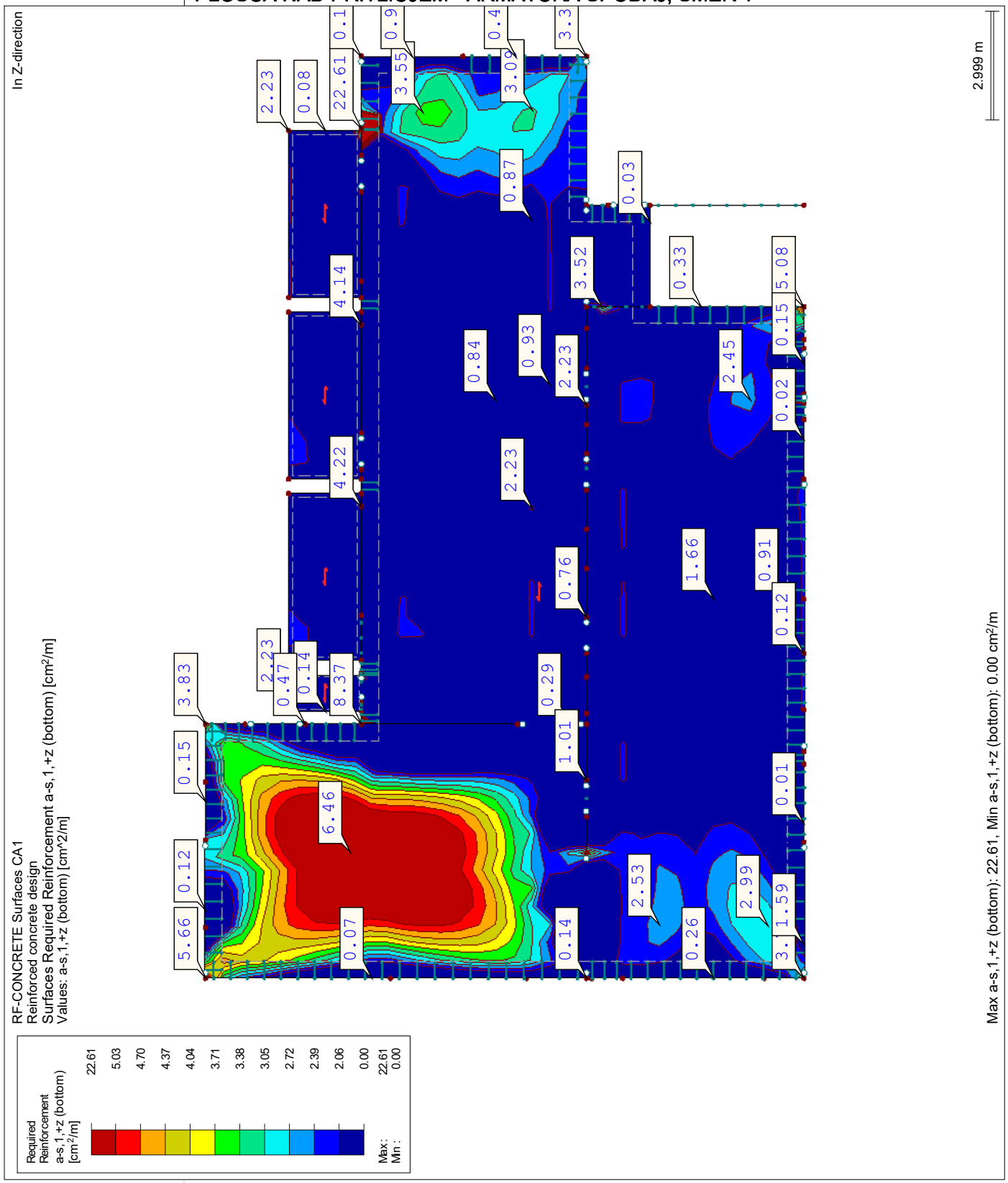
■ 2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
	M121	12.400	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	5.65	0.00	5.65	5.65	cm²/m	
	M8021	14.300	0.000	0.500	a_{sw}	8.00	-	-	-	cm²/m²	
35	M133	35.600	16.500	-1.900	$a_{s,1,-z\ (top)}$	5.04	0.00	5.04	5.04	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,2,-z\ (top)}$	3.86	0.00	3.86	3.86	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M133	35.600	16.500	-1.900	a_{sw}	0.00	-	-	-	cm²/m²	
37	M22	14.300	0.000	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M22	14.300	0.000	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M22	14.300	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M22	14.300	0.000	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M22	14.300	0.000	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
38	M138	14.300	5.100	-7.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M8374	14.300	10.500	-3.300	$a_{s,2,-z\ (top)}$	2.22	0.00	2.22	2.22	cm²/m	
	M138	14.300	5.100	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M8374	14.300	10.500	-3.300	$a_{s,2,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M138	14.300	5.100	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
39	M247	15.700	0.000	-3.300	$a_{s,1,-z\ (top)}$	13.48	0.00	13.48	13.48	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,2,-z\ (top)}$	19.53	0.00	19.53	19.53	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	13.95	0.00	13.95	13.95	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,2,+z\ (bottom)}$	19.58	0.00	19.58	19.58	cm²/m	
	M175	14.300	0.000	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
40	M250	19.700	0.000	-7.300	$a_{s,1,-z\ (top)}$	5.39	0.00	5.39	5.39	cm²/m	
	M38	21.300	0.000	-3.300	$a_{s,2,-z\ (top)}$	2.00	0.00	2.00	2.00	cm²/m	
	M250	19.700	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	5.15	0.00	5.15	5.15	cm²/m	
	M2658	21.300	0.000	-4.800	$a_{s,2,+z\ (bottom)}$	2.08	0.00	2.08	2.08	cm²/m	
	M38	21.300	0.000	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
42	M150	18.050	16.500	-7.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,2,-z\ (top)}$	2.25	0.00	2.25	2.25	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	2.33	0.00	2.33	2.33	cm²/m	
	M150	18.050	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
43	M153	21.700	16.500	-7.300	$a_{s,1,-z\ (top)}$	5.32	0.00	5.32	5.32	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,2,-z\ (top)}$	12.06	0.00	12.06	12.06	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	5.30	0.00	5.30	5.30	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	12.07	0.00	12.07	12.07	cm²/m	
	M153	21.700	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
44	M149	28.050	16.500	-7.300	$a_{s,1,-z\ (top)}$	3.48	0.00	3.48	3.48	cm²/m	
	M149	28.050	16.500	-7.300	$a_{s,2,-z\ (top)}$	6.76	0.00	6.76	6.76	cm²/m	
	M149	28.050	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	3.61	0.00	3.61	3.61	cm²/m	
	M149	28.050	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	7.03	0.00	7.03	7.03	cm²/m	
	M149	28.050	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
46	M136	32.800	16.500	-6.150	$a_{s,1,-z\ (top)}$	12.29	0.00	12.29	12.29	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,-z\ (top)}$	10.74	0.00	10.74	10.74	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,1,+z\ (bottom)}$	12.10	0.00	12.10	12.10	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,+z\ (bottom)}$	10.60	0.00	10.60	10.60	cm²/m	
	M136	32.800	16.500	-6.150	a_{sw}	Not designable	-	-	-	cm²/m²	13)
47	M8427	35.600	10.500	-3.300	$a_{s,1,-z\ (top)}$	14.13	0.00	14.13	14.13	cm²/m	
	M2842	35.600	11.000	-7.300	$a_{s,2,-z\ (top)}$	8.93	0.00	8.93	8.93	cm²/m	
	M8427	35.600	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	13.93	0.00	13.93	13.93	cm²/m	
	M2842	35.600	11.000	-7.300	$a_{s,2,+z\ (bottom)}$	8.68	0.00	8.68	8.68	cm²/m	
	M50	35.600	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
49	M8409	39.700	7.100	-3.300	$a_{s,1,-z\ (top)}$	3.56	0.00	3.56	3.56	cm²/m	
	M8409	39.700	7.100	-3.300	$a_{s,2,-z\ (top)}$	2.21	0.00	2.21	2.21	cm²/m	
	M8409	39.700	7.100	-3.300	$a_{s,1,+z\ (bottom)}$	3.51	0.00	3.51	3.51	cm²/m	
	M3113	39.700	7.586	-7.300	$a_{s,2,+z\ (bottom)}$	2.39	0.00	2.39	2.39	cm²/m	
	M56	39.700	10.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
56	M57	21.300	4.300	-7.300	$a_{s,1,-z\ (top)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M57	21.300	4.300	-7.300	$a_{s,2,-z\ (top)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M57	21.300	4.300	-7.300	$a_{s,1,+z\ (bottom)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M57	21.300	4.300	-7.300	$a_{s,2,+z\ (bottom)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M3199	21.633	4.300	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
58	M287 - E3212	21.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	34.38	0.00	34.38	34.38	cm²/m	
	M287 - E3212	21.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	17.11	0.00	17.11	17.11	cm²/m	
	M283	37.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	22.61	0.00	22.61	22.61	cm²/m	
	M3479	23.265	14.000	-3.300	$a_{s,2,+z\ (bottom)}$	6.12	0.00	6.12	6.12	cm²/m	
	M287 - E3212	21.300	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	7)
59	M8468 - E4550	21.300	4.300	-7.300	$a_{s,1,-z\ (top)}$	30.00	0.00	30.00	30.00	cm²/m	
	M8468 - E4177	21.300	4.300	-7.300	$a_{s,2,-z\ (top)}$	21.23	0.00	21.23	21.23	cm²/m	
	M4416	14.777	0.507	-7.300	$a_{s,1,+z\ (bottom)}$	5.60	0.00	5.60	5.60	cm²/m	
	M8453	14.300	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	6.58	0.00	6.58	6.58	cm²/m	
	M8468 - E4550	21.300	4.300	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	7)
61	M195	22.650	4.300	-3.300	$a_{s,1,-z\ (top)}$	1.84	0.00	1.84	1.84	cm²/m	
	M203	21.900	4.300	-3.300	$a_{s,2,-z\ (top)}$	6.06	0.00	6.06	6.06	cm²/m	
	M6522	21.983	2.300	-3.300	$a_{s,1,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M196	22.650	2.300	-3.300	$a_{s,2,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M197	21.650	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
62	M192	27.650	2.300	-3.300	$a_{s,1,-z\ (top)}$	2.23	0.00	2.23	2.23	cm²/m	
	M439	24.800	4.300	-3.300	$a_{s,2,-z\ (top)}$	5.29	0.00	5.29	5.29	cm²/m	
	M6538	23.510	2.300	-3.300	$a_{s,1,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M194	23.050	2.300	-3.300	$a_{s,2,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M178	27.300	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
63	M188	32.650	2.300	-3.300	$a_{s,1,-z\ (top)}$	2.23	0.00	2.23	2.23	cm²/m	

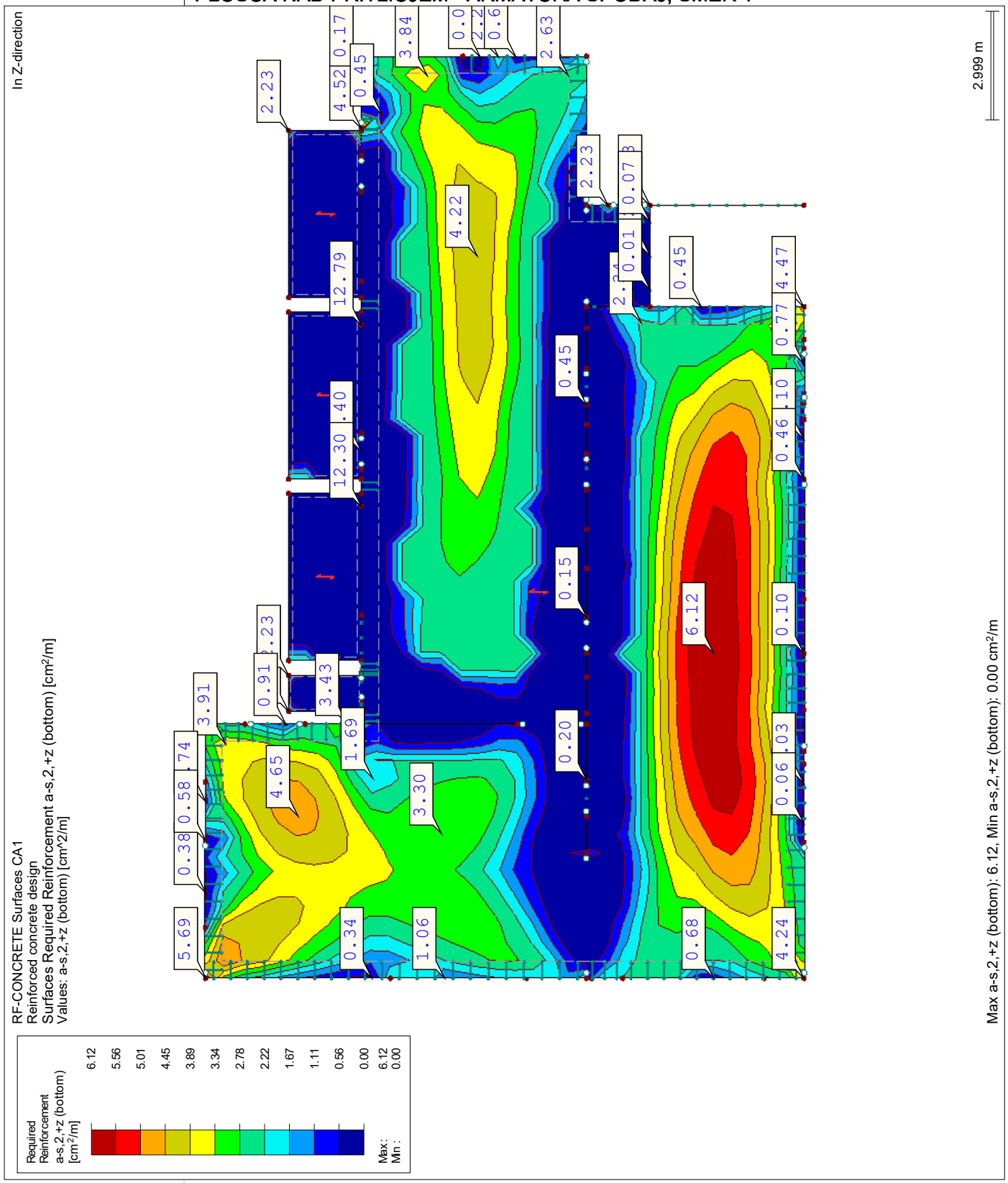
■ 2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
	M451	29.817	4.300	-3.300	$a_{s,2,-z\ (top)}$	6.22	0.00	6.22	6.22	cm²/m	
	M187	32.650	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M190	28.050	2.300	-3.300	$a_{s,2,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M451	29.817	4.300	-3.300	a_{sw}	10.36	-	-	-	cm²/m²	
64	M206	36.970	4.300	-3.300	$a_{s,1,-z\ (top)}$	5.86	0.00	5.86	5.86	cm²/m	
	M206	36.970	4.300	-3.300	$a_{s,2,-z\ (top)}$	7.81	0.00	7.81	7.81	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	3.93	0.00	3.93	3.93	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	3.75	0.00	3.75	3.75	cm²/m	
	M183	37.650	4.300	-3.300	a_{sw}	15.65	-	-	-	cm²/m²	
67	M327	21.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M7991	21.900	4.300	0.500	$a_{s,2,-z\ (top)}$	3.36	0.00	3.36	3.36	cm²/m	
	M327	21.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M7991	21.900	4.300	0.500	$a_{s,2,+z\ (bottom)}$	3.38	0.00	3.38	3.38	cm²/m	
	M327	21.300	4.300	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
68	M183	37.650	4.300	-3.300	$a_{s,1,-z\ (top)}$	4.47	0.00	4.47	4.47	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,2,-z\ (top)}$	14.75	0.00	14.75	14.75	cm²/m	
	M80	37.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	10.65	0.00	10.65	10.65	cm²/m	
	M205	36.970	4.300	0.500	$a_{s,2,+z\ (bottom)}$	10.67	0.00	10.67	10.67	cm²/m	
	M80	37.720	4.300	-3.300	a_{sw}	14.08	-	-	-	cm²/m²	
69	M21 - E6490	0.000	0.000	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M14 - E6489	0.000	0.500	0.500	$a_{s,2,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M7 - E6479	0.000	5.500	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M601 - E6473	0.000	8.500	0.500	$a_{s,2,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M6712	0.400	11.600	0.500	a_{sw}	12.53	-	-	-	cm²/m²	
70	M6973	20.346	0.400	0.500	$a_{s,1,-z\ (top)}$	18.87	0.00	18.87	18.87	cm²/m	
	M7006	14.800	11.465	0.500	$a_{s,2,-z\ (top)}$	11.03	0.00	11.03	11.03	cm²/m	
	M6973	20.346	0.400	0.500	$a_{s,1,+z\ (bottom)}$	21.47	0.00	21.47	21.47	cm²/m	
	M23 - E6664	14.300	0.000	0.500	$a_{s,2,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M6879	13.800	11.600	0.500	a_{sw}	13.82	-	-	-	cm²/m²	
71	M200	14.800	10.950	0.500	$a_{s,1,-z\ (top)}$	14.02	0.00	14.02	14.02	cm²/m	
	M200	14.800	10.950	0.500	$a_{s,2,-z\ (top)}$	11.11	0.00	11.11	11.11	cm²/m	
	M7251	17.825	10.050	0.500	$a_{s,1,+z\ (bottom)}$	25.63	0.00	25.63	25.63	cm²/m	
	M221	20.850	10.050	0.500	$a_{s,2,+z\ (bottom)}$	16.08	0.00	16.08	16.08	cm²/m	
	M7235	20.346	10.950	0.500	a_{sw}	8.54	-	-	-	cm²/m²	
72	M212	21.450	3.850	0.500	$a_{s,1,-z\ (top)}$	13.40	0.00	13.40	13.40	cm²/m	
	M7352	21.450	3.378	0.500	$a_{s,2,-z\ (top)}$	30.32	0.00	30.32	30.32	cm²/m	
	M212	21.450	3.850	0.500	$a_{s,1,+z\ (bottom)}$	21.11	0.00	21.11	21.11	cm²/m	
	M7352	21.450	3.378	0.500	$a_{s,2,+z\ (bottom)}$	36.72	0.00	36.72	36.72	cm²/m	
	M7351	21.450	2.906	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
73	M7406	39.350	6.677	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M2	40.050	3.850	0.500	$a_{s,2,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M46 - E7107	39.700	10.500	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M67 - E7112	39.700	7.100	0.500	$a_{s,2,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M201	39.350	10.050	0.500	a_{sw}	8.00	-	-	-	cm²/m²	
74	M7028	21.300	16.100	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M3	21.750	16.100	0.500	$a_{s,2,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M7447	21.750	12.495	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M229	20.850	10.950	0.500	$a_{s,2,+z\ (bottom)}$	22.36	0.00	22.36	22.36	cm²/m	
	M228	21.750	10.950	0.500	a_{sw}	14.04	-	-	-	cm²/m²	
75	M232	32.450	4.750	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M230	33.150	4.750	0.500	$a_{s,2,-z\ (top)}$	14.07	0.00	14.07	14.07	cm²/m	
	M232	32.450	4.750	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M231	32.450	10.050	0.500	$a_{s,2,+z\ (bottom)}$	21.43	0.00	21.43	21.43	cm²/m	
	M230	33.150	4.750	0.500	a_{sw}	8.00	-	-	-	cm²/m²	
78	M178	27.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	4.39	0.00	4.39	4.39	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	8.45	0.00	8.45	8.45	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	4.22	0.00	4.22	4.22	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	12.30	0.00	12.30	12.30	cm²/m	
	M178	27.300	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
79	M182	32.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	3.01	0.00	3.01	3.01	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	4.14	0.00	4.14	4.14	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	12.79	0.00	12.79	12.79	cm²/m	
	M182	32.300	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
86	M172	30.400	16.500	-7.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M172	30.400	16.500	-7.300	$a_{s,2,-z\ (top)}$	2.39	0.00	2.39	2.39	cm²/m	
	M172	30.400	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M172	30.400	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	2.62	0.00	2.62	2.62	cm²/m	
	M172	30.400	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
87	M136	32.800	16.500	-6.150	$a_{s,1,-z\ (top)}$	5.15	0.00	5.15	5.15	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,-z\ (top)}$	7.45	0.00	7.45	7.45	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,1,+z\ (bottom)}$	5.51	0.00	5.51	5.51	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,+z\ (bottom)}$	8.11	0.00	8.11	8.11	cm²/m	
	M51	32.800	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	

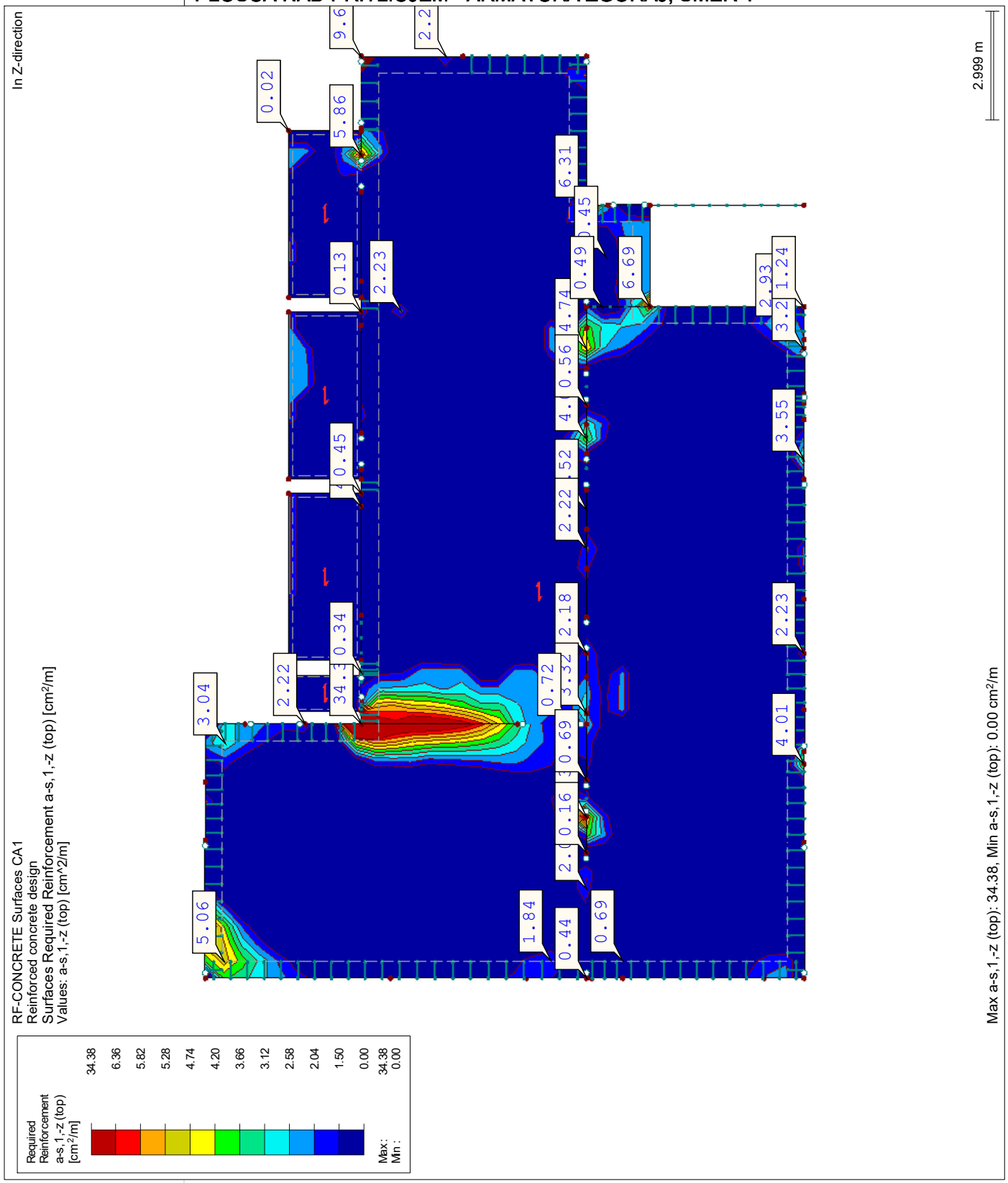
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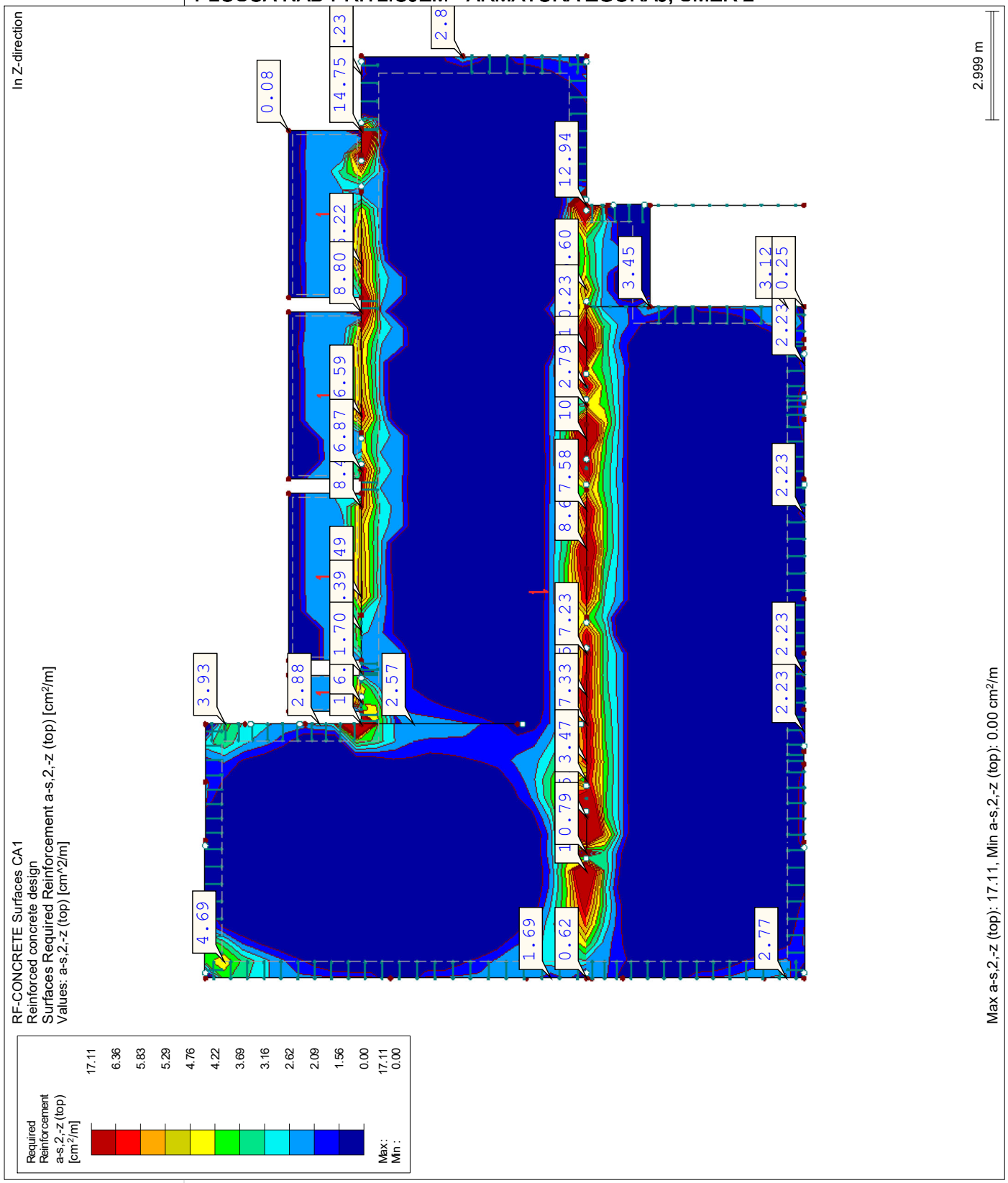
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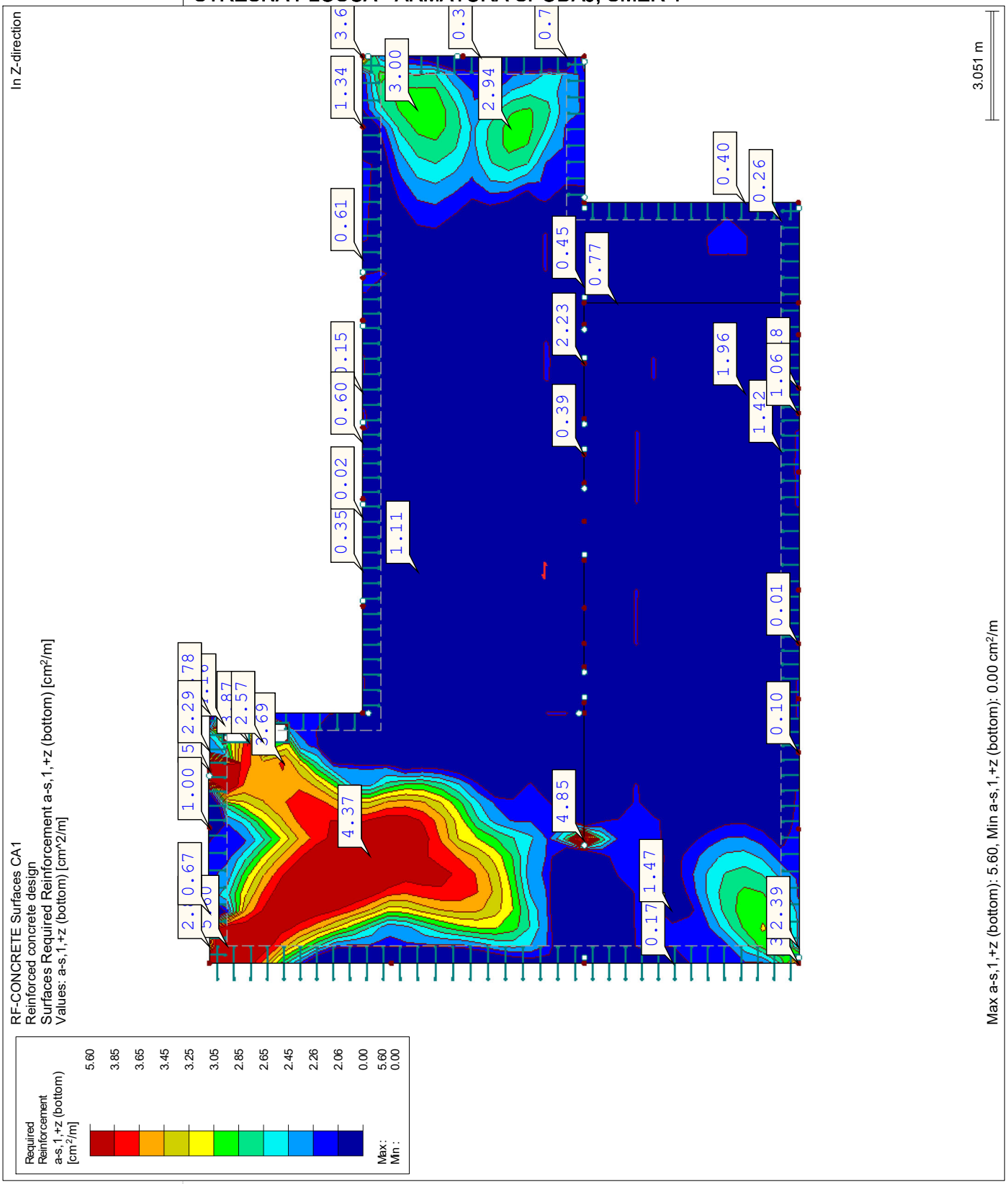
PLOSCA NAD PRITLICJEM - ARMATURA ZGORAJ, SMER 1



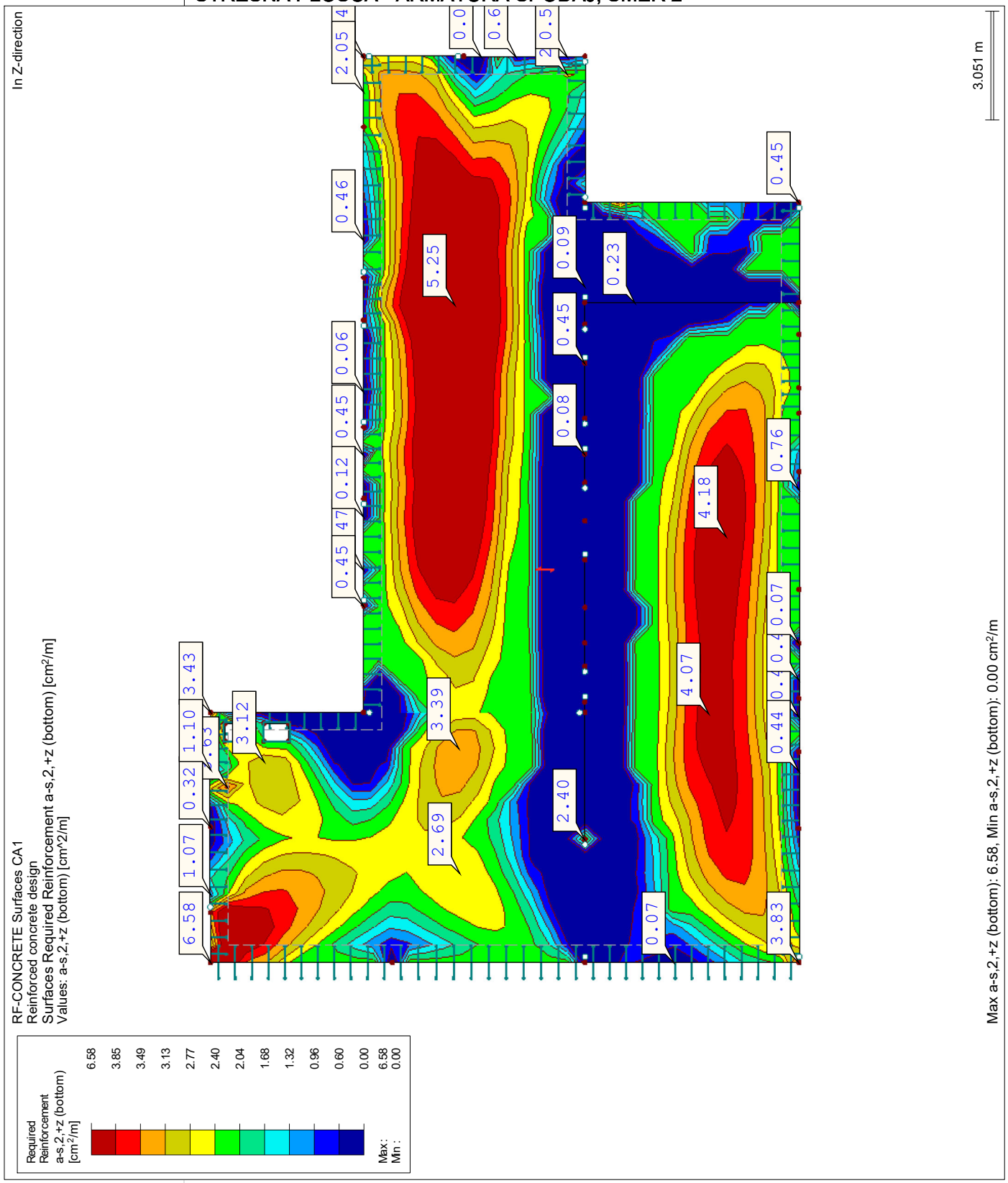
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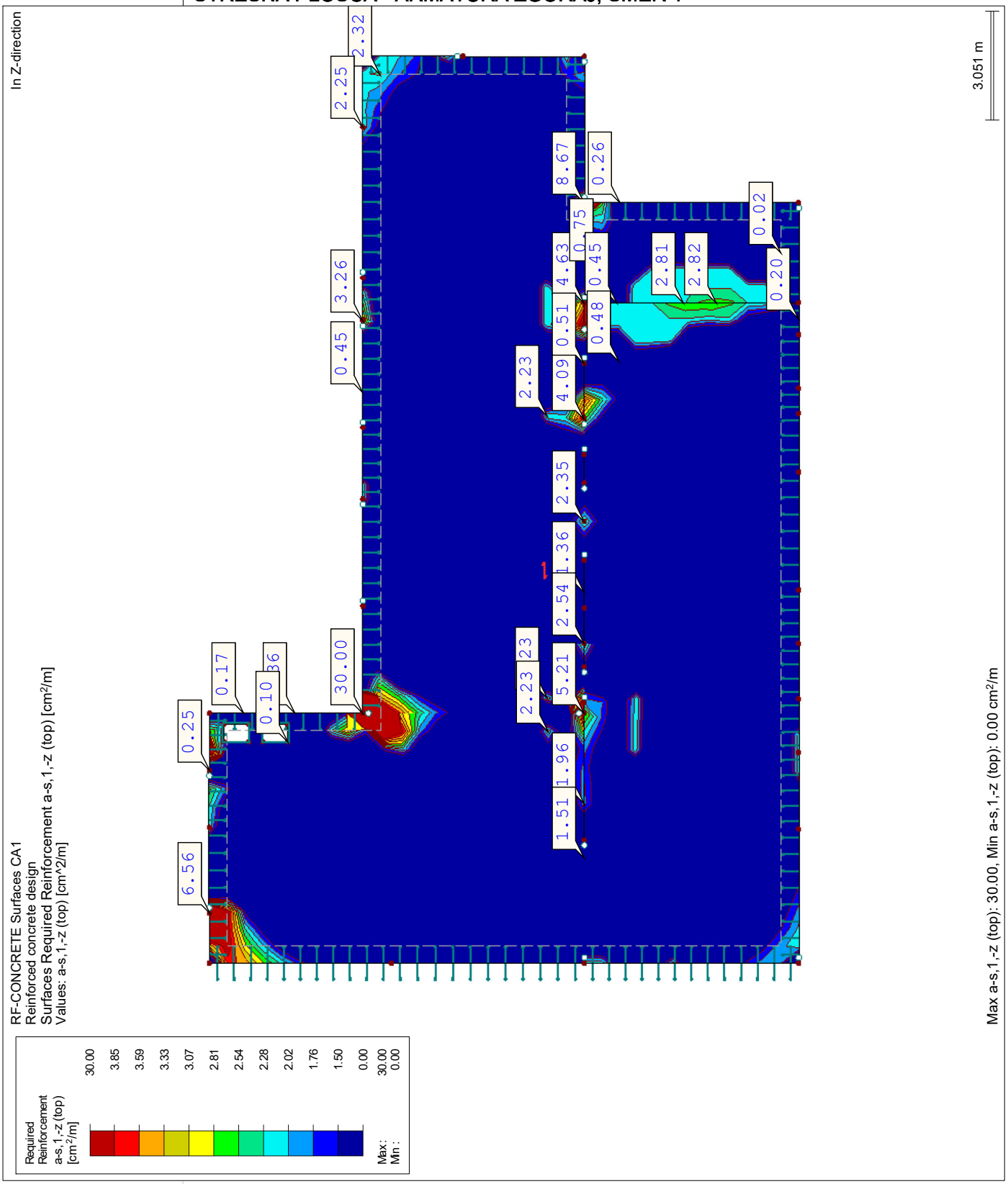
STRESNA PLOSCA - ARMATURA SPODAJ, SMER 1



