

MODEL

Project: PRILOGA B

Model: OKVIR V X SMERI

Date: 21.01.2024

STATICNA ANALIZA

MODEL - GENERAL DATA

General	Model name	: 2D_model_X_v02
	Type of model	: 2D-XZ (ux/uz/φy)
	Positive direction of global axis Z	: Upward
	Classification of load cases and combinations	: According to Standard: EN 1990 National Annex: SIST - Slovenia
Options	☐ RF-FORM-FINDING - Find initial equilibrium shapes of membrane and cable structures	
	☐ RF-CUTTING-PATTERN	
	☐ Piping analysis	
	☐ Use CQC Rule	
	☐ Enable CAD/BIM model	
Standard Gravity		: 10.00 m/s ²

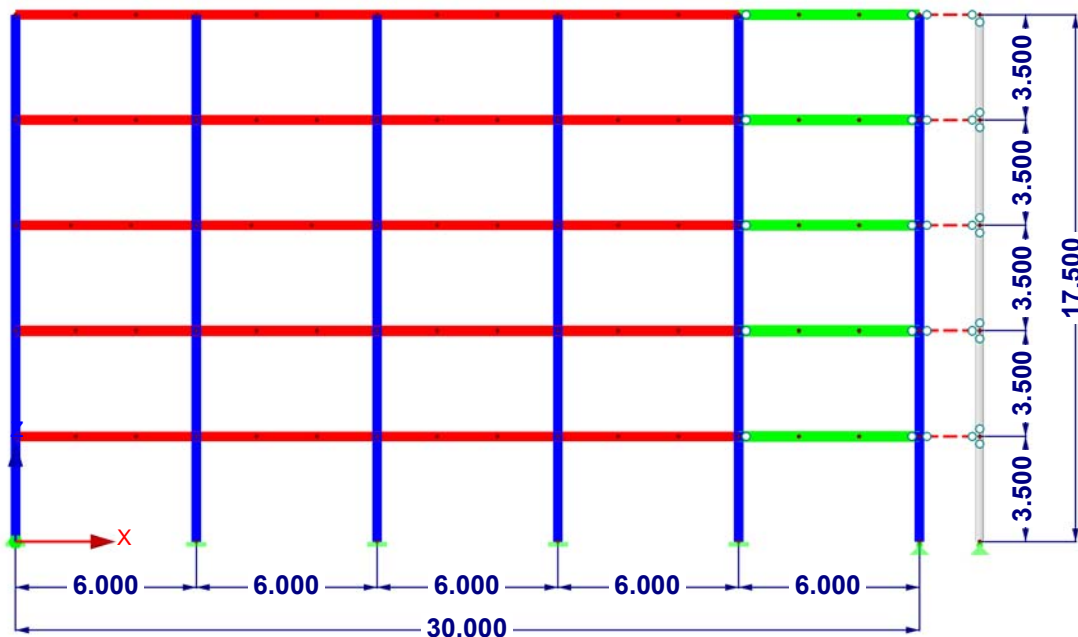
FE MESH SETTINGS

General	Target length of finite elements	l_{FE}	: 0.500 m
	Maximum distance between a node and a line to integrate it into the line	ϵ	: 0.001 m
	Maximum number of mesh nodes (in thousands)		: 500
Members	Number of divisions of members with cable, elastic foundation, taper, or plastic characteristic		: 10
	☒ Activate member divisions for large deformation or post-critical analysis		
	☒ Use division also for straight members, which are not integrated in surfaces, with		: Target length LFE of finite elements
	Minimum number of member divisions		: 2
	☒ Use division for members with node lying on them		
Surfaces	Maximum ratio of FE rectangle diagonals	Δ_D	: 1.800
	Maximum out-of-plane inclination of two finite elements	α	: 0.50 °
	Shape direction of finite elements		: Triangles and quadrangles
			☒ Same squares where possible

GEOMETRIJA MODELA OKVIRA V X SMERI IN PRECNI PREREZI

Cross-Sections
1: HE B 320
2: IPE 330 | E
3: IPE 360 | E
4: HE B 300

In Y-direction



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1.3 MATERIALS

Matl. No.	Modulus E [kN/cm ²]	Modulus G [kN/cm ²]	Poisson's Ratio ν [-]	Spec. Weight γ [kN/m ³]	Coeff. of Th. Exp. α [1/°C]	Partial Factor γ_M [-]	Material Model
1	Steel S 355 EN 21000.00	10025-2:2004-11 8076.92	0.300	78.50	1.20E-05	1.00	Isotropic Linear Elastic
2	Steel S 355 EN 21000.00	10025-2:2004-11 8076.92	0.300	0.00E+00	1.20E-05	1.00	Isotropic Linear Elastic

1.7 NODAL SUPPORTS

Support No.	Nodes No.	Axis System	Support or Spring [kN/m] [kNm/rad]			Comment
			u_x	u_z	ϕ_y	
1	24, 25	Global X,Y,Z	☒	☒	☐	
2	20-23, 26	Global X,Y,Z	☒	☒	☒	

1.13 CROSS-SECTIONS

Section No.	Matl. No.	J [cm ⁴] A [cm ²]	I_y [cm ⁴] A_y [cm ²]	I_z [cm ⁴] A_z [cm ²]	Principal Axes α [°]	Rotation α' [°]	Overall Dimensions [mm]	
							Width b	Height h
1	HE B 320 Euronorm 53-62 1	161.00	30820.00	32.08	0.00	0.00	300.0	320.0
2	IPE 330 Euronorm 19-57 1	62.60	11770.00	23.15	0.00	0.00	160.0	330.0
3	IPE 360 Euronorm 19-57 1	72.70	16270.00	26.92	0.00	0.00	170.0	360.0
4	HE B 300 Euronorm 53-62 2	149.00	25170.00	28.65	0.00	0.00	300.0	300.0

1.14 MEMBER HINGES

Release No.	Reference System	Force Release or Spring [kN/m]			Comment
		u_x	u_z	ϕ_y	
1	Local x,y,z Nonlinearity	☐	☐	☒	

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 teza	Permanent	☒	0.000		-1.000
LC2	Stalna obtežba	Permanent/Imposed	☐			
LC3	Koristna obtežba - medetaža	Imposed - Category B: office areas	☐			
LC4	Obtežba snega	Snow ($H \leq 1000$ m a.s.l.)	☐			
LC5	W1: W_x + notranji tlak ($c_{pi} = +0,2$)	Wind	☐			
LC6	W2: W_x + notranji srk ($c_{pi} = -0,3$)	Wind	☐			
LC10	Glob nepopolnosti +X	Imperfection	☐			

2.5 LOAD COMBINATIONS

Load Combin.	DS	Load Combination Description	No.	Factor	Load Case	
CO1	STR	MSN1: 1.35G + 1.50Q + 1.50S + imp	1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtežba
			3	1.50	LC3	Koristna obtežba - medetaža
			4	1.50	LC4	Obtežba snega
			5	1.00	LC10	Glob nepopolnosti +X
CO2	STR	MSN2: 1.35G + 1.05Q + 0.75S + 1.50W1 + imp	1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtežba
			3	1.05	LC3	Koristna obtežba - medetaža
			4	0.75	LC4	Obtežba snega
			5	1.50	LC5	W1: W_x + notranji tlak ($c_{pi} = +0,2$)
CO3	STR	MSN3: 1.35G + 1.05Q + 0.75S + 1.50W2 + imp	6	1.00	LC10	Glob nepopolnosti +X
			1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtežba
			3	1.05	LC3	Koristna obtežba - medetaža
			4	0.75	LC4	Obtežba snega
CO4	STR	MSN4: 1.35G + 1.50Q + 1.50S + 0.90W1 + imp	5	1.50	LC6	W2: W_x + notranji srk ($c_{pi} = -0,3$)
			6	1.00	LC10	Glob nepopolnosti +X
			1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtežba
			3	1.50	LC3	Koristna obtežba - medetaža
			4	1.50	LC4	Obtežba snega
			5	0.90	LC5	W1: W_x + notranji tlak ($c_{pi} = +0,2$)
			6	1.00	LC10	Glob nepopolnosti +X

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2.5 LOAD COMBINATIONS

Load Combin.	DS	Load Combination Description	No.	Factor	Load Case
CO5	STR	MSN5: 1.35G + 1.50Q + 1.50S+ 0.90W2 + imp	1	1.35	LC1 Lastna teza
			2	1.35	LC2 Stalna obtežba
			3	1.50	LC3 Koristna obtežba - medetaža
			4	1.50	LC4 Obtežba snega
			5	0.90	LC6 W2: Wx + notranji srk (cpi = -0,3)
			6	1.00	LC10 Glob nepopolnosti +X
CO6	STR	MSN6: 1.35G + 1.50Q + 0.90W1 + imp	1	1.35	LC1 Lastna teza
			2	1.35	LC2 Stalna obtežba
			3	1.50	LC3 Koristna obtežba - medetaža
			4	0.90	LC5 W1: Wx + notranji tlak (cpi = +0,2)
			5	1.00	LC10 Glob nepopolnosti +X
CO7	STR	MSN7: 1.35G + 1.50Q + 0.90W2 + imp	1	1.35	LC1 Lastna teza
			2	1.35	LC2 Stalna obtežba
			3	1.50	LC3 Koristna obtežba - medetaža
			4	0.90	LC6 W2: Wx + notranji srk (cpi = -0,3)
			5	1.00	LC10 Glob nepopolnosti +X
CO8	STR	MSN6: 1.00G + 1.50W1 + imp	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.50	LC5 W1: Wx + notranji tlak (cpi = +0,2)
			4	1.00	LC10 Glob nepopolnosti +X
CO9	STR	MSN7: 1.00G + 1.50W2 + imp	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.50	LC6 W2: Wx + notranji srk (cpi = -0,3)
			4	1.00	LC10 Glob nepopolnosti +X
CO10	S Ch	MSU1: 1.0G + 1.0Q + 1.0S	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.00	LC3 Koristna obtežba - medetaža
			4	1.00	LC4 Obtežba snega
CO11	S Ch	MSU2: 1.0G + 1.0Q + 1.0S + 0.6W1	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.00	LC3 Koristna obtežba - medetaža
			4	1.00	LC4 Obtežba snega
			5	0.60	LC5 W1: Wx + notranji tlak (cpi = +0,2)
CO12	S Ch	MSU3: 1.0G + 1.0Q + 1.0S + 0.6W2	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.00	LC3 Koristna obtežba - medetaža
			4	1.00	LC4 Obtežba snega
			5	0.60	LC6 W2: Wx + notranji srk (cpi = -0,3)
CO13	S Ch	MSU4: 1.0G + 0.7Q + 0.5S+ 1.0W1	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	0.70	LC3 Koristna obtežba - medetaža
			4	0.50	LC4 Obtežba snega
			5	1.00	LC5 W1: Wx + notranji tlak (cpi = +0,2)
CO14	S Ch	MSU5: 1.0G + 0.7Q + 0.5S+ 1.0W2	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	0.70	LC3 Koristna obtežba - medetaža
			4	0.50	LC4 Obtežba snega
			5	1.00	LC6 W2: Wx + notranji srk (cpi = -0,3)
CO15	S Ch	MSU6: 1.0G + 1.0Q + 0.6W1	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.00	LC3 Koristna obtežba - medetaža
			4	0.60	LC5 W1: Wx + notranji tlak (cpi = +0,2)
CO16	S Ch	MSU7: 1.0G + 1.0Q + 0.6W2	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	1.00	LC3 Koristna obtežba - medetaža
			4	0.60	LC6 W2: Wx + notranji srk (cpi = -0,3)
CO17	S Ch	MSU8: 1.0G + 0.7Q + 1.0W1	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	0.70	LC3 Koristna obtežba - medetaža
			4	1.00	LC5 W1: Wx + notranji tlak (cpi = +0,2)
CO18	S Ch	MSU9: 1.0G + 0.7Q + 1.0W2	1	1.00	LC1 Lastna teza
			2	1.00	LC2 Stalna obtežba
			3	0.70	LC3 Koristna obtežba - medetaža
			4	1.00	LC6 W2: Wx + notranji srk (cpi = -0,3)

2.7 RESULT COMBINATIONS

Result Combin	Description	Loading
RC1	MSN (ULS)	CO1/p or to CO9
RC2	MSU (SLS)	CO10/p or to CO18

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3.1 NODAL LOADS - BY COMPONENTS - COORDINATE SYSTEM

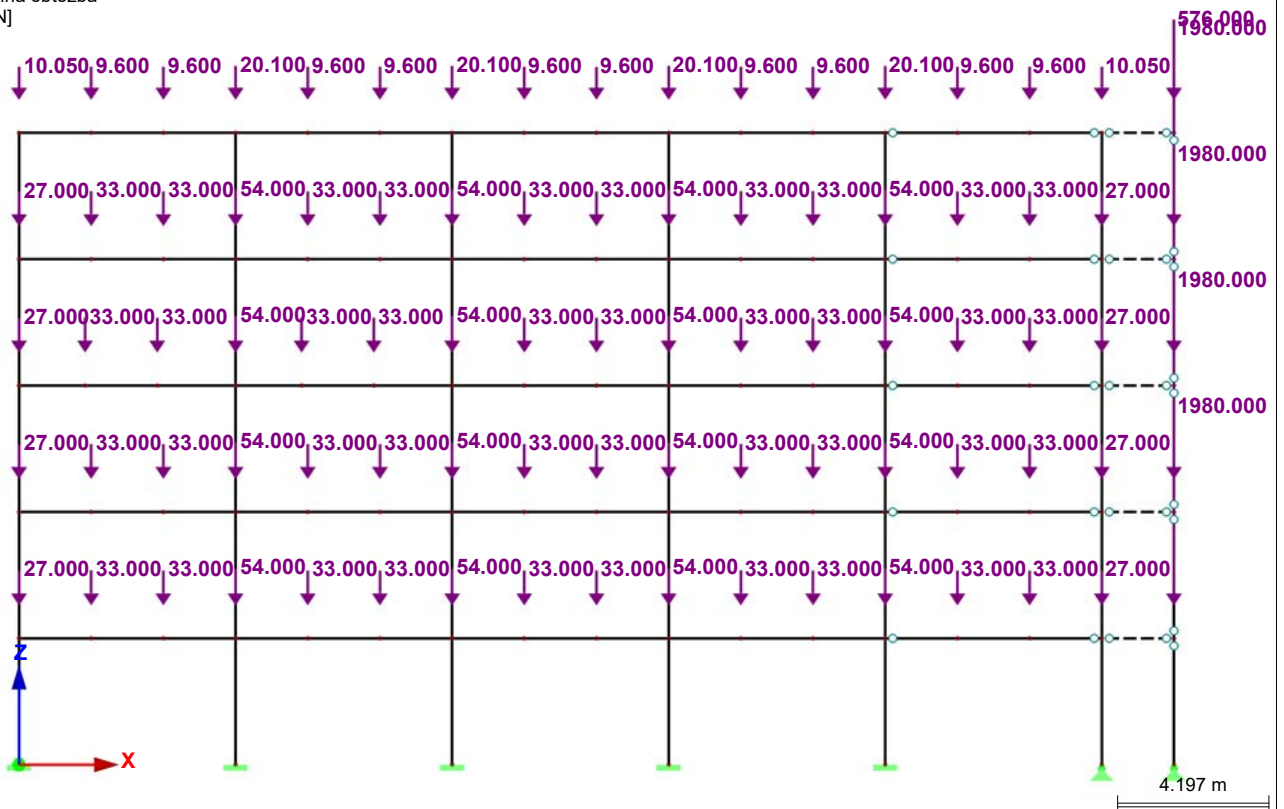
LC2: Stalna obtežba

No.	On Nodes No.	Coordinate System	Force [kN]		Moment M _y / M _v [kNm]
			P _x / P _u	P _z / P _w	
1	63,146	0 Global XYZ	0.000	-10.050	0.000
2	67	0 Global XYZ	0.000	-576.000	0.000
3	61,78,80,82	0 Global XYZ	0.000	-1980.000	0.000
4	59,64,65,69,70,74,75,115,118,126, 136,139,140,154,158,162	0 Global XYZ	0.000	-54.000	0.000
5	83-114,116,117,119-124	0 Global XYZ	0.000	-33.000	0.000
6	129-135,138,142,143	0 Global XYZ	0.000	-9.600	0.000
7	60,66,71,76,125,127,128,137	0 Global XYZ	0.000	-27.000	0.000
8	62,145,147,148	0 Global XYZ	0.000	-20.100	0.000

