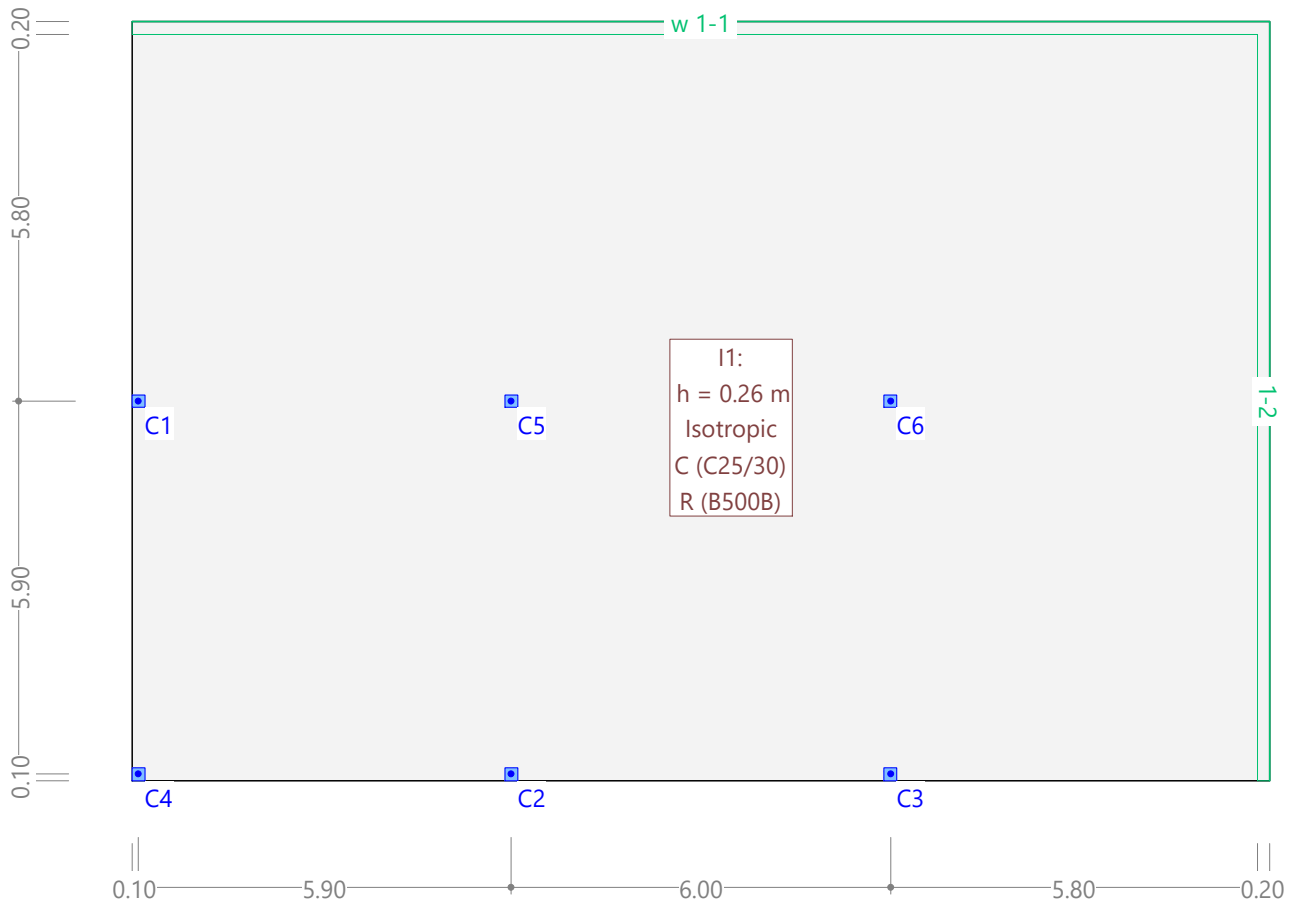
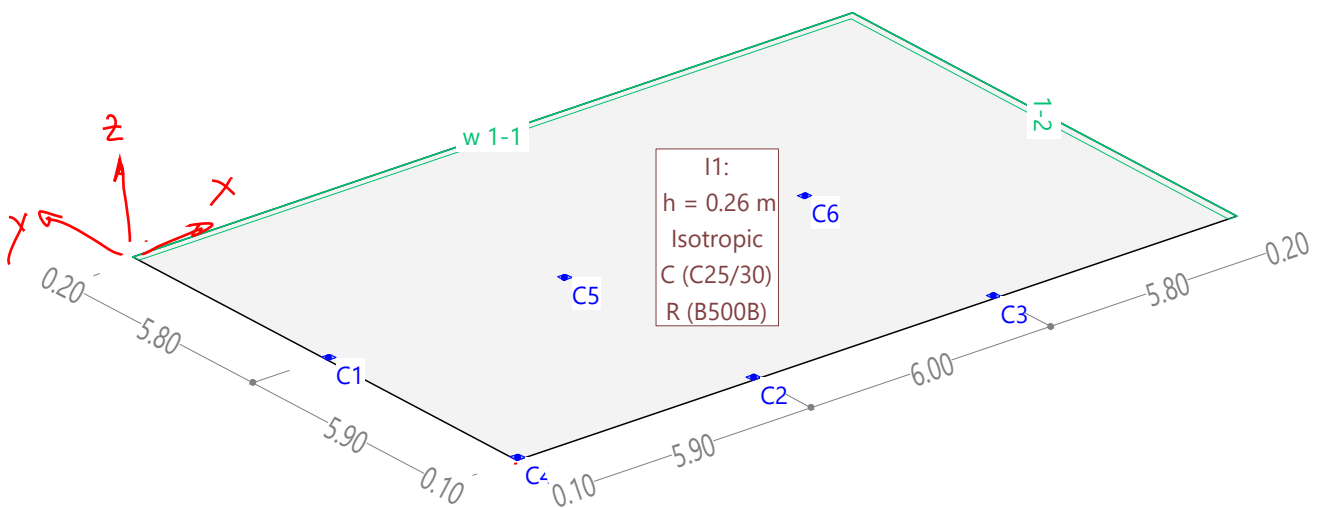