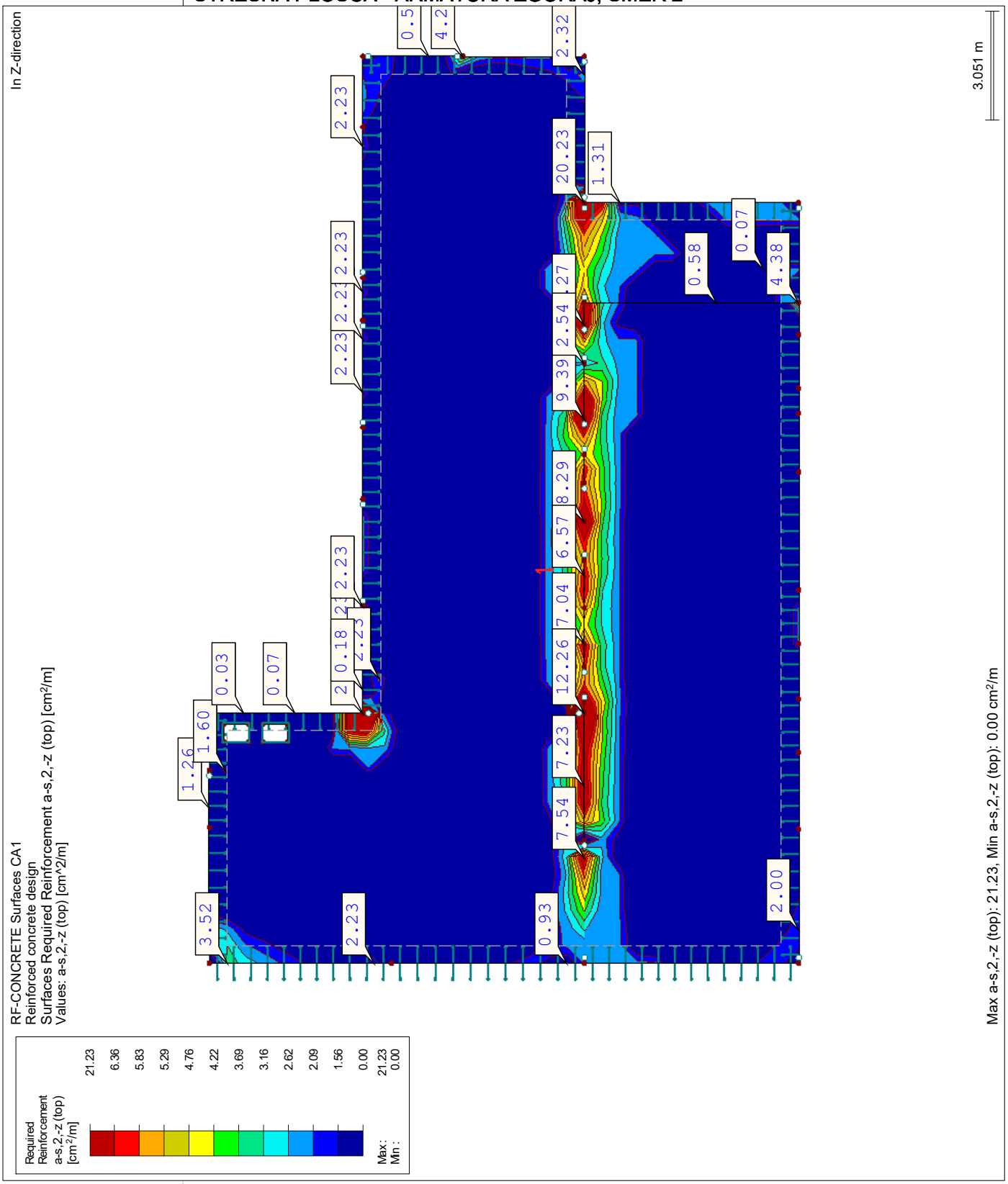
STRESNA PLOSCA - ARMATURA SPODAJ, SMER 2



STRESNA PLOSCA - ARMATURA ZGORAJ, SMER 1



STRESNA PLOSCA - ARMATURA ZGORAJ, SMER 2



STATIK d.o.o
RF-CONCRETE Members
CA1
Design of concrete members

1.1 GENERAL DATA

Design according to Standard:	SIST EN 1992-1-1:2005/A101:2006	
ULTIMATE LIMIT STATES		
Load combinations to design:	CO1	obtezba 1
		Persistent and Transient
	CO2	obtezba 2
		Persistent and Transient
	CO3	obtezba 3
		Persistent and Transient
	CO4	obtezba 4
		Persistent and Transient
Design Situation Settings for Serviceability Limit State Checks		
Load combination:		
Characteristic with direct load	Checks: k_1*f_{ck}, k_3*f_{yk}	
Characteristic with imposed deformation	Checks: k_1*f_{ck}, k_4*f_{yk}	
Frequent	Checks: w_k	
Quasi-permanent	Checks: k_2*f_{ck}, w_k, u_l	
Deformation Relative to:	Undeformed system	

1.1 SETTINGS - NONLINEAR CALCULATION (STATE II)

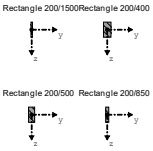
Activate nonlinear calculation for ULTIMATE LIMIT state:	☐
Activate nonlinear calculation for SERVICEABILITY LIMIT state:	☐
Activate nonlinear calculation for fire resistance	☐

1.2 MATERIALS

Matl. No.	Material Description		Comment
	Concrete Strength Class	Reinforcing Steel	
1	Concrete C25/30	B 500 S (A)	
7	Concrete C25/30	B 500 S (A)	

1.2.1 MATERIAL PARAMETERS

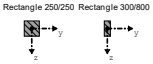
Matl. No.	Description	Name	Size	Unit
1	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.000	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.000	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.600	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.800	N/mm^2
	95 % Fractile of Axial Tensile Strength	$f_{ctk,0.95}$	3.300	N/mm^2
	Mean Secant Modulus of Elasticity	E_{cm}	31000.000	N/mm^2
	Characteristic Strains for Nonlinear Calculations			
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{cu1}	-3.500	‰
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2	
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000	N/mm^2
	Characteristic Yield Stress	f_{yk}	500	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
7	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.000	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.000	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.600	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.800	N/mm^2
	95 % Fractile of Axial Tensile Strength	$f_{ctk,0.95}$	3.300	N/mm^2
	Mean Secant Modulus of Elasticity	E_{cm}	31000.000	N/mm^2
	Characteristic Strains for Nonlinear Calculations			
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{cu1}	-3.500	‰
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2	
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000	N/mm^2
	Characteristic Yield Stress	f_{yk}	500	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰



RF-CONCRETE Members
CA1
Design of concrete members

1.3 CROSS-SECTIONS

Section No.	Matl. No.	Cross-Section Description	Notes	Comment
1	1	Rectangle 250/250		
2	1	Rectangle 200/1500		
3	1	Rectangle 200/500		
4	7	Rectangle 200/850		
6	1	Rectangle 300/800		
12	1	Rectangle 200/400		



1.6 REINFORCEMENT GROUP NO. 1 - NOSILCI

Applied to members:	1,7,10-13,15-17,24-27,31-36,38,39,41,44-48,50-52, 56,57,63,64,68,69,71,73-75,77,78
LONGITUDINAL REINFORCEMENT	
Possible diameters:	20.0 mm
Max. number of layers:	1
Min. spacing for first layer:	20.0 mm
Type of anchorage:	Straight
Steel surface:	Ribbed
Reduction of reinforcement:	None
SHEAR REINFORCEMENT	
Possible diameters:	10.0 mm
No. of stirrup legs:	2
Inclination:	90°
Type of anchorage:	Hook
Stirrup layout:	Uniform spacing throughout
REINFORCEMENT LAYOUT	
Concrete cover acc. to Standard	☐
Concrete cover c-top:	30.0 mm
Concrete cover c-bottom:	30.0 mm
Concrete cover c-side:	30.0 mm
Reinforcement layout:	-z (top) - +z (bottom) (optimized distribution)
Torsional reinforcement distributed circumferentially:	☒
Relevant internal forces:	N, V-y, V-z, M-T, M-y, M-z
MINIMUM REINFORCEMENT	
Min. reinforcement area (min. A-s,top):	0.00 cm²
Min. reinforcement area (min. A-s,bottom):	0.00 cm²
Min. longitudinal reinforcement acc. to Standard:	☒
Min. shear reinforcement acc. to Standard:	☒
Longitudinal reinforcement for shear force design:	Use required longitudinal reinforcement
SHEAR JOINT	
Shear joint available:	☐
Design of flange connections on segmented cross-sections	☐
OPTIONS FOR EN 1992-1-1:2004/A1:2014	
Max. percentage of reinforcement:	8.00 %
Neutral axis depth limitation	☒
Partial safety factor Gamma-c	PT 1.50, AC 1.20
Partial safety factor Gamma-s	PT 1.15, AC 1.00
Reduction factor Alpha-cc	PT 1.00, AC 1.00
Reduction factor Alpha-ct	PT 1.00, AC 1.00
Min. inclination of concrete strut	21.80 °
Max. inclination of concrete strut	45.00 °

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
Member No. 1 - Rectangle 200/400						
$A_{s,-z\ (top)}$	1	1.400	CO1	2.84	cm²	
$A_{s,+z\ (bottom)}$	1	0.000	CO4	1.20	cm²	13) 25)
$A_{s,T}$	1	0.000	CO3	0.42	cm²	
$a_{sw,V,stirrup}$	1	0.933	CO3	1.65	cm²/m	58)
$a_{sw,T,stirrup}$	1	0.000	CO3	0.08	cm²/m	
Member No. 7 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	7	0.000	CO4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	7	0.000	CO4	4.50	cm²	25)
$A_{s,T}$	7	0.450	CO3	1.44	cm²	
$a_{sw,V,stirrup}$	7	0.000	CO2	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	7	0.450	CO3	0.08	cm²/m	
Member No. 10 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	10	0.000	CO4	4.50	cm²	13) 25)
$A_{s,+z\ (bottom)}$	10	0.000	CO4	4.50	cm²	13) 25)
$A_{s,T}$	10	1.000	CO3	2.29	cm²	
$a_{sw,V,stirrup}$	10	0.000	CO3	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	10	1.000	CO3	0.12	cm²/m	
Member No. 11 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	11	0.000	CO3	4.50	cm²	13) 25)
$A_{s,+z\ (bottom)}$	11	0.000	CO3	4.50	cm²	13) 25)
$A_{s,T}$	11	3.450	CO3	2.71	cm²	
$a_{sw,V,stirrup}$	11	3.450	CO3	3.01	cm²/m	58)
$a_{sw,T,stirrup}$	11	3.450	CO3	0.14	cm²/m	
Member No. 12 - Rectangle 200/400						

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
$A_{s,-z\ (top)}$	12	0.500	CO1	1.20	cm^2	25)
$A_{s,+z\ (bottom)}$	12	0.500	CO1	1.20	cm^2	25)
$A_{s,T}$	12	1.000	CO3	1.82	cm^2	
$a_{sw,V,stirrup}$	12	0.000	CO1	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	12	1.000	CO3	0.33	cm^2/m	
Member No. 13 - Rectangle 200/400						
$A_{s,-z\ (top)}$	13	0.000	CO4	1.20	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	13	0.495	CO3	1.29	cm^2	
$A_{s,T}$	13	0.990	CO3	1.42	cm^2	
$a_{sw,V,stirrup}$	13	0.000	CO3	2.25	cm^2/m	58)
$a_{sw,T,stirrup}$	13	0.990	CO3	0.26	cm^2/m	
Member No. 15 - Rectangle 200/850						
$A_{s,-z\ (top)}$	15	0.000	CO3	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	15	0.000	CO3	2.55	cm^2	13) 25)
$A_{s,T}$	15	3.750	CO3	0.19	cm^2	
$a_{sw,V,stirrup}$	15	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	15	3.750	CO3	0.02	cm^2/m	
Member No. 16 - Rectangle 200/850						
$A_{s,-z\ (top)}$	16	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	16	1.150	CO4	2.96	cm^2	
$A_{s,T}$	16	0.575	CO3	0.17	cm^2	
$a_{sw,V,stirrup}$	16	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	16	0.575	CO3	0.01	cm^2/m	
Member No. 17 - Rectangle 200/850						
$A_{s,-z\ (top)}$	17	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	17	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,T}$	17	0.250	CO3	0.11	cm^2	
$a_{sw,V,stirrup}$	17	0.000	CO3	2.44	cm^2/m	58)
$a_{sw,T,stirrup}$	17	0.250	CO3	0.01	cm^2/m	
Member No. 24 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	24	0.000	CO2	0.00	cm^2	
$A_{s,+z\ (bottom)}$	24	6.382	CO4	3.95	cm^2	27)
$A_{s,T}$	24	5.891	CO3	0.17	cm^2	
$a_{sw,V,stirrup}$	24	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	24	5.891	CO3	0.01	cm^2/m	
Member No. 25 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	25	0.000	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	25	0.000	CO3	4.50	cm^2	25)
$A_{s,T}$	25	0.000	CO2	0.03	cm^2	
$a_{sw,V,stirrup}$	25	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	25	0.000	CO2	0.00	cm^2/m	
Member No. 26 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	26	0.000	CO4	4.50	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	26	0.000	CO4	4.50	cm^2	13) 25)
$A_{s,T}$	26	0.000	CO3	4.57	cm^2	
$a_{sw,V,stirrup}$	26	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	26	0.000	CO3	0.24	cm^2/m	
Member No. 27 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	27	0.000	CO2	4.50	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	27	0.000	CO2	4.50	cm^2	13) 25)
$A_{s,T}$	27	0.000	CO4	4.74	cm^2	
$a_{sw,V,stirrup}$	27	3.450	CO4	2.49	cm^2/m	58)
$a_{sw,T,stirrup}$	27	0.000	CO4	0.25	cm^2/m	
Member No. 31 - Rectangle 200/850						
$A_{s,-z\ (top)}$	31	1.550	CO2	2.19	cm^2	26)
$A_{s,+z\ (bottom)}$	31	0.000	CO4	2.96	cm^2	
$A_{s,T}$	31	0.517	CO3	0.17	cm^2	
$a_{sw,V,stirrup}$	31	0.000	CO2	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	31	0.517	CO3	0.01	cm^2/m	
Member No. 32 - Rectangle 200/850						
$A_{s,-z\ (top)}$	32	0.000	CO2	2.19	cm^2	26)
$A_{s,+z\ (bottom)}$	32	1.500	CO2	2.19	cm^2	27)
$A_{s,T}$	32	1.000	CO3	0.17	cm^2	
$a_{sw,V,stirrup}$	32	0.000	CO2	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	32	1.000	CO3	0.01	cm^2/m	
Member No. 33 - Rectangle 200/850						
$A_{s,-z\ (top)}$	33	3.300	CO2	2.19	cm^2	26)
$A_{s,+z\ (bottom)}$	33	2.829	CO3	2.19	cm^2	27)
$A_{s,T}$	33	2.829	CO3	0.17	cm^2	
$a_{sw,V,stirrup}$	33	3.300	CO3	1.99	cm^2/m	58)
$a_{sw,T,stirrup}$	33	2.829	CO3	0.01	cm^2/m	
Member No. 34 - Rectangle 200/850						
$A_{s,-z\ (top)}$	34	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	34	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,T}$	34	0.000	CO1	1.91	cm^2	
$a_{sw,V,stirrup}$	34	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	34	0.000	CO1	0.17	cm^2/m	
Member No. 35 - Rectangle 200/850						
$A_{s,-z\ (top)}$	35	3.588	CO4	2.55	cm^2	25)
$A_{s,+z\ (bottom)}$	35	3.588	CO4	2.55	cm^2	25)
$A_{s,T}$	35	3.588	CO2	2.41	cm^2	
$a_{sw,V,stirrup}$	35	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	35	3.588	CO2	0.22	cm^2/m	
Member No. 36 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	36	0.000	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	36	0.000	CO3	4.50	cm^2	25)
$A_{s,T}$	36	1.500	CO3	0.98	cm^2	
$a_{sw,V,stirrup}$	36	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	36	1.500	CO3	0.05	cm^2/m	

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
Member No. 38 - Rectangle 250/250						
$A_{s,-z\ (top)}$	38	0.000	CO4	0.94	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	38	0.000	CO4	0.94	cm^2	13) 25)
$A_{s,T}$	38	0.000	CO3	0.04	cm^2	
$a_{sw,V,stirrup}$	38	0.000	CO1	0.00	cm^2/m	58) 933)
$a_{sw,T,stirrup}$	38	0.000	CO3	0.01	cm^2/m	
Member No. 39 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	39	0.000	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	39	0.000	CO3	4.50	cm^2	25)
$A_{s,T}$	39	0.700	CO3	0.81	cm^2	
$a_{sw,V,stirrup}$	39	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	39	0.700	CO3	0.04	cm^2/m	
Member No. 41 - Rectangle 200/850						
$A_{s,-z\ (top)}$	41	2.800	CO1	2.55	cm^2	25)
$A_{s,+z\ (bottom)}$	41	2.800	CO1	2.55	cm^2	25)
$A_{s,T}$	41	0.000	CO4	1.98	cm^2	
$a_{sw,V,stirrup}$	41	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	41	0.000	CO4	0.18	cm^2/m	
Member No. 44 - Rectangle 200/850						
$A_{s,-z\ (top)}$	44	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	44	0.000	CO4	2.55	cm^2	13) 25)
$A_{s,T}$	44	1.500	CO3	1.02	cm^2	
$a_{sw,V,stirrup}$	44	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	44	1.500	CO3	0.09	cm^2/m	
Member No. 45 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	45	3.750	CO2	3.95	cm^2	26)
$A_{s,+z\ (bottom)}$	45	2.344	CO3	3.95	cm^2	27)
$A_{s,T}$	45	0.000	CO2	0.04	cm^2	
$a_{sw,V,stirrup}$	45	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	45	0.000	CO2	0.00	cm^2/m	
Member No. 46 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	46	1.613	CO4	3.95	cm^2	26)
$A_{s,+z\ (bottom)}$	46	0.000	CO1	3.95	cm^2	27)
$A_{s,T}$	46	2.150	CO3	0.13	cm^2	
$a_{sw,V,stirrup}$	46	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	46	2.150	CO3	0.01	cm^2/m	
Member No. 47 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	47	0.000	CO4	3.95	cm^2	26)
$A_{s,+z\ (bottom)}$	47	1.500	CO3	3.95	cm^2	27)
$A_{s,T}$	47	1.500	CO3	0.14	cm^2	
$a_{sw,V,stirrup}$	47	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	47	1.500	CO3	0.01	cm^2/m	
Member No. 48 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	48	1.033	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	48	1.033	CO3	4.50	cm^2	25)
$A_{s,T}$	48	1.550	CO3	0.21	cm^2	
$a_{sw,V,stirrup}$	48	0.000	CO4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	48	1.550	CO3	0.01	cm^2/m	
Member No. 50 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	50	0.000	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	50	0.000	CO3	4.50	cm^2	25)
$A_{s,T}$	50	1.000	CO3	0.22	cm^2	
$a_{sw,V,stirrup}$	50	0.000	CO1	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	50	1.000	CO3	0.01	cm^2/m	
Member No. 51 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	51	0.000	CO2	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	51	0.000	CO2	4.50	cm^2	25)
$A_{s,T}$	51	3.300	CO3	0.53	cm^2	
$a_{sw,V,stirrup}$	51	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	51	3.300	CO3	0.03	cm^2/m	
Member No. 52 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	52	1.100	CO2	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	52	1.100	CO2	4.50	cm^2	25)
$A_{s,T}$	52	0.550	CO3	0.58	cm^2	
$a_{sw,V,stirrup}$	52	0.000	CO1	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	52	0.550	CO3	0.03	cm^2/m	
Member No. 56 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	56	0.000	CO3	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	56	0.000	CO3	4.50	cm^2	25)
$A_{s,T}$	56	2.800	CO3	1.67	cm^2	
$a_{sw,V,stirrup}$	56	0.000	CO3	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	56	2.800	CO3	0.09	cm^2/m	
Member No. 57 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	57	0.000	CO4	4.50	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	57	0.000	CO4	4.50	cm^2	13) 25)
$A_{s,T}$	57	2.400	CO1	0.06	cm^2	
$a_{sw,V,stirrup}$	57	0.000	CO2	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	57	2.400	CO1	0.00	cm^2/m	
Member No. 63 - Rectangle 200/500						
$A_{s,-z\ (top)}$	63	0.000	CO4	1.50	cm^2	25)
$A_{s,+z\ (bottom)}$	63	2.583	CO2	3.23	cm^2	
$A_{s,T}$	63	0.000	CO2	6.89	cm^2	
$a_{sw,V,stirrup}$	63	6.200	CO2	2.83	cm^2/m	58)
$a_{sw,T,stirrup}$	63	0.000	CO2	1.02	cm^2/m	
Member No. 64 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	64	1.067	CO1	3.95	cm^2	26)
$A_{s,+z\ (bottom)}$	64	0.000	CO4	3.95	cm^2	27)
$A_{s,T}$	64	1.067	CO1	0.06	cm^2	
$a_{sw,V,stirrup}$	64	0.000	CO2	1.60	cm^2/m	58) 69)

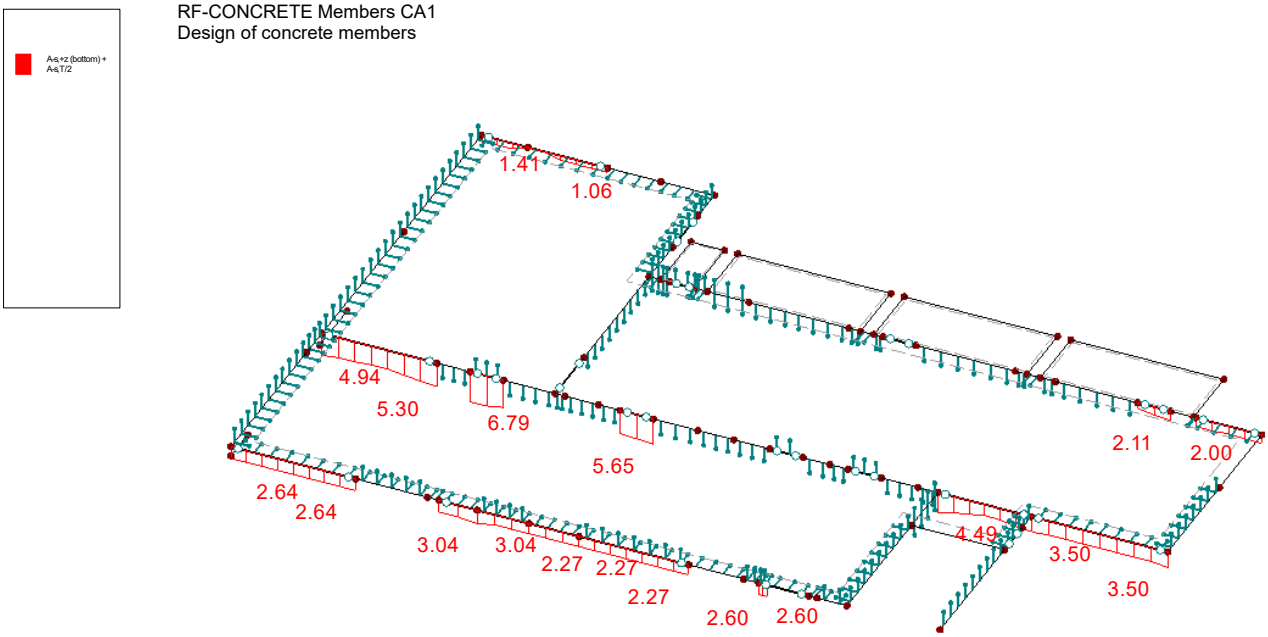
2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
$a_{sw,T,stirrup}$	64	1.067	CO1	0.00	cm²/m	
Member No. 68 - Rectangle 300/800						
$A_{s,-z\ (top)}$	68	4.467	CO4	23.54	cm²	
$A_{s,+z\ (bottom)}$	68	0.000	CO4	3.60	cm²	25)
$A_{s,T}$	68	0.000	CO3	0.11	cm²	
$a_{sw,V,stirrup}$	68	0.000	CO4	5.80	cm²/m	58)
$a_{sw,T,stirrup}$	68	0.000	CO3	0.01	cm²/m	
Member No. 69 - Rectangle 300/800						
$A_{s,-z\ (top)}$	69	8.933	CO4	23.06	cm²	
$A_{s,+z\ (bottom)}$	69	13.400	CO1	0.26	cm²	
$A_{s,T}$	69	8.933	CO3	0.06	cm²	
$a_{sw,V,stirrup}$	69	13.400	CO4	5.66	cm²/m	58)
$a_{sw,T,stirrup}$	69	8.933	CO3	0.01	cm²/m	
Member No. 71 - Rectangle 200/500						
$A_{s,-z\ (top)}$	71	1.867	CO1	1.50	cm²	25)
$A_{s,+z\ (bottom)}$	71	1.867	CO1	1.50	cm²	25)
$A_{s,T}$	71	1.400	CO3	1.40	cm²	
$a_{sw,V,stirrup}$	71	0.000	CO2	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	71	1.400	CO3	0.21	cm²/m	
Member No. 73 - Rectangle 200/400						
$A_{s,-z\ (top)}$	73	0.000	CO1	2.84	cm²	
$A_{s,+z\ (bottom)}$	73	1.920	CO1	1.03	cm²	
$A_{s,T}$	73	1.920	CO1	0.06	cm²	
$a_{sw,V,stirrup}$	73	0.000	CO3	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	73	1.920	CO1	0.01	cm²/m	
Member No. 74 - Rectangle 200/850						
$A_{s,-z\ (top)}$	74	0.000	CO4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	74	0.000	CO4	2.55	cm²	13) 25)
$A_{s,T}$	74	1.500	CO1	0.08	cm²	
$a_{sw,V,stirrup}$	74	0.000	CO4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	74	1.500	CO1	0.01	cm²/m	
Member No. 75 - Rectangle 200/850						
$A_{s,-z\ (top)}$	75	0.000	CO4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	75	0.000	CO4	2.55	cm²	13) 25)
$A_{s,T}$	75	4.220	CO3	0.23	cm²	
$a_{sw,V,stirrup}$	75	0.000	CO4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	75	4.220	CO3	0.02	cm²/m	
Member No. 77 - Rectangle 200/850						
$A_{s,-z\ (top)}$	77	0.000	CO1	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	77	0.000	CO1	2.55	cm²	25)
$A_{s,T}$	77	0.000	CO4	0.00	cm²	
$a_{sw,V,stirrup}$	77	0.000	CO2	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	77	0.000	CO4	0.00	cm²/m	
Member No. 78 - Rectangle 200/850						
$A_{s,-z\ (top)}$	78	0.000	CO4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	78	0.000	CO4	2.55	cm²	13) 25)
$A_{s,T}$	78	0.000	CO3	3.87	cm²	
$a_{sw,V,stirrup}$	78	0.000	CO3	1.60	cm²/m	58)
$a_{sw,T,stirrup}$	78	0.000	CO3	0.35	cm²/m	

NOSILCI PLOSCE NAD PRITLICJEM - ARMATURA SPODAJ

RF-CONCRETE Members CA1
Design of concrete members

Isometric

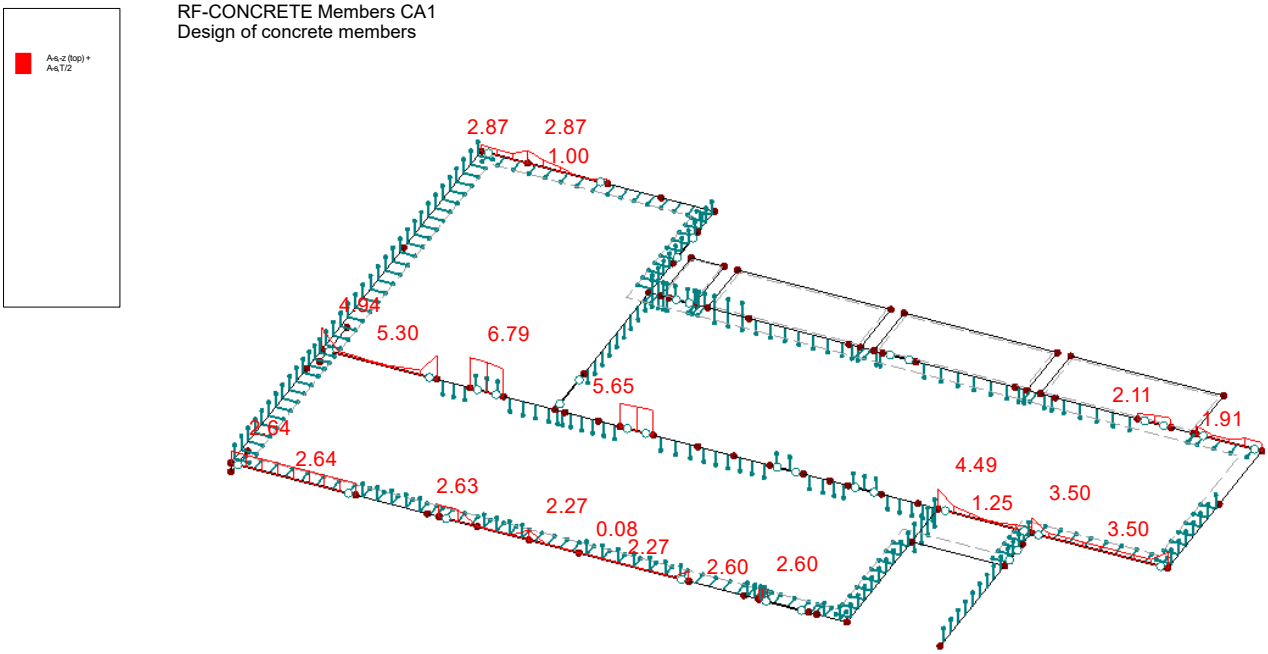


Max A-s,+z (bottom) + A-s,T/2: 6.79 cm²

NOSILCI PLOSCE NAD PRITLICJEM - ARMATURA ZGORAJ

RF-CONCRETE Members CA1
Design of concrete members

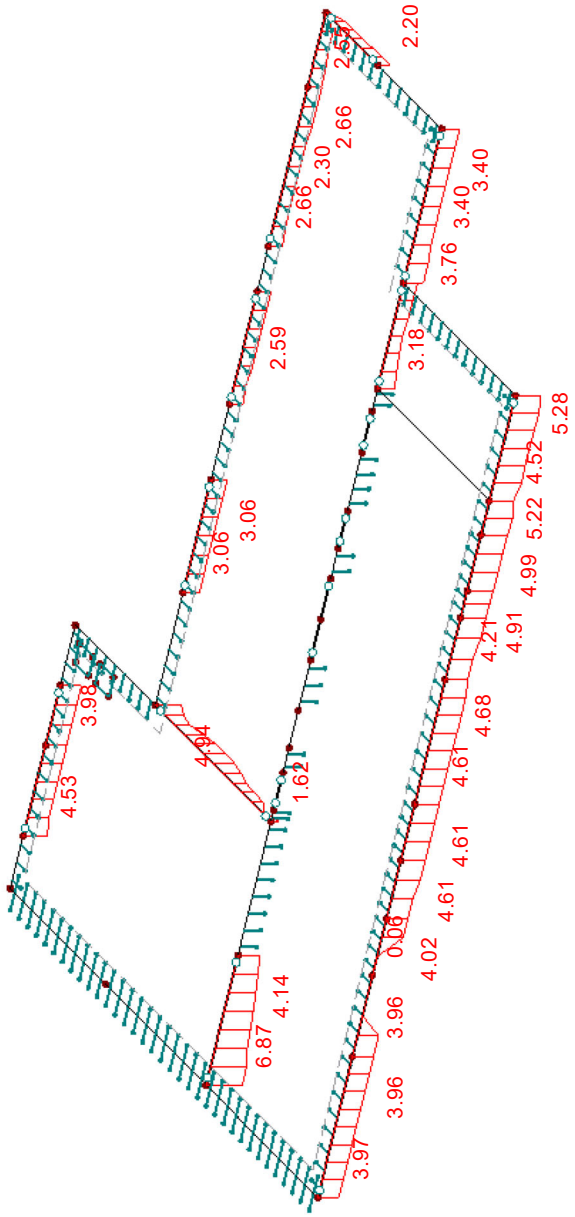
Isometric



Max A-s,-z (top) + A-s,T/2: 6.79 cm²

NOSILCI STRESNE PLOSCE - ARMATURA SPODAJ

Isometric



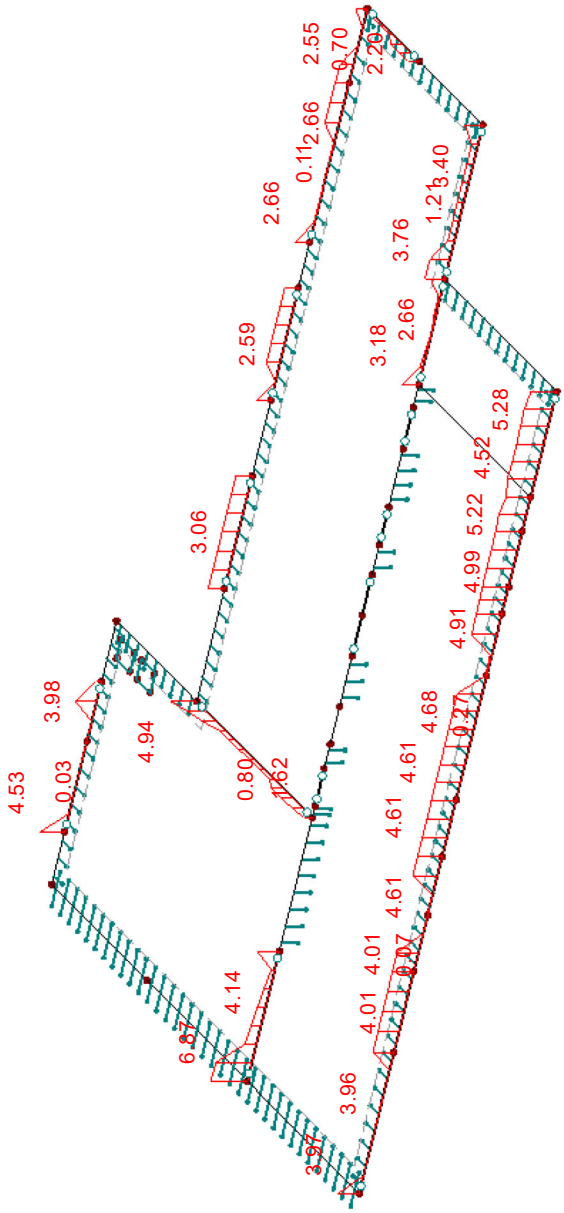
RF-CONCRETE Members CA1
Design of concrete members

A-s,+z (bottom) +

Max A-s,+z (bottom) + A-s,T/2: 6.87 cm²

NOSILCI STRESNE PLOSCE - ARMATURA ZGORAJ

Isometric



RF-CONCRETE Members CA1
Design of concrete members

A-s,-z (top) + A-s,T/2

Max A-s,-z (top) + A-s,T/2: 6.87 cm²

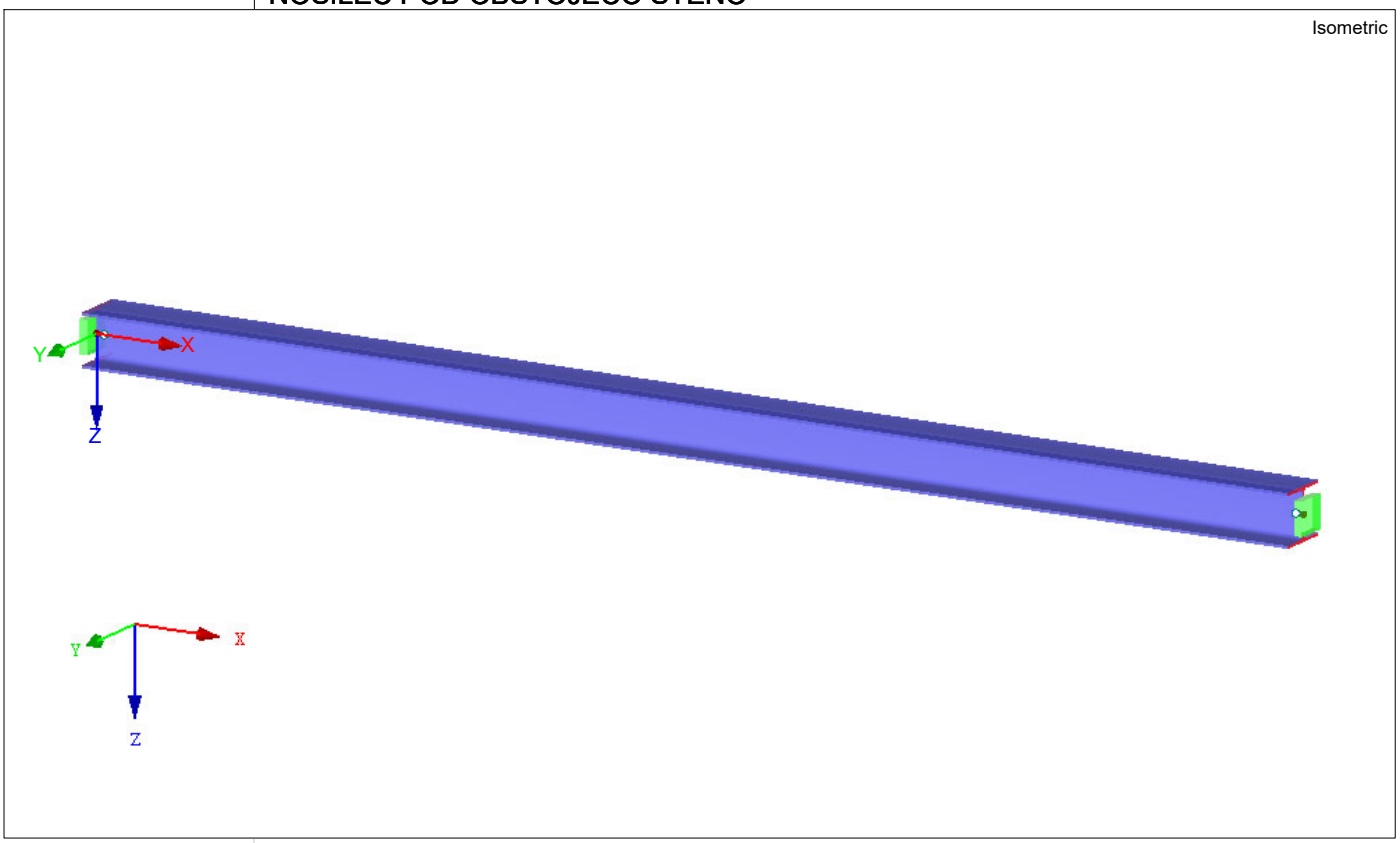
CONTENTS

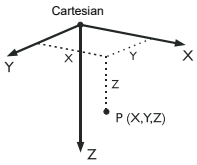
Graphic	Nosilec pod obstojeco steno, Isometric	1
1	**Model**	
1.1	Nodes	2
1.3	Materials	2
1.7	Nodal Supports	2
1.13	Cross-Sections	2
1.14	Member Hinges	2
1.17	Members	2
2	**Load Cases and Combinations**	
2.1	Load Cases	2
2.1.1	Load Cases - Calculation Parameters	2
2.5	Load Combinations	3
2.5.2	Load Combinations - Calculation Parameters	3