LC2: STALNA OBTEZBA

LC 2: Stalna obtežba
Loads [kN]

In Y-direction



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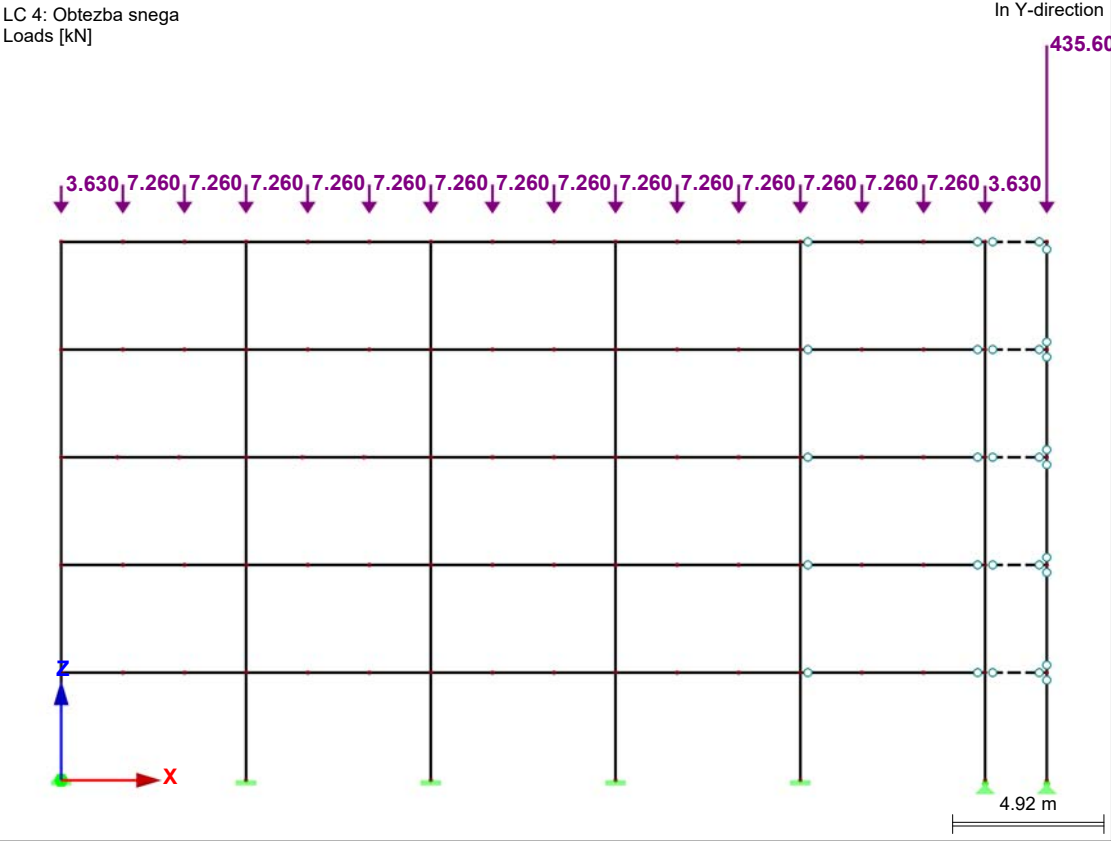
3.1 NODAL LOADS - BY COMPONENTS
 - COORDINATE SYSTEM

LC4: Obtezba snega

LC4
 Obtezba snega

No.	On Nodes No.	Coordinate System	Force [kN]		Moment M _y / M _v [kNm]
			P _x / P _u	P _z / P _w	
1	63,146	0 Global XYZ	0.000	-3.630	0.000
2	62,129-135,138,142,143,145,147,148	0 Global XYZ	0.000	-7.260	0.000
3	67	0 Global XYZ	0.000	-435.600	0.000

LC4: OBTEZBA SNEGA



LC5
 W1: Wx + notranji tlak
 (cpi = +0,2)

3.2 MEMBER LOADS

LC5: W1: Wx + notranji tlak (cpi = +0,2)

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters		
							Symbol	Value	Unit
1	Members	14,67,69,71,74	Force	Uniform	XL	True Length	p	5.550	kN/m
2	Members	17-19,32,133	Force	Uniform	XL	True Length	p	6.000	kN/m
3	Members	33	Force	Uniform	ZL	True Length	p	9.180	kN/m
4	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	20.400	kN/m
							p ₂	20.400	kN/m
							A	0.000	m
							B	3.000	m
5	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	9.180	kN/m
							p ₂	9.180	kN/m
							A	3.000	m
							B	6.000	m
6	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	9.180	kN/m
							p ₂	9.180	kN/m
							A	0.000	m
							B	3.000	m
7	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	3.000	m
							B	6.000	m
8	Members	201	Force	Uniform	ZL	True Length	p	4.080	kN/m
9	Members	40	Force	Uniform	ZL	True Length	p	4.080	kN/m

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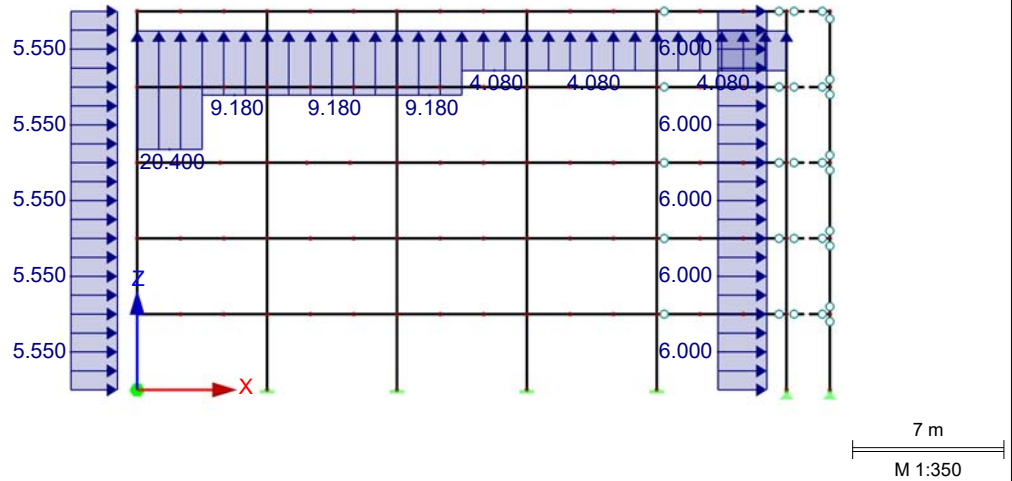
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LC5: W1: WX + NOTRANJI TLAK (CPI = +0,2)

LC 5: W1: Wx + notranji tlak (cpi = +0,2)
Loads [kN/m]

In Y-direction



LC6
W2: Wx + notranji srk
(cpi = -0,3)

3.2 MEMBER LOADS

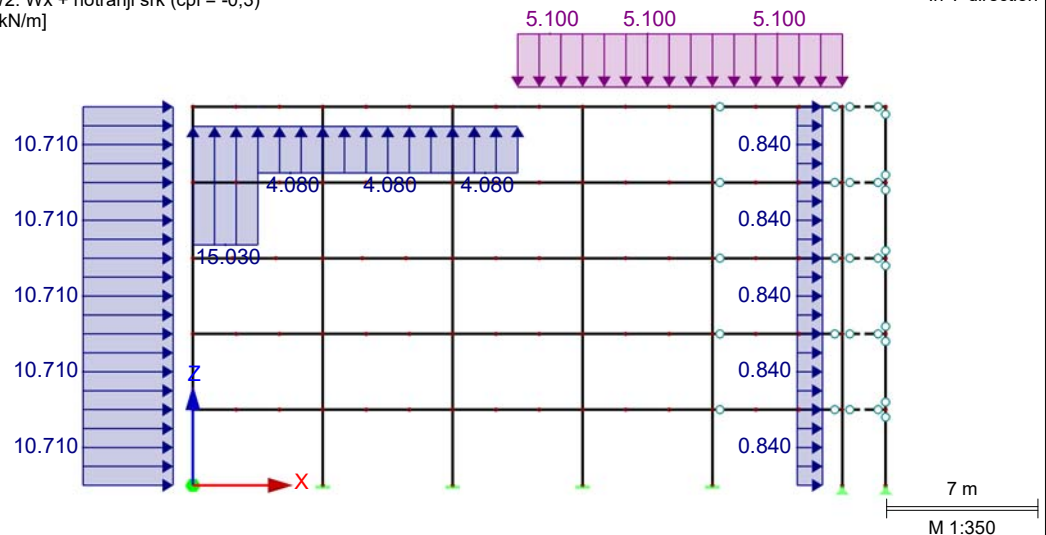
LC6: W2: Wx + notranji srk (cpi = -0,3)

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
1	Members	14,67,69,71,74	Force	Uniform	XL	True Length	p	10.710	kN/m
2	Members	17-19,32,133	Force	Uniform	XL	True Length	p	0.840	kN/m
3	Members	33	Force	Uniform	ZL	True Length	p	4.080	kN/m
4	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	15.030	kN/m
							p ₂	15.030	kN/m
							A	0.000	m
							B	3.000	m
5	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	3.000	m
							B	6.000	m
6	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	0.000	m
							B	3.000	m
7	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	-5.100	kN/m
							p ₂	-5.100	kN/m
							A	3.000	m
							B	6.000	m
8	Members	40,201	Force	Uniform	ZL	True Length	p	-5.100	kN/m

LC6: W2: WX + NOTRANJI SRK (CPI = -0,3)

LC 6: W2: Wx + notranji srk (cpi = -0,3)
Loads [kN/m]

In Y-direction



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LC10

Glob nepopolnosti +X

3.14 IMPERFECTIONS

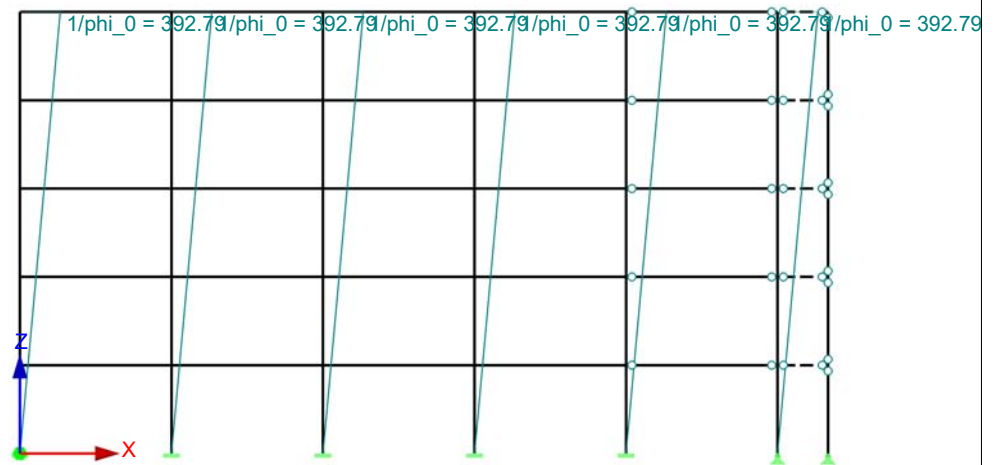
LC10: Glob nepopolnosti +X

No.	Reference to	On Members No.	Dir.	Inclination $1/\varphi_0, \delta$ [-,mm]	Precamber $L/e_0, e_0$ [-,mm]	Apply e_0 from ε_0 [-]	Comment
1	List of members	14,67,69,71,74	z	392.79	0.00	-	
2	List of members	13,66,68,70,72	z	392.79	0.00	-	
3	List of members	43,59,61,63,64	z	392.79	0.00	-	
4	List of members	73,52,54,56,57	z	392.79	0.00	-	
5	List of members	103,45,47,49,50	z	392.79	0.00	-	
6	List of members	133,17-19,32	z	392.79	0.00	-	

LC10: GLOB NEPOPOLNOSTI +X

LC 10: Glob nepopolnosti +X
Loads [-]