Structure [m]

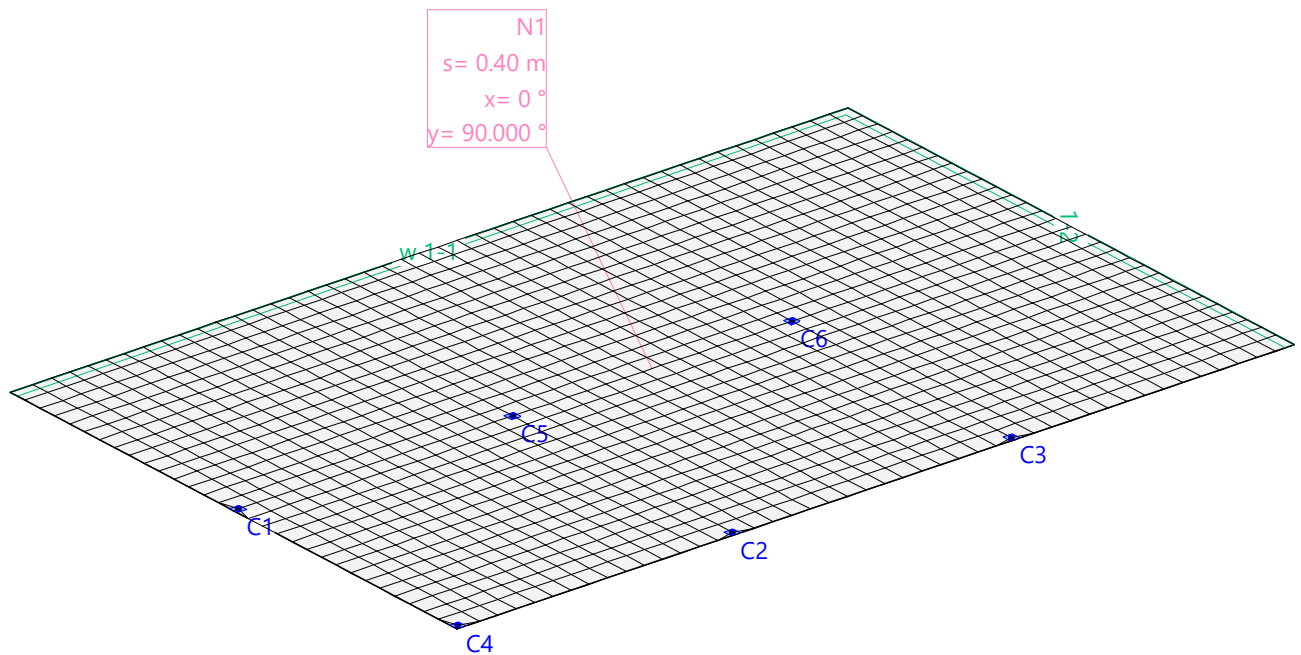


Structure



Note! z-axis pointing upward (in many FE programmes)

FE mesh



STRUCTURE DATA

MATERIALS Code: SIA

ID	Type	Member	E [kN/mm ²]	v	ρ [t/m ³]	α [‰]	Class
C	Concrete	(general)	32.10	0.17	2.50	0.010	C25/30
CC	Concrete	Column	33.60	0.17	2.50	0.010	C30/37
R	Reinforcement ste	(general)	205.00	0.30	8.00	0.012	B500B