3	**Loads**	
	LC2 - stalna obtezba - 3.2 Member Loads	4
	LC2 - stalna obtezba - 3.2/1 Member Loads - Load Eccentricity	4
Graphic	LC2 - LC2: stalna obtezba, Isometric	4
	RF-STEEL Members	
	CA1 - General stress analysis of steel members	
1.1.1	General Data	5
1.2	Materials	5
1.3.1	Cross-Sections	5
2.1	Stresses by Cross-Section	5

NOSILEC POD OBSTOJECO STENO

Isometric





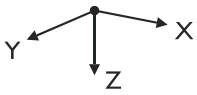
1.1 NODES

Node No.	Node Type	Reference Node	Coordinate System	Node Coordinates X [m]	Y [m]	Z [m]	Comment
1	Standard	-	Cartesian	0.000	0.000	0.000	Supported
3	Standard	-	Cartesian	4.600	0.000	0.000	Supported

1.3 MATERIALS

Matl. No.	Modulus E [kN/cm²]	Modulus G [kN/cm²]	Poisson's Ratio ν [-]	Spec. Weight γ [kN/m³]	Coeff. of Th. Ex α [1/°C]	Partial Factor γ_M [-]	Material Model
1	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic
2	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic
3	Steel S 235 | DIN EN 1993-1-1:2010-12						
	21000.00	8076.92	0.300	78.50	1.20E-05	1.00	Isotropic Linear Elastic

1.7 NODAL SUPPORTS

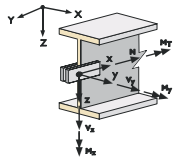


Support No.	Nodes No.	Axis System	Column in Z	Support Conditions u_X	u_Y	u_Z	φ_X	φ_Y	φ_Z
1	1,3	Global X,Y,Z	☐	☒	☒	☒	☒	☒	☒

1.13 CROSS-SECTIONS

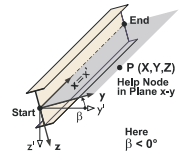
Section No.	Matl. No.	J [cm⁴] / A [cm²]	I_y [cm⁴] / A_y [cm²]	I_z [cm⁴] / A_z [cm²]	Principal Axes α [°]	Rotation α' [°]	Overall Dimensions [mm] Width b	Height h
1	HEA 200							
	3	20.98	3692.00	1336.00	0.00	0.00	200.0	190.0
		53.83	33.30	10.77				

1.14 MEMBER HINGES



Release No.	Reference System	Axial/Shear Release or Spring[kN/m] u_x	u_y	u_z	Moment Release or Spring[kNm/rad] φ_x	φ_y	φ_z	Comment
1	Local x,y,z	☐	☐	☐	☐	☒	☐	

1.17 MEMBERS



Mbr. No.	Line No.	Member	Rotation Type	Rotation β [°]	Cross-Section Start	Cross-Section End	Hinge No. Start	Hinge No. End	Ecc. No.	Div. No.	Length L [m]	
1	1	Beam	Angle	0.00	1	1	1	1	-	-	4.600	X

2.1 LOAD CASES

Load Case	Load Case Description	EN 1990 | CEN Action Category	Self-Weight - Factor in Direction Active	X	Y	Z
LC1	lastna teza	Permanent	☒	0.000	0.000	1.000
LC2	stalna obtezba	Permanent/Imposed	☐			

2.1.1 LOAD CASES - CALCULATION PARAMETERS

Load Case	Load Case Description	Calculation Parameters	
LC1	lastna teza	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC2	stalna obtezba	Method of analysis	: ⊙ Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙ Newton-Raphson
		Activate stiffness factors of:	: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)

2.5 LOAD COMBINATIONS

Load Combin.	DS	Load Combination Description	No.	Factor	Load Case	
CO1		obtezba 1	1	1.35	LC1	lastna teza
			2	1.35	LC2	stalna obtezba
CO2		poves	1	1.00	LC1	lastna teza
			2	1.00	LC2	stalna obtezba

2.5.2 LOAD COMBINATIONS - CALCULATION PARAMETERS

Load Combin.	Description	Calculation Parameters	
CO1	obtezba 1	Method of analysis	: ⊙ Second order analysis (P-Delta)
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
CO2	poves	Method of analysis	: ⊙ Second order analysis (P-Delta)
		Method for solving system of nonlinear algebraic equations	: ⊙ Picard
		Options	: ☒ Consider favorable effects due to tension
			: ☒ Refer internal forces to deformed system for:
			☒ Normal forces N
			☒ Shear forces V_y and V_z
			☒ Moments M_y, M_z and M_T
		Activate stiffness factors of:	: ☒ Materials (partial factor γM)
			: ☒ Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒ Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)

LC2
stalna obtezba

3.2 MEMBER LOADS

LC2: stalna obtezba

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1	Force	Uniform	ZL	True Length	p	4.000	kN/m

3.2/1 MEMBER LOADS - LOAD ECCENTRICITY

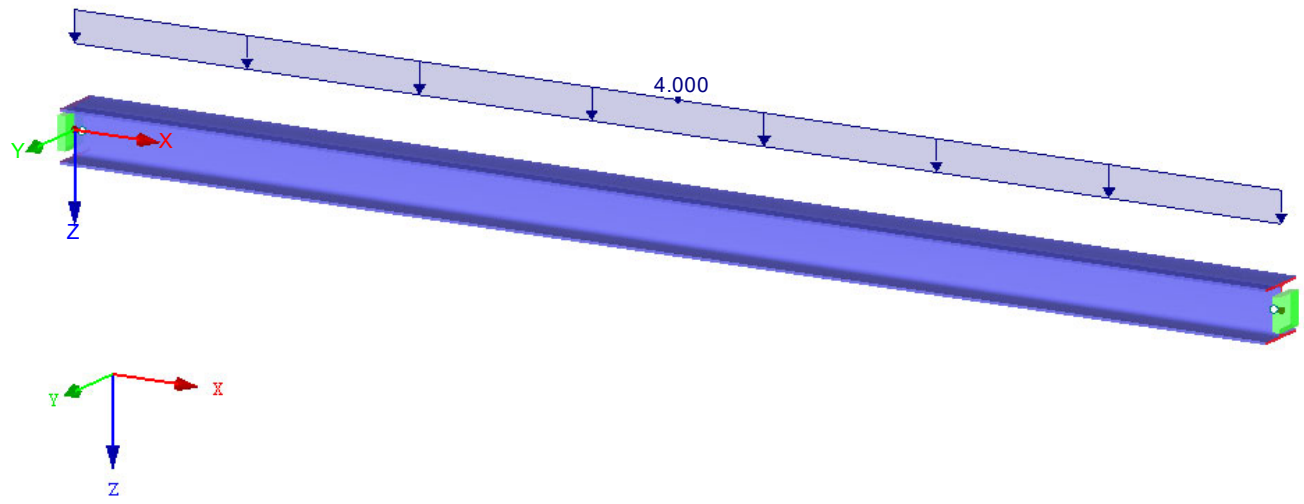
LC2: stalna obtezba

No.	Referenc to	On Member No.	Absolute Offset Mbr. Start	Absolute Offset Mbr. Start	Absolute Offset Mbr. End	Absolute Offset Mbr. End	Relative Offset Mbr. Start	Relative Offset Mbr. Start	Relative Offset Mbr. End	Relative Offset Mbr. End
			e_Y [mm]	e_Z [mm]	e_Y [mm]	e_Z [mm]	y-Axis	z-Axis	y-Axis	z-Axis
1	Members	1	0.0	0.0	0.0	0.0	Middle	Middle	Middle	Middle

LC2: STALNA OBTEZBA

LC2 : stalna obtezba
Loads [kN/m]

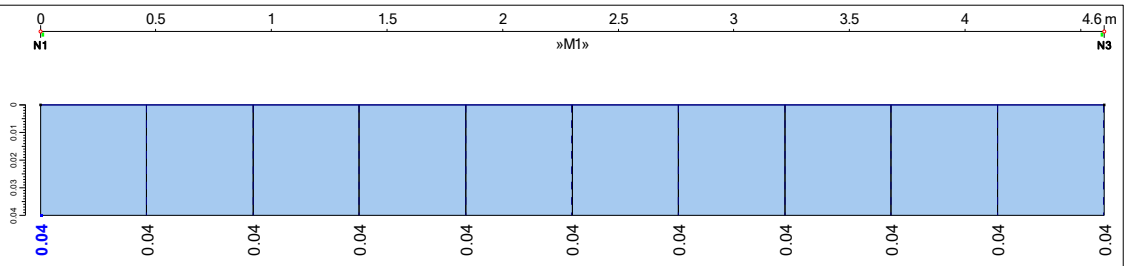
Isometric



NOTRANJE SILE

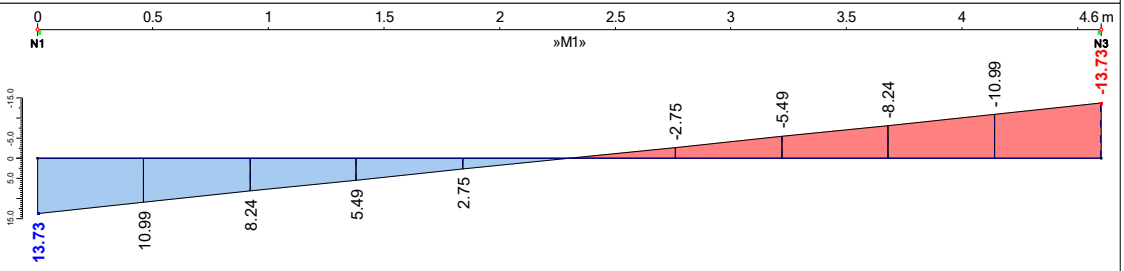
RFEM5
CO1: obtezba 1
Internal forces - N

	x [m]	N [kN]
max	0.000	0.04
min	--	--



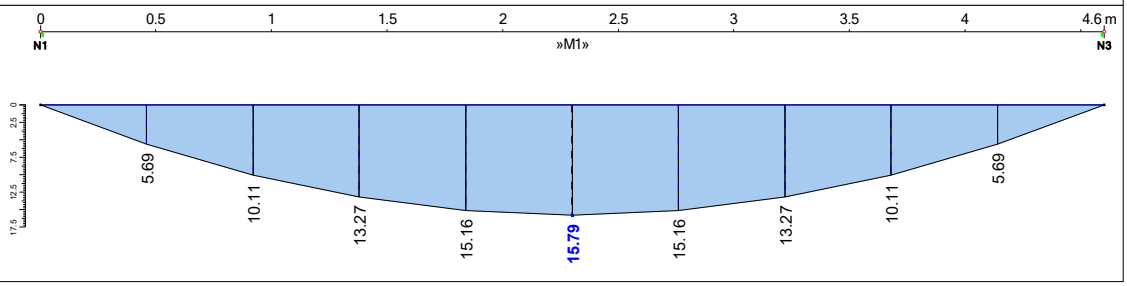
RFEM5
CO1: obtezba 1
Internal forces - V_z

	x [m]	Vz [kN]
max	0.000	13.73
min	4.600	-13.73



RFEM5
CO1: obtezba 1
Internal forces - M_y

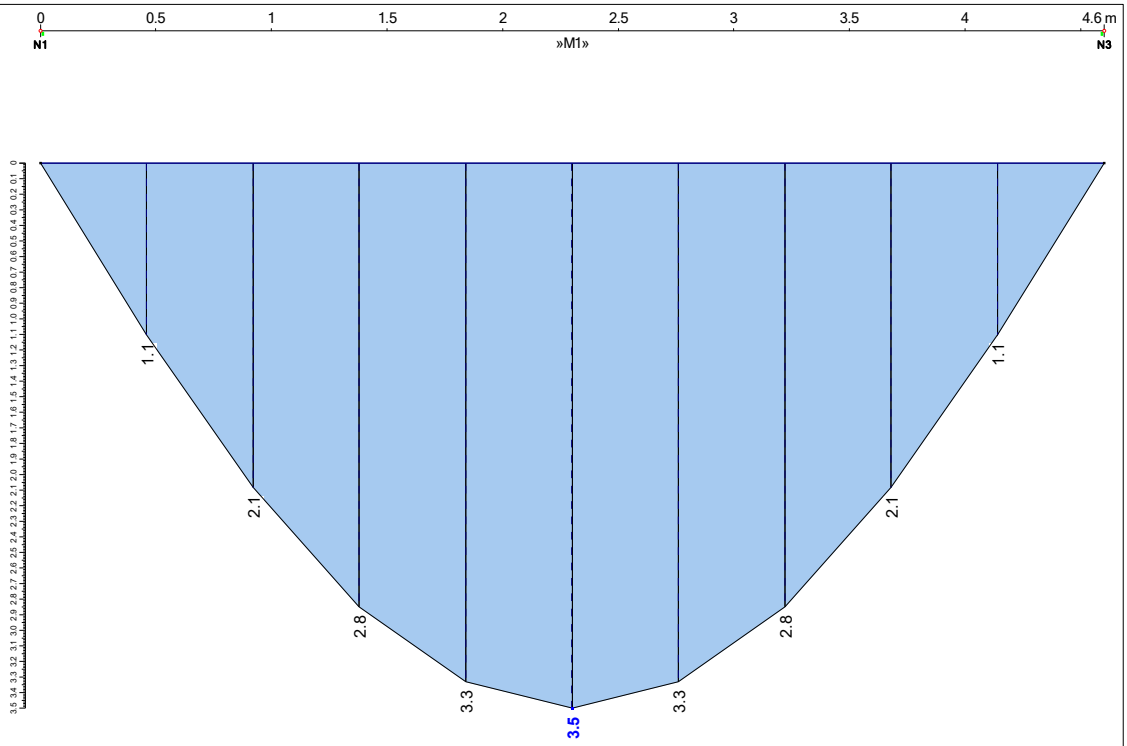
	x [m]	My [kNm]
max	2.300	15.79
min	--	--

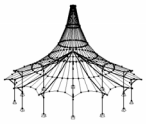


POVES

RFEM5
CO2: poves
Local Deformations - u_z

	x [m]	uz [mm]
max	2.300	3.5
min	--	--





RF-STEEL Members
CA1
General stress analysis
of steel members

1.1.1 GENERAL DATA

	Members to design:		All
	Load combinations to design:	CO1	obtezba 1

1.2 MATERIALS

Matl. No.	Material Description	Safety Factor γ_M [-]	Yield Strength f_{yk} [kN/cm²]	Limit Stresses [kN/cm²] Manually	Limit σ_x	Limit τ	Limit σ_{eqv}
3	Steel S 235	1.00	23.50	☐	23.50	13.57	23.50

1.3.1 CROSS-SECTIONS

Sect. No.	Matl. No.	Cross-section Description	I_t [cm⁴] A [cm²]	I_y [cm⁴] $\alpha_{pl,y}$	I_z [cm⁴] $\alpha_{pl,z}$	Comment
1	3	HEA 200	20.98 53.83	3692.00 1.11	1336.00 1.53	

2.1 STRESSES BY CROSS-SECTION

Sect. No.	Member No.	Location x [m]	S-Point No.	Load Case	Stress Type	Stress [kN/cm²] Existing	Limit	Stress Ratio
1	**HEA 200**							
	1	2.300	6	CO1	Sigma Total	4.06	23.50	0.17
	1	0.000	13	CO1	Tau Total	1.23	13.57	0.09
	1	2.300	6	CO1	Sigma-eqv	4.06	23.50	0.17

Podjetje:		Stran:	1
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

Komentar projektanta:

1 Izračun detajla sidranja

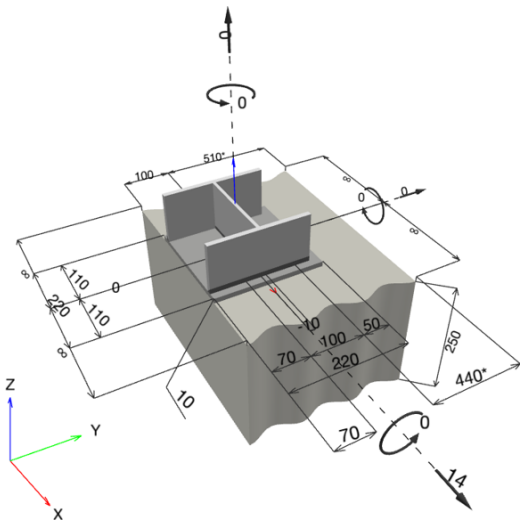
1.1 Vhodni podatki



Tip in velikost sidra:	**HUS4-H 12 h_nom1**
Povratna doba (življenjska doba v letih):	50
Številka artikla:	2293565 HUS4-H 12x70 10/-/-
Specification text:	Hilti HUS screw anchor with 60 mm embedment, 12 hnom1, Steel galvanized, installation per ETA-20/0867
Efektivna sidrna globina:	h_{ef} = 45,9 mm ($h_{ef,ETA}$ = 45,9 mm), h_{nom} = 60,0 mm
Material:	Carbon Steel
Tehnična ocena artikla:	ETA-20/0867
Izdano I Veljavno:	25.04.2024 | -
Kontrola:	Projektna metoda EN 1992-4, Mehansko sidro
Vgradnja z nadvišanjem:	e_b = 0,0 mm (brez nadvišanja); t = 10,0 mm
Ležišča pločevina[CBFEM]:	l_x x l_y x t = 220,0 mm x 220,0 mm x 10,0 mm;
Profil:	IPBi/HEA, IPBI 200 / HE 200 A; (L x W x T x FT) = 190,0 mm x 200,0 mm x 6,5 mm x 10,0 mm
Osnovni material:	nerazpokan beton, C25/30, $f_{c,cyl}$ = 25,00 N/mm^2; h =250,0 mm, Delni varnostni faktor materiala, ki ga določi uporabnik γ_c = 1,500
Vgradnja:	**Hammer drilled hole, Pogoji vgradnje: Suho**
Ojačitev:	brez armature ali razmak med armaturo >= 150 mm (any Ø) or >= 100 mm (Ø <= 10 mm) brez vzdolžne armature po robu betona

[CBFEM] - Izračun sider temelji na metodi končnih elementov z upoštevanjem posameznih komponent (CBFEM)

Geometrija [mm] & Obtežba [kN, kNm]



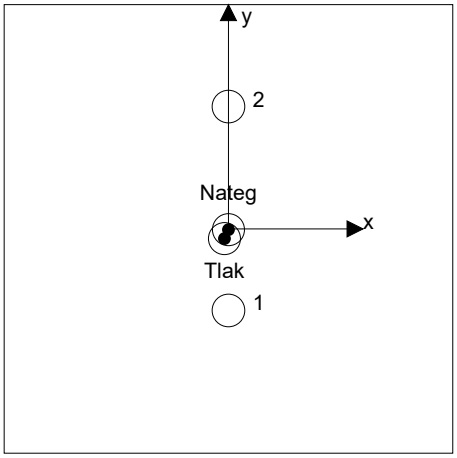
Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
PROFIS Engineering (c) 2003-2024 Hilti AG, FL-9494 Schaan Hilti je registrirana blagovna znamka Hilti AG, Schaan

Podjetje:		Stran:	2
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

1.1.1 Obtežna kombinacija

Primer	Opis	Sile [kN] / Momenti [kNm]	Potresno	požar	Izkoriščenost [%]
1	Combination 1	N = 0,000; V_x = 14,000; V_y = 0,000; M_x = 0,000; M_y = 0,000; M_z = 0,000;	ne	ne	63

1.2 Obtežni primer/Rezultante sil v sidru



Reakcije v sidru [kN]
Natezna sila: (+Nateg, -Tlak)

Sidro	Natezna sila	Strižna sila	Strižna sila x	Strižna sila y
1	0,200	9,800	9,800	−0,005
2	0,131	4,200	4,200	0,005

Resulting tension force in (x/y)=(0,0/−0,4): 0,332 [kN]
Resulting compression force in (x/y)=(−2,0/−4,8): 0,375 [kN]

Sile v sidru so izračunane po metodi končnih elementov z upoštevanjem posameznih komponent (CBFEM)

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	3
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

1.3 Natezna obremenitev (EN 1992-4, Točka 7.2.1)

	Obtežba [kN]	Kapaciteta [kN]	Izkoriščenost β_N [%]	Status
Nosilnost jekla*	0,200	52,667	1	OK
Nosilnost na izvlek*	0,200	11,402	2	OK
Porušitev po konusu betona**	0,332	33,018	2	OK
Cepitev betona**	0,332	20,918	2	OK

*najbolj obremenjeno sidro **skupina sider (natezno obremenjena sidra)

1.3.1 Nosilnost jekla

$$N_{Ed} \leq N_{Rd,s} = \frac{N_{Rk,s}}{\gamma_{Ms}}$$ EN 1992-4, Tabela 7.1

$N_{Rk,s}$ [kN]	γ_{Ms}	$N_{Rd,s}$ [kN]	N_{Ed} [kN]
79,000	1,500	52,667	0,200

1.3.2 Nosilnost na izvlek

$$N_{Ed} \leq N_{Rd,p} = \frac{\psi_c \cdot N_{Rk,p}}{\gamma_{Mp}}$$ EN 1992-4, Tabela 7.1

$N_{Rk,p}$ [kN]	ψ_c	γ_{Mp}	$N_{Rd,p}$ [kN]	N_{Ed} [kN]
15,298	1,118	1,500	11,402	0,200

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	4
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

1.3.3 Porušitev po konusu betona

$$N_{Ed} \le N_{Rd,c} = \frac{N_{Rk,c}}{\gamma_{Mc}}$$ EN 1992-4, Tabela 7.1

$$N_{Rk,c} = N^0_{Rk,c} \cdot \frac{A_{c,N}}{A^0_{c,N}} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \cdot \psi_{M,N}$$ EN 1992-4, Enačba (7.1)

$$N^0_{Rk,c} = k_1 \cdot \sqrt{f_{ck}} \cdot h_{ef}^{1,5}$$ EN 1992-4, Enačba (7.2)

$$A^0_{c,N} = s_{cr,N} \cdot s_{cr,N}$$ EN 1992-4, Enačba (7.3)

$$\psi_{s,N} = 0,7 + 0,3 \cdot \frac{c}{c_{cr,N}} \le 1,00$$ EN 1992-4, Enačba (7.4)

$$\psi_{ec1,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{N,1}}{s_{cr,N}}\right)} \le 1,00$$ EN 1992-4, Enačba (7.6)

$$\psi_{ec2,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{N,2}}{s_{cr,N}}\right)} \le 1,00$$ EN 1992-4, Enačba (7.6)

$$\psi_{M,N} = 2,0 - \frac{z}{1,5 \cdot h_{ef}} \ge 1,00$$ EN 1992-4, Enačba (7.7)

$A_{c,N}$ [mm²]	$A^0_{c,N}$ [mm²]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]	$f_{c,cyl}$ [N/mm²]
32.731	18.961	68,8	137,7	25,00

$e_{c1,N}$ [mm]	$\psi_{ec1,N}$	$e_{c2,N}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$	z [mm]
0,0	1,000	10,4	0,869	1,000	1,000	4,8

$\psi_{M,N}$	k_1	$N^0_{Rk,c}$ [kN]	γ_{Mc}	$N_{Rd,c}$ [kN]	N_{Ed} [kN]
1,930	11,000	17,103	1,500	33,018	0,332

ID skupine sider
1, 2

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Naslov:		Projektant:	
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Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

1.3.4 Cepitev betona

$N_{Ed} \le N_{Rd,sp} = \frac{N_{Rk,sp}}{\gamma_{Msp}}$ EN 1992-4, Tabela 7.1

$N_{Rk,sp} = N^0_{Rk,sp} \cdot \frac{A_{c,N}}{A^0_{c,N}} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \cdot \psi_{h,sp}$ EN 1992-4, Enačba (7.23)

$N^0_{Rk,sp} = N^0_{Rk,sp,ETA}$

$A^0_{c,N} = s_{cr,sp} \cdot s_{cr,sp}$ EN 1992-4, Enačba (7.3)

$\psi_{s,N} = 0{,}7 + 0{,}3 \cdot \frac{c}{c_{cr,sp}} \le 1{,}00$ EN 1992-4, Enačba (7.4)

$\psi_{ec1,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{N,1}}{s_{cr,sp}}\right)} \le 1{,}00$ EN 1992-4, Enačba (7.6)

$\psi_{ec2,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{N,2}}{s_{cr,sp}}\right)} \le 1{,}00$ EN 1992-4, Enačba (7.6)

$\psi_{h,sp} = \left(\frac{h}{h_{min}}\right)^{2/3} \le \max\left\{1; \left(\frac{h_{ef} + 1{,}5 \cdot c_1}{h_{min}}\right)^{2/3}\right\} \le 2{,}00$ EN 1992-4, Enačba (7.24)

$A_{c,N}$ [mm²]	$A^0_{c,N}$ [mm²]	$c_{cr,sp}$ [mm]	$s_{cr,sp}$ [mm]	h_{min} [mm]	$\psi_{h,sp}$	$f_{c,cyl}$ [N/mm²]
37.221	22.943	75,7	151,5	100,0	1,316	25,00

$e_{c1,N}$ [mm]	$\psi_{ec1,N}$	$e_{c2,N}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$	k_1
0,0	1,000	10,4	0,880	0,977	1,000	11,000

$N^0_{Rk,sp}$ [kN]	γ_{Msp}	$N_{Rd,sp}$ [kN]	N_{Ed} [kN]
17,103	1,500	20,918	0,332

ID skupine sider
1, 2

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Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

1.4 Strižna obremenitev (EN 1992-4, Točka 7.2.2)

	Obtežba [kN]	Kapaciteta [kN]	Izkoriščenost β_V [%]	Status
Nosilnost jekla (brez nadvišanja)*	9,800	24,896	40	OK
Porušitev po jeklu (z nadvišanjem)*	N/A	N/A	N/A	N/A
Nosilnost na iztrga betona**	14,000	30,504	46	OK
Porušitev po robu betona v smeri y-**	9,800	15,727	63	OK

*najbolj obremenjeno sidro **skupina sider (relevantna sidra)
When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

1.4.1 Nosilnost jekla (brez nadvišanja)

$V_{Ed} \leq V_{Rd,s} = \frac{V_{Rk,s}}{\gamma_{Ms}}$ EN 1992-4, Tabela 7.2

$V_{Rk,s} = k_7 \cdot V^0_{Rk,s}$ EN 1992-4, Enačba (7.35)

$V^0_{Rk,s}$ [kN]	k_7	$V_{Rk,s}$ [kN]	γ_{Ms}	$V_{Rd,s}$ [kN]	V_{Ed} [kN]
38,900	0,800	31,120	1,250	24,896	9,800

1.4.2 Nosilnost na iztrga betona

$V_{Ed} \leq V_{Rd,cp} = \frac{V_{Rk,cp}}{\gamma_{Mc,p}}$ EN 1992-4, Tabela 7.2

$V_{Rk,cp} = k_8 \cdot N_{Rk,c}$ EN 1992-4, Enačba (7.39a)

$N_{Rk,c} = N^0_{Rk,c} \cdot \frac{A_{c,N}}{A^0_{c,N}} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \cdot \psi_{M,N}$ EN 1992-4, Enačba (7.1)

$N^0_{Rk,c} = k_1 \cdot \sqrt{f_{ck}} \cdot h_{ef}^{1,5}$ EN 1992-4, Enačba (7.2)

$A^0_{c,N} = s_{cr,N} \cdot s_{cr,N}$ EN 1992-4, Enačba (7.3)

$\psi_{s,N} = 0,7 + 0,3 \cdot \frac{c}{c_{cr,N}} \leq 1,00$ EN 1992-4, Enačba (7.4)

$\psi_{ec1,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{V,1}}{s_{cr,N}}\right)} \leq 1,00$ EN 1992-4, Enačba (7.6)

$\psi_{ec2,N} = \frac{1}{1 + \left(\frac{2 \cdot e_{V,2}}{s_{cr,N}}\right)} \leq 1,00$ EN 1992-4, Enačba (7.6)

$\psi_{M,N} = 1$ EN 1992-4, Enačba (7.7)

$A_{c,N}$ [mm²]	$A^0_{c,N}$ [mm²]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]	k_8	$f_{c,cyl}$ [N/mm²]
32.731	18.961	68,8	137,7	2,000	25,00

$e_{c1,V}$ [mm]	$\psi_{ec1,N}$	$e_{c2,V}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$	$\psi_{M,N}$
0,0	1,000	20,0	0,775	1,000	1,000	1,000

k_1	$N^0_{Rk,c}$ [kN]	$\gamma_{Mc,p}$	$V_{Rd,cp}$ [kN]	V_{Ed} [kN]
11,000	17,103	1,500	30,504	14,000

ID skupine sider
1, 2

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1.4.3 Porušitev po robu betona v smeri y-

$$V_{Ed} \le V_{Rd,c} = \frac{V_{Rk,c}}{\gamma_{Mc}}$$ EN 1992-4, Tabela 7.2

$$V_{Rk,c} = k_T \cdot V^0_{Rk,c} \cdot \frac{A_{c,V}}{A^0_{c,V}} \cdot \psi_{s,V} \cdot \psi_{h,V} \cdot \psi_{\alpha,V} \cdot \psi_{ec,V} \cdot \psi_{re,V}$$ EN 1992-4, Enačba (7.40)

$$V^0_{Rk,c} = k_9 \cdot d_{nom}^{\alpha} \cdot l_f^{\beta} \cdot \sqrt{f_{ck}} \cdot c_1^{1,5}$$ EN 1992-4, Enačba (7.41)

$$\alpha = 0,1 \cdot \left(\frac{l_f}{c_1}\right)^{0,5}$$ EN 1992-4, Enačba (7.42)

$$\beta = 0,1 \cdot \left(\frac{d_{nom}}{c_1}\right)^{0,2}$$ EN 1992-4, Enačba (7.43)

$$A^0_{c,V} = 4,5 \cdot c_1^2$$ EN 1992-4, Enačba (7.44)

$$\psi_{s,V} = 0,7 + 0,3 \cdot \frac{c_2}{1,5 \cdot c_1} \le 1,00$$ EN 1992-4, Enačba (7.45)

$$\psi_{h,V} = \left(\frac{1,5 \cdot c_1}{h}\right)^{0,5} \ge 1,00$$ EN 1992-4, Enačba (7.46)

$$\psi_{ec,V} = \frac{1}{1 + \left(\frac{2 \cdot e_V}{3 \cdot c_1}\right)} \le 1,00$$ EN 1992-4, Enačba (7.47)

$$\psi_{\alpha,V} = \sqrt{\frac{1}{(\cos \alpha_V)^2 + (0,5 \cdot \sin \alpha_V)^2}} \ge 1,00$$ EN 1992-4, Enačba (7.48)

l_f [mm]	d_{nom} [mm]	k_9	α	β	$f_{c,cyl}$ [N/mm^2]	c_1 [mm]
60,0	12,00	2,400	0,093	0,070	25,00	70,0

$A_{c,V}$ [mm^2]	$A^0_{c,V}$ [mm^2]	$\psi_{s,V}$	$\psi_{h,V}$	$e_{c,V}$ [mm]	$\psi_{ec,V}$
22.050	22.050	1,000	1,000	0,0	1,000

α_V [°]	$\psi_{\alpha,V}$	$\psi_{re,V}$
89,97	2,000	1,000

$V^0_{Rk,c}$ [kN]	k_T	γ_{Mc}	$V_{Rd,c}$ [kN]	V_{Ed} [kN]
11,795	1,0	1,500	15,727	9,800

ID skupine sider
1

When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Točka pritrjevanja:			

1.5 Kombinacija nateznih in strižnih obremenitev (EN 1992-4-4, del 7.2.3)

Porušitev jekla

β_N	β_V	α	Izkoriščenost $\beta_{N,V}$ [%]	Status
0,004	0,394	2,000	16	OK

$\beta_N^{\alpha} + \beta_V^{\alpha} \leq 1{,}0$

Porušitev betona

β_N	β_V	α	Izkoriščenost $\beta_{N,V}$ [%]	Status
0,018	0,623	1,500	50	OK

$\beta_N^{\alpha} + \beta_V^{\alpha} \leq 1{,}0$

1.6 Opozorila

- Projektne metode v programski opremi PROFIS Engineering zahtevajo uporabo absolutno toge ležiščne pločevine v skladu z regulativami (ETAG 001/Annex C, EOTA TR029, itd.). To pomeni, da se porazdelitev obremenitve na sidra zaradi elastičnih deformacij sidrne plošče ne upošteva - predpostavlja se, da je ležiščna pločevina toga, da se ne deformira, v primeru delovanja projektne obtežbe. PROFIS Engineering izračuna najmanjšo potrebno debelino ležiščne pločevine s CBFEM metodo za omejitev napetosti v ležiščni pločevini na podlagi zgornjih predpostavk. PROFIS Engineering ne dokazuje, da je predpostavka o togi ležiščni pločevini pravilna. Vhodne podatke in rezultate je potrebno preveriti, da so v skladu z obstoječimi pogoji in verodostojnosti!
- Na splošno pogoji iz točke 4.2.2.1 in 4.2.2.3 b) ETAG 00 Dodatek C niso izpolnjeni, ker je premer luknje v ležiščni pločevini v skladu z Dodatkom 3 Tabela 3 večja od vrednosti, ki jih za ustrezen premer sidra določa Tabela 4.1 Dodatek C. Zato je projektna odpornost za skupine sider omejna na dvakratno vrednost strižne odpornosti jekla (enojnega sidra) v skladu s soglasjem.
- Potrebno je opraviti kontrolo prenosa obtežbe v osnovni material po EN 1992-4, Dodatek A!
- Izračun je veljaven samo v primeru, če luknja v ležiščni pločevini ni večja od vrednosti podane v Tabeli 6.1 of EN 1992-4!! Za večje premere izvrtin glej točko 6.2.2 of EN 1992-4!
- Seznam dodatne opreme v tem poročilu je samo za informacije uporabnika. V vsakem primeru je potrebno upoštevati navodila za uporabo, ki so priložena izdelku, da zagotovite pravilno vgradnjo.
- For the determination of the $\psi_{re,v}$ (concrete edge failure) the minimum concrete cover defined in the design settings is used as the concrete cover of the edge reinforcement.
- Please note that this design utilizes user defined material safety factor values that differ from the default values recommended in EN1992-4. Partial Safety factor value: γ_c = 1,500
- Metode projektiranja v programu PROFIS Engineering zahtevajo upoštevanje toge ležiščne pločevine, skladno z veljavnimi predpisi (ETAG 001/Dodatek C, EOTA TR029, itd.). To pomeni, da je ležiščna pločevina absolutno toga in prepreči prerazporeditev obtežbe na sidra zaradi elastičnih/plastičnih pomikov. Uporabnik sprejme, da se ležiščna pločevina po inženirski presoji upošteva kot skoraj toga.
- Karakteristična sprijemna trdnost je odvisna od povratne dobe (servisna doba v letih): 50

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Podjetje:		Stran:	9
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Točka pritrjevanja:			

1.7 Podatki za vgradnjo

Ležiščna pločevina, jeklo: S 235; E = 210.000,00 N/mm^2; f_{yk} = 235,00 N/mm^2
Profil: IPBi/HEA, IPBI 200 / HE 200 A; (L x W x T x FT) = 190,0 mm x 200,0 mm x 6,5 mm x 10,0 mm

Premer luknje v ležiščni plošči: d_f = 16,0 mm

Debelina ležiščne pločevine (vnos): 10,0 mm

Metoda vrtanja: Udarno vrtanje
Čiščenje: Clean the drill hole. Under the conditions - according to fastener size and drilling direction - given in the Assessment document and MPII (IFU), the cleaning of the drill hole may be omitted.

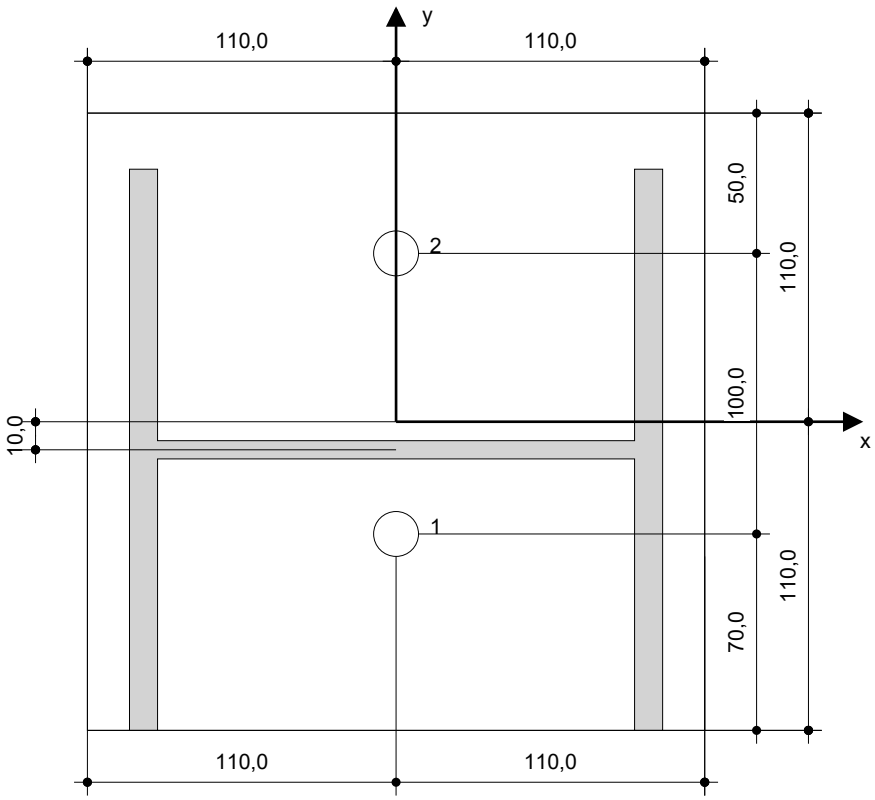
Tip in velikost sidra: HUS4-H 12 h_nom1
Številka artikla: 2293565 HUS4-H 12x70 10/-/-

Maximum installation torque: Hilti SIW 22T-A
Globina izvrtine v osnovnem materialu: 12,0 mm
Globina izvrtine v osnovnem materialu: 70,0 mm
Minimalna debelina osnovnega materiala: 110,0 mm

Hilti HUS screw anchor with 60 mm embedment, 12 hnom1, Steel galvanized, installation per ETA-20/0867

1.7.1 Priporočeni dodatki

Vrtanje	Čiščenje	Vgradnja
• Primerno vrtalno udarno kladivo • Ustrezen sveder	• Ročni izpihovalnik	• Hilti SIW 22T-A impulzni vijačnik



Koordinate sidra [mm]

Sidro	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0,0	−40,0	-	-	70,0	540,0
2	0,0	60,0	-	-	170,0	440,0

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Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

2 Izračun ležiščne pločevine

2.1 Vhodni podatki

Ležiščna pločevina:	Oblika: Pravokotna l_x x l_y x t = 220,0 mm x 220,0 mm x 10,0 mm Izračun: CBFEM Material: S 235; F_y = 235,00 N/mm²; ε_{lim} = 5,00%
Tip in velikost sidra:	HUS4-H 12 h_nom1, h_{ef} = 45,9 mm
Togost sidra:	Sidro je modelirano z upoštevanjem togosti določene iz grafov obremenitev-deformacija, na podlagi testov v neodvisnih laboratorijih. Upoštevajte, da enostavna zamenjava sidra ni mogoča, saj togost sidra močno vpliva na rezultate porazdelitve obtežbe.
Projektna metoda:	EN-based design uporaba MKE z upoštevanjem posameznih komponent
Vgradnja z nadvišanjem:	e_b = 0,0 mm (No stand-off); t = 10,0 mm
Profil:	IPBI 200 / HE 200 A; (L x W x T x FT) = 190,0 mm x 200,0 mm x 6,5 mm x 10,0 mm Material: S 235; F_y = 235,00 N/mm²; ε_{lim} = 5,00% Ekscentričnost x: 0,0 mm Ekscentričnost y: -10,0 mm
Osnovni material:	Uncracked concrete; C25/30; $f_{c,cyl}$ = 25,00 N/mm²; h = 250,0 mm; E = 31.000,00 N/mm²; G = 12.916,67 N/mm²; v = 0,20
Zvari (profil na ležiščno pločevino):	Tip razporeditve: Plastičen Material: S 235
Velikost mreže:	Število elementov na robu: 8 Min. velikost elementa: 10,0 mm Maks. velikost elementa: 50,0 mm

2.2 Povzetek

Opis		Profil		Ležiščna pločevina			Beton [%]
		σ_{Ed} [N/mm²]	ε_{Pl} [%]	σ_{Ed} [N/mm²]	ε_{Pl} [%]	Nosilnost pločevine na bočni pritisk v območju luknje [%]	
1	Combination 1	22,09	0,00	55,51	0,00	12	1

2.3 Klasifikacija ležiščne pločevine

Spodnji rezultati so prikazani za merodajno obtežno kombinacijo: Combination 1

Natezne sile v sidru	Ekvivalentno toga ležiščna pločevina (FEM)	Projektiranje z upoštevanjem podajne ležiščne pločevine (FEM)
Sidro 1	0,042 kN	0,200 kN
Sidro 2	0,037 kN	0,131 kN

Uporabnik je sprejel, da je obnašanje ležiščne pločevine 100 % togo, po svoji inženirski presoji.To pomeni, da so lahko uporabljene smernice za dimenzioniranje sider.