In Y-direction



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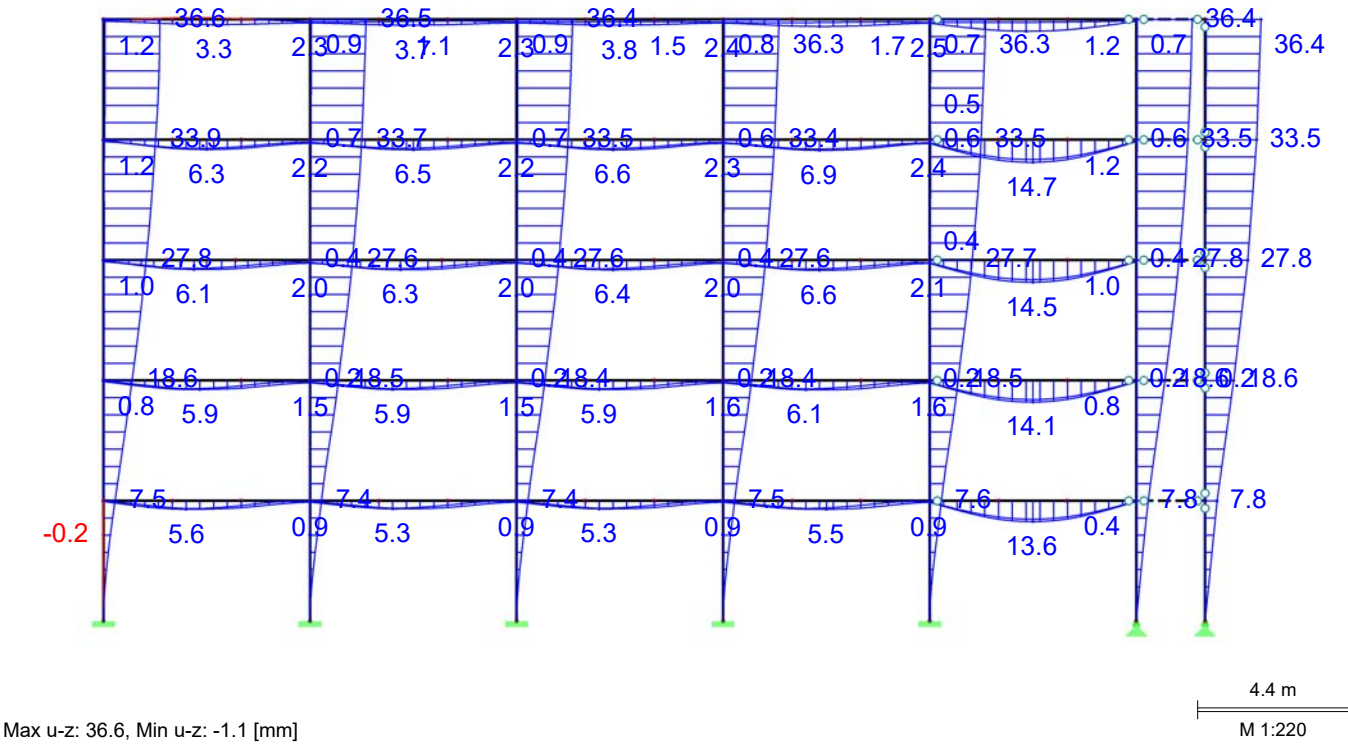
LOKALNI POMIKI U_z (MSU)

RC 2: MSU (SLS)

Local Deformations u-z

Result Combinations: Max and Min Values

In Y-direction



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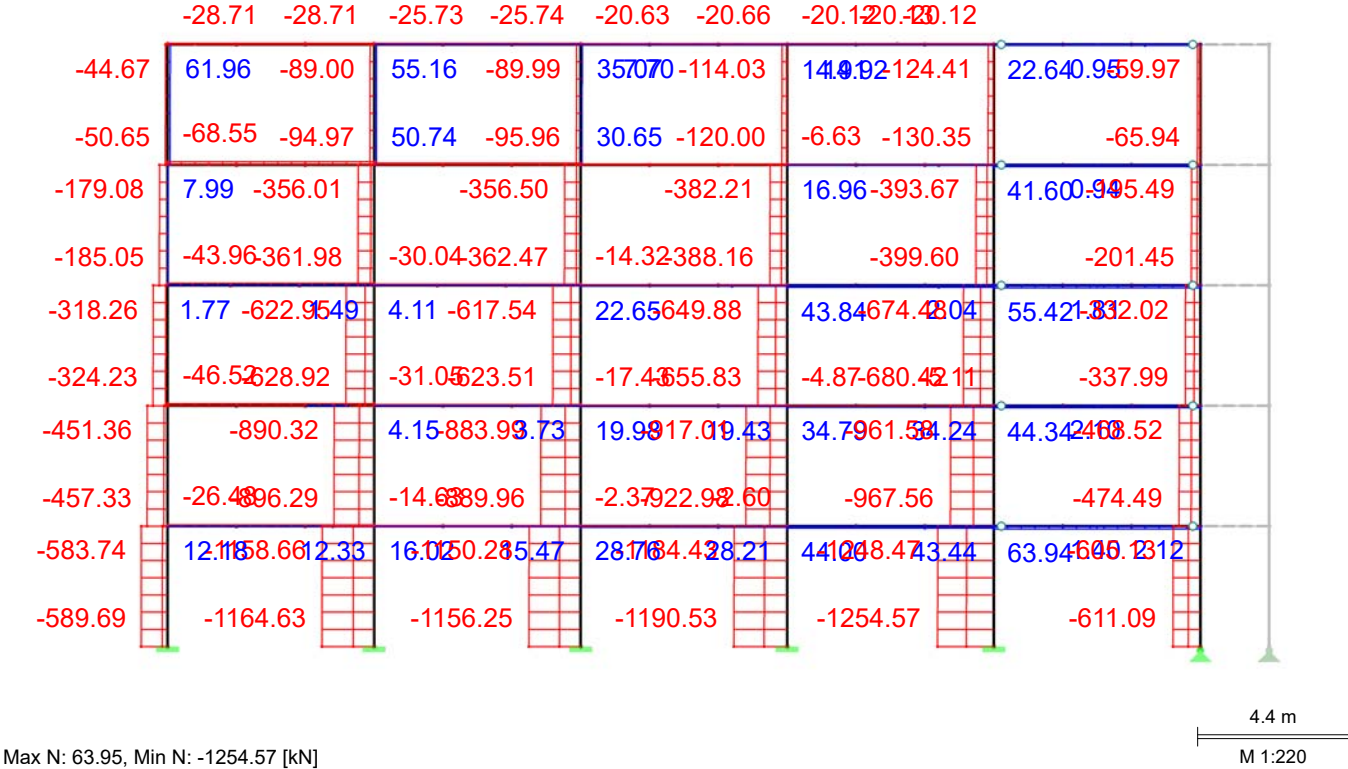
OSNE SILE N (MSN OVOJNICA)

RC 1: MSN (ULS)

Internal Forces N

Result Combinations: Max and Min Values

In Y-direction



Project: PRILOGAB

Model: OKVIR V X SMERI
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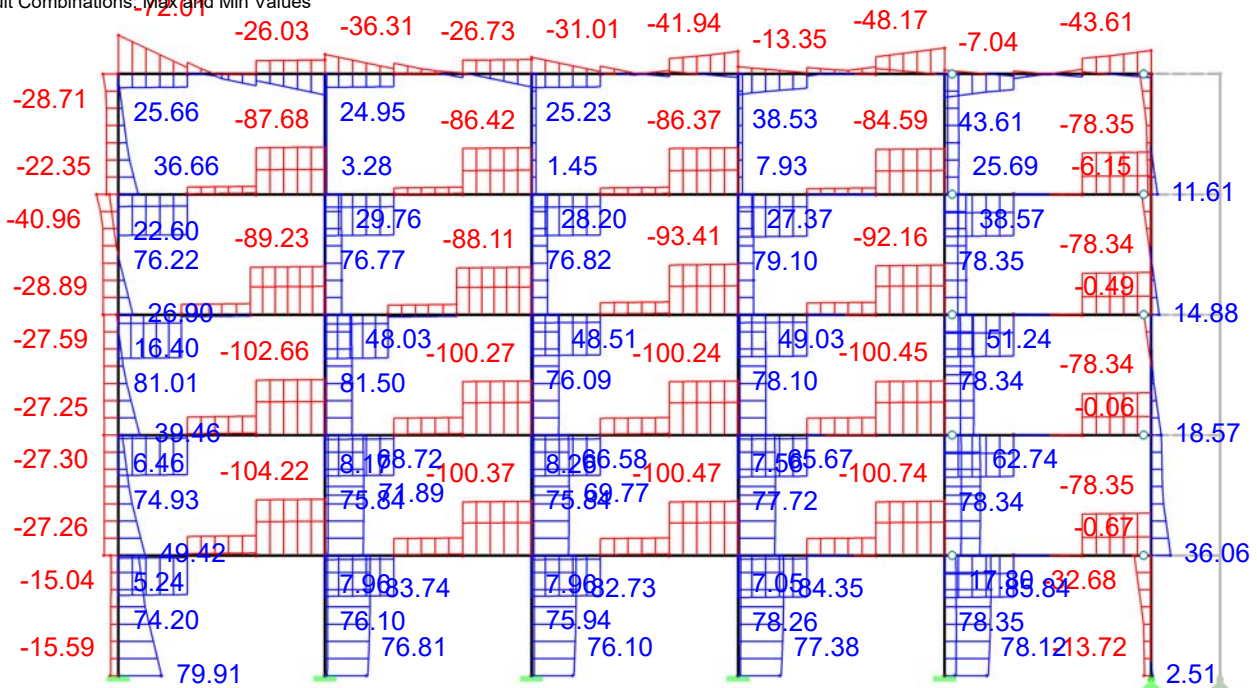
PRECNE SILE V_z (MSN OVOJNICA)

RC 1: MSN (ULS)

Internal Forces V-z

Result Combinations: Max and Min Values

In Y-direction



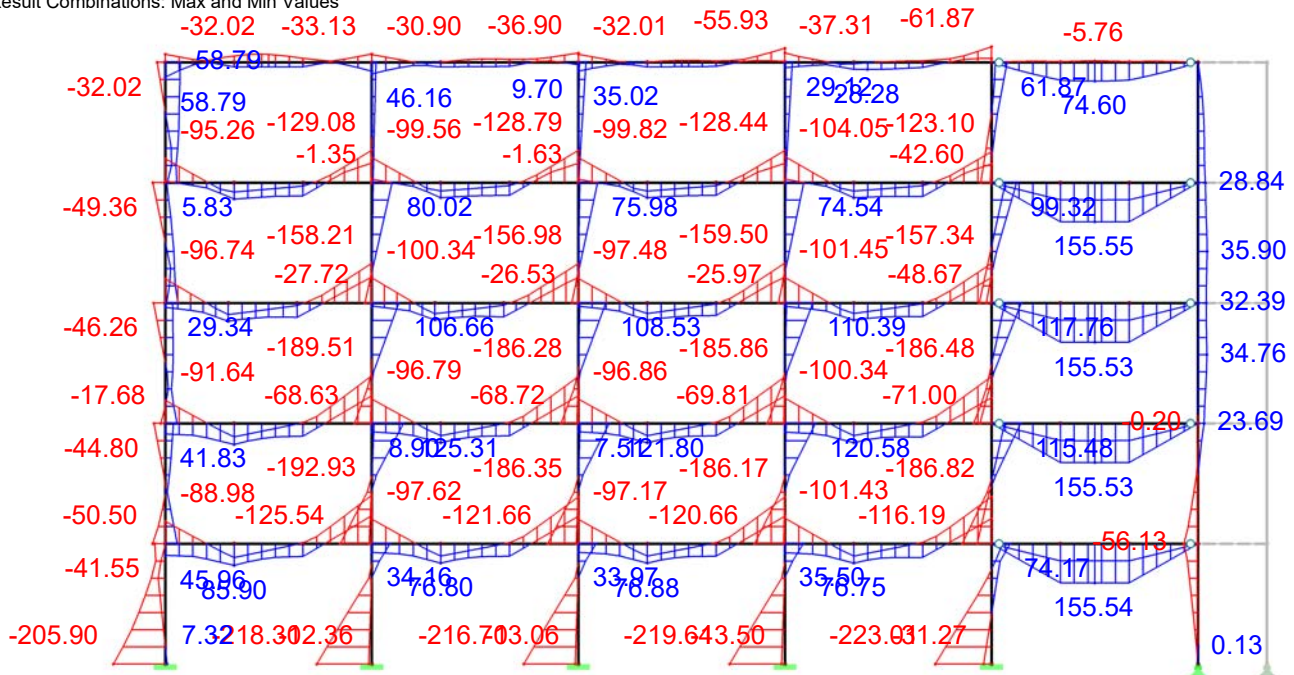
UPOGIBNI MOMENTI M_y (MSN OVOJNICA)

RC 1: MSN (ULS)

Internal Forces M-y

Result Combinations: Max and Min Values

In Y-direction



RF-STEEL Members
CA1
General stress analysis
of steel members

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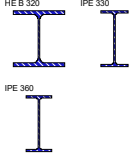
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1.1.1 GENERAL DATA

Members to design: 13,14,17-40,43,45,47,49,50,52,54,56,57,59,61,63,64,
66-74,103,133,199,201,204,208,212

Result combinations to design: RC1 MSN (ULS)

1.3.1 CROSS-SECTIONS



Sect. No.	Matl. No.	Cross-section Description	I_x [cm ⁴]	I_y [cm ⁴]	I_z [cm ⁴]	Comment
			A [cm ²]	$\alpha_{pl,y}$	$\alpha_{pl,z}$	
1	1	HE B 320 Euronorm 53-62	226.00	30820.00	9240.00	
			161.00	1.11	1.52	
2	1	IPE 330 Euronorm 19-57	28.30	11770.00	788.00	
			62.60	1.13	1.56	
3	1	IPE 360 Euronorm 19-57	37.50	16270.00	1040.00	
			72.70	1.13	1.55	

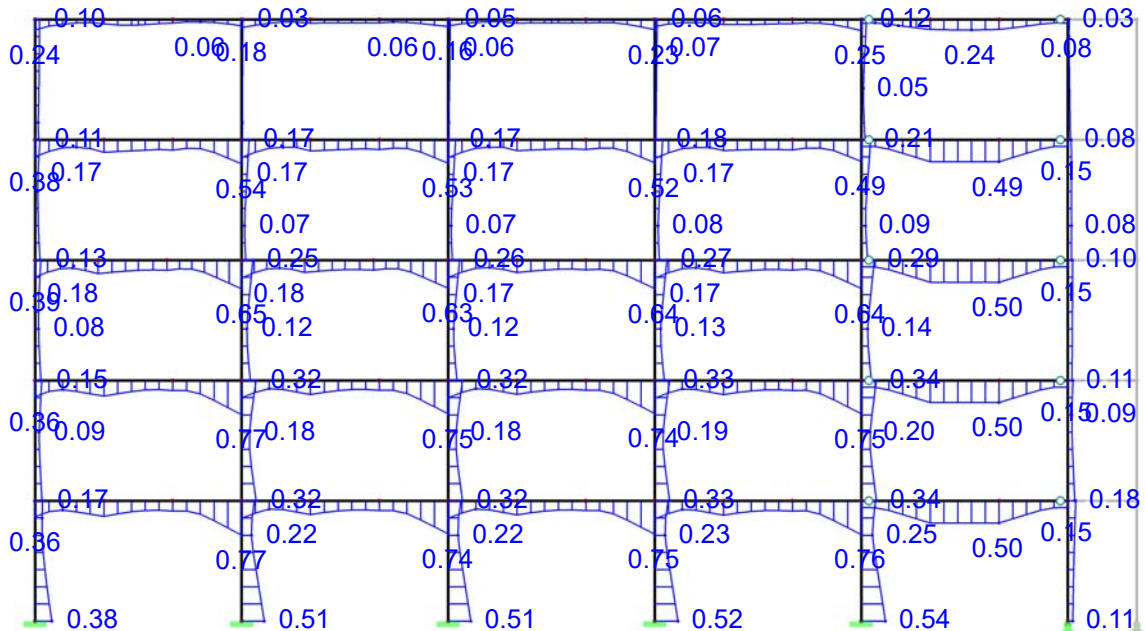
2.1 STRESSES BY CROSS-SECTION

Sect. No.	Member No.	Location x [m]	S-Point No.	Load Case	Stress Type	Stress [kN/cm²]		Stress Ratio
						Existing	Limit	
1	HE B 320 Euronorm 53-62							
	103	0.000	6	RC1	Sigma Total	-18.66	34.50	0.54
	103	2.500	13	RC1	Tau Total	2.60	20.50	0.13
	103	0.000	8	RC1	Sigma-eqv	18.68	34.50	0.54
2	IPE 330 Euronorm 19-57							
	27	6.000	6	RC1	Sigma Total	-27.37	35.50	0.77
	27	6.000	13	RC1	Tau Total	-4.74	20.50	0.23
	27	6.000	8	RC1	Sigma-eqv	27.44	35.50	0.77
3	IPE 360 Euronorm 19-57							
	212	3.200	6	RC1	Sigma Total	17.67	35.50	0.50
	199	0.000	13	RC1	Tau Total	3.06	20.50	0.15
	212	4.000	8	RC1	Sigma-eqv	17.69	35.50	0.50