COLUMNS - FE-Model

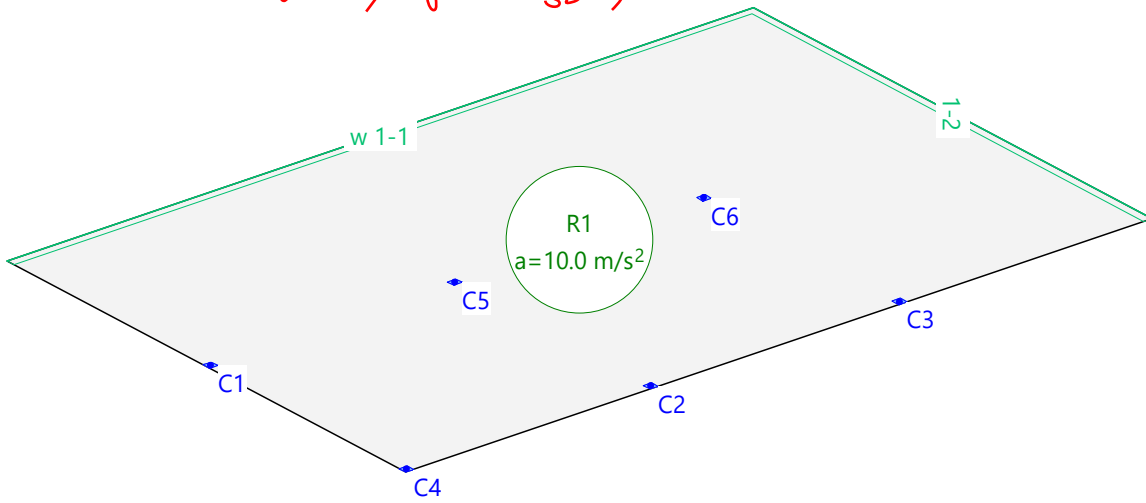
Id	Type Description	Non lin.	Support			Support zone			
			Sdz [kN/m]	Srx [kNm]	Sry [kNm]	du [m]	dv [m]	wu [°]	wv [°]
C1	Area	No	blocked	free	free	0.20	0.20	0	90.000
C2	Area	No	blocked	free	free	0.20	0.20	0	90.000
C3	Area	No	blocked	free	free	0.20	0.20	0	90.000
C4	Area	No	blocked	free	free	0.20	0.20	0	90.000
C5	Area	No	blocked	free	free	0.20	0.20	0	90.000
C6	Area	No	blocked	free	free	0.20	0.20	0	90.000

WALLS

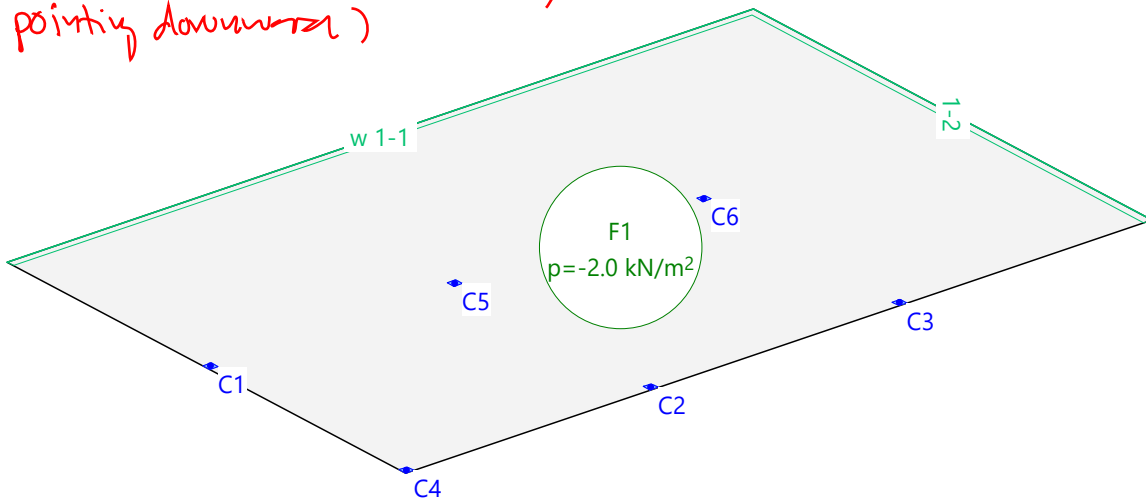
Id	Type		sdz [kN/m ²]	Support		Geometry		f _{E, sdz}	Materials	
	Description	N.Lin.		srx [kN]	sry [kN]	Width [m]	Height [m]		Body	Reinforcement
W1	free rotati	No	§ 2.14E+6	free	free	0.20	3.00	1.000	C	R

§ : Automatically calculate wall stiffness

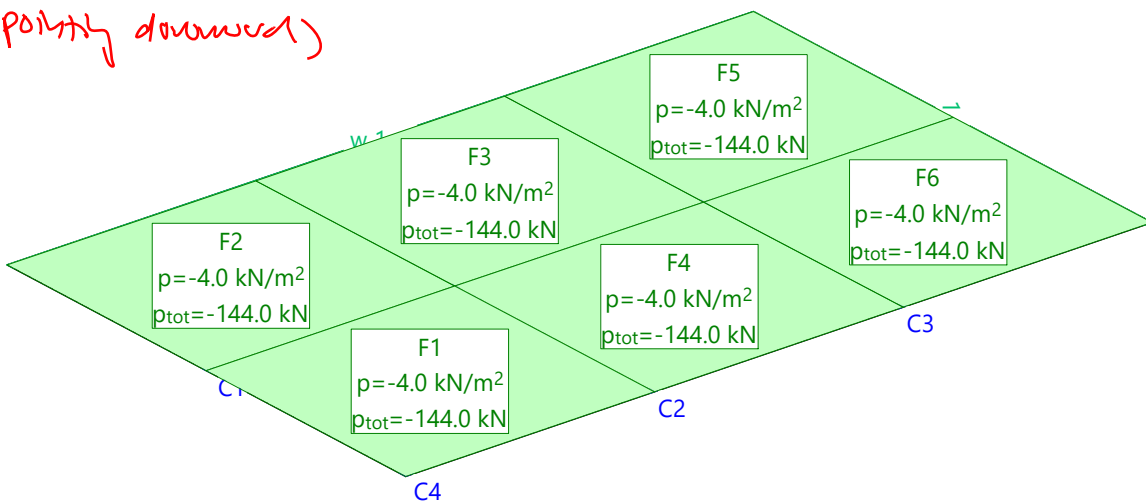
Loading SW: Self weight (gravity $g \approx 10 \frac{m}{s^2}$)