2.4 Profil/Toge ojačitve/Ležiščna pločevina

Profil in jeklene toge ojačitve so preverjene na ravni povezave jekla z betonom. Projektiranje detajla ne nadomesti projektiranja kritičnega jeklenega prereza, tovrstni izračun mora biti preverjen z drugim programom in ne PROFIS Engineering-om.

2.4.1 Nadomestna napetost in plastična deformacija

Kriterij mejnega stanja po EN1993-1-5 Dodatek C.8, (1) 2.

Rezultati

Del	Obtežna kombinacija	Material	σ_{Ed} [N/mm²]	ε_{Pl} [%]	f_y [N/mm²]	γ_{M0}	f_y/γ_{M0} [N/mm²]	ε_{lim} [%]	Status
Ležiščna pločevina	Combination 1	S 235	55,51	0,00	235,00	1,00	235,00	5,00	OK
Profil	Combination	S 235	12,85	0,00	235,00	1,00	235,00	5,00	OK

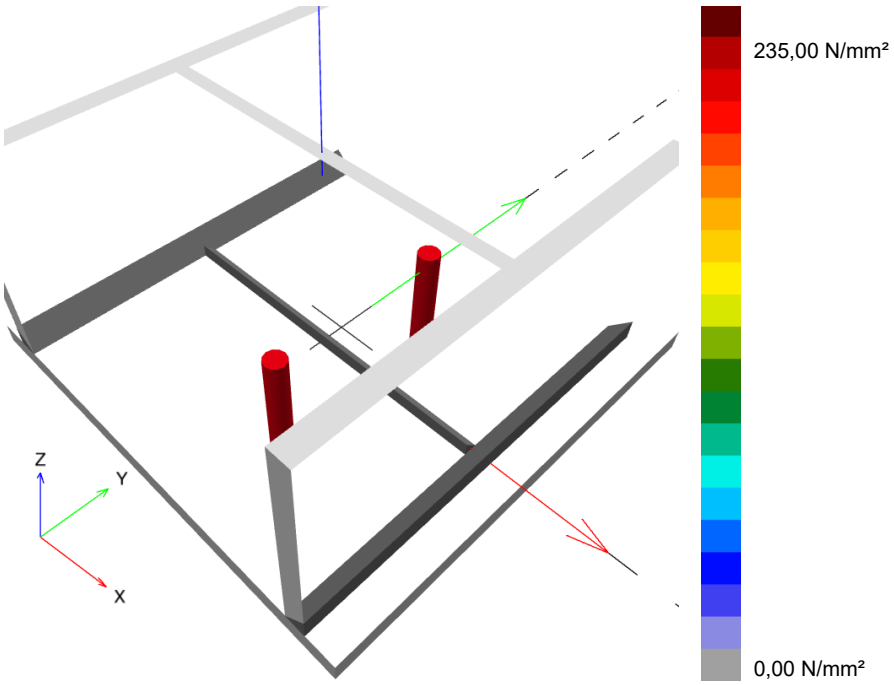
Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
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Del	Obtežna kombinacija	Material	σ_{Ed} [N/mm²]	ε_{Pl} [%]	f_y [N/mm²]	γ_{M0}	f_y/γ_{M0} [N/mm²]	ε_{lim} [%]	Status
	1								
Profil	Combination 1	S 235	12,84	0,00	235,00	1,00	235,00	5,00	OK
Profil	Combination 1	S 235	22,09	0,00	235,00	1,00	235,00	5,00	OK

2.4.1.1 Nadomestna napetost

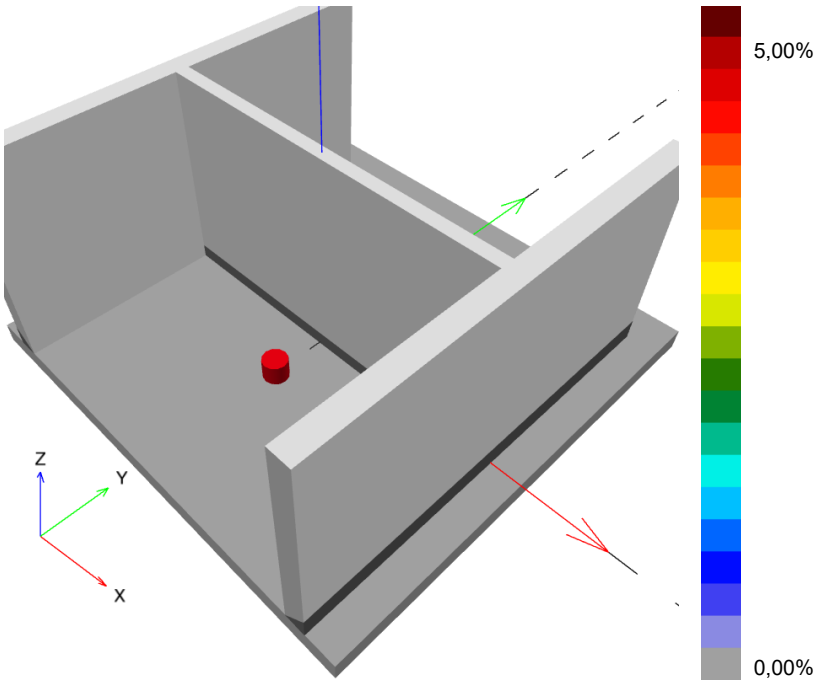
Spodnji rezultati so prikazani za merodajno obtežno kombinacijo: 1 - Combination 1



Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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2.4.1.2 Napetost na meji plastičnosti

Spodnji rezultati so prikazani za merodajno obtežno kombinacijo: 1 - Combination 1



2.4.2 Nosilnost pločevine na bočni pritisk v območju luknje

Merodajna obtežna kombinacija: 1 - Combination 1

Nosilnost pločevine na bočni pritisk, EN1993-1 - 8 točka 3.6.1:

Enačbe

$$F_{b,Rd} = \frac{k_1 \, a_b \, f_u \, d \, t}{\gamma_{M2}}$$

$$\text{Izkoriščenost} = \frac{V_{Ed}}{F_{b,Rd}}$$

Spremenljivke

	k_1	a_b	f_u [N/mm²]	d [mm]	t [mm]	γ_{M2}
Sidro 1	2,50	1,00	360,00	12,0	10,0	1.25
Sidro 2	2,50	1,00	360,00	12,0	10,0	1.25

Rezultati

	V_{Ed} [kN]	$F_{b,Rd}$ [kN]	Izkoriščenost [%]	Status
Sidro 1	9,800	86,400	12	OK
Sidro 2	4,200	86,400	5	OK

2.5 Beton

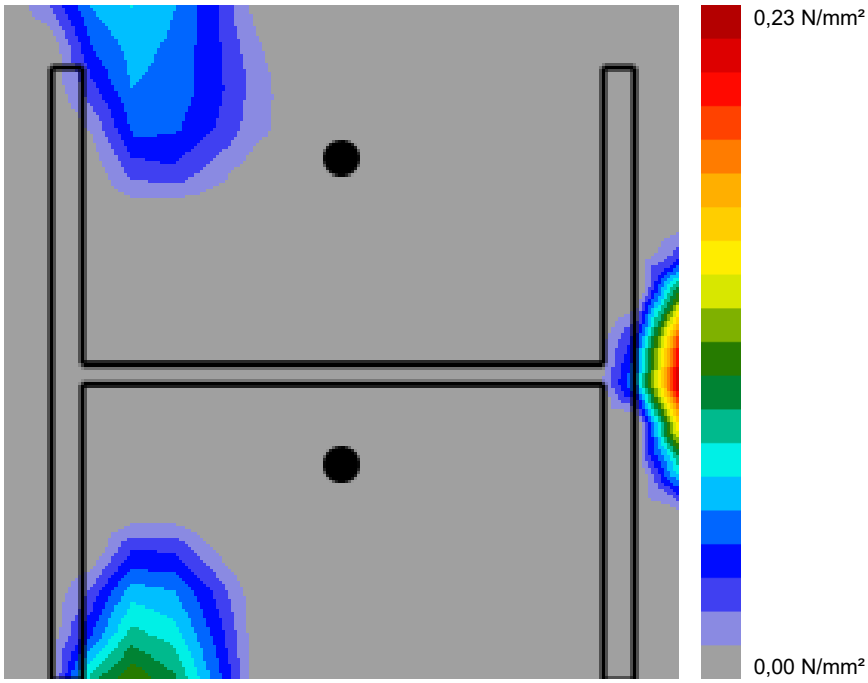
Merodajna obtežna kombinacija: 1 - Combination 1

V skladu s standardom EN1992-1-1 točka 6.7(4), mora biti beton dovolj armiran za prevzem nateznih sil, ki jih povzroči pritrjeni element. Programska oprema PROFIS Engineering ne zajema določitve potrebne armature v betonu.

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	13
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

2.5.1 Pritisk na beton pod ležiščno pločevino



2.5.2 Kontrola tlačnih napetosti v betonu pod ležiščno pločevino okoli profila po EN1992-1 točka 6.7 in EN1993-1-8, točka 6.2.5

Enačbe

$$f_{jd} = \frac{\beta_j \, k_j \, \alpha_{cc} \, f_{ck}}{\gamma_c}$$

$$\sigma = \frac{N}{A_{eff}}$$

$$\text{Izkoriščenost} = \frac{\sigma}{f_{jd}}$$

Spremenljivke

N [kN]	A_{eff} [mm²]	β_j	k_j	α_{cc}	f_{ck} [N/mm²]	γ_c
0,375	3.721	0,67	1,00	1,00	25,00	1,50

Rezultati

σ [N/mm²]	f_{jd} [N/mm²]	Izkoriščenost [%]	Status
0,10	11,17	1	OK

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	14
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

2.6 Pomen simbolov

a_b	Faktor
α_{cc}	Dolgotrajne posledice na maksimalno trdnost betona
A_{eff}	Efektivna površina
β_j	Koeficient spoja β_j
d	Nominalni premer vijaka
ε_{lim}	Mejna plastična deformacija
ε_{Pl}	Plastična deformacija po CBFEM
$F_{b,Rd}$	Odpornost ležiščne pločevine EN 1993-1-8 tab. 3.4
f_{ck}	Karakteristična tlačna trdnost betona
f_{jd}	Mejna odpornost betonske kocke
f_u	Mejna odpornost
f_y	Meja tečenja
γ_c	Faktor uporabe - SP 16, Tabela 41
γ_{M0}	Varnostni faktor jekla gamma M0
γ_{M2}	Varnostni faktor jekla gamma M2
k_1	Faktor oddaljenosti od roba in razmak med vijaki pravokotno na smer prenosa obremenitve - EN 1993-1-8 - Tabela 3.4
k_j	Faktor koncentracije
N	Rezultanta tlačne sile
σ	Povprečna napetost v betonu
σ_{Ed}	Nadomestna napetost
t	Debelina ležiščne pločevine
V_{Ed}	Strižna sila na sidro

2.7 Opozorila

- Z uporabo funkcionalnosti podajne ležiščne pločevine programa PROFIS Engineering ste mogoče izven okvirov standarda in vaša specificirana ležiščna pločevina se ne bo obnašala togo. Prosimo vas, da preverite rezultate s kompetentnim odgovornim projektantom za zagotovitev primernosti in ustreznosti za vaše specifične pristojnosti in projektne zahteve.
- Sidro je modelirano z upoštevanjem togosti določene iz grafov obremenitev-deformacija, na podlagi testov v neodvisnih laboratorijih. Upoštevajte, da enostavna zamenjava sidra ni mogoča, saj togost sidra močno vpliva na rezultate porazdelitve obtežbe.

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	15
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

3 Povzetek rezultatov

Izračun ležiščne pločevine, sider, zvarov in ostalih elementov je zasnovan po metodi CBFEM (metoda končnih elementov z upoštevanjem posameznih komponent) in regulativ iz Evrokoda.

	Obtežna kombinacija	Maks. izkoriščenost	Status
Sidra	Combination 1	63%	OK
Ležiščna pločevina	Combination 1	24%	OK
Beton	Combination 1	1%	OK
Profil	Combination 1	10%	OK

Izbrano pritrjevanje ustreza projektnim pogojem!

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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Podjetje:		Stran:	16
Naslov:		Projektant:	
Telefon I Faks:	|	E-mail:	
Projektiranje:	Telovadnica OŠ Križevci pri Ljutomeru	Datum:	08.12.2024
Točka pritrjevanja:			

4 Opombe; Vaše dolžnosti sodelovanja

- Vse informacije in podatki, ki jih vsebuje programska oprema, se nanašajo izključno na uporabo izdelkov Hilti in temeljijo na načelih, formulah in varnostnih predpisih v skladu s tehničnimi navodili podjetja Hilti ter navodili za uporabo, montažo in montažo itd. ki jih mora uporabnik dosledno upoštevati. Vse vsebovane vrednosti so povprečne številke, zato je treba pred uporabo ustreznega izdelka Hilti opraviti preskuse, specifične za uporabo. Rezultati izračunov s programsko opremo v osnovi temeljijo na podatkih, ki jih vnesete. Zato prevzemate vso odgovornost za odsotnost napak, popolnost in ustreznost podatkov, ki jih morate vnesti. Poleg tega prevzemate vso odgovornost za to, da rezultate izračunov pregleda in popravi strokovnjak, zlasti glede skladnosti z veljavnimi normativi in dovoljenji, preden jih uporabite za svoj specifični objekt. Programska oprema služi le kot pomoč pri razlagi norm in dovoljenj brez kakršnega koli jamstva o odsotnosti napak, pravilnosti in ustreznosti rezultatov ali primernosti za določeno aplikacijo.
- Za preprečevanje ali omejitev škode, ki jo povzroča programska oprema, morate sprejeti vse potrebne in razumne ukrepe. Zlasti morate poskrbeti za redno varnostno kopiranje izračunov in podatkov ter po potrebi redno posodabljati programsko opremo, ki jo ponuja Hilti. Če ne uporabljate funkcije AutoUpdate programske opreme, morate z uporabo ročnih posodobitev prek spletnega mesta Hilti zagotoviti, da uporabljate trenutno in posodobljeno različico programske opreme. Hilti ne bo odgovoren za posledice, kot so obnovitev izgubljenih ali poškodovanih podatkov ali programov, ki so posledica krivdne kršitve dolžnosti.

Vhodne podatke in rezultate je potrebno preveriti glede skladnosti z obstoječimi pogoji in verodostojnosti!
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3.0. POTRESNA ANALIZA - A.B. PLOŠČE in STENE

3.1. Zasnova

Plošča nad pritličjem (POZ 101)	d	=	20 cm
Plošča nad nadstropjem (POZ 201)	d	=	20 cm
Plošča nad nadstropjem (POZ 202)	d	=	40 cm
zidane stene (POZ St.)	d	=	25 cm
AB stene (POZ St.)	d	=	20 cm

3.2. Obtežba

POZ 202 (strešna plošča med osjo K - J)

stalna obtežba

Fotovoltaika (opcija)		=	0,60 kN/m^2
Nasutje (5cm)		=	0,80 kN/m^2
TI (30cm)		=	0,25 kN/m^2
Omet (2cm)		=	0,15 kN/m^2
Oprema (opcija)		=	0,15 kN/m^2
	g	=	3,00 kN/m^2

POZ 201 (strešna plošča med osjo J - M)

stalna obtežba

Fotovoltaika (opcija)		=	0,60 kN/m^2
Nasutje (5cm)		=	0,80 kN/m^2
TI (30cm)		=	0,25 kN/m^2
Omet (2cm)		=	0,15 kN/m^2
	g	=	1,80 kN/m^2

POZ 101 (plošča nad pritličjem)

stalna obtežba

Zaključni sloj		=	0,30 kN/m^2
estrih (6cm)		=	1,45 kN/m^2
TI (10cm)		=	0,10 kN/m^2
omet (2cm)		=	0,15 kN/m^2
	g	=	2,00 kN/m^2
koristna obtežba	q	=	3,00 kN/m^2

3.3. Zasnova, podatki in model

Potresna obremenitev

Križevci pri Ljutomeru so v coni projektnega pospeška a_g = 0,10g

Objekt je glede faktorja pomembnosti v kategoriji II, skladno s tem je Y_1 = 1,0

Faktor duktilnosti za izračun temeljev je bil uporabljen q = 1,5.

Tip tal (brez geomehanskega poročila) je privzet tip tal D.

3.4. Obremenitev in dimenzioniranje

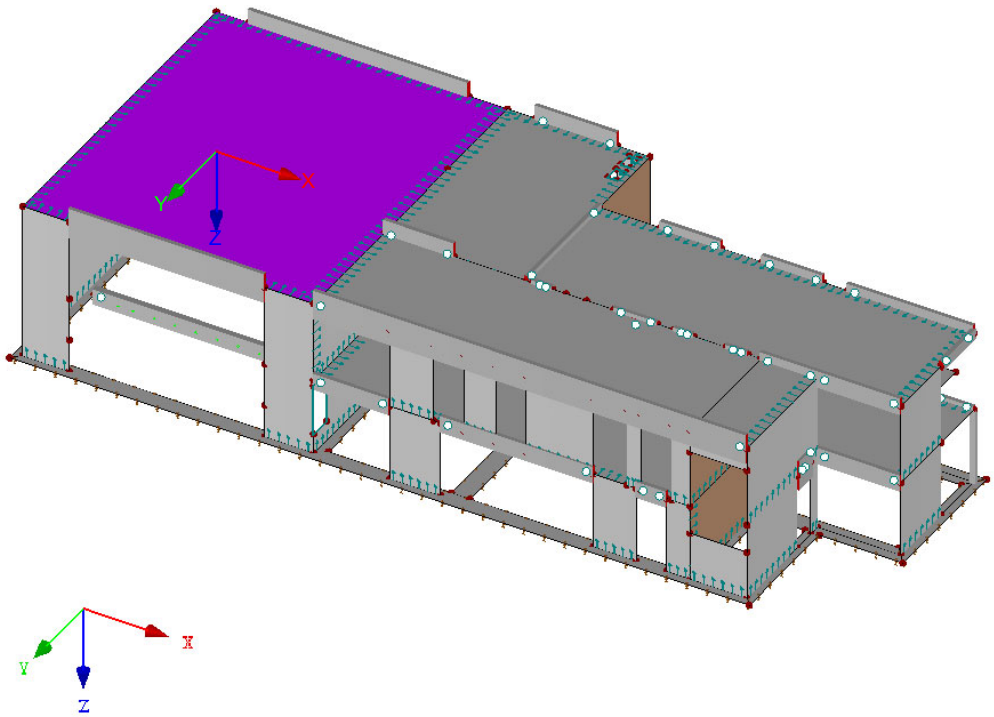
Obremenitve in dimenzionirane AB konstrukcije ter izračun armature so narejene s programom Dlubal » RFEM «

CONTENTS

Graphic	Konstrukcija - potres, Isometric	1
1	**Model**	
1.3	Materials	2
1.6	Openings	2
1.9	Surface Supports	2
1.13	Cross-Sections	2
1.14	Member Hinges	2
1.19	Member Elastic Foundations	2
2	**Load Cases and Combinations**	
2.1	Load Cases	3
2.1.1	Load Cases - Calculation Parameters	3
2.1.5	Load Cases - Parameters for CQC Rule	4
2.7	Result Combinations	4
2.7.2	Result Combinations - Calculation Parameters	4
3	**Loads**	
	LC2 - stalna obtezba - 3.4 Surface Loads	5
Graphic	LC2 - LC2: stalna obtezba, Isometric	5
	LC3 - koristna obtezba - 3.4 Surface Loads	6
Graphic	LC3 - LC3: koristna obtezba, Isometric	6
	Results - Result Combinations	
Graphic	Napetosti v temeljnih tleh - potres, RC4: potres - obremenitev, In Z-direction	7
Graphic	Potres - deformacija v smeri X, RC5: potres - deformacija, Isometric	8
Graphic	Potres - deformacija v smeri Y, RC5: potres - deformacija, Isometric	9
	RF-CONCRETE Surfaces	
	CA1 - Reinforced concrete design	
1.1	General Data	10
1.2	Materials	10
1.2.1	Material Parameters	10
1.3	Surfaces	11
1.4	Reinforcement Group No. 1 - plošče	11
1.4	Reinforcement Group No. 2 - stene	12
2.2	Required Reinforcement by Surface	13
	RF-CONCRETE Members	
	CA1 - Design of concrete members	
1.1	General Data	16
1.1	Settings - Nonlinear Calculation (State II)	16
1.2	Materials	16
1.2.1	Material Parameters	16
1.3	Cross-Sections	16
1.6	Reinforcement Group No. 1 - nosilci	17
2.3	Required Reinforcement by Member	17
	RF-DYNAM Pro	
1.1	Global Data	21
1.2.1	Mass Cases - General	21
1.3.1	Mass Combinations - General	21
1.4.1	Natural Vibration Case - General	21
1.4.2	Natural Vibration Case - Calculation Parameters	21
1.5.1	Response Spectra - General	21
1.5.2	Response Spectra - Standard Parameters	21
1.5.3.1	Response Spectra - Graph	22
1.8.1	Dynamic Load Cases - General	22
1.8.5.1	Dynamic Load Cases - Equivalent Static Force Analysis	22
1.8.5.2	Dynamic Load Cases - Equivalent Static Force Analysis - Mode Shapes To Generate	22
5.1	Natural Frequencies	23
5.7	Effective Modal Mass Factors	23

KONSTRUKCIJA - POTRES

Isometric



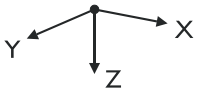
1.3 MATERIALS

Matl. No.	Modulus E [kN/cm²]	Modulus G [kN/cm²]	Poisson's Ratio ν [-]	Spec. Weight γ [kN/m³]	Coeff. of Th. Ex α [1/°C]	Partial Factor γM [-]	Material Model
1	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic
2	Opeèni zid						
	365.00	165.91	0.100	13.73	6.00E-06	1.00	Isotropic Linear Elastic
	User-Defined Material						
7	Concrete C25/30 | EN 1992-1-1:2004/A1:2014						
	3100.00	1291.67	0.200	25.00	1.00E-05	1.00	Isotropic Linear Elastic

1.6 OPENINGS

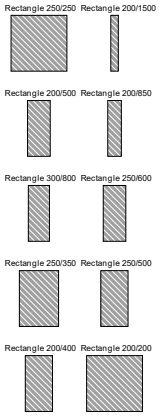
Opening No.	Boundary Lines No.	In Surface No.	Area A [m²]	Comment
1	336,338,239,337	20	2.750	
2	341,339,342,340	19	4.500	
3	187,55,346,38	59	0.350	
4	353,355,356,354	59	0.350	

1.9 SURFACE SUPPORTS



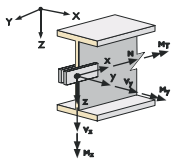
Found. No.	On Surfaces No.	Spring Constants RF-SOILIN	Translation Support or Spring [kN/m³] u_x	u_y	u_z	Shear Spring [kN/m] v_{xz}	v_{yz}
1	69-75	-	5000.000	5000.000	3000.000	1000.000	1000.000

1.13 CROSS-SECTIONS



Section No.	Matl. No.	J [cm⁴] A [cm²]	I_y [cm⁴] A_y [cm²]	I_z [cm⁴] A_z [cm²]	Principal Axes α [°]	Rotation α' [°]	Overall Dimensions [mm] Width b	Height h
1	Rectangle 250/250							
	1	54947.92	32552.08	32552.08	0.00	0.00	250.0	250.0
		625.00	520.83	520.83				
2	Rectangle 200/1500							
	1	366400.88	5625000.50	100000.00	0.00	0.00	200.0	1500.0
		3000.00	2500.00	2500.00				
3	Rectangle 200/500							
	1	99804.33	208333.33	33333.33	0.00	0.00	200.0	500.0
		1000.00	833.33	833.33				
4	Rectangle 200/850							
	7	193075.17	1023541.69	56666.67	0.00	0.00	200.0	850.0
		1700.00	1416.67	1416.67				
6	Rectangle 300/800							
	1	550177.63	1280000.00	180000.00	0.00	0.00	300.0	800.0
		2400.00	2000.00	2000.00				
7	Rectangle 250/600							
	1	230672.83	450000.03	78125.00	0.00	0.00	250.0	600.0
		1500.00	1250.00	1250.00				
8	Rectangle 250/350							
	1	102022.92	89322.91	45572.92	0.00	0.00	250.0	350.0
		875.00	729.17	729.17				
11	Rectangle 250/500							
	1	178808.59	260416.67	65104.17	0.00	0.00	250.0	500.0
		1250.00	1041.67	1041.67				
12	Rectangle 200/400							
	1	73240.00	106666.67	26666.67	0.00	0.00	200.0	400.0
		800.00	666.67	666.67				
13	Rectangle 200/200							
	1	22506.67	13333.33	13333.33	0.00	0.00	200.0	200.0
		400.00	333.33	333.33				

1.14 MEMBER HINGES



Release No.	Reference System	Axial/Shear Release or Spring[kN/m] u_x	u_y	u_z	Moment Release or Spring[kNm/rad] φx	φy	φz	Comment
1	Local x,y,z	☐	☐	☐	☐	☒	☐	
2	Local x,y,z	☐	☐	☐	☐	☒	☒	
3	Local x,y,z	☐	☐	☐	☐	☒	☐	

1.19 MEMBER ELASTIC FOUNDATIONS



Found. No.	Member No.	$C_{1,x}$ [kN/m²]	$C_{1,y}$ [kN/m²]	$C_{1,z}$ [kN/m²]	$C_{2,x}$ [kN]	$C_{2,y}$ [kN]	$C_{2,z}$ [kN]	$C_φ$ [kNm/rad/m]
1	68,69	1000.000	1000.000	5000.000	1000.000	1000.000	5000.000	0.000

2.1 LOAD CASES

Load Case	Load Case Description	EN 1990 | SIST Action Category	Self-Weight - Factor in Direction			
			Active	X	Y	Z
LC1	lastna teža	Permanent	☒	0.000	0.000	1.000
LC2	stalna obtezba	Permanent/Imposed	☐			
LC3	koristna obtezba	Imposed - Category A: domestic, residential areas	☐			
LC4	sneg	Snow (H ≤ 1000 m a.s.l.)	☐			
LC5	DLC1 - Mode shape 1, direction - X	Earthquake	☐			
LC6	DLC1 - Mode shape 1, direction - Y	Earthquake	☐			
LC7	DLC1 - Mode shape 2, direction - X	Earthquake	☐			
LC8	DLC1 - Mode shape 2, direction - Y	Earthquake	☐			
LC9	DLC1 - Mode shape 3, direction - X	Earthquake	☐			
LC10	DLC1 - Mode shape 3, direction - Y	Earthquake	☐			
LC11	DLC1 - Mode shape 4, direction - X	Earthquake	☐			
LC12	DLC1 - Mode shape 4, direction - Y	Earthquake	☐			
LC13	DLC1 - Mode shape 5, direction - X	Earthquake	☐			
LC14	DLC1 - Mode shape 5, direction - Y	Earthquake	☐			

2.1.1 LOAD CASES - CALCULATION PARAMETERS

Load Case	Load Case Description	Calculation Parameters		
LC1	lastna teža	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
		Activate stiffness factors of:	: ☒	Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒	Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC2	stalna obtezba	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
		Activate stiffness factors of:	: ☒	Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒	Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC3	koristna obtezba	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
		Activate stiffness factors of:	: ☒	Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒	Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC4	sneg	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
		Activate stiffness factors of:	: ☒	Cross-sections (factor for J, I_y, I_z, A, A_y, A_z)
			: ☒	Members (factor for GJ, EI_y, EI_z, EA, GA_y, GA_z)
LC5	DLC1 - Mode shape 1, direction - X	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC6	DLC1 - Mode shape 1, direction - Y	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC7	DLC1 - Mode shape 2, direction - X	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC8	DLC1 - Mode shape 2, direction - Y	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC9	DLC1 - Mode shape 3, direction - X	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC10	DLC1 - Mode shape 3, direction - Y	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC11	DLC1 - Mode shape 4, direction - X	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC12	DLC1 - Mode shape 4, direction - Y	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC13	DLC1 - Mode shape 5, direction - X	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson
LC14	DLC1 - Mode shape 5, direction - Y	Method of analysis	: ⊙	Geometrically linear analysis
		Method for solving system of nonlinear algebraic equations	: ⊙	Newton-Raphson

2.1.5 LOAD CASES - PARAMETERS FOR CQC RULE

Load Case	Load Case Description	Angular Frequency [rad/s	Lehr's damping [-]
LC5	DLC1 - Mode shape 1, direction - X	14.22	0.000
LC6	DLC1 - Mode shape 1, direction - Y	14.22	0.000
LC7	DLC1 - Mode shape 2, direction - X	18.67	0.000
LC8	DLC1 - Mode shape 2, direction - Y	18.67	0.000
LC9	DLC1 - Mode shape 3, direction - X	21.56	0.000
LC10	DLC1 - Mode shape 3, direction - Y	21.56	0.000
LC11	DLC1 - Mode shape 4, direction - X	42.15	0.000
LC12	DLC1 - Mode shape 4, direction - Y	42.15	0.000
LC13	DLC1 - Mode shape 5, direction - X	46.95	0.000
LC14	DLC1 - Mode shape 5, direction - Y	46.95	0.000

2.7 RESULT COMBINATIONS

Result Combin	Description	Loading
RC1	DLC1 - Result Envelope - X	LC5/p + LC7/p + LC9/p + LC11/p + LC13/p
RC2	DLC1 - Result Envelope - Y	LC6/p + LC8/p + LC10/p + LC12/p + LC14/p
RC3	DLC1 - Result Envelope - SRSS	RC1/p + RC2/p
RC4	potres - obremenitev	LC1/p + LC2 + 0.3*LC3 + RC3
RC5	potres - deformacija	LC1/p + LC2 + 0.3*LC3 + 1.5*RC3

2.7.2 RESULT COMBINATIONS - CALCULATION PARAMETERS

Result Combin.	DS	Result Combination Description	Calculation Parameters
RC1		DLC1 - Result Envelope - X	Options : ☒ Quadratic combination: SRSS ☒ Use equivalent linear combination ⦿ Positive (max) / negative (min)
RC2		DLC1 - Result Envelope - Y	Options : ☒ Quadratic combination: SRSS ☒ Use equivalent linear combination ⦿ Positive (max) / negative (min)
RC3		DLC1 - Result Envelope - SRSS	Options : ☒ Quadratic combination: SRSS ☒ Use equivalent linear combination ⦿ Positive (max) / negative (min)

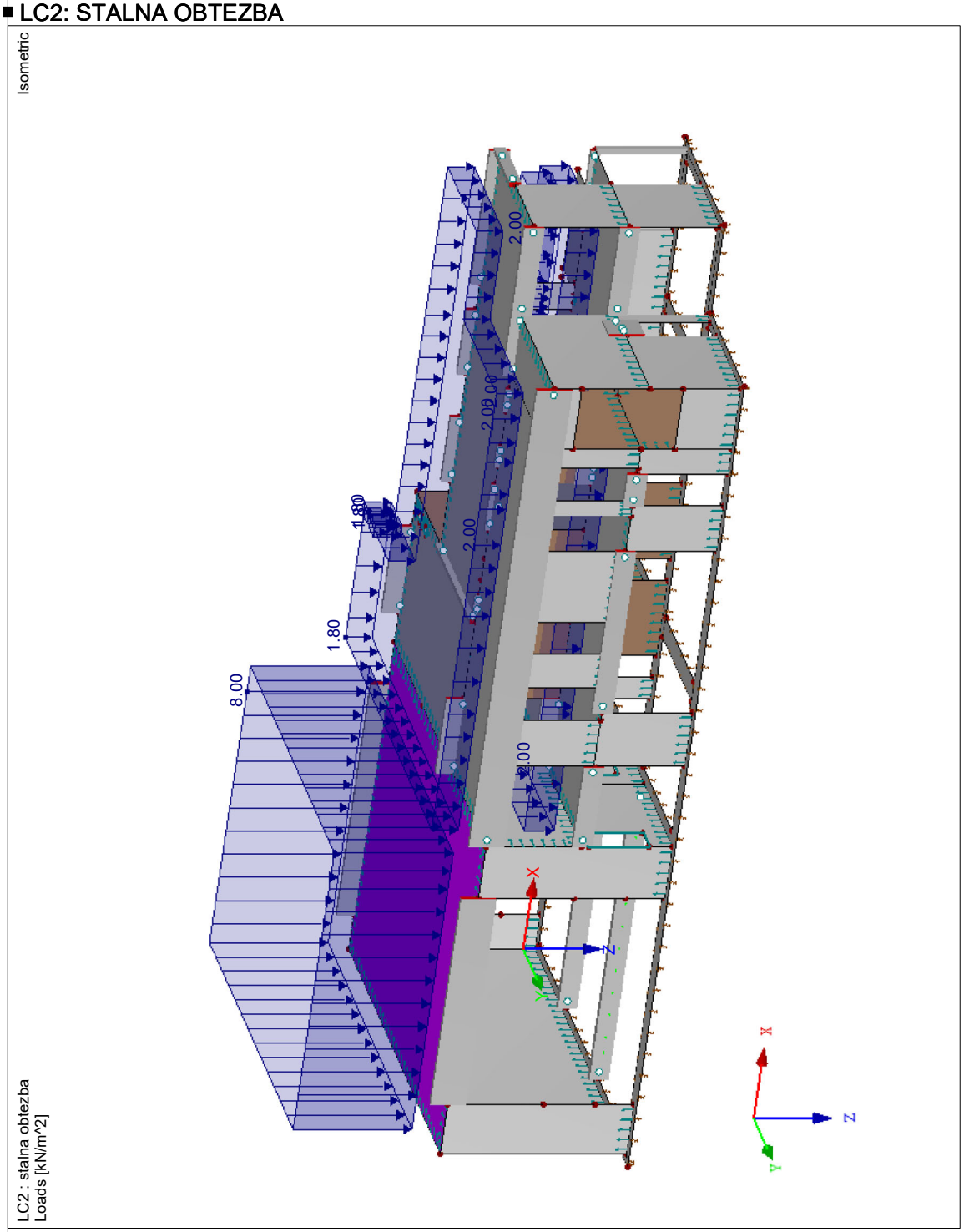
LC2
stalna obtezba

3.4 SURFACE LOADS

LC2: stalna obtezba

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
2	58,61-64	Force	Uniform	ZL	p	2.00	kN/m²
3	60	Force	Uniform	ZL	p	8.00	kN/m²
4	59	Force	Uniform	ZL	p	1.80	kN/m²

LC2: STALNA OBTEZBA



LC3
koristna obtezba

3.4 SURFACE LOADS

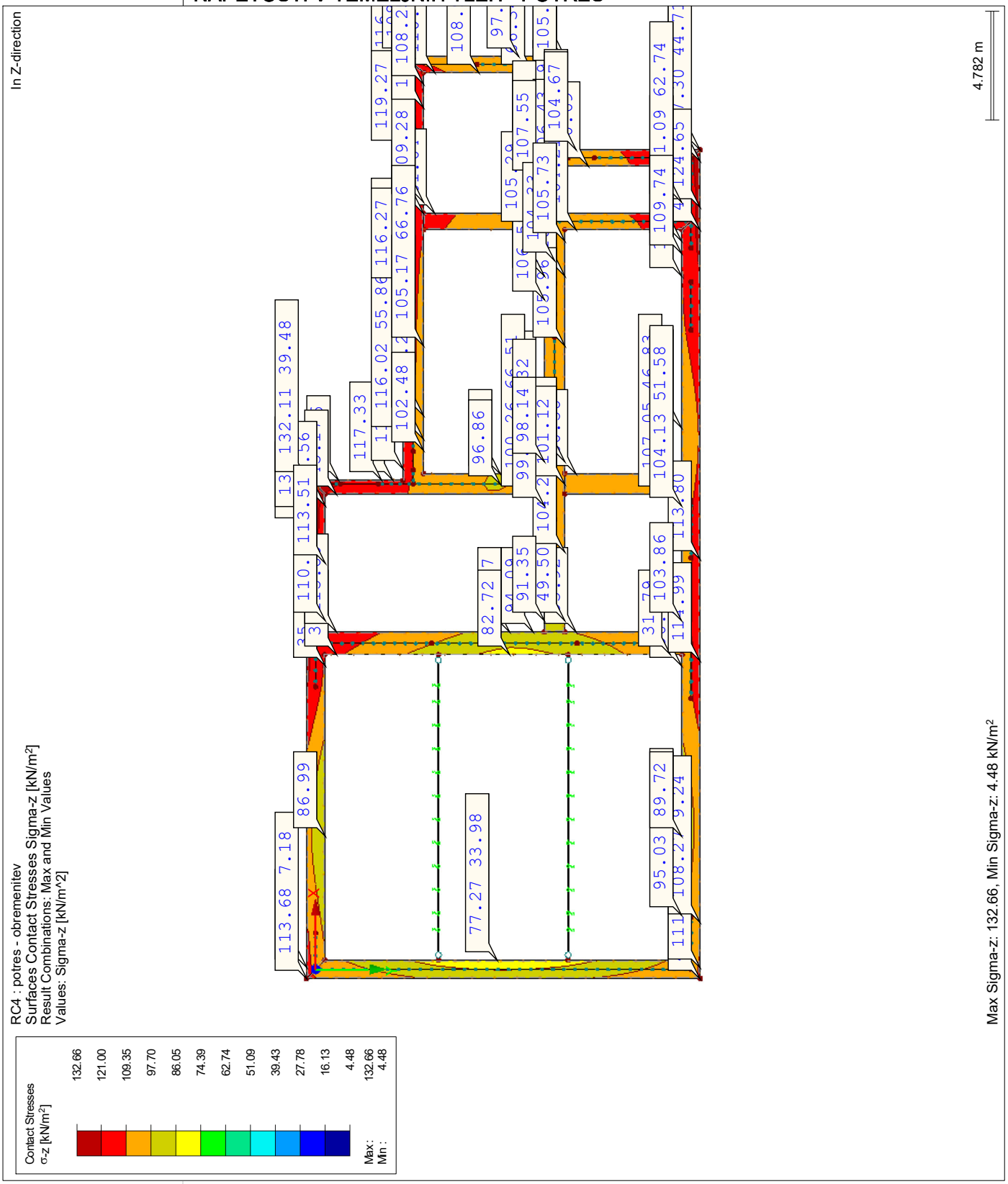
LC3: koristna obtezba

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	58,61-64	Force	Uniform	ZL	p	3.00	kN/m²