NAPETOSTI σ_{eqv}

RF-STEEL Members CA1

In Y-direction



Max Sigma-eqv: 0.77, Min Sigma-eqv: 0.00

4.4 m
M 1:220

RF-STEEL EC3
CA1
Design of steel members
according to Eurocode 3

Project: PRILOGA B

Model: OKVIR V X SMERI

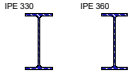
Date: 21.01.2024

STATICNA ANALIZA

1.1 GENERAL DATA

Members to design:	20-31,33-40,199,201,204,208,212	
Sets of members to design:		
National Annex:	SIST	
Ultimate Limit State Design Result combinations to design:	RC1	MSN (ULS)
Serviceability Limit State Design Result combinations to design:	RC2	MSU (SLS)

1.3 CROSS-SECTIONS



Sect. No.	Matl. No.	Cross-Section Description	Cross-Section Type	Max Design Ratio	Comment
2	1	IPE 330 Euronorm 19-57	I-section rolled	0.83	
3	1	IPE 360 Euronorm 19-57	I-section rolled	0.74	

2.2 DESIGN BY CROSS-SECTION

Sect. No.	Member No.	Location x [m]	LC/CO/ RC	Design		Equation No.	Description
2	IPE 330 Euronorm 19-57						
	39	4.000	RC1	0.02	≤ 1	CS101)	Cross-section check - Tension acc. to 6.2.3
	24	6.000	RC1	0.03	≤ 1	CS102)	Cross-section check - Compression acc. to 6.2.4
	20	4.400	RC1	0.02	≤ 1	CS103)	Cross-section check - Compression acc. to 6.2.4 - Class 4
	31	6.000	RC1	0.65	≤ 1	CS111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	40	0.800	RC1	0.01	≤ 1	CS112)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3
	27	6.000	RC1	0.17	≤ 1	CS121)	Cross-section check - Shear force in z-axis acc. to 6.2.6
	26	4.000	RC1	0.23	≤ 1	CS122)	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4
	20	0.000	RC1	0.00	≤ 1	CS126)	Cross-section check - Shear buckling acc. to 6.2.6(6)
	31	6.000	RC1	0.65	≤ 1	CS141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	40	0.800	RC1	0.01	≤ 1	CS142)	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3
	27	6.000	RC1	0.68	≤ 1	CS181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	24	0.400	RC1	0.12	≤ 1	CS182)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3
	27	6.000	RC1	0.68	≤ 1	ST331)	Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	26	4.000	RC1	0.83	≤ 1	ST364)	Stability analysis - Bending and compression acc. to 6.3.3, Method 2
	20	0.000	RC2	0.00	≤ 1	SE400)	Serviceability - Negligible deformations
	27	2.400	RC2	0.21	≤ 1	SE401)	Serviceability - Combination of actions 'Characteristic' - z-direction
3	IPE 360 Euronorm 19-57						
	212	6.000	RC1	0.02	≤ 1	CS101)	Cross-section check - Tension acc. to 6.2.3
	199	2.800	RC1	0.43	≤ 1	CS111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	199	0.000	RC1	0.11	≤ 1	CS121)	Cross-section check - Shear force in z-axis acc. to 6.2.6
	204	0.400	RC1	0.13	≤ 1	CS122)	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4
	199	0.000	RC1	0.00	≤ 1	CS126)	Cross-section check - Shear buckling acc. to 6.2.6(6)
	199	2.800	RC1	0.43	≤ 1	CS141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	199	2.800	RC1	0.43	≤ 1	CS181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	212	5.600	RC1	0.11	≤ 1	CS182)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3
	199	2.800	RC1	0.74	≤ 1	ST331)	Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	199	0.000	RC2	0.00	≤ 1	SE400)	Serviceability - Negligible deformations
	212	3.200	RC2	0.54	≤ 1	SE401)	Serviceability - Combination of actions 'Characteristic' - z-direction

Project: PRILOGA B

Model: OKVIR V X SMERI

Date: 21.01.2024

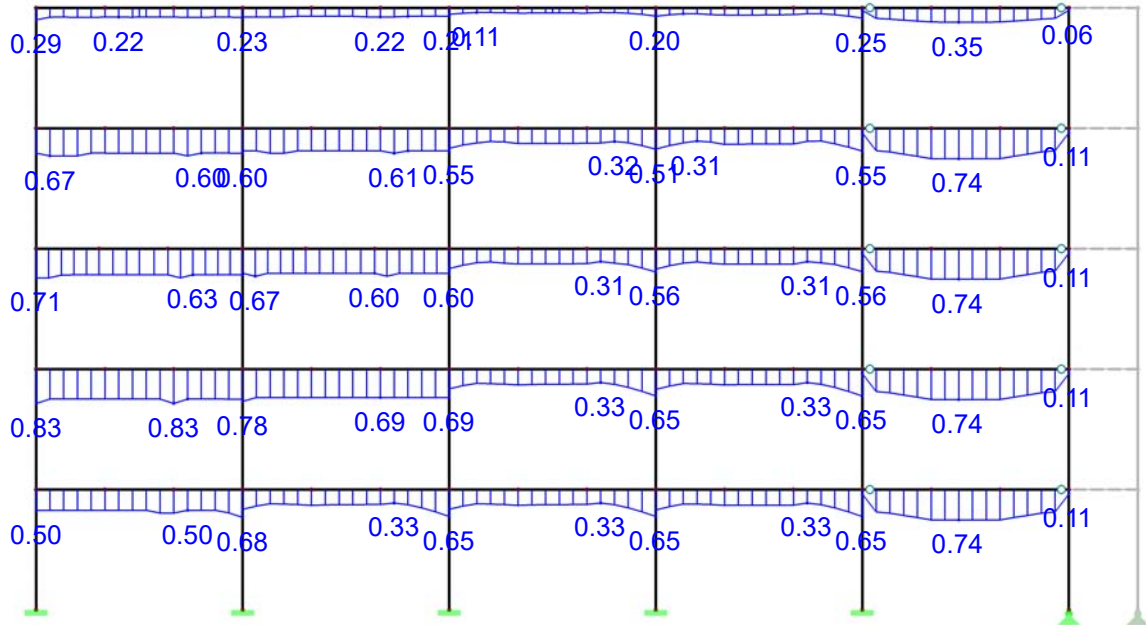
STATICNA ANALIZA

PROJEKTIRANJE PO EC3 (NOSILCI)

RF-STEEL EC3 CA1

In Y-direction

Ultimate Limit State: Cross-Section Design, Stability Design



Max Design Ratio: 0.83

4.4 m

M 1:220

RF-STEEL EC3
CA2
Design of columns
according to Eurocode 3

Project: PRILOGA B

Model: OKVIR V X SMERI

Date: 21.01.2024

STATICNA ANALIZA

1.1 GENERAL DATA

Members to design:	13,14,17-19,32,43,45,47,49,50,52,54,56,57,59,61,63,64,66-74,103,133
Sets of members to design:	
National Annex:	SIST
Ultimate Limit State Design Result combinations to design:	RC1 MSN (ULS)

1.3 CROSS-SECTIONS

Sect. No.	Matl. No.	Cross-Section Description	Cross-Section Type	Max Design Ratio	Comment
1	1	HE B 320 Euronorm 53-62	I-section rolled	0.54	

2.2 DESIGN BY CROSS-SECTION

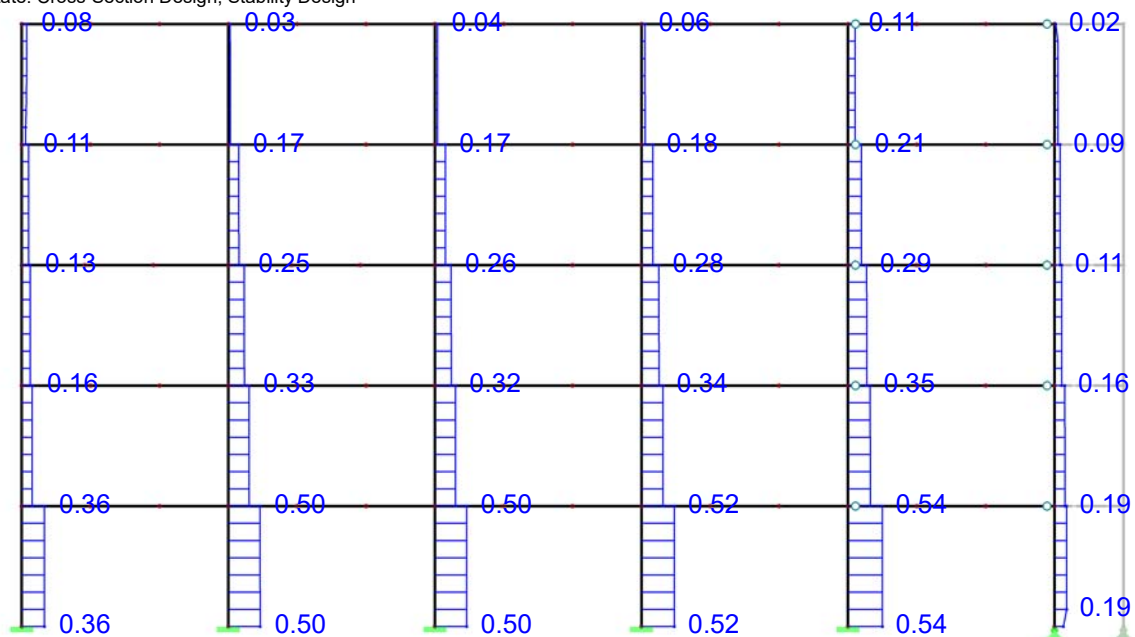
Sect. No.	Member No.	Location x [m]	LC/CO/ RC	Design	Equation No.	Description
1	HE B 320 Euronorm 53-62					
	74	3.500	RC1	0.01	≤ 1 CS101)	Cross-section check - Tension acc. to 6.2.3
	103	0.000	RC1	0.22	≤ 1 CS102)	Cross-section check - Compression acc. to 6.2.4
	74	0.000	RC1	0.06	≤ 1 CS111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	103	2.500	RC1	0.08	≤ 1 CS121)	Cross-section check - Shear force in z-axis acc. to 6.2.6
	13	0.000	RC1	0.00	≤ 1 CS126)	Cross-section check - Shear buckling acc. to 6.2.6(6)
	74	0.000	RC1	0.06	≤ 1 CS141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	103	0.000	RC1	0.47	≤ 1 CS181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	52	0.000	RC1	0.17	≤ 1 ST301)	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)
	68	2.500	RC1	0.14	≤ 1 ST311)	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)
	52	0.000	RC1	0.20	≤ 1 ST312)	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2
	54	0.000	RC1	0.14	≤ 1 ST321)	Stability analysis - Torsional buckling acc. to 6.3.1.4 and 6.3.1.2(4)
	52	0.000	RC1	0.19	≤ 1 ST322)	Stability analysis - Torsional buckling acc. to 6.3.1.4 and 6.3.1.2
	74	3.500	RC1	0.08	≤ 1 ST331)	Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	103	0.000	RC1	0.54	≤ 1 ST364)	Stability analysis - Bending and compression acc. to 6.3.3, Method 2

PROJEKTIRANJE PO EC3 (STEBRI)

RF-STEEL EC3 CA2

Ultimate Limit State: Cross-Section Design, Stability Design

In Y-direction



Max Design Ratio: 0.54

M 1:220

Project: PRILOGA B

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

MODEL - GENERAL DATA

General	Model name	: 2D_model_Y_v02_
	Type of model	: 2D-XZ (ux/uz/ϕy)
	Positive direction of global axis Z	: Upward
	Classification of load cases and combinations	: According to Standard: EN 1990 National Annex: SIST - Slovenia
Options	☐ RF-FORM-FINDING - Find initial equilibrium shapes of membrane and cable structures	
	☐ RF-CUTTING-PATTERN	
	☐ Piping analysis	
	☐ Use CQC Rule	
	☐ Enable CAD/BIM model	
Standard Gravity		: 10.00 m/s ²