Loading SDL: Superimposed dead load (negative, pointing downwards)



G-Pattern LL: Live load (patch load) (negative, pointing downwards)



Note: "Pattern" loads are combined per defined action in Cedrus.

Limit state specification: !SLS(frequent) = Serviceability

Description

Standard design situation: Serviceability, SLS frequent combination

Action combinations

No	Action Name	Fac	1	Action combinations
1	Dead load	1	1	
2	Superimposed dead loads	1	1	
3	Live load A Living space	1	0.5	

Fac : all combination factors are multiplied by this factor

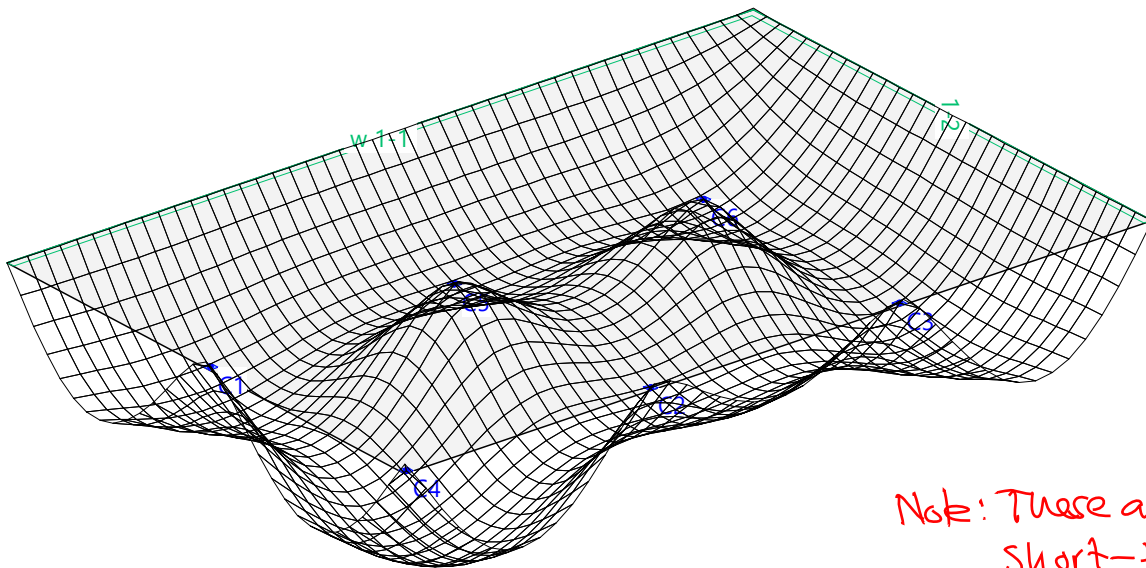
Loading superpositions for the actions

for limit state specification !SLS(frequent)

Action	Alt	additive	exclusive	Loading	Factor	Comb.
Dead load		permanent		SW Self weight	1.000	
Superimposed dead loa		permanent		SDL Superimposed dead load	1.000	
Live load A Living sp		if critical		LL%F2 LL - Field F2	1.000	
		plus where crit		LL%F3 LL - Field F3	1.000	
		plus where crit		LL%F5 LL - Field F5	1.000	
		plus where crit		LL%F4 LL - Field F4	1.000	
		plus where crit		LL%F6 LL - Field F6	1.000	
		plus where crit		LL%F1 LL - Field F1	1.000	

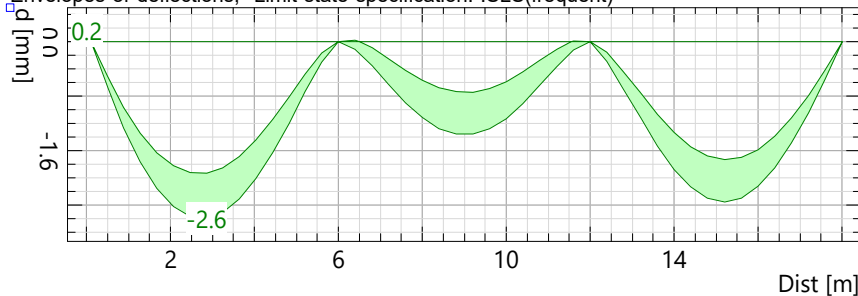
Alt : Alternativesuperposition

Envelopes of deflections: Minima, Limit state specification: !SLS(frequent), Scale exaggeration factor: 1000.0