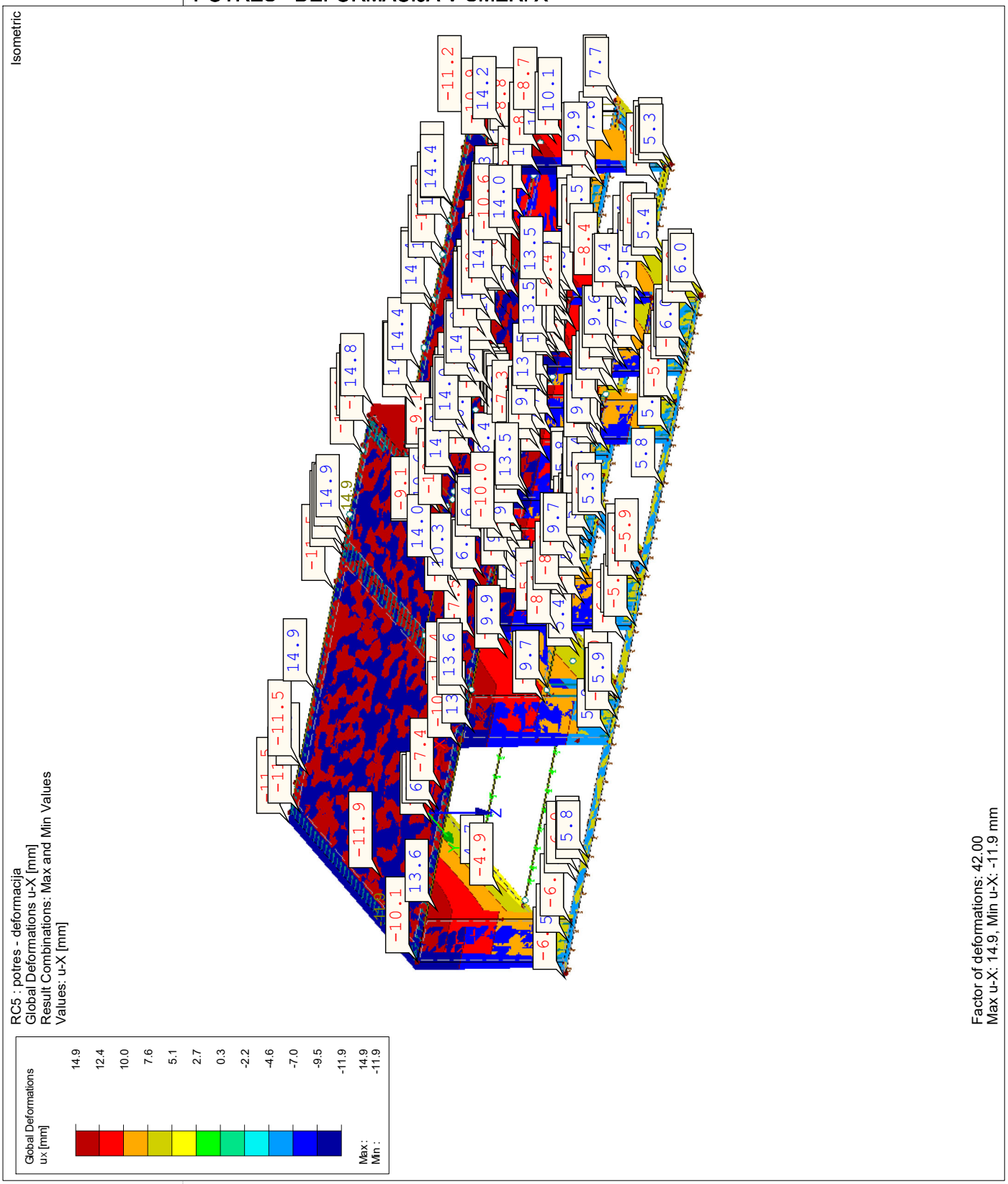
LC3: KORISTNA OBTEZBA



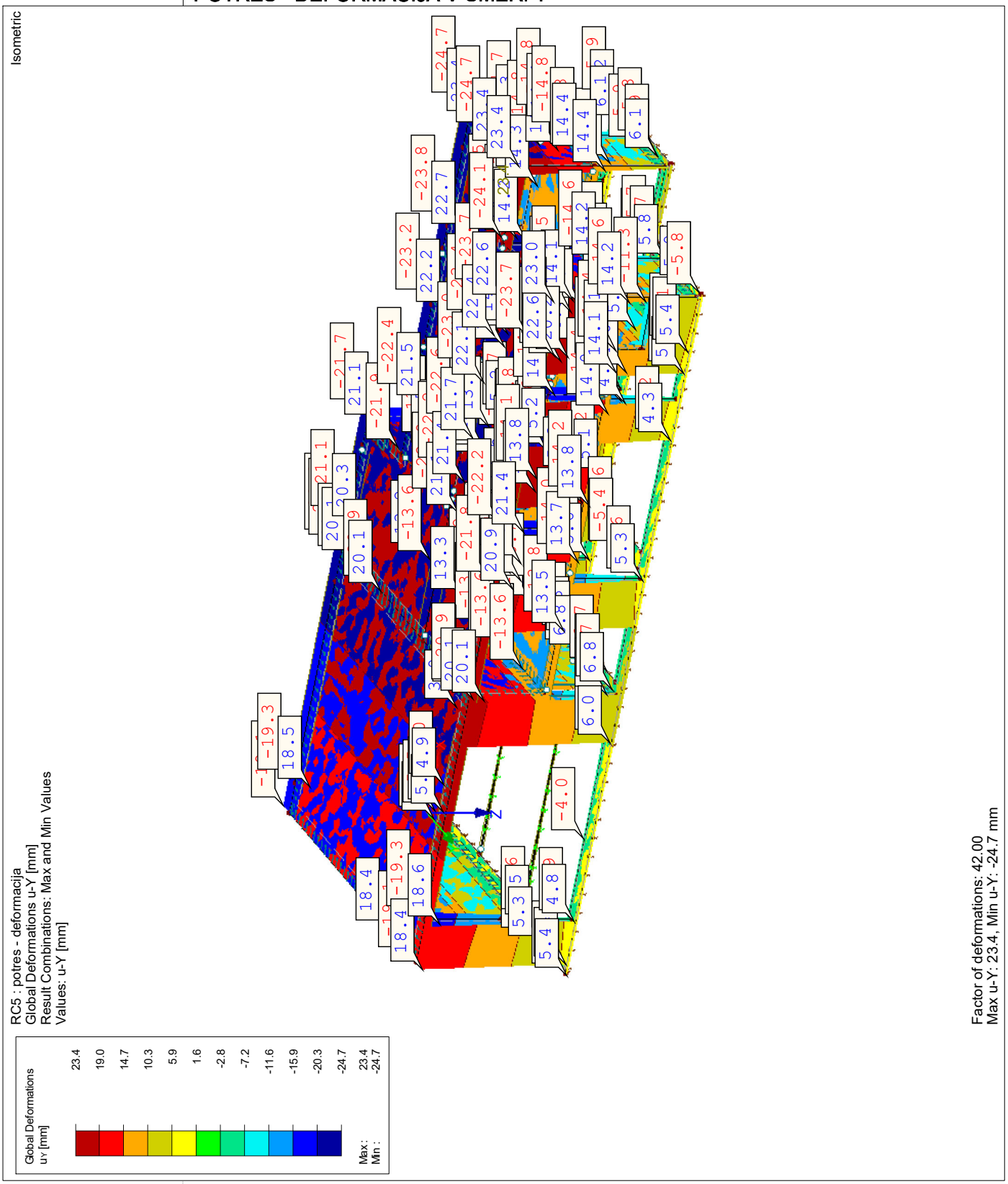
NAPETOSTI V TEMELJNIH TLEH - POTRES



POTRES - DEFORMACIJA V SMERI X



POTRES - DEFORMACIJA V SMERI Y



STATIK d.o.o
RF-CONCRETE Surfaces
CA1
Reinforced concrete design

1.1 GENERAL DATA

Design according to Standard:	SIST EN 1992-1-1:2005/A101:2006
ULTIMATE LIMIT STATE	
Result combination for design:	RC4 potres - obremenitev Persistent and Transient
Definition of Provided Additional Reinforcement	Automatic arrangement according to the specifications in Table 1.4
DETAILS	
Analysis Method for Reinforcement Envelope	Mixed
Apply the internal forces without the rib components	☐
Design Situation Settings for Serviceability Limit State Checks	
Load combination:	
Characteristic with direct load	Checks: k_1*f_{ck}, k_3*f_{yk}
Characteristic with imposed deformation	Checks: k_1*f_{ck}, k_4*f_{yk}
Frequent	Checks: w_k
Quasi-permanent	Checks: k_2*f_{ck}, w_k, u_l

1.2 MATERIALS

Material No.	Material Description		Comment
	Concrete Strength Class	Steel Description	
1	Concrete C25/30	B 500 S (A)	
2	Opeèni zid	B 500 S (A)	
7	Concrete C25/30	B 500 S (A)	

1.2.1 MATERIAL PARAMETERS

Material No.	Description	Name	Size	Unit
1	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.80	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	31000.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.60	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{c1u}	-3.500	‰
	Shear Modulus	G	12916.70	N/mm^2
	Poisson's Ratio	ν	0.200	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2.000	-
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
2	**Concrete Strength Class: Opeèni zid**			
	Characteristic Cylinder Compressive Strength	f_{ck}	0.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	0.00	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	0.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	0.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	0.00	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	0.000	‰
	Ultimate Strain at Failure	ε_{c1u}	0.000	‰
	Shear Modulus	G	0.00	N/mm^2
	Poisson's Ratio	ν	0.000	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	0.000	‰
	Ultimate Strain at Failure	ε_{cu2}	0.000	‰
	Parabola Exponent	n	0.000	-
	Specific Weight	γ	0.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
7	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.00	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.80	N/mm^2
	Characteristic for Nonlinear Calculations			
	Mean Secant Modulus of Elasticity	E_{cm}	31000.00	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.00	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.60	N/mm^2
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{c1u}	-3.500	‰
	Shear Modulus	G	12916.70	N/mm^2
	Poisson's Ratio	ν	0.200	-
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰

1.2.1 MATERIAL PARAMETERS

Material No.	Description	Name	Size	Unit
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2.000	-
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000.00	N/mm^2
	Yield Stress Mean Value	f_{ym}	550.00	N/mm^2
	Characteristic Yield Stress	f_{yk}	500.00	N/mm^2
	Tensile Strength Mean Value	f_{tm}	551.25	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525.00	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰

1.3 SURFACES

Surface No.	Matl. No.	Thickness Type	Thickness [mm]	Notes	Comment
6	7	Constant	200.00		
11	7	Constant	200.00		
12	7	Constant	200.00		
13	7	Constant	200.00		
14	7	Constant	200.00		
15	7	Constant	200.00		
16	7	Constant	200.00		
17	7	Constant	200.00		
18	1	Constant	200.00		
19	1	Constant	200.00		
20	7	Constant	200.00		
21	7	Constant	200.00		
26	7	Constant	250.00		
28	7	Constant	200.00		
29	7	Constant	200.00		
31	7	Constant	200.00		
32	7	Constant	200.00		
33	7	Constant	200.00		
35	7	Constant	200.00		
37	7	Constant	200.00		
38	7	Constant	200.00		
39	7	Constant	200.00		
40	7	Constant	200.00		
42	7	Constant	200.00		
43	7	Constant	200.00		
44	7	Constant	200.00		
46	1	Constant	200.00		
47	7	Constant	200.00		
49	7	Constant	200.00		
56	7	Constant	200.00		
58	1	Constant	200.00		
59	1	Constant	200.00		
61	1	Constant	200.00		
62	1	Constant	200.00		
63	1	Constant	200.00		
64	1	Constant	200.00		
67	7	Constant	200.00		
68	7	Constant	200.00		
69	1	Constant	800.00		
70	1	Constant	800.00		
71	1	Constant	800.00		
72	1	Constant	800.00		
73	1	Constant	800.00		
74	1	Constant	800.00		
75	1	Constant	800.00		
78	7	Constant	200.00		
79	7	Constant	200.00		
86	7	Constant	200.00		
87	7	Constant	200.00		

1.4 REINFORCEMENT GROUP NO. 1 - PLOŠČE

Applied to surfaces:	58,59,61-64,69-75
REINFORCEMENT RATIO	
Minimum secondary reinforcement	20.0 %
Basic minimum reinforcement	0.0 %
Minimum compression reinforcement	0.0 %
Minimum tension reinforcement	0.0 %
Maximum reinforcement percentage	4.0 %
Minimum shear reinforcement percentage	0.0 %
Concrete cover acc. to Standard	☐
BASIC REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,-z (top): 0.00, As-2,-z (top): 0.00 cm^2/m
BASIC REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,+z (bottom): 0.00, As-2,+z (bottom): 0.00 cm^2/m

1.4 REINFORCEMENT GROUP NO. 1 - PLOŠČE

ADDITIONAL REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
ADDITIONAL REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
LONGITUDINAL REINFORCEMENT FOR SHEAR FORCE DESIGN	
Apply the greater value resulting from either the required or provided reinforcement (basic and add. reinforcement) per reinforcement direction	
OPTIONS FOR SIST EN 1992-1-1:2005/A101:2006	
Minimum longitudinal reinforcement for plates acc. to 9.3.1	☒
Direction of minimum reinforcement	
Reinforcement direction with the main tensile force from top (-z) and bottom (+z) surfaces together:	☒
Minimum longitudinal reinforcement for walls acc. to 9.6	☐
Minimum shear reinforcement	☒
Neutral axis depth limitation	☒
Variable strut inclination - min	21.801 °
Variable concrete strut inclination - max	45.000 °
Partial safety factor γ_s	PT 1.15, AC 1.00, SLS 1.00
Partial safety factor γ_c	PT 1.50, AC 1.20, SLS 1.00
Consideration of long-term effects Alpha-cc	PT 1.00, AC 1.00, SLS 1.00
Consideration of long-term effects Alpha-ct	SLS 1.00

1.4 REINFORCEMENT GROUP NO. 2 - STENE

Applied to surfaces:	6,11-21,26,28,29,31-33,35,37-40,42-44,46,47,49, 56,67,68,78,79,86,87
REINFORCEMENT RATIO	
Minimum secondary reinforcement	20.0 %
Basic minimum reinforcement	0.0 %
Minimum compression reinforcement	0.0 %
Minimum tension reinforcement	0.0 %
Maximum reinforcement percentage	4.0 %
Minimum shear reinforcement percentage	0.0 %
Concrete cover acc. to Standard	☐
BASIC REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,-z (top): 0.00, As-2,-z (top): 0.00 cm^2/m
BASIC REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	As-1,+z (bottom): 0.00, As-2,+z (bottom): 0.00 cm^2/m
ADDITIONAL REINFORCEMENT LAYOUT - TOP (-z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
ADDITIONAL REINFORCEMENT LAYOUT - BOTTOM (+z)	
Number of directions	2
Cover to rebar centroid	d-1: 30.00, d-2: 40.00 mm
Bar diameter	ds-1: 10.00, ds-2: 10.00 mm
Directions of reinforcement	Phi-1: 0.000°, Phi-2: 90.000°
Reinforcement area	Use required additional reinforcement acc. to Tables 2.1, 2.2, 2.3
LONGITUDINAL REINFORCEMENT FOR SHEAR FORCE DESIGN	
Apply the greater value resulting from either the required or provided reinforcement (basic and add. reinforcement) per reinforcement direction	
OPTIONS FOR SIST EN 1992-1-1:2005/A101:2006	
Minimum longitudinal reinforcement for plates acc. to 9.3.1	☐
Minimum longitudinal reinforcement for walls acc. to 9.6	☒
Minimum shear reinforcement	☒
Neutral axis depth limitation	☒
Variable strut inclination - min	21.801 °
Variable concrete strut inclination - max	45.000 °
Partial safety factor γ_s	PT 1.15, AC 1.00, SLS 1.00
Partial safety factor γ_c	PT 1.50, AC 1.20, SLS 1.00
Consideration of long-term effects Alpha-cc	PT 1.00, AC 1.00, SLS 1.00
Consideration of long-term effects Alpha-ct	SLS 1.00

2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
6	M8146	39.700	7.100	0.500	$a_{s,1,-z\ (top)}$	7.65	0.00	7.65	7.65	cm²/m	
	M8146	39.700	7.100	0.500	$a_{s,2,-z\ (top)}$	14.34	0.00	14.34	14.34	cm²/m	
	M8146	39.700	7.100	0.500	$a_{s,1,+z\ (bottom)}$	7.76	0.00	7.76	7.76	cm²/m	
	M8146	39.700	7.100	0.500	$a_{s,2,+z\ (bottom)}$	14.41	0.00	14.41	14.41	cm²/m	
	M8146	39.700	7.100	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
11	M74	22.720	4.300	-3.300	$a_{s,1,-z\ (top)}$	6.60	0.00	6.60	6.60	cm²/m	
	M74	22.720	4.300	-3.300	$a_{s,2,-z\ (top)}$	11.34	0.00	11.34	11.34	cm²/m	
	M74	22.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	9.04	0.00	9.04	9.04	cm²/m	
	M74	22.720	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	16.41	0.00	16.41	16.41	cm²/m	
	M74	22.720	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
12	M8363	35.970	4.300	-3.300	$a_{s,1,-z\ (top)}$	9.31	0.00	9.31	9.31	cm²/m	
	M8363	35.970	4.300	-3.300	$a_{s,2,-z\ (top)}$	12.23	0.00	12.23	12.23	cm²/m	
	M8363	35.970	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	9.25	0.00	9.25	9.25	cm²/m	
	M8363	35.970	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	12.18	0.00	12.18	12.18	cm²/m	
	M8363	35.970	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
13	M131	35.600	12.250	-3.300	$a_{s,1,-z\ (top)}$	5.59	0.00	5.59	5.59	cm²/m	
	M131	35.600	12.250	-3.300	$a_{s,2,-z\ (top)}$	5.60	0.00	5.60	5.60	cm²/m	
	M131	35.600	12.250	-3.300	$a_{s,1,+z\ (bottom)}$	7.20	0.00	7.20	7.20	cm²/m	
	M131	35.600	12.250	-3.300	$a_{s,2,+z\ (bottom)}$	6.10	0.00	6.10	6.10	cm²/m	
	M28	35.600	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
14	M34	35.600	10.500	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M52	35.600	11.100	-3.300	$a_{s,2,-z\ (top)}$	6.51	0.00	6.51	6.51	cm²/m	
	M34	35.600	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M52	35.600	11.100	-3.300	$a_{s,2,+z\ (bottom)}$	6.51	0.00	6.51	6.51	cm²/m	
	M34	35.600	10.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
15	M8114	18.050	16.500	0.500	$a_{s,1,-z\ (top)}$	3.35	0.00	3.35	3.35	cm²/m	
	M8114	18.050	16.500	0.500	$a_{s,2,-z\ (top)}$	6.75	0.00	6.75	6.75	cm²/m	
	M8114	18.050	16.500	0.500	$a_{s,1,+z\ (bottom)}$	3.54	0.00	3.54	3.54	cm²/m	
	M8114	18.050	16.500	0.500	$a_{s,2,+z\ (bottom)}$	6.85	0.00	6.85	6.85	cm²/m	
	M88	20.550	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
16	M748	28.600	16.500	-3.300	$a_{s,1,-z\ (top)}$	3.23	0.00	3.23	3.23	cm²/m	
	M8124	30.150	16.500	0.500	$a_{s,2,-z\ (top)}$	6.71	0.00	6.71	6.71	cm²/m	
	M748	28.600	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	3.16	0.00	3.16	3.16	cm²/m	
	M8124	30.150	16.500	0.500	$a_{s,2,+z\ (bottom)}$	6.71	0.00	6.71	6.71	cm²/m	
	M84	30.150	16.500	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
17	M82	31.650	16.500	-3.300	$a_{s,1,-z\ (top)}$	4.72	0.00	4.72	4.72	cm²/m	
	M799	31.650	16.500	-1.875	$a_{s,2,-z\ (top)}$	11.10	0.00	11.10	11.10	cm²/m	
	M82	31.650	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	4.34	0.00	4.34	4.34	cm²/m	
	M799	31.650	16.500	-1.875	$a_{s,2,+z\ (bottom)}$	11.05	0.00	11.05	11.05	cm²/m	
	M799	31.650	16.500	-1.875	a_{sw}	8.00	-	-	-	cm²/m²	
18	M8021	14.300	0.000	0.500	$a_{s,1,-z\ (top)}$	3.51	0.00	3.51	3.51	cm²/m	
	M838	14.300	0.000	0.025	$a_{s,2,-z\ (top)}$	7.63	0.00	7.63	7.63	cm²/m	
	M8021	14.300	0.000	0.500	$a_{s,1,+z\ (bottom)}$	9.38	0.00	9.38	9.38	cm²/m	
	M8021	14.300	0.000	0.500	$a_{s,2,+z\ (bottom)}$	20.23	0.00	20.23	20.23	cm²/m	
	M8021	14.300	0.000	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
19	M240	14.300	10.650	-0.500	$a_{s,1,-z\ (top)}$	3.02	0.00	3.02	3.02	cm²/m	
	M8018	14.300	10.023	0.500	$a_{s,2,-z\ (top)}$	2.11	0.00	2.11	2.11	cm²/m	
	M240	14.300	10.650	-0.500	$a_{s,1,+z\ (bottom)}$	3.55	0.00	3.55	3.55	cm²/m	
	M24	14.300	5.100	-3.300	$a_{s,2,+z\ (bottom)}$	2.00	0.00	2.00	2.00	cm²/m	
	M24	14.300	5.100	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
20	M238	14.300	15.400	-3.000	$a_{s,1,-z\ (top)}$	5.31	0.00	5.31	5.31	cm²/m	
	M1093	14.300	16.500	0.000	$a_{s,2,-z\ (top)}$	7.83	0.00	7.83	7.83	cm²/m	
	M238	14.300	15.400	-3.000	$a_{s,1,+z\ (bottom)}$	5.22	0.00	5.22	5.22	cm²/m	
	M7997	14.300	16.500	0.500	$a_{s,2,+z\ (bottom)}$	14.08	0.00	14.08	14.08	cm²/m	
	M26	14.300	16.500	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
21	M97	18.100	0.000	-3.300	$a_{s,1,-z\ (top)}$	10.36	0.00	10.36	10.36	cm²/m	
	M97	18.100	0.000	-3.300	$a_{s,2,-z\ (top)}$	10.23	0.00	10.23	10.23	cm²/m	
	M97	18.100	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	11.30	0.00	11.30	11.30	cm²/m	
	M97	18.100	0.000	-3.300	$a_{s,2,+z\ (bottom)}$	10.41	0.00	10.41	10.41	cm²/m	
	M97	18.100	0.000	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
26	M8241	17.750	10.500	-3.300	$a_{s,1,-z\ (top)}$	19.74	0.00	19.74	19.74	cm²/m	
	M8056	18.750	10.500	0.500	$a_{s,2,-z\ (top)}$	17.09	0.00	17.09	17.09	cm²/m	
	M8241	17.750	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	19.78	0.00	19.78	19.78	cm²/m	
	M8056	18.750	10.500	0.500	$a_{s,2,+z\ (bottom)}$	16.92	0.00	16.92	16.92	cm²/m	
	M1383	18.750	10.500	0.025	a_{sw}	Not designable	-	-	-	cm²/m²	13)
28	M7912	0.000	0.000	0.500	$a_{s,1,-z\ (top)}$	4.62	0.00	4.62	4.62	cm²/m	
	M7912	0.000	0.000	0.500	$a_{s,2,-z\ (top)}$	9.68	0.00	9.68	9.68	cm²/m	
	M59	0.000	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M1390	0.000	16.500	-6.813	$a_{s,2,+z\ (bottom)}$	4.29	0.00	4.29	4.29	cm²/m	
	M61	0.000	16.500	-7.300	a_{sw}	8.00	-	-	-	cm²/m²	
29	M119	2.300	16.500	-7.300	$a_{s,1,-z\ (top)}$	4.37	0.00	4.37	4.37	cm²/m	
	M119	2.300	16.500	-7.300	$a_{s,2,-z\ (top)}$	11.36	0.00	11.36	11.36	cm²/m	
	M119	2.300	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	3.79	0.00	3.79	3.79	cm²/m	
	M119	2.300	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	10.49	0.00	10.49	10.49	cm²/m	
	M119	2.300	16.500	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
31	M117	11.900	16.500	-7.300	$a_{s,1,-z\ (top)}$	7.92	0.00	7.92	7.92	cm²/m	
	M117	11.900	16.500	-7.300	$a_{s,2,-z\ (top)}$	20.12	0.00	20.12	20.12	cm²/m	
	M7997	14.300	16.500	0.500	$a_{s,1,+z\ (bottom)}$	9.64	0.00	9.64	9.64	cm²/m	
	M117	11.900	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	19.27	0.00	19.27	19.27	cm²/m	
	M117	11.900	16.500	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
32	M123	1.600	0.000	-7.300	$a_{s,1,-z\ (top)}$	4.63	0.00	4.63	4.63	cm²/m	
	M123	1.600	0.000	-7.300	$a_{s,2,-z\ (top)}$	13.40	0.00	13.40	13.40	cm²/m	
	M123	1.600	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	5.14	0.00	5.14	5.14	cm²/m	
	M123	1.600	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	14.25	0.00	14.25	14.25	cm²/m	
	M123	1.600	0.000	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
33	M121	12.400	0.000	-7.300	$a_{s,1,-z\ (top)}$	11.15	0.00	11.15	11.15	cm²/m	
	M121	12.400	0.000	-7.300	$a_{s,2,-z\ (top)}$	27.12	0.00	27.12	27.12	cm²/m	
	M121	12.400	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	11.39	0.00	11.39	11.39	cm²/m	

2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
	M121	12.400	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	27.56	0.00	27.56	27.56	cm²/m	
	M121	12.400	0.000	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
35	M133	35.600	16.500	-1.900	$a_{s,1,-z\ (top)}$	7.83	0.00	7.83	7.83	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,2,-z\ (top)}$	6.22	0.00	6.22	6.22	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M133	35.600	16.500	-1.900	$a_{s,2,+z\ (bottom)}$	2.92	0.00	2.92	2.92	cm²/m	
	M133	35.600	16.500	-1.900	a_{sw}	8.00	-	-	-	cm²/m²	
37	M22	14.300	0.000	-3.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M40	14.300	0.000	-7.300	$a_{s,2,-z\ (top)}$	3.46	0.00	3.46	3.46	cm²/m	
	M22	14.300	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M40	14.300	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	7.88	0.00	7.88	7.88	cm²/m	
	M40	14.300	0.000	-7.300	a_{sw}	8.00	-	-	-	cm²/m²	
38	M138	14.300	5.100	-7.300	$a_{s,1,-z\ (top)}$	3.00	0.00	3.00	3.00	cm²/m	
	M8386	14.300	16.500	-7.300	$a_{s,2,-z\ (top)}$	3.67	0.00	3.67	3.67	cm²/m	
	M138	14.300	5.100	-7.300	$a_{s,1,+z\ (bottom)}$	3.00	0.00	3.00	3.00	cm²/m	
	M8386	14.300	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	3.30	0.00	3.30	3.30	cm²/m	
	M138	14.300	5.100	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
39	M247	15.700	0.000	-3.300	$a_{s,1,-z\ (top)}$	18.40	0.00	18.40	18.40	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,2,-z\ (top)}$	23.88	0.00	23.88	23.88	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,1,+z\ (bottom)}$	19.11	0.00	19.11	19.11	cm²/m	
	M247	15.700	0.000	-3.300	$a_{s,2,+z\ (bottom)}$	24.09	0.00	24.09	24.09	cm²/m	
	M247	15.700	0.000	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
40	M250	19.700	0.000	-7.300	$a_{s,1,-z\ (top)}$	8.19	0.00	8.19	8.19	cm²/m	
	M250	19.700	0.000	-7.300	$a_{s,2,-z\ (top)}$	3.94	0.00	3.94	3.94	cm²/m	
	M250	19.700	0.000	-7.300	$a_{s,1,+z\ (bottom)}$	8.00	0.00	8.00	8.00	cm²/m	
	M250	19.700	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	4.20	0.00	4.20	4.20	cm²/m	
	M38	21.300	0.000	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
42	M150	18.050	16.500	-7.300	$a_{s,1,-z\ (top)}$	6.19	0.00	6.19	6.19	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,2,-z\ (top)}$	13.01	0.00	13.01	13.01	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	6.30	0.00	6.30	6.30	cm²/m	
	M150	18.050	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	13.31	0.00	13.31	13.31	cm²/m	
	M150	18.050	16.500	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
43	M153	21.700	16.500	-7.300	$a_{s,1,-z\ (top)}$	7.36	0.00	7.36	7.36	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,2,-z\ (top)}$	16.84	0.00	16.84	16.84	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	7.31	0.00	7.31	7.31	cm²/m	
	M153	21.700	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	16.72	0.00	16.72	16.72	cm²/m	
	M153	21.700	16.500	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
44	M157	24.750	16.500	-7.300	$a_{s,1,-z\ (top)}$	4.44	0.00	4.44	4.44	cm²/m	
	M157	24.750	16.500	-7.300	$a_{s,2,-z\ (top)}$	9.46	0.00	9.46	9.46	cm²/m	
	M149	28.050	16.500	-7.300	$a_{s,1,+z\ (bottom)}$	4.41	0.00	4.41	4.41	cm²/m	
	M157	24.750	16.500	-7.300	$a_{s,2,+z\ (bottom)}$	9.31	0.00	9.31	9.31	cm²/m	
	M149	28.050	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
46	M136	32.800	16.500	-6.150	$a_{s,1,-z\ (top)}$	14.73	0.00	14.73	14.73	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,-z\ (top)}$	13.26	0.00	13.26	13.26	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,1,+z\ (bottom)}$	14.89	0.00	14.89	14.89	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,+z\ (bottom)}$	13.20	0.00	13.20	13.20	cm²/m	
	M136	32.800	16.500	-6.150	a_{sw}	Not designable	-	-	-	cm²/m²	13)
47	M8427	35.600	10.500	-3.300	$a_{s,1,-z\ (top)}$	9.97	0.00	9.97	9.97	cm²/m	
	M8427	35.600	10.500	-3.300	$a_{s,2,-z\ (top)}$	8.40	0.00	8.40	8.40	cm²/m	
	M8427	35.600	10.500	-3.300	$a_{s,1,+z\ (bottom)}$	10.13	0.00	10.13	10.13	cm²/m	
	M8427	35.600	10.500	-3.300	$a_{s,2,+z\ (bottom)}$	8.58	0.00	8.58	8.58	cm²/m	
	M8427	35.600	10.500	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
49	M8409	39.700	7.100	-3.300	$a_{s,1,-z\ (top)}$	4.21	0.00	4.21	4.21	cm²/m	
	M8409	39.700	7.100	-3.300	$a_{s,2,-z\ (top)}$	4.03	0.00	4.03	4.03	cm²/m	
	M8409	39.700	7.100	-3.300	$a_{s,1,+z\ (bottom)}$	4.15	0.00	4.15	4.15	cm²/m	
	M8409	39.700	7.100	-3.300	$a_{s,2,+z\ (bottom)}$	3.95	0.00	3.95	3.95	cm²/m	
	M56	39.700	10.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	
56	M291	21.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	5.21	0.00	5.21	5.21	cm²/m	
	M291	21.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	16.01	0.00	16.01	16.01	cm²/m	
	M291	21.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	6.29	0.00	6.29	6.29	cm²/m	
	M291	21.300	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	17.53	0.00	17.53	17.53	cm²/m	
	M291	21.300	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
58	M287 - E3212	21.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	19.25	0.00	19.25	19.25	cm²/m	
	M282 - E3149	35.600	10.500	-3.300	$a_{s,2,-z\ (top)}$	13.20	0.00	13.20	13.20	cm²/m	
	M283	37.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	22.08	0.00	22.08	22.08	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	6.95	0.00	6.95	6.95	cm²/m	
	M287 - E3212	21.300	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	7)
59	M8468 - E4550	21.300	4.300	-7.300	$a_{s,1,-z\ (top)}$	20.57	0.00	20.57	20.57	cm²/m	
	M308 - E5327	35.600	10.500	-7.300	$a_{s,2,-z\ (top)}$	18.80	0.00	18.80	18.80	cm²/m	
	M308 - E4609	35.600	10.500	-7.300	$a_{s,1,+z\ (bottom)}$	6.78	0.00	6.78	6.78	cm²/m	
	M8453	14.300	0.000	-7.300	$a_{s,2,+z\ (bottom)}$	4.64	0.00	4.64	4.64	cm²/m	
	M8468 - E4177	21.300	4.300	-7.300	a_{sw}	28.16	-	-	-	cm²/m²	
61	M197	21.650	4.300	-3.300	$a_{s,1,-z\ (top)}$	2.23	0.00	2.23	2.23	cm²/m	
	M203	21.900	4.300	-3.300	$a_{s,2,-z\ (top)}$	3.44	0.00	3.44	3.44	cm²/m	
	M196	22.650	2.300	-3.300	$a_{s,1,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M196	22.650	2.300	-3.300	$a_{s,2,+z\ (bottom)}$	2.23	0.00	2.23	2.23	cm²/m	
	M197	21.650	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	
62	M192	27.650	2.300	-3.300	$a_{s,1,-z\ (top)}$	2.23	0.00	2.23	2.23	cm²/m	
	M443	26.800	4.300	-3.300	$a_{s,2,-z\ (top)}$	3.22	0.00	3.22	3.22	cm²/m	
	M193	23.050	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	2.80	0.00	2.80	2.80	cm²/m	
	M191	27.650	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	2.91	0.00	2.91	2.91	cm²/m	
	M191	27.650	4.300	-3.300	a_{sw}	8.00	-	-	-	cm²/m²	

■ 2.2 REQUIRED REINFORCEMENT BY SURFACE

Surface No.	Point No.	Point Coordinates [m] X	Y	Z	Symbol	Required Reinf. ULS	Basic Reinf.	Additional Reinforcement Required	Provided	Unit	Notes
63	M76	28.320	4.300	-3.300	$a_{s,1,-z\ (top)}$	2.23	0.00	2.23	2.23	cm²/m	
	M77	29.320	4.300	-3.300	$a_{s,2,-z\ (top)}$	4.51	0.00	4.51	4.51	cm²/m	
	M187	32.650	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	3.47	0.00	3.47	3.47	cm²/m	
	M187	32.650	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	4.53	0.00	4.53	4.53	cm²/m	
	M451	29.817	4.300	-3.300	a_{sw}	11.29	-	-	-	cm²/m²	
64	M206	36.970	4.300	-3.300	$a_{s,1,-z\ (top)}$	5.03	0.00	5.03	5.03	cm²/m	
	M206	36.970	4.300	-3.300	$a_{s,2,-z\ (top)}$	5.85	0.00	5.85	5.85	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	4.78	0.00	4.78	4.78	cm²/m	
	M183	37.650	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	5.71	0.00	5.71	5.71	cm²/m	
	M183	37.650	4.300	-3.300	a_{sw}	15.96	-	-	-	cm²/m²	
67	M7991	21.900	4.300	0.500	$a_{s,1,-z\ (top)}$	3.78	0.00	3.78	3.78	cm²/m	
	M7991	21.900	4.300	0.500	$a_{s,2,-z\ (top)}$	8.31	0.00	8.31	8.31	cm²/m	
	M7991	21.900	4.300	0.500	$a_{s,1,+z\ (bottom)}$	3.71	0.00	3.71	3.71	cm²/m	
	M7991	21.900	4.300	0.500	$a_{s,2,+z\ (bottom)}$	8.25	0.00	8.25	8.25	cm²/m	
	M327	21.300	4.300	-3.300	a_{sw}	0.00	-	-	-	cm²/m²	
68	M80	37.720	4.300	-3.300	$a_{s,1,-z\ (top)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M80	37.720	4.300	-3.300	$a_{s,2,-z\ (top)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M80	37.720	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M80	37.720	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	Not designable	0.00	Not designable	Not designable	cm²/m	5)
	M205	36.970	4.300	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
69	M25 - E6459	0.000	16.500	0.500	$a_{s,1,-z\ (top)}$	11.07	0.00	11.07	11.07	cm²/m	
	M6704	0.400	15.600	0.500	$a_{s,2,-z\ (top)}$	14.43	0.00	14.43	14.43	cm²/m	
	M673 - E6468	0.000	11.000	0.500	$a_{s,1,+z\ (bottom)}$	10.65	0.00	10.65	10.65	cm²/m	
	M6704	0.400	15.600	0.500	$a_{s,2,+z\ (bottom)}$	11.36	0.00	11.36	11.36	cm²/m	
	M6712	0.400	11.600	0.500	a_{sw}	9.94	-	-	-	cm²/m²	
70	M6902	13.304	0.400	0.500	$a_{s,1,-z\ (top)}$	27.05	0.00	27.05	27.05	cm²/m	
	M6900	13.800	0.900	0.500	$a_{s,2,-z\ (top)}$	18.55	0.00	18.55	18.55	cm²/m	
	M6953	12.511	-0.400	0.500	$a_{s,1,+z\ (bottom)}$	31.00	0.00	31.00	31.00	cm²/m	
	M23 - E6750	14.300	0.000	0.500	$a_{s,2,+z\ (bottom)}$	16.91	0.00	16.91	16.91	cm²/m	
	M6813	15.036	16.900	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
71	M200	14.800	10.950	0.500	$a_{s,1,-z\ (top)}$	30.97	0.00	30.97	30.97	cm²/m	
	M200	14.800	10.950	0.500	$a_{s,2,-z\ (top)}$	21.75	0.00	21.75	21.75	cm²/m	
	M200	14.800	10.950	0.500	$a_{s,1,+z\ (bottom)}$	25.80	0.00	25.80	25.80	cm²/m	
	M7193	33.150	11.465	0.500	$a_{s,2,+z\ (bottom)}$	16.53	0.00	16.53	16.53	cm²/m	
	M7166	36.463	10.950	0.500	a_{sw}	8.81	-	-	-	cm²/m²	
72	M212	21.450	3.850	0.500	$a_{s,1,-z\ (top)}$	13.93	0.00	13.93	13.93	cm²/m	
	M7352	21.450	3.378	0.500	$a_{s,2,-z\ (top)}$	28.66	0.00	28.66	28.66	cm²/m	
	M212	21.450	3.850	0.500	$a_{s,1,+z\ (bottom)}$	18.80	0.00	18.80	18.80	cm²/m	
	M7352	21.450	3.378	0.500	$a_{s,2,+z\ (bottom)}$	31.21	0.00	31.21	31.21	cm²/m	
	M7352	21.450	3.378	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
73	M2	40.050	3.850	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M67 - E7113	39.700	7.100	0.500	$a_{s,2,-z\ (top)}$	16.50	0.00	16.50	16.50	cm²/m	
	M2	40.050	3.850	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M67 - E7121	39.700	7.100	0.500	$a_{s,2,+z\ (bottom)}$	18.50	0.00	18.50	18.50	cm²/m	
	M7417	40.050	7.907	0.500	a_{sw}	10.13	-	-	-	cm²/m²	
74	M4	20.850	16.100	0.500	$a_{s,1,-z\ (top)}$	17.18	0.00	17.18	17.18	cm²/m	
	M4	20.850	16.100	0.500	$a_{s,2,-z\ (top)}$	27.11	0.00	27.11	27.11	cm²/m	
	M3	21.750	16.100	0.500	$a_{s,1,+z\ (bottom)}$	18.01	0.00	18.01	18.01	cm²/m	
	M229	20.850	10.950	0.500	$a_{s,2,+z\ (bottom)}$	34.50	0.00	34.50	34.50	cm²/m	
	M228	21.750	10.950	0.500	a_{sw}	10.16	-	-	-	cm²/m²	
75	M230	33.150	4.750	0.500	$a_{s,1,-z\ (top)}$	10.34	0.00	10.34	10.34	cm²/m	
	M230	33.150	4.750	0.500	$a_{s,2,-z\ (top)}$	30.13	0.00	30.13	30.13	cm²/m	
	M230	33.150	4.750	0.500	$a_{s,1,+z\ (bottom)}$	10.34	0.00	10.34	10.34	cm²/m	
	M231	32.450	10.050	0.500	$a_{s,2,+z\ (bottom)}$	35.94	0.00	35.94	35.94	cm²/m	
	M230	33.150	4.750	0.500	a_{sw}	Not designable	-	-	-	cm²/m²	13)
78	M178	27.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	8.16	0.00	8.16	8.16	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	18.27	0.00	18.27	18.27	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	7.24	0.00	7.24	7.24	cm²/m	
	M178	27.300	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	17.68	0.00	17.68	17.68	cm²/m	
	M178	27.300	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
79	M182	32.300	4.300	-3.300	$a_{s,1,-z\ (top)}$	5.96	0.00	5.96	5.96	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,2,-z\ (top)}$	13.81	0.00	13.81	13.81	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,1,+z\ (bottom)}$	5.69	0.00	5.69	5.69	cm²/m	
	M182	32.300	4.300	-3.300	$a_{s,2,+z\ (bottom)}$	13.80	0.00	13.80	13.80	cm²/m	
	M182	32.300	4.300	-3.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
86	M263	30.400	16.500	-3.300	$a_{s,1,-z\ (top)}$	8.93	0.00	8.93	8.93	cm²/m	
	M263	30.400	16.500	-3.300	$a_{s,2,-z\ (top)}$	12.34	0.00	12.34	12.34	cm²/m	
	M263	30.400	16.500	-3.300	$a_{s,1,+z\ (bottom)}$	8.86	0.00	8.86	8.86	cm²/m	
	M263	30.400	16.500	-3.300	$a_{s,2,+z\ (bottom)}$	12.31	0.00	12.31	12.31	cm²/m	
	M172	30.400	16.500	-7.300	a_{sw}	Not designable	-	-	-	cm²/m²	13)
87	M136	32.800	16.500	-6.150	$a_{s,1,-z\ (top)}$	6.43	0.00	6.43	6.43	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,-z\ (top)}$	9.36	0.00	9.36	9.36	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,1,+z\ (bottom)}$	7.33	0.00	7.33	7.33	cm²/m	
	M136	32.800	16.500	-6.150	$a_{s,2,+z\ (bottom)}$	10.39	0.00	10.39	10.39	cm²/m	
	M51	32.800	16.500	-7.300	a_{sw}	0.00	-	-	-	cm²/m²	