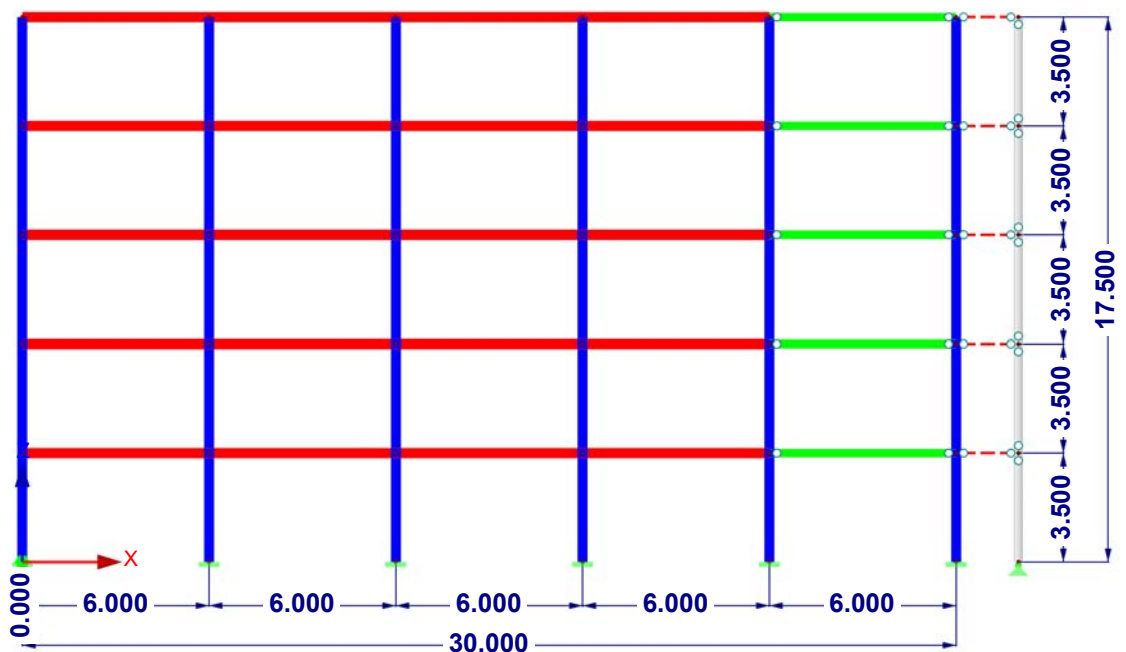
FE MESH SETTINGS

General	Target length of finite elements	l_{FE}	: 0.500 m
	Maximum distance between a node and a line to integrate it into the line	ϵ	: 0.001 m
	Maximum number of mesh nodes (in thousands)		: 500
Members	Number of divisions of members with cable, elastic foundation, taper, or plastic characteristic		: 10
	☒ Activate member divisions for large deformation or post-critical analysis		
	☒ Use division also for straight members, which are not integrated in surfaces, with		: Target length LFE of finite elements
	Minimum number of member divisions		: 2
	☒ Use division for members with node lying on them		
Surfaces	Maximum ratio of FE rectangle diagonals	Δ_D	: 1.800
	Maximum out-of-plane inclination of two finite elements	α	: 0.50 °
	Shape direction of finite elements		: Triangles and quadrangles
			☒ Same squares where possible

GEOMETRIJA MODELA OKVIRA V Y SMERI IN PRECNI PREREZI

In Y-direction

Cross-Sections
1: HE B 320
2: IPE 330 | E
3: IPE 270 | E
4: HE B 300



4.862 m

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

1.3 MATERIALS

Matl. No.	Modulus E [kN/cm ²]	Modulus G [kN/cm ²]	Poisson's Ratio ν [-]	Spec. Weight γ [kN/m ³]	Coeff. of Th. Exp. α [1/°C]	Partial Factor γ_M [-]	Material Model
1	Steel S 355 EN 10025-2:2004-11 21000.00	8076.92	0.300	78.50	1.20E-05	1.00	Isotropic Linear Elastic
2	Steel S 355 EN 10025-2:2004-11 21000.00	8076.92	0.300	0.00E+00	1.20E-05	1.00	Isotropic Linear Elastic

1.7 NODAL SUPPORTS

Support No.	Nodes No.	Axis System	Support or Spring [kN/m] [kNm/rad]			Comment
			u_x	u_z	ϕ_y	
1	25	Global X,Y,Z	☒	☒	☐	
2	20-24,26	Global X,Y,Z	☒	☒	☒	

1.13 CROSS-SECTIONS

Section No.	Matl. No.	J [cm ⁴]	I_y [cm ⁴]	I_z [cm ⁴]	Principal Axes α [°]	Rotation α' [°]	Overall Dimensions [mm]	
		A [cm ²]	A_y [cm ²]	A_z [cm ²]			Width b	Height h
1	HE B 320 Euronorm 53-62 1	161.00	30820.00	32.08	0.00	0.00	300.0	320.0
2	IPE 330 Euronorm 19-57 1	62.60	11770.00	23.15	0.00	0.00	160.0	330.0
3	IPE 270 Euronorm 19-57 1	45.90	5790.00	16.57	0.00	0.00	135.0	270.0
4	HE B 300 Euronorm 53-62 2	149.00	25170.00	28.65	0.00	0.00	300.0	300.0

1.14 MEMBER HINGES

Release No.	Reference System	Force Release or Spring [kN/m]			Comment
		u_x	u_z	ϕ_y	
1	Local x,y,z Nonlinearity	☐	☐	☒	

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 teza	Permanent	☒	0.000		-1.000
LC2	Stalna obtežba	Permanent/Imposed	☐			
LC3	Koristna obtežba - medetaža	Imposed - Category B: office areas	☐			
LC4	Obtežba snega	Snow ($H \leq 1000$ m a.s.l.)	☐			
LC5	W1: Wy + notranji tlak (cpi = +0,2)	Wind	☐			
LC6	W2: Wy + notranji srk (cpi = -0,3)	Wind	☐			
LC10	Glob nepopolnosti +Y	Imperfection	☐			

2.5 LOAD COMBINATIONS

Load Combin.	DS	Load Combination Description	No.	Factor			Load Case
CO1	STR	MSN1: 1.35G + 1.50Q + 1.50S + imp	1	1.35	LC1		Lastna teza
			2	1.35	LC2		Stalna obtežba
			3	1.50	LC3		Koristna obtežba - medetaža
			4	1.50	LC4		Obtežba snega
			5	1.00	LC10		Glob nepopolnosti +Y
CO2	STR	MSN2: 1.35G + 1.05Q + 0.75S+ 1.50W1 + imp	1	1.35	LC1		Lastna teza
			2	1.35	LC2		Stalna obtežba
			3	1.05	LC3		Koristna obtežba - medetaža
			4	0.75	LC4		Obtežba snega
			5	1.50	LC5		W1: Wy + notranji tlak (cpi = +0,2)
CO3	STR	MSN3: 1.35G + 1.05Q + 0.75S+ 1.50W2 + imp	6	1.00	LC10		Glob nepopolnosti +Y
			1	1.35	LC1		Lastna teza
			2	1.35	LC2		Stalna obtežba
			3	1.05	LC3		Koristna obtežba - medetaža
			4	0.75	LC4		Obtežba snega
CO4	STR	MSN4: 1.35G + 1.50Q + 1.50S + 0.90W1 + imp	5	1.50	LC6		W2: Wy + notranji srk (cpi = -0,3)
			6	1.00	LC10		Glob nepopolnosti +Y
			1	1.35	LC1		Lastna teza
			2	1.35	LC2		Stalna obtežba
			3	1.50	LC3		Koristna obtežba - medetaža
			4	1.50	LC4		Obtežba snega
			5	0.90	LC5		W1: Wy + notranji tlak (cpi = +0,2)
			6	1.00	LC10		Glob nepopolnosti +Y

LOADS

Project: PRILOGA B

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

2.5 LOAD COMBINATIONS

Load Combin.	Load Combination		No.	Factor	Load Case	
	DS	Description				
CO5	STR	MSN5: 1.35G + 1.50Q + 1.50S+ 0.90W2 + imp	1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtezbza
			3	1.50	LC3	Koristna obtezbza - medetaža
			4	1.50	LC4	Obtezbza snega
			5	0.90	LC6	W2: Wy + notranji srk (cpi = -0,3)
			6	1.00	LC10	Glob nepopolnosti +Y
CO6	STR	MSN6: 1.35G + 1.50Q + 0.90W1 + imp	1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtezbza
			3	1.50	LC3	Koristna obtezbza - medetaža
			4	0.90	LC5	W1: Wy + notranji tlak (cpi = +0,2)
			5	1.00	LC10	Glob nepopolnosti +Y
CO7	STR	MSN7: 1.35G + 1.50Q + 0.90W2 + imp	1	1.35	LC1	Lastna teza
			2	1.35	LC2	Stalna obtezbza
			3	1.50	LC3	Koristna obtezbza - medetaža
			4	0.90	LC6	W2: Wy + notranji srk (cpi = -0,3)
			5	1.00	LC10	Glob nepopolnosti +Y
CO8	STR	MSN8: 1.00G + 1.50W1 + imp	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.50	LC5	W1: Wy + notranji tlak (cpi = +0,2)
			4	1.00	LC10	Glob nepopolnosti +Y
CO9	STR	MSN9: 1.00G + 1.50W2 + imp	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.50	LC6	W2: Wy + notranji srk (cpi = -0,3)
			4	1.00	LC10	Glob nepopolnosti +Y
CO10	S Ch	MSU1: 1.0G + 1.0Q + 1.0S	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.00	LC3	Koristna obtezbza - medetaža
			4	1.00	LC4	Obtezbza snega
CO11	S Ch	MSU2: 1.0G + 1.0Q + 1.0S + 0.6W1	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.00	LC3	Koristna obtezbza - medetaža
			4	1.00	LC4	Obtezbza snega
			5	0.60	LC5	W1: Wy + notranji tlak (cpi = +0,2)
CO12	S Ch	MSU3: 1.0G + 1.0Q + 1.0S + 0.6W2	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.00	LC3	Koristna obtezbza - medetaža
			4	1.00	LC4	Obtezbza snega
			5	0.60	LC6	W2: Wy + notranji srk (cpi = -0,3)
CO13	S Ch	MSU4: 1.0G + 0.7Q + 0.5S+ 1.0W1	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	0.70	LC3	Koristna obtezbza - medetaža
			4	0.50	LC4	Obtezbza snega
			5	1.00	LC5	W1: Wy + notranji tlak (cpi = +0,2)
CO14	S Ch	MSU5: 1.0G + 0.7Q + 0.5S+ 1.0W2	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	0.70	LC3	Koristna obtezbza - medetaža
			4	0.50	LC4	Obtezbza snega
			5	1.00	LC6	W2: Wy + notranji srk (cpi = -0,3)
CO15	S Ch	MSU6: 1.0G + 1.0Q + 0.6W1	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.00	LC3	Koristna obtezbza - medetaža
			4	0.60	LC5	W1: Wy + notranji tlak (cpi = +0,2)
CO16	S Ch	MSU7: 1.0G + 1.0Q + 0.6W2	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	1.00	LC3	Koristna obtezbza - medetaža
			4	0.60	LC6	W2: Wy + notranji srk (cpi = -0,3)
CO17	S Ch	MSU8: 1.0G + 0.7Q + 1.0W1	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	0.70	LC3	Koristna obtezbza - medetaža
			4	1.00	LC5	W1: Wy + notranji tlak (cpi = +0,2)
CO18	S Ch	MSU9: 1.0G + 0.7Q + 1.0W2	1	1.00	LC1	Lastna teza
			2	1.00	LC2	Stalna obtezbza
			3	0.70	LC3	Koristna obtezbza - medetaža
			4	1.00	LC6	W2: Wy + notranji srk (cpi = -0,3)

2.7 RESULT COMBINATIONS

Result Combin	Description	Loading
RC1	MSN (ULS)	CO1/p or CO2/p or CO3/p or CO4/p or CO5/p or CO8/p or CO9/p or CO8/p or CO8/p or CO9/p
RC2	MSU (SLS)	CO10/p or to CO18

LOADS

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

3.1 NODAL LOADS - BY COMPONENTS - COORDINATE SYSTEM

LC2: Stalna obtežba

No.	On Nodes No.	Coordinate System	Force [kN]		Moment M _y / M _v [kNm]
			P _x / P _u	P _z / P _w	
1	63,146	0 Global XYZ	0.000	-14.850	0.000
2	67	0 Global XYZ	0.000	-576.000	0.000
3	61,78,80,82	0 Global XYZ	0.000	-1980.000	0.000
4	59,64,65,69,70,74,75,115,118,126, 136,139,140,154,158,162	0 Global XYZ	0.000	-87.000	0.000
5	62,145,147,148	0 Global XYZ	0.000	-29.700	0.000
6	60,66,71,76,125,127,128,137	0 Global XYZ	0.000	-43.500	0.000

3.2 MEMBER LOADS

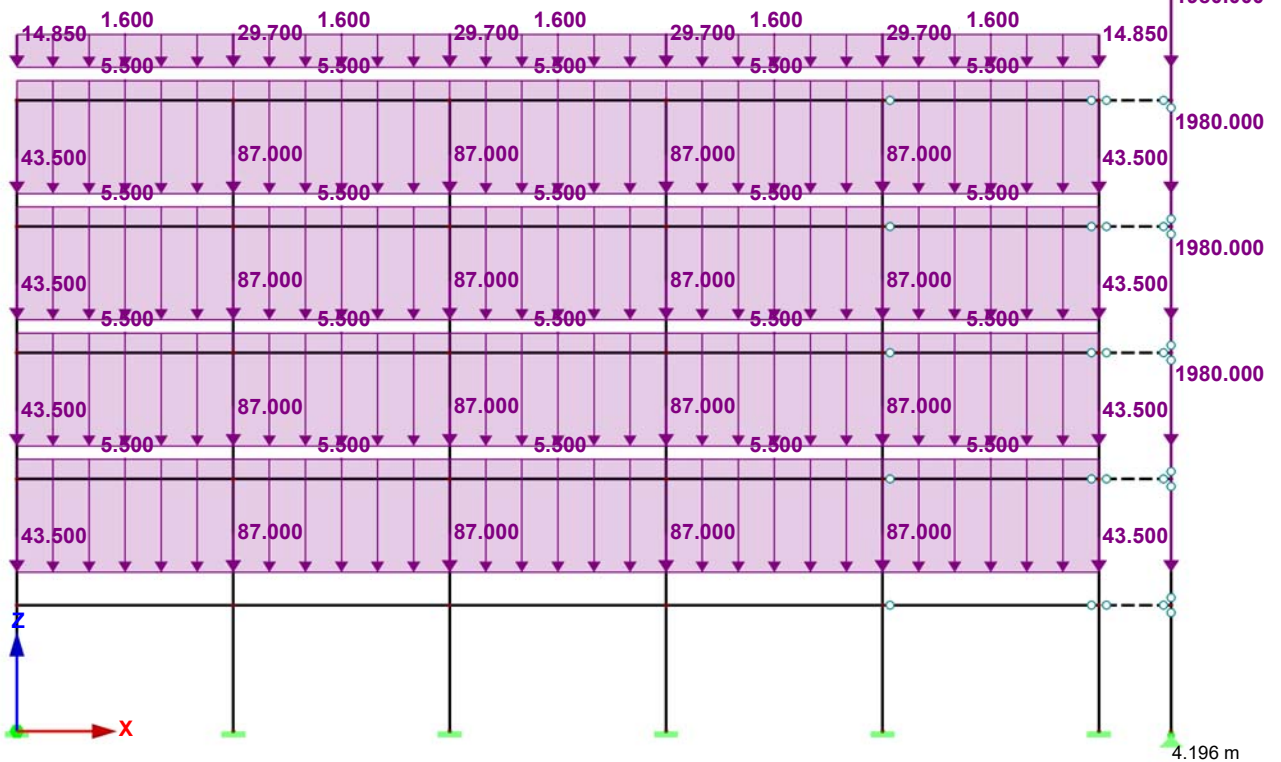
LC2: Stalna obtežba

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters		
							Symbol	Value	Unit
1	Members	33-35,40, 201	Force	Uniform	ZL	True Length	p	-1.600	kN/m
2	Members	20-31,36-39, 199,204, 208,212	Force	Uniform	ZL	True Length	p	-5.500	kN/m