Section: S1 (-9.00,0.00 - 9.00,0.00)

Envelopes of deflections, Limit state specification: !SLS(frequent)



Note: These are short-term, uncracked deflections

↓
real deflections are much larger (≈ 3x, if critical check more accurately)

Limit state specification: !ULS

Description

Standard design situation: Ultimate, ULS type 2 (1B)

Action combinations

No	Action Name	Fac	Action combinations	
			1	2
1	Dead load	1	1.35	0.8
2	Superimposed dead loads	1	1.35	0.8
3	Live load A Living space	1	1.5	1.5

Fac : all combination factors are multiplied by this factor

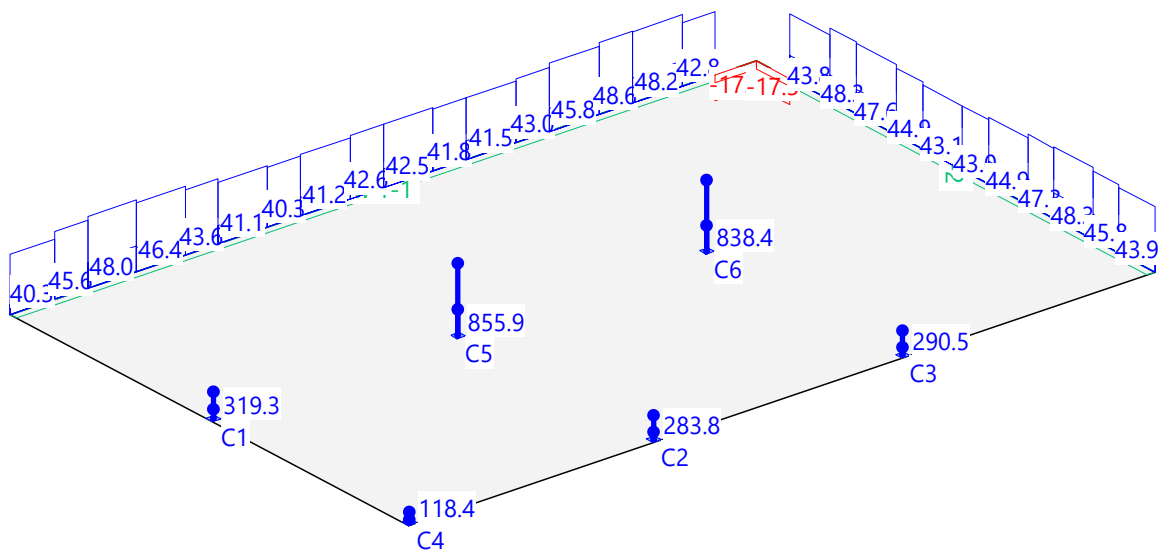
Loading superpositions for the actions

for limit state specification !ULS

Action	Alt	additive	exclusive	Loading	Factor	Comb.
Dead load		permanent		SW Self weight	1.000	
Superimposed dead load		permanent		SDL Superimposed dead load	1.000	
Live load A Living space		if critical		LL%F2 LL - Field F2	1.000	
		plus where crit		LL%F3 LL - Field F3	1.000	
		plus where crit		LL%F5 LL - Field F5	1.000	
		plus where crit		LL%F4 LL - Field F4	1.000	
		plus where crit		LL%F6 LL - Field F6	1.000	
		plus where crit		LL%F1 LL - Field F1	1.000	