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Design of concrete members

1.1 GENERAL DATA

Design according to Standard:	SIST EN 1992-1-1:2005/A101:2006	
ULTIMATE LIMIT STATES		
Result combinations to design:	RC4	potres - obremenitev Persistent and Transient
Design Situation Settings for Serviceability Limit State Checks		
Load combination:		
Characteristic with direct load	Checks: k_1*f_{ck}, k_3*f_{yk}	
Characteristic with imposed deformation	Checks: k_1*f_{ck}, k_4*f_{yk}	
Frequent	Checks: w_k	
Quasi-permanent	Checks: k_2*f_{ck}, w_k, u_l	
Deformation Relative to:	Undeformed system	

1.1 SETTINGS - NONLINEAR CALCULATION (STATE II)

Activate nonlinear calculation for ULTIMATE LIMIT state:	☐
Activate nonlinear calculation for SERVICEABILITY LIMIT state:	☐
Activate nonlinear calculation for fire resistance	☐

1.2 MATERIALS

Matl. No.	Material Description: Concrete Strength Class	Material Description: Reinforcing Steel	Comment
1	Concrete C25/30	B 500 S (A)	
7	Concrete C25/30	B 500 S (A)	

1.2.1 MATERIAL PARAMETERS

Matl. No.	Description	Name	Size	Unit
1	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.000	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.000	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.600	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.800	N/mm^2
	95 % Fractile of Axial Tensile Strength	$f_{ctk,0.95}$	3.300	N/mm^2
	Mean Secant Modulus of Elasticity	E_{cm}	31000.000	N/mm^2
	Characteristic Strains for Nonlinear Calculations			
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{cu1}	-3.500	‰
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2	
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000	N/mm^2
	Characteristic Yield Stress	f_{yk}	500	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰
7	**Concrete Strength Class: Concrete C25/30**			
	Characteristic Cylinder Compressive Strength	f_{ck}	25.000	N/mm^2
	Mean Cylinder Compressive Strength	f_{cm}	33.000	N/mm^2
	Mean Axial Tensile Strength	f_{ctm}	2.600	N/mm^2
	5 % Fractile of Axial Tensile Strength	$f_{ctk,0.05}$	1.800	N/mm^2
	95 % Fractile of Axial Tensile Strength	$f_{ctk,0.95}$	3.300	N/mm^2
	Mean Secant Modulus of Elasticity	E_{cm}	31000.000	N/mm^2
	Characteristic Strains for Nonlinear Calculations			
	Ultimate Strain for Pure Compression	ε_{c1}	-2.100	‰
	Ultimate Strain at Failure	ε_{cu1}	-3.500	‰
	Characteristic Strains for Parabolic-Rectangular Diagram			
	Ultimate Strain for Pure Compression	ε_{c2}	-2.000	‰
	Ultimate Strain at Failure	ε_{cu2}	-3.500	‰
	Parabola Exponent	n	2	
	Specific Weight	γ	25.00	kN/m^3
	Reinforcing Steel: B 500 S (A)			
	Modulus of Elasticity	E_s	200000	N/mm^2
	Characteristic Yield Stress	f_{yk}	500	N/mm^2
	Characteristic Tensile Strength	f_{tk}	525	N/mm^2
	Limiting Strain	ε_{uk}	25.000	‰

1.3 CROSS-SECTIONS

Rectangle 200/1500 Rectangle 200/400



Rectangle 200/500 Rectangle 200/850



Section No.	Matl. No.	Cross-Section Description	Notes	Comment
1	1	Rectangle 250/250		
2	1	Rectangle 200/1500		
3	1	Rectangle 200/500		
4	7	Rectangle 200/850		
6	1	Rectangle 300/800		
12	1	Rectangle 200/400		



RF-CONCRETE Members
CA1
Design of concrete members

1.6 REINFORCEMENT GROUP NO. 1 - NOSILCI

Applied to members:	1,10-13,15-17,24-26,31-35,38,41,44-48,50-52,56, 57,63,64,68,69,71,73-75,77,78
LONGITUDINAL REINFORCEMENT	
Possible diameters:	20.0 mm
Max. number of layers:	1
Min. spacing for first layer:	20.0 mm
Type of anchorage:	Straight
Steel surface:	Ribbed
Reduction of reinforcement:	None
SHEAR REINFORCEMENT	
Possible diameters:	10.0 mm
No. of stirrup legs:	2
Inclination:	90°
Type of anchorage:	Hook
Stirrup layout:	Uniform spacing throughout
REINFORCEMENT LAYOUT	
Concrete cover acc. to Standard	☐
Concrete cover c-top:	30.0 mm
Concrete cover c-bottom:	30.0 mm
Concrete cover c-side:	30.0 mm
Reinforcement layout:	-z (top) - +z (bottom) (optimized distribution)
Torsional reinforcement distributed circumferentially:	☒
Relevant internal forces:	N, V-y, V-z, M-T, M-y, M-z
MINIMUM REINFORCEMENT	
Min. reinforcement area (min. A-s,top):	0.00 cm²
Min. reinforcement area (min. A-s,bottom):	0.00 cm²
Min. longitudinal reinforcement acc. to Standard:	☒
Min. shear reinforcement acc. to Standard:	☒
Longitudinal reinforcement for shear force design:	Use required longitudinal reinforcement
SHEAR JOINT	
Shear joint available:	☐
Design of flange connections on segmented cross-sections	☐
OPTIONS FOR EN 1992-1-1:2004/A1:2014	
Max. percentage of reinforcement:	8.00 %
Neutral axis depth limitation	☒
Partial safety factor Gamma-c	PT 1.50, AC 1.20
Partial safety factor Gamma-s	PT 1.15, AC 1.00
Reduction factor Alpha-cc	PT 1.00, AC 1.00
Reduction factor Alpha-ct	PT 1.00, AC 1.00
Min. inclination of concrete strut	21.80 °
Max. inclination of concrete strut	45.00 °

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
Member No. 1 - Rectangle 200/400						
$A_{s,-z\ (top)}$	1	1.400	RC4	4.44	cm²	
$A_{s,+z\ (bottom)}$	1	0.000	RC4	1.20	cm²	25)
$A_{s,T}$	1	0.000	RC4	0.55	cm²	
$a_{sw,V,stirrup}$	1	0.933	RC4	1.84	cm²/m	58)
$a_{sw,T,stirrup}$	1	0.000	RC4	0.10	cm²/m	
Member No. 10 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	10	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	10	0.000	RC4	4.50	cm²	25)
$A_{s,T}$	10	1.000	RC4	2.61	cm²	
$a_{sw,V,stirrup}$	10	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	10	1.000	RC4	0.14	cm²/m	
Member No. 11 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	11	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	11	0.000	RC4	4.50	cm²	25)
$A_{s,T}$	11	3.450	RC4	2.52	cm²	
$a_{sw,V,stirrup}$	11	3.450	RC4	2.70	cm²/m	58)
$a_{sw,T,stirrup}$	11	3.450	RC4	0.13	cm²/m	
Member No. 12 - Rectangle 200/400						
$A_{s,-z\ (top)}$	12	0.000	RC4	1.20	cm²	13) 25)
$A_{s,+z\ (bottom)}$	12	0.000	RC4	1.20	cm²	13) 25)
$A_{s,T}$	12	1.000	RC4	2.34	cm²	
$a_{sw,V,stirrup}$	12	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	12	1.000	RC4	0.43	cm²/m	
Member No. 13 - Rectangle 200/400						
$A_{s,-z\ (top)}$	13	0.000	RC4	1.20	cm²	13) 25)
$A_{s,+z\ (bottom)}$	13	0.495	RC4	1.34	cm²	
$A_{s,T}$	13	0.000	RC4	2.42	cm²	
$a_{sw,V,stirrup}$	13	0.000	RC4	2.29	cm²/m	58)
$a_{sw,T,stirrup}$	13	0.000	RC4	0.44	cm²/m	
Member No. 15 - Rectangle 200/850						
$A_{s,-z\ (top)}$	15	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	15	0.000	RC4	2.55	cm²	25)
$A_{s,T}$	15	0.000	RC4	0.43	cm²	
$a_{sw,V,stirrup}$	15	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	15	0.000	RC4	0.04	cm²/m	
Member No. 16 - Rectangle 200/850						
$A_{s,-z\ (top)}$	16	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	16	1.150	RC4	4.37	cm²	

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
$A_{s,T}$	16	0.000	RC4	0.43	cm²	
$a_{sw,V,stirrup}$	16	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	16	0.000	RC4	0.04	cm²/m	
Member No. 17 - Rectangle 200/850						
$A_{s,-z\ (top)}$	17	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	17	0.000	RC4	2.55	cm²	25)
$A_{s,T}$	17	0.000	RC4	0.20	cm²	
$a_{sw,V,stirrup}$	17	0.000	RC4	3.46	cm²/m	58)
$a_{sw,T,stirrup}$	17	0.000	RC4	0.02	cm²/m	
Member No. 24 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	24	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	24	0.000	RC4	4.50	cm²	25)
$A_{s,T}$	24	0.000	RC4	0.30	cm²	
$a_{sw,V,stirrup}$	24	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	24	0.000	RC4	0.02	cm²/m	
Member No. 25 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	25	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	25	0.000	RC4	4.50	cm²	25)
$A_{s,T}$	25	0.000	RC4	0.24	cm²	
$a_{sw,V,stirrup}$	25	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	25	0.000	RC4	0.01	cm²/m	
Member No. 26 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	26	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	26	0.000	RC4	4.50	cm²	25)
$A_{s,T}$	26	0.000	RC4	4.53	cm²	
$a_{sw,V,stirrup}$	26	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	26	0.000	RC4	0.24	cm²/m	
Member No. 31 - Rectangle 200/850						
$A_{s,-z\ (top)}$	31	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	31	0.000	RC4	4.37	cm²	
$A_{s,T}$	31	0.000	RC4	0.43	cm²	
$a_{sw,V,stirrup}$	31	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	31	0.000	RC4	0.04	cm²/m	
Member No. 32 - Rectangle 200/850						
$A_{s,-z\ (top)}$	32	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	32	0.000	RC4	2.55	cm²	25)
$A_{s,T}$	32	0.000	RC4	0.43	cm²	
$a_{sw,V,stirrup}$	32	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	32	0.000	RC4	0.04	cm²/m	
Member No. 33 - Rectangle 200/850						
$A_{s,-z\ (top)}$	33	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	33	0.000	RC4	2.55	cm²	25)
$A_{s,T}$	33	0.000	RC4	0.43	cm²	
$a_{sw,V,stirrup}$	33	3.300	RC4	1.98	cm²/m	58)
$a_{sw,T,stirrup}$	33	0.000	RC4	0.04	cm²/m	
Member No. 34 - Rectangle 200/850						
$A_{s,-z\ (top)}$	34	0.000	RC4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	34	0.000	RC4	2.55	cm²	13) 25)
$A_{s,T}$	34	0.000	RC4	1.87	cm²	
$a_{sw,V,stirrup}$	34	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	34	0.000	RC4	0.17	cm²/m	
Member No. 35 - Rectangle 200/850						
$A_{s,-z\ (top)}$	35	0.000	RC4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	35	0.000	RC4	2.55	cm²	13) 25)
$A_{s,T}$	35	0.000	RC4	2.24	cm²	
$a_{sw,V,stirrup}$	35	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	35	0.000	RC4	0.20	cm²/m	
Member No. 38 - Rectangle 250/250						
$A_{s,-z\ (top)}$	38	0.000	RC4	0.94	cm²	25)
$A_{s,+z\ (bottom)}$	38	0.000	RC4	0.94	cm²	25)
$A_{s,T}$	38	1.600	RC4	0.10	cm²	
$a_{sw,V,stirrup}$	38	0.000	RC4	0.00	cm²/m	58) 933)
$a_{sw,T,stirrup}$	38	1.600	RC4	0.02	cm²/m	
Member No. 41 - Rectangle 200/850						
$A_{s,-z\ (top)}$	41	0.000	RC4	2.55	cm²	13) 25)
$A_{s,+z\ (bottom)}$	41	0.000	RC4	2.55	cm²	13) 25)
$A_{s,T}$	41	2.800	RC4	1.95	cm²	
$a_{sw,V,stirrup}$	41	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	41	2.800	RC4	0.18	cm²/m	
Member No. 44 - Rectangle 200/850						
$A_{s,-z\ (top)}$	44	0.000	RC4	2.55	cm²	25)
$A_{s,+z\ (bottom)}$	44	0.000	RC4	2.55	cm²	25)
$A_{s,T}$	44	0.000	RC4	1.03	cm²	
$a_{sw,V,stirrup}$	44	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	44	0.000	RC4	0.09	cm²/m	
Member No. 45 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	45	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	45	3.750	RC4	4.61	cm²	
$A_{s,T}$	45	0.000	RC4	0.28	cm²	
$a_{sw,V,stirrup}$	45	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	45	0.000	RC4	0.01	cm²/m	
Member No. 46 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	46	0.000	RC4	4.50	cm²	25)
$A_{s,+z\ (bottom)}$	46	0.000	RC4	4.61	cm²	
$A_{s,T}$	46	2.150	RC4	0.32	cm²	
$a_{sw,V,stirrup}$	46	0.000	RC4	1.60	cm²/m	58) 69)
$a_{sw,T,stirrup}$	46	2.150	RC4	0.02	cm²/m	
Member No. 47 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	47	0.000	RC4	4.50	cm²	25)

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
$A_{s,+z\ (bottom)}$	47	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	47	1.500	RC4	0.39	cm^2	
$a_{sw,V,stirrup}$	47	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	47	1.500	RC4	0.02	cm^2/m	
Member No. 48 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	48	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	48	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	48	1.550	RC4	0.52	cm^2	
$a_{sw,V,stirrup}$	48	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	48	1.550	RC4	0.03	cm^2/m	
Member No. 50 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	50	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	50	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	50	1.500	RC4	0.59	cm^2	
$a_{sw,V,stirrup}$	50	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	50	1.500	RC4	0.03	cm^2/m	
Member No. 51 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	51	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	51	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	51	3.300	RC4	1.20	cm^2	
$a_{sw,V,stirrup}$	51	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	51	3.300	RC4	0.06	cm^2/m	
Member No. 52 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	52	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	52	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	52	1.650	RC4	1.35	cm^2	
$a_{sw,V,stirrup}$	52	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	52	1.650	RC4	0.07	cm^2/m	
Member No. 56 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	56	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	56	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	56	0.467	RC4	1.37	cm^2	
$a_{sw,V,stirrup}$	56	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	56	0.467	RC4	0.07	cm^2/m	
Member No. 57 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	57	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	57	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	57	0.000	RC4	0.14	cm^2	
$a_{sw,V,stirrup}$	57	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	57	0.000	RC4	0.01	cm^2/m	
Member No. 63 - Rectangle 200/500						
$A_{s,-z\ (top)}$	63	0.000	RC4	1.50	cm^2	25)
$A_{s,+z\ (bottom)}$	63	2.583	RC4	2.16	cm^2	
$A_{s,T}$	63	0.000	RC4	5.01	cm^2	
$a_{sw,V,stirrup}$	63	6.200	RC4	1.92	cm^2/m	58)
$a_{sw,T,stirrup}$	63	0.000	RC4	0.74	cm^2/m	
Member No. 64 - Rectangle 200/1500						
$A_{s,-z\ (top)}$	64	0.000	RC4	4.50	cm^2	25)
$A_{s,+z\ (bottom)}$	64	0.000	RC4	4.50	cm^2	25)
$A_{s,T}$	64	0.000	RC4	0.14	cm^2	
$a_{sw,V,stirrup}$	64	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	64	0.000	RC4	0.01	cm^2/m	
Member No. 68 - Rectangle 300/800						
$A_{s,-z\ (top)}$	68	4.963	RC4	18.01	cm^2	
$A_{s,+z\ (bottom)}$	68	0.000	RC4	3.60	cm^2	25)
$A_{s,T}$	68	0.000	RC4	0.10	cm^2	
$a_{sw,V,stirrup}$	68	0.000	RC4	4.64	cm^2/m	58)
$a_{sw,T,stirrup}$	68	0.000	RC4	0.01	cm^2/m	
Member No. 69 - Rectangle 300/800						
$A_{s,-z\ (top)}$	69	8.437	RC4	17.85	cm^2	
$A_{s,+z\ (bottom)}$	69	0.000	RC4	3.60	cm^2	25)
$A_{s,T}$	69	0.000	RC4	0.08	cm^2	
$a_{sw,V,stirrup}$	69	13.400	RC4	4.48	cm^2/m	58)
$a_{sw,T,stirrup}$	69	0.000	RC4	0.01	cm^2/m	
Member No. 71 - Rectangle 200/500						
$A_{s,-z\ (top)}$	71	0.000	RC4	1.50	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	71	0.000	RC4	1.50	cm^2	13) 25)
$A_{s,T}$	71	0.000	RC4	1.25	cm^2	
$a_{sw,V,stirrup}$	71	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	71	0.000	RC4	0.19	cm^2/m	
Member No. 73 - Rectangle 200/400						
$A_{s,-z\ (top)}$	73	0.000	RC4	4.44	cm^2	
$A_{s,+z\ (bottom)}$	73	1.920	RC4	1.73	cm^2	
$A_{s,T}$	73	0.000	RC4	0.21	cm^2	
$a_{sw,V,stirrup}$	73	2.400	RC4	2.02	cm^2/m	58)
$a_{sw,T,stirrup}$	73	0.000	RC4	0.04	cm^2/m	
Member No. 74 - Rectangle 200/850						
$A_{s,-z\ (top)}$	74	0.000	RC4	2.55	cm^2	25)
$A_{s,+z\ (bottom)}$	74	0.000	RC4	2.55	cm^2	25)
$A_{s,T}$	74	0.000	RC4	0.27	cm^2	
$a_{sw,V,stirrup}$	74	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	74	0.000	RC4	0.02	cm^2/m	
Member No. 75 - Rectangle 200/850						
$A_{s,-z\ (top)}$	75	0.000	RC4	2.55	cm^2	13) 25)
$A_{s,+z\ (bottom)}$	75	0.000	RC4	2.55	cm^2	13) 25)
$A_{s,T}$	75	0.000	RC4	0.24	cm^2	
$a_{sw,V,stirrup}$	75	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	75	0.000	RC4	0.02	cm^2/m	
Member No. 77 - Rectangle 200/850						

2.3 REQUIRED REINFORCEMENT BY MEMBER

Reinforcement	Member No.	Location x [m]	Loading	Reinforcement Area	Unit	Error Message or Note
$A_{s,-z\ (top)}$	77	0.000	RC4	2.55	cm^2	25)
$A_{s,+z\ (bottom)}$	77	0.000	RC4	2.55	cm^2	25)
$A_{s,T}$	77	0.000	RC4	0.00	cm^2	
$a_{sw,V,stirrup}$	77	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	77	0.000	RC4	0.00	cm^2/m	
Member No. 78 - Rectangle 200/850						
$A_{s,-z\ (top)}$	78	0.000	RC4	2.55	cm^2	25)
$A_{s,+z\ (bottom)}$	78	0.000	RC4	2.55	cm^2	25)
$A_{s,T}$	78	0.000	RC4	2.57	cm^2	
$a_{sw,V,stirrup}$	78	0.000	RC4	1.60	cm^2/m	58) 69)
$a_{sw,T,stirrup}$	78	0.000	RC4	0.23	cm^2/m	

1.1 GLOBAL DATA

	Activities	☒ Modal analysis (eigenvectors) ☒ Mass combinations ☐ Forced vibrations ☐ Response spectra ☐ Accelerograms ☐ Time diagrams ☒ Equivalent static force analysis	
	Setting	Gravity acceleration	: 10.00 m/s^2

1.2.1 MASS CASES - GENERAL

No.	Mass Case Description	Parameters	
MC1	lastna teza	Mass Case Type Masses	: Permanent ☒ : From self-weight of structure
MC2	stalna obtezba	Mass Case Type Masses	: Permanent ☒ : From force components of Load Case LC2-stalna obtezba
MC3	koristna obtezba	Mass Case Type Masses	: Imposed - category C (independent, p=0.5) ☒ : From force components of Load Case LC3-koristna obtezba

1.3.1 MASS COMBINATIONS - GENERAL

No.	Mass Combination Description	Parameters		
MCO1	obtezba	Mass Cases	: 1.00	MC1 - lastna teza
			1.00	MC2 - stalna obtezba
			0.30	MC3 - koristna obtezba
		Comment	:	

1.4.1 NATURAL VIBRATION CASE - GENERAL

NVC Case	Natural Vibration Case Description	Parameters	
NVC1	obtezba	Number of Smallest Eigenvalues	: 5
		Acting Masses	: MCO1 - obtezba
		Masses considered in	: ☒ X-direction
			☒ Y-direction

1.4.2 NATURAL VIBRATION CASE - CALCULATION PARAMETERS

NVC Case	Natural Vibration Case Description	Calculation Parameters	
NVC1	obtezba	Type of Mass Matrix	: Diagonal matrix (translational DOFs)
		Scaling Vibration Mode Shapes	: Max $\{u_j\} = 1$
		Method for Solving Eigenvalues	: Lanczos

1.5.1 RESPONSE SPECTRA - GENERAL

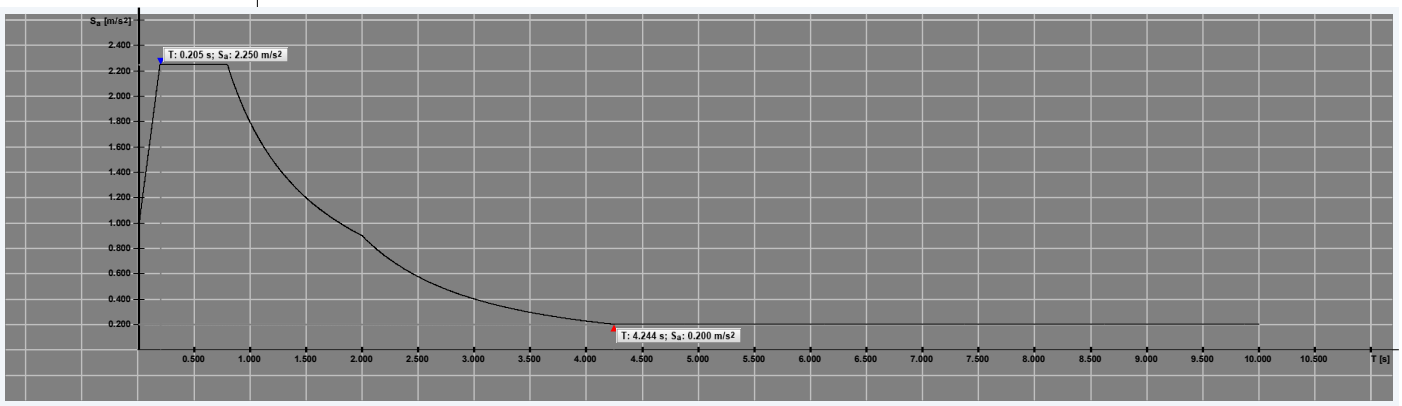
RS Case	Response Spectra Description	Definition Type	Comment
RS1	potres	According to Standard: EN 1998-1:2010 - European Union National Annex: SIST - Slovenia	

1.5.2 RESPONSE SPECTRA - STANDARD PARAMETERS

No.	Response Spectrum Description	Mass Case Parameters			
RS1	potres	Type of Spectrum			
		Type of Spectrum		:	Design spectrum for linear calculation
		Spectrum direction		:	Horizontal spectrum
		Seismic action			
		Reference peak ground acceleration	a_{gR}	:	1.00
		Importance category		:	II
		Importance factor	γ_I	:	1.0000
		Design ground acceleration	a_g	:	1.0000
		Parameter for description of response spectrum			
		Ground type		:	D
		Soil factor	S	:	1.3500
		Lower limit of area of constant spectral acceleration (horizontal)	T_{B-H}	:	0.2000
		Upper limit of area of constant spectral acceleration (horizontal)	T_{C-H}	:	0.8000
		Value defining the beginning of area of constant spectrum displacements (horizontal)	T_{D-H}	:	2.0000
		Factors			
		Behavior factor	q	:	1.5000
		Limit value for horizontal design spectrum	β	:	0.2000

1.5.3.1 RESPONSE SPECTRA - GRAPH

RS1



1.8.1 DYNAMIC LOAD CASES - GENERAL

DLC Case	Dynamic Load Cases Description	Parameters		
DLC1	potres	Method Type	:	Equivalent static force analysis (response spectrum required)
		Assign Natural Vibration	:	Natural Vibration Case: obtezba

1.8.5.1 DYNAMIC LOAD CASES - EQUIVALENT STATIC FORCE ANALYSIS

DLC Case	Dynamic Load Cases Description	Parameters
DLC1	potres	Assign response spectrum: Response Spectrum in Direction — Multiplication factor ☒ x: RS1 - potres — 1.000 ☒ y: RS1 - potres — 1.000 Rotate a_X a_Y about Z: — α = 0.00 [°]
		Settings: ☐ Consider accidental torsional actions:
		To generate: ☒ Load cases with $E_{X,i}$ / $E_{Z,i}$ from all modal shapes Number of first generated load case: 1 ☒ Result Combinations (modal combination) Number of first generated result combination: 1 ☒ Combination of directional components with ☒ SRSS ☐ 100 / 30 % ☐ 100 / 40 %
		Combination Rules: Modal response combination rule: ☒ SRSS ☐ CQC Options ☒ Use equivalent linear combination ☐ Signed results using dominant mode shape

1.8.5.2 DYNAMIC LOAD CASES - EQUIVALENT STATIC FORCE ANALYSIS - MODE SHAPES TO GENERATE

DLC Case	Dynamic Load Cases Description	Mode No.	To generat	Frequency ω [rad/s]	Frequency f [Hz]	Period T [s]	Acceleration S_a [m/s^2]
DLC1	potres	1	☒	14.218	2.263	0.442	2.250
		2	☒	18.672	2.972	0.337	2.250
		3	☒	21.564	3.432	0.291	2.250
		4	☒	42.152	6.709	0.149	1.906
		5	☒	46.952	7.473	0.134	1.803

NVC1
obtezba

5.1 NATURAL FREQUENCIES

NVC1

Mode No.	Eigenvalue λ [1/s^2]	Angular frequency ω [rad/s]	Natural Frequency f [Hz]	Natural Period T [s]	
1	202.144	14.218	2.263	0.442	
2	348.633	18.672	2.972	0.337	
3	464.995	21.564	3.432	0.291	
4	1776.788	42.152	6.709	0.149	
5	2204.536	46.952	7.473	0.134	

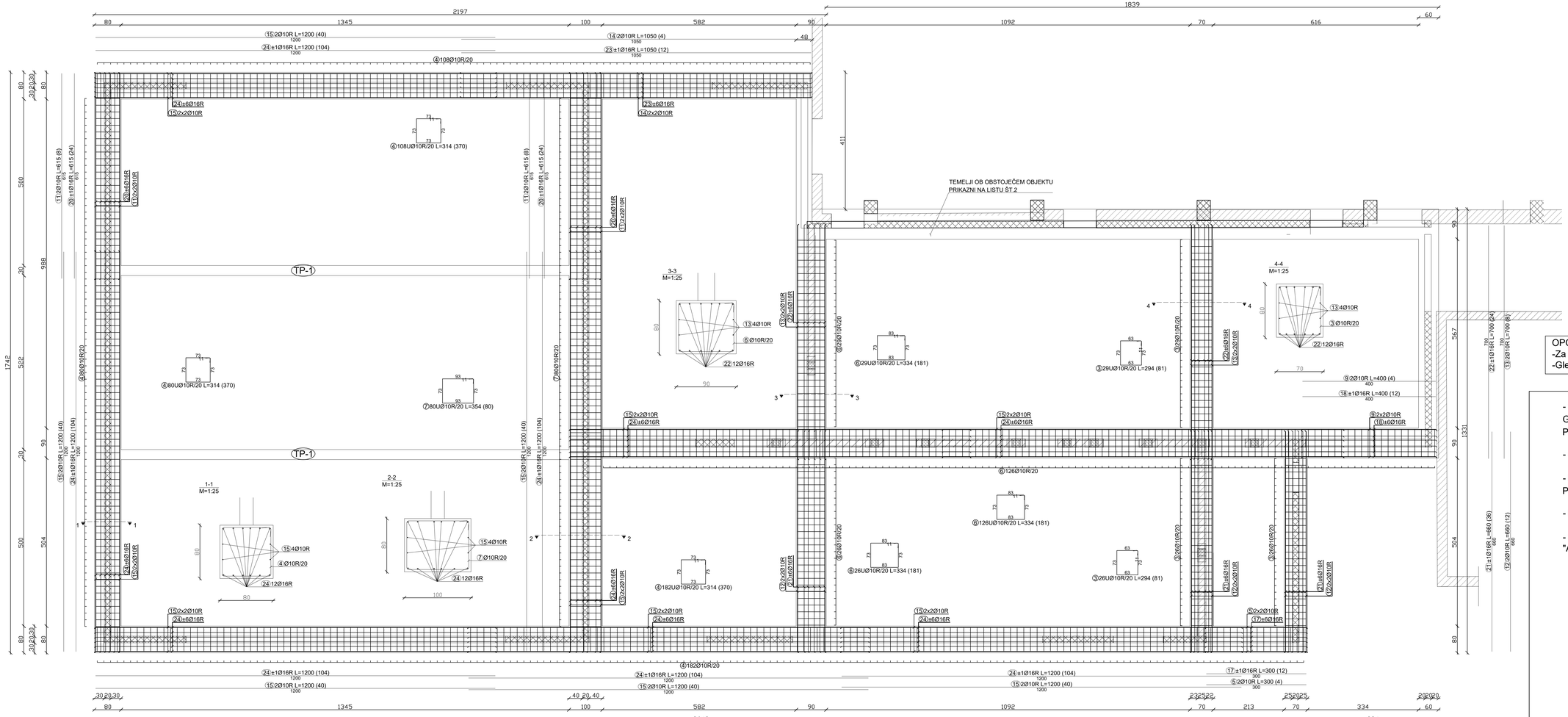
NVC1
obtezba

5.7 EFFECTIVE MODAL MASS FACTORS

NVC1

Mode	Modal Mas	Effective Modal Mass						Effective Modal Mass Factor		
No.	M_i [kg]	m_{eX} [kg]	m_{eY} [kg]	m_{eZ} [kg]	$m_{\varphi X}$ [kg.m^2]	$m_{\varphi Y}$ [kg.m^2]	$m_{\varphi Z}$ [kg.m^2]	f_{meX} [-]	f_{meY} [-]	f_{meZ} [-]
1	484242.19	3227.18	1144624.77	0.00	1976315.91	4644.72	114799.03	0.002	0.838	0.000
2	585750.68	1275340.51	3228.37	0.00	22.29	684726.57	1598333.10	0.934	0.002	0.000
3	339633.63	11173.99	1388.94	0.00	129825.84	810.40	201749346 .52	0.008	0.001	0.000
4	16058.80	14.70	262.37	0.00	6838.42	242802.18	582.46	0.000	0.000	0.000
5	157867.09	384.41	212833.72	0.00	10415632.92	8557.64	79227.77	0.000	0.156	0.000
Sum	1583552.39	1290140.79	1362338.18	0.00	12528635.38	941541.52	203542288 .88	0.945	0.998	0.000

ARMATURA TEMELJEV OBJEKTA
Htem = 80 CM, kom : 1
M : 1 : 50



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- OBVEZEN GEOMEHANSKI PREGLED TEMELJNIH TAL !

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE V IN POD TEMELJE - GLEJ NAČRTE INŠTALACIJ!!!

- Evd TAMPONSKE BLAZINE = MIN. 40 MPa

- SIDRA IZ TEMELJEV SO OBDELANA V NAČRTU "ARMATURA KONSTRUKCIJ ZIDOV OBJEKTA "!!!

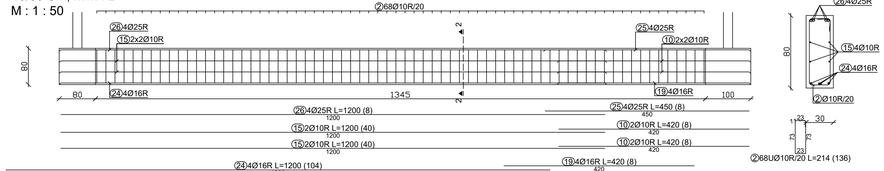
BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0cm

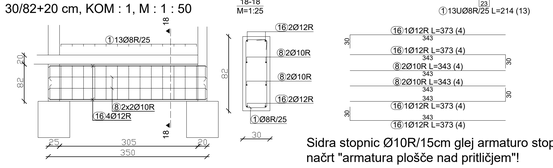
ARMATURA - S500

ARMATURA TEMELJNEV OBJEKTA M : 1 : 50

ARMATURA PASOVNEGA TEMELJA TP-1
40/80 CM, kom : 2
M : 1 : 50



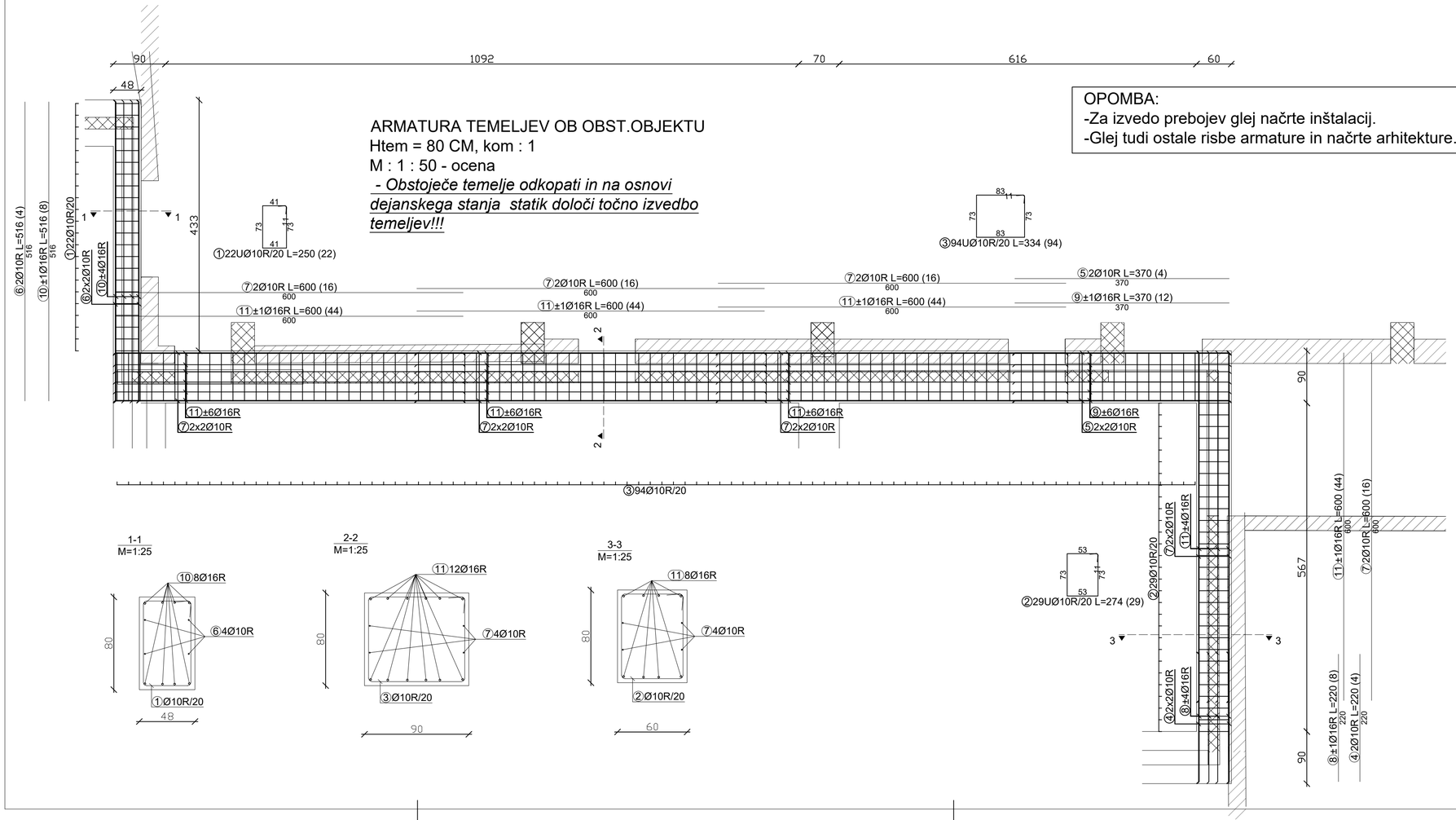
ARMATURA TEMELJA STOPNIC
30/82+20 cm, KOM : 1, M : 1 : 50



Sidra stopnic Ø10R/15cm glej armaturo stopnic - načrt "armatura plošče nad pritličjem"!