LC2: STALNA OBTEZBA

LC 2: Stalna obtežba
Loads [kN/m], [kN]

In Y-direction



LOADS

Project: PRILOGA B

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

3.1 NODAL LOADS - BY COMPONENTS COORDINATE SYSTEM

LC3: Koristna obtežba - medetaža

No.	On Nodes No.	Coordinate System	Force [kN]		Moment M _y / M _v [kNm]
			P _x / P _u	P _z / P _w	
1	59,64,65,69,70,74,75,115,118,126, 136,139,140,154,158,162	0 Global XYZ	0.000	-42.000	0.000
2	60,66,71,76,125,127,128,137	0 Global XYZ	0.000	-21.000	0.000
3	61,78,80,82	0 Global XYZ	0.000	-1260.000	0.000

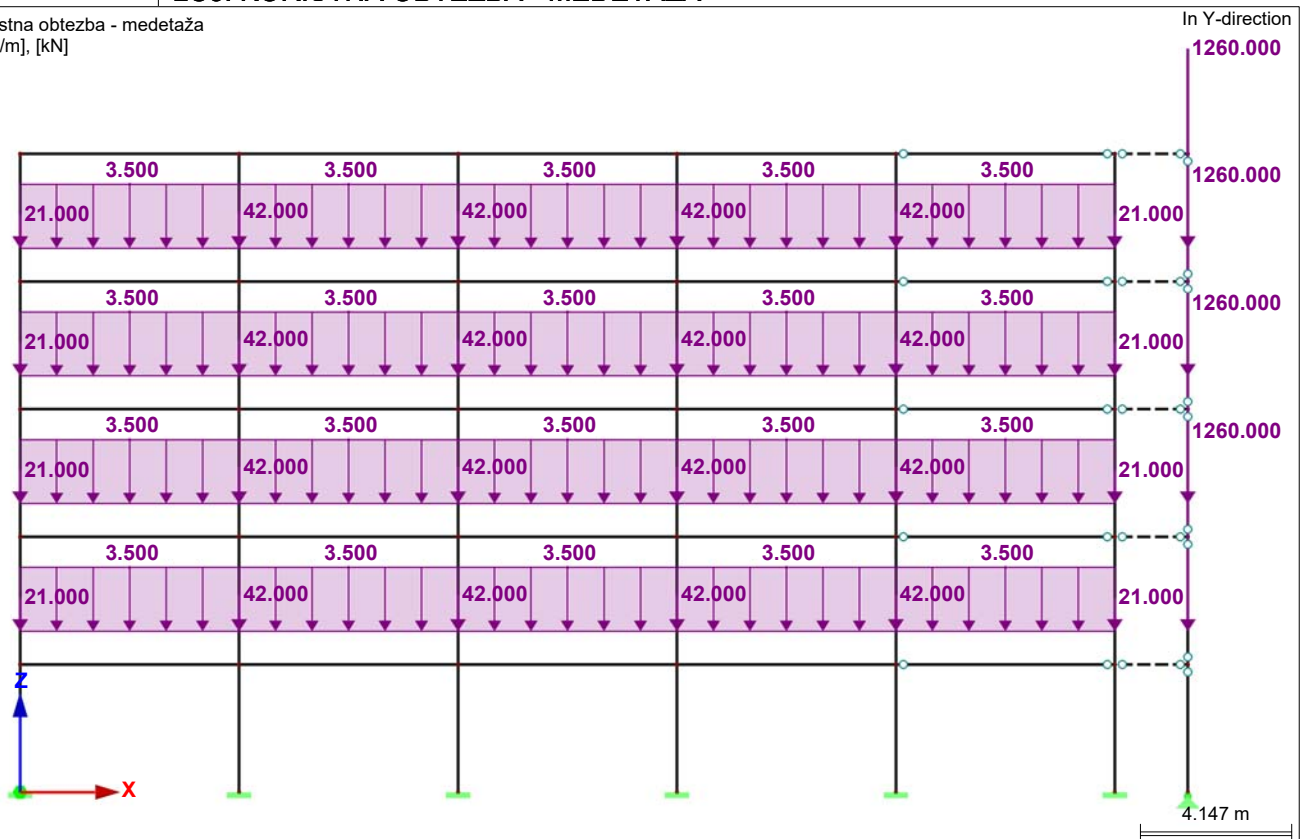
3.2 MEMBER LOADS

LC3: Koristna obtežba - medetaža

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters		
							Symbol	Value	Unit
1	Members	20-31,36-39, 199,204, 208,212	Force	Uniform	ZL	True Length	p	-3.500	kN/m

LC3: KORISTNA OBTEŽBA - MEDETAŽA

LC 3: Koristna obtežba - medetaža
Loads [kN/m], [kN]



LOADS

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

3.1 NODAL LOADS - BY COMPONENTS - COORDINATE SYSTEM

LC4: Obtezba snega

No.	On Nodes No.	Coordinate System	Force [kN]		Moment M _y / M _v [kNm]
			P _x / P _u	P _z / P _w	
1	63,146	0 Global XYZ	0.000	-7.260	0.000
2	62,145,147,148	0 Global XYZ	0.000	-14.520	0.000
3	67	0 Global XYZ	0.000	-435.600	0.000

LC4
Obtezba snega

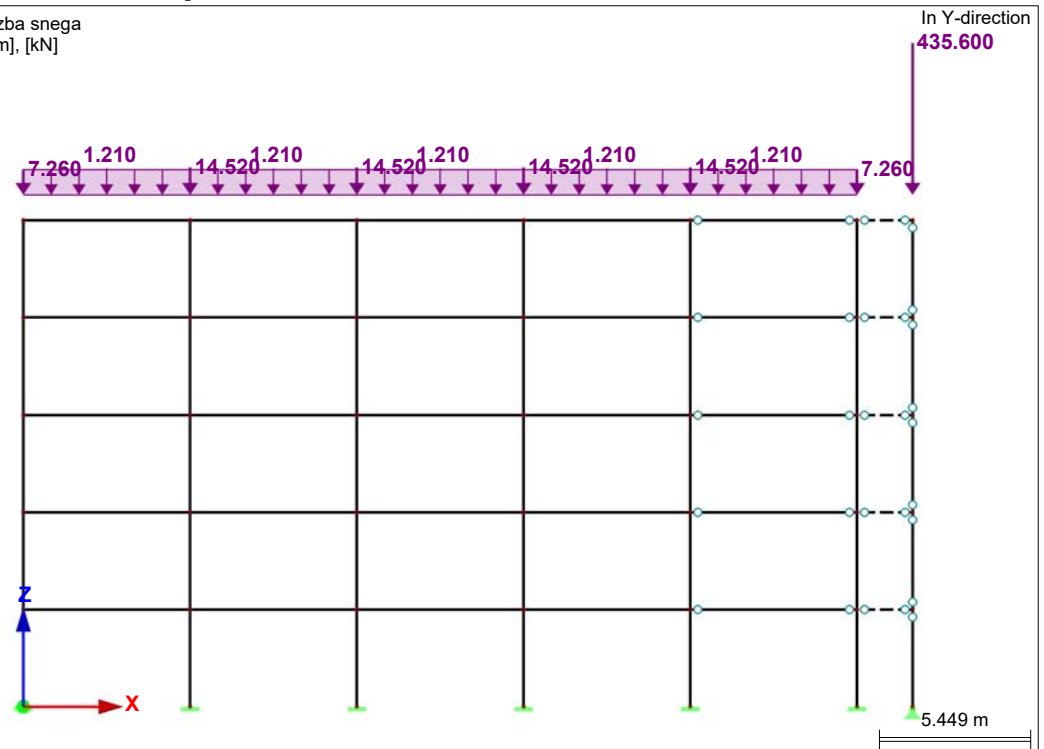
3.2 MEMBER LOADS

LC4: Obtezba snega

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters		
							Symbol	Value	Unit
1	Members	33-35,40, 201	Force	Uniform	ZL	True Length	p	-1.210	kN/m

LC4: OBTEZBA SNEGA

LC 4: Obtezba snega
Loads [kN/m], [kN]



LC5
W1: Wy + notranji tlak
(cpi = +0,2)

3.2 MEMBER LOADS

LC5: W1: Wy + notranji tlak (cpi = +0,2)

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters		
							Symbol	Value	Unit
1	Members	14,67,69, 71,74	Force	Uniform	XL	True Length	p	5.550	kN/m
2	Members	17-19,32, 133	Force	Uniform	XL	True Length	p	6.000	kN/m
3	Members	33	Force	Uniform	ZL	True Length	p	9.180	kN/m
4	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	20.400	kN/m
							p ₂	20.400	kN/m
							A	0.000	m
							B	3.000	m
5	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	9.180	kN/m
							p ₂	9.180	kN/m
							A	3.000	m
							B	6.000	m
6	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	9.180	kN/m
							p ₂	9.180	kN/m
							A	0.000	m
							B	3.000	m
7	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	3.000	m
							B	6.000	m
8	Members	201	Force	Uniform	ZL	True Length	p	4.080	kN/m
9	Members	40	Force	Uniform	ZL	True Length	p	4.080	kN/m

Project: PRILOGAB

Model: OKVIR V Y SMERI

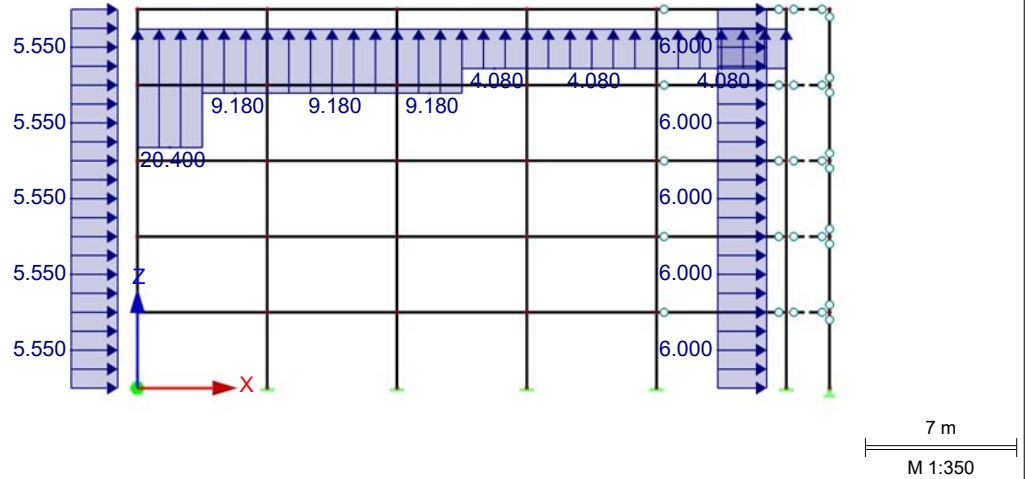
Date: 21.01.2024

STATICNA ANALIZA

LC5: W1: WY + NOTRANJI TLAK (CPI = +0,2)

LC 5: W1: Wy + notranji tlak (cpi = +0,2)
Loads [kN/m]

In Y-direction



LC6

W2: Wy + notranji srk
(cpi = -0,3)

3.2 MEMBER LOADS

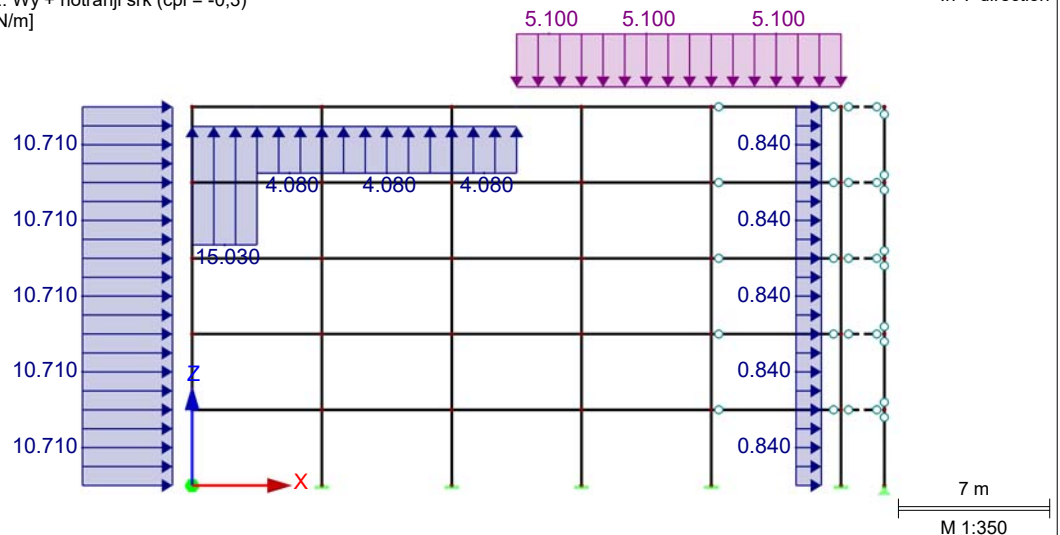
LC6: W2: Wy + notranji srk (cpi = -0,3)

No.	Reference to	On Members No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
1	Members	14,67,69,71,74	Force	Uniform	XL	True Length	p	10.710	kN/m
2	Members	17-19,32,133	Force	Uniform	XL	True Length	p	0.840	kN/m
3	Members	33	Force	Uniform	ZL	True Length	p	4.080	kN/m
4	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	15.030	kN/m
							p ₂	15.030	kN/m
							A	0.000	m
							B	3.000	m
5	Members	34	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	3.000	m
							B	6.000	m
6	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	4.080	kN/m
							p ₂	4.080	kN/m
							A	0.000	m
							B	3.000	m
7	Members	35	Force	Trapezoidal	ZL	True Length	p ₁	-5.100	kN/m
							p ₂	-5.100	kN/m
							A	3.000	m
							B	6.000	m
8	Members	40,201	Force	Uniform	ZL	True Length	p	-5.100	kN/m

LC6: W2: WY + NOTRANJI SRK (CPI = -0,3)

LC 6: W2: Wy + notranji srk (cpi = -0,3)
Loads [kN/m]