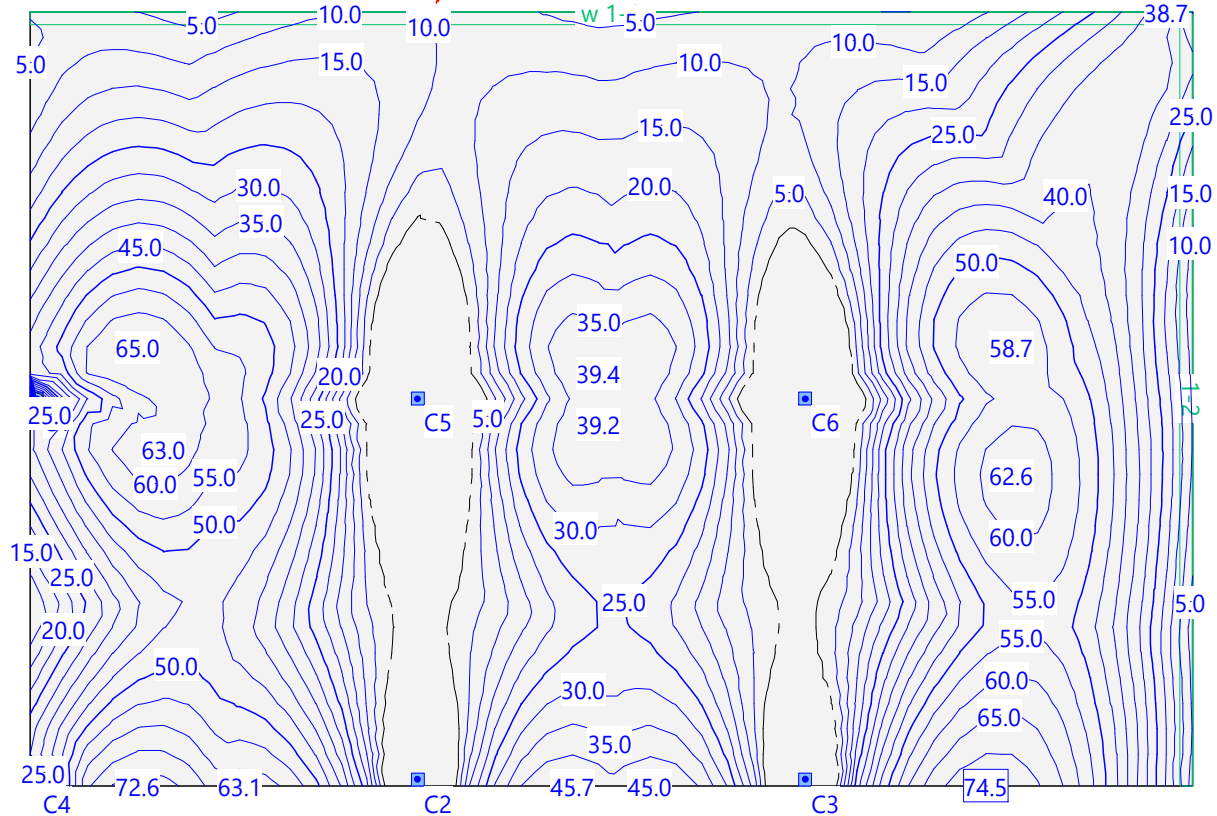
Alt : Alternativesuperposition

Envelopes of reaction forces Walls and columns: Limit state specification: !ULS
Walls values sectionwise presented, Identifications: Columns: [kN], Walls: [kN/m]

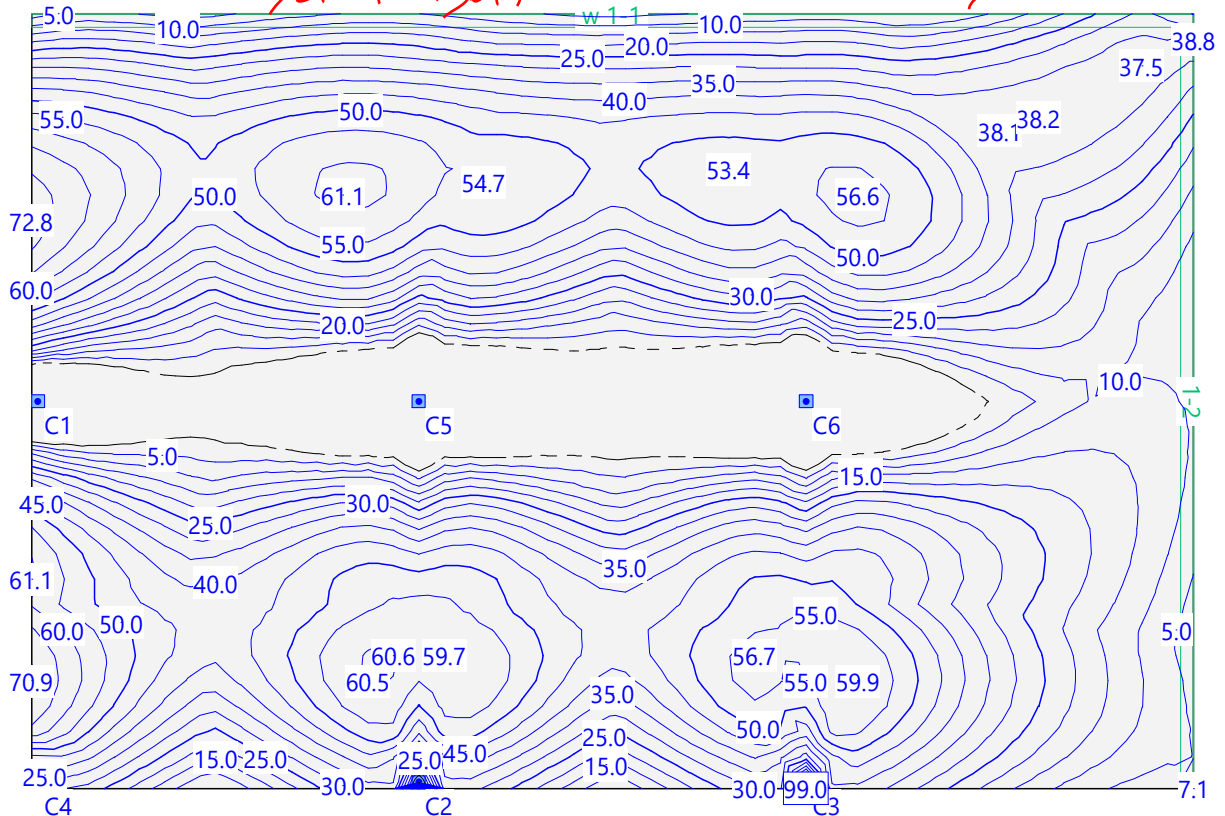


Note: Columns were defined as too stiff. Using "flexible" supports (3m long elastic columns), ca. 5% smaller column reactions would result e.g. at C5