STATIK d.o.o.	
Podjetje za projektiranje in svetovanje	
Prešernova 2, 5280 Idrija	
Investitor: Občina Križevci, Križevci pri Ljutomeru 11, 9242 Križevci pri Ljutomeru	Objekt: Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci
Projektant načrta: STATIK d.o.o. podjetje za projektiranje in svetovanje, Prešernova 2, 5280 Idrija	Vrsta načrta: Načrt gradbenih konstrukcij; Faza: PZI
	Pooblaščen arhitekt: Nikola Kahlenik, u.d.i.a. A - 1078
	Pooblaščen inženir: Matevž Govekar, u.d.i.g.(o.) - 3743
	Sodelavec: Matevž Govekar, u.d.i.g.
	Številka načrta: 95/24
	Številka projekta: 2062024; Merilo: M 1:50
Projektant: Arhitekt d.o.o. Bezenškova ulica 34 2000 Maribor	Datum: december 2024; Št. lista: 1.
	Naslov risbe: Armaturni načrt - Pasovni temelji

Aliplan 2008



ARMATURA TEMELJEV OB OBST.OBJEKTU
Htem = 80 CM, kom : 1
M : 1 : 50 - ocena
- Obstoječe temelje odkopati in na osnovi dejanskega stanja statik določi točno izvedbo temeljev!!!

OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- OBVEZEN GEOMEHANSKI PREGLED TEMELJNIH TAL !

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE V IN POD TEMELJE - GLEJ NAČRTE INŠTALACIJ!!!

- Evd TAMPONSKE BLAZINE = MIN. 40 MPa

- SIDRA IZ TEMELJEV SO OBDELANA V NAČRTU "ARMATURA KONSTRUKCIJ ZIDOV OBJEKTA "!!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0cm

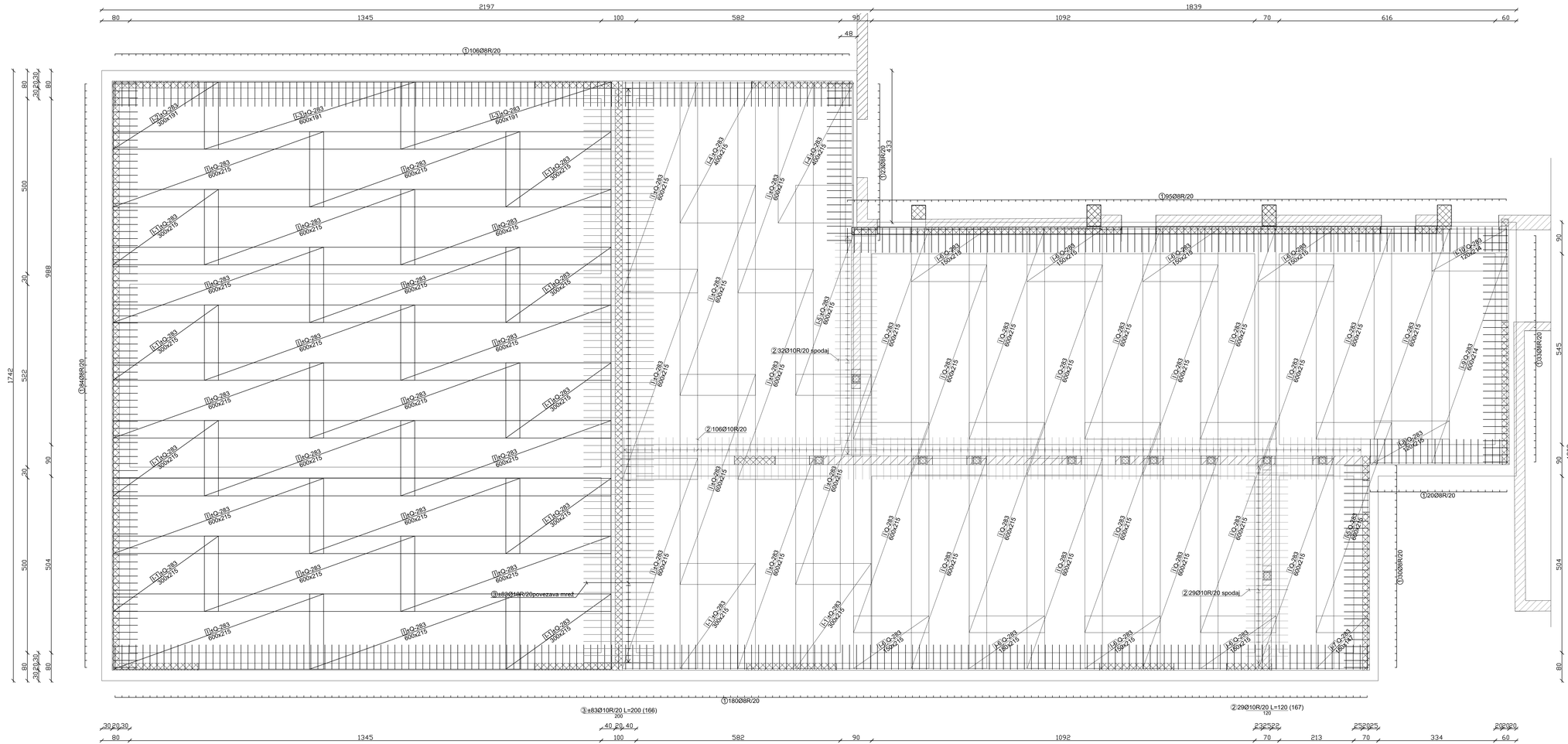
ARMATURA - S500

ARMATURA TEMELJEV OBJEKTA - ob obstoječem objektu
M : 1 : 50

STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

Investitor Občina Križevci Križevci pri Ljutomeru 11 9252 Križevci pri Ljutomeru	Objekt Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci			
	Vrsta načrta	Načrt gradbenih konstrukcij	Faza:	PZI
Projektant načrta STATIK d.o.o. podjetje za projektiranje in svetovanje Prešernova 2, 5280 Idrija	Pooblaščen arhitekt	Mateja Katrašnik, u.d.i.a.	A - 1578	
	Pooblaščen inženir	Matevž Govekar, u.d.i.g.	G - 3743	
	Sodelavec	Matevž Govekar, u.d.i.g.		
	Številka načrta	95/24		
	Številka projekta	206/2024	Merilo:	M 1:50
Projektant Arhiteza d.o.o. Bezenškova ulica 34 2000 Maribor	Datum	december 2024		Št. lista
	Naslov risbe Armaturni načrt - Pasovni temelji - obstoječi objekt			2.

ARMATURA TALNE PLOŠČE OBJEKTA
D = 20 CM, kom : 1
M : 1 : 50



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- OBVEZEN GEOMEHANSKI PREGLED TEMELJNIH TAL !

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE V IN POD TALNO PLOŠČO - GLEJ NAČRTE INŠTALACIJ!!!

- Evd TAMPONSKE BLAZINE = MIN. 40 MPa

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 4,0cm
- mrežna armatura 3,0cm

ARMATURA - S500

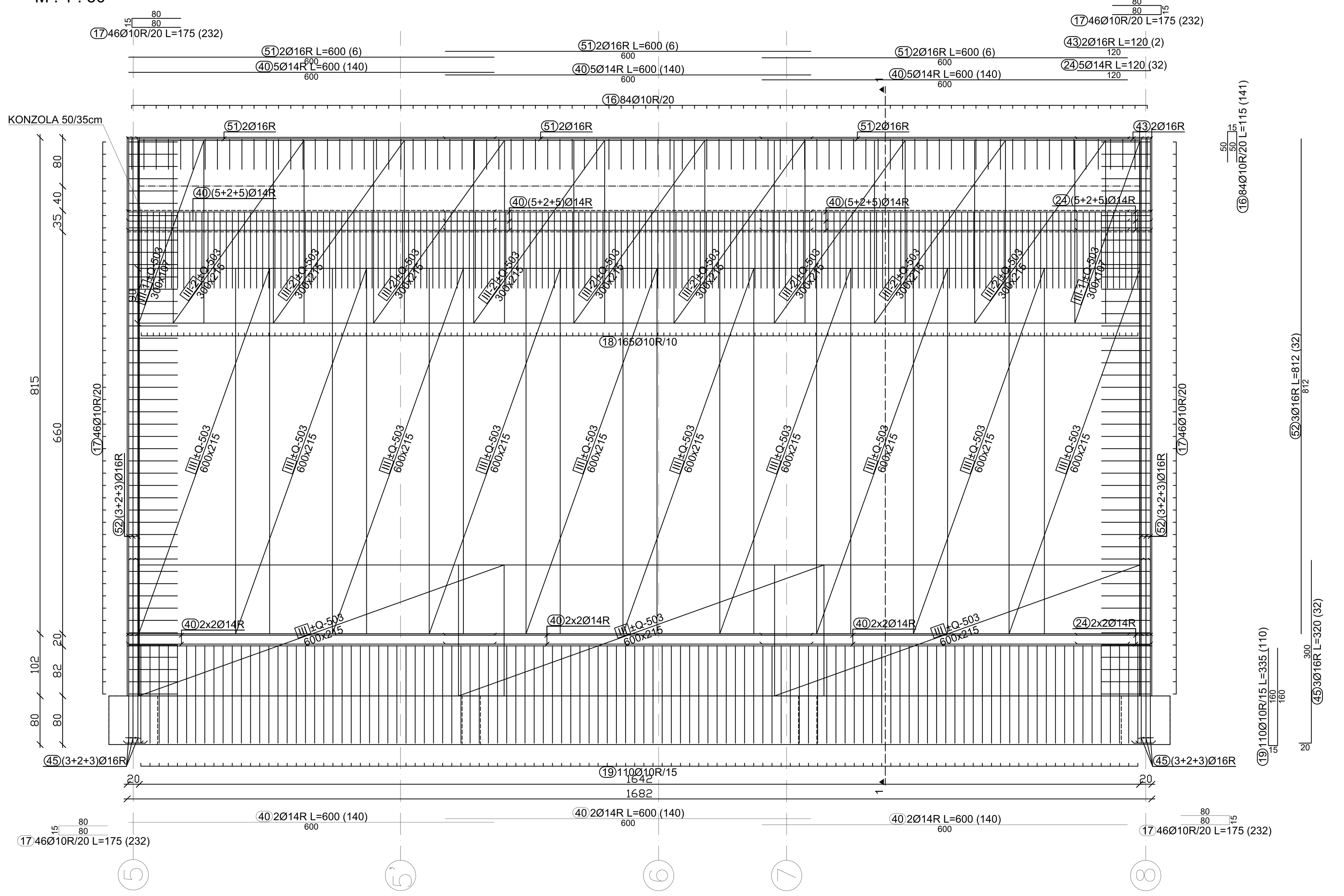
ARMATURA TALNE PLOŠČE OBJEKTA
M : 1 : 50

STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

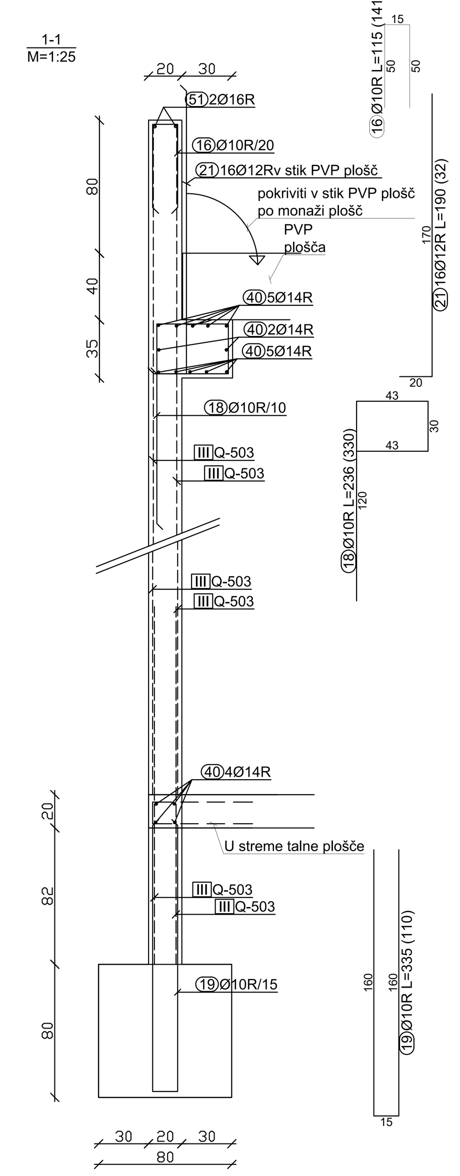
Investitor: Občina Križevci, Križevci pri Ljutomeru 11, 9252 Križevci pri Ljutomeru	Objekt: Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci			
	Vrsta načrta: Načrt gradbenih konstrukcij	Faza: PZI		
Projektant načrta: STATIK, d.o.o., podjetje za projektiranje in svetovanje, Prešernova 2, 5280 Idrija	Pooblaščen arhitekt: Mateja Kalnišnik, u.d.i.a. A - 1578			
	Pooblaščen inženir: Matevž Govekar, u.d.i.g. G - 3745			
	Sodelavec: Matevž Govekar, u.d.i.g.			
	Številka načrta: 95/24			
	Številka projekta: 20K2024	Merilo: M 1:50		
Projektant: Arhiteza d.o.o., Bezenškova ulica 34, 2000 Maribor	Datum: december 2024			Št. lista
	Naslov risbe: Armaturni načrt - Talna plošča			3.

Allplan 2008

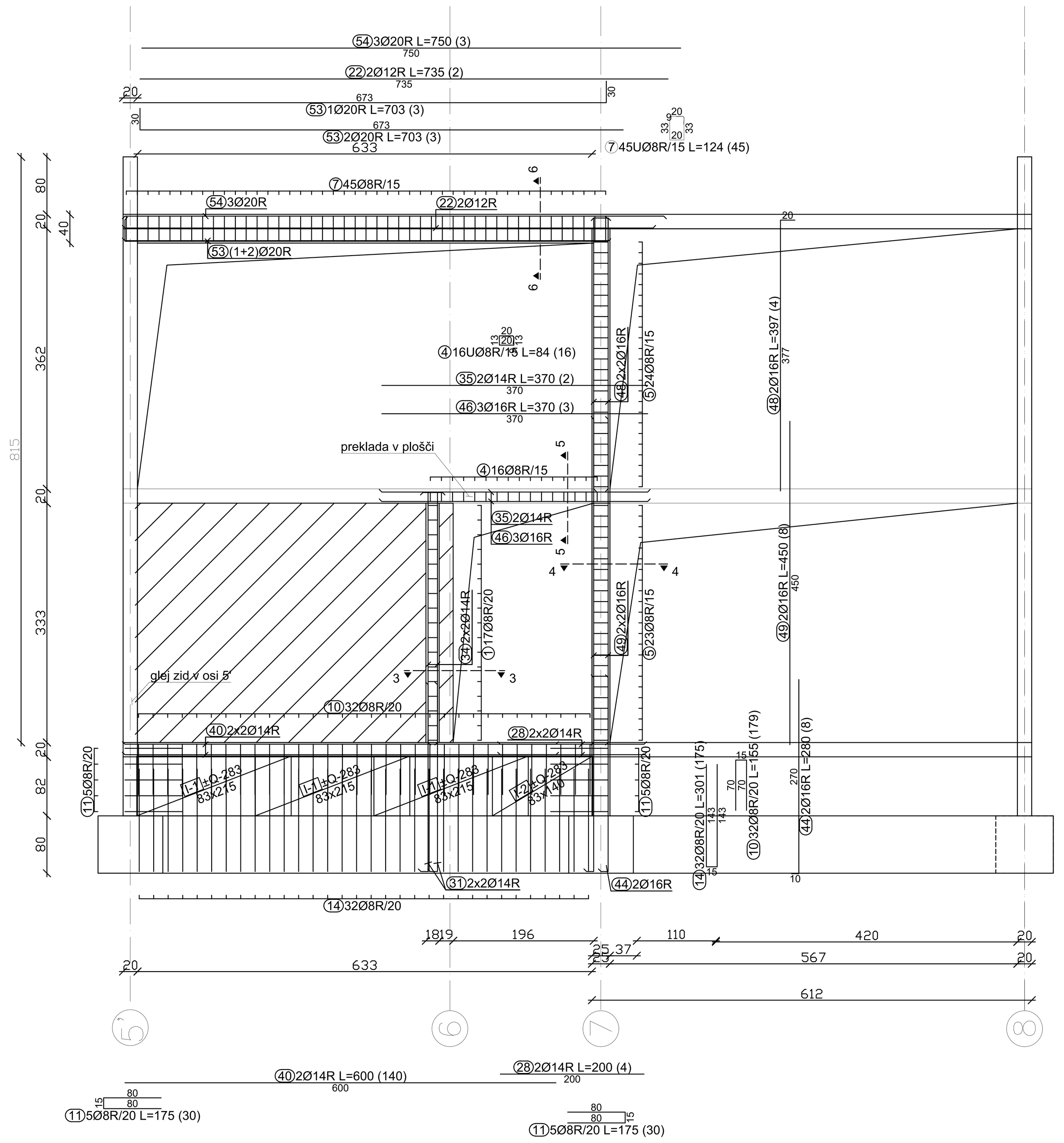
ARMATURA ZIDU V OSI K
Dz = 20 CM, kom : 1
M : 1 : 50

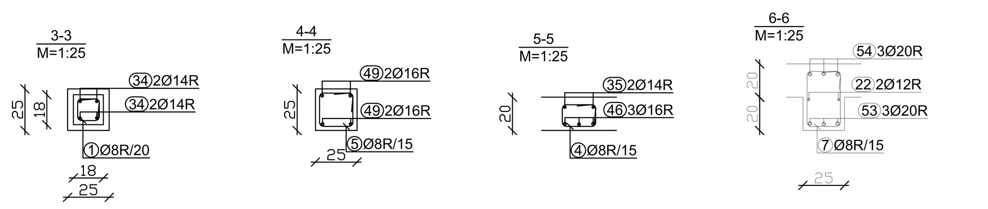


1-1
M=1:25



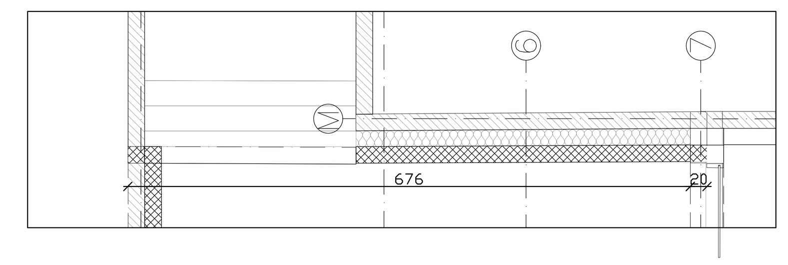
ARMATURA ZIDU OB OSI H
Dz = 20 CM, kom : 1
M : 1 : 50

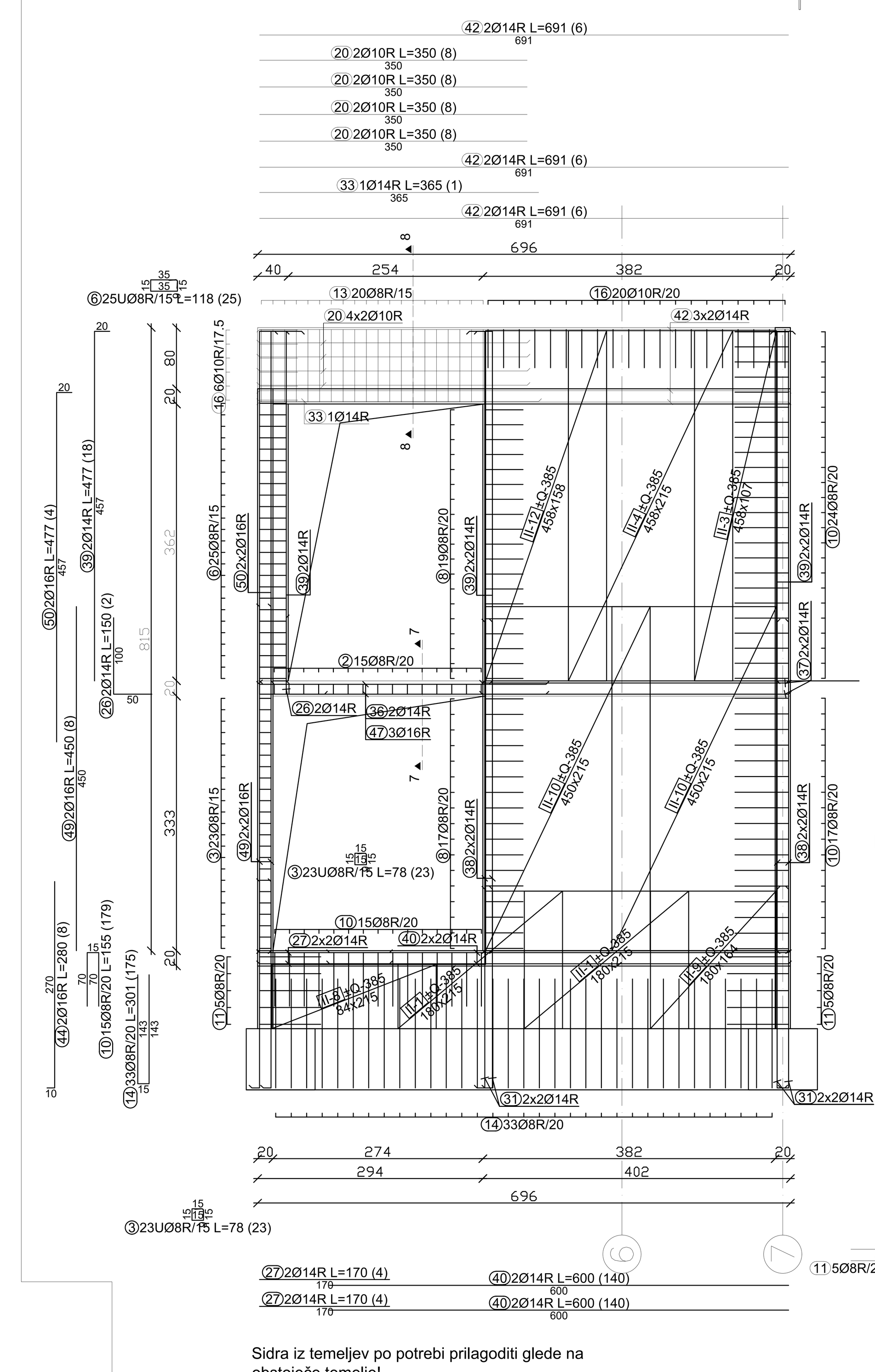


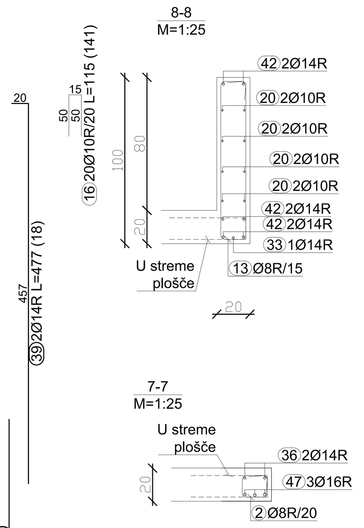


ARMATURA ZIDU V OSI M
Dz = 20 CM, kom : 1
M : 1 : 50

TLORIS NADSTROPJA
M : 1 : 50

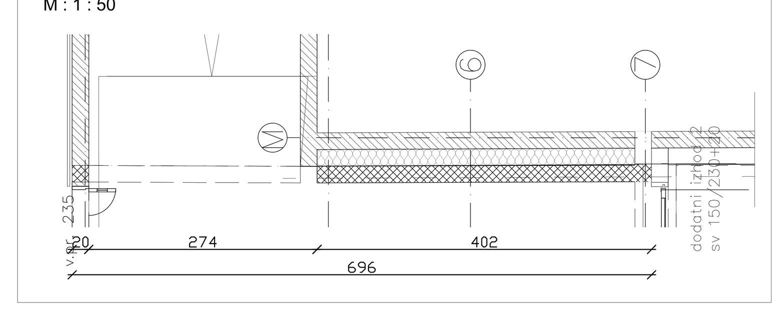




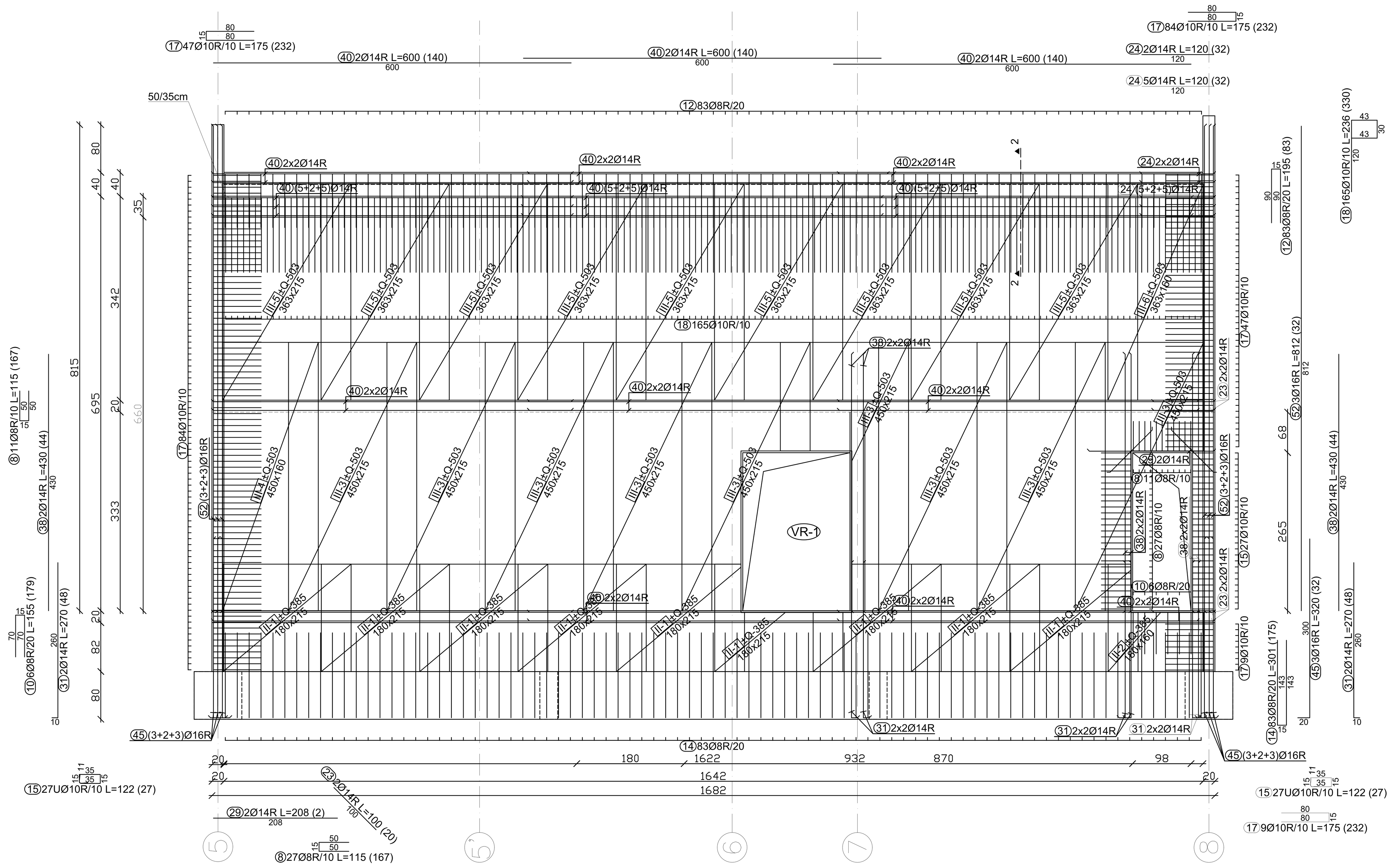


Sidra iz temeljev po potrebi prilagoditi glede na obstoječe temelje!

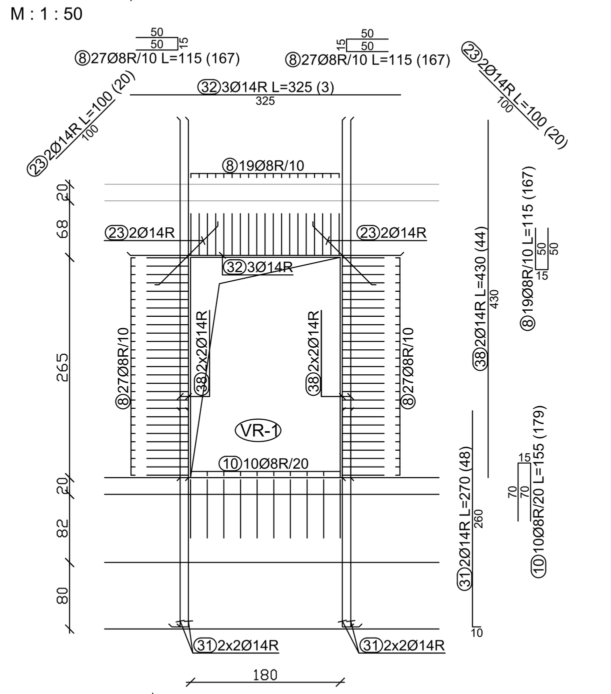
TLORIS PRITLIČJA
M : 1 : 50



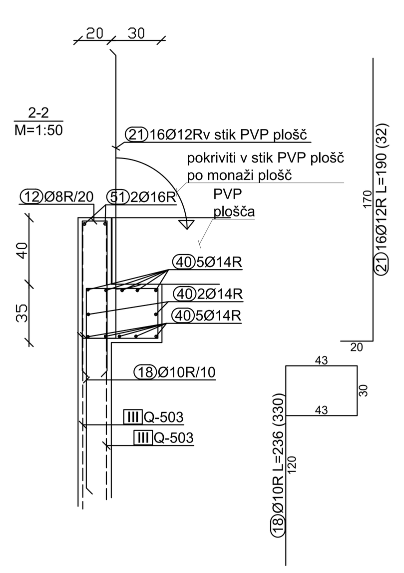
ARMATURA ZIDU V OSI J
Dz = 20 CM, kom : 1
M : 1 : 50



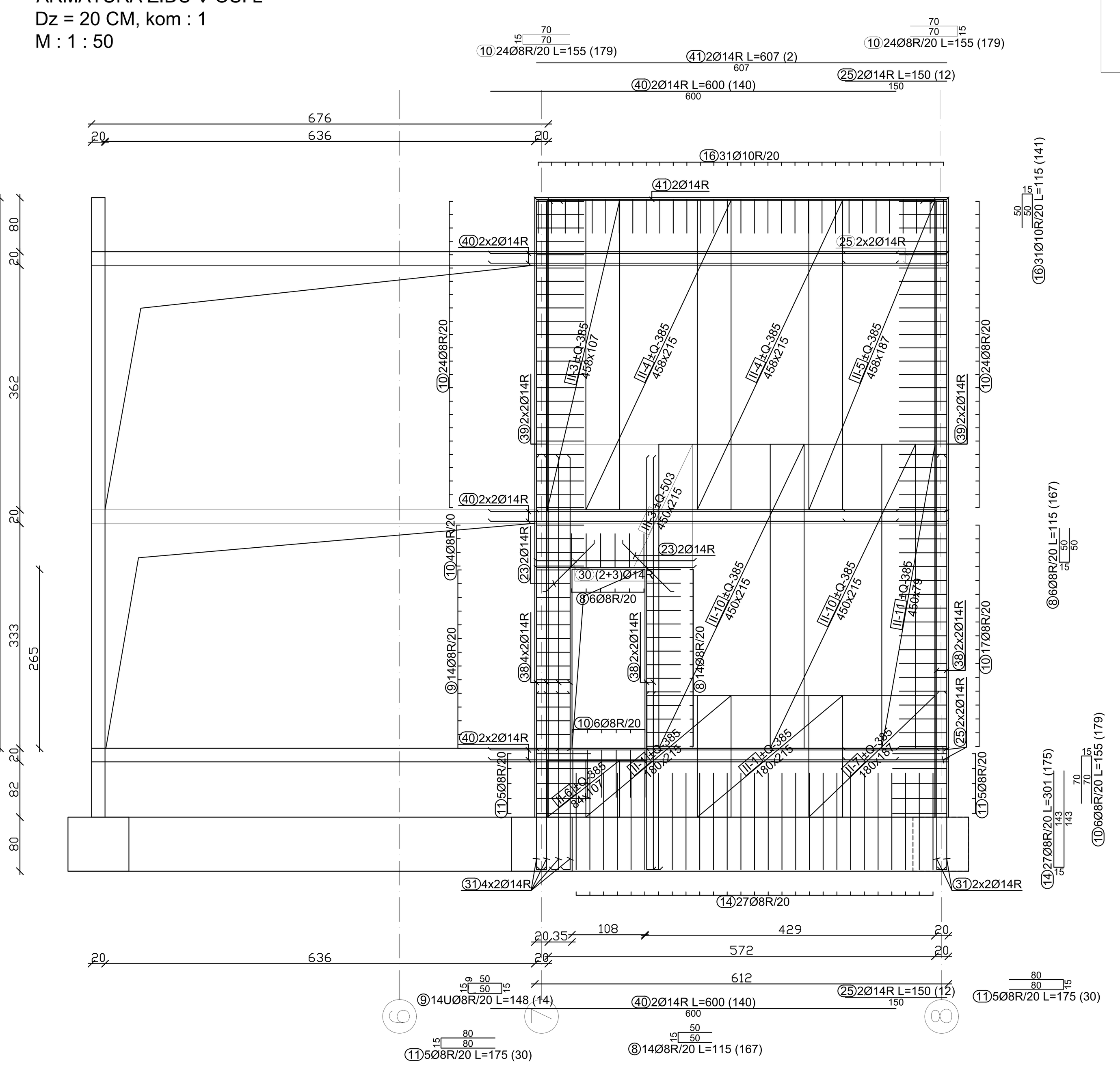
ARMATURA OKOLI VRAT VR-1
180/265/15 CM, kom : 1
M : 1 : 50



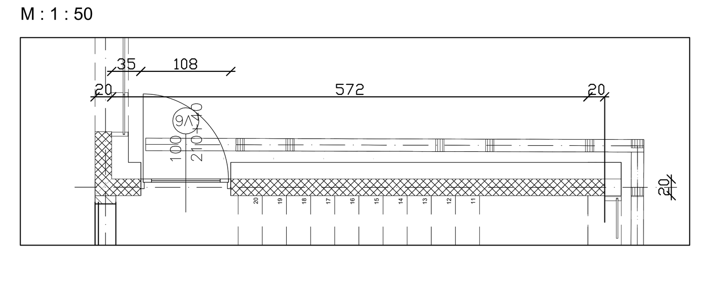
2-2
M=1:50



ARMATURA ZIDU V OSI L
Dz = 20 CM, kom : 1
M : 1 : 50



TLORIS PRITLIČJA
M : 1 : 50



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

ARMATURA - S500

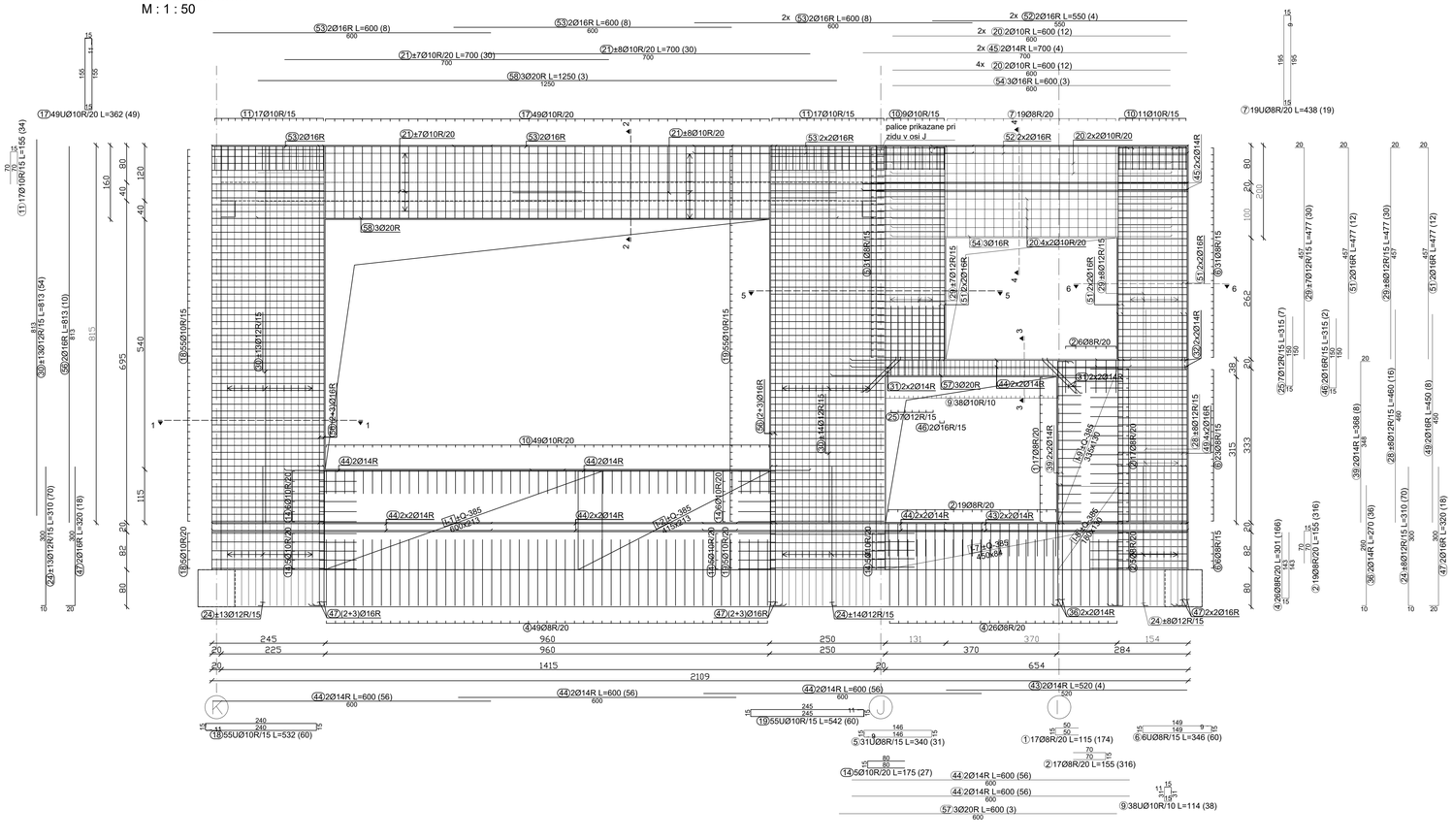
ARMATURA KONSTRUKCIJ
ZIDOV V OSI K,J,H,L,M
M : 1 : 50

STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

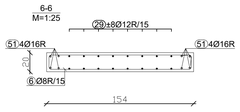
Investitor Občina Križevci Križevci pri Ljutomeru 11 9252 Križevci pri Ljutomeru	Objekt Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci			
Projektant načrta STATIK d.o.o. podjetje za projektiranje in svetovanje Prešernova 2, 5280 Idrija	Vrsta načrta	Načrt gradbenih konstrukcij	Faza:	PZI
	Pooblaščen arhitekt	Mateja Katrašnik, u.d.i.a.	A - 1578	
	Pooblaščen inženir	Matevž Govekar, u.d.i.g.	G - 3743	
	Sodelavec	Matevž Govekar, u.d.i.g.		
	Številka načrta	95/24		
	Številka projekta	206/2024	Merilo:	M 1:50
Projektant Arhiteza d.o.o. Bezenškova ulica 34 2000 Maribor	Datum	december 2024		Št. lista
	Naslov risbe Armaturni načrt - Konstrukcije v osi K, J, H, L in M			4.