In Y-direction



Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

LC10
Glob nepopolnosti +Y

3.14 IMPERFECTIONS

LC10: Glob nepopolnosti +Y

No.	Reference to	On Members No.	Dir.	Inclination $1/\varphi_0, \delta$ [-,mm]	Precamber $L/e_0, e_0$ [-,mm]	Apply e_0 from ε_0 [-]	Comment
1	List of members	14,67,69,71,74	z	392.79	0.00	-	
2	List of members	13,66,68,70,72	z	392.79	0.00	-	
3	List of members	43,59,61,63,64	z	392.79	0.00	-	
4	List of members	73,52,54,56,57	z	392.79	0.00	-	
5	List of members	103,45,47,49,50	z	392.79	0.00	-	
6	List of members	133,17-19,32	z	392.79	0.00	-	

LC10: GLOB NEPOPOLNOSTI +Y

LC 10: Glob nepopolnosti +Y
Loads [-]
LC Factor: 1.416

In Y-direction



Project: PRILOGAB

Model: OKVIR V Y SMERI

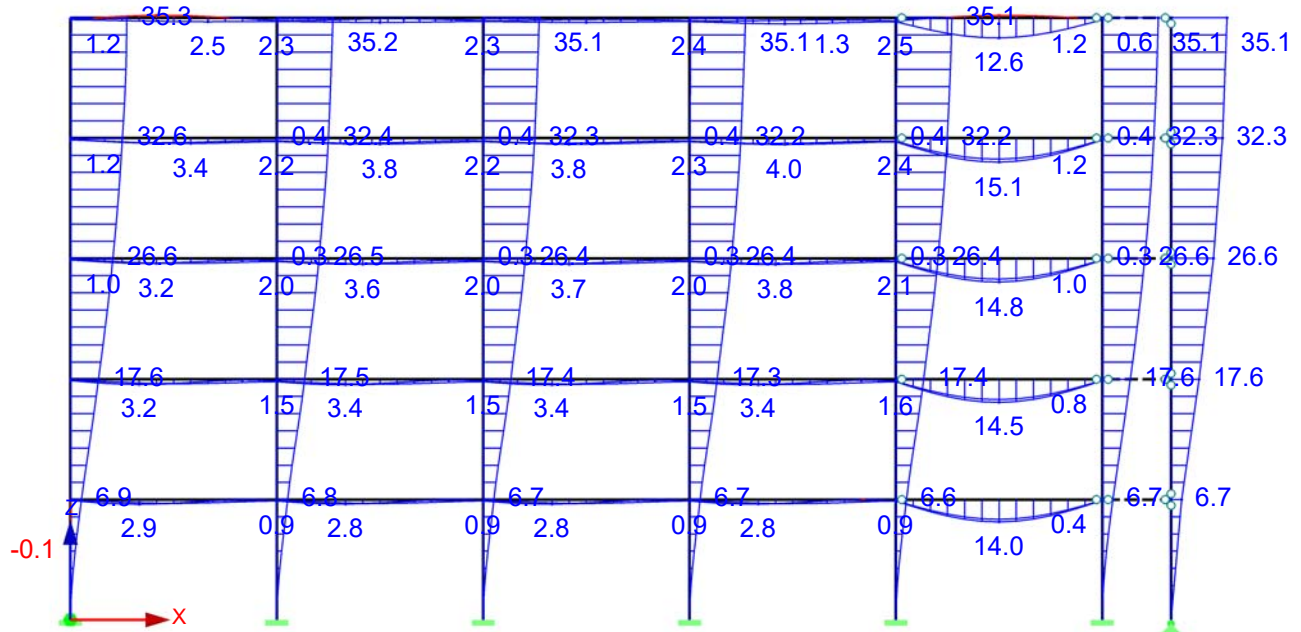
Date: 21.01.2024

STATICNA ANALIZA

LOKALNI POMIKI U_z (MSU)

RC 2: MSU (SLS)
Local Deformations u-z
Result Combinations: Max and Min Values

In Y-direction



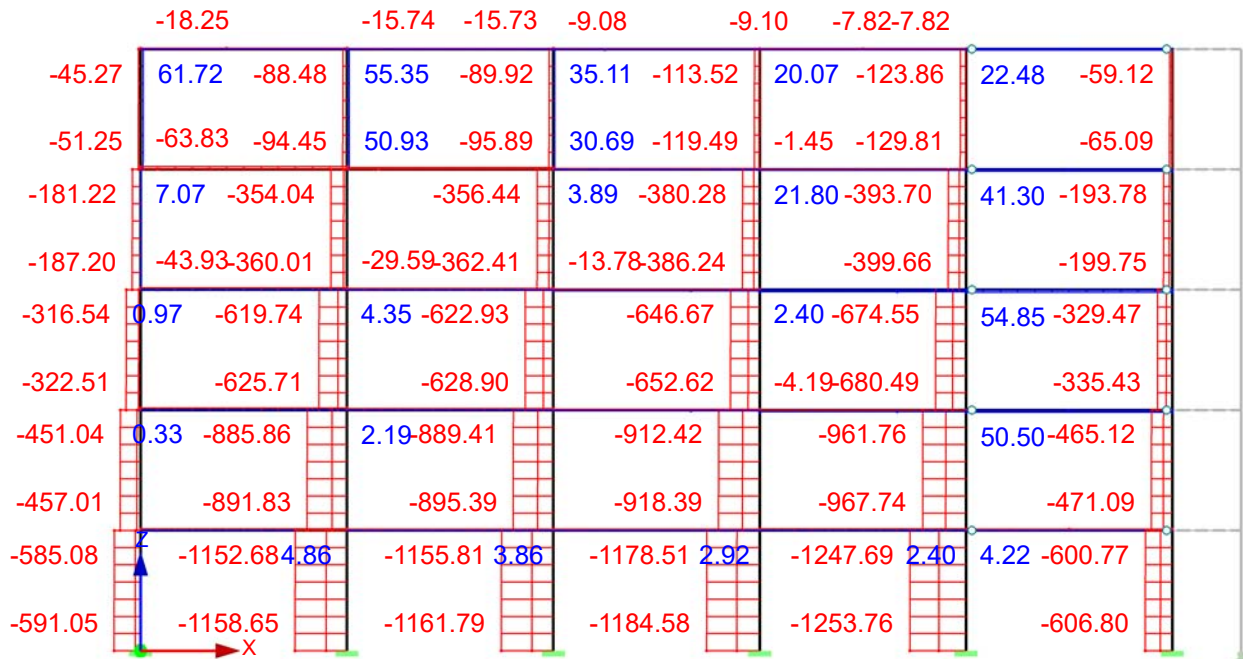
Max u-z: 35.3, Min u-z: -1.6 [mm]

4.4 m
M 1:220

OSNE SILE N (MSN OVOJNICA)

RC 1: MSN (ULS)
Internal Forces N
Result Combinations: Max and Min Values

In Y-direction



Max N: 61.72, Min N: -1253.76 [kN]

4.4 m
M 1:220

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

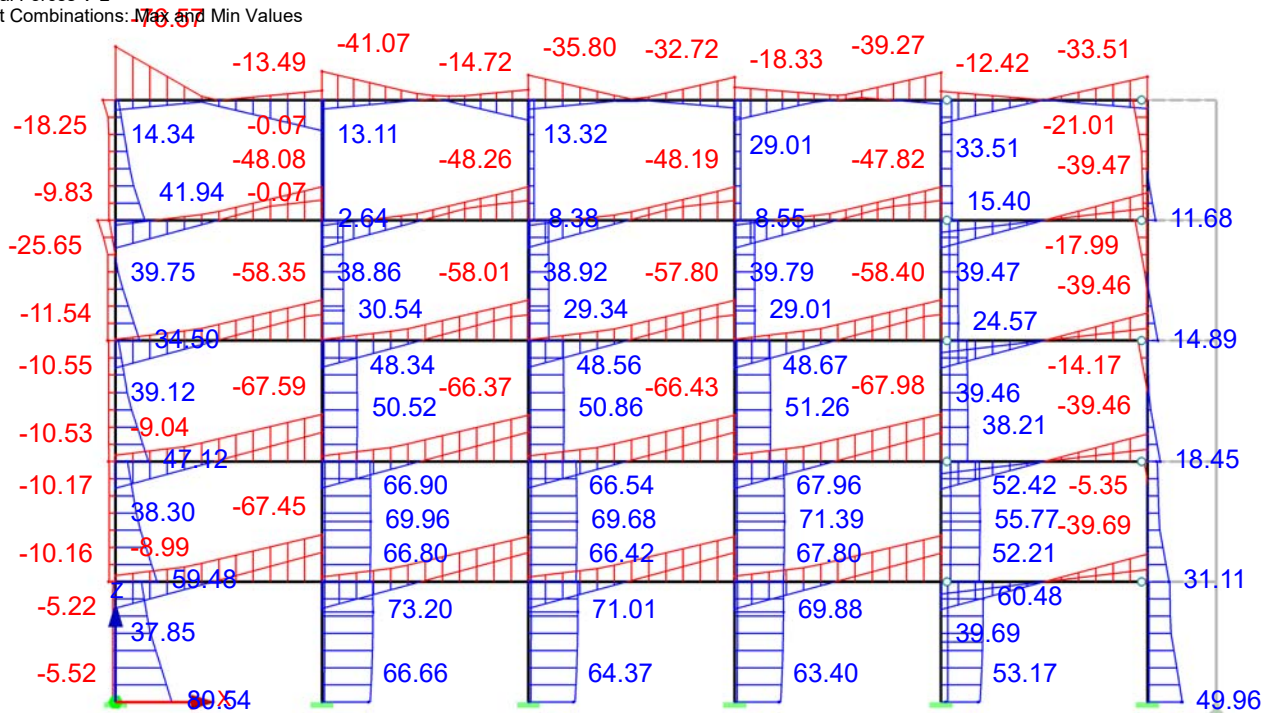
■ PRECNE SILE V_z (MSN OVOJNICA)

RC 1: MSN (ULS)

Internal Forces V-z

Result Combinations: Max and Min Values

In Y-direction



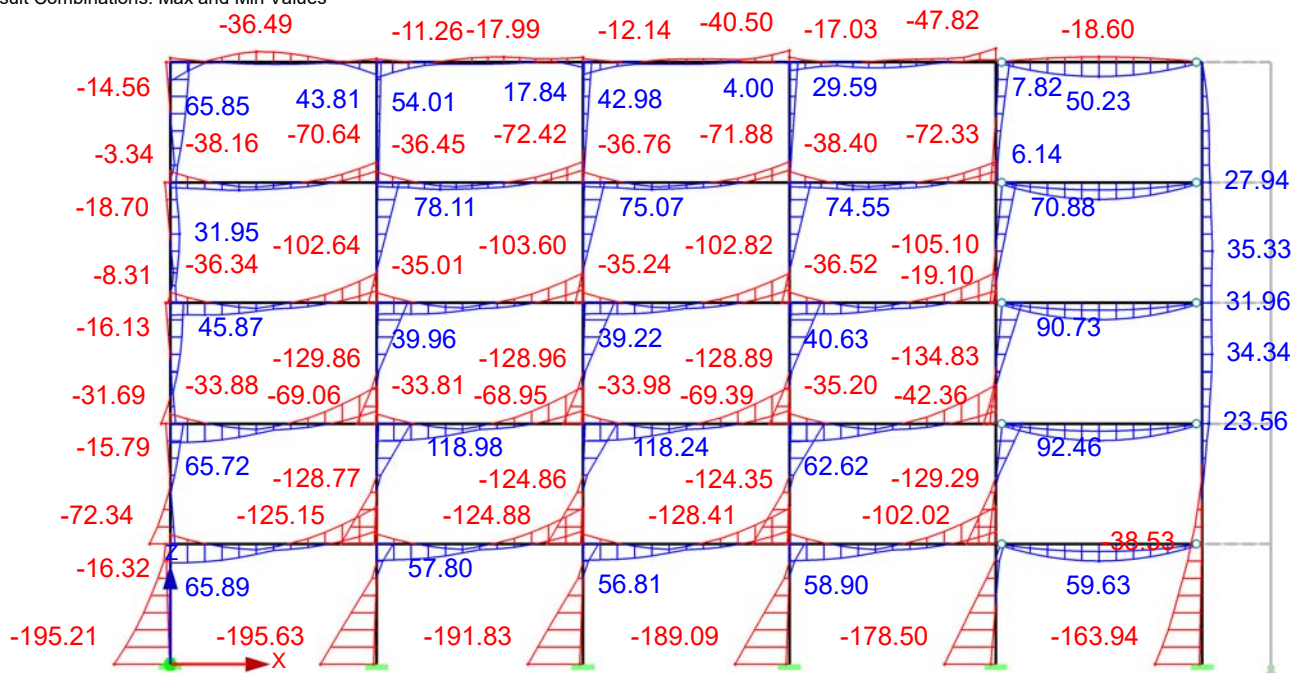
■ UPOGIBNI MOMENTI M_y (MSN OVOJNICA)

RC 1: MSN (ULS)

Internal Forces M-y

Result Combinations: Max and Min Values

In Y-direction



RF-STEEL Members
CA1
General stress analysis
of steel members

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

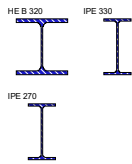
1.1.1 GENERAL DATA

Members to design: 13,14,17-40,43,45,47,49,50,52,54,56,57,59,61,63,64,
66-74,103,133,199,201,204,208,212
Result combinations to design: RC1 MSN (ULS)

1.2 MATERIALS

Matl. No.	Material Description	Safety Factor γ_M [-]	Yield Strength f_{yk} [kN/cm ²]	Manually	Limit Stresses [kN/cm ²]		
					Limit σ_x	Limit τ	Limit σ_{eqv}
1	Steel S 355	1.00	35.50	☐	35.50	20.50	35.50

1.3.1 CROSS-SECTIONS



Sect. No.	Matl. No.	Cross-section Description	I_x [cm ⁴] A [cm ²]	I_y [cm ⁴] $\alpha_{pl,y}$	I_z [cm ⁴] $\alpha_{pl,z}$	Comment
1	1	HE B 320 Euronorm 53-62	226.00 161.00	30820.00 1.11	9240.00 1.52	
2	1	IPE 330 Euronorm 19-57	28.30 62.60	11770.00 1.13	788.00 1.56	
3	1	IPE 270 Euronorm 19-57	16.00 45.90	5790.00 1.13	420.00 1.56	