Envelopes of dimensioning moments: maxb [kN], Equidistance: 5.0 [kN], Reference line: 0.0
 Specification: !ULS $= m_{xd} + |m_{xyd}|$ → bottom reinforcement, x-direction

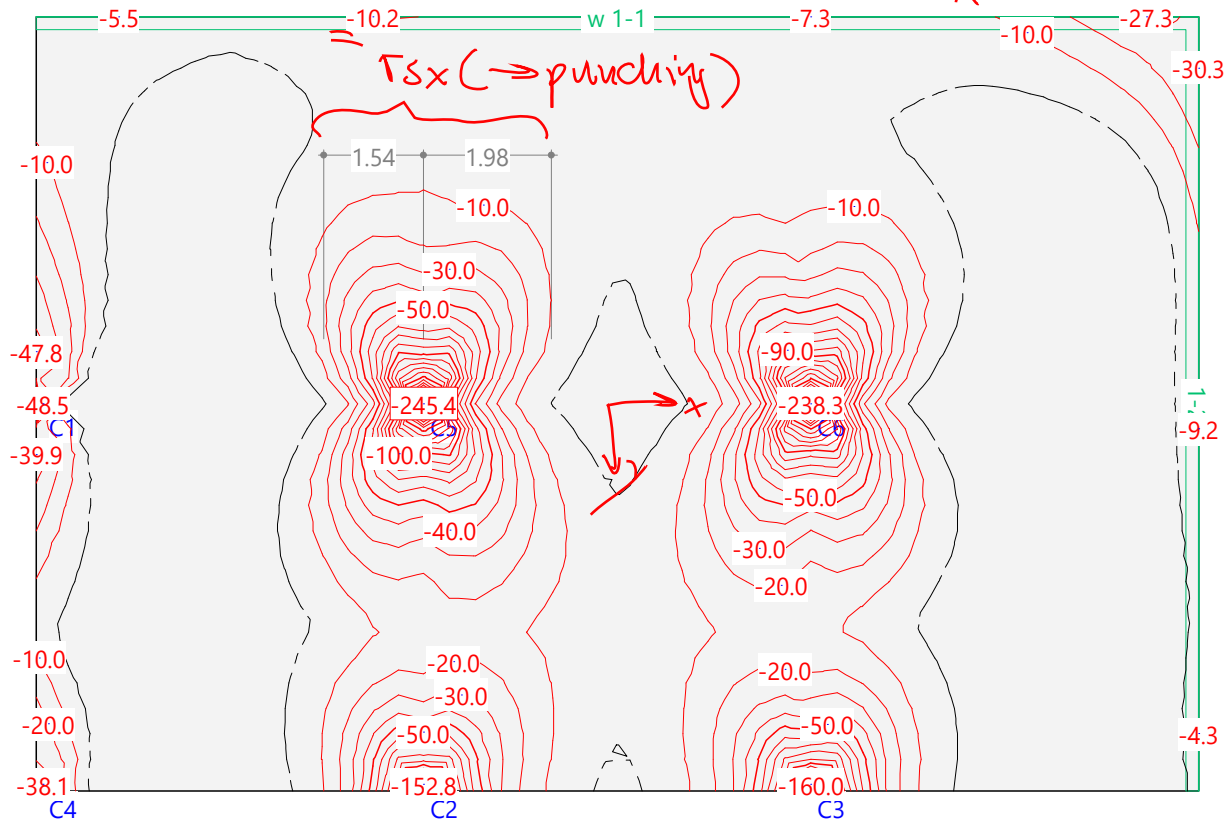


Envelopes of dimensioning moments: mayb [kN], Equidistance: 5.0 [kN], Reference line: 0.0
 Specification: !ULS $= m_{yd} + |m_{xyd}|$ → bottom reinforcement, y-direction