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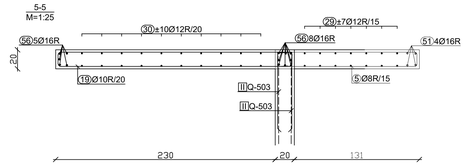
ARMATURA ZIDU V OSI 5
Dz = 20 CM, kom : 1
M : 1 : 50



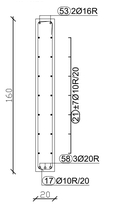
6-6
M=1:25



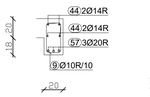
5-5
M=1:25



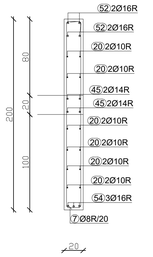
2-2
M=1:25



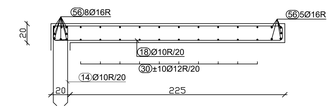
3-3
M=1:25



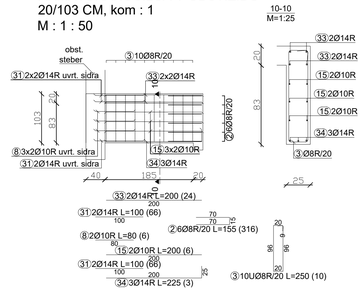
4-4
M=1:25



1-1
M=1:25



ARMATURANOSILCA V OBST.ZIDU
20/103 CM, kom : 1
M : 1 : 50



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

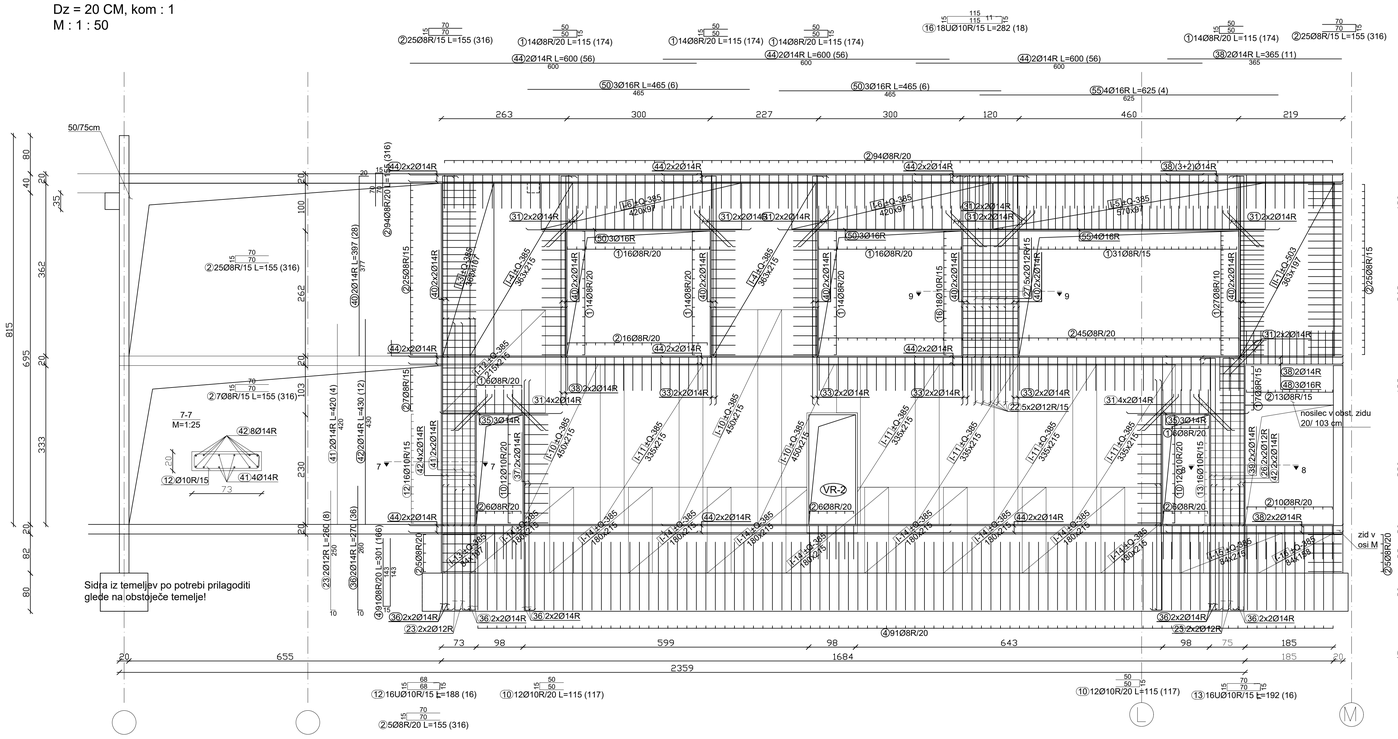
BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

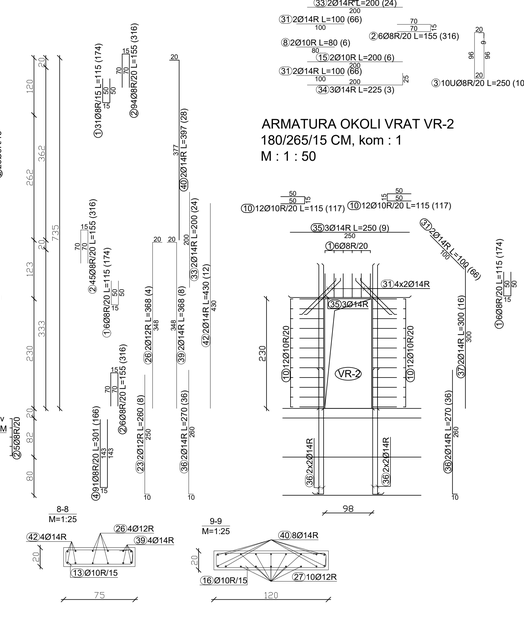
ARMATURA - S500

ARMATURA KONSTRUKCIJ
ZIDOV V OSI 5,3
M : 1 : 50

ARMATURA ZIDU V OSI 3
Dz = 20 CM, kom : 1
M : 1 : 50



ARMATURA OKOLI VRAT VR-2
180/265/15 CM, kom : 1
M : 1 : 50



- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

ARMATURA - S500

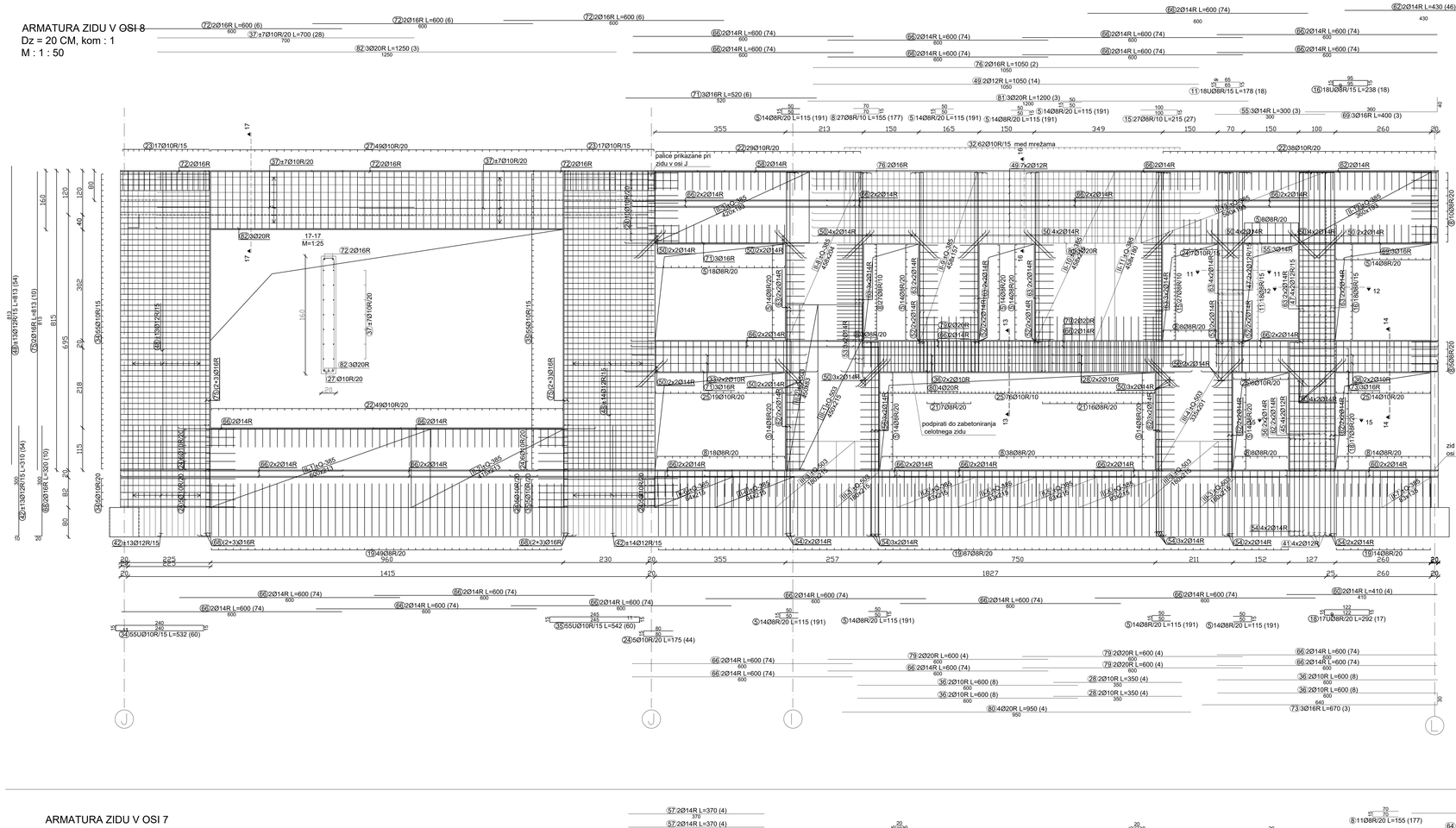
ARMATURA KONSTRUKCIJ
ZIDOV V OSI 5,3
M : 1 : 50

STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

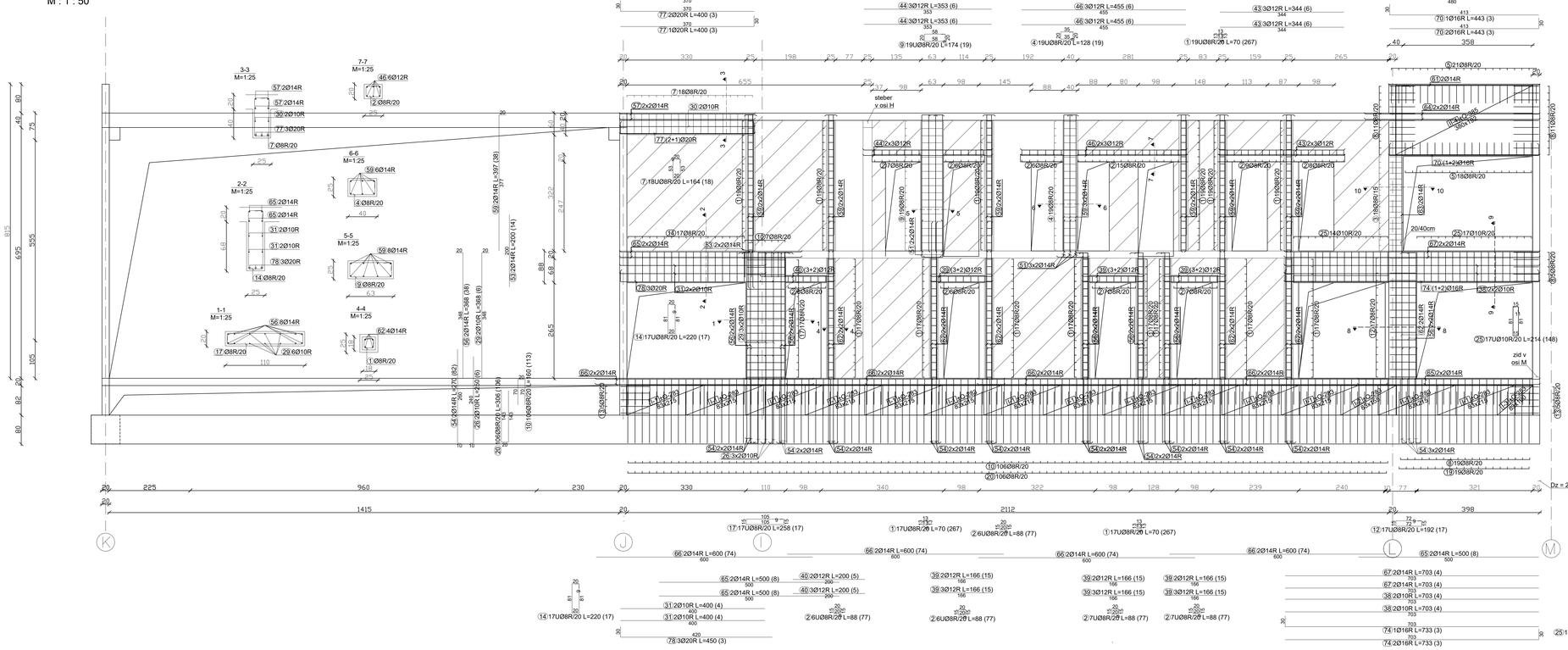
Investitor: Občina Križevci, Križevci pri Ljutomeru 11, 9252 Križevci pri Ljutomeru	Objekt: Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci		
	Vrsta načrta: načrt gradbenih konstrukcij	Faza:	PZI
Projektant načrta: STATIK d.o.o. podjetje za projektiranje in svetovanje Prešernova 2, 5280 Idrija	Pooblaščen arhitekt: Mateja Kalnišnik, u.d.i.a.	A - 1578	
	Pooblaščen inženir: Matevž Govekar, u.d.i.g.	G - 3748	
	Sodelavec: Matevž Govekar, u.d.i.g.		
	Številka načrta:	05/24	Merilo: M 1:50
	Številka projekta:	206/2024	
Projektant: Arhiteza d.o.o. Bezenškova ulica 34 2000 Maribor	Datum:	december 2024	Št. lista
	Naslov risbe: Armaturni načrt - Konstrukcije v osi 5, 3		5.

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ARMATURA ZIDU V ~~OSI 8~~
Dz = 20 CM, kom : 1
M : 1 : 50



ARMATURA ZIDU V OSI 7
Dz = 25 CM, kom : 1
M : 1 : 50



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

ARMATURA - S500

ARMATURA KONSTRUKCIJ
ZIDOV V OSI 7,8
M : 1 : 50

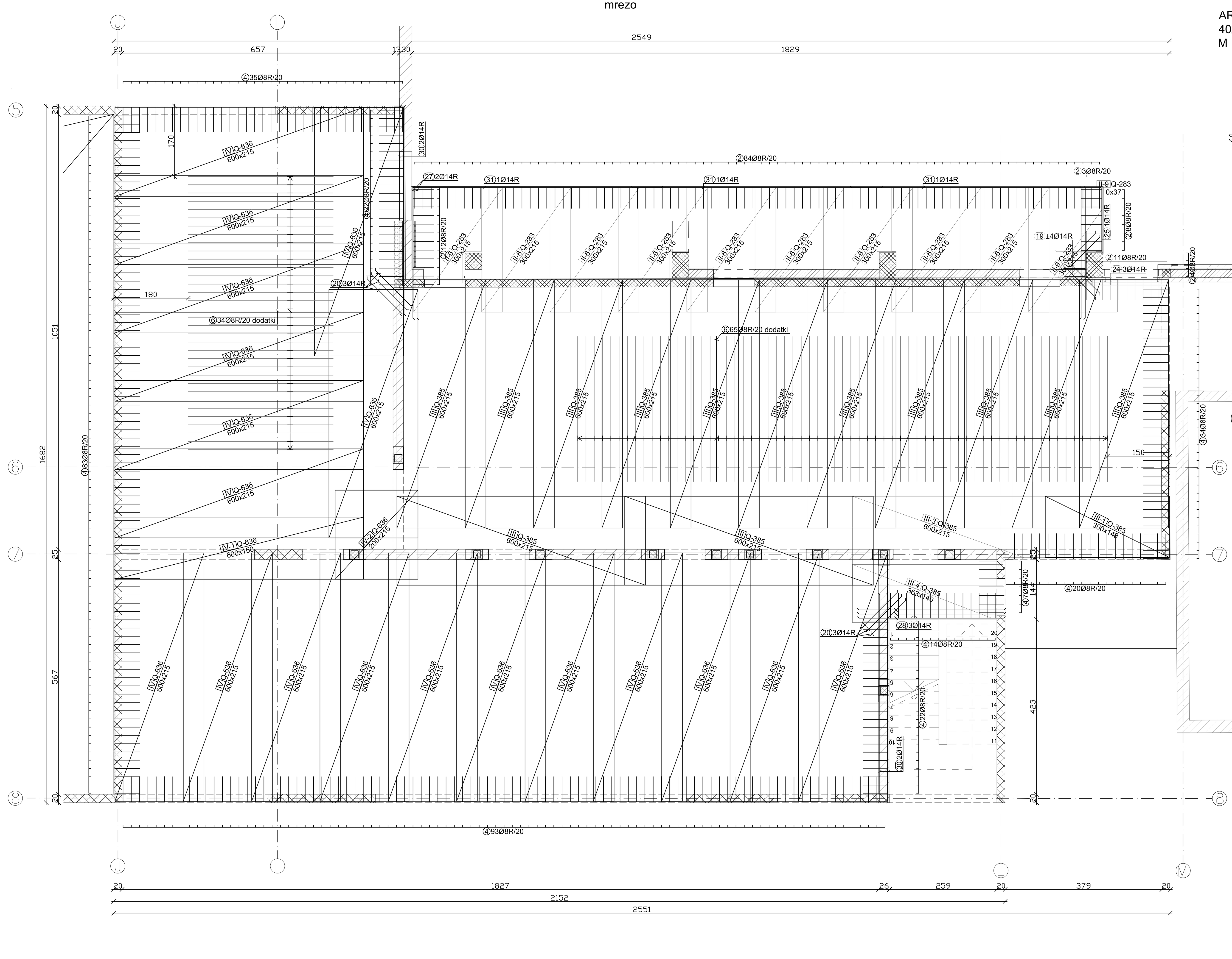
STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

Investitor	Občina Kričevci Kričevci pri Ljutomeru 11 9252 Kričevci pri Ljutomeru	Objekt	Rekonstrukcija in prizidava telovadnice pri Osnovna šola Kričevci
		Vrsta načrta	Načrt gradbenih konstrukcij	PGD
Projektant načrta	STATIK d.o.o. podjetje za projektiranje in svetovanje Prešernova 2, 5280 Idrija	Pooblaščen arhitekt	Nataša Kalinšek, u.d.i.a. A - 1978	
		Pooblaščen inženir	Matevž Govekar, u.d.i.g.(u. 3743	
		Sodelavec	Matevž Govekar, u.d.i.g.	
		Številka načrta	95/24	
		Številka projekta	2050/2024	Merilo: M 1:50
Projektant	Arhitekta d.o.o. Bezenškova ulica 34 2000 Maribor	Datum	december 2024	Št. lista
		Naslov risbe	Armaturni načrt - Konstrukcije v osi 7, 8	6.

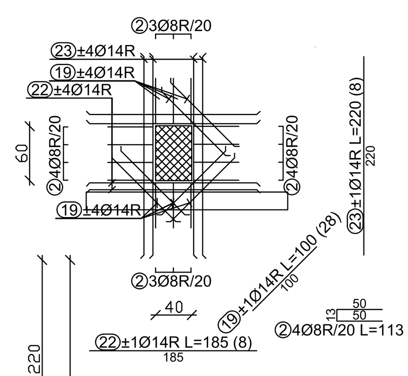
# ARMATURA PLOŠČE NAD PRITLIČJEM
Dpl = 20 CM, KOM : 1
M : 1 : 50

POZITIVNA ARMATURA - spodaj

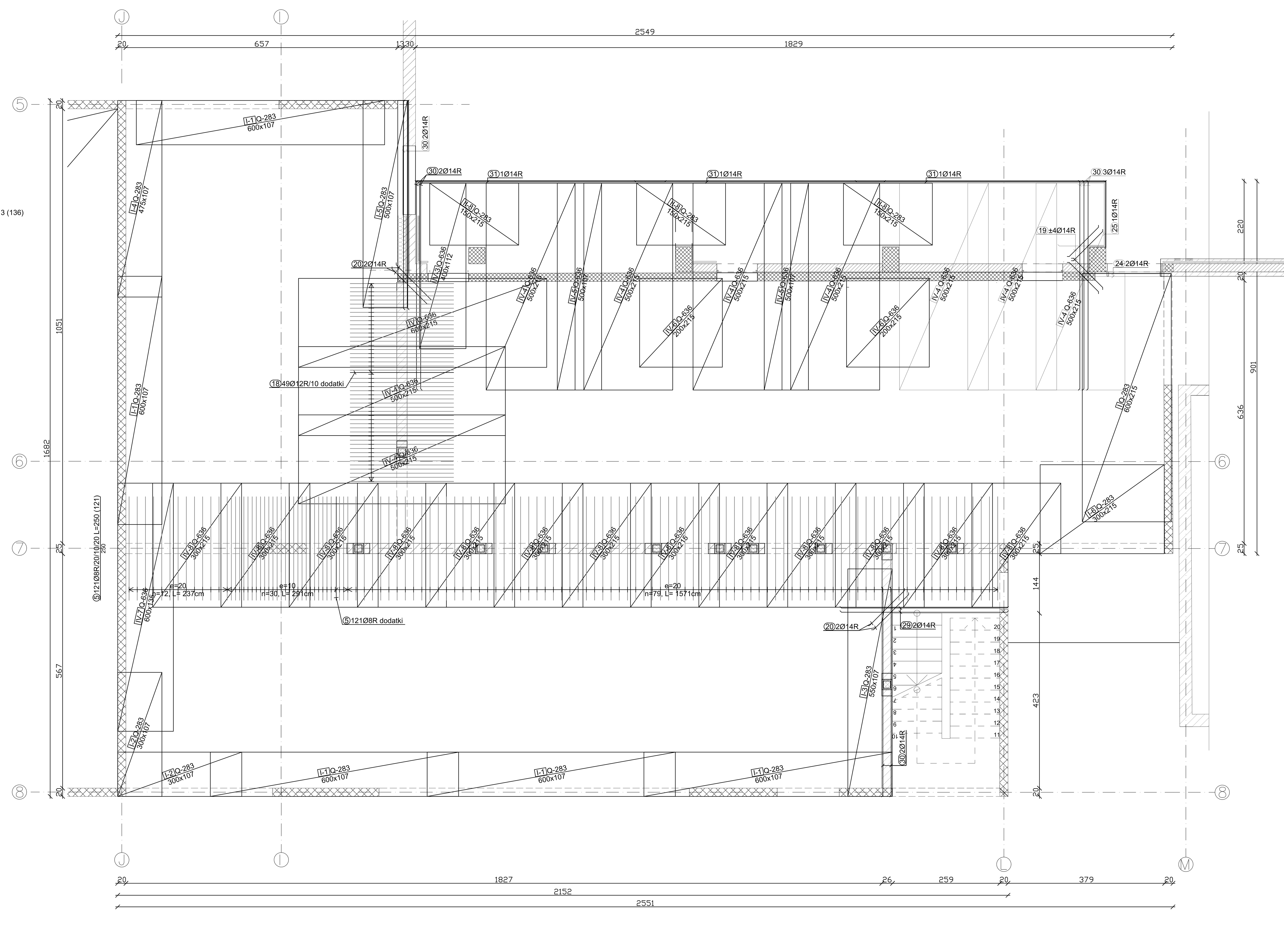
tukaj se stena nasloni na obstoječo steno......prestavi ujke cca 10cm v steno...kot imas mrezo



ARMATURA OKOLI STEBROV
40/70 CM, kom : 3
M : 1 : 50

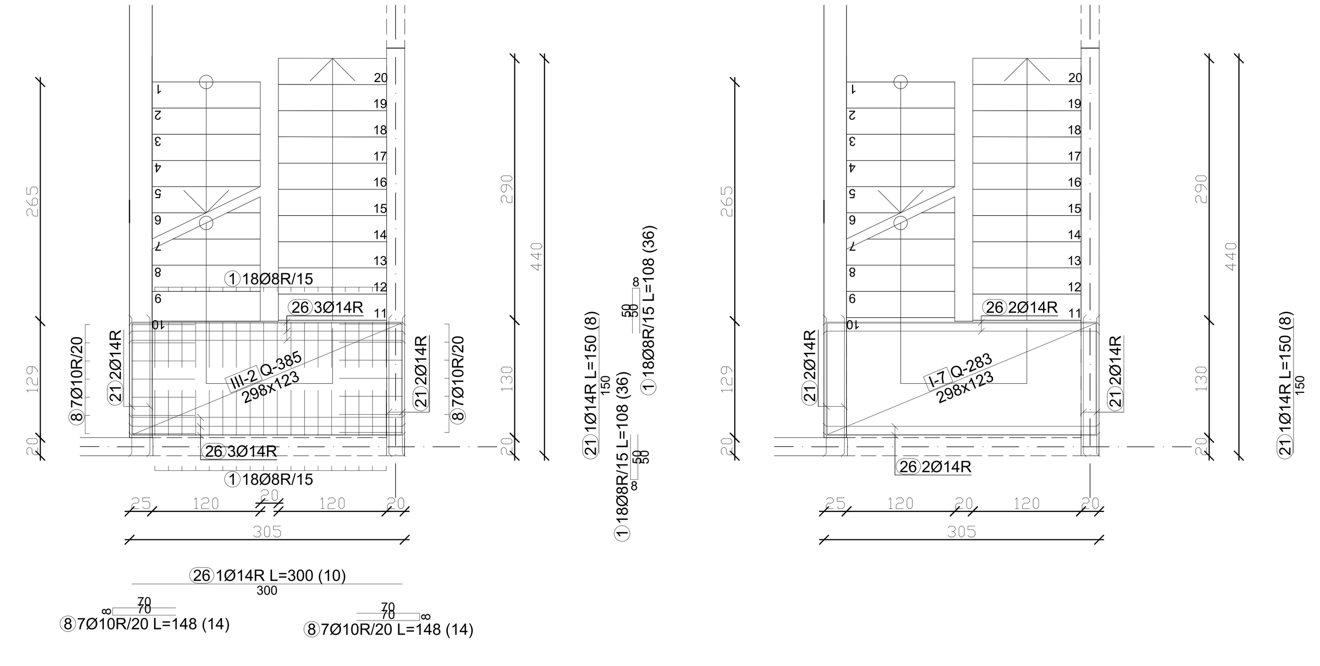


NEGATIVNA ARMATURA - zgoraj

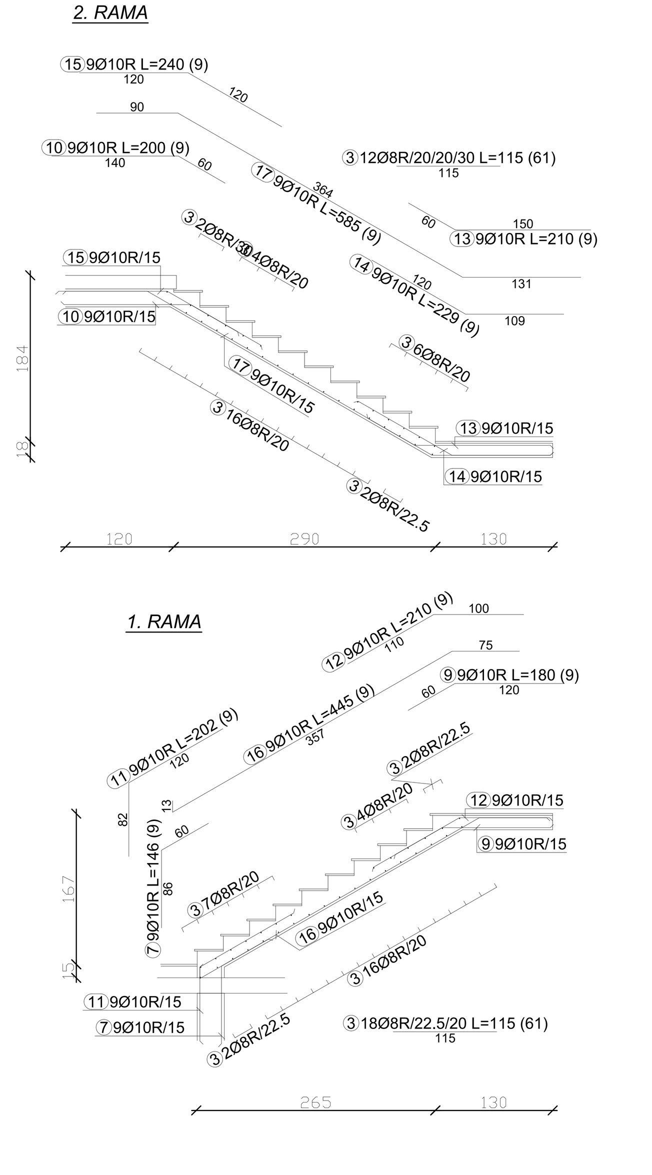


ARMATURA VMESNEGA PODESTA
Dpl = 16cm podesti in rame
KOM : 1, M : 1 : 50

POZITIVNA ARMATURA - spodaj / *NEGATIVNA ARMATURA - zgoraj*



2. RAMA / *1. RAMA*



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

- SIDRA IZ PLOŠČE PREVERITI PO NAČRTU "ARMATURA KONSTRUKCIJ PRITLIČJA" !!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

ARMATURA - S500

ARMATURA PLOŠČE NAD PRITLIČJEM
M : 1 : 50

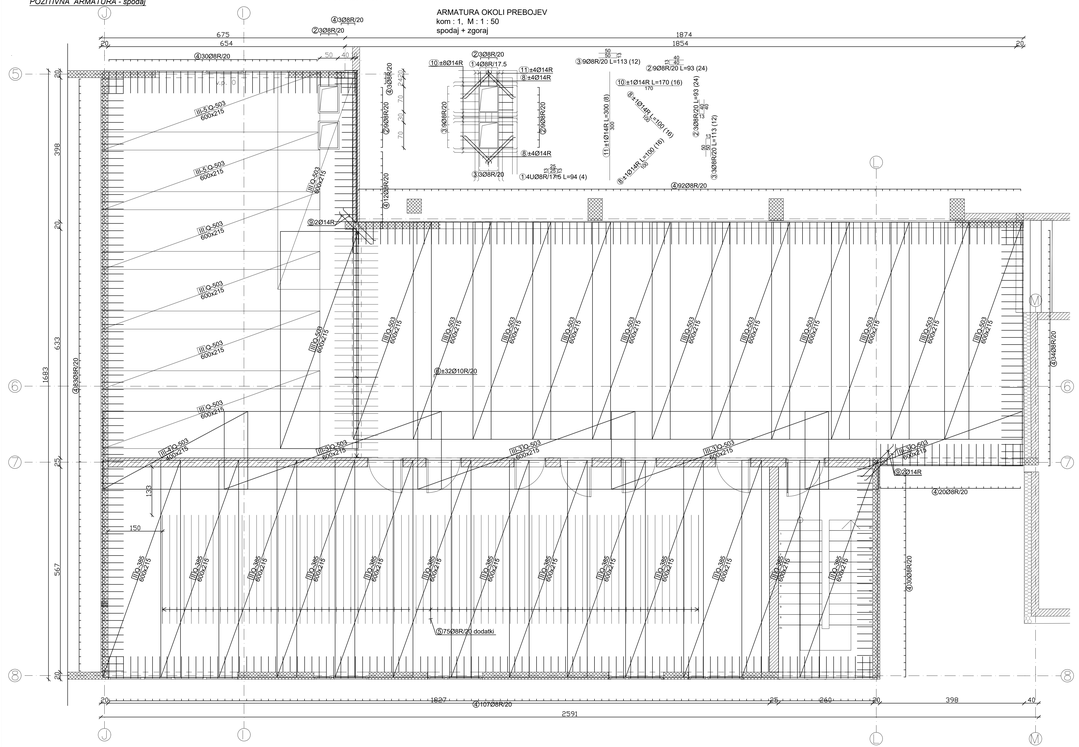
STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 5280 Idrija

Investitor: Občina Križevci, Križevci pri Ljutomeru 11, 9252 Križevci pri Ljutomeru	Objekt: Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci				
Projektant načrta: STATIK d.o.o. podjetje za projektiranje in svetovanje, Prešernova 2, 5280 Idrija	Vrsta načrta	Načrt gradbenih konstrukcij	Faza:	PZI	
	Pooblaščen arhitekt	Mateja Katrašnik, u.d.i.a.	A - 1578		
	Pooblaščen inženir	Matevž Govekar, u.d.i.g.	G - 3743		
	Sodelavec	Matevž Govekar, u.d.i.g.			
	Številka načrta	95/24			
	Številka projekta	206/2024	Merilo:	M 1:50	
Projektant: Arhiteza d.o.o., Bezenškova ulica 34, 2000 Maribor	Datum	december 2024			Št. lista
	Naslov risbe: Armaturni načrt - Plošča nad nadstropjem				7.

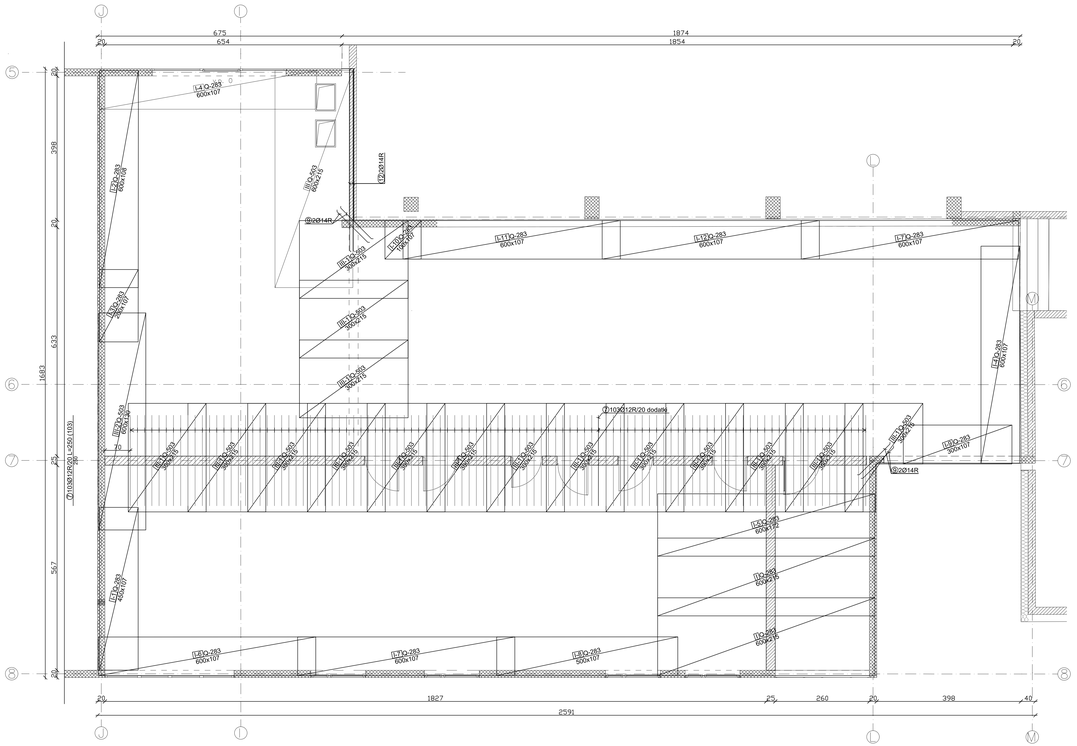
Allplan 2008

# ARMATURA STREŠNE PLOŠČE
Dpl = 20 CM, KOM :
M : 1 : 50

POZITIVNA ARMATURA - spodaj



NEGATIVNA ARMATURA - zgoraj



OPOMBA:
-Za izvedo prebojev glej načrte inštalacij.
-Glej tudi ostale risbe armature in načrte arhitekture.

- VSE MERE IN KOM ARMATURE KONTROLIRATI NA GRADBIŠČU IN JIH PO POTREBI USTREZNO KORIGIRATI, PRED NAROČILOM ARMATURE !!!

- PRED BETONIRANJEM VSTAVITI VSE INŠTALACIJE - GLEJ NAČRTE INŠTALACIJ!!!

- SIDRA IZ PLOŠČE PREVERITI PO NAČRTU "ARMATURA KONSTRUKCIJ PRITLIČJA" !!!

BETON - C25/30,Dmax 16, XC2

ZAŠČITNI SLOJ BETONA:
- rebrasta armatura 3,0 - 4,0cm
- mrežna armatura 3,0 - 4,0cm

ARMATURA - S500

ARMATURA PLOŠČE NAD NADSTROPJEM
M : 1 : 50

STATIK d.o.o.
Podjetje za projektiranje in svetovanje
Prešernova 2, 9280 Ivanja

Investitor: Občina Križevci Križevci pri Ljutomeru 11 9252 Križevci pri Ljutomeru	Objekt: Rekonstrukcija in prizidava telovadnice pri Osnovna šola Križevci		
	Vrsta načrta	Izvor gradbenih konstrukcij	Faza: IDZ
Projektant načrta: STATIK d.o.o. podjetje za projektiranje in svetovanje Prešernova 2, 9280 Ivanja	Projektiral/Del. arhitekt	Nataša Kamenšek, u.d.i.a. IA - 1576	
	Projektiral/Gen. inženir	Matevž Grivec, u.d.i.g. - 3150	
	Sodelavec	Matevž Grivec, u.d.i.g.	
	Številka načrta	08/24	
	Številka projekta	208/2024	Merilo: M 1:50
Projektant: Arhitekt d.o.o. Slovenčeva ulica 34 2000 Maribor	Datum	december 2024	Št. lista: 8.
	Ime načrta: Armaturni načrt - Plošča nad nadstropjem		

Alipan 2008