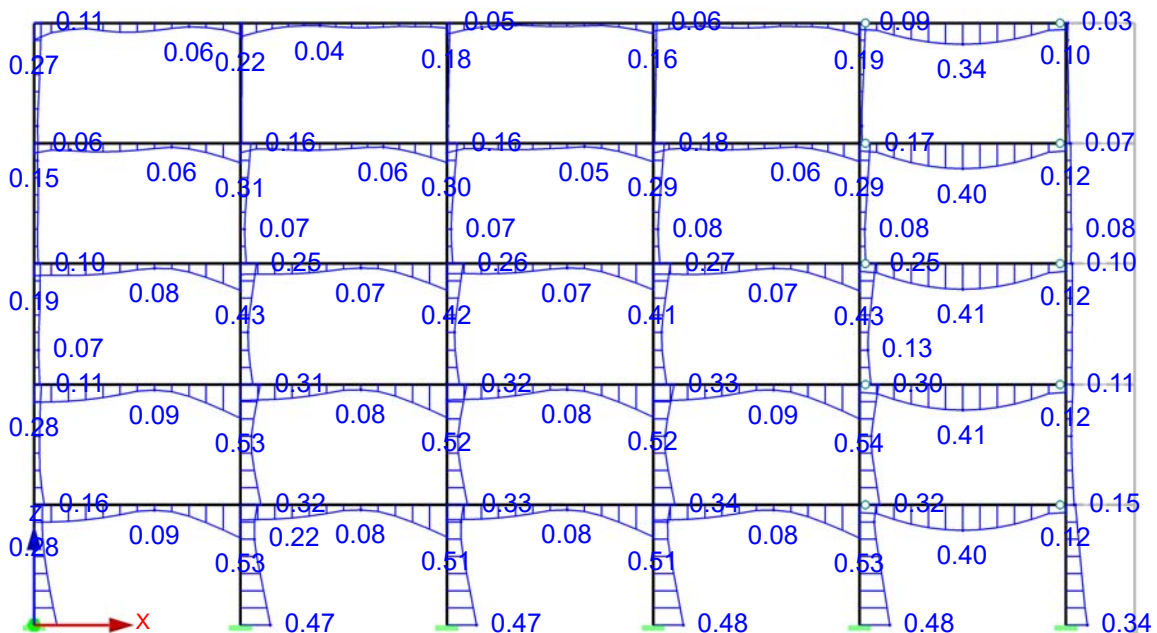
2.1 STRESSES BY CROSS-SECTION

Sect. No.	Member No.	Location x [m]	S-Point No.	Load Case	Stress Type	Stress [kN/cm²]		Stress Ratio
						Existing	Limit	
1	HE B 320 Euronorm 53-62							
	103	0.000	6	RC1	Sigma Total	-16.46	34.50	0.48
	14	0.000	13	RC1	Tau Total	2.44	20.50	0.12
	103	0.000	8	RC1	Sigma-eqv	16.48	34.50	0.48
2	IPE 330 Euronorm 19-57							
	38	6.000	1	RC1	Sigma Total	19.29	35.50	0.54
	34	0.000	13	RC1	Tau Total	-3.49	20.50	0.17
	38	6.000	3	RC1	Sigma-eqv	19.33	35.50	0.54
3	IPE 270 Euronorm 19-57							
	204	3.000	6	RC1	Sigma Total	14.46	35.50	0.41
	212	0.000	13	RC1	Tau Total	2.51	20.50	0.12
	204	3.000	6	RC1	Sigma-eqv	14.46	35.50	0.41

NAPETOSTI σ_{eqv}

RF-STEEL Members CA1

In Y-direction



Max Sigma-eqv: 0.54, Min Sigma-eqv: 0.00

4.4 m
M 1:220

RF-STEEL EC3

CA1

Design of steel members
according to EC 3

Project: PRILOGAB

Model: OKVIR V Y SMERI

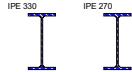
STATICNA ANALIZA

Date: 21.01.2024

1.1 GENERAL DATA

Members to design:	20-31,33-40,199,201,204,208,212	
Sets of members to design:		
National Annex:	SIST	
Ultimate Limit State Design Result combinations to design:	RC1	MSN (ULS)
Serviceability Limit State Design Result combinations to design:	RC2	MSU (SLS)

1.3 CROSS-SECTIONS



Sect. No.	Matl. No.	Cross-Section Description	Cross-Section Type	Max Design Ratio	Comment
2	1	IPE 330 Euronorm 19-57	I-section rolled	0.61	
3	1	IPE 270 Euronorm 19-57	I-section rolled	0.62	

2.2 DESIGN BY CROSS-SECTION

Sect. No.	Member No.	Location x [m]	LC/CO/ RC	Design		Equation No.	Description
2	IPE 330 Euronorm 19-57						
	37	4.000	RC1	0.02	≤ 1	CS101)	Cross-section check - Tension acc. to 6.2.3
	24	6.000	RC1	0.03	≤ 1	CS102)	Cross-section check - Compression acc. to 6.2.4
	25	3.500	RC1	0.02	≤ 1	CS103)	Cross-section check - Compression acc. to 6.2.4 - Class 4
	22	6.000	RC1	0.45	≤ 1	CS111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	21	4.000	RC1	0.01	≤ 1	CS112)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3
	34	0.000	RC1	0.12	≤ 1	CS121)	Cross-section check - Shear force in z-axis acc. to 6.2.6
	26	4.000	RC1	0.10	≤ 1	CS122)	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4
	20	0.000	RC1	0.00	≤ 1	CS126)	Cross-section check - Shear buckling acc. to 6.2.6(6)
	22	6.000	RC1	0.45	≤ 1	CS141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	21	4.000	RC1	0.01	≤ 1	CS142)	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3
	38	6.000	RC1	0.47	≤ 1	CS181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	24	1.500	RC1	0.13	≤ 1	CS182)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3
	38	6.000	RC1	0.47	≤ 1	ST331)	Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	26	3.500	RC1	0.61	≤ 1	ST364)	Stability analysis - Bending and compression acc. to 6.3.3, Method 2
	20	0.000	RC2	0.00	≤ 1	SE400)	Serviceability - Negligible deformations
	34	3.000	RC2	0.11	≤ 1	SE401)	Serviceability - Combination of actions 'Characteristic' - z-direction
3	IPE 270 Euronorm 19-57						
	204	6.000	RC1	0.03	≤ 1	CS101)	Cross-section check - Tension acc. to 6.2.3
	212	3.000	RC1	0.02	≤ 1	CS102)	Cross-section check - Compression acc. to 6.2.4
	212	3.000	RC1	0.34	≤ 1	CS111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	199	0.000	RC1	0.09	≤ 1	CS121)	Cross-section check - Shear force in z-axis acc. to 6.2.6
	212	0.000	RC1	0.12	≤ 1	CS122)	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4
	199	0.000	RC1	0.00	≤ 1	CS126)	Cross-section check - Shear buckling acc. to 6.2.6(6)
	212	3.000	RC1	0.34	≤ 1	CS141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	212	3.000	RC1	0.35	≤ 1	CS181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	204	5.500	RC1	0.14	≤ 1	CS182)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3
	212	0.000	RC1	0.02	≤ 1	ST301)	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)
	212	0.000	RC1	0.14	≤ 1	ST312)	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2
	212	0.000	RC1	0.04	≤ 1	ST321)	Stability analysis - Torsional buckling acc. to 6.3.1.4 and 6.3.1.2(4)
	212	3.000	RC1	0.53	≤ 1	ST331)	Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	212	3.000	RC1	0.62	≤ 1	ST364)	Stability analysis - Bending and compression acc. to 6.3.3, Method 2
	199	0.000	RC2	0.00	≤ 1	SE400)	Serviceability - Negligible deformations
	212	3.000	RC2	0.56	≤ 1	SE401)	Serviceability - Combination of actions 'Characteristic' - z-direction

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

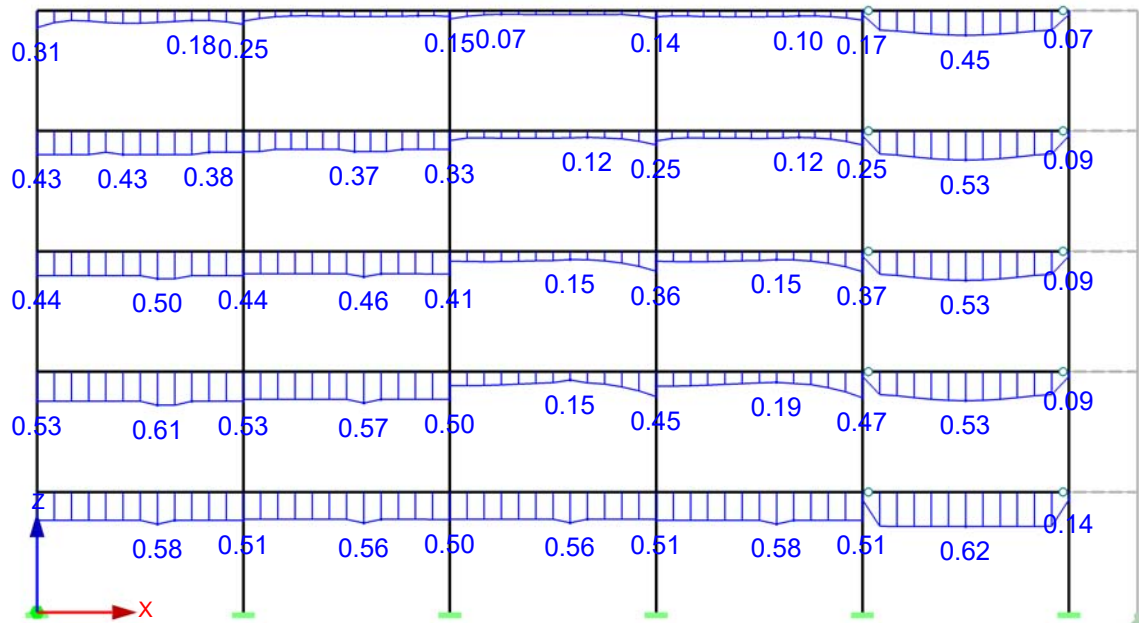
STATICNA ANALIZA

PROJEKTIRANJE PO EC3 (NOSILCI)

RF-STEEL EC3 CA1

Ultimate Limit State: Cross-Section Design, Stability Design

In Y-direction



Max Design Ratio: 0.62

RF-STEEL EC3
CA2
Design of columns
according to EC3

Project: PRILOGAB

Model: OKVIR V Y SMERI

Date: 21.01.2024

STATICNA ANALIZA

1.1 GENERAL DATA

Members to design:	13,14,17-19,32,43,45,47,49,50,52,54,56,57,59,61,63,64,66-74,103,133
Sets of members to design:	
National Annex:	SIST
Ultimate Limit State Design Result combinations to design:	RC1 MSN (ULS)

1.3 CROSS-SECTIONS

Sect. No.	Matl. No.	Cross-Section Description	Cross-Section Type	Max Design Ratio	Comment
1	1	HE B 320 Euronorm 53-62	I-section rolled	0.45	

2.2 DESIGN BY CROSS-SECTION

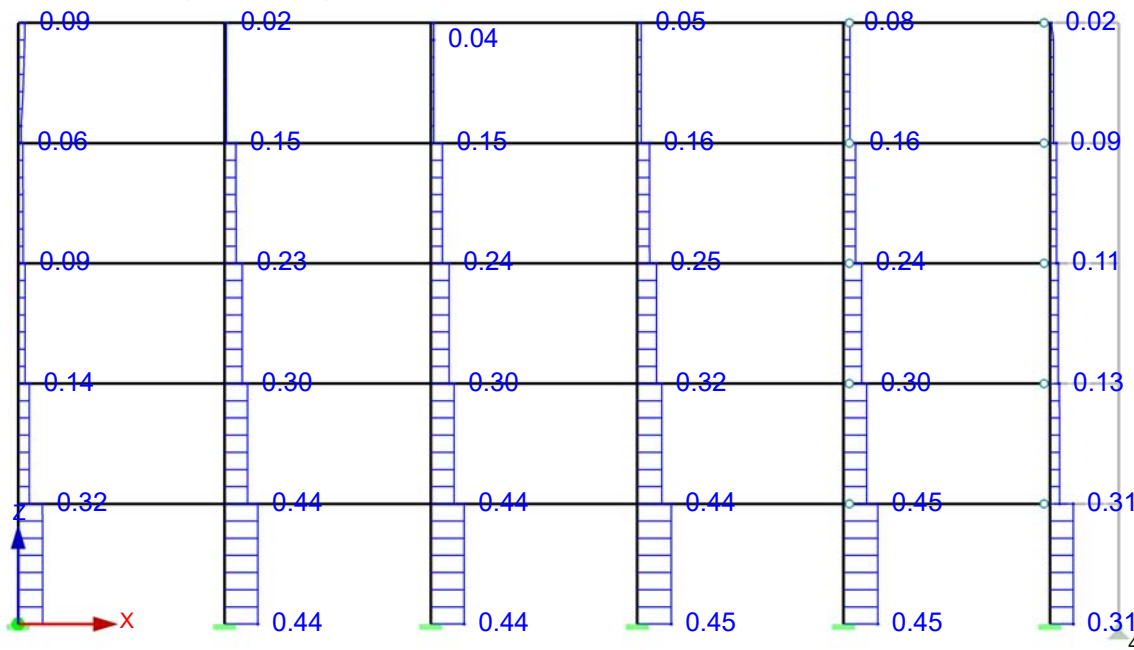
Sect. No.	Member No.	Location x [m]	LC/CO/RC	Design	Equation No.	Description
1	HE B 320 Euronorm 53-62					
	74	3.500	RC1	0.01	≤ 1	CS101) Cross-section check - Tension acc. to 6.2.3
	103	0.000	RC1	0.22	≤ 1	CS102) Cross-section check - Compression acc. to 6.2.4
	74	2.500	RC1	0.04	≤ 1	CS111) Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2
	14	0.000	RC1	0.08	≤ 1	CS121) Cross-section check - Shear force in z-axis acc. to 6.2.6
	13	0.000	RC1	0.00	≤ 1	CS126) Cross-section check - Shear buckling acc. to 6.2.6(6)
	74	2.500	RC1	0.04	≤ 1	CS141) Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8
	103	0.000	RC1	0.42	≤ 1	CS181) Cross-section check - Bending, shear and axial force acc. to 6.2.9.1
	17	0.000	RC1	0.10	≤ 1	ST301) Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)
	52	0.000	RC1	0.20	≤ 1	ST302) Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2
	52	0.000	RC1	0.17	≤ 1	ST311) Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)
	54	0.000	RC1	0.13	≤ 1	ST321) Stability analysis - Torsional buckling acc. to 6.3.1.4 and 6.3.1.2(4)
	52	0.000	RC1	0.19	≤ 1	ST322) Stability analysis - Torsional buckling acc. to 6.3.1.4 and 6.3.1.2
	74	3.500	RC1	0.09	≤ 1	ST331) Stability analysis - Lateral torsional buckling acc. to 6.3.2.1 and 6.3.2.3 - I-Section
	103	0.000	RC1	0.45	≤ 1	ST364) Stability analysis - Bending and compression acc. to 6.3.3, Method 2

PROJEKTIRANJE PO EC3 (STEBRI)

RF-STEEL EC3 CA2

Ultimate Limit State: Cross-Section Design, Stability Design

In Y-direction



Max Design Ratio: 0.45