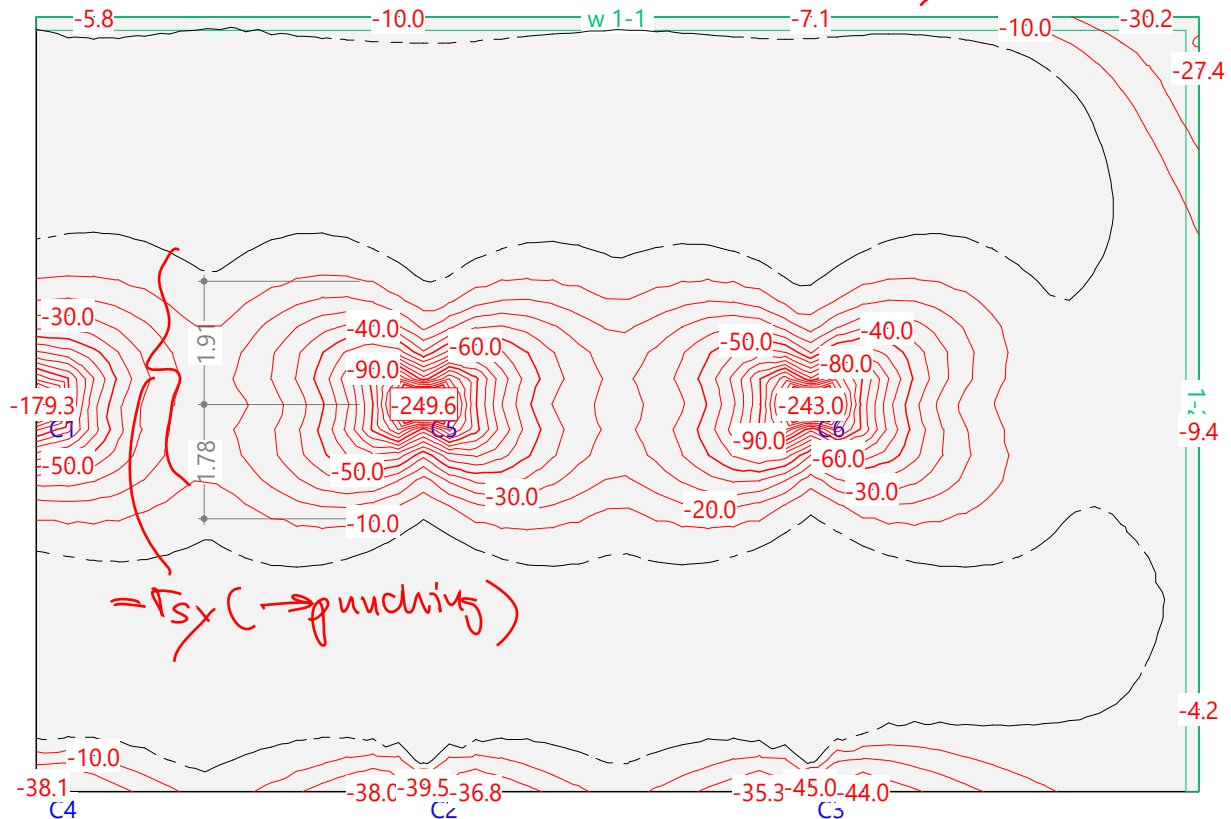
Envelopes of dimensioning moments: maxt [kN], Equidistance: 10.0 [kN], Reference line: 0.0
Specification: !ULS

→ top reinforcement
x-direction

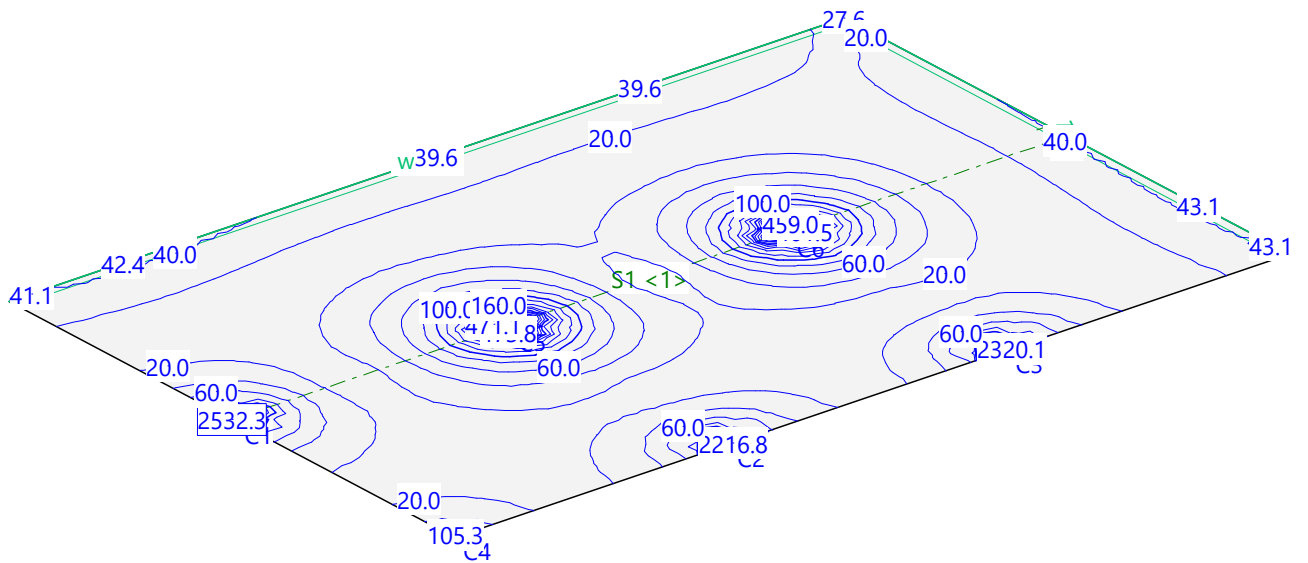


Envelopes of dimensioning moments: mayt [kN], Equidistance: 10.0 [kN], Reference line: 0.0
Specification: !ULS

→ top reinforcement
y-direction



Envelopes of maximum shear forces: [kN/m], Equidistance: 20.0 [kN/m], Reference line: 0.0
Specification: !ULS



Envelopes of maximum shear forces: [kN/m], Equidistance: 20.0 [kN/m], Reference line: 0.0
Specification: !ULS

